
STUDER 900

Betriebs- und Serviceanleitung Operating and Service Instructions

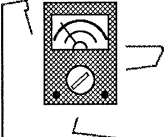
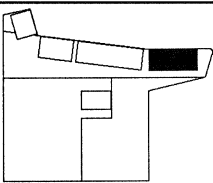
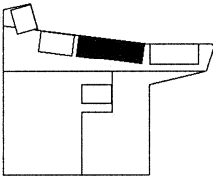
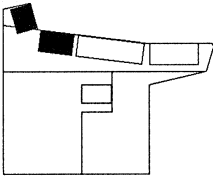
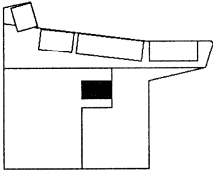
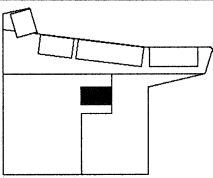


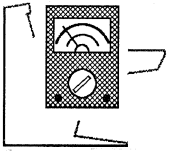
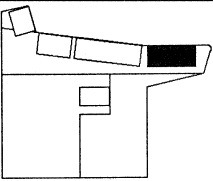
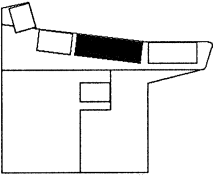
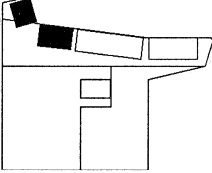
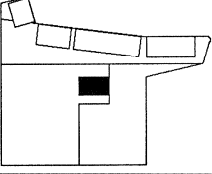
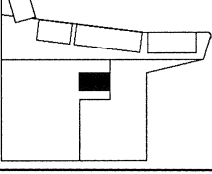
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| |
|---|
| CAUTION |
| RISK OF ELECTRIC SHOCK DO NOT OPEN |
| ATTENTION |
| RISQUE DE CHOC ELECTRIQUE NE PAS OUVRIR |
| ACHTUNG |
| GEFAHR: ELEKTRISCHER SCHLAG NICHT ÖFFNEN |

To reduce the risk of electric shock, do not remove covers (or back). No user-serviceable parts inside. Refer servicing to qualified service personnel.

Afin de prévenir un choc électrique, ne pas enlever les couvercles (où l'arrière) de l'appareil. Il ne se trouve à l'intérieur aucune pièce pouvant être réparée par l'utilisateur.

Um die Gefahr eines elektrischen Schlages zu vermeiden, entfernen Sie keine Abdeckungen (oder Rückwand). Überlassen Sie die Wartung und Reparatur dem qualifizierten Fachpersonal.



This symbol is intended to alert the user to presence of uninsulated "**dangerous voltage**" within the apparatus that may be of sufficient magnitude to constitute a risk of electric shock to a person.

Ce symbole indique à l'utilisateur qu'il existe à l'intérieur de l'appareil des "**tensions dangereuses**". Ces tensions élevées entraînent un risque de choc électrique en cas de contact.

Dieses Symbol deutet dem Anwender an, dass im Geräteinnern die Gefahr der Berührung von "**gefährlicher Spannung**" besteht. Die Größe der Spannung kann zu einem elektrischen Schlag führen.



This symbol is intended to alert the user to the presence of **important instructions** for operating and maintenance in the enclosed documentation.

Ce symbole indique à l'utilisateur que la documentation jointe contient d'**importantes instructions** concernant le fonctionnement et la maintenance.

Dieses Symbol deutet dem Anwender an, dass die beigelegte Dokumentation **wichtige Hinweise** für Betrieb und Wartung beinhaltet.

| | |
|-------------------|--|
| CAUTION: | Lithium Battery. Danger of explosion by incorrect handling. Replace by battery of the same make and type only. |
| ATTENTION: | Pile au lithium. Danger d'explosion en cas de manipulation incorrecte. Ne remplacer que par un modèle de même type. |
| ACHTUNG: | Explosionsgefahr bei unsachgemäßem Auswechseln der Lithiumbatterie. Nur durch den selben Typ ersetzen. |
| ADVARSEL: | Lithiumbatteri. Eksplosionsfare. Udskiftning må kun foretages af en sagkyndig og som beskrevet i servicemanualen (DK). |

FIRST AID

(in case of electric shock)

1. Separate the person as quickly as possible from the electric power source:
 - by switching off the equipment
 - or by unplugging or disconnecting the mains cable
 - pushing the person away from the power source by using dry insulating material (such as wood or plastic).
 - After having sustained an electric shock, always consult a doctor.

WARNING!

DO NOT TOUCH THE PERSON OR HIS CLOTHING BEFORE THE POWER IS TURNED OFF, OTHERWISE YOU STAND THE RISK OF SUSTAINING AN ELECTRIC SHOCK AS WELL!

2. If the person is unconscious
 - check the pulse,
 - reanimate the person if respiration is poor,
 - lay the body down and turn it to one side, call for a doctor immediately.

PREMIERS SECOURS

(en cas d'électrocution)

1. Si la personne est dans l'impossibilité de se libérer:
 - Couper l'interrupteur principal
 - Couper le courant
 - Repousser la personne de l'appareil à l'aide d'un objet en matière non conductrice (matière plastique ou bois)
 - Après une électrocution, consulter un médecin.

ATTENTION!

NE JAMAIS TOUCHER UNE PERSONNE QUI EST SOUS TENSION, SOUS PEINE DE SUBIR EGALEMENT UNE ELECTROCUTION.

2. En cas de perte de connaissance de la personne électrocutée:
 - Contrôler le pouls
 - Si nécessaire, pratiquer la respiration artificielle
 - Placer l'accidenté sur le flanc et consulter un médecin.

ERSTE HILFE

(bei Stromunfällen)

1. Bei einem Stromunfall die betroffene Person so rasch wie möglich vom Strom trennen:
 - Durch Ausschalten des Gerätes
 - Ziehen oder Unterbrechen der Netzzuleitung
 - Betroffene Person mit isoliertem Material (Holz, Kunststoff) von der Gefahrenquelle wegstoßen
 - Nach einem Stromunfall sollte immer ein Arzt aufgesucht werden.

ACHTUNG!

EINE UNTER SPANNUNG STEHENDE PERSON DARF NICHT BERÜHRT WERDEN. SIE KÖNNEN DABEI SELBST ELEKTRISIERT WERDEN!

2. Bei Bewusstlosigkeit des Verunfallten:
 - Puls kontrollieren,
 - bei ausgesetzter Atmung künstlich beatmen,
 - Seitenlagerung des Verunfallten vornehmen und Arzt verständigen.

Installation, Betrieb und Entsorgung

Vor der Installation des Gerätes müssen die hier aufgeführten und auch die weiter in dieser Anleitung mit \triangle bezeichneten Hinweise gelesen und während der Installation und des Betriebes beachtet werden.

Das Gerät und sein Zubehör ist auf allfällige Transportschäden zu untersuchen.

Ein Gerät, das mechanische Beschädigung aufweist oder in welches Flüssigkeit oder Gegenstände eingedrungen sind, darf nicht ans Netz angeschlossen oder muss sofort durch Ziehen des Netzsteckers vom Netz getrennt werden. Das Öffnen und Instandsetzen des Gerätes darf nur vom Fachpersonal unter Einhaltung der geltenden Vorschriften durchgeführt werden.

Falls dem Gerät kein konfektioniertes Netzkabel beiliegt, muss dieses durch eine Fachperson unter Verwendung der mitgelieferten Kabel-Gerätesteckdose IEC320/C13 oder IEC320/C19 und unter Berücksichtigung der einschlägigen, im jeweiligen Lande geltenden Bestimmungen angefertigt werden; siehe Bild unten.

Vor Anschluss des Netzkabels an die Netzsteckdose muss überprüft werden, ob die Stromversorgungs- und Anschlusswerte des Gerätes (Netzspannung, Netzfrequenz) innerhalb der erlaubten Toleranzen liegen. Die im Gerät eingesetzten Sicherungen müssen den am Gerät angebrachten Angaben entsprechen.

Ein Gerät mit einem dreipoligen Gerätestecker (Gerät der Schutzklasse I) muss an eine dreipolige Netzsteckdose angeschlossen und somit das Gerätegehäuse mit dem Schutzleiter der Netzinstallation verbunden werden (Für Dänemark gelten Starkstrombestimmungen, Abschnitt 107).

Installation, Operation, and Waste Disposal

Before you install the equipment, please read and adhere to the following recommendations and all sections of these instructions marked with \triangle .

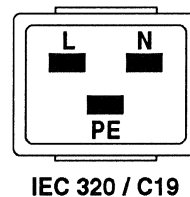
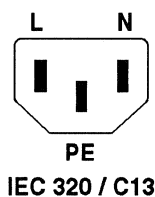
Check the equipment for any transport damage.

A unit that is mechanically damaged or which has been penetrated by liquids or foreign objects must not be connected to the AC power outlet or must be immediately disconnected by unplugging the power cable. Repairs must only be performed by trained personnel in accordance with the applicable regulations.

Should the equipment be delivered without a matching mains cable, the latter has to be prepared by a trained person using the attached female plug (IEC320/C13 or IEC320/C19) with respect to the applicable regulations in your country - see diagram below.

Before connecting the equipment to the AC power outlet, check that the local line voltage matches the equipment rating (voltage, frequency) within the admissible tolerance. The equipment fuses must be rated in accordance with the specifications on the equipment.

Equipment supplied with a 3-pole appliance inlet (equipment conforming to protection class I) must be connected to a 3-pole AC power outlet so that the equipment cabinet is connected to the protective earth conductor of the AC supply (for Denmark the Heavy Current Regulations, Section 107, are applicable).



Female plug (IEC320), view from contact side:

| | | |
|---------|------------------------------------|-----------------------------------|
| L | live; brown | National American Standard: black |
| N | neutral; blue | white |
| PE ... | protective earth; green and yellow | green |

Connecteur femelle (IEC320), vue de la face aux contacts:

| | | |
|--------|---------------------------------|-----------------------------------|
| L..... | phase, brun | Standard National Américain: noir |
| N..... | neutre, bleu | blanc |
| PE.... | terre protective; vert et jaune | vert |

Ansicht auf Steckkontakte der Kabel-Gerätesteckdose (IEC320):

| | | |
|--------|-------------------------|-----------------------|
| L..... | Polleiter, braun | USA-Standard: schwarz |
| N..... | Neutralleiter, hellblau | weiss |
| PE.... | Schutzleiter, gelb/grün | grün |

Bei der Installation des Gerätes muss **vermieden** werden, dass:

- das Gerät Regen, Feuchtigkeit, direkter Sonneneinstrahlung oder übermässiger Wärmestrahlung von Wärmequellen (Heizgeräte, Heizungen, Spotlampen) ausgesetzt wird
- die für den Betrieb des Gerätes benötigte Luftzirkulation beeinträchtigt und dadurch die zulässige maximale Lufttemperatur der Geräteumgebung überschritten wird (Wärmestau)
- die Belüftungsöffnungen des Gerätes blockiert oder abgedeckt werden.

Das Gerät und seine Verpackung darf nur sachgerecht entsorgt werden. Alle Teile des Gerätes, die gefährliche Stoffe (Quecksilber, Cadmium) enthalten, müssen als Sondermüll behandelt werden.

Verbrauchte Batterien und Akkus müssen dem Hersteller zur Entsorgung zurückgegeben oder entsprechend den spezifischen Bestimmungen Ihres Landes fachgerecht entsorgt werden.

Wartung und Reparatur

Durch Entfernen von Gehäuseteilen, Abschirmungen etc. werden stromführende Teile freigelegt. Aus diesem Grund müssen u.a. die folgenden Grundsätze beachtet werden:

Eingriffe in das Gerät dürfen nur von Fachpersonal unter Einhaltung der geltenden Vorschriften vorgenommen werden.

Vor Entfernen von Gehäuseteilen muss das Gerät ausgeschaltet und vom Netz getrennt werden.

Bei geöffnetem, vom Netz getrenntem Gerät dürfen Teile mit gefährlichen Ladungen (z. B. Kondensatoren, Bildröhren) erst nach kontrollierter Entladung, heiße Bauteile (Leistungshalbleiter, Kühlkörper etc.) erst nach deren Abkühlen berührt werden.

Bei Wartungsarbeiten am geöffneten, unter Netzspannung stehenden Gerät dürfen blanke Schaltungsteile und metallene Halbleitergehäuse weder direkt noch mit einem nichtisolierten Werkzeug berührt werden.

Zusätzliche Gefahren bestehen bei unsachgemässer Handhabung besonderer Komponenten:

- **Explosionsgefahr** bei Lithiumzellen, Elektrolyt-Kondensatoren und Leistungshalbleitern
- **Implosionsgefahr** bei evakuierten Anzeigeeinheiten
- **Strahlungsgefahr** bei Lasereinheiten (nichtionisierend), Bildröhren (ionisierend)
- **Verätzungsgefahr** bei Anzeigeeinheiten (LCD) und Komponenten mit flüssigem Elektrolyt.

Solche Komponenten dürfen nur von dafür ausgebildetem Fachpersonal unter Verwendung von vorgeschriebenen Schutzmitteln (u.a. Schutzbrille, Handschuhe) gehandhabt werden.

The equipment installation **must satisfy** the following requirements:

- Protection against rain, humidity, direct solar irradiation or strong thermal radiation from heat sources (heaters, radiators, spotlights).
- Unobstructed air circulation so that the maximum air temperature in the equipment environment will not be exceeded (no heat accumulation).
- Ventilation louvers of the equipment must not be blocked or covered.

The equipment and its packing materials should ultimately be disposed off in accordance with the applicable regulations only. All parts of the equipment that contain hazardous substances (mercury, cadmium) must be treated as toxic waste.

Weak batteries or exhausted rechargeable batteries must be returned to the manufacturer for competent disposal or must be disposed of in accordance with the environmental protection regulations applicable for your country.

Maintenance and Repair

The removal of housing parts, shields, etc. exposes energized parts. For this reason the following precautions should be observed:

Maintenance should only be performed by trained personnel in accordance with the applicable regulations. The equipment should be switched off and disconnected from the AC power outlet before any housing parts are removed.

Even after the equipment has been disconnected from the power, parts with hazardous charges (e.g. capacitors, picture tubes) should only be touched after they have been properly discharged. Hot components (power semiconductors, heat sinks, etc.) should only be touched after they have cooled off.

If maintenance is performed on a unit that is opened and switched on, no uninsulated circuit components and metallic semiconductor housings should be touched neither with your bare hands nor with uninsulated tools.

Certain components pose additional hazards:

- **Explosion hazard** from lithium batteries, electrolytic capacitors and power semiconductors
- **Implosion hazard** from evacuated display units
- **Radiation hazard** from laser units (non-ionizing), picture tubes (ionizing)
- **Caustic effect** of display units (LCD) and such components containig liquid electrolyte.

Such components should only be handled by trained personnel who are properly protected (e.g. by goggles, gloves).

Für Wartung und Reparatur der sicherheitsrelevanten Teile des Gerätes darf nur Ersatzmaterial nach Herstellerspezifikation verwendet werden.

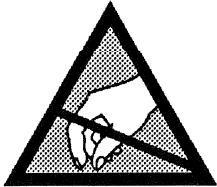
Das Gerät muss ordnungsgemäss und regelmässig gewartet und somit in sicherem Zustand erhalten werden. Bei ungenügender Wartung oder bei Änderungen der sicherheitsrelevanten Teile des Gerätes erlischt die entsprechende Produkthaftung des Herstellers.

For maintenance work and repair on components that influence the equipment safety, only replacement material conforming to the manufacturer's specifications may be used.

The equipment should be properly serviced in regular intervals and be maintained in safe operating condition. If the equipment is not properly maintained or if any modifications are made to components that influence safety, the manufacturer's product liability gets void.

Elektrostatische Entladung (ESD) bei Wartung und Reparatur

Electrostatic Discharge (ESD) during Maintenance and Repair


ATTENTION:

Observe precautions for handling devices sensitive to electrostatic discharge!

ATTENTION:

Respecter les précautions d'usage concernant la manipulation de composants sensibles à l'électricité statique!

ACHTUNG:

Vorsichtsmassnahmen bei Handhabung elektrostatisch entladungsgefährdeter Bauelemente beachten!

Viele ICs und andere Halbleiter sind empfindlich gegen elektrostatische Entladung (ESD). Unfachgerechte Behandlung von Baugruppen mit solchen Komponenten bei Wartung und Reparatur kann deren Lebensdauer drastisch vermindern.

Bei der Handhabung der ESD-empfindlichen Komponenten sind u.a. folgende Regeln zu beachten:

- ESD-empfindliche Komponenten dürfen ausschliesslich in dafür bestimmten und bezeichneten Verpackungen gelagert und transportiert werden.
- Unverpackte, ESD-empfindliche Komponenten dürfen nur in den dafür eingerichteten Schutzzonen (EPA, z.B. Gebiet für Feldservice, Reparatur- oder Serviceplatz) gehandhabt und nur von Personen berührt werden, die durch ein Handgelenkband mit Serienwiderstand mit dem Massepotential des Reparatur- oder Serviceplatzes verbunden sind. Das gewartete oder reparierte Gerät wie auch Werkzeuge, Hilfsmittel, EPA-taugliche (elektrisch leitende) Arbeits-, Ablage- und Bodenmatten müssen ebenfalls mit diesem Potential verbunden sein.
- Die Anschlüsse der ESD-empfindlichen Komponenten dürfen unkontrolliert weder mit elektrostatisch aufladbaren (Gefahr von Spannungsdurchschlag), noch mit metallischen Oberflächen (Schockentladungsfahr) in Berührung kommen.
- Um undefinierte transiente Beanspruchung der Komponenten und deren eventuelle Beschädigung durch unerlaubte Spannung oder Ausgleichsströme zu vermeiden, dürfen elektrische Verbindungen nur am abgeschalteten Gerät und nach dem Abbau allfälliger Kondensatorladungen hergestellt oder getrennt werden.

Many ICs and semiconductors are sensitive to electrostatic discharge (ESD). The life of components containing such elements can be drastically reduced by improper handling during maintenance and repair work.

Please observe the following rules when handling ESD sensitive components:

- ESD sensitive components should only be stored and transported in the packing material specifically provided for this purpose.
- Unpacked ESD sensitive components should only be handled in ESD protected areas (EPA, e.g. area for field service, repair or service bench) and only be touched by persons who wear a wristlet that is connected to the ground potential of the repair or service bench by a series resistor. The equipment to be repaired or serviced and all tools, aids, as well as electrically semiconducting work, storage and floor mats should also be connected to this ground potential.
- The terminals of ESD sensitive components must not come in uncontrolled contact with electrostatically chargeable (voltage puncture) or metallic surfaces (discharge shock hazard).
- To prevent undefined transient stress of the components and possible damage due to inadmissible voltages or compensation currents, electrical connections should only be established or separated when the equipment is switched off and after any capacitor charges have decayed.

SMD-Bauelemente

Der Austausch von SMD-Bauelementen ist ausschliesslich geübten Fachleuten vorbehalten. Für verwüstete Platinen können keine Ersatzansprüche geltend gemacht werden. Beispiele für korrekte und falsche SMD-Lötverbindungen in der Abbildung weiter unten.

Bei Studer werden keine handelsüblichen SMD-Teile bewirtschaftet. Für Reparaturen sind die notwendigen Bauteile lokal zu beschaffen. Die Spezifikationen aller Komponenten finden Sie in den Positionslisten im Schemateil.

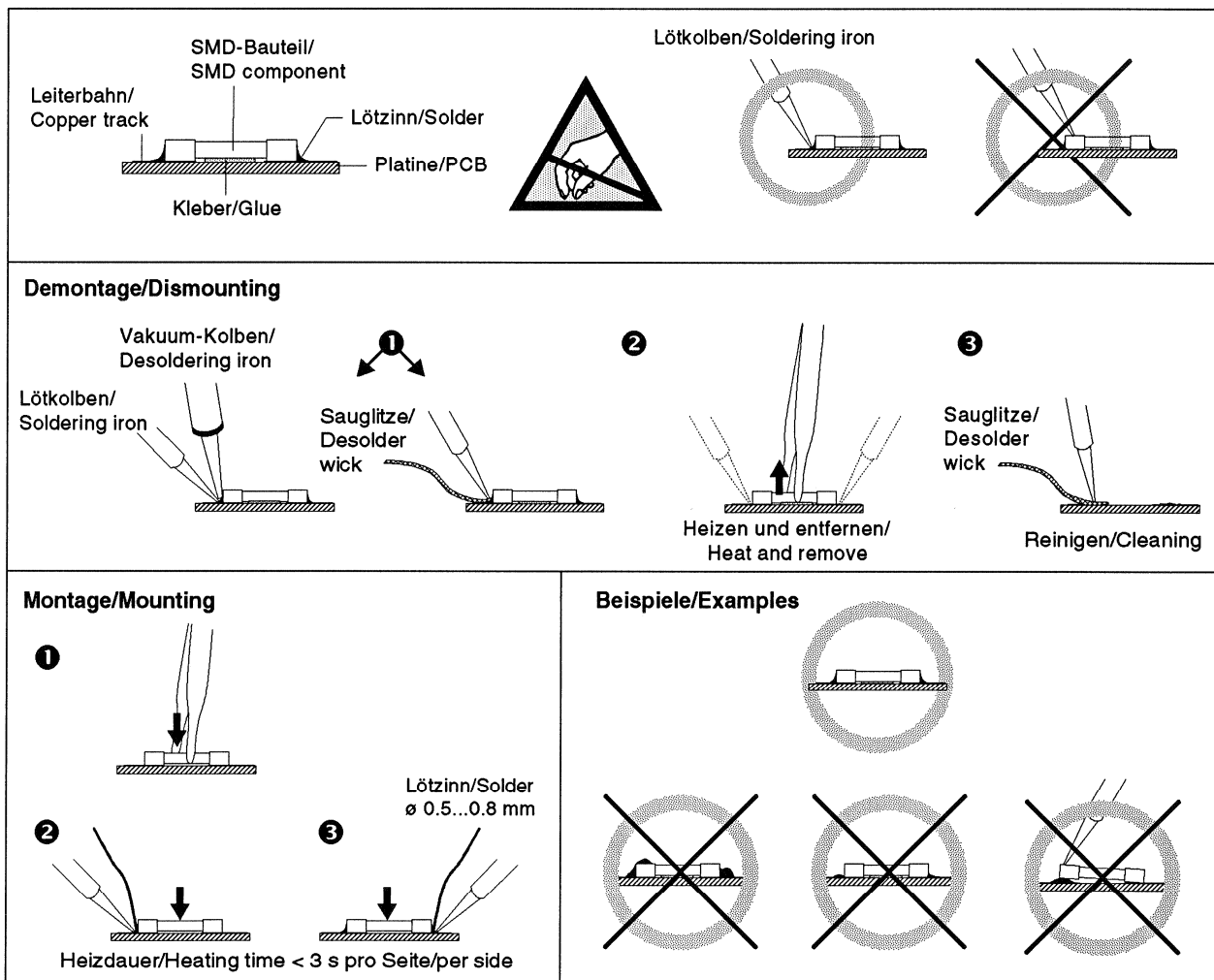
Spezialkomponenten sind in der Positionsliste mit einer Artikelnummer versehen und können bei Studer unter dieser Nummer bezogen werden.

SMD Components

SMDs should only be replaced by skilled specialists. No warranty claims will be accepted for circuit boards that have been ruined. Proper and improper SMD soldering joints are depicted below.

Studer does not keep any commercially available SMDs in stock. For repairs the corresponding devices should be purchased locally. The specifications of all components can be found in the parts lists in the diagram section.

Special components having a part number in the parts list can be ordered from Studer by specifying this number.



Störstrahlung und Störfestigkeit

Das Gerät entspricht den Schutzanforderungen auf dem Gebiet der elektromagnetischen Phänomene, die u.a. in den Richtlinien 89/336/EWG und FCC, Part 15, aufgeführt sind :

1. Die vom Gerät erzeugten elektromagnetischen Ausstrahlungen sind soweit begrenzt, dass ein bestimmungsgemässer Betrieb anderer Geräte und Systeme möglich ist.
2. Das Gerät weist eine angemessene Festigkeit gegen elektromagnetische Störungen auf, so dass sein bestimmungsgemässer Betrieb möglich ist.

Das Gerät wurde getestet und erfüllt die Bedingungen der im Kapitel "Technische Daten" aufgeführten EMV-Standards. Die Limiten dieser Standards gewährleisten mit einer angemessenen Wahrscheinlichkeit sowohl einen Schutz der Umgebung wie auch entsprechende Störfestigkeit des Gerätes. Eine absolute Garantie, dass keine unerlaubte elektromagnetische Beeinträchtigung während des Gerätebetriebes entsteht, ist jedoch nicht gegeben.

Um die Wahrscheinlichkeit solcher Beeinträchtigung weitgehend auszuschliessen, sind u.a. folgende Massnahmen zu beachten:

- Installieren Sie das Gerät gemäss den Angaben in der Bedienungsanleitung, und verwenden Sie das mitgelieferte Zubehör.
- Verwenden Sie im System und in der Umgebung, in denen das Gerät eingesetzt ist, nur Komponenten (Anlagen, Geräte), die ihrerseits die Anforderungen der obenerwähnten Standards erfüllen.
- Sehen Sie ein Erdungskonzept des Systems vor, das sowohl die Sicherheitsanforderungen (die Erdung der Geräte gemäss Schutzklasse I mit einem Schutzleiter muss gewährleistet sein), wie auch die EMV-Belange berücksichtigt. Bei der Entscheidung zwischen stern- oder flächenförmiger bzw. kombinierter Erdung sind Vor- und Nachteile gegeneinander abzuwägen.
- Benutzen Sie abgeschirmte Kabel für die Verbindungen, für welche eine Abschirmung vorgesehen ist. Achten Sie auf einwandfreie, grossflächige, korrosionsbeständige Verbindung der Abschirmung zum entsprechenden Steckeranschluss bzw. zum Steckergehäuse. Beachten Sie, dass eine nur an einem Ende angeschlossene Kabelabschirmung als Sende- bzw. Empfangsantenne wirken kann (z.B. bei wirksamer Kabellänge von 5 m oberhalb von 10 MHz), und dass die Flanken der digitalen Kommunikationssignale hochfrequente Aussendungen verursachen (z.B. LS- oder HC-Logik bis 30 MHz).
- Vermeiden Sie Bildung von Stromschleifen oder vermindern Sie deren unerwünschte Auswirkung, indem Sie deren Fläche möglichst klein halten und den darin fliessenden Strom durch Einfügen einer Impedanz (z.B. Gleichtaktdrossel) reduzieren.

Electromagnetic Compatibility

The equipment conforms to the protection requirements relevant to electromagnetic phenomena that are listed in the guidelines 89/336/EC and FCC, part 15.

1. The electromagnetic interference generated by the equipment is limited in such a way that other equipment and systems can be operated normally.
2. The equipment is adequately protected against electromagnetic interference so that it can operate correctly.

The equipment has been tested and conforms to the EMC standards applicable to residential, commercial and light industry, as listed in the section "Technical Data". The limits of these standards reasonably ensure protection of the environment and corresponding noise immunity of the equipment. However, it is not absolutely warranted that the equipment will not be adversely affected by electromagnetic interference during operation.

To minimize the probability of electromagnetic interference as far as possible, the following recommendations should be followed:

- Install the equipment in accordance with the operating instructions. Use the supplied accessories.
- In the system and in the vicinity where the equipment is installed, use only components (systems, equipment) that also fulfill the above EMC standards.
- Use a system grounding concept that satisfies the safety requirements (protection class I equipment must be connected with a protective ground conductor) that also takes into consideration the EMC requirements. When deciding between radial, surface or combined grounding, the advantages and disadvantages should be carefully evaluated in each case.
- Use shielded cables where shielding is specified. The connection of the shield to the corresponding connector terminal or housing should have a large surface and be corrosion-proof. Please note that a cable shield connected only single-ended can act as a transmitting or receiving antenna (e.g. with an effective cable length of 5 m, the frequency is above 10 MHz) and that the edges of the digital communication signals cause high-frequency radiation (e.g. LS or HC logic up to 30 MHz).
- Avoid current loops or reduce their adverse effects by keeping the loop surface as small as possible, and reduce the noise current flowing through the loop by inserting an additional impedance (e.g. common-mode rejection choke).

Class A Equipment - FCC Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide a reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Caution:

Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment. Also refer to relevant information in this manual.

CE-Konformitätserklärung

Wir,

Studer Professional Audio AG,
CH-8105 Regensdorf,

erklären in eigener Verantwortung, dass das in dieser Anleitung beschriebene Produkt

- 900, Mischpult,

auf das sich diese Erklärung bezieht, entsprechend den Bestimmungen der EU-Richtlinien und deren Ergänzungen

- Elektromagnetische Verträglichkeit (EMV):
89/336/EWG + 92/31/EWG + 93/68/EWG
- Niederspannung:
73/23/EWG, 93/68/EWG

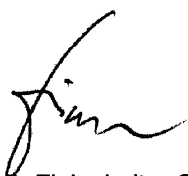
mit den folgenden Normen und normativen Dokumenten übereinstimmt:

- Sicherheit:
Class I, EN 60065/1993 (IEC 65/1985)
- EMV:
EN 50081-1/1992; EN 50082-1/1992

Regensdorf, 16. Juni 1995



B. Hochstrasser, Geschäftsleiter



P. Fiala, Leiter QS

CE Declaration of Conformity

We,

Studer Professional Audio AG,
CH-8105 Regensdorf,

declare under our sole responsibility that the product described in this manual

- 900, Mixing Console,

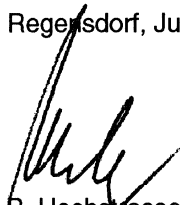
to which this declaration relates, according to following regulations of EU directives and amendments

- Electromagnetic Compatibility (EMC):
89/336/EEC + 92/31/EEC + 93/68/EEC
- Low Voltage (LVD):
73/23/EEC + 93/68/EEC

is in conformity with the following standards or other normative documents:

- Safety:
Class I, EN 60065/1993 (IEC 65/1985)
- EMC:
EN 50081-1/1992; EN 50082-1/1992

Regensdorf, June 16, 1995



B. Hochstrasser, Managing Director



P. Fiala, Manager QA

KAPITEL 1: Allgemeines

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2. Abmessungen

2.1 Chassisversionen

Das Pultchassis wird in zwei Grundausführungen für 3 oder 4 Einschubsektionen gebaut. Mit Chassiseinheiten in zwei Breiten für 12 bzw. 16 Einschubreihen wird die individuelle Pultgröße realisiert. Ein Chassis für 12 Einheiten bietet zudem Platz für verschieden dimensionierte, 19" normierte Geräte.

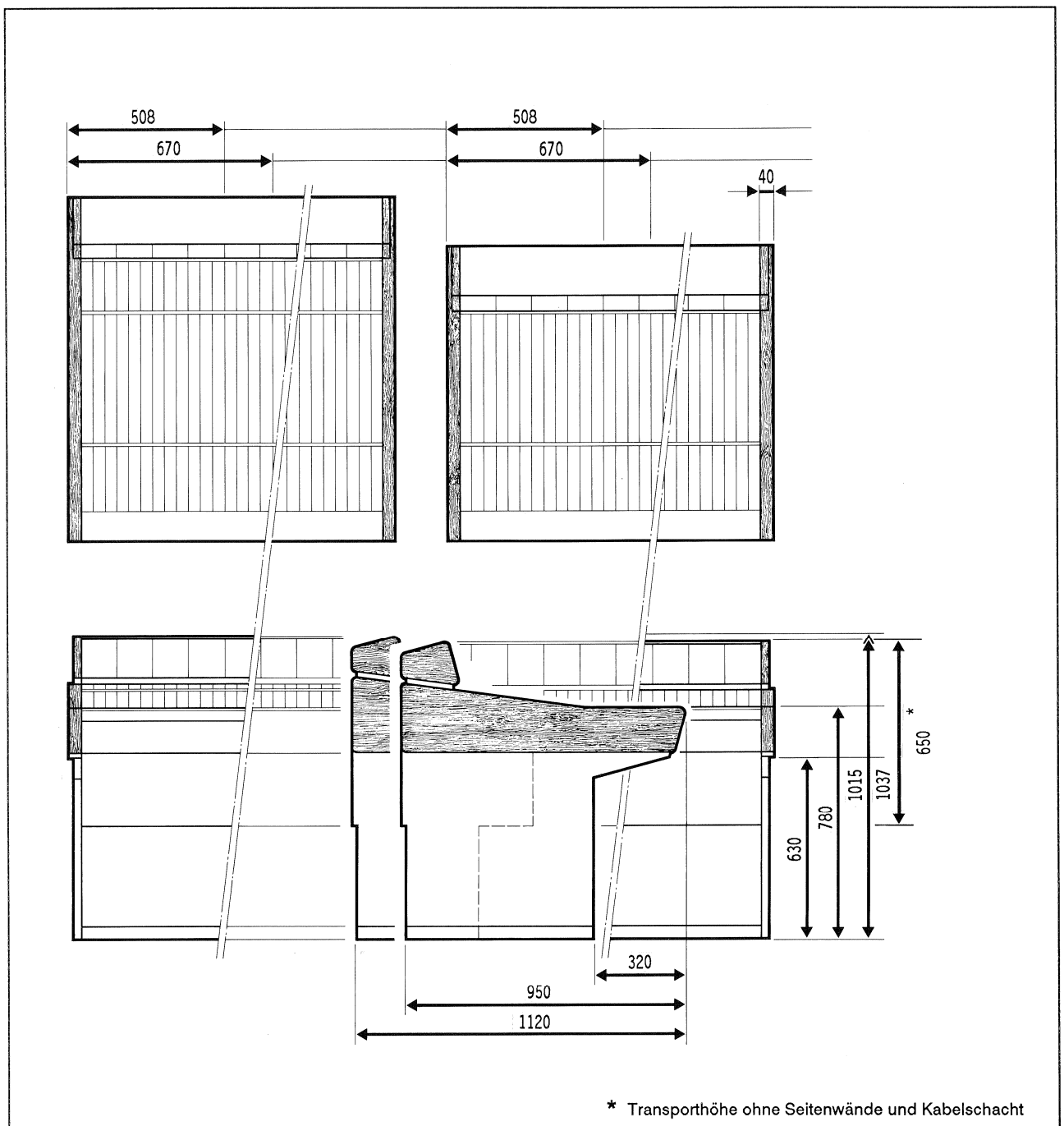
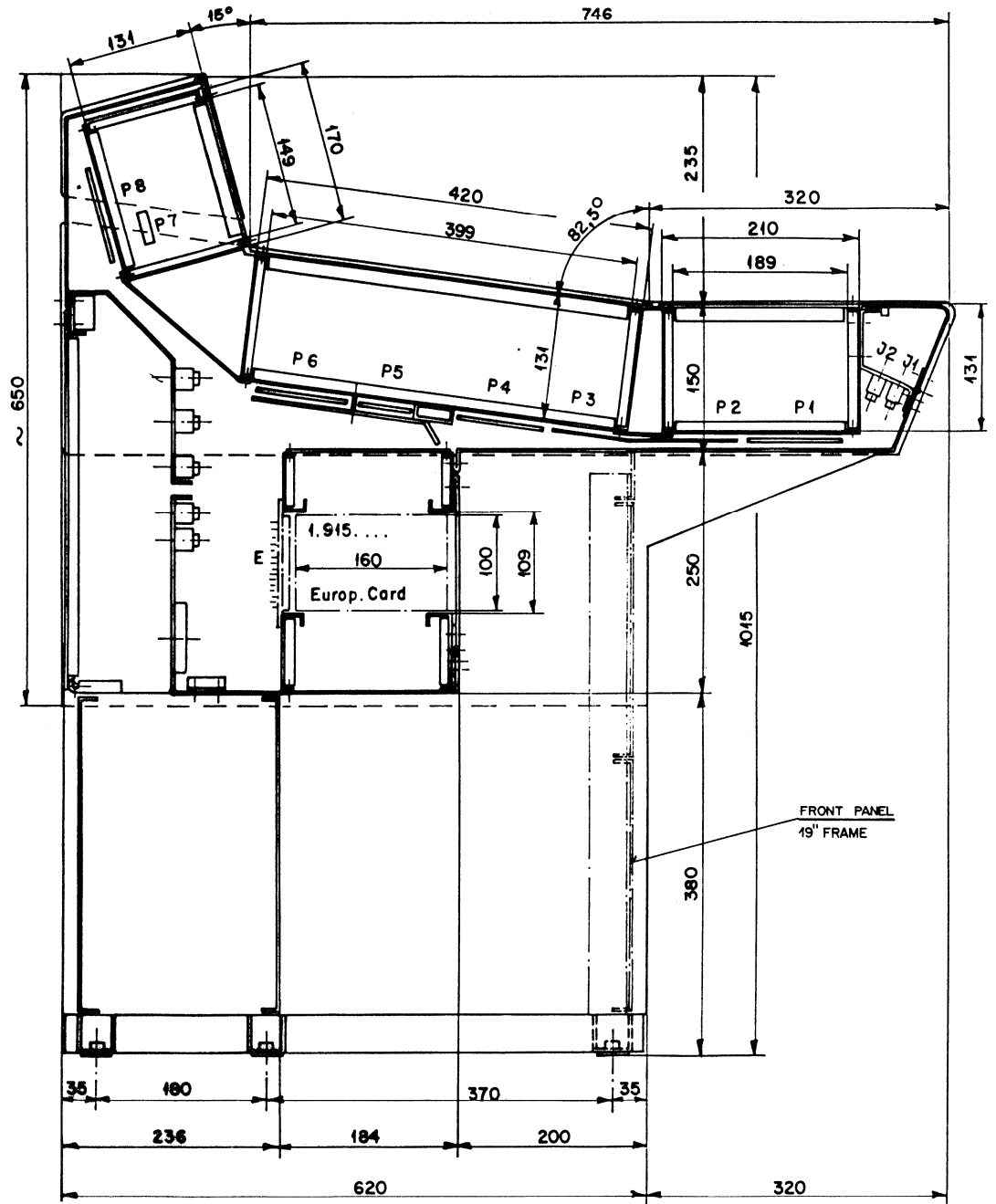


Fig. 1 Masszeichnungen der zwei Chassisbreiten für die beiden Grundversionen mit 3 bzw. 4 Einschubsektionen.

2.2 Querschnittzeichnung

Der Seitenriss zeigt die Pultversion mit 3 Einschubsektionen. Eine zusätzliche Routingsektion liegt zwischen Eingangs- und Meterpanel und hat die gleichen Dimensionen wie das Meterpanel.

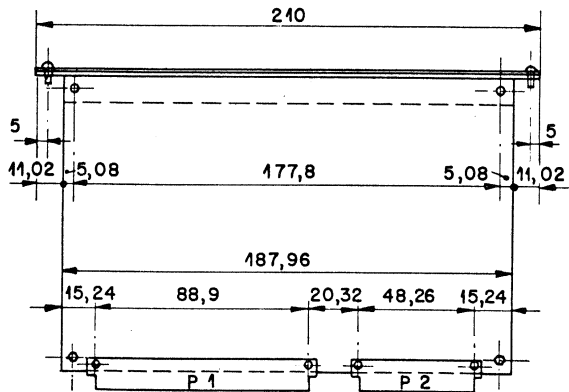


- | | | | | |
|-----------------|--------|---|---|-----------------------------|
| Stecker: | J1/J2 | → | Insert Field (Jack) | Masse in Millimetern |
| | P1 | → | Fader Input and Output | |
| | P2/P3 | → | Interconnection Fader - Input Unit | |
| | P4(P8) | → | Mains Bus | |
| | P5 | → | Intercom | |
| | P6 | → | Inputs | |
| | P7 | → | Meter Connection | |
| | X/D/S | → | Input/Output Connection Panel | |
| | E | → | Eurocards (Voltage Stabilizer, Line Amplifier etc.) | |

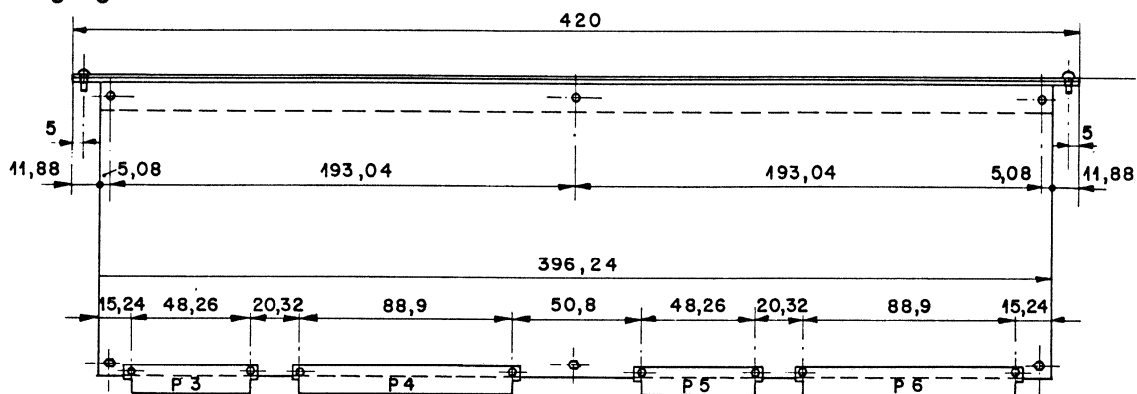
2.3 Masse der Einschubplätze

Wiederum ist die Mischpultversion mit 3 Einschubsektionen dargestellt. Eine 4. Sektion für erweitertes Routing hat die gleichen Dimensionen wie das Meterpanel.

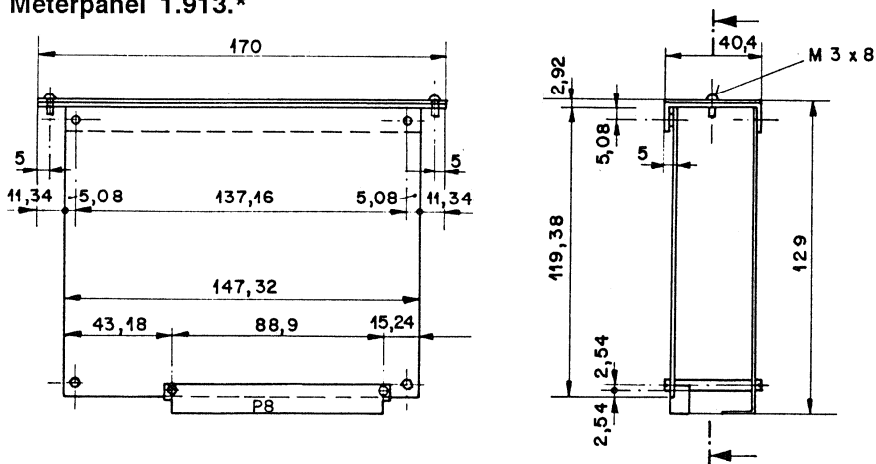
Fadersektion 1.911.*



Eingangssektion 1.912.*



Meterpanel 1.913.*

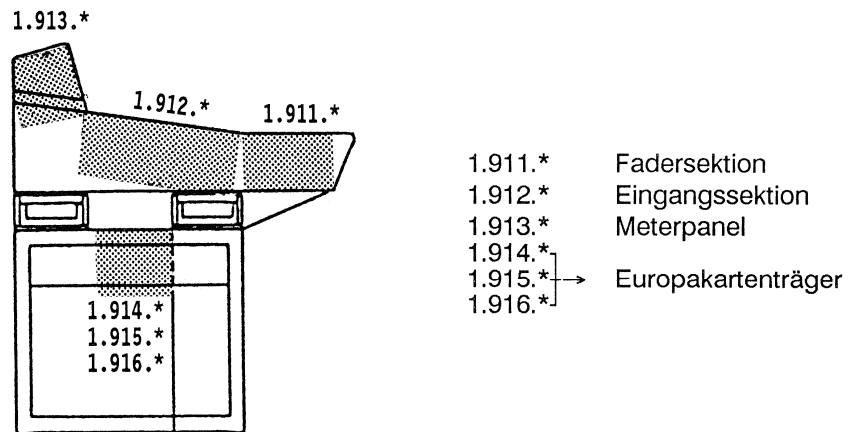


3. Konzeption und Bezeichnungen

Der modulare Aufbau der STUDER Regiepulte 900 ermöglicht eine dem Einzelfall angepasste Konzeption. Nach erfolgter Montage sind die Einschubmodule nur noch sehr eingeschränkt vertauschbar. Anschlussfeld und Verdrahtung werden für jeden Kunden individuell ausgelegt und in den Kapiteln 2, 9 und 10 des Handbuches dokumentiert. Als Orientierungshilfe für Struktur und Funktion des Regiepultes werden im Folgenden einige Grundsätze erläutert.

3.1 Bezeichnung der Einschubplätze

Auf einer Einschubreihe (entspricht einem Kanal) stehen 4 bis 5 Einschubplätze zur Verfügung. Die zugehörigen Baugruppen tragen Nummern mit folgenden Anfangsziffern:



Die Europakarten sind mit den Anfangsziffern 1.915.* und 1.916.* bezeichnet. Die STUDER "Modular Sub Cards" (1.914.*) lassen sich auf einer Trägerkarte im Europakartenformat kombinieren und ebenfalls im Europakartenträger unterbringen.

3.2 Steckeranordnung und Bezeichnungen

Alle Stecker des Mischpultes haben eine Bezeichnung, die die Lage und den Steckertyp definiert. Die Bezeichnung eines Steckerplatzes setzt sich aus vier Ziffern mit folgenden Bedeutungen zusammen:

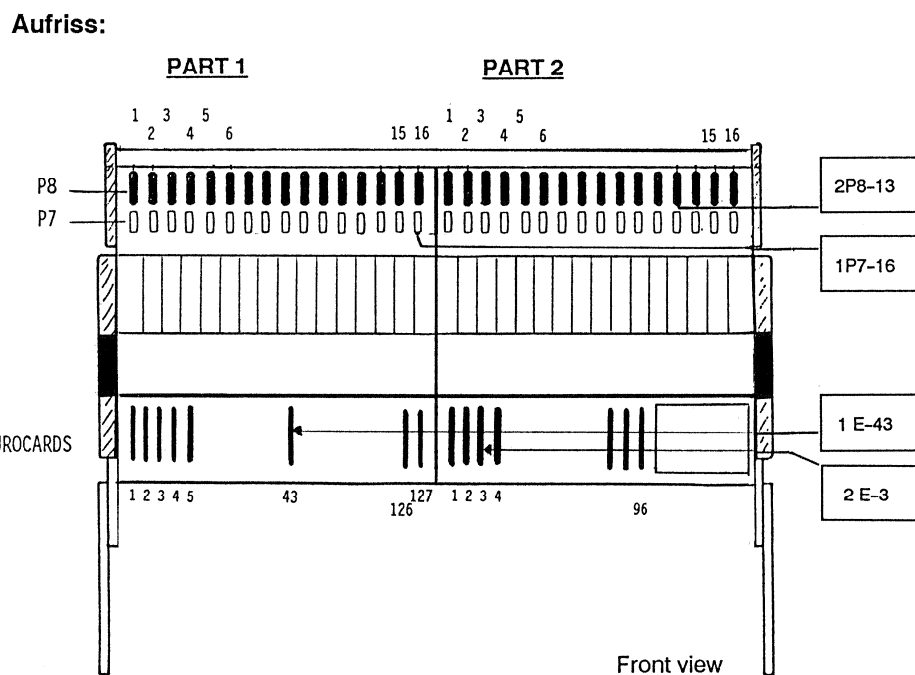
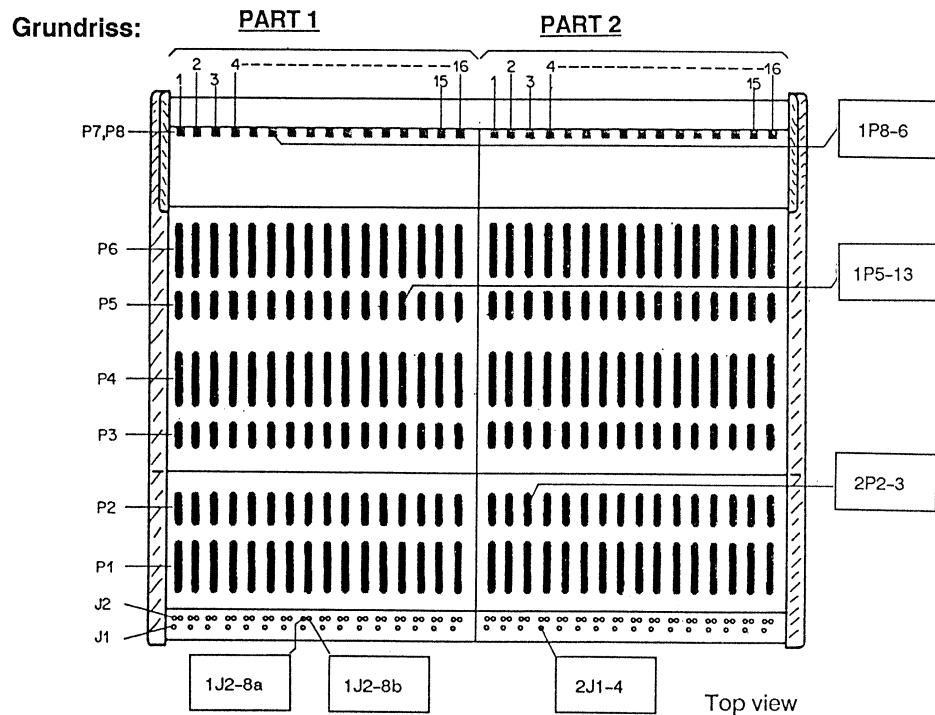
- | | |
|------------|---|
| 1. Ziffer: | Nummer des Pultchassis ¹⁾ |
| 2. Ziffer: | Abkürzung für den Steckertyp (vgl. Tabelle) |
| 3. Ziffer: | Vertikale Position ²⁾ |
| 4. Ziffer: | Horizontale Position ¹⁾ |

¹⁾ Numerierung von links nach rechts

²⁾ Pultoberseite: Numerierung von vorn nach hinten
Pultrückseite: Numerierung von oben nach unten

Abkürzungen für Steckertypen:

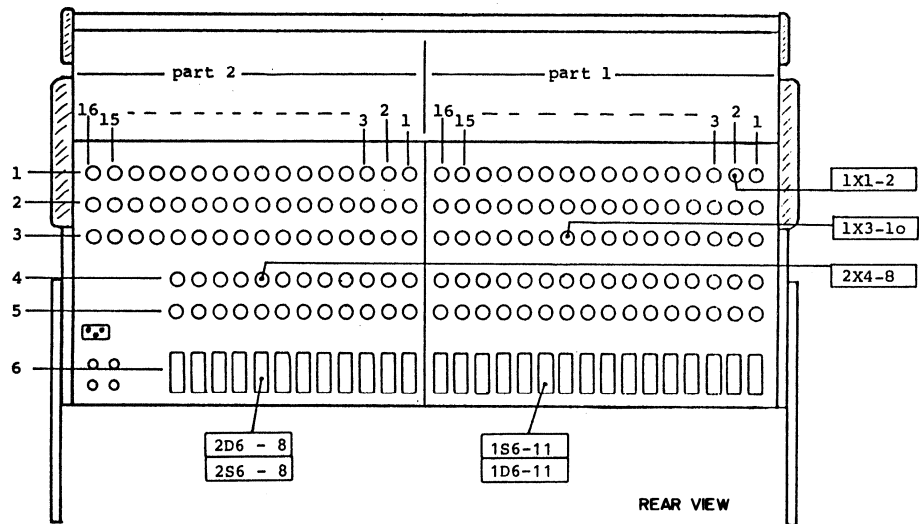
| | | |
|--------------------------|------------------------------|---------------|
| P1 / P4 / P6 / P8 | 32 pin Eurocard-Stecker | DIN 41612 |
| P2 / P3 / P5 | 16 pin Eurocard-Stecker | DIN 41612 |
| E | 32 / 64 pin Eurocard-Stecker | DIN 41612 |
| P7 | 10 / 16 / 26 pin Stecker | DIN 41651/MIL |
| J | Stereo Jack, Ø 6,3mm | |
| X | XLR Stecker | |
| S | Siemens Multipinstecker | |
| D | D Typ Multipinstecker | |



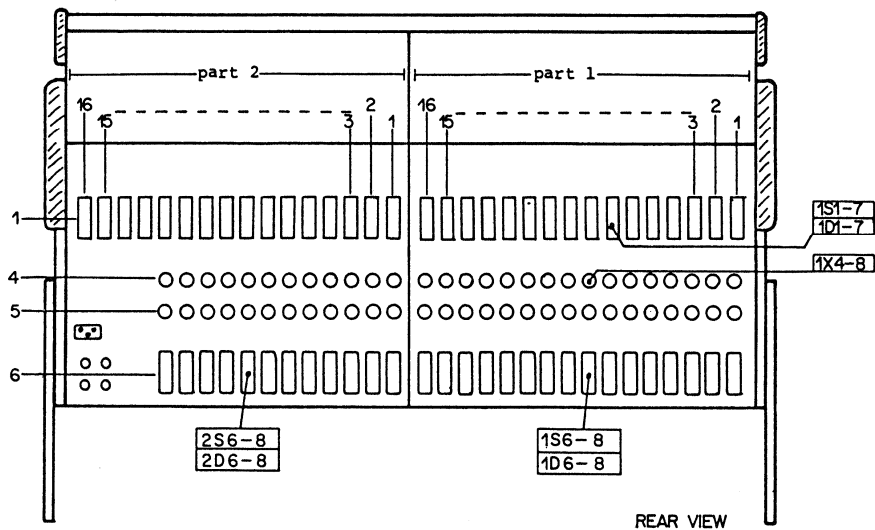
Anschlussfeld: Bezeichnung der Steckerplätze

Die individuelle Auslegung des Anschlussfeldes ist in Kapitel 9 dokumentiert. An dieser Stelle wird lediglich das Prinzip für die Steckerbezeichnung erläutert.

Rückansicht 1:



Rückansicht 2:

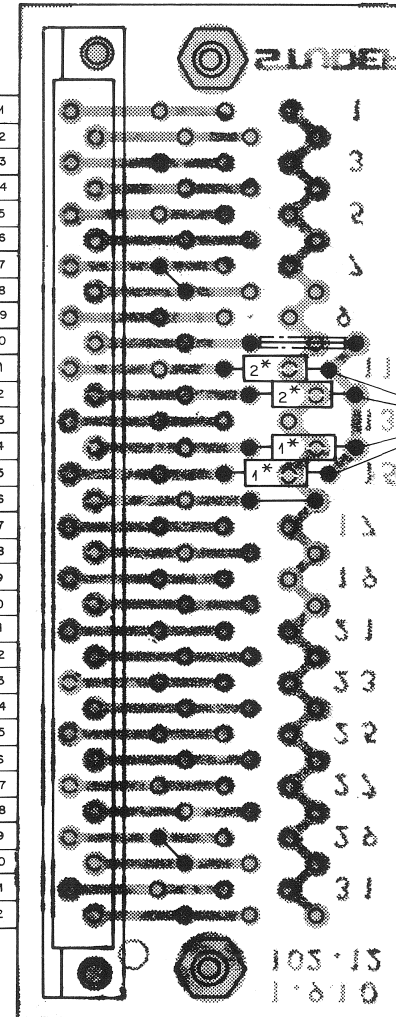


3.3 Verbindungsprint Eingangseinheiten

Die Speisung der verschiedenen Baugruppen sowie der Abgriff der Audio-signale erfolgt über die Eurocard-Stecker an der Basis der Einschubmodule. Die Beschaltung des Input Connection Boards mit dem Stecker P6 ist hier beispielhaft erklärt.

| INPUT CONNECTION BOARDS P 6 | | | | | | | | | | |
|--|---|-----------------------------|---|--|---|--|---|-----------------------------|---|----------------------------------|
| MONO INPUT UNITS A | | STEREO HL-INPUT UNITS A | | STEREO UNIVERSAL-INPUT UNITS A | | MONO INPUT UNITS B | | STEREO HL-INPUT UNITS B | | NOTES |
| CONNECTION BOARD: 4.940.103 (+12V PH) 4.940.104 (+48V PH) | | CONNECTION BOARD: 4.940.125 | | CONNECTION BOARD: 4.940.123 (+12V PH) 4.940.124 (+48V PH) | | CONNECTION BOARD: 4.940.120 (+12V PH) 4.940.124 (+48V PH) | | CONNECTION BOARD: 4.940.122 | | |
| TAPE INPUT | X | LINE 2 INPUT CH 2 (RIGHT) | X | LINE INPUT CH 2 (RIGHT) | X | TAPE INPUT (OPTIONAL) | O | LINE 2 INPUT CH 2 (RIGHT) | X | a / wht 4 |
| | | | | | | | | | | b / blu 2 |
| | | | | | | | | | | screen / yel 3 |
| LINE INPUT | X | LINE 2 INPUT CH 1 (LEFT) | X | LINE INPUT CH 1 (LEFT) | X | LINE INPUT | X | LINE 2 INPUT CH 1 (LEFT) | X | a / wht 4 |
| | | | | | | | | | | b / blu 5 |
| | | | | | | | | | | screen / yel 6 |
| | O | OUT IN | X | OUT IN | X | | O | OUT IN | X | P - FILTER INSERT CH 2 (RIGHT) 7 |
| | | | | | | | | | | 8 |
| | | | | | | | | | | 9 |
| | X | | O | | X | | X | | O | PHANTOM POWER 10 |
| | | | | | | | | | | a / wht 11 |
| | O | LINE 1 INPUT CH 2 (RIGHT) | X | MIC INPUT CH 2 (RIGHT) | X | | O | LINE 1 INPUT CH 2 (RIGHT) | X | b / blu 12 |
| | | | | | | | | | | screen / yel 13 |
| MIC INPUT | X | LINE 1 INPUT CH 1 (LEFT) | X | MIC INPUT CH 1 (LEFT) | X | MIC INPUT | X | LINE 1 INPUT CH 1 (LEFT) | X | a / wht 14 |
| | | | | | | | | | | b / blu 15 |
| | | | | | | | | | | screen / yel 16 |
| | | | | | | | | | | 17 |
| | | | | | | | | | | 18 |
| | | | | | | | | | | 19 |
| | | | | | | | | | | 20 |
| | | | | | | | | | | 21 |
| | | | | | | | | | | 22 |
| | | | | | | | | | | 23 |
| | | | | | | | | | | 24 |
| | | | | | | | | | | 25 |
| | | | | | | | | | | 26 |
| | | | | | | | | | | 27 |
| | | | | | | | | | | 28 |
| OUT IN | X | OUT IN | X | OUT IN | X | OUT IN | X | OUT IN | X | P - FILTER INSERT CH 1 (LEFT) 29 |
| | | | | | | | | | | 30 |
| LINE SIGN. | X | LINE 1 SIGN. | X | LINE SIGN. | X | LINE SIGN. | X | LINE 1 SIGN. | X | FADER START SIGNAL brn 31 |
| TAPE SIGN. | X | LINE 2 SIGN. | X | | O | TAPE SIGN. (OPT.) | O | LINE 2 SIGN. | X | red 32 |

X Δ EQUIPPED
O Δ NOT EQUIPPED

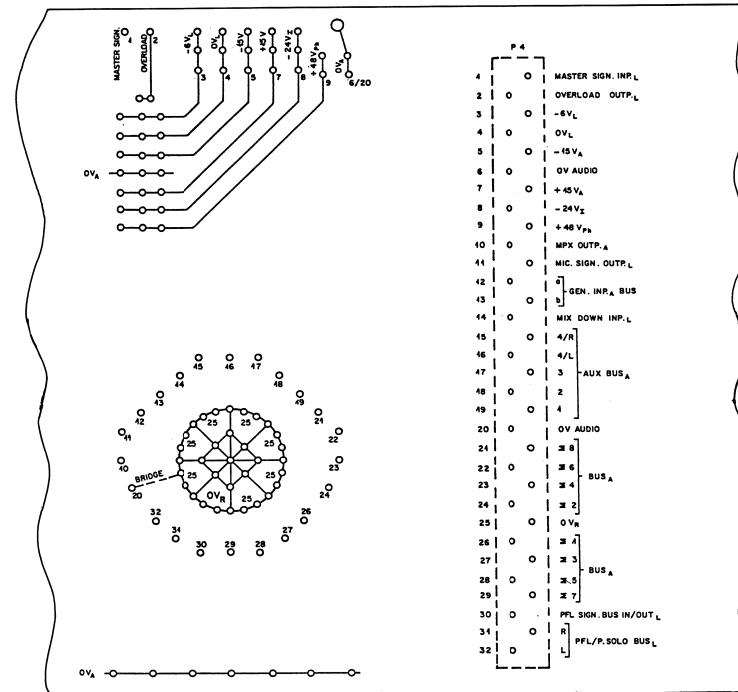


PHANTOM - RESISTORS :
 + 48V = 2 x 6,8k Ω / 0,1% each
 + 24V = 2 x 4,3k Ω / 0,1% each
 + 12V = 2 x 680 Ω / 0,1% each

1* ONLY EQUIPPED FOR :
 - MONO INP. UNITS A
 - MONO INP. UNITS B

1*+2* ONLY EQUIPPED FOR :
 - STEREO UNIVERSAL INPUT UNITS A

3.4 Sammelschienenanschluss



BUS BOARD 1.910.215

. P4 - V .

- ..._A = ANALOG
- ..._L = LOGIC
- ..._R = REFERENCE
- ..._I = INTERNAL
- ..._{Ph} = PHANTOM

3.5 Signalisation

Das Regiepult ist mit zwei Signalisationssystemen ausgerüstet:

- eine optische Studio-Signalisation
- ein Signalisationssystem zur Fernbedienung von Wiedergabegeräten

Studio Signalisation

Bestehend aus einem Signalisationsfeld mit:

- Anzeige "STUDIO ON" (rotes Licht)
- Anzeige für "READY" (grünes Licht)
- Rückmeldung "ON AIR"
- "CALL" Taste für optische Verbindung zwischen Sprecher und Regie.

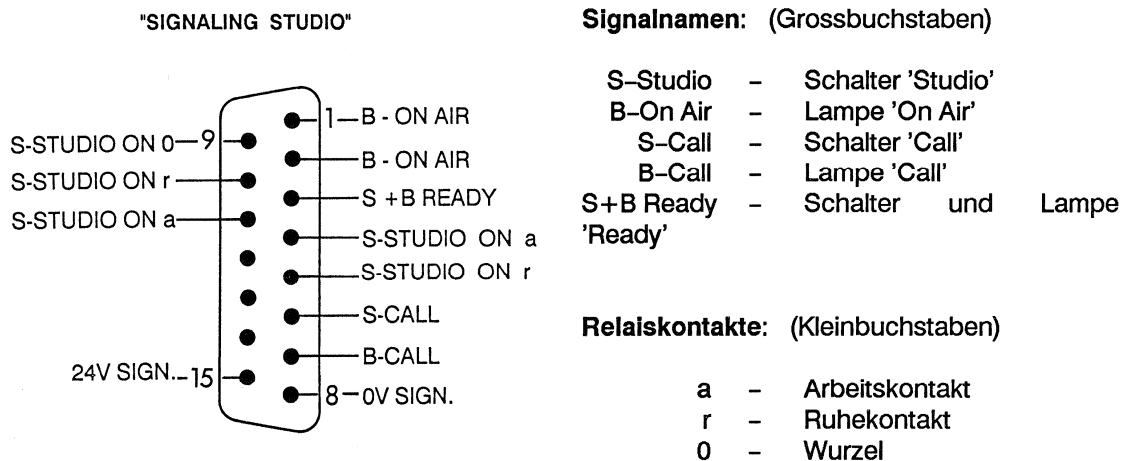
Steuerlogik: Die "READY"- und "STUDIO ON"-Signale können durch getrennte Tastschalter einzeln eingeschaltet werden, wobei das "STUDIO ON"- Signal erst durchgeschaltet wird, wenn bei einer oder mehreren Eingangseinheiten folgende Bedingungen erfüllt sind:

- Input Selector muss auf MIC geschaltet sein.
- MIC CUT - Funktion darf nicht aktiv sein.
- MUTE inaktiv.
- Kein MIX DOWN Betrieb.
- INPUT FADER muss aufgezogen sein
- Mindestens ein MASTER (SUMME) muss angewählt sein
- Mindestens ein MASTER FADER muss aufgezogen sein.

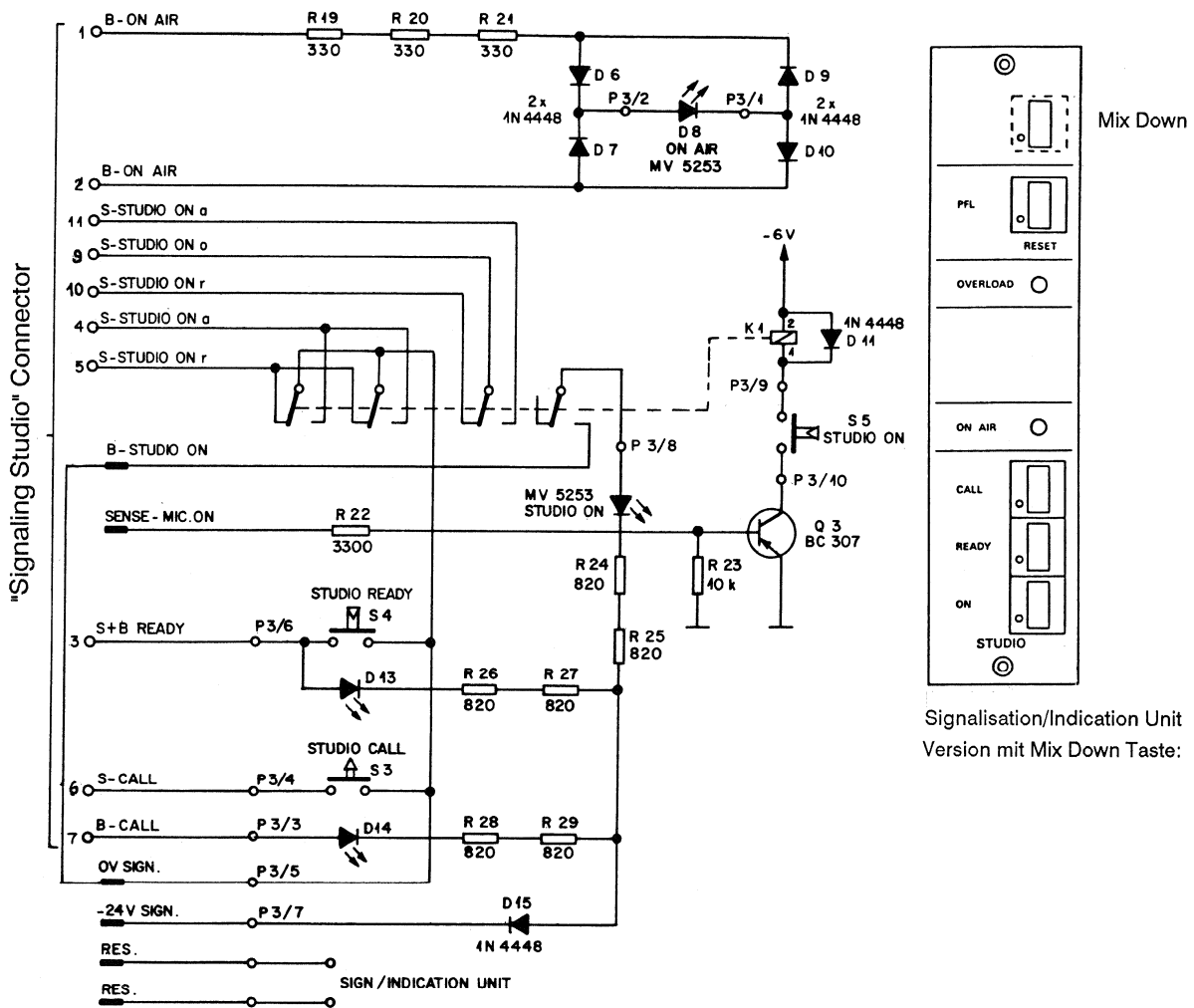
Die Relaiskontakte für die Signalisation stehen am D-Typ 15 Pin Stecker "SIGNALING STUDIO" im Anschlussfeld zur Verfügung.

Über die individuelle Ausführung der Studiosignalisation gibt das Blockschalbild "Signalisation" im Kapitel 2 Auskunft. Dort ist auch die Position des Steckers "Signaling Studio" angegeben.

Die Studio Signalisation arbeitet ausschliesslich mit -24 Volt und ist bis ca. 500mA belastbar. (Speisung -24Volt im Pult eingebaut)



Schaltschema der Studiosignalisation



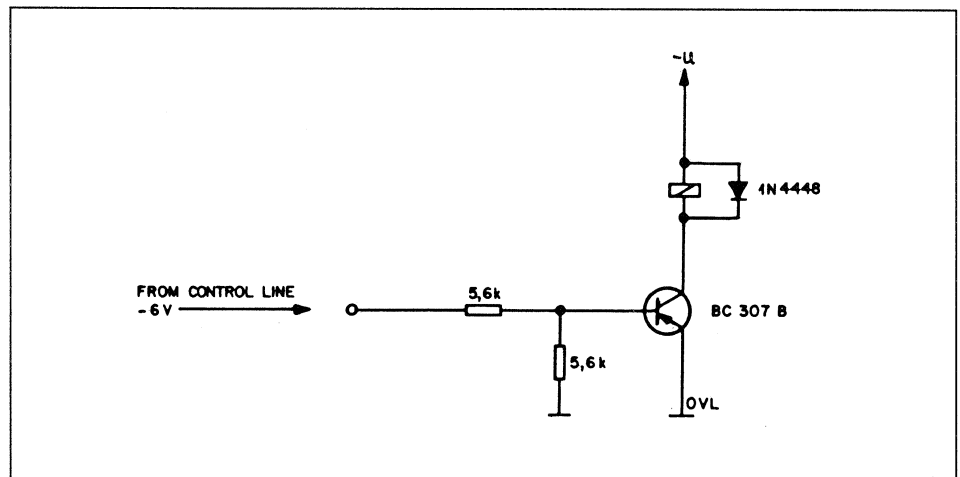
Signalisation/Indication Unit 1.913.140
Version mit Mix Down Taste: 1.913.141

Faderstart Signalisation

An jedem Kanal steht pro Eingang ein separates Fernsteuersignal für Wiedergabegeräte zur Verfügung. Je nach Stellung des Eingangswahlschalters wird einzeln das Zuspieldgerät für den LINE- bzw. den TAPE-Eingang angesteuert. Am Steuerausgang des jeweiligen Inputs liegen dann -6V an, die mit maximal $2,5\text{mA}$ belastbar sind.

Da mit dieser Steuerspannung kein Relais direkt angesteuert werden kann, sind in jedem Pult serienmässig alle Steuerleitungen auf die Buchse 'FADER SIGNAL' geführt. In der gleichen Buchse sind auch die Steuerleitungen zu den Faderstartrelais vorhanden. Im zugehörigen Stecker können somit beliebige Faderstartsignale mit Drahtbrücken auf jedes gewünschte Relais (Abspielgerät) geschaltet werden. Der Stecker 'Fader Signal' dient also in der Art eines Jumpers als Programmierstecker.

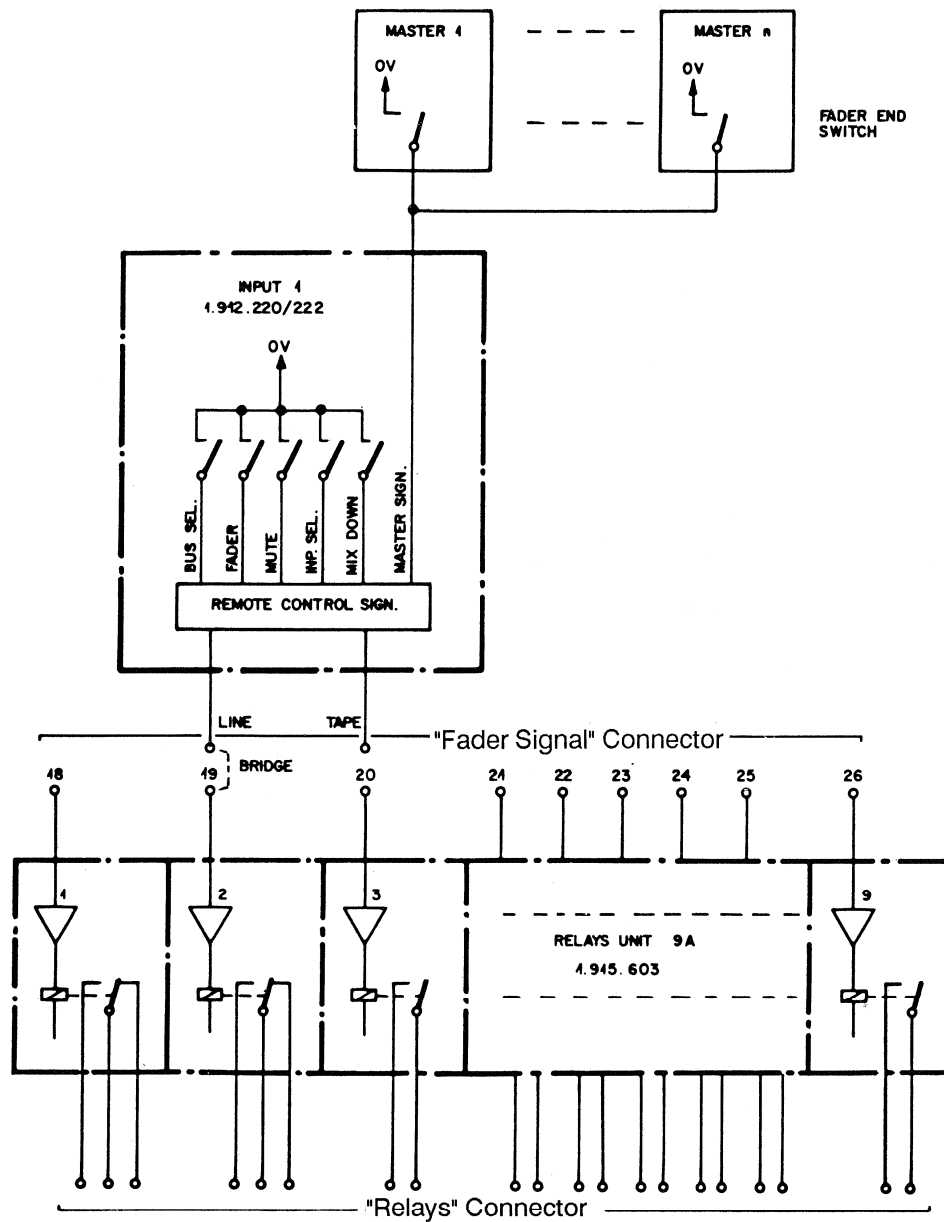
Wenn in einem speziellen Anwendungsfall direkt die Steuerleitung benutzt werden soll, kann mit folgender Schaltung ein Relais angesteuert werden:



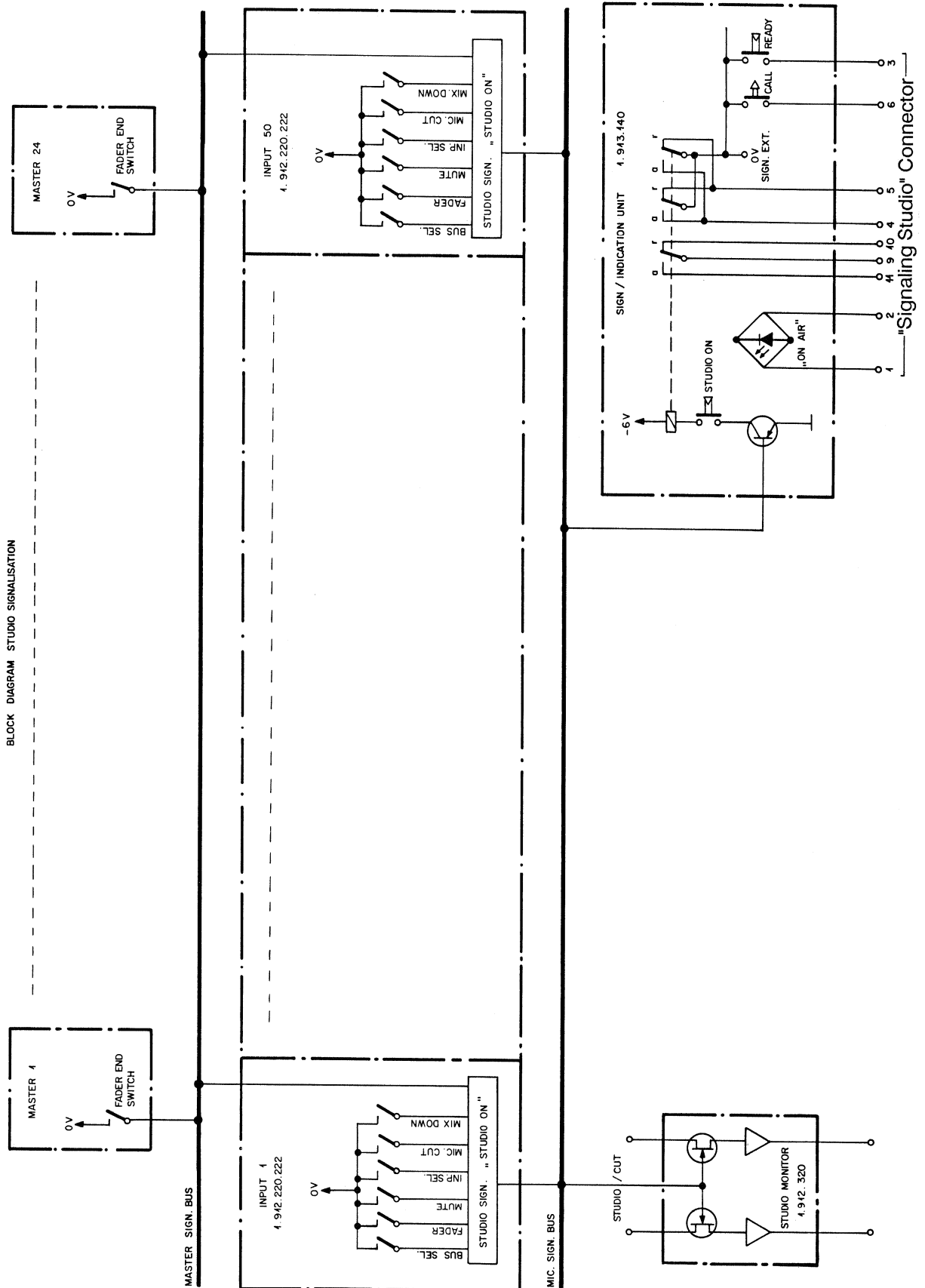
Je nach Pultauslegung steht eine unterschiedliche Anzahl Relais zur Verfügung. Pro Relais-Europakarte 1.915.603 bestehen 9 Schaltmöglichkeiten; 7 Arbeits- und 2 Umschaltkontakte.

- Steuerlogik:** Damit ein Fernsteuersignal durchgeschaltet wird, müssen folgende Bedingungen erfüllt sein:
- INPUT SEL auf 'Tape', wenn Tape auf Relais geschaltet
 - INPUT SEL auf 'Line', wenn Line auf Relais geschaltet
 - falls 'LINE' kein MIX DOWN Betrieb.
 - MUTE darf nicht aktiviert sein
 - INPUT FADER aufgezogen
 - BUS SEL: mindestens 1 MASTER (Summe) muss angewählt sein.
 - Mindestens 1 MASTER FADER muss geöffnet sein.

Blockdiagramm Faderstart Fernsteuerung für 1 Eingangskanal

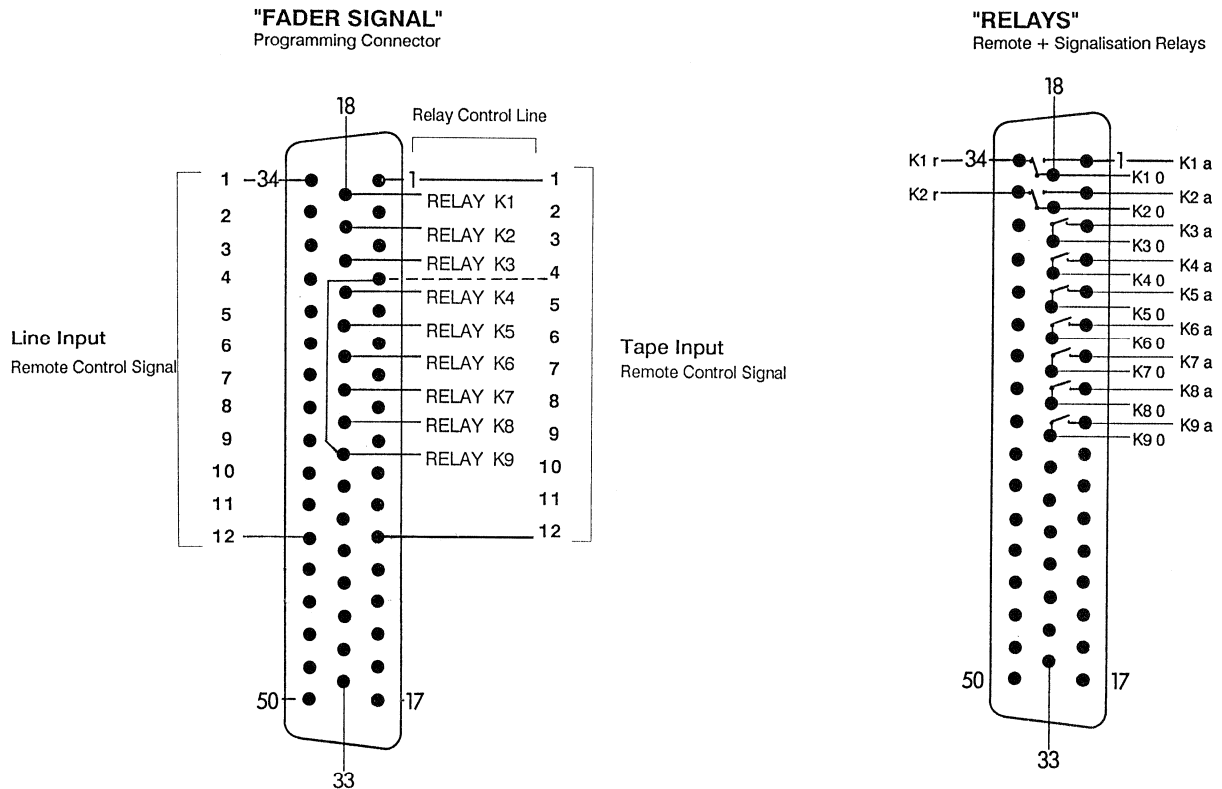


Blockdiagramm Faderstart Fernsteuerung für ganzes System



Beispiel: Mit Input 4 (Tape Input) soll Tape 9 ferngesteuert werden:

Das Faderstartsignal des Tapeeinganges Kanal 4 wird im Stecker 'FADER SIGNAL' auf die Steuerleitung zum Relais K9 verdrahtet. Vorausgesetzt wird natürlich, dass an der Buchse 'RELAYS' eine Fernsteuerverbindung von Relais K9 zum Tape 9 besteht.



Input 4 (Tape) soll Tape 9 fernsteuern: Verbinde im hier abgebildeten Beispiel Pin 4 des Steckers 'Fader Signal' mit Pin 26. Nun kann der Schaltkontakt von Relais K9 an der Buchse 'Relays' zum Fernsteuern der Maschine benützt werden. (K9 0 - K9 a)

3.6 Masseführung im Blickpunkt

Mit der Neuentwicklung der Serie 900 Mischpulte sind für eine ganze Reihe von Problemen grundsätzlich neue Lösungen gefunden worden. Ein sehr wesentlicher Punkt betrifft die Erzielung bester Werte für das Übersprechen und den Fremdspannungsabstand. Der folgende Beitrag zeigt sowohl die Problematik als auch die fortschrittlichen Lösungswege auf.

Probleme der Masseführung treten in unterschiedlichem Ausmass in allen Audiogeräten auf. Ihre Lösung bedarf einer sorgfältigen Planung. Alle Beteiligten müssen ihren Beitrag dazu leisten: der Ingenieur in der Entwicklung, der Laborant bei der Auslegung der Leiterplatten, der Konstrukteur bei der Suche nach der besten mechanischen Lösung, oder der Mechaniker bei der Montage der Geräte.

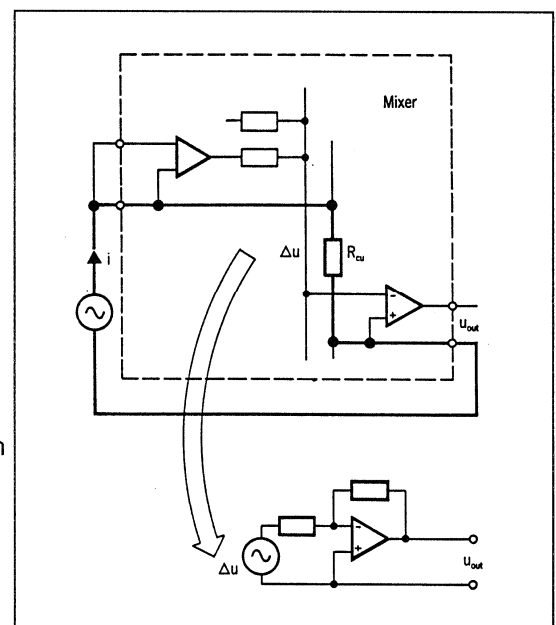
Selbst der Anwender muss einige Grundkenntnisse mitbringen, um ein optimales Resultat erzielen zu können.

Die grossen Probleme der Studio-Erdung inkl. der elektrischen Sicherheit könnten ganze Bücher füllen, stehen aber hier nicht zur Diskussion. Der folgende Bericht beschränkt sich auf die interne Masseführung im Regiepult 900.

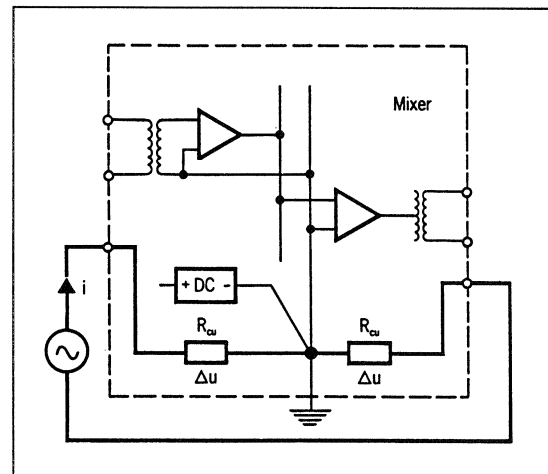
Die äussere Beschaltung

Beispiel: Ein Signalstrom fliesst durch die Masse vom Eingang zum Ausgang und ist hier als Störung feststellbar.

Grund: Der Wechselstrom i produziert am Kupferwiderstand R_{Cu} der Masseleitung einen Spannungsabfall, der am Ausgang verstärkt als Störung erscheint. Vor allem bei Amateurgeräten mit unsymmetrischen Trennstellen ist dies ein grosses Problem. Durch den Einsatz von symmetrischen Trennstellen (Trafos oder Elektronik) ist dieses Problem bei Profigeräten weitgehend gelöst.



Lösung: Die Masseleitungen der Eingänge sind an der Rückwand zusammengefasst und führen gemeinsam auf die Masse des Netzteils. Anstelle der Einspeisung in den Rückleiter wird der störende Strom jetzt in den Schirmleiter eingespiesen und kann die Übertragung nicht mehr stören.



Die interne Masseführung

Das Mischpult ist immer die Hauptschaltzentrale im Tonstudiobereich. Unzählige Audiowege lassen sich schalten. Nicht alle Wege werden mit gleichartigen Signalen durchlaufen. Es bestehen somit recht hohe Anforderungen an das Übersprechen.

Beispiel:

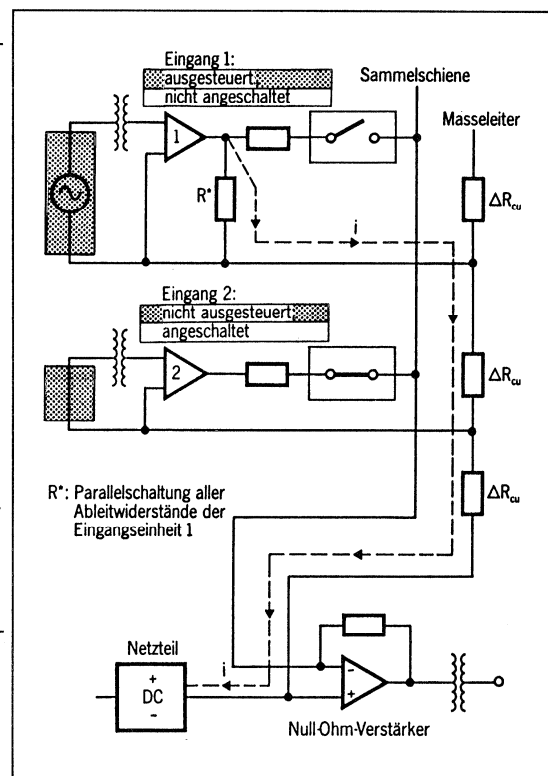
- Pflichtenheft der ARD:
- Panorama Potentiometer > 70dB
 - abhängige Wege > 80dB
 - unabhängige Wege > 85dB
 - verschiedene Programme > 95dB
 - Reglerdämpfung > 100dB

Andere Rundfunkanstalten stellen vergleichbare Forderungen.

Durch mechanische Aufteilung der Kanäle lässt sich das kapazitive Übersprechen beheben. Das ohmsche Übersprechen ist jedoch nur mit einer optimalen Masseführung zu verhindern.

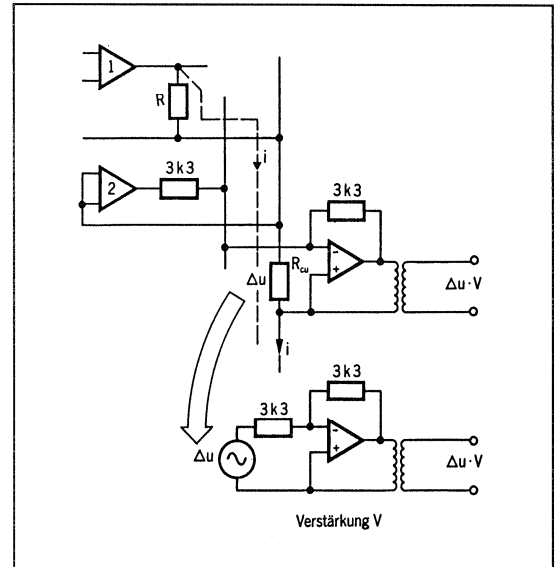
Zur Problemstellung:

Der Eingang 1 ist angesteuert. Die Spannung bildet am Widerstand R einen Strom i. Dieser fließt über die Masse der Sammelschiene zum Netzteil. Die Masseleitung lässt sich darstellen als eine Serieschaltung von Teilwiderständen ΔR_{Cu} .



Einfache Anordnung einer Sammelschiene

Der Strom i bildet an ΔR_{Cu} einen Spannungsabfall Δu . Diese Spannung wirkt im aufgeschalteten Kreis 2 als Generator und produziert ein Übersprechen.



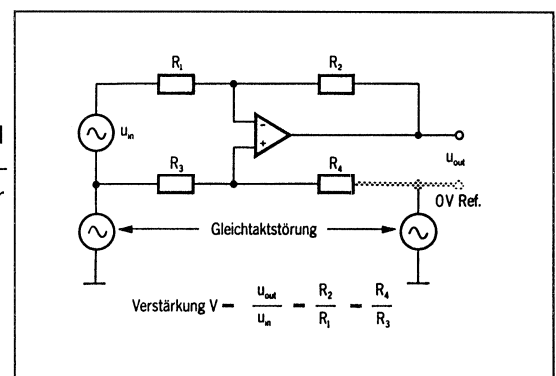
Ohmsches Übersprechen

Mögliche Lösungen:

- Masseschiene mit grossem Querschnitt verwenden
- Einspeisung der Masse in der Mitte der Sammelschiene
- Sternförmige Massenverdrahtung (nicht realisierbar)
- Entkoppelung durch Trafos (nicht mehr zeitgemäss)
- Entkoppelung durch Differentialverstärker

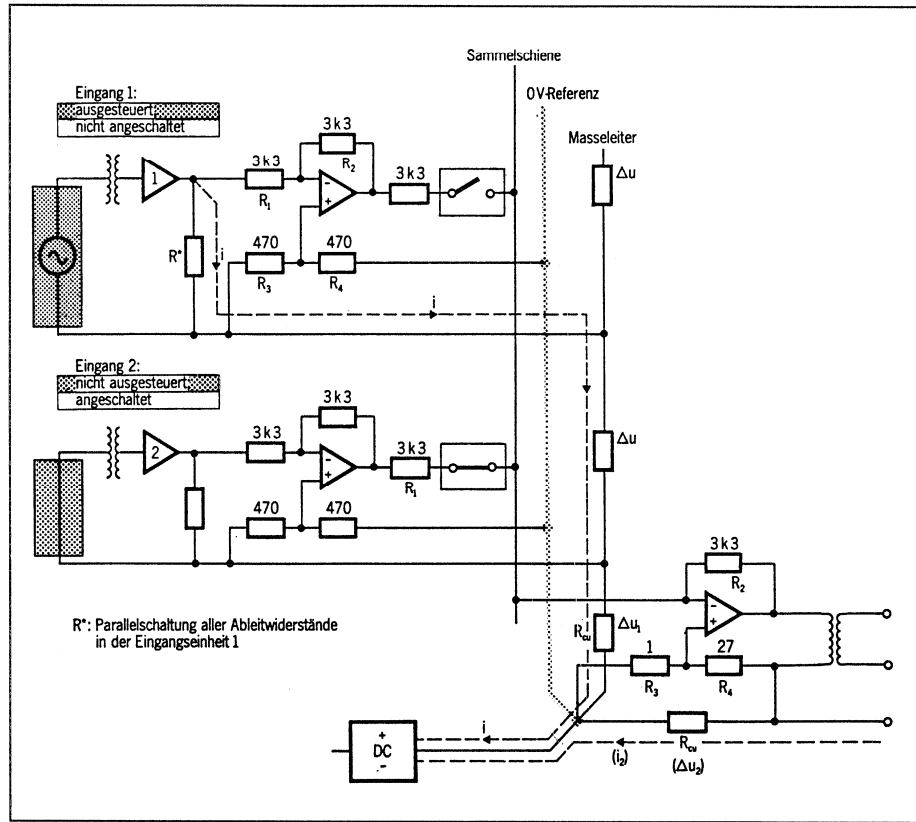
Im Pult 900 wird die letzte Lösung angewendet; diese soll hier noch etwas näher beschrieben werden. Grundlage des Systems bildet der Differentialverstärker.

Die Eingangs- und Ausgangs-Gleichtaktstörungen werden durch die Schaltung auskompensiert. Als Bezugsmasse wird im Pult 900 eine «0V-Referenz»-Leitung eingeführt. Dieser Leiter darf unter keinen Umständen belastet werden.



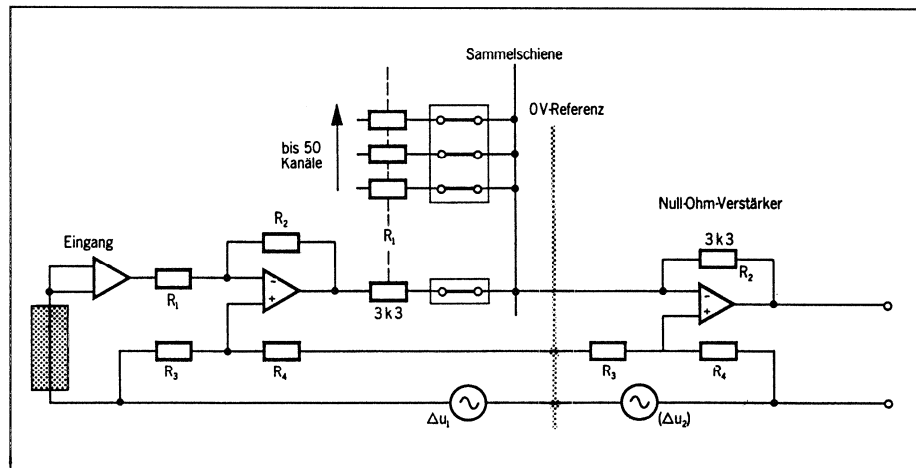
Entkoppelung durch Differentialverstärker

Die Anwendung auf die praktizierte Schaltung zeigt die folgende Abbildung:

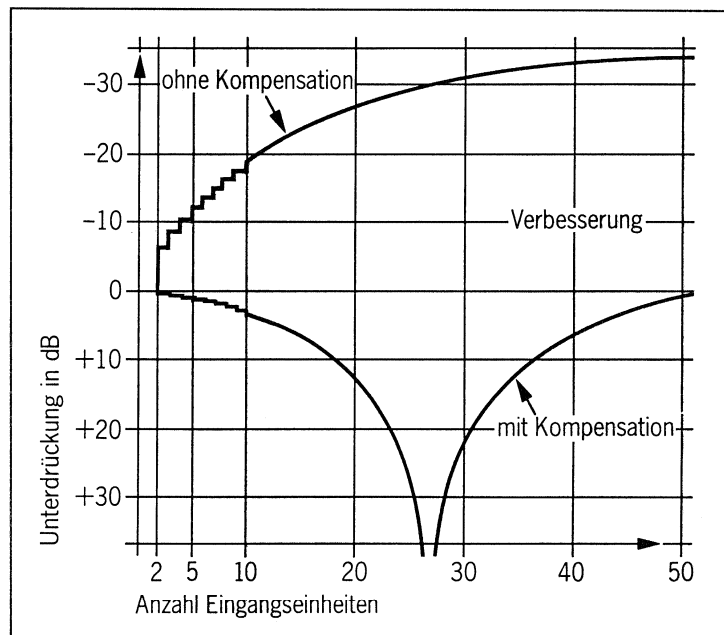


Der Eingang 1 wird wiederum angesteuert und produziert am Widerstand R_{Cu} einen Strom i . Dieser fließt über die Masse der Sammelschiene zum Netzteil. Der Strom i produziert an ΔR_{Cu} eine kleine Spannung Δu_1 .

Der eingebaute Differentialverstärker kompensiert diese Spannung und Δu_1 fällt dadurch weg. Mit dieser Massnahme ist das ohmsche Übersprechen unterdrückt. Um ein gutes Resultat zu erzielen muss im Differentialverstärker die Bedingung $R_2 : R_1 = R_3 : R_4$ möglichst gut erfüllt sein.



Diese Forderung ist in der Eingangseinheit, im Gegensatz zum Null-Ohm-Verstärker, gut erfüllt. Im Null-Ohm-Verstärker variiert der Eingangswiderstand R_1 zwischen 3k3:1 und 3k3:50, je nach der angewählten Kanalzahl. Trotzdem ergibt sich eine eindeutige Verbesserung für die Unterdrückung der Störsignale.



Störsignalunterdrückung in Abhängigkeit von der Kanalzahl.

Differentialverstärker werden im ganzen Mischpult an allen wichtigen Trennstellen eingesetzt. Diese Tatsache sollte beim nachträglichen Einbau von Sonderanfertigungen unbedingt beachtet werden. Durch die konsequente Anwendung dieser fortschrittlichen Technik sind wir in der Lage, auch grösste Regiepulte mit guten Übersprech- und Fremdspannungswerten anzubieten.

ALLGEMEINES

4. Elektrische Daten

Allgemein gilt: ■ Spannungen in dBu beziehen sich immer auf 0,775V.

$$0 \text{ dBu} \cong 0,775 V_{\text{eff}}$$

- Die Flachbahnregler der Eingangskanäle und der Summen sind auf 0dB eingestellt.
- Leitungsausgänge sind mit 600Ω abgeschlossen.
- Externe Quellen haben einen Quellenwiderstand von $\leq 200\Omega$.
- Die Angaben gelten im Frequenzbereich von 31,5Hz ... 16kHz.
- Angegebene Pegel sind mit Sinusdauernton gemessen.
(0VU \cong 6dB unter Vollpegel)

4.1 Pegel

| | | |
|------------------|---|--|
| Eingänge: | MIC Empfindlichkeit extern in 10dB Schritten grob, und mit Feinregler überlappend stufenlos einstellbar. | -70dBu ... +20dBu |
| | LINE Empfindlichkeit intern einstellbar. Der externe Feinregler mit Mittenraasterung erlaubt Anpassung um | +6dBu ... +15dBu ±6dB |
| | TAPE Empfindlichkeit intern einstellbar. | +6dBu ... +15dBu |

Einschleifpunkte: INSERT: Der Pegel (Return) liegt bei **0dBu**

| | | |
|------------------|--|-------------------------------------|
| Ausgänge: | Einstellbereich generell Hauptausgang, Hilfsausgänge, Studioausgang, Monitorausgang sind intern einstellbar. | +6dBu ... +15dBu (Last:600Ω) |
| | Kopfhörer: Monitor und Studio | +10dBu unbelastet |

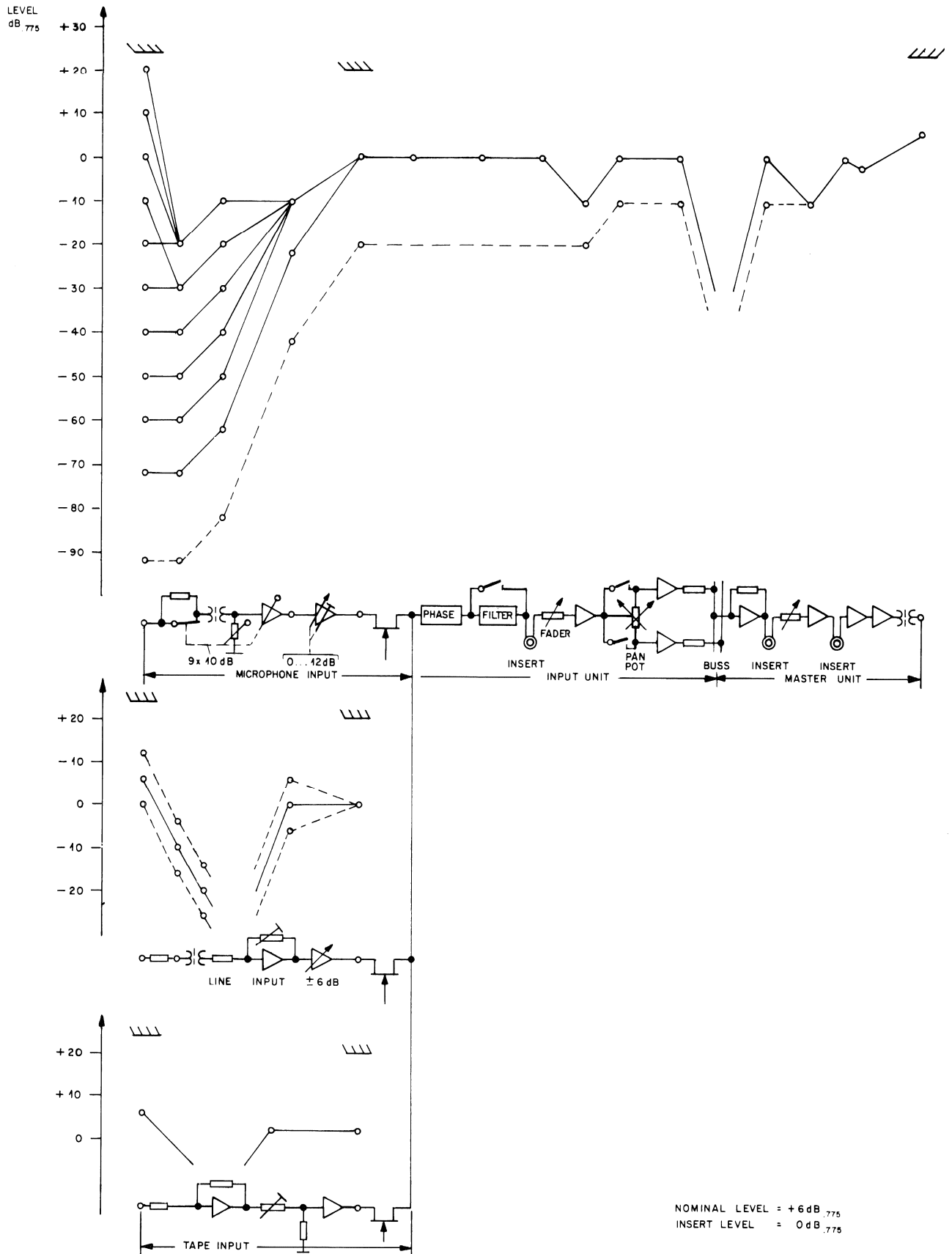
Maximale Pegel

| | |
|------------------|---|
| Eingänge: | MIC: +24dBu LINE: +24dBu TAPE: +24dBu INSERT: +20dBu |
|------------------|---|

| | |
|------------------|---|
| Ausgänge: | Leitung: +24dBu Monitor: +22dBu (30Hz: +18dBu) Studio: +22dBu (30Hz: +18dBu) Insert: +20dBu Kopfhörer: +20dBu (Leerlauf) |
|------------------|---|

Übersteuerungsreserve: vor dem Eingangskanalregler ($k_{\text{tot}} 1\%$) **20dB**
 vor dem Summenregler ($k_{\text{tot}} 1\%$) **20dB**

4.2 Pegeldiagramm



ALLGEMEINES

4.3 Impedanzen

| | | | | |
|----------------------|---|------------------------------|---|-------|
| Eingänge: | MIC: | Bereich -70 ... -10dB | ≥ | 1,2kΩ |
| | | Bereich -10 ... +20dB | ≥ | 5kΩ |
| | LINE + TAPE: | | ≥ | 10kΩ |
| | INSERT: | | ≈ | 5kΩ |
| Ausgänge: | Hauptausgang, Hilfsausgang, Studioausgang und Monitorausgang generell | | ≤ | 50Ω |
| | Kopfhörerausgang: | | ≈ | 135Ω |
| | INSERT: | | ≤ | 50Ω |
| Beschreibung: | MIC: | symmetrisch, erdfrei, Quelle | ≤ | 200Ω |
| | LINE: | symmetrisch, erdfrei, Quelle | ≤ | 200Ω |
| | TAPE: | symmetrisch, Quelle | ≤ | 200Ω |
| | INSERT: | unsymmetrisch, Quelle | ≤ | 200Ω |
| | Leitungsausgänge: | symmetrisch, erdfrei, Last | ≥ | 200Ω |
| | Studioausgang: | symmetrisch, erdfrei, Last | ≥ | 600Ω |
| | Monitorausgang: | symmetrisch, erdfrei, Last | ≥ | 600Ω |
| | Insertausgang: | unsymmetrisch, Last | ≥ | 2kΩ |
| | Kopfhörerausgang: | unsymm. empfohlene Last | ≥ | 200Ω |

4.4 Frequenzgänge mit Eingangseinheiten Mono "A"

| | | |
|-------------------|--|--------------------------------------|
| | Filter ausgeschaltet; Toleranz im Bereich von 31,5Hz ...16kHz | +0,5dB / -1dB |
| Filter: | Trittschallfilter 12dB/Oktave 3dB Punkt einstellbar von | 30Hz ...330Hz |
| | Höhenfilter 12dB/Oktave 3dB Punkt einstellbar von Ausserhalb des Audiobereiches kontinuierlich abfallend mit 12dB/Oktave | 700Hz ...20kHz |
| Equalizer: | HF Höhenregler "Shelfing" Einsatzfrequenz einstellbar | ±15dB 700Hz ...15kHz |
| | HF Höhenregler "Bell" Mittelfrequenz einstellbar | ±15dB 700Hz ...15kHz (Güte Q ≈ 1) |
| | LF Tiefenregler "Shelfing" Einsatzfrequenz einstellbar | ±15dB 30Hz ...600Hz |
| | LF Tiefenregler "Bell" Mittelfrequenz einstellbar | ±15dB 30Hz ...600Hz (Güte Q ≈ 1) |

| | |
|------------------------------|-----------------------|
| HMF Präsenzfilter "Bell" | $\pm 15\text{dB}$ |
| Mittelfrequenz einstellbar | 400Hz ... 7kHz |
| Güte 'schmal': $Q \approx 3$ | (bei max. Anhebung) |
| Güte 'breit': $Q \approx 1$ | (bei max. Anhebung) |

| | |
|------------------------------|-----------------------|
| LMF Präsenzfilter "Bell" | $\pm 15\text{dB}$ |
| Mittelfrequenz einstellbar | 120Hz ... 2kHz |
| Güte 'schmal': $Q \approx 3$ | (bei max. Anhebung) |
| Güte 'breit': $Q \approx 1$ | (bei max. Anhebung) |

4.5 Fremdspannungen

Die Fremdspannungen sind Effektivwerte mit einer äquivalenten Rauschbandbreite von 30Hz ... 23kHz (Siemens U2033 oder gleichwertiges Instrument).

Rauschzahl F des Mikrofoneingangs: $F \leq 4\text{dB}$
(Quellenimpedanz = 200 Ω)

Fremdspannungsabstand am Summenausgang
(Summenregler geschlossen) $> 100\text{dB}$

Einkanalige Anordnung:

Eingangs- und Summenregler 0dB; LINE-Eingang; Verstärkung Ein-/Ausgang = 1;
ohne Equalizer $> 98\text{dB}$
mit Equalizer (linear) $> 90\text{dB}$

12-kanalige Anordnung:

Eingangs- und Summenregler 0dB; LINE-Eingang; Verstärkung Ein-/Ausgang = 1;
ohne Equalizer $> 90\text{dB}$
mit Equalizer (linear) $> 82\text{dB}$

24-kanalige Anordnung:

Eingangs- und Summenregler 0dB; LINE-Eingang; Verstärkung Ein-/Ausgang = 1;
ohne Equalizer $> 87\text{dB}$
mit Equalizer (linear) $> 79\text{dB}$

4.6 Klirrfaktor und Übersprechen

| | | |
|----------------------|--------------------------------------|-----------------|
| Klirrfaktor: | Für Leitungspegel im Frequenzbereich | $\leq 0,1\%$ |
| Übersprechen: | Übersprechen von Summe auf Summe | $> 85\text{dB}$ |

4.7 Stromversorgung

Der Netzbetrieb ist für folgende Netzspannungen umschaltbar:
110V, 120V, 140V, 200V, 240V AC $\pm 10\%$

| | | |
|-----------------------------|------|------------------|
| Interne Betriebsspannungen: | +15V | Audio |
| | -15V | Audio |
| | -6V | Logik |
| | -24V | Logik, Steuerung |
| | 24V | Signalisation |
| | 48V | Phantomspeisung |

SECTION 1: General

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2. Dimensions

2.1 Chassis versions

The console chassis is available in two basic versions for 3 or 4 module sections. The individual console size is achieved with widths for 12 or 16 module sections. A chassis for 12 modules also accommodates 19" standard units of different sizes.

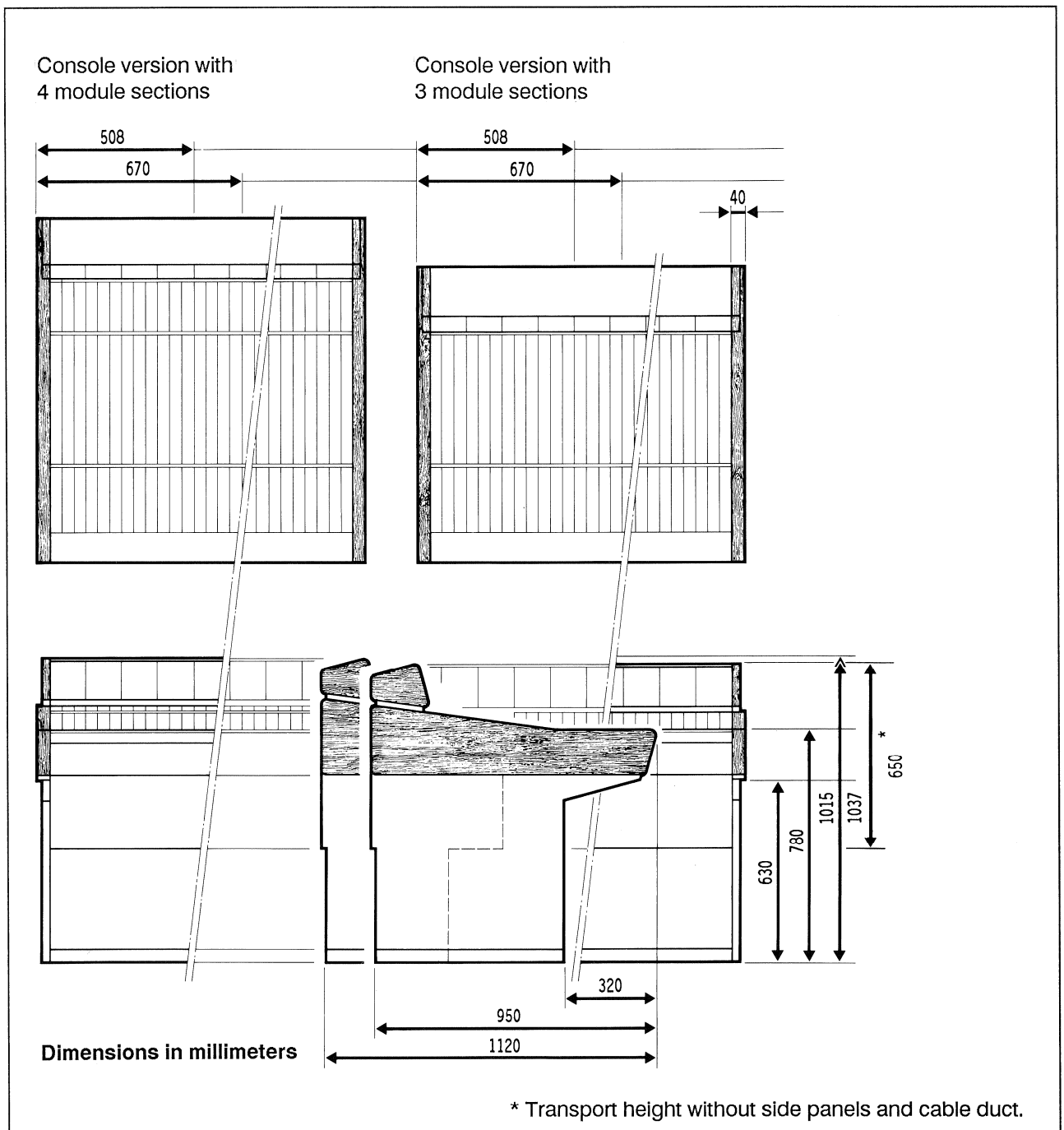
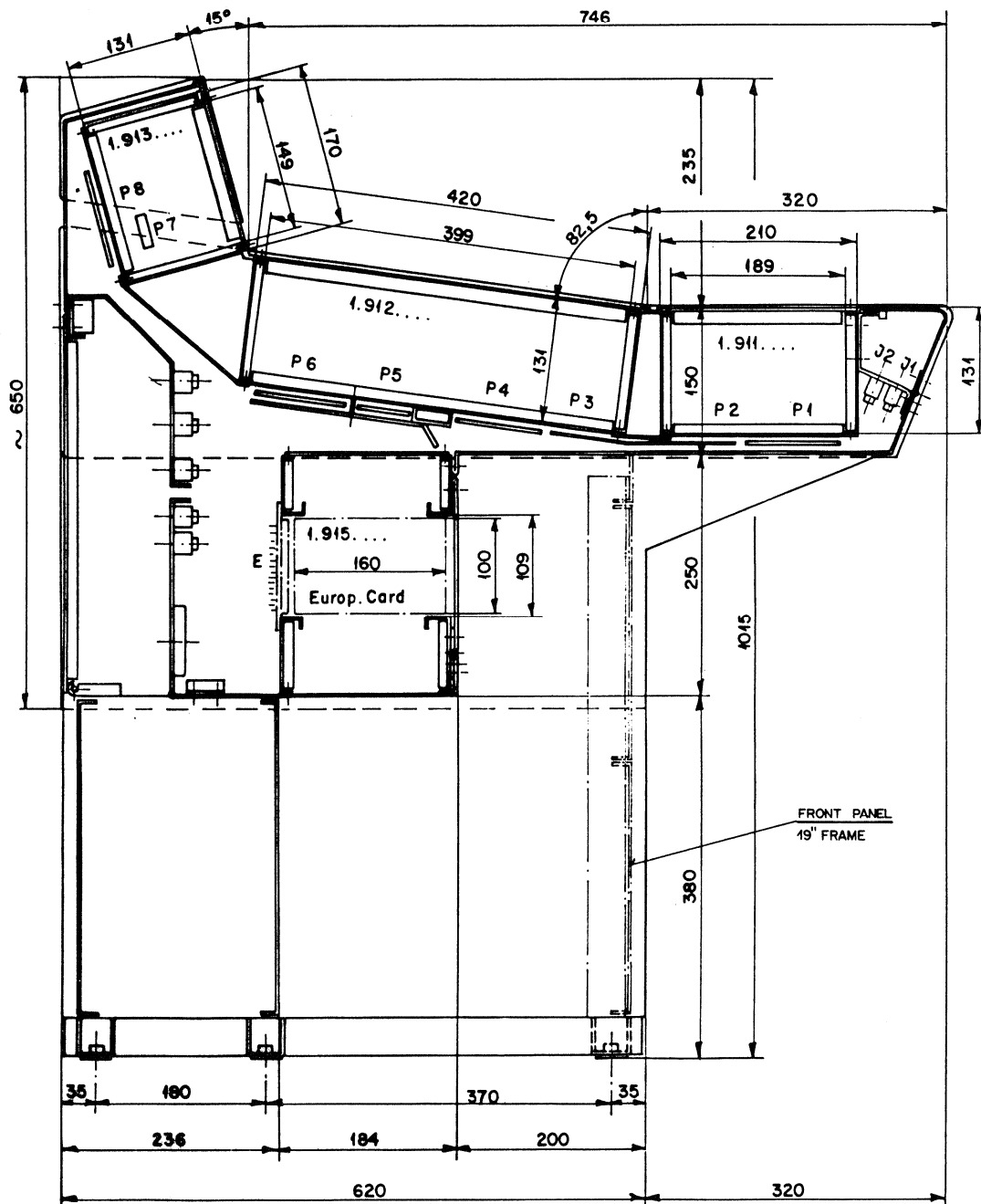


Fig. 1 Dimension drawing of the two chassis widths for the two basic versions with 3 and 4 module sections respectively.

2.2 Section drawing

The sectional view illustrates the console version with 3 module sections. An additional routing section is located between the input panel and the meter panel and has the same dimensions as the meter panel.



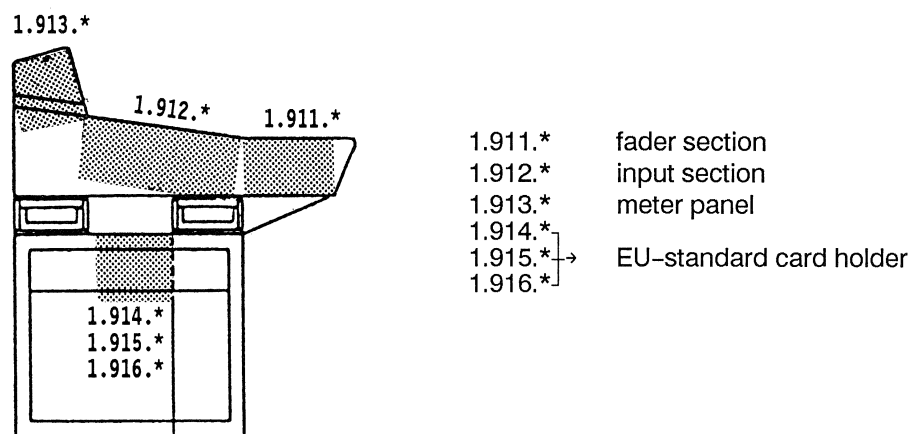
- | | | | | |
|--------------------|--------|---|---|----------------------------------|
| Connectors: | J1/J2 | → | Insert field (Jack) | Dimensions in millimeters |
| | P1 | → | Fader Input and Output | |
| | P2/P3 | → | Interconnection fader - Input unit | |
| | P4(P8) | → | Mains bus | |
| | P5 | → | Intercom | |
| | P6 | → | Inputs | |
| | P7 | → | Meter connection | |
| | X/D/S | → | Input/Output connection panel | |
| | E | → | Eurocards (voltage stabilizer, line amplifier etc.) | |

3. Layout and designations

The modular design of the STUDER series 900 mixing consoles permits a layout that is suited to the individual application. After the installation has been completed, the plug-in modules can only be relocated within certain restrictions. The connector panel and the wiring are custom designed for each unit and are documented in Sections 2, 9 and 10 of the manual. As an aid for clarifying the structure and function of the mixing console some basic principles are explained below.

3.1 Designation of the slots

Four to 5 slots are available on a plug-in row (corresponds to one channel). The corresponding modules are numbered with the following starting digits:



The EU circuit boards are identified with the starting digits 1.915.* and 1.916.*. The STUDER modular sub cards (1.914.*) can be combined on an EU-standard mounting board and also be installed in the EU-standard card holder.

3.2 Connector layout and designations

All connectors of the mixing console carry a designation that identifies the location and the connector type. The designation of a connector consists of four digits that have the following meaning:

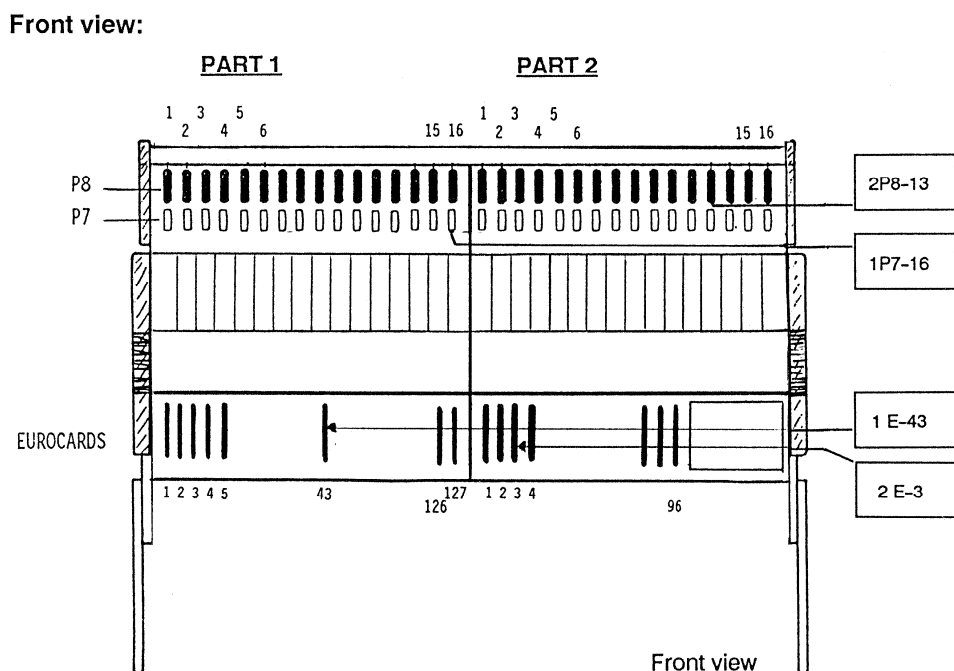
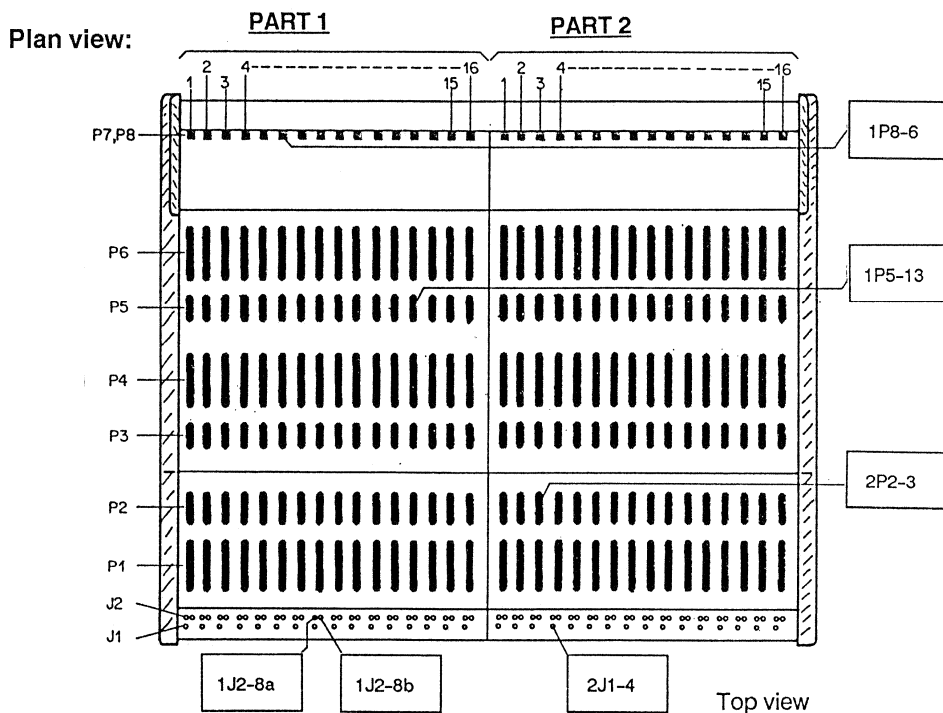
| | |
|------------|---|
| 1st digit: | Number of the console chassis ¹⁾ |
| 2nd digit: | Abbreviation for the connector type (see table) |
| 3rd digit: | Vertical position ²⁾ |
| 4th digit: | Horizontal position ¹⁾ |

¹⁾ Numbering from left to right

²⁾ Top of console: Numbering from front to back
Rear of console: Numbering from top to bottom

Abbreviations for connector type:

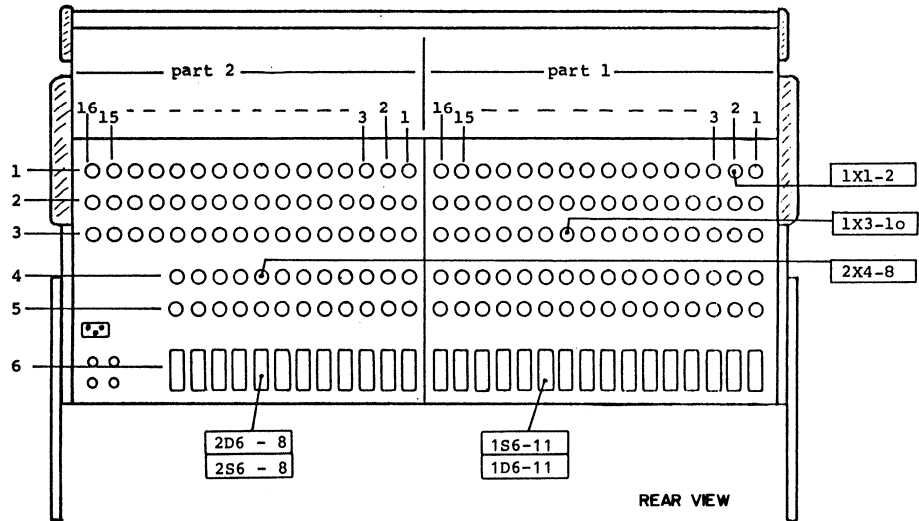
| | | |
|--------------------------|-------------------------------|---------------|
| P1 / P4 / P6 / P8 | 32 pin EU-card connector | DIN 41612 |
| P2 / P3 / P5 | 16 pin EU-card connector | DIN 41612 |
| E | 32 / 64 pin EU-card connector | DIN 41612 |
| P7 | 10 / 16 / 26 pin connector | DIN 41651/MIL |
| J | Stereo Jack, Ø 6,3mm | |
| X | XLR connector | |
| S | Siemens multipin connector | |
| D | D type multipin connector | |



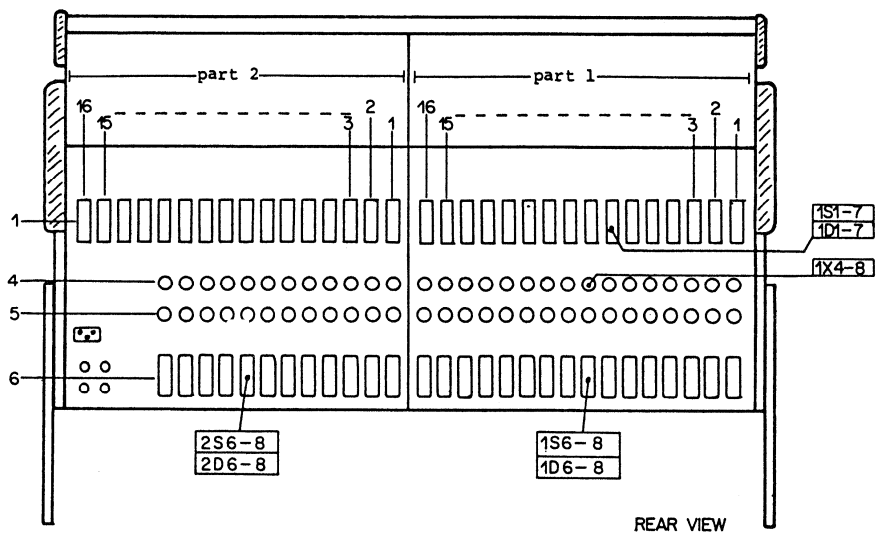
Connector panel: Designation of the connector locations

The individual layout of the connector panel is documented in Section 9. This Section of the manual only explains the principle of the connector designations.

Rear view 1:



Rear view 2:

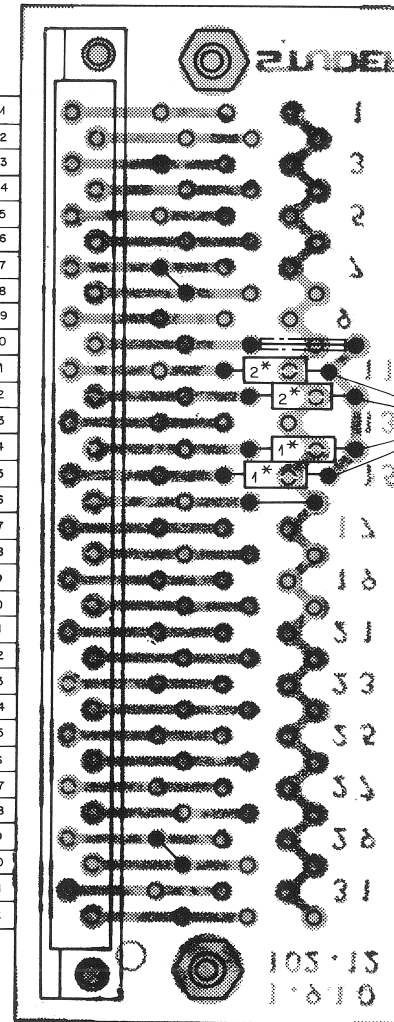


3.3 Connection board, input units

EU-standard connectors at the base of the plug-in modules are used for supplying the various assemblies and for tapping the audio signals. The input connection board with connector P6 is explained here as a typical example.

| INPUT CONNECTION BOARDS P 6 | | | | | | | | | | |
|--|---------------------------------|------------------------------|--|--|---------------------------------|--------------------------------|-------|------------------------------|---|--|
| MONO INPUT UNITS A | STEREO HL-INPUT UNITS A | | STEREO UNIVERSAL-INPUT UNITS A | MONO INPUT UNITS B | STEREO HL-INPUT UNITS B | | NOTES | | | |
| CONNECTION BOARD : 4.940.103 (+12V PH) 4.940.104 (+48V PH) | CONNECTION BOARD : 4.940.125 | | CONNECTION BOARD : 4.940.123 (+12V PH) 4.940.124 (+48V PH) | CONNECTION BOARD : 4.940.120 (+12V PH) 4.940.124 (+48V PH) | CONNECTION BOARD : 4.940.122 | | | | | |
| TAPE INPUT | X | LINE 2 INPUT CH 2 (RIGHT) | X | LINE INPUT CH 2 (RIGHT) | X | TAPE INPUT (OPTIONAL) | O | LINE 2 INPUT CH 2 (RIGHT) | X | a / wht 4 b / blu 2 screen / yel 3 |
| LINE INPUT | X | LINE 2 INPUT CH 1 (LEFT) | X | LINE INPUT CH 1 (LEFT) | X | LINE INPUT | X | LINE 2 INPUT CH 1 (LEFT) | X | a / wht 4 b / blu 5 screen / yel 6 |
| | O | OUT IN | X | OUT IN | X | | O | OUT IN | X | P - FILTER INSERT CH 2 (RIGHT) 7 8 |
| | X | | O | | X | | X | | O | PHANTOM POWER 10 |
| | O | LINE 4 INPUT CH 2 (RIGHT) | X | MIC INPUT CH 2 (RIGHT) | X | | O | LINE 4 INPUT CH 2 (RIGHT) | X | a / wht 11 b / blu 12 screen / yel 13 |
| MIC INPUT | X | LINE 4 INPUT CH 1 (LEFT) | X | MIC INPUT CH 1 (LEFT) | X | MIC INPUT | X | LINE 4 INPUT CH 1 (LEFT) | X | a / wht 14 b / blu 15 screen / yel 16 |
| | | | | | | | | | | 17 18 19 20 21 22 23 24 25 26 27 28 |
| OUT IN | X | OUT IN | X | OUT IN | X | OUT IN | X | OUT IN | X | P - FILTER INSERT CH 1 (LEFT) 29 30 |
| LINE SIGN. TAPE SIGN. | X | LINE 4 SIGN. LINE 2 SIGN. | X | LINE SIGN. O | X | LINE SIGN. TAPE SIGN.(OPT.) | O | LINE 1 SIGN. LINE 2 SIGN. | X | FADER START SIGNAL brn 34 red 32 |

X Δ EQUIPPED
O Δ NOT EQUIPPED

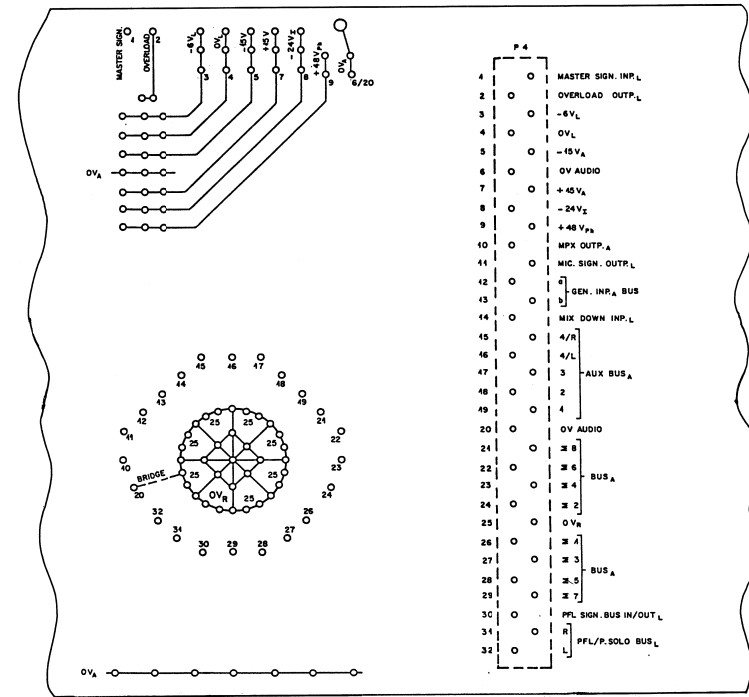


PHANTOM - RESISTORS :
+ 48 V = 2 x 6,8 k Ω / 0,1% each
+ 24 V = 2 x 4,3 k Ω / 0,1% each
+ 12 V = 2 x 680 Ω / 0,1% each

4* ONLY EQUIPPED FOR :
- MONO INP. UNITS A
- MONO INP. UNITS B

4*+2* ONLY EQUIPPED FOR :
- STEREO UNIVERSAL INPUT UNITS A

3.4 Bus connection



BUS BOARD 1.910. 215

. P4 - V .

- ...A = ANALOG
- ...L = LOGIC
- ...R = REFERENCE
- ...I = INTERNAL
- ...Ph = PHANTOM

3.5 Signalization

There are two signaling circuits incorporated in the audio console:

- an optical studio signaling circuit.
- a signaling system for remote control of reproduction equipment.

Studio signalization

The studio signaling system consists of a signaling field with:

- indication for "STUDIO ON" (red light)
- indication for "READY" (green light)
- return command for "ON AIR"
- "CALL" key for optical connection between speaker and control room.

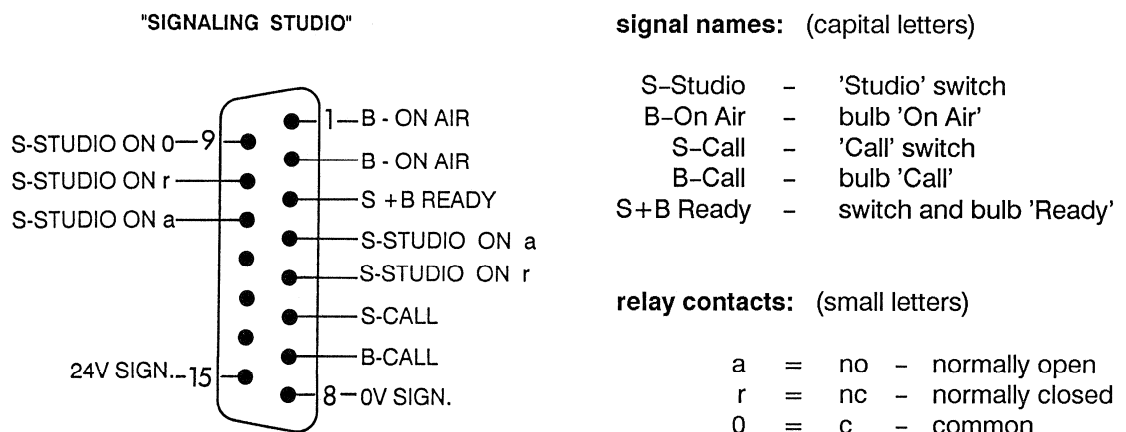
Control logic: The READY and STUDIO ON signals can be enabled individually by separate nonlocking switches. The STUDIO ON signal is only through-connected if the following criteria are satisfied on at least one input unit:

- Input selector must be switched to MIC.
- MIC CUT must be disabled.
- MUTE must be disabled.
- No MIX DOWN operating.
- INPUT FADER must be open.
- At least one MASTER must be selected (Bus selection).
- At least one MASTER FADER must be open.

The relay contacts for the signalization are wired to the D-type 15 pin connector "SIGNALING STUDIO" in the connector panel.

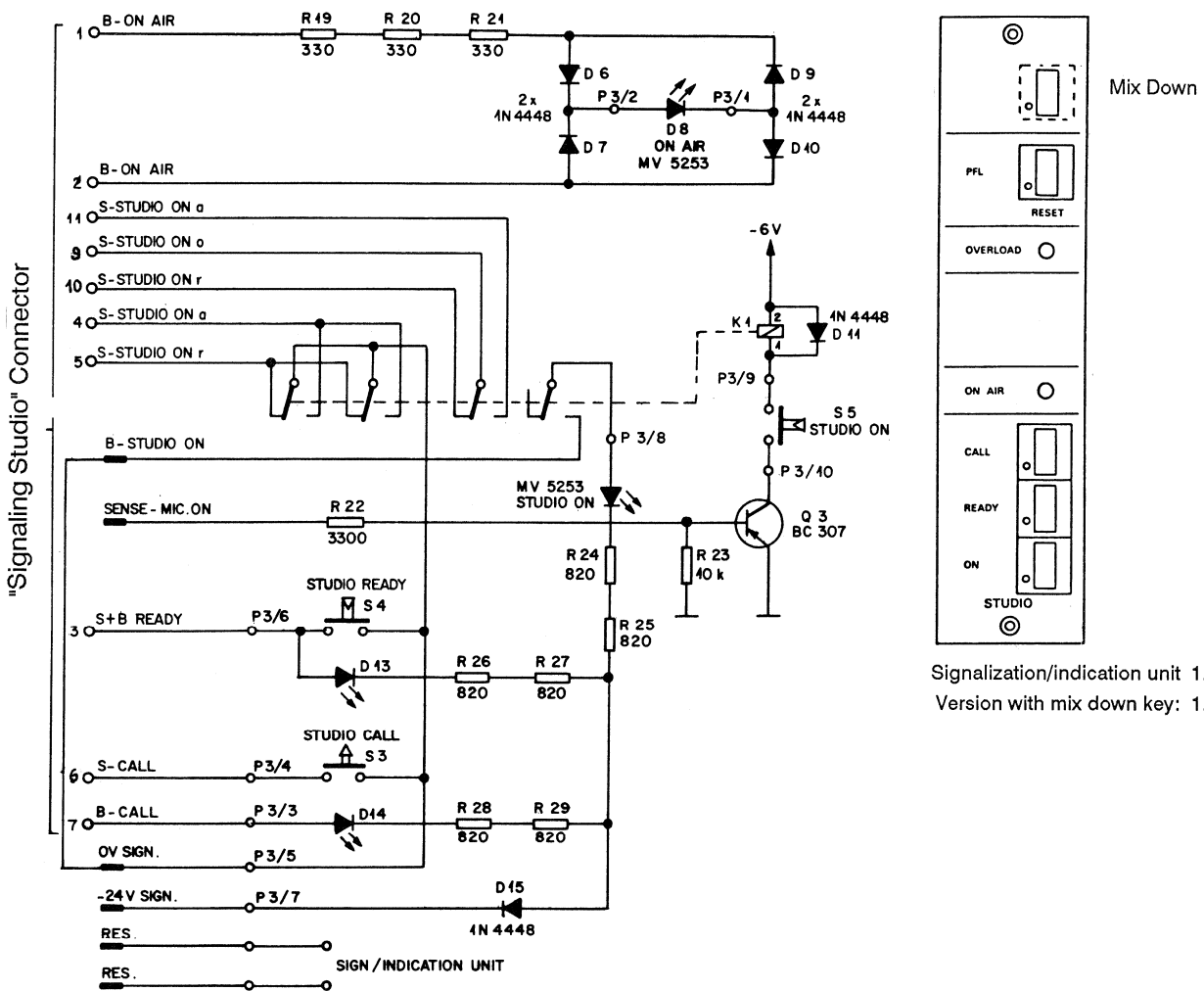
Further information about the individual layout of the signaling system is given in section 2.

The studio signaling system runs at -24V DC. The built in power supply (-24V) may be loaded at 500mA.



GENERAL

Circuit diagram of the studio signalization

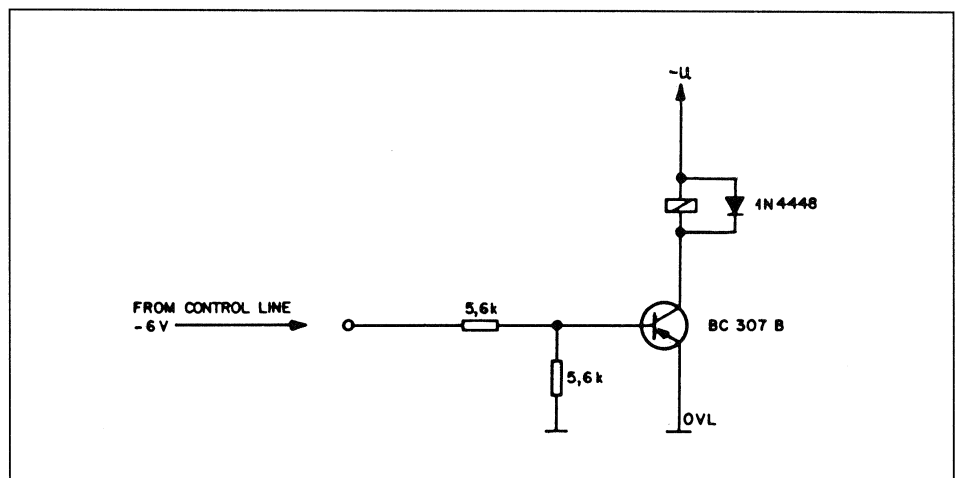


Fader start signalization

A separate remote control signal for audio reproducers is available on each channel. Depending on the position of the input selector, the insert machine for the LINE or the TAPE input is controlled individually. On the control output, -6 V are available in this case which can be loaded with up to 2.5 mA.

Because it is not possible to directly control a relay with this control voltage, all control lines of every mixing console are factory-connected to the FADER SIGNAL socket. The same socket also contains the control terminals to the fader start relays. This means that any fader start signal can be connected to any relay (audio reproducer) by means of jumpers. The Fader Signal connector consequently serves as a jumper-type programming connector.

If the control line is to be used for special applications, a relay can be controlled by means of the following circuit:



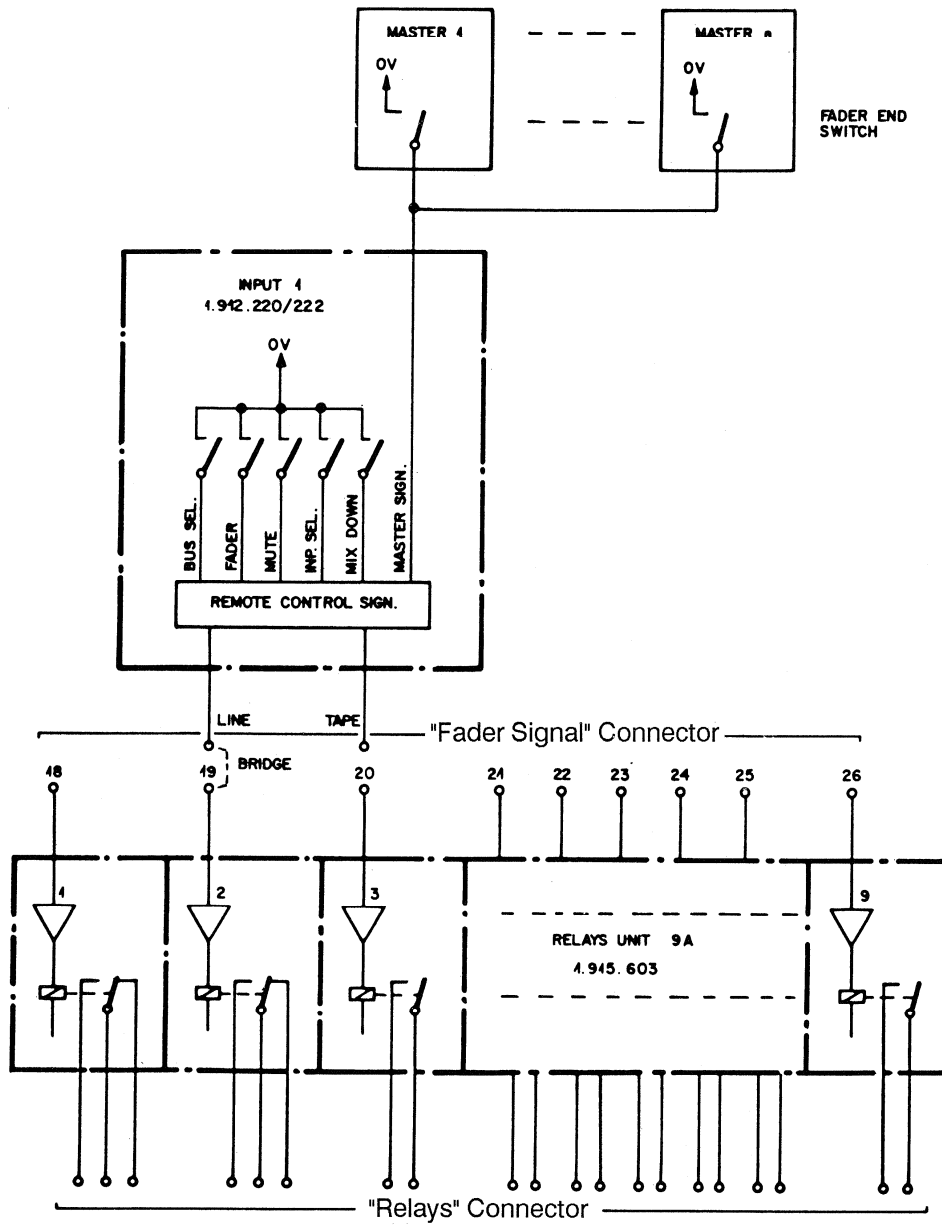
The number of available relays varies, depending on the console configuration. For each EU-standard relay board 1.915.603, there are 9 switching possibilities, i.e. 7 make contacts and 2 two-way contacts are available.

control logic: A remote signal is only switched through, if the following conditions are accomplished:

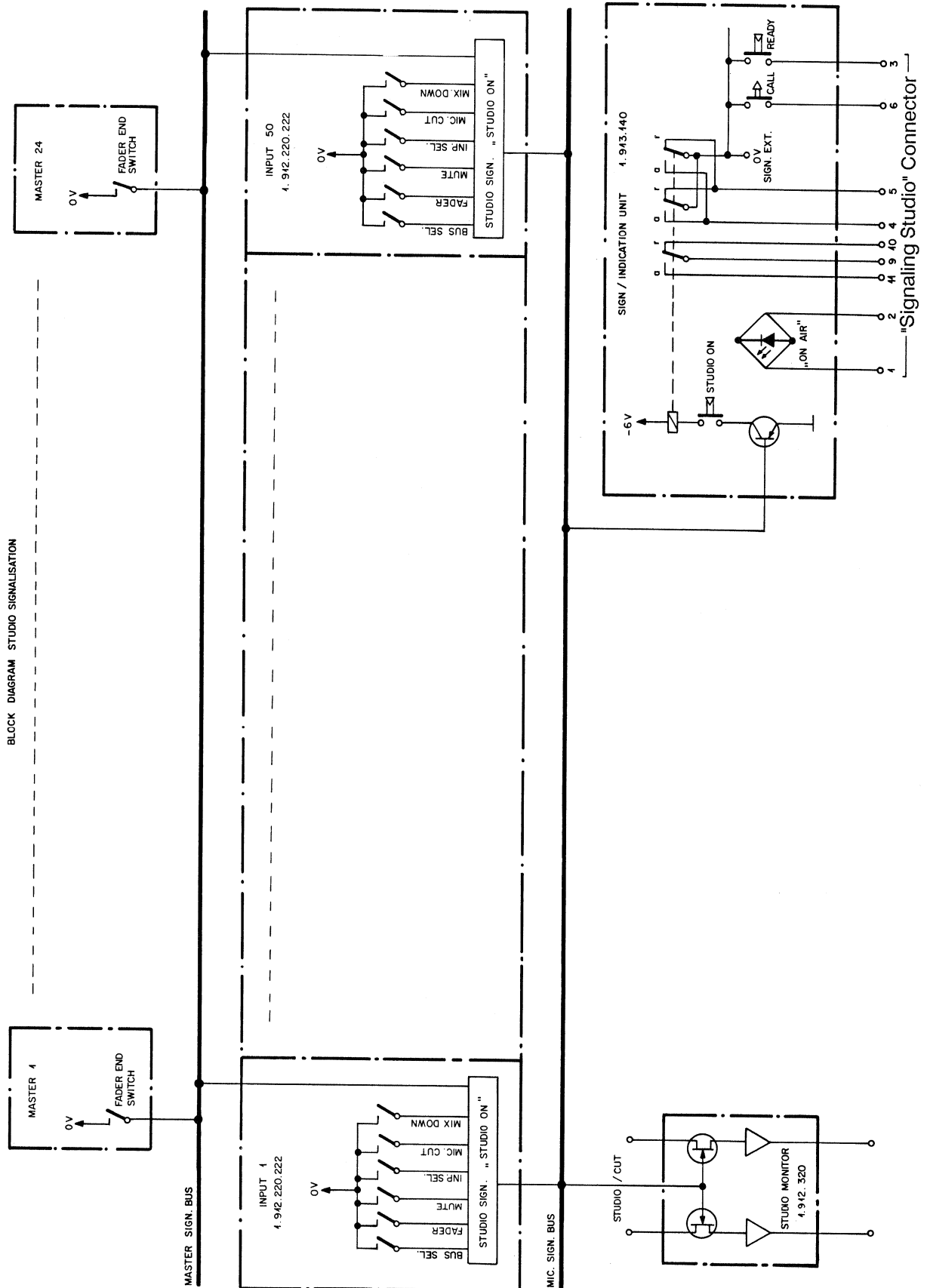
- INPUT SEL on 'Tape', if the Tape input is connected to the relay.
- INPUT SEL on 'Line', if the Line input is connected to the relay.
- If 'LINE' is selected, no MIX DOWN operating.
- MUTE must be disabled.
- INPUT FADER must be open.
- BUS SEL: at least one MASTER must be selected.
- At least one MASTER FADER must be open.

GENERAL

Block diagram for fader-start remote control of 1 input channel



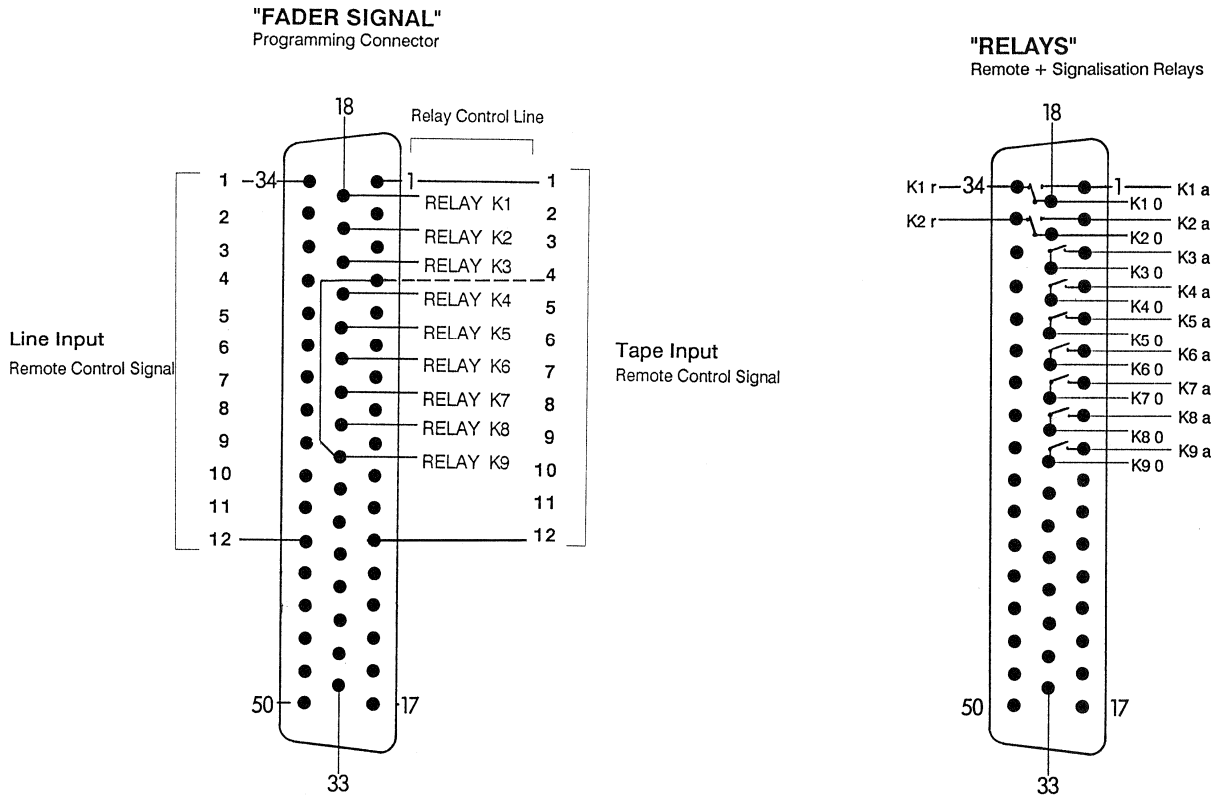
Block diagram for fader-start remote control of the entire system



GENERAL

For instance: Tape 9 should be remotely controlled by input 4 (tape input):

In the programming connector "FADER SIGNAL" the remote control signal of the tape input 4 is connected to the relay control line of relay K9 with a wire bridge. The relay contacts 'K9 0' and 'K9 a' in the "RELAYS" connector may now be used for remote control of the machine.



Connect pin 4 of the "FADER SIGNAL" connector to pin 26.

3.6 A Close-Up of the Chassis Ground System

Totally new solutions to a number of problems had to be found for the newly developed mixing consoles of the series 900. One of our major goals was to achieve outstanding performance in respect to cross talk and signal-to-noise ratio. The following article describes the inherent problems as well as the advanced solutions.

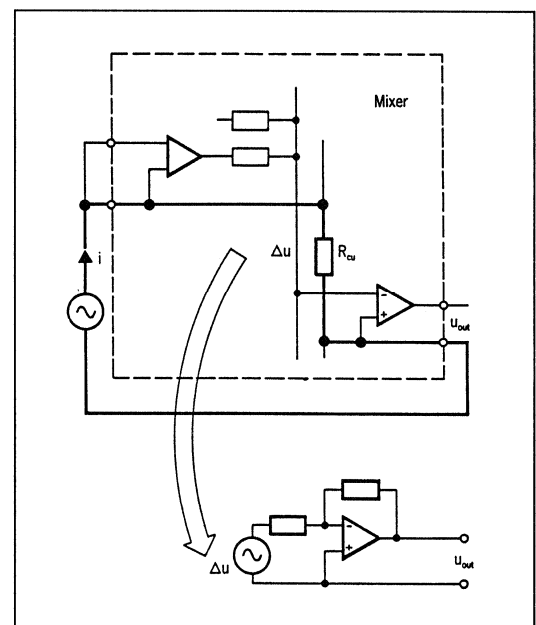
Problems in the layout of the chassis ground occur to some degree in all audio equipment. Careful planning is essential to a satisfactory solution. All persons involved in the design must participate: the development engineer, the laboratory technician who lays out the printed circuit board, the designer in this search for the best possible physical implementation or the technician in the assembly of the equipment.

Even the user should possess some basic knowledge in order to achieve satisfactory results. The enormous problems associated with the studio ground, including the electrical safety, would fill books, and thus cannot be covered here. The following report concentrates on the internal chassis ground concept of the Series 900 mixing consoles.

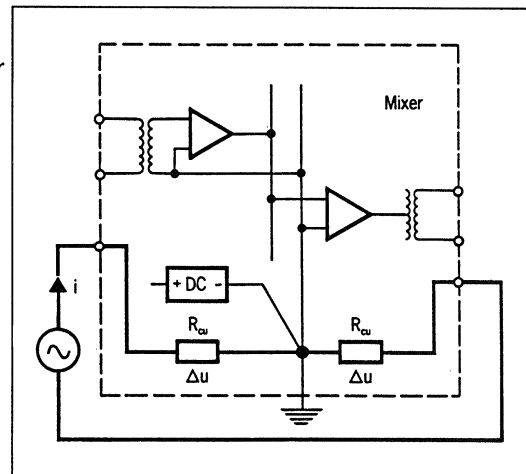
External wiring

Example: A signal current i flows through the chassis from the input to the output where it can be measured as noise.

Reason: On the copper resistor R_{Cu} of the ground conductor, the AC current i causes a voltage drop which appears at the output in the form of amplified noise. This is a serious problem, especially in non-professional equipment with unbalanced decoupling components. In professional equipment, this problem has been largely solved by incorporating balanced decoupling components (transformers or electronics).



Solution: The ground conductors of the inputs are combined on the rear panel from where a common branch leads to the ground of the power supply. Instead of being fed into the return, the parasitic current is fed into the screening and can no longer interfere with the transmission.



Internal ground layout The mixing console is the main switching center of the recording studio. An uncountable number of audio paths can be established, however, not all paths carry the same types of signals. The cross-talk specification are, therefore, very demanding.

Example: Target specifications of ARD:

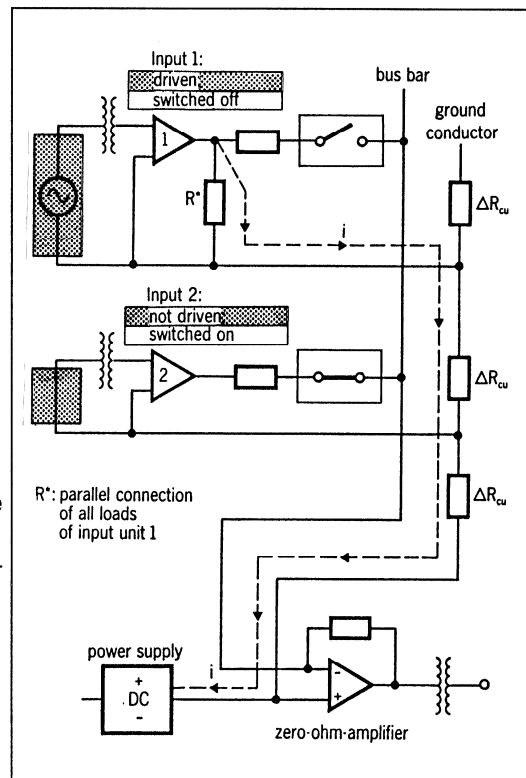
| | |
|------------------------|---------|
| Panorama Potentiometer | > 70dB |
| Dependent paths | > 80dB |
| Independent paths | > 85dB |
| Misc. programs | > 95dB |
| Trimmer attenuation | > 100dB |

The specifications of other broadcasting companies are similar

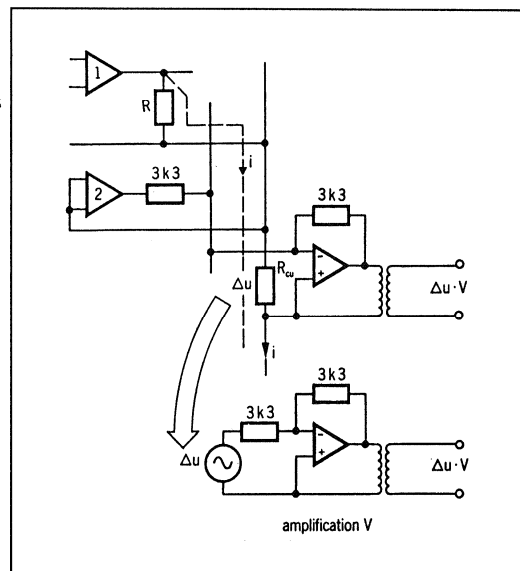
Capacitive cross talk can be overcome through physical isolation of the channels. However, resistive cross talk can only be prevented by an optimum ground system.

Problem illustrating:

To illustrate the problem: simple bus bar arrangement. Input 1 is driven. The voltage forms a current i on resistor R . This current flows through the ground of the bus bar to the power supply. The ground conductor can be represented as a circuit with serially connected partial resistors ΔR_{Cu} .



The current I causes a voltage drop Δu on ΔR_{Cu} . In the selected circuit 2, this voltage acts as a generator and causes cross talk.



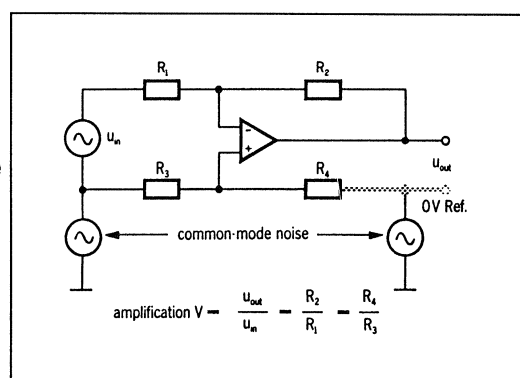
Resistive cross talk

Possible solutions:

- Installation of bus bar with large cross section.
- Feeding the ground in the middle of the bus bar.
- Star-connected chassis ground (not feasible).
- Decoupling with transformers (outdated).
- Decoupling with differential amplifiers.

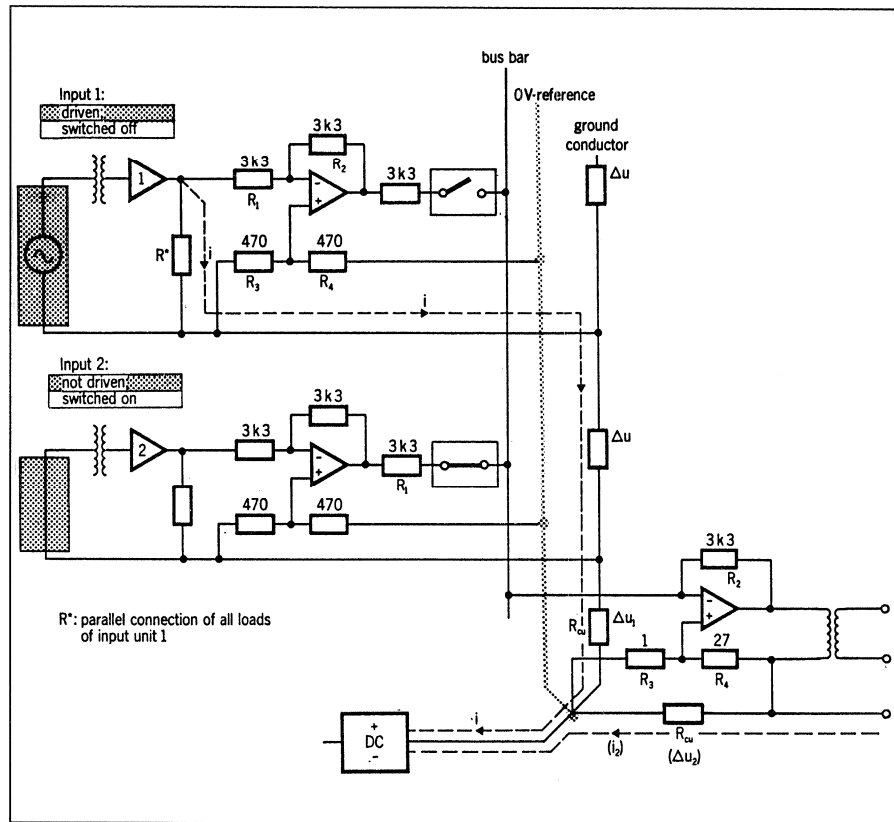
The last solution which is based on the differential amplifier is implemented in the Series 900 mixing consoles and shall now be described in more detail.

The input/output common-mode noise is compensated by this circuit. In the Series 900 audio console, a "0 V reference" line is introduced as a reference ground. Under no circumstances must this conductor be loaded.



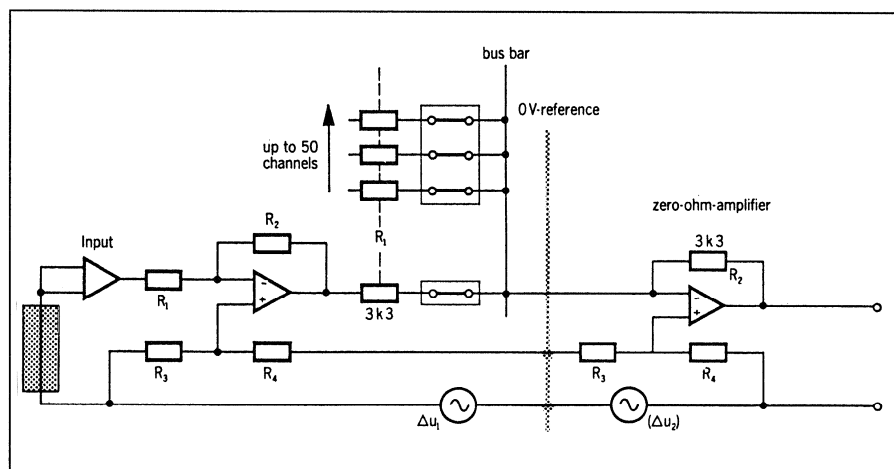
Decoupling with differential amplifiers.

The actual circuitry looks as follows:



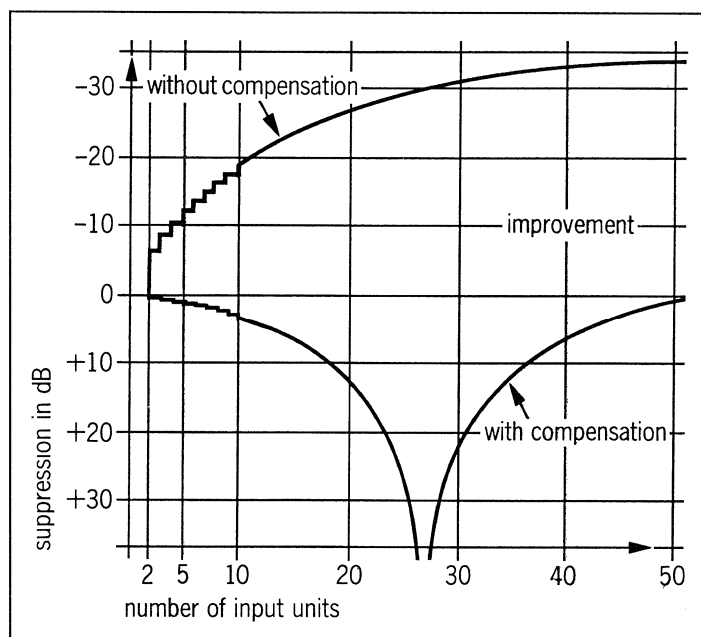
Input 1 is again driven and produces a current flows through the ground of the bus bar to the power supply. Current I produces a small voltage ΔU_1 on ΔR_{Cu} .

The built-in differential amplifier compensates this voltage. ΔU_1 is thus eliminated and resistive cross talk is cancelled. For an excellent result, the condition $R_2 : R_1 = R_3 : R_4$ must be optimally satisfied.



In contrast to the zero-ohm amplifier, this requirement is well satisfied in the input unit. In the zero-ohm amplifier, the input resistance R_1 varies between $3k\Omega : 1 \dots 3k\Omega : 50$, depending on the number of channels selected.

However, a significant improvement in the suppression of noise signals is still achieved.



Suppression of noise signals depending on the number of input units.

Differential amplifiers are used in all major decoupling locations. This fact should, therefore, be taken into consideration in the subsequent installation of custom equipment. Because of the universal application of this advanced technology, even the largest mixing consoles we build still offer excellent cross-talk rejection and SN ratios.

GENERAL

4. Electrical Specifications

General: ■ Voltages in dBu are referred to 0.775V.

| |
|--|
| $0 \text{ dBu} \cong 0,775 V_{\text{eff}}$ |
|--|

- Channel and master faders are set to 0 dB. (Position of the linear faders)
- Line outputs are loaded with 600 Ω .
- External sources have a source impedance of $\leq 200 \Omega$.
- Data given are valid from 31.5 Hz...16 kHz.
- Levels are measured with a continuous sine wave.
(0 VU \cong 6 dB below peak recording level)

4.1 Levels

| | | |
|----------------|--|--|
| Inputs: | MIC -70dBu ... +20dBu Sensitivity adjustable in 10dB steps, continuously variable with pot for fine attenuation. (max. sensitivity with open faders -90dBu \cong 0.024mV) | |
| | LINE -6dBu ... +15dBu Sensitivity internally presettable. The external pot for fine adjust with center detent has a range of $\pm 6\text{dB}$ | |
| | TAPE +6dBu ... +15dBu Internally presettable sensitivity. | |

| | | |
|--------------------------|--|--|
| Insertion points: | INSERT level: 0dBu. | |
|--------------------------|--|--|

| | | |
|-----------------|--|--|
| Outputs: | Presettable within a range of +6dBu ... +15dBu (load 600 Ω) (Main-, auxiliary-, studio-, monitor outputs) Headphones: monitor and studio +10dBu (unloaded) | |
|-----------------|--|--|

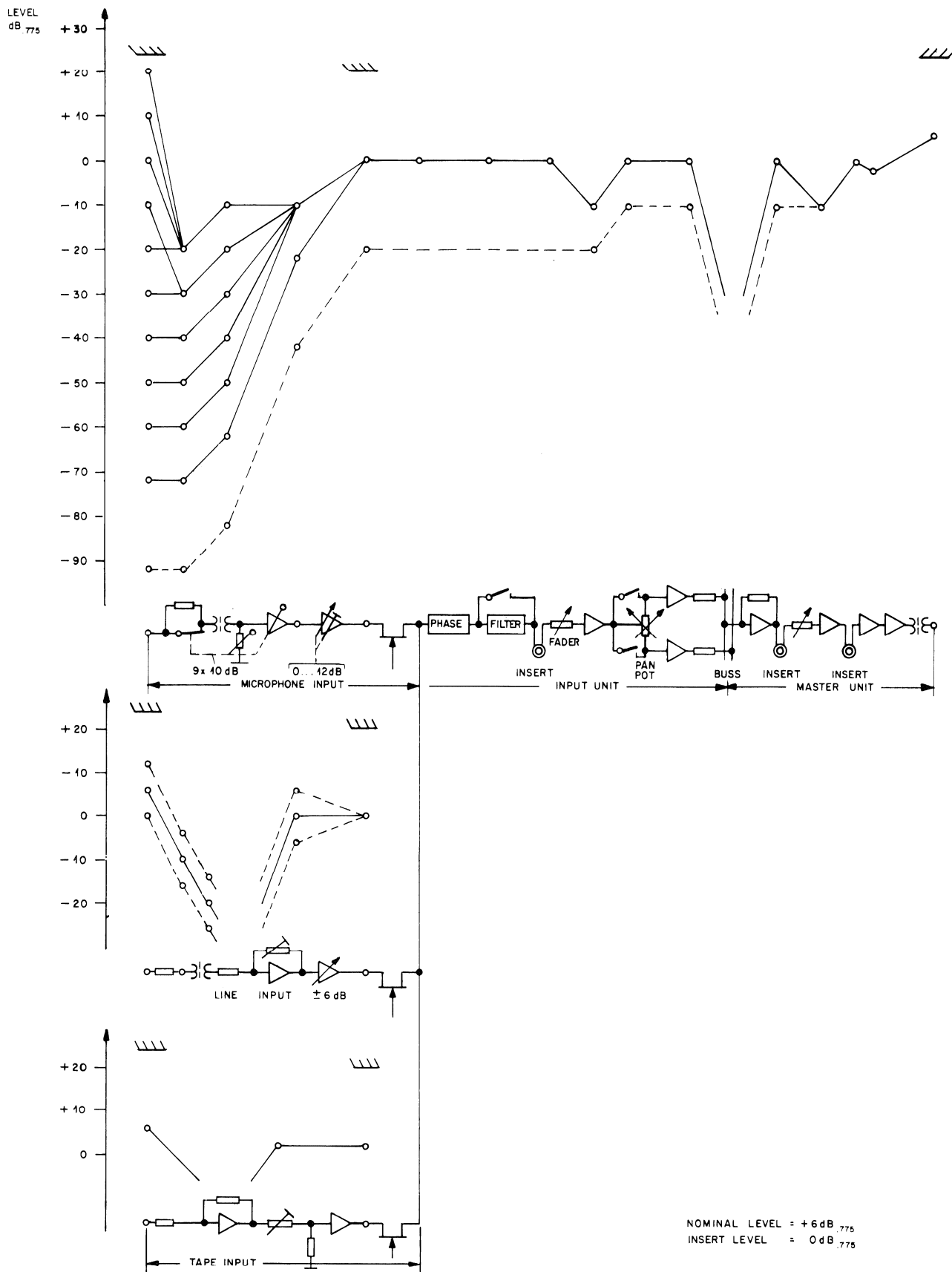
Maximum levels

| | | |
|----------------|---|--|
| Inputs: | MIC: +24dBu LINE: +24dBu TAPE: +24dBu INSERT: +20dBu | |
|----------------|---|--|

| | | |
|-----------------|---|--|
| Outputs: | Line: +24dBu Monitor: +22dBu (30Hz: +18dBu) Studio: +22dBu (30Hz: +18dBu) Insert: +20dBu Headphones: +20dBu (unloaded) | |
|-----------------|---|--|

| | | |
|-------------------------|---|--|
| Overload margin: | at the channel fader ($k_{\text{tot}} 1\%$) 20dB at the master fader ($k_{\text{tot}} 1\%$) 20dB | |
|-------------------------|---|--|

4.2 Level Diagram



GENERAL

4.3 Impedances

| | | | |
|---------------------|--|----------------------------|---------------------|
| Inputs: | MIC: | range -70 ... -10dB | $\geq 1,2k\Omega$ |
| | | range -10 ... +20dB | $\geq 5k\Omega$ |
| | LINE + TAPE: | | $\geq 10k\Omega$ |
| | INSERT: | | $\approx 5k\Omega$ |
| Outputs: | Main-, auxiliary-, studio-, monitor outputs: | | $\leq 50\Omega$ |
| | Headphones output: | | $\approx 135\Omega$ |
| | INSERT: | | $\leq 50\Omega$ |
| Description: | MIC: | balanced, floating, source | $\leq 200\Omega$ |
| | LINE: | balanced, floating, source | $\leq 200\Omega$ |
| | TAPE: | balanced, source | $\leq 200\Omega$ |
| | INSERT: | unbalanced, source | $\leq 200\Omega$ |
| | Line outputs: | balanced, floating, load | $\geq 200\Omega$ |
| | Studio output: | balanced, floating, load | $\geq 600\Omega$ |
| | Monitor output: | balanced, floating, load | $\geq 600\Omega$ |
| | Insert output: | unbalanced, load | $\geq 2k\Omega$ |
| | Headphones: | unbal., recommended load | $\geq 200\Omega$ |

4.4 Frequency Response (Mono Input, Version "A")

| | | |
|-------------------|---|---|
| | Filters off; frequency range 31,5Hz...16kHz | +0,5dB / -1dB |
| Filter: | Bass cut 12 dB/octave 3dB point adjustable (roll-off) | 30Hz ...330Hz |
| | Treble filter 12 dB/octave 3dB point adjustable (roll-off) Outside audio range continuously decreasing at 12 dB/octave. | 700Hz ...20kHz |
| Equalizer: | Treble control, shelving HF Adjustable attack frequency | $\pm 15\text{dB}$ 700Hz ...15kHz |
| | Treble control, bell HF Adjustable center frequency | $\pm 15\text{dB}$ 700Hz ...15kHz (Q ≈ 1) |
| | Bass control, shelving LF Adjustable attack frequency | $\pm 15\text{dB}$ 30Hz ...600Hz |
| | bass control, bell LF adjustable center frequency | $\pm 15\text{dB}$ 30Hz ...600Hz (Q ≈ 1) |

| | | |
|-----------------------------------|-----------------------|-----------------|
| Presence/absence filter, bell HMF | ±15dB | |
| Adjustable center frequency | 400Hz ... 7kHz | |
| Q 'narrow': | Q ≈ 3 | (at max. boost) |
| Q 'wide': | Q ≈ 1 | (at max. boost) |

| | | |
|-----------------------------------|-----------------------|-----------------|
| Presence/absence filter, bell LMF | ±15dB | |
| Adjustable center frequency | 120Hz ... 2kHz | |
| Q 'narrow': | Q ≈ 3 | (at max. boost) |
| Q 'wide': | Q ≈ 1 | (at max. boost) |

4.5 Noise weighted

Noise voltages are measured with a true RMS voltmeter and an equivalent noise bandwidth of 30 Hz...23kHz (e.g. Siemens U2033 or equal).

Noise figure of the microphone input: **F ≤ 4dB**
(Source impedance = 200 Ω)

Signal-to-noise ratio
(Master fader closed) **> 100dB**

One channel:

Input and master faders 0 dB; line input, unity gain;
 filters off **> 98dB**
 filters on (linear) **> 90dB**

12-channels:

Input and master faders 0 dB; line input, unity gain;
 filters off **> 90dB**
 filters on (linear) **> 82dB**

24-channels:

Input and master faders 0 dB; line input, unity gain;
 filters off **> 87dB**
 filters on (linear) **> 79dB**

4.6 Distortion and Crosstalk

Distortion: Line level in frequency range **≤ 0,1%**

Crosstalk: Crosstalk from master to master **> 85dB**

4.7 Power Supply

Mains operation, mains voltage selector for:
110V, 120V, 140V, 200V, 240V AC ±10%

| | | |
|--------------------------|------|-------------------|
| Internal supply voltage: | +15V | Audio |
| | -15V | Audio electronics |
| | -6V | Logic |
| | -24V | Logic/control |
| | 24V | Signalization |
| | 48V | Phantom powering |

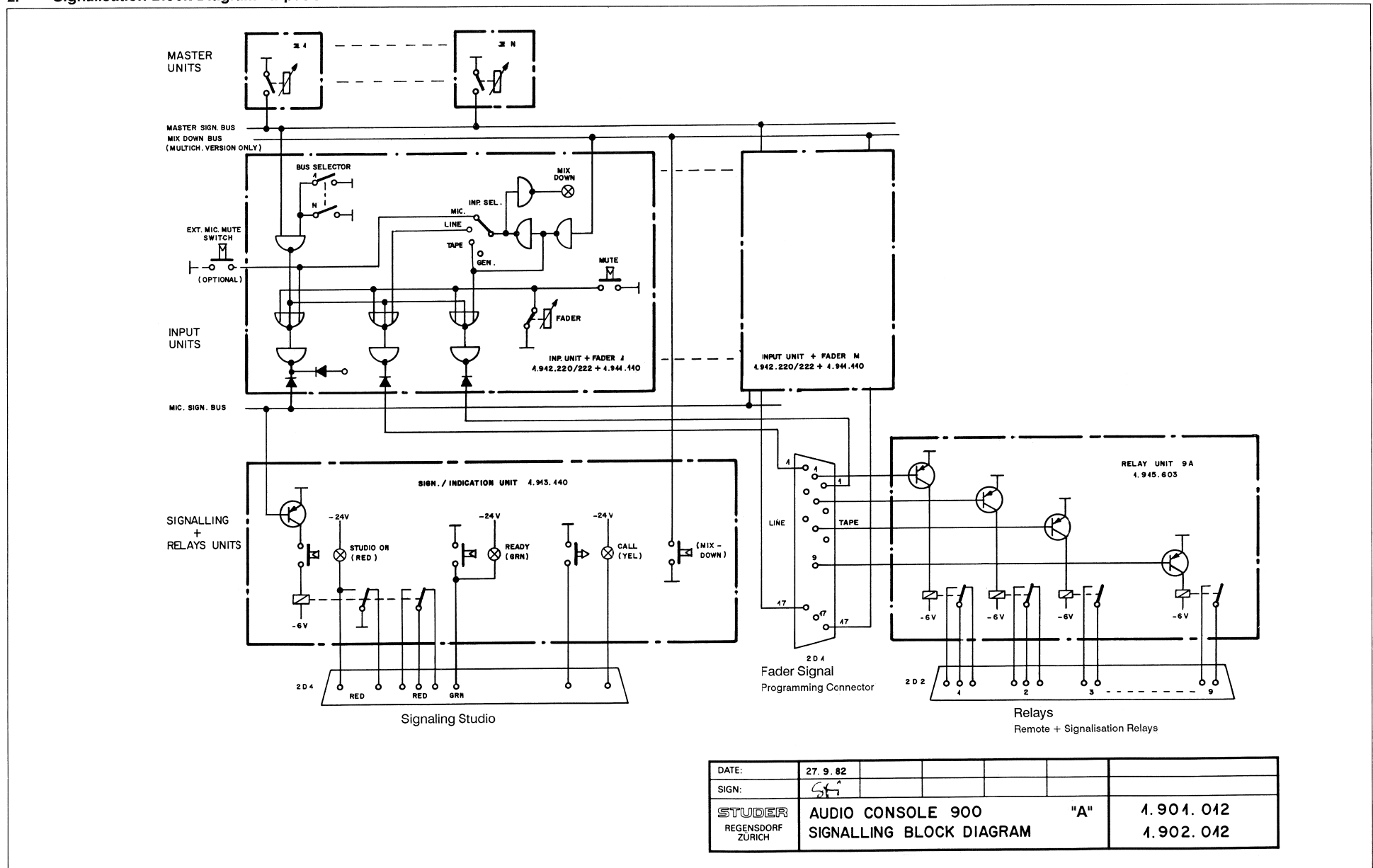
SECTION 2: Block Diagrams / Blockschaltbilder

1. **Audio Block Diagram**
2. **Signalisation Block Diagram Input Units A**
3. **Signalisation Block Diagram Input Units B**
4. **Block Diagram PFL / P.Solo System**

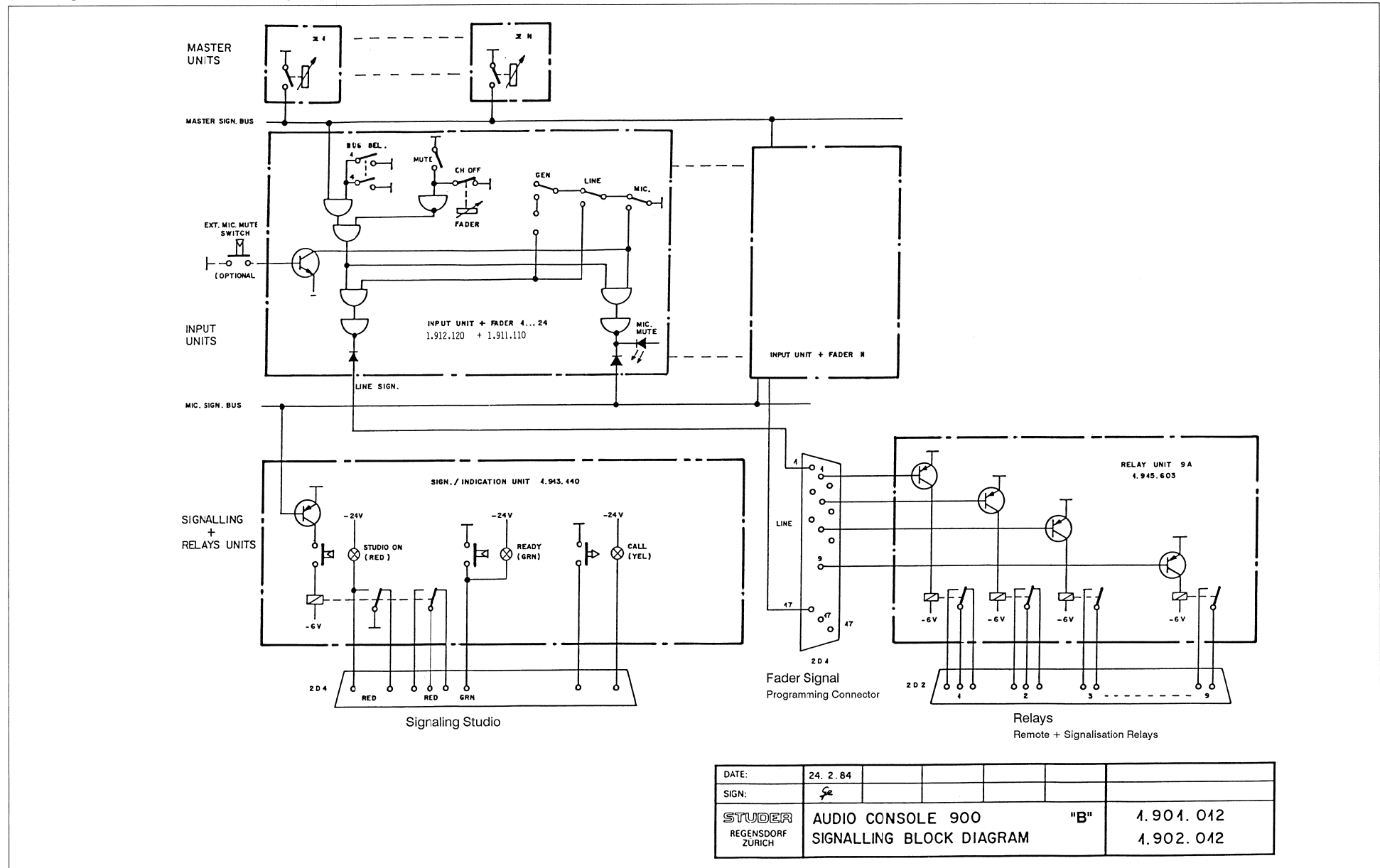
1. Audio Block Diagram

Projektspezifische Unterlagen

2. Signalisation Block Diagram Input Units A

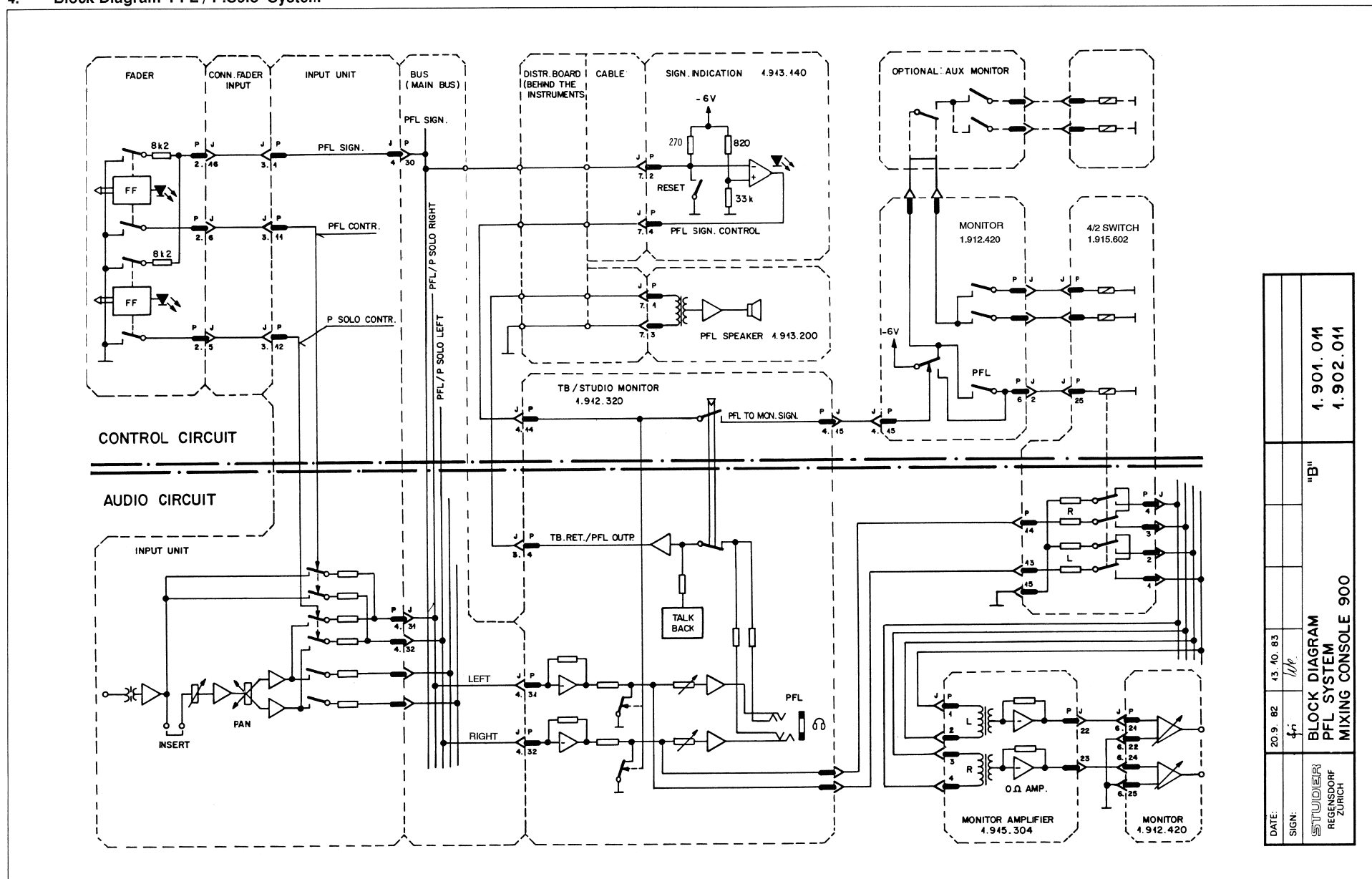


3. Signalisation Block Diagram Input Units B



| | | | | |
|--------------------------------|---|-----|------------------------|--|
| DATE: | 24. 2. 84 | | | |
| SIGN: | <i>Se</i> | | | |
| STUDER REGENSDORF ZURICH | AUDIO CONSOLE 900 SIGNALLING BLOCK DIAGRAM | "B" | 1.901.012 1.902.012 | |

4. Block Diagram PFL / P.Solo System



| | | | | |
|---|-----------|-----------|-----|------------------------|
| DATE: | 20.9.82 | 13.10.83 | | |
| SIGN: | <i>fr</i> | <i>Wp</i> | | |
| STUDIOER REGENSDORF ZÜRICH | | | "B" | 1.904.041 1.902.011 |
| BLOCK DIAGRAM PFL SYSTEM MIXING CONSOLE 900 | | | | |

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1. Allgemeines

1.1 Pegel-Definition

Pegelangaben: Nennpegelangaben in dBu basieren ausschliesslich auf einem festgelegten Spannungswert als Bezugsgrösse:

$$0 \text{ dBu} \cong 0,775 V_{\text{eff}}$$

Nennpegel in dBu:

Nennpegel = Pegel bei Vollaussteuerung

Der Nennpegel entspricht dem Pegel bei Vollaussteuerung. Die Begriffe Nominalpegel, Studio- und Leitungspegel werden synonym verwendet. Der Nennpegel gilt für relative Pegelangaben als 0dB-Wert.

Typische Nennpegel sind:

| | | |
|--------|---|----------------------|
| +6dBu | ≅ | 1,55V _{eff} |
| +10dBu | ≅ | 2,45V _{eff} |
| +15dBu | ≅ | 4,36V _{eff} |

Aussteuerungspegel:

| | | |
|-----------------|----------|------------------------------|
| 0 dB PPM | = | Nennpegel |
| 0 VU | = | Nennpegel minus 6 dB* |

* 6dB entsprechen einem verbreiteten Wert für den Vorlauf (Lead) des VU-Instrumentes.

PPM-Pulte Peak Program Meter zeigen als Quasispitzenwert-Instrumente den Effektivwert einer Sinusspannung an. Ein Signal mit Nennpegel ergibt eine 0dB-Anzeige.

VU-Pulte VU-Instrumente zeigen bei einem Dauerton einen um den Vorlauf zu hohen Wert an. Für eine 0VU-Anzeige muss der Pegel des Testsignals um den Vorlauf vermindert werden.
 VU-Pulte werden häufig auf einen Nennpegel von +10dBu eingestellt, d.h. bei 6dB Vorlauf des VU-Meters wird ein Pegel von +4dBu mit 0VU angezeigt.

Verstärkung/Dämpfung:

Relative Pegelangaben in dB geben Auskunft über das Verstärkungs- bzw. Dämpfungsmass einer aktiven (z.B. Verstärkerstufe) oder passiven (z.B. Potentiometer) Schaltungskomponente innerhalb eines Schaltkreises. Die folgende Tabelle setzt Spannungsverhältnisse (Ausgang ÷ Eingang) zu Dezibelwerten in Beziehung (gerundete Faktoren):

| | | | | | | | | | | | | |
|---------------|-------------|----------|----------|----------|----------|------------|-----------|-----------|------------|-----------|-----------|-----------|
| | dB | 0 | 1 | 2 | 3 | 6 | 10 | 14 | 20 | 26 | 34 | 40 |
| Faktor | Verstärkung | 1 | 1,1 | 1,2 | 1,4 | 2 | 3,2 | 5 | 10 | 20 | 50 | 100 |
| | Dämpfung | 1 | 0,9 | 0,8 | 0,7 | 0,5 | 0,3 | 0,2 | 0,1 | 0,05 | 0,02 | 0,01 |

1.2 Umrechnungstabelle der Spannungspegel: Volt ↔ dBu

| $\frac{U_1}{U_2}$ | μV ————— dBu | | | | $\frac{U_1}{U_2}$ | μV ————— dBu | | | |
|-------------------|-------------------|-----|-----|------|-------------------|-------------------|-----|-----|-----|
| | mV | dBu | | dBu | | mV | dBu | | dBu |
| | V | | | | V | | | | |
| 1 | 0,775 | ±0 | -60 | -120 | 31,6 | 24,5 | +30 | -30 | -90 |
| 1,12 | 0,87 | +1 | -59 | -119 | 35,5 | 27,5 | +31 | -29 | -89 |
| 1,26 | 0,98 | +2 | -58 | -118 | 39,8 | 30,8 | +32 | -28 | -88 |
| 1,41 | 1,09 | +3 | -57 | -117 | 44,7 | 34,6 | +33 | -27 | -87 |
| 1,59 | 1,23 | +4 | -56 | -116 | 50,1 | 38,8 | +34 | -26 | -86 |
| 1,78 | 1,38 | +5 | -55 | -115 | 56,2 | 43,6 | +35 | -25 | -85 |
| 2,00 | 1,55 | +6 | -54 | -114 | 63,1 | 48,9 | +36 | -24 | -84 |
| 2,24 | 1,73 | +7 | -53 | -113 | 70,8 | 54,8 | +37 | -23 | -83 |
| 2,51 | 1,95 | +8 | -52 | -112 | 79,4 | 61,5 | +38 | -22 | -82 |
| 2,82 | 2,18 | +9 | -51 | -111 | 89,1 | 69,0 | +39 | -21 | -81 |
| 3,16 | 2,45 | +10 | -50 | -110 | 100 | 77,5 | +40 | -20 | -80 |
| 3,55 | 2,75 | +11 | -49 | -109 | 112 | 86,9 | +41 | -19 | -79 |
| 3,98 | 3,08 | +12 | -48 | -108 | 126 | 97,5 | +42 | -18 | -78 |
| 4,47 | 3,46 | +13 | -47 | -107 | 141 | 109,4 | +43 | -17 | -77 |
| 5,01 | 3,88 | +14 | -46 | -106 | 159 | 122,8 | +44 | -16 | -76 |
| 5,62 | 4,36 | +15 | -45 | -105 | 178 | 137,7 | +45 | -15 | -75 |
| 6,31 | 4,89 | +16 | -44 | -104 | 200 | 154,5 | +46 | -14 | -74 |
| 7,08 | 5,48 | +17 | -43 | -103 | 224 | 173,4 | +47 | -13 | -73 |
| 7,94 | 6,15 | +18 | -42 | -102 | 251 | 194,6 | +48 | -12 | -72 |
| 8,91 | 6,90 | +19 | -41 | -101 | 282 | 218,3 | +49 | -11 | -71 |
| 10,0 | 7,75 | +20 | -40 | -100 | 316 | 244,9 | +50 | -10 | -70 |
| 11,2 | 8,69 | +21 | -39 | -99 | 355 | 274,8 | +51 | -9 | -69 |
| 12,6 | 9,75 | +22 | -38 | -98 | 398 | 308,4 | +52 | -8 | -68 |
| 14,1 | 10,9 | +23 | -37 | -97 | 447 | 346,0 | +53 | -7 | -67 |
| 15,8 | 12,3 | +24 | -36 | -96 | 501 | 388,2 | +54 | -6 | -66 |
| 17,8 | 13,8 | +25 | -35 | -95 | 562 | 435,6 | +55 | -5 | -65 |
| 20,0 | 15,5 | +26 | -34 | -94 | 631 | 488,7 | +56 | -4 | -64 |
| 22,4 | 17,3 | +27 | -33 | -93 | 708 | 548,4 | +57 | -3 | -63 |
| 25,1 | 19,5 | +28 | -32 | -92 | 794 | 615,3 | +58 | -2 | -62 |
| 28,2 | 21,8 | +29 | -31 | -91 | 891 | 690,4 | +59 | -1 | -61 |
| 31,6 | 24,5 | +30 | -30 | -90 | 1000 | 774,6 | +60 | ±0 | -60 |

Die fettgedruckte Kolonne enthält Spannungswerte. Die drei anschliessenden Kolonnen zeigen die entsprechenden Dezibelwerte bei Interpretation der Spannungen als Volt, Millivolt oder Mikrovolt. Die Kolonne U1/U2 gibt die Spannungsverhältnisse an, die den auf Volt bezogenen dBu-Werten entsprechen.

Der Tabelle liegt die Definition $0dBu \cong 0,775V_{eff}$ zugrunde.

1.3 Notwendigkeit des Einmessens

Jedes ab Herstellerwerk ausgelieferte Mischpult verfügt über ein Prüfprotokoll, in dem die Daten der Endprüfung eingetragen sind, wie:

- Abgleich auf kundenspezifischen Nennpegel
- Frequenzgang, Klirrfaktor, Geräuschabstand, Rauschspannung und Übersprechdämpfung.

Das Einmessen des Mischpultes ist bei Änderungen der Betriebsbedingungen (Nennpegel) am Einsatzort oder nach Modifikationen am Mischpult erforderlich. Einzige turnusgemässe Wartungsmassnahme bildet das nachfolgend beschriebene Entmagnetisieren der Eingangsübertrager. (vgl. 1.8)

Hinweis: Ab Herstellerwerk ausgelieferte (Ersatz-) Einschübe sind werkseitig auf einen Nennpegel von +6dBu abgeglichen und können direkt in das einzumessende Mischpult eingesetzt werden.

1.4 Benötigte Messgeräte und Hilfsmittel

- Tonfrequenz-Generator / $R_s \leq 200\Omega$
- NF-Voltmeter, $R_{z_{in}} \geq 10k\Omega$
- 2 Kanal Kathodenstrahl-Oszillograph
- Abgleich-Schraubenzieher, Grösse 2
- Sammelschienen-Adapter zur Kontaktierung ausgebaute Einschübe mit der Sammelschiene. Es werden mindestens benötigt:

| | |
|---|---------------------------------|
| 1 Verlängerungsprint mit 32-Pol Steckern | Best.-Nr. 1.228.322.81 |
| 2 Verlängerungsprints mit 64-Pol Steckern | Best.-Nr. (1 Stk.) 1.228.327.81 |
- 2 Ausziehwerkzeuge für Einschübe Best.-Nr. (1 Stk.) 1.912.000.06
- Feste, nicht leitende Matte (Gummi oder Karton), als Unterlage für ausgebaute, über den Adapter mit der Sammelschiene kontaktierte Einschübe (werden mit Vorteil auf das Bedienungsfeld des Mischpultes gelegt). Abmessung ca. 40 x 25 cm.

1.5 Elektrostatisch empfindliche Bauteile "ESE"



Statische Elektrizität:

Viele Materialien der heutigen Arbeitswelt sind mögliche Quellen statischer Elektrizität. Unter geeigneten Voraussetzungen können sich dadurch Gegenstände und Personen auf sehr hohe Potentiale aufladen. Bei Entladung dieser Potentiale können Impulse von beachtlicher Spitzenleistung auftreten. Findet auch nur ein kleiner Teil dieser Energie seinen Weg in Bauelemente der Elektronik, werden diese zerstört oder beschädigt.

EINMESSEN

Umgang mit ESE-Platinen: Es muss deshalb unser Ziel sein, unsere Produkte vor Fehlern und Mängeln durch elektrostatische Entladung zu bewahren. Richtiger Umgang mit elektronischen Baugruppen ist im Bereich der Geräterwartung von grösster Wichtigkeit. Dabei gilt es einige einfache Verhaltenshinweise zu befolgen:

1. Entlade Dich durch Anfassen von Erde, bevor Du eine elektronische Baugruppe in die Hand nimmst.
2. Gib dem Partner zuerst die Hand und dann die Baugruppe.
3. Fasse einen bestückten Print grundsätzlich nur am Rand oder an der Frontplatte an.
4. Berühre niemals Leiterbahnen, Anschlusspunkte oder Bauelemente, ohne Dich vorher zu entladen.
5. Schalte die Netzspannung aus, bevor Du eine ESE-Baugruppe herausnimmst oder einsteckst.
6. Transportiere und lagere ESE-Baugruppen immer in ESE-Verpackungen.
7. Arbeite nur mit ESE-geeigneten und geprüften Werkzeugen.
8. Trage bei Arbeiten an elektrischen Baugruppen, egal ob ESE oder nicht, immer das Erdungsarmband.
9. Halte Styropor, PVC-Folien, Plastiksäcke und ähnliche Materialien weit entfernt von ESE-Baugruppen.

Wir empfehlen, den Arbeitsplatz mit einer geerdeten Unterlage auszurüsten:

| | | |
|------------------------|--|-----------------------------------|
| ESE-Schutzmatte | Dieses Kit enthält eine Schutzmatte (60 × 70cm) mit Erdungskabel und Erdungsarmband für Arbeiten an elektrischen Baugruppen. | Best. Nr. 20.020.001.44 |
|------------------------|--|-----------------------------------|

1.6 Messgrundlagen

Temperatur: Das Einmessen des Mischpultes erfolgt bei erreichter Betriebstemperatur. (ca. 15 Minuten nach dem Einschalten)

Last:

- Einschleifpunkte (INSERTs), Monitor-, Vorhör- und Kommando- (TB-) Ausgänge sind **nicht** zu belasten ($R_L \geq 10k\Omega$)
- Leitungsausgänge (Gruppen, Summen, Hilfssummen) sind mit **600 Ω Last** abzuschliessen.

Testsignal: Sinuston / 1 kHz

Pegelreferenz: **Alle Angaben dieser Einmessanleitung beziehen sich auf einen Nennpegel von +6dBu.**
Andere Nennpegel bedingen Messwerte gemäss folgender Tabelle:

Pegelübersicht:

| Nennpegel | Insert symmetrisch | Insert asymmetrisch | Leitungs- ausgänge | Anzeige OVU (6dB Vorlauf) | Anzeige 0dB (PPM) |
|-----------|-----------------------|------------------------|-----------------------|------------------------------|----------------------|
| +6dBu | +6dBu | 0dBu | +6dBu | 0dBu | +6dBu |
| +10dBu | +10dBu | +4dBu | +10dBu | +4dBu | +10dBu |
| +15dBu | +15dBu | +9dBu | +15dBu | +9dBu | +15dBu |

Insert-Pegel: Die symmetrischen Einschleifpunkte liegen auf Nennpegel, während asymmetrische Ausführungen einen um 6dB tieferen Pegel führen.

1.7 Messaufbau

Ein- und Ausbau der Einschübe:

Die einzumessenden Einheiten müssen ausgebaut und über Printverlängerungen wieder ans Mischpult angeschlossen werden.

Die 0Ω -Bus-Verstärker sind empfindlich auf Spannungsspitzen, wie sie beim Einstecken der Baugruppen unter Spannung entstehen können. Zum Schutz des Pultes und der Peripherie dürfen folgende Einschübe **nur bei ausgeschaltetem Pult** aus- oder eingebaut werden:

- VCA-Fader; Master-Fader; Gruppen-Fader; Aux-Master Einheit; Studio Monitor; CR Monitor.

Symmetrische Messgeräte:

NF-Voltmeter und NF-Generator müssen grundsätzlich über **symmetrische** Ein- resp. Ausgänge verfügen.

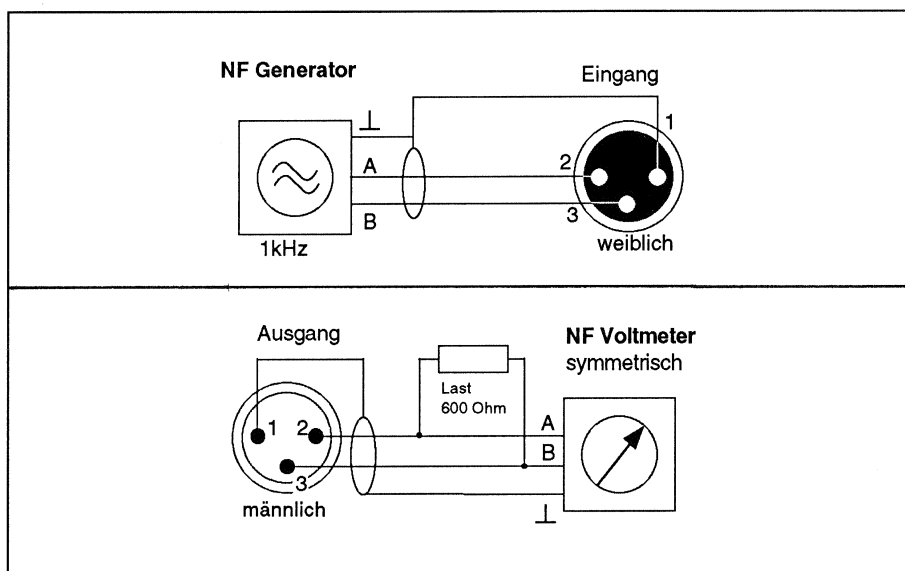


Fig. 1 Anschluss des NF-Generators mit symmetrischer Leitung. Messungen mit dem NF-Voltmeter erfolgen je nach Messpunkt mit oder ohne Belastung des Ausganges.

Asymmetrische Messgeräte:

Asymmetrischen Messgeräten ist ein Symmetrier-Übertrager vorzuschalten. Ist dies nicht möglich, kann behelfsmässig wie folgt beschaltet werden:

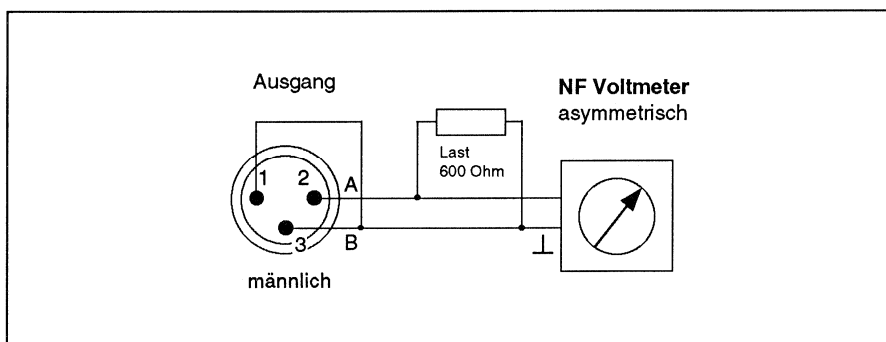


Fig. 2

Die **b**-Leitung (3) mit der Audiomasse (1) verbunden bildet mit der **a**-Leitung (2) einen asymmetrischen Messpunkt. Diese Schaltung ist jedoch nicht für Messungen bei hoher Aussteuerung anwendbar. (Clipping-Effekt bei elektronisch symmetrierten Ausgängen, z.B. INSERT)

EINMESSEN

Messung an Insertpunkten: Die Schaltkontakte der Klinkenbuchsen unterbrechen den Signalfluss durch den Kanal, sobald ein Stecker angeschlossen wird. Bei Messungen an INSERT-Punkten darf der Signalweg jedoch nicht unterbrochen werden. Aus diesem Grund ist folgendes zu beachten:

- Asymmetrische Inserts müssen durchverbunden werden (SEND → RETURN).
- Symmetrische Inserts können an der Insert SEND-Buchse gemessen werden. Das Signal wird nur bei Belegung der RETURN-Buchse unterbrochen.

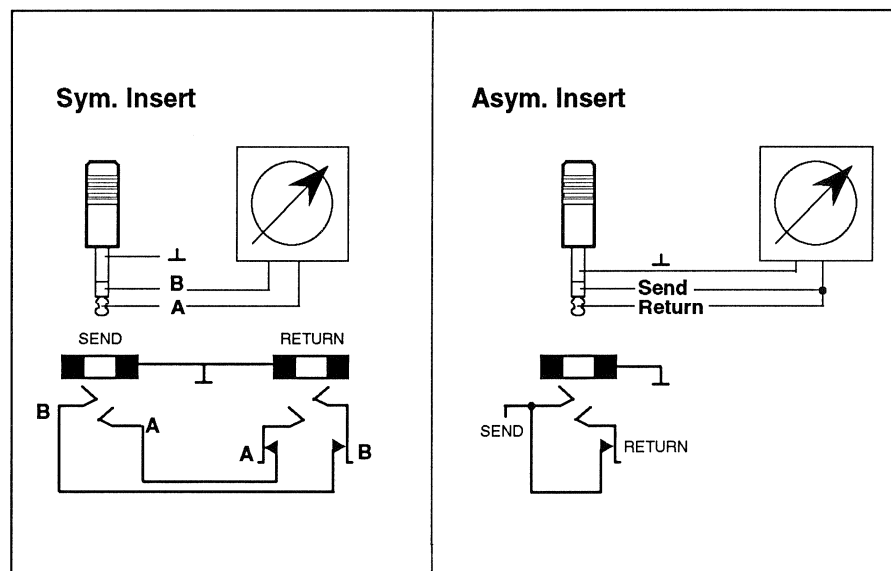


Fig. 3 Messung an symmetrischen und asymmetrischen Inserts. Der Signalfluss darf nicht unterbrochen werden.

1.8 Entmagnetisieren von Mikrofon-Eingangsübertragern

Unerlaubtes Anschliessen asymmetrischer Eingangsquellen oder unbeabsichtigter Masseschluss der a/b-Tonadern von Mikrofon-Eingängen mit zugeschalteter Phantomspeisung treiben die Eingangsübertrager in die Sättigung und bewirken deren permanente Magnetisierung (Remanenz).

Diese äussert sich nachteilig durch den sogenannten Mikrofonie-Effekt: Leichte mechanische Einwirkungen auf das Mischpult, z.B. das Antippen von Einschüben, bewirken eine hörbare Modulation über die Lautsprecher, auch bei nicht belegten Mikrofon-Eingängen.

Auch kann sich Remanenz in den Übertragern im Laufe längerer Betriebsdauer kumulieren.

Es empfiehlt sich deshalb, alle Mikrofon-Eingänge periodisch, und vor Einmessvorgängen, zu entmagnetisieren:

- Vorgehen:**
- Mischpult ausschalten. (zum Schutze angeschlossener Lautsprecher)
 - NF-Generator an Mikrofon-Eingang anschliessen.
Das Testsignal muss gleichspannungsfrei sein, damit der Eingangsübertrager nicht magnetisiert wird. Die folgende Schaltung sperrt Gleichstromanteile:

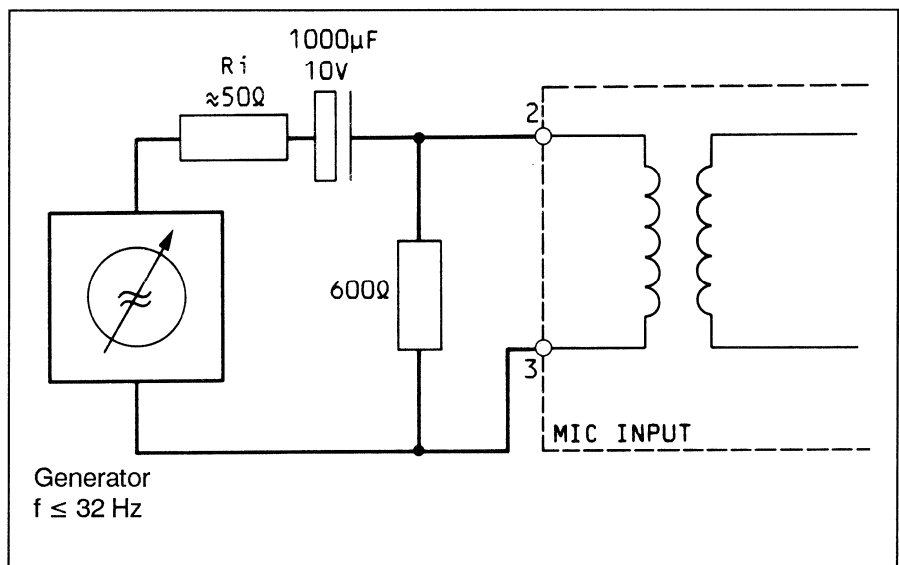


Fig. 4 Anschluss des NF-Generators an Mikrophoneingänge.

- Kondensator $C=1000\mu F/10V$ sperrt Gleichstrom-Anteile.
- Widerstand $R600\Omega$ dient der Entladung des Kondensators von Gleichstrom-Anteilen.
- Frequenz $\leq 32Hz$ sukzessive auf Einspeispegel von $0V...3V$ erhöhen.
- Einspeispegel **langsam** auf $0V$ zurückregeln.

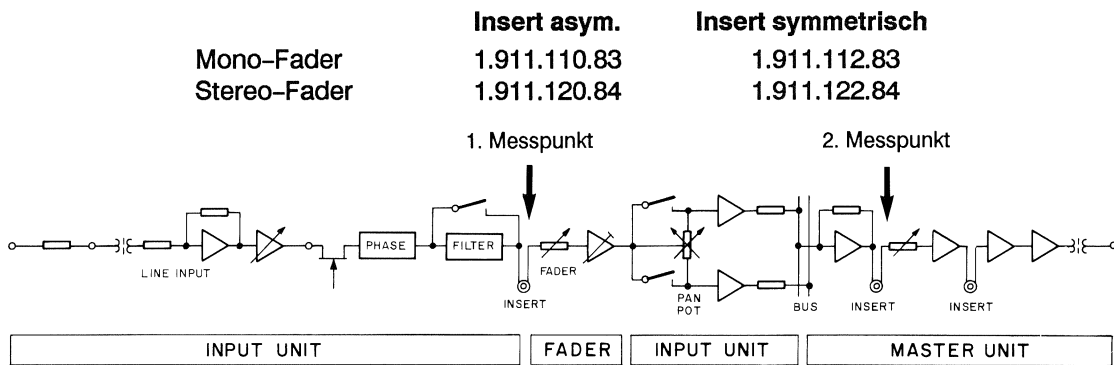
2. Abgleichanleitungen Faderpanel

Die jeweilige Fadereinheit zum Einmessen ausbauen und den Printstecker P1 über Verlängerungskabel mit dem Pult verbinden.

Für den Abgleich sind Filter, Equalizer, Balance- bzw. Panoramapotentio- meter auszuschalten.

2.1 Eingangs-Fader Mono/Stereo,

1.911.110/112/120/122



- Testsignal mit Nennpegel in LINE Eingang einspeisen.
- AC-Voltmeter an PF Insert Send der Eingangseinheit anschliessen. (1. Messpunkt)
- Regler LINE GAIN der Eingangseinheit in Mittelstellung einrasten und Filter ausschalten. Werden am PF Insert nun nicht die folgenden Werte gemessen, muss die Eingangseinheit eingemessen werden. (siehe 3.)
 - a) asymmetrischer Insert: **0dBu**
 - b) symmetrischer Insert: **+6dBu**
- Fader auf **0dB** positionieren.
- Auf der Eingangseinheit eine Summe (Master Unit) anwählen und Voltmeter am PF Insert SEND dieser Summe anschliessen. (entspricht dem Pegel nach dem Eingangs-Fader; 2. Messpunkt)
- Abgleich des Pegels mit den Trimmern R23 des Mono Faders bzw. mit R109 (links) und R209 (rechts) des Stereo Faders:
 - a) bei asymmetrischem Summen-Insert: **0dBu**
 - b) bei symmetrischem Summen-Insert: **+6dBu**

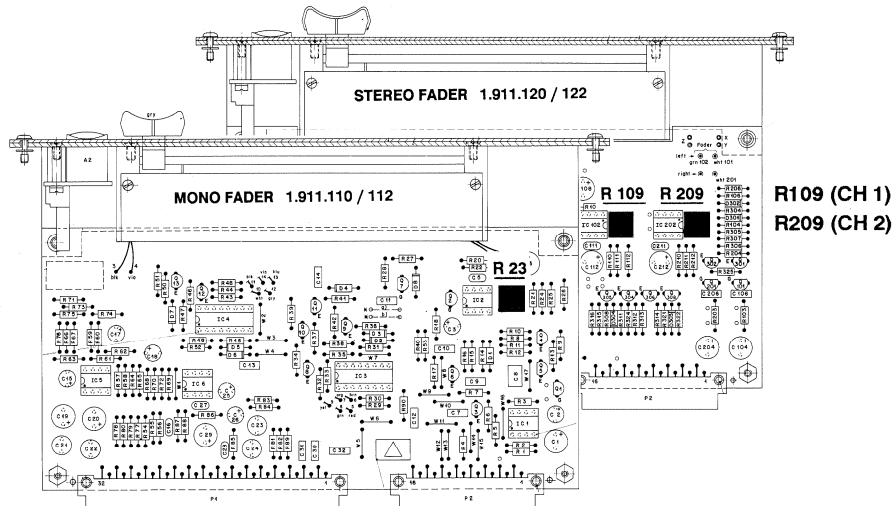


Fig. 5 Abgleich Elemente der Mono- und Stereo-Fader.

2.2 Summen-Fader Mk II

1.911.315/325/335

| | ohne Limiter | mit Limiter |
|------------------------|--------------|-------------|
| Mono Master Unit Mk II | 1.911.315 | 1.911.317 |
| Dual Master Unit Mk II | 1.911.325 | 1.911.335 |

Die verwendeten Platinen tragen die Nummern 1.911.323 (Kanal 1 bzw. Mono) und 1.911.324 (Kanal 2).

Pegel des AF-Inserts:

- Testsignal mit Nennpegel über einen richtig eingemessenen Line Eingang einspeisen und auf gewünschte Summe schalten.
- Eingangsfader und Summenfader auf 0 dB aufziehen.
- Voltmeter an AF-INSERT OUT anschliessen.
- AF Insert OUT mit R142 für CH1 (bzw. R342 für CH2) auf 0dBu einmessen.

Summenausgang:

- Testsignal wie oben einspeisen und Eingangsfader in Position '0dB' bringen.
- Entsprechende Summe anwählen (Bus Selector) und Summen-Fader ebenfalls auf 0dB positionieren.
- Voltmeter am Summenausgang anschliessen und Kanal 1 mit R152 (bzw. Kanal 2 mit R352) auf **Nennpegel** (+6dBu) einstellen.
- Danach bei der Eingangseinheit den nächsten Summenkanal anwählen und sinngemäss einstellen. Alle Summenregler auf diese Weise abgleichen.

Klirrabgleich:

Ein Klirrabgleich erübrigt sich, da die Ausgangsstufe klirrkompensiert ist.

Anmerkung:

- Bauteile des ersten Kanals (Print Nr. 1.911.323) haben Positions-Nummern von 100 bis 299, die des zweiten Kanals (Print Nr. 1.911.324) von 300 bis 499.
- Die beiden Kanäle der Stereo - Ausführungen sind baugleich und vollständig getrennt. Die Prints verhalten sich jedoch spiegelsymmetrisch zueinander.

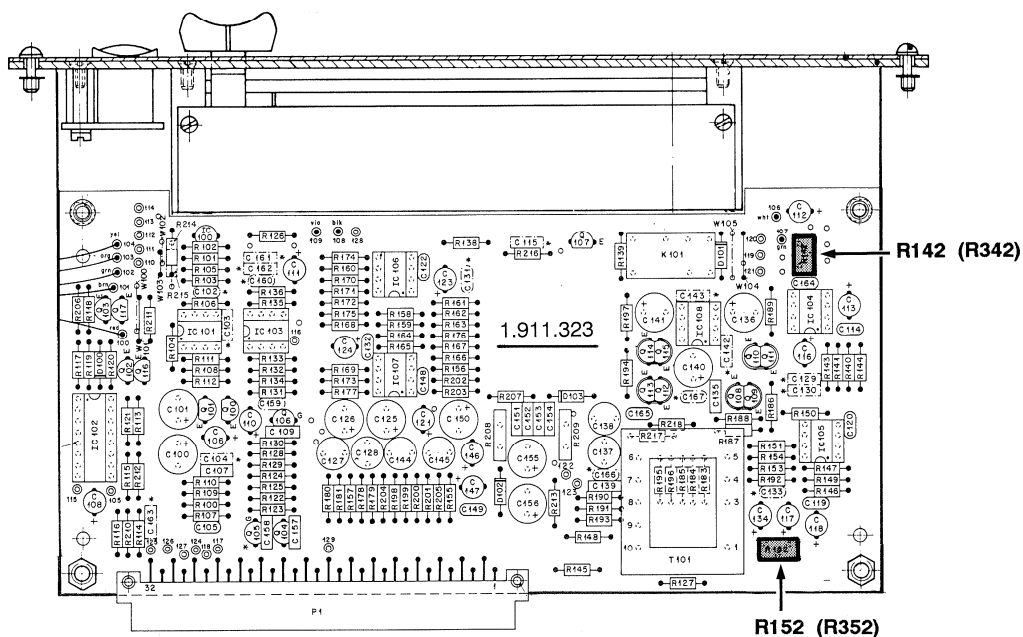


Fig. 6 Abgleichelemente der Master Unit MkII (Kanal 2 in Klammern)

- | | | |
|-----------------------|---------------------|---------------------------|
| Kanal 1: (Σ1, 3, 5..) | R142: AF-Insert OUT | R152: Pegel Summenausgang |
| Kanal 2: (Σ2, 4, 6..) | R342: AF-Insert OUT | R352: Pegel Summenausgang |

3. Abgleichanleitungen Input-Panel

Die einzumessende Eingangseinheit ausbauen und die Printstecker P3, P4 sowie P6 mit Verlängerungskabeln anschliessen. Den Abgleich nur bei linearer Einstellung vornehmen. (Filter, EQ, BAL, PAN, Ø, Limiter ausschalten).

Alle Pegelangaben basieren auf einem **Nennpegel von +6dBu**. Vergleiche dazu die Abschnitte 1.1 "Pegeldefinitionen" und 1.6 "Messgrundlagen".

3.1 Eingangseinheiten Mono "A"

1.912.220...226

- Voltmeter an **PF-Insert** anschliessen. (unter Handauflage; Patch Panel bzw. P6-27) Richtiger Anschluss siehe oben. (1.7 "Messaufbau")
- Beide Filter ausschalten.
- Entzerrer mit Taste **EQUALIZER** ausschalten.

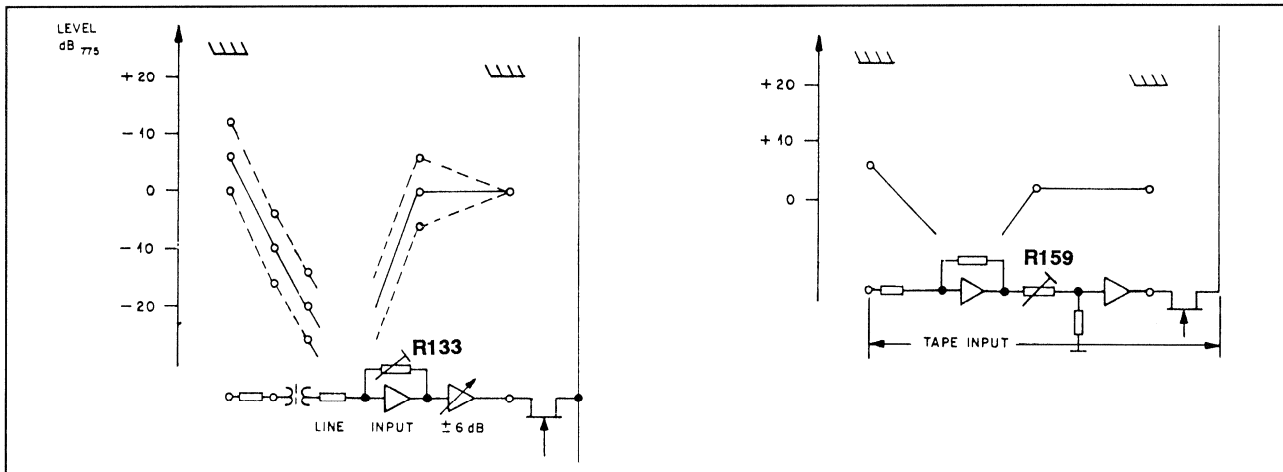


Fig. 7

Line Eingang:

- Testsignal mit Nennpegel in Line Eingang einspeisen.
- Korrektur-Potentiometer **LINE GAIN** in Kalibrierstellung einrasten.
- Pegel mit **R133** auf **0dBu** abgleichen.

Tape Eingang:

- Testsignal mit Nennpegel in Tape Eingang einspeisen.
- Pegel mit **R159** auf **0dBu** abgleichen.

Gleichtaktunterdrückung:

- Am elektronisch symmetrierten Tape Eingang kann die Gleichtaktunterdrückung abgeglichen werden. Das Testsignal auf die beiden Tonadern des Eingangs schalten, wie in Fig. 8 gezeigt.

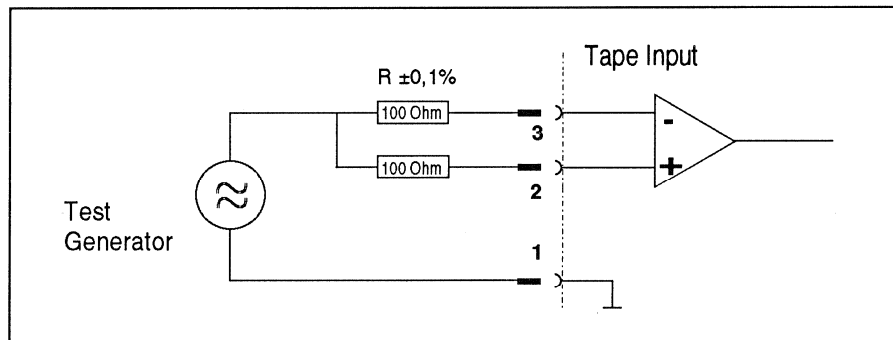


Fig. 8 Einspeisung des Testsignals zum Abgleich der Gleichtaktunterdrückung.

- Den Pegel am PF Insert mit **R153** auf **Minimalwert** einstellen.
(Gleichtaktunterdrückung bei 1kHz/+6dBu \geq 80dB d.h. Messwerte im μ V-Bereich.)

Mikrophon Eingang: Für den Mikrophoneingang sind keine Einstellungen erforderlich. Entmagnetisierung des Eingangsübertragers vgl. 1.8.

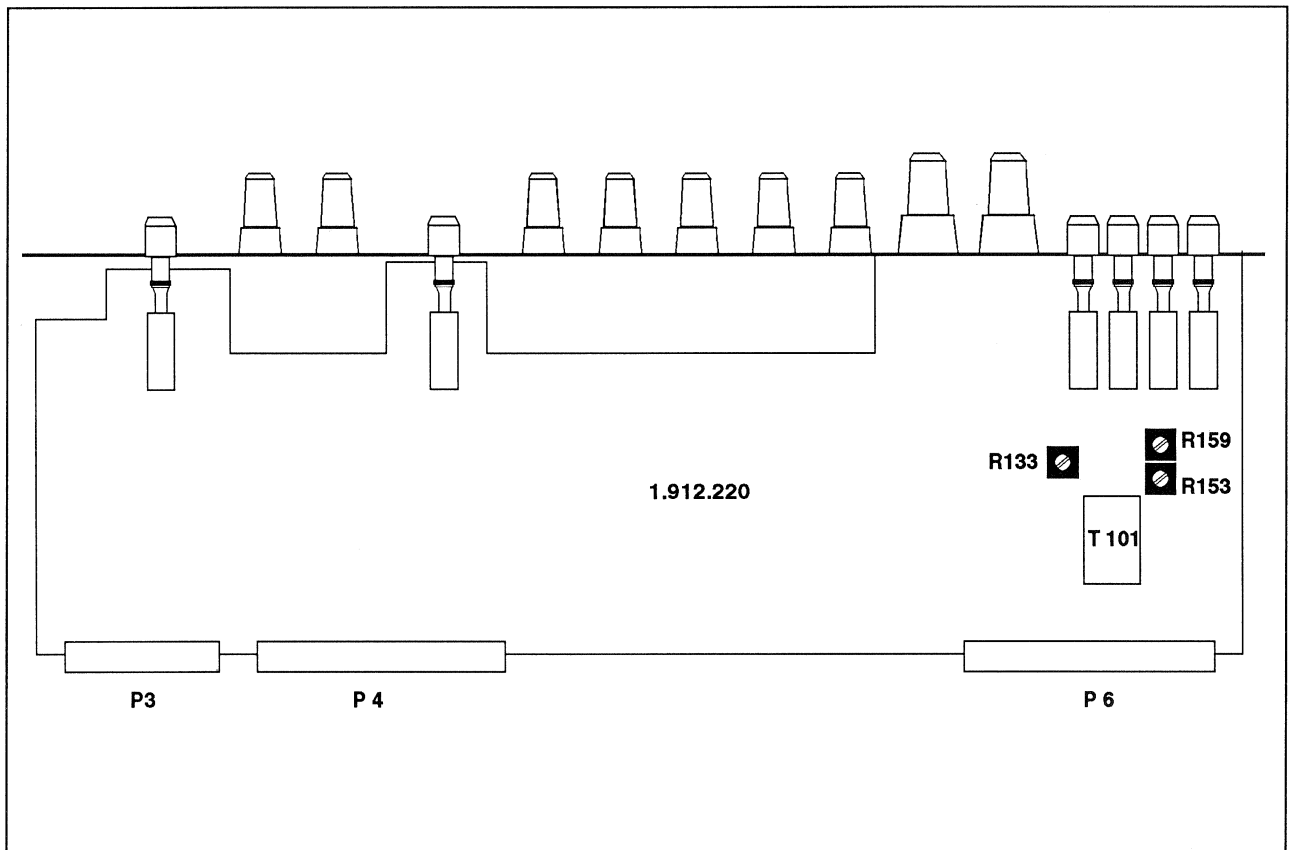


Fig. 9 Abgleichelemente der Mono Eingangseinheiten Version "A"

3.2 Eingangseinheiten Stereo Hochpegel "A"

1.912.240...243

Die beiden Line Eingänge benutzen die gleiche Eingangsstufe. Es genügt also, einen der Eingänge einzumessen.

- Potentiometer GAIN in Mittelstellung einrasten.
- MONO Taste, STEREO SPREAD und EQUALIZER ausschalten.
- Eingangswahltaste LINE 1 drücken.

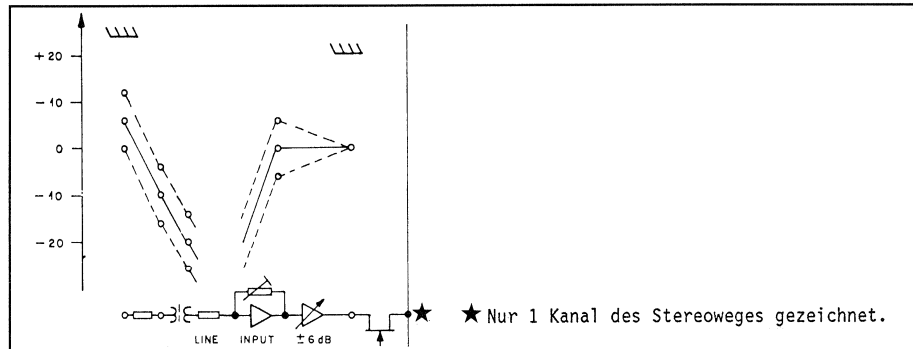


Fig. 10

Line Eingang links:

- Testsignal mit Nennpegel in Eingang LINE 1 (links) einspeisen.
- Voltmeter an **PF-Insert left** (Patch bzw. P3-15) anschliessen.
- Linken Kanal mit Trimmer **R114** auf **0dBu** abgleichen.

Line Eingang rechts:

- Testsignal mit Nennpegel in Eingang LINE 1 (rechts) einspeisen.
- Voltmeter an **PF-Insert right** (Patch bzw. P3-13) anschliessen.
- Rechten Kanal mit Trimmer **R214** auf **0dBu** abgleichen.

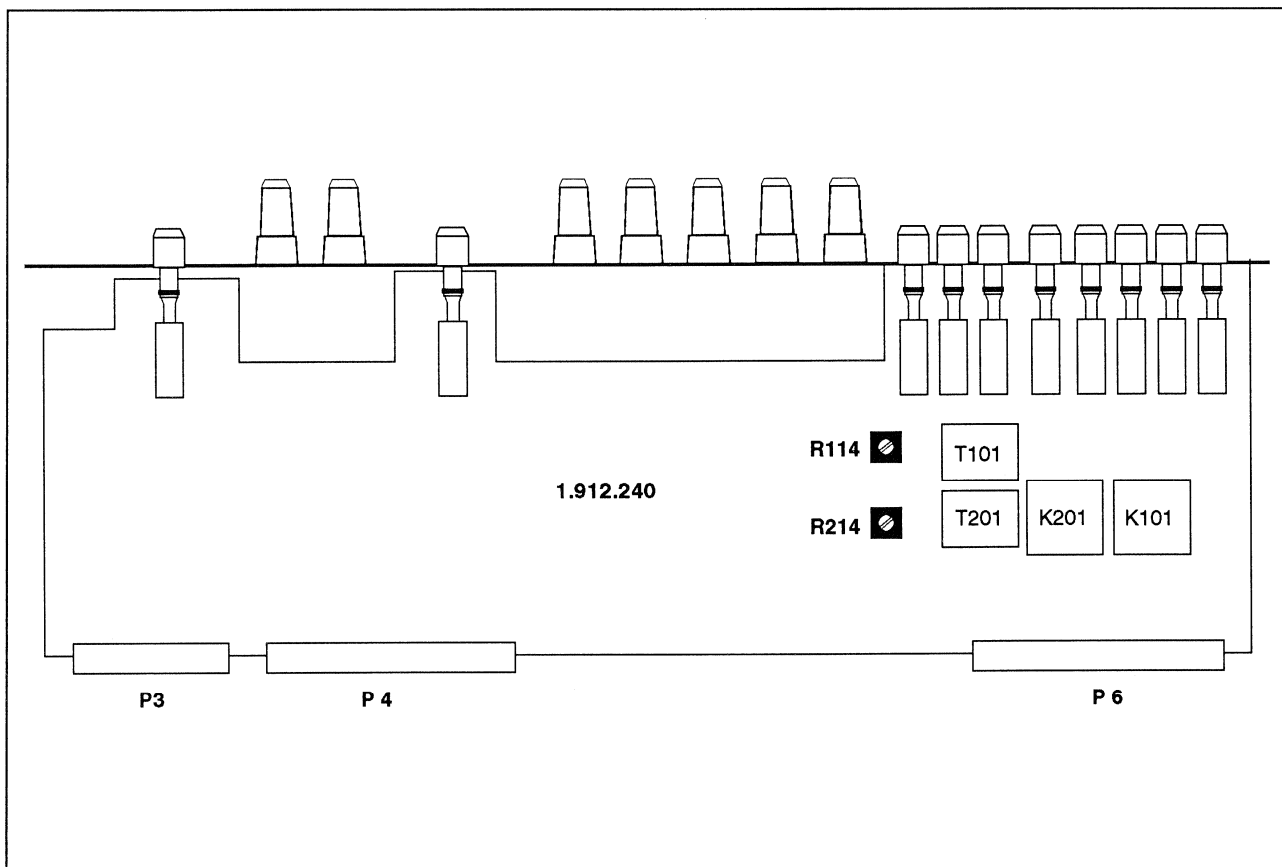


Fig. 11 Abgleich Elemente der Eingangseinheiten Stereo Hochpegel Version "A".

3.3 Eingangseinheiten Stereo Universal "A"

1.912.250...253

- FILTER, EQUALIZER und STEREO SPREAD ausschalten.

Line Eingang:

- Potentiometer LINE GAIN in Mittelstellung einrasten.
- Eingang LINE anwählen.
- linker Kanal
 - Testsignal mit Nennpegel in Eingang LINE links einspeisen.
 - Voltmeter an **PF-Insert left** (Patch bzw. P3-15) anschliessen.
 - Linken Kanal mit Trimmer **R125** auf **0dBu** abgleichen.
- rechter Kanal
 - Testsignal mit Nennpegel in Eingang LINE rechts einspeisen.
 - Voltmeter an **PF-Insert right** (Patch bzw. P3-13) anschliessen.
 - Rechten Kanal mit Trimmer **R325** auf **0dBu** abgleichen.

Mikrophon Eingang:

Für den Mikrophoneingang sind keine Einstellungen erforderlich. Entmagnetisierung des Eingangsübertragers vgl. 1.8.

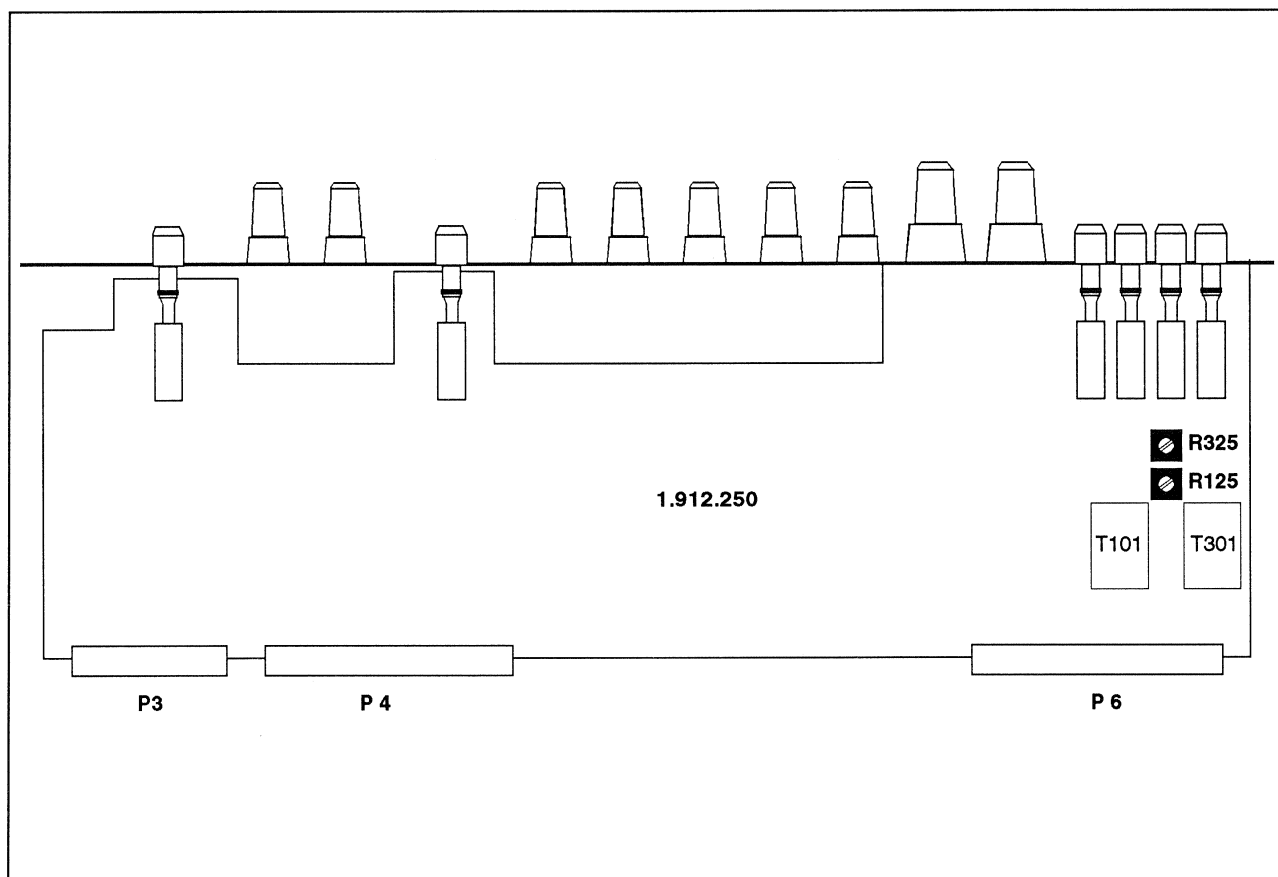


Fig. 12 Trimmer für den Abgleich des Line-Eingangs.

3.4 Eingangseinheiten Mono "B"

1.912.120/122

- EQUALIZER und FILTER ausschalten

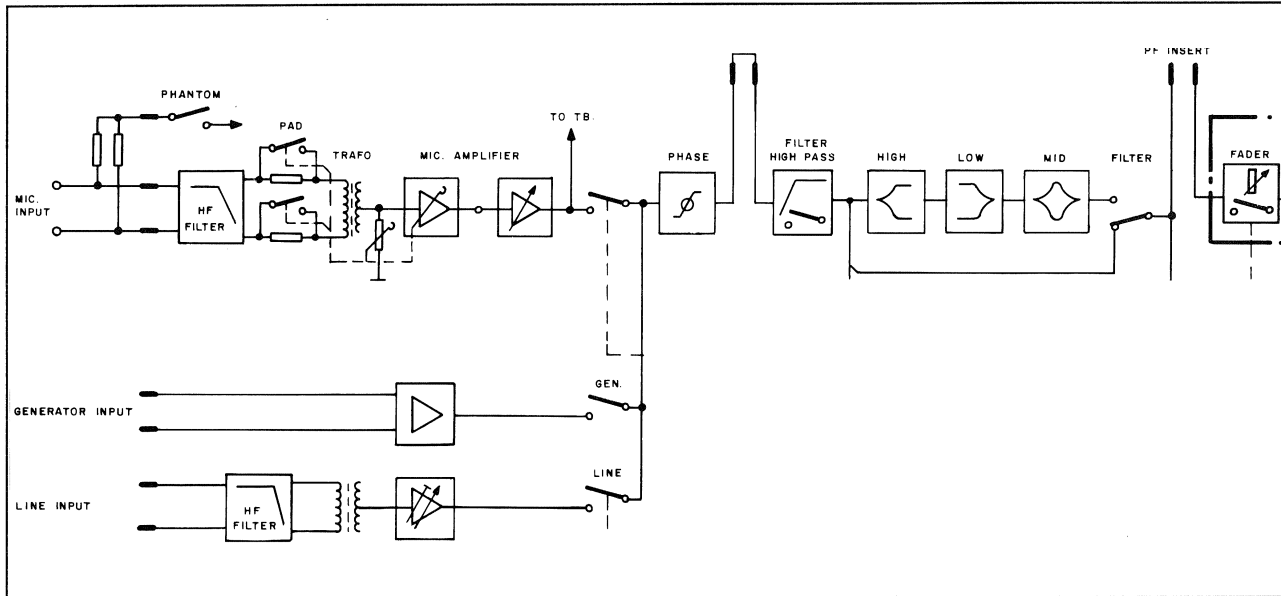


Fig. 13 Blockschaltbild

Line Eingang:

Als einzige Einstellung muss bei dieser Einheit der Pegel des Line Eingangs abgeglichen werden.

- Testsignal mit Nennpegel in LINE Eingang einspeisen.
- Korrektur-Potentiometer LINE GAIN in Kalibrierstellung einrasten.
- Voltmeter an PF-Insert (Patch bzw. P6-27) anschliessen.
- Pegel mit R35 auf 0dBu abgleichen.

Übrige Eingänge:

Die Eingänge für Mikrophon und Generator brauchen keine Pegelanpassung.

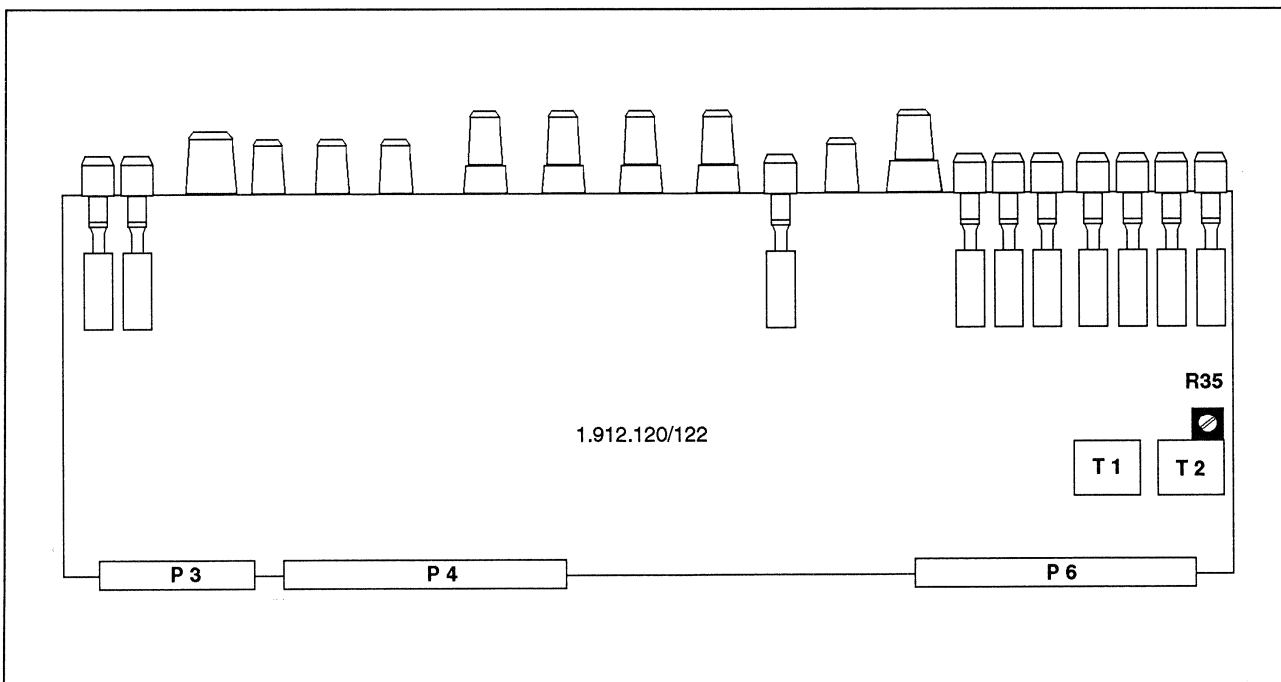


Fig. 14 Abgleichelemente der Mono Eingangseinheiten Version "B".

3.5 Eingangseinheiten Stereo Hochpegel "B"

1.912.141...145

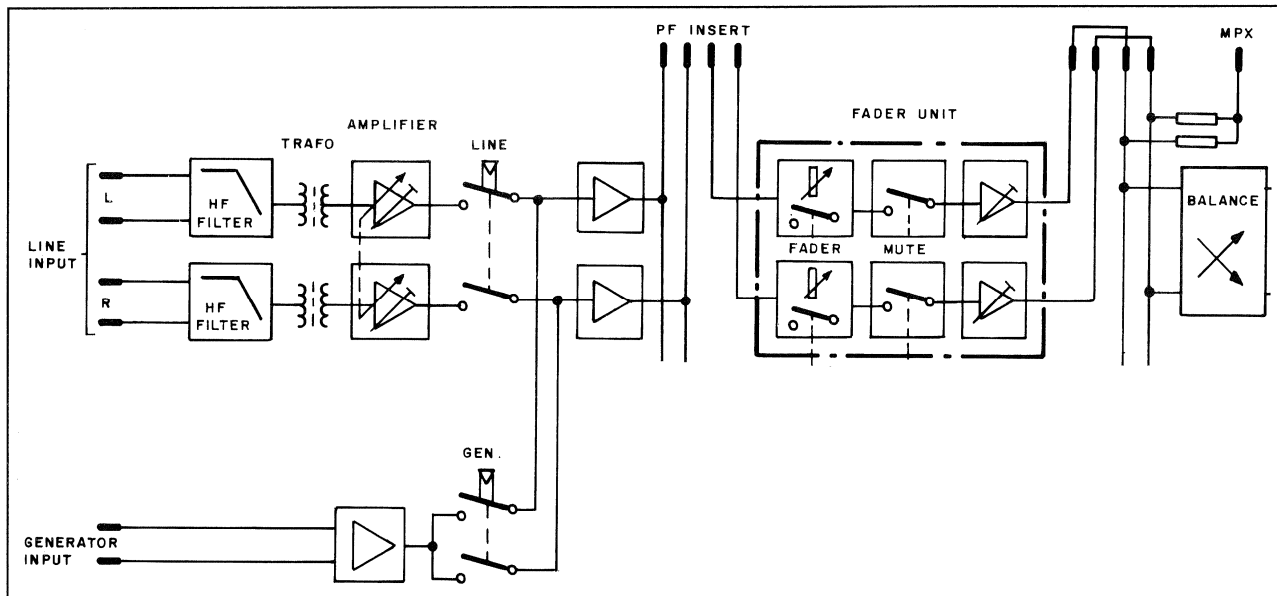


Fig. 15 Blockschaltbild

Line Eingang:

- Testsignal mit Nennpegel in LINE Eingang einspeisen.
- Korrektur-Potentiometer LINE GAIN in Kalibrierstellung einrasten.

linker Kanal

- Voltmeter an PF-Insert left (Patch bzw. P3-15) anschliessen.
- Pegel mit R109 auf 0dBu abgleichen.

rechter Kanal

- Voltmeter an PF-Insert right (Patch bzw. P3-13) anschliessen.
- Pegel mit R209 auf 0dBu abgleichen.

Generator:

Der Generator-Eingang braucht keinen Pegelabgleich.

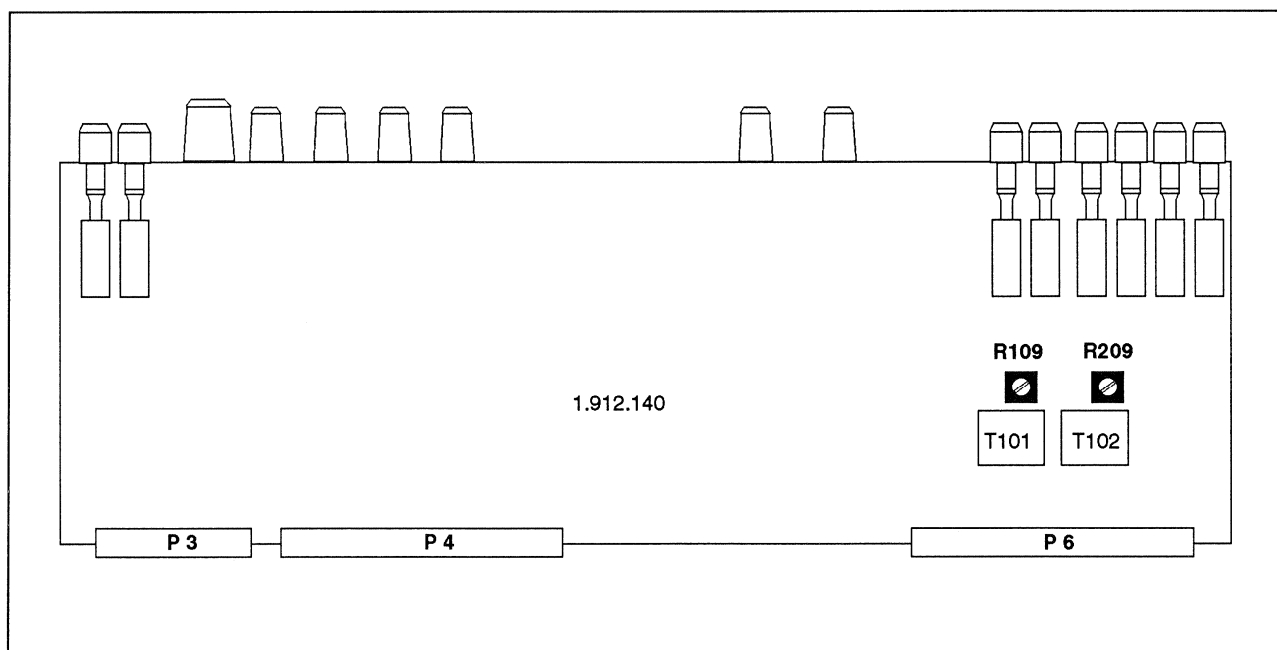


Fig. 16 Abgleich Elemente der Stereo Eingangseinheiten Version "B".

3.6 Auxiliary Mastereinheit

1.912.310

- AUX-Ausgangspegel:** Die Ausgangspegel der Hilfssummen AUX werden bei Maximalverstärkung im Hilfsweg auf **10dB über dem Nennpegel** abgeglichen.
- Testsignal mit **Nennpegel** in LINE Eingang 1 einspeisen und Eingangsfader auf 0dB positionieren.
 - **AUX-Regler** des Eingangs in Stellung **AF** auf Rechtsanschlag öffnen. ☹
 - Die Regler **AUX SEND (1...4)** der AUX Master Einheit ebenfalls ganz öffnen. ☹
- AUX 1 ...3**
- Voltmeter an den jeweiligen AUX-Ausgang anschliessen.
 - Pegel mit Brückenstecker (0dB/-10dB) und Trimmer auf 10dB über dem Nennpegel abgleichen. Die zu den jeweiligen Hilfswegen gehörenden Abgleichelemente **A** und **Z** sind unten dargestellt.
- AUX 4**
- Einstellvorgang wie oben beschrieben durchführen.
 - AUX-Balanceregler (Eingangseinheit) extrem **links** einstellen und Ausgangspegel AUX 4 links mit **R425** auf 10dB über Nennpegel einmessen.
 - AUX-Balanceregler (Eingangseinheit) extrem **rechts** einstellen und Ausgangspegel AUX 4 rechts mit **R525** auf 10dB über Nennpegel einmessen.
- Klirrabgleich:** Diese Einstellung ist nur nach Reparatur einer Ausgangsstufe notwendig.
- Voltmeter an AUX Ausgang anschliessen.
 - 30Hz Sinuston vom Generator auf die zu messende Hilfssumme schalten.
 - Testsignal auf einen Ausgangspegel von +24dBu erhöhen und mit den unten angegebenen Trimpotentiometern auf minimalen Klirr abgleichen.

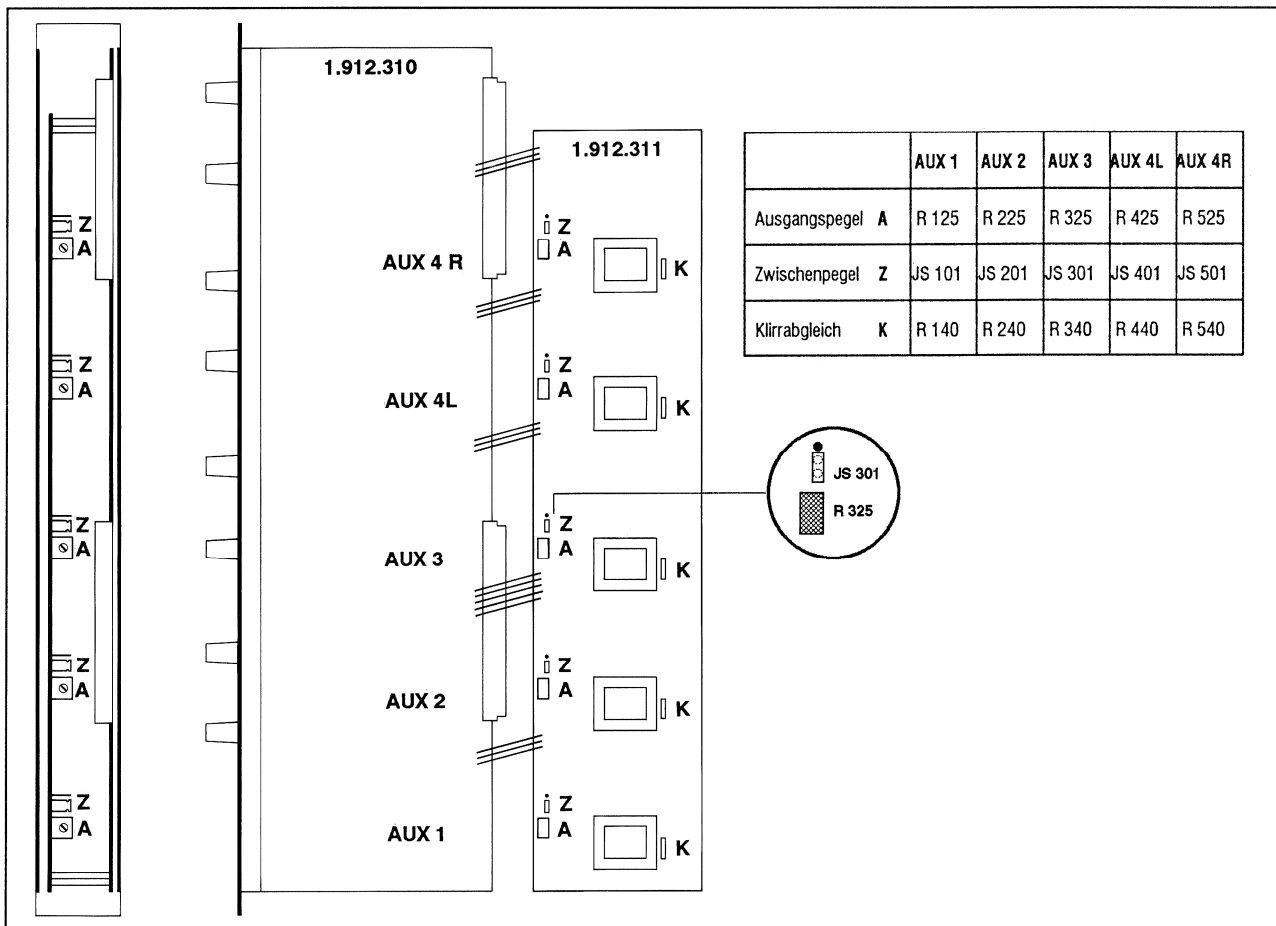


Fig. 17 Abgleichelemente der AUX Master Einheit.

3.7 Kontrollraum Monitor

1.912.420

Für den Abgleich darf keine Taste der Einheit gedrückt (d.h. aktiviert) sein.

- Testsignal mit Nennpegel in Eingang EXTERNAL 1 links bzw. rechts einspeisen.
- Den Eingang EXT 1 auf CR Monitor anwählen.
- Monitor VOLUME Potentiometer auf Rechtsanschlag öffnen C.
- BALANCE Regler mit Taste BALANCE IN ausschalten.

Kopfhörer Pegel:

- Voltmeter ohne Last mit einem 6,3mm Jack-Stecker an eine der Kopfhörerbuchsen anschliessen:
Spitze = linker Kanal / Ring = rechter Kanal / Schaft = 0V
- Pegel mit R7 links bzw. R64 rechts auf +20dBu (7,75V) abgleichen.

CR Monitor:

- Voltmeter ohne Last an CR MONITOR Ausgang links bzw. rechts anschliessen.
- Ausgangspegel mit R30 links, bzw R82 rechts auf +16dBu abgleichen.

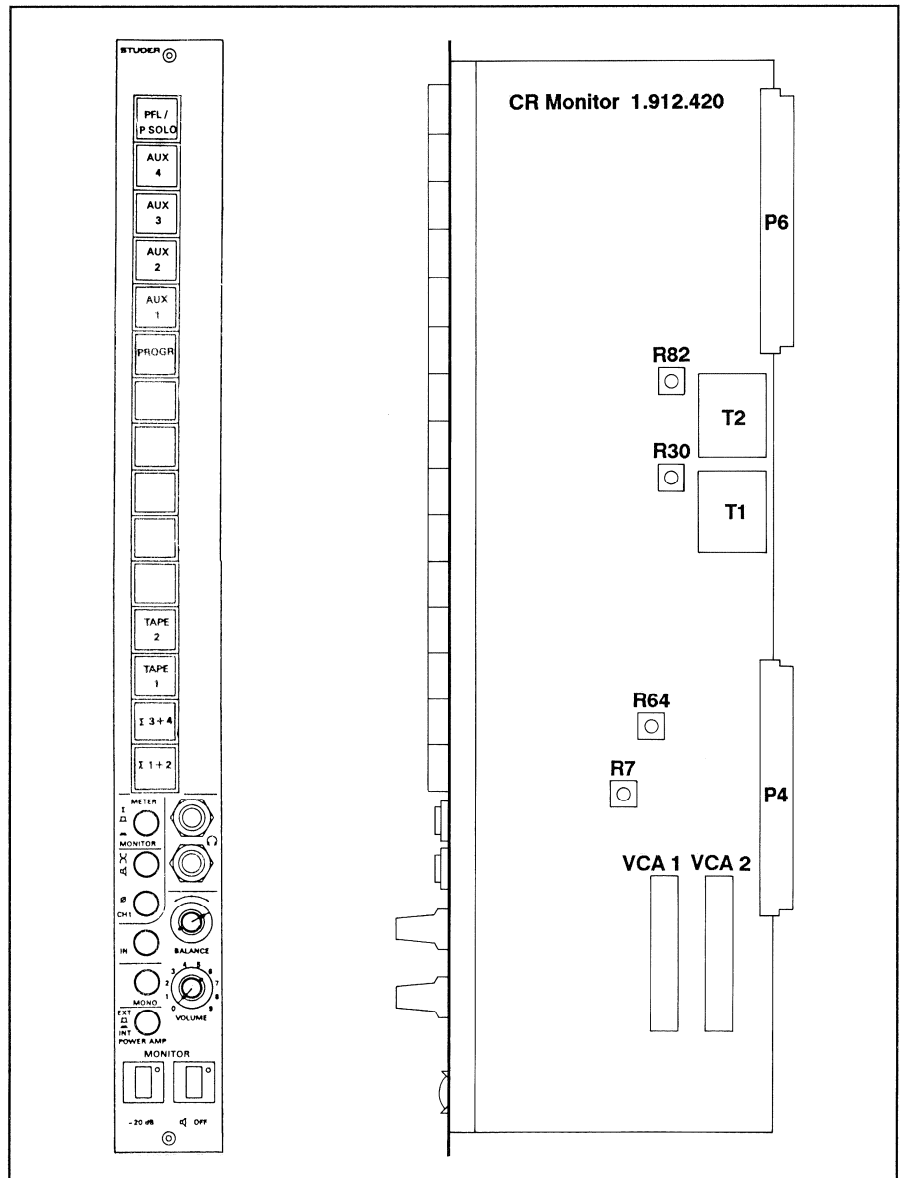


Fig. 18 Abgleichelemente der Kontrollraum-Monitoreinheit 1.912.420.

3.8 Studio Monitor und Kommando-Einheit

1.912.320

Vor dem Einmessen des Studio Monitors muss der Kontrollraum Monitor korrekt abgeglichen sein.

PFL - Pegel:

- Das Testsignal mit **Nennpegel** in LINE Eingang (Gain: CAL) der Eingangseinheit 1 einspeisen.
- **PFL**-Taste dieses Eingangskanals drücken.
- Monitor VOLUME des Kontrollraum Monitors auf Rechtsanschlag öffnen ☉.
- Taste PFL/P.SOLO to MONITOR des Studio Monitors drücken. Das Testsignal wird vor dem PFL/P.SOLO-Regler des Studio Monitors abgegriffen und auf den CR MONITOR Ausgang geschickt.

PFL/P.SOLO-Monitor

- Voltmeter ohne Last an den CR MONITOR Ausgang anschliessen.
- Abgleich mit **R67** links bzw. mit **R70** rechts auf **+16dBu**.

PFL/P.SOLO-Kopfhörer

- Potentiometer PFL/P.SOLO auf Rechtsanschlag öffnen ☉.
- Voltmeter ohne Last an Kopfhörerbuchse PFL/P.SOLO anschliessen.
Spitze = linker Kanal / Ring = rechter Kanal / Schaft = 0V
- Mit **R79** links bzw. mit **R87** rechts auf **+20dBu** abgleichen.

Hinweise:

- Der Studio Monitor wird stummgeschaltet, wenn ein Mikrophonsignal durchgeschaltet ist. Dies wird durch die CUT-LED angezeigt. Mit der Taste RE-IN kann die Stummschaltung aufgehoben werden.
- Die Tasten TB STUDIO und TB SPEAKER senken den Pegel des STUDIO-Ausganges um 20dB und dürfen daher nicht aktiviert sein.

Studio Monitor:

- Testsignal mit **Nennpegel** in einen Monitoreingang EXTERNAL einspeisen und die entsprechende Quellenwahltaste in der Sektion STUDIO drücken.
- Potentiometer STUDIO auf Rechtsanschlag öffnen ☉.
- Voltmeter ohne Last an STUDIO-Ausgang links bzw. rechts anschliessen.
- Mit **R11** links bzw. mit **R32** rechts auf **+16dBu** abgleichen.

Studio Kopfhörer:

- Diese Einstellung betrifft den Pegel, mit welchem das Studio Monitor Signal zum Studio-Kopfhörer gesendet wird. (Anschluss z.B. an Talk Back Box)
- Testsignal wie für den Studio Monitor beschrieben einspeisen.
 - Voltmeter ohne Last an den Ausgang TB-Box (D-Typ) oder an die Kopfhörerbuchse der TB-Box (VOLUME ganz öffnen!) anschliessen.
(Spitze = linker Kanal / Ring = rechter Kanal / Schaft = 0V)
 - Mit **R7** links bzw. mit **R28** rechts auf **+20dBu** abgleichen.

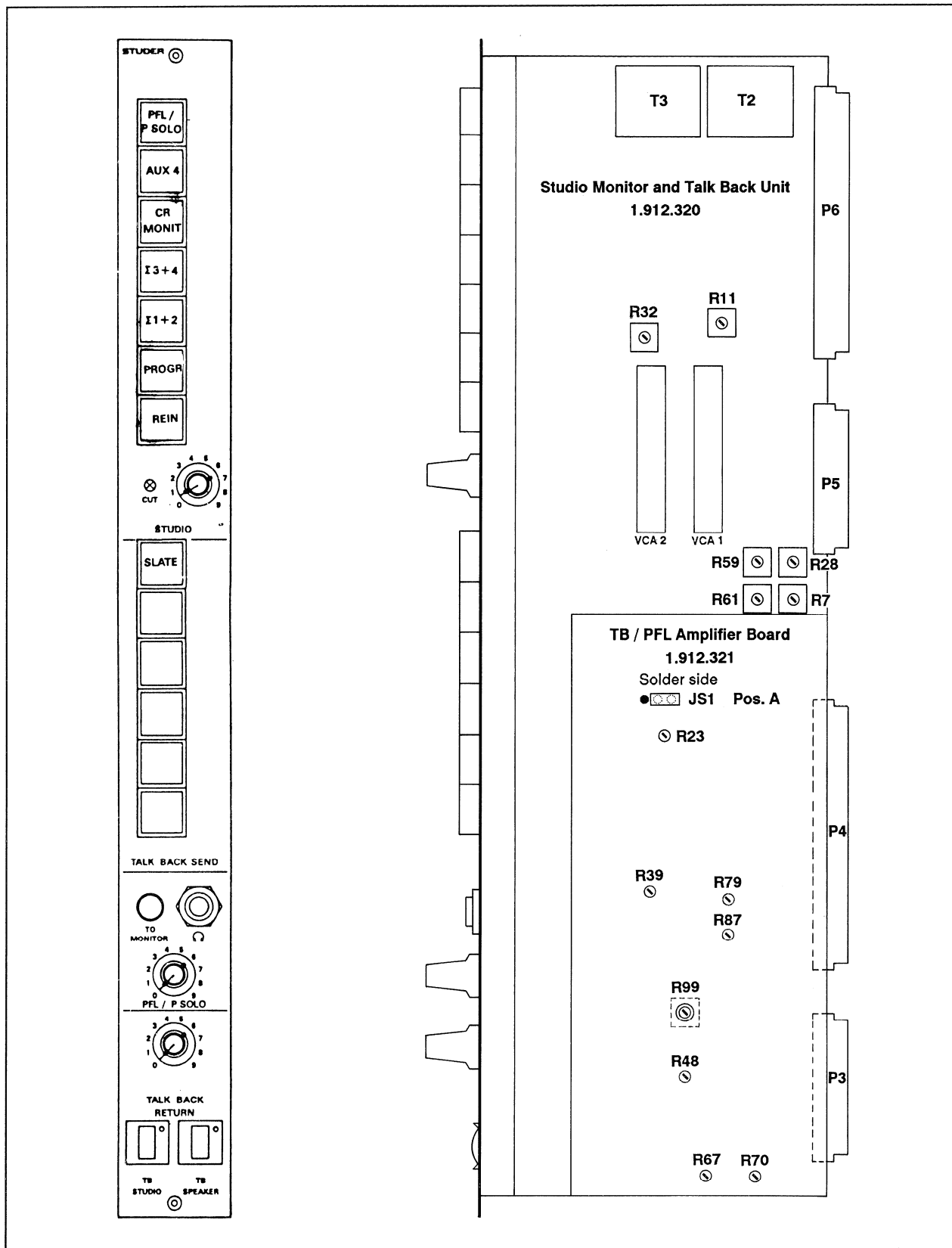


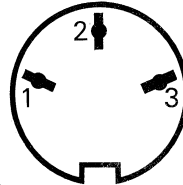
Fig. 19 Abgleich Elemente der Studio Monitor und Kommando-Einheit 1.912.320.

EINMESSEN

Talk Back Pegel:

Das Gegensprechmikrofon des Kontrollraums wird mit drei Trimmern eingestellt: Eingangsverstärkung, Einspeisung auf Studio Monitor und auf Studio Kopfhörer getrennt.

- In die Mikrofonbuchse am Mischpult (Schwanenhals) das **Testsignal mit -60dBu** einspeisen. Anschluss symmetrisch an Pin 1 und 3 des DIN-Steckers.



TB-Mikrofon (Kontrollraum)

- Taste TB SEND A drücken.
- Voltmeter ohne Last an TB EXTERNAL Ausgang 1 anschliessen.
- Abgleich der Limiterschwelle des TB-Weges mit **R99** auf **+6dBu**. Der Trimmer ist durch eine Bohrung in der Platine 1.912.321 zugänglich. (Der Jumper JS1 (1.912.321) soll auf Position A gesetzt sein.)

TB auf Studio Monitor

- Impulstaste TB STUDIO betätigen.
- Voltmeter ohne Last an linken Kanal des STUDIO-Ausgangs anschliessen.
- Mit **R59** auf **+6dBu*** abgleichen. (Trimmer R59 wirkt auf beide Kanäle)
* = Werkeinstellung, Pegel abhängig von gewünschter TB-Lautstärke.

TB auf Studio Kopfhörer

- Voltmeter ohne Last an den Ausgang TB-Box (D-Typ) oder an die Kopfhörerbuchse der TB-Box (VOLUME ganz öffnen!) anschliessen. (Spitze = linker Kanal / Ring = rechter Kanal / Schaft = 0V)
- Pegel mit **R61** auf **+6dBu*** einstellen. (Trimmer R61 wirkt auf beide Kanäle.)
* = Werkeinstellung, Pegel abhängig von gewünschter TB-Lautstärke.

TB Return

- **Testsignal** mit **+6dBu** in TB RETURN Eingang einspeisen.
- Dieses Signal wird von der TB-Signalisation zum PFL/TB-Lautsprecher durchgeschaltet. Von extern muss daher eine TB-Taste gedrückt werden. (Das interne Signal 'E' öffnet den TB RET-Weg. Schema 1.912.320; Seite 2)
- Potentiometer TB RETURN ganz öffnen ☉.
- Einstellung TB RETURN INPUT mit **R48** auf gewünschte Maximallautstärke.

Dämpfung TB Return

Das TB-Signal des Sprechers könnte über das TB-Mikrofon im Kontrollraum rückgekoppelt werden. Aus diesem Grund wird der TB Return gedämpft, sobald im Kontrollraum eine TB-Taste gedrückt wird. R39 bestimmt das Mass dieser Dämpfung.

- **Testsignal** mit **-60dBu** in die Buchse des Sprecher TB-Mikrophons einspeisen. (D-Typ)
- Eine TB-Taste auf dem Pult drücken. Die dadurch eingeschaltete Dämpfung des TB Returns mit **R39** auf gewünschten Wert einstellen.
Werkeinstellung: **-20dB**.
(Das interne Signal 'D' dämpft den TB RET-Weg. Schema 1.912.320; Seite 2)

Sprecher TB-Mikrofon

- Testsignal und Messanordnung wie für die Dämpfung des TB Returns beibehalten.
- Gleich wie beim TB RETURN muss die Signalisation aktiviert sein. (s.o.)
- Potentiometer TB RETURN ganz öffnen ☉.
- Einstellung SPEAKER MIC mit **R23** auf gewünschte Maximallautstärke.

4. Abgleichanleitungen Instrumenten Panel

4.1 PPM-Zeigerinstrumente

1.913.220/221

- Testsignal mit Nennpegel zum Summenausgang durchschalten..
- Mit **R4** (Fig. 20) am zugehörigen Instrument den Zeigerausschlag auf 0dB einstellen.

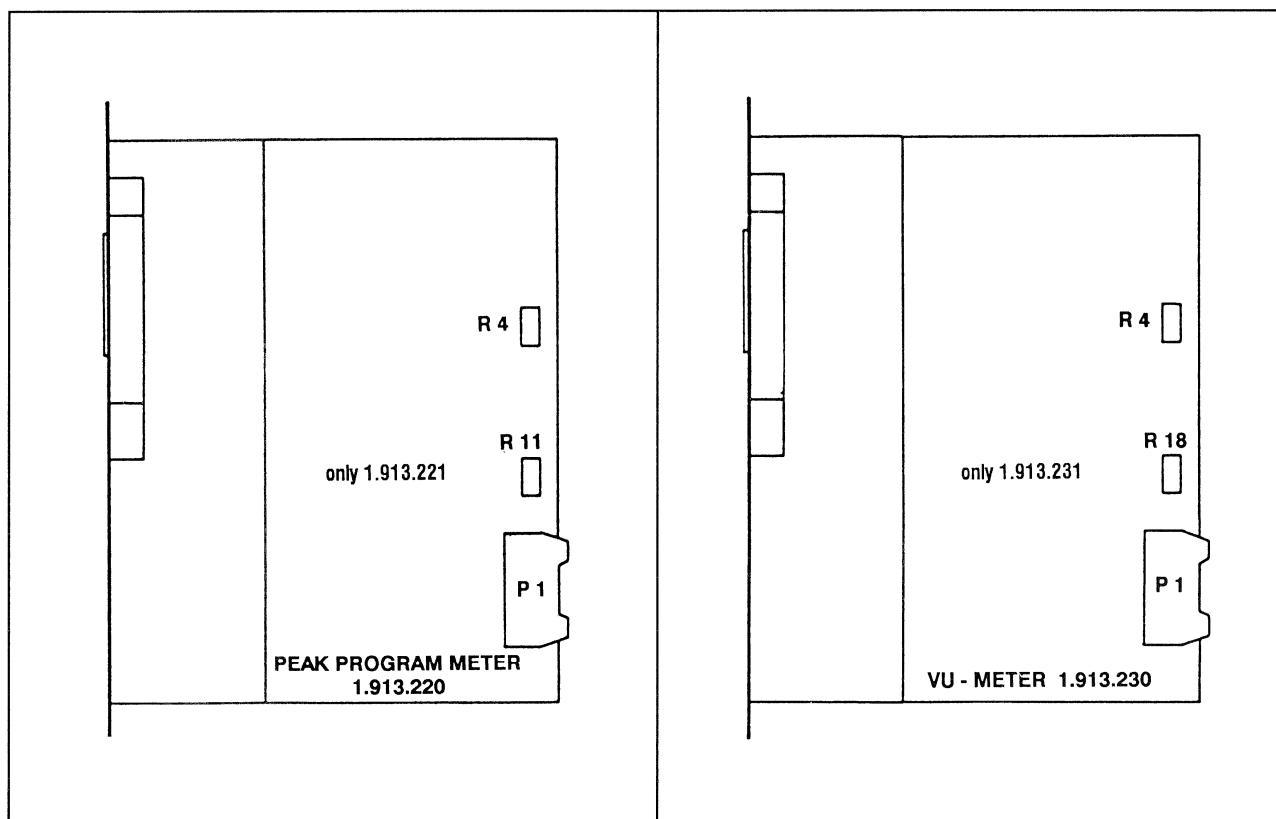


Fig. 20 Abgleich des PPM

Fig. 21 Abgleich des VU-Meters

4.2 VU-Zeigerinstrumente

1.913.230/231

- Testsignal am Summenausgang Pegel auf **Nennpegel minus 'Lead'** (=Vorlauf des VU-Instruments, vgl. 1.6) einstellen.
- Mit **R4** (Fig. 21) am zugehörigen Instrument Zeigerausschlag auf **0VU** einstellen. Damit ist der notwendige Vorlauf von beispielsweise 6dB eingestellt.

4.3 Korrelator 2CH / 4 CH

1.913.210/211

- Testsignal mit Nennpegel zu beiden Kanälen einer Stereosumme durchschalten.
- Spannung an Testpunkt 1 (TP1) mit R4 bzw. an Testpunkt 2 (TP2) mit R13 auf **-18dBu** (100mV AC) abgleichen.
- Das einkanalige Testsignal (Mono) ist auf die Stereosumme aufgeschaltet. Beide Summenkanäle sind darum phasengleich korreliert. Mit R26 Zeigerausschlag des Korrelators auf +1 einstellen.

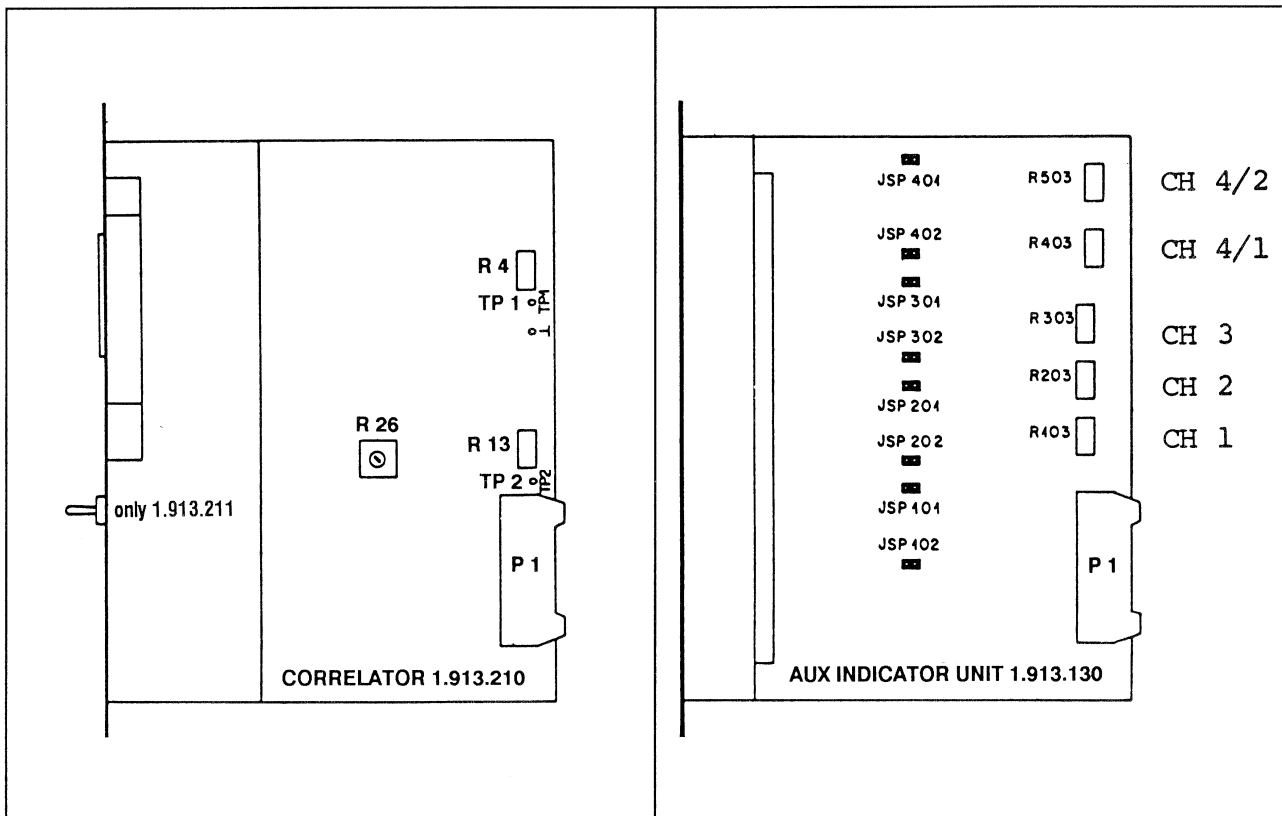


Fig. 22 Abgleich des Korrelators

Fig. 23 Abgleich des AUX-Instruments

4.4 AUX-Anzeigeinstrumente VU / PPM

1.913.130

Auf dieser Einheit befinden sich die vier Instrumente der Hilfsausgänge. Die Anzeige-Charakteristik kann den Hauptinstrumenten angepasst werden. Es ist eine Wahl zwischen PPM und VU möglich. Die Wahl wird mit Brückensteckern (Jumpers) vorgenommen. Diese Punkte sind mit JSP bezeichnet. (Fig. 23).

VU-Charakteristik:

Die Jumper müssen wie folgt gesetzt sein:

JSP 102 → Instrument AUX 1
 JSP 202 → Instrument AUX 2
 JSP 302 → Instrument AUX 3
 JSP 402 → Instrument AUX 4

VU-Meter:

Einstellung für Spitzenpegel (Peak Level) +10 dBu / +12 dBu.
 Für diese beiden Spitzenpegel liegt der Pegel für eine 0VU-Anzeige bei +4 dBu.
 Der Vorlauf (Lead) beträgt also 6dB resp. 8dB.

AUX 1...3 (VU)

Testsignal mit **+4dBu** an den Eingang des jeweiligen Instrumentes anlegen.
 Einstellen der Anzeige auf **0VU** mit Trimmer CH1 ... CH3. (siehe Fig. 23)

AUX 4 (VU)

AUX 4 zeigt die **Monosumme** des Stereohilfsweges an. Jeder Kanal einzeln wird auf eine Anzeige von **-3VU** eingestellt. Beide Kanäle zusammen ergeben dann 0VU.

- +4dBu an **AUX 4/1** (linker Kanal), kein Pegel an AUX 4/2.
 ■ Mit Trimmer CH 4/1 auf -3VU-Anzeige einstellen.
- +4dBu an **AUX 4/2** (rechter Kanal), kein Pegel an AUX 4/1.
 ■ Mit Trimmer CH 4/2 auf -3VU-Anzeige einstellen.

PPM-Charakteristik:

Für den Betrieb als Peak Program Meter gelten folgende Jumper-Einstellungen:

JSP 101 → Instrument AUX 1
 JSP 201 → Instrument AUX 2
 JSP 301 → Instrument AUX 3
 JSP 401 → Instrument AUX 4

AUX 1...3 (PPM)

Nennpegel an den Eingang der Instrumente anlegen.
 Einstellen mit Trimmer CH1...CH3 auf Anzeige **0dB**.

AUX 4 (PPM)

Dieser Stereo-Hilfsweg wird prinzipiell gleich eingestellt, wie beim VU-Instrument beschrieben.

- **Nennpegel** an **AUX 4/1** (linker Kanal), kein Pegel an AUX 4/2.
 ■ Mit Trimmer CH 4/1 auf **-3dB**-Anzeige einstellen.
- **Nennpegel** an **AUX 4/2** (rechter Kanal), kein Pegel an AUX 4/1.
 ■ Mit Trimmer CH 4/1 auf **-3dB**-Anzeige einstellen.

4.5 Testgenerator

1.913.150

- Oszillator:**
- Auf dem Testgenerator die Taste **OSCILLATOR** drücken und die Frequenz auf **1kHz** einstellen.
 - Voltmeter an symmetrischen Generatorausgang anschliessen: **P1-1 / P1-3**.
 - Mit **R49** Nennpegel einstellen.

- Klirrabgleich**
- Frequenz auf **30Hz** einstellen.
 - Mit **R59** Klirr auf **-62dB (0,08%)** abgleichen.

- Kennton:**
- Taste **IDENT** drücken.
 - Mit **R52** Nennpegel einstellen.

- Weisses Rauschen:**
- Taste **WHITE NOISE** drücken.
 - Mit **R67** Nennpegel einstellen.

- Rosa Rauschen:**
- Taste **PINK NOISE** drücken.
 - Mit **R73** Nennpegel einstellen.

Das Springen des Instrumenten-Zeigers bei den Rauschsignalen ist schaltungsbedingt und somit normal.

- Generatoreingang:**
- Auf Kanal 1 Eingang **GEN** wählen.
 - Voltmeter ohne Last an **PF-Insert** anschliessen.
 - Mit **R89** auf Insertpegel (vgl. 1.6) einstellen.

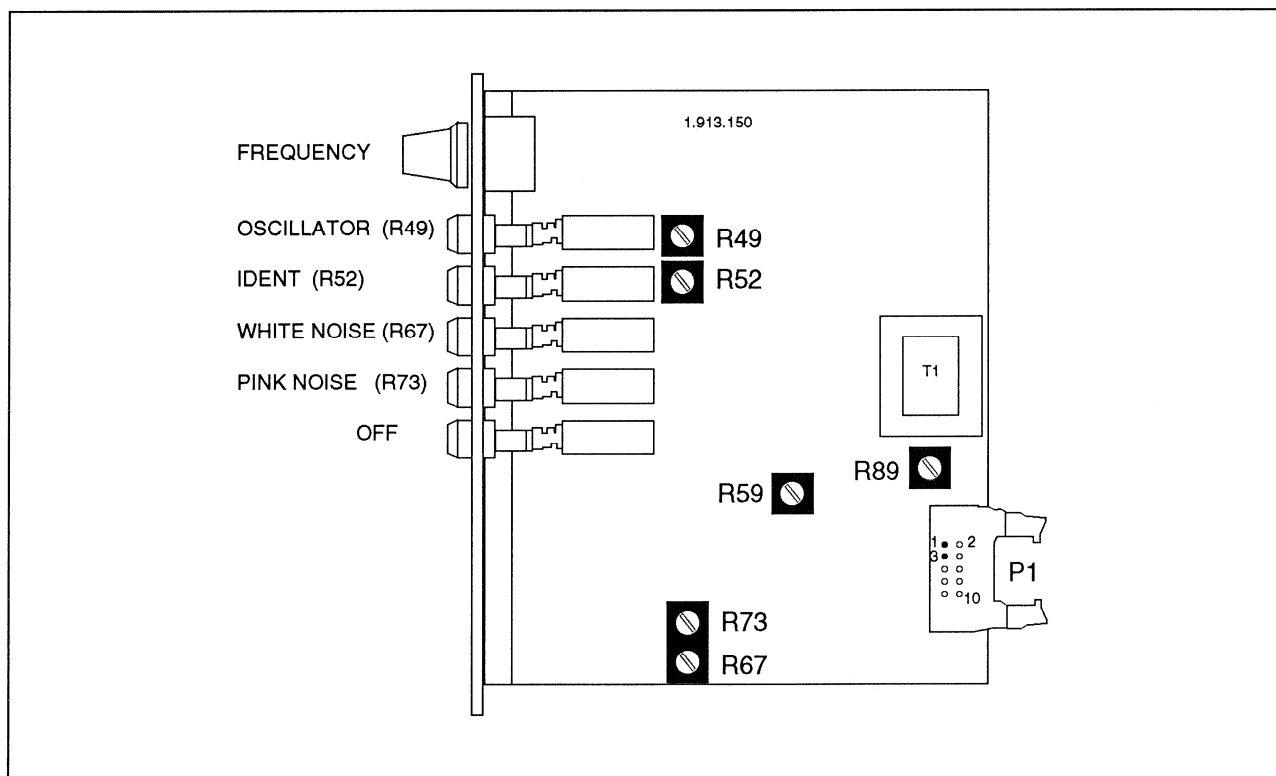


Fig. 24 Abgleich Elemente des Testgenerators 1.913.150.

SECTION 3: Alignment Instruction

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1. General

1.1 Level definition

Level specifications: The specifications of nominal levels in dBu are based on a fixed voltage as the reference value:

0 dBu \cong 0,775 V_{eff}

The reference value of 0.775 V for the relative voltage level in dBu has been derived from the value definition of the absolute voltage level in dBm, however without regard to the definition (600 Ω /1mW).

Nominal level in dBu: The nominal level corresponds to the studio level at peak level recording. The terms line level and studio level are used synonymously.

The typical nominal levels are::

| | | |
|--------|---------|----------------------|
| +6dBu | \cong | 1,55V _{eff} |
| +10dBu | \cong | 2,45V _{eff} |
| +15dBu | \cong | 4,36V _{eff} |

Output level:

| | | |
|-----------------|----------|----------------------------------|
| 0 dB PPM | = | Nominal level |
| 0 VU | = | Nominal level minus 6 dB* |

* 6dB correspond to the widely used value for the VU instrument lead.

PPM consoles Peak program meters as quasi-peak reading instruments indicate 0 dB at nominal level.

VU consoles VU-instruments indicate the level of a test signal plus the lead of the instrument. Therefore the test signal must be nominal level minus lead for a 0VU indication.

Gain/attenuation: The relative level specifications in dB provide information on the degree of amplification/attenuation of an active (e.g. amplifier) or passive (e.g. potentiometer) attenuation provided by an element with in a circuit. The following table translates the voltage ratios (output \div input) into decibel values (rounded factors):

| | | | | | | | | | | | | | |
|---------------|-------------|-----------|----------|------------|------------|------------|------------|------------|------------|------------|-------------|-------------|-------------|
| | | dB | 0 | 1 | 2 | 3 | 6 | 10 | 14 | 20 | 26 | 34 | 40 |
| Factor | Gain | | 1 | 1,1 | 1,2 | 1,4 | 2 | 3,2 | 5 | 10 | 20 | 50 | 100 |
| | Attenuation | | 1 | 0,9 | 0,8 | 0,7 | 0,5 | 0,3 | 0,2 | 0,1 | 0,05 | 0,02 | 0,01 |

ALIGNMENT

1.2 Conversion table for voltage levels: volt ↔ dBu

| $\frac{U_1}{U_2}$ | $\frac{\mu V}{mV/V} \rightarrow dBu$ | | | | $\frac{U_1}{U_2}$ | $\frac{\mu V}{mV/V} \rightarrow dBu$ | | | |
|-------------------|--------------------------------------|------|-----|-------|-------------------|--------------------------------------|------|-----|-------|
| | μV | mV | V | dBu | | μV | mV | V | dBu |
| 1 | 0,775 | ±0 | -60 | -120 | 31,6 | 24,5 | +30 | -30 | -90 |
| 1,12 | 0,87 | +1 | -59 | -119 | 35,5 | 27,5 | +31 | -29 | -89 |
| 1,26 | 0,98 | +2 | -58 | -118 | 39,8 | 30,8 | +32 | -28 | -88 |
| 1,41 | 1,09 | +3 | -57 | -117 | 44,7 | 34,6 | +33 | -27 | -87 |
| 1,59 | 1,23 | +4 | -56 | -116 | 50,1 | 38,8 | +34 | -26 | -86 |
| 1,78 | 1,38 | +5 | -55 | -115 | 56,2 | 43,6 | +35 | -25 | -85 |
| 2,00 | 1,55 | +6 | -54 | -114 | 63,1 | 48,9 | +36 | -24 | -84 |
| 2,24 | 1,73 | +7 | -53 | -113 | 70,8 | 54,8 | +37 | -23 | -83 |
| 2,51 | 1,95 | +8 | -52 | -112 | 79,4 | 61,5 | +38 | -22 | -82 |
| 2,82 | 2,18 | +9 | -51 | -111 | 89,1 | 69,0 | +39 | -21 | -81 |
| 3,16 | 2,45 | +10 | -50 | -110 | 100 | 77,5 | +40 | -20 | -80 |
| 3,55 | 2,75 | +11 | -49 | -109 | 112 | 86,9 | +41 | -19 | -79 |
| 3,98 | 3,08 | +12 | -48 | -108 | 126 | 97,5 | +42 | -18 | -78 |
| 4,47 | 3,46 | +13 | -47 | -107 | 141 | 109,4 | +43 | -17 | -77 |
| 5,01 | 3,88 | +14 | -46 | -106 | 159 | 122,8 | +44 | -16 | -76 |
| 5,62 | 4,36 | +15 | -45 | -105 | 178 | 137,7 | +45 | -15 | -75 |
| 6,31 | 4,89 | +16 | -44 | -104 | 200 | 154,5 | +46 | -14 | -74 |
| 7,08 | 5,48 | +17 | -43 | -103 | 224 | 173,4 | +47 | -13 | -73 |
| 7,94 | 6,15 | +18 | -42 | -102 | 251 | 194,6 | +48 | -12 | -72 |
| 8,91 | 6,90 | +19 | -41 | -101 | 282 | 218,3 | +49 | -11 | -71 |
| 10,0 | 7,75 | +20 | -40 | -100 | 316 | 244,9 | +50 | -10 | -70 |
| 11,2 | 8,69 | +21 | -39 | -99 | 355 | 274,8 | +51 | -9 | -69 |
| 12,6 | 9,75 | +22 | -38 | -98 | 398 | 308,4 | +52 | -8 | -68 |
| 14,1 | 10,9 | +23 | -37 | -97 | 447 | 346,0 | +53 | -7 | -67 |
| 15,8 | 12,3 | +24 | -36 | -96 | 501 | 388,2 | +54 | -6 | -66 |
| 17,8 | 13,8 | +25 | -35 | -95 | 562 | 435,6 | +55 | -5 | -65 |
| 20,0 | 15,5 | +26 | -34 | -94 | 631 | 488,7 | +56 | -4 | -64 |
| 22,4 | 17,3 | +27 | -33 | -93 | 708 | 548,4 | +57 | -3 | -63 |
| 25,1 | 19,5 | +28 | -32 | -92 | 794 | 615,3 | +58 | -2 | -62 |
| 28,2 | 21,8 | +29 | -31 | -91 | 891 | 690,4 | +59 | -1 | -61 |
| 31,6 | 24,5 | +30 | -30 | -90 | 1000 | 774,6 | +60 | ±0 | -60 |

The column with the bold figures contains voltage values. The next three columns give the corresponding decibel values when interpreting the voltages as Volt, millivolt, or microvolt. The first column specifies the voltage ratios that correspond to the dBu values relative to Volt.

This table is based on the definition $0 \text{ dBu} \equiv 0.775V_{\text{eff}}$.

1,3 Requirement for calibration

Each mixing console that leaves the factory is shipped with a test report that contains the data of the final inspection such as:

- Alignment to the nominal level specified by the customer
- Frequency response, distortion, signal-to-noise ratio, noise voltage and channel separation.

Recalibration of the mixing console is required when the operating parameters (nominal level) change or after modifications to the mixing consoles have been made. The only scheduled maintenance required is the demagnetization of the input transformers (see 1.8).

Note: Factory supplied (exchange) modules are prealigned to a nominal level of +6 dBu and can be installed directly into the mixing console.

1.4 Required tools and utensils

- Audio frequency generator 1 kHz sin./Rs $\leq 200\Omega$
- AF voltmeter, Rz in $\geq 10\text{ k}\Omega$
- 2-channel CRO
- Alignment screwdriver, size 2
- Bus adapter for connecting unplugged modules to the bus. At least the following are required:

| | |
|---------------------------------|---------------------------------------|
| 1 Adapter with 32-pin connector | Part No. 1.228.322.81 |
| 2 Adapter with 64-pin connector | Part No. (1 pce.) 1.228.327.81 |
- 2 Extractors for the modules Part No. (1 pcs) **1.912.000.06**
- Firm, non-conductive support (rubber or cardboard), as a base for the modules that have been removed and connected to the bus via the adapter. (these should preferably be placed on the control panel of the audio console)
Size approx. 400 x 250 mm

1.5 Electrostatically Sensitive Elements "ESE"



Static electricity

In our daily activities numerous materials may be a possible source of static electricity. If certain circumstances are given, a person and the various things that are being handled may build up considerable static charges. When it comes to a discharge of such a static potential, very high peak power pulses may result. Even a small portion of such energy, when finding its way into an electronic component, will result in damage or even destruction of that component.

Handling of ESE-assemblies

It must be our aim, therefore, to protect our products from damages and fault conditions that may be the result of electrostatic discharges. Correct handling of electronic assemblies when performing service work on equipment is of utmost importance. For this the following safe handling procedures have to be observed:

ALIGNMENT

1. Discharge your body by touching earth before picking up an electronic assembly.
2. Touch your partner first (handshake) before handing an assembly to him.
3. When handling complete PC-boards, make it your standard practice to hold them only at their edge or at their front panel.
4. Never touch the conductive tracks, terminal points or components on a circuit board without having first discharged yourself.
5. Switch off the electric current supply to the equipment before removing or inserting an ESE assembly.
6. Always use ESE packaging for transportation or storage of ESE assemblies.
7. Make sure to use only tools that are approved for ESE work.
8. An earthed wrist-band is to be carried whenever performing any work on or with electronic assemblies, irrespective of whether they contain ESE or not.
9. Keep Styropor, PVC folis, plastic bags, etc. far away from ESE assemblies.

- **ESE-kit** This kit consists of an earthed protective base (60 × 70cm) with earthed wrist-band for any work with electronic assemblies. Part No.
20.020.001.44

1.6 Calibration requirements

Temperature: The mixing console should be calibrated when it has attained the normal operating temperature (approx. 15 minutes after power on)

Load:

- The insert points (INSERTs), monitor, prefader listening (PFL) and talk-back (TB) outputs should not be loaded ($R_L \geq 10\text{ k}\Omega$)
- The line outputs (Group, master, aux master) should be terminated with a 600Ω load.

Test signal: Sine-wave signal / 1 kHz

Level reference: **All specifications in this calibration instruction relate to a nominal level of +6dBu.**
If other nominal levels are used, the values according to the following table are applicable:

Overview:

| Nominal level | Insert balanced | Insert unbalanced | Line outputs | OVU Indication (6dB lead) | 0dB Indication (PPM) |
|---------------|-----------------|-------------------|--------------|---------------------------|----------------------|
| +6dBu | +6dBu | 0dBu | +6dBu | 0dBu | +6dBu |
| +10dBu | +10dBu | +4dBu | +10dBu | +4dBu | +10dBu |
| +15dBu | +15dBu | +9dBu | +15dBu | +9dBu | +15dBu |

Insert level: Balanced insert points are at nominal level whereas unbalanced versions carry a level that is 6 dB lower.

1.7 Measuring setup

Removing and monting the assemblies:

Remove the unit to be calibrated and connect it to the audio console with the bus adapter cable.

The zero-ohm-bus amplifiers are sensitive to the peak voltages that may occur when plugging in assemblies to the powered console. For this reason the following units must never be removed or plugged in unless the audio console is switched off:

- VCA fader;
- master fader;
- group fader;
- AUX master;
- studio monitor;
- CR monitor.

Balanced Instruments:

AF voltmeter and AF generator must be equipped with balanced inputs and outputs.

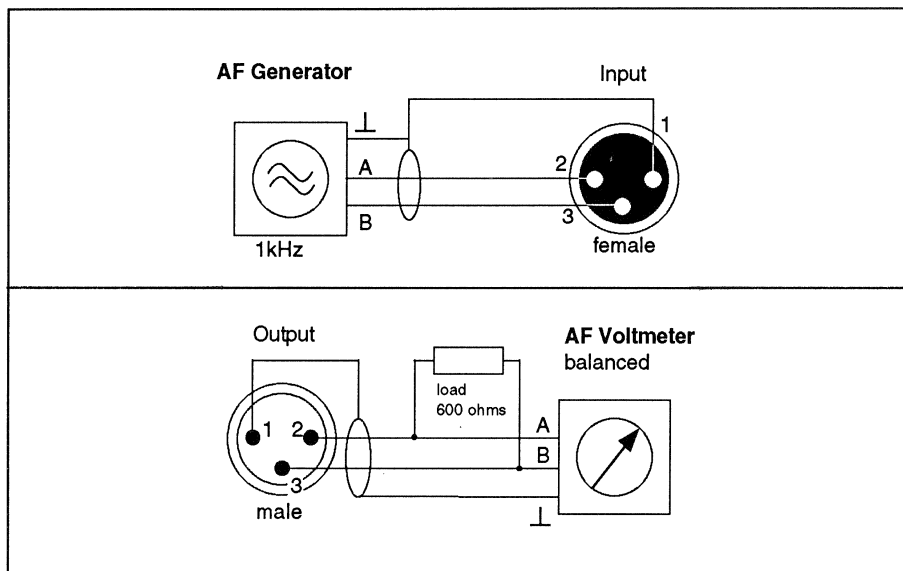


Fig. 1 Connection of the AF generator with balanced line. The measurements with the audio voltmeter are performed with or without loading the output, depending on the test point

Unbalanced Instruments:

Unbalanced instruments are to be connected via a line balance transformer. If this is not feasible, the following wiring can be used as an expedient:

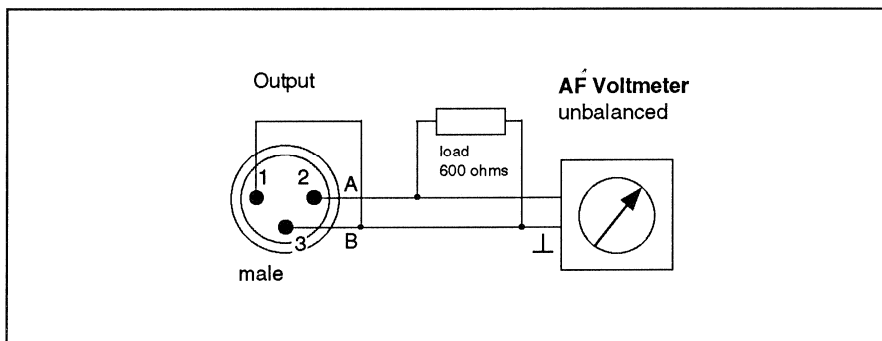


Fig. 2

The b-line (3) connected to the audio ground (1) together with the a-line (2) constitutes an unbalanced test point. However, this circuit arrangement cannot be used for high output levels (clipping effect on electronically balanced outputs, e.g. INSERT).

ALIGNMENT

Measurements on insert points:

The switch contacts of the jack sockets interrupt the signal flow through the channel as soon as a jack is inserted. However, when measurements are taken on INSERT points, the signal path should not be interrupted. For this reason the following should be noted:

- Unbalanced inserts must be through-connected (SEND → RETURN).
- Balanced inserts can be measured on the insert SEND socket. The signal is only interrupted when the RETURN socket is used.

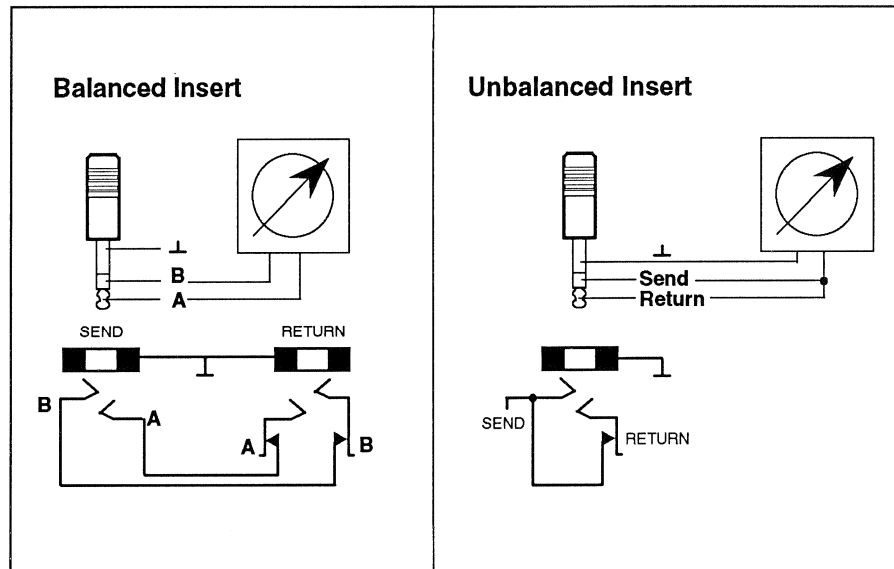


Fig. 3 Measurement on balanced and unbalanced inserts. The signal flow should not be interrupted.

1.8 Demagnetizing the Microphone Input Transformers

Inadmissible connection of unbalanced input sources or unintentional ground connection of the a/b audio (leads of microphone inputs to a connected phantom supply drive the input transformers into saturation and cause permanent magnetization (remanence).

This detrimental effect is manifested through so-called microphonic noise: (light metallic vibrations of the mixing console, e.g. tapping against plug-in modules, produce audible modulations via the speakers, even if the microphone inputs are not connected.

The residual magnetism in the transformers can also accumulate over extended operating times.

We therefore recommend to demagnetize all microphone inputs periodically and before calibration work:

- Procedure:**
- Switch audio console off (to protect the connected speakers).
 - Connect audio generator to the microphone input. The generator should supply a signal without DC content in order to prevent unwanted magnetization of the transformer.

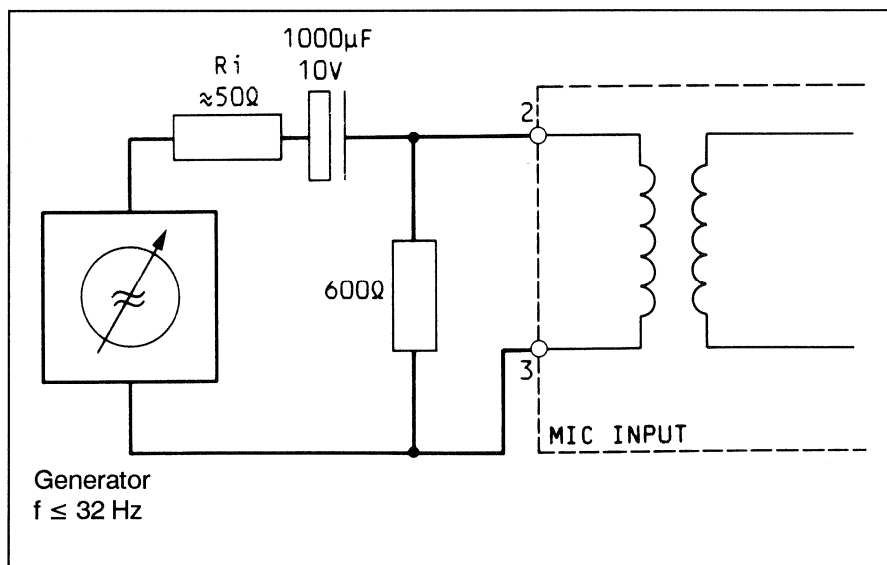


Fig. 4 Connection of the AF-generator to microphone inputs.

- Capacitor $C=1000\mu\text{F}/10\text{V}$ blocks the DC components.
- Resistor $R600\Omega$ removes DC components from the capacitors.
- Slowly increase generator level (frequency $\leq 32\text{Hz}$) from 0V to 3V.
- Slowly decrease supply level to 0V.

ALIGNMENT

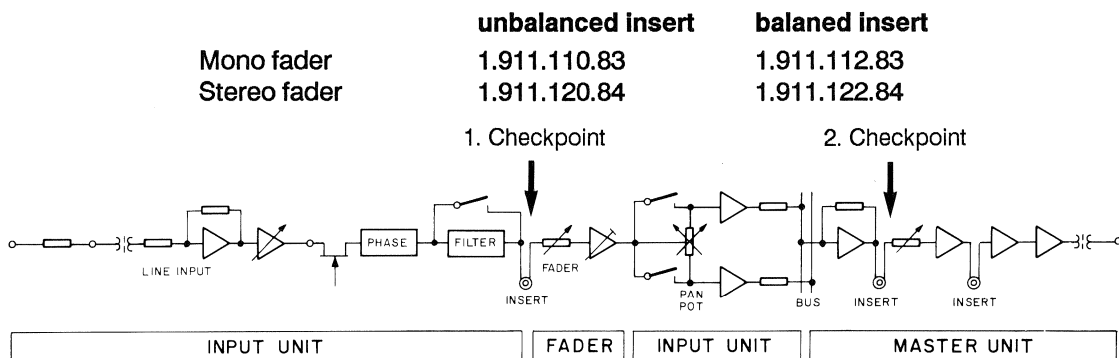
2. Units of the fader panel

Remove the unit for calibration and connect it to the audio console with the bus adapter cable.

All filters, EQ, balance and panorama potentiometers have to be switched off during calibration.

2.1 Mono/stereo fader unit

1.911.110/112/120/122



- Feed test signal at nominal level to the input unit.
- Connect the AC voltmeter to the PF insert. (test point 1)
- Set the potentiometer LINE GAIN of the input unit to middle position and switch off the equalizer. If you cannot measure a PF insert level as listed below, the input unit has to be calibrated.
 - a) Unbalanced insert: **0dBu**
 - b) Balanced insert: **+6dBu**
- Position the fader at **0dB**.
- Select a master on the input unit, switch off the panorama potentiometer and connect the DC voltmeter to the PF insert of this master. (corresponds to the output level of the input fader; test point 2)
- Align the level with the trimmers **R23** of the mono fader or **R109** –left– and **R209** –right– of the stereo fader:
 - a) For unbalanced master inserts: **0dBu**
 - b) For balanced master inserts: **+6dBu**

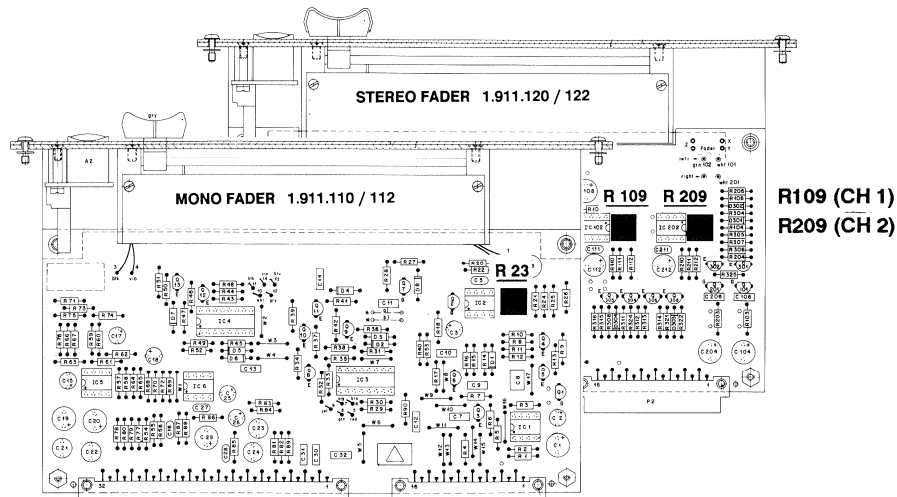


Fig. 5 Alignment elements of mono and stereo fader units.

2.2 Master fader Mk II

1.911.315/325/335

| | without limiter | with limiter |
|--------------------------|-----------------|--------------|
| Mono master unit Mk II | 1.911.315 | 1.911.317 |
| Stereo master unit Mk II | 1.911.325 | 1.911.335 |

The corresponding circuit boards are numbered as 1.911.323 (mono) and 1.911.323/324 (stereo).

AF insert level:

- Feed test signal at nominal level to a calibrated input and rout it to the master.
- Connect the voltmeter to the AF INSERT OUT of this master fader.
- Set the input fader and the master fader to 0dB.
- Calibrate the AF INSERT OUT with R142 for CH1 (or R342 for CH2) to the corresponding insert level. (see 1.6)

Master output level:

- Feed same test signal as described above and set the input fader and the master fader to 0dB.
- Connect the AF voltmeter to the master output and adjust it to nominal level with R152 for CH 1 or R352 for CH 2.
- Subsequently select next master on the input unit and repeat foregoing procedure with that unit. Align all master faders in the same manner.

Distortion alignment:

No distortion alignment is necessary because the output stage compensates distortion.

Notes:

- The components of the 1st channel (PCB No. 1.911.323) are assigned the position numbers 100 to 299, those of the second channel the numbers 300 to 499 (PCB No. 1.911.324).
- The two channels of the stereo version are identical and completely separated. However, these two boards are mirror symmetrical.

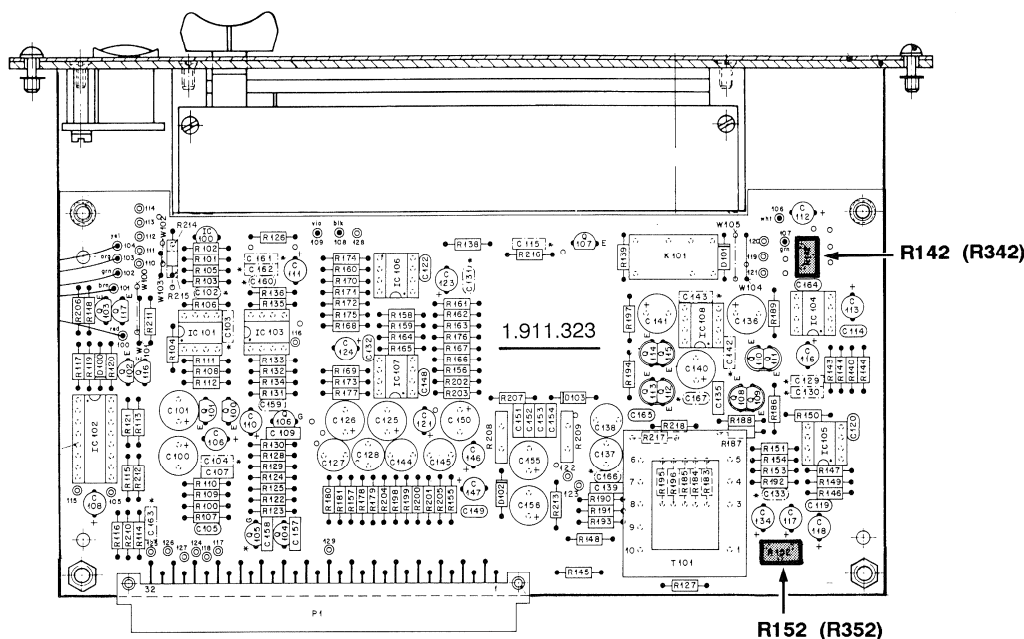


Fig. 6: Alignment elements of the master unit MkII.

- | | | |
|-------------------------|---------------------|---------------------------|
| Channel 1: (Σ1, 3, 5..) | R142: AF insert OUT | R152: Master output level |
| Channel 2: (Σ2, 4, 6..) | R342: AF insert OUT | R352: Master output level |

ALIGNMENT

3. Units of the input panel

Use the suitable bus adapter cables for connecting P3, P4 and P6 of the removed unit to the audio console. Switch off all non-linear functions as filters, EQ, phase and limiters.

3.1 Input units mono "A"

1.912.220...226

- Connect AF voltmeter to the **PF insert**. (For a correct connection to the insert socket see 1.7 "measuring setup")
- Switch off both filters.
- Switch off the equalizer.

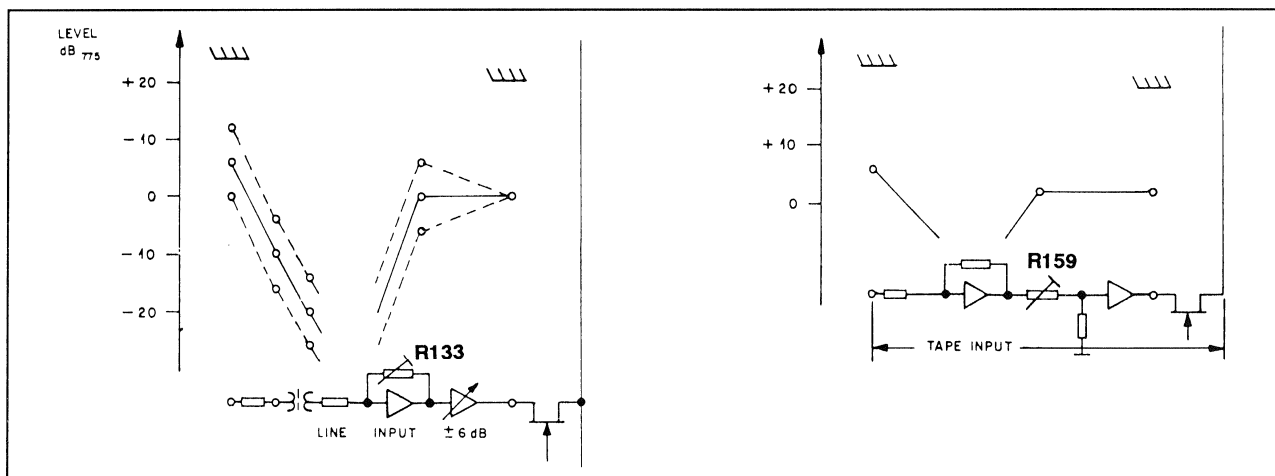


Fig. 7 Block diagram

Line input:

- Feed the test signal at nominal level to the line input.
- Set the correction potentiometer LINE GAIN to the self-locking CAL position.
- Adjust level with **R133** to **0dBu**. (balanced insert levels see 1.6)

Tape input:

- Feed the test signal at nominal level to the tape input.
- Adjust level with **R159** to **0dBu**. (balanced insert levels see 1.6)

Common mode rejection:

- The electronically balanced tape input needs adjustment of the common mode rejection. Feed the test signal to the a- and b-line of the input as depicted in fig.8.

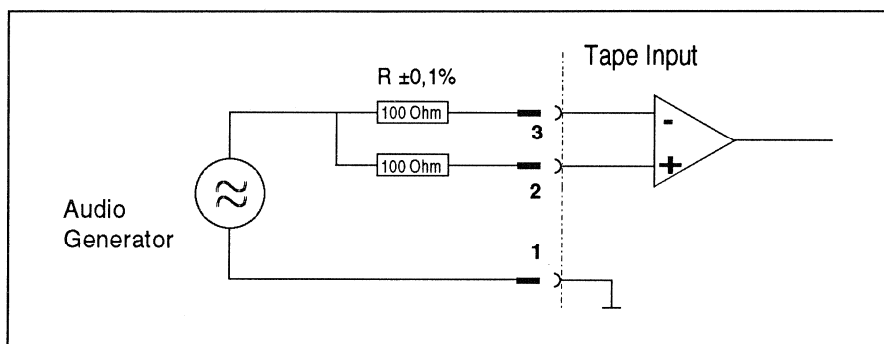


Fig. 8 Feeding the test signal for the adjustment of common mode rejection.

- Minimize the level at the inputs PF insert with R153.
(common mode rejection at 1kHz/+6dBu \geq 80dB i.e. values in the μ V range).

Microphone input:

No calibration is needed for the microphone input other than demagnetizing the input transformers. (see 1.6)

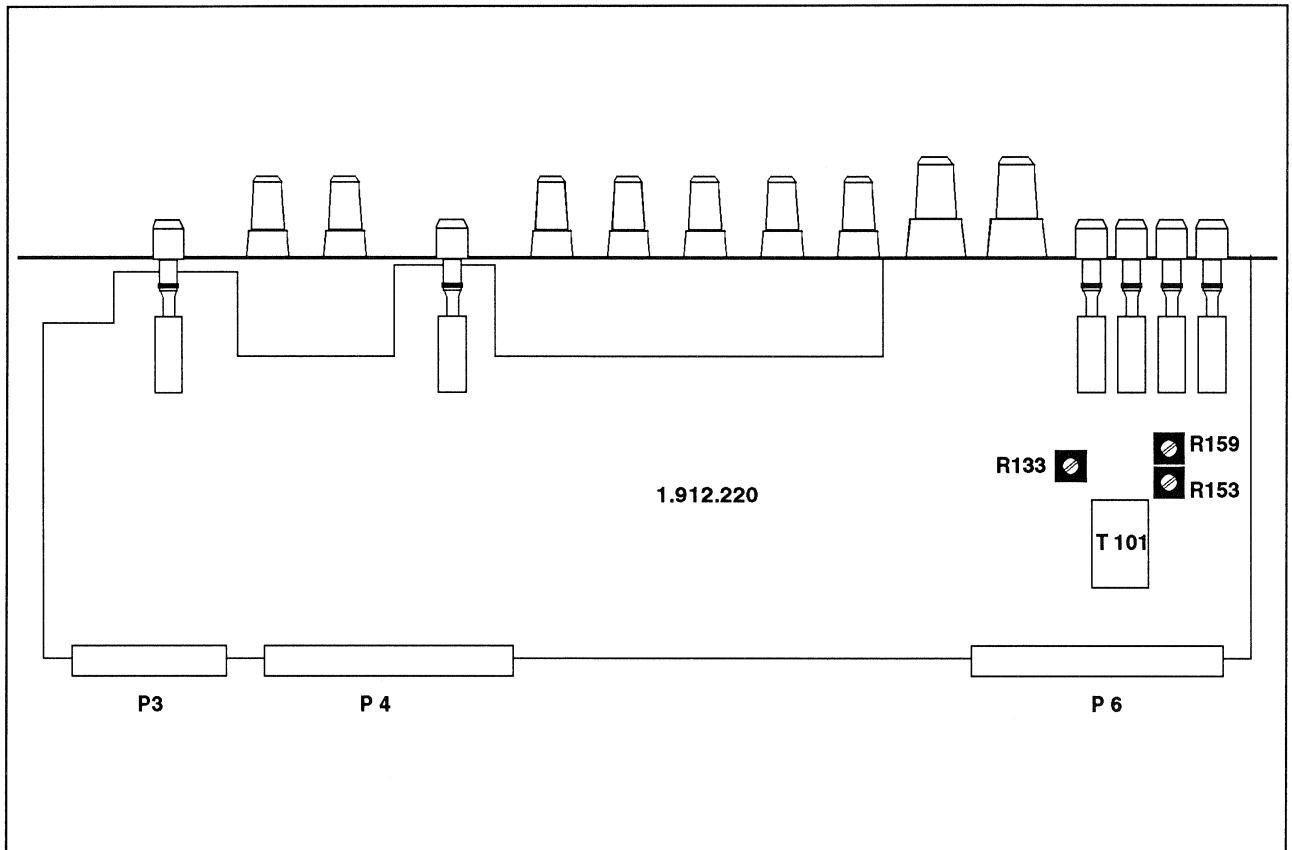


Fig. 9 Alignment elements of the input unit version "A"

ALIGNMENT

3.2 Input units stereo high level "A"

1.912.240...243

Both line inputs 1 and 2 share the same input stage. The calibration of one input is sufficient.

- Set the GAIN potentiometer to the self-locking center position.
- Switch off the STEREO SPREAD, EQUALIZER and the MONO key.
- Press the input selector key LINE 1.

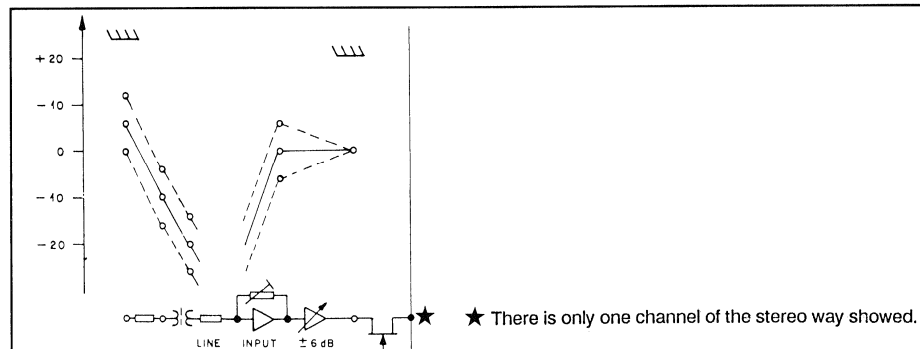


Fig. 10 Block diagram

Line input left:

- Feed test signal at nominal level to the input LINE 1, left.
- Connect voltmeter to the **PF insert left** (patch or P3-15).
- Adjust the left channel with **R114** to **0dBu**. (balanced insert levels see 1.6)

Line input right:

- Feed test signal at nominal level to the input LINE 1, right.
- Connect voltmeter to the **PF insert right** (patch or P3-13).
- Adjust the right channel with **R214** to **0dBu**. (balanced insert levels see 1.6)

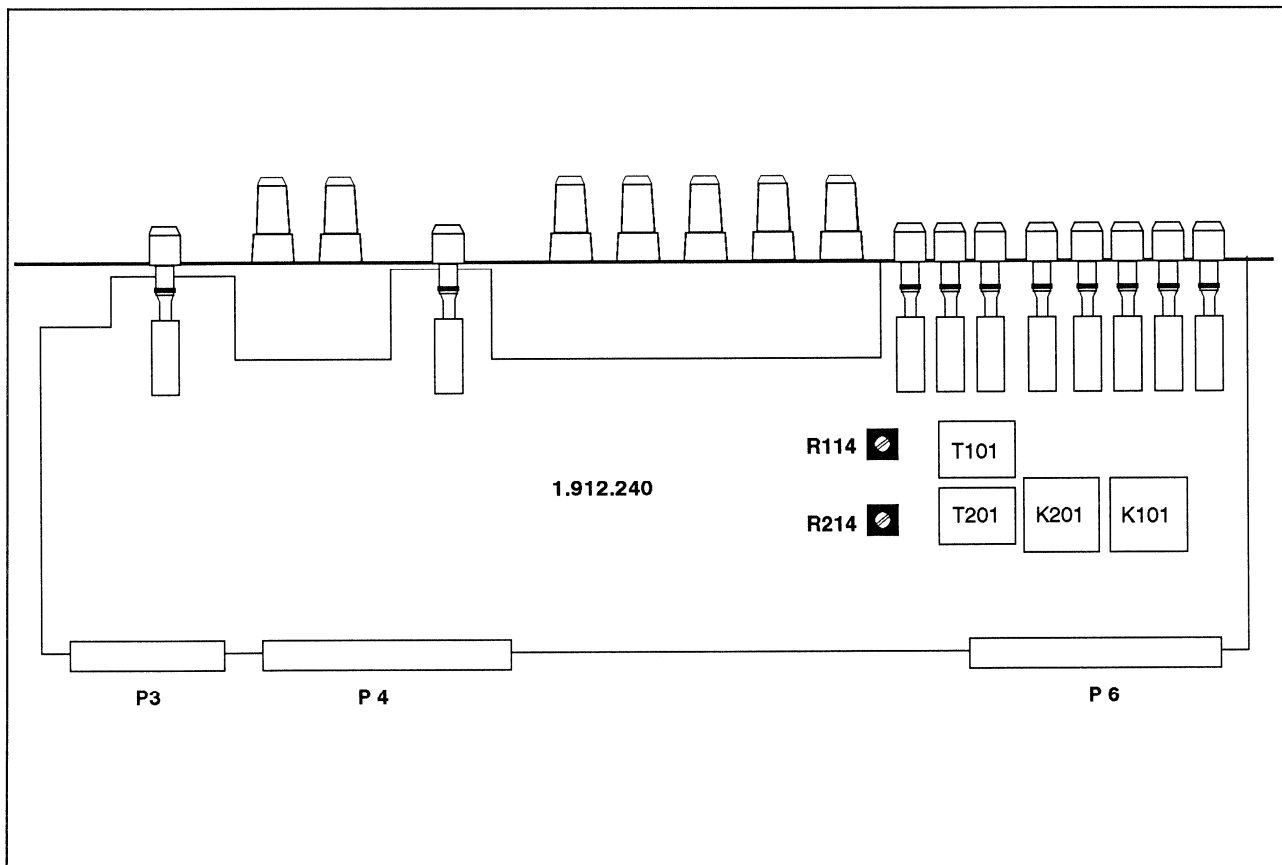


Fig. 11 Alignment elements of the input unit stereo high level version "A".

3.3 Input units stereo universal "A"

1.912.250...253

- Switch off FILTER, EQUALIZER and STEREO SPREAD.

Line input:

- Set the LINE GAIN potentiometer to the self-locking center position.
- Select the LINE input.

left channel

- Feed test signal at nominal level to the LINE input, left channel.
- Connect voltmeter to the **PF insert left** (patch or P3-15).
- Adjust the left channel with **R125** to **0dBu**. (balanced insert levels see 1.6)

right channel

- Feed test signal at nominal level to the LINE input, right channel.
- Connect voltmeter to the **PF insert right** (patch or P3-13).
- Adjust the right channel with **R325** to **0dBu**. (balanced insert levels see 1.6)

Microphone input:

No adjustment is needed for the microphone input other than demagnetizing the input transformers. (see 1.8)

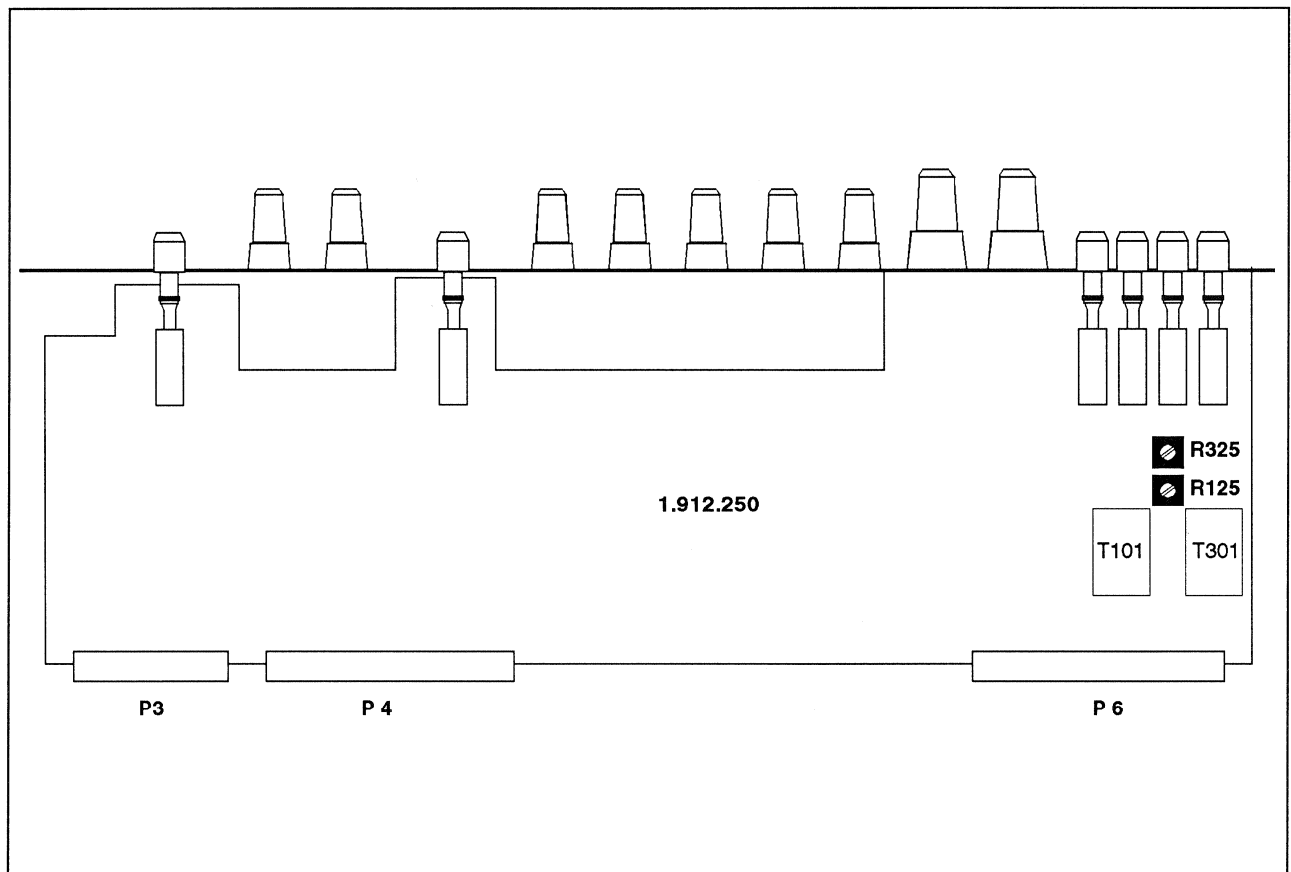


Fig. 12 Trimmer potentiometers for the calibration of the LINE input.

ALIGNMENT

3.4 Input units mono "B"

1.912.120/122

- Switch off EQUALIZER and FILTER.

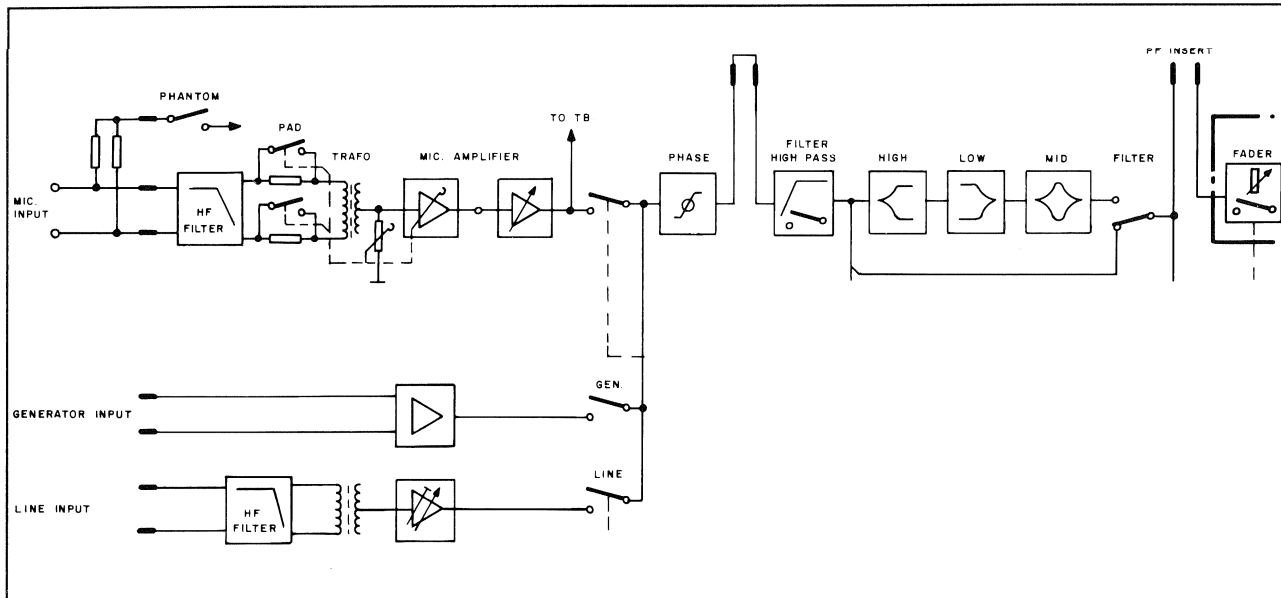


Fig. 13 Block diagram

Line input:

- Feed test signal at nominal level to the LINE input.
- Set the potentiometer LINE GAIN to the self-locking CAL position.
- Connect voltmeter to the PF insert (patch or P6-27).
- Adjust the level with R35 to 0dBu. (balanced insert levels see 1.6)

Other inputs:

The input stages for microphone and audio generator don't need calibration.

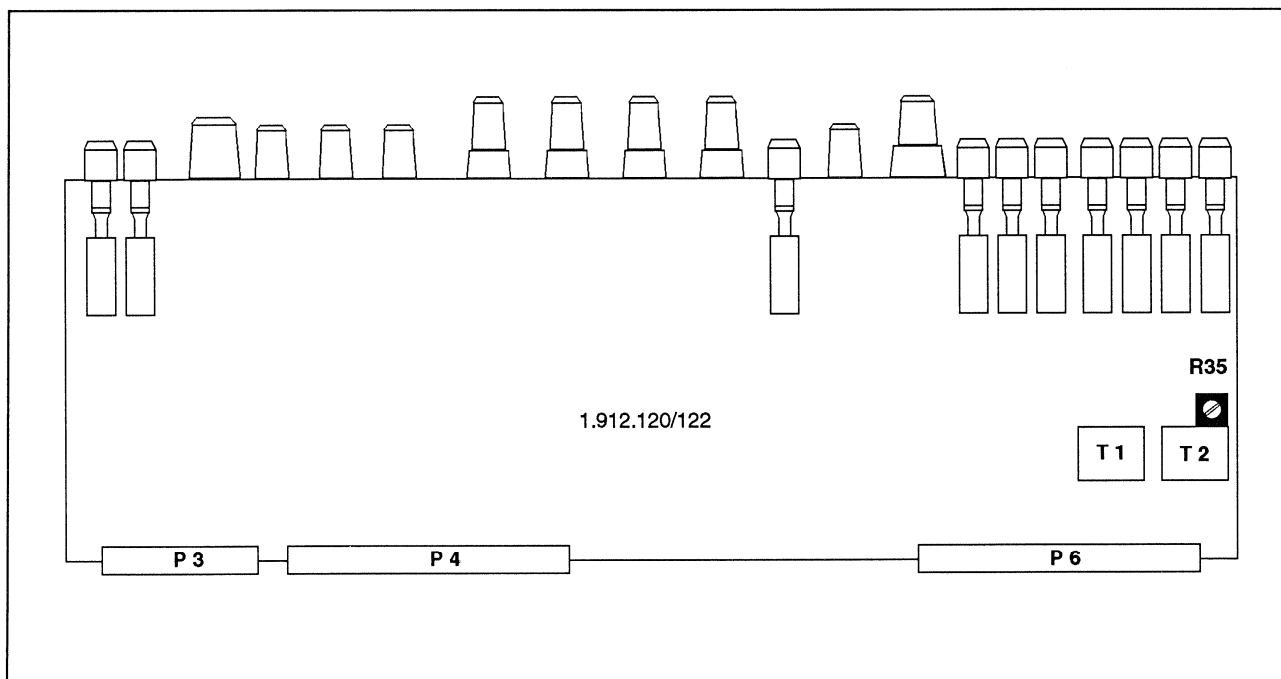


Fig. 14 Alignment elements for the mono input units version "B".

3.5 Input units stereo high level "B"

1.912.141...145

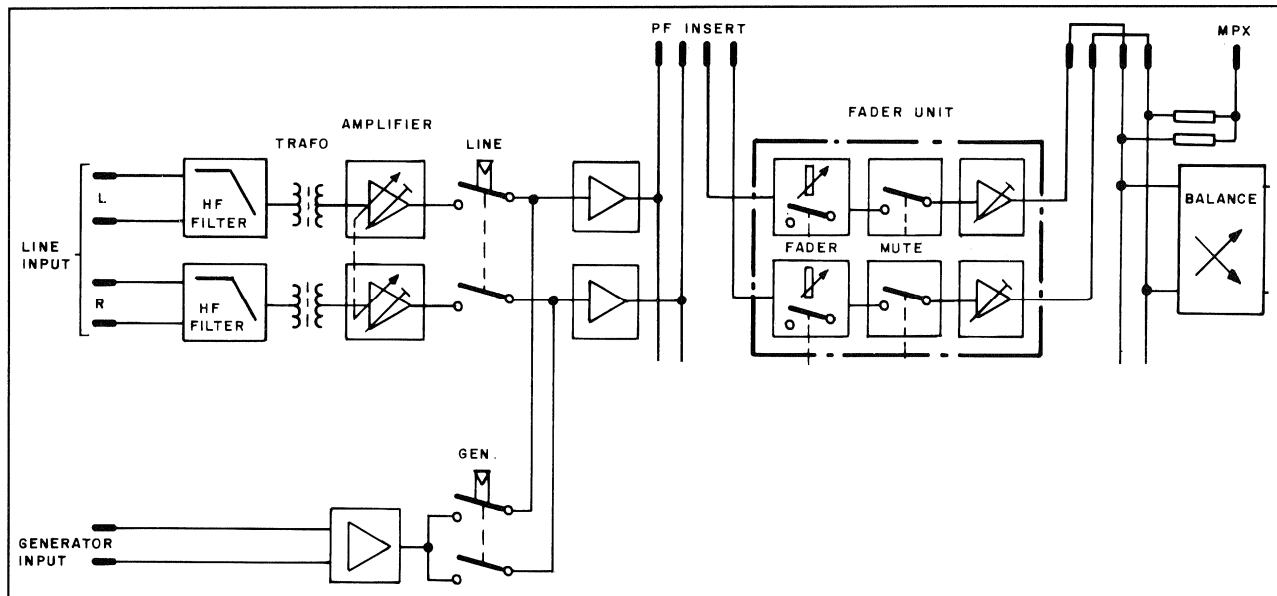


Fig. 15 Block diagram

Line input:

- Set the LINE GAIN potentiometer to the self-locking center position.

left channel

- Feed test signal at nominal level to the LINE input left channel.
- Connect voltmeter to the PF insert left (patch or P3-15).
- Adjust the left channel with R109 to 0dBu. (balanced insert levels see 1.6)

right channel

- Feed test signal at nominal level to the LINE input right channel.
- Connect voltmeter to the PF insert right (patch or P3-13).
- Adjust the right channel with R209 to 0dBu. (balanced insert levels see 1.6)

Generator:

The input stage for the audio generator doesn't need any calibration.

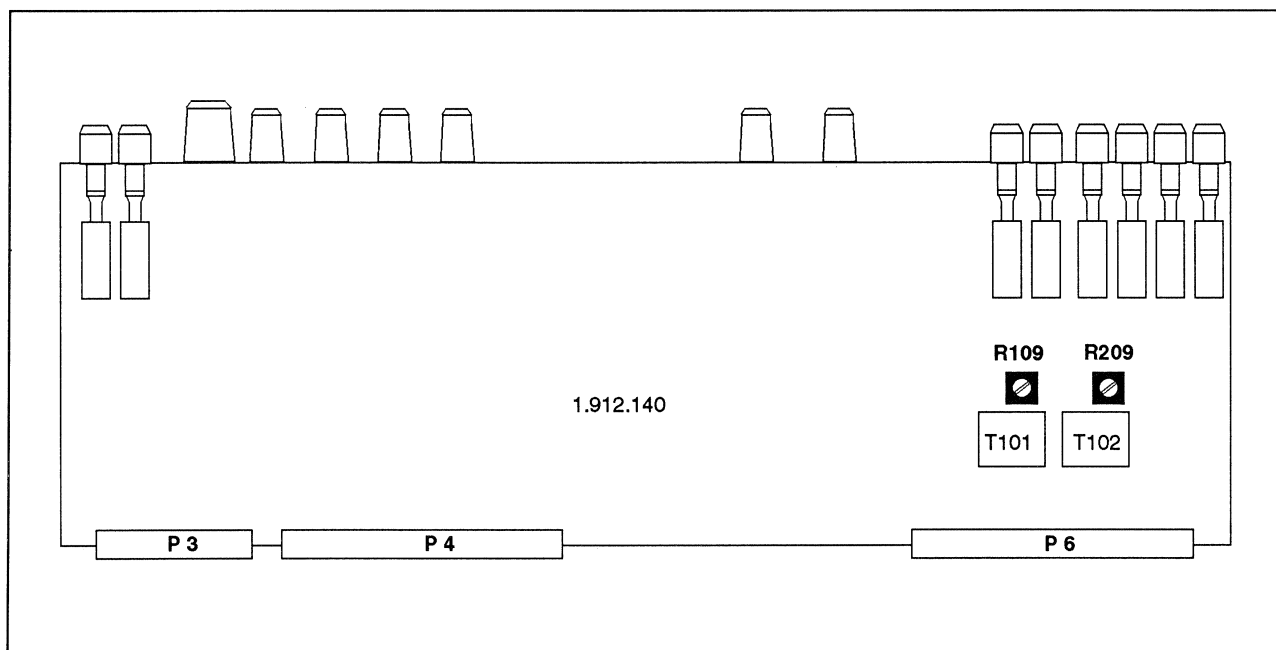


Fig. 16 Alignment elements of the stereo input units version "B".

ALIGNMENT

3.6 Auxiliary master unit

1.912.310

AUX output level:

The output levels of the AUX masters at maximum gain in the AUX path are aligned to **10dB above nominal level**.

- Feed test signal at **nominal level** to LINE input 1 and set the input fader to 0dB.
- Completely open the **AUX** potentiometers 1...4 of the input in the PF position by turning it fully clockwise. ☉
- Completely open also the potentiometers **AUX SEND 1...4** of the AUX master unit by turning them fully clockwise. ☉

AUX 1...3

- Connect the voltmeter to the corresponding **AUX output**.
- With a jumper (0dB/-10dB) and a trimmer align the level to 10dB above the nominal level. The alignment controls for the corresponding AUX path are shown in the table below.

AUX 4

- Perform the alignment as described above.
- Turn the AUX balance potentiometer (input unit) to the extreme **left** position ☉ and adjust the output AUX 4L with **R425** to 10dB above nominal level.
- Turn the AUX balance potentiometer (input unit) to the extreme **right** position ☉ and adjust the output AUX 4R with **R525** to 10dB above nominal level.

Distortion alignment:

This alignment is only necessary after an output stage has been repaired.

- Connect the voltmeter to AUX output.
- Switch the 30Hz sine wave signal from the audio generator to the AUX master to be calibrated.
- Increase the output level to +24dBu and subsequently align to minimal distortion with the aid of the trimmer potentiometers listed below.

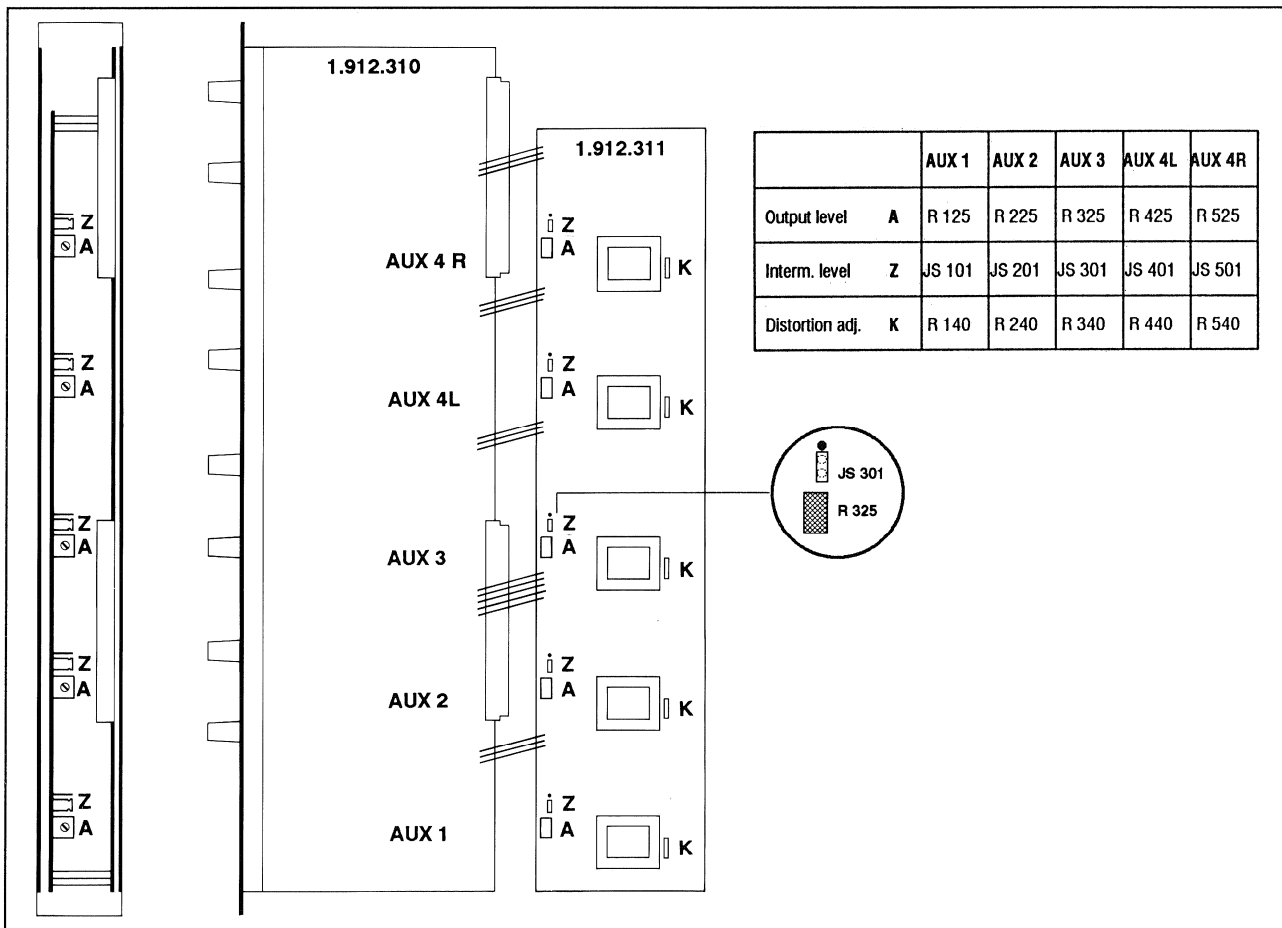


Fig. 17 Location of trimmer potentiometers on the AUX master unit.

3.7 Control Room Monitor

1.912.420

To start the alignment no key on the CR monitor unit must be pressed.

- Feed test signal at **nominal level** to the input EXTERNAL 1 left or right.
- Select the input EXT 1 on the CR monitor.
- Completely open the potentiometer MONITOR VOLUME by turning it clockwise. ☺
- Make sure that the BALANCE is switched off (BALANCE IN key).

Headphones level:

- Connect voltmeter with no load to one of the 6.3mm headphone sockets: tip = left channel / ring = right channel / sleeve = 0V
- Adjust level with **R7** left and **R64** right to **+20dBu** (7,75V).

CR monitor:

- Connect voltmeter with no load to the CR MONITOR output left or right
- Adjust the output level with **R30** left and **R82** right to **+16dBu**.

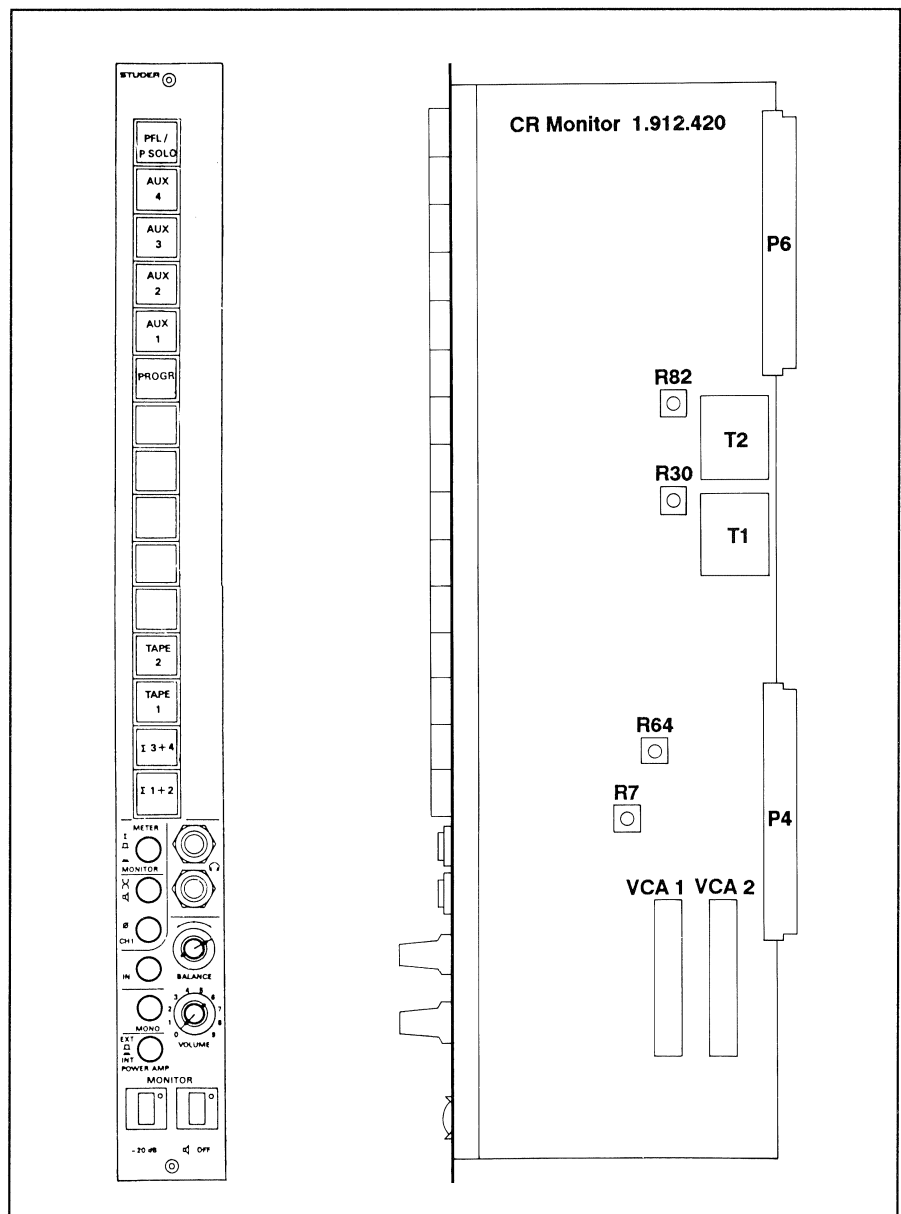


Fig. 18 Alignment elements of the CR Monitor unit. 1.912.420.

ALIGNMENT

3.8 Studio Monitor and Talk Back unit

1.912.320

The control room monitor unit must be calibrated before the alignment of the studio monitor.

- PFL level:**
- Feed test signal at **nominal level** to the LINE input (gain: CAL) of the input unit.
 - Press **PFL** key on this input unit.
 - Completely open the potentiometer MONITOR VOLUME of the CR Monitor unit by turning it completely clockwise. ☉
 - Press PFL/P.SOLO to MONITOR key on the Studio Monitor unit. The potentiometer PFL/P.SOLO has no influence on the signal level of the CR MONITOR output.

- PFL/P.SOLO monitor:**
- Connect the voltmeter with no load to the CR MONITOR output.
 - Adjust with **R67** left and with **R70** right to **+16dBu**.

- PFL/P.SOLO headphones:**
- Completely open the PFL/P.SOLO potentiometer ☉.
 - Connect voltmeter with no load to the headphones socket PFL/P.SOLO.
tip = left channel / ring = right channel / sleeve = 0V
 - Adjust with **R79** left and with **R87** right to **+20dBu**.

- Notes:**
- The Studio Monitor is muted as soon as a microphone is on. In this case the CUT LED is light. Muting can be released with the RE-IN key.
 - The TB STUDIO and TB SPEAKER keys attenuate the studio output level for 20dB and must therefore not be activated.

- Studio Monitor:**
- Feed test signal at **nominal level** to one of the monitor inputs EXTERNAL and press the corresponding source selector key.
 - Completely open the STUDIO potentiometer. ☉
 - Connect voltmeter with no load to the STUDIO output left or right.
 - Adjust with **R11** left and with **R32** right to **+16dBu**.

- Headphones studio:**
- This adjustment affects the level of the studio monitor signal going out to the studio headphones. (e.g. connected to TB box)
 - Feed test signal as described for the studio monitor alignment.
 - Connect voltmeter with no load to the output TB box (D-type) or to the headphones socket on the TB box (open VOLUME completely).
tip = left channel / ring = right channel / sleeve = 0V
 - Adjust with **R7** left and **R28** right to **+20dBu**.

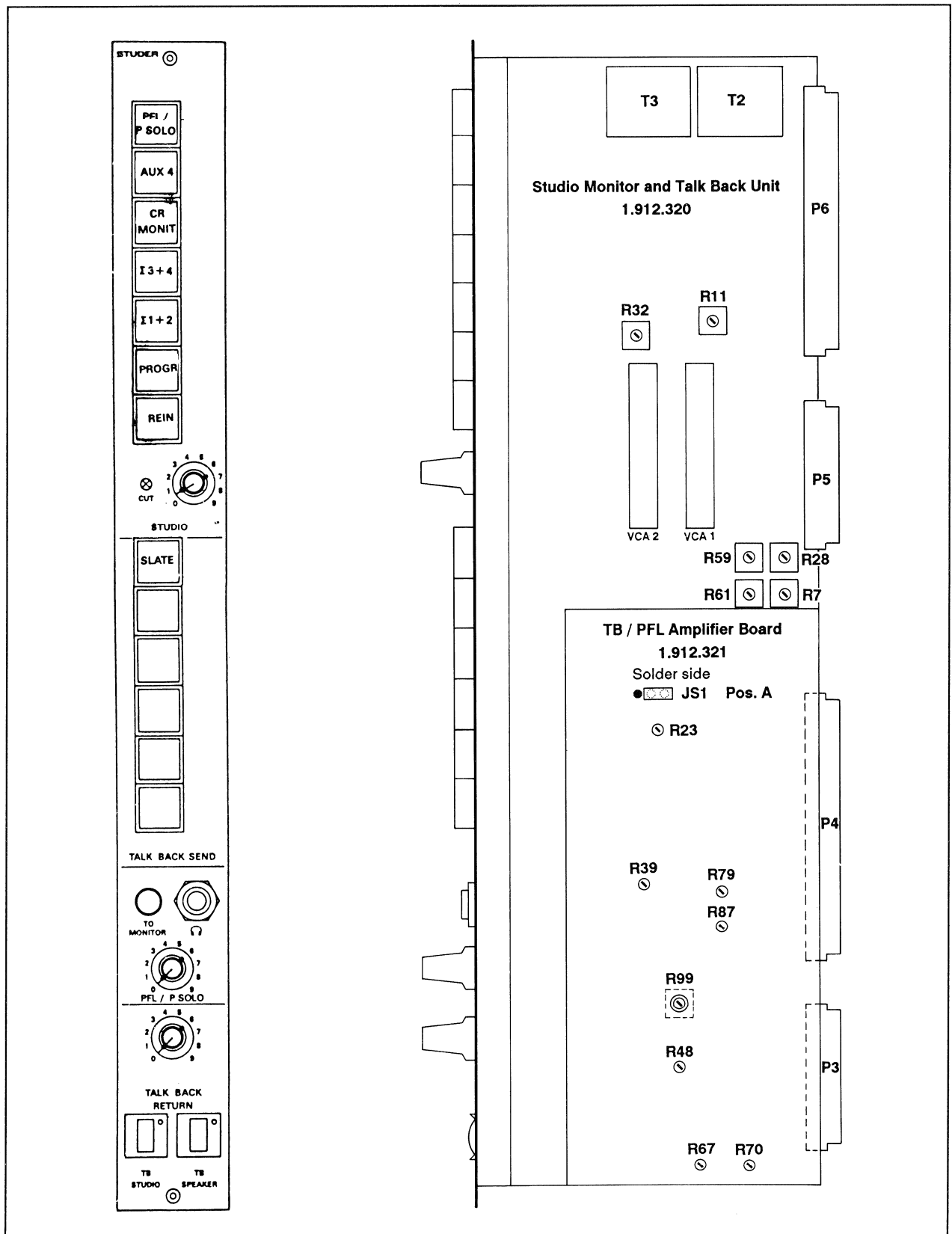


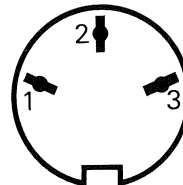
Fig. 19 Alignment elements of the Studio Monitor and Talk Back unit 1.912.320.

ALIGNMENT

Talk Back level:

The level of the TB microphone is adjustable with three different trimmer potentiometers: input gain, level for feeding to studio monitor and to studio headphones separately.

- Feed test signal at **-60dBu** to the microphone socket on the audio console (goose neck). Balanced connection to pin 1 and 3 of the DIN-connector.



TB microphone
(control room)

- Press the TB SEND A key.
- Connect voltmeter with no load to the output TB EXTERNAL 1.
- Adjust the limiter threshold level for the TB signal with **R99** to **+6dBu**. This trimmer potentiometer is accessible through a hole in the PCB 1.912.321. (The jumper JS1 (on 1.912.321) should be set to position A.)

TB to Studio Monitor

- Press the TB STUDIO key.
- Connect voltmeter with no load to the left channel of the STUDIO output.
- Adjust with **R59** to **+6dBu**.* (R59 affects both channels)
* = factory setting. The level depends on the desired talk back volume.

TB to Studio headphones

- Connect voltmeter with no load to TB box output (D-type) or to the headphones socket of the TB box (open VOLUME completely).
tip = left channel / ring = right channel / sleeve = 0V
- Adjust with **R61** to **+6dBu*** (R61 affects both channels.)
* = factory setting. The level depends on the desired talk back volume.

TB return

- Feed test signal with **+6dBu** to the TB RETURN input.
- In normal operation the TB signalization switches the signal to the PFL/TB speaker. For this reason an external TB key has to be pressed.
(The internal signal 'E' opens the TB RET signal path. Circuit diagram 1.912.320; page 2)
- Completely open the TB RETURN potentiometer \odot .
- Adjust TB RETURN INPUT with **R48** to the desired maximum volume.

Attenuation TB return

To avoid feedback in the control room the TB return signal is attenuated as soon as a TB key in the control room is pressed. The attenuation is adjustable with R39.

- Feed test signal at **-60dBu** to the speaker microphone socket. (D-type)
- Press any TB key on the audio console. This activates the attenuation of the TB return signal. Adjust it with **R39** to the desired value.
factory setting: **-20dB**.
(The internal signal 'D' attenuates the TB RET signal. Circuit diagram 1.912.320; page 2)

Speaker TB microphone

- Use same measuring setup as described above.
- Activate the signalization as described for the TB return signal.
- Completely open the TB RETURN potentiometer \odot .
- Adjust the SPEAKER MIC level with **R23** to the desired maximum volume.

4. Main Instruments

4.1 VU-Meter 1.913.230/231

- Adjust the output level to 6 dB below line level on the master output.
- Adjust with R4 (Fig. 21) to a VU-meter reading of 0 VU.
- This gives the necessary lead of 6 dB.

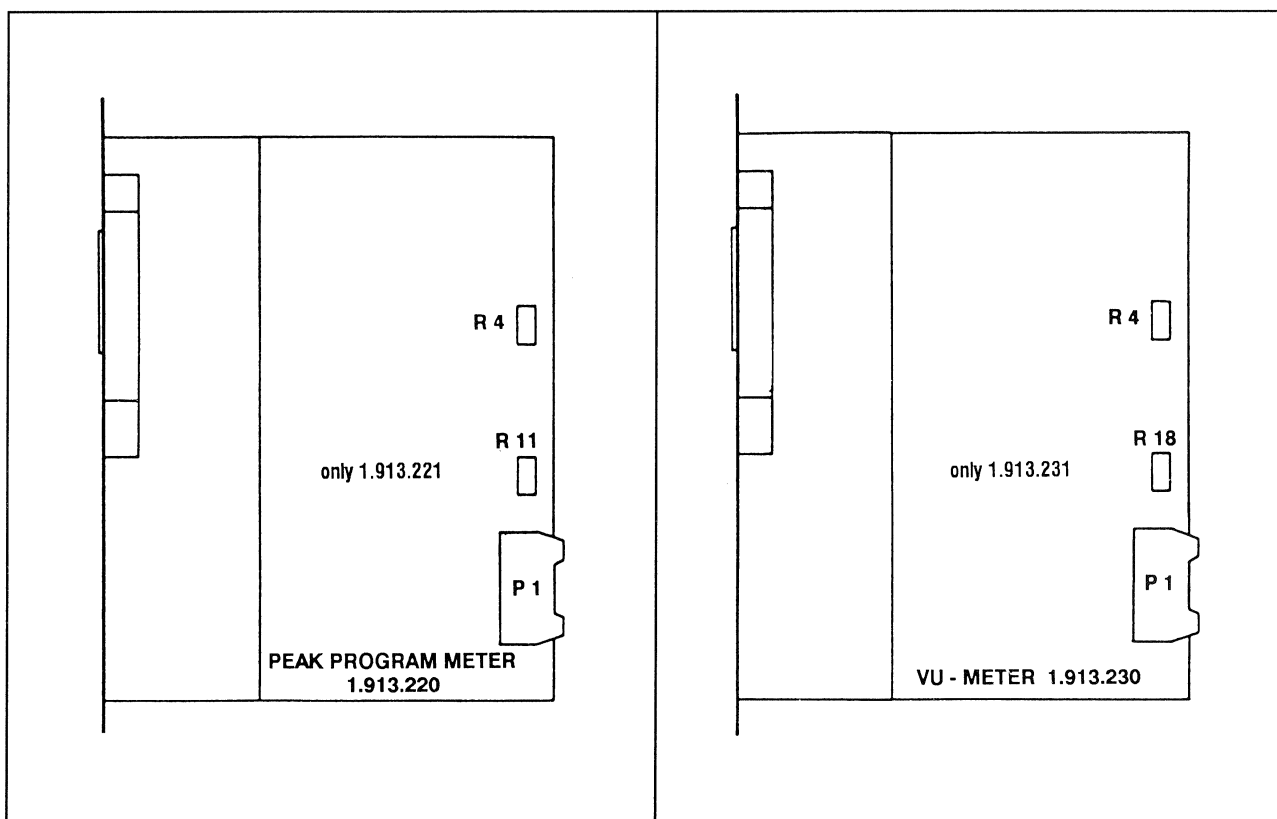


Fig. 20

Fig. 21

4.2 Peak Program Meter (PPM) 1.913.220/221

- Adjust master output to line level.
- Adjust with R4 (Fig. 20) to a needle indication of 0 dB.

ALIGNMENT

4.3 Correlator 1.913.210/211

- Adjust line level at master output 1 and 2.
- Adjust with R4 (Fig. 22) and R13 to -18 dBu or 100 mVAC measured at testpoint 1 (TP1) and testpoint 2 (TP2).
- Output signal in phase at master 1 and 2 (correlate).
- Adjust with R26 to a meter indication of + 1.

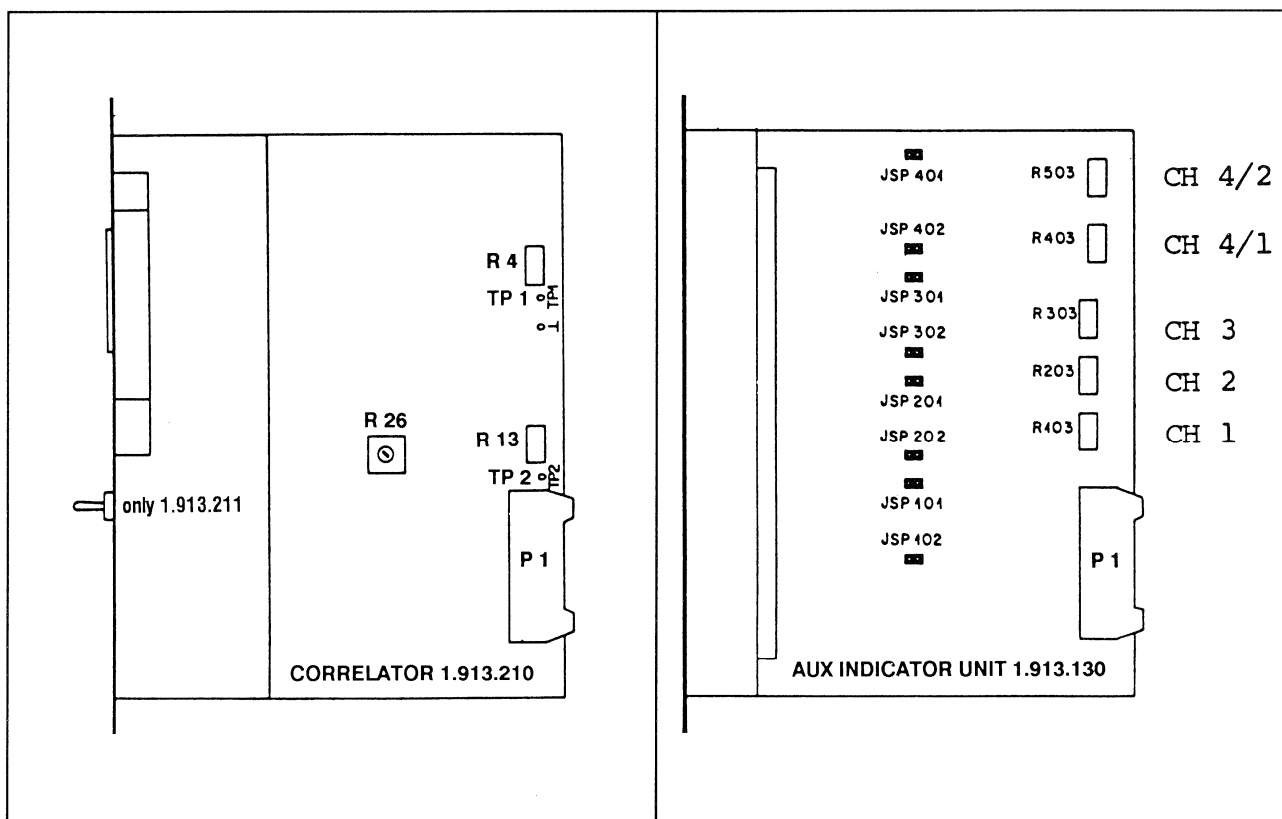


Fig. 22

Fig. 23

4.4 AUX Indicator

1.913.130

This unit contains the four instruments of auxiliary outputs. The indication characteristic may be adapted to the main instruments. It is possible to choose between PPM or VU with jumpers. The jumper switches are named JSP (Fig.23).

VU display:

For this type of dynamic characteristic the jumpers must be set as follows:

JSP 102 → Instrument AUX 1

JSP 202 → Instrument AUX 2

JSP 302 → Instrument AUX 3

JSP 402 → Instrument AUX 4

VU meter

Adjustment for peak-level +10dBu / +12dBu.

For these two peak levels the nominal level for a reading of 0VU is +4dBu.

The so-called lead is, therefore, 6dB or 8dB respectively.

AUX 1...3 (VU)

Apply the test signal with **+4dBu** to the input of the instrument to be calibrated. Adjust for a reading of **0VU** with trimmer potentiometers **R103**, **R203** or **R303** (see fig. 23).

AUX 4 (VU)

The AUX 4 instrument displays the mono level of the AUX 4 stereo path. Each channel of AUX 4 has to be adjusted to **-3VU** which results in 0VU reading for both channels together.

- Feed **+4dBu** to **AUX 4/1** (left channel), no signal to AUX 4/2.
- Adjust the instrument with trimmer **R403** (see fig. 23) to **-3VU**.
- Feed **+4dBu** to **AUX 4/2** (right channel), no signal to AUX 4/1.
- Adjust the instrument with trimmer **R503** (see fig. 23) to **-3VU**.

PPM display:

The characteristic of a Peak Program Meter can be obtained by the following jumper setting:

JSP 101 → Instrument AUX 1

JSP 201 → Instrument AUX 2

JSP 301 → Instrument AUX 3

JSP 401 → Instrument AUX 4

AUX 1...3 (PPM)

Apply the test signal with **line level** to the input of the instrument to be calibrated. Adjust for a reading of **0dB** with trimmer potentiometers **R103**, **R203** or **R303** (see fig. 23).

AUX 4 (PPM)

The AUX 4 instrument is aligned in a similar way as described for the VU characteristic.

- Feed **line level** to **AUX 4/1** (left channel), no signal to AUX 4/2.
- Adjust the instrument with trimmer **R403** (see fig. 23) to **-3dB**.
- Feed **line level** to **AUX 4/2** (right channel), no signal to AUX 4/1.
- Adjust the instrument with trimmer **R503** (see fig. 23) to **-3dB**.

ALIGNMENT

4.5 Audio Generator

1.913.150

- Oscillator:**
- Press the **OSCILLATOR** key on the audio generator and set the frequency to **1kHz**.
 - Connect the voltmeter to the balanced output of the audio generator: **P1-1 / P1-3**.
 - Adjust to **line level** with the trimmer potentiometer **R49**.

- Harmonic distortions**
- Set the frequency to **30Hz**.
 - Adjust the distortions with **R59** to **-62dB (0,08%)**.

- Identification:**
- Press the **IDENT** key.
 - Adjust to **line level** with **R52**.

- White noise:**
- Press the **WHITE NOISE** key.
 - Adjust to **line level** with **R67**.

- Pink noise:**
- Press the **PINK NOISE** key.
 - Adjust to **line level** with **R73**.

The irregular deflection of the VU meter instrument with noise signals is due to the circuit layout.

- Audio generator input:**
- Select the input **GEN** on channel 1.
 - Connect the voltmeter without load to the **PF insert** of channel 1.
 - Adjust with **R89** to the insert level of your console (see 1.6).

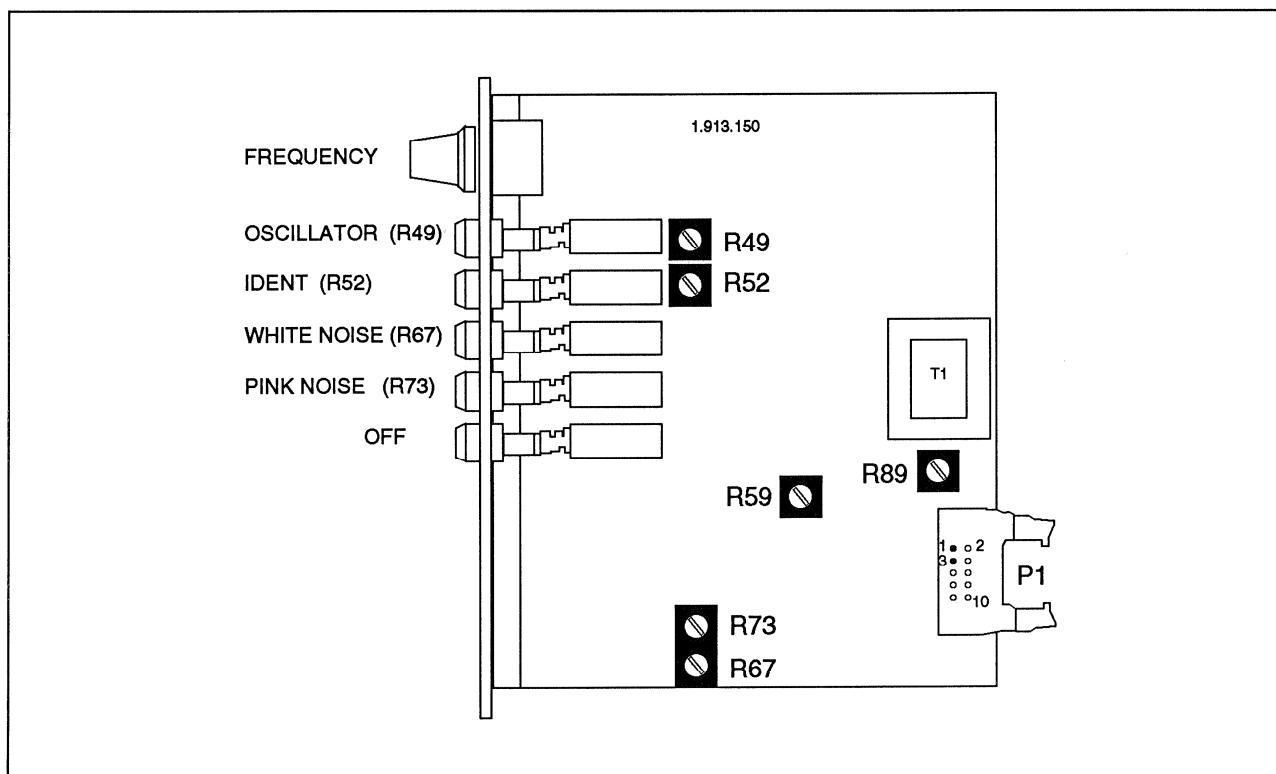


Fig. 24 Trimmer potentiometers for the calibration of the audio generator 1.913.150.

KAPITEL 4: Einschub-Module der Fadersektion 1.911. ...

INHALT

| | | |
|------------|---|---|
| 1. | Flachbahnregeler Mono / Stereo | 1.911.110...122 |
| 2. | Master Unit MkII | 1.911.315...335 |
| 3.* | VCA-Fader Units | 1.911.210 ...216 1.911.220 |

SECTION 4: Plug-in Units of the fader section 1.911. ...

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| 1. | Mono / stereo fader | 1.911.110...122 |
| 2. | Master unit MkII..... | 1.911.315...335 |
| 3.* | VCA fader units..... | 1.911.210 ...216 1.911.220 |

* Diese Beschreibungen werden kundenspezifisch bestückt.

* These descriptions are supplied according to the customers requirements.

Flachbahnregler Mono/Stereo, mit /ohne symmetrischen Insert

INHALT

Seite

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| 1. | Bedienungselemente..... | 2 |
| 2. | Symmetrierverstärker | 2 |
| 3. | Technische Daten der Baugruppe..... | 3 |
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GELTUNGSBEREICH

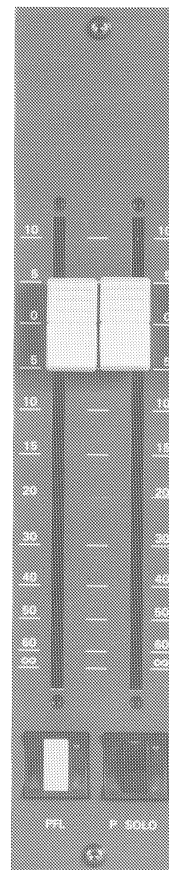
Die vorliegenden Informationen gelten für folgende Baugruppen:

| | <u>Insert unsym.</u> | <u>Insert symmetrisch</u> |
|------------------|----------------------|---------------------------|
| Mono-Fader "A" | 1.911.110.83 | 1.911.112.83 |
| Stereo-Fader "A" | 1.911.120.84 | 1.911.122.84 |

FADER "A"

1. Bedienungselemente

- Regler** Flachbahnregler mit Conductiv-Plastic-Bahn. Für den Faderstart ist in der Kontaktbahn ein Faderendkontakt eingebaut, der vom Abtaster geschlossen wird. Diese Bauart kommt ohne Mikroschalter und Schalterpunkteinstellung aus(s. unten). Zur Erhaltung einer einwandfreien mechanischen und elektrischen Funktion ist der Flachbahnregler bei Bedarf zu reinigen und zu ölen. Eine ausführliche Anleitung sowie alle notwendigen Utensilien sind als 'Studer Fader Pflege Kit' unter der Bestellnummer 20.020.001.77 erhältlich.
- PFL Taste** Die PFL- und P-Solo-Tasten sind gegenseitig elektronisch gekoppelt. Ist eine der beiden Tasten aktiviert, wird sie automatisch beim Drücken der andern ausgeschaltet. Die Vorhörtaste (PFL = Pre Fader Listening) ist als Impulstaste mit elektronischer Umschaltung und LED-Anzeige ausgeführt. Sie schaltet das Audiosignal vor dem Flachbahnregler auf die Vorhørsammelschiene. Wird auf der Leiterplatte die Brücke X---Z eingelötet (vgl. Schema: Option a), so ist die PFL-Funktion nur bei geschlossenem Fader möglich. In der Grundausführung ist keine Brücke eingebaut. Das PFL-Signal wird also nicht durch den Fader beeinflusst.
- P Solo Taste** Die Abhörtaste 'Positional Solo' (Impulstaste mit elektronischer Umschaltung und LED-Anzeige) schaltet das Audiosignal nach Fader und Panorama-Regler auf die Vorhørsammelschiene.
- Signalstromkreis** Der Flachbahnregler ist mit einem Schalter versehen, der beim Öffnen des Reglers ein Signal an die logische Steuerung gibt. Abhängig von der Stellung der Schalter Mute, Eingangswähler, Summenwahl, Summenregler und eventuell Mic-Cut entsteht am Ausgang je ein Faderstartsignal pro Eingang Mic, Line und Tape.



2. Symmetrierverstärker

1.911.112
1.911.122

Der Symmetrierverstärker dient der Adaptation des Insert-Ein- und Ausgangs an asymmetrische Peripheriegeräte. Pro Kanal ist dazu ein Verstärker mit asymmetrischem Eingang und trafolosem, symmetrischem Ausgang sowie ein Verstärker mit trafolosem, symmetrischem Eingang und asymmetrischem Ausgang vorgesehen. Diese Anordnung stellt asymmetrische Insert- Ein- und Ausgänge zusätzlich zu den symmetrischen Anschlüssen zur Verfügung.

**Technische Daten
Symmetrierverstärker:**
Allgemein

| | |
|--|----------------------------|
| Frequenzgang | 30 Hz...16kHz $\pm 0,5$ dB |
| Klirrfaktor | < 80 dB |
| Fremdspannungsabstand | 100 dB |
| Verstärkung (asym. \rightarrow sym.) | 6 dB |
| Dämpfung (sym. \rightarrow asym.) | 6 dB |

Verstärkerteil 1

| | |
|--------------------|-------------------------|
| Eingang: | unsymmetrisch |
| Eingangsimpedanz | > 10 kOhm |
| Max. Eingangspegel | +20 dBu |
| Ausgang: | symmetrisch, ohne Trafo |
| Ausgangsimpedanz | < 50 Ohm |
| Max. Last | > 600 Ohm |
| Max. Ausgangspegel | +24 dBu |

Verstärkerteil 2

| | |
|---------------------|-------------------------|
| Eingang: | symmetrisch, ohne Trafo |
| Eingangsimpedanz | > 10 kOhm |
| Max. Eingangspegel | +24 dBu |
| Ausgang: | unsymmetrisch |
| Ausgangsimpedanz | < 100 Ohm |
| Max. Ausgangspegel | +20 dBu |
| Max. Lastwiderstand | > 1 kOhm |

3. Technische Daten der Baugruppe

| | | | | | |
|--------------------|-------------------------------|------------------|------------------|------------------|------------------|
| Elektrisch: | Stromaufnahme maximal: | <u>1.911.110</u> | <u>1.911.112</u> | <u>1.911.120</u> | <u>1.911.122</u> |
| | Speisung $\pm 15V$ | $\approx 10mA$ | $\approx 20mA$ | $\approx 20mA$ | $\approx 45mA$ |
| | Speisung $-6V$ | $\approx 15mA$ | $\approx 15mA$ | $\approx 15mA$ | $\approx 15mA$ |
| Mechanisch: | Masse Frontschild: | 40,4mm x 210mm | | | |
| | Tiefe: | 129mm | | | |
| Audiodaten: | Siehe Kapitel 1 "Allgemeines" | | | | |

Mono/stereo fader, with/without balanced insert

CONTENTS

page

| | | |
|----|------------------------------------|---|
| 1. | Operator controls | 2 |
| 2. | Balancing amplifier | 2 |
| 3. | Technical data of the module | 3 |
| 4. | Circuit diagrams | 5 |

VALIDITY

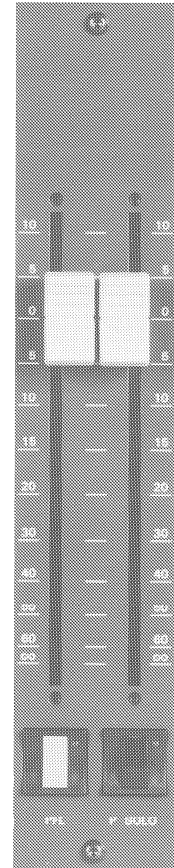
This information applies to the following modules:

| | <u>Insert, unbalanced</u> | <u>Insert, balanced</u> |
|------------------|---------------------------|-------------------------|
| Mono fader "A" | 1.911.110.83 | 1.911.112.83 |
| Stereo fader "A" | 1.911.120.84 | 1.911.122.84 |

FADER "A"

1. Operator controls

- Fader** Linear fader with conductive plastic strip. A fader contact, built into the fader strip of the linear fader is closed by the wiper when a fader start is performed. This design eliminates the need for a microswitch and switch point alignment (see below). In order to maintain proper mechanical and electrical function, the fader should be cleaned and oiled as required. Detailed instructions and the required utensils are contained in the 'Studer fader service kit', part No. 20.020.001.77.
- PFL key** The PFL key and the P-Solo key are electronically interlocked. If either of these two keys is activated, the other is automatically deactivated. The prefader listening (PFL) key is implemented as a momentary-action push button with electronic changeover and a pilot LED. It connects the prefader audio signal to the prelistening bus. If the X--Z Jumper is soldered into the circuit board (see circuit diagram: option a), the PFL function is only enabled when the fader is closed. This jumper is not installed in the standard version, i.e. the PFL signal is not influenced by the fader.
- P Solo key** The 'Positional Solo' key (momentary-action push button with electronic changeover and pilot LED) connects the audio signal after the fader and the panorama potentiometer to the prelistening bus.
- Signal circuit** The fader is equipped with a switch that outputs a signal to the logic control when the fader is opened. Depending on the switch settings mute, input selector, master selection, master fader, and possibly Mic-Out, a fader start signal for each mic, line, and tape input becomes available on the output.



2. Balancing amplifier

1.912.112
1.912.122

The balancing amplifier is used for adapting the insert input and output to unbalanced peripherals. For each channel an amplifier with unbalanced input and as well as an amplifier with transformerless, balanced input and unbalanced output are available (Fig. 2). This arrangement makes unbalanced insert inputs and outputs available in addition to the balanced outputs.

Technical data
Balancing amplifier:General

| | |
|---|-----------------------------|
| Frequency response | 30 Hz...16 kHz ± 0.5 dB |
| Distortion | < 80 dB |
| Signal-to-noise ratio | 100 dB |
| Gain (unbal. \rightarrow bal.) | 6 dB |
| Attenuation (bal. \rightarrow unbal.) | 6 dB |

Amplifier section 1

| | |
|-------------------|---------------------------|
| Input: | unbalanced |
| Input impedance | > 10 kohm |
| Max. input level | + 20 dBu |
| Output: | balanced, transformerless |
| Output impedance | < 50 ohm |
| Max. load | > 600 ohm |
| Max. output level | + 24 dBu |

Amplifier section 2

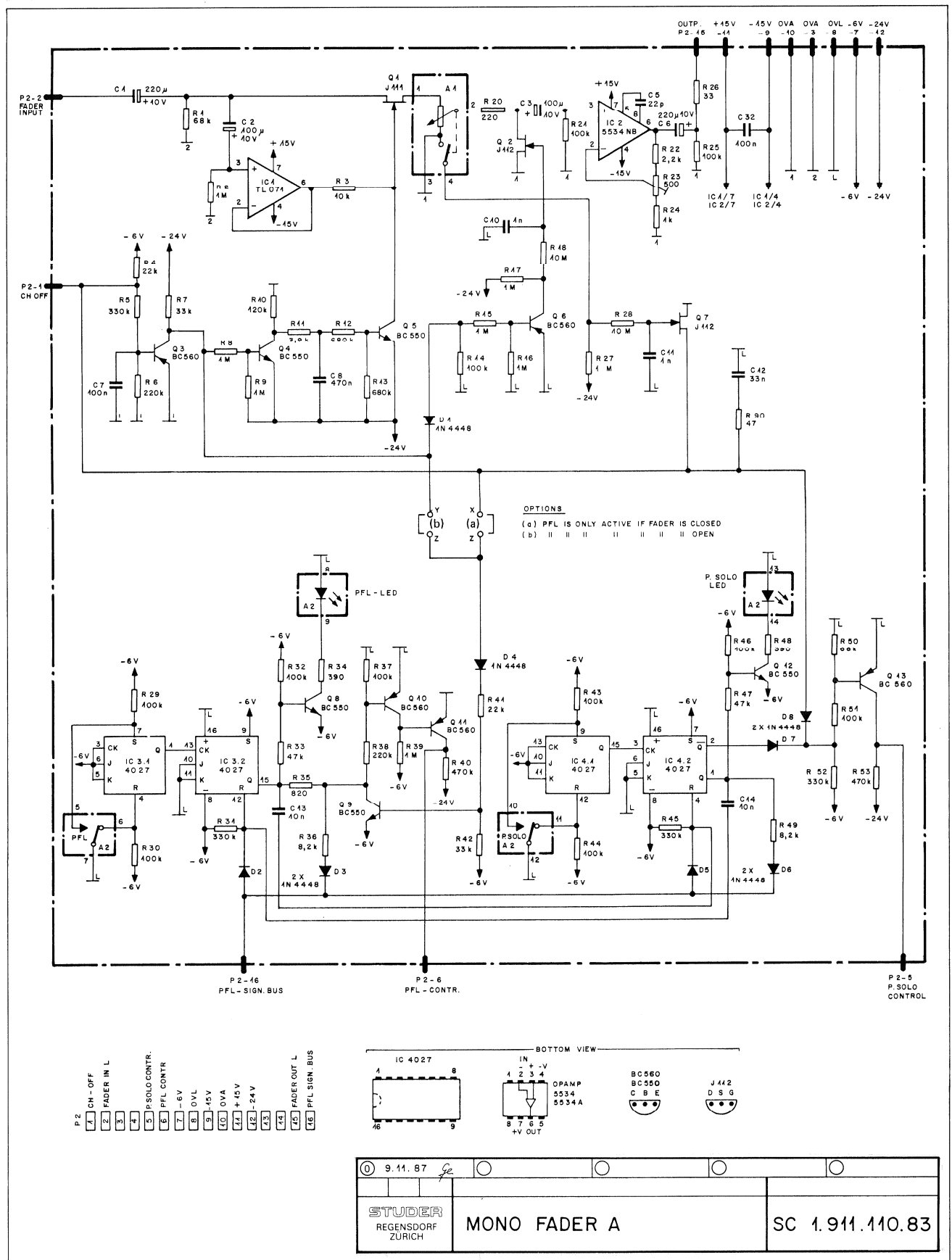
| | |
|---------------------|---------------------------|
| Input: | balanced, transformerless |
| Input impedance | > 10 kohm |
| Max. input level | + 24 dBu |
| Output: | unbalanced |
| Output impedance | < 100 ohm |
| Max. output level | + 20 dBu |
| Max. load impedance | > 1 kohm |

3. Technical data of the modules

| | | | | | |
|--------------------|--------------------------|------------------|------------------|------------------|------------------|
| Electrical: | Power consumption, max.: | <u>1.911.110</u> | <u>1.911.112</u> | <u>1.911.120</u> | <u>1.911.122</u> |
| | ± 15 V supply | ≈ 10 mA | ≈ 20 mA | ≈ 20 mA | ≈ 45 mA |
| | -6 V supply | ≈ 15 mA | ≈ 15 mA | ≈ 15 mA | ≈ 15 mA |
| Mechanical: | Front panel dimensions: | 40.4 mm x 210 mm | | | |
| | Depth: | 129 mm | | | |
| Audio data: | See Section 1, "General" | | | | |

4. Circuit diagrams / Schemateil

Monofader MkII 1.911.110



FADER "A"

Monofader MkII 1.911.110 / 112 (with - without balanced insert / mit - ohne sym. Insert)

| Ad | POS. | REF.No. | DESCRIPTION | MANUFACTURER |
|----|----------|--------------|---|--------------------------------|
| 01 | A.....1 | 1.960.011.00 | mono fader | St |
| | A.....1 | 1.960.011.81 | mono fader | St |
| | A.....2 | 1.911.001.00 | pushbutton board N-N | St |
| | C.....1 | 59.22.3221 | 220 uF 10V EL | R....31 57.11.4334 330 kOhm |
| | C.....2 | 59.22.3101 | 100 uF 10V EL | R....32 57.11.4104 100 kOhm |
| | C.....3 | 59.22.3101 | 100 uF 10V EL | R....33 57.11.4473 47 kOhm |
| | C.....5 | 59.34.2220 | 22 pF CER | R....34 57.11.4391 390 Ohm |
| | C.....6 | 59.22.3221 | 220 uF 10V EL | R....35 57.11.4821 820 Ohm |
| | C.....7 | 59.06.0104 | 100 nF PE | R....36 57.11.4822 8.2 kOhm |
| | C.....8 | 59.06.0474 | 470 nF PE | R....37 57.11.4104 100 kOhm |
| | C.....9 | 59.06.0332 | 33 nF PE | R....38 57.11.4224 220 kOhm |
| | C.....10 | 59.06.0102 | 1 nF PE | R....39 57.11.4105 1 MOhm |
| | C.....11 | 59.06.0102 | 1 nF PE | R....40 57.11.4474 470 kOhm |
| | C.....12 | 59.06.0333 | 33 nF PE | R....41 57.11.4223 22 kOhm |
| | C.....13 | 59.06.0103 | 10 nF PE | R....42 57.11.4333 33 kOhm |
| | C.....14 | 59.06.0103 | 10 nF PE | R....43 57.11.4104 100 kOhm |
| | C.....15 | 59.22.3101 | 100 uF 10V EL | R....44 57.11.4104 100 kOhm |
| | C.....16 | 59.34.4101 | 100 pF CER | R....45 57.11.4334 330 kOhm |
| | C.....17 | 59.22.3101 | 100 uF 10V EL | R....46 57.11.4104 100 kOhm |
| | C.....18 | 59.22.3101 | 100 uF 10V EL | R....47 57.11.4473 47 kOhm |
| | C.....19 | 59.22.3221 | 220 uF 10V EL | R....48 57.11.4391 390 Ohm |
| | C.....20 | 59.22.3221 | 220 uF 10V EL | R....49 57.11.4822 8.2 kOhm |
| | C.....21 | 59.05.1681 | 680 pF 1% PP | R....50 57.11.4683 68 kOhm |
| | C.....22 | 59.05.1681 | 680 pF 1% PP | R....51 57.11.4104 100 kOhm |
| | C.....23 | 59.05.1681 | 680 pF 1% PP | R....52 57.11.4334 330 kOhm |
| | C.....24 | 59.05.1681 | 680 pF 1% PP | R....53 57.11.4474 470 kOhm |
| | C.....25 | 59.22.3101 | 100 uF 10V EL | R....54 57.11.4471 470 Ohm |
| | C.....26 | 59.22.3101 | 100 uF 10V EL | R....55 57.11.4223 22 kOhm |
| | C.....27 | 59.34.4101 | 100 pF CER | R....56 57.11.4473 47 kOhm |
| | C.....28 | 59.34.4101 | 100 pF CER | R....57 57.11.3272 2.7 kOhm 1% |
| | C.....29 | 59.22.3221 | 220 uF 10V EL | R....58 57.11.3302 3 kOhm 1% |
| | C.....30 | 59.06.0223 | 22 nF PE | R....59 57.11.3473 47 kOhm 1% |
| | C.....31 | 59.06.0223 | 22 nF PE | R....60 57.11.3302 3 kOhm 1% |
| | C.....32 | 59.06.0104 | 100 nF PE | R....61 57.11.4474 470 kOhm 2% |
| | D.....1 | 50.04.0125 | 1N4448 | R....62 57.11.3302 3 kOhm 1% |
| | D.....2 | 50.04.0125 | 1N4448 | R....63 57.11.3150 15 Ohm 1% |
| | D.....3 | 50.04.0125 | 1N4448 | R....64 57.11.3302 3 kOhm 1% |
| | D.....4 | 50.04.0125 | 1N4448 | R....65 57.11.3473 47 kOhm 1% |
| | D.....5 | 50.04.0125 | 1N4448 | R....66 57.11.3272 2.7 kOhm 1% |
| | D.....6 | 50.04.0125 | 1N4448 | R....67 57.11.3302 3 kOhm 1% |
| | D.....7 | 50.04.0125 | 1N4448 | R....68 57.11.3302 3 kOhm 1% |
| | D.....8 | 50.04.0125 | 1N4448 | R....69 57.11.4474 470 kOhm 2% |
| | IC.....1 | 50.09.0103 | TI071CP J-FET-op.amp. TI | R....70 57.11.3150 15 Ohm 1% |
| | IC.....2 | 50.05.0244 | 5534 law noise op.amp. RA: 5534ANB, Sig: NE5534AN | R....71 57.11.3302 3 kOhm 1% |
| | IC.....3 | 50.07.0027 | 4027 IC C-MOS Mot: MC14027BCP, RCA:CD4027BE | R....72 57.11.3302 3 kOhm 1% |
| | IC.....4 | 50.07.0027 | 4027 Ph: HEF4027BP, SGS: HCF4027BEY | R....73 57.11.3302 3 kOhm 1% |
| | IC.....5 | 50.09.0105 | NE5532 dual op. amp. * | R....74 57.11.3302 3 kOhm 1% |
| | IC.....6 | 50.09.0105 | NE5532 dual op. amp. * | R....75 57.11.3302 3 kOhm 1% |
| | P.....1 | 54.01.0359 | 2*16 pin eurocard connector, male * | R....76 57.11.3302 3 kOhm 1% |
| | P.....2 | 54.11.2007 | 2*8 pin 1/2-eurocard connector, male | R....77 57.11.3302 3 kOhm 1% |
| | Q.....1 | 50.03.0216 | J111 N-J-FET NS, Mot, Six | R....78 57.11.3302 3 kOhm 1% |
| | Q.....2 | 50.03.0350 | J112 N-J-FET Mot | R....79 57.11.3689 6.8 Ohm 1% |
| | Q.....3 | 50.03.0496 | BC560 PNP, Ic<100mA, B>290 any | R....80 57.11.3689 6.8 Ohm 1% |
| | Q.....4 | 50.03.0497 | BC550 NPN, Ic<100mA, B>290 any | R....81 57.11.3152 1.5 kOhm 1% |
| | Q.....5 | 50.03.0497 | BC550 NPN, Ic<100mA, B>290 any | R....82 57.11.3152 1.5 kOhm 1% |
| | Q.....6 | 50.03.0496 | BC560 PNP, Ic<100mA, B>290 any | R....83 57.11.3392 3.9 kOhm 1% |
| | Q.....7 | 50.03.0350 | J112 N-J-FET Mot | R....84 57.11.3392 3.9 kOhm 1% |
| | Q.....8 | 50.03.0497 | BC550 NPN, Ic<100mA, B>290 any | R....85 57.11.3272 2.7 kOhm 1% |
| | Q.....9 | 50.03.0497 | BC550 NPN, Ic<100mA, B>290 any | R....86 57.11.3272 2.7 kOhm 1% |
| | Q.....10 | 50.03.0496 | BC560 PNP, Ic<100mA, B>290 any | R....87 57.11.4223 22 kOhm |
| | Q.....11 | 50.03.0496 | BC560 PNP, Ic<100mA, B>290 any | R....88 57.11.4330 33 Ohm |
| | Q.....12 | 50.03.0497 | BC550 NPN, Ic<100mA, B>290 any | R....89 57.11.4471 470 Ohm |
| | Q.....13 | 50.03.0496 | BC560 PNP, Ic<100mA, B>290 any | R....90 57.11.4470 47 Ohm |
| | R.....1 | 57.11.4683 | 68 kOhm | |
| | R.....2 | 57.11.4105 | 1 MOhm | |
| | R.....3 | 57.11.4103 | 10 kOhm | |
| | R.....4 | 57.11.4223 | 22 kOhm | |
| | R.....5 | 57.11.4334 | 330 kOhm | |
| | R.....6 | 57.11.4224 | 220 kOhm | |
| | R.....7 | 57.11.4333 | 33 kOhm | |
| | R.....8 | 57.11.4105 | 1 MOhm | |
| | R.....9 | 57.11.4105 | 1 MOhm | |
| | R.....10 | 57.11.4124 | 120 kOhm | |
| | R.....11 | 57.11.4392 | 3.9 kOhm | |
| | R.....12 | 57.11.4684 | 680 kOhm | |
| | R.....13 | 57.11.4684 | 680 kOhm | |
| | R.....14 | 57.11.4104 | 100 kOhm | |
| | R.....15 | 57.11.4105 | 1 MOhm | |
| | R.....16 | 57.11.4105 | 1 MOhm | |
| | R.....17 | 57.11.4105 | 1 MOhm | |
| | R.....18 | 57.11.5106 | 10 MOhm | |
| | R.....20 | 57.11.4221 | 220 Ohm | |
| | R.....21 | 57.11.4104 | 100 kOhm | |
| | R.....22 | 57.11.4222 | 2.2 kOhm | |
| | R.....23 | 58.01.8501 | 500 Ohm | |
| | R.....24 | 57.11.4102 | 1 kOhm | |
| | R.....25 | 57.11.4104 | 100 kOhm | |
| | R.....26 | 57.11.4330 | 33 Ohm | |
| | R.....27 | 57.11.3105 | 1 MOhm | |
| | R.....28 | 57.11.5106 | 10 MOhm | |
| | R.....29 | 57.11.4104 | 100 kOhm | |
| | R.....30 | 57.11.4104 | 100 kOhm | |

This position list is valid for:
 Diese Positionsliste ist gültig für:
 -1.911.110.83 Mono Fader Unit A Mk2
 -1.911.112.83 Mono Fader Unit A Mk2 / Bal.Amp.

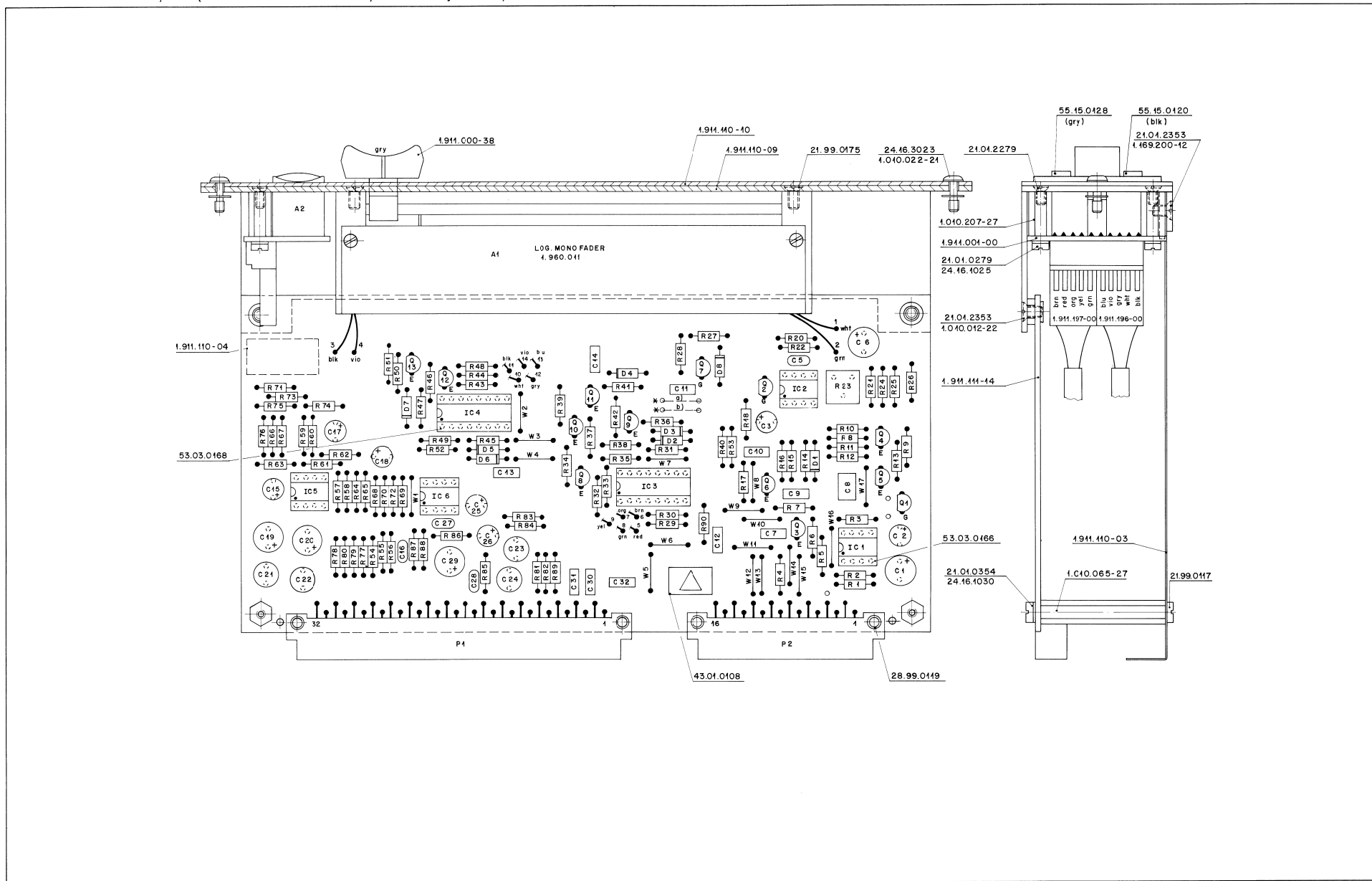
* = only/nur 1.911.112.83
 CER = ceramic, EL = electrolytic, PE = polyester

MANUFACTURER: Mot=Motorola, NS=National Semiconductors, Ph=Philips,
 Ra=Raytheon, SGS=SGS/Ates, Sig=Signetics,
 Six=Siliconics, St=Studer, TI=Texas Instruments

HISTORY:

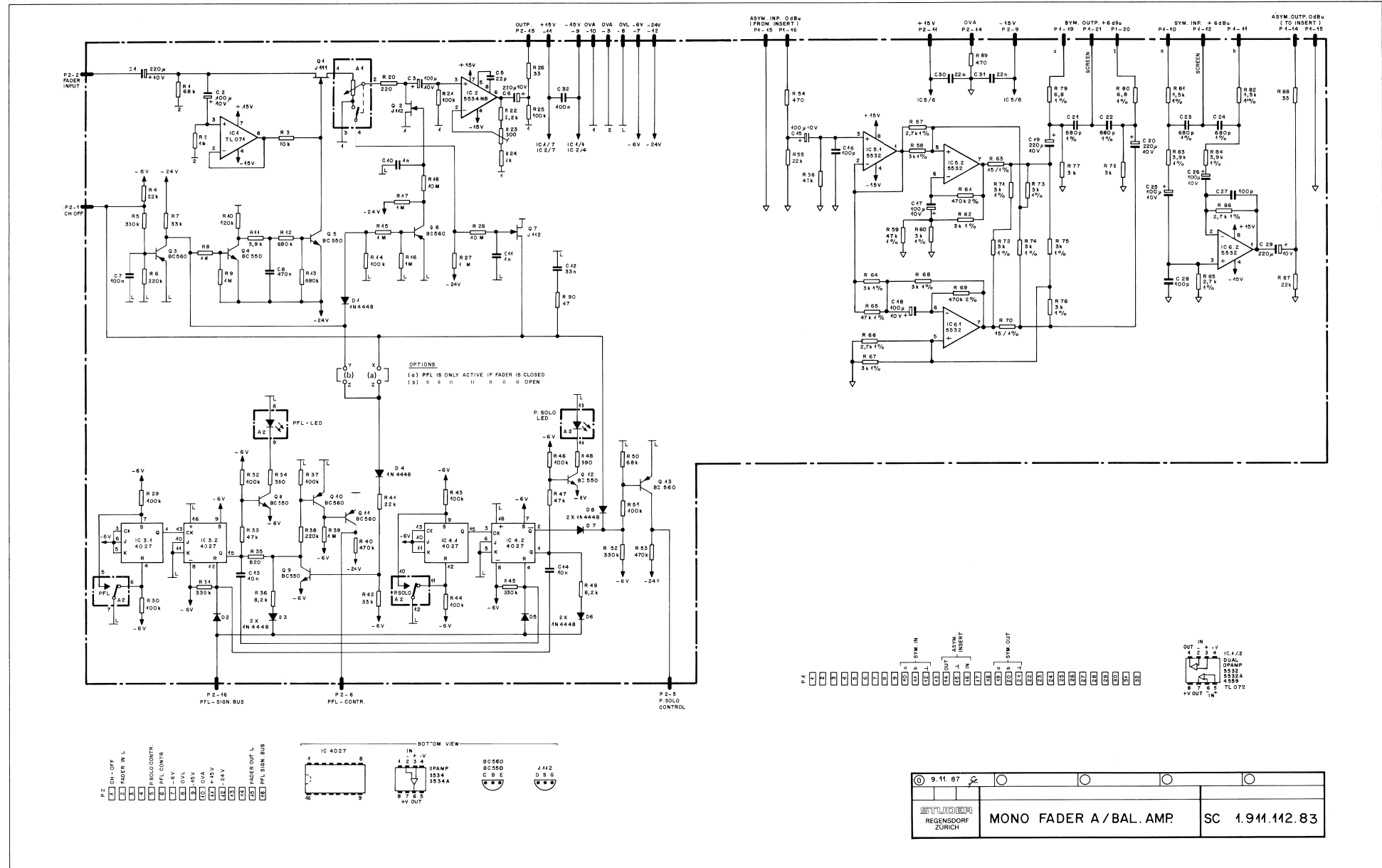
20.3.90 (1) New Fader 1.960.011.81
 1.911.110.83 MONO FADER UNIT A Mk2 TA 89/10/1700
 1.911.110.83 MONO FADER UNIT A Mk2 HOR90/03/2001

Monofader MkII 1.911.110 / 112 (with - without balanced insert / mit - ohne sym. Insert)



FADER "A"

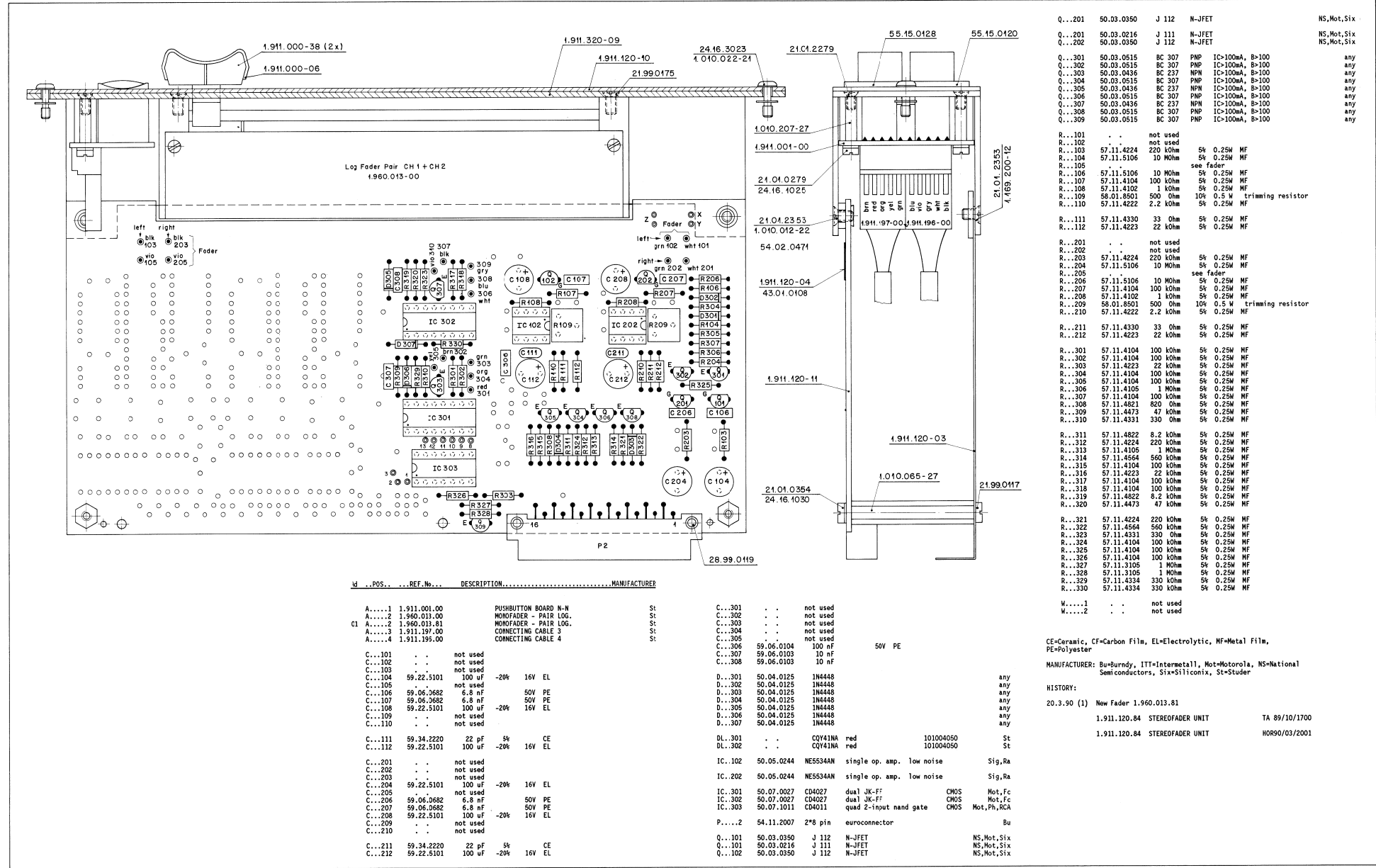
Monofader MkII 1.911.112 (balanced insert / symmetrischer Insert)



| | | |
|--------------------------------|-----------------------|-----------------|
| 9.11.87 | | |
| STUDER REGENSDORF ZURICH | MONO FADER A/BAL. AMP | SC 1.911.112.83 |

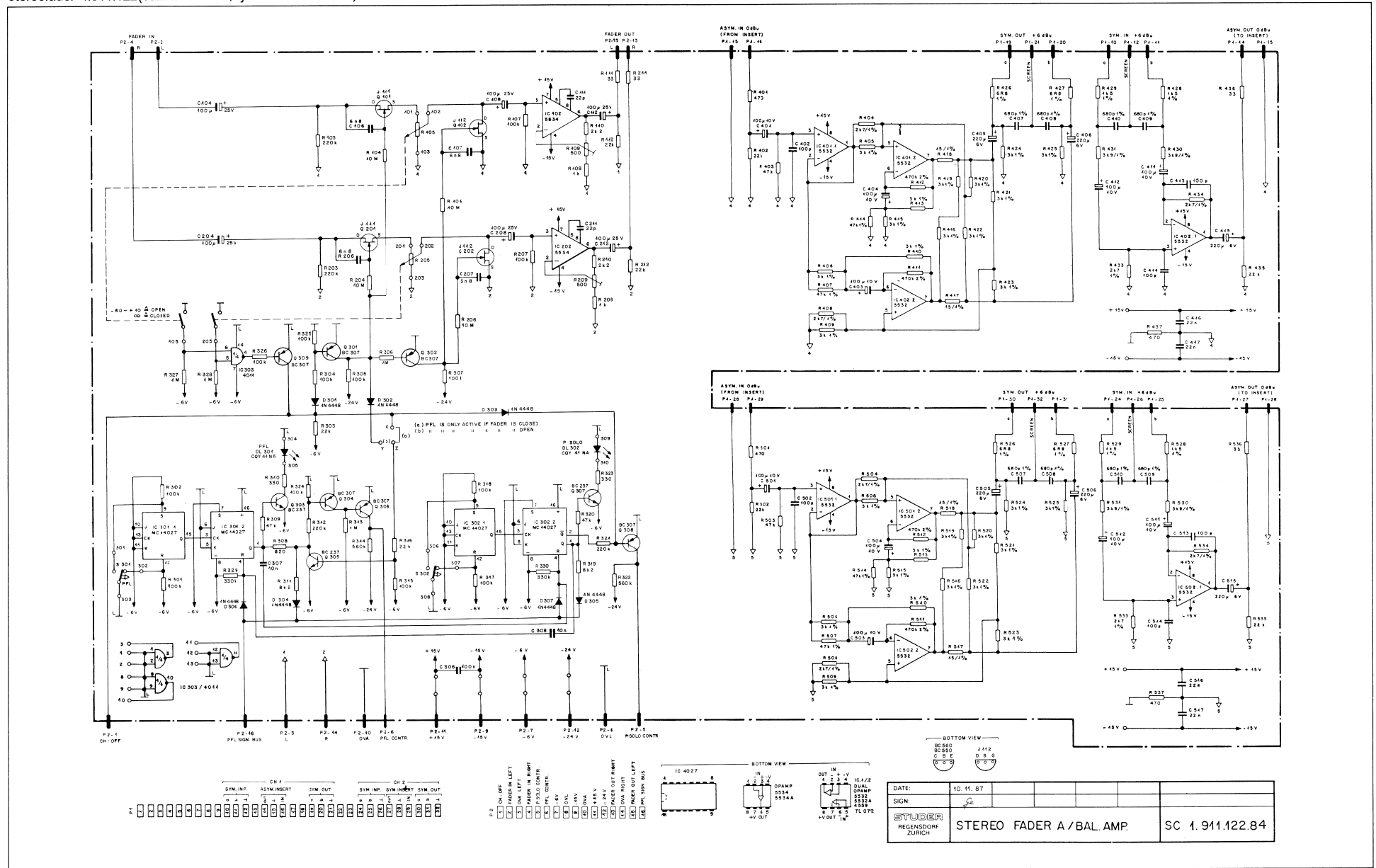
FADER "A"

Stereofader 1.911.120



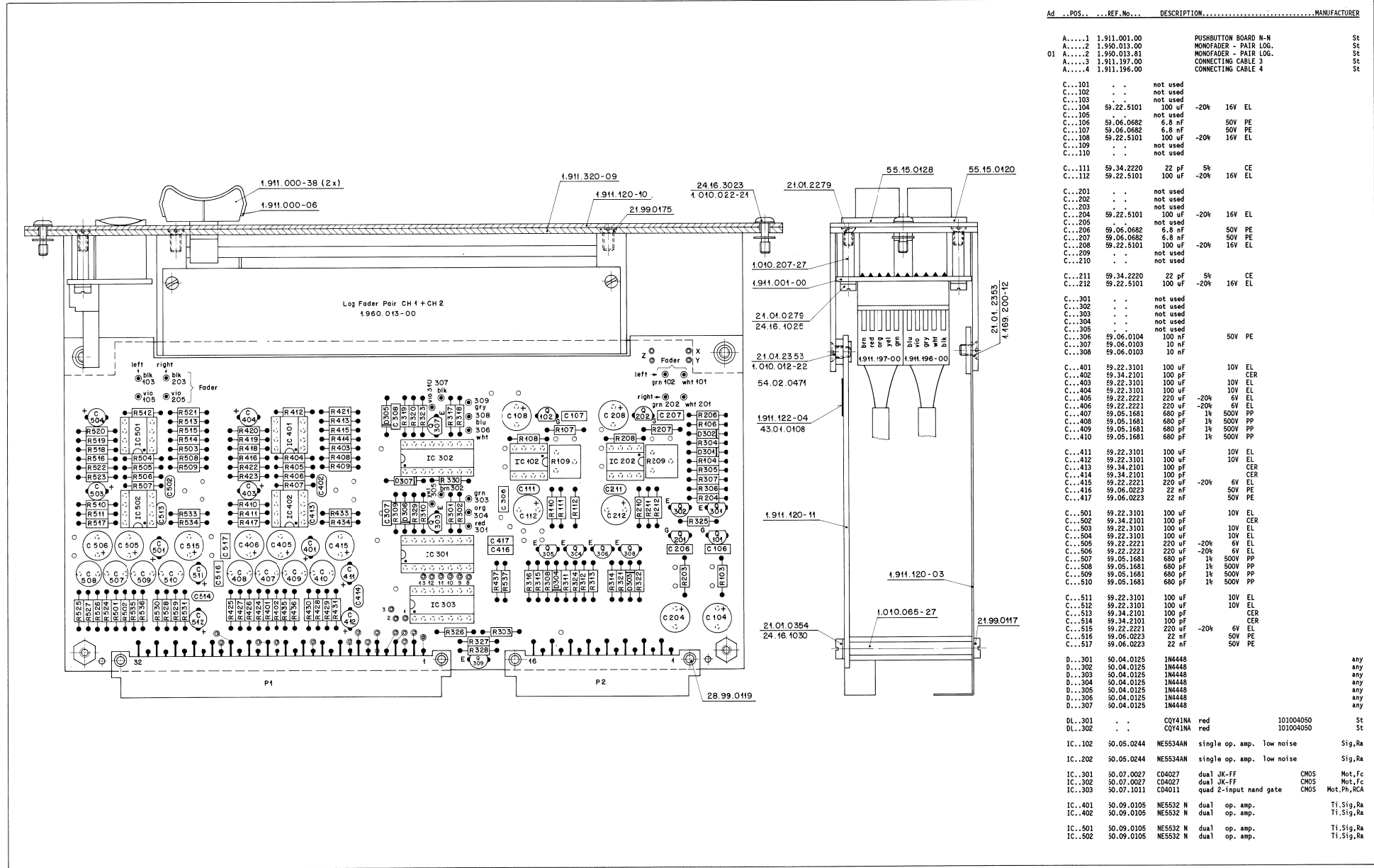
| Q... | REF. No... | DESCRIPTION | MANUFACTURER |
|---|--------------|------------------|-----------------------------|
| Q...201 | 50.03.0350 | J 112 | N-JFET |
| Q...201 | 50.03.0216 | J 111 | N-JFET |
| Q...202 | 50.03.0350 | J 112 | N-JFET |
| Q...301 | 50.03.0515 | BC 307 | PNP IC>100mA, B>100 |
| Q...302 | 50.03.0515 | BC 307 | PNP IC>100mA, B>100 |
| Q...303 | 50.03.0436 | BC 237 | NPN IC>100mA, B>100 |
| Q...304 | 50.03.0515 | BC 307 | PNP IC>100mA, B>100 |
| Q...305 | 50.03.0436 | BC 237 | NPN IC>100mA, B>100 |
| Q...306 | 50.03.0515 | BC 307 | PNP IC>100mA, B>100 |
| Q...307 | 50.03.0436 | BC 237 | NPN IC>100mA, B>100 |
| Q...308 | 50.03.0515 | BC 307 | PNP IC>100mA, B>100 |
| Q...309 | 50.03.0515 | BC 307 | PNP IC>100mA, B>100 |
| R...101 | . | not used | |
| R...102 | . | not used | |
| R...103 | 57.11.4224 | 220 kOhm | 5% 0.25W MF |
| R...104 | 57.11.5106 | 10 MOhm | 5% 0.25W MF |
| R...105 | . | see fader | |
| R...106 | 57.11.5106 | 10 MOhm | 5% 0.25W MF |
| R...107 | 57.11.4104 | 100 kOhm | 5% 0.25W MF |
| R...108 | 57.11.4102 | 1 kOhm | 5% 0.25W MF |
| R...109 | 58.01.8501 | 500 Ohm | 10% 0.5 W trimming resistor |
| R...110 | 57.11.4222 | 2.2 kOhm | 5% 0.25W MF |
| R...111 | 57.11.4330 | 33 Ohm | 5% 0.25W MF |
| R...112 | 57.11.4223 | 22 kOhm | 5% 0.25W MF |
| R...201 | . | not used | |
| R...202 | . | not used | |
| R...203 | 57.11.4224 | 220 kOhm | 5% 0.25W MF |
| R...204 | 57.11.5106 | 10 MOhm | 5% 0.25W MF |
| R...205 | . | see fader | |
| R...206 | 57.11.5106 | 10 MOhm | 5% 0.25W MF |
| R...207 | 57.11.4104 | 100 kOhm | 5% 0.25W MF |
| R...208 | 57.11.4102 | 1 kOhm | 5% 0.25W MF |
| R...209 | 58.01.8501 | 500 Ohm | 10% 0.5 W trimming resistor |
| R...210 | 57.11.4222 | 2.2 kOhm | 5% 0.25W MF |
| R...211 | 57.11.4330 | 33 Ohm | 5% 0.25W MF |
| R...212 | 57.11.4223 | 22 kOhm | 5% 0.25W MF |
| R...301 | 57.11.4104 | 100 kOhm | 5% 0.25W MF |
| R...302 | 57.11.4104 | 100 kOhm | 5% 0.25W MF |
| R...303 | 57.11.4223 | 22 kOhm | 5% 0.25W MF |
| R...304 | 57.11.4104 | 100 kOhm | 5% 0.25W MF |
| R...305 | 57.11.4104 | 100 kOhm | 5% 0.25W MF |
| R...306 | 57.11.4105 | 1 MOhm | 5% 0.25W MF |
| R...307 | 57.11.4104 | 100 kOhm | 5% 0.25W MF |
| R...308 | 57.11.4821 | 820 Ohm | 5% 0.25W MF |
| R...309 | 57.11.4473 | 47 kOhm | 5% 0.25W MF |
| R...310 | 57.11.4331 | 330 Ohm | 5% 0.25W MF |
| R...311 | 57.11.4822 | 8.2 kOhm | 5% 0.25W MF |
| R...312 | 57.11.4224 | 220 kOhm | 5% 0.25W MF |
| R...313 | 57.11.4105 | 1 MOhm | 5% 0.25W MF |
| R...314 | 57.11.4564 | 560 kOhm | 5% 0.25W MF |
| R...315 | 57.11.4104 | 100 kOhm | 5% 0.25W MF |
| R...316 | 57.11.4223 | 22 kOhm | 5% 0.25W MF |
| R...317 | 57.11.4104 | 100 kOhm | 5% 0.25W MF |
| R...318 | 57.11.4104 | 100 kOhm | 5% 0.25W MF |
| R...319 | 57.11.4822 | 8.2 kOhm | 5% 0.25W MF |
| R...320 | 57.11.4473 | 47 kOhm | 5% 0.25W MF |
| R...321 | 57.11.4224 | 220 kOhm | 5% 0.25W MF |
| R...322 | 57.11.4564 | 560 kOhm | 5% 0.25W MF |
| R...323 | 57.11.4331 | 330 Ohm | 5% 0.25W MF |
| R...324 | 57.11.4104 | 100 kOhm | 5% 0.25W MF |
| R...325 | 57.11.4104 | 100 kOhm | 5% 0.25W MF |
| R...326 | 57.11.4104 | 100 kOhm | 5% 0.25W MF |
| R...327 | 57.11.3105 | 1 MOhm | 5% 0.25W MF |
| R...328 | 57.11.3105 | 1 MOhm | 5% 0.25W MF |
| R...329 | 57.11.4334 | 330 kOhm | 5% 0.25W MF |
| R...330 | 57.11.4334 | 330 kOhm | 5% 0.25W MF |
| W...1 | . | not used | |
| W...2 | . | not used | |
| CE=Ceramic, CF=Carbon Film, EL=Electrolytic, MF=Metal Film, PE=Polyester | | | |
| MANUFACTURER: Bu=Burdny, ITT=Intermetal, Mot=Motorola, NS=National Semiconductors, Six=Siliconix, St=Studer | | | |
| HISTORY: | | | |
| 20.3.90 (1) New Fader 1.960.013.81 | | | |
| | 1.911.120.84 | STEREOFADER UNIT | TA 89/10/1700 |
| | 1.911.120.84 | STEREOFADER UNIT | HORS90/03/2001 |

Stereofader 1.911.122(balanced insert/symmetrischer Insert)



FADER "A"

Stereofader 1.911.122(balanced insert/symmetrischer Insert)



Stereofader 1.911.122 (balanced insert / symmetrischer Insert)

| Ad | ..POS.. | ..REF.No.. | DESCRIPTION..... | MANUFACTURER |
|---------|------------|------------|-----------------------------|--------------|
| P....1 | 54.01.0359 | 2*16pin | euroconnector | Bu |
| P....2 | 54.11.2007 | 2*8 pin | euroconnector | Bu |
| Q...101 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| Q...101 | 50.03.0216 | J 111 | N-JFET | NS,Mot,Six |
| Q...102 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| Q...201 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| Q...201 | 50.03.0216 | J 111 | N-JFET | NS,Mot,Six |
| Q...202 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| Q...301 | 50.03.0515 | BC 307 | PNP IC>100mA, B>100 | any |
| Q...302 | 50.03.0515 | BC 307 | PNP IC>100mA, B>100 | any |
| Q...303 | 50.03.0436 | BC 237 | NPN IC>100mA, B>100 | any |
| Q...304 | 50.03.0515 | BC 307 | PNP IC>100mA, B>100 | any |
| Q...305 | 50.03.0436 | BC 237 | NPN IC>100mA, B>100 | any |
| Q...306 | 50.03.0515 | BC 307 | PNP IC>100mA, B>100 | any |
| Q...307 | 50.03.0436 | BC 237 | NPN IC>100mA, B>100 | any |
| Q...308 | 50.03.0515 | BC 307 | PNP IC>100mA, B>100 | any |
| Q...309 | 50.03.0515 | BC 307 | PNP IC>100mA, B>100 | any |
| R...101 | . | . | not used | |
| R...102 | . | . | not used | |
| R...103 | 57.11.4224 | 220 kOhm | 5% 0.25W MF | |
| R...104 | 57.11.5106 | 10 MOhm | 5% 0.25W MF | |
| R...105 | . | . | see fader | |
| R...106 | 57.11.5106 | 10 MOhm | 5% 0.25W MF | |
| R...107 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| R...108 | 57.11.4102 | 1 kOhm | 5% 0.25W MF | |
| R...109 | 58.01.8501 | 500 Ohm | 10% 0.5 W trimming resistor | |
| R...110 | 57.11.4222 | 2.2 kOhm | 5% 0.25W MF | |
| R...111 | 57.11.4330 | 33 Ohm | 5% 0.25W MF | |
| R...112 | 57.11.4223 | 22 kOhm | 5% 0.25W MF | |
| R...201 | . | . | not used | |
| R...202 | . | . | not used | |
| R...203 | 57.11.4224 | 220 kOhm | 5% 0.25W MF | |
| R...204 | 57.11.5106 | 10 MOhm | 5% 0.25W MF | |
| R...205 | . | . | see fader | |
| R...206 | 57.11.5106 | 10 MOhm | 5% 0.25W MF | |
| R...207 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| R...208 | 57.11.4102 | 1 kOhm | 5% 0.25W MF | |
| R...209 | 58.01.8501 | 500 Ohm | 10% 0.5 W trimming resistor | |
| R...210 | 57.11.4222 | 2.2 kOhm | 5% 0.25W MF | |
| R...211 | 57.11.4330 | 33 Ohm | 5% 0.25W MF | |
| R...212 | 57.11.4223 | 22 kOhm | 5% 0.25W MF | |
| R...301 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| R...302 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| R...303 | 57.11.4223 | 22 kOhm | 5% 0.25W MF | |
| R...304 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| R...305 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| R...306 | 57.11.4105 | 1 MOhm | 5% 0.25W MF | |
| R...307 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| R...308 | 57.11.4821 | 820 Ohm | 5% 0.25W MF | |
| R...309 | 57.11.4473 | 47 kOhm | 5% 0.25W MF | |
| R...310 | 57.11.4331 | 330 Ohm | 5% 0.25W MF | |
| R...311 | 57.11.4822 | 8.2 kOhm | 5% 0.25W MF | |
| R...312 | 57.11.4224 | 220 kOhm | 5% 0.25W MF | |
| R...313 | 57.11.4105 | 1 MOhm | 5% 0.25W MF | |
| R...314 | 57.11.4564 | 560 kOhm | 5% 0.25W MF | |
| R...315 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| R...316 | 57.11.4223 | 22 kOhm | 5% 0.25W MF | |
| R...317 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| R...318 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| R...319 | 57.11.4822 | 8.2 kOhm | 5% 0.25W MF | |
| R...320 | 57.11.4473 | 47 kOhm | 5% 0.25W MF | |
| R...321 | 57.11.4224 | 220 kOhm | 5% 0.25W MF | |
| R...322 | 57.11.4564 | 560 kOhm | 5% 0.25W MF | |
| R...323 | 57.11.4331 | 330 Ohm | 5% 0.25W MF | |
| R...324 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| R...325 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| R...326 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| R...327 | 57.11.3105 | 1 MOhm | 5% 0.25W MF | |
| R...328 | 57.11.3105 | 1 MOhm | 5% 0.25W MF | |
| R...329 | 57.11.4334 | 330 kOhm | 5% 0.25W MF | |
| R...330 | 57.11.4334 | 330 kOhm | 5% 0.25W MF | |
| R...401 | 57.11.4471 | 470 Ohm | 5% 0.25W MF | |
| R...402 | 57.11.4223 | 22 kOhm | 5% 0.25W MF | |
| R...403 | 57.11.4473 | 47 kOhm | 5% 0.25W MF | |
| R...404 | 57.11.3272 | 2.7 kOhm | 1% 0.25W MF | |
| R...405 | 57.11.3302 | 3 kOhm | 1% 0.25W MF | |
| R...406 | 57.11.3302 | 3 kOhm | 1% 0.25W MF | |
| R...407 | 57.11.3473 | 47 kOhm | 1% 0.25W MF | |
| R...408 | 57.11.3272 | 2.7 kOhm | 1% 0.25W MF | |
| R...409 | 57.11.3302 | 3 kOhm | 1% 0.25W MF | |
| R...410 | 57.11.3302 | 3 kOhm | 1% 0.25W MF | |
| R...411 | 57.11.4474 | 470 kOhm | 2% 0.25W MF | |
| R...412 | 57.11.4474 | 470 kOhm | 2% 0.25W MF | |
| R...413 | 57.11.3302 | 3 kOhm | 1% 0.25W MF | |
| R...414 | 57.11.3473 | 47 kOhm | 1% 0.25W MF | |
| R...415 | 57.11.3302 | 3 kOhm | 1% 0.25W MF | |
| R...416 | 57.11.3302 | 3 kOhm | 1% 0.25W MF | |
| R...417 | 57.11.3150 | 15 Ohm | 1% 0.25W MF | |
| R...418 | 57.11.3150 | 15 Ohm | 1% 0.25W MF | |
| R...419 | 57.11.3302 | 3 kOhm | 1% 0.25W MF | |
| R...420 | 57.11.3302 | 3 kOhm | 1% 0.25W MF | |
| R...421 | 57.11.3302 | 3 kOhm | 1% 0.25W MF | |
| R...422 | 57.11.3302 | 3 kOhm | 1% 0.25W MF | |
| R...423 | 57.11.3302 | 3 kOhm | 1% 0.25W MF | |
| R...424 | 57.11.3302 | 3 kOhm | 1% 0.25W MF | |
| R...425 | 57.11.3302 | 3 kOhm | 1% 0.25W MF | |
| R...426 | 57.11.3689 | 6.8 Ohm | 1% 0.25W MF | |
| R...427 | 57.11.3689 | 6.8 Ohm | 1% 0.25W MF | |
| R...428 | 57.11.3152 | 1.5 kOhm | 1% 0.25W MF | |
| R...429 | 57.11.3152 | 1.5 kOhm | 1% 0.25W MF | |
| R...430 | 57.11.3392 | 3.9 kOhm | 1% 0.25W MF | |
| R...431 | 57.11.3392 | 3.9 kOhm | 1% 0.25W MF | |
| R...432 | . | . | not used | |
| R...433 | 57.11.3272 | 2.7 kOhm | 1% 0.25W MF | |
| R...434 | 57.11.3272 | 2.7 kOhm | 1% 0.25W MF | |
| R...435 | 57.11.4223 | 22 kOhm | 5% 0.25W MF | |
| R...436 | 57.11.4330 | 33 Ohm | 5% 0.25W MF | |
| R...437 | 57.11.4471 | 470 Ohm | 5% 0.25W MF | |
| R...501 | 57.11.4471 | 470 Ohm | 5% 0.25W MF | |
| R...502 | 57.11.4223 | 22 kOhm | 5% 0.25W MF | |
| R...503 | 57.11.4473 | 47 kOhm | 5% 0.25W MF | |
| R...504 | 57.11.3272 | 2.7 kOhm | 1% 0.25W MF | |
| R...505 | 57.11.3302 | 3 kOhm | 1% 0.25W MF | |
| R...506 | 57.11.3302 | 3 kOhm | 1% 0.25W MF | |
| R...507 | 57.11.3473 | 47 kOhm | 1% 0.25W MF | |
| R...508 | 57.11.3272 | 2.7 kOhm | 1% 0.25W MF | |
| R...509 | 57.11.3302 | 3 kOhm | 1% 0.25W MF | |
| R...510 | 57.11.3302 | 3 kOhm | 1% 0.25W MF | |
| R...511 | 57.11.4474 | 470 kOhm | 5% 0.25W MF | |
| R...512 | 57.11.4474 | 470 kOhm | 5% 0.25W MF | |
| R...513 | 57.11.3302 | 3 kOhm | 1% 0.25W MF | |
| R...514 | 57.11.3473 | 47 kOhm | 1% 0.25W MF | |
| R...515 | 57.11.3302 | 3 kOhm | 1% 0.25W MF | |
| R...516 | 57.11.3302 | 3 kOhm | 1% 0.25W MF | |
| R...517 | 57.11.3150 | 15 Ohm | 1% 0.25W MF | |
| R...518 | 57.11.3150 | 15 Ohm | 1% 0.25W MF | |
| R...519 | 57.11.3302 | 3 kOhm | 1% 0.25W MF | |
| R...520 | 57.11.3302 | 3 kOhm | 1% 0.25W MF | |
| R...521 | 57.11.3302 | 3 kOhm | 1% 0.25W MF | |
| R...522 | 57.11.3302 | 3 kOhm | 1% 0.25W MF | |
| R...523 | 57.11.3302 | 3 kOhm | 1% 0.25W MF | |
| R...524 | 57.11.3302 | 3 kOhm | 1% 0.25W MF | |
| R...525 | 57.11.3302 | 3 kOhm | 1% 0.25W MF | |
| R...526 | 57.11.3689 | 6.8 Ohm | 1% 0.25W MF | |
| R...527 | 57.11.3689 | 6.8 Ohm | 1% 0.25W MF | |
| R...528 | 57.11.3152 | 1.5 kOhm | 1% 0.25W MF | |
| R...529 | 57.11.3152 | 1.5 kOhm | 1% 0.25W MF | |
| R...530 | 57.11.3392 | 3.9 kOhm | 1% 0.25W MF | |
| R...531 | 57.11.3392 | 3.9 kOhm | 1% 0.25W MF | |
| R...532 | . | . | not used | |
| R...533 | 57.11.3272 | 2.7 kOhm | 1% 0.25W MF | |
| R...534 | 57.11.3272 | 2.7 kOhm | 1% 0.25W MF | |
| R...535 | 57.11.4223 | 22 kOhm | 5% 0.25W MF | |
| R...536 | 57.11.4330 | 33 Ohm | 5% 0.25W MF | |
| R...537 | 57.11.4471 | 470 Ohm | 5% 0.25W MF | |
| W....1 | . | . | not used | |
| W....2 | . | . | not used | |

CE=Ceramic, CF=Carbon Film, EL=Electrolytic, MF=Metal Film, PE=Polyester

MANUFACTURER: Bu=Burndy, ITT=Intermetal, Mot=Motorola, NS=National Semiconductors, Six=Siliconix, St=Studer

HISTORY:

20.3.90 (1) New Fader 1.960.013.81

1.911.122.84 STEREOFADER/BAL.AMP.UNIT TA 89/10/1700
 1.911.122.84 STEREOFADER/BAL.AMP.UNIT HOR90/03/2001

Master Unit Mk II

INHALT

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GELTUNGSBEREICH

Die folgenden Informationen beziehen sich auf die Einschübe mit den Nummern:

| | <u>ohne Limiter</u> | <u>mit Limiter</u> |
|------------------------|---------------------|--------------------|
| Mono Master Unit Mk II | 1.911.315 | 1.911.317 |
| Dual Master Unit Mk II | 1.911.325 | 1.911.335 |

Die verwendeten Prints tragen die Nummern 1.911.323 (Kanal 1 bzw. Mono) und 1.911.324 (Kanal 2).

MASTER UNIT MKII

1. Allgemeines

Der STUDER Summenregler ist einheitlich aus einem Summierverstärker in Null-Ohm-Technik, einem Flachbahnregler, einer Vorhörtaste sowie einem Leitungsverstärker mit Ausgangstransformator aufgebaut. Die Ausführungen mit Limiteranschluss verfügen zusätzlich über den Kippschalter 'Limiter on'. Er aktiviert die Dual Limiter - Europakarte 1.915.700, die im AF Insert der Summeneinheit eingeschleuft wird. Bei den Dual Master Einheiten können die beiden Limiterkanäle durch den Kippschalter 'Link' gekoppelt werden. Das Summensignal kann als 'PF out' (pre fader) vor oder als 'AF out' (after fader) nach dem Flachbahnregler abgegriffen und wieder eingespeist werden. Pro Kanal ist zudem ein vollkommen unabhängiger, elektronisch symmetrierter Verstärker vorhanden, der je nach Anwendung für die Bereitstellung symmetrischer Ein- und Ausgänge verschaltet werden kann. Neben den asymmetrischen Einschleifpunkten ist der 'AF in' symmetrisch ausgeführt.

2. Blockschaltbild

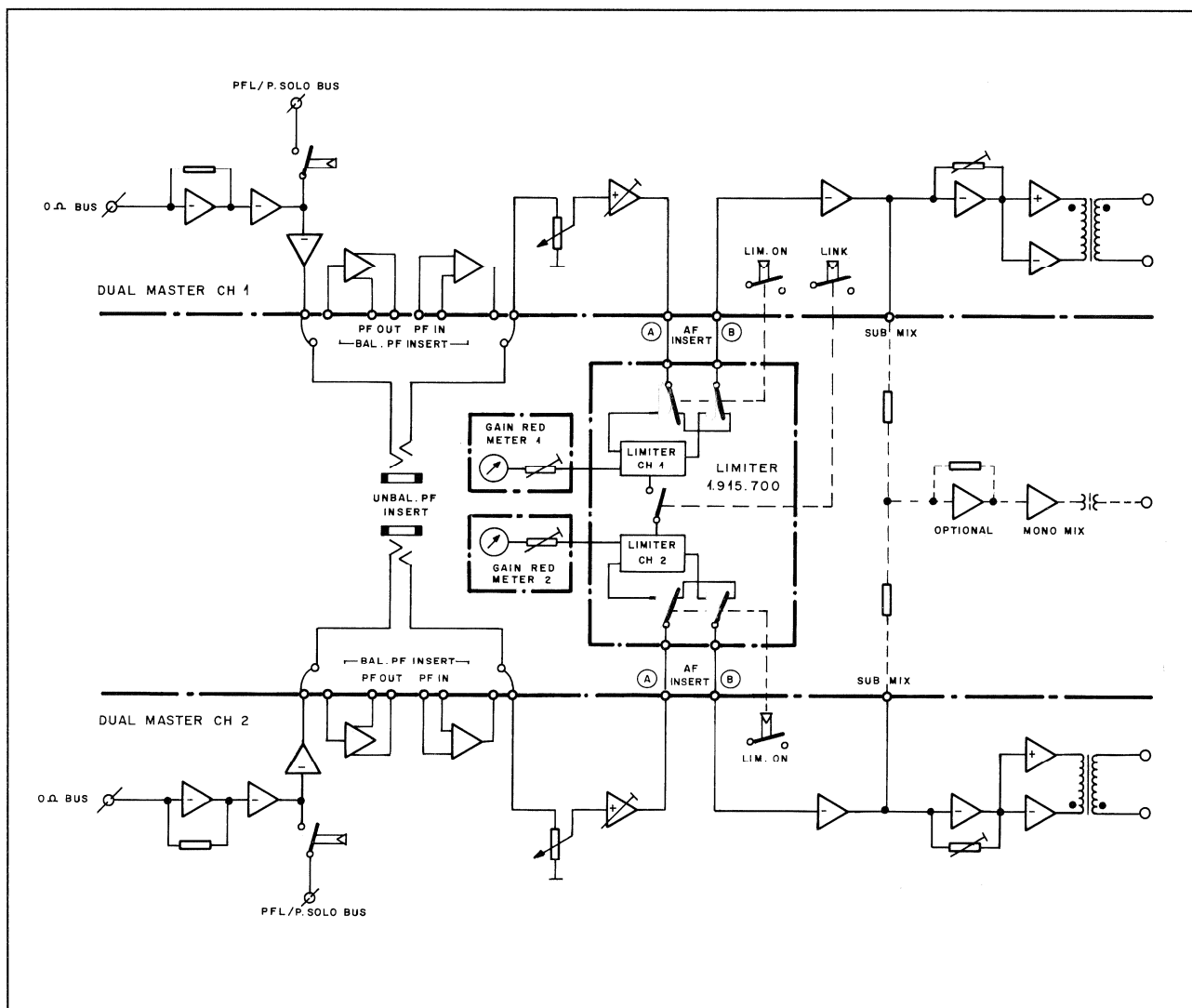


Fig. 1 Das Blockschaltbild zeigt die Version 1.911.335. Bei Ausführungen ohne Limiter wird an dessen Stelle eine Drahtbrücke bestückt. (Verbindung: A ... B)

3. Flachbahnregler

Der Studer Flachbahnregler ist mit einer Widerstandsschicht aus leitendem Kunststoff ausgerüstet, deren logarithmische Widerstandskennlinie engen Toleranzen folgt. Zieht man den Fader zu, so wird mit dem Schleifer ein Fader - Endkontakt in der Widerstandsschicht geschlossen. Durch diese Bauart entfallen Mikroschalter und Schaltpunkt - Einstellungen. Der Faderweg misst 104mm.

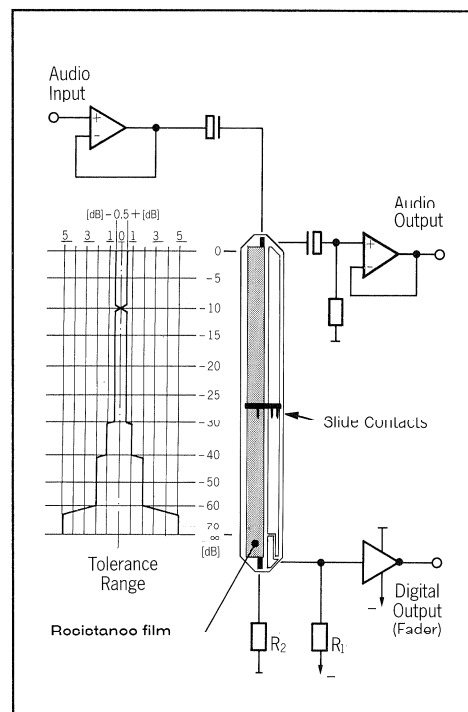


Fig. 2 Schematische Darstellung des Faderschaltkreises mit Toleranzdiagramm der Widerstandsschicht.

4. PFL - Taste

Die PFL- und P-Solo-Tasten sind gegenseitig elektronisch gekoppelt. Ist eine der beiden Tasten aktiviert, wird sie automatisch beim Drücken -der andern ausgeschaltet.

Die Vorhörtaste (PFL = Pre Fader Listening) ist als Impulstaste mit elektronischer Umschaltung und LED-Anzeige ausgeführt. Sie schaltet das Audiosignal vor dem Flachbahnregler auf die Vorhørsammelschiene.

Die Optionen 3 und 4 der Tabelle auf dem Schema (S.7) koppeln die PFL Funktion mit der Faderstellung:

Mit der Drahtbrücke PFL ON ist nur bei offenem Fader ein PFL Signal zu hören. Die Brücke PFL OFF schaltet umgekehrt nur bei geschlossenem Fader ein PFL Signal durch.

MASTER UNIT MKII

5. P Solo Taste

Die Abhörtaste 'Positional Solo' (Impulstaste mit elektronischer Umschaltung und LED-Anzeige) schaltet das Audiosignal nach Fader und Panorama-Regler auf die Vorhørsammelschiene.

6. Limiter

Der Stereo - Summenregler Nr. 1.911.335 ist mit der Limiter - Europakarte Nr. 1.915.700 verbunden. Diese wird für jeden Kanal separat durch den Kippschalter Limiter on aktiviert. Sollen die Limiter beider Kanäle gekoppelt arbeiten, muss der Kippschalter Link betätigt werden. Dies verhindert bei Stereowiedergabe ein Wandern der Schallquellen im Panoramafeld. Auch die Mono Master Unit kann mit einem Limiter ausgerüstet werden. Die Funktion 'Limiter on' wird dann aber über eine zweite Impulstaste mit LED - Anzeige gesteuert. Angaben zum Limiter finden sich im Kapitel 8, Europakarten.

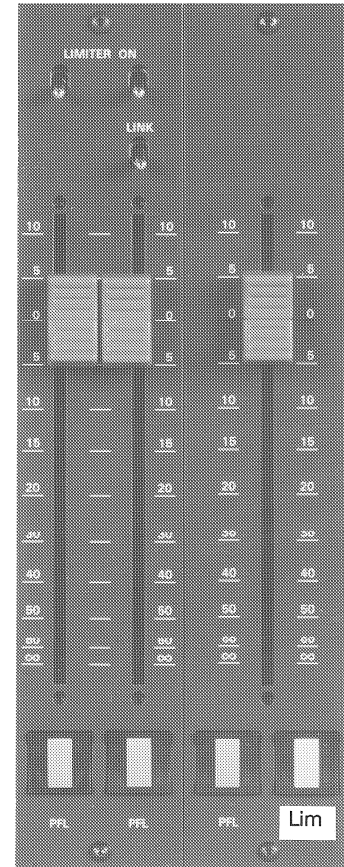


Fig. 3: Dual Master Unit MkII mit Limiter (1.911.335) und Mono Master Unit MkII mit Limiter (1.911.317)

7. Pegeldiagramm

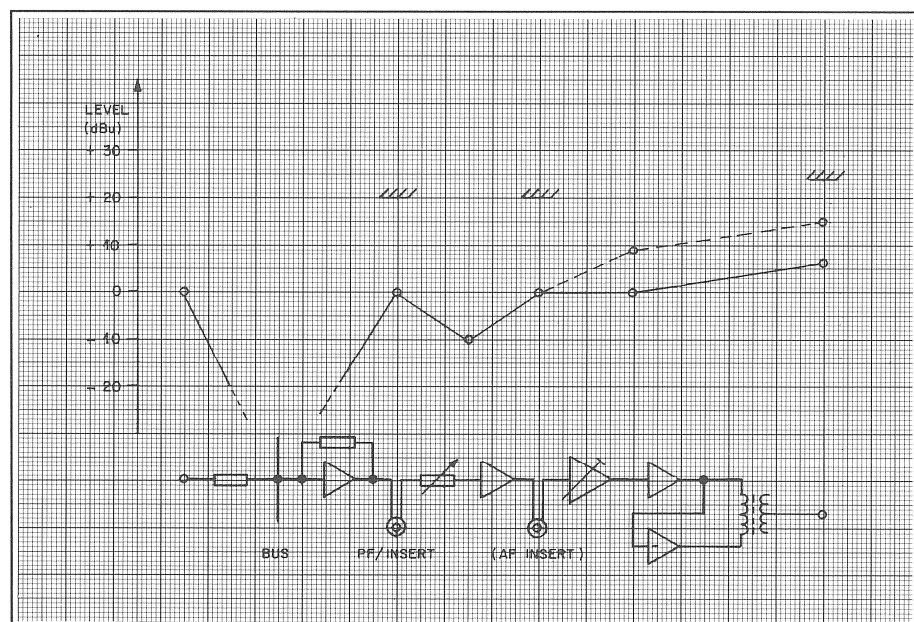


Fig. 4 Pegeldiagramm der Master Unit MkII

Master Unit Mk II

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VALIDITY

The following information relates to modules with the numbers:

| | <u>Without limiter</u> | <u>With limiter</u> |
|------------------------|------------------------|---------------------|
| Mono Master Unit Mk II | 1.911.315 | 1.911.317 |
| Dual Master Unit Mk II | 1.911.325 | 1.911.335 |

The corresponding circuit boards are numbered as 1.911.323 (mono) and 1.911.323/324 (stereo).

MASTER UNIT MKII

1. General

The STUDER master fader consists of a summing amplifier in zero-ohm technology, a fader, a prefader listening key, as well as a line amplifier with output transformer. Versions with a limiter connector are additionally equipped with a 'Limiter on' toggle switch. It activates the dual EU-standard limiter PCB 1.915.700 which is connected to the AF insert of the master unit. On dual master units, the two limiter channels can be coupled by means of the 'Link' toggle switch. The master signals can be tapped before the fader as 'PF out', or after the fader as 'AF out' and reinserted. Each channel has a fully independent, electronically balanced amplifier which can be wired for balanced input and outputs, as required by the application. In addition to the balanced PF and AF insertion points, also the 'AF in' is implemented with balanced circuits.

2. Block diagram

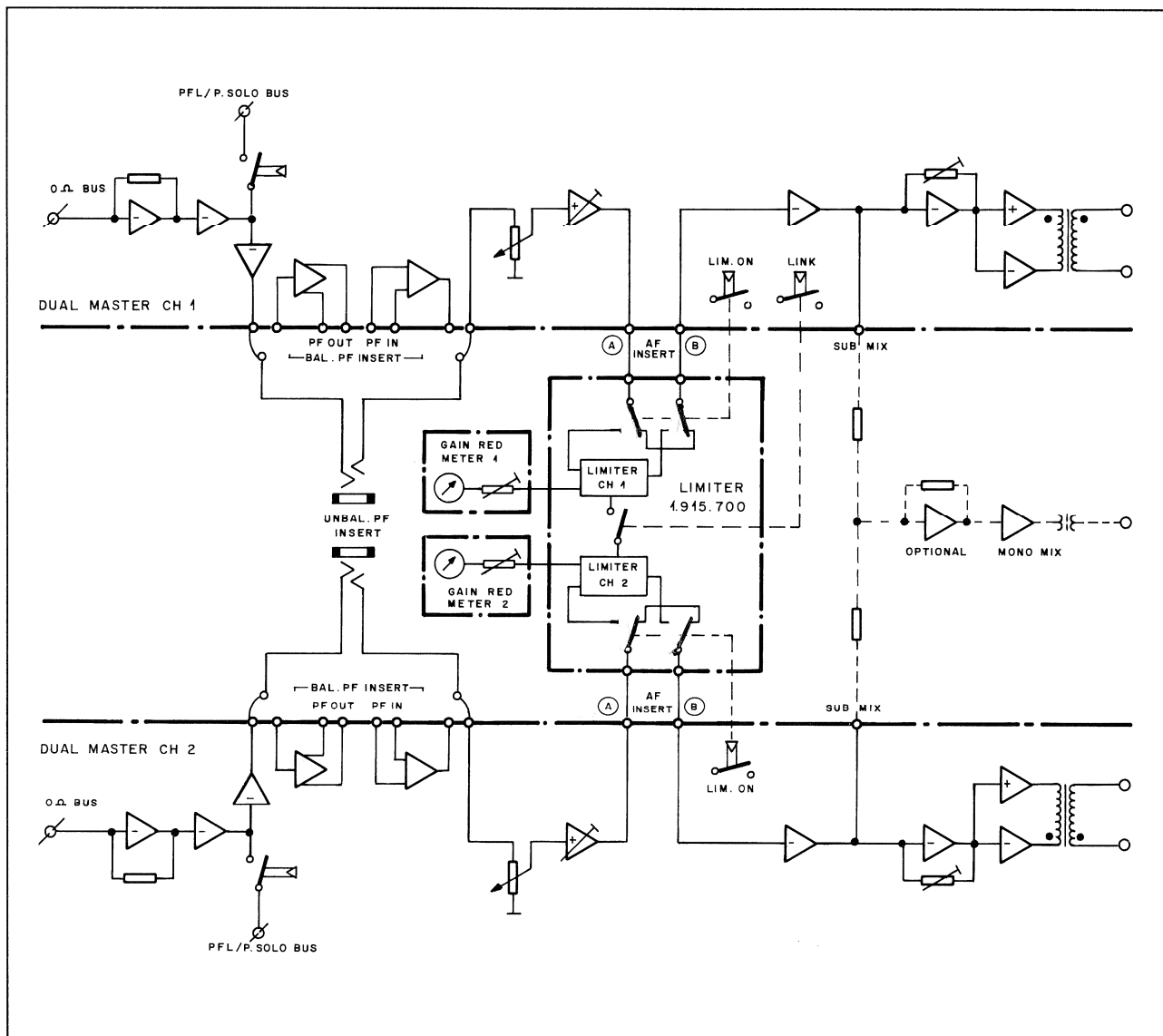


Fig. 1 The block diagram illustrates the version 1.911.335. In versions without a limiter a jumper is inserted in its place (connection: A...B)

3. Linear fader

The Studer linear fader features a resistance film made of conductive plastic whose resistance characteristic is logarithmic within close tolerances. When the fader is being closed, a fader limit contact is closed in the resistance film. This design eliminates the need for a microswitch and switch point alignments.

The fader has a travel of 104 mm.

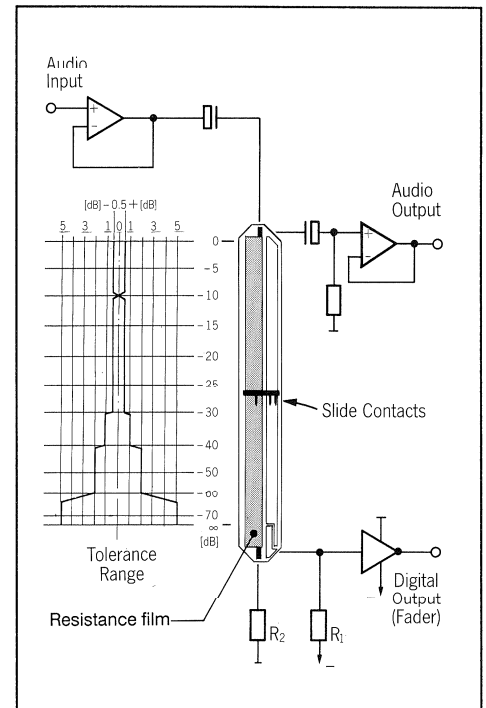


Fig. 2 Schematic representation of the fader circuit with tolerance diagram of the resistance film.

4. PFL key

The PFL key and the P.Solo key are electronically interlocked. If either of these two keys is activated, the other is automatically deactivated.

The prefader listening (PFL) key is implemented as a momentary-action push button with electronic changeover and pilot LED. It connects the prefader audio signal to the prelistening bus.

Options 3 and 4 of the table in the diagram (p.7) couple the PFL function to the fader setting:

With the PFL jumper in the ON position, a PFL signal can only be heard when the fader is open. Conversely, if the PFL jumper is in the OFF position, the PFL signal is only through-connected when the fader is closed.

MASTER UNIT MKII

5. P Solo key

The 'Positional Solo' key (momentary-action push button with electronic changeover and pilot LED) connects the audio signal after the fader and the panorama potentiometer to the prelistening bus.

6. Limiter

The stereo master fader No. 1.911.335 is connected to the EU-standard limiter board 1.915.700. This board is activated separately for each channel by the limiter toggle switch. If the limiters of both channels should work linked mode, the link toggle switch must be actuated. This prevents drifting of the sound sources in the panorama field during stereo reproduction. The mono master unit can also be fitted with a limiter. In this case the 'Limiter on' function is controlled via a second momentary-action push button with pilot LED. The limiter specifications can be found in Section 8, EU-standard boards.

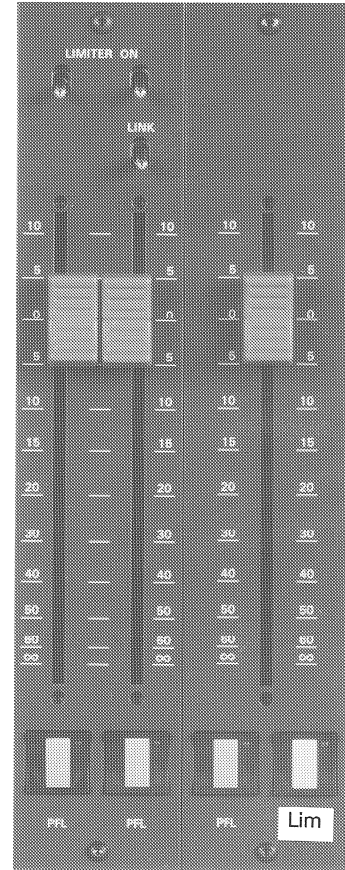


Fig. 3 Dual master unit MkII with limiter (1.911.335) and mono master unit MkII with limiter (1.911.317)

7. Level diagram

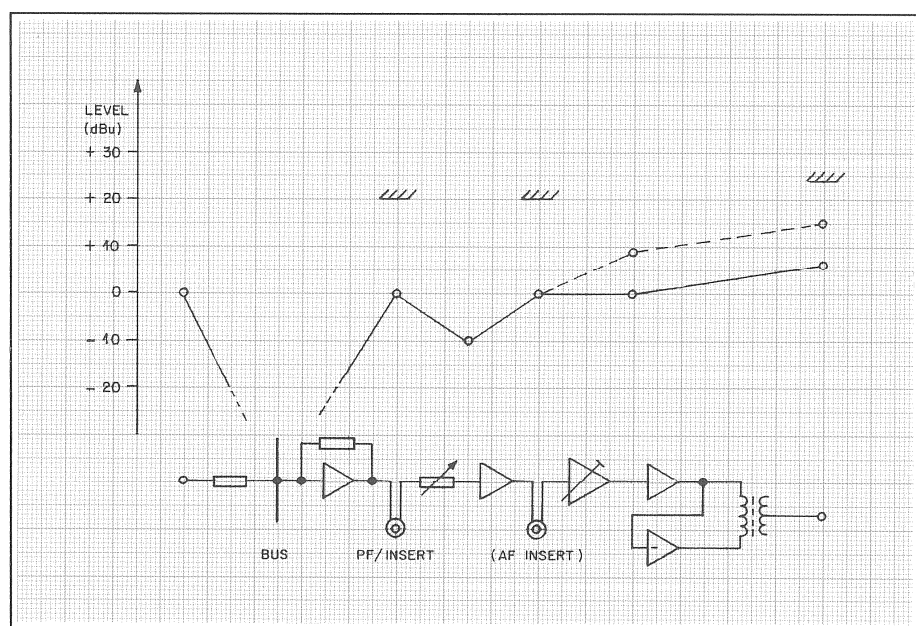
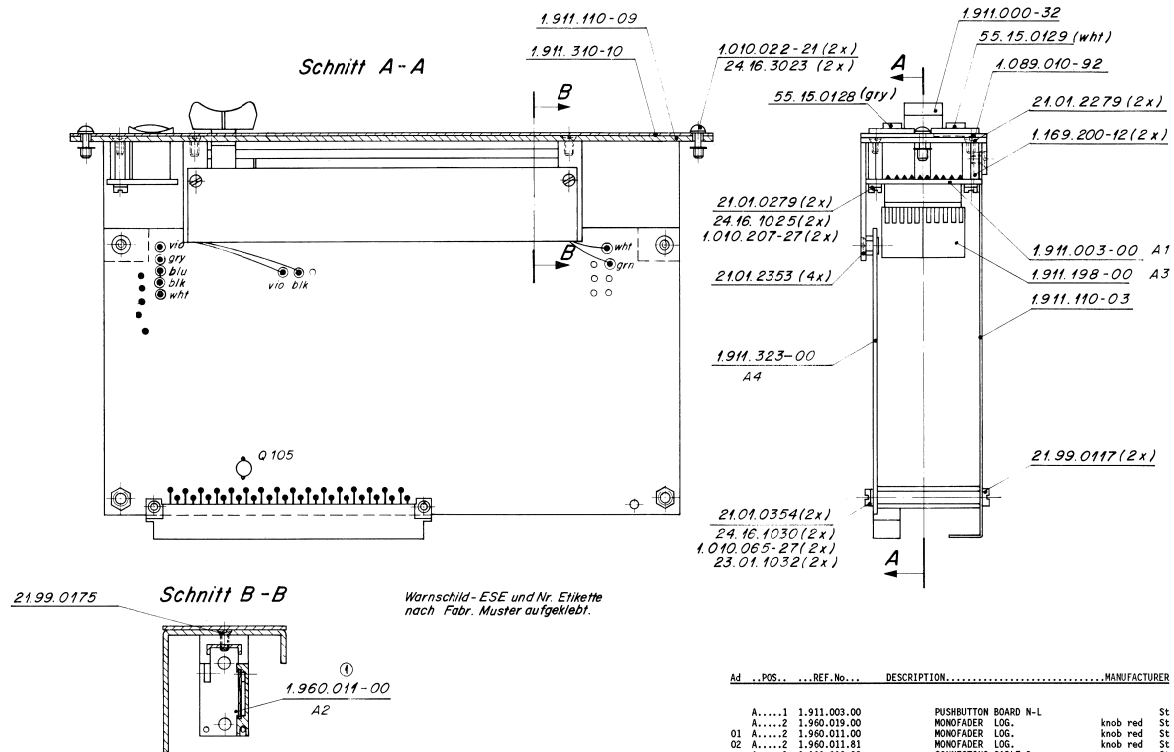


Fig. 4 Level diagram of the master unit MkII

Mono Master Unit 1.911.315 (1.911.317)



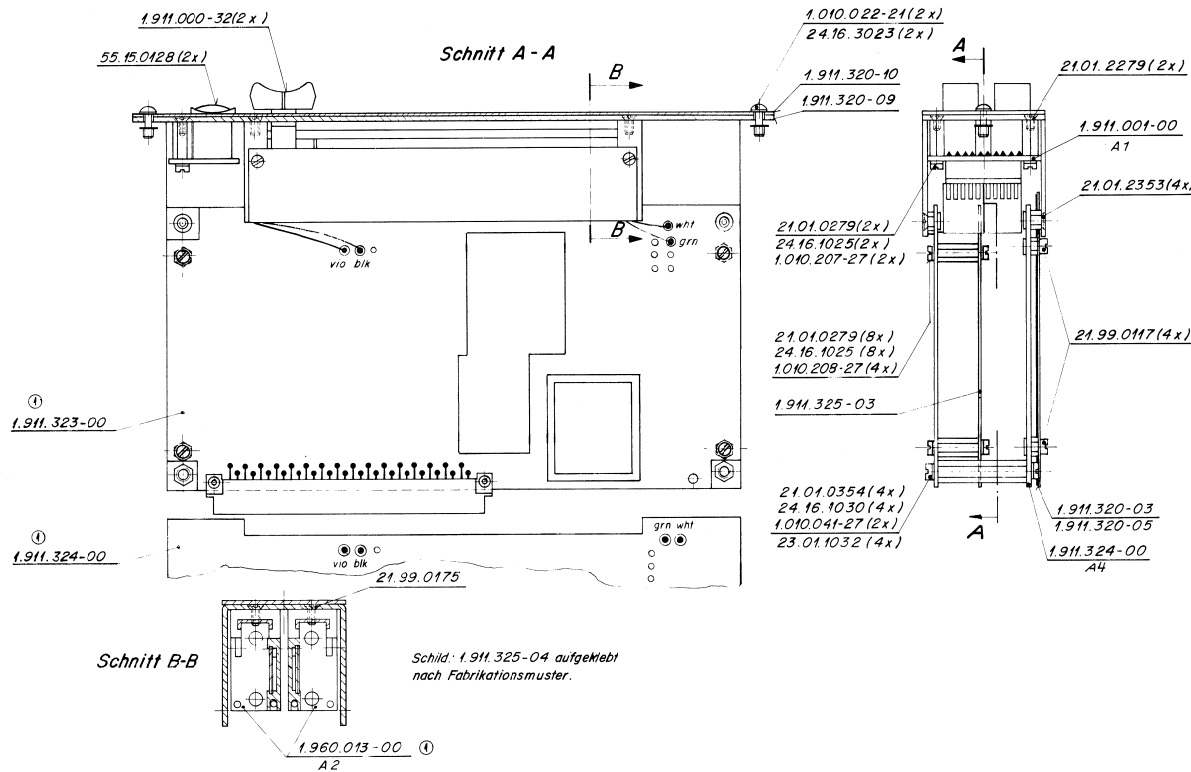
| Ad | POS. | REF.No. | DESCRIPTION | MANUFACTURER |
|---------|--------|--------------|-------------------------------------|--------------|
| A....1 | | 1.911.003.00 | PUSHBUTTON BOARD N-L | St |
| A....2 | | 1.960.019.00 | MONOFADER LOG. | knob red St |
| 01 | A....2 | 1.960.011.00 | MONOFADER LOG. | knob red St |
| 02 | A....2 | 1.960.011.81 | MONOFADER LOG. | knob red St |
| A....3 | | 1.911.198.00 | CONNECTING CABLE 2 | St |
| A....4 | | 1.911.323.00 | MASTER BOARD CH 1 | St |
| DL..100 | . | . | CQY41NA LED red 10100450 used in A1 | St |
| DL..200 | . | . | CQY41NA LED red 10100450 used in A1 | St |
| Q...105 | | 50.03.0216 | J 111 N-JFET | NS,Mot,Six |
| S...100 | . | . | 1 * U switch 55150113 used in A1 | knob gry St |
| S...200 | . | . | 1 * U switch 55150113 used in A1 | knob wht St |

MANUFACTURER: Mot=Motorola, VS=National Semi conductor, Six=Siliconix, St=Studer

HISTORY:

| | | |
|--------------|------------------------|---------------|
| 20.3.90 (2) | New Fader 1.960.011.81 | |
| 1.911.315.00 | MONO MASTER UNIT | TA 87/07/1500 |
| 1.911.315.00 | MONO MASTER UNIT | TA 88/05/0901 |
| 1.911.315.00 | MONO MASTER UNIT | HOR90/03/2002 |

Dual Master Unit 1.911.325 (1.911.335)



| Ad | ..POS. | ..REF.No. | DESCRIPTION | MANUFACTURER |
|------------|--------|--------------|------------------------------|--------------|
| A.....1 | | 1.911.001.00 | PUSHBUTTON BOARD N-N | St |
| A.....2 | | 1.960.018.00 | MONOFADER-PAIR LOG. knob red | St |
| 01 A.....2 | | 1.960.013.00 | MONOFADER-PAIR LOG. knob red | St |
| 02 A.....2 | | 1.960.013.81 | MONOFADER-PAIR LOG. knob red | St |
| A.....3 | | 1.911.323.00 | MASTER BOARD CH 1 | St |
| A.....4 | | 1.911.324.00 | MASTER BOARD CH 2 | St |

MANUFACTURER: St=Studer

HISTORY:

20.3.90 (2) New Fader 1.960.013.81

1.911.325.00 DUAL MASTER UNIT TA 87/07/1500

1.911.325.00 DUAL MASTER UNIT TA 88/05/0901

1.911.325.00 DUAL MASTER UNIT HOR90/03/2002

| Ad | ..POS. | ..REF.No. | DESCRIPTION | MANUFACTURER |
|------------|--------|--------------|--------------------------------|--------------|
| A.....1 | | 1.911.001.00 | PUSHBUTTON BOARD N-N | St |
| A.....2 | | 1.960.018.00 | MONOFADER - PAIR LOG. knob red | St |
| 01 A.....2 | | 1.960.013.00 | MONOFADER - PAIR LOG. knob red | St |
| A.....3 | | 1.911.323.00 | MASTER BOARD CH 1 | St |
| A.....4 | | 1.911.324.00 | MASTER BOARD CH 2 | St |

S...102 55.01.0111 ON-ON toggle switch

S...202 55.01.0111 ON-ON toggle switch

S...203 55.01.0111 ON-ON toggle switch

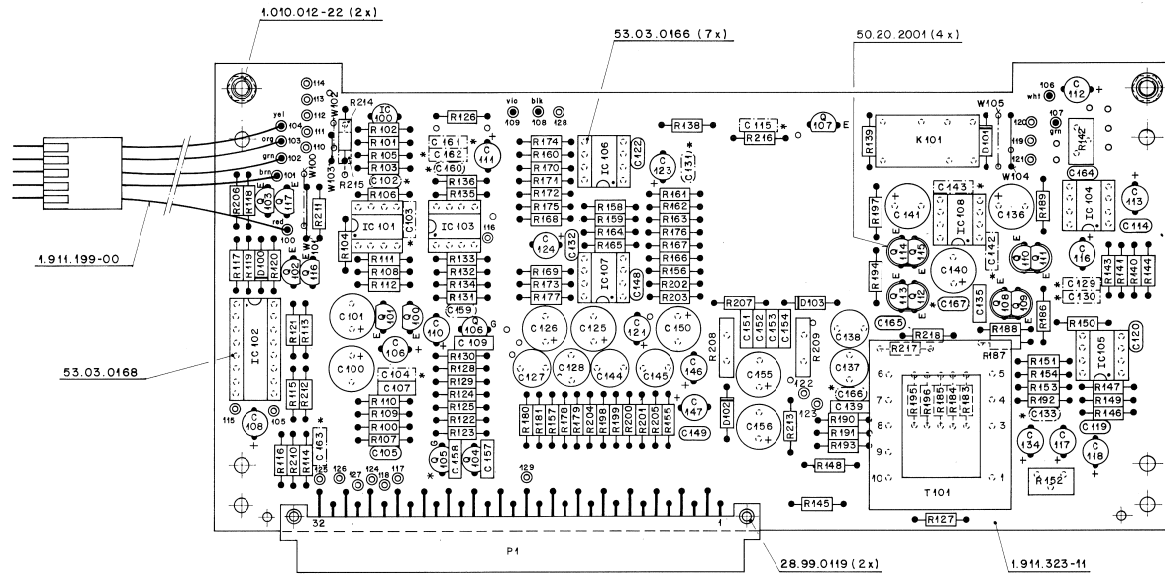
MANUFACTURER: St=Studer

1.911.335.00 DUAL MASTER UNIT + LIM SWITCH TA 87/07/1500

1.911.335.00 DUAL MASTER UNIT + LIM SWITCH TA 88/05/0901

MASTER UNIT MKII

Master Board CH1 1.911.323



| Ad | POS | REF.No | DESCRIPTION | MANUFACTURER |
|------|-----|------------|--|-----------------------------|
| Q... | 104 | 50.03.0216 | J 111 N-JFET | NS,Not,Six |
| Q... | 105 | not used | | see note 2) |
| Q... | 106 | 50.03.0216 | J 111 N-JFET | NS,Not,Six |
| Q... | 107 | 50.03.0515 | BC 307 PNP B > 100 (BC 557 , BC 560) | any |
| Q... | 108 | 50.03.0516 | BC 337 NPN IC max 800mA | match Sie |
| Q... | 109 | 50.03.0516 | BC 337 NPN IC max 800mA | match Sie |
| Q... | 110 | 50.03.0625 | BC 327 PNP IC max 800mA | match Sie |
| Q... | 111 | 50.03.0625 | BC 327 PNP IC max 800mA | match Sie |
| Q... | 112 | 50.03.0516 | BC 337 NPN IC max 800mA | match Sie |
| Q... | 113 | 50.03.0516 | BC 337 NPN IC max 800mA | match Sie |
| Q... | 114 | 50.03.0625 | BC 327 PNP IC max 800mA | match Sie |
| Q... | 115 | 50.03.0625 | BC 327 PNP IC max 800mA | match Sie |
| Q... | 116 | 50.03.0515 | BC 307 PNP B > 100 (BC 557 , BC 560) | any |
| Q... | 117 | 50.03.0436 | BC 237 NPN B > 100 (BC 547 , BC 550) | any |
| R... | 100 | 57.11.4223 | 22 kOhm | 0.25W MF |
| R... | 101 | 57.11.4153 | 15 kOhm | 2% 0.25W MF |
| R... | 102 | 57.11.4472 | 4.7 kOhm | 2% 0.25W MF |
| R... | 103 | 57.11.4821 | 820 Ohm | 2% 0.25W MF |
| R... | 104 | 57.11.4223 | 22 kOhm | 2% 0.25W MF |
| R... | 105 | 57.11.4223 | 22 kOhm | 2% 0.25W MF |
| R... | 106 | 57.11.4223 | 22 kOhm | 2% 0.25W MF |
| R... | 107 | 57.11.3362 | 3.6 kOhm | 1% 0.25W MF |
| R... | 108 | 57.11.5104 | 470 Ohm | 0.25W MF |
| R... | 109 | 57.11.4823 | 82 kOhm | 0.25W MF |
| R... | 110 | 57.11.4101 | 100 Ohm | 0.25W MF |
| R... | 111 | 57.11.4223 | 22 kOhm | 2% 0.25W MF |
| R... | 112 | 57.11.4104 | 100 kOhm | 0.25W MF |
| R... | 113 | 57.11.4104 | 100 kOhm | 0.25W MF |
| R... | 114 | 57.19.0100 | 10 Ohm | 0.33W |
| R... | 115 | 57.11.4104 | 100 kOhm | 0.25W MF |
| R... | 116 | 57.11.4104 | 100 kOhm | 0.25W MF |
| R... | 117 | 57.11.4104 | 100 kOhm | 0.25W MF |
| R... | 118 | 57.11.4391 | 390 Ohm | 0.25W MF |
| R... | 119 | 57.11.4333 | 33 kOhm | 0.25W MF |
| R... | 120 | 57.11.4822 | 8.2 kOhm | 0.25W MF |
| R... | 121 | 57.11.4104 | 100 kOhm | 0.25W MF |
| R... | 122 | 57.11.4104 | 100 kOhm | 0.25W MF |
| R... | 123 | 57.11.5106 | 10 Mohm | 0.25W MF |
| R... | 124 | 57.11.4103 | 10 kOhm | 0.25W MF |
| R... | 125 | 57.11.5106 | 10 Mohm | 0.25W MF |
| R... | 126 | 57.11.4333 | 33 kOhm | 0.25W MF |
| R... | 127 | 57.11.4330 | 33 Ohm | 0.25W MF |
| R... | 128 | 57.11.4333 | 33 kOhm | 0.25W MF |
| R... | 129 | 57.11.5106 | 10 Mohm | 0.25W MF |
| R... | 130 | 57.11.4333 | 33 kOhm | 0.25W MF |
| R... | 131 | 57.11.3362 | 3.6 kOhm | 1% 0.25W MF |
| R... | 132 | 57.11.3362 | 3.6 kOhm | 1% 0.25W MF |
| R... | 133 | 57.11.3471 | 470 Ohm | 1% 0.25W MF |
| R... | 134 | 57.11.3471 | 470 Ohm | 1% 0.25W MF |
| R... | 135 | 57.11.3362 | 3.6 kOhm | 1% 0.25W MF |
| R... | 136 | 57.11.3362 | 3.6 kOhm | 1% 0.25W MF |
| R... | 137 | 5 kOhm | log fader | see note 3) |
| R... | 138 | 57.11.4334 | 330 kOhm | 0.25W MF |
| R... | 139 | 57.11.4151 | 150 Ohm | 0.25W MF |
| R... | 140 | not exist | | (replaced by 0104) |
| R... | 141 | 57.11.3272 | 2.7 kOhm | 5% 0.25W MF |
| R... | 142 | 58.01.9501 | 500 Ohm | 10% 0.5 W trimming resistor |
| R... | 143 | 57.11.4102 | 1 kOhm | 0.25W MF |
| R... | 144 | 57.11.4333 | 33 kOhm | 0.25W MF |
| R... | 145 | 57.11.4330 | 33 Ohm | 0.25W MF |
| R... | 146 | 57.11.3512 | 5.1 kOhm | 1% 0.25W MF |
| R... | 147 | 57.11.3512 | 5.1 kOhm | 1% 0.25W MF |
| R... | 148 | 57.11.4330 | 33 Ohm | 0.25W MF |
| R... | 149 | 57.11.3512 | 5.1 kOhm | 1% 0.25W MF |
| R... | 150 | 57.11.3512 | 5.1 kOhm | 1% 0.25W MF |
| R... | 151 | 57.11.3272 | 2.7 kOhm | 5% 0.25W MF |
| R... | 152 | 58.01.9103 | 10 Ohm | 10% 0.5 W trimming resistor |
| R... | 153 | 57.11.4182 | 1.8 kOhm | 0.25W MF |
| R... | 154 | 57.11.4330 | 33 Ohm | 0.25W MF |
| R... | 155 | 57.11.4223 | 22 kOhm | 0.25W MF |
| R... | 156 | 57.11.3473 | 470 Ohm | 5% 0.25W MF |
| R... | 157 | 57.11.3471 | 470 Ohm | 5% 0.25W MF |
| R... | 158 | 57.11.3272 | 2.7 kOhm | 5% 0.25W MF |
| R... | 159 | 57.11.3502 | 3 kOhm | 1% 0.25W MF |
| R... | 160 | 57.11.4474 | 470 kOhm | 2% 0.25W MF |
| R... | 161 | 57.11.3302 | 3 kOhm | 1% 0.25W MF |
| R... | 162 | 57.11.3473 | 470 kOhm | 1% 0.25W MF |
| R... | 163 | 57.11.3302 | 3 kOhm | 1% 0.25W MF |
| R... | 164 | 57.11.3473 | 470 kOhm | 1% 0.25W MF |
| R... | 165 | 57.11.3302 | 3 kOhm | 1% 0.25W MF |
| R... | 166 | 57.11.3272 | 2.7 kOhm | 1% 0.25W MF |
| R... | 167 | 57.11.3302 | 3 kOhm | 1% 0.25W MF |
| R... | 168 | 57.11.3302 | 3 kOhm | 1% 0.25W MF |
| R... | 169 | 57.11.4474 | 470 kOhm | 2% 0.25W MF |
| R... | 170 | 57.11.3150 | 15 Ohm | 1% 0.25W MF |
| R... | 171 | 57.11.3302 | 3 kOhm | 1% 0.25W MF |
| R... | 172 | 57.11.3302 | 3 kOhm | 1% 0.25W MF |
| R... | 173 | 57.11.3150 | 15 Ohm | 1% 0.25W MF |
| R... | 174 | 57.11.3302 | 3 kOhm | 1% 0.25W MF |
| R... | 175 | 57.11.3302 | 3 kOhm | 1% 0.25W MF |
| R... | 176 | 57.11.3302 | 3 kOhm | 1% 0.25W MF |
| R... | 177 | 57.11.3302 | 3 kOhm | 1% 0.25W MF |
| R... | 178 | 57.11.3302 | 3 kOhm | 1% 0.25W MF |
| R... | 179 | 57.11.3302 | 3 kOhm | 1% 0.25W MF |
| R... | 180 | 57.11.3689 | 6.8 Ohm | 1% 0.25W MF |
| R... | 181 | 57.11.3689 | 6.8 Ohm | 1% 0.25W MF |

| Ad | POS | REF.No | DESCRIPTION | MANUFACTURER |
|------|-----|--------------|--------------------|--------------|
| A... | 101 | 1.911.199.00 | connecting cable 1 | St |
| C... | 100 | 59.22.2221 | 220 uF -20% 6V EL | |
| C... | 101 | 59.22.2221 | 220 uF -20% 6V EL | |
| C... | 102 | not used | | |
| C... | 103 | not used | | |
| C... | 104 | not used | | |
| C... | 105 | 59.34.4221 | 220 pF 5% CE | |
| C... | 106 | 59.26.0470 | 47 uF 20% 6V SAL | |
| C... | 107 | 59.06.0102 | 1 nF 10% 50V PE | |
| C... | 108 | 59.26.0680 | 68 uF 20% 6V SAL | |
| C... | 109 | 59.06.0682 | 6.8 nF 50V PE | |
| C... | 110 | 59.26.0680 | 68 uF 20% 6V SAL | |
| C... | 111 | 59.26.0680 | 68 uF 20% 6V SAL | |
| C... | 112 | 59.26.0680 | 68 uF 20% 6V SAL | |
| C... | 113 | 59.26.0680 | 68 uF 20% 6V SAL | |
| C... | 114 | 59.34.4221 | 220 pF 5% CE | |
| C... | 115 | | | |

Master Board CH1 1.911.323

| Ad | ..POS. | ..REF.No. | DESCRIPTION | MANUFACTURER |
|---|--------|--------------|---------------------------------------|----------------------------|
| R... | 182 | . | not exist | |
| R... | 183 | 57.11.4223 | 22 kOhm | 0.25W MF |
| R... | 184 | 57.11.4332 | 3.3 kOhm | 0.25W MF |
| R... | 185 | 57.11.4332 | 3.3 kOhm | 0.25W MF |
| R... | 186 | 57.11.4103 | 10 kOhm | 0.25W MF |
| R... | 187 | 57.11.4339 | 3.3 Ohm | 0.25W MF |
| R... | 188 | 57.11.4339 | 3.3 Ohm | 0.25W MF |
| R... | 189 | 57.11.4103 | 10 kOhm | 0.25W MF |
| R... | 190 | 57.11.4821 | 820 Ohm | 0.25W MF |
| R... | 191 | 57.11.4102 | 1 kOhm | 0.25W MF |
| R... | 192 | 57.11.4333 | 33 kOhm | 0.25W MF |
| R... | 193 | . | not used | |
| R... | 194 | 57.11.4103 | 10 kOhm | 0.25W MF |
| R... | 195 | 57.11.4339 | 3.3 Ohm | 0.25W MF |
| R... | 196 | 57.11.4339 | 3.3 Ohm | 0.25W MF |
| R... | 197 | 57.11.4103 | 10 kOhm | 0.25W MF |
| R... | 198 | 57.11.3152 | 1.5 kOhm | 1% 0.25W MF |
| R... | 199 | 57.11.3152 | 1.5 kOhm | 1% 0.25W MF |
| R... | 200 | 57.11.3392 | 3.9 kOhm | 1% 0.25W MF |
| R... | 201 | 57.11.3392 | 3.9 kOhm | 1% 0.25W MF |
| R... | 202 | 57.11.3272 | 2.7 kOhm | 1% 0.25W MF |
| R... | 203 | 57.11.3272 | 2.7 kOhm | 1% 0.25W MF |
| R... | 204 | 57.11.4330 | 33 Ohm | 0.25W MF |
| R... | 205 | 57.11.4223 | 22 kOhm | 0.25W MF |
| R... | 206 | 57.11.4391 | 390 Ohm | 0.25W MF |
| R... | 207 | 57.11.3471 | 470 Ohm | 5% 0.25W MF |
| R... | 208 | 57.92.1271 | 6.5 Ohm | PTC |
| R... | 209 | 57.92.1271 | 6.5 Ohm | PTC |
| R... | 210 | . | not used | |
| R... | 211 | 57.11.4333 | 33 kOhm | 0.25W MF |
| R... | 212 | 57.11.4104 | 100 kOhm | 0.25W MF |
| R... | 213 | 57.11.4330 | 33 Ohm | 0.25W MF |
| R... | 214 | 57.11.4104 | 100 kOhm | 0.25W MF |
| R... | 215 | . | not used | |
| R... | 216 | 57.11.4104 | 100 kOhm | 0.25W MF |
| R... | 217 | 57.19.0330 | 33 Ohm | 0.33W /(\ fusible resistor |
| R... | 218 | 57.19.0330 | 33 Ohm | 0.33W /(\ fusible resistor |
| S... | 100 | . | 1 * U | see note 3) |
| S... | 101 | . | fader-end switch | combined with R137 |
| S... | 102 | . | ON-ON | see note 4) |
| S... | 103 | . | not used | |
| T... | 101 | 1.022.362.00 | output trafo 1 : 1.45 | St |
| W... | 100 | . | not used | |
| W... | 101 | 57.11.4000 | 10mm link | |
| W... | 102 | 1.010.321.64 | 5mm link | |
| W... | 103 | . | not used | |
| W... | 104 | 57.11.4000 | 10mm link | option 3/4 see note 1) |
| W... | 105 | . | not used | |
| 1) --> | | | see option list 1.911.325.00 | |
| 2) --> | | | Normnummer see Poslst. - 1.911.315.xx | |
| 3) --> | | | Normnummer see Poslst. - 1.911.315.xx | |
| 4) --> | | | Normnummer see Poslst. - 1.911.335.xx | |
| History : | | | | |
| ***** | | | | |
| 29.11.90 (01) | | | - IC 108 -> MC33078 | |
| | | | - C 167 -> 33pF | |
| 4.12.91 (02) | | | R139 is replaced by D104 | |
| ***** | | | | |
| CE=Ceramic, CF=Carbon Film, EL=Electrolytic, MF=Metal Film, | | | | |
| PE=Polyester, SAL=Solid Aluminum | | | | |
| MANUFACTURER: Bu=Burndy, ITT=Intermetall, Mot=Motorola, NS=National | | | | |
| Semiconductors, Six=Siliconix, St=Studer | | | | |
| Siemens, Fc=Fairchild, Sig=Signetics | | | | |
| GI=General Instruments, Ra=Raytheon | | | | |
| TI=Texas Instrument | | | | |
| 1.911.323.00 | | | MASTER BOARD CH 1 | TA 88/02/2400 |
| 1.911.323.00 | | | MASTER BOARD CH 1 | TA 90/11/2901 |
| 1.911.323.00 | | | MASTER BOARD CH 1 | H0891/12/0402 |

Master Board CH2 1.911.324

| Ad | ..POS. | ..REF.No. | DESCRIPTION | MANUFACTURER | Ad | ..POS. | ..REF.No. | DESCRIPTION | MANUFACTURER |
|------|--------|--------------|--------------------|--------------|------|--------|------------|-------------|-----------------------------------|
| A... | 301 | 1.911.198.00 | connecting cable 2 | St | Q... | 302 | 50.03.0515 | BC 307 | PNP B > 100 (BC 557 , BC 560) |
| C... | 300 | 59.22.2221 | 220 uF | 6V EL | Q... | 303 | 50.03.0436 | BC 237 | NPN B > 100 (BC 547 , BC 550) |
| C... | 301 | 59.22.2221 | 220 uF | -20% 6V EL | Q... | 304 | . | not used | |
| C... | 302 | . | not used | | Q... | 305 | 50.03.0216 | J 111 | N-JFET |
| C... | 303 | . | not used | | Q... | 306 | 50.03.0216 | J 111 | N-JFET |
| C... | 304 | . | not used | | Q... | 307 | 50.03.0515 | BC 307 | PNP B > 100 (BC 557 , BC 560) |
| C... | 305 | 59.34.4221 | 220 pF | 5% CE | Q... | 308 | 50.03.0516 | BC 337 | NPN IC max 800mA match |
| C... | 306 | 59.22.6470 | 47 uF | -20% 6V EL | Q... | 309 | 50.03.0516 | BC 337 | NPN IC max 800mA match |
| C... | 307 | 59.06.0102 | 1 nF | 10% 50V PE | Q... | 310 | 50.03.0528 | BC 337 | NPN IC max 800mA match |
| C... | 308 | 59.26.0680 | 68 uF | 20% 6V SAL | Q... | 311 | 50.03.0625 | BC 327 | PNP IC max 800mA match |
| C... | 309 | 59.06.0682 | 6.8 nF | 20% 50V PE | Q... | 312 | 50.03.0516 | BC 337 | NPN IC max 800mA match |
| C... | 310 | 59.26.0680 | 68 uF | 20% 6V SAL | Q... | 313 | 50.03.0516 | BC 337 | NPN IC max 800mA match |
| C... | 311 | 59.26.0680 | 68 uF | 20% 6V SAL | Q... | 314 | 50.03.0625 | BC 327 | PNP IC max 800mA match |
| C... | 312 | 59.26.0680 | 68 uF | 20% 6V SAL | Q... | 315 | 50.03.0625 | BC 327 | PNP IC max 800mA match |
| C... | 313 | 59.34.4221 | 220 pF | 5% CE | Q... | 316 | 50.03.0515 | BC 307 | PNP B > 100 (BC 557 , BC 560) |
| C... | 314 | . | not used | | Q... | 317 | 50.03.0436 | BC 237 | NPN B > 100 (BC 547 , BC 550) |
| C... | 315 | . | not used | | R... | 300 | 57.11.4223 | 22 kOhm | 0.25W MF |
| C... | 316 | 59.26.0680 | 68 uF | 20% 6V SAL | R... | 301 | 57.11.4153 | 15 kOhm | 2% 0.25W MF |
| C... | 317 | 59.26.0680 | 68 uF | 20% 6V SAL | R... | 302 | 57.11.4472 | 4.7 kOhm | 2% 0.25W MF |
| C... | 318 | 59.26.0680 | 68 uF | 20% 6V SAL | R... | 303 | 57.11.4821 | 820 Ohm | 2% 0.25W MF |
| C... | 319 | 59.34.7151 | 150 pF | 2% CE | R... | 304 | 57.11.4223 | 22 kOhm | 2% 0.25W MF |
| C... | 320 | 59.34.7151 | 150 pF | 2% CE | R... | 305 | 57.11.4223 | 22 kOhm | 2% 0.25W MF |
| C... | 321 | 59.26.0680 | 68 uF | 20% 6V SAL | R... | 306 | 57.11.4223 | 22 kOhm | 2% 0.25W MF |
| C... | 322 | 59.34.4101 | 100 pF | 5% CE | R... | 307 | 57.11.3392 | 3.9 kOhm | 1% 0.25W MF |
| C... | 323 | 59.26.0680 | 68 uF | 20% 6V SAL | R... | 308 | 57.11.4104 | 100 kOhm | 0.25W MF |
| C... | 324 | 59.26.0680 | 68 uF | 20% 6V SAL | R... | 309 | 57.11.4823 | 82 kOhm | 0.25W MF |
| C... | 325 | 59.22.2221 | 220 uF | -20% 6V EL | R... | 310 | 57.11.4101 | 100 Ohm | 0.25W MF |
| C... | 326 | 59.22.2221 | 220 uF | -20% 6V EL | R... | 311 | 57.11.4223 | 22 kOhm | 2% 0.25W MF |
| C... | 327 | 59.05.1681 | 680 pF | 1% 500V PP | R... | 312 | 57.11.4104 | 100 kOhm | 0.25W MF |
| C... | 328 | 59.05.1681 | 680 pF | 1% 500V PP | R... | 313 | 57.11.4104 | 100 kOhm | 0.25W MF |
| C... | 329 | . | not used | | R... | 314 | 57.19.0100 | 10 Ohm | 0.33W /(\ fusible resistor |
| C... | 330 | . | not used | | R... | 315 | 57.11.4104 | 100 kOhm | 0.25W MF |
| C... | 331 | . | not used | | R... | 316 | 57.11.4104 | 100 kOhm | 0.25W MF |
| C... | 332 | . | not used | | R... | 317 | 57.11.4104 | 100 kOhm | 0.25W MF |
| C... | 333 | . | not used | | R... | 318 | 57.11.4391 | 390 Ohm | 0.25W MF |
| C... | 334 | 59.26.0680 | 68 uF | 20% 6V SAL | R... | 319 | 57.11.4333 | 33 kOhm | 0.25W MF |
| C... | 335 | 59.06.0223 | 22 nF | 50V PE | R... | 320 | 57.11.4822 | 8.2 kOhm | 0.25W MF |
| C... | 336 | 59.22.6470 | 47 uF | -20% 30V EL | R... | 321 | 57.11.4104 | 100 kOhm | 0.25W MF |
| C... | 337 | 59.05.1102 | 1 nF | 1% 500V PP | R... | 322 | 57.11.4103 | 10 kOhm | 0.25W MF |
| C... | 338 | 59.05.1102 | 1 nF | 1% 500V PP | R... | 323 | 57.11.5106 | 10 MOhm | 0.25W MF |
| C... | 339 | 59.06.0333 | 33 nF | 50V PE | R... | 324 | 57.11.4103 | 10 kOhm | 0.25W MF |
| C... | 340 | 59.22.2221 | 220 uF | -20% 6V EL | R... | 325 | 57.11.5106 | 10 MOhm | 0.25W MF |
| C... | 341 | 59.22.6470 | 47 uF | -20% 30V EL | R... | 326 | 57.11.4333 | 33 kOhm | 0.25W MF |
| C... | 342 | . | not used | | R... | 327 | 57.11.4330 | 33 Ohm | 0.25W MF |
| C... | 343 | . | not used | | R... | 328 | 57.11.4333 | 33 kOhm | 0.25W MF |
| C... | 344 | 59.05.1681 | 680 pF | 1% 500V PP | R... | 329 | 57.11.5106 | 10 MOhm | 0.25W MF |
| C... | 345 | 59.05.1681 | 680 pF | 1% 500V PP | R... | 330 | 57.11.4333 | 33 kOhm | 0.25W MF |
| C... | 346 | 59.26.0680 | 68 uF | 20% 6V SAL | R... | 331 | 57.11.3362 | 3.6 kOhm | 1% 0.25W MF |
| C... | 347 | 59.26.0680 | 68 uF | 20% 6V SAL | R... | 332 | 57.11.3362 | 3.6 kOhm | 1% 0.25W MF |
| C... | 348 | 59.34.4101 | 100 pF | 5% CER | R... | 333 | 57.11.3471 | 470 Ohm | 1% 0.25W MF |
| C... | 349 | 59.34.4101 | 100 pF | 5% CER | R... | 334 | 57.11.3471 | 470 Ohm | 1% 0.25W MF |
| C... | 350 | 59.22.2221 | 220 uF | -20% 6V EL | R... | 335 | 57.11.3362 | 3.6 kOhm | 1% 0.25W MF |
| C... | 351 | 59.06.0223 | 22 nF | 50V PE | R... | 336 | 57.11.3362 | 3.6 kOhm | 1% 0.25W MF |
| C... | 352 | 59.06.0223 | 22 nF | 50V PE | R... | 337 | . | 5 kOhm | log fader see note 4) |
| C... | 353 | 59.06.0333 | 33 nF | 50V PE | R... | 338 | 57.11.4334 | 330 kOhm | 0.25W MF |
| C... | 354 | 59.06.0333 | 33 nF | 50V PE | R... | 339 | 57.11.4151 | 150 Ohm | 0.25W MF |
| C... | 355 | 59.22.5101 | 100 uF | -20% 16V EL | 03 | R... | 339 | . | not exist (R339 replaced by D304) |
| C... | 356 | 59.22.5101 | 100 uF | -20% 16V EL | R... | 340 | 57.11.4104 | 100 kOhm | 0.25W MF |
| C... | 357 | 59.06.0682 | 6.8 nF | 50V PE | R... | 341 | 57.11.3272 | 2.7 kOhm | 5% 0.25W MF |
| C... | 358 | 59.06.0682 | 6.8 nF | 50V PE | R... | 342 | 58.01.9501 | 500 Ohm | 10% 0.5 W trimming resistor |
| C... | 359 | . | not used | | R... | 343 | 57.11.4102 | 33 kOhm | 2% 0.25W MF |
| C... | 360 | . | not used | | R... | 344 | 57.11.4333 | 33 kOhm | 0.25W MF |
| C... | 361 | . | not used | | R... | 345 | 57.11.4330 | 33 Ohm | 0.25W MF |
| C... | 362 | . | not used | | R... | 346 | 57.11.3512 | 5.1 kOhm | 1% 0.25W MF |
| C... | 363 | . | not used | | R... | 347 | 57.11.3512 | 5.1 kOhm | 1% 0.25W MF |
| C... | 364 | 59.34.2220 | 22 pF | CE | R... | 348 | 57.11.4330 | 33 Ohm | 0.25W MF |
| C... | 365 | 59.34.4680 | 68 pF | CE | R... | 349 | 57.11.3512 | 5.1 kOhm | 1% 0.25W MF |
| C... | 366 | . | not used | | R... | 350 | 57.11.3512 | 5.1 kOhm | 1% 0.25W MF |
| C... | 367 | 59.34.2330 | 33 pF | CE | R... | 351 | 57.11.4272 | 2.7 kOhm | 5% 0.25W MF |
| D... | 300 | 50.04.0125 | 1M4448 | any | R... | 352 | 58.01.9103 | 10 kOhm | 10% 0.5 W trimming resistor |
| D... | 301 | 50.04.0125 | 1M4448 | any | R... | 353 | 57.11.4182 | 1.8 kOhm | 0.25W MF |
| D... | 302 | 50.04.0105 | 1M0004 | IA | R... | 354 | 57.11.4330 | 33 Ohm | 0.25W MF |
| D... | 303 | 50.04.0105 | 1M0004 | IA | R... | 355 | 57.11.4223 | 22 kOhm | 0.25W MF |
| D... | 304 | 50.04.0125 | 1M | | | | | | |

MASTER UNIT MKII

Master Board CH2 1.911.324

Ad .POS. .REF.No. .DESCRIPTION. .MANUFACTURER

| | | | | | |
|---------|--------------|----------|-------|-----------------------|--------------------|
| R...381 | 57.11.3689 | 6.3 Ohm | 1% | 0.25W MF | |
| R...382 | | | | not exist | |
| R...383 | 57.11.4223 | 22 Ohm | | 0.25W MF | |
| R...384 | 57.11.4332 | 3.3 kOhm | | 0.25W MF | |
| R...385 | 57.11.4332 | 3.3 kOhm | | 0.25W MF | |
| R...386 | 57.11.4103 | 10 kOhm | | 0.25W MF | |
| R...387 | 57.11.4339 | 3.3 Ohm | | 0.25W MF | |
| R...388 | 57.11.4339 | 3.3 Ohm | | 0.25W MF | |
| R...389 | 57.11.4103 | 10 kOhm | | 0.25W MF | |
| R...390 | 57.11.4821 | 820 Ohm | | 0.25W MF | |
| R...391 | 57.11.4102 | 1 kOhm | | 0.25W MF | |
| R...392 | 57.11.4333 | 33 kOhm | | 0.25W MF | |
| R...393 | | | | not used | |
| R...394 | 57.11.4103 | 10 kOhm | | 0.25W MF | |
| R...395 | 57.11.4339 | 3.3 Ohm | | 0.25W MF | |
| R...396 | 57.11.4339 | 3.3 Ohm | | 0.25W MF | |
| R...397 | 57.11.4103 | 10 kOhm | | 0.25W MF | |
| R...398 | 57.11.3152 | 1.5 kOhm | 1% | 0.25W MF | |
| R...399 | 57.11.3152 | 1.5 kOhm | 1% | 0.25W MF | |
| R...400 | 57.11.3392 | 3.3 kOhm | 1% | 0.25W MF | |
| R...401 | 57.11.3392 | 3.3 kOhm | 1% | 0.25W MF | |
| R...402 | 57.11.3272 | 2.7 kOhm | 1% | 0.25W MF | |
| R...403 | 57.11.3272 | 2.7 kOhm | 1% | 0.25W MF | |
| R...404 | 57.11.4330 | 33 Ohm | | 0.25W MF | |
| R...405 | 57.11.4223 | 22 kOhm | | 0.25W MF | |
| R...406 | 57.11.4391 | 390 Ohm | | 0.25W MF | |
| R...407 | 57.11.3471 | 470 Ohm | 5% | 0.25W MF | |
| R...408 | 57.92.1271 | 6.5 Ohm | | PTC | |
| R...409 | 57.92.1271 | 6.5 Ohm | | PTC | |
| R...410 | | | | not used | |
| R...411 | 57.11.4333 | 33 kOhm | | 0.25W MF | |
| R...412 | 57.11.4104 | 100 kOhm | | 0.25W MF | |
| R...413 | 57.11.4330 | 33 Ohm | | 0.25W MF | |
| R...414 | 57.11.4104 | 100 kOhm | | 0.25W MF | |
| R...415 | | | | not used | |
| R...416 | 57.11.4104 | 100 kOhm | | 0.25W MF | |
| R...417 | 57.19.0330 | 33 Ohm | 0.33W | fusible resistor | |
| R...418 | 57.19.0330 | 33 Ohm | 0.33W | fusible resistor | |
| S...300 | | 1 * U | | | see note 3) |
| S...301 | | | | fader-end switch | combined with R337 |
| S...302 | | OH-OH | | | see note 5) |
| S...303 | | OH-OH | | | see note 5) |
| T...301 | 1.022.362.00 | | | output trafo 1 : 1.45 | St |
| W...300 | | | | not used | |
| W...301 | 57.11.4000 | | | 10mm link | |
| W...302 | 1.010.321.64 | | | 5mm link | |
| W...303 | | | | not used | |
| W...304 | 57.11.4000 | | | option 3/4 | see note 1) |
| W...305 | | | | 10mm link | |

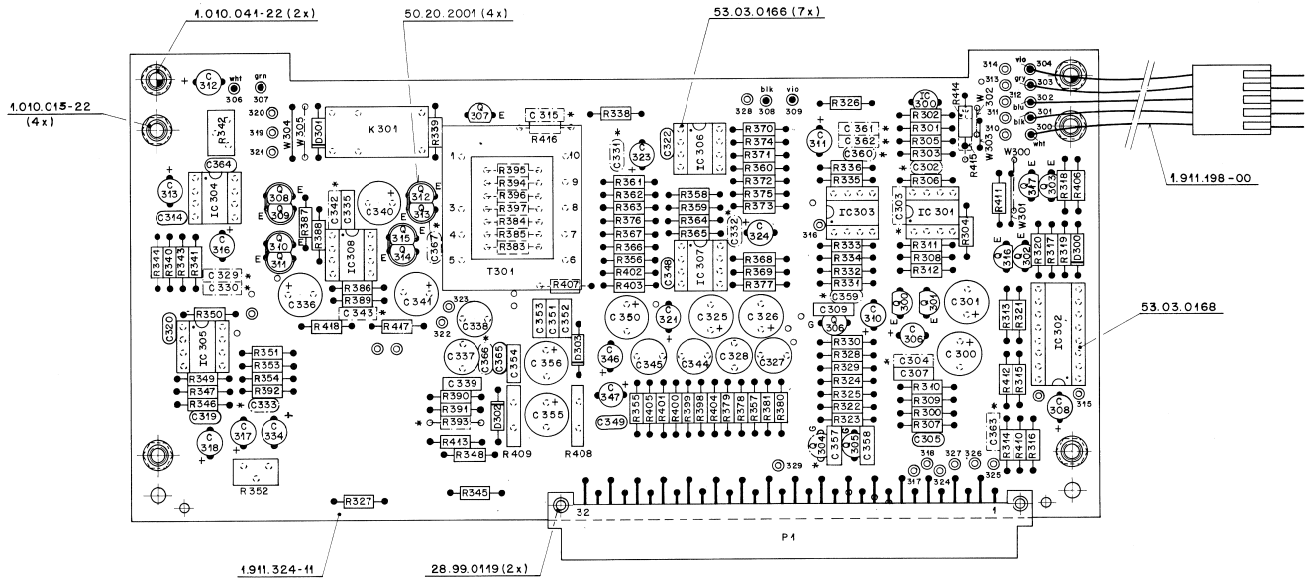
- 1) --> see optionlist 1.911.325.00
- 2) --> Wornumber see Poslst. - 1.911.315.xx
- 3) --> Wornumber see Poslst. - 1.911.315.xx
- 1.911.325.xx
- 1.911.335.xx
- 4) --> Wornumber see Poslst. - 1.911.325.xx
- 1.911.335.xx
- 5) --> Wornumber see Poslst. - 1.911.335.xx

History :
 29.11.90 (01) - IC 308 -> M33078
 - C 367 -> 32pF
 11.12.90 (02) - C 306 -> SAL-Bauform (Platzgruende)
 4.12.91 (03) R339 is replaced by D304

CE=Ceramic, CF=Carbon Film, EL=Electrolytic, MF=Metal Film,
 PE=Polyester, SAL=Solid Aluminum

MANUFACTURER: Bu=Burndy, ITT=Intermetall, Mot=Motorola, NS=National
 Semiconductors, Six=Siliconix, St=Studer
 Sie=Siemens, Fc=Fairchild, Sig=Signetics
 GI=General Instruments, Ra=Raytheon
 TI=Texas Instrument

| | | |
|--------------|-------------------|---------------|
| 1.911.324.00 | MASTER BOARD CH 2 | TA 88/02/2400 |
| 1.911.324.00 | MASTER BOARD CH 2 | TA 90/11/2901 |
| 1.911.324.00 | MASTER BOARD CH 2 | TA 90/12/1102 |
| 1.911.324.00 | MASTER BOARD CH 2 | HOR91/12/0403 |



* NOT USED

Schilder 1.911.324-04 / 43.01.0108
 aufgeklebt nach Fabrikationsmuster.

VCA FLACHBAHNREGLER

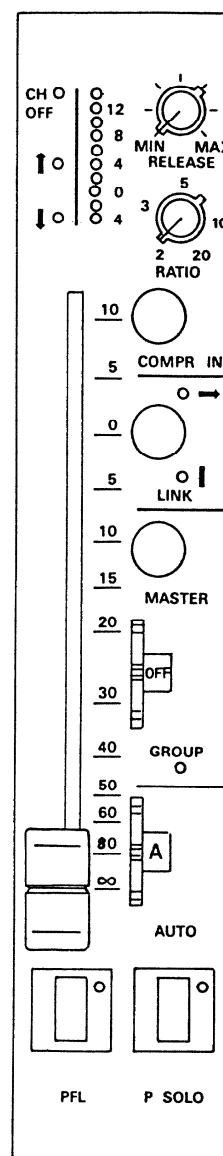
Der VCA Flachbahnregler 1.911.210 dient zur Regelung eines monophonen Tonsignals, wobei vier verschiedene Steuergrößen auf das Steuerglied (den spannungsgesteuerten Verstärker VCA) einwirken.

- Flachbahnregler
- Limiter/Kompressor
- externe Steuerung durch Gruppenregler
- externe Steuerung durch Rechner

BEDIENUNGSELEMENTE

LIMITER/KOMPRESSOR TEIL

- GRM** (gain reduction meter)
LED zeigen die Größe der Abschwächung (rot) resp. Anhebung (grün) an.
- RELEASE** Einstellung der Rücklaufzeit des Limiter/Kompressors (min. 50 ms max. 2...10 s). Die Rücklaufzeit ist nicht nur von der Potentiometerstellung sondern auch vom Programminhalt abhängig dh. kurze Uebersteuerungen ergeben kürzere Rücklaufzeiten als lange andauernde Ueberschreitung der Kompressionsschwelle.
- RATIO** Verhältnis der Dynamikkompression einstellbar von 2:1 ... 20:1. Um einen gleichbleibenden Lautstärkeindruck zu erzielen wird mit zunehmendem Ratio die Grundverstärkung angehoben.
- COMPR IN** Limiter/Kompressor wird eingeschaltet.
- LINK** Kopplung der Steuerspannung mit dem rechts benachbarten VCA Regler (Stereopaar). Die LED zeigt, dass der benachbarte Regler zugeschaltet ist. Die LED signalisiert den letzten angekoppelten Regler einer Gruppe.



GROUP VCA GRUPPEN-TEIL

Mit dem Daumenradschalter kann eine von 10 Gruppenschienen angewählt werden. Eine der aufgeschalteten VCA Einheiten wird mit der Taste MASTER zum Gruppenregler erhoben. Er bestimmt nun als Gruppenregler die Verstärkung aller Gruppenmitglieder. Zur Bestätigung leuchtet die Group-LED bei allen Gruppenmitgliedern auf.

V C A FADER

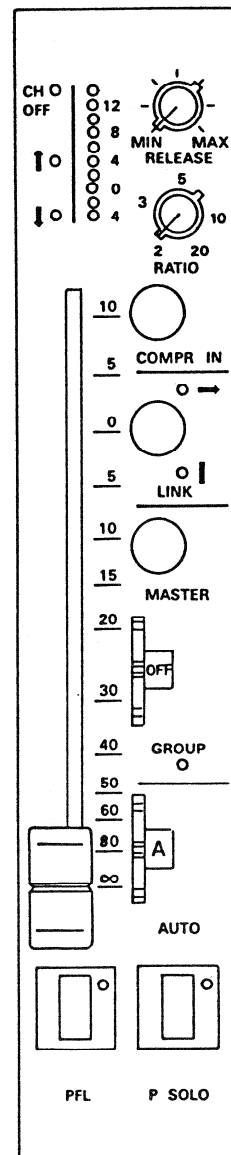
The VCA fader 1.911.210 is used to control a monophonic audio signal. Four different control variables act on the controlling element of the voltage-controlled amplifier (VCA).

- Fader
- Limiter/compressor
- External control by group fader
- External control by computer

OPERATING CONTROLS

LIMITER/COMPRESSOR SECTION

- GRM (gain reduction meter)
LEDs indicate the amount of gain reduction (red) or boost (green) respectively.
- RELEASE Adjustment of the limiter / compressor's release time (min. 50 ms, max. 2 to 10 s). The release time depends not only on the potentiometer setting, but also on the program content, i.e. short overdriving results in shorter release times than if the compression threshold is continuously exceeded.
- RATIO Ratio of the dynamic range compression, adjustable from 2:1 to 20:1. In order to achieve a uniform loudness impression, the basic gain is boosted with higher ratios.
- COMPR IN Limiter/compressor is switched on.
- LINK Coupling of the control voltage with the right-hand adjacent VCA fader (stereo pair). The LED indicates that the adjacent fader is switched into the circuit. The LED signals the last coupled fader of a group.



GROUP VCA GROUP SECTION

One of 10 group buses can be selected with the thumb wheel switch. One of the connected VCA units is designated as the group fader by pressing the MASTER key. This group fader now determines the gain of all group members. The group LED of all group members turns on to acknowledge this status.

AUTOMATIKTEIL

Anzeige-LED \updownarrow dient zur Anpassung der Reglerstellung an die vom Rechner angebotene Steuerspannung.

AUTO Daumenradschalter bestimmt den Zustand des VCA-Reglers gegenüber dem Rechner.

A+B Zustand wird durch den VCA Mode Selector bestimmt.

R READ übernimmt die absolute Reglerstellung vom Rechner.

W WRITE übergibt die absolute Reglerstellung dem Rechner.

U UPDATE korrigiert Reglerstellung im Rechner (relativ zur Stellung 0 dB).

M MANUAL nur Flachbahnregler im Betrieb

ABHOERTEIL

PFL Abhören des Audiosignals vor Regler

P.SOLO Kontrolle des Audiosignals nach Regler und nach Panoramapotiometer.

TECHNISCHE DATEN

EINGANG

unsymmetrisch, Eingangswiderstand

max. Eingangsspegel (d=1%, f=1kHz)
Verstärkung (Begrenzer aus)

AUSGANG

unsymmetrisch, Ausgangswiderstand

max. Ausgangsspegel (d=1%, f=1kHz)
(d=1%, f=1kHz) + 21 dBu

FREMDSPANNUNGSABSTAND (bez. auf 0dBu)

in Reglerstellung +10dB

in Reglerstellung 0dB

in Reglerstellung -00dB

KOMPRESSOR / BEGRENZER

Einsatzpunkt

Kompressionsverhältnis

Ansprechzeit

Rücklaufzeit

SIGNALWEG (bezogen auf 0dBu)

Frequenzgang (@ 0.5 dB)

max. Reglerdämpfung (@ 16 kHz)

Klirrfaktor (@ 30Hz...16kHz)

STROMVERBRAUCH

+/- 15 V, 90 mA

- 6 V, 90 mA

- 24 V, 1.5 mA

ANSCHLUSS ZUM RECHNER

Sendeweg

unsymmetrisch, Impedanz

Ausgangsspannung

Empfangsweg

unsymmetrisch, Impedanz

Eingangsspannung

Logiksignal write tief
hoch

AUTOMATIC SECTION

Indicating LED \updownarrow For matching the fader setting to the control voltage offered by the computer.

AUTO Thumb wheel switch, determines the status of the VCA fader relative to the computer.

A+B Status is determined by the VCA mode selector.

R READ accepts the absolute fader setting from the computer.

W WRITE transfers the absolute fader setting to the computer.

U UPDATE to correct the fader setting in the computer (relative to the 0dB position).

M MANUAL, only the fader is active.

MONITORING SECTION

PFL Prefader listening of the audio signal.

P.SOLO To check the audio signal after the fader and after the panorama potentiometer.

SPECIFICATIONS

INPUT

unbalanced, impedance > 50 kohms

max. level (d=1%, 1kHz) + 21 dBu

overall gain (limiter off) + 10...-100dB

OUTPUT

unbalanced, impedance < 50 Ohms

max. level

S/N RATIO (DIN 45405)

Fader position +10dB - 96 dB

Fader position 0dB -103 dB

Fader position -00dB -110 dB

COMPRESSOR / LIMITER

threshold level - 15 dBu...+ 5 dBu

Ratio (see diagram) 2:1 ... 20:1

gradual entry into desired compression (soft knee)

attack time 1 ms

release time 50 ms ... 2 s

program dependent

SIGNAL PATH (@ 0dBu)

frequency response (@ .5dB) 20 Hz ... 100 kHz

max. attenuation (@ 16 kHz) 103 dB

distortion (@ 30Hz ...16kHz) < .03%

POWER REQUIREMENTS

+/- 15 V, 90 mA

- 6 V, 90 mA

- 24 V, 1.5 mA

AUTOMATION CONNECTIONS

Send

unbalanced, impedance < 50 ohms

output voltage 0V ... +5.5V or -5.5V ... +5V

selectable with jumper

Return

unbalanced, impedance > 5 kohms

input voltage 0V ... +5.5V or -5.5V ... +5V

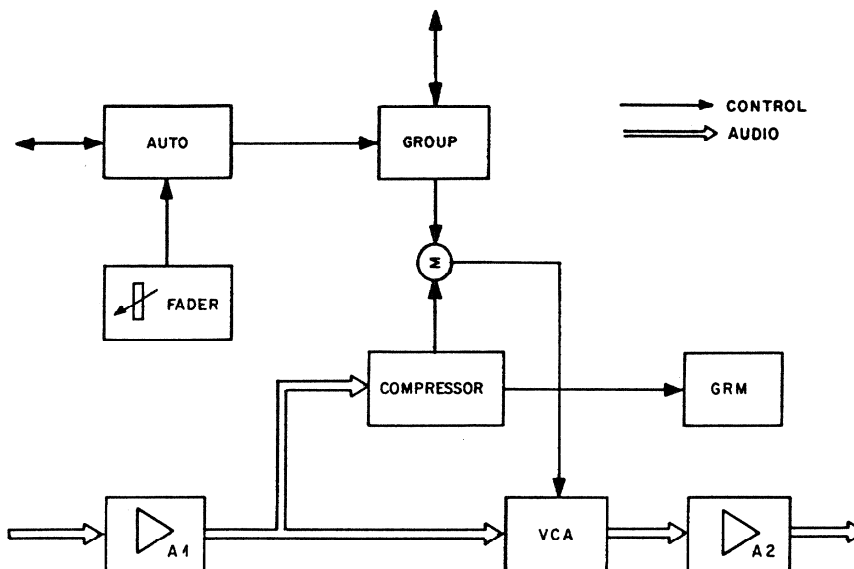
selectable with jumper

write low switched to GND

high open collector

BLOCKSCHALTBILD

BLOCK DIAGRAM



FUNKTIONSBESCHREIBUNG

Über den Eingangsverstärker A1 gelangt das Audiosignal auf den VCA und den Kompressor / Limiter. Nach dem VCA wird es über Verstärker A2 wieder ausgekoppelt. Die Steuergleichspannung wird dem VCA als Summe der Regelspannung des Kompressor/Limiters und der Steuerspannung des Flachbahnreglers zusammen mit den Steuerspannungen des Rechners und der Gruppensammelschiene zugeführt. Das GRM (Gain Reduction Meter) zeigt die Verstärkungsreduktion bei eingeschaltetem Limiter-Kompressor an.

AUTO - Block

Je nach Einstellung des Betriebsmodus-Schalters wird die vom Flachbahnregler abgegebene Steuerspannung verschiedenen Zielen zugeschaltet. Der Betriebsmodus-Schalter kann folgende sechs Stellungen einnehmen:

- A : Wahl des Master Status Moduls A
- B : Wahl des Master Status Moduls B
- R : READ Steuerung des VCA durch den Rechner
- W : WRITE Übernahme der Faderstellung auf den Rechner und gleichzeitige Steuerung des VCA
- U : UPDATE Korrektur der vom Rechner angelieferten Steuerspannung, wobei jede Abweichung von der Faderstellung 0dB als Korrekturfaktor eingelesen wird.
- M : MANUAL Steuerung des VCA durch den Flachbahnregler ohne Rechnerbeeinflussung.

Die Wahl der vier Zustände (R,W,U,M) durch die beiden übergeordneten Signale A + B erfordert eine zweipolige Steuerleitung. Die nachfolgenden Abbildungen zeigen den Verlauf der analogen Steuerspannungen und der beiden logischen Steuerbefehle.

FUNCTIONAL DESCRIPTION

The audio signal arriving from the input amplifier A1 is taken to the VCA and the compressor / limiter. After the VCA the audio signal is decoupled via amplifier A2. The DC control voltage is taken to the VCA as the sum of the compressor / limiter control voltage and the control voltage of the fader, together with the control voltages of the computer and of the group bus. The GRM (gain reduction meter) indicates the amount of gain reduction when the limiter/compressor is switched on.

AUTO - Block

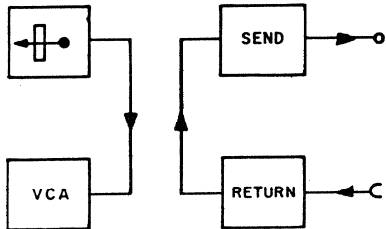
Depending on the setting of the mode switch, the control voltage supplied by the fader is connected to various targets. The mode switch features six settings:

- A: Selects master status module A
- B: Selects master status module B
- R: READ Control of VCA via the computer
- W: WRITE Transfer of the fader setting to the computer with simultaneous control of the VCA.
- U: UPDATE Correction of the control voltage supplied by the computer; any deviation from the 0dB fader setting is entered as a correction factor.
- M: MANUAL Control of the VCA gain by the fader without computer influence.

A 2-conductor control line is required for selecting the four states (R, W, U, M) with the aid of the two bus assignment signals A+B. The following diagrams illustrate the routing of the analog control voltage and the two logical control commands.

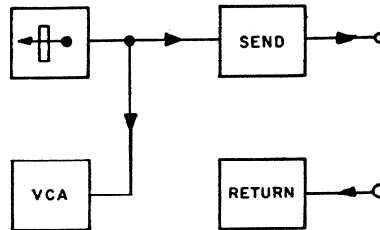
MANUAL

R : L
W : L



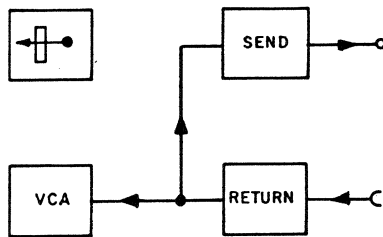
WRITE

R : L
W : H



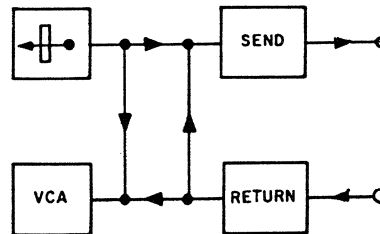
READ

R : H
W : L



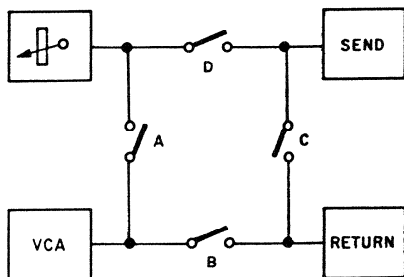
UPDATE

R : H
W : H



Die logischen Steuerbefehle R und W steuern die vier FET-Analogschalter wie folgt:

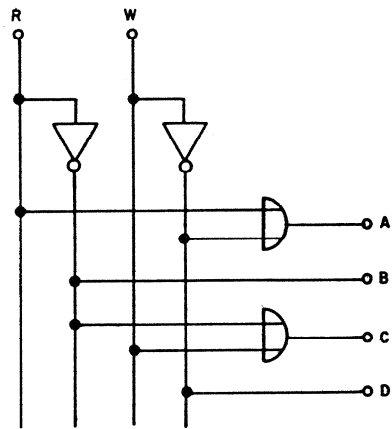
The logical control commands R and W control the four analog FET switches as follows:



| R | W | A | B | C | D |
|---|---|---|---|---|---|
| 1 | 1 | 1 | 0 | 1 | 0 |
| 1 | 0 | 1 | 0 | 0 | 1 |
| 0 | 1 | 0 | 1 | 1 | 0 |
| 0 | 0 | 1 | 1 | 1 | 1 |

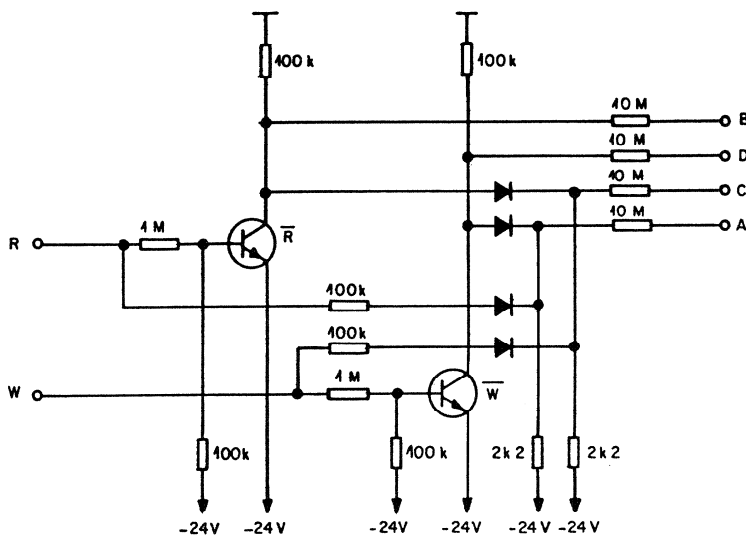
Die Umsetzung der Steuerbefehle wird wie folgt realisiert:

The control commands are translated as follows:



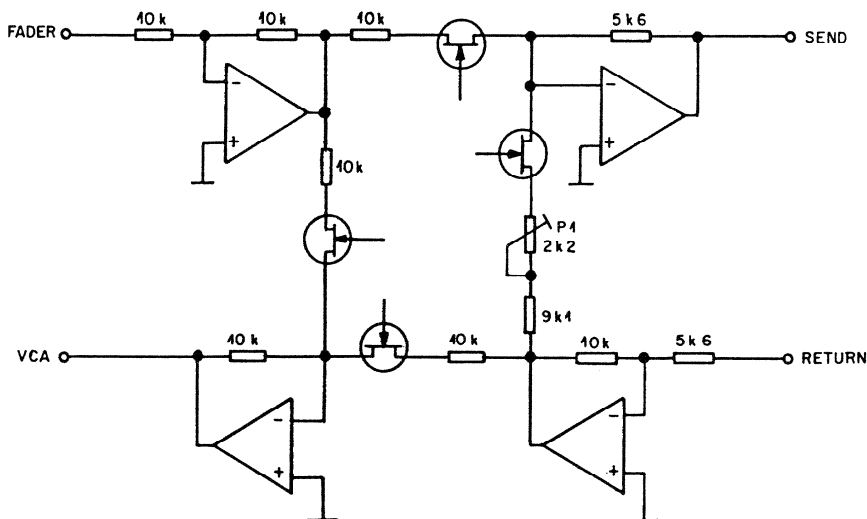
Das ergibt die folgende diskret aufgebaute Schaltung:

This results in the following discrete circuit:



Der analoge Teil der Schaltung ist nach folgendem Schema aufgebaut:

The analog section of the circuit is implemented according to the following diagram:

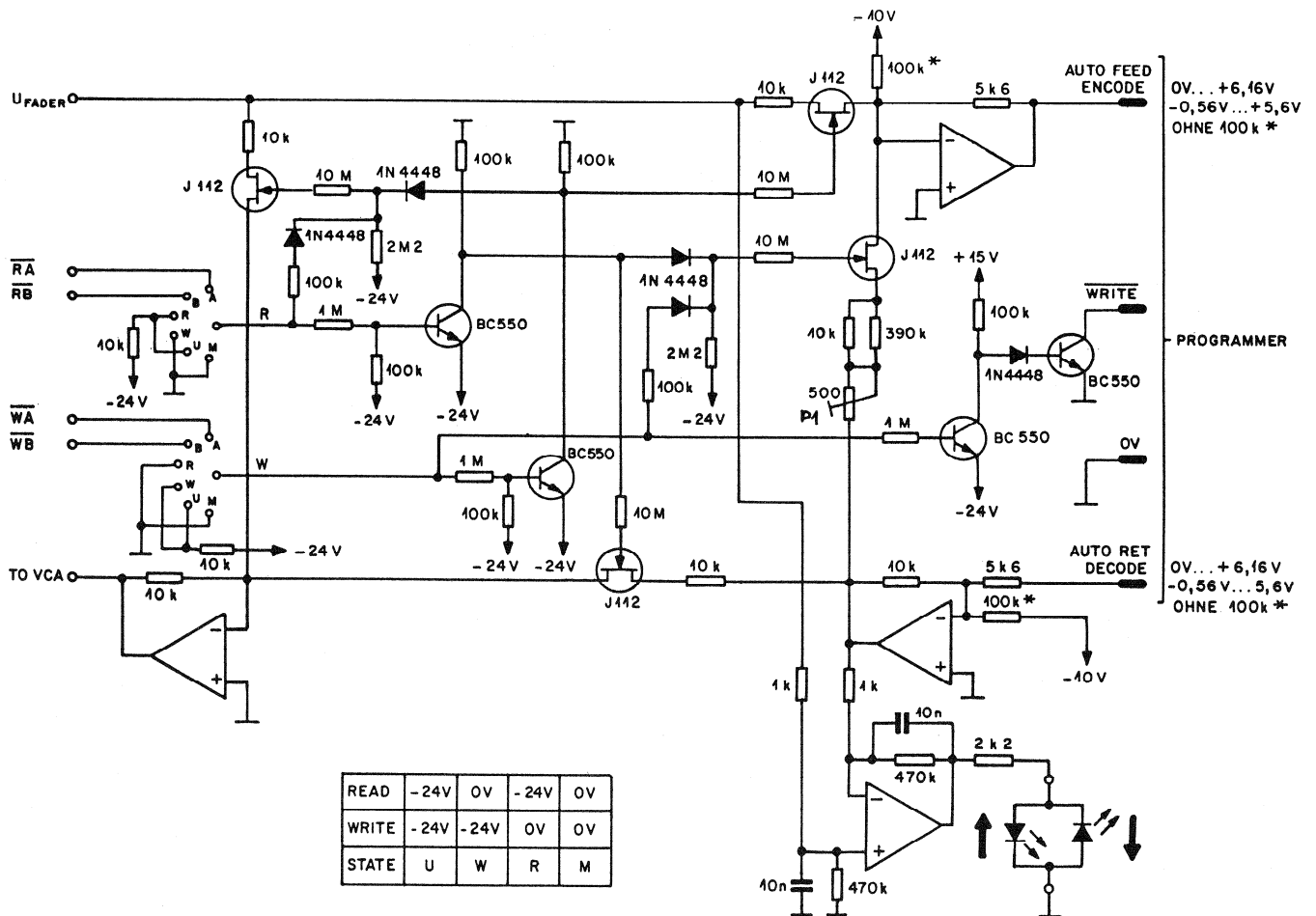


Der Trimmer P1 wird in Betriebsart MANUAL so eingestellt, dass die READ-Spannung der SEND-Spannung entspricht. Dadurch wird sichergestellt, dass der Rechner im READ und im unkorrigierten (Faderstellung 0dB) UPDATE Modus die RETURN Spannung unverändert zurückerhält. Spannungsdifferenzen würden ja bei jedem Durchgang eine erneute Verstärkungsdrift bewirken.

Die nächste Abbildung zeigt die vollständige Automatikschaltung. Der Differenzverstärker zeigt an den beiden LEDs, ob die Fader-Spannung gleich, grösser oder kleiner als die vom Rechner kommende Spannung ist. Um einen Lautstärkesprung beim Umschalten von READ auf WRITE resp. von UPDATE auf MANUAL zu vermeiden, müssen beide LED erloschen sein.

The trimmer P1 is set in the MANUAL mode in such a way that the READ voltage corresponds to the SEND voltage. This ensures that the computer receives the RETURN voltage without change in READ mode and in the uncorrected (fader setting 0dB) UPDATE mode because any voltage differences would cause a new gain drift in every passage.

The following diagram illustrates the complete automatic circuit. The differential amplifier indicates on both LEDs whether or not the fader voltage is the same, larger or smaller than the voltage arriving from the computer. To avoid a loudness jump when switching from READ to WRITE or from UPDATE to MANUAL, both LEDs must be off.



FLACHBAHNREGLER

Die Einheit ist mit einem linearen Flachbahnregler ausgerüstet. Die Regelcharakteristik des VCAs ist dB-linear zur angelegten Steuerspannung. Um den gewünschten, weder Spannungs- noch dB-linearen Reglerverlauf zu erhalten, muss ein Funktionsgenerator mit dem Verlauf

$$y = \operatorname{artanh} x$$

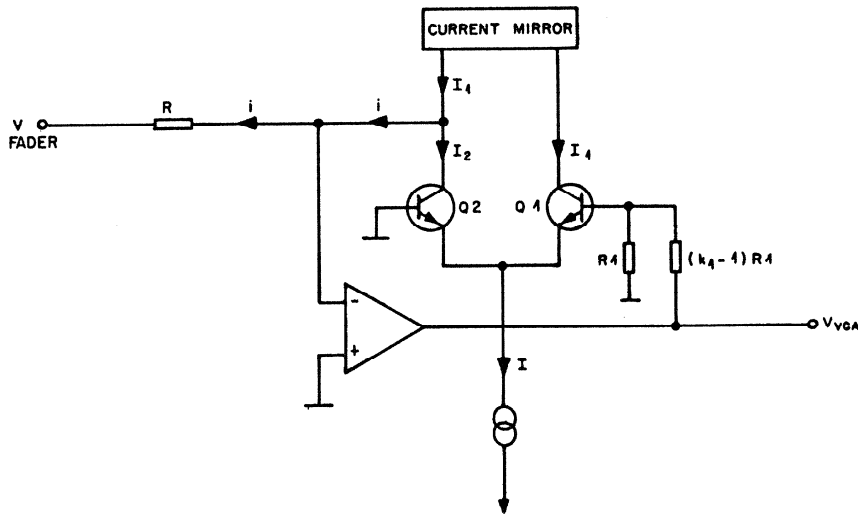
zwischen Fader und VCA geschaltet werden. Dies wird mit der folgenden Schaltung erreicht:

FADER

The module is equipped with a fader of linear taper. The control characteristic of the VCA is dB-linear to the applied control voltage. In order to achieve the desired fader behavior, that is neither voltage-linear nor dB-linear, a function generator with the characteristic

$$y = \operatorname{artanh} x$$

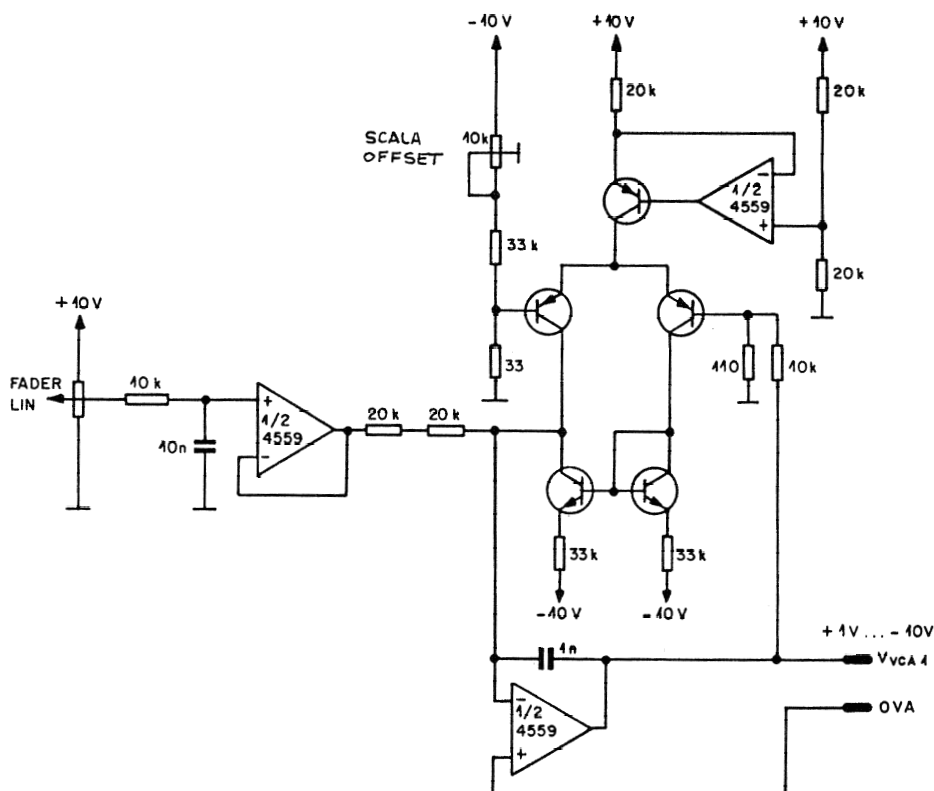
must be connected between the fader and the VCA. This is accomplished with the following circuit:



Mit dem Trimmer SCALA OFFSET lässt sich eine mechanische Abweichung des Faders zur Skala ausgleichen.

With the SCALE OFFSET trimmer it is possible to compensate for any mechanical deviation of the fader relative to the scale.

Schaltung des Funktions-Generators

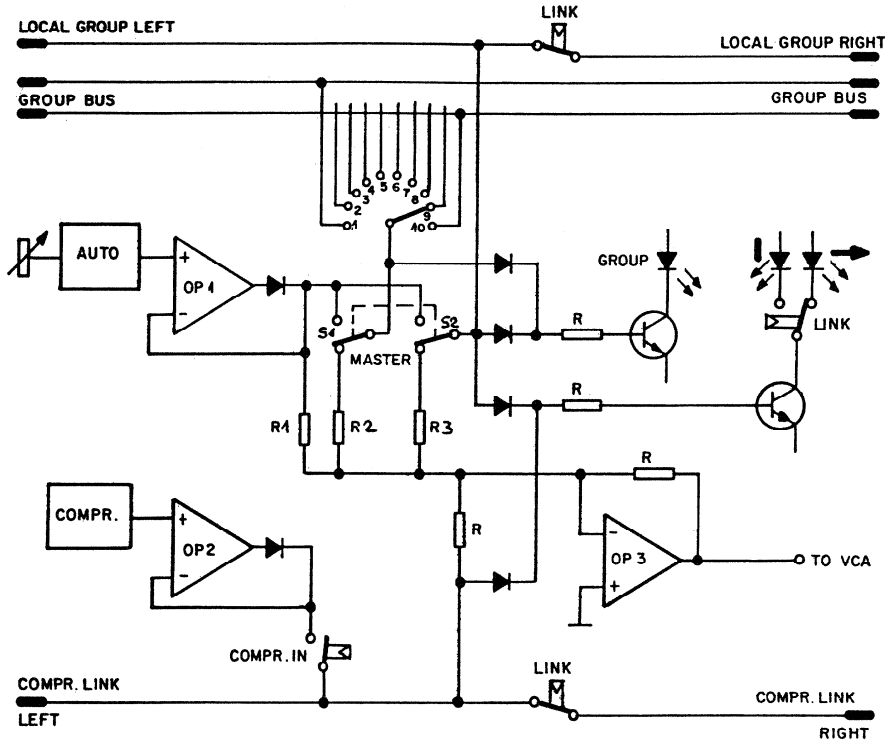


GRUPPENBILDUNG (GROUPING)

GROUPING

Blockdiagram Grouping

Grouping block diagram



Das vom Flachbahnregler abgegebene Steuersignal gelangt direkt über R1 auf den Addierer OP3, welcher den VCA steuert. Bei unbetätigtem MASTER-Schalter S1 gelangt die über den GROUP-Selector angewählte Steuerspannung zusätzlich auf den Addierer. Auch das vom LOCAL GROUP BUS stammende Signal wird an OP3 aufsummiert. Sobald der MASTER-Schalter betätigt wird, gelangt die eigene Faderspannung auf den angewählten Buss und übernimmt damit die Kontrolle über alle auf diesen Bus geschalteten Kanäle. Gleichzeitig wird die Faderspannung auch dem LOCAL GROUP BUS zugeführt und so der benachbarte, "gelinkte" Kanal beeinflusst.

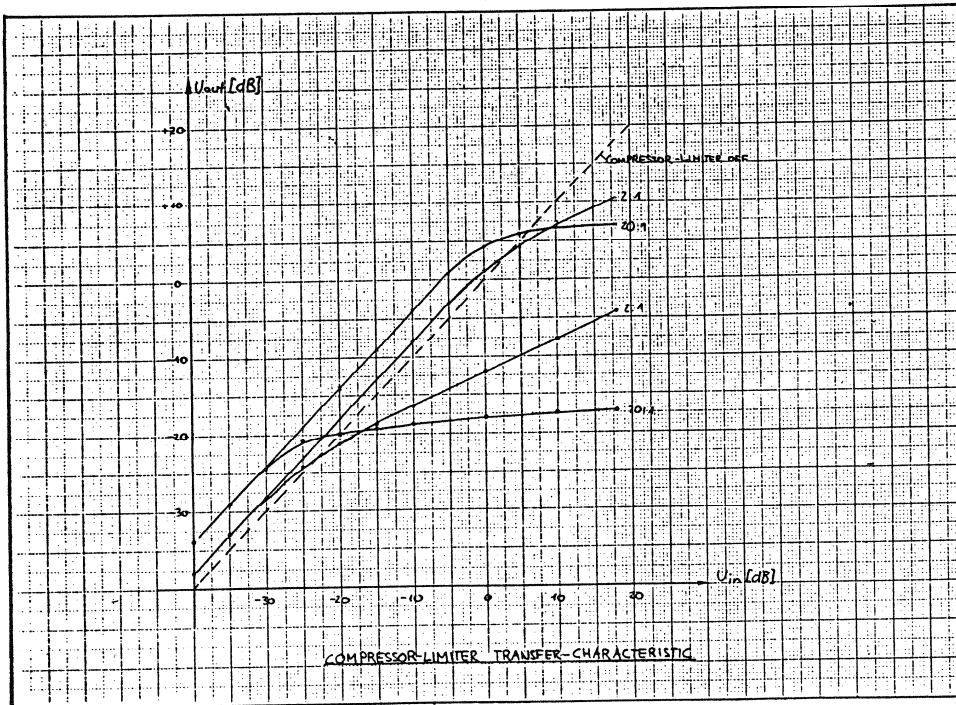
The control signal supplied by the linear fader is taken directly via R1 to the adder OP3 which controls the VCA. When the MASTER switch S1 is not actuated, the control voltage chosen via the GROUP selector is applied to the adder. Also, the signal originating from the LOCAL BUS is added to OP3. As soon as the MASTER switch is actuated, the own fader voltage reaches the selected bus and thereby controls all channels connected to this bus. The fader voltage is also taken to the LOCAL GROUP BUS which means that the adjacent, "linked" channel is influenced.

KOMPRESSOR / LIMITER

Der VCA-FADER ist mit einem vorwärts-gesteuerten Kompressor / Limiter ausgerüstet. Die Regelspannung des VCA wird also vom Audiosignal abgeleitet, das vor dem Regelglied anliegt. Das Kompressionsverhältnis ist im Bereich 2:1 bis 20:1 einstellbar und die Rücklaufzeit kann ebenfalls in einem weiten Bereich gewählt werden. Diese ist aber nicht nur von der Potentiometereinstellung, sondern auch vom angebotenen Programm selber abhängig. Um einen konstanten Lautstärkeindruck bei zunehmendem Kompressions-Ratio zu erzielen wird die Grundverstärkung angehoben (max. 6dB bei einem Ratio von 20:1). Die statische Übertragungskennlinie weist einen weichen Übergang zwischen linearem und komprimiertem Bereich auf, um die dynamischen Regelverzerrungen zu verkleinern und die Regelvorgänge weitgehend unhörbar zu machen.

COMPRESSOR / LIMITER

The VCA FADER is equipped with a forward-controlled compressor / limiter. The control voltage of the VCA is consequently derived from the audio signal that is available at the input to the control element. The compression ratio is adjustable from 2:1 to 20:1 and the release time can also be selected over a wide range. This depends not only on the potentiometer setting, but also on the offered program itself. In order to achieve a uniform loudness sensation for increasing compression ratios, it is necessary to increase the basic gain (max. 6dB for a ratio of 20:1). The static transmission curve features a soft transition between the linear and the compressed zone in order to minimize dynamic control distortions and to render the control operation as inaudible as possible.



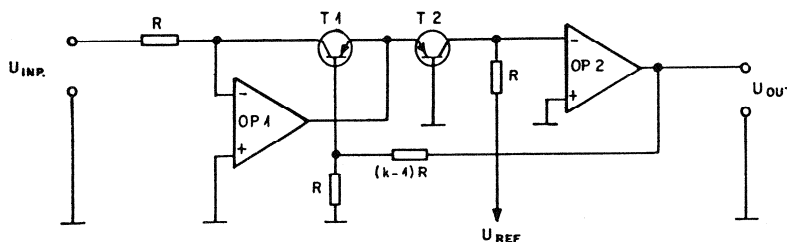
Logarithmierer / Rücklaufzeit

Für die Ausgangsspannung des unten abgebildeten Logarithmierers gilt

$$U_{out} = k * U_t \ln\left(\frac{U_{in}}{U_{ref}}\right)$$

Logarithmation section / release time

The following applies to the output voltage of the logarithmation section illustrated below:



Fügen wir in die Rückkopplung des Logarithmierers einen Spitzengleichrichter mit Zeitkonstante, so folgt die Ausgangsspannung dem Logarithmus des Eingangsspitzenwertes. Ein aktiver Gleichrichter sorgt dafür, dass nur negative Eingangsspannungen entstehen können. Die nächste Abbildung zeigt den erweiterten Logarithmierer, dessen Ausgangsspannung bei höheren Frequenzen der Formel

$$U_{out} = k * U_t \ln \left(\frac{|U_{INP}|}{U_{REF}} \right)$$

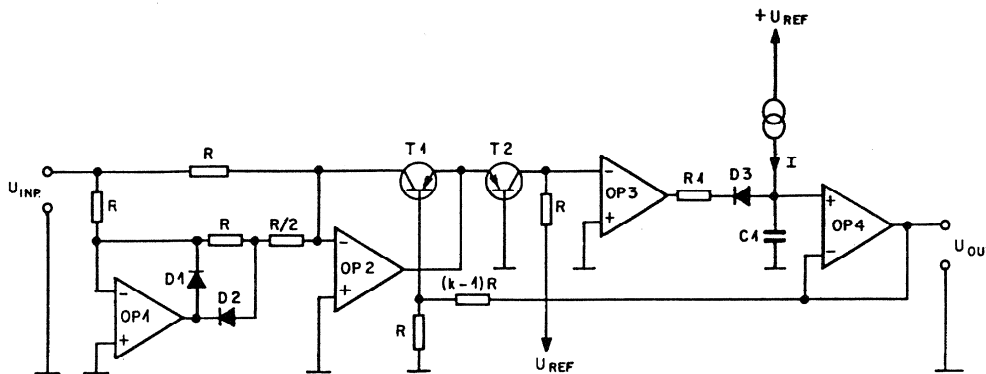
folgt.

Durch anlegen einer Spannung an die Basis von T2 kann die Ansprechschwelle der Schaltung verändert werden.

By inserting a peak rectifier with a time constant into the feedback of the logarithmation section, the output voltage follows the logarithm of the input peak value. An active rectifier ensures that only negative input voltages can occur. The next diagram illustrates the expanded logarithmation section whose output voltage, in the case of higher frequencies, follows the formula

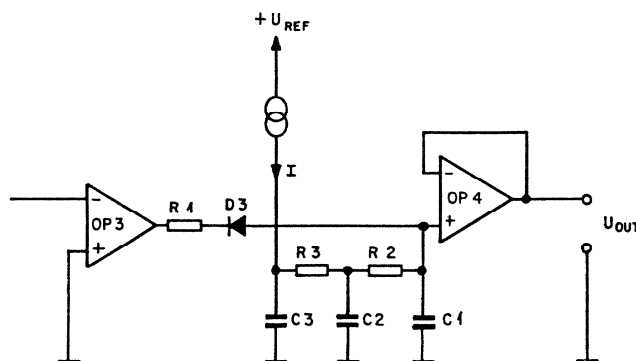
$$U_{out} = k * U_t \ln \left(\frac{|U_{INP}|}{U_{REF}} \right)$$

The threshold of this circuit can be changed by applying a voltage to the base of T2.



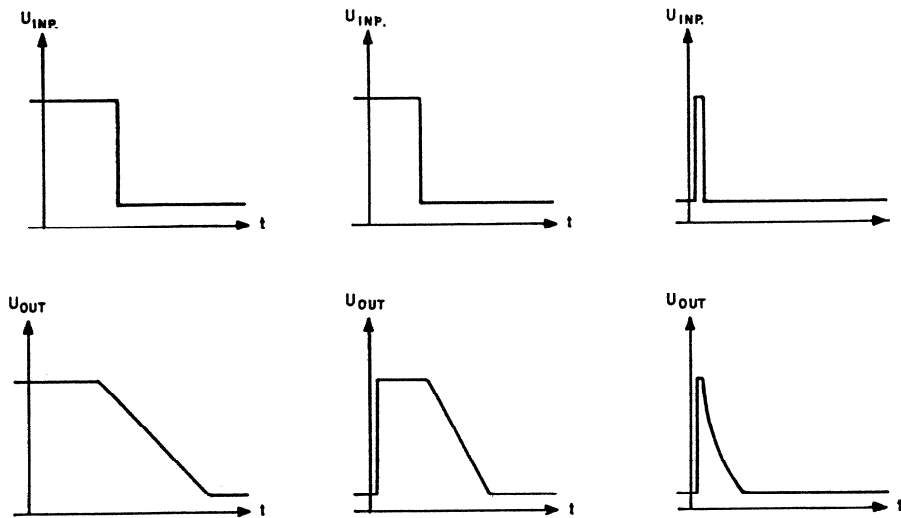
Die Ausgangsspannung gehorcht der Eingangsspannung nach der Funktion des Logarithmierers, verzögert durch die Ansprechzeitkonstante $T_1 = R_1 * C_1$. Wird die Eingangsspannung reduziert, entlädt sich C_1 mit I solange bis die log. Funktion wieder erfüllt ist (Rücklaufzeitkonstante). Wird die Stromquelle I variabel gemacht, kann die Rücklaufzeit in weiten Grenzen eingestellt werden. Durch Zuschaltung der Zeitkonstanten $R_2 * C_2$ und $R_3 * C_3$ und gleichzeitiger Beeinflussung der Stromquelle I durch die Ausgangsspannung wird die Rücklaufzeit dem Programminhalt angepasst. Diese programmabhängige Rücklaufzeit ergibt, besonders beim Anlegen von impulsförmigen hohen Eingangssignalen, einen wesentlich verbesserten Höreindruck.

The output voltage follows the input voltage according to the function of the logarithmation section, delayed by the response time constant $T_1 = R_1 * C_1$. If the input voltage is lowered, C_1 discharges with I until the log. function is again satisfied (release time constant). If the current source is made variable, the release time constant can be adjusted over a wide range. The release time is adjusted to the program content by adding the time constants $R_2 * C_2$ and $R_3 * C_3$ while simultaneously influencing the current source I . This program-dependent release time results in a much improved aural performance, particularly when pulse-shaped input signals of high level are occurring.



Rücklaufzeiten nach verschiedenartiger Uebersteuerung:

Release times resulting from different types of overmodulation:



Eine tieffrequente Eingangsspannung erzeugt bei kurzer Rücklaufzeit eine Steuerspannung mit überlagerter Niederfrequenz (Rippel). Dies bewirkt eine Verstärkungsänderung innerhalb der Signalperiode und damit nichtlineare Verzerrungen. Um dies zu vermeiden, wird die Stromquelle I während und kurz nach jeder Verstärkungsreduktion gesperrt.

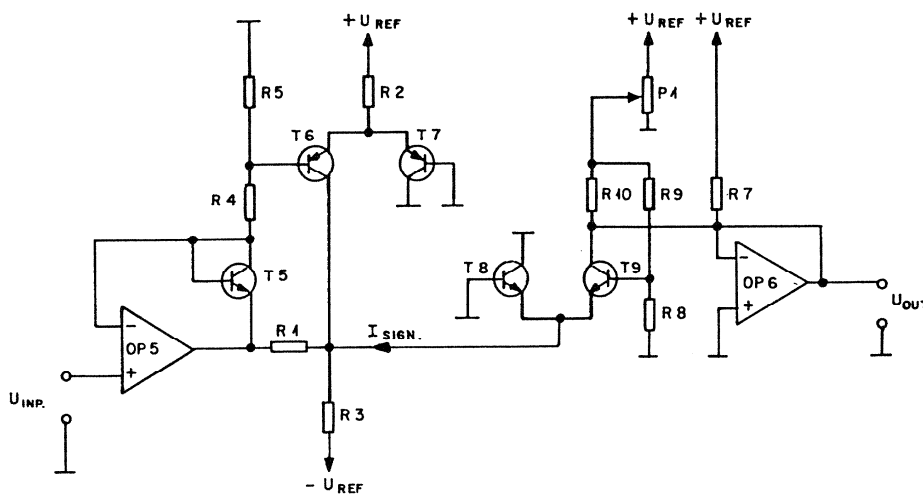
With a short release time, a low-frequency input voltage produces a control voltage with a superposed audio frequency (ripple). This results in a gain change within the signal period and consequently non-linear distortions. This is avoided by blocking the current source I during and immediately after each gain reduction.

KOMPRESSIONSVERHAELTNIS (RATIO)

Das Kompressionsverhältnis wird wie die Rücklaufzeit mit einem spannungsgesteuerten Stromverteiler bestimmt. Der gesteuerte Strom ist proportional zur Ausgangsspannung des Logarithmierers. Mit der Spannungssteuerung lässt sich gleichzeitig noch die ratiobedingte Grundverstärkung des VCA beeinflussen.

COMPRESSION RATIO

As is the case for the release time, the compression ratio is also determined with a voltage-controlled current distributor. The controlled current is proportional to the output voltage of the logarithmation section. With this voltage control it is also possible to influence the ratio-related basic gain of the VCA.



Der linke Teil der obigen Schaltung dient zur Erzeugung des Soft-Limiting Teils der Kompressionskennlinie, d.h. des sanften Uebergangs zwischen unbeeinflusstem und komprimierten Teil der Kennlinie. Der rechte Schaltungsteil bestimmt das Kompressionsverhältnis., wobei an Potentiometer P1 das Ratio eingestellt wird. Der gleichzeitig über R10 nach OP6 fliessende Strom erhöht die Grundverstärkung mit zunehmendem Ratio, was einen gleichbleibenden Lautstärkeindruck bewirkt. Die so gewonnene Steuerspannung gelangt nun über den Schalter COMPR IN auf den Spannungssummierer des VCA, auf den LINK-Bus und das GAIN REDUCTION Meter.

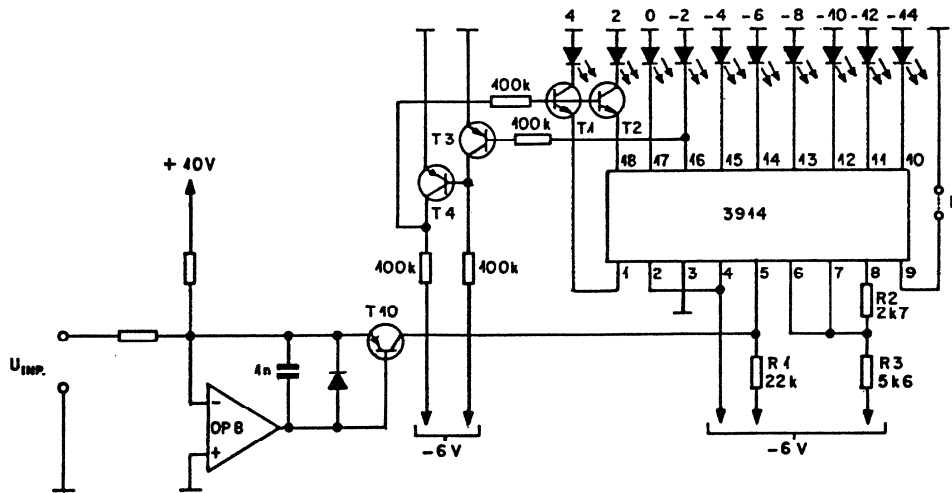
The left-hand section of the above circuit is used for producing the soft-limiting zone of the compression characteristic, i.e. the soft transition between the uninfluenced and compressed zone of the characteristic. The right-hand circuit section determines the compression ratio which is set with potentiometer P1. The current flowing via R10 to OP6 boosts the basic gain with increasing ratios with the effect that a uniform loudness sensation is produced. The control voltage derived in this manner is now taken via the COMPR IN switch to the voltage adder of the VCA, to the LINK bus, and to the GAIN REDUCTION meter.

GAIN REDUCTION METER

Die dB-lineare Anzeige des GRM erfolgt über 10 LED. Der angezeigte Bereich umfasst 14 ...-4 dB in 2 dB Schritten. Bei grossem Ratio und kleinem Eingangssignal wird, wie wir vorher gesehen haben, das Eingangssignal verstärkt. Diese "negative Verstärkungsreduktion" bringt daher die Dioden -2 oder -4 dB zum Aufleuchten.

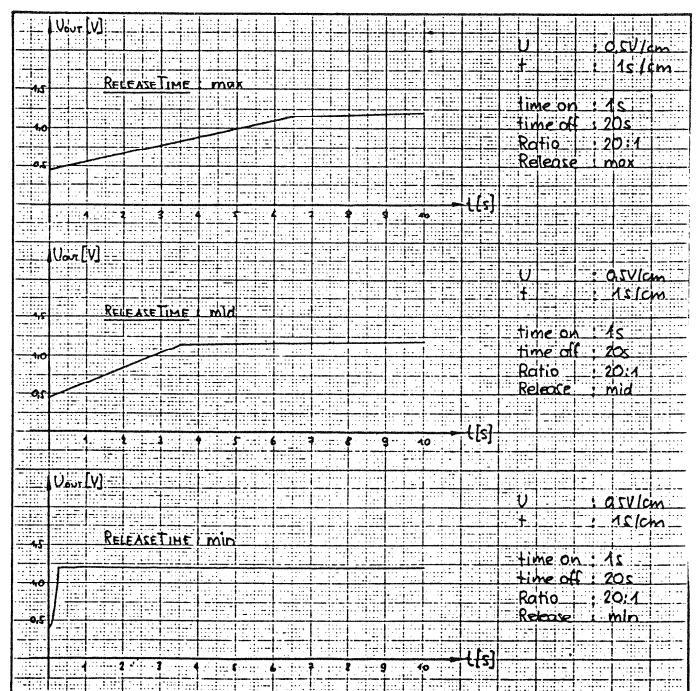
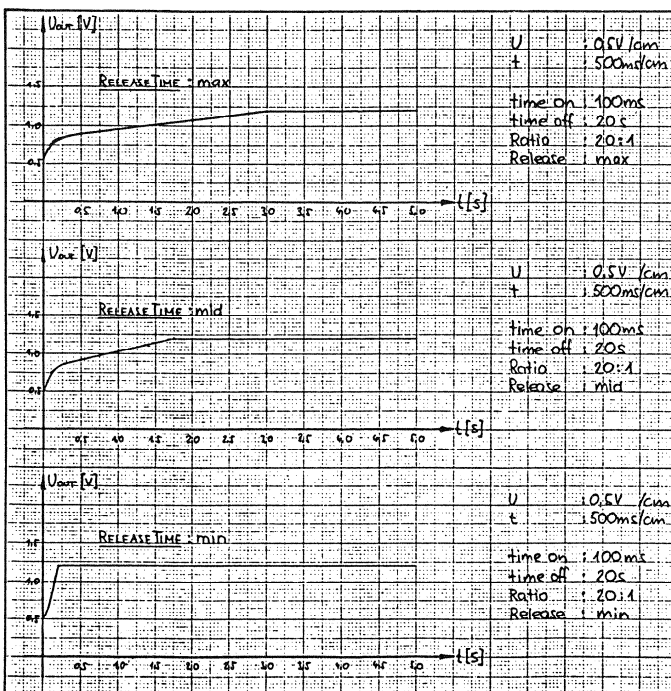
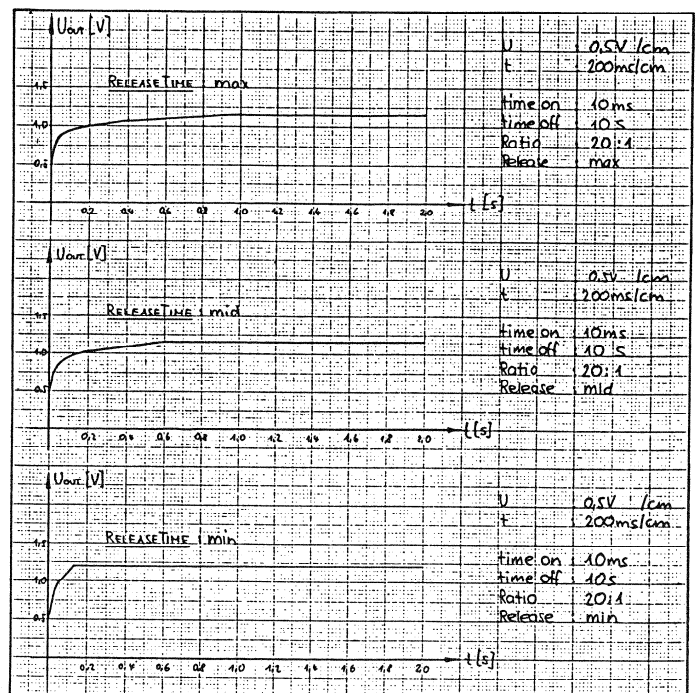
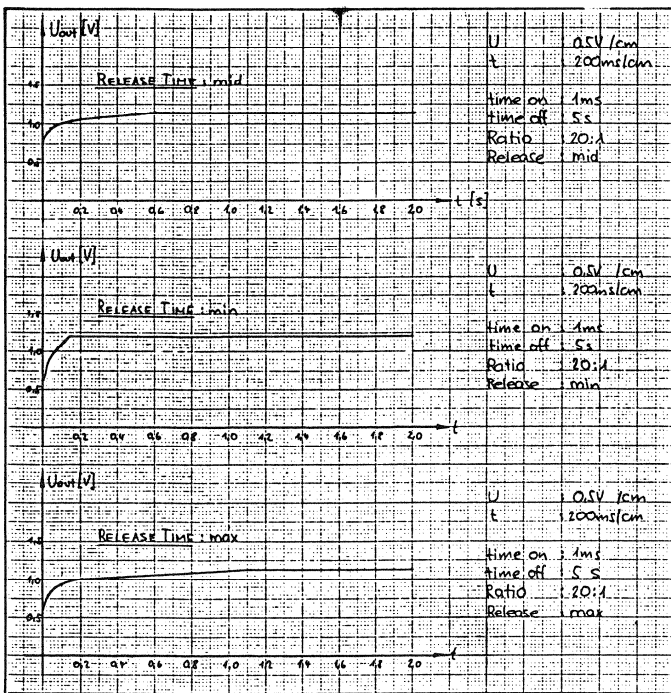
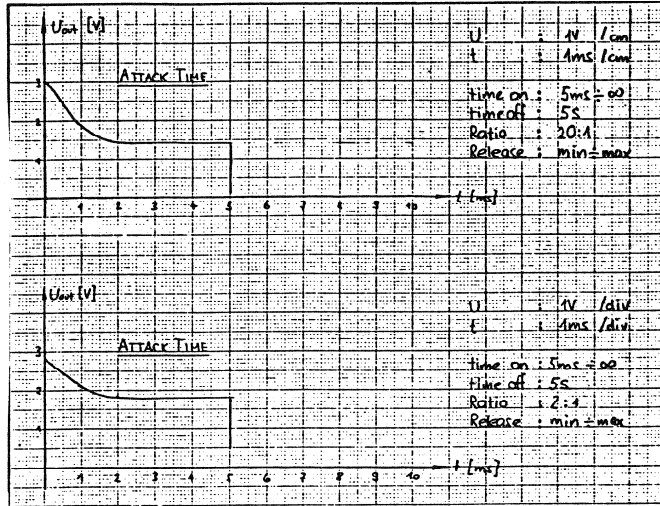
GAIN REDUCTION METER

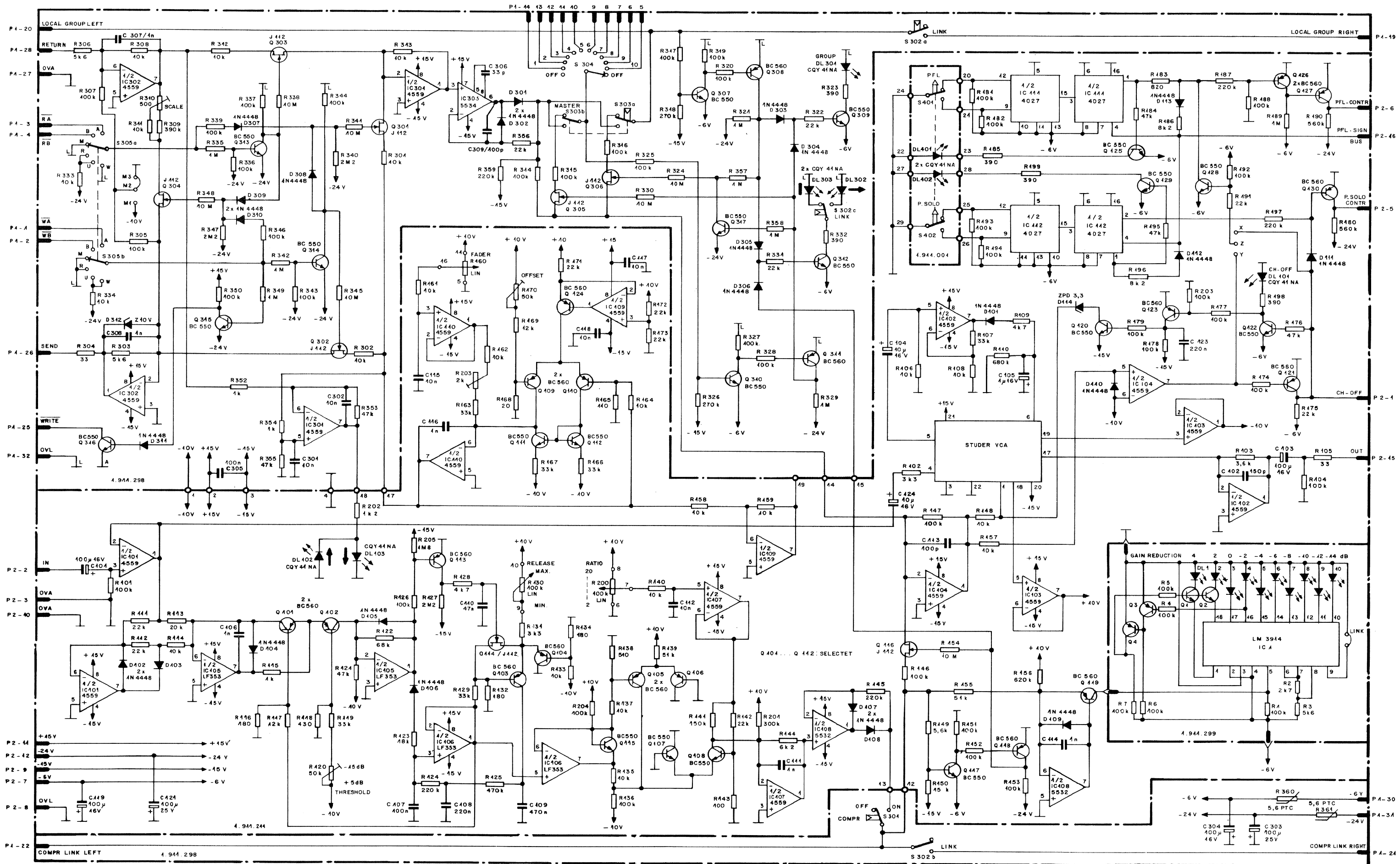
The dB-linear display of the GRM is implemented with 10 LEDs. The indicated range covers 14 dB of gain reduction. For high ratios and a small input signal, the input signal is amplified as we have seen before. This "negative gain reduction" causes the diodes -2dB or -4dB to turn on.



Mit der Brücke K auf obigen GRM Schema kann punktförmige Anzeige in eine Kollonnenförmige umgesetzt werden.

With jumper K, illustrated in the above GRM diagram, a dot-shaped display can be transformed into a column-shaped one.





- 1 CH-OFF
- 2 FADER IN
- 3 OVA
- 4 SOLO CONTR.
- 5 PFL CONTR.
- 6 OVL
- 7 -6V
- 8 -15V
- 9 OVA
- 10 +15V
- 11 -24V
- 12 FADER OUT
- 13 PFL SIGN BUS

- 1 LOCAL GR. RIGHT
- 2 LOCAL GR. LEFT
- 3 COMPR LINK RIGHT
- 4 COMPR LINK LEFT
- 5 WRITE
- 6 SEND
- 7 OVA
- 8 RETURN
- 9 -6V
- 10 -15V
- 11 -24V
- 12 OVL

| | | | | | | |
|--------------------------------|-------------|-----------|-----------|-----------|-----------|-----------------|
| DATE | 24.1.85 | 5.7.85 | 21.8.85 | 30.8.85 | 30.9.85 | 5.10.85 |
| SIGN: | <i>ml</i> | <i>ml</i> | <i>ml</i> | <i>ml</i> | <i>ml</i> | <i>ml</i> |
| STUDER REGENSDORF ZÜRICH | VCA - FADER | | | | | SC 1.911.210.82 |

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|------------|-----------|---------------------------|-----|
| C | 101 | 59.22.4101 | 100 μ | 16 V EL | |
| | 102 | 59.34.4151 | 150 p | CER | |
| | 103 | 59.22.4101 | 100 μ | 16 V EL | |
| | 104 | 59.26.2100 | 10 μ | 16 V SAL | |
| | 105 | 59.26.9109 | 1 μ | 16 V SAL | |
| | 106 | 59.06.0102 | 1 n | PETP | |
| | 107 | 59.06.5104 | 100 n | PETP | |
| | 108 | 59.06.5224 | 220 n | PETP | |
| | 109 | 59.06.5474 | 470 n | PETP | |
| | 110 | 59.06.0473 | 47 n | PETP | |
| | 111 | 59.06.0102 | 1 n | PETP | |
| | 112 | 59.06.0103 | 10 n | PETP | |
| | 113 | 59.34.4101 | 100 p | CER | |
| | 114 | 59.06.0102 | 1 n | PETP | |
| | 115 | 59.06.0103 | 10 n | PETP | |
| | 116 | 59.06.0102 | 1 n | PETP | |
| | 117 | 59.06.0103 | 10 n | PETP | |
| | 118 | 59.06.0103 | 10 n | PETP | |
| | 119 | 59.22.4101 | 100 μ | 16 V EL | |
| | 120 | | | not used | |
| | 121 | 59.22.5101 | 100 μ | 25 V EL | |
| | 122 | | | not used | |
| | 123 | 59.06.5224 | 220 n | PETP | |
| 3 | 124 | 59.26.2100 | 10 μ | 16 V SAL | |
| D | 101 | 50.04.0125 | 1N4448 | | |
| | 102 | 50.04.0125 | 1N4448 | | |
| | 103 | 50.04.0125 | 1N4448 | | |
| | 104 | 50.04.0125 | 1N4448 | | |
| | 105 | 50.04.0125 | 1N4448 | | |

| IND | DATE | NAME | PL | 1..911..211..81 | PAGE 1 OF 7 |
|--------|-----------------|----------|----|-----------------|-------------|
| ④ | | | | | |
| ③ | 5.10.85 | A.Ho | | | |
| ② | 21.8.85 | W.M. | | | |
| ① | 5.7.85 | W.M. | | | |
| ○ | 24.Jan.85 | W.Markl. | | | |
| STUDER | VCA-FADER BOARD | | PL | 1..911..211..81 | PAGE 1 OF 7 |

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|--------------|---------|---------------------------|-----|
| IC | 106 | 50.09.0101 | TL072 | | |
| | 107 | 50.09.0107 | RC4559 | | |
| | 108 | 50.09.0105 | NE5532 | | |
| | 109 | 50.09.0107 | RC4559 | | |
| | 110 | 50.09.0107 | RC4559 | | |
| | 111 | 50.07.0027 | MC14027 | | |
| | 112 | 50.07.0027 | MC14027 | | |
| J | 1 | 54.01.0287 | 3 POL | CIS | |
| Q | 101 | 1.010.038.50 | BC560 | SEL | |
| | 102 | 1.010.038.50 | BC560 | SEL | |
| | 103 | 1.010.038.50 | BC560 | SEL | |
| | 104 | 1.010.038.50 | BC560 | SEL | |
| | 105 | 1.010.038.50 | BC560 | SEL | |
| | 106 | 1.010.038.50 | BC560 | SEL | |
| | 107 | 1.010.039.50 | BC550 | SEL | |
| | 108 | 1.010.039.50 | BC550 | SEL | |
| | 109 | 1.010.038.50 | BC560 | SEL | |
| | 110 | 1.010.038.50 | BC560 | SEL | |
| | 111 | 1.010.039.50 | BC550 | SEL | |
| | 112 | 1.010.039.50 | BC550 | SEL | |
| | 113 | 50.03.0515 | BC560 | | |
| | 114 | 50.03.0350 | J-112 | | |
| | 115 | 1.010.039.50 | BC550 | SEL | |
| | 116 | 50.03.0350 | J-112 | | |
| | 117 | 50.03.0436 | BC550 | | |
| | 118 | 50.03.0515 | BC560 | | |
| | 119 | 50.03.0515 | BC560 | | |
| | 120 | 50.03.0436 | BC550 | | |

| IND | DATE | NAME | PL | 1..911..211..81 | PAGE 3 OF 7 |
|--------|-----------------|----------|----|-----------------|-------------|
| ④ | | | | | |
| ③ | 5.7.85 | A.Ho | | | |
| ② | 21.8.85 | W.M. | | | |
| ① | 5.7.85 | W.M. | | | |
| ○ | 24.Jan.85 | W.Markl. | | | |
| STUDER | VCA-FADER BOARD | | PL | 1..911..211..81 | PAGE 3 OF 7 |

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|------------|----------|---------------------------|-----|
| D | 106 | 50.04.0125 | 1N4448 | | |
| | 107 | 50.04.0125 | 1N4448 | | |
| | 108 | 50.04.0125 | 1N4448 | | |
| | 109 | 50.04.0125 | 1N4448 | | |
| | 110 | 50.04.0125 | 1N4448 | | |
| | 111 | 50.04.0125 | 1N4448 | | |
| | 112 | 50.04.0125 | 1N4448 | | |
| | 113 | 50.04.0125 | 1N4448 | | |
| | 114 | 50.04.1107 | D 3.3V | | |
| DL | 101 | 50.04.2121 | ICQY41AN | LED RED | |
| | 102 | 50.04.2121 | ICQY41AN | LED RED | |
| | 103 | 50.04.2121 | ICQY41AN | LED RED | |
| IC | 101 | 50.09.0107 | RC4559 | | |
| | 102 | 50.09.0107 | RC4559 | | |
| | 103 | 50.09.0107 | RC4559 | | |
| | 104 | 50.09.0107 | RC4559 | | |
| | 105 | 50.09.0101 | TL072 | | |

| IND | DATE | NAME | PL | 1..911..211..81 | PAGE 2 OF 7 |
|--------|-----------------|----------|----|-----------------|-------------|
| ④ | | | | | |
| ③ | 5.10.85 | A.Ho | | | |
| ② | 21.8.85 | W.M. | | | |
| ① | 5.7.85 | W.M. | | | |
| ○ | 24.Jan.85 | W.Markl. | | | |
| STUDER | VCA-FADER BOARD | | PL | 1..911..211..81 | PAGE 2 OF 7 |

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|------------|--------|---------------------------|-----|
| Q | 121 | 50.03.0515 | BC560 | | |
| | 122 | 50.03.0436 | BC550 | | |
| | 123 | 50.03.0515 | BC560 | | |
| | 124 | 50.03.0515 | BC560 | | |
| | 125 | 50.03.0436 | BC550 | | |
| | 126 | 50.03.0515 | BC560 | | |
| | 127 | 50.03.0515 | BC560 | | |
| | 128 | 50.03.0436 | BC550 | | |
| | 129 | 50.03.0436 | BC550 | | |
| | 130 | 50.03.0515 | BC560 | | |
| P | 1 | 54.11.2007 | 2*8PIN | | |
| R | 101 | 57.11.4104 | 100 K | | |
| | 102 | 57.11.3362 | 3.6 K | | |
| | 103 | 57.11.4332 | 3.3 K | | |
| | 104 | 57.11.4104 | 100 K | | |
| | 105 | 57.11.4330 | 33 | | |
| | 106 | 57.11.4103 | 10 K | | |
| | 107 | 57.11.4333 | 33 K | | |
| | 108 | 57.11.4103 | 10 K | | |
| | 109 | 57.11.4472 | 4.7 K | | |
| | 110 | 57.11.4684 | 680 K | | |
| | 111 | 57.11.4223 | 22 K | | |
| | 112 | 57.11.4223 | 22 K | | |
| | 113 | 57.11.3203 | 20 K | | |
| | 114 | 57.11.4103 | 10 K | | |
| | 115 | 57.11.4102 | 1 K | | |
| | 116 | 57.11.4181 | 180 | | |
| | 117 | 57.11.4123 | 12 K | | |

| IND | DATE | NAME | PL | 1..911..211..81 | PAGE 4 OF 7 |
|--------|-----------------|----------|----|-----------------|-------------|
| ④ | | | | | |
| ③ | 5.10.85 | A.Ho | | | |
| ② | 21.8.85 | W.M. | | | |
| ① | 5.7.85 | W.M. | | | |
| ○ | 24.Jan.85 | W.Markl. | | | |
| STUDER | VCA-FADER BOARD | | PL | 1..911..211..81 | PAGE 4 OF 7 |

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|------------|-------|----------------------------|-----|
| R | 118 | 57.11.3431 | 430 | | |
| | 119 | 57.11.4333 | 33 K | | |
| | 120 | 58.01.9503 | 50 K | TRIM PMG | |
| | 121 | 57.11.4473 | 47 K | | |
| | 122 | 57.11.4683 | 68 K | | |
| | 123 | 57.11.4183 | 18 K | | |
| | 124 | 57.11.4224 | 220 K | | |
| | 125 | 57.11.4474 | 470 K | | |
| | 126 | 57.11.4104 | 100 K | | |
| | 127 | 57.11.5225 | 2.2 M | | |
| | 128 | 57.11.4472 | 4.7 K | | |
| | 129 | 57.11.4333 | 33 K | | |
| | 130 | 58.03.0104 | 100 K | LIN POT PCC (on 1.911.210) | |
| | 131 | 57.11.4332 | 3.3 K | | |
| | 132 | 57.11.4181 | 180 | | |
| | 133 | 57.11.4103 | 10 K | | |
| | 134 | 57.11.4181 | 180 | | |
| | 135 | 57.11.4103 | 10 K | | |
| | 136 | 57.11.4104 | 100 K | | |
| | 137 | 57.11.4103 | 10 K | | |
| | 138 | 57.11.3511 | 510 | | |
| | 139 | 57.11.3513 | 51 K | | |
| | 140 | 57.11.4103 | 10 K | | |
| | 141 | 57.11.4154 | 150 K | | |
| | 142 | 57.11.4223 | 22 K | | |
| | 143 | 57.11.4101 | 100 | | |
| | 144 | 57.11.3622 | 6.2 K | | |
| | 145 | 57.11.4224 | 220 K | | |
| | 146 | 57.11.4104 | 100 K | | |
| | 147 | 57.11.4104 | 100 K | | |

| IND | DATE | NAME |
|-----|-------------|----------|
| ④ | | |
| ③ | 5.10.85 | A. Ko |
| ② | 21.8.85 | W |
| ① | 5.7.85 | W |
| ○ | 24. Jan. 85 | W. Markl |

STUDER VCA-FADER BOARD PL 1.911.211.81 PAGE 5 OF 7

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|--------------|-------|----------------------------|-----|
| R | 178 | 57.11.4104 | 100 K | | |
| | 179 | 57.11.4104 | 100 K | | |
| | 180 | 57.11.4564 | 560 K | | |
| | 181 | 57.11.4104 | 100 K | | |
| | 182 | 57.11.4104 | 100 K | | |
| | 183 | 57.11.4821 | 820 | | |
| | 184 | 57.11.4473 | 47 K | | |
| | 185 | 57.11.4391 | 390 | | |
| | 186 | 57.11.4822 | 8.2 K | | |
| | 187 | 57.11.4224 | 220 K | | |
| | 188 | 57.11.4104 | 100 K | | |
| | 189 | 57.11.4105 | 1 M | | |
| | 190 | 57.11.4564 | 560 K | | |
| | 191 | 57.11.4223 | 22 K | | |
| | 192 | 57.11.4104 | 100 K | | |
| | 193 | 57.11.4104 | 100 K | | |
| | 194 | 57.11.4104 | 100 K | | |
| | 195 | 57.11.4473 | 47 K | | |
| | 196 | 57.11.4822 | 8.2 K | | |
| | 197 | 57.11.4224 | 220 K | | |
| | 198 | 57.11.4391 | 390 | | |
| | 199 | 57.11.4391 | 390 | | |
| | 200 | 58.03.0104 | 100 K | LIN POT PCC (on 1.911.210) | |
| | 201 | 57.11.3304 | 300 K | | |
| | 202 | 57.11.4122 | 1.2 K | | |
| | 203 | 57.11.4104 | 100 K | | |
| | 204 | 57.11.4104 | 100 K | | |
| | VCA1 | 1.010.110.50 | | STUDER VCA | |
| 2 | 205 | 57.11.5185 | 1.8 M | | |
| | MPQ | 50.20.2001 | | CLIP, 2* TO 92 | |

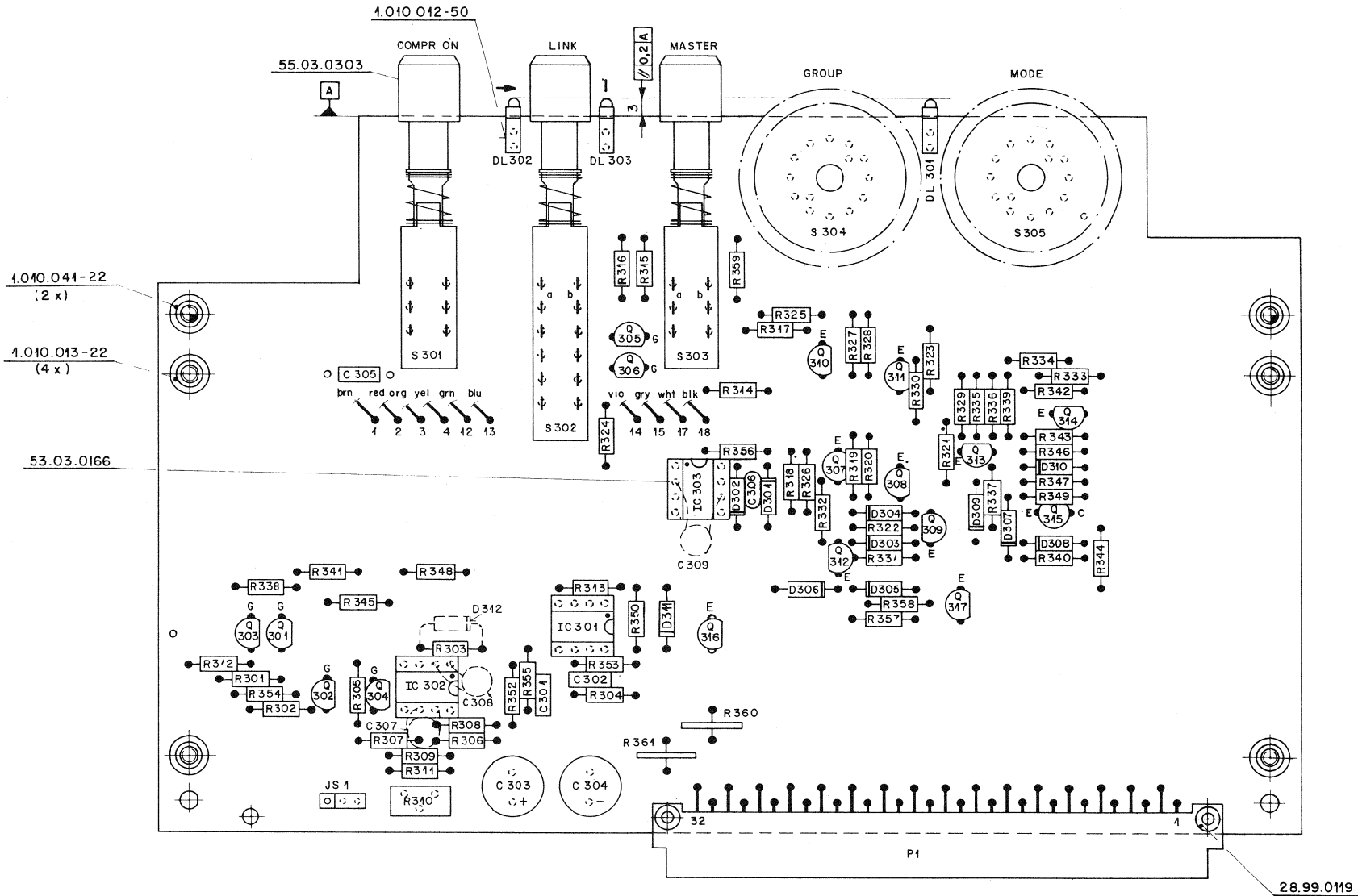
| IND | DATE | NAME |
|-----|-------------|----------|
| ④ | | |
| ③ | 5.10.85 | A. Ko |
| ② | 21.8.85 | W |
| ① | 5.7.85 | W |
| ○ | 24. Jan. 85 | W. Markl |

STUDER VCA-FADER BOARD PL 1.911.211.81 PAGE 7 OF 7

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|--------------|-------|---------------------------|-----|
| R | 148 | 57.11.4103 | 10 K | | |
| | 149 | 57.11.4562 | 5.6 K | | |
| | 150 | 57.11.4153 | 15 K | | |
| | 151 | 57.11.4104 | 100 K | | |
| | 152 | 57.11.4104 | 100 K | | |
| | 153 | 57.11.4104 | 100 K | | |
| | 154 | 57.11.6101 | 10 M | | |
| | 155 | 57.11.3513 | 51 K | | |
| | 156 | 57.11.3624 | 620 K | | |
| | 157 | 57.11.4103 | 10 K | | |
| | 158 | 57.11.4103 | 10 K | | |
| | 159 | 57.11.4103 | 10 K | | |
| 1 | 160 | 1.960.029.00 | 10 K | FADER TRACK LIN. | |
| | 161 | 57.11.4103 | 10 K | | |
| 2 | 162 | 57.11.4103 | 10 K | | |
| | 163 | 57.11.4333 | 33 K | | |
| | 164 | 57.11.4104 | 10 K | | |
| | 165 | 57.11.3111 | 110 | | |
| | 166 | 57.11.4333 | 33 K | | |
| | 167 | 57.11.4333 | 33 K | | |
| | 168 | 57.11.3200 | 20 | | |
| | 169 | 57.11.4123 | 12 K | | |
| | 170 | 58.01.9503 | 50 K | TRIM PMG | |
| | 171 | 57.11.4223 | 22 K | | |
| | 172 | 57.11.4223 | 22 K | | |
| | 173 | 57.11.4223 | 22 K | | |
| | 174 | 57.11.4104 | 100 K | | |
| | 175 | 57.11.4223 | 22 K | | |
| | 176 | 57.11.4473 | 47 K | | |
| | 177 | 57.11.4104 | 100 K | | |

| IND | DATE | NAME |
|-----|-------------|----------|
| ④ | | |
| ③ | 5.10.85 | A. Ko |
| ② | 21.8.85 | W |
| ① | 5.7.85 | W |
| ○ | 24. Jan. 85 | W. Markl |

STUDER VCA-FADER BOARD PL 1.911.211.81 PAGE 6 OF 7



- ① C 307, C 308, C 309 neu dazu
- ② D 312 neu dazu

| | | | |
|--|------------------|---------------|---|
| Werkstoff | Norm-Nr.: | Güte: | Änderung 30.9.85 A.Ho <i>WM</i> 30.8.85 A.Ho <i>WM</i> |
| | DIN-Bez.: | Oberfläche: | |
| | Abmessung | Beh. | |
| Zugehörige Unterlagen: | Freimasstoleranz | Maßstab | Ausgabe 24.1.85 A.Ho <i>WM</i> Datum Gez Gepr Gcs Index |
| Ersatz für: | | Ersetzt durch | Kopie für |
| Benennung: STUDEF REGENDORF ZÜRICH | | | Automations Board Nummer: 1.911.298-81 |

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|------------|---------|---------------------------|-----|
| C | 301 | 59.06.0103 | 10n | PETP | |
| | 302 | 59.06.0103 | 10n | PETP | |
| | 303 | 59.22.5101 | 100µ | 25V EL | |
| | 304 | 59.22.4101 | 100µ | 16V EL | |
| | 305 | 59.06.5104 | 100n | PETP | |
| | 306 | 59.34.2330 | 33p | CER | |
| 1 | 307 | 59.32.4102 | 1n | CER | |
| 1 | 308 | 59.32.4102 | 1n | CER | |
| 1 | 309 | 59.34.4101 | 400p | CER | |
| D | 301 | 50.04.0125 | 1N4448 | | |
| | 302 | 50.04.0125 | 1N4448 | | |
| | 303 | 50.04.0125 | 1N4448 | | |
| | 304 | 50.04.0125 | 1N4448 | | |
| | 305 | 50.04.0125 | 1N4448 | | |
| | 306 | 50.04.0125 | 1N4448 | | |
| | 307 | 50.04.0125 | 1N4448 | | |
| | 308 | 50.04.0125 | 1N4448 | | |
| | 309 | 50.04.0125 | 1N4448 | | |
| | 310 | 50.04.0125 | 1N4448 | | |
| | 311 | 50.04.0125 | 1N4448 | | |
| 2 | 312 | 50.04.1114 | 10V | Z-DIODE | |
| DL | 301 | 50.04.2121 | CQY41AN | LED ROT | |
| | 302 | 50.04.2121 | CQY41AN | LED ROT | |
| | 303 | 50.04.2121 | CQY41AN | LED ROT | |
| JS | 1 | 54.11.0126 | 3PIN | JUMPER | |
| IC | 301 | 50.09.0107 | RC4559 | | |
| | 302 | 50.09.0107 | RC4559 | | |
| | 303 | 50.05.0243 | NE5534M | | |
| P | 1 | 54.01.0359 | 2*16PIN | EUROCONNECTOR | |

| INDI | DATE | NAME |
|------|------------|---------|
| ④ | | |
| ③ | | |
| ② | 30.Sept.85 | A.Ho- |
| ① | 30.Aug.85 | A.Ho- |
| ○ | 24.Jan.85 | W.Markl |

STUDER AUTOMATION BOARD PL 1..9.1.1..298..81 PAGE 1 OF 4

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|------------|-------|---------------------------|-----|
| R | 311 | 57.11.4103 | 10 K | | |
| | 312 | 57.11.4103 | 10 K | | |
| | 313 | 57.11.4103 | 10 K | | |
| | 314 | 57.11.4104 | 100 K | | |
| | 315 | 57.11.4104 | 100 K | | |
| | 316 | 57.11.4104 | 100 K | | |
| | 317 | 57.11.4104 | 100 K | | |
| | 318 | 57.11.4274 | 270 K | | |
| | 319 | 57.11.4104 | 100 K | | |
| | 320 | 57.11.4104 | 100 K | | |
| | 321 | 57.11.4105 | 1 M | | |
| | 322 | 57.11.4223 | 22 K | | |
| | 323 | 57.11.4391 | 390 | | |
| | 324 | 57.11.6106 | 10 M | | |
| | 325 | 57.11.4104 | 100 K | | |
| | 326 | 57.11.4274 | 270 K | | |
| | 327 | 57.11.4104 | 100 K | | |
| | 328 | 57.11.4104 | 100 K | | |
| | 329 | 57.11.4105 | 1 M | | |
| | 330 | 57.11.6106 | 10 M | | |
| | 331 | 57.11.4223 | 22 K | | |
| | 332 | 57.11.4391 | 390 | | |
| | 333 | 57.11.4103 | 10 K | | |
| | 334 | 57.11.4103 | 10 K | | |
| | 335 | 57.11.4105 | 1 M | | |
| | 336 | 57.11.4104 | 100 K | | |
| | 337 | 57.11.4104 | 100 K | | |
| | 338 | 57.11.6106 | 10 M | | |
| | 339 | 57.11.4104 | 100 K | | |
| | 340 | 57.11.5225 | 2.2 M | | |

| INDI | DATE | NAME |
|------|------------|---------|
| ④ | | |
| ③ | | |
| ② | 30.Sept.85 | A.Ho- |
| ① | 30.Aug.85 | A.Ho- |
| ○ | 24.Jan.85 | W.Markl |

STUDER AUTOMATION BOARD PL 1..9.1.1..298..81 PAGE 3 OF 4

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|------------|-------|---------------------------|-----|
| Q | 301 | 50.03.0350 | J112 | | |
| | 302 | 50.03.0350 | J112 | | |
| | 303 | 50.03.0350 | J112 | | |
| | 304 | 50.03.0350 | J112 | | |
| | 305 | 50.03.0350 | J112 | | |
| | 306 | 50.03.0350 | J112 | | |
| | 307 | 50.03.0436 | BC550 | | |
| | 308 | 50.03.0515 | BC560 | | |
| | 309 | 50.03.0436 | BC550 | | |
| | 310 | 50.03.0436 | BC550 | | |
| | 311 | 50.03.0515 | BC560 | | |
| | 312 | 50.03.0436 | BC550 | | |
| | 313 | 50.03.0436 | BC550 | | |
| | 314 | 50.03.0436 | BC550 | | |
| | 315 | 50.03.0436 | BC550 | | |
| | 316 | 50.03.0436 | BC550 | | |
| | 317 | 50.03.0436 | BC550 | | |
| R | 301 | 57.11.4103 | 10 K | | |
| | 302 | 57.11.4103 | 10 K | | |
| | 303 | 57.11.4562 | 5.6 K | | |
| | 304 | 57.11.4330 | 33 | | |
| | 305 | 57.11.4104 | 100 K | | |
| | 306 | 57.11.4562 | 5.6 K | | |
| | 307 | 57.11.4104 | 100 K | | |
| | 308 | 57.11.4103 | 10 K | | |
| | 309 | 57.11.4394 | 390 K | | |
| | 310 | 58.01.9501 | 500 | TRIMM PMG | |

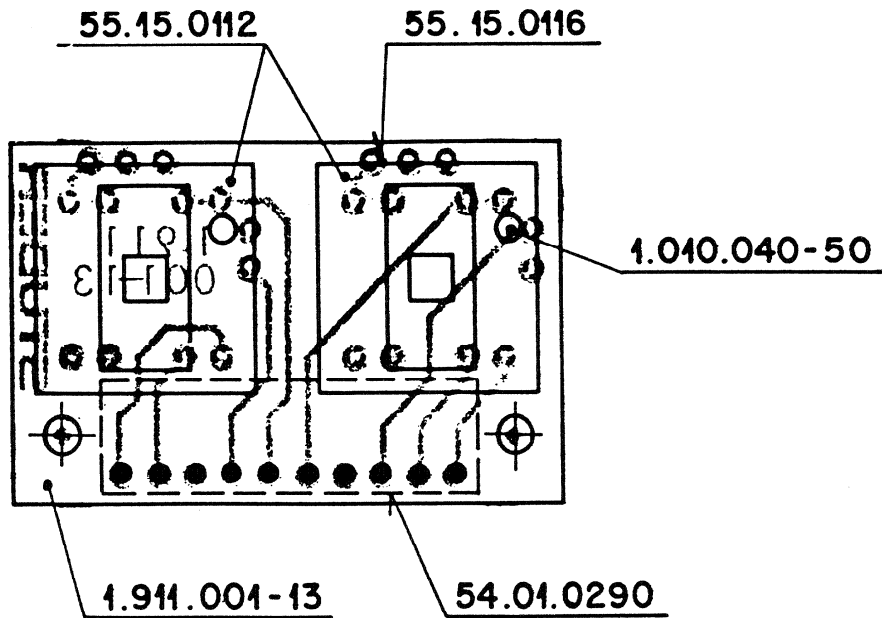
| INDI | DATE | NAME |
|------|------------|---------|
| ④ | | |
| ③ | | |
| ② | 30.Sept.85 | A.Ho- |
| ① | 30.Aug.85 | A.Ho- |
| ○ | 24.Jan.85 | W.Markl |

STUDER AUTOMATION BOARD PL 1..9.1.1..298..81 PAGE 2 OF 4

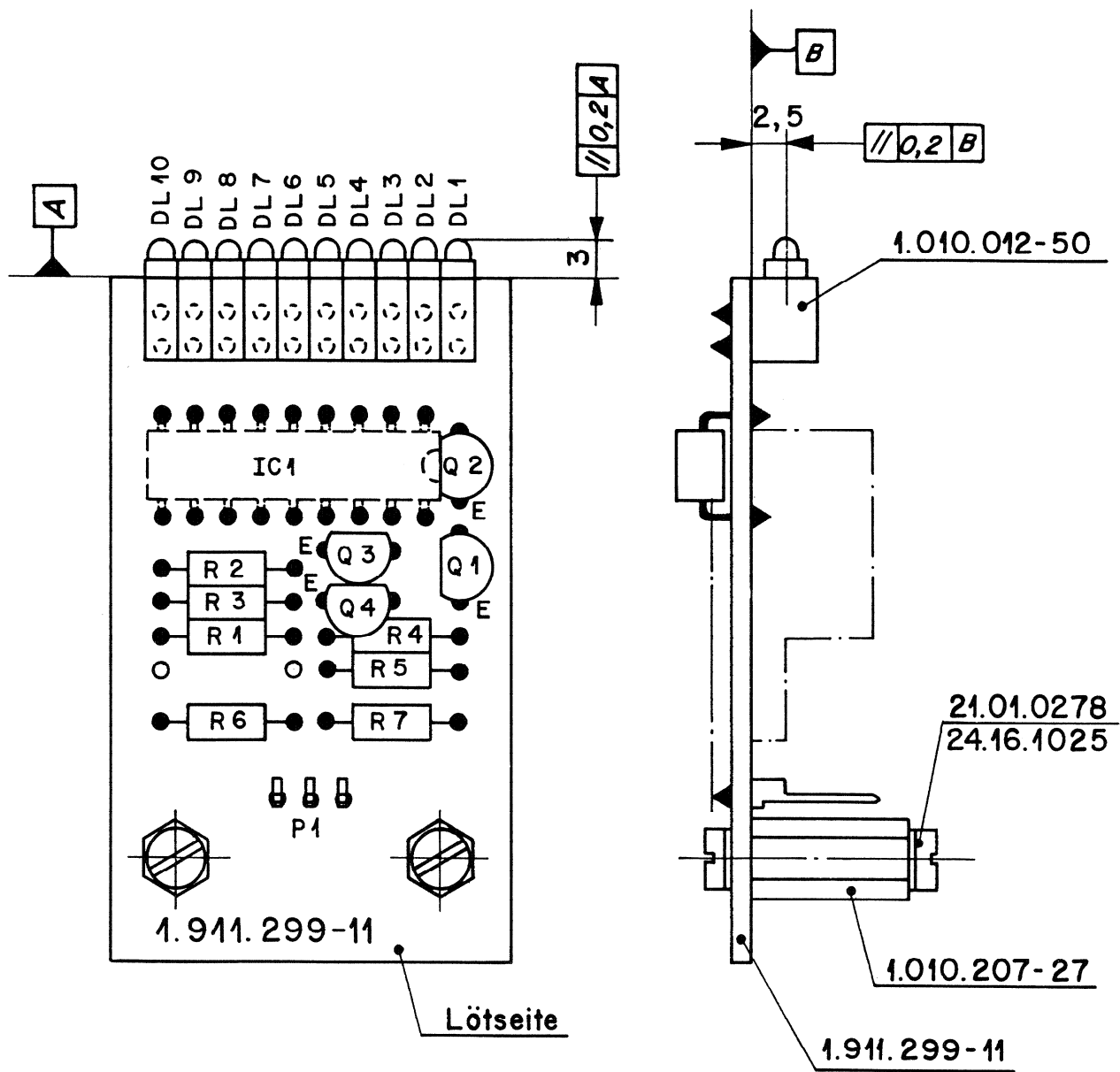
| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|------------|-------|---------------------------|-----|
| R | 341 | 57.11.6106 | 10 M | | |
| | 342 | 57.11.4105 | 1 M | | |
| | 343 | 57.11.4104 | 100 K | | |
| | 344 | 57.11.4104 | 100 K | | |
| | 345 | 57.11.6106 | 10 M | | |
| | 346 | 57.11.4104 | 100 K | | |
| | 347 | 57.11.5225 | 2.2 M | | |
| | 348 | 57.11.6106 | 10 M | | |
| | 349 | 57.11.4105 | 1 M | | |
| | 350 | 57.11.4104 | 100 K | | |
| | 351 | | | | |
| | 352 | 57.11.4102 | 1 K | | |
| 1 | 353 | 57.11.4473 | 47 K | | |
| | 354 | 57.11.4102 | 1 K | | |
| 1 | 355 | 57.11.4473 | 47 K | | |
| | 356 | 57.11.4223 | 22 K | | |
| | 357 | 57.11.4105 | 1 M | | |
| | 358 | 57.11.4105 | 1 M | | |
| | 359 | 57.11.4224 | 220 K | | |
| | 360 | 57.99.0209 | 5.6 | PTC | |
| | 361 | 57.99.0209 | 5.6 | PTC | |
| S | 301 | 55.15.0002 | 2*U | TASTE | |
| | 302 | 55.15.0004 | 4*U | TASTE | |
| | 303 | 55.15.0002 | 2*U | TASTE | |
| | 304 | 55.13.0011 | 1*12 | SCHALTER U | |
| | 305 | 55.13.0010 | 2*6 | SCHALTER KS | |

| INDI | DATE | NAME |
|------|------------|---------|
| ④ | | |
| ③ | | |
| ② | 30.Sept.85 | A.Ho- |
| ① | 30.Aug.85 | A.Ho- |
| ○ | 24.Jan.85 | W.Markl |

STUDER AUTOMATION BOARD PL 1..9.1.1..298..81 PAGE 4 OF 4



| | | | | | | | | | | |
|---------------------------------------|------------|--|----------|------------|-----------------------------|-------|------|-------|---|---|
| Werkstoff | Norm-Nr.: | Oberfläche | Güte: | Änderung | | | | | ③ | |
| | DIN-Bez.: | | Beh.: | | | | | | | ② |
| | Abmessung: | | | | | | | | | ① |
| Zugehörige Unterlagen: | | Freimasstoleranz: | Maßstab: | Ausgabe | 19.5.82 | Ho | Vf | | ① | |
| | | ± | 2 : 1 | Datum | Gez. | Gepr. | Ges. | Index | | |
| Ersatz für: | | Ersetzt durch: | | Kopie für: | | | | | | |
| STUDER REGENSDORF ZÜRICH | | Benennung: Pushbutton Board N-N | | | Nummer: 1.911.001-00 | | | | | |



| | | | | | | | | | | | |
|--------------------------------|------------|-----------------------------|----------|---------|-------------------------|-------|------|-------|---|---|---|
| Werkstoff | Norm-Nr.: | Oberfläche | | Güte: | Änderung | | | | | ③ | |
| | DIN-Bez.: | Beh.: | | | | | | | | | ② |
| | Abmessung: | | | | | | | | | | ① |
| Zugehörige Unterlagen: | | Freimasstoleranz: | Maßstab: | Ausgabe | 14.7.83 | A.Ho | W.M. | ① | ① | ① | |
| PL | | + | 2:1 | Datum | Gez. | Gepr. | Ges. | Index | | | |
| Ersatz für: | | Ersetzt durch: | | | Kopie für: | | | | | | |
| STUDER REGENSDORF ZÜRICH | | Benennung: Led-GRM Board | | | Nummer: 1.911.299-00 | | | | | | |

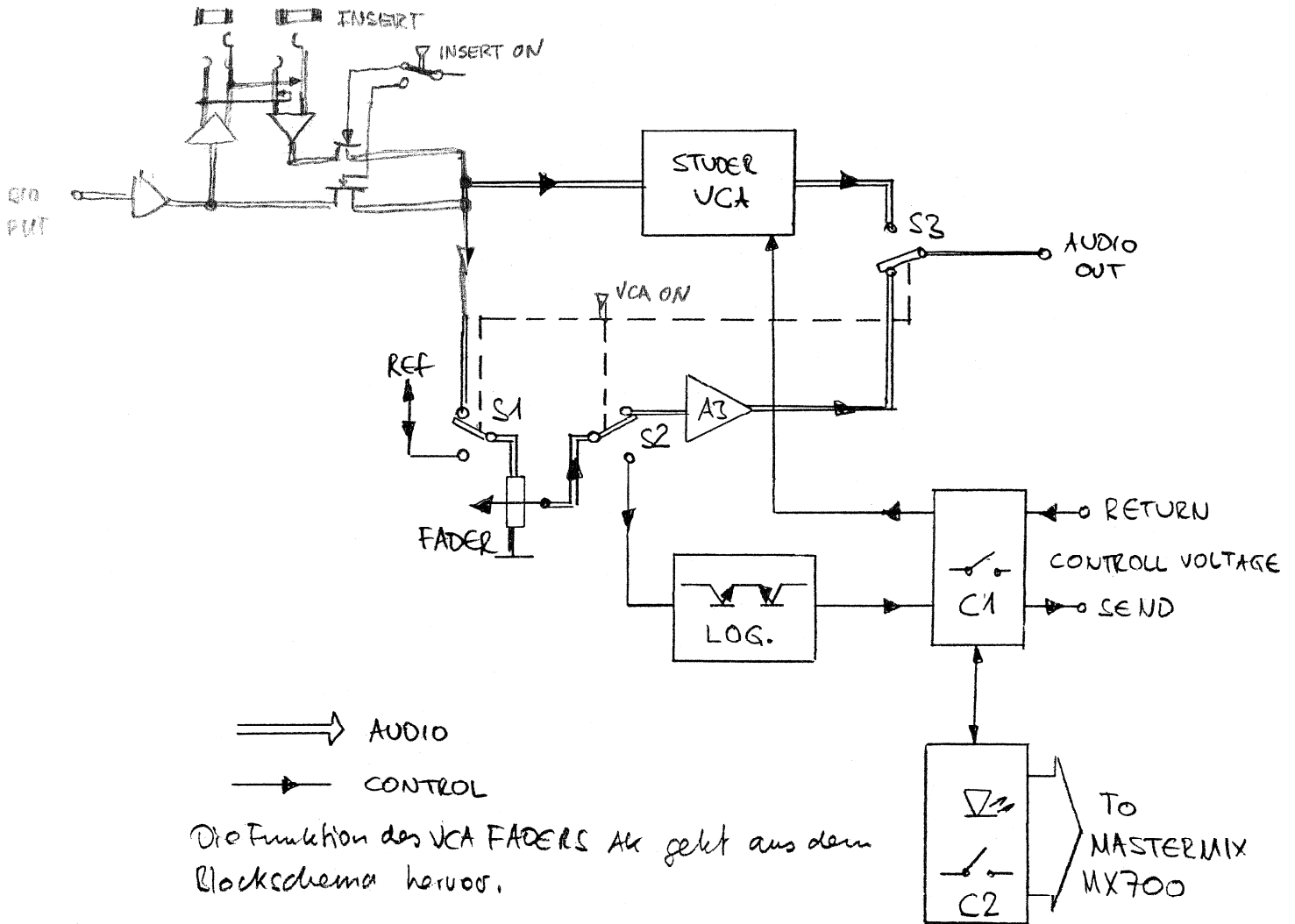
| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|------------|---------|---------------------------|-----|
| | DL 1 | 50.04.2132 | CQY73N | LED GREEN | |
| | 2 | 50.04.2132 | CQY73N | LED GREEN | |
| | 3 | 50.04.2132 | CQY73N | LED GREEN | |
| | 4 | 50.04.2121 | CQY41NA | LED RED | |
| | 5 | 50.04.2121 | CQY41NA | LED RED | |
| | 6 | 50.04.2121 | CQY41NA | LED RED | |
| | 7 | 50.04.2121 | CQY41NA | LED RED | |
| | 8 | 50.04.2121 | CQY41NA | LED RED | |
| | 9 | 50.04.2121 | CQY41NA | LED RED | |
| | 10 | 50.04.2121 | CQY41NA | LED RED | |
| | | | | | |
| | IC 1 | 50.11.0119 | LM3914 | | |
| | | | | | |
| | Q 1 | 50.03.0436 | BC237 | | |
| | 2 | 50.03.0436 | BC237 | | |
| | 3 | 50.03.0515 | BC307 | | |
| | 4 | 50.03.0515 | BC307 | | |
| | | | | | |
| | R 1 | 57.11.4104 | 100 K | | |
| | 2 | 57.11.4272 | 2,7 K | | |
| | 3 | 57.11.4562 | 5,6 K | | |
| | 4 | 57.11.4104 | 100 K | | |
| | 5 | 57.11.4104 | 100 K | | |
| | 6 | 57.11.4104 | 100 K | | |
| | 7 | 57.11.4104 | 100 K | | |
| | | | | | |
| | P 1 | 54.01.0313 | 3 POL | | |
| | | | | | |
| | | | | | |
| | | | | | |

| IND | DATE | NAME | | | |
|--------|----------|--------------------------|----|--------------|-------------|
| ④ | | | | | |
| ③ | | | | | |
| ② | | | | | |
| ① | | | | | |
| ○ | 26.10.82 | W.Markl | | | |
| STUDER | | LED-GAIN-REDUCTION-METER | PL | 1.911.299.00 | PAGE 1 OF 1 |

VCA FADER AK

1.911.220.00

Blockschaltbild



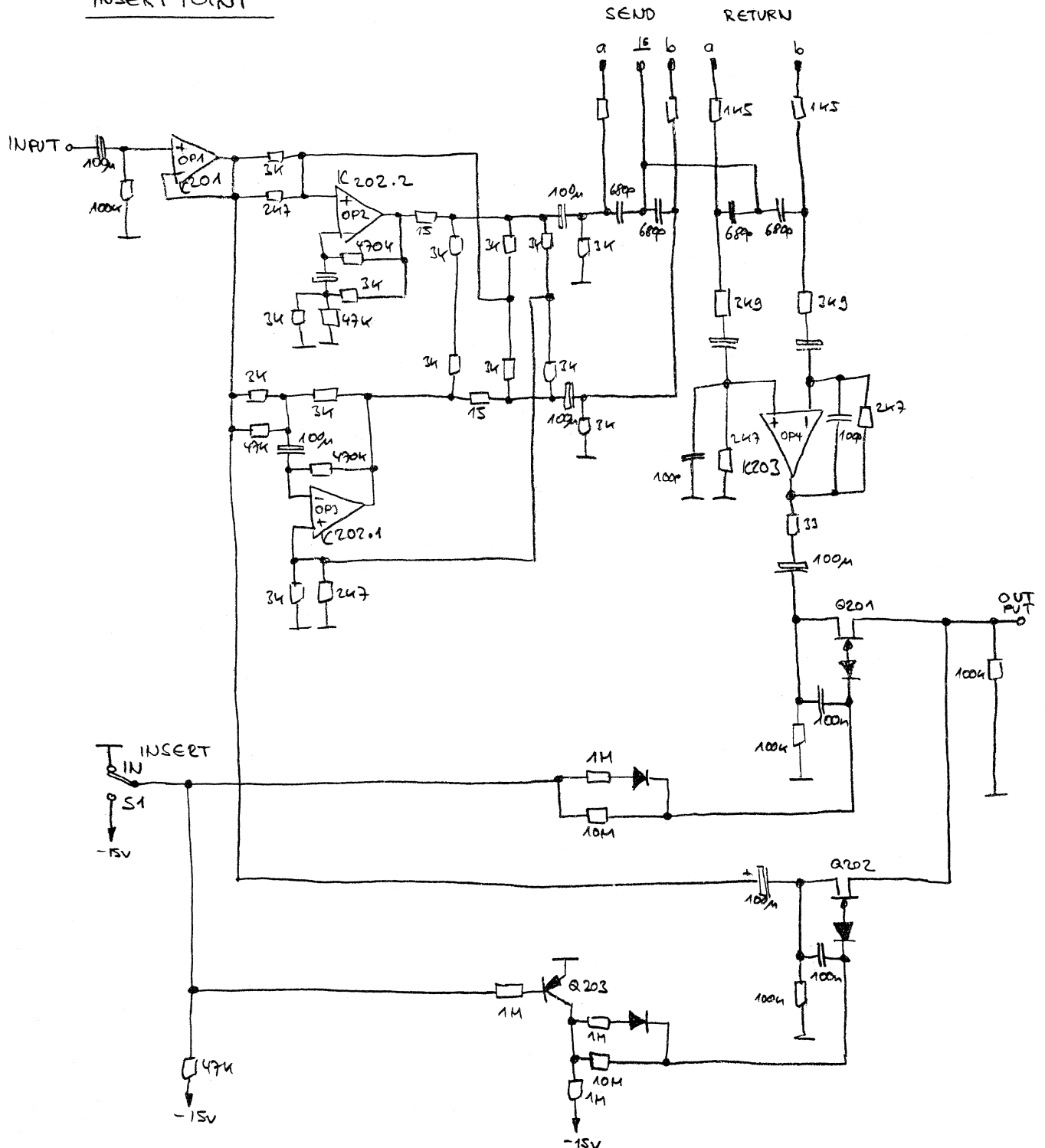
Die Funktion des VCA FADERS AK geht aus dem Blockschema hervor.

Funktionsbeschreibung

Das Audiosignal fließt über A1, einem Symmetrierer, auf den Insertpunkt INSERT und von dort zurück auf den symmetrischen Eingang A2. Dessen Ausgang speist den STUDER-VCA und bei gezeigter Schalterstellung von S1 den FADER. Das Signal fließt nun vom Faderabgriff über Schalter S2 auf den Verstärker A3 über S3 auf den Ausgang.

Bei der anderen Schalterstellung wird das Audiosignal vom Ausgang des VCA auf den AUDIO-Ausgang geleitet.

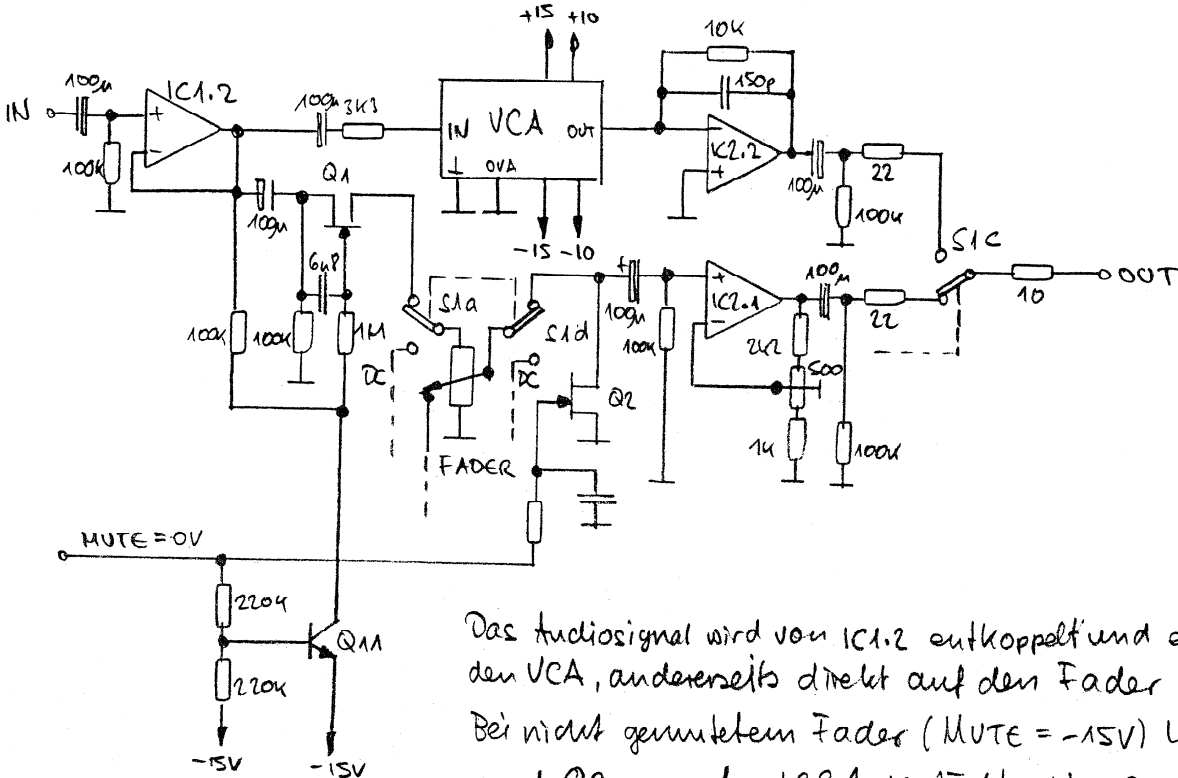
Der Fader wird dann mit einer Referenzspannung gespeist. Die Spannung am Schleifer wird über einen Logarithmimeter LOG der Kennlinie des VCA angepasst. Diese Steuerspannung wird nun über einen Analogschalter C1 auf das Automationsystem gesendet. Von dort gelangt es zurück über C1 auf den VCA.

INSERT POINT

Das Audiosignal wird mit OP1 (IC201) gepuffert an den Symmetrierverstärker OP2 (OP3 (IC202) und den Schalterfet Q202 geliefert. Wenn der Schalter INSERT IN geschaltet ist, leitet Q202 das Audiosignal zum Ausgang. Das symmetrische Signal kommt vom Insertpunkt auf den Symmetrischen Eingang RETURN zurück und wird mit dem OP4 (IC203) entkoppelt. Ist der Schalter INSERT IN nicht betätigt, leitet Q201 das Return-Signal zum Ausgang, während Q202 sperrt.

Damit das Umschalten knopflos erfolgt, werden die Fet's jeweils rasch eingeschaltet und langsam ausgeschaltet.

FADER und VCA

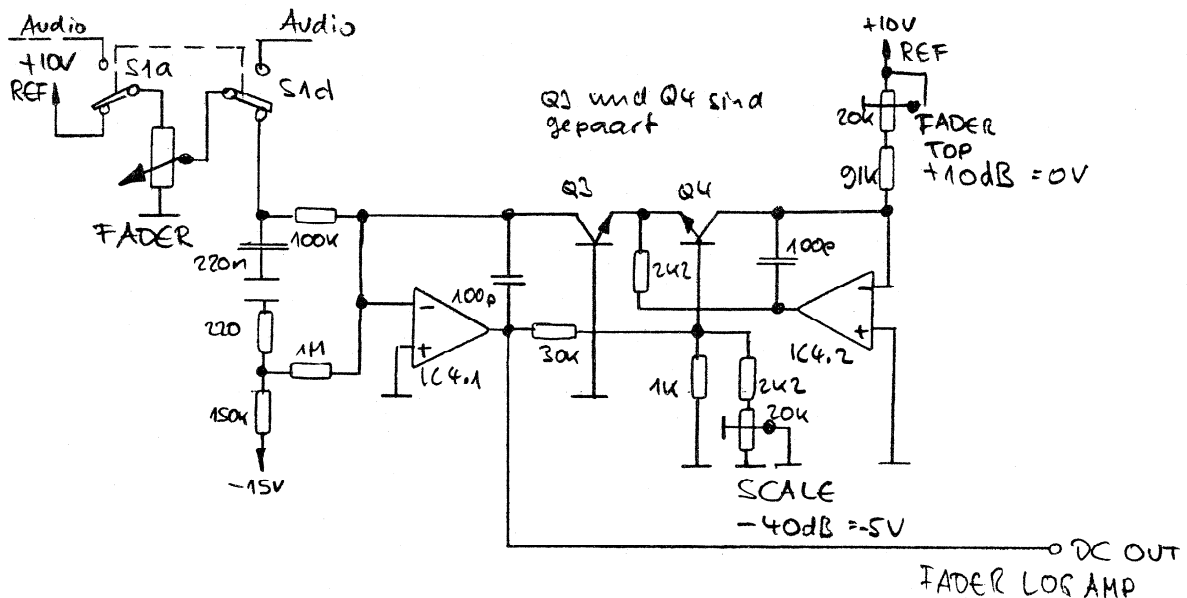


Das Audiosignal wird von IC1.2 entkoppelt und einerseits auf den VCA, andererseits direkt auf den Fader geleitet. Bei nicht gedrücktem Fader (MUTE = -15V) leitet Q1 und Q2 sperrt. IC2.1 verstärkt die Spannung vom Schalter und sendet diese über den Schalter S1C an den Ausgang OUT. Wird hingegen S1 gedrückt, dann gelangt das Audiosignal vom Ausgang des VCA über IC2.2 an den Schalter S1C zum Ausgang OUT. In diesem Zustand ist IC2.1 mit dem 100kΩ Widerstand am Eingang gegen Masse geschaltet. Der Ausgang bleibt unbelastet. Wird die MUTE Leitung = 0V, dann leitet Q2 und Q11. Q11 legt somit eine negative Spannung an das Gate von Q1, so dass dieser sperrt. Der Fader ist somit abgekoppelt. ⇒ MUTE

Schleifer und sendet diese über den Schalter S1C an den Ausgang OUT. Wird hingegen S1 gedrückt, dann gelangt das Audiosignal vom Ausgang des VCA über IC2.2 an den Schalter S1C zum Ausgang OUT. In diesem Zustand ist IC2.1 mit dem 100kΩ Widerstand am Eingang gegen Masse geschaltet. Der Ausgang bleibt unbelastet.

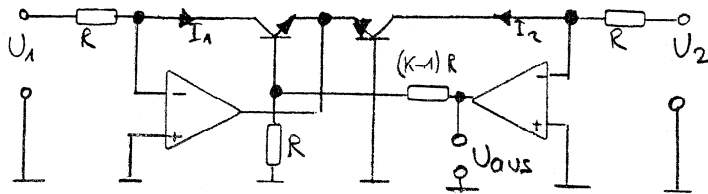
Wird die MUTE Leitung = 0V, dann leitet Q2 und Q11. Q11 legt somit eine negative Spannung an das Gate von Q1, so dass dieser sperrt. Der Fader ist somit abgekoppelt. ⇒ MUTE

LOGARITHMIERER



Wenn der Schalter S1 gedrückt ist, dann wird über S1 a eine Referenzspannung von +10V an den FADER gelegt. Die Ausgangsspannung des Faders gelangt dann über S1 d auf den Logarithmierer. Der 220nF Kondensator an dessen Eingang glättet die DC-Spannung die der Fader liefert von Störungen die beim Betätigen entstehen können.

Die nächste Abbildung zeigt das Prinzipschaltbild eines Logarithmierers.



Die Ausgangsspannung folgt der Gleichung

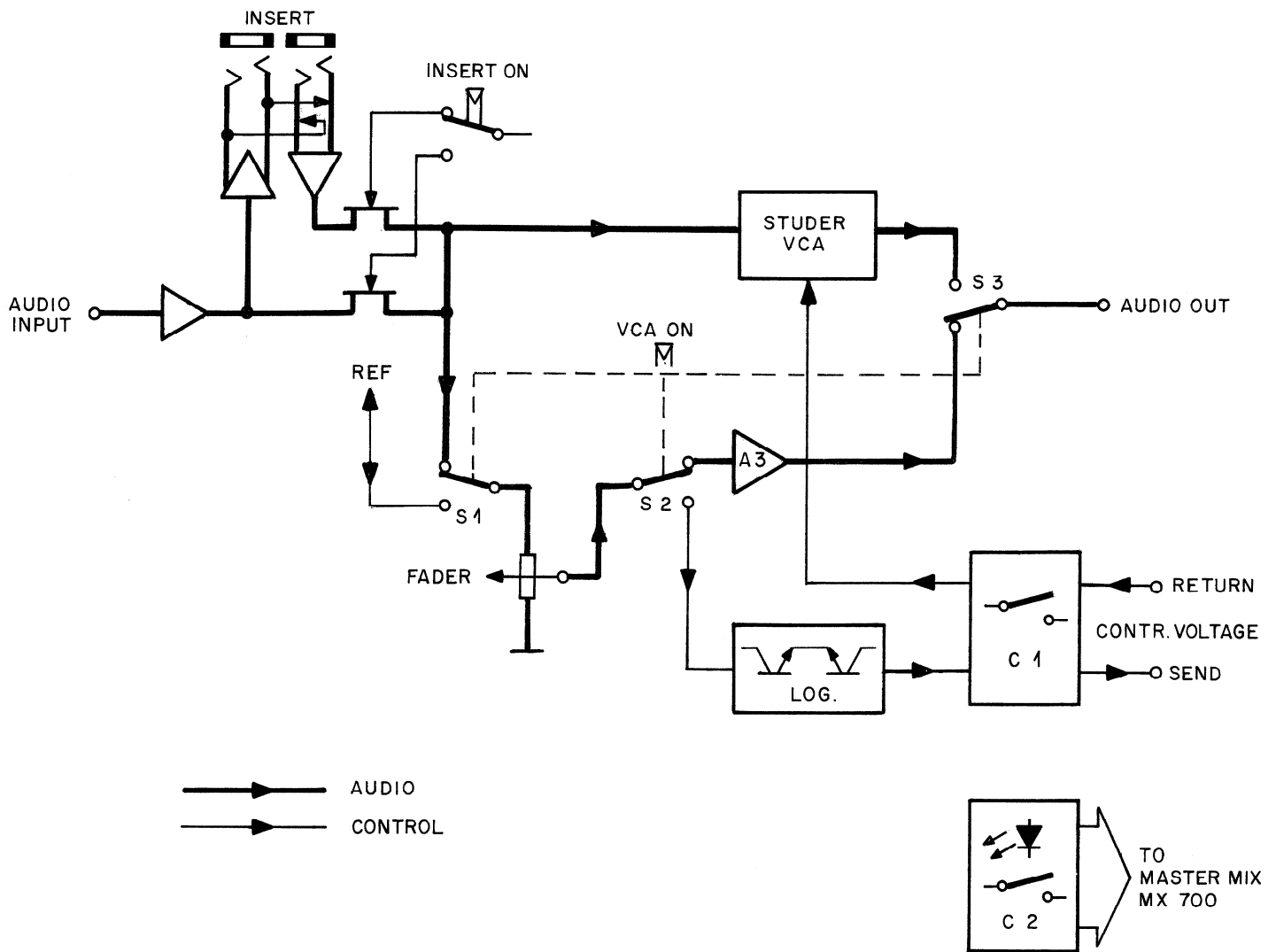
$$\underline{\underline{U_{aus} = -k \cdot U_T \cdot \ln\left(\frac{U_1}{U_2}\right)}}$$



Beim Logarithmierer im VCA FADER AK ist nun $U_1 = +10V$ die Referenzspannung, Da die temperaturabhängige Spannung U_T einen Fehler bei Temperaturänderungen verursacht, wird die Referenzspannung dazu umgekehrtproportional temperaturabhängig gemacht.

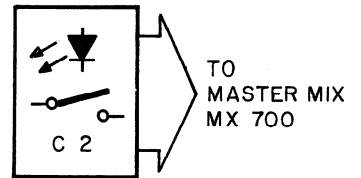
Dies kompensiert diesen Fehler.

Damit nun, wenn der Fader gegen $-\infty$ eingestellt ist, die Ausschalt-dämpfung sicher erreicht wird, wird zum Eingangsstrom noch ein kleiner negativer Beitrag hinzugefügt. Dies bewirkt bei ca. $-60dB$ ein sicheres ausschalten des Logarithmierers.

S3 des Analogschalters IC6 dient zum Muten. Wenn der Mute-Eingang auf Masse gezogen wird (MUTE = 0V), dann schaltet S3 den nichtinvertierenden Über den 330 Ω -Widerstand auf -6V. Durch diesen Widerstand wird die Anstiegs geschwindigkeit am +-Eingang von IC3 mit dem 100nF Kondensator begrenzt. Wenn die Mute-Leitung wieder +10V wird, wird der 100nF-Kondensator nun über S3 und dem 3,3k Ω Widerstand entladen. IC3 arbeitet wieder als normaler invertierender Verstärker.



 AUDIO
 CONTROL



VCA Flachbahnregler (AK)

Der VCA Flachbahnregler 1.911.221 wird zusammen mit dem Audio Kinetics "Mastermix" Automationsystem eingesetzt. Die Kombination von Mastermix MX644 mit einem der ~~dem~~ Mastermix Regie pult Interfaces MMK 732 (bei 32 Eingangskanälen) MMK 742 (42 Eingänge) oder MMK 764 (64 Eingänge) und einer entsprechenden Anzahl von VCA Flachbahnreglern 1.911.221 erlaubt das computerunterstützte Abmischen von ^(SMPTE/EBU) Timecode synchronisierten Aufnahmen und die unbegrenzte Gruppenbildung über das digitale Grouping.

^{und Anzeige}
Bedienungselemente

INSERT IN schaltet den symmetrischen Einschleifpunkt vor dem Flachbahnregler ein.
Bei ausgeschaltetem Einschleifpunkt nicht gedrückter Taste steht das vor dem Flach Regler anliegende Audiosignal ~~als~~ als Direktausgang trotz dem zur Verfügung

VCA IN Bei nicht gedrückter VCA IN-Taste wird der VCA Regler umgangen und das Audio-Signal direkt über den Flachbahnregler geführt.
Bei gedrückter Taste wird das Audio-Signal über den VCA geführt, der Flachbahnregler liefert die Steuerspannung für den VCA resp ~~oder ~~steuert~~ das~~ Mastermix-System

CH off LED zeigt an, wenn der Kanal ausgeschaltet ist (geschlossener ^{Kanal} Regler, geschlossene Gruppe, Mute signal vom Mastermix)

▽ 0
0
△ 0
drei LED zeigen an, ob die Reglerstellung der vom Mastermix gelieferten Steuerspannung entspricht oder zu klein resp zu gross ist

Group Taste

Taste + LED Erlaubt die Gruppenbildung über das Mastermix System

WRITE

Taste + LED Bringt den Kanal von "Read" (übernimmt ^{VCA} Stromspannung vom Automations-System) in WRITE (Stromspannung des Flachbahnreglers)

Wird vom A-System übernommen, übernimmt kein ~~normales~~ ^{Exb} +

Einmal

Zweimal

ISOLATE

Durchdrücken übernimmt zwingend

Taste + LED. Durch Drücken dieser Taste kann die Flachbahnreglereinheit vom Automations-System abgetrennt werden.

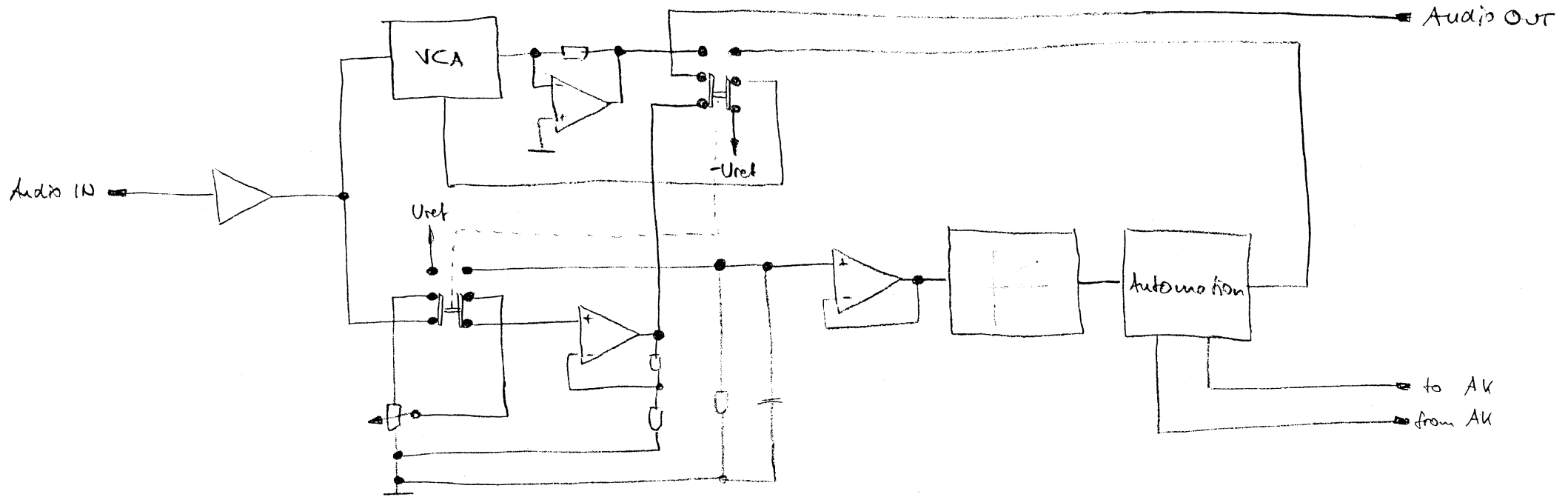
Regeländerungen am Regler wirken sich nicht mehr auf das ~~Mastermix System~~ aus dem Computer aus

UPDATE

Taste + LED Erlaubt das übernehmen der zum normalen Faderwert Offset

Make write ~~immer~~ ^{immer} im write mode System übernimmt

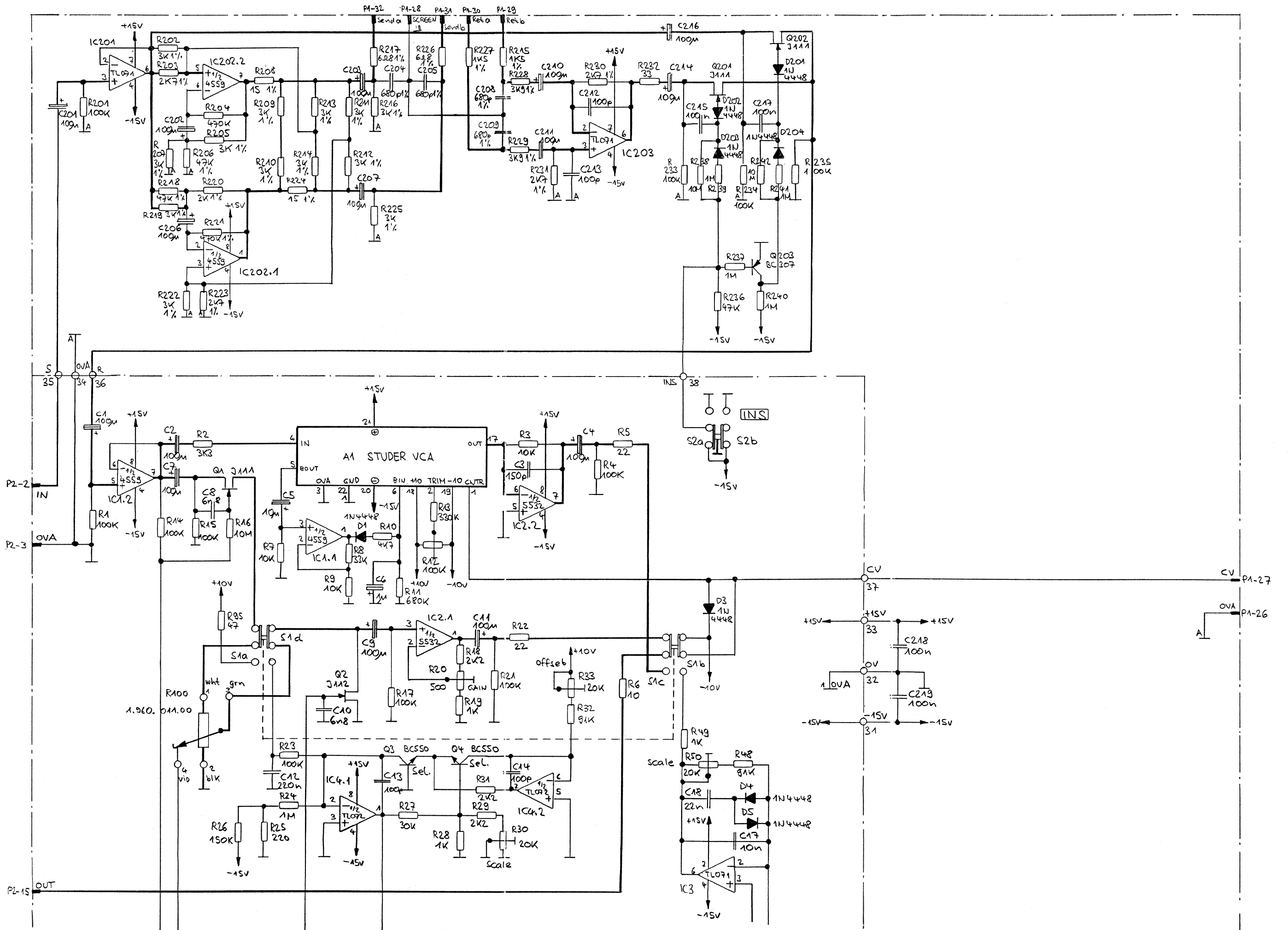
Make

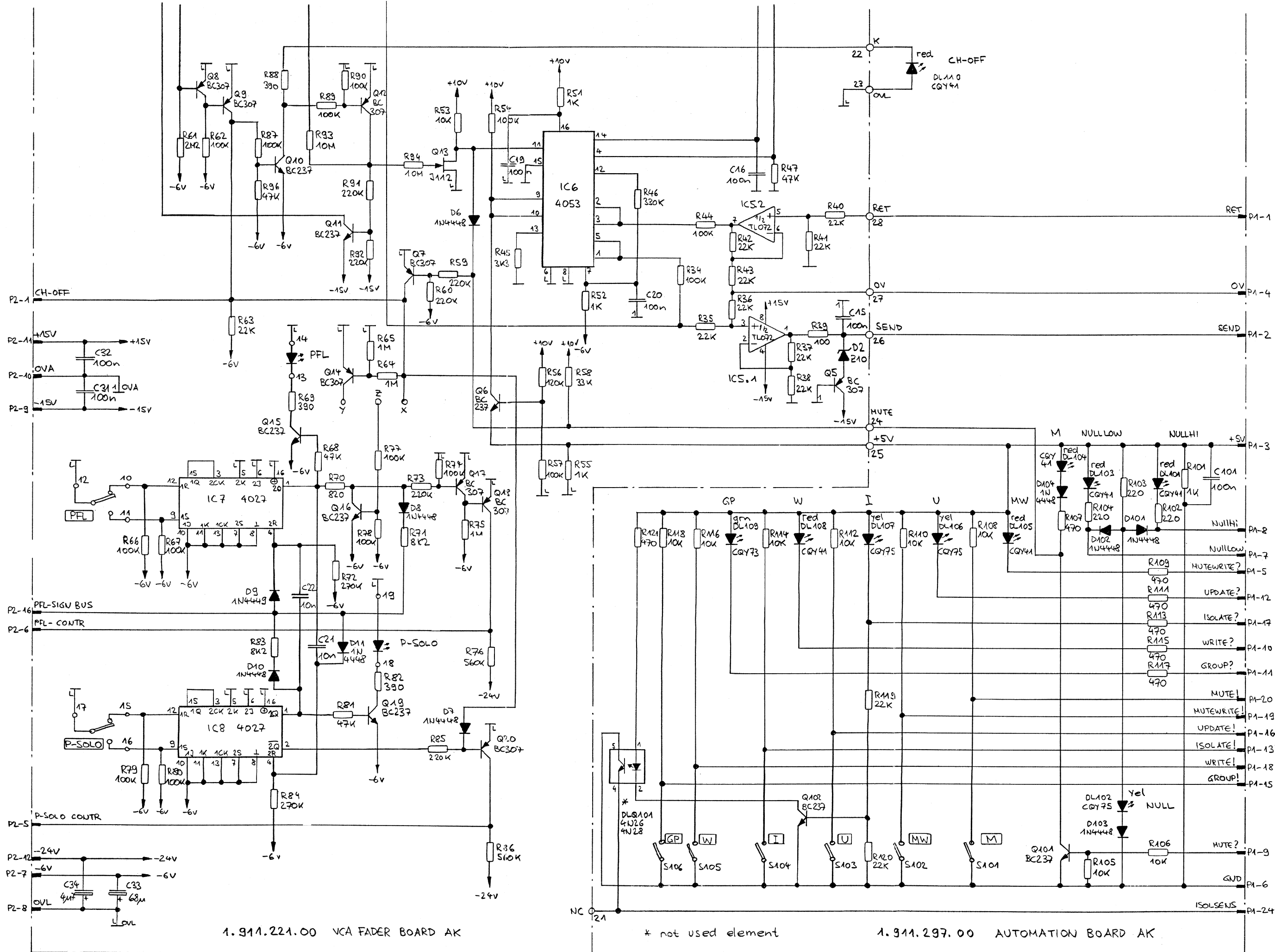


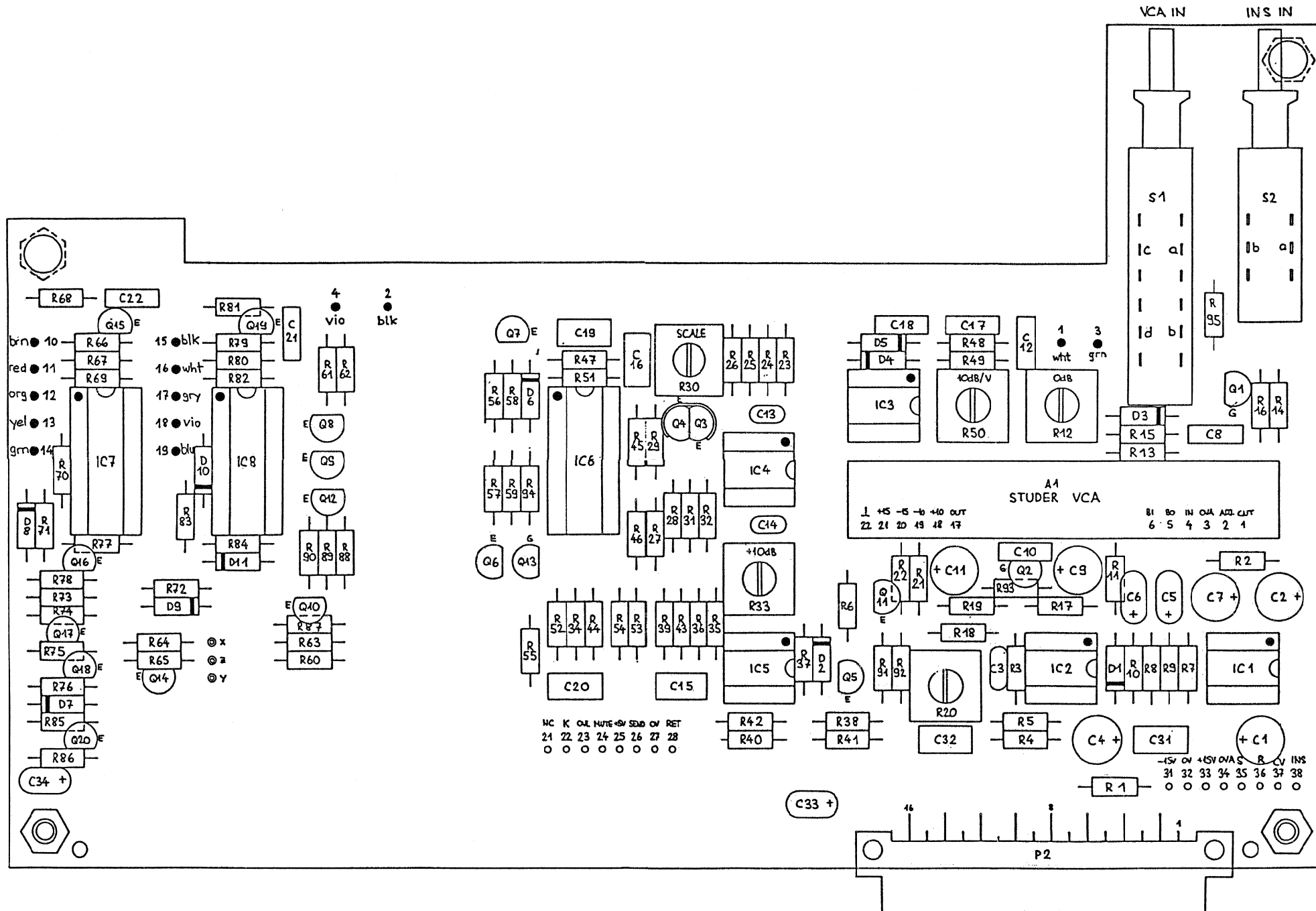
Block-Schema

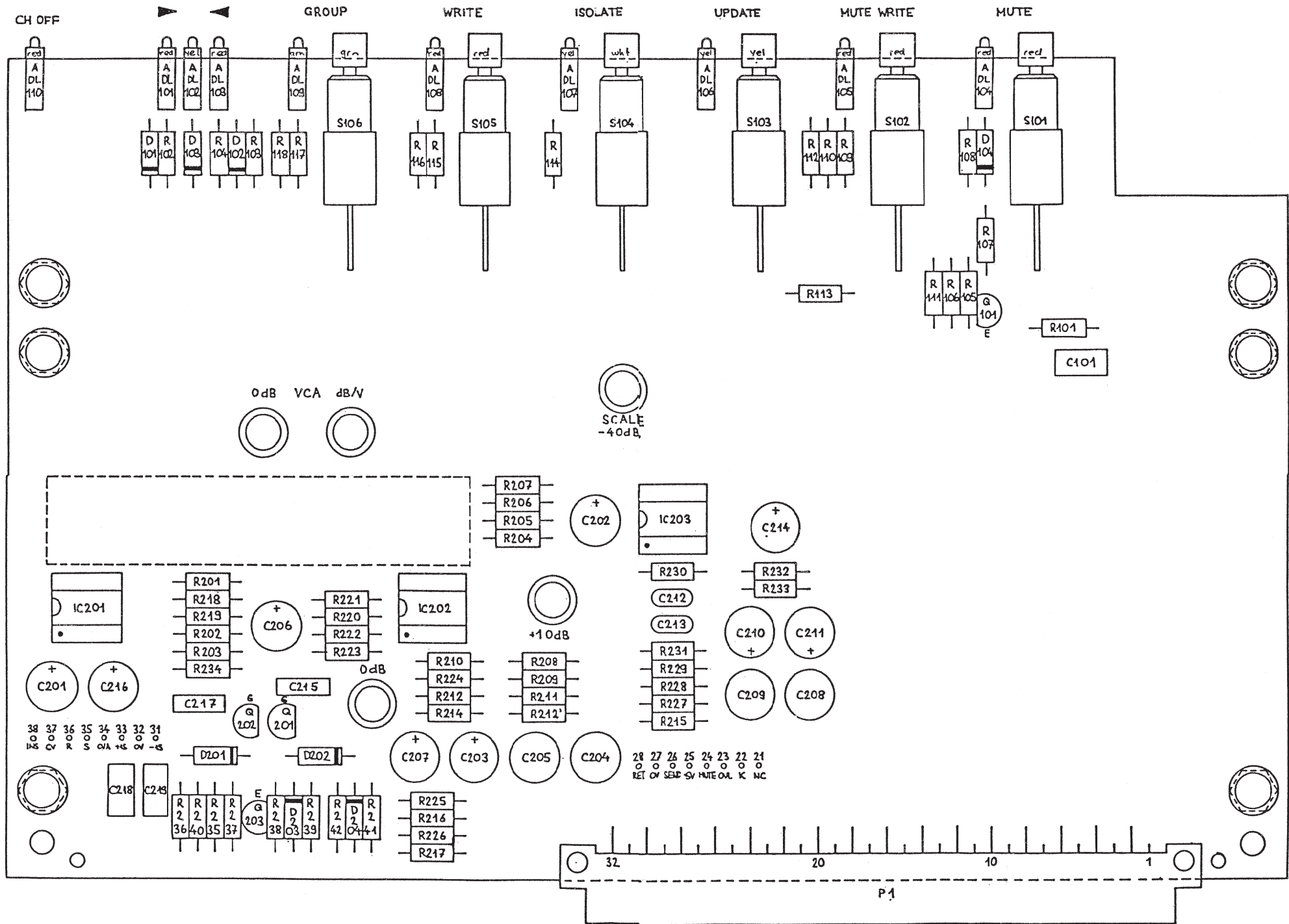
VCA-Fader AK

S. aus. ~~8~~ mm









KAPITEL 5: Einschub-Module der Eingangssektion 1.912. ...

INHALT

| | | |
|-----|---|-------------------|
| 1.* | Eingangseinheiten Mono 'A' | 1.912.220... 226 |
| 2.* | Eingangseinheiten Stereo und Hochpegel 'A' | 1.912.240../250.. |
| 3.* | Eingangseinheiten Mono / Stereo Version 'B' | 1.912.120../141.. |
| 4. | Hilfssummeneinheit..... | 1.912.310 |
| 5. | Studiomonitor- und Kommando-Einheit | 1.912.320 |
| 6. | Kontrollraum-Monitor..... | 1.912.420 |
| 7. | Monitoreerweiterung (AUX Monitor) | 1.912.460 |
| 8. | Summenausgangswahl-Einheit..... | 1.912.500 |
| 9. | Monitor Mixer / mit EQ..... | 1.912.510/511 |
| 10. | Compact (Hex) Density Mixer..... | 1.912.514 |

SECTION 5: Plug-in Units of the input section 1.912. ...

CONTENTS

| | | |
|-----|---|-------------------|
| 1.* | Input units mono 'A' | 1.912.220... 226 |
| 2.* | Input units stereo and high level 'A' | 1.912.240../250.. |
| 3.* | Input units mono / stereo 'B' | 1.912.120../141.. |
| 4. | AUX master unit..... | 1.912.310 |
| 5. | Studio monitor and talk back unit | 1.912.320 |
| 6. | Control room monitor..... | 1.912.420 |
| 7. | Monitor expansion (AUX Monitor) | 1.912.460 |
| 8. | Master output selector | 1.912.500 |
| 9. | Monitor mixer / with EQ..... | 1.912.510/511 |
| 10. | Compact (Hex) Density Mixer..... | 1.912.514 |

- * Diese Beschreibungen werden kundenspezifisch bestückt.
 * These descriptions are supplied according to the customers requirements.

MONO EINGANGSEINHEIT

Die universelle Mono-Eingangseinheit ist mit vier Eingängen ausgerüstet, welche die Verarbeitung von Mikrofon bis Leitungspegel im Bereich -70 ... + 24 dBu erlauben.

Der Filter - und Equalizerteil bietet mit seinen stetig einstellbaren Höhen- und Tiefensperren und dem parametrischen 4-Band Equalizer beste Voraussetzungen zur Frequenzgang-Korrektur und auch zur Realisierung ausgefallener Klangbilder.

Auf der Ausgangsseite der Einheit stehen vier Hilfskanäle (3 Mono, 1 Stereo), das Vorhören vor dem Flachbahnregler und nach dem Panorama-Potentiometer sowie vier resp. acht Hauptausgänge (1.912.220 / 1.912.222) zu den Summensammelschienen zur Verfügung.

Panorama-Potentiometer, Mutetaste, Usertaste, Phantomschalter und Phasenschalter vervollständigen die Eingangseinheit.

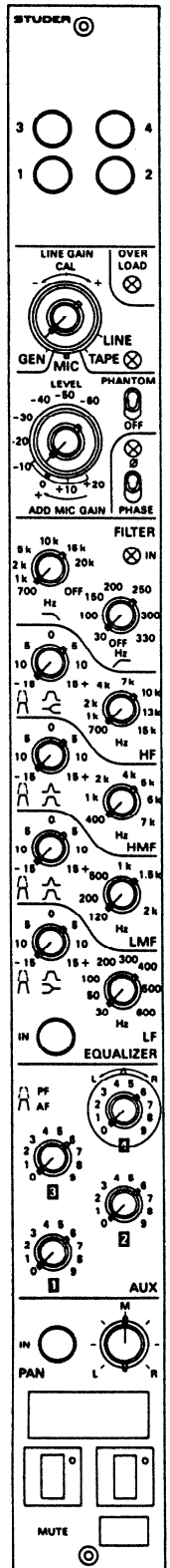
MONO INPUT UNIT

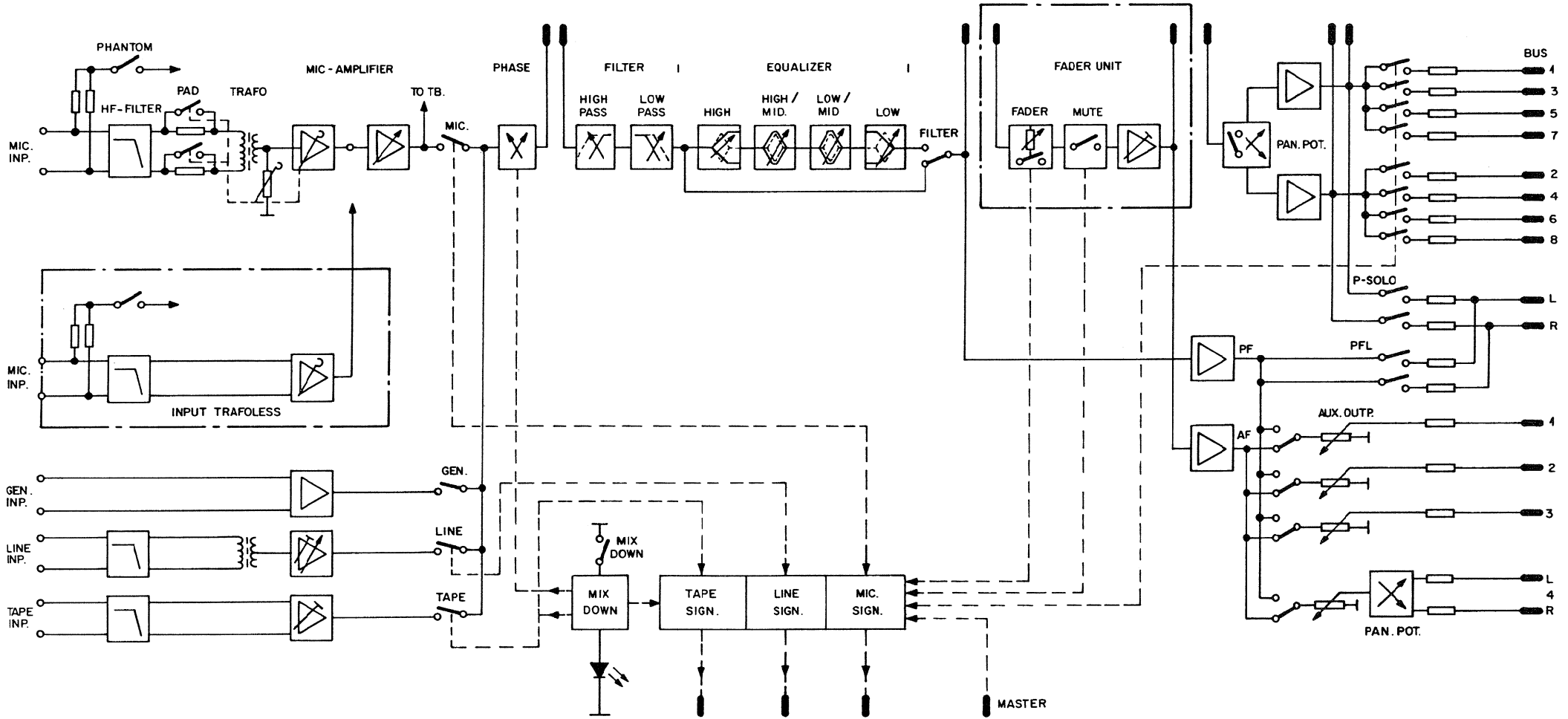
The universal input unit is equipped with four inputs which allow a range between the microphone and the line level of -70...+24 dBu.

The filter and the equalizer with its continually adjustable low and high pass filters and the parametric 4-band equalizer provides assumption for correcting frequency response and realization of special tonal effects.

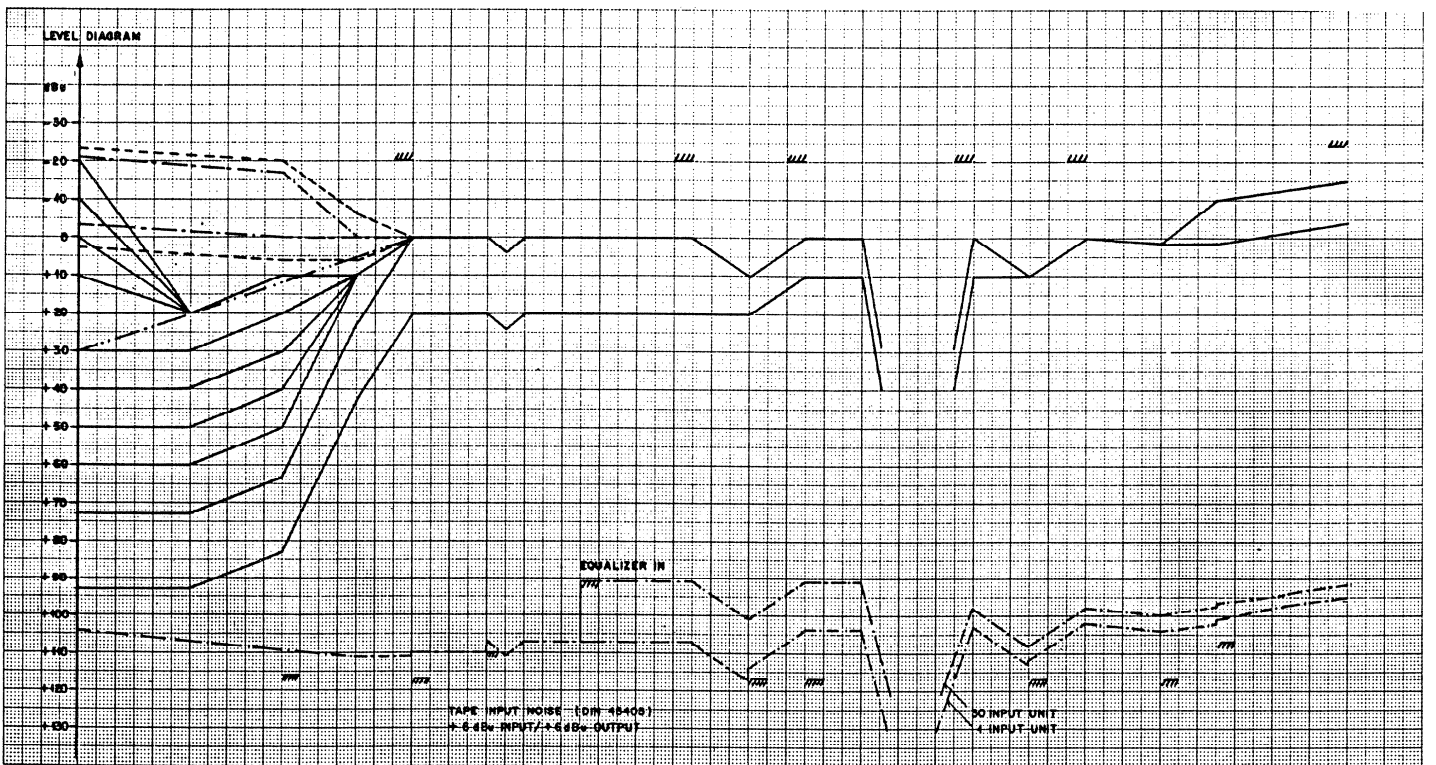
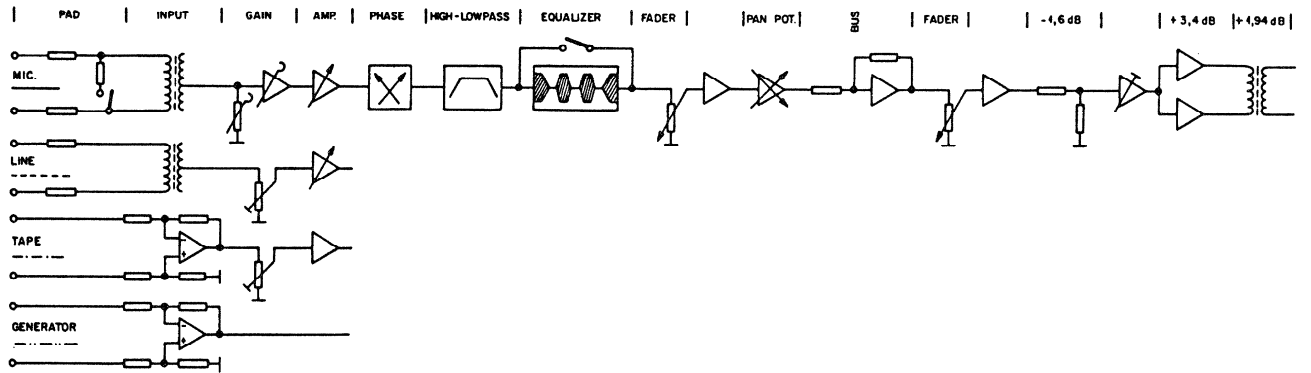
At the unit's output side there are four auxiliary channels (3 mono, 1 stereo). Pre-fader-listening before the fader and after the panorama potentiometer as well as four respectively eight main outputs (1.912.220/1.912.222) to the master busses are available.

Panorama potentiometer, mute switch, user push button, phantom switch and phase switch complete the input unit.



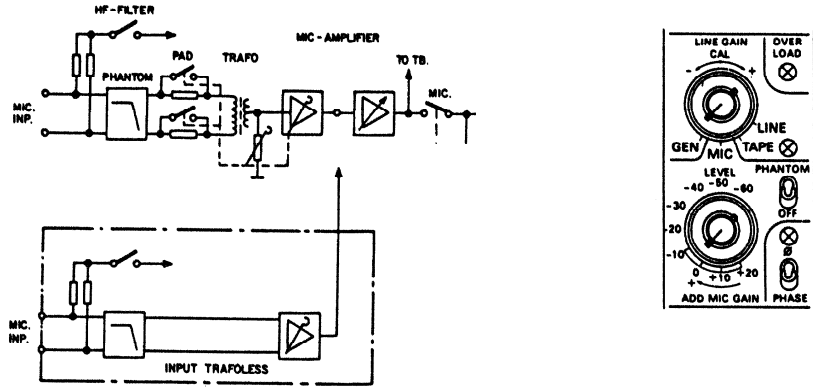


BLOCK DIAGRAM INPUT UNIT MONO



1. EINGANGSTEIL

1. INPUT SECTION



1.1 MIC EINGANG

Universaleingang, Mikrofon bis Leitungspegel, symmetrisch, erdfrei mit Eingangstransformator.

Verstärkung einstellbar mit 9-stelligem Stufenschalter in 10 dB Schritten im Bereich -60... + 20 dBu. Zusätzliche am Potentiometer stetig einstellbare Verstärkung von 0...12 dB.

Kann von extern stumm geschaltet werden (MIC CUT).

Minimaler Eingangspegel bei Normalstellung der Flachbahnregler (0 dB) -72 dBu

Maximaler Eingangspegel +24 dBu

Eingangsimpedanz bei Stellung -20 ... -60 dBu des Pegelschalters >1,5kOhm

Eingangsimpedanz bei Stellung -10 ... + 20 dBu des Empfindlichkeitschalter ≥ 5 kOhm

Eingangssymmetrie (-20 ... -60 dBu) ≥ 60 dB
(+20 ... -20 dBu) ≥ 50 dB

Phantomstromversorgung mit Schalter 48V (auf Wunsch 12V oder 24V)

Fremdspannung bezogen auf den MIC-Eingang bei einem Quellenwiderstand $R_s=200 \text{ Ohm}$ $NF \leq 4 \text{ dB}$

Als Option kann ein symmetrischer, trafoloser Universaleingang eingesetzt werden.

1.1 MIC INPUT

Universal input, microphone to line level, balanced, floating with the input transformer.

The gain can be adjusted with a nine-position selector switch in 10 dB steps in the range of -60...+20 dB. An additional continually adjustable gain of 0...12 dB.

Mute can be operated externally (MIC CUT).

Minimum input level at normal position of the fader (0 dB) -72 dBu

Maximum input level +24 dBu

Input impedance at position -20...-60 dBu of the level switch >1,5 kOhm

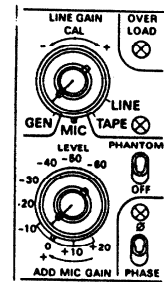
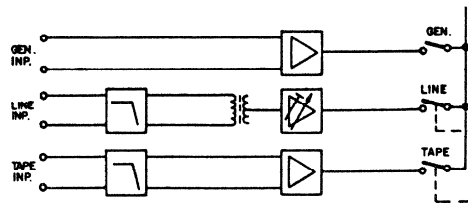
Input impedance of the sensitivity switch in position -10...+20 dBu ≥ 5 kOhm

Input symmetry (-20...-60 dBu) ≥ 60 dB
(+20...-20 dBu) ≥ 50 dB

Phantom current supply with switch 48 V (on request 12 V or 24 V)

External voltage referred to the MIC input on a source impedance of $R_s=200 \text{ Ohm}$ $NF \leq 4 \text{ dB}$

A balanced, transformerless universal input can be used as an option.



1.2 LINE EINGANG

Hochpegeleingang, symmetrisch, erdfrei, auf Nominalpegel abgeglichen ,

an Korrekturpotentiometer mit rastender Mittelstellung um +6dB veränderbar

Nomineller Eingangspegel, einstellbar + 4 ... + 16 dBu

| | |
|-------------------------|----------------------------|
| Maximaler Eingangspegel | + 24 dBu |
| Eingangsimpedanz | ≥ 10kOhm |
| Eingangssymmetrie | ≥ 50 dB a 30 Hz ... 16 kHz |
| Klirrfaktor | ≤ -85dB a 30 Hz ... 16 kHz |
| Fremdspannungsabstand | ≥ 100 dB |

1.3 TAPE EINGANG

Trafoloser, symmetrischer Hochpegeleingang auf Nominalpegel abgeglichen. Durch externen MIX-DOWN Befehl mit Vorrang schaltbar. Gleichzeitig wird der Phaseninverter ausgeschaltet.

| | |
|-------------------------------|------------------------|
| Nomineller Eingangspegel | +4 ... + 21 dBu |
| Maximaler Eingangspegel | + 24 dBu |
| Eingangsimpedanz, symmetrisch | ≥ 10 kOhm |
| asymmetrisch | ≥ 5 kOhm |
| Eingangs-Symmetrie | ≥ 50dB a 30Hz...16 kHz |
| Klirrfaktor | ≤ 85dB a 30Hz...16 kHz |
| Fremdspannungsabstand | ≥ 100 dB |

1.4 GEN EINGANG

Tongeneratoreingang symmetrisch, trafolos, wird vom Testgenerator über Sammelschienen gespeist.

| | |
|---------------|---------|
| Eingangspegel | -30 dBu |
|---------------|---------|

1.5 EINGANGSUMSCHALTUNG

Der Eingangswahlschalter steuert über Gleichspannungssignale Feldeffekttransistoren, welche ihrerseits das Niederfrequenzsignal kontaktlos durchschalten.

Zusätzliche Steuereingänge (6V Gleichspannung) erlauben es

- den Mikrofoneingang ferngesteuert zu unterbrechen (Räuspertaste/Mute Schaltung)
- den TAPE-Eingang mit Priorität durchzuschalten (MIX DOWN).

1.2 LINE INPUT

High level input, balanced and floating, aligned to nominal level

at correction potentiometer with framed medium position changeable by ±6 dB

Nominal input level, adjustable +4...+16 dBu

| | |
|-----------------------|---------------------------|
| Maximum input level | + 24 dBu |
| Input impedance | ≥ 10 kOhm |
| Input symmetry | 50 dB @ 30 Hz ... 16 kHz |
| Distortion | -85 dB @ 30 Hz ... 16 kHz |
| Signal to noise ratio | ≥ 100 dB |

1.3. TAPE INPUT

Transformerless, balanced high level input aligned to nominal level. Switchable through external MIX-DOWN order with priority. Simultaneously the phase inverter in mute position.

| | |
|---------------------------|----------------------------|
| Nominal input level | +4 ... +21 dBu |
| Maximum input level | +24 dBu |
| Input impedance, balanced | ≥ 10 kOhm |
| unbalanced | ≥ 5 kOhm |
| Input symmetry | ≥ 50 dB @ 30 Hz ... 16 kHz |
| Distortion | ≤ 85 dB @ 30 Hz ... 16 kHz |
| Signal to noise ratio | ≥ 100 dB |

1.4 GEN INPUT

Audio generator input balanced, transformerless and the test generator gets fed by busses.

| | |
|-------------|---------|
| Input level | -30 dBu |
|-------------|---------|

1.5 INPUT SWITCHING

The input selector switch controls field effect transistors with current voltage signals which themselves contactlessly connect the low frequency signal through.

Additional control inputs (6 V direct current voltage) allow

- to interrupt the microphone input remote controlled (cough key/mute mounting)
- to connect the TAPE input through with priority (MIX DOWN).

1.6 PHASENSCHALTER Ø

Der Kippschalter Ø mit LED Anzeige steuert über Feldeffekttransistoren einen Operationsverstärker von normaler in invertierende Phasenlage um. Die Phasenlage aller Eingangssignale wird dadurch gedreht.

MIX DOWN Betrieb stellt den nicht invertierenden Betrieb wieder her.

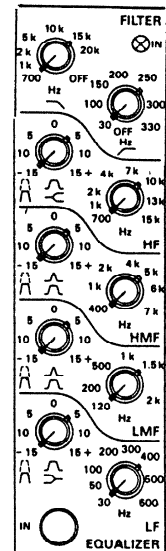
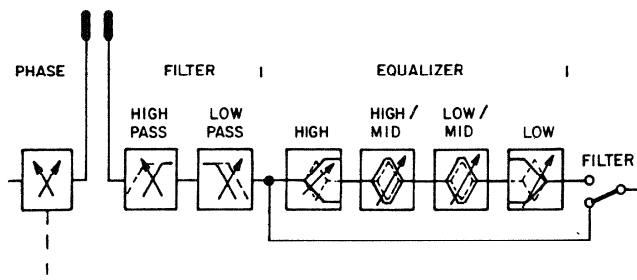
1.6 PHASE SWITCH Ø

The toggle switch Ø with LED indication reverses an operational amplifier from normal to inverted phase-relationship by field effect transistors. The phase-relationship of all input signals gets turned by that.

The MIX DOWN operation reestablishes the not inverted activity.

2. FILTER

2. FILTER

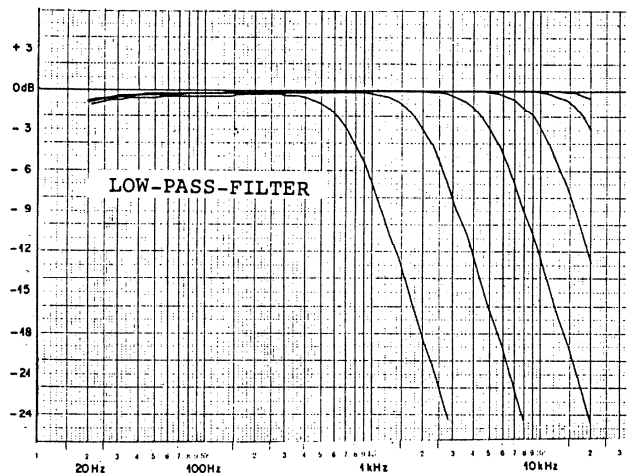
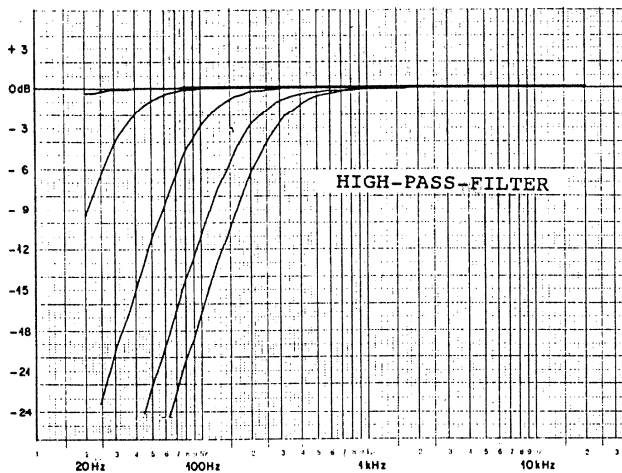


2.1 TIEFENSPERRE (HIGH-PASS-FILTER)

Hochpassfilter mit Butterworth-Charakteristik und 12 dB/Oktave Steilheit. Die Eckfrequenz ist mit Potentiometer im Bereich 30 ... 330 Hz stetig einstellbar. In der Stellung OFF wird die Grenzfrequenz auf ca. 5 Hz gelegt.

2.1 HIGH-PASS FILTER

High-pass filter with Butterworth characteristic and 12 dB/octave slope. Frequency range continuously variable in the range 30 ... 330 Hz. In position OFF, the cutoff frequency is put at about 5 Hz.



2.2 HOEHENSPERRE (LOW-PASS-FILTER)

Tiefpass-Filter mit Butterworth-Charakteristik und 12 dB/Oktave Steilheit. Die Eckfrequenz ist mit Potentiometer im Bereich 700 ... 22 kHz stetig einstellbar.

In der Stellung OFF wird die Grenzfrequenz auf ca. 30 kHz gelegt.

2.2 LOW-PASS FILTER

Low-pass filter with Butterworth characteristic and 12 dB/octave slope. Frequency range continuously variable in the range 700 ... 22 kHz.

In position OFF, the cutoff frequency is put at about 30 kHz.

2.3 LED-ANZEIGE

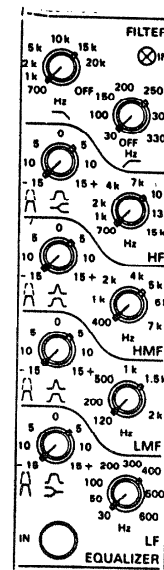
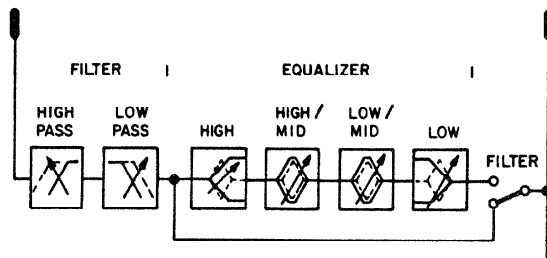
Die den beiden Filtern zugeordnete LED-Anzeige leuchtet, sobald eines oder beide Filter eingeschaltet sind.

2.3 LED INDICATION

The LED which is assigned to both of the filters indicates one or both filters switched on.

3. ENTZERRER

3. EQUALIZER



Der Entzerrerteil umfasst vier parametrische Filter, deren Mittenfrequenz und deren Anhebung resp. Absenkung stufenlos eingestellt werden können.

The four-band equalizer has continuously, variable frequency controls, cut and boost controls are also continuously variable and have a range of ± 15 dB.

3.1 HF-ENTZERRER

Höhenfilter 700 Hz ... 15 kHz ± 15 dB

Charakteristik von Glockenkurve auf Fächerentzerrer umschaltbar

Güte der Glockenkurve ≈ 1

3.1 HF EQUALIZER

High-pass Equalizer 700 Hz ... 15 kHz ± 15 dB

Characteristic switchable from "peaking" to "shelving"

Q factor of peaking curve ≈ 1

3.2 HMF/LMF-ENTZERRER

Zwei parametrische Filter mit umschaltbarer Güte. Einstellbare Mittenfrequenz 400 Hz...7kHz resp. 120 Hz...2kHz.

Anhebung / Absenkung ± 15 dB

Güte: 1,1 / 3

3.2 HMF/LMF EQUALIZER

Two parametric equalizer with switchable Q factor. Adjustable centre frequency 400 Hz ... 7 kHz respectively 120 Hz ... 2 kHz.

Boost / cut ± 15 dB

Q factor: 1,1 / 3

3.3 LF-ENTZERRER

Tiefenfilter 30 ... 600 Hz, ± 15 dB

umschaltbar von Glockenkurve auf Fächerentzerrer

Güte der Glockenkurve ≈ 1

3.3 LF EQUALIZER

Low-pass equalizer 30 ... 600 Hz ± 15 dB

switchable from "peaking" to "shelving"

Q factor of peaking curve ≈ 1

3.4 ENTZERRER TASTE

Taste zur Ueberbrückung des ganzen Entzerrerteils LF / LMF / HMF / HF

3.4 EQUALIZER BUTTON

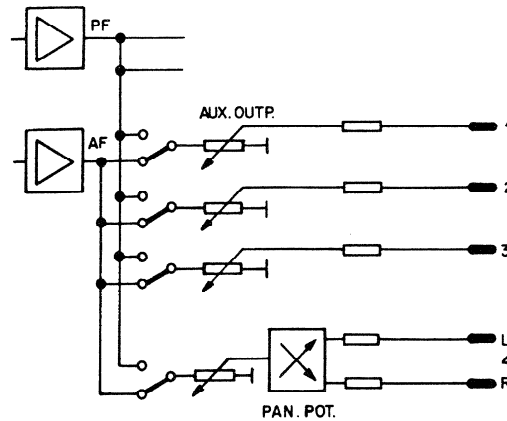
Push button for bridging the whole equalizer LF / LMF / HMF / HF

4. HILFSAUSGAENGE AUX 1 ... AUX 4

Die vier getrennt regelbaren Hilfsausgänge werden zur Hallmischung, als Playback-, Foldback- oder Mithörkanal eingesetzt. Das Signal lässt sich über die mit den Potentiometern gekoppelten Zug-Druckschalter wie folgt wählen:

- gezogen-PF Das Signal wird vor dem Flachbahnregler abgegriffen
- gedrückt-AF Das Signal wird nach dem Flachbahnregler abgegriffen.

AUX 1 ... 3 sind Monoausgänge, der Stereohilfsausgang AUX 4 ist zusätzlich mit einem Panorama-Potentiometer ausgerüstet.

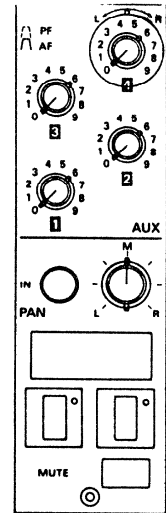


4. AUXILIARY OUTPUTS AUX 1 ... AUX 4

The four seperately adjustable auxiliary outputs are used for sound blending , as play-back-, foldback- or monitoring channel. The signal can be selected via the pull-push button which is connected with the potentiometer:

- pulled-PF The signal gets tapped off before the waferswitch
- crushed-AF The signal gets tapped off after the waferswitch.

AUX 1 ... 3 are mono outputs, the stereo auxiliary output AUX 4 is additionally equipped with a panorama potentiometer.



5. MUTE- und USER-TASTEN

MUTE:

Impulstaste mit elektronischer Umschaltung zum Stummschalten des Eingangskanals. Statusanzeige mit LED.

USER:

Umschalten mit LED-Anzeige für Zusatzfunktionen die vom Anwender gewünscht werden, z.B. Aufheben des MIX-DOWN Zustandes, Fernstart einer Quelle, Signalisation usw. Das darunter liegende Einlageplättchen kann mit der Funktionsbezeichnung graviert werden.

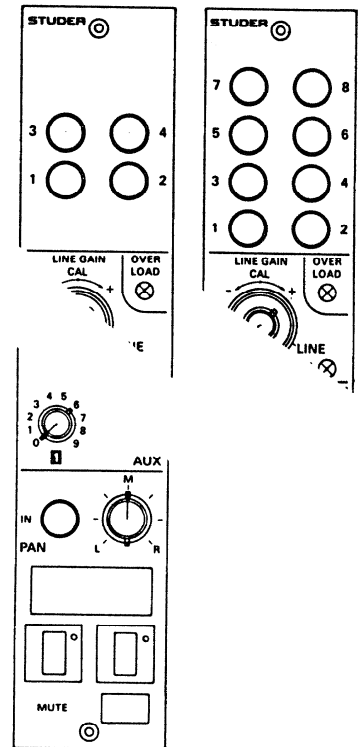
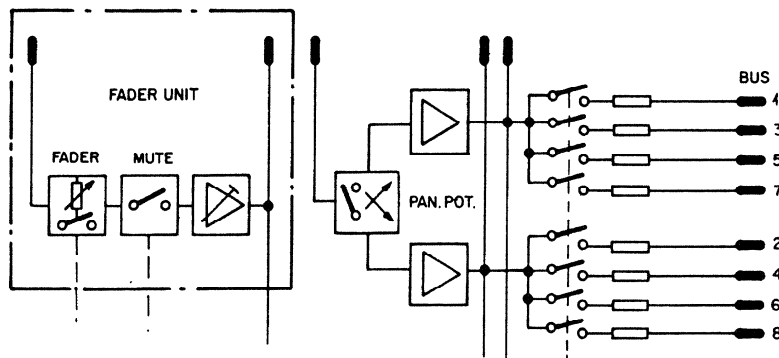
5. MUTE- and USER-PUSH BUTTON

MUTE:

Impulse push button with electronical switch for muting of the input channel. State indicator with LED.

USER:

Switching with LED indicator for additional functions which are requested by the user, for example cancelling of the MIX DOWN condition, remote starting of a source, signalization etc. The small insertion plate which is located below can be engraved with the description of the function.



6. PAN.POT.

Ein Drucktastenschalter erlaubt das Zuschalten eines Panorama-Potentiometers in den Hauptausgang.

6. PAN.POT.

A push button switch allows the connection of a panorama potentiometer into the main output.

7. SUMMEN ANWAHL

Vier Tasten bei der Eingangseinheit 1.912.220 und acht Tasten bei der Einheit 1.912.222 dienen zur Anwahl der 4 resp. 8 Hauptsammel-schienen.

Bei 16- und 24-Kanal Mischpulten wird das Regiepult durch einen 8 resp. 16-teiligen Tastensatz im Schrägteil ergänzt.

Die Modulationsdurchschaltung erfolgt über Feldeffekt-Transistoren.

7. MASTER SELECTION

Four push buttons at the input unit 1.912.220 and eight push buttons at the unit 1.912.222 serve for the selection of the 4 respectively 8 main bus bars.

The mixing desk of 16- and 24-channel mixing consoles gets completed by an eight respectively sixteen parts key set in the sloping part.

The modulation interconnection takes place over field effect transistors.

8. OVERLOAD-SIGNALE

Der Audiopegel wird an drei Stellen der Eingangseinheit überwacht. Sobald der Pegel am Ausgang des Entzerrers oder nach dem Flachbahnregler einen Pegel von ca. + 17 dBu überschreitet (ca. 3 dB unterhalb der Uebersteuerungsgrenze) leuchtet die OVERLOAD LED auf.

8. OVERLOAD SIGNALS

The audio level gets controlled on three positions of the input unit. As soon as the level at the output of the equalizer or after the fader exceeds a level of about +17 dBu (about 3 dB below the overmodulation limit), the OVERLOAD LED lights up.

9. FLACHBAHNREGLER 1.911.110

9.1 REGLER

Flachbahnregler mit conductiv-Plastik-Bahn.

9.2 PFL TASTE

Vorhörtaste (Impulstaste mit elektronischer Umschaltung und LED-Anzeige) schaltet das Audiosignal vor dem Flachbahnregler auf die PFL-Sammelschiene.

Durch Einlöten einer Brücke auf der gedruckten Leiterplatte kann das PFL Signal beim Öffnen des Reglers automatisch unterbrochen werden.

9.3 P. SOLO TASTE

Abhörtaste (Impulstaste mit elektronischer Umschaltung und LED-Anzeige) schaltet das Audiosignal nach dem Panorama-Potentiometer auf die Stereo-Vorhörsammelschiene.

9.4 SIGNALSTROMKREIS

Der Flachbahnregler ist mit einem Schalter versehen, der beim Öffnen des Reglers ein Signal an die logische Schaltung weitergibt. Abhängig vom MUTE-Schalter, der Stellung des Eingangswählers, der Summenanwahltasten und der Stellung des Summenreglers, eventuell auch der MIC-CUT Information, entsteht am Ausgang je ein getrenntes Faderstart-Signal für die Eingänge MIC, LINE und TAPE.

9. FADER 1.911.110

9.1 CONTROL

Fader with conductive plastic resistor layer.

9.2 PFL PUSH BUTTON

Pre-fader listening (pulse push button with electronical switching and LED indication) switches the audio signal before the fader to the PFL bus bar.

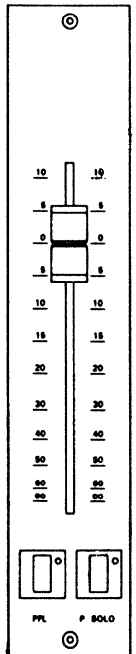
By soldering a bridge on the printed circuit board, the PFL signal can automatically be interrupted while opening the control.

9.3 P. SOLO PUSH BUTTON

The monitoring key (pulse push button with electronical switching and LED indication) switches the audio signal after the panorama potentiometer to the stereo pre-fader listening bus bar.

9.4 SIGNALLING CIRCUIT

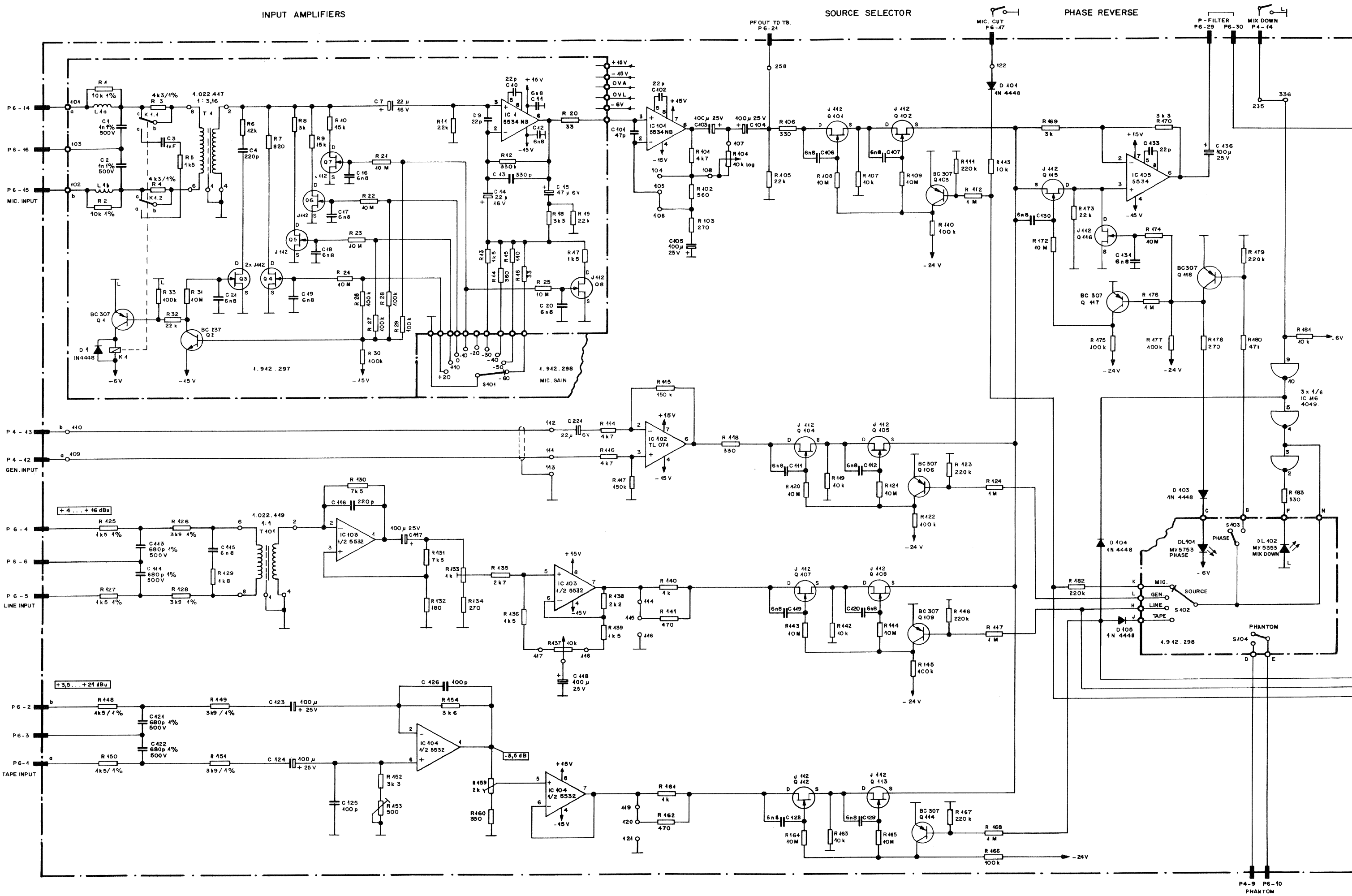
The fader is equipped with a switch which passes a signal on to the logical connection while opening the control. Depending on the MUTE switch, the position of the input selector, the master bus buttons and the position of the master control maybe even of the MIC-CUT information, at the output is each a seperated fader start signal formed for the inputs MIC, LINE and TAPE.



INPUT AMPLIFIERS

SOURCE SELECTOR

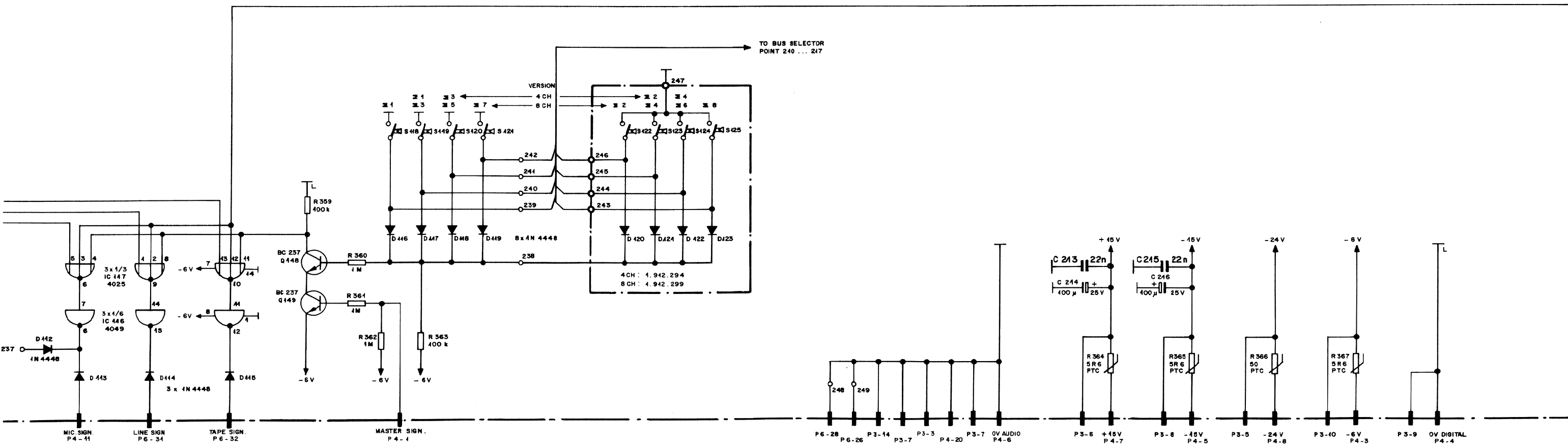
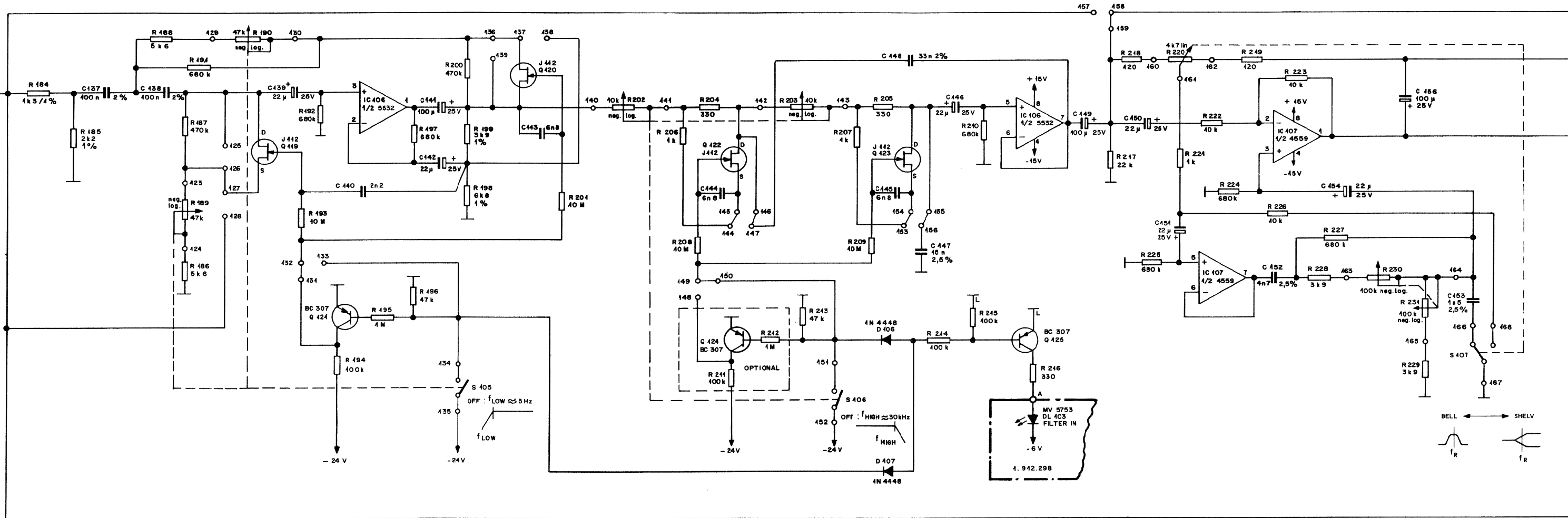
PHASE REVERSE



HIGHPASS
30 Hz ... 330 Hz

LOWPASS
700 Hz ... 20 kHz

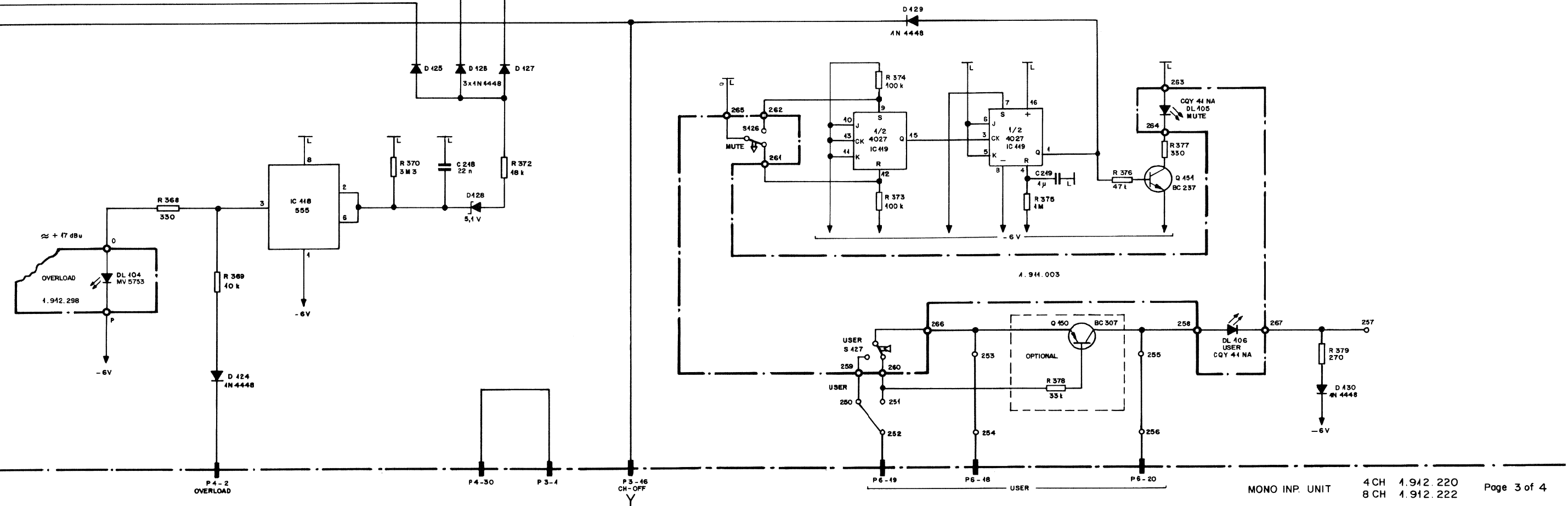
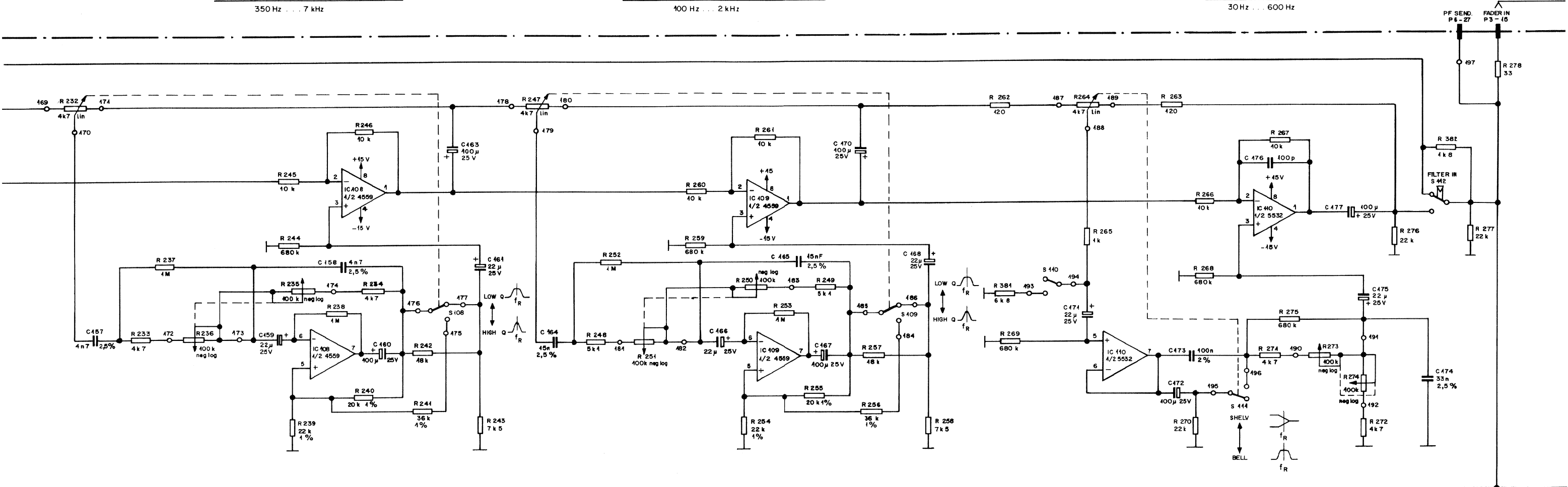
HIGH EQUALIZER (HF)
750 Hz ... 45 kHz



HIGH PARAMETRIC EQUALIZER (HMF)
350 Hz ... 7 kHz

LOW PARAMETRIC EQUALIZER (LMF)
100 Hz ... 2 kHz

LOW EQUALIZER (LF)
30 Hz ... 600 Hz



P 4 - 2
OVERLOAD

P 4 - 30

P 3 - 1

P 3 - 46
CH-OFF

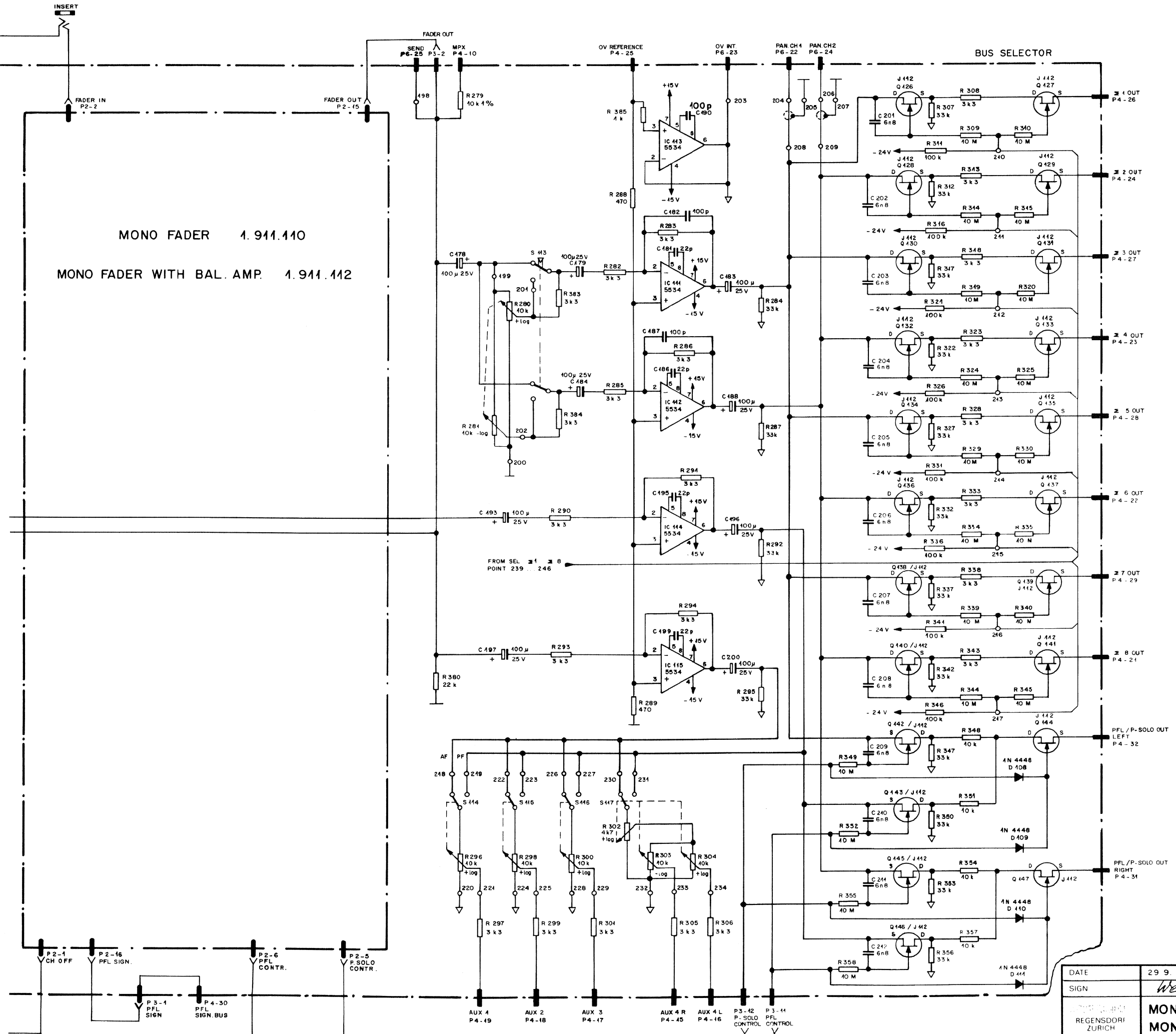
P 6 - 19

P 6 - 48
USER

P 6 - 20

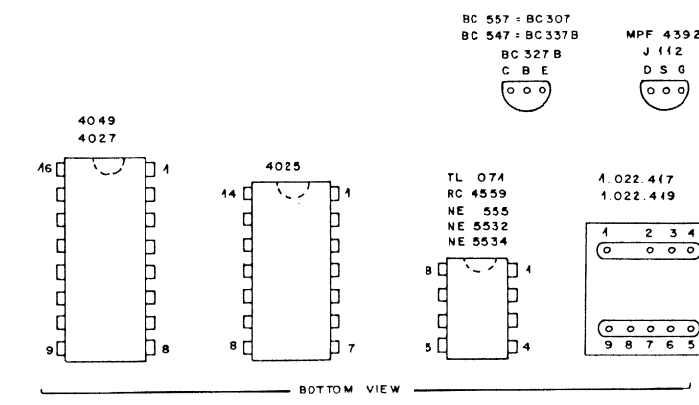
MONO INP. UNIT

4 CH 1.912.220
8 CH 1.912.222

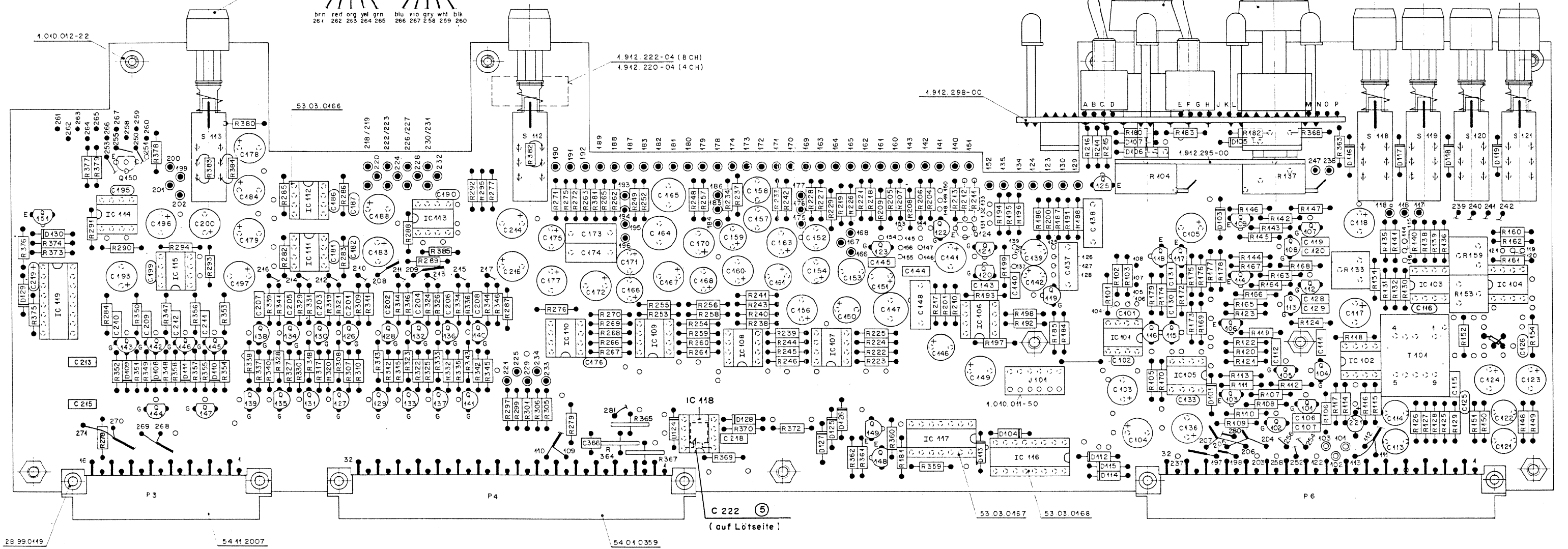
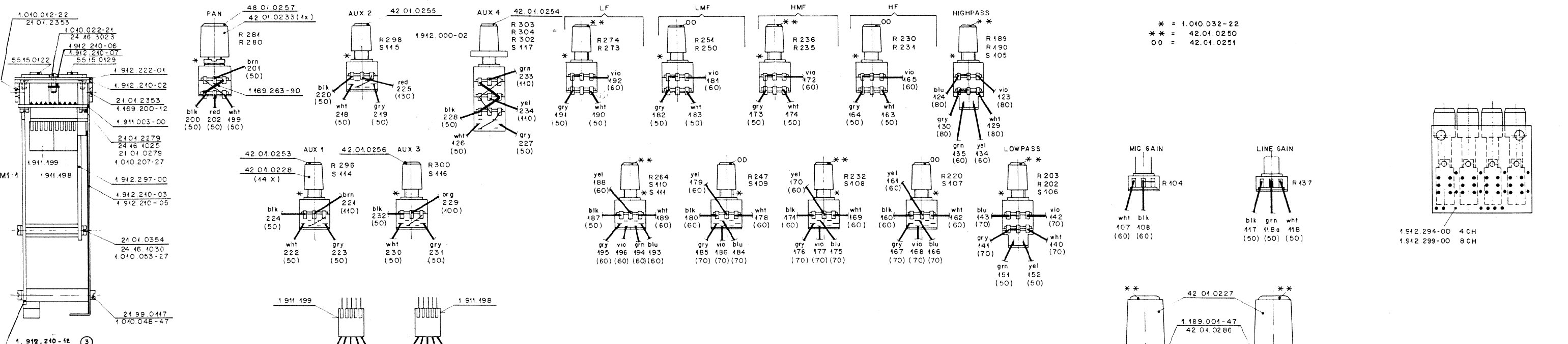


- P 4**
- 1 MASTER SIGN. DIGITAL INPUT
 - 2 OVERLOAD DIGITAL OUTPUT
 - 3 -6V
 - 4 OV DIGITAL
 - 5 -15V
 - 6 OV AUDIO
 - 7 +45V
 - 8 -24V
 - 9 +48V
 - 10 MPX ANALOG OUTPUT
 - 11 MIC. SIGN. DIGITAL OUTPUT
 - 12 a ANALOG INPUT
 - 12 b GEN.
 - 13 MIX DOWN DIGITAL INPUT
 - 14 AUX 4R OUT
 - 15 AUX 4L OUT
 - 16 AUX 3 OUT
 - 17 AUX 2 OUT
 - 18 AUX 1 OUT
 - 19 OV AUDIO
 - 20 USER
 - 21 PF OUT TO TB ANALOG OUTPUT
 - 22 PAN CH 1 ANALOG OUTPUT
 - 23 OV INT
 - 24 PAN CH 2 ANALOG OUTPUT
 - 25 AF OUT ANALOG OUTPUT
 - 26 OV AUDIO
 - 27 PF OUT ANALOG OUTPUT
 - 28 OV AUDIO
 - 29 P.FILTER OUT ANALOG OUTPUT
 - 30 P.FILTER IN ANALOG INPUT
 - 31 PFL / P-SOLO R ANALOG OUTPUT
 - 32 PFL / P-SOLO L ANALOG OUTPUT
- P 6**
- 1 a TAPE ANALOG INPUT
 - 1 b
 - 2 SCREEN
 - 3 a LINE ANALOG INPUT
 - 3 b
 - 4 SCREEN
 - 5
 - 6 PHANTOM
 - 7
 - 8
 - 9
 - 10 MIC. ANALOG INPUT
 - 11 a
 - 11 b
 - 12 SCREEN
 - 13 MIC. CUT DIGITAL INPUT
 - 14 USER
 - 15 USER
 - 16 USER
 - 17 P.FILTER OUT ANALOG OUTPUT
 - 18 PAN CH 1 ANALOG OUTPUT
 - 19 OV INT
 - 20 PAN CH 2 ANALOG OUTPUT
 - 21 AF OUT ANALOG OUTPUT
 - 22 OV AUDIO
 - 23 PF OUT ANALOG OUTPUT
 - 24 OV AUDIO
 - 25 P.FILTER OUT ANALOG OUTPUT
 - 26 P.FILTER IN ANALOG INPUT
 - 27 LINE SIGN. DIGITAL OUTPUT
 - 28 TAPE SIGN. DIGITAL OUTPUT

- P 3**
- 1 PFL - SIGN BUS DIGITAL IN/OUT
 - 2 FADER OUT L ANALOG INPUT
 - 3 OV AUDIO R
 - 4 (FADER OUT R)
 - 5 -24V
 - 6 +45V
 - 7 OV AUDIO
 - 8 -45V
 - 9 OV DIGITAL
 - 10 -6V
 - 11 PFL CONTROL DIGITAL
 - 12 P-SOLO CONTROL DIGITAL
 - 13 (FADER INPUT R)
 - 14 OV AUDIO L
 - 15 FADER INPUT L ANALOG OUTPUT
 - 16 CH-OFF DIGITAL IN/OUT



| | | | | | |
|------------------|----------------------|-----------|-----------|--------------|-------------|
| DATE | 29.9.83 | 25.5.84 | 4.10.84 | | PAGE 4 OF 4 |
| SIGN | <i>We</i> | <i>We</i> | <i>ul</i> | | |
| REGISDORF ZÜRICH | MONO INPUT UNIT 4 CH | | | SC 1.912.220 | |
| | MONO INPUT UNIT 8 CH | | | SC 1.912.222 | |



| wiringdiagram (LL) | (KL) |
|--------------------------|-----------------------|
| 255 TO 256 gry | 440 TO 442 wht |
| 253 TO 254 wht | 409 TO 441 blu screen |
| 250 TO 252 blik (390 mm) | 208 TO 204 wht |
| 280 TO 281 blik (200 mm) | 205 screen |
| 240 TO 239 brn | 209 TO 206 wht |
| 212 TO 240 org | 207 screen |
| 214 TO 241 grn | 498 TO 268 wht |
| 246 TO 242 vio | 269 screen |
| 241 red | 197 TO 270 wht |
| 243 yel | 274 screen |
| 245 blu | |
| 247 gry | |
| TO 4.912.294 / 299 | |

| *** | |
|---------------------|---------------------|
| 4 CH - 1.912.220-00 | 8 CH - 1.912.222-00 |
| PL 4.912.220-00 | 4.912.220-00 |
| LL 4.912.220-93 | 4.912.222-93 |
| KL 4.912.240-94 | 4.912.240-94 |

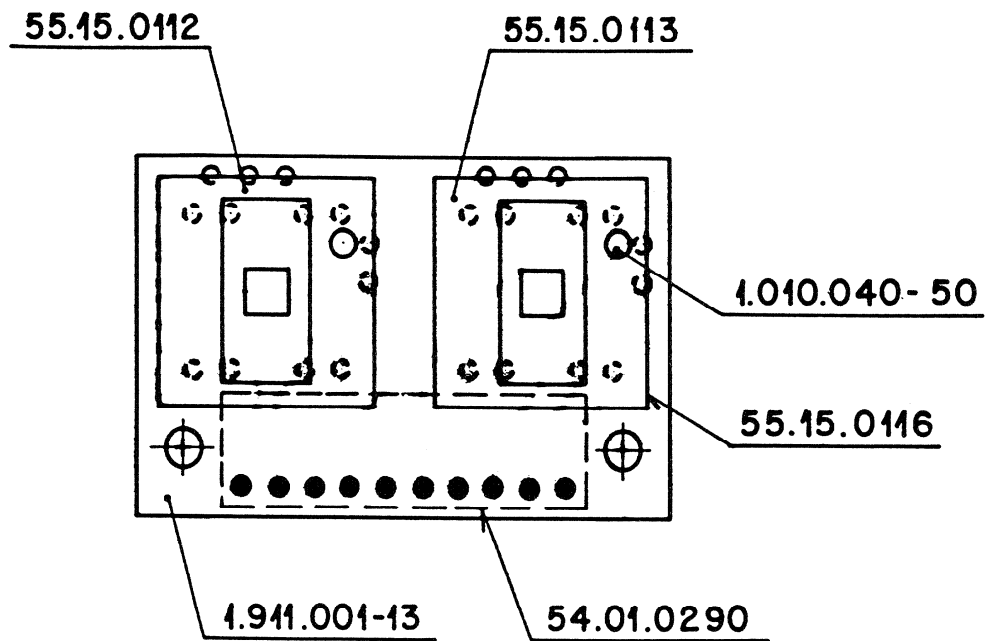
| | | | |
|----------|-----|----|---|
| 30.4.90 | Si | de | 5 |
| 20.8.86 | Si | de | 4 |
| 25.6.86 | de | de | 3 |
| 1.09.84 | de | de | 2 |
| 6.1.83 | AHO | de | 1 |
| 48.11.82 | AHO | de | 0 |

| | |
|-----------------------|--------------------|
| Norm-Nr | GuTe |
| Werkstoff | Beh |
| DIN-Bez | |
| Abmessung | |
| Zugehörige Unterlagen | Frei mass toleranz |
| *** | |
| Datum | Gez |
| Ersatz für | |
| Ersetzt durch | |
| Kopie für | |

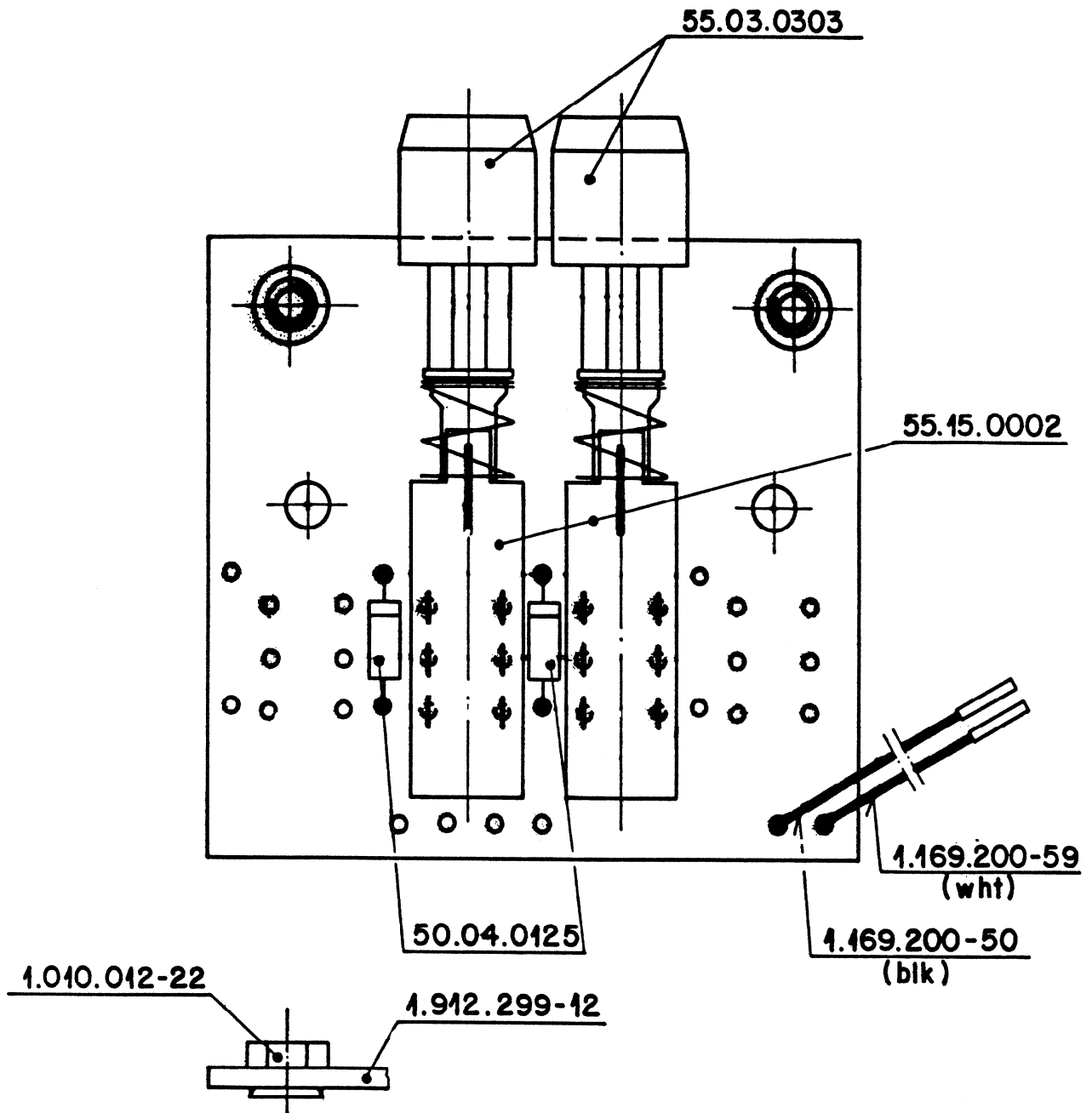
| | |
|------------|---------------------|
| STUOER | Mono Input Unit Pan |
| REGENSDORF | 4 CH / 8 CH |
| ZURICH | |

| | |
|--------|--------------|
| Nummer | 1.912.220-00 |
|--------|--------------|

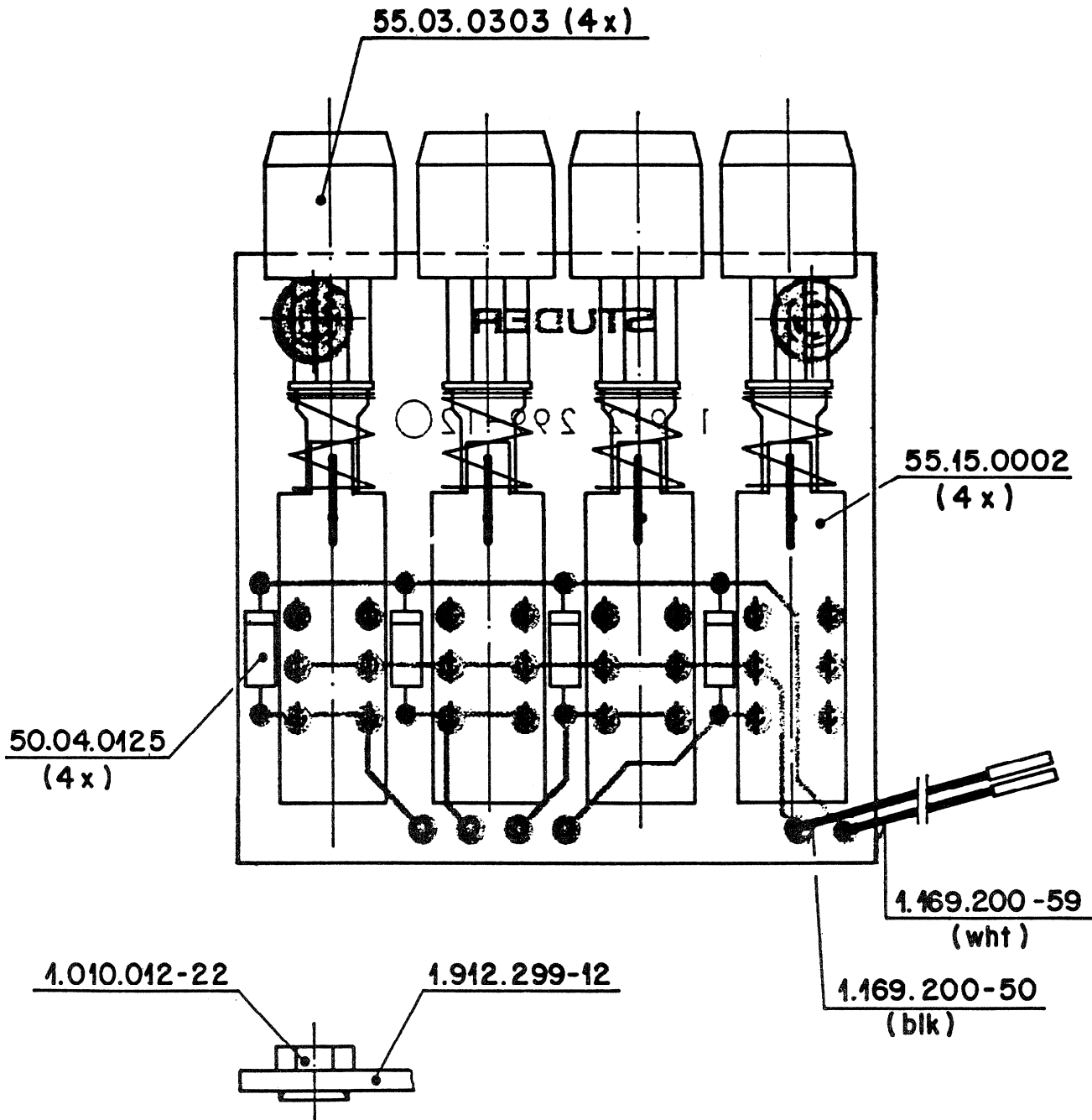
C 416 / C 243 / C 215 / R 385 nachgezogen



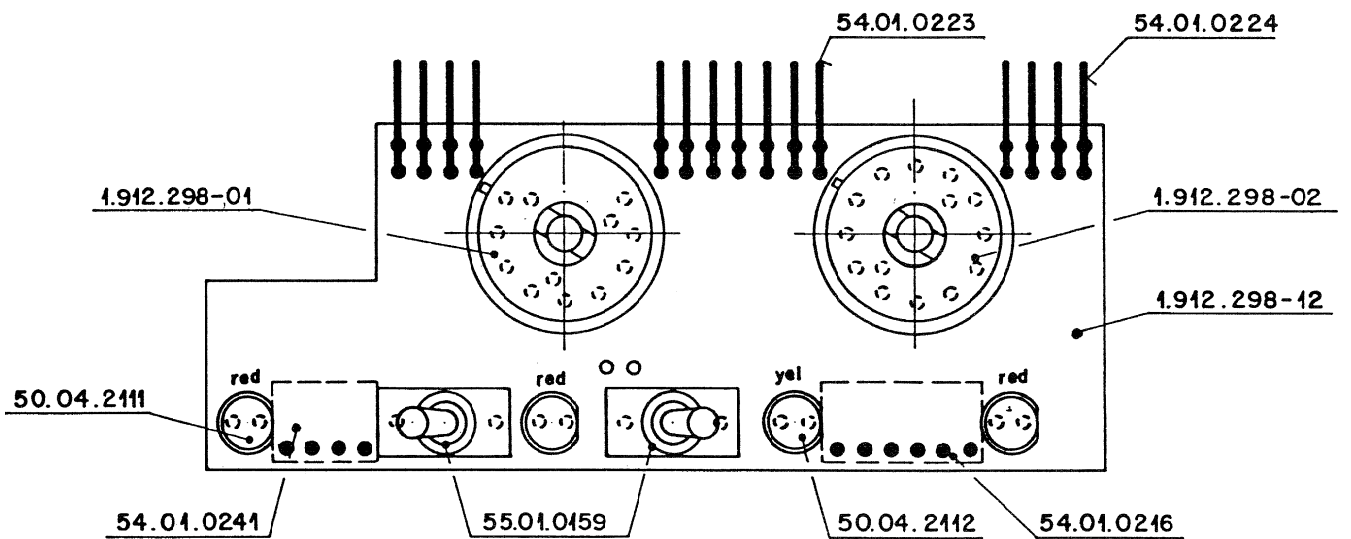
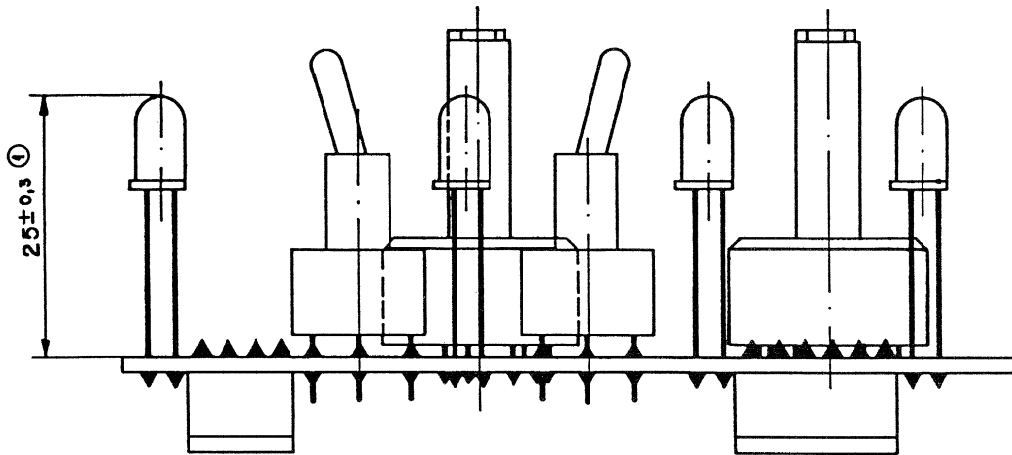
| | | | | | | | | | |
|---------------------------------------|-------------------|---|------------|------|--------------------------------|------|-------|--|---|
| Werkstoff | Norm-Nr.: | Güte: | | | | | | | ③ |
| | DIN-Bez.: | Oberfläche | | | | | | | ② |
| | Abmessung: | Beh.: | | | | | | | ① |
| Zugehörige Unterlagen: | Freimasstoleranz: | Maßstab: | 19.5.82 | Ho | / | | | | ④ |
| | ± | 2 : 1 | Datum | Gez. | Gepr. | Ges. | Index | | |
| Ersatz für: | Ersetzt durch: | | Kopie für: | | | | | | |
| STUDER REGENSDORF ZÜRICH | | Benennung: Pushbutton Board N-L | | | Nummer: 1.911.003-00 | | | | |



| | | | | | | | | | | |
|---------------------------------------|------------------|------------|-----------------------|----------|-------|------|--|--|---------|---------------------|
| Werkstoff | Norm-Nr.: | Güte: | | Änderung | | | | | ③ | |
| | DIN-Bez.: | Oberfläche | | | | | | | | ② |
| | Abmessung: | Beh.: | | | | | | | ① | |
| Zugehörige Unterlagen: | Freimaßtoleranz: | Maßstab: | 4. 6. 82 | Ho | W | de | | | ① | |
| | ± | 2 : 4 | Datum | Gez. | Gepr. | Ges. | | | ① | |
| Ersatz für: | Ersatz durch: | | Kopie für: | | | | | | | |
| STUDER REGENSDORF ZÜRICH | Benennung: | | Bus Board 4 CH | | | | | | Nummer: | 1.912.294-00 |



| | | | | | | |
|--------------------------------|------------|--------------------------------|----------|------------|-------------------------|-------|
| Werkstoff | Norm-Nr.: | Oberfläche | Güte: | | Änderung | ③ |
| | DIN-Bez.: | | Beh.: | | | |
| | Abmessung: | | | | | ① |
| Zugehörige Unterlagen: | | Freimasstoleranz: | Maßstab: | 4.6.82 | Ho | ④ |
| | | ± | 2 : 1 | Datum | Gez. | Gepr. |
| Ersatz für: | | Ersetzt durch: | | Kopie für: | | |
| STUDER REGENSDORF ZÜRICH | | Bezeichnung: Bus Board 8 CH | | | Nummer: 1.912.299-00 | |



| | | | | | | | | | | |
|---------------------------------------|------------------|-------------|----------------------------------|-----------|-------|-----|--------------------------------|--|---|---|
| Version: | Norm-Nr.: | Oberfläche: | Güte: | Änderung: | | | | | ③ | |
| | DIN-Bez.: | | Boh.: | | | | | | | ② |
| | Abmessung: | | | 1.9.83 | AHo | | | | ① | |
| Zugehörige Unterlagen: | Freimaßtoleranz: | Maßstab: | 10.6.82 | Ho | | | | | ④ | |
| | ± | 2 : 1 | Datum | Gez | Gepr. | Gez | Index | | | |
| Ersatz für: | Ersetzt durch: | | Kopie für: | | | | | | | |
| STUDER REGENSDORF ZÜRICH | | | Benennung Switch-Board | | | | Nummer: 1.912.298-00 | | | |

| INDI POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | | | MFR |
|-------------|------------|-------|-------------------------------|------|-----|-----|
| A 101 | 1.912.296 | | MIC. PREAMPL. TRANSFORMERLESS | | | |
| 102 | 1.912.297 | | WIT TRAFD | | | |
| 103 | 1.912.298 | | SWITCHBOARD | | | |
| 104 | 1.912.299 | | BUS BOARD 8CH ONLY 8CH | | | |
| 105 | 1.912.294 | | BUS BOARD 4CH * | | | |
| 106 | 1.911.003 | | PUSHBUTTON | | | |
| C 101 | 59.34.2470 | 47 p | | | CER | |
| 102 | 59.34.2220 | 22 p | | | CER | |
| 103 | 59.22.5101 | 100 μ | | 16V | EL | |
| 104 | 59.22.5101 | 100 μ | | 16V | EL | |
| 105 | 59.22.5101 | 100 μ | | 16V | EL | |
| 106 | 59.06.0682 | 6,8 n | 10% | 63V | PE | |
| 107 | 59.06.0682 | 6,8 n | 10% | 63V | PE | |
| 111 | 59.06.0682 | 6,8 n | 10% | 63V | PE | |
| 112 | 59.06.0682 | 6,8 n | 10% | 63V | PE | |
| 113 | 59.05.1681 | 680 p | 1% | 630V | PP | |
| 114 | 59.05.1681 | 680 p | 1% | 630V | PP | |
| 115 | 59.06.0682 | 6,8 n | 10% | 63V | PE | |
| 116 | 59.34.4224 | 220 p | | | CER | |
| 117 | 59.22.5101 | 100 μ | | 16V | EL | |
| 118 | 59.22.5101 | 100 μ | | 16V | EL | |
| 119 | 59.06.0682 | 6,8 n | 10% | 63V | PE | |
| 120 | 59.06.0682 | 6,8 n | 10% | 63V | PE | |
| 121 | 59.05.1681 | 680 p | 1% | 630V | PP | |
| 122 | 59.05.1681 | 680 p | 1% | 630V | PP | |

| INDI | DATE | NAME | | |
|---------------|---------------|--------|-----------------------------|---------------------------|
| ③ | 4.10.84 | Ek | CER: CERAMIC | SAL: SOLID ALUMINIUM |
| ② | 22. Aug. 1983 | Eckert | EL: ELECTROLYTIC | |
| ① | 6. Jan. 1983 | Eckert | PC: POLYCARBONAT | |
| ○ | 2. Dez. 1981 | Eckert | PE: POLYESTER | * ONLY 4CH |
| | | | PP: POLYPROPYLEN | 1.912.222.00 |
| STUDER | | | MONO INPUT UNIT PAN 4CH/8CH | 1.912.220.00 PAGE 1 OF 21 |

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| INDI POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | | | MFR |
|-------------|------------|-------|---------------------------|-----|-----|-----|
| C 123 | 59.22.5101 | 100 μ | | 16V | EL | |
| 124 | 59.22.5101 | 100 μ | | 16V | EL | |
| 125 | 59.34.4101 | 100 p | | | CER | |
| 126 | 59.34.4101 | 100 p | | | CER | |
| 128 | 59.06.0682 | 6,8 n | 10% | 63V | PE | |
| 129 | 59.06.0682 | 6,8 n | 10% | 63V | PE | |
| 130 | 59.06.0682 | 6,8 n | 10% | 63V | PE | |
| 131 | 59.06.0682 | 6,8 n | 10% | 63V | PE | |
| 133 | 59.34.2220 | 22 p | | | CER | |
| 136 | 59.22.5101 | 100 μ | | 16V | EL | |
| 137 | 59.99.0254 | 100 n | 2% | 63V | PC | |
| 138 | 59.99.0254 | 100 n | 2% | 63V | PC | |
| 139 | 59.22.5220 | 22 μ | | 16V | EL | |
| 140 | 59.06.0222 | 2,2 n | | 63V | PE | |
| 141 | 59.22.5101 | 100 μ | | 16V | EL | |
| 142 | 59.22.5220 | 22 μ | | 16V | EL | |
| 143 | 59.06.0682 | 6,8 n | 10% | 63V | PE | |
| 144 | 59.06.0682 | 6,8 n | 10% | 63V | PE | |
| 145 | 59.06.0682 | 6,8 n | 10% | 63V | PE | |
| 146 | 59.22.5220 | 22 μ | | 16V | EL | |
| 147 | 59.05.2153 | 15 n | 25% | 63V | PP | |
| 148 | 59.99.0514 | 33 n | 2% | 63V | PC | |
| 149 | 59.22.5101 | 100 μ | | 16V | EL | |
| 150 | 59.22.5220 | 22 μ | | 16V | EL | |
| 151 | 59.22.5220 | 22 μ | | 16V | EL | |
| 152 | 59.05.2472 | 4,7 n | 25% | | | |

| INDI | DATE | NAME | | |
|---------------|---------------|--------|--------------------|---------------------------|
| ③ | 4.10.84 | Ek | | |
| ② | 22. Aug. 1983 | Eckert | | |
| ① | 6. Jan. 1983 | Eckert | | |
| ○ | 2. Dez. 1981 | Eckert | | |
| STUDER | | | MONO INPUT 4CH/8CH | 1.912.220.00 PAGE 2 OF 21 |

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| INDI POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | | | MFR |
|-------------|------------|-------|---------------------------|-----|-----|-----|
| C 153 | 59.05.2152 | 15 n | 25% | 63V | PP | |
| 154 | 59.22.5220 | 22 μ | | 16V | EL | |
| 156 | 59.22.5101 | 100 μ | | 16V | EL | |
| 157 | 59.05.2472 | 4,7 n | 25% | 63V | PP | |
| 158 | 59.05.2472 | 4,7 n | 25% | 63V | PP | |
| 159 | 59.22.5220 | 22 μ | | 16V | EL | |
| 160 | 59.22.5101 | 100 μ | | 16V | EL | |
| 161 | 59.22.5220 | 22 μ | | 16V | EL | |
| 163 | 59.22.5101 | 100 μ | | 16V | EL | |
| 164 | 59.05.2153 | 15 n | 25% | 63V | PP | |
| 165 | 59.05.2153 | 15 n | 25% | 63V | PP | |
| 166 | 59.22.5220 | 22 μ | | 16V | EL | |
| 167 | 59.22.5101 | 100 μ | | 16V | EL | |
| 168 | 59.22.5220 | 22 μ | | 16V | EL | |
| 170 | 59.22.5101 | 100 μ | | 16V | EL | |
| 171 | 59.22.5220 | 22 μ | | 16V | EL | |
| 172 | 59.22.5101 | 100 μ | | 16V | EL | |
| 173 | 59.99.0254 | 100 n | 2% | | PC | |
| 174 | 59.99.0514 | 33 n | 2% | | PC | |
| 175 | 59.22.5220 | 22 μ | | 16V | EL | |
| 176 | 59.34.4101 | 100 p | | | CER | |
| 177 | 59.22.5101 | 100 μ | | 16V | EL | |
| 178 | 59.22.5101 | 100 μ | | 16V | EL | |
| 179 | 59.22.5101 | 100 μ | | 16V | EL | |
| 181 | 59.34.2220 | 22 p | | | CER | |
| 182 | 59.34.4101 | 100 p | | | CER | |

| INDI | DATE | NAME | | |
|---------------|---------------|--------|--------------------|---------------------------|
| ③ | 4.10.84 | Ek | | |
| ② | 22. Aug. 1983 | Eckert | | |
| ① | 6. Jan. 1983 | Eckert | | |
| ○ | 2. Dez. 1981 | Eckert | | |
| STUDER | | | MONO INPUT 4CH/8CH | 1.912.220.00 PAGE 3 OF 21 |

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| INDI POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | | | MFR |
|-------------|------------|-------|---------------------------|-----|-----|-----|
| C 183 | 59.22.5101 | 100 μ | | 16V | EL | |
| 184 | 59.22.5101 | 100 μ | | 16V | EL | |
| 186 | 59.34.2220 | 22 p | | | CER | |
| 187 | 59.34.4101 | 100 p | | | CER | |
| 188 | 59.22.5101 | 100 μ | | 16V | EL | |
| ③ 190 | 59.34.4101 | 100 p | | | CER | |
| 193 | 59.22.5101 | 100 μ | | 16V | EL | |
| 195 | 59.34.2220 | 22 p | | | CER | |
| 196 | 59.22.5101 | 100 μ | | 16V | EL | |
| 197 | 59.22.5101 | 100 μ | | 16V | EL | |
| 199 | 59.34.2220 | 22 p | | | CER | |
| 200 | 59.22.5101 | 100 μ | | 16V | EL | |
| 201 | 59.06.0682 | 6,8 n | 10% | 63V | PE | |
| 202 | 59.06.0682 | 6,8 n | 10% | 63V | PE | |
| 203 | 59.06.0682 | 6,8 n | 10% | 63V | PE | |
| 204 | 59.06.0682 | 6,8 n | 10% | 63V | PE | |
| 205 | 59.06.0682 | 6,8 n | 10% | 63V | PE | * |
| 206 | 59.06.0682 | 6,8 n | 10% | 63V | PE | * |
| 207 | 59.06.0682 | 6,8 n | 10% | 63V | PE | * |
| 208 | 59.06.0682 | 6,8 n | 10% | 63V | PE | * |
| 209 | 59.06.0682 | 6,8 n | 10% | 63V | PE | |
| 210 | 59.06.0682 | 6,8 n | 10% | 63V | PE | |
| 211 | 59.06.0682 | 6,8 n | 10% | 63V | PE | |
| 212 | 59.06.0682 | 6,8 n | 10% | 63V | PE | |

| INDI | DATE | NAME | | |
|---------------|---------------|--------|--------------------|---------------------------|
| ③ | 4.10.84 | Ek | | |
| ② | 22. Aug. 1983 | Eckert | | |
| ① | 6. Jan. 1983 | Eckert | | |
| ○ | 2. Dez. 1981 | Eckert | | |
| STUDER | | | MONO INPUT 4CH/8CH | 1.912.220.00 PAGE 4 OF 21 |

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| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|--------------|-------|---------------------------|----------------|
| R | 191 | 57.11.4684 | 680 | k | |
| | 192 | .4684 | 680 | k | |
| | 193 | .6106 | 40 | M | |
| | 194 | .4104 | 100 | k | |
| | 195 | .4105 | 1 | M | |
| | 196 | .4473 | 47 | k | |
| | 197 | .4684 | 680 | k 5% | |
| | 198 | .3682 | 68 | k 1% | |
| | 199 | .3392 | 39 | k 1% | |
| | 200 | .4474 | 470 | k 5% | |
| | 201 | .6106 | 40 | M | |
| | 202 | 1.912.001.51 | 40 | k | |
| | 203 | 1.912.001.51 | 40 | k | POT. NEG. LOG. |
| | 204 | 57.11.4331 | 330 | 5% | |
| | 205 | .4331 | 330 | 5% | |
| | 206 | .4102 | 1 | k 5% | |
| | 207 | .4102 | 1 | k 5% | |
| | 208 | .6106 | 40 | M | |
| | 209 | .6106 | 40 | M | |
| | 210 | .4684 | 680 | k | |
| | 211 | .4104 | 100 | k | OPTIONAL |
| | 212 | .4105 | 1 | M | OPTIONAL |
| | 213 | .4473 | 47 | k | |
| | 214 | .4104 | 100 | k | |
| | 215 | .4104 | 100 | k | |
| | 216 | .4331 | 330 | | |
| | 217 | .4223 | 22 | k | |
| | 218 | .4121 | 120 | 5% | |
| | 219 | .4121 | 120 | 5% | |
| | 220 | 1.912.001.41 | 47 | k | LIN POT. |

| IND | DATE | NAME |
|-----|-------------|--------|
| ④ | | |
| ③ | 4.10.84 | 4 |
| ② | 22. Aug. 83 | Eckert |
| ① | 6. Jan. 83 | Eckert |
| ○ | 2. Dez. 81 | Eckert |

STUDER MONO INPUT 4CH/8CH 1.912.220.00 PAGE 13 OF 21

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| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|--------------|-------|---------------------------|----------------|
| R | 221 | 57.11.4102 | 1 | k | |
| | 222 | .4103 | 40 | k 5% | |
| | 223 | .4103 | 40 | k 5% | |
| | 224 | .4684 | 680 | k | |
| | 225 | .4684 | 680 | k | |
| | 226 | .4103 | 40 | k 5% | |
| | 227 | .4684 | 680 | k | |
| | 228 | .4392 | 39 | k 5% | |
| | 229 | .4392 | 39 | k 5% | |
| | 230 | 1.912.001.31 | 100 | k | |
| | 231 | 1.912.001.31 | 100 | k | NEG. LOG. POT. |
| | 232 | 1.912.002.41 | 47 | k | LIN POT. |
| | 233 | 57.11.4472 | 47 | k 5% | |
| | 234 | .4472 | 47 | k 5% | |
| | 235 | 1.912.001.31 | 100 | k | |
| | 236 | 1.912.001.31 | 100 | k | NEG. LOG. POT. |
| | 237 | 57.11.4105 | 1 | M | |
| | 238 | .4105 | 1 | M | |
| | 239 | .3223 | 22 | k 1% | |
| | 240 | .3203 | 20 | k 1% | |
| | 241 | .3363 | 36 | k 1% | |
| | 242 | .4183 | 18 | k 2% | |
| | 243 | .3752 | 75 | k 1% | |
| | 244 | .4684 | 680 | k | |
| | 245 | .4103 | 40 | k 5% | |
| | 246 | .4103 | 40 | k 5% | |
| | 247 | 1.912.001.41 | 47 | k | LIN. POT. |
| | 248 | 57.11.3512 | 51 | k 5% | |
| | 249 | .3512 | 51 | k 5% | |

| IND | DATE | NAME |
|-----|-------------|--------|
| ④ | | |
| ③ | 4.10.84 | 4 |
| ② | 22. Aug. 83 | Eckert |
| ① | 6. Jan. 83 | Eckert |
| ○ | 2. Dez. 81 | Eckert |

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| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|--------------|-------|---------------------------|----------------|
| R | 250 | 1.912.001.31 | 100 | k | |
| | 251 | 1.912.001.31 | 100 | k | NEG. LOG. POT. |
| | 252 | 57.11.4105 | 1 | M | |
| | 253 | .4105 | 1 | M | |
| | 254 | .3223 | 22 | k 1% | |
| | 255 | .3203 | 20 | k 1% | |
| | 256 | .3363 | 36 | k 1% | |
| | 257 | .4183 | 18 | k 2% | |
| | 258 | .3752 | 75 | k 1% | |
| | 259 | .4684 | 680 | k | |
| | 260 | .4103 | 40 | k 5% | |
| | 261 | .4103 | 40 | k 5% | |
| | 262 | .4121 | 120 | 5% | |
| | 263 | .4121 | 120 | 5% | |
| | 264 | 1.912.001.41 | 47 | k | LIN. POT. |
| | 265 | 57.11.4102 | 1 | k 5% | |
| | 266 | .4103 | 40 | k 5% | |
| | 267 | .4103 | 40 | k 5% | |
| | 268 | .4684 | 680 | k | |
| | 269 | .4684 | 680 | k | |
| | 270 | .4223 | 22 | k | |
| | 271 | .4472 | 47 | k 5% | |
| | 272 | .4472 | 47 | k 5% | |
| | 273 | 1.912.001.31 | 100 | k | |
| | 274 | 1.912.001.31 | 100 | k | NEG. LOG. POT. |
| | 275 | 57.11.4684 | 680 | k | |
| | 276 | .4223 | 22 | k | |
| | 277 | .4223 | 22 | k | |
| | 278 | .4330 | 33 | | |
| | 279 | .3103 | 40 | k 1% | |

| IND | DATE | NAME |
|-----|-------------|--------|
| ④ | | |
| ③ | 4.10.84 | 4 |
| ② | 22. Aug. 83 | Eckert |
| ① | 6. Jan. 83 | Eckert |
| ○ | 2. Dez. 81 | Eckert |

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| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|--------------|-------|---------------------------|------------------|
| R | 280 | 1.912.001.35 | 40 | k | POS. LOG. } POT. |
| | 281 | 1.912.001.35 | 40 | k | NEG. LOG. } POT. |
| | 282 | 57.11.4332 | 33 | k 5% | |
| | 283 | .4332 | 33 | k 5% | |
| | 284 | .4333 | 33 | k | |
| | 285 | .4332 | 33 | k 5% | |
| | 286 | .4332 | 33 | k 5% | |
| | 287 | .4333 | 33 | k | |
| | 288 | .4471 | 470 | | |
| | 289 | .4471 | 470 | | |
| | 290 | .4332 | 33 | k 5% | |
| | 291 | .4332 | 33 | k 5% | |
| | 292 | .4333 | 33 | k | |
| | 293 | .4332 | 33 | k 5% | |
| | 294 | .4332 | 33 | k 5% | |
| | 295 | .4333 | 33 | k | |
| | 296 | 1.912.001.42 | 40 | k | POS. LOG. POT. |
| | 297 | 57.11.4332 | 33 | k 5% | |
| | 298 | 1.912.001.42 | 40 | k | POS. LOG. POT. |
| | 299 | 57.11.4332 | 33 | k 5% | |
| | 300 | 1.912.001.42 | 40 | k | POS. LOG. POT. |
| | 301 | 57.11.4332 | 33 | k 5% | |
| | 302 | 1.912.001.43 | 47 | k | POS. LOG. } POT. |
| | 303 | 1.912.001.43 | 40 | k | POS. LOG. } POT. |
| | 304 | 1.912.001.43 | 40 | k | NEG. LOG. } |
| | 305 | 57.11.4332 | 33 | k 5% | |
| | 306 | .4332 | 33 | k 5% | |
| | 307 | .4333 | 33 | k | |
| | 308 | .4332 | 33 | k 5% | |
| | 309 | .6106 | 40 | M | |

| IND | DATE | NAME |
|-----|-------------|--------|
| ④ | | |
| ③ | 4.10.84 | 4 |
| ② | 22. Aug. 83 | Eckert |
| ① | 6. Jan. 83 | Eckert |
| ○ | 2. Dez. 81 | Eckert |

STUDER MONO INPUT 4CH/8CH 1.912.220.00 PAGE 16 OF 21

13.046.578

| INDI | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------|--------|------------|-------|---------------------------|-----|
| R | 310 | 57.11.6106 | 40 M | | |
| | 311 | .4104 | 100 k | | |
| | 312 | .4333 | 33 k | | |
| | 313 | .4332 | 33 k | 5% | |
| | 314 | .6106 | 10 M | | |
| | 315 | .6106 | 10 M | | |
| | 316 | .4104 | 100 k | | |
| | 317 | .4333 | 33 k | | |
| | 318 | .4332 | 33 k | 5% | |
| | 319 | .6106 | 10 M | | |
| | 320 | .6106 | 10 M | | |
| | 321 | .4104 | 100 k | | |
| | 322 | .4333 | 33 k | | |
| | 323 | .4332 | 33 k | 5% | |
| | 324 | .6106 | 10 M | | |
| | 325 | .6106 | 10 M | | |
| | 326 | .4104 | 100 k | | |
| | 327 | .4333 | 33 k | | * |
| | 328 | .4332 | 33 k | 5% | * |
| | 329 | .6106 | 10 M | | * |
| | 330 | .6106 | 10 M | | * |
| | 331 | .4104 | 100 k | | * |
| | 332 | .4333 | 33 k | | * |
| | 333 | .4332 | 33 k | 5% | * |
| | 334 | .6106 | 10 M | | * |
| | 335 | .6106 | 10 M | | * |
| | 336 | .4104 | 100 k | | * |
| | 337 | .4333 | 33 k | | * |
| | 338 | .4332 | 33 k | 5% | * |
| | 339 | .6106 | 10 M | | * |

| INDI | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------|--------|------------|-------|---------------------------|-----|
| R | 340 | 57.11.6106 | 10 M | | * |
| | 341 | .4104 | 100 k | | * |
| | 342 | .4333 | 33 k | | * |
| | 343 | .4332 | 33 k | 5% | * |
| | 344 | .6106 | 10 M | | * |
| | 345 | .6106 | 10 M | | * |
| | 346 | .4104 | 100 k | | * |
| | 347 | .4333 | 33 k | | |
| | 348 | .4103 | 10 k | 5% | |
| | 349 | .6106 | 10 M | | |
| | 350 | .4333 | 33 k | | |
| | 351 | .4103 | 10 k | 5% | |
| | 352 | .6106 | 10 M | | |
| | 353 | .4333 | 33 k | | |
| | 354 | .4103 | 10 k | 5% | |
| | 355 | .6106 | 10 M | | |
| | 356 | .4333 | 33 k | | |
| | 357 | .4103 | 10 k | 5% | |
| | 358 | .6106 | 10 M | | |
| | 359 | .4104 | 100 k | | |
| | 360 | .4105 | 1 M | | |
| | 361 | .4105 | 1 M | | |
| | 362 | .4105 | 1 M | | |
| | 363 | .4104 | 100 k | | |
| | 364 | 57.99.0209 | 56 | PTC | |
| | 365 | 57.99.0209 | 56 | PTC | |
| | 366 | 57.99.0206 | 50 | PTC | |
| | 367 | 57.99.0209 | 56 | PTC | |
| | 368 | 57.11.4331 | 330 | | |
| | 369 | .4103 | 10 k | | |

| INDI | DATE | NAME | |
|------|-------------|--------|------------|
| ④ | | | |
| ③ | 4.10.84 | | |
| ② | 22. Aug. 83 | Eckert | |
| ① | 6. Jan. 83 | Eckert | * ONLY 8CH |
| ○ | 2. Dez. 81 | Eckert | |

STUDER MONO INPUT 4CH/8CH 1.912.220.00 PAGE 17 OF 21

| INDI | DATE | NAME | |
|------|-------------|--------|------------|
| ④ | | | |
| ③ | 4.10.84 | | |
| ② | 22. Aug. 83 | Eckert | |
| ① | 6. Jan. 83 | Eckert | * ONLY 8CH |
| ○ | 2. Dez. 81 | Eckert | |

STUDER MONO INPUT 4CH/8CH 1.912.220.00 PAGE 18 OF 21

13.046.578

13.046.578

| INDI | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------|--------|--------------|-------|---------------------------|-----|
| R | 370 | 57.11.6335 | 33 M | | |
| | 372 | .4183 | 18 k | 5% | |
| | 373 | .4104 | 100 k | | |
| | 374 | .4104 | 100 k | | |
| | 375 | .4105 | 1 M | | |
| | 376 | .4473 | 47 k | | |
| | 377 | .4331 | 330 | | |
| | 378 | .4333 | 33 k | OPTIONAL | |
| | 379 | .4271 | 270 | | |
| | 380 | .4223 | 22 k | | |
| | 381 | .3682 | 68 k | 1% | |
| 1 | 382 | .4182 | 18 k | | |
| 1 | 383 | .4332 | 33 k | | |
| 1 | 384 | .4332 | 33 k | | |
| 2 | 385 | .4102 | 1 k | | |
| S | 101 | 1.912.298.01 | 1*9 | ROTARY | |
| | 102 | 1.912.298.02 | 3*4 | ROTARY | |
| | 103 | 55.04.0159 | 1p | TOGGLE | |
| | 104 | 55.04.0159 | 1p | TOGGLE | |
| | 105 | | 1p ON | COMBINED WITH R189/R190 | |
| | 106 | | 1p ON | " R202/R203 | |
| | 107 | | 2p | " R220 | |
| | 108 | | 2p | " R232 | |
| | 109 | | 2p | " R247 | |
| | 110 | | 1p | | |
| | 111 | | 1p | " R264 | |
| | 112 | 55.15.0003 | 2p | PUSHBUTTON | |
| | | 55.03.0303 | | KNOB RED INDIC | |
| | 113 | 55.15.0003 | 2p | PUSHBUTTON | |

| INDI | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------|--------|------------|-------|---------------------------|-----|
| | | 55.03.0303 | | KNOB RED INDIC | |
| S | 114 | | | COMBINED WITH R296 | |
| | 115 | | | " R298 | |
| | 116 | | | " R300 | |
| | 117 | | | " R302/R303/R304 | |
| | 118 | 55.15.0002 | 2p | PUSHBUTTON | * |
| | | 55.03.0303 | | KNOB RED INDIC | * |
| | 119 | 55.15.0002 | 2p | PUSHBUTTON | |
| | | 55.03.0303 | | KNOB RED INDIC | |
| | 120 | 55.15.0002 | 2p | PUSHBUTTON | |
| | | 55.03.0303 | | KNOB RED INDIC | |
| | 121 | 55.15.0002 | 2p | PUSHBUTTON | * |
| | | 55.03.0303 | | KNOB RED INDIC | * |
| | 122 | 55.15.0002 | 2p | PUSHBUTTON | * |
| | | 55.03.0303 | | KNOB RED INDIC | * |
| | 123 | 55.15.0002 | 2p | PUSHBUTTON | |
| | | 55.03.0303 | | KNOB RED INDIC | |
| | 124 | 55.15.0002 | 2p | PUSHBUTTON | |
| | | 55.03.0303 | | KNOB RED INDIC | |
| | 125 | 55.15.0002 | 2p | PUSHBUTTON | * |
| | | 55.03.0303 | | KNOB RED INDIC | * |
| | 126 | 55.15.0112 | | PUSHBUTTON | |
| | | 55.15.0116 | | BEZEL BLACK | |
| | | 55.15.0122 | | KNOB RED | |
| | 127 | 55.15.0113 | | PUSHBUTTON | |
| | | 55.15.0116 | | BEZEL BLACK | |
| | | 55.15.0129 | | KNOB WHITE | |

| INDI | DATE | NAME | |
|------|-------------|--------|--|
| ④ | | | |
| ③ | 4.10.84 | | |
| ② | 22. Aug. 83 | Eckert | |
| ① | 6. Jan. 83 | Eckert | |
| ○ | 2. Dez. 81 | Eckert | |

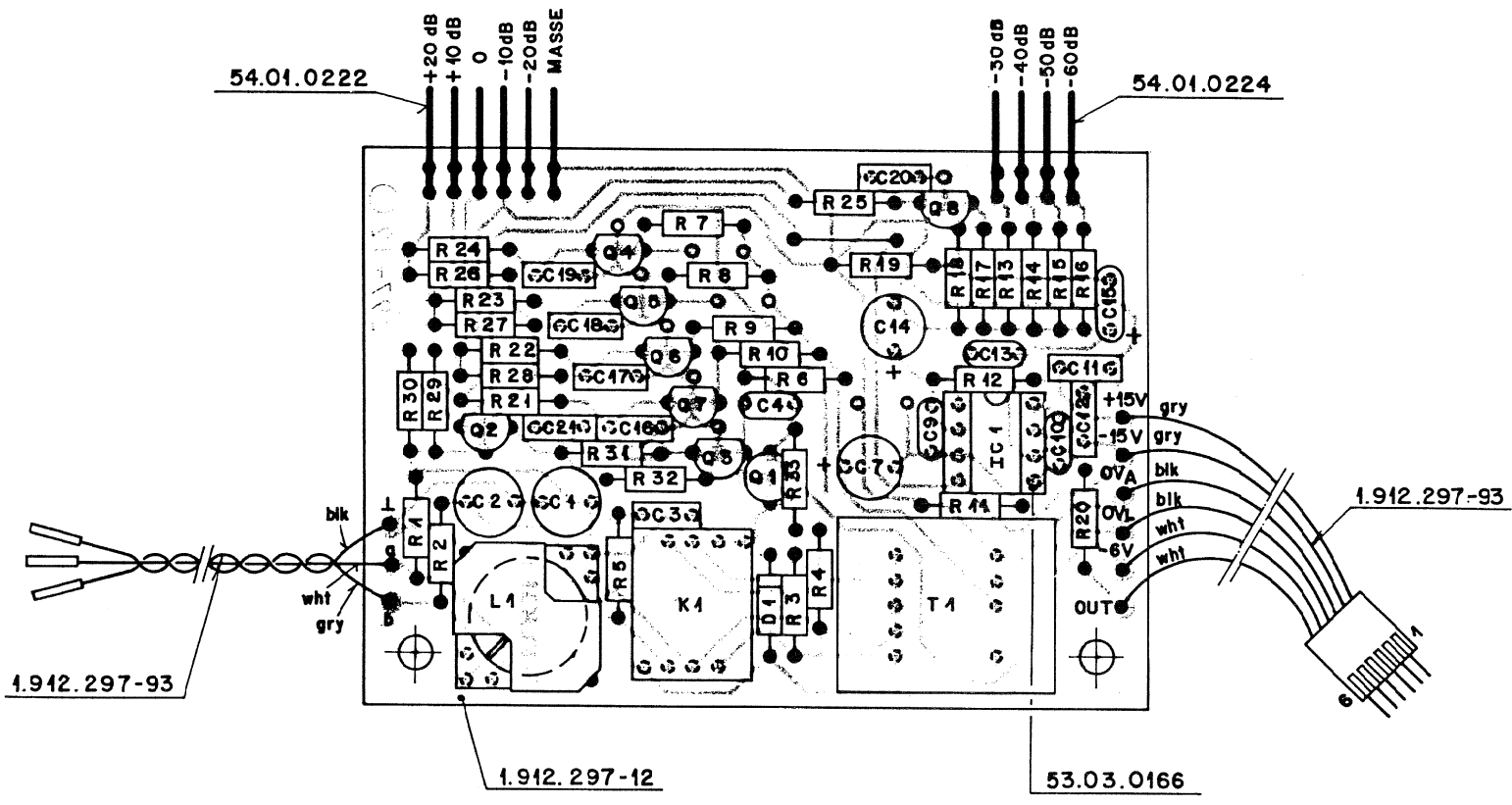
STUDER MONO INPUT 4CH/8CH 1.912.220.00 PAGE 19 OF 21

| INDI | DATE | NAME | |
|------|-------------|--------|------------|
| ④ | | | |
| ③ | 4.10.84 | | |
| ② | 22. Aug. 83 | Eckert | |
| ① | 6. Jan. 83 | Eckert | * ONLY 8CH |
| ○ | 2. Dez. 81 | Eckert | |

STUDER MONO INPUT 4CH/8CH 1.912.220.00 PAGE 20 OF 21

13.046.578

13.046.578



| | | | | | | | |
|---------------------------------------|---------------------|---|------------|--------------------------------|-------|------|--------|
| Werkstoff: | Norm-Nr.: | Güte: | | Änderung: | ③ | | |
| | DIN-Bez.: | Oberfläche: | | | ② | | |
| | Abmessung: | Beh.: | | | ① | | |
| Zugehörige Unterlagen: | Feinmassstufenanz.: | Maßstab: | 7.6.82 | Ho | Gepr. | Gez. | Index: |
| PL | ± | 2:1 | Datum | Gez. | Gepr. | Gez. | Index: |
| Ersatz für: | Ersetzt durch: | | Kopie für: | | | | |
| STUDER REGENSDORF ZÜRICH | | Bezeichnung: Microphone Amplifier | | Nummer: 1.912.297-00 | | | |

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|------------|----------|---------------------------|-----|
| C | 1 | 59.05.1102 | 1 n 1% | 630V PP | |
| | 2 | 59.05.1102 | 1 n 1% | 630V PP | |
| | 3 | 59.06.0102 | 1 n | 63V PE | |
| | 4 | 59.34.4224 | 220 p | CER | |
| | 7 | 59.22.5220 | 22 μ | 16V EL | |
| | 9 | 59.34.2220 | 22 p | CER | |
| | 10 | 59.34.2220 | 22 p | CER | |
| | 11 | 59.34.5564 | 560 p | CER | |
| | 12 | 59.34.5564 | 560 p | CER | |
| | 13 | 59.34.4334 | 330 p | CER | |
| | 14 | 59.22.5220 | 22 μ | 16V EL | |
| | 15 | 59.26.0470 | 47 μ | 63V SAL | |
| | 16 | 59.06.0682 | 68 n | 63V PE | |
| | 17 | 59.06.0682 | 68 n | 63V PE | |
| | 18 | 59.06.0682 | 68 n | 63V PE | |
| | 19 | 59.06.0682 | 68 n | 63V PE | |
| | 20 | 59.06.0682 | 68 n | 63V PE | |
| | 21 | 59.06.0682 | 68 n | 63V PE | |
| D | 1 | 50.04.0125 | 1N4448 | | |
| IC | 1 | 50.05.0244 | NE5534AN | LOW NOISE | |
| K | 1 | 56.04.0170 | 5V | | |

| IND | DATE | NAME |
|-----|--------|------------------|
| ④ | | CER: CERAMIC |
| ③ | | EL: ELECTROLYTIC |
| ② | | PE: POLYESTER |
| ① | | PP: POLYPROPYLEN |
| ○ | 8.4.82 | Eckert |

STUDER MICROPHONE AMPLIFIER PL 1.912.297.00 PAGE 1 OF 3

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|--------------|----------|---------------------------|-----|
| L | 1 | 1.022.207.00 | | HF SYM. COIL | |
| Q | 1 | 50.03.0515 | BC 307 | | |
| | 2 | 50.03.0436 | BC 237 | | |
| | 3 | 50.03.0350 | J 112 | | |
| | 4 | 50.03.0350 | J 112 | | |
| | 5 | 50.03.0350 | J 112 | | |
| | 6 | 50.03.0350 | J 112 | | |
| | 7 | 50.03.0350 | J 112 | | |
| | 8 | 50.03.0350 | J 112 | | |
| R | 1 | 57.11.3103 | 10 k 1% | | |
| | 2 | 57.11.3103 | 10 k 1% | | |
| | 3 | 57.11.3432 | 43 k 1% | | |
| | 4 | 57.11.3432 | 43 k 1% | | |
| | 5 | 57.11.4452 | 45 k 5% | | |
| | 6 | 57.11.4423 | 12 k 5% | | |
| | 7 | 57.11.4824 | 820 2% | | |
| | 8 | 57.11.3302 | 3 k 2% | | |
| | 9 | 57.11.4453 | 15 k 2% | | |
| | 10 | 57.11.4453 | 15 k 2% | | |
| | 11 | 57.11.4223 | 22 k | | |
| | 12 | 57.11.4334 | 330 k 5% | | |
| | 13 | 57.11.4452 | 15 k 2% | | |
| | 14 | 57.11.3364 | 360 2% | | |
| | 15 | 57.11.3114 | 110 2% | | |

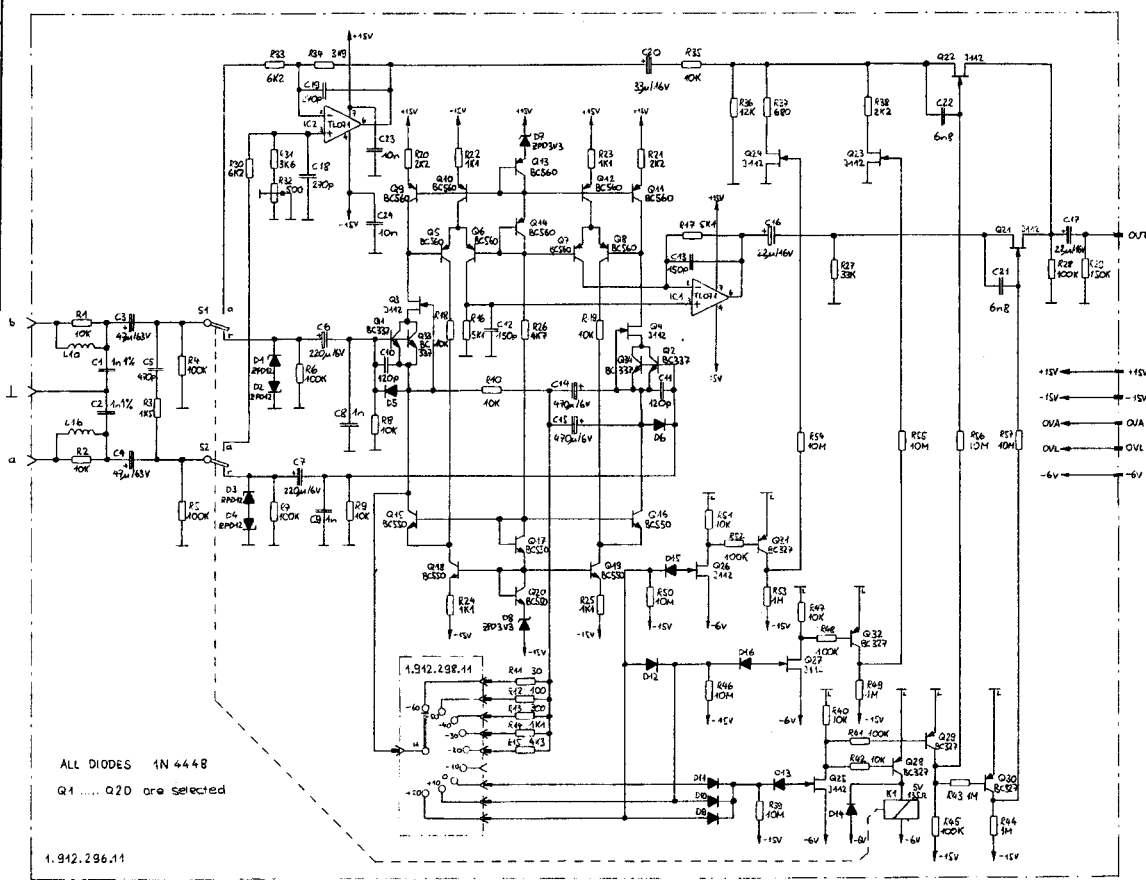
| IND | DATE | NAME |
|-----|--------|--------|
| ④ | | |
| ③ | | |
| ② | | |
| ① | | |
| ○ | 8.4.82 | Eckert |

STUDER MICROPHONE AMPLIFIER PL 1.912.297.00 PAGE 2 OF 3

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|--------------|---------|---------------------------|-----|
| R | 16 | 57.11.4330 | 33 2% | | |
| | 17 | 57.11.4452 | 45 k 2% | | |
| | 18 | 57.11.3332 | 33 k 2% | | |
| | 19 | 57.11.4223 | 22 k | | |
| | 20 | 57.11.4330 | 33 | | |
| | 21 | 57.11.6106 | 10 M | | |
| | 22 | 57.11.6106 | 10 M | | |
| | 23 | 57.11.6106 | 10 M | | |
| | 24 | 57.11.6106 | 10 M | | |
| | 25 | 57.11.6106 | 10 M | | |
| | 26 | 57.11.4404 | 100 k | | |
| | 27 | 57.11.4404 | 100 k | | |
| | 28 | 57.11.4404 | 100 k | | |
| | 29 | 57.11.4404 | 100 k | | |
| | 30 | 57.11.4404 | 100 k | | |
| | 31 | 57.11.6106 | 10 M | | |
| | 32 | 57.11.4223 | 22 k | | |
| | 33 | 57.11.4404 | 100 k | | |
| S | 1 | | 1p | } COMBINED WITH K1 | |
| | 2 | | 1p | | |
| T | 1 | 1.022.447.00 | | MIC INPUT TRAFD | |
| XIC | | 53.03.0466 | 8p | IC SOCKET | |

| IND | DATE | NAME |
|-----|--------|--------|
| ④ | | |
| ③ | | |
| ② | | |
| ① | | |
| ○ | 8.4.82 | Eckert |

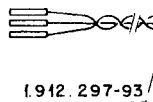
STUDER MICROPHONE AMPLIFIER PL 1.912.297.00 PAGE 3 OF 3



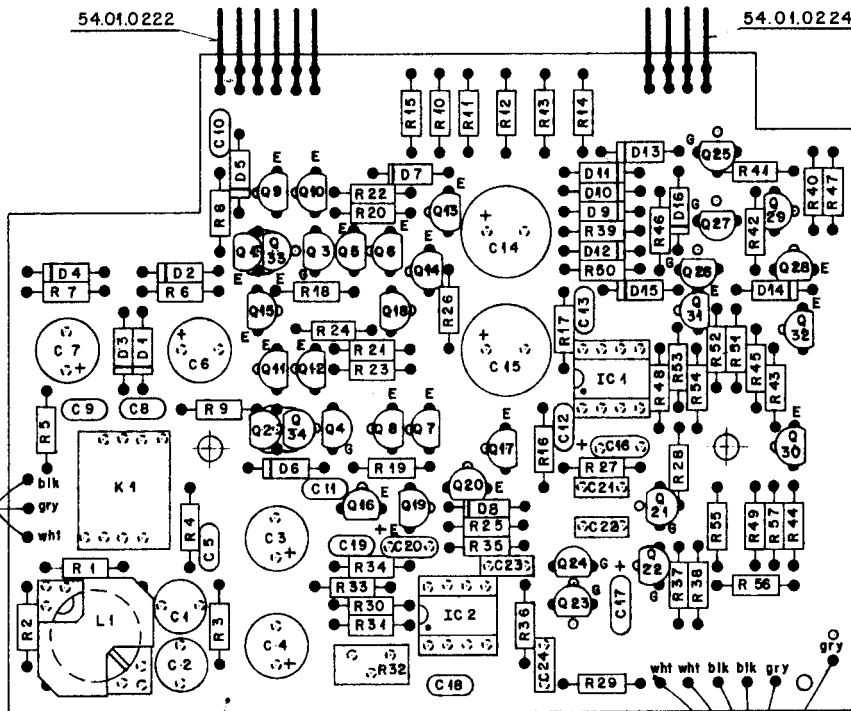
ALL DIODES 1N 444B
 Q1 Q20 are selected

54.01.0222

54.01.0224

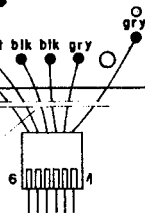


1.912.297-93

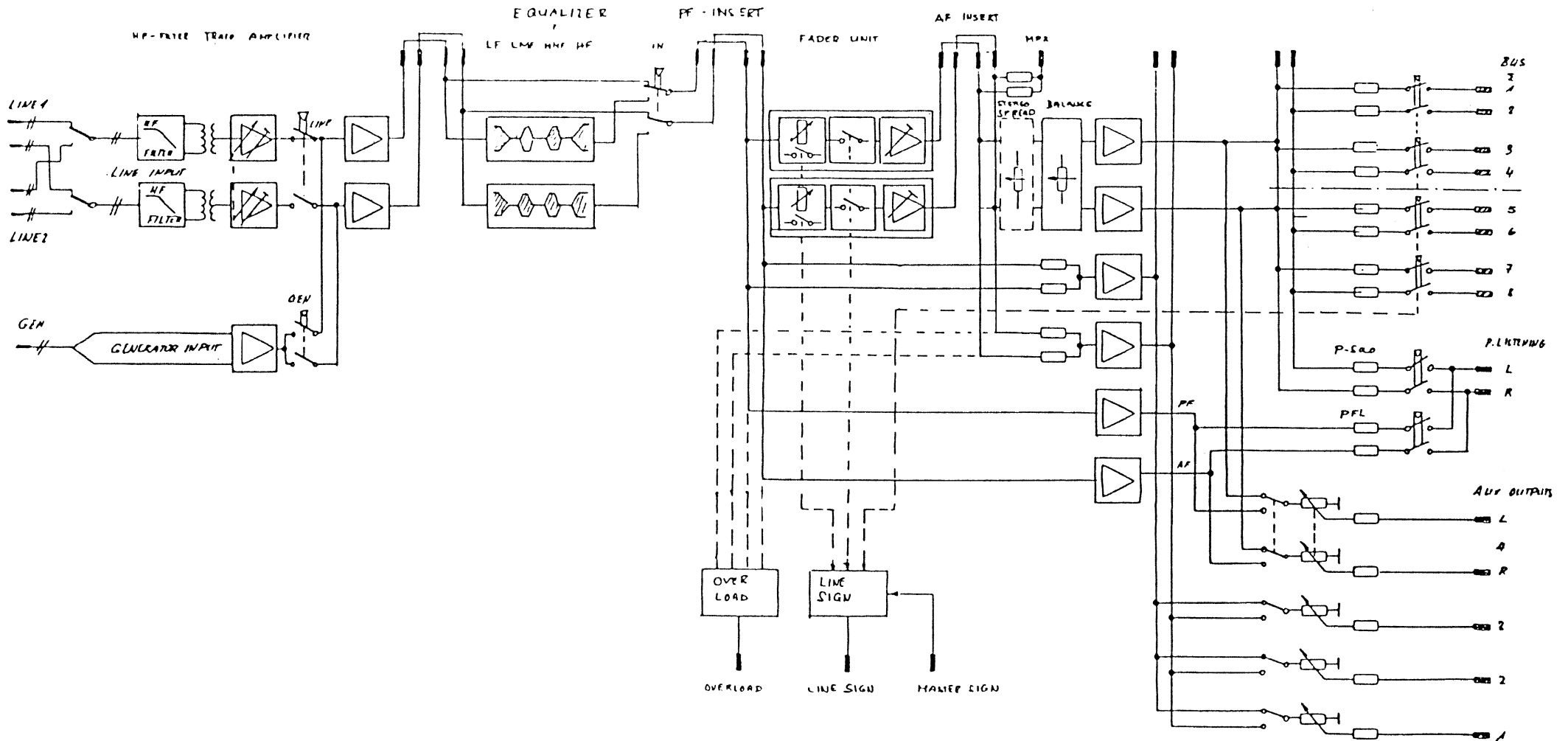


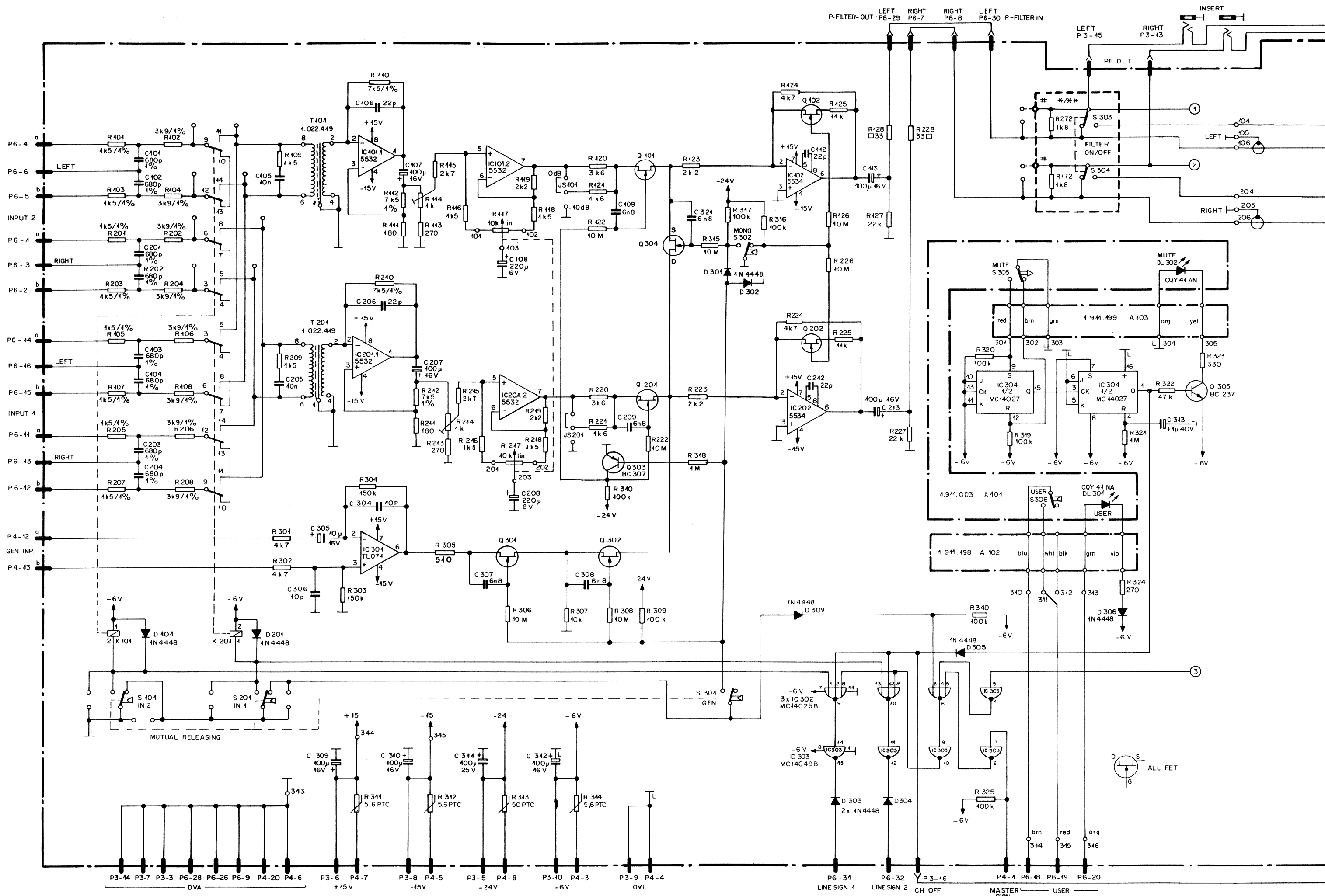
1.912.296-11

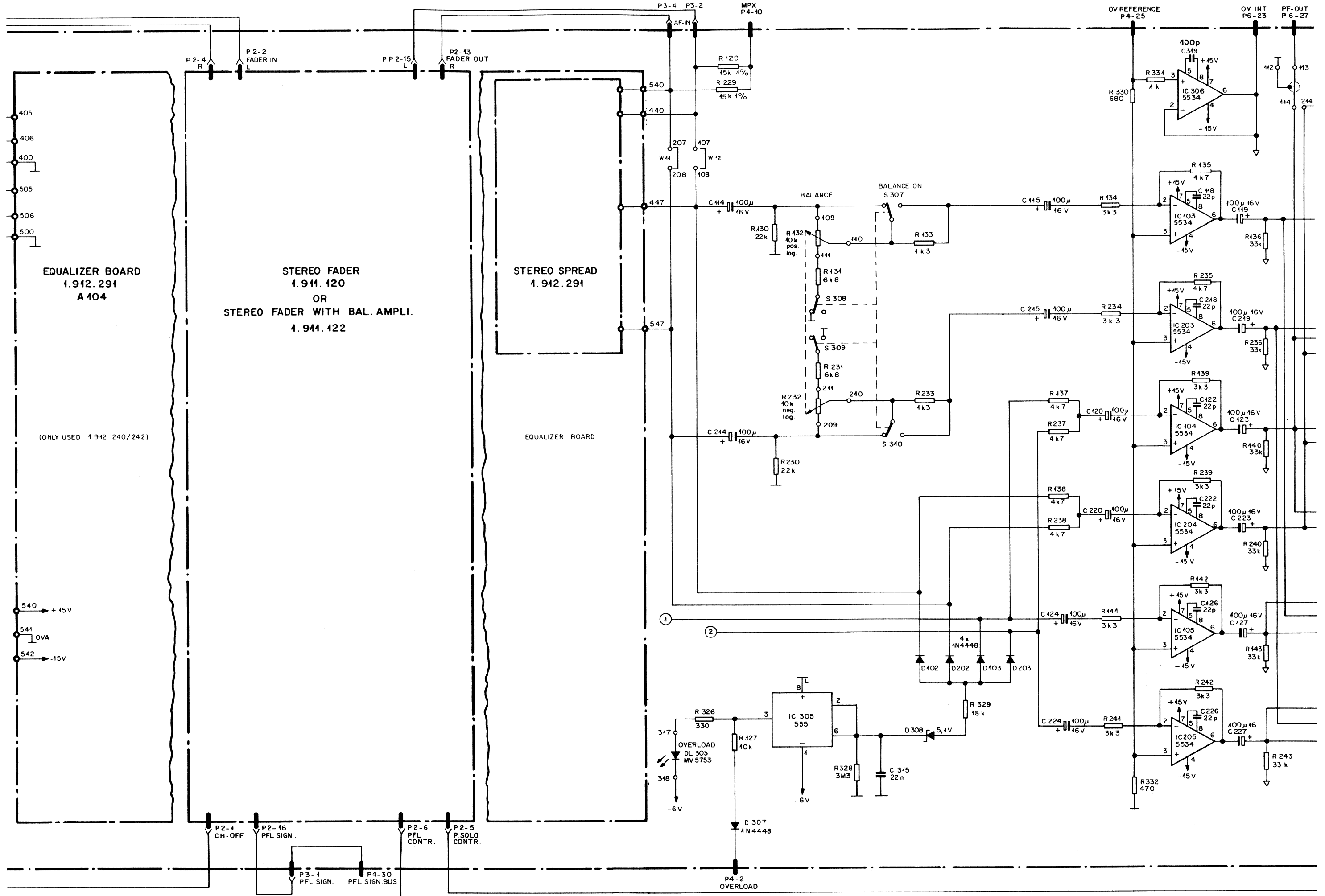
1.912.297-93

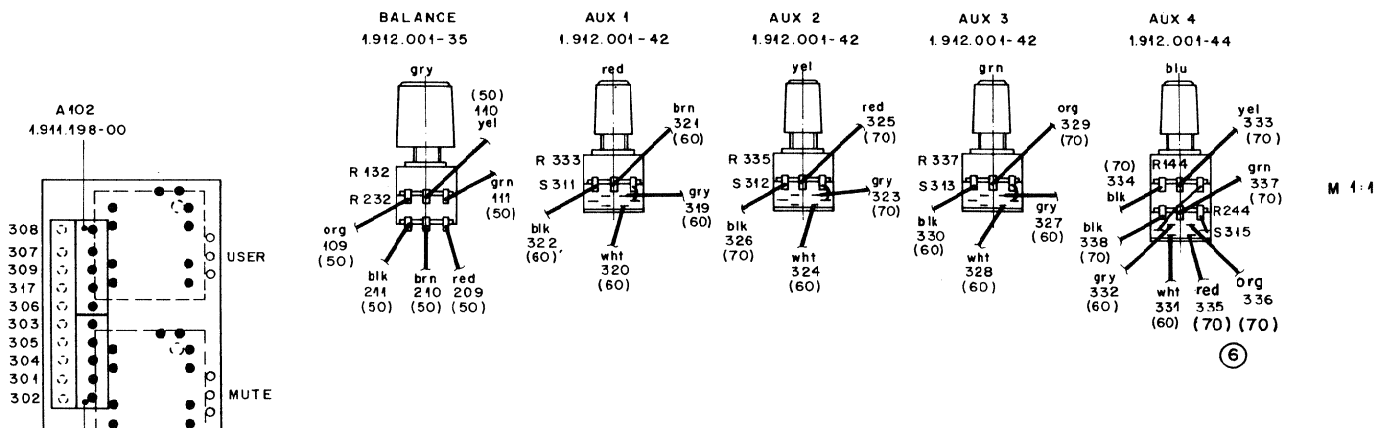


Ⓐ Q 33 u. Q 34 neu hinzu
D7/D8 umgedreht





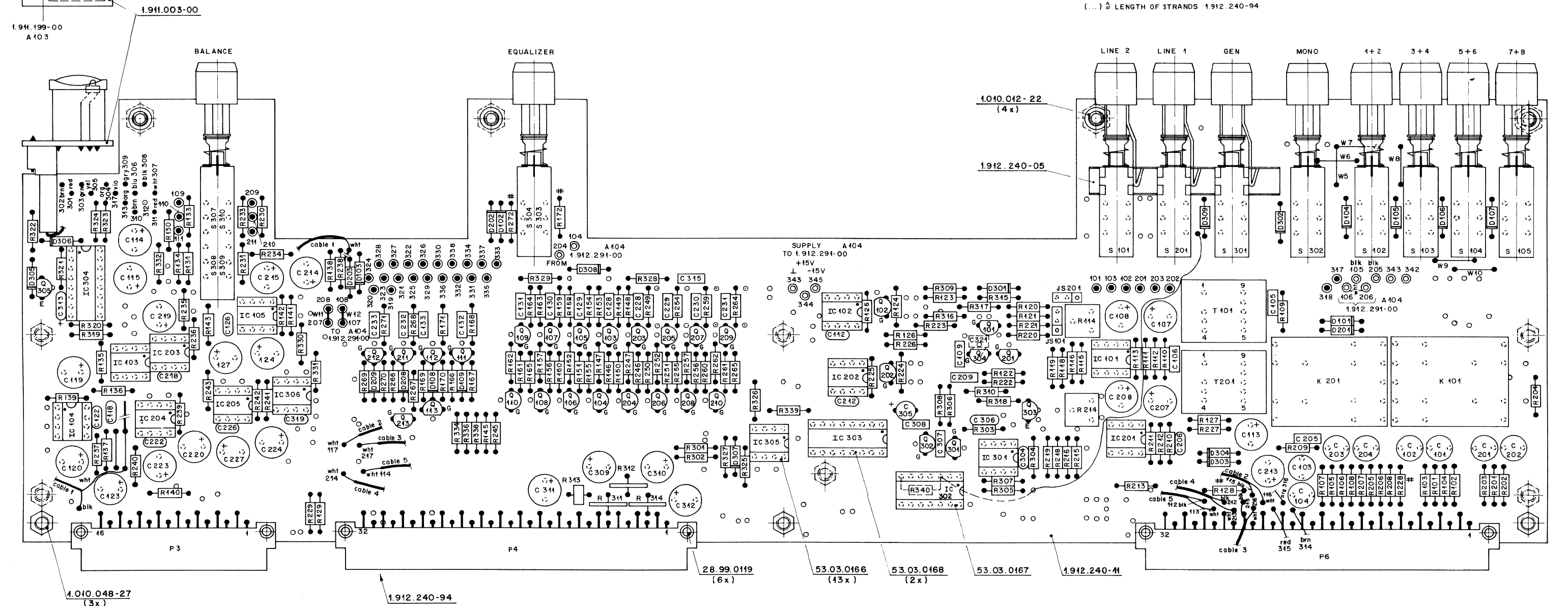
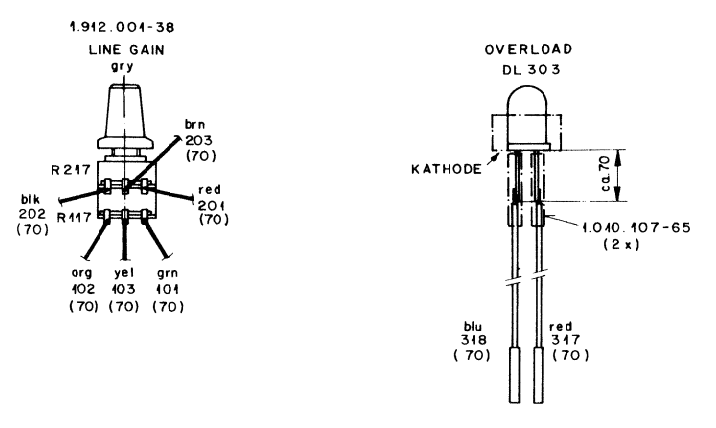




⑤

WIRINGDIAGRAM FOR FILTER VERSION

| UNIT | EQ BOARD | | | |
|--------------|--------------|-----|------------|---|
| 1.912.240-00 | 1.912.291-00 | | | |
| 104 | 405 | gry | FILTER OUT | L |
| 105 | 400 | blk | ⊥ | L |
| 106 | 406 | wht | FILTER IN | L |
| 107 | 441 | grn | SPREAD IN | L |
| 108 | 446 | gry | SPREAD OUT | L |
| 204 | 505 | brn | FILTER OUT | R |
| 205 | 500 | blk | ⊥ | R |
| 206 | 506 | wht | FILTER IN | R |
| 207 | 541 | wht | SPREAD IN | R |
| 208 | 546 | brn | SPREAD OUT | R |
| 343 | 541 | blk | OV | |
| 344 | 540 | red | +15 V | |
| 345 | 542 | blu | -15 V | |



④ # In der Version mit Filter (1.912.240/242-00) müssen R172/R272 (1k Ω) bestückt werden. R128/R228 müssen durch Brücken ersetzt werden.

In der Version ohne Filter (1.912.241/243-00) müssen R172/R272 durch Brücken ersetzt werden. R128/R228 (33 Ω) müssen bestückt werden.

// Leiterbahn auf Bestückungsseite aufgetrennt

① # FILTER VERSION : R172 REPLACED (OPTION 1)
 W1 R272
 W2 " "
 W3 W4
 W4 " "

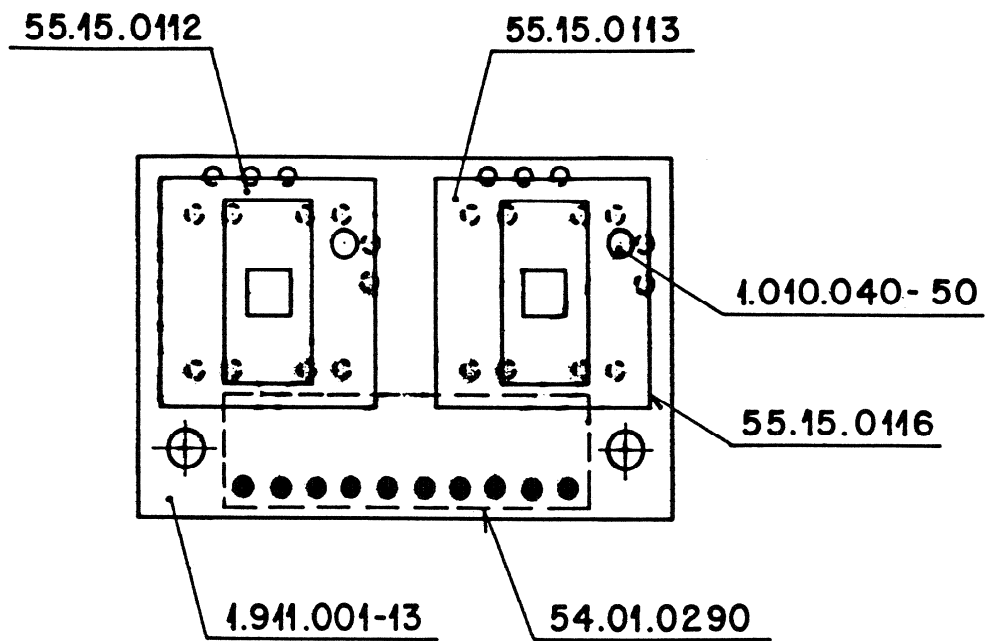
ONLY 4CH : W5, W6, W7, W9
 ONLY 8CH : W6, W7, W9
 W6 ONLY USED WITH PCB 1.912.240-11 INDEX 0

④ // CIRCUIT INTERRUPT COMPONENTSIDE

| VALID FOR | NR. UNIT | PL | EQUALIZER |
|------------|--------------|--------------|--------------|
| 4CH FILTER | 1.912.240-00 | 1.912.240-00 | 1.912.291-00 |
| 4CH | 1.912.241-00 | 1.912.240-00 | — |
| 8CH FILTER | 1.912.242-00 | 1.912.240-00 | 1.912.291-00 |
| 8CH | 1.912.243-00 | 1.912.240-00 | — |

| | | | | |
|------------------------|-------------------|----------|-------|-------|
| Norm-Nr.: | Güte: | 28.885 | A.Ho | ⑥ |
| DIN-Bez.: | Beh.: | M.4.85 | A.Ho | ⑤ |
| Abmessung: | Änderung: | 11.12.84 | A.Ho | ④ |
| Zugehörige Unterlagen: | Freimasstoleranz: | 6.9.84 | R.Be | ③ |
| * | Maßstab: | H.5.84 | A.Ho | ② |
| | ± | 9.2.84 | A.Ho | ① |
| Ersetzt für: | Ersetzt durch: | 23.9.83 | A.Ho | ① |
| | | Datum | Gez. | Gepr. |
| | | Gez. | Gepr. | Ges. |
| | | Gez. | Gepr. | Index |

Benennung: HL Stereo Input Unit 4CH / 8CH
 Nummer: 1.912.240-00



| | | | | | | | | |
|--------------------------------|------------|--------------------------------------|----------|-------------------------|------|-------|------|-------|
| Werkstoff | Norm-Nr.: | Oberfläche | Güte: | | | | | ③ |
| | DIN-Bez.: | | Beh.: | | | | | ② |
| | Abmessung: | | | | | | ① | |
| Zugehörige Unterlagen: | | Freimasstoleranz: | Maßstab: | 19.5.82 | Ho | W | | ⑤ |
| | | ± | 2 : 1 | Datum | Gez. | Gepr. | Ges. | Index |
| Ersatz für: | | Ersetzt durch: | | Kopie für: | | | | |
| STUDER REGENSDORF ZÜRICH | | Bezeichnung: Pushbutton Board N-L | | Nummer: 1.911.003-00 | | | | |

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|--------------|-------|---------------------------|-----|
| | A101 | 1.911.003.00 | | PUSHBUTTON BOARD | ST |
| | 102 | 1.911.198.00 | | CONNECTING CABLE 2 | " |
| | 103 | 1.911.199.00 | | " " 1 | " |
| 1 | 104 | 1.912.291.00 | | EQUALIZER BOARD OPTION 1 | " |

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|------------|-------|---------------------------|-----|
| | C.01 | 59.05.1681 | 680 p | 1% 500V PP | |
| | .02 | 59.05.1681 | 680 p | 1% 500V PP | |
| | .03 | 59.05.1681 | 680 p | 1% 500V PP | |
| | .04 | 59.05.1681 | 680 p | 1% 500V PP | |
| | .05 | 59.06.0103 | 10 n | 10% 63V PE | |
| | .06 | 59.34.2220 | 22 p | CER | |
| | .07 | 59.22.4101 | 100 μ | 16V EL | |
| | .08 | 59.22.2221 | 220 μ | 63V EL | |
| | .09 | 59.06.0682 | 6,8 n | 63V PE | |
| | .12 | 59.34.2220 | 22 p | CER | |
| | .13 | 59.22.4101 | 100 μ | 16V EL | |
| | .14 | 59.22.4101 | 100 μ | 16V " | |
| | .15 | 59.22.4101 | 100 μ | 16V " | |
| | .18 | 59.34.2220 | 22 p | CER | |
| | .19 | 59.22.4101 | 100 μ | 16V EL | |
| | .20 | 59.22.4101 | 100 μ | 16V EL | |
| | .22 | 59.34.2220 | 22 p | CER | |
| | .23 | 59.22.4101 | 100 μ | 16V EL | |
| | .24 | 59.22.4101 | 100 μ | 16V EL | |
| | .26 | 59.34.2220 | 22 p | CER | |
| | .27 | 59.22.4101 | 100 μ | 16V EL | |
| | .28 | 59.06.0682 | 6,8 n | 10% 63V PE | |
| | .29 | 59.06.0682 | 6,8 n | " " " | |
| 1 | .30 | 59.06.0682 | 6,8 n | " " " * | |

| IND | DATE | NAME | | |
|-----|----------|---------------|-------------|--------------------------|
| ④ | 11.12.84 | ⑤ 11.4.85 1/2 | OPTION 1 | 4CH/FILTER: 1.912.240.00 |
| ③ | 4.10.84 | 1/2 | with Filter | 4CH : 1.912.241.00 |
| ② | 11.5.84 | 1/2 | | 8CH/FILTER: 1.912.242.00 |
| ① | 9.2.84 | 1/2 | | 8CH : 1.912.243.00 |
| ○ | 12.6.82 | TAMAS 1/2 | ST: STUDER | |

STUDER HL ST INPUT UNIT 4CH/FILTER PL 1.912.240.00 PAGE 1 OF 13

| IND | DATE | NAME | | |
|-----|----------|---------------|------------------|-------------|
| ④ | 11.12.84 | ⑤ 11.4.85 1/2 | CER: CERAMIC | |
| ③ | 4.10.84 | 1/2 | EL: ELECTROLYTIC | |
| ② | 11.5.84 | 1/2 | PE: POLYESTER | |
| ① | 9.2.84 | 1/2 | PP: POLYPROPYLEN | * only 8 CH |
| ○ | 12.6.82 | TAMAS 1/2 | | |

STUDER HL ST INPUT UNIT 4CH/FILTER PL 1.912.240.00 PAGE 2 OF 13

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|------------|-------|---------------------------|-----|
| 1 | C.31 | 59.06.0682 | 6,8 n | 63V PE * | |
| | .32 | 59.06.0682 | 6,8 n | 63V PE | |
| | .33 | 59.06.0682 | 6,8 n | 63V PE | |
| | C304 | 59.34.1100 | 10 p | CER | |
| | 305 | 59.30.4100 | 10 μ | 16V EL | |
| | 306 | 59.34.1100 | 10 p | CER | |
| | 307 | 59.06.0682 | 6,8 n | 63V PE | |
| | 308 | 59.06.0682 | 6,8 n | 63V PE | |
| | 309 | 59.22.4101 | 100 μ | 16V EL | |
| | 310 | 59.22.4101 | 100 μ | " " | |
| | 311 | 59.22.5101 | 100 μ | 25V " | |
| | 312 | 59.22.4101 | 100 μ | 16V " | |
| | 313 | 59.26.9109 | 1 μ | 6V SAL | |
| | 315 | 59.06.0223 | 22 n | 63V PE | |
| 3 | 319 | 59.34.4101 | 100 p | CER | |
| 2 | 321 | 59.06.0682 | 6,8 n | 63V PE | |

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|------------|-----------|---------------------------|-----|
| | D.01 | 50.04.0125 | 1N4448 | | |
| | .02 | 50.04.0125 | 1N4448 | | |
| | .03 | 50.04.0125 | 1N4448 | | |
| 1 | 104 | 50.04.0125 | 1N4448 | | * |
| | 105 | 50.04.0125 | 1N4448 | | |
| | 106 | 50.04.0125 | 1N4448 | | |
| 1 | 107 | 50.04.0125 | 1N4448 | | * |
| | .08 | 50.04.0125 | 1N4448 | | |
| | .09 | 50.04.0125 | 1N4448 | | |
| | D301 | 50.04.0125 | 1N4448 | | |
| | 302 | 50.04.0125 | 1N4448 | | |
| | 303 | 50.04.0125 | 1N4448 | | |
| | 304 | 50.04.0125 | 1N4448 | | |
| | 305 | 50.04.0125 | 1N4448 | | |
| | 306 | 50.04.0125 | 1N4448 | | |
| | 307 | 50.04.0125 | 1N4448 | | |
| | 308 | 50.04.1112 | Z 5V1 | 400mW | |
| | 309 | 50.04.0125 | 1N4448 | | |
| | D3011 | 010.040.50 | COY 41 NA | | ST |
| | 3021 | 010.040.50 | COY 41 NA | | ST |
| | 303 | 50.04.2111 | MV 5753 | | |

| IND | DATE | NAME | | |
|-----|----------|---------------|-----------------------|------------|
| ④ | 11.12.84 | ⑤ 11.4.85 1/2 | CER: CERAMIC | |
| ③ | 4.10.84 | 1/2 | EL: ELECTROLYTIC | |
| ② | 11.5.84 | 1/2 | PE: POLYESTER | |
| ① | 9.2.84 | 1/2 | SAL: SOLID ALUMINILUM | * only 8CH |
| ○ | 12.6.82 | TAMAS 1/2 | | |

STUDER HL ST INPUT UNIT 4CH/FILTER PL 1.912.240.00 PAGE 3 OF 13

| IND | DATE | NAME | | |
|-----|----------|---------------|------------|--|
| ④ | 11.12.84 | ⑤ 11.4.85 1/2 | ST: STUDER | |
| ③ | 4.10.84 | 1/2 | | |
| ② | 11.5.84 | 1/2 | | |
| ① | 9.2.84 | 1/2 | | |
| ○ | 12.6.82 | TAMAS 1/2 | | |

STUDER HL ST INPUT UNIT 4CH/FILTER PL 1.912.240.00 PAGE 4 OF 13

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|------------|----------|---------------------------|--------|
| | IC .01 | 50.09.0106 | NE 5532 | LN DUAL OP-AMP | SIG |
| | .02 | 50.05.0243 | NE 5534 | OP-AMP | " |
| | .03 | 50.05.0243 | NE 5534 | " | " |
| | .04 | 50.05.0243 | NE 5534 | " | " |
| | .05 | 50.05.0243 | NE 5534 | " | " |
| | IC 301 | 50.09.0103 | TL 071 | FET OP-AMP LF 351 | TI |
| | 302 | 50.07.0012 | 4025 | 3-IN NOR GATE MOS | MOT,FC |
| | 303 | 50.07.0049 | 4049 | HEX INV. BUFFER MOS | " " |
| | 304 | 50.07.0027 | 4027 | DUAL J-K FF MOS | " " |
| | 305 | 50.05.0156 | 555 | TIMER | SIG,NE |
| | 306 | 50.05.0243 | NE 5534 | OP-AMP | SIG |
| | JS .01 | 54.01.0020 | PIN | | |
| | | 54.01.0021 | JUMPER | | |
| | K .01 | 56.04.0146 | NF-4E-6V | | |
| | P 3 | 54.11.2007 | 2 * 8 | 1/2 ELURO B-TYPE | BU |
| | 4 | 54.01.0359 | 2 * 16 | ELURO B-TYPE | " |
| | 6 | 54.01.0359 | 2 * 16 | ELURO B-TYPE | " |

| IND | DATE | NAME | | |
|---|----------|-----------|------------------------------|---------------|
| ① | 11.12.84 | ⑤ 11.4.85 | SIG : SIGNETICS | BU: BURNDY |
| ③ | 4.10.84 | ④ | TI : TEXAS INSTRUMENT | |
| ② | 11.5.84 | ⑥ | MOT: MOTOROLA | LN: LOW NOISE |
| ① | 9.2.84 | ⑦ | FC : FAIRCHILD | |
| ○ | 21.6.82 | TAMAS | NS : NATIONAL SEMICONDUCTORS | |
| STUDER HL ST INPUT UNIT 4CH/FILTER PL 1.912.240.00 PAGE 5 OF 13 | | | | |

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|------------|--------|---------------------------|--------|
| 5 | Q .01 | 50.03.0216 | J 111 | | SX |
| | .02 | 50.03.0350 | J 112 | | " |
| | .03 | 50.03.0350 | J 112 | | " |
| | .04 | 50.03.0350 | J 112 | | " |
| | .05 | 50.03.0350 | J 112 | | " |
| | .06 | 50.03.0350 | J 112 | | " |
| 1 | .07 | 50.03.0350 | J 112 | | * |
| 1 | .08 | 50.03.0350 | J 112 | | * |
| 1 | .09 | 50.03.0350 | J 112 | | * |
| 1 | .10 | 50.03.0350 | J 112 | | * |
| | .11 | 50.03.0350 | J 112 | | " |
| | .12 | 50.03.0350 | J 112 | | " |
| | .13 | 50.03.0350 | J 112 | | " |
| | Q 301 | 50.03.0350 | J 112 | | SX |
| | 302 | 50.03.0350 | J 112 | | SX |
| | 303 | 50.03.0515 | BC 307 | PNP | BC 557 |
| | 304 | 50.03.0350 | J 112 | | SX |
| | 305 | 50.03.0436 | BC 237 | NPN | BC 547 |

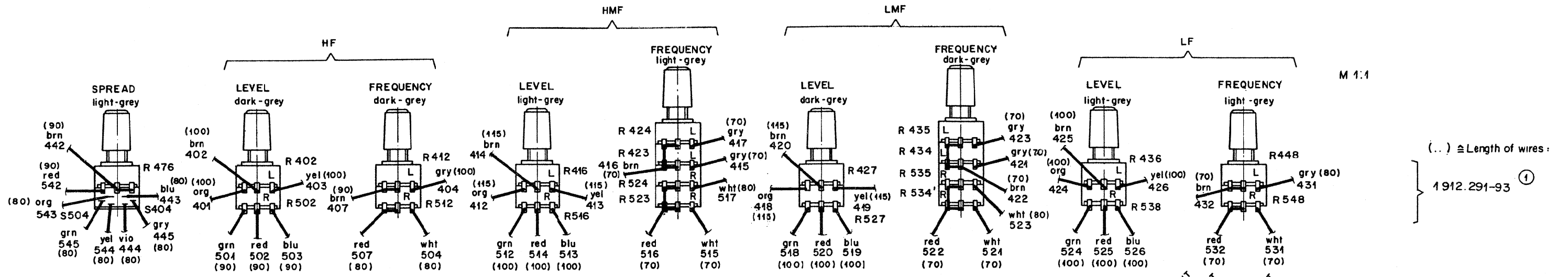
| IND | DATE | NAME | | |
|---|----------|-----------|----------------|------------|
| ① | 11.12.84 | ⑤ 11.4.85 | SX : SILICONIX | |
| ③ | 4.10.84 | ④ | | |
| ② | 11.5.84 | ⑥ | | |
| ① | 9.2.84 | ⑦ | | |
| ○ | 21.6.82 | TAMAS | | * only 8CH |
| STUDER HL ST INPUT UNIT 4CH/FILTER PL 1.912.240.00 PAGE 6 OF 13 | | | | |

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|--------------|-------|---------------------------|-----|
| | R .01 | 57.11.3152 | 15 k | 1% | |
| | .02 | .3392 | 39 k | 1% | |
| | .03 | .3152 | 45 k | 1% | |
| | .04 | .3392 | 39 k | 1% | |
| | .05 | .3152 | 45 k | 1% | |
| | .06 | .3392 | 39 k | 1% | |
| | .07 | .3152 | 45 k | 1% | |
| | .08 | .3392 | 39 k | 1% | |
| | .09 | .4152 | 45 k | 2% | |
| | .10 | .3752 | 75 k | 2% | |
| | .11 | .4181 | 180 Ω | 2% | |
| | .12 | .3752 | 75 k | 2% | |
| | .13 | .4271 | 270 Ω | | |
| | .14 | 58.01.8102 | 1 k | TRIM | |
| | .15 | 57.11.4272 | 27 k | | |
| | .16 | 57.11.4152 | 45 k | | |
| | .17 | 1.912.001.32 | 10 k | 2 x 10k LIN POT | ST |
| | .18 | 57.11.4152 | 45 k | | |
| | .19 | .4222 | 22 k | | |
| | .20 | .3362 | 36 k | 2% | |
| | .21 | .3162 | 45 k | 2% | |
| 5 | .22 | .5106 | 10 M | | |
| | .23 | .4222 | 22 k | | |
| | .24 | .4472 | 47 k | | |
| | .25 | .3113 | 45 k | 2% | |
| 5 | .26 | .5106 | 10 M | | |
| | .27 | .4223 | 22 k | | |
| 1 | .28 | .4330 | 33 Ω | OPTION 1 replaced by link | |
| | .29 | .4153 | 45 k | | |
| | .30 | .4223 | 22 k | | |

| IND | DATE | NAME | | |
|---|----------|-----------|----------------------|--|
| ① | 11.12.84 | ⑤ 11.4.85 | ST : STUDER | |
| ③ | 4.10.84 | ④ | | |
| ② | 11.5.84 | ⑥ | OPTION 1 with Filter | |
| ① | 9.2.84 | ⑦ | | |
| ○ | 21.6.82 | TAMAS | | |
| STUDER HL ST INPUT UNIT 4CH/FILTER PL 1.912.240.00 PAGE 7 OF 13 | | | | |

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|--------------|-------|---------------------------|-----|
| | R .31 | 57.11.4682 | 68 k | | |
| | .132 | 1.912.001.35 | 10 k | POS. LOG. } POT | ST |
| | .232 | | 10 k | NEG. LOG. } | |
| | .33 | 57.11.3132 | 1.3 k | | |
| | .34 | .4332 | 33 k | | |
| | .35 | .4472 | 47 k | | |
| | .36 | .4333 | 33 k | | |
| | .37 | .4472 | 47 k | | |
| | .38 | .4472 | 47 k | | |
| | .39 | .4332 | 33 k | | |
| | .40 | .4333 | 33 k | | |
| | .41 | .4332 | 33 k | | |
| | .42 | .4332 | 33 k | | |
| | .43 | .4333 | 33 k | | |
| | .44 | 1.912.001.44 | 10 k | 2 x 10k POS. LOG. POT | ST |
| | .45 | 57.11.4332 | 33 k | | |
| | .46 | .4333 | 33 k | | |
| | .47 | .4332 | 33 k | | |
| | .148 | .4104 | 100 k | | |
| 5 | .49 | .5106 | 10 M | | |
| 5 | .50 | .5106 | 10 M | | |
| | .51 | .4333 | 33 k | | |
| | .52 | .4332 | 33 k | | |
| | .153 | .4104 | 100 k | | |
| 5 | .54 | .5106 | 10 M | | |
| 5 | .55 | .5106 | 10 M | | |
| 1 | .56 | .4333 | 33 k | * | |
| 1 | .57 | .4332 | 33 k | * | |
| 1 | .158 | .4104 | 100 k | * | |
| 5 | .59 | .5106 | 10 M | * | |

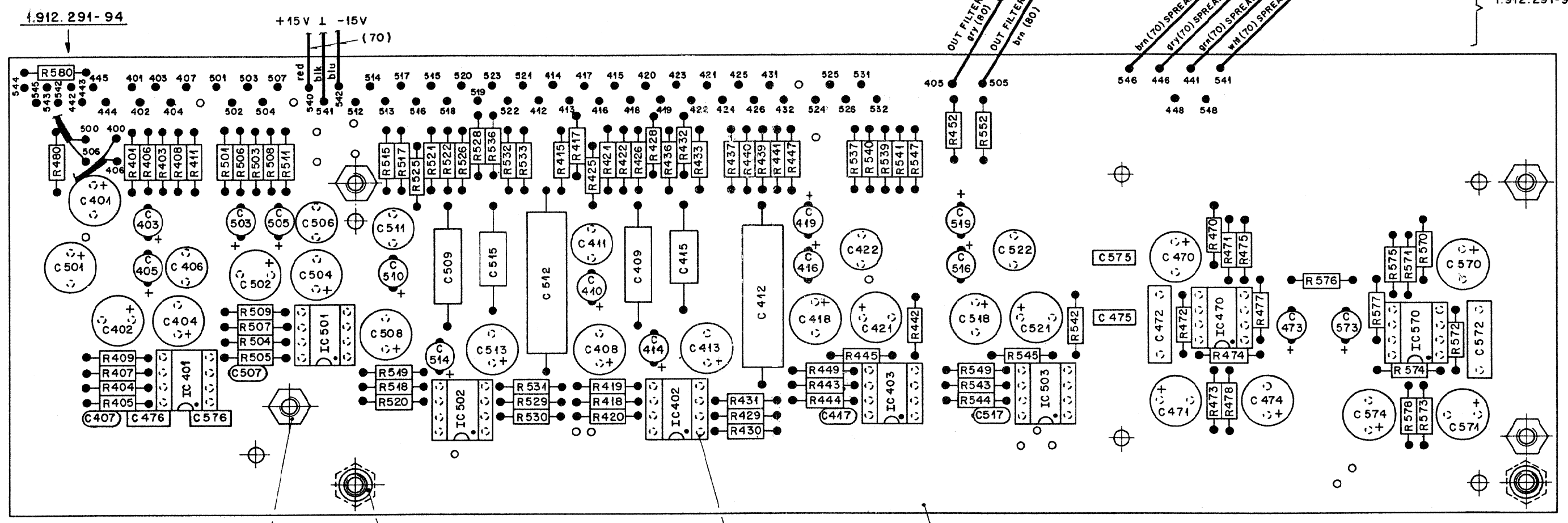
| IND | DATE | NAME | | |
|---|----------|-----------|-------------|------------|
| ① | 11.12.84 | ⑤ 11.4.85 | ST : STUDER | |
| ③ | 4.10.84 | ④ | | |
| ② | 11.5.84 | ⑥ | | |
| ① | 9.2.84 | ⑦ | | |
| ○ | 21.6.82 | TAMAS | | * only 8CH |
| STUDER HL ST INPUT UNIT 4CH/FILTER PL 1.912.240.00 PAGE 8 OF 13 | | | | |



M 1:1

(...) ≙ Length of wires:
1.912.291-93 ①

1.912.291-94 ①



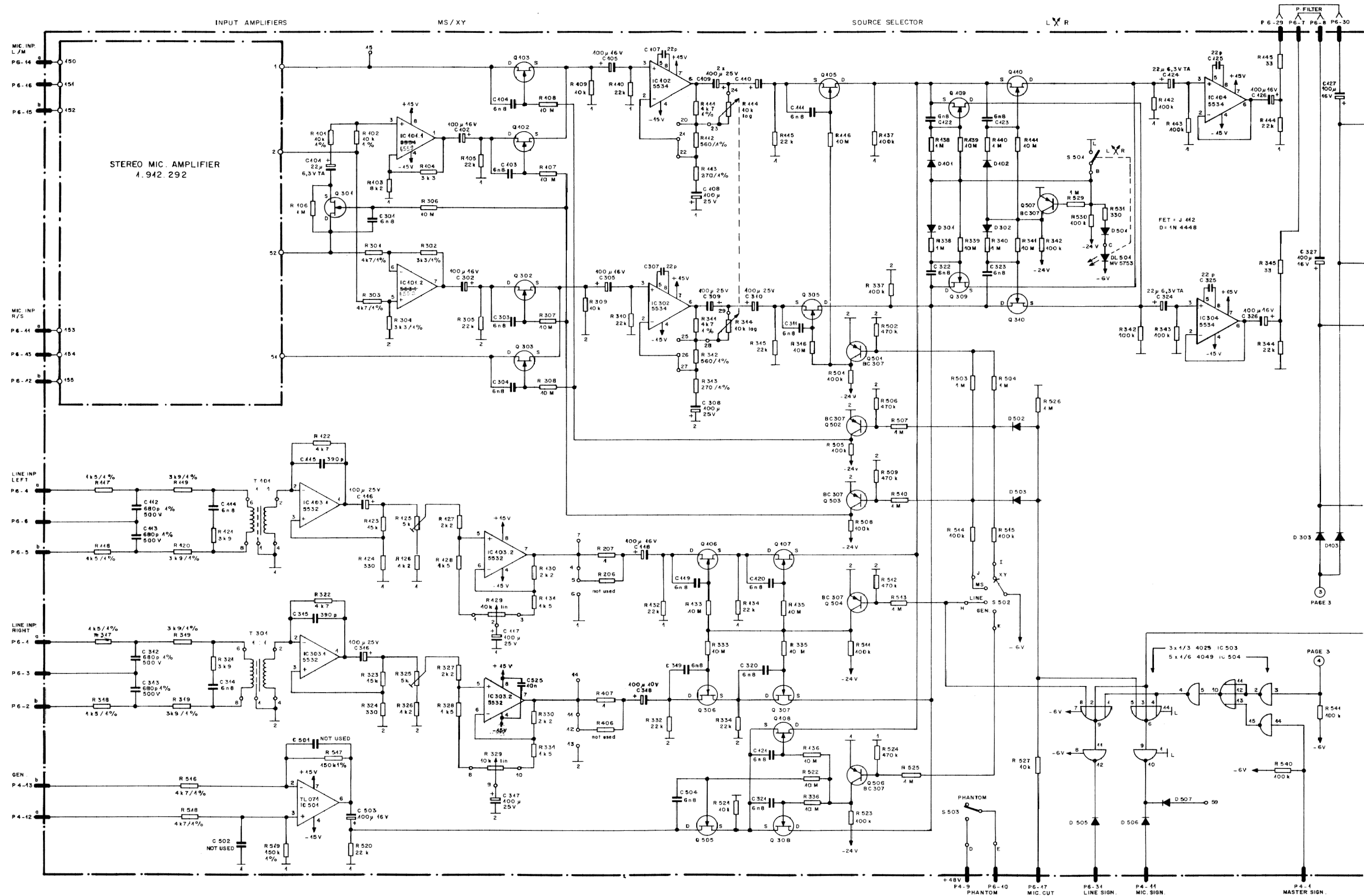
21.01.0354 (4x)
24.16.4030 (4x)
1.010.041-27 (4x)

1.010.040-22 (2x) ②

53.03.0166 (8x)

1.912.291-12

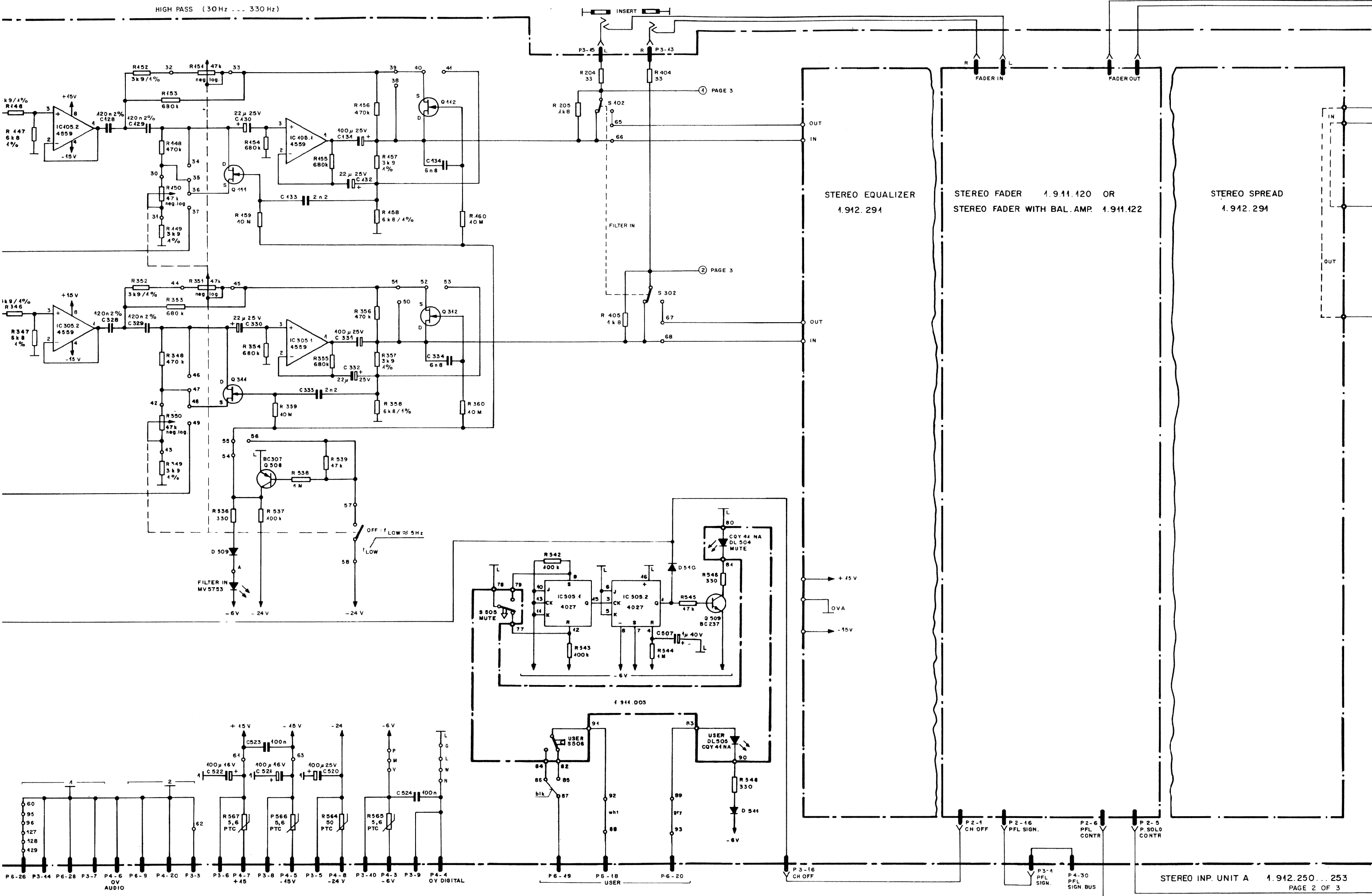
| | | | | |
|--------------------------------------|----------------|--------------------------------------|------------|--------------------------------|
| Werkstoff | Norm-Nr.: | Güte: | Anderung: | ③ |
| | DIN-Bez.: | | | 12.9.85 A.Ho. <i>mlh mlh</i> |
| Zugehörige Unterlagen: | Abmessung: | Freimasstoleranz: | Maßstab: | ② |
| | PL | | | 1:1; 2:1 |
| Ersatz für: | Ersetzt durch: | Datum: | Gez.: | ④ |
| | | | | Gepr.: |
| Ersatz für: | | | Kopie für: | |
| STUDER REGENDORF ZÜRICH | | Benennung: Equalizer Board | | Nummer: 1.912.291-00 |



STEREO MIC. AMPLIFIER
1.942.292

FET: J 412
D: 1N 4448

HIGH PASS (30 Hz - 330 Hz)

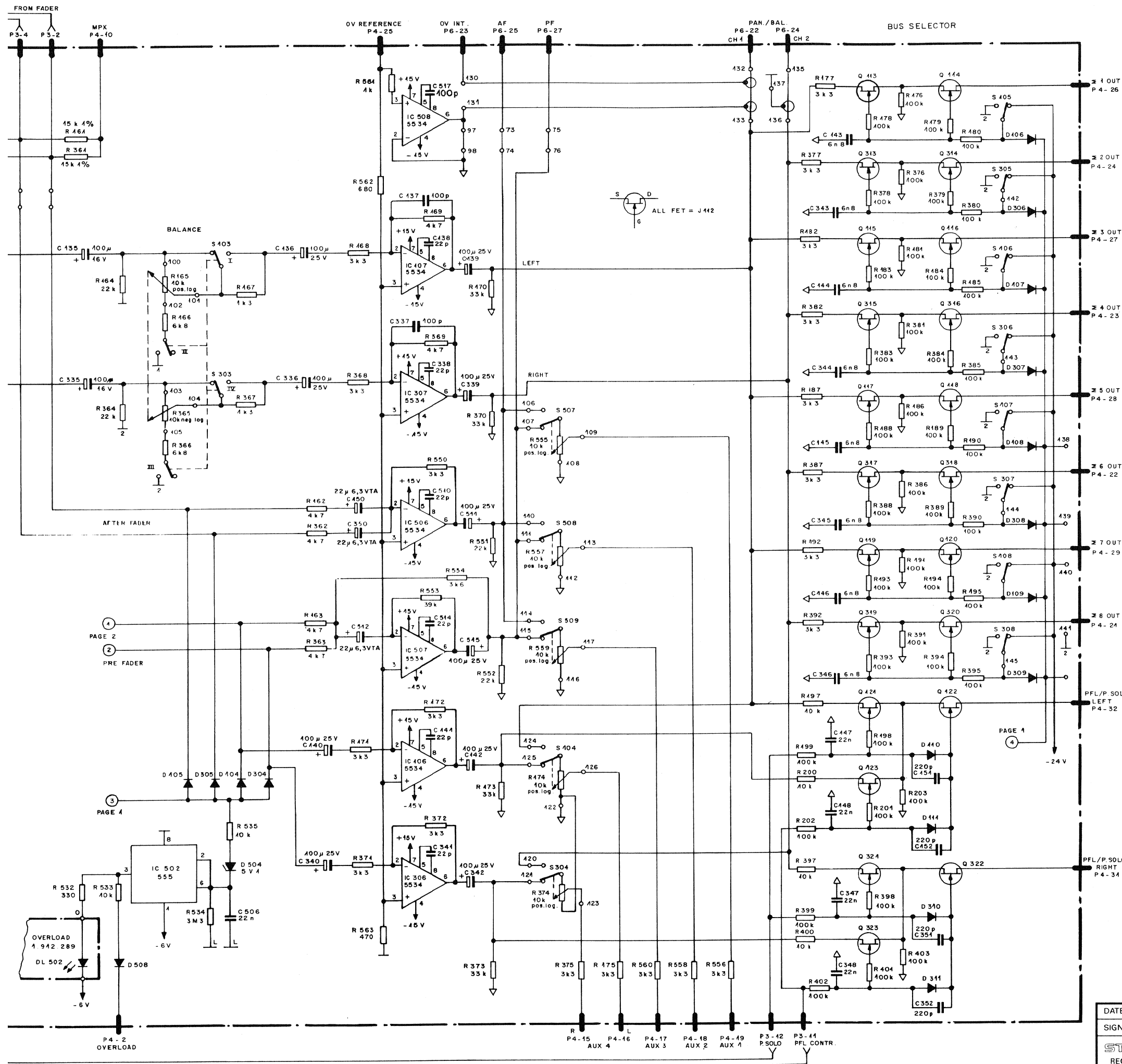


STEREO EQUALIZER
1.912.291

STEREO FADER 1.911.120 OR
STEREO FADER WITH BAL. AMP. 1.911.122

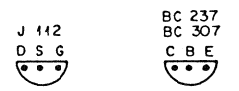
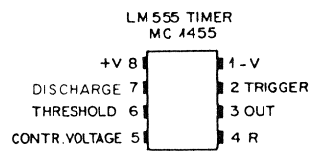
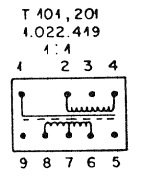
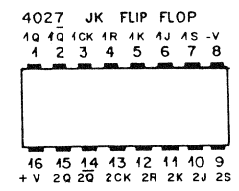
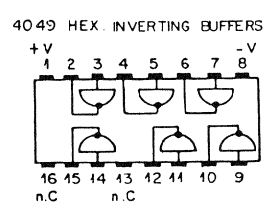
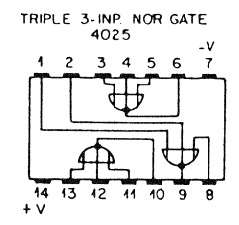
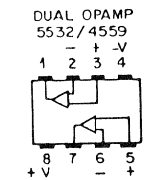
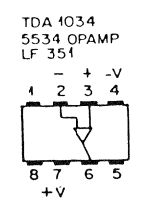
STEREO SPREAD
1.912.291

STEREO INP. UNIT A 1.912.250...253
PAGE 2 OF 3



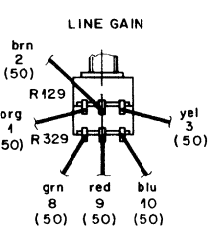
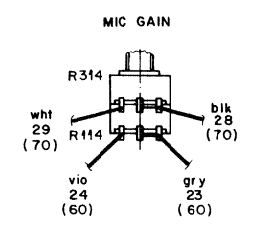
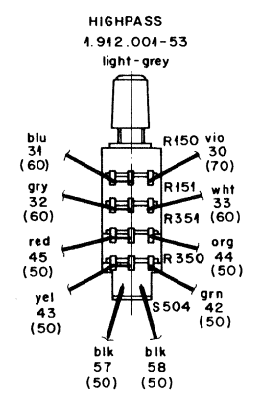
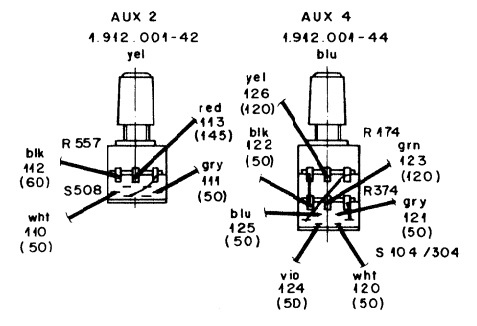
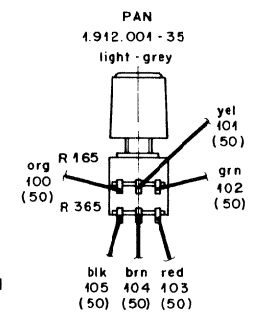
- P 6
 - 1 LINE a
 - 2 LINE b
 - 3 SCREEN
 - 4 LINE a
 - 5 LINE b
 - 6 SCREEN
 - 7 P-FILTER OUT
 - 8 P-FILTER IN
 - 9 OVA
 - 10 X
 - 11 MIC. a
 - 12 MIC. b
 - 13 SCREEN
 - 14 MIC. a
 - 15 MIC. b
 - 16 SCREEN
 - 17 X
 - 18 USER
 - 19 USER
 - 20 USER
 - 21 X
 - 22 CH 1 PAN/BAL
 - 23 OV INT.
 - 24 CH 2 PAN/BAL
 - 25 AF OUT
 - 26 OVA
 - 27 PF-OUT
 - 28 OVA
 - 29 P-FILTER OUT
 - 30 P-FILTER IN
 - 31 LINE SIGN.
 - 32 X
- P 4
 - 1 MASTER SIGN.
 - 2 OVERLOAD
 - 3 -6V
 - 4 OVL
 - 5 -15V
 - 6 OVA
 - 7 +15V
 - 8 -24V
 - 9 -15V
 - 10 OVL
 - 11 -6V
 - 12 MPX
 - 13 MIC. SIGN
 - 14 GEN. a
 - 15 GEN. b
 - 16 X
 - 17 AUX 4-R OUT
 - 18 AUX 4-L OUT
 - 19 AUX 3 OUT
 - 20 AUX 2 OUT
 - 21 AUX 1 OUT
 - 22 OVA
 - 23 8 OUT
 - 24 6 OUT
 - 25 4 OUT
 - 26 2 OUT
 - 27 1 OUT
 - 28 3 OUT
 - 29 7 OUT
 - 30 PFL - SIGN. BUS
 - 31 PFL/P-SOLO R
 - 32 PFL/P-SOLO L
- P 3
 - 1 PFL-SIGN. BUS
 - 2 FADER OUT L
 - 3 OVA R
 - 4 FADER OUT R
 - 5 -24V
 - 6 +15V
 - 7 OVA
 - 8 -15V
 - 9 OVL
 - 10 -6V
 - 11 PFL CONTR.
 - 12 P-SOLO CONTR
 - 13 FADER IN R
 - 14 OVA L
 - 15 FADER IN L
 - 16 CH-OFF
- P 2
 - 1 CH-OFF
 - 2 FADER IN L
 - 3 OVA L
 - 4 FADER IN R
 - 5 P-SOLO CONTR.
 - 6 PFL CONTR.
 - 7 -6V
 - 8 OVL
 - 9 -15V
 - 10 OVA
 - 11 -24V
 - 12 +15V
 - 13 FADER OUT R
 - 14 OVA R
 - 15 FADER OUT L
 - 16 PFL-SIGN. BUS

ALL FET ARE J 112
ALL DIODES ARE 1N 4448

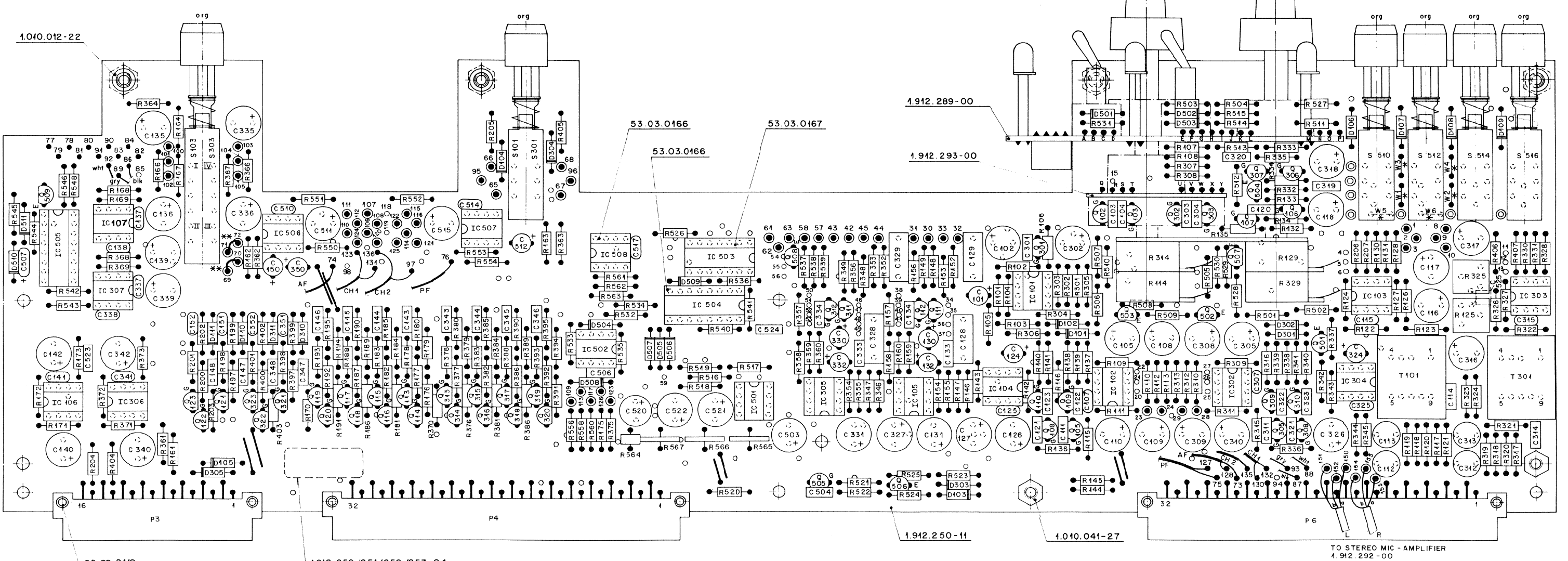
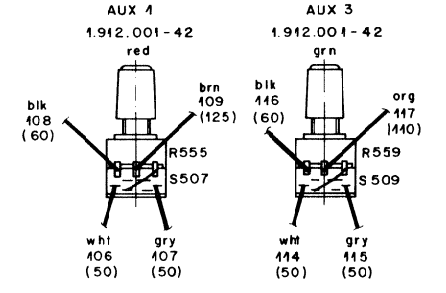
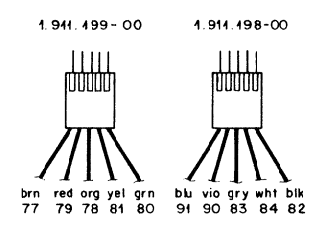


BOTTOM VIEW

| | | | | | |
|--------------------------------|---------------------|-----------|-----------|---------------------|-------------|
| DATE: 27. 2. 84 | 1. 3. 84 | 25. 5. 84 | 4. 10. 84 | | PAGE 3 OF 3 |
| SIGN: <i>We</i> | <i>We</i> | <i>We</i> | <i>Wl</i> | | |
| STUDER REGENSDORF ZURICH | STEREO INPUT UNIT A | | | SC 1.912.250... 253 | |



(...) Δ LENGTH OF STRANDS 1.912.250-93



* 4 CH : 1.912.250/251-00
ONLY W3, W4, W5, W6
ARE REQUIRED

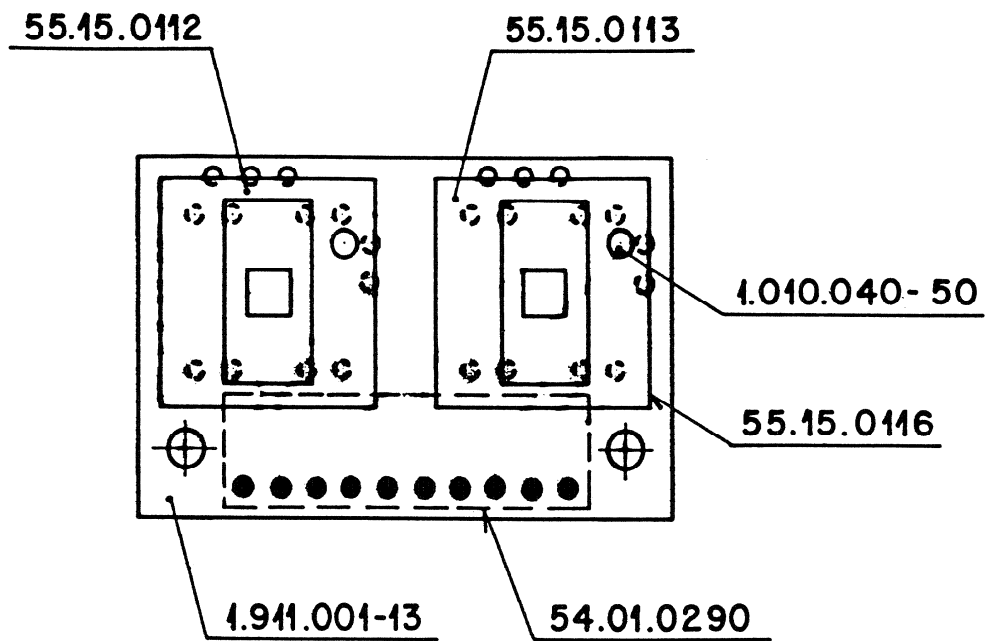
* 8 CH : 1.912.252/253-00
ONLY W1 AND W2
ARE REQUIRED

** ONLY 1.912.251-00
AND 1.912.253-00

| WIRINGDIAGRAM | |
|------------------|--------------|
| STEREO-INPUT | EQUALIZER |
| 1.912.250/252-00 | 1.912.291-00 |
| 61 | 540 |
| 62 | 541 |
| 63 | 542 |
| 68 | 506 |
| 96 | 500 |
| 67 | 505 |
| 66 | 406 |
| 95 | 400 |
| 65 | 405 |
| 99 | 444 |
| 71 | 446 |
| 70 | 541 |
| 72 | 546 |

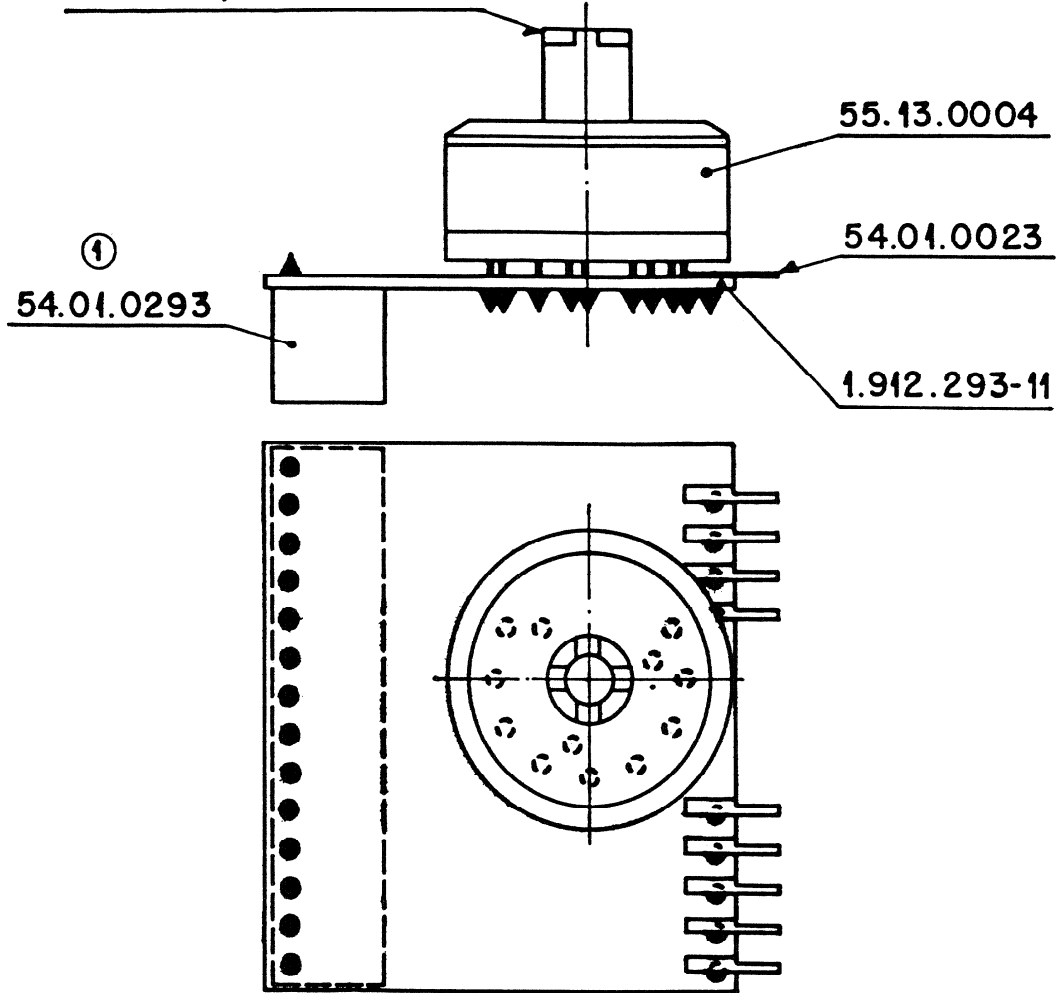
| VALID FOR | NR. UNIT | NR. PL | EQUALIZER |
|-------------|--------------|--------------|--------------|
| 4 CH FILTER | 1.912.250-00 | 1.912.250-00 | 1.912.291-00 |
| 4 CH | 1.912.251-00 | 1.912.250-00 | - |
| 8 CH FILTER | 1.912.252-00 | 1.912.250-00 | 1.912.291-00 |
| 8 CH | 1.912.253-00 | 1.912.250-00 | - |

| | | |
|---------------------------------------|------------------|----------------------------------|
| Norm-Nr. | Güte | Ausgabe |
| Werkstoff | Beh. | |
| DIN-Bez. | Oberfläche | Anforderung |
| Abmessung | Beh. | |
| Zugehörige Unterlagen | Freimassstokanz. | Maßstab |
| LL, KL | | |
| Ersetzt durch | Ersetzt durch | Kopie für |
| | | |
| STUDEF REGENSDORF ZÜRICH | | Stereo Input Unit 4 CH / 8 CH |
| 4.4. 85 Si 27.2. 84A.Ho | | 26.10.83A.Ho |
| Datum Gez. Gepr. Ges. Index | | Nummer 1.912.250-00 |



| | | | | | | | | |
|--------------------------------|------------|--------------------------------------|----------|-------------------------|------|-------|------|-------|
| Werkstoff | Norm-Nr.: | Oberfläche | Güte: | | | | | ③ |
| | DIN-Bez.: | | Beh.: | | | | | ② |
| | Abmessung: | | | | | | ① | |
| Zugehörige Unterlagen: | | Freimasstoleranz: | Maßstab: | 19.5.82 | Ho | W | | ⑤ |
| | | ± | 2 : 1 | Datum | Gez. | Gepr. | Ges. | Index |
| Ersatz für: | | Ersetzt durch: | | Kopie für: | | | | |
| STUDER REGENSDORF ZÜRICH | | Bezeichnung: Pushbutton Board N-L | | Nummer: 1.911.003-00 | | | | |

Schalter während dem Lötén
auf Print pressen.



| | | | | | | | | | | |
|---------------------------------------|-------------------|---|------------|--------------------------------|---------|------|-------|---|---|---|
| Werkstoff | Norm-Nr.: | Oberfläche | Güte: | Änderung | | | | | ③ | |
| | DIN-Bez.: | | Beh.: | | | | | | | ② |
| | Abmessung: | | | | 13.1.84 | A.Ho | W | W | | ① |
| Zugehörige Unterlagen: | Freimasstoleranz: | Maßstab: | Ausgabe | 6.5.83 | A.Ho | W | W | | ① | |
| | | | Datum | Gez. | Gepr. | Ges. | Index | | | |
| Ersatz für: | Ersetzt durch: | | Kopie für: | | | | | | | |
| STUDER REGENSDORF ZÜRICH | | Bezeichnung: Switch Interface | | Nummer: 1.912.293-00 | | | | | | |

| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | | | MANUF. |
|------------------------------|---------|--------------|----------------------|-----------------------------|--------------|----------|--------|
| | A.....1 | 1.912.292.00 | | STEREO-MIC-AMPLIFIER | | | |
| | A.....2 | 1.912.293.00 | | SWITCH-INTERFACE | | | |
| | A.....3 | 1.912.289.00 | | SWITCH-BOARD-STEREO | | | |
| | A.....4 | 1.911.003.00 | | PUSHBUTTON BOARD N-L | | | |
| | A.....5 | 1.911.199.00 | | CONNECTING CABLE 1 | | | |
| | A.....6 | 1.911.198.00 | | CONNECTING CABLE 2 | | | |
| | A.....7 | | | EQUALIZER-BOARD | 1.912.291.00 | option 2 | |
| | C...101 | 59.30.2220 | 22 uF | -20% | 6.3V | TA | |
| | C...102 | 59.22.4101 | 100 uF | -10% | 16V | EL | |
| | C...103 | 59.06.0682 | 6.8 nF | 10% | 50V | PE | |
| | C...104 | 59.06.0682 | 6.8 nF | 10% | 50V | PE | |
| | C...105 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| | C...106 | | not used | | | | |
| | C...107 | 59.34.2220 | 22 pF | 5% | | CE | |
| | C...108 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| | C...109 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| | C...110 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| | C...111 | 59.06.0682 | 6.8 nF | 10% | 50V | EL | |
| | C...112 | 59.05.1681 | 680 pF | 1% | 500V | PP | |
| | C...113 | 59.05.1681 | 680 pF | 1% | 500V | PP | |
| (01) | C...114 | 59.06.0682 | 6.8 nF | 10% | 50V | PE | |
| (01) | C...115 | 59.34.5391 | 390 pF | 5% | | CE | |
| | C...116 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| | C...117 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| | C...118 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| | C...119 | 59.06.0682 | 6.8 nF | 10% | 50V | PE | |
| | C...120 | 59.06.0682 | 6.8 nF | 10% | 50V | PE | |
| | C...121 | 59.06.0682 | 6.8 nF | 10% | 50V | PE | |
| | C...122 | 59.06.0682 | 6.8 nF | 10% | 50V | PE | |
| | C...123 | 59.06.0682 | 6.8 nF | 10% | 50V | PE | |
| | C...124 | 59.30.2220 | 22 uF | -20% | 6.3V | TA | |
| | C...125 | 59.34.2220 | 22 pF | 5% | | CE | |
| | C...126 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| | C...127 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| (01) | C...128 | 59.02.2124 | 120 nF | 5% | | PC | |
| (01) | C...129 | 59.02.2124 | 120 nF | 5% | | PC | |
| S T U D E R (04) 84/10/04 TA | | | STEREO-INPUT-4CH/8CH | 1.912.250.00 | PAGE | 1 | |

| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | | | MANUF. |
|------------------------------|---------|------------|----------------------|-----------------------------|------|----|--------|
| | C...130 | 59.30.2220 | 22 uF | -20% | 6.3V | TA | |
| | C...131 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| | C...132 | 59.30.2220 | 22 uF | -20% | 6.3V | TA | |
| | C...133 | 59.06.0222 | 2.2 nF | 10% | 50V | PE | |
| | C...134 | 59.06.0682 | 6.8 nF | 10% | 50V | PE | |
| | C...135 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| | C...136 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| | C...137 | 59.34.4101 | 100 pF | 5% | | CE | |
| | C...138 | 59.34.2220 | 22 pF | 5% | | CE | |
| | C...139 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| | C...140 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| | C...141 | 59.34.2220 | 22 pF | 5% | | CE | |
| | C...142 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| | C...143 | 59.06.0682 | 6.8 nF | 10% | 50V | PE | |
| | C...144 | 59.06.0682 | 6.8 nF | 10% | 50V | PE | |
| | C...145 | 59.06.0682 | * 6.8 nF | 10% | 50V | PE | |
| | C...146 | 59.06.0682 | * 6.8 nF | 10% | 50V | PE | |
| | C...147 | 59.06.0223 | 22 nF | 10% | 50V | PE | |
| | C...148 | 59.06.0223 | 22 nF | 10% | 50V | PE | |
| | C...149 | | not used | | | | |
| | C...150 | 59.30.2220 | 22 uF | -20% | 6.3V | TA | |
| | C...151 | 59.34.4221 | 220 pF | 5% | | CE | |
| | C...152 | 59.34.4221 | 220 pF | 5% | | CE | |
| | C...301 | 59.06.0682 | 6.8 nF | 10% | 50V | PE | |
| | C...302 | 59.22.4101 | 100 uF | -10% | 16V | EL | |
| | C...303 | 59.06.0682 | 6.8 nF | 10% | 50V | PE | |
| | C...304 | 59.06.0682 | 6.8 nF | 10% | 50V | PE | |
| | C...305 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| | C...306 | | not used | | | | |
| | C...307 | 59.34.2220 | 22 pF | 5% | | CE | |
| | C...308 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| | C...309 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| | C...310 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| | C...311 | 59.06.0682 | 6.8 nF | 10% | 50V | EL | |
| | C...312 | 59.05.1681 | 680 pF | 1% | 500V | PP | |
| | C...313 | 59.05.1681 | 680 pF | 1% | 500V | PP | |
| (01) | C...314 | 59.06.0682 | 6.8 nF | 10% | 50V | PE | |
| S T U D E R (04) 84/10/04 TA | | | STEREO-INPUT-4CH/8CH | 1.912.250.00 | PAGE | 2 | |

| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | | | MANUF. |
|------|---------|------------|----------|-----------------------------|------|----|--------|
| (01) | C...315 | 59.34.5391 | 390 pF | 5% | | CE | |
| | C...316 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| | C...317 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| (03) | C...318 | 59.22.3101 | 100 uF | -20% | 10V | EL | |
| | C...319 | 59.06.0682 | 6.8 nF | 10% | 50V | PE | |
| | C...320 | 59.06.0682 | 6.8 nF | 10% | 50V | PE | |
| | C...321 | 59.06.0682 | 6.8 nF | 10% | 50V | PE | |
| | C...322 | 59.06.0682 | 6.8 nF | 10% | 50V | PE | |
| | C...323 | 59.06.0682 | 6.8 nF | 10% | 50V | PE | |
| | C...324 | 59.30.2220 | 22 uF | -20% | 6.3V | TA | |
| | C...325 | 59.34.2220 | 22 pF | 5% | | CE | |
| | C...326 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| | C...327 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| (01) | C...328 | 59.02.2124 | 120 nF | 5% | | PC | |
| (01) | C...329 | 59.02.2124 | 120 nF | 5% | | PC | |
| | C...330 | 59.30.2220 | 22 uF | -20% | 6.3V | TA | |
| | C...331 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| | C...332 | 59.30.2220 | 22 uF | -20% | 6.3V | TA | |
| | C...333 | 59.06.0222 | 2.2 nF | 10% | 50V | PE | |
| | C...334 | 59.06.0682 | 6.8 nF | 10% | 50V | PE | |
| | C...335 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| | C...336 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| | C...337 | 59.34.4101 | 100 pF | 5% | | CE | |
| | C...338 | 59.34.2220 | 22 pF | 5% | | CE | |
| | C...339 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| | C...340 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| | C...341 | 59.34.2220 | 22 pF | 5% | | CE | |
| | C...342 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| | C...343 | 59.06.0682 | 6.8 nF | 10% | 50V | PE | |
| | C...344 | 59.06.0682 | 6.8 nF | 10% | 50V | PE | |
| | C...345 | 59.06.0682 | * 6.8 nF | 10% | 50V | PE | |
| | C...346 | 59.06.0682 | * 6.8 nF | 10% | 50V | PE | |
| | C...347 | 59.06.0223 | 22 nF | 10% | 50V | PE | |
| | C...348 | 59.06.0223 | 22 nF | 10% | 50V | PE | |
| | C...349 | | not used | | | | |
| | C...350 | 59.30.2220 | 22 uF | -20% | 6.3V | TA | |
| | C...351 | 59.34.4221 | 220 pF | 5% | | CE | |

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| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | | | MANUF. |
|------|---------|------------|----------|-----------------------------|------|-----|--------|
| | C...352 | 59.34.4221 | 220 pF | 5% | | CE | |
| | C...501 | | not used | | | | |
| | C...502 | | not used | | | | |
| | C...503 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| | C...504 | 59.06.0682 | 6.8 nF | 10% | 50V | PE | |
| | C...505 | | not used | | | | |
| (03) | C...506 | 59.06.0223 | 22 nF | 10% | 50V | PE | |
| | C...507 | 59.26.9109 | 1 uF | | 25V | SAL | |
| | C...508 | | not used | | | | |
| | C...509 | | not used | | | | |
| | C...510 | 59.34.2220 | 22 pF | 5% | | CE | |
| | C...511 | 59.22.4101 | 100 uF | -10% | 16V | EL | |
| | C...512 | 59.30.2220 | 22 uF | -20% | 6.3V | TA | |
| | C...513 | | not used | | | | |
| | C...514 | 59.34.2220 | 22 pF | 5% | | CE | |
| | C...515 | 59.22.4101 | 100 uF | -10% | 16V | EL | |
| (04) | C...516 | | not used | | | | |
| | C...517 | 59.34.4101 | 100 pF | 5% | | CE | |
| | C...518 | | not used | | | | |
| | C...519 | | not used | | | | |
| | C...520 | 59.22.5101 | 100 uF | -10% | 25V | EL | |
| | C...521 | 59.22.4101 | 100 uF | -10% | 16V | EL | |
| | C...522 | 59.22.4101 | 100 uF | -10% | 16V | EL | |
| | C...523 | 59.06.0104 | 100 nF | | 50V | PE | |
| | C...524 | 59.06.0104 | 100 nF | | 50V | PE | |
| (01) | C...525 | 59.32.3103 | 10 nF | | | CE | |
| | D...101 | 50.04.0125 | 1N4448 | | | | any |
| | D...102 | 50.04.0125 | 1N4448 | | | | any |
| | D...103 | 50.04.0125 | 1N4448 | | | | any |
| | D...104 | 50.04.0125 | 1N4448 | | | | any |
| | D...105 | 50.04.0125 | 1N4448 | | | | any |
| (03) | D...106 | 50.04.0125 | * 1N4448 | | | | any |
| | D...107 | 50.04.0125 | 1N4448 | | | | any |
| (03) | D...108 | 50.04.0125 | 1N4448 | | | | any |
| | D...109 | 50.04.0125 | * 1N4448 | | | | any |
| | D...110 | 50.04.0125 | 1N4448 | | | | any |

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| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|------|---------|------------|----------|---------------------------------------|--------|
| | D...111 | 50.04.0125 | 1N4448 | | any |
| | D...301 | 50.04.0125 | 1N4448 | | any |
| | D...302 | 50.04.0125 | 1N4448 | | any |
| | D...303 | 50.04.0125 | 1N4448 | | any |
| | D...304 | 50.04.0125 | 1N4448 | | any |
| | D...305 | 50.04.0125 | 1N4448 | | any |
| | D...306 | | 1N4448 | 50040125 | any |
| | D...307 | | 1N4448 | 50040125 | any |
| | D...308 | | * 1N4448 | 50040125 | any |
| | D...309 | | * 1N4448 | 50040125 | any |
| | D...310 | 50.04.0125 | 1N4448 | | any |
| | D...311 | 50.04.0125 | 1N4448 | | any |
| | D...501 | 50.04.0125 | 1N4448 | | any |
| | D...502 | 50.04.0125 | 1N4448 | | any |
| | D...503 | 50.04.0125 | 1N4448 | | any |
| | D...504 | 50.04.1112 | Z 5.1V | 400mW BZX83C 5.1, BZX55C 5.1, ZPD 5.1 | any |
| | D...505 | 50.04.0125 | 1N4448 | | any |
| | D...506 | 50.04.0125 | 1N4448 | | any |
| | D...507 | 50.04.0125 | 1N4448 | | any |
| | D...508 | 50.04.0125 | 1N4448 | | any |
| | D...509 | 50.04.0125 | 1N4448 | | any |
| | D...510 | 50.04.0125 | 1N4448 | | any |
| | D...511 | 50.04.0125 | 1N4448 | | any |

| | | | | | |
|------|---------|------------|----------|---------------------------|-----------|
| | IC..101 | 50.09.0107 | RC4559 N | dual op. amp. | Ti,Sig,Ra |
| | IC..102 | 50.05.0244 | NE5534AN | single op. amp. low noise | Ti,Sig,Ra |
| | IC..103 | 50.09.0106 | NE5532AN | dual op. amp. low noise | Ti,Sig,Ra |
| | IC..104 | 50.05.0243 | NE5534 N | single op. amp. | Ti,Sig,Ra |
| (02) | IC..105 | 50.09.0107 | RC4559 N | dual op. amp. | Ti,Sig,Ra |
| | IC..106 | 50.05.0243 | NE5534 N | single op. amp. | Ti,Sig,Ra |
| | IC..107 | 50.05.0243 | NE5534 N | single op. amp. | Ti,Sig,Ra |
| | IC..302 | 50.05.0244 | NE5534AN | single op. amp. low noise | Ti,Sig,Ra |
| | IC..303 | 50.09.0106 | NE5532AN | dual op. amp. low noise | Ti,Sig,Ra |
| | IC..304 | 50.05.0243 | NE5534 N | single op. amp. | Ti,Sig,Ra |
| (02) | IC..305 | 50.09.0107 | RC4559 N | dual op. amp. | Ti,Sig,Ra |
| | IC..306 | 50.05.0243 | NE5534 N | single op. amp. | Ti,Sig,Ra |
| | IC..307 | 50.05.0243 | NE5534 N | single op. amp. | Ti,Sig,Ra |

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| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|------|---------|------------|---------|-----------------------------|-------------|
| | IC..501 | 50.09.0103 | TL 071 | single op. amp. | TI |
| | IC..502 | 50.05.0158 | NE 555 | timer | Sig,Mot,NSC |
| | IC..503 | 50.07.0012 | CD4025 | 3-input nor-gate CMOS | Mot,Fc,NSC |
| | IC..504 | 50.07.0049 | CD4049 | hex. inverter CMOS | Fc,Mot |
| | IC..505 | 50.07.0027 | CD4027 | dual JK-FF CMOS | Mot,Fc |
| | IC..506 | 50.05.0243 | NE5534N | single op. amp. | TI,Sig,Ra |
| | IC..507 | 50.05.0243 | NE5534N | single op. amp. | TI,Sig,Ra |
| | IC..508 | 50.05.0243 | NE5534N | single op. amp. | TI,Sig,Ra |
| | P.....3 | 54.11.2007 | 2*8 pin | euroconnector | Bu |
| | P.....4 | 54.01.0359 | 2*16pin | euroconnector | Bu |
| | P.....6 | 54.01.0359 | 2*16pin | euroconnector | Bu |
| | Q...102 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...103 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...105 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...106 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...107 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...108 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...109 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...110 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...111 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...112 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...113 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...114 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...115 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...116 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...117 | 50.03.0350 | * J 112 | N-JFET | NS,Mot,Six |
| | Q...118 | 50.03.0350 | * J 112 | N-JFET | NS,Mot,Six |
| | Q...119 | 50.03.0350 | * J 112 | N-JFET | NS,Mot,Six |
| | Q...120 | 50.03.0350 | * J 112 | N-JFET | NS,Mot,Six |
| | Q...121 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...122 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...123 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...301 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...302 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...303 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |

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| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|------|---------|------------|----------|-----------------------------|------------|
| | Q...305 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...306 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...307 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...308 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...309 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...310 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...311 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...312 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...313 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...314 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...315 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...316 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...317 | 50.03.0350 | * J 112 | N-JFET | NS,Mot,Six |
| | Q...318 | 50.03.0350 | * J 112 | N-JFET | NS,Mot,Six |
| | Q...319 | 50.03.0350 | * J 112 | N-JFET | NS,Mot,Six |
| | Q...320 | 50.03.0350 | * J 112 | N-JFET | NS,Mot,Six |
| | Q...321 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...322 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...323 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...501 | 50.03.0515 | BC 307 | PNP IC>100mA, B>100 | any |
| | Q...502 | 50.03.0515 | BC 307 | PNP IC>100mA, B>100 | any |
| | Q...503 | 50.03.0515 | BC 307 | PNP IC>100mA, B>100 | any |
| | Q...504 | 50.03.0515 | BC 307 | PNP IC>100mA, B>100 | any |
| | Q...505 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...506 | 50.03.0515 | BC 307 | PNP IC>100mA, B>100 | any |
| | Q...507 | 50.03.0515 | BC 307 | PNP IC>100mA, B>100 | any |
| | Q...508 | 50.03.0515 | BC 307 | PNP IC>100mA, B>100 | any |
| | Q...509 | 50.03.0436 | BC 237 | NPN IC>100mA, B>100 | any |
| | R...101 | 57.11.3103 | 10 kOhm | 1% 0.25W MF | |
| | R...102 | 57.11.3103 | 10 kOhm | 1% 0.25W MF | |
| | R...103 | 57.11.4822 | 8.2 kOhm | 5% 0.25W MF | |
| | R...104 | 57.11.4332 | 3.3 kOhm | 5% 0.25W MF | |
| | R...105 | 57.11.4223 | 22 kOhm | 5% 0.25W MF | |
| | R...106 | 57.11.4105 | 1 MOhm | 5% 0.25W MF | |
| | R...107 | 57.11.6106 | 10 MOhm | 10% 0.25W MF | |
| | R...108 | 57.11.6106 | 10 MOhm | 10% 0.25W MF | |

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| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|------|---------|--------------|----------|------------------------------|--------|
| | R...109 | 57.11.4103 | 10 kOhm | 5% 0.25W MF | |
| | R...110 | 57.11.4223 | 22 kOhm | 5% 0.25W MF | |
| | R...111 | 57.11.3472 | 4.7 kOhm | 1% 0.25W MF | |
| | R...112 | 57.11.4561 | 560 Ohm | 2% 0.25W MF | |
| | R...113 | 57.11.3271 | 270 Ohm | 1% 0.25W MF | |
| | R...114 | 1.912.001.30 | 10 kOhm | 5% pos.log.variable resistor | St |
| | R...115 | 57.11.4223 | 22 kOhm | 5% 0.25W MF | |
| | R...116 | 57.11.6106 | 10 MOhm | 10% 0.25W MF | |
| | R...117 | 57.11.3152 | 1.5 kOhm | 1% 0.25W MF | |
| | R...118 | 57.11.3152 | 1.5 kOhm | 1% 0.25W MF | |
| | R...119 | 57.11.3392 | 3.9 kOhm | 1% 0.25W MF | |
| | R...120 | 57.11.3392 | 3.9 kOhm | 1% 0.25W MF | |
| (01) | R...121 | 57.11.4392 | 3.9 kOhm | 5% 0.25W MF | |
| (01) | R...122 | 57.11.4472 | 4.7 kOhm | 5% 0.25W MF | |
| (01) | R...123 | 57.11.4153 | 15 kOhm | 5% 0.25W MF | |
| (01) | R...124 | 57.11.4331 | 330 Ohm | 5% 0.25W MF | |
| (01) | R...125 | 58.01.8502 | 5 kOhm | 10% 0.50W trimming resistor | |
| (01) | R...126 | 57.11.4122 | 1.2 kOhm | 5% 0.25W MF | |
| (01) | R...127 | 57.11.4222 | 2.2 kOhm | 5% 0.25W MF | |
| | R...128 | 57.11.4152 | 1.5 kOhm | 5% 0.25W MF | |
| | R...129 | 1.912.001.29 | 10 kOhm | 10% lin. variable resistor | St |
| | R...130 | 57.11.4222 | 2.2 kOhm | 5% 0.25W MF | |
| | R...131 | 57.11.4152 | 1.5 kOhm | 5% 0.25W MF | |
| | R...132 | 57.11.4223 | 22 kOhm | 5% 0.25W MF | |
| | R...133 | 57.11.6106 | 10 MOhm | 10% 0.25W MF | |
| (01) | R...134 | 57.11.4223 | 22 kOhm | 5% 0.25W MF | |
| | R...135 | 57.11.6106 | 10 MOhm | 10% 0.25W MF | |
| (03) | R...136 | 57.11.6106 | 10 MOhm | 10% 0.25W MF | |
| (01) | R...137 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...138 | 57.11.4105 | 1 MOhm | 5% 0.25W MF | |
| | R...139 | 57.11.6106 | 10 MOhm | 10% 0.25W MF | |
| | R...140 | 57.11.4105 | 1 MOhm | 5% 0.25W MF | |
| | R...141 | 57.11.6106 | 10 MOhm | 10% 0.25W MF | |
| (01) | R...142 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| (01) | R...143 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...144 | 57.11.4223 | 22 kOhm | 5% 0.25W MF | |
| | R...145 | 57.11.4330 | 33 Ohm | 5% 0.25W MF | |

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| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|------|---------|--------------|----------|--|--------|
| | R...146 | 57.11.3392 | 3.9 kOhm | 1% 0.25W MF | |
| | R...147 | 57.11.3682 | 6.8 kOhm | 1% 0.25W MF | |
| | R...148 | 57.11.3474 | 470 kOhm | 1% 0.25W MF | |
| (01) | R...149 | 57.11.3392 | 3.9 kOhm | 1% 0.25W MF | |
| | R...150 | 1.912.001.53 | 47 kOhm | 5% neg.log.variable resistor | St |
| | R...151 | | 47 kOhm | 5% neg.log.variable resistor, see R150 | St |
| (01) | R...152 | 57.11.3392 | 3.9 kOhm | 1% 0.25W MF | |
| | R...153 | 57.11.4684 | 680 kOhm | 5% 0.25W MF | |
| | R...154 | 57.11.4684 | 680 kOhm | 5% 0.25W MF | |
| | R...155 | 57.11.4684 | 680 kOhm | 5% 0.25W MF | |
| | R...156 | 57.11.3474 | 470 kOhm | 1% 0.25W MF | |
| | R...157 | 57.11.3392 | 3.9 kOhm | 1% 0.25W MF | |
| | R...158 | 57.11.3682 | 6.8 kOhm | 1% 0.25W MF | |
| | R...159 | 57.11.6106 | 10 MOhm | 10% 0.25W MF | |
| | R...160 | 57.11.6106 | 10 MOhm | 10% 0.25W MF | |
| | R...161 | 57.11.3153 | 15 kOhm | 1% 0.25W MF | |
| | R...162 | 57.11.4472 | 4.7 kOhm | 5% 0.25W MF | |
| | R...163 | 57.11.4472 | 4.7 kOhm | 5% 0.25W MF | |
| | R...164 | 57.11.4223 | 22 kOhm | 5% 0.25W MF | |
| | R...165 | 1.912.001.35 | 10 kOhm | 20% pos.log.variable resistor | St |
| | R...166 | 57.11.4682 | 6.8 kOhm | 5% 0.25W MF | |
| | R...167 | 57.11.3132 | 1.3 kOhm | 2% 0.25W MF | |
| | R...168 | 57.11.4332 | 3.3 kOhm | 5% 0.25W MF | |
| | R...169 | 57.11.4472 | 4.7 kOhm | 5% 0.25W MF | |
| | R...170 | 57.11.4333 | 33 kOhm | 5% 0.25W MF | |
| | R...171 | 57.11.4332 | 3.3 kOhm | 5% 0.25W MF | |
| | R...172 | 57.11.4332 | 3.3 kOhm | 5% 0.25W MF | |
| | R...173 | 57.11.4333 | 33 kOhm | 5% 0.25W MF | |
| | R...174 | 1.912.001.44 | 10 kOhm | 20% pos.log.variable resistor | |
| | R...175 | 57.11.4332 | 3.3 kOhm | 5% 0.25W MF | |
| | R...176 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...177 | 57.11.4332 | 3.3 kOhm | 5% 0.25W MF | |
| | R...178 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...179 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...180 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...181 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...182 | 57.11.4332 | 3.3 kOhm | 5% 0.25W MF | |

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| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|------|---------|------------|-----------|-----------------------------|---------------------|
| | R...183 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...184 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...185 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...186 | 57.11.4104 | *100 kOhm | 5% 0.25W MF | |
| | R...187 | 57.11.4332 | *3.3 kOhm | 5% 0.25W MF | |
| | R...188 | 57.11.4104 | *100 kOhm | 5% 0.25W MF | |
| | R...189 | 57.11.4104 | *100 kOhm | 5% 0.25W MF | |
| | R...190 | 57.11.4104 | *100 kOhm | 5% 0.25W MF | |
| | R...191 | 57.11.4104 | *100 kOhm | 5% 0.25W MF | |
| | R...192 | 57.11.4332 | *3.3 kOhm | 5% 0.25W MF | |
| | R...193 | 57.11.4104 | *100 kOhm | 5% 0.25W MF | |
| | R...194 | 57.11.4104 | *100 kOhm | 5% 0.25W MF | |
| | R...195 | 57.11.4104 | *100 kOhm | 5% 0.25W MF | |
| | R...196 | | not used | | |
| | R...197 | 57.11.4103 | 10 kOhm | 5% 0.25W MF | |
| | R...198 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...199 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...200 | 57.11.4103 | 10 kOhm | 5% 0.25W MF | |
| | R...201 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...202 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...203 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...204 | 57.11.4330 | 33 Ohm | 5% 0.25W MF | |
| | R...205 | | 1.8 kOhm | 5% 0.25W MF | 57114182 optional 2 |
| (01) | R...206 | | not used | | |
| (01) | R...207 | 57.11.4109 | 1 Ohm | 5% 0.25W MF | |
| | R...301 | 57.11.3472 | 4.7 kOhm | 1% 0.25W MF | |
| | R...302 | 57.11.3332 | 3.3 kOhm | 1% 0.25W MF | |
| | R...303 | 57.11.3472 | 4.7 kOhm | 1% 0.25W MF | |
| | R...304 | 57.11.3332 | 3.3 kOhm | 1% 0.25W MF | |
| | R...305 | 57.11.4223 | 22 kOhm | 5% 0.25W MF | |
| | R...306 | 57.11.6106 | 10 MOhm | 10% 0.25W MF | |
| | R...307 | 57.11.6106 | 10 MOhm | 10% 0.25W MF | |
| | R...308 | 57.11.6106 | 10 MOhm | 10% 0.25W MF | |
| | R...309 | 57.11.4103 | 10 kOhm | 5% 0.25W MF | |
| | R...310 | 57.11.4223 | 22 kOhm | 5% 0.25W MF | |
| | R...311 | 57.11.3472 | 4.7 kOhm | 1% 0.25W MF | |
| | R...312 | 57.11.4561 | 560 Ohm | 2% 0.25W MF | |

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| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|------|---------|------------|----------|--|-------------------|
| | R...313 | 57.11.3271 | 270 Ohm | 1% 0.25W MF | |
| | R...314 | | 10 kOhm | 5% pos.log.variable resistor, see R114 | St |
| | R...315 | 57.11.4223 | 22 kOhm | 5% 0.25W MF | |
| | R...316 | 57.11.6106 | 10 MOhm | 10% 0.25W MF | |
| | R...317 | 57.11.3152 | 1.5 kOhm | 1% 0.25W MF | |
| | R...318 | 57.11.3152 | 1.5 kOhm | 1% 0.25W MF | |
| | R...319 | 57.11.3392 | 3.9 kOhm | 1% 0.25W MF | |
| | R...320 | 57.11.3392 | 3.9 kOhm | 1% 0.25W MF | |
| (01) | R...321 | 57.11.4392 | 3.9 kOhm | 5% 0.25W MF | |
| (01) | R...322 | 57.11.4472 | 4.7 kOhm | 5% 0.25W MF | |
| (01) | R...323 | 57.11.4153 | 15 kOhm | 5% 0.25W MF | |
| (01) | R...324 | 57.11.4331 | 330 Ohm | 5% 0.25W MF | |
| (01) | R...325 | 58.01.8502 | 5 kOhm | 10% 0.50W | trimming resistor |
| (01) | R...326 | 57.11.4122 | 1.2 kOhm | 5% 0.25W MF | |
| (01) | R...327 | 57.11.4222 | 2.2 kOhm | 5% 0.25W MF | |
| | R...328 | 57.11.4152 | 1.5 kOhm | 5% 0.25W MF | |
| | R...329 | | 10 kOhm | 10% lin. variable resistor, see R129 | St |
| | R...330 | 57.11.4222 | 2.2 kOhm | 5% 0.25W MF | |
| | R...331 | 57.11.4152 | 1.5 kOhm | 5% 0.25W MF | |
| | R...332 | 57.11.4223 | 22 kOhm | 5% 0.25W MF | |
| | R...333 | 57.11.6106 | 10 MOhm | 10% 0.25W MF | |
| (01) | R...334 | 57.11.4223 | 22 kOhm | 5% 0.25W MF | |
| | R...335 | 57.11.6106 | 10 MOhm | 10% 0.25W MF | |
| (03) | R...336 | 57.11.6106 | 10 MOhm | 10% 0.25W MF | |
| (01) | R...337 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...338 | 57.11.4105 | 1 MOhm | 5% 0.25W MF | |
| | R...339 | 57.11.6106 | 10 MOhm | 10% 0.25W MF | |
| | R...340 | 57.11.4105 | 1 MOhm | 5% 0.25W MF | |
| | R...341 | 57.11.6106 | 10 MOhm | 10% 0.25W MF | |
| (01) | R...342 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| (01) | R...343 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...344 | 57.11.4223 | 22 kOhm | 5% 0.25W MF | |
| | R...345 | 57.11.4330 | 33 Ohm | 5% 0.25W MF | |
| | R...346 | 57.11.3392 | 3.9 kOhm | 1% 0.25W MF | |
| | R...347 | 57.11.3682 | 6.8 kOhm | 1% 0.25W MF | |
| | R...348 | 57.11.3474 | 470 kOhm | 1% 0.25W MF | |
| (01) | R...349 | 57.11.3392 | 3.9 kOhm | 1% 0.25W MF | |

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| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|------|---------|------------|-----------|---|--------|
| | R...350 | | 47 kOhm | 5% neg.log.variable resistor, see R150 | St |
| | R...351 | | 47 kOhm | 5% neg.log.variable resistor, see R150 | St |
| (01) | R...352 | 57.11.3392 | 3.9 kOhm | 1% 0.25W MF | |
| | R...353 | 57.11.4684 | 680 kOhm | 5% 0.25W MF | |
| | R...354 | 57.11.4684 | 680 kOhm | 5% 0.25W MF | |
| | R...355 | 57.11.4684 | 680 kOhm | 5% 0.25W MF | |
| | R...356 | 57.11.3474 | 470 kOhm | 1% 0.25W MF | |
| | R...357 | 57.11.3392 | 3.9 kOhm | 1% 0.25W MF | |
| | R...358 | 57.11.3682 | 6.8 kOhm | 1% 0.25W MF | |
| | R...359 | 57.11.6106 | 10 MOhm | 10% 0.25W MF | |
| | R...360 | 57.11.6106 | 10 MOhm | 10% 0.25W MF | |
| | R...361 | 57.11.3153 | 15 kOhm | 1% 0.25W MF | |
| | R...362 | 57.11.4472 | 4.7 kOhm | 5% 0.25W MF | |
| | R...363 | 57.11.4472 | 4.7 kOhm | 5% 0.25W MF | |
| | R...364 | 57.11.4223 | 22 kOhm | 5% 0.25W MF | |
| | R...365 | | 10 kOhm | 10% neg.log.variable resistor, see R165 | St |
| | R...366 | 57.11.4682 | 6.8 kOhm | 5% 0.25W MF | |
| | R...367 | 57.11.3132 | 1.3 kOhm | 2% 0.25W MF | |
| | R...368 | 57.11.4332 | 3.3 kOhm | 5% 0.25W MF | |
| | R...369 | 57.11.4472 | 4.7 kOhm | 5% 0.25W MF | |
| | R...370 | 57.11.4333 | 33 kOhm | 5% 0.25W MF | |
| | R...371 | 57.11.4332 | 3.3 kOhm | 5% 0.25W MF | |
| | R...372 | 57.11.4332 | 3.3 kOhm | 5% 0.25W MF | |
| | R...373 | 57.11.4333 | 33 kOhm | 5% 0.25W MF | |
| | R...374 | | 10 kOhm | 20% pos.log.variable resistor, see R174 | |
| | R...375 | 57.11.4332 | 3.3 kOhm | 5% 0.25W MF | |
| | R...376 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...377 | 57.11.4332 | 3.3 kOhm | 5% 0.25W MF | |
| | R...378 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...379 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...380 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...381 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...382 | 57.11.4332 | 3.3 kOhm | 5% 0.25W MF | |
| | R...383 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...384 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...385 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...386 | 57.11.4104 | *100 kOhm | 5% 0.25W MF | |

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| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|------|---------|------------|-----------|-----------------------------|-------------------|
| | R...387 | 57.11.4332 | *3.3 kOhm | 5% 0.25W MF | |
| | R...388 | 57.11.4104 | *100 kOhm | 5% 0.25W MF | |
| | R...389 | 57.11.4104 | *100 kOhm | 5% 0.25W MF | |
| | R...390 | 57.11.4104 | *100 kOhm | 5% 0.25W MF | |
| | R...391 | 57.11.4104 | *100 kOhm | 5% 0.25W MF | |
| | R...392 | 57.11.4332 | *3.3 kOhm | 5% 0.25W MF | |
| | R...393 | 57.11.4104 | *100 kOhm | 5% 0.25W MF | |
| | R...394 | 57.11.4104 | *100 kOhm | 5% 0.25W MF | |
| | R...395 | 57.11.4104 | *100 kOhm | 5% 0.25W MF | |
| | R...396 | | not used | | |
| | R...397 | 57.11.4103 | 10 kOhm | 5% 0.25W MF | |
| | R...398 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...399 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...400 | 57.11.4103 | 10 kOhm | 5% 0.25W MF | |
| | R...401 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...402 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...403 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...404 | 57.11.4330 | 33 Ohm | 5% 0.25W MF | |
| | R...405 | | 1.8 kOhm | 5% 0.25W MF | 57114182 option 2 |
| (01) | R...406 | | not used | | |
| (01) | R...407 | 57.11.4109 | 1 Ohm | 5% 0.25W MF | |
| | R...501 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...502 | 57.11.4474 | 470 kOhm | 5% 0.25W MF | |
| | R...503 | 57.11.4105 | 1 MOhm | 5% 0.25W MF | |
| | R...504 | 57.11.4105 | 1 MOhm | 5% 0.25W MF | |
| | R...505 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...506 | 57.11.4474 | 470 kOhm | 5% 0.25W MF | |
| | R...507 | 57.11.4105 | 1 MOhm | 5% 0.25W MF | |
| | R...508 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...509 | 57.11.4474 | 470 kOhm | 5% 0.25W MF | |
| | R...510 | 57.11.4105 | 1 MOhm | 5% 0.25W MF | |
| | R...511 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...512 | 57.11.4474 | 470 kOhm | 5% 0.25W MF | |
| | R...513 | 57.11.4105 | 1 MOhm | 5% 0.25W MF | |
| | R...514 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...515 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...516 | 57.11.3472 | 4.7 kOhm | 1% 0.25W MF | |

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| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|------|---------|------------|----------|-----------------------------|--------|
| | R...517 | 57.11.4154 | 150 kOhm | 2% 0.25W MF | |
| | R...518 | 57.11.3472 | 4.7 kOhm | 1% 0.25W MF | |
| | R...519 | 57.11.4154 | 150 kOhm | 2% 0.25W MF | |
| | R...520 | 57.11.4223 | 22 kOhm | 5% 0.25W MF | |
| | R...521 | 57.11.4103 | 10 kOhm | 5% 0.25W MF | |
| | R...522 | 57.11.6106 | 10 MOhm | 10% 0.25W MF | |
| | R...523 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...524 | 57.11.4474 | 470 kOhm | 5% 0.25W MF | |
| (01) | R...525 | 57.11.4105 | 1 MOhm | 5% 0.25W MF | |
| | R...526 | 57.11.4105 | 1 MOhm | 5% 0.25W MF | |
| | R...527 | 57.11.4103 | 10 kOhm | 5% 0.25W MF | |
| | R...528 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...529 | 57.11.4105 | 1 MOhm | 5% 0.25W MF | |
| | R...530 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...531 | 57.11.4331 | 330 Ohm | 5% 0.25W MF | |
| | R...532 | 57.11.4331 | 330 Ohm | 5% 0.25W MF | |
| | R...533 | 57.11.4103 | 10 kOhm | 5% 0.25W MF | |
| | R...534 | 57.11.4335 | 3.3 MOhm | 5% 0.25W MF | |
| | R...535 | 57.11.4103 | 10 kOhm | 5% 0.25W MF | |
| | R...536 | 57.11.4331 | 330 Ohm | 5% 0.25W MF | |
| | R...537 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...538 | 57.11.4105 | 1 MOhm | 5% 0.25W MF | |
| | R...539 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...540 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...541 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...542 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...543 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R...544 | 57.11.4105 | 1 MOhm | 5% 0.25W MF | |
| | R...545 | 57.11.4473 | 47 kOhm | 5% 0.25W MF | |
| | R...546 | 57.11.4331 | 330 Ohm | 5% 0.25W MF | |
| | R...547 | | not used | | |
| | R...548 | 57.11.4331 | 330 Ohm | 5% 0.25W MF | |
| | R...549 | | not used | | |
| | R...550 | 57.11.4332 | 3.3 kOhm | 5% 0.25W MF | |
| | R...551 | 57.11.4223 | 22 kOhm | 5% 0.25W MF | |
| | R...552 | 57.11.4223 | 22 kOhm | 5% 0.25W MF | |
| | R...553 | 57.11.4393 | 39 kOhm | 5% 0.25W MF | |

S T U D E R (04) 84/10/04 TA STEREO-INPUT-4CH/8CH 1.912.250.00 PAGE 14

| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|------|---------|--------------|----------|---------------------------------------|--------|
| | R...554 | 57.11.3362 | 3.6 kOhm | 5% 0.25W MF | |
| | R...555 | 1.912.001.42 | 10 kOhm | 20% pos.log.variable resistor | St |
| | R...556 | 57.11.4332 | 3.3 kOhm | 5% 0.25W MF | |
| | R...557 | 1.912.001.42 | 10 kOhm | 20% pos.log.variable resistor | St |
| | R...558 | 57.11.4332 | 3.3 kOhm | 5% 0.25W MF | |
| | R...559 | 1.912.001.42 | 10 kOhm | 20% pos.log.variable resistor | St |
| | R...560 | 57.11.4332 | 3.3 kOhm | 5% 0.25W MF | |
| (01) | R...561 | 57.11.4102 | 1 kOhm | 5% 0.25W MF | |
| | R...562 | 57.11.4681 | 680 Ohm | 5% 0.25W MF | |
| | R...563 | 57.11.4471 | 470 Ohm | 5% 0.25W MF | |
| | R...564 | 57.99.0206 | 50 Ohm | PTC Philips Nr.2322 662 91008 | |
| | R...565 | 57.99.0209 | 5.6 Ohm | PTC Philips Nr.2322 662 91005 | |
| | R...566 | 57.99.0209 | 5.6 Ohm | PTC Philips Nr.2322 662 91005 | |
| | R...567 | 57.99.0209 | 5.6 Ohm | PTC Philips Nr.2322 662 91005 | |
| | R...568 | | | | |
| | R...569 | | | | |
| | S...101 | | 2*U | 3u gold 55150003 option2 | ITT |
| | S...102 | | not used | | |
| | S...103 | 55.15.0004 | 4*U | 3u gold button: 55030303 red | ITT |
| | S...104 | | 2*U | combined with variable resistor R 174 | St |
| | S...105 | 55.15.0002 | 2*U | button: 55030303 red | ITT |
| | S...106 | 55.15.0002 | 2*U | button: 55030303 red | ITT |
| | S...107 | 55.15.0002 | * 2*U | button: 55030303 red | ITT |
| | S...108 | 55.15.0002 | * 2*U | button: 55030303 red | ITT |
| | S...301 | | 2*U | 3u gold see S101 | |
| | S...302 | | not used | | |
| | S...303 | | 4*U | 3u gold see S103 | |
| | S...304 | | 2*U | combined with variable resistor R 174 | St |
| | S...305 | | 2*U | 55150012 option1 | ITT |
| | S...306 | | 2*U | 55150012 option1 | ITT |
| | S...307 | | 2*U | 55150012 option1 | ITT |
| | S...308 | | 2*U | 55150012 option1 | ITT |
| | S...501 | | 1*U | toggle-switch 55010159 dialight,CK | |
| | S...502 | | 2*4 | rotary-switch 55130003 | St |
| | S...503 | | 1*U | toggle-switch 55010159 dialight,CK | |
| | S...504 | | 1*U | combined with variable resistor R 150 | St |

S T U D E R (04) 84/10/04 TA STEREO-INPUT-4CH/8CH 1.912.250.00 PAGE 15

| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|------|---------|--------------|-------|---------------------------------------|--------|
| | S...505 | | 1*U | see 1.911.001.00 | |
| | S...506 | | 1*U | see 1.911.001.00 | |
| | S...507 | | 1*U | combined with variable resistor R 555 | St |
| | S...508 | | 1*U | combined with variable resistor R 557 | St |
| | S...509 | | 1*U | combined with variable resistor R 559 | St |
| | T...101 | 1.022.451.00 | | input trafo 1:0.62 | St |
| | T...301 | 1.022.451.00 | | input trafo 1:0.62 | St |

=====
* ONLY 8-CHANNEL
=====

(01) 29.06.83 quality improvement
(02) 15.09.83 improvement of low frequency noise
(03) 27.02.84
(04) 04.10.84 suppression of high frequency

optional 1: 8-switches for 8-master-select

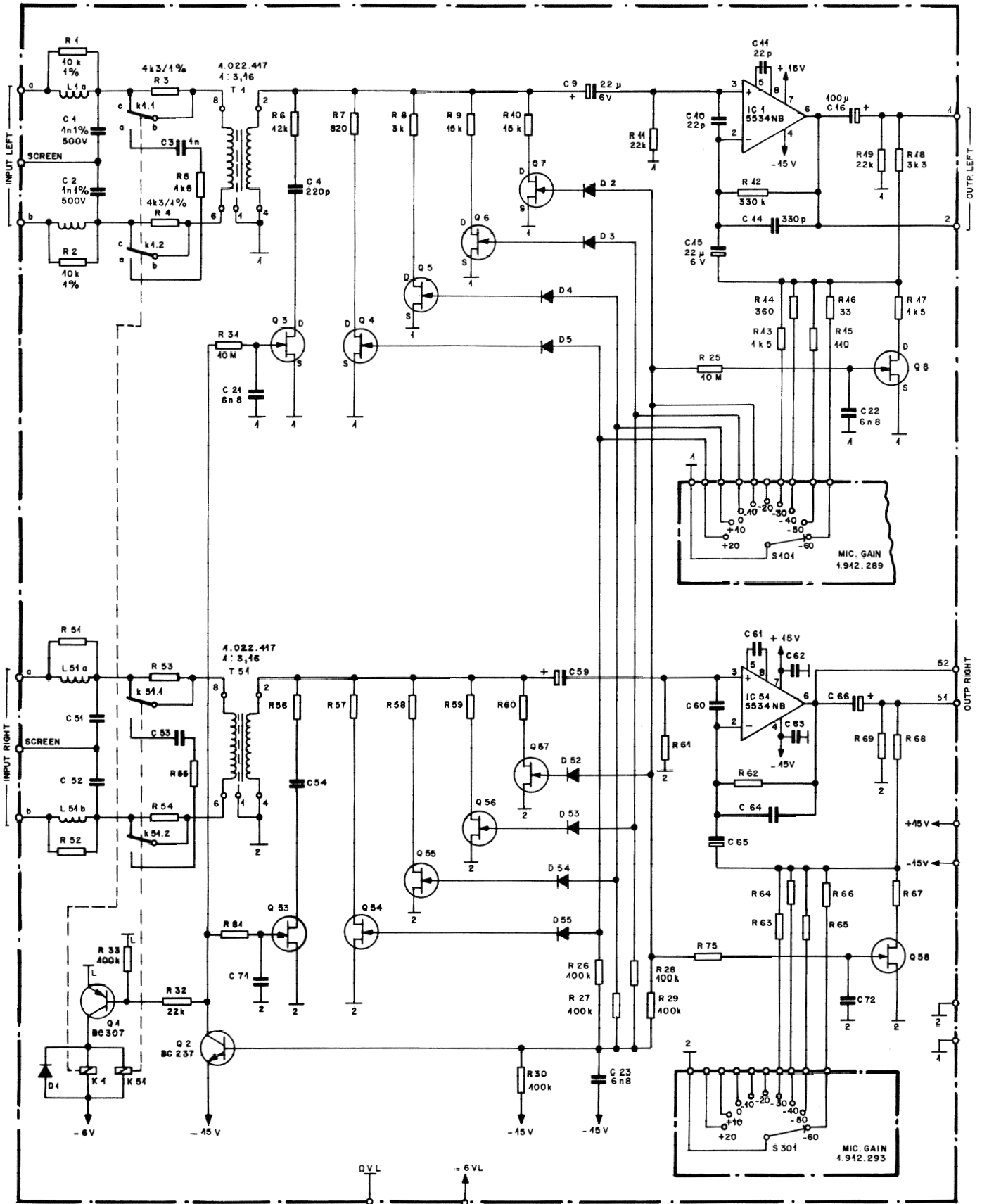
optional 2: with equalizer pcb

CE=Ceramic, CF=Carbon Film, EL=Electrolytic, MF=Metal Film,
PE=Polyester, PP=Polypropylen, PS=Polystyrol

MANUFACTURER: Bu=Burndy, Ex=Exar, Fc=Fairchild, GI=General Instrument
HP=Hewlett Packard, ITT=Intermetall, Mot=Motorola,
NS=National Semiconductors, Ph=Philips, Ra=Raytheon,
Sig=Signetics, Six=Siliconix, St=Studer,
TI=Texas Instrument, CK=C&K

ORIG 83/03/23 (01) 83/06/29 (02) 83/09/15 (03) 84/02/27 (04) 84/10/04

S T U D E R (04) 84/10/04 TA STEREO-INPUT-4CH/8CH 1.912.250.00 PAGE 16

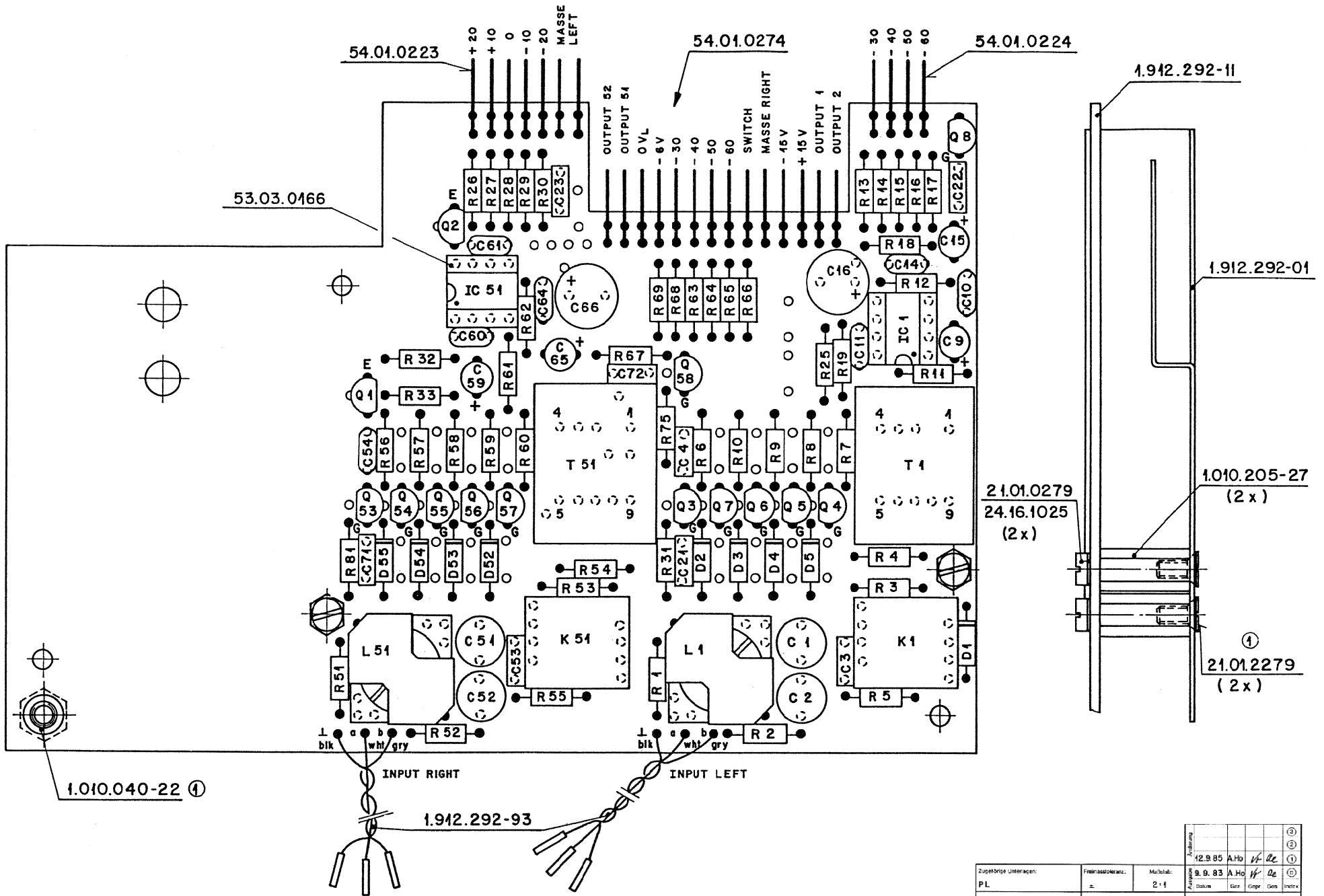


ALL D = 1N 4448

ALL FET = J442

POS. NR.: 4... 49 LEFT
54... 99 RIGHT

| | | | | | |
|--------------------------------|-----------------------|--|--|--------------|--|
| DATE: | 26.10.85 | | | | |
| SIGN: | <i>ml</i> | | | | |
| STUDER REGENSDORF ZÜRICH | STEREO MIC. AMPLIFIER | | | SC 1.912.292 | |



| | | | | | | | | | | |
|----------------------------------|-------------------------|--------------|--------------|-------------|----------------|---------------|----------------|----------------|-------------------|----------------|
| Zusätzliche Unterlagen: | Freiassoziation: | Multiplikat: | Arbeitsjahr: | Arbeitsort: | Arbeitsnummer: | Arbeitsdatum: | Arbeitsgruppe: | Arbeitsleiter: | Arbeitsassistent: | Arbeitsnummer: |
| PL | ± | 2:1 | 9.9.83 | A.Ho | 14 | De | De | De | De | De |
| Erstellt für: | Erstellt durch: | | Kopie für: | | | | | | | |
| STUDIER REGENERATOR ZÜRICH | Stereo Mic Amplifier | | 1.942.292-00 | | | | | | | |

| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|------|-----------|--------------|----------|-----------------------------|------------|
| | C.....1 | 59.05.1102 | 1 nF | 1% 500V PP | |
| | C.....2 | 59.05.1102 | 1 nF | 1% 500V PP | |
| | C.....3 | 59.06.0102 | 1 nF | 10% 50V PE | |
| | C.....4 | 59.34.4221 | 220 pF | 5% CE | |
| | C.....5 | | not used | | |
| | C.....6 | | not used | | |
| | C.....7 | | not used | | |
| | C.....8 | | not used | | |
| | C.....9 | 59.30.2220 | 22 uF | -20% 6.3V TA | |
| | C.....10 | 59.34.2220 | 22 pF | 5% CE | |
| | C.....11 | 59.34.2220 | 22 pF | 5% CE | |
| | C.....14 | 59.34.4331 | 330 pF | 5% CE | |
| | C.....15 | 59.30.2220 | 22 uF | -20% 6.3V TA | |
| (01) | C.....16 | 59.22.3101 | 100 uF | -20% 10V EL | |
| | C.....17 | | not used | | |
| | C.....18 | | not used | | |
| | C.....19 | | not used | | |
| | C.....20 | | not used | | |
| | C.....21 | 59.06.0682 | 6.8 nF | 10% 50V PE | |
| | C.....22 | 59.06.0682 | 6.8 nF | 10% 50V PE | |
| | C.....23 | 59.06.0682 | 6.8 nF | 10% 50V PE | |
| | C.....24 | | not used | | |
| | C.....25 | | not used | | |
| | C.....51 | 59.05.1102 | 1 nF | 1% 500V PP | |
| | C.....52 | 59.05.1102 | 1 nF | 1% 500V PP | |
| | C.....53 | 59.06.0102 | 1 nF | 10% 50V PE | |
| | C.....54 | 59.34.4221 | 220 pF | 5% CE | |
| | C.....55 | | not used | | |
| | C.....56 | | not used | | |
| | C.....57 | | not used | | |
| | C.....58 | | not used | | |
| | C.....59 | 59.30.2220 | 22 uF | -20% 6.3V TA | |
| | C.....60 | 59.34.2220 | 22 pF | 5% CE | |
| | C.....61 | 59.34.2220 | 22 pF | 5% CE | |
| | C.....62 | | not used | | |
| | C.....63 | | not used | | |
| | C.....64 | 59.34.4331 | 330 pF | 5% CE | |
| | C.....65 | 59.30.2220 | 22 uF | -20% 6.3V TA | |
| | C.....66 | 59.22.4101 | 100 uF | -20% 16V EL | |
| | C.....67 | | not used | | |
| | C.....68 | | not used | | |
| | C.....69 | | not used | | |
| | C.....70 | | not used | | |
| | C.....71 | 59.06.0682 | 6.8 nF | 10% 50V PE | |
| | C.....72 | 59.06.0682 | 6.8 nF | 10% 50V PE | |
| | D.....1 | 50.04.0125 | 1N4448 | | any |
| | D.....2 | 50.04.0125 | 1N4448 | | any |
| | D.....3 | 50.04.0125 | 1N4448 | | any |
| | D.....4 | 50.04.0125 | 1N4448 | | any |
| | D.....5 | 50.04.0125 | 1N4448 | | any |
| | D.....52 | 50.04.0125 | 1N4448 | | any |
| | D.....53 | 50.04.0125 | 1N4448 | | any |
| | D.....54 | 50.04.0125 | 1N4448 | | any |
| | D.....55 | 50.04.0125 | 1N4448 | | any |
| | IC.....1 | 50.05.0244 | NE5534AN | single op. amp. low noise | Ti,Sig,Ra |
| | IC.....51 | 50.05.0244 | NE5534AN | single op. amp. low noise | Ti,Sig,Ra |
| | K.....1 | 56.04.0170 | 5 V | relais | |
| | K.....51 | 56.04.0170 | 5 V | relais | |
| | L.....1 | 1.022.207.00 | | HF-sym. coil | |
| | L.....51 | 1.022.207.00 | | HF-sym. coil | |
| | Q.....1 | 50.03.0515 | BC 307 | PNP IC>100mA, B>100 | any |
| | Q.....2 | 50.03.0436 | BC 237 | NPN IC>100mA, B>100 | any |
| | Q.....3 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q.....4 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q.....5 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q.....6 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q.....7 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q.....8 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q.....53 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |

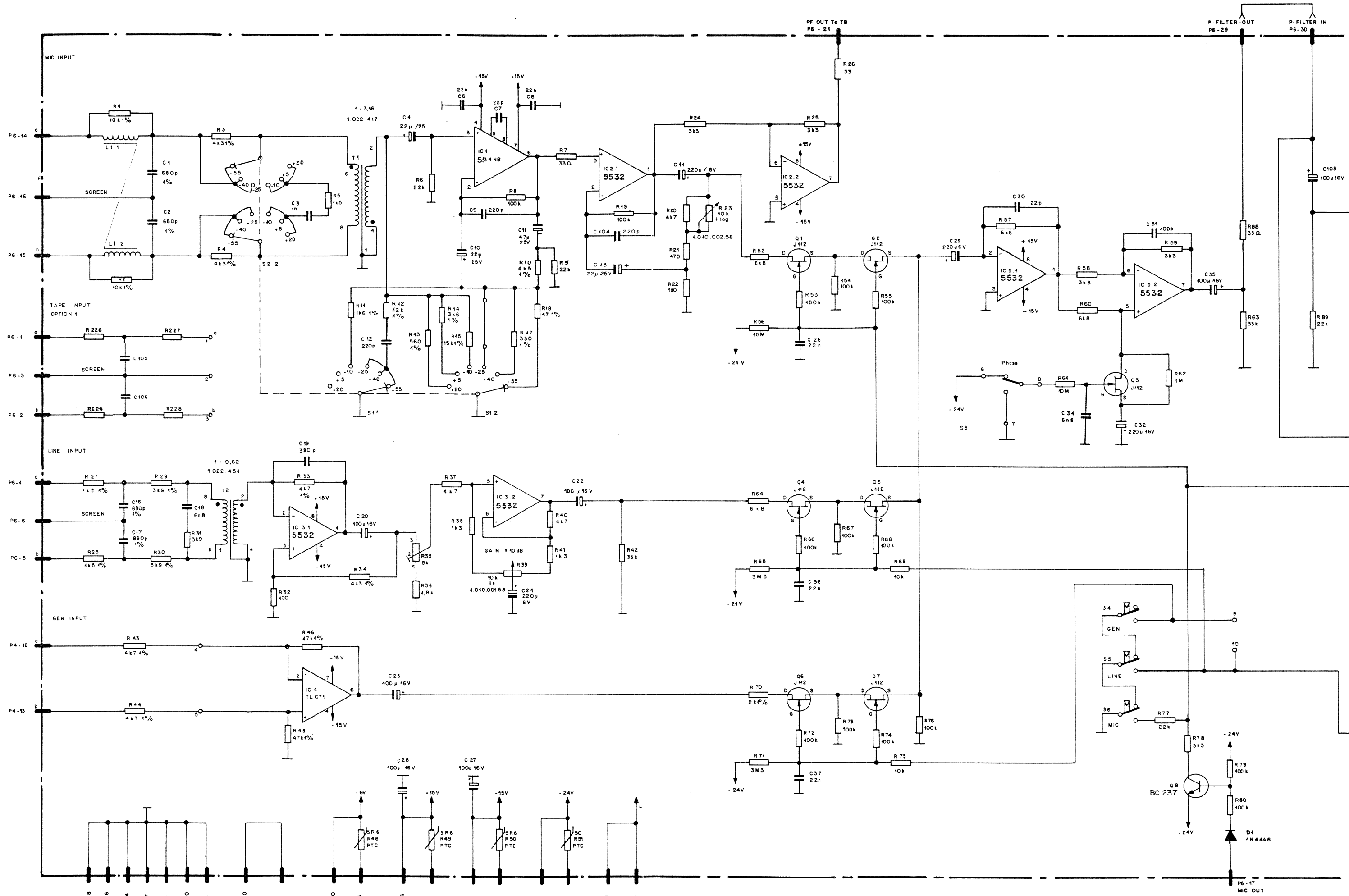
| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|------|----------|--------------|----------|-----------------------------|-------------------|
| | Q.....54 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q.....55 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q.....56 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q.....57 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q.....58 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | R.....1 | 57.11.3103 | 10 kOhm | 1% 0.25W MF | |
| | R.....2 | 57.11.3103 | 10 kOhm | 1% 0.25W MF | |
| | R.....3 | 57.11.3432 | 4.3 kOhm | 1% 0.25W MF | |
| | R.....4 | 57.11.3432 | 4.3 kOhm | 1% 0.25W MF | |
| | R.....5 | 57.11.4152 | 1.5 kOhm | 5% 0.25W MF | |
| | R.....6 | 57.11.4123 | 12 kOhm | 5% 0.25W MF | |
| | R.....7 | 57.11.4821 | 820 Ohm | 2% 0.25W MF | |
| | R.....8 | 57.11.3302 | 3 kOhm | 2% 0.25W MF | |
| | R.....9 | 57.11.4153 | 15 kOhm | 2% 0.25W MF | |
| | R.....10 | 57.11.4153 | 15 kOhm | 2% 0.25W MF | |
| | R.....11 | 57.11.4223 | 22 kOhm | 5% 0.25W MF | |
| | R.....12 | 57.11.4334 | 330 kOhm | 5% 0.25W MF | |
| | R.....13 | 57.11.4152 | 1.5 kOhm | 2% 0.25W MF | |
| | R.....14 | 57.11.3361 | 360 Ohm | 2% 0.25W MF | |
| | R.....15 | 57.11.3111 | 110 Ohm | 2% 0.25W MF | |
| | R.....16 | 57.11.4330 | 33 Ohm | 2% 0.25W MF | |
| | R.....17 | 57.11.4152 | 1.5 kOhm | 2% 0.25W MF | |
| | R.....18 | 57.11.3332 | 3.3 kOhm | 2% 0.25W MF | |
| | R.....19 | 57.11.4223 | 22 kOhm | 5% 0.25W MF | |
| | R.....21 | | not used | | |
| | R.....22 | | not used | | |
| | R.....23 | | not used | | |
| | R.....24 | | not used | | |
| | R.....25 | 57.11.6106 | 10 MOhm | 10% 0.25W MF | |
| | R.....26 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R.....27 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R.....28 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R.....29 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R.....30 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R.....31 | 57.11.6106 | 10 MOhm | 10% 0.25W MF | |
| | R.....32 | 57.11.4223 | 22 kOhm | 5% 0.25W MF | eventuell kleiner |
| | R.....33 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | |
| | R.....51 | 57.11.3103 | 10 kOhm | 1% 0.25W MF | |
| | R.....52 | 57.11.3103 | 10 kOhm | 1% 0.25W MF | |
| | R.....53 | 57.11.3432 | 4.3 kOhm | 1% 0.25W MF | |
| | R.....54 | 57.11.3432 | 4.3 kOhm | 1% 0.25W MF | |
| | R.....55 | 57.11.4152 | 1.5 kOhm | 5% 0.25W MF | |
| | R.....56 | 57.11.4123 | 12 kOhm | 5% 0.25W MF | |
| | R.....57 | 57.11.4821 | 820 Ohm | 2% 0.25W MF | |
| | R.....58 | 57.11.3302 | 3 kOhm | 2% 0.25W MF | |
| | R.....59 | 57.11.4153 | 15 kOhm | 2% 0.25W MF | |
| | R.....60 | 57.11.4153 | 15 kOhm | 2% 0.25W MF | |
| | R.....61 | 57.11.4223 | 22 kOhm | 5% 0.25W MF | |
| | R.....62 | 57.11.4334 | 330 kOhm | 5% 0.25W MF | |
| | R.....63 | 57.11.4152 | 1.5 kOhm | 2% 0.25W MF | |
| | R.....64 | 57.11.3361 | 360 Ohm | 2% 0.25W MF | |
| | R.....65 | 57.11.3111 | 110 Ohm | 2% 0.25W MF | |
| | R.....66 | 57.11.4330 | 33 Ohm | 2% 0.25W MF | |
| | R.....67 | 57.11.4152 | 1.5 kOhm | 2% 0.25W MF | |
| | R.....68 | 57.11.3332 | 3.3 kOhm | 2% 0.25W MF | |
| | R.....69 | 57.11.4223 | 22 kOhm | 5% 0.25W MF | |
| | R.....71 | | not used | | |
| | R.....72 | | not used | | |
| | R.....73 | | not used | | |
| | R.....74 | | not used | | |
| | R.....75 | 57.11.6106 | 10 MOhm | 10% 0.25W MF | |
| | R.....81 | 57.11.6106 | 10 MOhm | 10% 0.25W MF | |
| | S.....1 | | 10U | combined with K1 | |
| | S.....2 | | 20U | combined with K1 | |
| | S.....51 | | 10U | combined with K1 | |
| | S.....52 | | 20U | combined with K1 | |
| | T.....1 | 1.022.417.00 | | input trafo 1:3.1 | |
| | T.....51 | 1.022.417.00 | | input trafo 1:3.1 | |
| | XIC..... | 53.03.0166 | | IC-socket | |

CE=Ceramic, CF=Carbon Film, EL=Electrolytic, MF=Metal Film, PE=Polyester, PP=Polypropylen, PS=Polystyrol

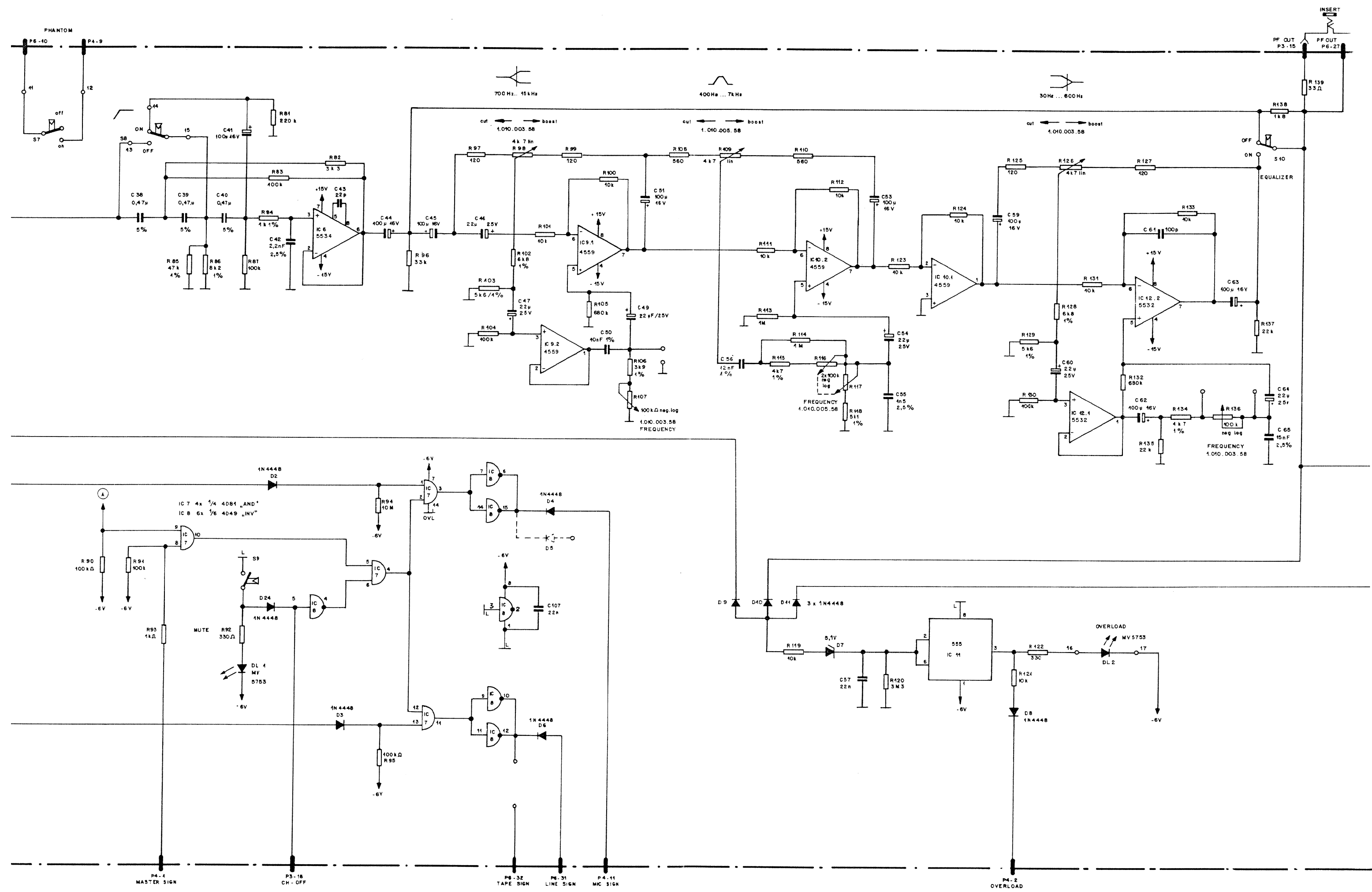
MANUFACTURER: Bu=Burndy, Ex=Exar, Fc=Fairchild, GI=General Instrument, HP=Hewlett Packard, ITT=Intermetall, Mot=Motorola, NS=National Semiconductors, Ph=Phillips, Ra=Raytheon, Sig=Signetics, Six=Siliconix, St=Studer, TI=Texas Instrument

ORIG 83/03/29 (1) 14/02/21

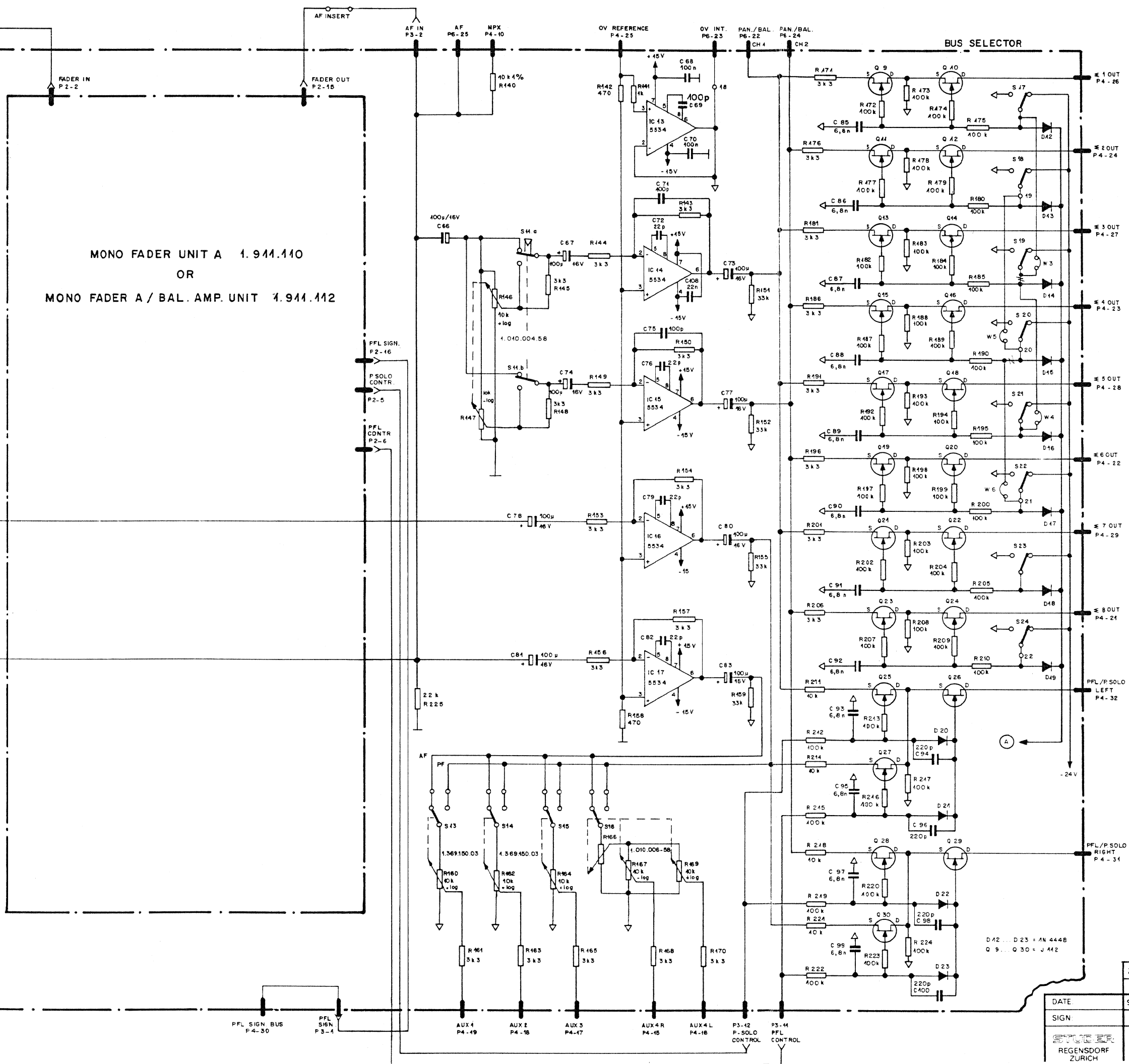
S T U D E R 83/03/29 AE MICROPHONE-AMPLIFIER-STEREO 1.912.292.00



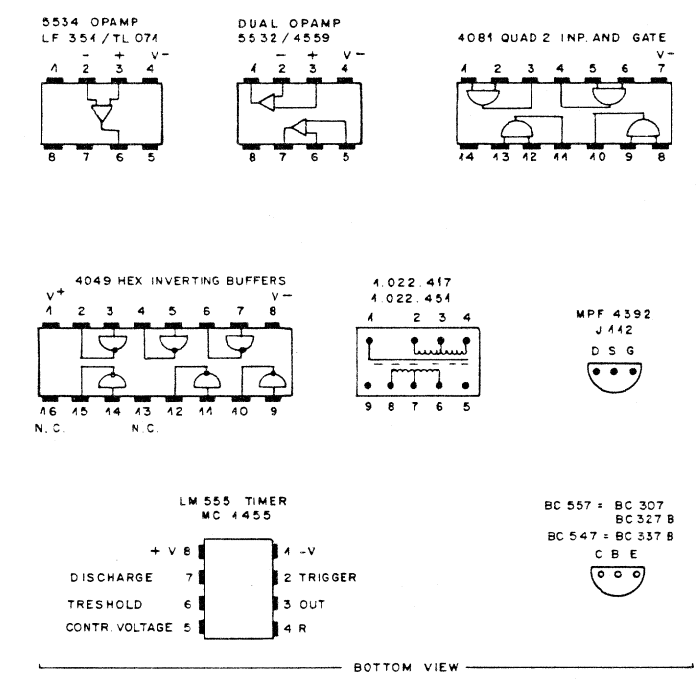
MONO INP. B 4 CH 4.942.120
 MONO INP. B 8 CH 4.942.122
 PAGE 4 OF 3



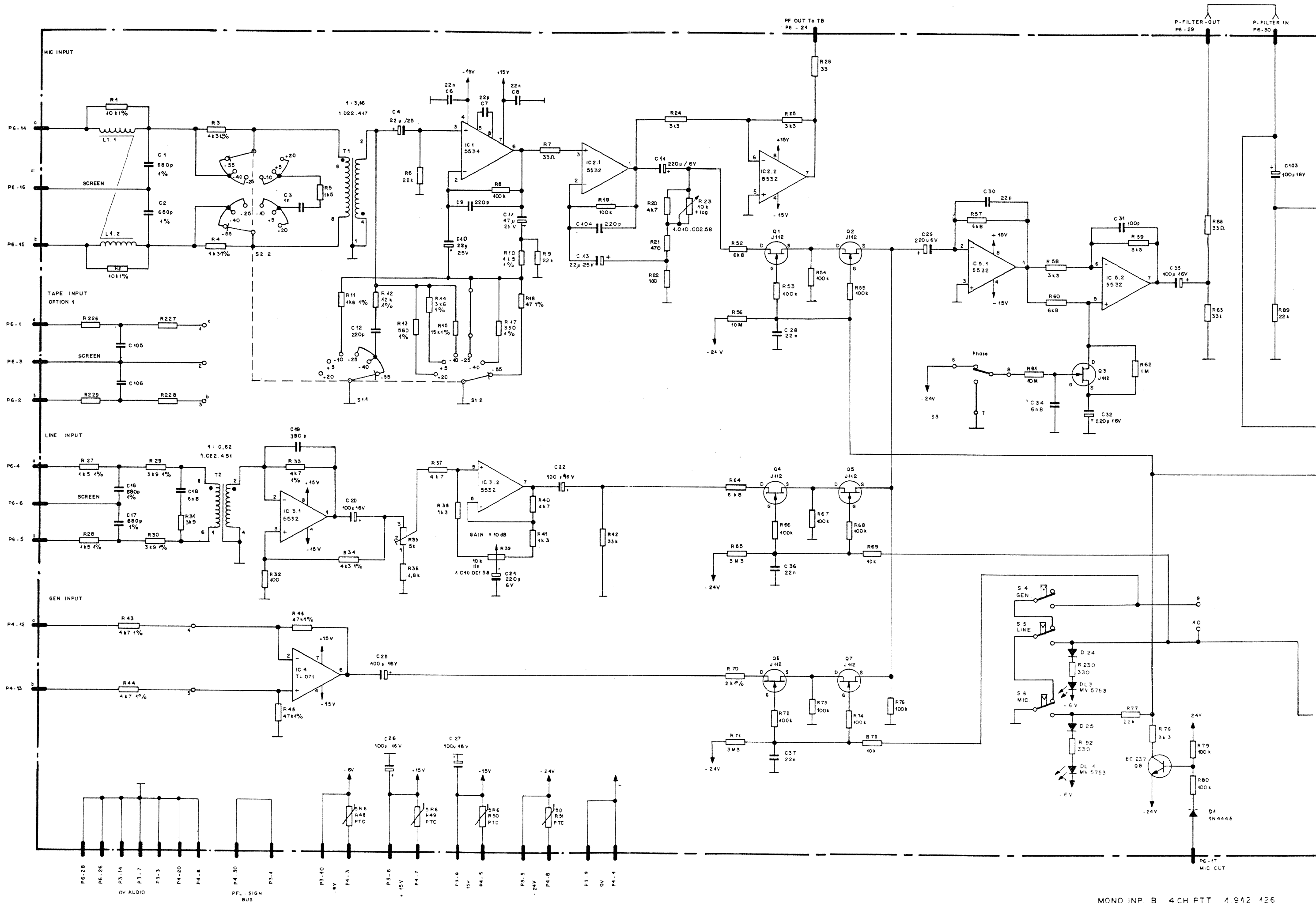
MONO FADER UNIT A 1.944.110
OR
MONO FADER A / BAL. AMP. UNIT 1.944.112

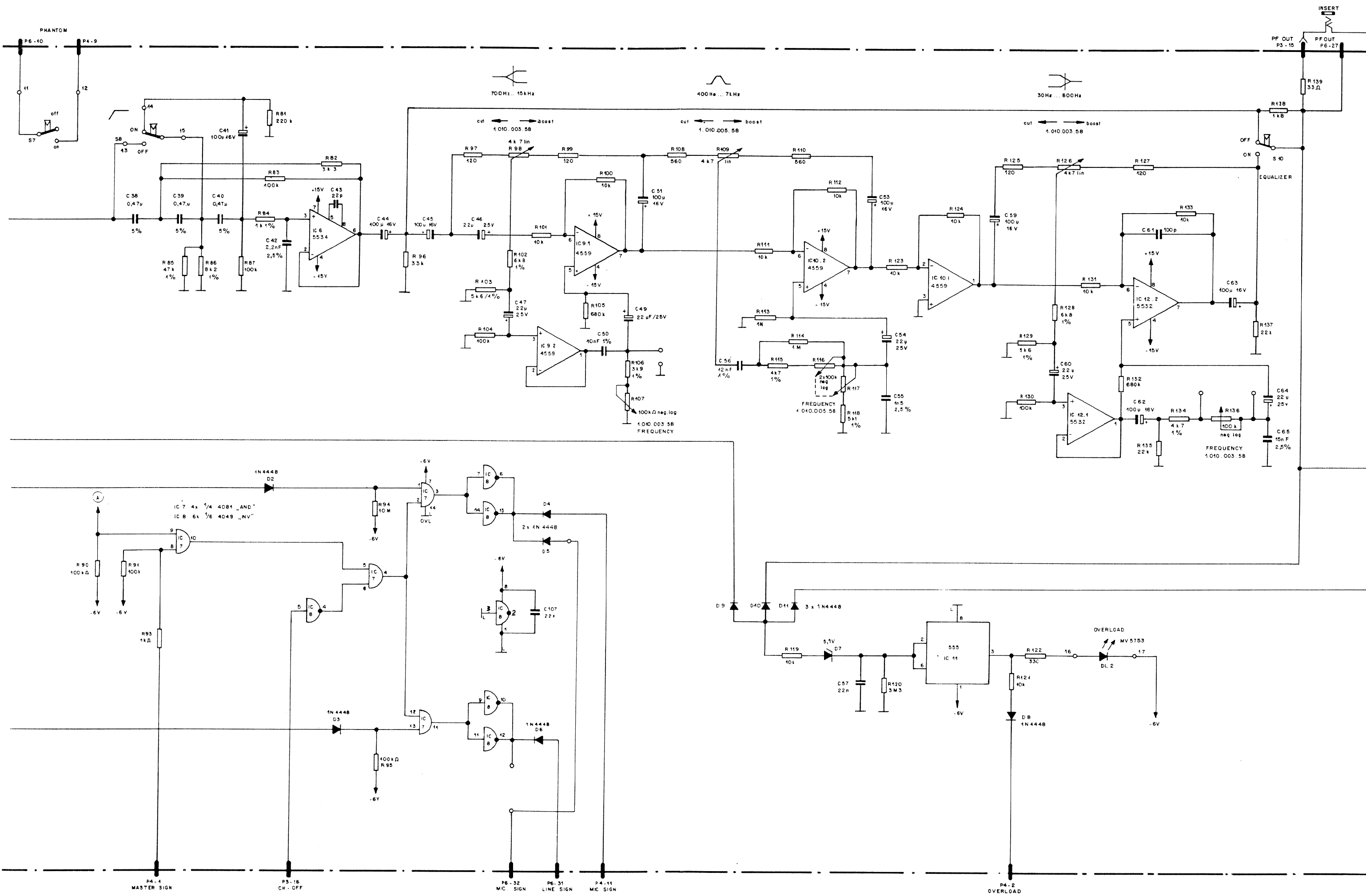


- | | | | | | |
|------------|-----------------------|-----|-------------------|-----|-------------------|
| P 6 | 1 TAPE a | P 4 | 1 MASTER SIGN. | P 3 | 1 PFL SIGN. BUS |
| 2 TAPE b | 2 OVERLOAD | 2 | 2 FADER OUT | 2 | 2 -6 V |
| 3 SCREEN | 3 -6 V | 3 | 3 OVL | 3 | 3 -15 V |
| 4 LINE a | 4 OVL | 4 | 4 OV A | 4 | 4 +15 V |
| 5 LINE b | 5 -15 V | 5 | 5 OVA | 5 | 5 -24 V |
| 6 SCREEN | 6 OV A | 6 | 6 +15 V | 6 | 6 -45 V |
| 7 | 7 +15 V | 7 | 7 OVA | 7 | 7 OVL |
| 8 | 8 -24 V | 8 | 8 OVA | 8 | 8 -6 V |
| 9 | 9 +48 V | 9 | 9 OVL | 9 | 9 PFL CONTR. |
| 10 PHANTOM | 10 MPX | 10 | 10 -6 V | 10 | 10 P. SOLO CONTR. |
| 11 | 11 MIC. SIGN. | 11 | 11 PFL CONTR. | 11 | 11 OVA LEFT |
| 12 | 12 GEN. a | 12 | 12 P. SOLO CONTR. | 12 | 12 FADER INP. |
| 13 | 13 GEN. b | 13 | 13 OVA | 13 | 13 CH-OFF |
| 14 | 14 MIC. a | 14 | 14 = 8 OUT | | |
| 15 | 15 MIC. b | 15 | 15 AUX 4 R OUT | | |
| 16 | 16 SCREEN | 16 | 16 AUX 4 L OUT | | |
| 17 | 17 MIC. CUT | 17 | 17 AUX 3 OUT | | |
| 18 | | 18 | 18 AUX 2 OUT | | |
| 19 | | 19 | 19 AUX 1 OUT | | |
| 20 | | 20 | 20 OV A | | |
| 21 | 21 PF OUT TO TB. | 21 | 21 = 8 OUT | | |
| 22 | 22 CH 1 PAN./BAL. | 22 | 22 = 6 OUT | | |
| 23 | 23 OV INT. | 23 | 23 = 4 OUT | | |
| 24 | 24 CH 2 PAN./BAL. | 24 | 24 = 2 OUT | | |
| 25 | 25 AF OUT | 25 | 25 OV REF | | |
| 26 | 26 OVA | 26 | 26 = 4 OUT | | |
| 27 | 27 PF OUT | 27 | 27 = 3 OUT | | |
| 28 | 28 OVA | 28 | 28 = 5 OUT | | |
| 29 | 29 P-FILTER OUT | 29 | 29 = 7 OUT | | |
| 30 | 30 P-FILTER IN | 30 | 30 PFL SIGN. BUS | | |
| 31 | 31 LINE SIGN. | 31 | 31 PFL/P SOLO R | | |
| 32 | 32 TAPE SIGN OPTION 1 | 32 | 32 PFL/P SOLO L | | |



| | | | | | | |
|------|---------------------------------|--------------|----------|---------|---------|--------------|
| DATE | 2.10.89 | | | | | |
| SIGN | Ge | 13.12.83 | 16.12.83 | 26.2.84 | 25.5.84 | 4.10.84 |
| | me | nc | fo | nc | ul | ul |
| | | | | | | PAGE 3 OF 3 |
| | STÜCKER REGENSDORF ZÜRICH | MONO INPUT B | 4 CH | | | SC 1.912.120 |
| | | MONO INPUT B | 8 CH | | | SC 1.912.122 |

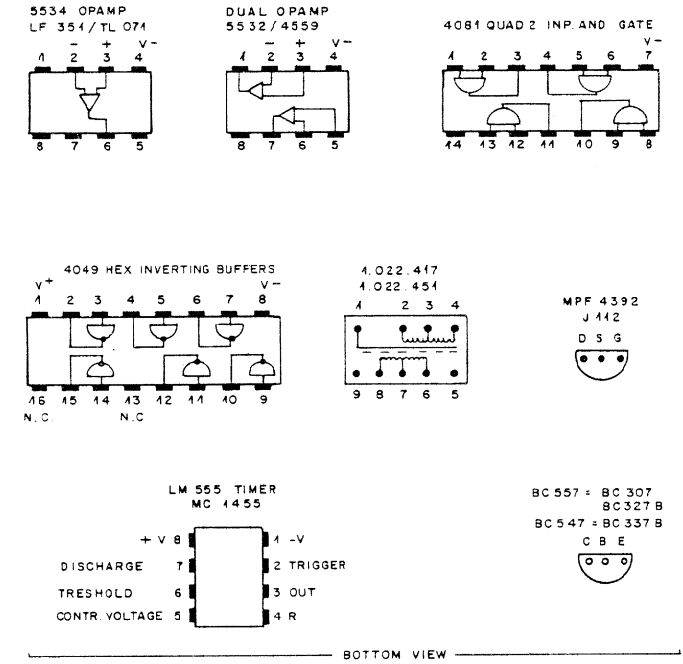




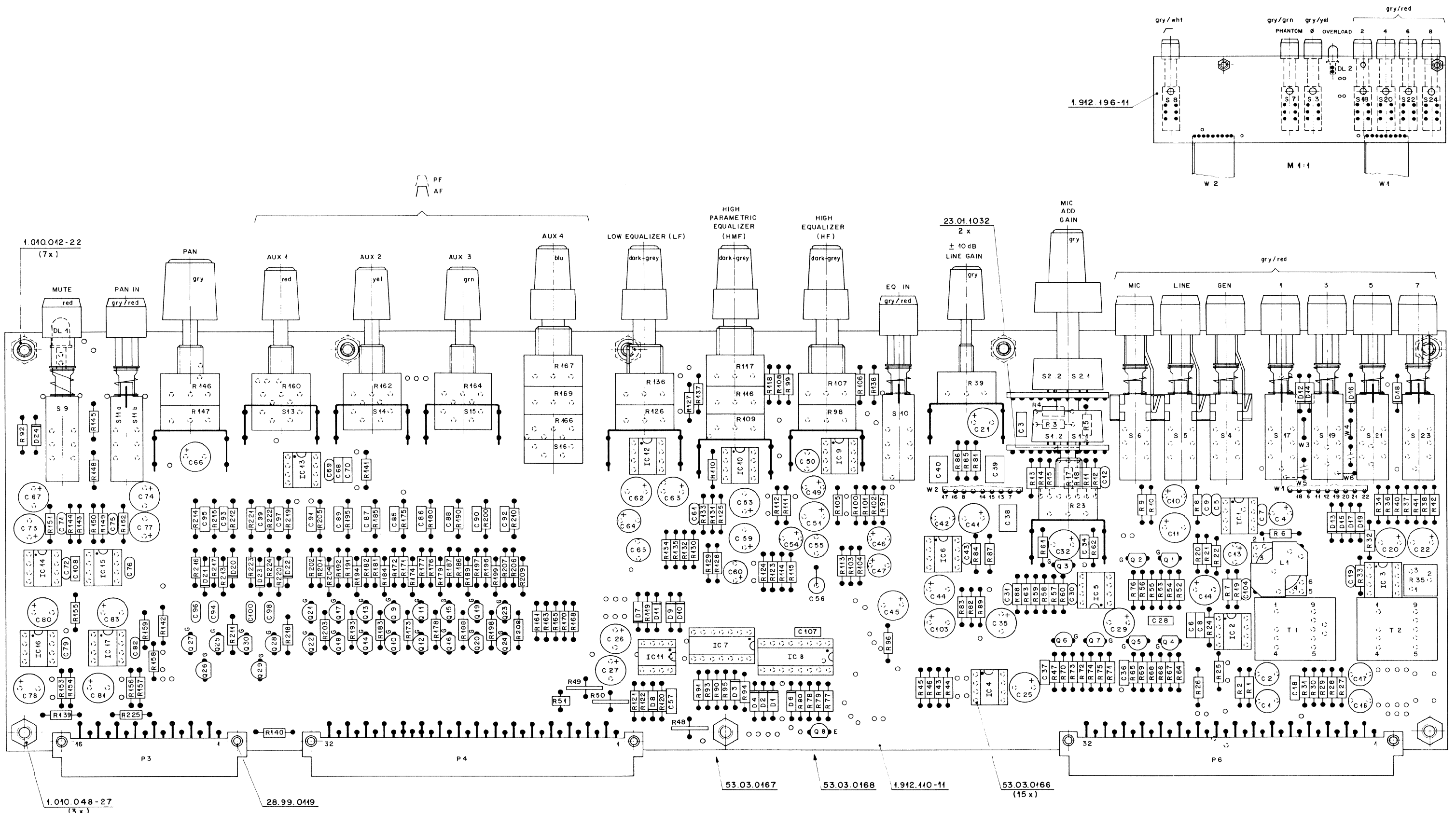
MONO FADER UNIT B 1.911.150
OR
MONO FADER B / BAL. AMP. 1.911.152

BUS SELECTOR

- | | | | | | |
|------------------------|----------|-------------------|----------------|-------------|----------------|
| P 6 | 1 TAPE a | P 4 | 1 MASTER SIGN. | P 3 | 1 PFL SIGN BUS |
| 2 TAPE b | OPTION 1 | 2 OVERLOAD | 2 FADER OUT | 2 FADER OUT | |
| 3 SCREEN | | 3 -6V | 3 | 3 | |
| 4 LINE a | | 4 DVL | 4 | 4 | |
| 5 LINE b | | 5 -15V | 5 | 5 | |
| 6 SCREEN | | 6 OV A | 6 | 6 | |
| 7 | | 7 +15V | 7 | 7 | |
| 8 | | 8 -24V | 8 | 8 | |
| 9 | | 9 +48V | 9 | 9 | |
| 10 PHANTOM | | 10 MPX | 10 | 10 | |
| 11 | | 11 MIC SIGN. | 11 | 11 | |
| 12 | | 12 GEN. a | 12 | 12 | |
| 13 | | 13 GEN. b | 13 | 13 | |
| 14 | | 14 MIC. a | 14 | 14 | |
| 15 | | 15 MIC. b | 15 | 15 | |
| 16 SCREEN | | 16 AUX 4 R OUT | 16 | 16 | |
| 17 MIC. OUT | | 17 AUX 4 L OUT | 17 | 17 | |
| 18 | | 18 AUX 3 OUT | 18 | 18 | |
| 19 | | 19 AUX 2 OUT | 19 | 19 | |
| 20 | | 20 AUX 1 OUT | 20 | 20 | |
| 21 PF OUT TO TB | | 21 OV A | 21 | 21 | |
| 22 CH 1 PAN / BAL | | 22 8 OUT | 22 | 22 | |
| 23 OV INT. | | 23 6 OUT | 23 | 23 | |
| 24 CH 2 PAN / BAL | | 24 4 OUT | 24 | 24 | |
| 25 AF OUT | | 25 2 OUT | 25 | 25 | |
| 26 | | 26 1 OUT | 26 | 26 | |
| 27 PF OUT | | 27 3 OUT | 27 | 27 | |
| 28 | | 28 5 OUT | 28 | 28 | |
| 29 P-FILTER OUT | | 29 7 OUT | 29 | 29 | |
| 30 P-FILTER IN | | 30 PFL SIGN. BUS | 30 | 30 | |
| 31 LINE SIGN. | | 31 PFL / P SOLO R | 31 | 31 | |
| 32 TAPE SIGN. OPTION 1 | | 32 PFL / P SOLO L | 32 | 32 | |



| | | | | | |
|--------------------------------|--------|---------|-----------------------|--|--------------|
| DATE: | 8.1.85 | 2.10.89 | | | |
| SIGN: | Ge | Ge | | | PAGE 3 OF 3 |
| STUDER REGENSDORF ZÜRICH | | | MONO INPUT B 4 CH PTT | | SC 1.912.126 |

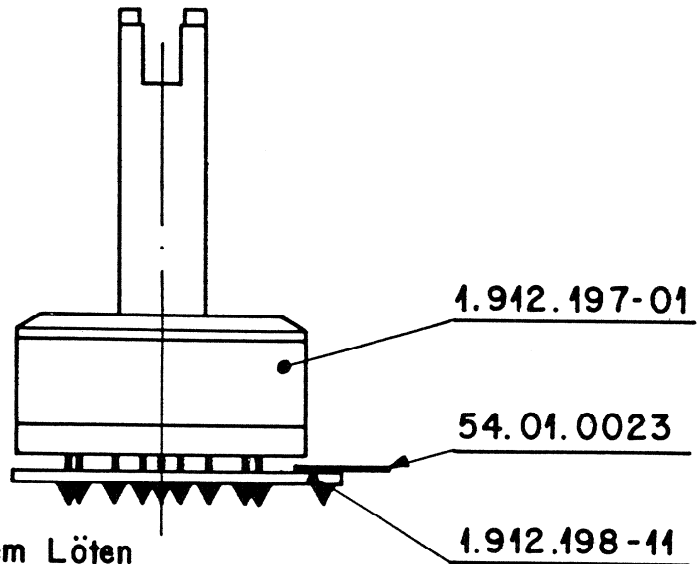


ONLY 4 CH : W3, W4, W5, W6
 // CIRCUIT INTERRUPT SOLDER SIDE

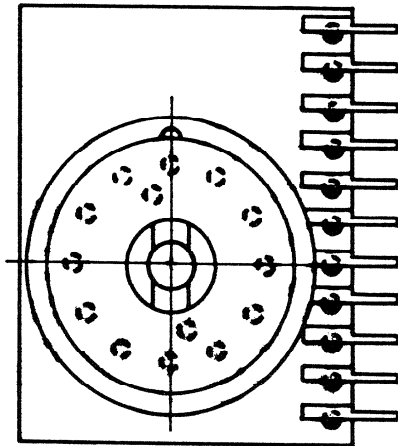
| VALID FOR | NR. UNIT | NR. PL |
|-----------|--------------|--------------|
| 4 CH | 1.912.120-00 | 1.912.120-00 |
| 8 CH | 1.912.122-00 | 1.912.120-00 |

① C 34 was C 33

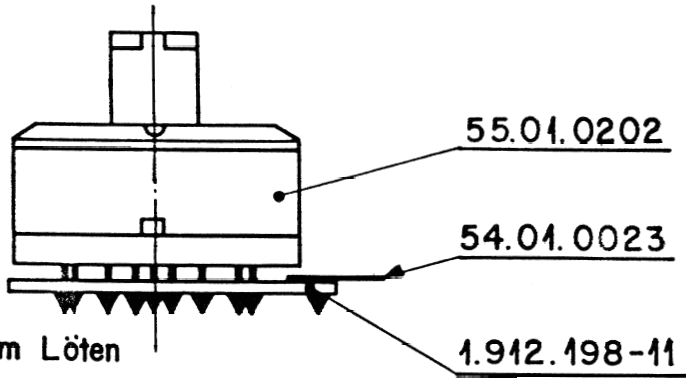
| | | | |
|---------------------------------------|------------------------|--|-----------------------|
| Werkstoff | Norm-Nr.: | Güte: | Änderung |
| DIN-Bez.: | Oberfläche: | Beh.: | 8.2.84 A.Ho |
| Abmessung: | Zugehörige Unterlagen: | Fremmasstoleranz: | 16.12.83 A.Ho |
| | | Maßstab: | 7.10.83 A.Ho |
| | | Datum: | Gez. Gepr. Ges. Index |
| Ersetzt für: | Ersetzt durch: | Kopie für: | |
| STUDEF REGENSDORF ZÜRICH | | Bezeichnung: Mono Input Unit B 4 CH / 8 CH Nummer: 1.912.120-00 | |



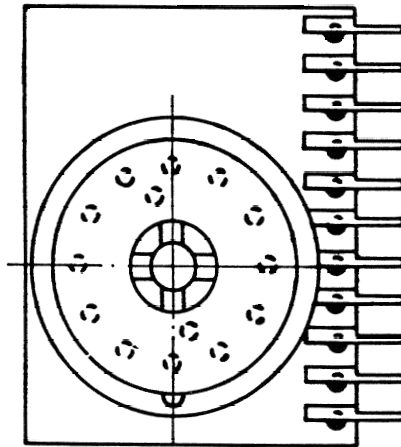
Schalter während dem Lötén
auf Print pressen



| | | | | | | | | | | | |
|--------------------------------|------------|-------------------------------------|----------|-------------------------|--------|-------|------|-------|--|---|---|
| Werkstoff | Norm-Nr.: | Oberfläche | Güte: | Änderung | | | | | | ③ | |
| | DIN-Bez.: | | Beh.: | | | | | | | | ② |
| | Abmessung: | | | | | | | | | | |
| Zugehörige Unterlagen: | | Freimasstoleranz: | Maßstab: | Ausgabe | 6.5.83 | A.Ho | ✓ | ✓ | | ④ | |
| Ersatz für: | | ± | 2:1 | Datum | Gez. | Gepr. | Ges. | Index | | | |
| Ersetzt durch: | | Kopie für: | | | | | | | | | |
| STUDER REGENSDORF ZÜRICH | | Bezeichnung: Switch - Board - B1 | | Nummer: 1.912.197-00 | | | | | | | |



Schalter während dem Lötén
auf Print pressen



| | | | | | | | | | | |
|---------------------------------------|---|------------|--------------------------------|----------|--------|------|-------|----|---|---|
| Werkstoff | Norm-Nr.: | Güte: | | Änderung | | | | | ③ | |
| | DIN-Bez.: | Oberfläche | | | | | | | | ② |
| | Abmessung: | Beh.: | | | | | | | | ① |
| Zugehörige Unterlagen: | Freimasstoleranz: | Maßstab: | Ausgabe | | 6.5.83 | A.Ho | W | ka | ④ | |
| | ± | 2 : 1 | Datum | Gez. | Gepr. | Ges. | Index | | | |
| Ersatz für: | Ersetzt durch: | | Kopie für: | | | | | | | |
| STUDER REGENSDORF ZÜRICH | Benennung: Switch-Board - B 2 | | Nummer: 1.912.198-00 | | | | | | | |

| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | | | MANUF. |
|------------------------------|----------|--------------|---------------------------|-----------------------------|------|----|--------|
| | A.....1 | 1.912.197.00 | | SWITCH-BOARD-B1 | | | |
| | A.....2 | 1.912.198.00 | | SWITCH-BOARD-B2 | | | |
| | C.....1 | 59.05.1681 | 680 pF | 1% | 500V | PP | |
| | C.....2 | 59.05.1681 | 680 pF | 1% | 500V | PP | |
| | C.....3 | 59.06.0102 | 1 nF | 10% | 50V | PE | |
| | C.....4 | 59.22.6220 | 22 uF | -20% | 25V | EL | |
| | C.....5 | 59.34.2220 | 22 pF | 5% | | CE | |
| | C.....6 | 59.06.0223 | 22 nF | 10% | 50V | PE | |
| | C.....7 | 59.34.2220 | 22 pF | 5% | | CE | |
| | C.....8 | 59.06.0223 | 22 nF | 10% | 50V | PE | |
| | C.....9 | 59.34.4221 | 220 pF | 5% | | CE | |
| | C.....10 | 59.22.6220 | 22 uF | -20% | 25V | EL | |
| | C.....11 | 59.22.5470 | 47 uF | -20% | 25V | EL | |
| | C.....12 | 59.34.4221 | 220 pF | 5% | | CE | |
| | C.....13 | 59.22.6220 | 22 uF | -20% | 25V | EL | |
| | C.....14 | 59.22.2221 | 220 uF | -20% | 6V | EL | |
| | C.....15 | | not used | | | | |
| | C.....16 | 59.05.1681 | 680 pF | 1% | 500V | PP | |
| | C.....17 | 59.05.1681 | 680 pF | 1% | 500V | PP | |
| | C.....18 | 59.06.0682 | 6.8 nF | 5% | 50V | PE | |
| | C.....19 | 59.34.5391 | 390 pF | 5% | | CE | |
| | C.....20 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| | C.....21 | 59.22.2221 | 220 uF | -20% | 6V | EL | |
| | C.....22 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| | C.....23 | | not used | | | | |
| | C.....24 | | not used | | | | |
| | C.....25 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| | C.....26 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| | C.....27 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| | C.....28 | 59.06.0223 | 22 nF | | 50V | PE | |
| | C.....29 | 59.22.2221 | 220 uF | -20% | 6V | EL | |
| | C.....30 | 59.34.2220 | 22 pF | 5% | | CE | |
| | C.....31 | 59.34.4101 | 100 pF | 5% | | CE | |
| | C.....32 | 59.22.2221 | 220 uF | -20% | 6V | EL | |
| (01) | C.....33 | | not used | | | | |
| (01) | C.....34 | 59.06.0682 | 6.8 nF | -20% | 50V | PE | |
| S T U D E R (03) 84/10/04 TA | | | MONO-INPUT-UNIT-B-4CH/8CH | 1.912.120.00 | PAGE | 1 | |

| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | | | MANUF. |
|------------------------------|----------|------------|---------------------------|-----------------------------|------|----|--------|
| | C.....35 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| | C.....36 | 59.06.0223 | 22 nF | | 50V | PE | |
| | C.....37 | 59.06.0223 | 22 nF | | 50V | PE | |
| | C.....38 | 59.06.5474 | 470 nF | 5% | 50V | PE | |
| | C.....39 | 59.06.5474 | 470 nF | 5% | 50V | PE | |
| | C.....40 | 59.06.5474 | 470 nF | 5% | 50V | PE | |
| | C.....41 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| | C.....42 | 59.05.2222 | 2.2 nF | 2.5% | 50V | PP | |
| | C.....43 | 59.34.2220 | 22 pF | 5% | | CE | |
| | C.....44 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| | C.....45 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| | C.....46 | 59.22.6220 | 22 uF | -20% | 25V | EL | |
| | C.....47 | 59.22.6220 | 22 uF | -20% | 25V | EL | |
| | C.....48 | | not used | | | | |
| | C.....49 | 59.22.6220 | 22 uF | -20% | 25V | EL | |
| | C.....50 | 59.05.1103 | 10 nF | 1% | 50V | PP | |
| | C.....51 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| | C.....52 | | not used | | | | |
| | C.....53 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| | C.....54 | 59.22.6220 | 22 uF | -20% | 25V | EL | |
| | C.....55 | 59.05.2152 | 1.5 nF | 2.5% | 50V | PP | |
| | C.....56 | 59.12.7123 | 12 nF | 1% | 50V | PS | |
| | C.....57 | 59.06.0223 | 22 nF | 10% | 50V | PE | |
| | C.....58 | | not used | | | | |
| | C.....59 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| | C.....60 | 59.22.6220 | 22 uF | -20% | 25V | EL | |
| | C.....61 | 59.34.4101 | 100 pF | 5% | | CE | |
| | C.....62 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| | C.....63 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| | C.....64 | 59.22.6220 | 22 uF | -20% | 25V | EL | |
| | C.....65 | 59.05.2153 | 15 nF | 2.5% | 50V | PP | |
| | C.....66 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| | C.....67 | 59.22.4101 | 100 uF | -20% | 16V | EL | |
| | C.....68 | 59.06.0223 | 22 nF | 10% | 50V | PE | |
| (03) | C.....69 | 59.34.4101 | 100 pF | 5% | | CE | |
| | C.....70 | 59.06.0223 | 22 nF | 10% | 50V | PE | |
| | C.....71 | 59.34.4101 | 100 pF | 5% | | CE | |
| S T U D E R (03) 84/10/04 TA | | | MONO-INPUT-UNIT-B-4CH/8CH | 1.912.120.00 | PAGE | 2 | |

| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | | MANUF. |
|---------|---------|------------|----------|-----------------------------|------|----------------------|
| C....72 | | 59.34.2220 | 22 pF | 5% | | CE |
| C....73 | | 59.22.4101 | 100 uF | -20% | 16V | EL |
| C....74 | | 59.22.4101 | 100 uF | -20% | 16V | EL |
| C....75 | | 59.34.4101 | 100 pF | 5% | | CE |
| C....76 | | 59.34.2220 | 22 pF | 5% | | CE |
| C....77 | | 59.22.4101 | 100 uF | -20% | 16V | EL |
| C....78 | | 59.22.4101 | 100 uF | -20% | 16V | EL |
| C....79 | | 59.34.2220 | 22 pF | 5% | | CE |
| C....80 | | 59.22.4101 | 100 uF | -20% | 16V | EL |
| C....81 | | 59.22.4101 | 100 uF | -20% | 16V | EL |
| C....82 | | 59.34.2220 | 22 pF | 5% | | CE |
| C....83 | | 59.22.4101 | 100 uF | -20% | 16V | EL |
| C....84 | | | not used | | | |
| C....85 | | 59.06.0682 | 6.8 nF | | 50V | PE |
| C....86 | | 59.06.0682 | 6.8 nF | | 50V | PE |
| C....87 | | 59.06.0682 | 6.8 nF | | 50V | PE |
| C....88 | | 59.06.0682 | 6.8 nF | | 50V | PE |
| C....89 | | 59.06.0682 | * 6.8 nF | | 50V | PE |
| C....90 | | 59.06.0682 | * 6.8 nF | | 50V | PE |
| C....91 | | 59.06.0682 | * 6.8 nF | | 50V | PE |
| C....92 | | 59.06.0682 | * 6.8 nF | | 50V | PE |
| C....93 | | 59.06.0682 | 6.8 nF | | 50V | PE |
| C....94 | | 59.34.4221 | 220 pF | 5% | | CE |
| C....95 | | 59.06.0682 | 6.8 nF | | 50V | PE |
| C....96 | | 59.34.4222 | 220 pF | 5% | | CE |
| C....97 | | 59.06.0682 | 6.8 nF | | 50V | PE |
| C....98 | | 59.34.4221 | 220 pF | 5% | | CE |
| C....99 | | 59.06.0682 | 6.8 nF | | 50V | PE |
| C...100 | | 59.34.4221 | 220 pF | 5% | | CE |
| C...101 | | | not used | | | |
| C...102 | | | not used | | | |
| C...103 | | 59.22.4101 | 100 uF | -20% | 16V | EL |
| C...104 | | 59.34.4221 | 220 pF | 5% | | CE |
| C...105 | | | 680 pF | 1% | 500V | PP 59051681 option 1 |
| C...106 | | | 680 pF | 1% | 500V | PP 59051681 option 1 |
| C...107 | | 59.06.0223 | 22 nF | 10% | 50V | PE |
| C...108 | | 59.06.0223 | 22 nF | 10% | 50V | PE |

S T U D E R (03) 84/10/04 TA MONO-INPUT-UNIT-B-4CH/8CH 1.912.120.00 PAGE 3

| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | | MANUF. |
|---------|---------|------------|----------|-----------------------------|---------------------------------|-----------|
| C...109 | | | not used | | | |
| C...110 | | | not used | | | |
| C...111 | | | not used | | | |
| D.....1 | | 50.04.0125 | 1N4448 | | | any |
| D.....2 | | 50.04.0125 | 1N4448 | | | any |
| D.....3 | | 50.04.0125 | 1N4448 | | | any |
| D.....4 | | 50.04.0125 | 1N4448 | | | any |
| D.....5 | | | not used | | | |
| D.....6 | | 50.04.0125 | 1N4448 | | | any |
| D.....7 | | 50.04.0112 | Z 5.1V | 400mW | BZX83C 5.1, BZX55C 5.1, ZPD 5.1 | any |
| D.....8 | | 50.04.0125 | 1N4448 | | | any |
| D.....9 | | 50.04.0125 | 1N4448 | | | any |
| D....10 | | 50.04.0125 | 1N4448 | | | any |
| D....11 | | 50.04.0125 | 1N4448 | | | any |
| D....12 | | 50.04.0125 | 1N4448 | | | any |
| D....13 | | 50.04.0125 | * 1N4448 | | | any |
| D....14 | | 50.04.0125 | 1N4448 | | | any |
| D....15 | | 50.04.0125 | 1N4448 | | | any |
| D....16 | | 50.04.0125 | * 1N4448 | | | any |
| D....17 | | 50.04.0125 | 1N4448 | | | any |
| D....18 | | 50.04.0125 | * 1N4448 | | | any |
| D....19 | | 50.04.0125 | * 1N4448 | | | any |
| D....20 | | 50.04.0125 | 1N4448 | | | any |
| D....21 | | 50.04.0125 | 1N4448 | | | any |
| D....22 | | 50.04.0125 | 1N4448 | | | any |
| D....23 | | 50.04.0125 | 1N4448 | | | any |
| D....24 | | 50.04.0125 | 1N4448 | | | any |
| DL....1 | | 50.04.2111 | MV5753 | red | | GI,HP |
| DL....2 | | 50.04.2111 | MV5753 | red | | GI,HP |
| IC....1 | | 50.05.0244 | NE5534NB | single op. amp. | low noise | Sig,Ra |
| IC....2 | | 50.09.0106 | NE5532AN | dual op. amp. | low noise | Sig,Ex,Ra |
| IC....3 | | 50.09.0106 | NE5532AN | dual op. amp. | low noise | Sig,Ex,Ra |
| IC....4 | | 50.09.0103 | TL 071 | single op. amp. | | TI |
| IC....5 | | 50.09.0105 | NE5532 | dual op. amp. | | Sig,Ex,Ra |

S T U D E R (03) 84/10/04 TA MONO-INPUT-UNIT-B-4CH/8CH 1.912.120.00 PAGE 4

| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|---------|--------------|------------|---------|-----------------------------|-------------|
| IC....6 | | 50.05.0243 | NE5534N | single op. amp. | TI,Sig,Ra |
| IC....7 | | 50.07.0081 | CD4081 | 2 input and-gate CMOS | Fc,Mot,RCA |
| IC....8 | | 50.07.0049 | CD4049 | hex. inverter CMOS | Fc,Mot |
| IC....9 | | 50.09.0107 | RC4559 | dual op. amp. | Ra,NEC |
| IC...10 | | 50.09.0107 | RC4559 | dual op. amp. | Ra,NEC |
| IC...11 | | 50.05.0158 | NE 555 | timer | Sig,Mot,NSC |
| IC...12 | | 50.09.0105 | NE5532 | dual op. amp. | Sig,Ex,Ra |
| IC...13 | | 50.05.0243 | NE5534N | single op. amp. | TI,Sig,Ra |
| IC...14 | | 50.05.0243 | NE5534N | single op. amp. | TI,Sig,Ra |
| IC...15 | | 50.05.0243 | NE5534N | single op. amp. | TI,Sig,Ra |
| IC...16 | | 50.05.0243 | NE5534N | single op. amp. | TI,Sig,Ra |
| IC...17 | | 50.05.0243 | NE5534N | single op. amp. | TI,Sig,Ra |
| L.....1 | 1.022.207.00 | | | hf-sym.choke | St |
| P.....3 | 54.11.2007 | | 2*8 pin | euroconnector | Bu |
| P.....4 | 54.01.0359 | | 2*16pin | euroconnector | Bu |
| P.....6 | 54.01.0359 | | 2*16pin | euroconnector | Bu |
| Q.....1 | 50.03.0350 | | J 112 | N-JFET | NS,Mot,Six |
| Q.....2 | 50.03.0350 | | J 112 | N-JFET | NS,Mot,Six |
| Q.....3 | 50.03.0350 | | J 112 | N-JFET | NS,Mot,Six |
| Q.....4 | 50.03.0350 | | J 112 | N-JFET | NS,Mot,Six |
| Q.....5 | 50.03.0350 | | J 112 | N-JFET | NS,Mot,Six |
| Q.....6 | 50.03.0350 | | J 112 | N-JFET | NS,Mot,Six |
| Q.....7 | 50.03.0350 | | J 112 | N-JFET | NS,Mot,Six |
| Q.....8 | 50.03.0436 | | BC 237 | NPN IC>100mA, B>100 | any |
| Q.....9 | 50.03.0350 | | J 112 | N-JFET | NS,Mot,Six |
| Q....10 | 50.03.0350 | | J 112 | N-JFET | NS,Mot,Six |
| Q....11 | 50.03.0350 | | J 112 | N-JFET | NS,Mot,Six |
| Q....12 | 50.03.0350 | | J 112 | N-JFET | NS,Mot,Six |
| Q....13 | 50.03.0350 | | J 112 | N-JFET | NS,Mot,Six |
| Q....14 | 50.03.0350 | | J 112 | N-JFET | NS,Mot,Six |
| Q....15 | 50.03.0350 | | J 112 | N-JFET | NS,Mot,Six |
| Q....16 | 50.03.0350 | | J 112 | N-JFET | NS,Mot,Six |
| Q....17 | 50.03.0350 | * | J 112 | N-JFET | NS,Mot,Six |
| Q....18 | 50.03.0350 | * | J 112 | N-JFET | NS,Mot,Six |

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| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|----------|--------------|----------|----------|-----------------------------|----------------------|
| Q....19 | 50.03.0350 | * | J 112 | N-JFET | NS,Mot,Six |
| Q....20 | 50.03.0350 | * | J 112 | N-JFET | NS,Mot,Six |
| Q....21 | 50.03.0350 | * | J 112 | N-JFET | NS,Mot,Six |
| Q....22 | 50.03.0350 | * | J 112 | N-JFET | NS,Mot,Six |
| Q....23 | 50.03.0350 | * | J 112 | N-JFET | NS,Mot,Six |
| Q....24 | 50.03.0350 | * | J 112 | N-JFET | NS,Mot,Six |
| Q....25 | 50.03.0350 | | J 112 | N-JFET | NS,Mot,Six |
| Q....26 | 50.03.0350 | | J 112 | N-JFET | NS,Mot,Six |
| Q....27 | 50.03.0350 | | J 112 | N-JFET | NS,Mot,Six |
| Q....28 | 50.03.0350 | | J 112 | N-JFET | NS,Mot,Six |
| Q....29 | 50.03.0350 | | J 112 | N-JFET | NS,Mot,Six |
| Q....30 | 50.03.0350 | | J 112 | N-JFET | NS,Mot,Six |
| R.....1 | 57.11.3103 | | 10 kOhm | 1% 0.25W MF | |
| R.....2 | 57.11.3103 | | 10 kOhm | 1% 0.25W MF | |
| R.....3 | 57.11.3432 | | 4.3 kOhm | 1% 0.25W MF | |
| R.....4 | 57.11.3432 | | 4.3 kOhm | 1% 0.25W MF | |
| R.....5 | 57.11.4152 | | 1.5 kOhm | 5% 0.25W MF | |
| R.....6 | 57.11.4223 | | 22 kOhm | 5% 0.25W MF | |
| R.....7 | 57.11.4330 | | 33 Ohm | 5% 0.25W MF | |
| R.....8 | 57.11.4104 | | 100 kOhm | 5% 0.25W MF | |
| R.....9 | 57.11.4223 | | 22 kOhm | 5% 0.25W MF | |
| R.....10 | 57.11.3152 | | 1.5 kOhm | 1% 0.25W MF | |
| R.....11 | 57.11.3162 | | 1.6 kOhm | 1% 0.25W MF | |
| R.....12 | 57.11.3123 | | 12 kOhm | 1% 0.25W MF | |
| R.....13 | 57.11.3561 | | 560 Ohm | 1% 0.25W MF | |
| R.....14 | 57.11.3362 | | 3.6 kOhm | 1% 0.25W MF | |
| R.....15 | 57.11.3153 | | 15 kOhm | 1% 0.25W MF | |
| R.....16 | | | not used | | |
| R.....17 | 57.11.3331 | | 330 Ohm | 1% 0.25W MF | |
| R.....18 | 57.11.3470 | | 47 Ohm | 1% 0.25W MF | |
| R.....19 | 57.11.4104 | | 100 kOhm | 5% 0.25W MF | |
| R.....20 | 57.11.4472 | | 4.7 kOhm | 5% 0.25W MF | |
| R.....21 | 57.11.4471 | | 470 Ohm | 5% 0.25W MF | |
| R.....22 | 57.11.4101 | | 100 Ohm | 5% 0.25W MF | |
| R.....23 | 1.010.002.58 | | 10 kOhm | 20% pos. log. | variable resistor St |
| R.....24 | 57.11.4332 | | 3.3 kOhm | 5% 0.25W CF | |

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| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | | | MANUF. |
|---------|--------------|------------|----------|-----------------------------|-------|-------------------|---------------------------|
| R....25 | | 57.11.4332 | 3.3 kOhm | 5% | 0.25W | CF | |
| R....26 | | 57.11.4330 | 33 Ohm | 5% | 0.25W | CF | |
| R....27 | | 57.11.3152 | 1.5 kOhm | 1% | 0.25W | MF | |
| R....28 | | 57.11.3152 | 1.5 kOhm | 1% | 0.25W | MF | |
| R....29 | | 57.11.3392 | 3.9 kOhm | 1% | 0.25W | MF | |
| R....30 | | 57.11.3392 | 3.9 kOhm | 1% | 0.25W | MF | |
| R....31 | | 57.11.3392 | 3.9 kOhm | 5% | 0.25W | MF | |
| R....32 | | 57.11.4101 | 100 Ohm | 5% | 0.25W | MF | |
| R....33 | | 57.11.3472 | 4.7 kOhm | 1% | 0.25W | MF | |
| R....34 | | 57.11.3432 | 4.3 kOhm | 1% | 0.25W | MF | |
| R....35 | | 58.01.8502 | 5 kOhm | 10% | | | |
| R....36 | | 57.11.4182 | 1.8 kOhm | 5% | 0.25W | MF | |
| R....37 | | 57.11.4472 | 4.7 kOhm | 5% | 0.25W | MF | |
| R....38 | | 57.11.3132 | 1.3 kOhm | 5% | 0.25W | MF | |
| R....39 | 1.010.001.58 | | 10 kOhm | 20% | lin. | variable resistor | St |
| R....40 | | 57.11.4472 | 4.7 kOhm | 5% | 0.25W | MF | |
| R....41 | | 57.11.3132 | 1.3 kOhm | 5% | 0.25W | MF | |
| R....42 | | 57.11.4333 | 33 kOhm | 5% | 0.25W | MF | |
| R....43 | | 57.11.3472 | 4.7 kOhm | 1% | 0.25W | CF | |
| R....44 | | 57.11.3472 | 4.7 kOhm | 1% | 0.25W | CF | |
| R....45 | | 57.11.3473 | 47 kOhm | 1% | 0.25W | CF | |
| R....46 | | 57.11.3473 | 47 kOhm | 1% | 0.25W | CF | |
| R....47 | | 57.11.4333 | 33 kOhm | 5% | 0.25W | CF | |
| R....48 | | 57.99.0209 | 5.6 Ohm | | | PTC | Philips Nr.2322 662 91005 |
| R....49 | | 57.99.0209 | 5.6 Ohm | | | PTC | Philips Nr.2322 662 91005 |
| R....50 | | 57.99.0209 | 5.6 Ohm | | | PTC | Philips Nr.2322 662 91005 |
| R....51 | | 57.99.0206 | 50 Ohm | | | PTC | Philips Nr.2322 660 91008 |
| R....52 | | 57.11.4682 | 6.8 kOhm | 5% | 0.25W | CF | |
| R....53 | | 57.11.4104 | 100 kOhm | 5% | 0.25W | CF | |
| R....54 | | 57.11.4104 | 100 kOhm | 5% | 0.25W | CF | |
| R....55 | | 57.11.4104 | 100 kOhm | 5% | 0.25W | CF | |
| R....56 | | 57.11.6106 | 10 MOhm | 10% | 0.25W | CF | |
| R....57 | | 57.11.4682 | 6.8 kOhm | 5% | 0.25W | CF | |
| R....58 | | 57.11.4332 | 3.3 kOhm | 5% | 0.25W | CF | |
| R....59 | | 57.11.4332 | 3.3 kOhm | 5% | 0.25W | CF | |
| R....60 | | 57.11.4682 | 6.8 kOhm | 5% | 0.25W | CF | |
| R....61 | | 57.11.6106 | 10 MOhm | 10% | 0.25W | CF | |

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| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | | | MANUF. |
|---------|--------------|------------|----------|-----------------------------|-------|-------------------|--------|
| R....62 | | 57.11.4105 | 1 MOhm | 5% | 0.25W | CF | |
| R....63 | | 57.11.4333 | 33 kOhm | 5% | 0.25W | CF | |
| R....64 | | 57.11.4682 | 6.8 kOhm | 5% | 0.25W | CF | |
| R....65 | | 57.11.4335 | 3.3 MOhm | 5% | 0.25W | CF | |
| R....66 | | 57.11.4104 | 100 kOhm | 5% | 0.25W | CF | |
| R....67 | | 57.11.4104 | 100 kOhm | 5% | 0.25W | CF | |
| R....68 | | 57.11.4104 | 100 kOhm | 5% | 0.25W | CF | |
| R....69 | | 57.11.4103 | 10 kOhm | 5% | 0.25W | CF | |
| R....70 | | 57.11.3202 | 2 kOhm | 1% | 0.25 | CF | |
| R....71 | | 57.11.4335 | 3.3 MOhm | 5% | 0.25W | CF | |
| R....72 | | 57.11.4104 | 100 kOhm | 5% | 0.25W | CF | |
| R....73 | | 57.11.4104 | 100 kOhm | 5% | 0.25W | CF | |
| R....74 | | 57.11.4104 | 100 kOhm | 5% | 0.25W | CF | |
| R....75 | | 57.11.4103 | 10 kOhm | 5% | 0.25W | CF | |
| R....76 | | 57.11.4104 | 100 kOhm | 5% | 0.25W | CF | |
| R....77 | | 57.11.4223 | 22 kOhm | 5% | 0.25W | CF | |
| R....78 | | 57.11.4332 | 3.3 kOhm | 5% | 0.25W | CF | |
| R....79 | | 57.11.4104 | 100 kOhm | 5% | 0.25W | CF | |
| R....80 | | 57.11.4104 | 100 kOhm | 5% | 0.25W | CF | |
| R....81 | | 57.11.4224 | 220 kOhm | 5% | 0.25W | CF | |
| R....82 | | 57.11.4332 | 3.3 kOhm | 5% | 0.25W | CF | |
| R....83 | | 57.11.4104 | 100 kOhm | 5% | 0.25W | CF | |
| R....84 | | 57.11.3102 | 1 kOhm | 1% | 0.25W | CF | |
| R....85 | | 57.11.3473 | 47 kOhm | 1% | 0.25W | CF | |
| R....86 | | 57.11.3822 | 8.2 kOhm | 1% | 0.25W | CF | |
| R....87 | | 57.11.4104 | 100 kOhm | 5% | 0.25W | CF | |
| R....88 | | 57.11.4330 | 33 Ohm | 5% | 0.25W | CF | |
| R....89 | | 57.11.4223 | 22 kOhm | 5% | 0.25W | CF | |
| R....90 | | 57.11.4104 | 100 kOhm | 5% | 0.25W | CF | |
| R....91 | | 57.11.4104 | 100 kOhm | 5% | 0.25W | CF | |
| R....92 | | 57.11.4331 | 330 Ohm | 5% | 0.25W | CF | |
| R....93 | | 57.11.4102 | 1 kOhm | 5% | 0.25W | CF | |
| R....94 | | 57.11.6106 | 10 MOhm | 10% | 0.25W | CF | |
| R....95 | | 57.11.4104 | 100 kOhm | 5% | 0.25W | CF | |
| R....96 | | 57.11.4333 | 33 kOhm | 5% | 0.25W | CF | |
| R....97 | | 57.11.4121 | 120 Ohm | 5% | 0.25W | CF | |
| R....98 | 1.010.003.58 | | 4.7 kOhm | 20% | lin. | variable resistor | St |

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| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|---------|---------|--------------|----------|---|--------|
| R....99 | | 57.11.4121 | 120 Ohm | 5% 0.25W CF | |
| R...100 | | 57.11.4103 | 10 kOhm | 5% 0.25W CF | |
| R...101 | | 57.11.4103 | 10 kOhm | 5% 0.25W CF | |
| R...102 | | 57.11.3682 | 6.8 kOhm | 1% 0.25W CF | |
| R...103 | | 57.11.3562 | 5.6 kOhm | 1% 0.25W CF | |
| R...104 | | 57.11.4104 | 100 kOhm | 5% 0.25W CF | |
| R...105 | | 57.11.4684 | 680 kOhm | 5% 0.25W CF | |
| R...106 | | 57.11.3392 | 3.9 kOhm | 1% 0.25W CF | |
| R...107 | | | 100 kOhm | 10% neg.log.variable resistor, see R98 | St |
| R...108 | | 57.11.4561 | 560 Ohm | 5% 0.25W CF | |
| R...109 | | 1.010.005.58 | 4.7 kOhm | 20% lin. variable resistor | St |
| R...110 | | 57.11.4561 | 560 Ohm | 5% 0.25W CF | |
| R...111 | | 57.11.4103 | 10 kOhm | 5% 0.25W CF | |
| R...112 | | 57.11.4103 | 10 kOhm | 5% 0.25W CF | |
| R...113 | | 57.11.4105 | 1 MOhm | 5% 0.25W CF | |
| R...114 | | 57.11.4105 | 1 MOhm | 5% 0.25W CF | |
| R...115 | | 57.11.3472 | 4.7 kOhm | 1% 0.25W CF | |
| R...116 | | | 100 kOhm | 10% neg.log.variable resistor, see R109 | St |
| R...117 | | | 100 kOhm | 10% neg.log.variable resistor, see R109 | St |
| R...118 | | 57.11.3512 | 5.1 kOhm | 1% 0.25W CF | |
| R...119 | | 57.11.4103 | 10 kOhm | 5% 0.25W CF | |
| R...120 | | 57.11.4335 | 3.3 MOhm | 5% 0.25W CF | |
| R...121 | | 57.11.4103 | 10 kOhm | 5% 0.25W CF | |
| R...122 | | 57.11.4331 | 330 Ohm | 5% 0.25W CF | |
| R...123 | | 57.11.4103 | 10 kOhm | 5% 0.25W CF | |
| R...124 | | 57.11.4103 | 10 kOhm | 5% 0.25W CF | |
| R...125 | | 57.11.4121 | 120 Ohm | 5% 0.25W CF | |
| R...126 | | 1.010.003.58 | 4.7 kOhm | 20% lin. variable resistor | St |
| R...127 | | 57.11.4121 | 120 Ohm | 5% 0.25W CF | |
| R...128 | | 57.11.3682 | 6.8 kOhm | 1% 0.25W CF | |
| R...129 | | 57.11.3562 | 5.6 kOhm | 1% 0.25W CF | |
| R...130 | | 57.11.4104 | 100 kOhm | 5% 0.25W CF | |
| R...131 | | 57.11.4103 | 10 kOhm | 5% 0.25W CF | |
| R...132 | | 57.11.4684 | 680 kOhm | 5% 0.25W CF | |
| R...133 | | 57.11.4103 | 10 kOhm | 5% 0.25W CF | |
| R...134 | | 57.11.3472 | 4.7 kOhm | 1% 0.25W CF | |
| R...135 | | 57.11.4223 | 22 kOhm | 5% 0.25W CF | |

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| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|---------|---------|--------------|----------|---|--------|
| R...136 | | | 100 kOhm | 10% neg.log.variable resistor, see R126 | St |
| R...137 | | 57.11.4223 | 22 kOhm | 5% 0.25W CF | |
| R...138 | | 57.11.4182 | 1.8 kOhm | 5% 0.25W CF | |
| R...139 | | 57.11.4330 | 33 Ohm | 5% 0.25W CF | |
| R...140 | | 57.11.3103 | 10 kOhm | 1% 0.25W CF | |
| R...141 | | 57.11.4102 | 1 kOhm | 5% 0.25W CF | |
| R...142 | | 57.11.4471 | 470 Ohm | 5% 0.25W CF | |
| R...143 | | 57.11.4332 | 3.3 kOhm | 5% 0.25W CF | |
| R...144 | | 57.11.4332 | 3.3 kOhm | 5% 0.25W CF | |
| R...145 | | 57.11.4332 | 3.3 kOhm | 5% 0.25W CF | |
| R...146 | | 1.010.004.58 | 10 kOhm | 10% pos.log.variable resistor | St |
| R...147 | | | 10 kOhm | 10% neg.log.variable resistor, see R146 | St |
| R...148 | | 57.11.4332 | 3.3 kOhm | 5% 0.25W CF | |
| R...149 | | 57.11.4332 | 3.3 kOhm | 5% 0.25W CF | |
| R...150 | | 57.11.4332 | 3.3 kOhm | 5% 0.25W CF | |
| R...151 | | 57.11.4333 | 33 kOhm | 5% 0.25W CF | |
| R...152 | | 57.11.4333 | 33 kOhm | 5% 0.25W CF | |
| R...153 | | 57.11.4332 | 3.3 kOhm | 5% 0.25W CF | |
| R...154 | | 57.11.4332 | 3.3 kOhm | 5% 0.25W CF | |
| R...155 | | 57.11.4333 | 33 kOhm | 5% 0.25W CF | |
| R...156 | | 57.11.4332 | 3.3 kOhm | 5% 0.25W CF | |
| R...157 | | 57.11.4332 | 3.3 kOhm | 5% 0.25W CF | |
| R...158 | | 57.11.4471 | 470 Ohm | 5% 0.25W CF | |
| R...159 | | 57.11.4333 | 33 kOhm | 5% 0.25W CF | |
| R...160 | | 1.369.150.03 | 10 kOhm | 20% pos.log.variable resistor | St |
| R...161 | | 57.11.4332 | 3.3 kOhm | 5% 0.25W CF | |
| R...162 | | 1.369.150.03 | 10 kOhm | 20% pos.log.variable resistor | St |
| R...163 | | 57.11.4332 | 3.3 kOhm | 5% 0.25W CF | |
| R...164 | | 1.369.150.03 | 10 kOhm | 20% pos.log.variable resistor | St |
| R...165 | | 57.11.4332 | 3.3 kOhm | 5% 0.25W CF | |
| R...166 | | 1.010.006.58 | 4.7 kOhm | 20% lin. variable resistor | St |
| R...167 | | | 10 kOhm | 20% neg.log.variable resistor, see R166 | St |
| R...168 | | 57.11.4332 | 3.3 kOhm | 5% 0.25W CF | |
| R...169 | | | 10 kOhm | 20% pos.log.variable resistor, see R166 | St |
| R...170 | | 57.11.4332 | 3.3 kOhm | 5% 0.25W CF | |
| R...171 | | 57.11.4332 | 3.3 kOhm | 5% 0.25W CF | |
| R...172 | | 57.11.4104 | 100 kOhm | 5% 0.25W CF | |

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| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|------|---------|------------|-----------|-----------------------------|--------|
| R... | 173 | 57.11.4104 | 100 kOhm | 5% 0.25W CF | |
| R... | 174 | 57.11.4104 | 100 kOhm | 5% 0.25W CF | |
| R... | 175 | 57.11.4104 | 100 kOhm | 5% 0.25W CF | |
| R... | 176 | 57.11.4332 | 3.3 kOhm | 5% 0.25W CF | |
| R... | 177 | 57.11.4104 | 100 kOhm | 5% 0.25W CF | |
| R... | 178 | 57.11.4104 | 100 kOhm | 5% 0.25W CF | |
| R... | 179 | 57.11.4104 | 100 kOhm | 5% 0.25W CF | |
| R... | 180 | 57.11.4104 | 100 kOhm | 5% 0.25W CF | |
| R... | 181 | 57.11.4332 | 3.3 kOhm | 5% 0.25W CF | |
| R... | 182 | 57.11.4104 | 100 kOhm | 5% 0.25W CF | |
| R... | 183 | 57.11.4104 | 100 kOhm | 5% 0.25W CF | |
| R... | 184 | 57.11.4104 | 100 kOhm | 5% 0.25W CF | |
| R... | 185 | 57.11.4104 | 100 kOhm | 5% 0.25W CF | |
| R... | 186 | 57.11.4332 | 3.3 kOhm | 5% 0.25W CF | |
| R... | 187 | 57.11.4104 | 100 kOhm | 5% 0.25W CF | |
| R... | 188 | 57.11.4104 | 100 kOhm | 5% 0.25W CF | |
| R... | 189 | 57.11.4104 | 100 kOhm | 5% 0.25W CF | |
| R... | 190 | 57.11.4104 | 100 kOhm | 5% 0.25W CF | |
| R... | 191 | 57.11.4332 | *3.3 kOhm | 5% 0.25W CF | |
| R... | 192 | 57.11.4104 | *100 kOhm | 5% 0.25W CF | |
| R... | 193 | 57.11.4104 | *100 kOhm | 5% 0.25W CF | |
| R... | 194 | 57.11.4104 | *100 kOhm | 5% 0.25W CF | |
| R... | 195 | 57.11.4104 | *100 kOhm | 5% 0.25W CF | |
| R... | 196 | 57.11.4332 | *3.3 kOhm | 5% 0.25W CF | |
| R... | 197 | 57.11.4104 | *100 kOhm | 5% 0.25W CF | |
| R... | 198 | 57.11.4104 | *100 kOhm | 5% 0.25W CF | |
| R... | 199 | 57.11.4104 | *100 kOhm | 5% 0.25W CF | |
| R... | 200 | 57.11.4104 | *100 kOhm | 5% 0.25W CF | |
| R... | 201 | 57.11.4332 | *3.3 kOhm | 5% 0.25W CF | |
| R... | 202 | 57.11.4104 | *100 kOhm | 5% 0.25W CF | |
| R... | 203 | 57.11.4104 | *100 kOhm | 5% 0.25W CF | |
| R... | 204 | 57.11.4104 | *100 kOhm | 5% 0.25W CF | |
| R... | 205 | 57.11.4104 | *100 kOhm | 5% 0.25W CF | |
| R... | 206 | 57.11.4332 | *3.3 kOhm | 5% 0.25W CF | |
| R... | 207 | 57.11.4104 | *100 kOhm | 5% 0.25W CF | |
| R... | 208 | 57.11.4104 | *100 kOhm | 5% 0.25W CF | |
| R... | 209 | 57.11.4104 | *100 kOhm | 5% 0.25W CF | |

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| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|--------|---------|--------------|-----------|---------------------------------------|----------|
| R... | 210 | 57.11.4104 | *100 kOhm | 5% 0.25W CF | |
| R... | 211 | 57.11.4103 | 10 kOhm | 5% 0.25W CF | |
| R... | 212 | 57.11.4104 | 100 kOhm | 5% 0.25W CF | |
| R... | 213 | 57.11.4104 | 100 kOhm | 5% 0.25W CF | |
| R... | 214 | 57.11.4103 | 10 kOhm | 5% 0.25W CF | |
| R... | 215 | 57.11.4104 | 100 kOhm | 5% 0.25W CF | |
| R... | 216 | 57.11.4104 | 100 kOhm | 5% 0.25W CF | |
| R... | 217 | 57.11.4104 | 100 kOhm | 5% 0.25W CF | |
| R... | 218 | 57.11.4103 | 10 kOhm | 5% 0.25W CF | |
| R... | 219 | 57.11.4104 | 100 kOhm | 5% 0.25W CF | |
| R... | 220 | 57.11.4104 | 100 kOhm | 5% 0.25W CF | |
| R... | 221 | 57.11.4103 | 10 kOhm | 5% 0.25W CF | |
| R... | 222 | 57.11.4104 | 100 kOhm | 5% 0.25W CF | |
| R... | 223 | 57.11.4104 | 100 kOhm | 5% 0.25W CF | |
| R... | 224 | 57.11.4104 | 100 kOhm | 5% 0.25W CF | |
| R... | 225 | 57.11.4223 | 22 kOhm | 5% 0.25W CF | |
| R... | 226 | | 1.5 kOhm | 1% 0.25W MF 57113152 | option 1 |
| R... | 227 | | 3.9 kOhm | 1% 0.25W MF 57113392 | option 1 |
| R... | 228 | | 3.9 kOhm | 1% 0.25W MF 57113392 | option 1 |
| R... | 229 | | 1.5 kOhm | 1% 0.25W MF 57113152 | option 1 |
| S..... | 3 | 55.15.0002 | 2*U | button: 55030304 | yellow |
| S..... | 4 | 1.912.120.03 | 2*U | | |
| S..... | 5 | | 2*U | see S4 | |
| S..... | 6 | | 2*U | see S4 | |
| S..... | 7 | 55.15.0002 | 2*U | button: 55030305 | green |
| S..... | 8 | 55.15.0003 | 2*U | button: 55030310 | white |
| S..... | 9 | 55.15.0012 | 2*U | button: 55150106 | red ITT |
| S..... | 10 | 55.15.0003 | 2*U | button: 55030303 | red ITT |
| S..... | 11 | 55.15.0003 | 2*U | button: 55030303 | red ITT |
| S..... | 13 | 1.369.150.03 | 1*U | combined with variable resistor R 160 | St |
| S..... | 14 | 1.369.150.03 | 1*U | combined with variable resistor R 162 | St |
| S..... | 15 | 1.369.150.03 | 1*U | combined with variable resistor R 164 | St |
| S..... | 16 | 1.010.006.59 | 1*U | combined with variable resistor R 166 | St |
| 02) | S..... | 55.15.0002 | * 2*U | button: 55030303 | red ITT |
| 02) | S..... | 55.15.0002 | * 2*U | button: 55030303 | red ITT |
| | S..... | 55.15.0002 | 2*U | button: 55030303 | red ITT |

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| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|------|---------|--------------|--------|-----------------------------|---------|
| | S....20 | 55.15.0002 | 2*U | button: 55030303 | red ITT |
| (02) | S....21 | 55.15.0002 | 2*U | button: 55030303 | red ITT |
| (02) | S....22 | 55.15.0002 | 2*U | button: 55030303 | red ITT |
| | S....23 | 55.15.0002 | * 2*U | button: 55030303 | red ITT |
| | S....24 | 55.15.0002 | * 2*U | button: 55030303 | red ITT |
| | T.....1 | 1.022.417.00 | | input trafo 1:3.14 | St |
| | T.....2 | 1.022.451.00 | | input trafo 1:0.62 | St |
| | w.....1 | 1.128.072.01 | 9-wire | flatcable | |
| | w.....2 | 1.128.072.01 | 9-wire | flatcable | |
| | w.....3 | | ** | | |
| | w.....4 | | ** | | |
| | w.....5 | | ** | | |
| | w.....6 | | ** | | |
| | XDL...1 | 1.010.012.50 | | LED-holder | St |
| | XDL...2 | 1.010.012.50 | | LED-holder | St |

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| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|------|---------|----------|-------|-----------------------------|--------|
|------|---------|----------|-------|-----------------------------|--------|

```

=====
* ONLY 8-CHANNEL 1.912.122.00
-----
** ONLY 4-CHANNEL
=====

```

01 83/12/16 elimination of phase-switching noise

02 84/02/08 S17 S18 only 8CH 1.912.122.00

03 84/10/04 suppression of high frequency

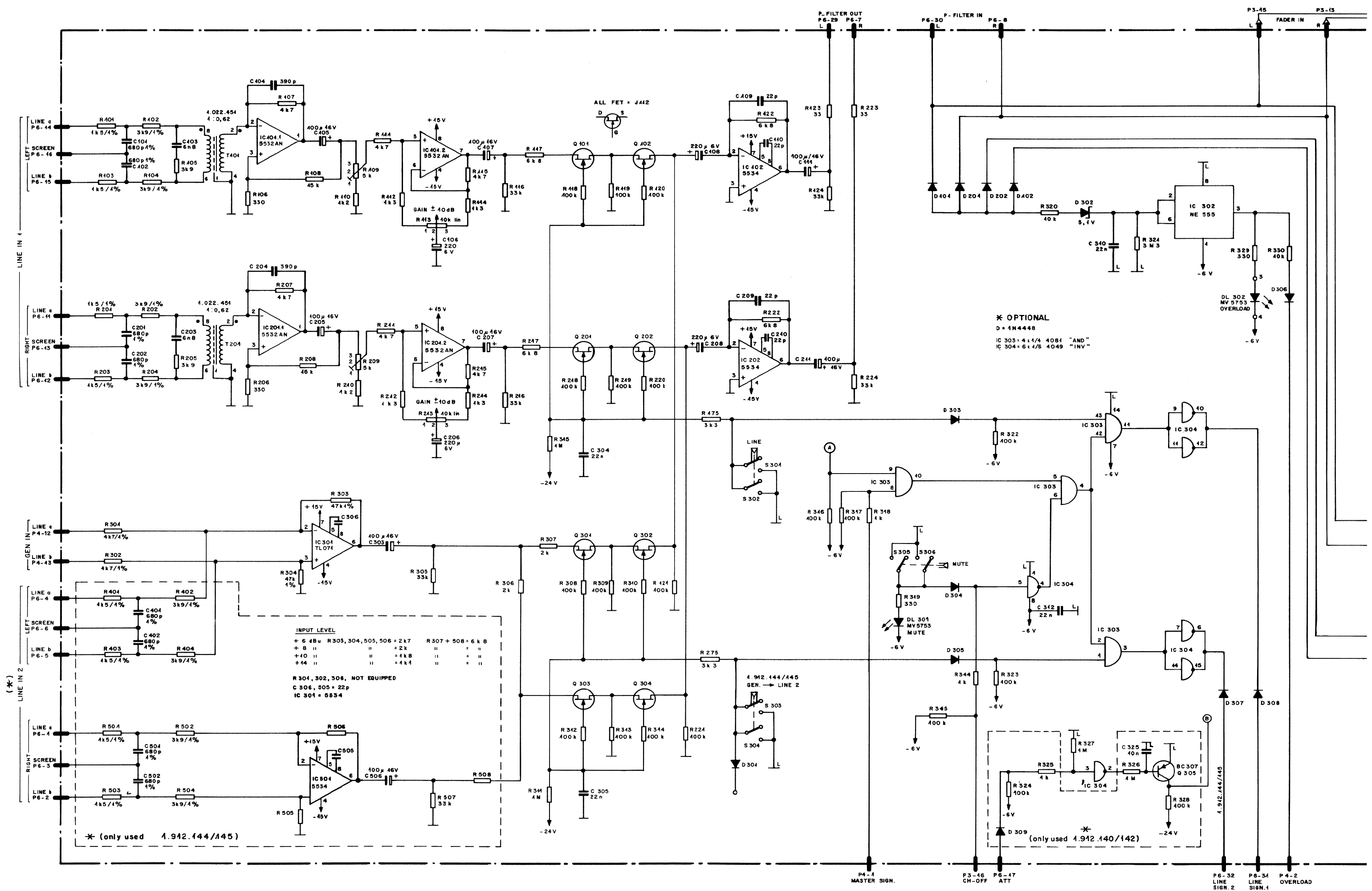
option 1: tape-input replaces gen-input

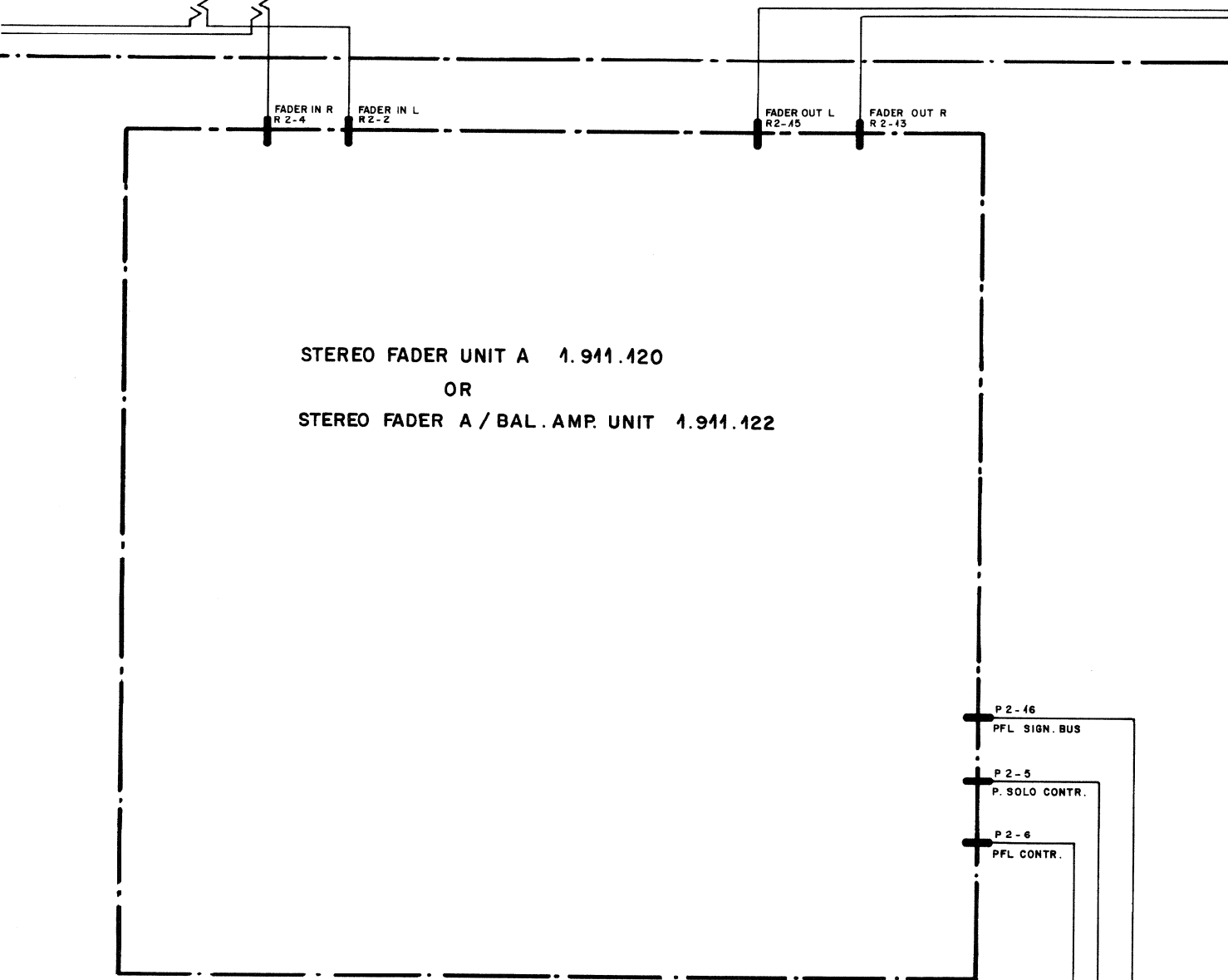
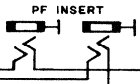
CE=Ceramic, CF=Carbon Film, EL=Electrolytic, MF=Metal Film,
PE=Polyester, PP=Polypropylen, PS=Polystyrol

MANUFACTURER: Bu=Burndy, Ex=Exar, Fc=Fairchild, GI=General Instrument
HP=Hewlett Packard, ITT=Intermetall, Mot=Motorola,
NS=National Semiconductors, Ph=Philips, Ra=Raytheon,
Sig=Signetics, Six=Siliconix, St=Studer,
TI=Texas Instrument

ORIG 83/01/20 (01) 83/12/16 (02) 84/02/08 (03) 84/10/04

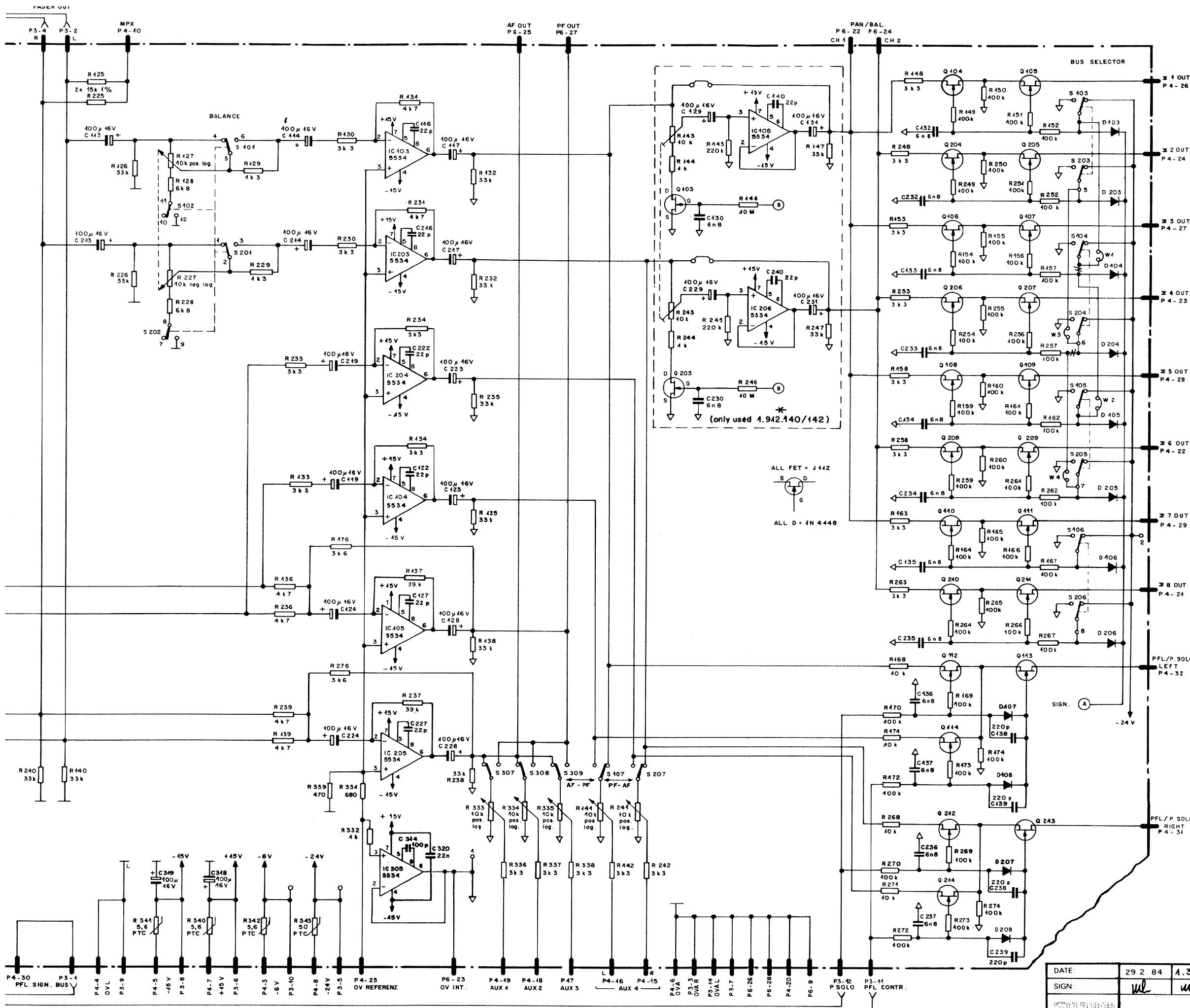
S T U D E R (03) 84/10/04 TA MONO-INPUT-UNIT-B-4CH/8CH 1.912.120.00 PAGE 14





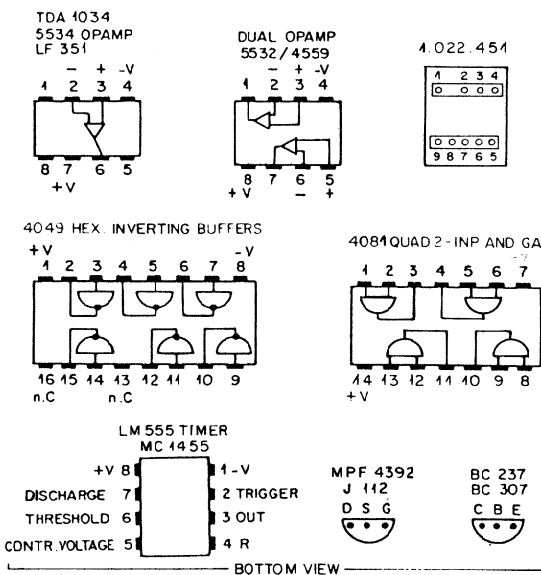
STEREO FADER UNIT A 1.911.120
 OR
 STEREO FADER A / BAL. AMP. UNIT 1.911.122

- P 2-16
PFL SIGN. BUS
- P 2-5
P. SOLO CONTR.
- P 2-6
PFL CONTR.



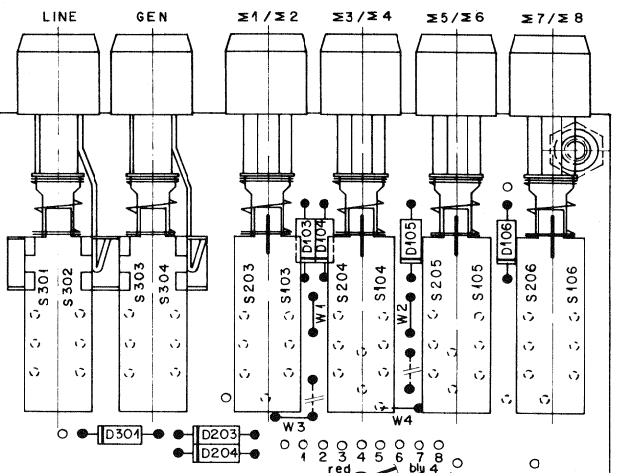
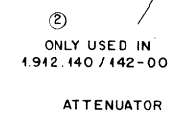
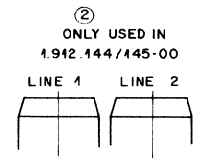
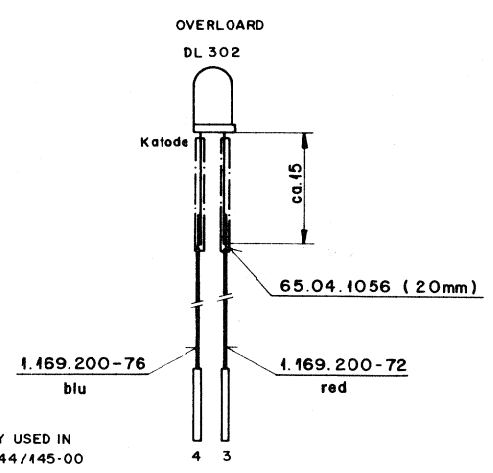
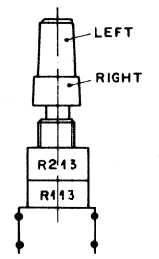
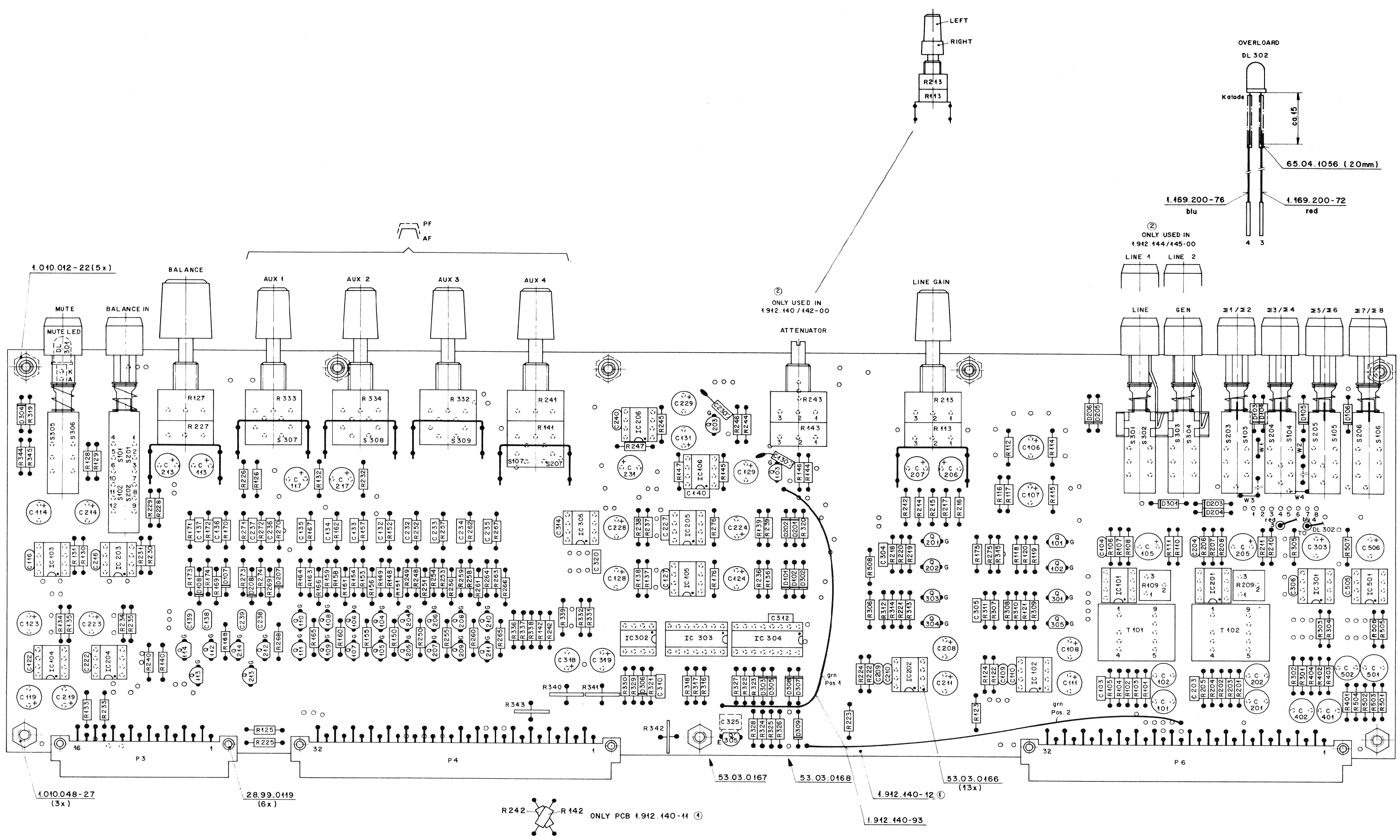
- P 6**
- 1 LINE a
 - 2 LINE b
 - 3 SCREEN
 - 4 LINE a
 - 5 LINE b
 - 6 SCREEN
 - 7 P-FILTER OUT
 - 8 P-FILTER IN
 - 9 OVA
 - 10 X
 - 11 LINE a
 - 12 LINE b
 - 13 SCREEN
 - 14 LINE a
 - 15 LINE b
 - 16 SCREEN
 - 17 ATT (*)
 - 18 X
 - 19 X
 - 20 X
 - 21 X
 - 22 CH 1 PAN/BAL
 - 23 OV INT.
 - 24 CH 2 PAN/BAL
 - 25 AF OUT
 - 26 OVA
 - 27 PF-OUT
 - 28 OVA
 - 29 P-FILTER OUT
 - 30 P-FILTER IN
 - 31 LINE SIGN. 1
 - 32 LINE SIGN. 2 (*)
- P 4**
- 1 MASTER SIGN.
 - 2 OVERLOAD
 - 3 -6V
 - 4 OVL
 - 5 -15V
 - 6 OVA
 - 7 +15V
 - 8 -24V
 - 9 X
 - 10 MPX
 - 11 X
 - 12 GEN. a
 - 13 GEN. b
 - 14 X
 - 15 AUX 4-R OUT
 - 16 AUX 4-L OUT
 - 17 AUX 3 OUT
 - 18 AUX 2 OUT
 - 19 AUX 1 OUT
 - 20 OVA
 - 21 8 OUT
 - 22 6 OUT
 - 23 4 OUT
 - 24 2 OUT
 - 25 OV REF
 - 26 1 OUT
 - 27 3 OUT
 - 28 5 OUT
 - 29 7 OUT
 - 30 PFL-SIGN. BUS
 - 31 PFL/P-SOLO R
 - 32 PFL/P-SOLO L

- P 3**
- 1 PFL-SIGN BUS
 - 2 FADER OUT L
 - 3 OVA R
 - 4 FADER OUT R
 - 5 -24V
 - 6 +15V
 - 7 OVA
 - 8 -15V
 - 9 OVL
 - 10 -6V
 - 11 PFL CONTR.
 - 12 P-SOLO CONTR
 - 13 FADER IN R
 - 14 OVA L
 - 15 FADER IN L
 - 16 CH-OFF
- * OPTIONAL**
 ONLY 4CH: W1, W2, W3, W4
 /V CIRCUIT INTERRUPT SOLDER SIDE



4 CH : 1.942.140/441/444
 8 CH : 1.942.142/443/445

| | | | | | |
|-------|-----------|-----------|-----------|--|------------------------|
| DATE: | 29.2.84 | 1.3.84 | 4.10.84 | | PAGE 3 OF 3 |
| SIGN: | <i>ul</i> | <i>ul</i> | <i>ul</i> | | |
| | | | | | HL STEREO INPUT UNIT B |
| | | | | | SC 1.942.140...145 |



1.010.012-22 (5x)

MUTE MUTE LED

BALANCE BALANCE IN

AUX 1

AUX 2

AUX 3

AUX 4

ONLY USED IN 1.912.140/142-00

ATTENUATOR

LINE GAIN

LINE

GEN

≥1/≥2

≥3/≥4

≥5/≥6

≥7/≥8

1.010.048-27 (3x)

28.99.0119 (6x)

R242 R142 ONLY PCB 1.912.140-11 ④

ONLY 4 CH: W1, W2, W3, W4
// CIRCUIT INTERRUPT
SOLDERSIDE

| VALID FOR | NR. UNIT | NR. PL | NR. LL |
|---------------|--------------|--------------|--------------|
| 4 CH RAI | 1.912.140-00 | 1.912.140-00 | 1.912.140-93 |
| 4 CH LINE/GEN | 1.912.141-00 | 1.912.141-00 | - |
| 8 CH RAI | 1.912.142-00 | 1.912.140-00 | 1.912.140-93 |
| 8 CH LINE/GEN | 1.912.143-00 | 1.912.141-00 | - |
| 4 CH 2 LINE | 1.912.144-00 | 1.912.144-00 | - |
| 8 CH 2 LINE | 1.912.145-00 | 1.912.144-00 | - |

| | | |
|--------------------------------|----------------------------------|-------------------------|
| Norm-Nr.: | Güte: | Änderung: |
| DIN-Bez.: | Beh.: | 1.3.84 A.Ho |
| Abmessung: | Freinastoleranz: | 7.12.83 A.Ho |
| Zugehörige Unterlagen: | Maßstab: | 15.12.83 A.Ho |
| * | t: | 2:1 |
| Erstz. für: | Ersetzt durch: | Kopie für: |
| STUDER REGENSDORF ZÜRICH | Benennung: HL ST. INP. UNIT B | Nummer: 1.912.140-00 |

| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | | MANUF. |
|------|---------|----------|------------|-----------------------------|------|---------|
| | | C...101 | 59.05.1681 | 680 pF | 1% | 500V PP |
| | | C...102 | 59.05.1681 | 680 pF | 1% | 500V PP |
| (03) | | C...103 | 59.06.0682 | 6,8 nF | 10% | 50V PE |
| | | C...104 | 59.34.5391 | 390 pF | 5% | CE |
| | | C...105 | 59.22.4101 | 100 uF | -20% | 16V EL |
| | | C...106 | 59.22.2221 | 220 uF | -20% | 6V EL |
| | | C...107 | 59.22.4101 | 100 uF | -20% | 16V EL |
| | | C...108 | 59.22.2221 | 220 uF | -20% | 6V EL |
| | | C...109 | 59.34.2220 | 22 pF | 5% | CE |
| | | C...110 | 59.34.2220 | 22 pF | 5% | CE |
| | | C...111 | 59.22.4101 | 100 uF | -20% | 16V EL |
| | | C...112 | | not exist | | |
| | | C...113 | 59.22.4101 | 100 uF | -20% | 16V EL |
| | | C...114 | 59.22.4101 | 100 uF | -20% | 16V EL |
| | | C...115 | | not used | | |
| | | C...116 | 59.34.2220 | 22 pF | 5% | CE |
| | | C...117 | 59.22.4101 | 100 uF | -20% | 16V EL |
| | | C...118 | | not exist | | |
| | | C...119 | 59.22.4101 | 100 uF | -20% | 16V EL |
| | | C...120 | | not exist | | |
| | | C...121 | | not used | | |
| | | C...122 | 59.34.2220 | 22 pF | 5% | CE |
| | | C...123 | 59.22.4101 | 100 uF | -20% | 16V EL |
| | | C...124 | 59.22.4101 | 100 uF | -20% | 16V EL |
| | | C...125 | | not exist | | |
| | | C...126 | | not used | | |
| | | C...127 | 59.34.2220 | 22 pF | 5% | CE |
| | | C...128 | 59.22.4101 | 100 uF | -20% | 16V EL |
| (01) | | C...129 | | not used | | |
| (01) | | C...130 | | not used | | |
| (01) | | C...131 | | not used | | |
| | | C...132 | 59.06.0682 | 6.8 nF | | 50V PE |
| | | C...133 | 59.06.0682 | 6.8 nF | | 50V PE |
| | | C...134 | 59.06.0682 | * 6.8 nF | | 50V PE |
| | | C...135 | 59.06.0682 | * 6.8 uF | | 50V PE |
| | | C...136 | 59.06.0682 | 6.8 nF | | 50V PE |
| | | C...137 | 59.06.0682 | 6.8 nF | | 50V PE |

S T U D E R (03) 84/12/01 TA HL-ST-INPUT-UNIT-B-4CH/8CH 1.912.141.00 PAGE 1

| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | | MANUF. |
|------|---------|----------|------------|-----------------------------|------|---------|
| | | C...138 | 59.34.4221 | 220 pF | 5% | CE |
| | | C...139 | 59.34.4221 | 220 pF | 5% | CE |
| (01) | | C...140 | | not used | | |
| | | C...201 | 59.05.1681 | 680 pF | 1% | 500V PP |
| (03) | | C...202 | 59.05.1681 | 680 pF | 1% | 500V PP |
| | | C...203 | 59.06.0682 | 6,8 nF | 10% | 50V PE |
| | | C...204 | 59.34.5391 | 390 pF | 5% | CE |
| | | C...205 | 59.22.4101 | 100 uF | -20% | 16V EL |
| | | C...206 | 59.22.2221 | 220 uF | -20% | 6V EL |
| | | C...207 | 59.22.4101 | 100 uF | -20% | 16V EL |
| | | C...208 | 59.22.2221 | 220 uF | -20% | 6V EL |
| | | C...209 | 59.34.2220 | 22 pF | 5% | CE |
| | | C...210 | 59.34.2220 | 22 pF | 5% | CE |
| | | C...211 | 59.22.4101 | 100 uF | -20% | 16V EL |
| | | C...212 | | not exist | | |
| | | C...213 | 59.22.4101 | 100 uF | -20% | 16V EL |
| | | C...214 | 59.22.4101 | 100 uF | -20% | 16V EL |
| | | C...215 | | not used | | |
| | | C...216 | 59.34.2220 | 22 pF | 5% | CE |
| | | C...217 | 59.22.4101 | 100 uF | -20% | 16V EL |
| | | C...218 | | not exist | | |
| | | C...219 | 59.22.4101 | 100 uF | -20% | 16V EL |
| | | C...220 | | not exist | | |
| | | C...221 | | not used | | |
| | | C...222 | 59.34.2220 | 22 pF | 5% | CE |
| | | C...223 | 59.22.4101 | 100 uF | -20% | 16V EL |
| | | C...224 | 59.22.4101 | 100 uF | -20% | 16V EL |
| | | C...225 | | not exist | | |
| | | C...226 | | not used | | |
| | | C...227 | 59.34.2220 | 22 pF | 5% | CE |
| | | C...228 | 59.22.4101 | 100 uF | -20% | 16V EL |
| (01) | | C...229 | | not used | | |
| (01) | | C...230 | | not used | | |
| (01) | | C...231 | | not used | | |
| | | C...232 | 59.06.0682 | 6.8 nF | | 50V PE |
| | | C...233 | 59.06.0682 | 6.8 nF | | 50V PE |
| | | C...234 | 59.06.0682 | * 6.8 nF | | 50V PE |

S T U D E R (03) 84/12/01 TA HL-ST-INPUT-UNIT-B-4CH/8CH 1.912.141.00 PAGE 2

| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|------|---------|------------|----------|-----------------------------|--------|
| | C...235 | 59.06.0682 | * 6.8 uF | 50V PE | |
| | C...236 | 59.06.0682 | 6.8 nF | 50V PE | |
| | C...237 | 59.06.0682 | 6.8 nF | 50V PE | |
| | C...238 | 59.34.4221 | 220 pF | 5% CE | |
| | C...239 | 59.34.4221 | 220 pF | 5% CE | |
| (01) | C...240 | | not used | | |
| | C...301 | | not used | | |
| | C...302 | | not used | | |
| | C...303 | 59.22.4101 | 100 uF | -20% 16V EL | |
| | C...304 | 59.06.0223 | 22 nF | 10% 50V PE | |
| (01) | C...305 | 59.06.0223 | 22 nF | 10% 50V PE | |
| | C...306 | | not used | | |
| | C...307 | | not used | | |
| | C...308 | | not used | | |
| | C...309 | | not used | | |
| | C...310 | 59.06.0223 | 22 nF | 10% 50V PE | |
| | C...311 | | not used | | |
| | C...312 | 59.06.0223 | 22 nF | 10% 50V PE | |
| (02) | C...313 | | not used | | |
| | C...314 | 59.34.4101 | 100 pF | 5% CE | |
| | C...315 | | not used | | |
| | C...316 | | not used | | |
| | C...317 | | not used | | |
| | C...318 | 59.22.4101 | 100 uF | -20% 16V EL | |
| | C...319 | 59.22.4101 | 100 uF | -20% 16V EL | |
| | C...320 | 59.06.0223 | 22 nF | 10% 50V PE | |
| | C...321 | | not used | | |
| | C...322 | | not used | | |
| | C...323 | | not used | | |
| | C...324 | | not used | | |
| (01) | C...325 | | not used | | |
| (01) | C...401 | | not used | | |
| (01) | C...402 | | not used | | |
| (01) | C...501 | | not used | | |
| (01) | C...502 | | not used | | |
| | C...503 | | not used | | |
| | C...504 | | not used | | |

S T U D E R (03) 84/12/01 TA HL-ST-INPUT-UNIT-B-4CH/8CH 1.912.141.00 PAGE 3

| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|------|----------|------------|----------|---------------------------------------|-----------|
| (01) | C...505 | | not used | | |
| | C...506 | | not used | | |
| | C...507 | | not used | | |
| | D...101 | 50.04.0125 | 1N4448 | | any |
| | D...102 | 50.04.0125 | 1N4448 | | any |
| | D...103 | 50.04.0125 | 1N4448 | | any |
| | D...104 | 50.04.0125 | 1N4448 | | any |
| | D...105 | 50.04.0125 | * 1N4448 | | any |
| | D...106 | 50.04.0125 | * 1N4448 | | any |
| | D...107 | 50.04.0125 | 1N4448 | | any |
| | D...108 | 50.04.0125 | 1N4448 | | any |
| | D...201 | 50.04.0125 | 1N4448 | | any |
| | D...202 | 50.04.0125 | 1N4448 | | any |
| | D...203 | 50.04.0125 | 1N4448 | | any |
| | D...204 | 50.04.0125 | 1N4448 | | any |
| | D...205 | 50.04.0125 | * 1N4448 | | any |
| | D...206 | 50.04.0125 | * 1N4448 | | any |
| | D...207 | 50.04.0125 | 1N4448 | | any |
| | D...208 | 50.04.0125 | 1N4448 | | any |
| | D...301 | 50.04.0125 | 1N4448 | | any |
| | D...302 | 50.04.1112 | Z 5.1V | 400mW BZX83C 5.1, BZX55C 5.1, ZPD 5.1 | |
| | D...303 | 50.04.0125 | 1N4448 | | any |
| | D...304 | 50.04.0125 | 1N4448 | | any |
| | D...305 | 50.04.0125 | 1N4448 | | any |
| | D...306 | 50.04.0125 | 1N4448 | | any |
| (01) | D...307 | | not used | | |
| | D...308 | 50.04.0125 | 1N4448 | | any |
| (01) | D...309 | | not used | | |
| | DL...301 | 50.04.2111 | MV5753 | red | GI,HP |
| | DL...302 | 50.04.2111 | MV5753 | red | GI,HP |
| | IC...101 | 50.09.0106 | NE5532AN | dual op. amp. low noise | Siq,Ex,Ra |
| | IC...102 | 50.05.0243 | NE5534N | single op. amp. | TI,Sig,Ra |
| | IC...103 | 50.05.0243 | NE5534N | single op. amp. | TI,Sig,Ra |
| | IC...104 | 50.05.0243 | NE5534N | single op. amp. | TI,Sig,Ra |

S T U D E R (03) 84/12/01 TA HL-ST-INPUT-UNIT-B-4CH/8CH 1.912.141.00 PAGE 4

| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|------|---------|------------|----------|-----------------------------|-------------|
| | IC..105 | 50.05.0243 | NE5534N | single op. amp. | TI,Sig,Ra |
| (01) | IC..106 | | not used | | |
| | IC..201 | 50.09.0106 | NE5532AN | dual op. amp. low noise | Sig,Ex,Ra |
| | IC..202 | 50.05.0243 | NE5534N | single op. amp. | TI,Sig,Ra |
| | IC..203 | 50.05.0243 | NE5534N | single op. amp. | TI,Sig,Ra |
| | IC..204 | 50.05.0243 | NE5534N | single op. amp. | TI,Sig,Ra |
| | IC..205 | 50.05.0243 | NE5534N | single op. amp. | TI,Sig,Ra |
| (01) | IC..206 | | not used | | |
| (01) | IC..301 | | not used | | |
| | IC..302 | 50.05.0158 | NE 555 | timer | Sig,Mot,NSC |
| | IC..303 | 50.07.0081 | CD4081 | 2 input and-gate CMOS | Fc,Mot,RCA |
| | IC..304 | 50.07.0049 | CD4049 | hex. inverter CMOS | Fc,Mot |
| | IC..305 | 50.05.0243 | NE5534N | single op. amp. | TI,Sig,Ra |
| (01) | IC..501 | | not used | | |
| | P.....3 | 54.11.2007 | 2*8 pin | euroconnector | Bu |
| | P.....4 | 54.01.0359 | 2*16pin | euroconnector | Bu |
| | P.....6 | 54.01.0359 | 2*16pin | euroconnector | Bu |
| | Q...101 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...102 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| (01) | Q...103 | | not used | | |
| | Q...104 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...105 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...106 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...107 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...108 | 50.03.0350 | * J 112 | N-JFET | NS,Mot,Six |
| | Q...109 | 50.03.0350 | * J 112 | N-JFET | NS,Mot,Six |
| | Q...110 | 50.03.0350 | * J 112 | N-JFET | NS,Mot,Six |
| | Q...111 | 50.03.0350 | * J 112 | N-JFET | NS,Mot,Six |
| | Q...112 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...113 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...114 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...201 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...202 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| (01) | Q...203 | | not used | | |
| | Q...204 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |

S T U D E R (03) 84/12/01 TA HL-ST-INPUT-UNIT-B-4CH/8CH 1.912.141.00 PAGE 5

| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|------|---------|--------------|----------|------------------------------|------------|
| | Q...205 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...206 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...207 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...208 | 50.03.0350 | * J 112 | N-JFET | NS,Mot,Six |
| | Q...209 | 50.03.0350 | * J 112 | N-JFET | NS,Mot,Six |
| | Q...210 | 50.03.0350 | * J 112 | N-JFET | NS,Mot,Six |
| | Q...211 | 50.03.0350 | * J 112 | N-JFET | NS,Mot,Six |
| | Q...212 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...213 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...214 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...301 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...302 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...303 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...304 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...305 | | BC 307 | PNP IC>100mA, B>100 50030515 | any |
| | R...101 | 57.11.3152 | 1.5 kOhm | 1% 0.25W | |
| | R...102 | 57.11.3392 | 3.9 kOhm | 1% 0.25W | |
| | R...103 | 57.11.3152 | 1.5 kOhm | 1% 0.25W | |
| | R...104 | 57.11.3392 | 3.9 kOhm | 1% 0.25W | |
| (01) | R...105 | 57.11.3392 | 3.9 kOhm | 5% 0.25W | |
| | R...106 | 57.11.4331 | 330 Ohm | 5% 0.25W | |
| | R...107 | 57.11.4472 | 4.7 kOhm | 5% 0.25W | |
| | R...108 | 57.11.3153 | 15 kOhm | 5% 0.25W | |
| | R...109 | 58.01.8502 | 5 kOhm | 10% | |
| | R...110 | 57.11.4122 | 1.2 kOhm | 5% 0.25W | |
| | R...111 | 57.11.4472 | 4.7 kOhm | 5% 0.25W | |
| | R...112 | 57.11.3132 | 1.3 kOhm | 5% 0.25W | |
| (01) | R...113 | 1.010.007.58 | 10 kOhm | 10% lin. combined with R 213 | St |
| | R...114 | 57.11.3132 | 1.3 kOhm | 5% 0.25W | |
| | R...115 | 57.11.4472 | 4.7 kOhm | 5% 0.25W | |
| | R...116 | 57.11.4333 | 33 kOhm | 5% 0.25W | |
| | R...117 | 57.11.4682 | 6.8 kOhm | 5% 0.25W | |
| | R...118 | 57.11.4104 | 100 kOhm | 5% 0.25W | |
| | R...119 | 57.11.4104 | 100 kOhm | 5% 0.25W | |
| | R...120 | 57.11.4104 | 100 kOhm | 5% 0.25W | |
| | R...121 | 57.11.4104 | 100 kOhm | 5% 0.25W | |

S T U D E R (03) 84/12/01 TA HL-ST-INPUT-UNIT-B-4CH/8CH 1.912.141.00 PAGE 6

| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|------|---------|--------------|-----------|-------------------------------|-------------------|
| | R...122 | 57.11.4682 | 6.8 kOhm | 5% 0.25W | |
| | R...123 | 57.11.4330 | 33 Ohm | 5% 0.25W | |
| | R...124 | 57.11.4333 | 33 kOhm | 5% 0.25W | |
| | R...125 | 57.11.3153 | 15 kOhm | 1% 0.25W | |
| | R...126 | 57.11.4333 | 33 kOhm | 5% 0.25W | |
| | R...127 | 1.010.004.58 | 10 kOhm | 10% pos.log.variable resistor | St |
| | R...128 | 57.11.4682 | 6.8 kOhm | 5% 0.25W | |
| | R...129 | 57.11.3132 | 1.3 kOhm | 5% 0.25W | |
| | R...130 | 57.11.4332 | 3.3 kOhm | 5% 0.25W | |
| | R...131 | 57.11.4472 | 4.7 kOhm | 5% 0.25W | |
| | R...132 | 57.11.4333 | 33 kOhm | 5% 0.25W | |
| | R...133 | 57.11.4332 | 3.3 kOhm | 5% 0.25W | |
| | R...134 | 57.11.4332 | 3.3 kOhm | 5% 0.25W | |
| | R...135 | 57.11.4333 | 33 kOhm | 5% 0.25W | |
| | R...136 | 57.11.4472 | 4.7 kOhm | 5% 0.25W | |
| | R...137 | 57.11.4393 | 39 kOhm | 5% 0.25W | |
| | R...138 | 57.11.4333 | 33 kOhm | 5% 0.25W | |
| | R...139 | 57.11.4472 | 4.7 kOhm | 5% 0.25W | |
| | R...140 | 57.11.4333 | 33 kOhm | 5% 0.25W | |
| | R...141 | 1.010.008.58 | 10 kOhm | 10% pos.log.variable resistor | St |
| | R...142 | 57.11.4332 | 3.3 kOhm | 5% 0.25W | |
| (01) | R...143 | | not used | | |
| (01) | R...144 | | not used | | |
| (01) | R...145 | | not used | | |
| (01) | R...146 | | not used | | |
| | R...147 | | 33 kOhm | 5% 0.25W | 57114333 option 2 |
| | R...148 | 57.11.4332 | 3.3 kOhm | 5% 0.25W | |
| | R...149 | 57.11.4104 | 100 kOhm | 5% 0.25W | |
| | R...150 | 57.11.4104 | 100 kOhm | 5% 0.25W | |
| | R...151 | 57.11.4104 | 100 kOhm | 5% 0.25W | |
| | R...152 | 57.11.4104 | 100 kOhm | 5% 0.25W | |
| | R...153 | 57.11.4332 | 3.3 kOhm | 5% 0.25W | |
| | R...154 | 57.11.4104 | 100 kOhm | 5% 0.25W | |
| | R...155 | 57.11.4104 | 100 kOhm | 5% 0.25W | |
| | R...156 | 57.11.4104 | 100 kOhm | 5% 0.25W | |
| | R...157 | 57.11.4104 | 100 kOhm | 5% 0.25W | |
| | R...158 | 57.11.4332 | *3.3 kOhm | 5% 0.25W | |

S T U D E R (03) 84/12/01 TA HL-ST-INPUT-UNIT-B-4CH/8CH 1.912.141.00 PAGE 7

| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|------|---------|--------------|-----------|------------------------------|--------|
| | R...159 | 57.11.4104 | *100 kOhm | 5% 0.25W | |
| | R...160 | 57.11.4104 | *100 kOhm | 5% 0.25W | |
| | R...161 | 57.11.4104 | *100 kOhm | 5% 0.25W | |
| | R...162 | 57.11.4104 | *100 kOhm | 5% 0.25W | |
| | R...163 | 57.11.4332 | *3.3 kOhm | 5% 0.25W | |
| | R...164 | 57.11.4104 | *100 kOhm | 5% 0.25W | |
| | R...165 | 57.11.4104 | *100 kOhm | 5% 0.25W | |
| | R...166 | 57.11.4104 | *100 kOhm | 5% 0.25W | |
| | R...167 | 57.11.4104 | *100 kOhm | 5% 0.25W | |
| | R...168 | 57.11.4103 | 10 kOhm | 5% 0.25W | |
| | R...169 | 57.11.4104 | 100 kOhm | 5% 0.25W | |
| | R...170 | 57.11.4104 | 100 kOhm | 5% 0.25W | |
| | R...171 | 57.11.4103 | 10 kOhm | 5% 0.25W | |
| | R...172 | 57.11.4104 | 100 kOhm | 5% 0.25W | |
| | R...173 | 57.11.4104 | 100 kOhm | 5% 0.25W | |
| | R...174 | 57.11.4104 | 100 kOhm | 5% 0.25W | |
| | R...175 | 57.11.4332 | 3.3 kOhm | 5% 0.25W | |
| | R...176 | 57.11.3362 | 3.6 kOhm | 5% 0.25W | |
| | R...201 | 57.11.3152 | 1.5 kOhm | 1% 0.25W | |
| | R...202 | 57.11.3392 | 3.9 kOhm | 1% 0.25W | |
| | R...203 | 57.11.3152 | 1.5 kOhm | 1% 0.25W | |
| | R...204 | 57.11.3392 | 3.9 kOhm | 1% 0.25W | |
| (01) | R...205 | 57.11.3392 | 3.9 kOhm | 5% 0.25W | |
| | R...206 | 57.11.4331 | 330 Ohm | 5% 0.25W | |
| | R...207 | 57.11.4472 | 4.7 kOhm | 5% 0.25W | |
| | R...208 | 57.11.3153 | 15 kOhm | 5% 0.25W | |
| | R...209 | 58.01.8502 | 5 kOhm | 10% | |
| | R...210 | 57.11.4122 | 1.2 kOhm | 5% 0.25W | |
| | R...211 | 57.11.4472 | 4.7 kOhm | 5% 0.25W | |
| | R...212 | 57.11.3132 | 1.3 kOhm | 5% 0.25W | |
| (01) | R...213 | 1.010.007.58 | 10 kOhm | 20% lin. combined with R 113 | St |
| | R...214 | 57.11.3132 | 1.3 kOhm | 5% 0.25W | |
| | R...215 | 57.11.4472 | 4.7 kOhm | 5% 0.25W | |
| | R...216 | 57.11.4333 | 33 kOhm | 5% 0.25W | |
| | R...217 | 57.11.4682 | 6.8 kOhm | 5% 0.25W | |
| | R...218 | 57.11.4104 | 100 kOhm | 5% 0.25W | |
| | R...219 | 57.11.4104 | 100 kOhm | 5% 0.25W | |

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| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|------|---------|--------------|----------|-------------------------------|--------|
| | R...220 | 57.11.4104 | 100 kOhm | 5% 0.25W | |
| | R...221 | 57.11.4104 | 100 kOhm | 5% 0.25W | |
| | R...222 | 57.11.4682 | 6.8 kOhm | 5% 0.25W | |
| | R...223 | 57.11.4330 | 33 Ohm | 5% 0.25W | |
| | R...224 | 57.11.4333 | 33 kOhm | 5% 0.25W | |
| | R...225 | 57.11.3153 | 15 kOhm | 1% 0.25W | |
| | R...226 | 57.11.4333 | 33 kOhm | 5% 0.25W | |
| | R...227 | 1.010.004.58 | 10 kOhm | 10% pos.log.variable resistor | St |
| | R...228 | 57.11.4682 | 6.8 kOhm | 5% 0.25W | |
| | R...229 | 57.11.3132 | 1.3 kOhm | 5% 0.25W | |
| | R...230 | 57.11.4332 | 3.3 kOhm | 5% 0.25W | |
| | R...231 | 57.11.4472 | 4.7 kOhm | 5% 0.25W | |
| | R...232 | 57.11.4333 | 33 kOhm | 5% 0.25W | |
| | R...233 | 57.11.4332 | 3.3 kOhm | 5% 0.25W | |
| | R...234 | 57.11.4332 | 3.3 kOhm | 5% 0.25W | |
| | R...235 | 57.11.4333 | 33 kOhm | 5% 0.25W | |
| | R...236 | 57.11.4472 | 4.7 kOhm | 5% 0.25W | |
| | R...237 | 57.11.4393 | 39 kOhm | 5% 0.25W | |
| | R...238 | 57.11.4333 | 33 kOhm | 5% 0.25W | |
| | R...239 | 57.11.4472 | 4.7 kOhm | 5% 0.25W | |
| | R...240 | 57.11.4333 | 33 kOhm | 5% 0.25W | |
| | R...241 | 1.010.008.58 | 10 kOhm | 10% pos.log.variable resistor | St |
| | R...242 | 57.11.4332 | 3.3 kOhm | 5% 0.25W | |
| (01) | R...243 | | not used | | |
| (01) | R...244 | | not used | | |
| (01) | R...245 | | not used | | |
| (01) | R...246 | | not used | | |
| (01) | R...247 | | not used | | |
| | R...248 | 57.11.4332 | 3.3 kOhm | 5% 0.25W | |
| | R...249 | 57.11.4104 | 100 kOhm | 5% 0.25W | |
| | R...250 | 57.11.4104 | 100 kOhm | 5% 0.25W | |
| | R...251 | 57.11.4104 | 100 kOhm | 5% 0.25W | |
| | R...252 | 57.11.4104 | 100 kOhm | 5% 0.25W | |
| | R...253 | 57.11.4332 | 3.3 kOhm | 5% 0.25W | |
| | R...254 | 57.11.4104 | 100 kOhm | 5% 0.25W | |
| | R...255 | 57.11.4104 | 100 kOhm | 5% 0.25W | |
| | R...256 | 57.11.4104 | 100 kOhm | 5% 0.25W | |

S T U D E R (03) 84/12/01 TA HL-ST-INPUT-UNIT-B-4CH/8CH 1.912.141.00 PAGE 9

| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|------|---------|------------|-----------|-----------------------------|--------|
| | R...257 | 57.11.4104 | 100 kOhm | 5% 0.25W | |
| | R...258 | 57.11.4332 | *3.3 kOhm | 5% 0.25W | |
| | R...259 | 57.11.4104 | *100 kOhm | 5% 0.25W | |
| | R...260 | 57.11.4104 | *100 kOhm | 5% 0.25W | |
| | R...261 | 57.11.4104 | *100 kOhm | 5% 0.25W | |
| | R...262 | 57.11.4104 | *100 kOhm | 5% 0.25W | |
| | R...263 | 57.11.4332 | *3.3 kOhm | 5% 0.25W | |
| | R...264 | 57.11.4104 | *100 kOhm | 5% 0.25W | |
| | R...265 | 57.11.4104 | *100 kOhm | 5% 0.25W | |
| | R...266 | 57.11.4104 | *100 kOhm | 5% 0.25W | |
| | R...267 | 57.11.4104 | *100 kOhm | 5% 0.25W | |
| | R...268 | 57.11.4103 | 10 kOhm | 5% 0.25W | |
| | R...269 | 57.11.4104 | 100 kOhm | 5% 0.25W | |
| | R...270 | 57.11.4104 | 100 kOhm | 5% 0.25W | |
| | R...271 | 57.11.4103 | 10 kOhm | 5% 0.25W | |
| | R...272 | 57.11.4104 | 100 kOhm | 5% 0.25W | |
| | R...273 | 57.11.4104 | 100 kOhm | 5% 0.25W | |
| | R...274 | 57.11.4104 | 100 kOhm | 5% 0.25W | |
| | R...275 | 57.11.4332 | 3.3 kOhm | 5% 0.25W | |
| | R...276 | 57.11.3362 | 3.6 kOhm | 5% 0.25W | |
| | R...301 | 57.11.3472 | 4.7 kOhm | 1% 0.25W | |
| | R...302 | 57.11.3472 | 4.7 kOhm | 1% 0.25W | |
| | R...303 | 57.11.3473 | 47 kOhm | 1% 0.25W | |
| | R...304 | 57.11.3473 | 47 kOhm | 1% 0.25W | |
| | R...305 | 57.11.4333 | 33 kOhm | 5% 0.25W | |
| | R...307 | 57.11.3202 | 2 kOhm | 1% 0.25W | |
| | R...308 | 57.11.4104 | 100 kOhm | 5% 0.25W | |
| | R...309 | 57.11.4104 | 100 kOhm | 5% 0.25W | |
| | R...310 | 57.11.4104 | 100 kOhm | 5% 0.25W | |
| | R...311 | 57.11.4105 | 1 MOhm | 5% 0.25W | |
| | R...312 | 57.11.4104 | 100 kOhm | 5% 0.25W | |
| | R...313 | 57.11.4104 | 100 kOhm | 5% 0.25W | |
| | R...314 | 57.11.4104 | 100 kOhm | 5% 0.25W | |
| | R...315 | 57.11.4105 | 1 MOhm | 5% 0.25W | |
| | R...316 | 57.11.4104 | 100 kOhm | 5% 0.25W | |
| | R...317 | 57.11.4104 | 100 kOhm | 5% 0.25W | |
| | R...318 | 57.11.4102 | 1 kOhm | 5% 0.25W | |

S T U D E R (03) 84/12/01 TA HL-ST-INPUT-UNIT-B-4CH/8CH 1.912.141.00 PAGE 10

| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|------|---------|--------------|-----------|-------------------------------|--------|
| | R...319 | 57.11.4331 | 330 Ohm | 5% 0.25W | |
| | R...320 | 57.11.4103 | 10 kOhm | 5% 0.25W | |
| | R...321 | 57.11.4335 | 3.3 MOhm | 5% 0.25W | |
| | R...322 | 57.11.4104 | 100 kOhm | 5% 0.25W | |
| | R...323 | 57.11.4104 | 100 kOhm | 5% 0.25W | |
| (01) | R...324 | | not used | | |
| (01) | R...325 | | not used | | |
| (01) | R...326 | | not used | | |
| (01) | R...327 | 57.11.4105 | 1 MOhm | 5% 0.25W | |
| (01) | R...328 | | not used | | |
| | R...329 | 57.11.4331 | 330 Ohm | 5% 0.25W | |
| | R...330 | 57.11.4103 | 10 kOhm | 5% 0.25W | |
| | R...331 | 57.11.4681 | 680 Ohm | 5% 0.25W | |
| | R...332 | 57.11.4102 | 1 kOhm | 5% 0.25W | |
| | R...333 | 1.369.150.03 | 10 kOhm | 20% pos.log.variable resistor | St |
| | R...334 | 1.369.150.03 | 10 kOhm | 20% pos.log.variable resistor | St |
| | R...335 | 1.369.150.03 | 10 kOhm | 20% pos.log.variable resistor | St |
| | R...336 | 57.11.4332 | 3.3 kOhm | 5% 0.25W | |
| | R...337 | 57.11.4332 | 3.3 kOhm | 5% 0.25W | |
| | R...338 | 57.11.4332 | 3.3 kOhm | 5% 0.25W | |
| | R...339 | 57.11.4471 | 470 Ohm | 5% 0.25W | |
| | R...340 | 57.99.0209 | 5.6 Ohm | PTC Philips Nr.2322 662 91005 | |
| | R...341 | 57.99.0209 | 5.6 Ohm | PTC Philips Nr.2322 662 91005 | |
| | R...342 | 57.99.0209 | 5.6 Ohm | PTC Philips Nr.2322 662 91005 | |
| | R...343 | 57.99.0206 | 50 Ohm | PTC Philips Nr.2322 660 91008 | |
| | R...344 | 57.11.4102 | 1 kOhm | 5% 0.25W | |
| | R...345 | 57.11.4104 | 100 kOhm | 5% 0.25W | |
| (01) | R...346 | | not exist | | |
| (01) | R...401 | | not used | | |
| (01) | R...402 | | not used | | |
| (01) | R...403 | | not used | | |
| (01) | R...404 | | not used | | |
| (01) | R...501 | | not used | | |
| (01) | R...502 | | not used | | |
| (01) | R...503 | | not used | | |
| (01) | R...504 | | not used | | |
| (01) | R...505 | | not used | | |

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| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|------|---------|--------------|----------|---|--------|
| (01) | R...506 | | not used | | |
| (01) | R...507 | | not used | | |
| (01) | R...508 | | not used | | |
| | S...101 | 55.15.0004 | 4*U | 2u gold button: 55150106 red | |
| | S...102 | | | combined with S101 | |
| | S...103 | 55.15.0002 | * 2*U | button: 55030303 red | ITT |
| | S...104 | 55.15.0002 | 2*U | button: 55030303 red | ITT |
| | S...105 | 55.15.0002 | 2*U | button: 55030303 red | ITT |
| | S...106 | 55.15.0002 | * 2*U | button: 55030303 red | ITT |
| | S...107 | 1.010.008.59 | 1*U | combined with variable resistor R 141/241 | St |
| | S...201 | | | combined with S101 | |
| | S...202 | | | combined with S101 | |
| | S...203 | | * | combined with S103 | |
| | S...204 | | | combined with S104 | |
| | S...205 | | | combined with S105 | |
| | S...206 | | * | combined with S106 | |
| | S...207 | 1.010.008.59 | 1*U | combined with variable resistor R 141/241 | St |
| | S...301 | 1.912.120.03 | 2*U | button: 55030303 red | |
| | S...302 | | | combined with S301 | |
| | S...303 | | 2*U | mutual realising with S301/S302 | |
| | S...304 | | | combined with S303 | |
| | S...305 | 55.15.0012 | 2*U | button: 55150106 red | |
| | S...306 | | | combined with S305 | |
| | S...307 | 1.369.150.03 | 1*U | combined with variable resistor R 333 | St |
| | S...308 | 1.369.150.03 | 1*U | combined with variable resistor R 334 | St |
| | S...309 | 1.369.150.03 | 1*U | combined with variable resistor R 335 | St |
| | T...101 | 1.022.451.00 | | input trafo 1:0.62 | St |
| | T...201 | 1.022.451.00 | | input trafo 1:0.62 | St |
| | W.....1 | | | by 8-CH not equipped | |
| | W.....2 | | | by 8-CH not equipped | |
| | W.....3 | | | by 8-CH not equipped | |
| | W.....4 | | | by 8-CH not equipped | |

(01) XDL.301

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| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|------|--------------------|--------------|-------|-----------------------------|--------|
| (01) | XDL.302 XDL.... | 1.010.012.50 | | LED-holder | St |

(01) 84/03/01 click suppression of attenuator

(02) 84/10/04 suppression of high frequency

=====
 * ONLY 8-CHANNEL 1.912.143.00
 =====

CE=Ceramic, CF=Carbon Film, EL=Electrolytic, MF=Metal Film,
 PE=Polyester, PP=Polypropylen, PS=Polystyrol

MANUFACTURER: Bu=Burndy, Ex=Exar, Fc=Fairchild, GI=General Instrument
 HP=Hewlett Packard, ITT=Intermetall, Mot=Motorola,
 NS=National Semiconductors, Ph=Philips, Ra=Raytheon,
 Sig=Signetics, Six=Siliconix, St=Studer,
 TI=Texas Instrument

ORIG 83/01/20 (01) 84/03/01 (02) 84/10/04 (03) 84/12/01

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Hilfssummeneinheit

Die drei Mono-Hilfsausgänge (AUX 1...3) und der Stereo-Hilfsausgang (AUX 4) der Eingangseinheiten werden über Sammelschienen den Hilfssummeneinheiten zugeführt und dort auf Nominalpegel verstärkt.

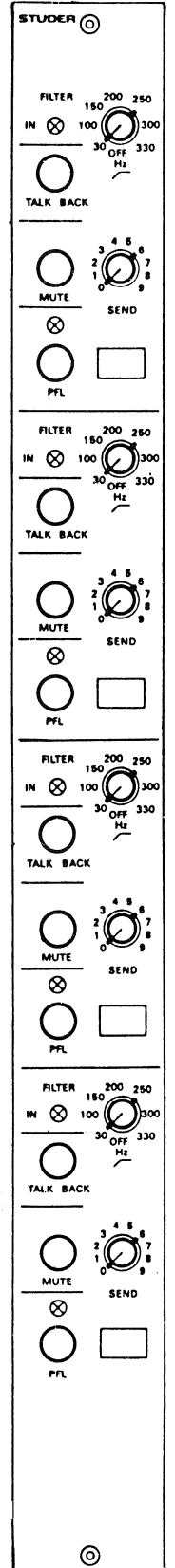
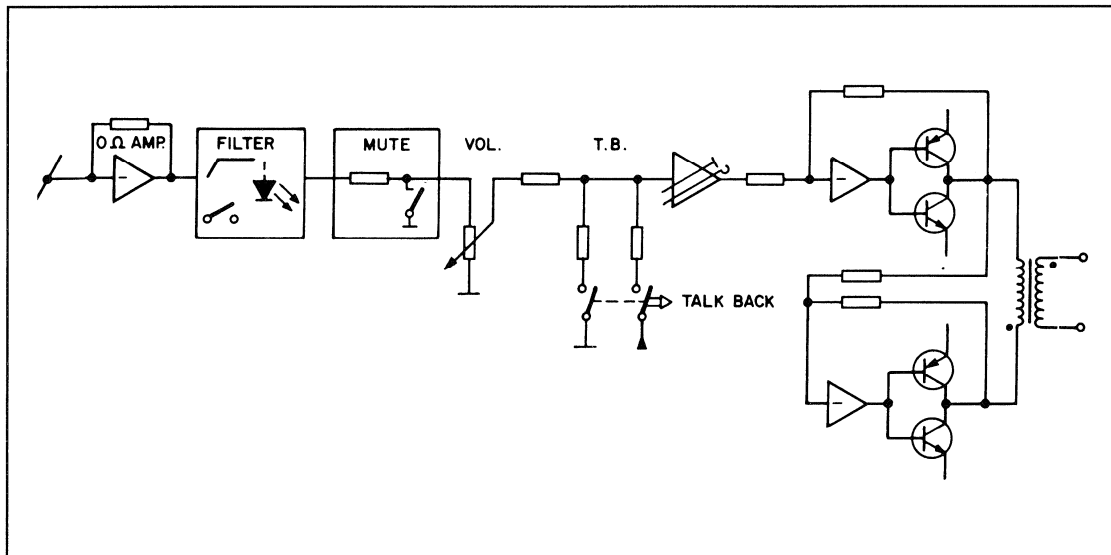
Vor dem Summenregler (SEND) kann das Signal durch ein Hochpassfilter mit variabler Grenzfrequenz geführt, und über PFL vorgehört werden. Die MUTE-Taste unterbricht den Signalweg. Befehle können über das Kommandomikrofon mit der TALK BACK-Taste direkt auf jede Hilfssumme gegeben werden.

| | |
|------------------|---|
| Filter | Variables Hochpassfilter mit einer Steilheit von 12dB pro Oktave. Grenzfrequenz einstellbar von 30...330Hz. |
| Send | Summenpegelregler |
| Talk Back | Gegensprechen auf den betreffenden AUX-Kanal. Bei gedrückter Talk Back-Taste wird das AUX-Signal um 20 dB gedämpft. |
| Mute | Stummschaltung der Hilfssumme |
| PFL | Vorhören der Hilfssumme |

Ausgangspegel +6dBu @ 600Ω

Speisung ± 15 V / 200 mA
 - 6 V / 1...80 mA
 - 24 V / < 8 mA

Blockdiagramm



AUX MASTER

Auxiliary master unit

The three mono auxiliary outputs (AUX 1...3) and the stereo auxiliary output (AUX 4) of the output units get fed to the auxiliary master units by the bus bars and there they get amplified to normal level.

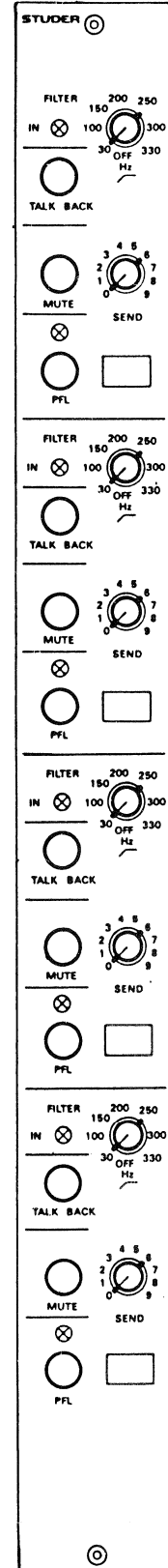
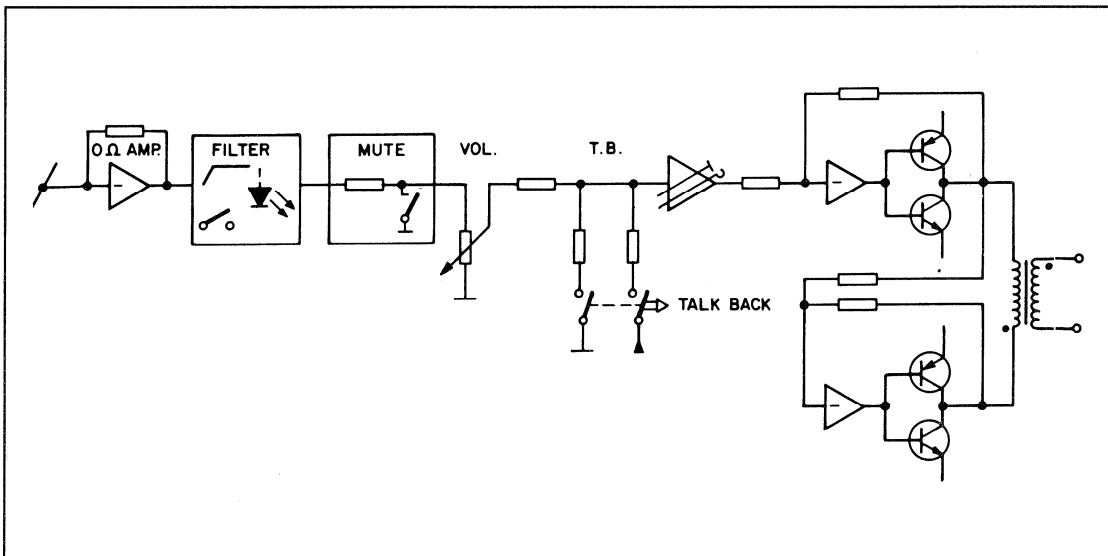
Before the master control (SEND), the signal can be led through a high-pass filter with variable cutoff frequency, and it can be pre-listened over PFL. The MUTE push button interrupts the signal path. Orders can directly be given to each auxiliary master by the command microphone with the TALK BACK push button.

| | |
|------------------|--|
| Filter | High-pass filter with 12 dB/octave slope. The attack frequency can be varied from 30 Hz to 330 Hz. |
| Send | Master level control |
| Talk back | Talk back to the referring auxiliary channel. The talk back key activates damping of 20dB on the AUX signal. |
| Mute | Push button for muting the AUX channel. |
| PFL | Pre-listening of the AUX channel |

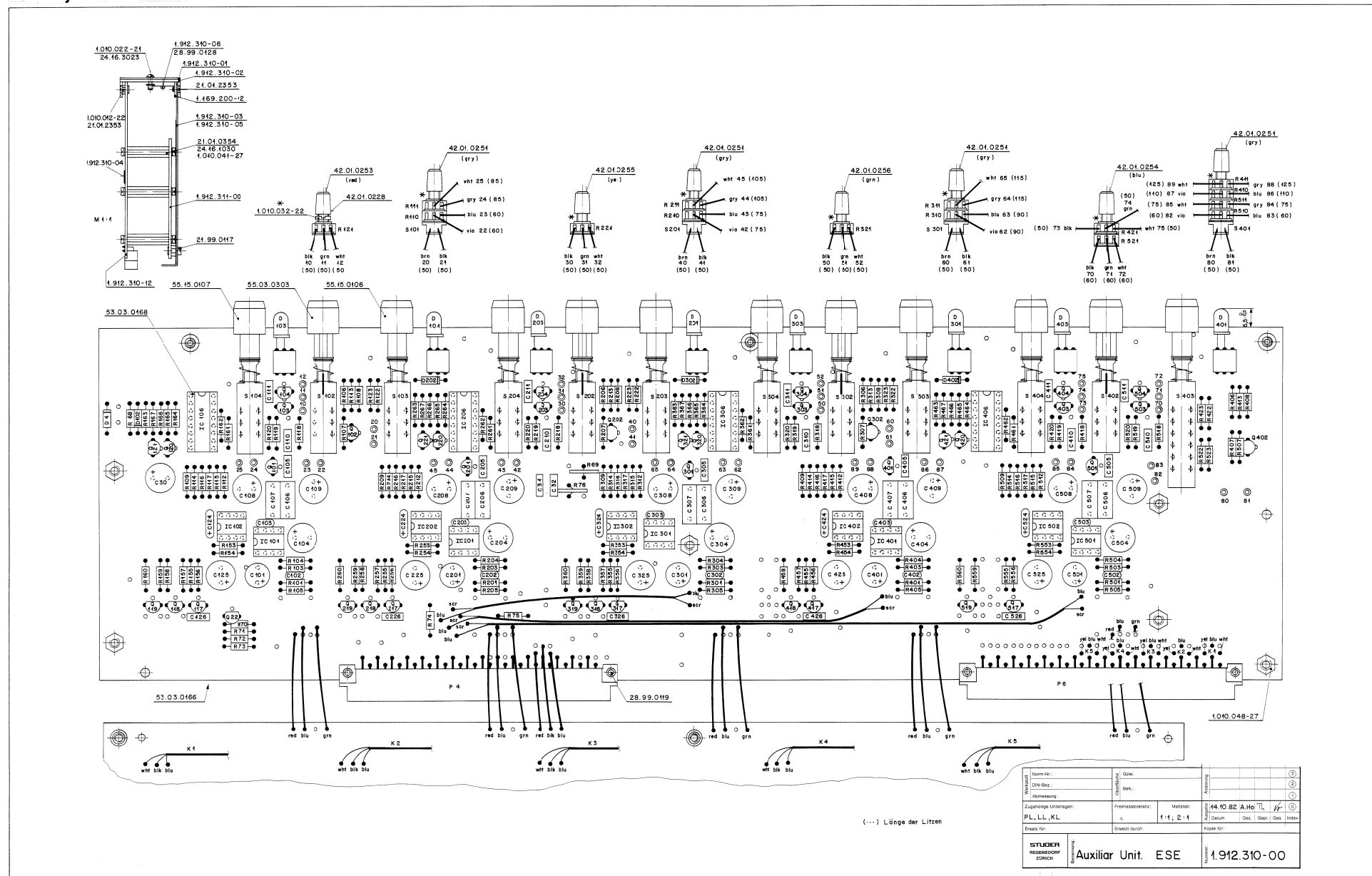
Output level +6 dBu @ 600Ω

Supply ± 15 V / 200 mA
 - 6 V / 1...80 mA
 - 24 V / < 8 mA

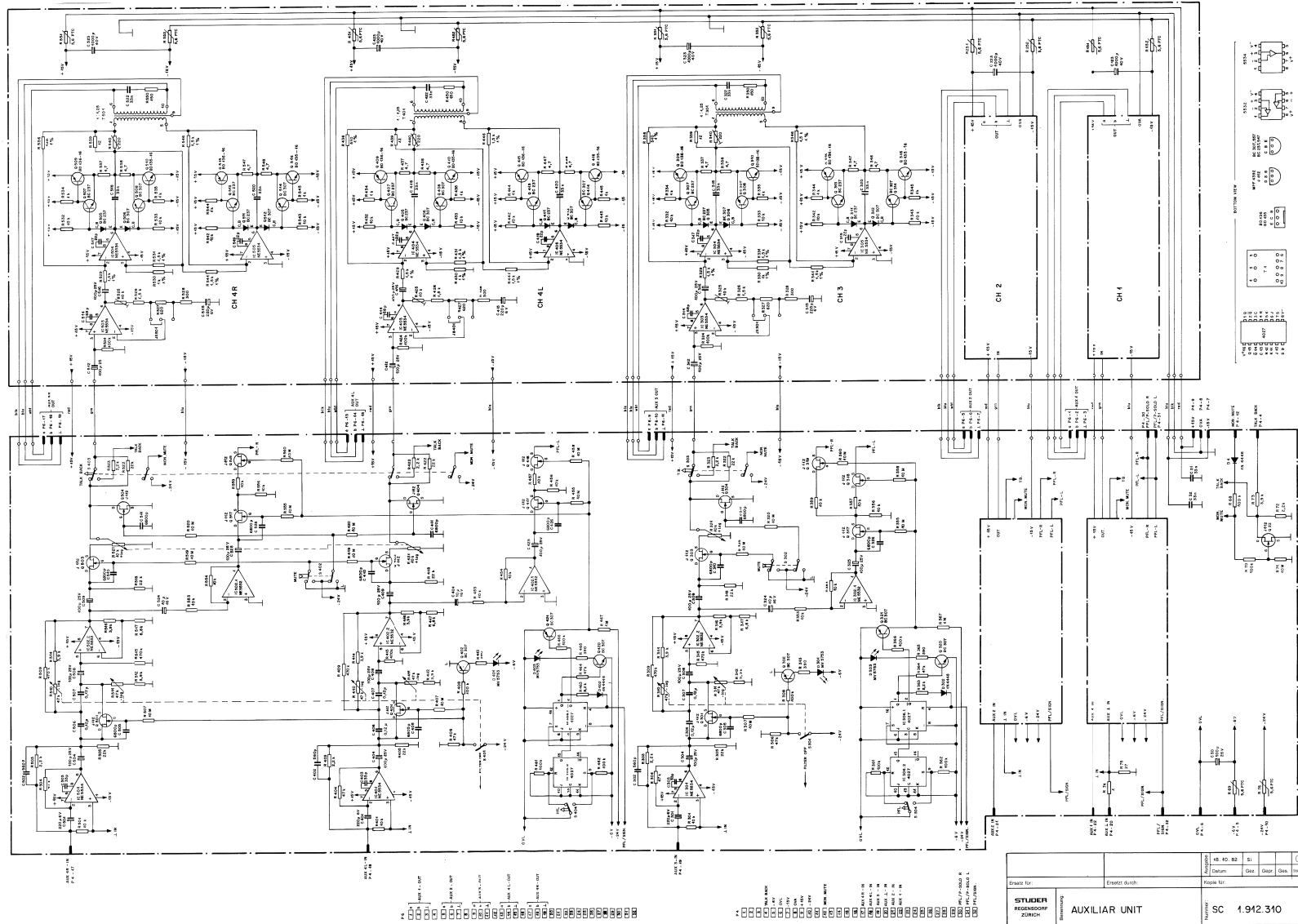
Block diagram



Auxiliary Unit 1.912.310



Auxiliary Unit 1.912.310



Auxiliary Unit 1.912.310

| IND POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------------|------------|---------|---------------------------|-----|
| C_01 | 59.22.2221 | 220 μ | 6V EL | |
| .02 | 59.34.5561 | 560 p | CER | |
| .03 | 59.34.2330 | 33 p | CER | |
| .04 | 59.22.5101 | 100 μ | 25V EL | |
| .05 | 59.06.0682 | 6800 p | 63V PE | |
| .06 | 59.02.2174 | 0.12 μ | 5% PE | |
| .07 | 59.02.2124 | 0.12 μ | 5% PE | |
| .08 | 59.22.5101 | 100 μ | 25V EL | |
| .09 | 59.22.5101 | 100 μ | 25V EL | |
| .10 | 59.06.0682 | 6800 p | 63V PE | |
| .11 | 59.06.0682 | 6800 p | 63V PE | |
| .12 | 59.22.5101 | 100 μ | 25V EL | |
| .13 | | | | |
| .14 | 59.34.4680 | 68 p | CER | |
| .15 | 59.22.2221 | 220 μ | 6V EL | |
| .16 | 59.22.5101 | 100 μ | 25V EL | |
| .17 | 59.34.2220 | 22 p | CER | |
| .18 | 59.06.0333 | 0.033 μ | 63V PE | |
| .19 | 59.34.2220 | 22 p | CER | |
| .20 | 59.06.0333 | 0.033 μ | 63V PE | |
| .21 | | | | |
| .22 | 59.06.0333 | 0.033 μ | 63V PE | |
| .23 | 59.25.5102 | 1000 μ | 46V EL | |
| .24 | 59.26.2103 | 10 μ | 46V SAL | |
| .25 | 59.25.5101 | 100 μ | 25V EL | |
| .26 | 59.06.0682 | 6800 p | 63V PE | |
| .27 | | | | |
| .28 | | | | |
| .29 | | | | |
| 30 | 59.22.5101 | 100 μ | 25V EL | |

| IND | DATE | NAME | |
|-----|---------|------|---------------------|
| IG | | | CER GERMANIC |
| EL | | | EL ELECTROLYTIC |
| PC | 1.2.85 | JK | PC POLYCARBONAT |
| PE | 30.1.84 | JK | PE POLYESTER |
| SAL | 24.9.82 | TL | SAL SOLID ALUMINIUM |

STUDER AUXILIAR UNIT | 1.912.310.00 | page 1 of 6
13046510

| IND POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------------|------------|----------|---------------------------|--------|
| C 31 | 59.06.0333 | 0.033 μ | 63V PE | |
| 32 | 59.06.0333 | 0.033 μ | 63V PE | |
| 01 | 50.04.2111 | MV5753 | LED RED | IR |
| .02 | 50.04.0125 | MN44B | | |
| .03 | 50.04.2111 | MV5753 | LED RED | IR |
| 4 | 50.04.0125 | MN44B | | |
| IC_01 | 50.05.0244 | NE 5534A | OP-AMP DIP 8 | S16 |
| .02 | 50.09.0105 | NE 5532 | DUAL OP-AMP DIP 8 | . |
| .03 | 50.05.0243 | NE 5534 | OP-AMP DIP 8 | . |
| .04 | 50.05.0243 | NE 5534 | OP-AMP DIP 8 | . |
| .05 | 50.05.0243 | NE 5534 | OP-AMP DIP 8 | . |
| .06 | 50.07.0027 | 4027 | DUAL J-K FF | M05 |
| | | | | |
| IC_01 | 54.01.0020 | PIN | | |
| | 54.01.0021 | JUMPER | | |
| | | | | |
| P 4 | 54.01.0359 | 2*16p | | |
| 6 | 54.01.0359 | 2*16p | | |
| | | | | |
| Q_01 | 50.03.0350 | J112 | J-FET | Sx |
| .02 | 50.03.0515 | BC307 | PNP | BC 557 |
| .03 | 50.03.0350 | J112 | J-FET | Sx |
| .04 | 50.03.0350 | J112 | J-FET | Sx |
| .05 | 50.03.0436 | BC 237 | NPN | BC 547 |
| .06 | 50.03.0515 | BC 307 | PNP | BC 557 |

| IND | DATE | NAME | |
|-----|------|------|---------------------|
| IR | | | IR INT. RECTIFER |
| S16 | | | S16 SEMI-CONDUCTORS |
| Sx | | | Sx SILICONIX |

STUDER AUXILIAR UNIT | 1.912.310.00 | page 2 of 6
13046510

| IND POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------------|--------------|-----------|---------------------------|--------|
| Q_07 | 50.03.0436 | BC 237 | NPN | BC 547 |
| .08 | 50.03.0515 | BC 307 | PNP | BC 557 |
| .09 | 50.03.0515 | BD136-6 | PNP | |
| .10 | 50.03.0436 | BD135-16 | NPN | |
| .11 | 50.03.0436 | BC 237 | NPN | BC 547 |
| .12 | 50.03.0515 | BC 307 | PNP | BC 557 |
| .13 | 50.03.0436 | BC 237 | NPN | BC 547 |
| .14 | 50.03.0515 | BC 307 | PNP | BC 557 |
| .15 | 50.03.0510 | BD 136-6 | PNP | |
| .16 | 50.03.0436 | BD 135-16 | NPN | |
| .17 | 50.03.0350 | J112 | J-FET | Sx |
| .18 | 50.03.0350 | J112 | J-FET | Sx |
| .19 | 50.03.0350 | J112 | J-FET | Sx |
| .20 | 50.03.0436 | BC 237 | NPN | BC 547 |
| .21 | 50.03.0515 | BC 307 | PNP | BC 557 |
| .22 | 50.03.0350 | J112 | J-FET | Sx |
| | | | | |
| R_01 | 57.11.4163 | 10 k | | MF |
| .02 | | | | |
| .03 | 57.11.4222 | 2.2 k | 2% | |
| .04 | 57.11.4473 | 4.7 k | | |
| .05 | 57.11.4223 | 2.2 k | | |
| .06 | 57.11.4473 | 4.7 k | | |
| .07 | 57.11.6106 | 10 M | | |
| .08 | 57.11.4104 | 100 k | | |
| .09 | 57.11.4474 | 4.70 k | | |
| .10 | | 2*4.7 k | ON-OFF SW LEFT | St |
| .11 | 1.912.001.52 | -106 | | |

| IND | DATE | NAME | |
|-----|------|------|---------------|
| MF | | | MF METAL FILM |
| Sx | | | Sx SILICONIX |
| St | | | St STUDER |

STUDER AUXILIAR UNIT | 1.912.310.00 | page 3 of 6
13046510

| IND POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------------|--------------|---------|---------------------------|-----|
| R 410 | | | | |
| 411 | 1.912.001.53 | 4*4.7 k | ON-OFF SW LEFT | St |
| 510 | | -106 | | |
| 511 | | | | |
| .12 | 57.11.4392 | 3.9 k | | |
| .13 | 57.11.4394 | 390 | | |
| .14 | 57.11.4392 | 3.9 k | | |
| .15 | 57.11.4474 | 4.70 k | | |
| .16 | 57.11.4392 | 3.9 k | | |
| .17 | 57.11.4682 | 6.8 k | | |
| .18 | 57.11.4223 | 2.2 k | | |
| .19 | 57.11.6106 | 10 M | | |
| .20 | 57.11.6106 | 10 M | | |
| .21 | 1.912.001.24 | 10k+106 | | |
| 421 | | 2*4.0k | | |
| 521 | 012.001.34 | +106 | | |
| .22 | 57.11.4223 | 2.2 k | | |
| .23 | 57.11.4222 | 2.2 k | | |
| .24 | 57.11.4104 | 100 k | | |
| .25 | 58.01.7103 | 10 k | TRIM | |
| .26 | 57.11.4452 | 4.5 k | | |
| .27 | 57.11.3621 | 620 | 2% | |
| .28 | 57.11.3504 | 300 | 2% | |
| .29 | 57.11.3152 | 4.5 k | 1% | |
| .30 | 57.11.3102 | 1.0 k | 1% | |
| .31 | 57.11.3152 | 4.5 k | 1% | |
| .32 | 57.11.4103 | 10 k | | |
| .33 | 57.11.4103 | 10 k | | |
| .34 | 57.11.4102 | 1 k | | |
| .35 | 57.11.4102 | 1 k | | |

| IND | DATE | NAME | |
|-----|------|------|-----------|
| St | | | St STUDER |

STUDER AUXILIAR UNIT | 1.912.310.00 | page 4 of 6
13046510

| IND POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------------|------------|-------|---------------------------|-----|
| R 36 | 57.11.3811 | 510 | 1% | |
| .37 | 57.11.4479 | 4.7 | | |
| .38 | 57.11.4479 | 4.7 | | |
| .39 | 57.11.4120 | 42 | | |
| 40 | 58.01.9204 | 220 | TRIM | |
| .41 | 57.11.3152 | 4.5 k | 1% | |
| .42 | 57.11.4103 | 10 k | | |
| .43 | 57.11.4103 | 10 k | | |
| .44 | 57.11.4102 | 1 k | | |
| .45 | 57.11.4102 | 1 k | | |
| .46 | 57.11.3152 | 4.5 k | 1% | |
| .47 | 57.11.4479 | 4.7 | | |
| .48 | 57.11.4479 | 4.7 | | |
| .49 | | | | |
| .50 | 57.11.4151 | 150 | | |
| .51 | 57.09.0209 | 5.6 | PTC | |
| .52 | 57.09.0209 | 5.6 | PTC | |
| .53 | 57.11.4103 | 10 k | | |
| .54 | 57.11.4103 | 10 k | | |
| .55 | 57.11.6106 | 10 M | | |
| .56 | 57.11.4103 | 10 k | | |
| .57 | 57.11.4103 | 10 k | | |
| .58 | 57.11.6106 | 10 M | | |
| .59 | 57.11.4103 | 10 k | | |
| .60 | 57.11.6106 | 10 M | | |
| .61 | 57.11.4104 | 100 k | | |
| .62 | 57.11.4104 | 100 k | | |
| .63 | 57.11.4822 | 82 k | | |
| .64 | 57.11.4473 | 4.7 k | | |
| .65 | 57.11.4391 | 390 | | |

| IND | DATE | NAME | |
|-----|------|------|------------|
| Ph | | | Ph PHILIPS |

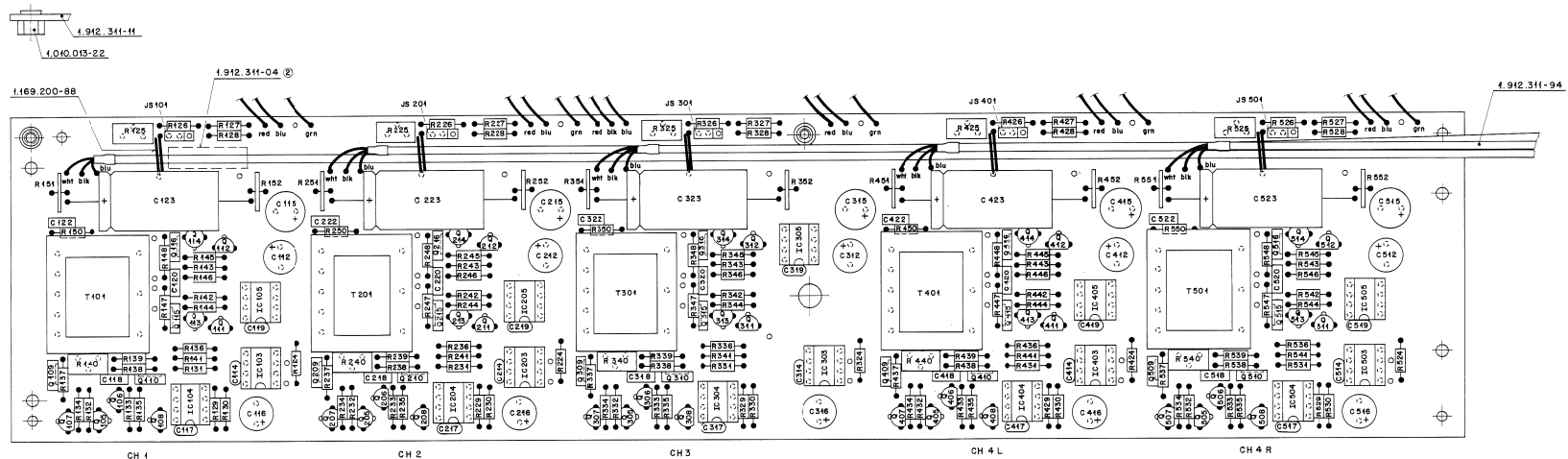
STUDER AUXILIAR UNIT | 1.912.310.00 | page 5 of 6
13046510

| IND POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------------|--------------|--------|---------------------------|-----|
| R 64 | 57.11.4104 | 100 k | | |
| .67 | 57.11.4105 | 1 M | | |
| 68 | 57.11.4104 | 100 k | | |
| 69 | 57.09.0209 | 5.6 | PTC | Ph |
| 70 | 57.11.4104 | 100 k | | |
| 71 | 57.11.6106 | 10 M | | |
| 72 | 57.11.4222 | 2.2 k | | |
| 73 | 57.11.4392 | 3.9 k | | |
| 74 | 57.11.4104 | 100 k | | |
| 75 | 57.11.4270 | 27 | | |
| 76 | 57.09.0209 | 5.6 | PTC | Ph |
| | | | | |
| S_01 | | 1p ON | COMBINED WITH R10/R11 | |
| .02 | 55.15.0003 | 2p | PUSHBUTTON SWITCH | |
| | 55.05.0303 | | KNOB RED INDIC | |
| .03 | 55.15.0003 | 2p | PUSHBUTTON SWITCH | |
| 403 | 55.15.0004 | 4p | PUSHBUTTON SWITCH | |
| | 55.15.0106 | | KNOB GRV/RED | |
| S_04 | 55.15.0003 | 2p | PUSHBUTTON SWITCH | |
| | 55.15.0107 | | KNOB GRV/GRV | |
| | | | | |
| T_01 | 1.022.353.00 | 1:1.25 | LINE OUT TRAF0 | |
| | | | | |
| XIC | 53.03.0166 | 8p | IC SOCKET | |
| | 53.03.0166 | 16p | IC SOCKET | |
| XLED | 54.01.0219 | | | |

| IND | DATE | NAME | |
|-----|------|------|------------|
| Ph | | | Ph PHILIPS |

STUDER AUXILIAR UNIT | 1.912.310.00 | page 6 of 6
13046510

AUX Line Amplifier Board 1.912.311



C 123 / C 223 / C 323 / C 423 / C 523
 verklebt nach BV 640 ③

| | | | |
|-------------------------------|-----------------------|---------------|---|
| Norm-Nr.: | Datum: | 19.11.86 | ④ |
| U.Nr. Bes.: | U.Nr. Bes.: | 26.5.86 A. Ho | ③ |
| Abmessung: | Abmessung: | 307.84 A.Ho | ① |
| Zugehörige Unterlagen: | Freigeberstanz: | Multisab: | ② |
| PL 1.912.310 | | 2.1 | |
| Erstellt für: | Erstellt durch: | Kopie Nr.: | |
| STUDER RESENDORF ZÜRICH | Aux Line Amp Board | 1.912.311-00 | |

Studiomonitor- und Kommando-Einheit

Studiomonitor

Gegenseitig auslösende Drucktasten erlauben die Wahl zwischen sechs verschiedenen Quellen, die ins Studio eingespielt werden können. Die Abhörlautstärke wird über VCA gesteuert.

Die Studio-Lautstärke kann wahlweise durch das eingebaute Potentiometer oder durch eine von aussen kommende Steuerspannung eingestellt werden. Bei offenen Mikrofonreglern werden die Studiolautsprecher abgeschaltet. Der getrennte Kopfhörerausgang bleibt dabei eingeschaltet. Falls trotz offenen Mikrofonreglern Lautsprechereinspielen gewünscht wird, ist die Taste REIN zu drücken.

Talk Back Send

**TB STUDIO
TB SPEAKER**

Gegensprechen ins Studio ist über zwei Wege möglich: über die Einspiellautsprecher über eine im Sprechertisch oder im Dirigentenpult eingebaute Sprechstelle.

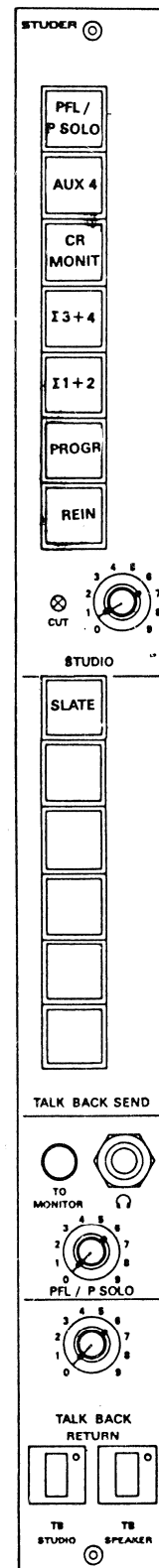
Die Taste SLATE schaltet das Kommandosignal auf die Summensammelschienen. Über fünf weitere Tasten kann Verbindung zu gleichwertigen Gegensprechstellen aufgenommen werden. Das von diesen Stellen kommende Antwortsignal wird über den TB/PFL-Lautsprecher wiedergegeben.

PFL / P.SOLO

In der Studiomonitor- und Kommando-Einheit sind auch die Sammelschienenverstärker von Vorhören (PFL) und Abhören nach Panoramapotiometer (P.SOLO) sowie der dazugehörige Lautstärkereglер und eine Kopfhörerbuchse untergebracht. Bei eingestecktem Kopfhörer wird der Vorhörlautsprecher unterbrochen.

Mit der Taste PFL/P.SOLO TO MONITOR wird der Vorhörlautsprecher ebenfalls unterbrochen. Sobald eine oder mehrere PFL- und P.SOLO Tasten gedrückt sind, wird automatisch das Monitorsignal unterbrochen und an seiner Stelle das gewählte PFL- oder P.SOLO-Signal auf die Abhörlautsprecher geschaltet. Dies ermöglicht, eine beliebige Gruppe von Eingangskanälen mit der richtigen, am Panoramapotiometer eingestellten Stereoablage abzuhören. Die laufende Aufnahme und Sendung wird dabei nicht beeinflusst. Sind alle angeählten PFL/P.SOLO Tasten durch nochmaliges Drücken wieder ausgeschaltet, oder werden diese durch Betätigung der RESET-Taste auf dem Signalisationseinschub zurückgestellt, so wird wieder das normale Monitorsignal hörbar.

(Siehe auch Blockdiagramm PFL-System)



STUDIO MONITOR + TALK BACK

Studio monitor and talk back unit

Studio monitoring

With the aid of interlocking push buttons, six different sources can be fed back to the studio. The monitoring volume is controlled via VCAs.

The studio volume can either be adjusted with the built-in potentiometer or with an external control voltage. With open microphone channels the studio speakers are muted while the separate headphones output remains active. If the speakers are to be reinjected though the microphone controls are open, the REIN button must be pressed.

Talk back send

**TB STUDIO
TB SPEAKER**

Two methods are available for talking back to the studio:

via the talk back speakers

via a loudspeaker built into the announcer's or the conductor's desk.

The SLATE key connects the talk back signal to the bus. Five additional keys are available for communicating with similarly equipped talk back stations. The answering signal is reproduced by the TB/PFL speaker.

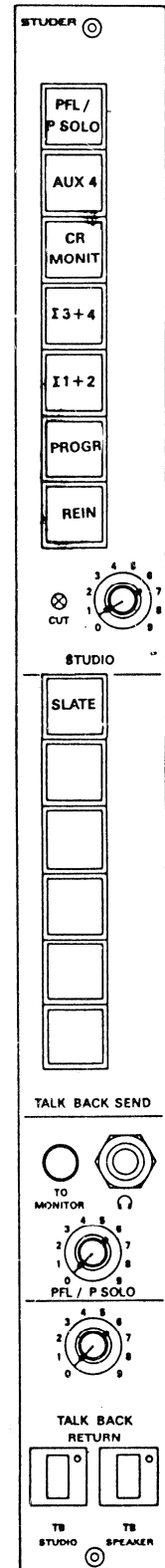
PFL / P.SOLO

The bus amplifiers of pre-fader listening (PFL) and monitoring after the panorama potentiometer (positional solo) as well as the corresponding volume control and headphones socket are also included in the studio monitor and talk back unit. When the headphones jack is inserted, the PFL speaker is muted.

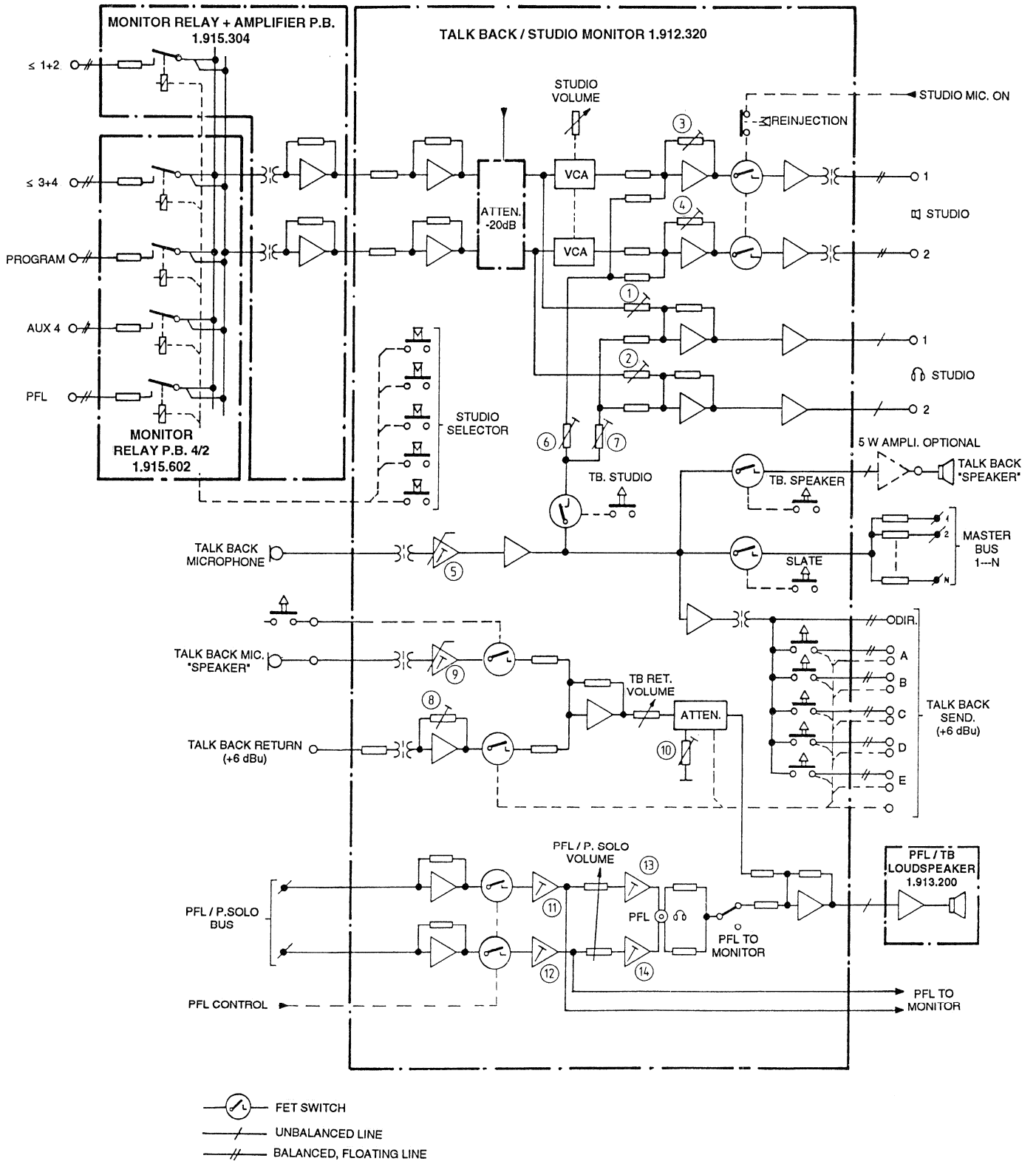
With the PFL/P.SOLO TO MONITOR button the PFL speaker is also muted. As soon as one or more PFL- and P.SOLO buttons have been pressed, the monitor signal is automatically disabled and the selected PFL or P.SOLO signal is connected to the monitor speakers. In this manner it is possible to monitor any group of input channels with the true stereo balance as adjusted with the panorama potentiometer.

A recording or broadcast in progress will not be affected. If all selected PFL/P.SOLO buttons have been reset by pressing the RESET button on the signalling module, the normal monitor signal can be heard.

(Also refer to block diagram PFL system)



Blockdiagramm / Block diagram



STUDIO MONITOR + TALK BACK

Abgleichelemente / Alignment Elements

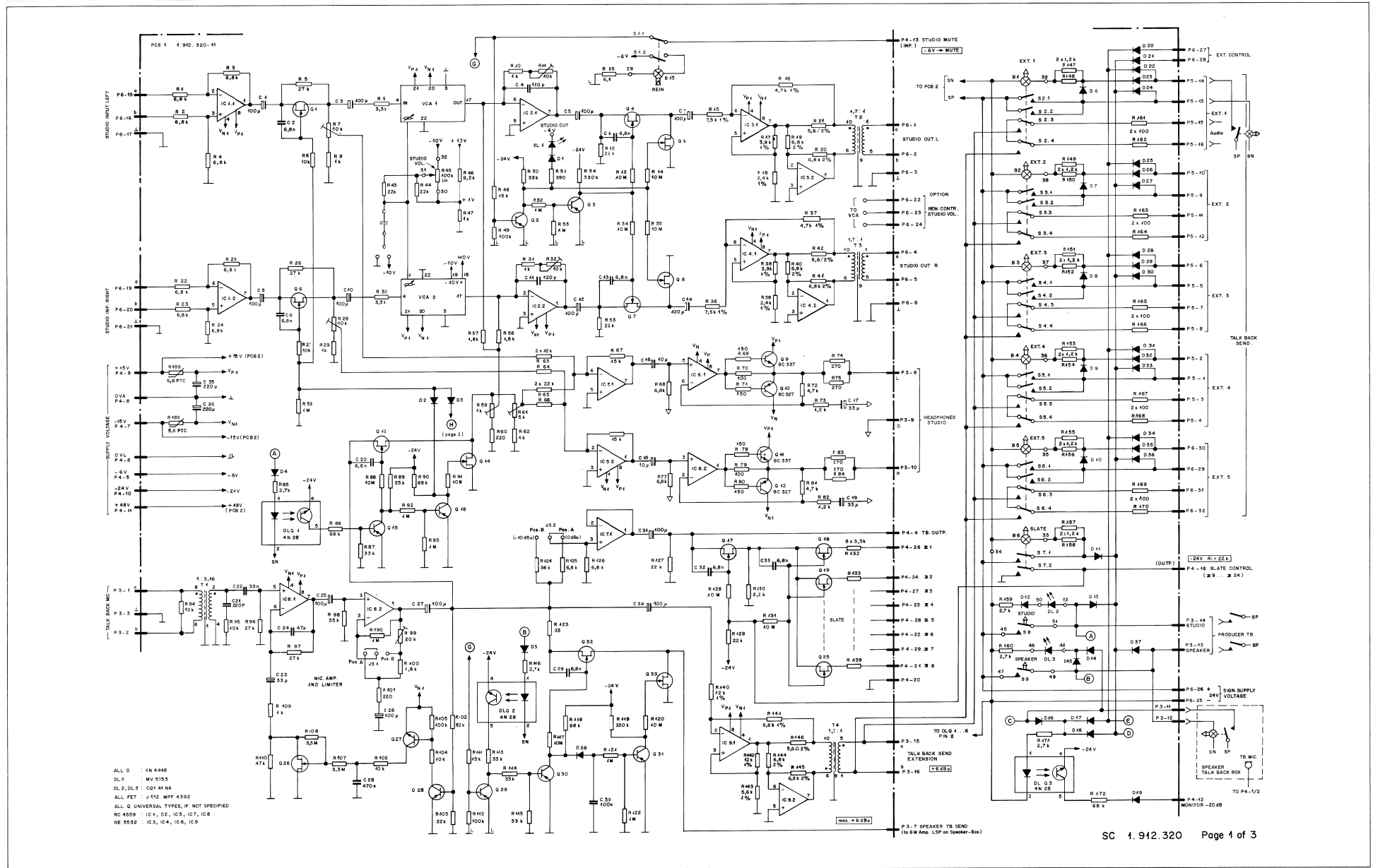
Die Nummern beziehen sich auf das Blockdiagramm.

| | | |
|----|--|-----|
| 1 | Ausgangspegel Studio-Kopfhörer, links, | R7 |
| 2 | Ausgangspegel Studio-Kopfhörer, rechts | R28 |
| 3 | Pegel Studioausgang, links | R11 |
| 4 | Pegel Studioausgang, rechts | R32 |
| 5 | Eingangspegel talk back mikro. | R99 |
| 6 | Talk Back Pegel Studiolausprecher | R59 |
| 7 | Talk Back Pegel Studiokopfhörer | R61 |
| 8 | Talk Back Return Pegel (Leitungseingang) | R48 |
| 9 | Talk Back Return Pegel 'Speaker mikro.' | R23 |
| 10 | Dämpfung Talk Back Return Pegel | R39 |
| 11 | Pegel PFL/P SOLO links | R67 |
| 12 | Pegel PFL/P SOLO rechts | R70 |
| 13 | Pegel PFL/P SOLO Kopfhörer links | R79 |
| 14 | Pegel PFL/P SOLO Kopfhörer rechts | R87 |

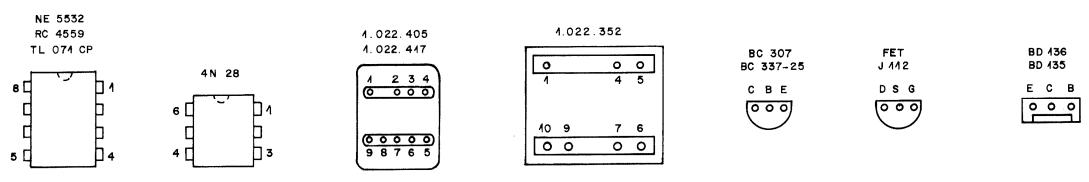
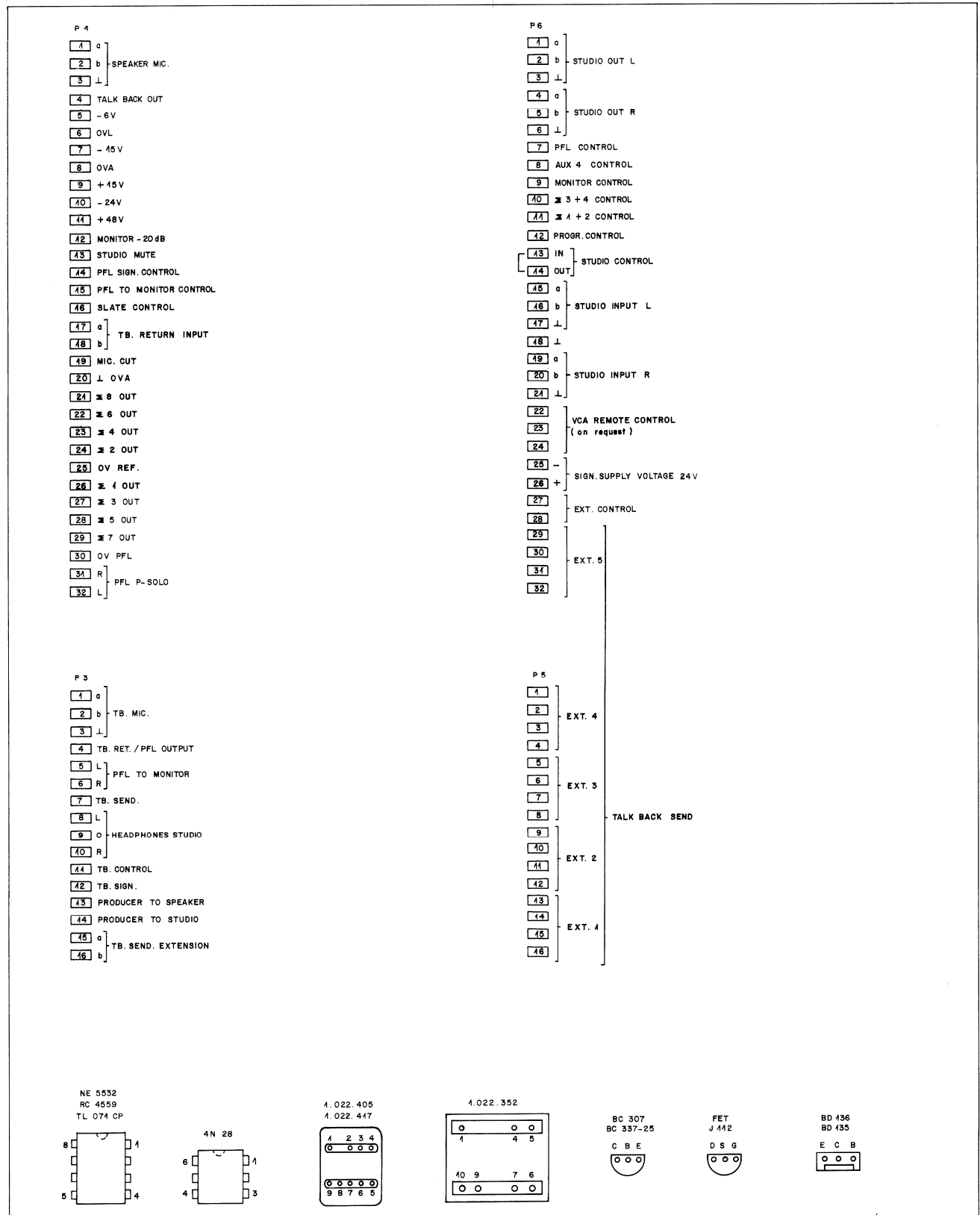
The numbers relate to the block diagram.

| | | |
|----|---|-----|
| 1 | Input level to headphones studio, left | R7 |
| 2 | Input level to headphones studio, right | R28 |
| 3 | Studio output level, left | R11 |
| 4 | Studio output level, right | R32 |
| 5 | Input level talk back mic. | R99 |
| 6 | Talk back level studio speaker | R59 |
| 7 | Talk back level studio headphones | R61 |
| 8 | Talk back return level (line input) | R48 |
| 9 | Talk back return level speaker mic | R23 |
| 10 | Attenuation talk back return level | R39 |
| 11 | Level PFL/P SOLO left | R67 |
| 12 | Level PFL/P SOLO right | R70 |
| 13 | Level PFL/P SOLO headphones left | R79 |
| 14 | Level PFL/P SOLO headphones right | R87 |

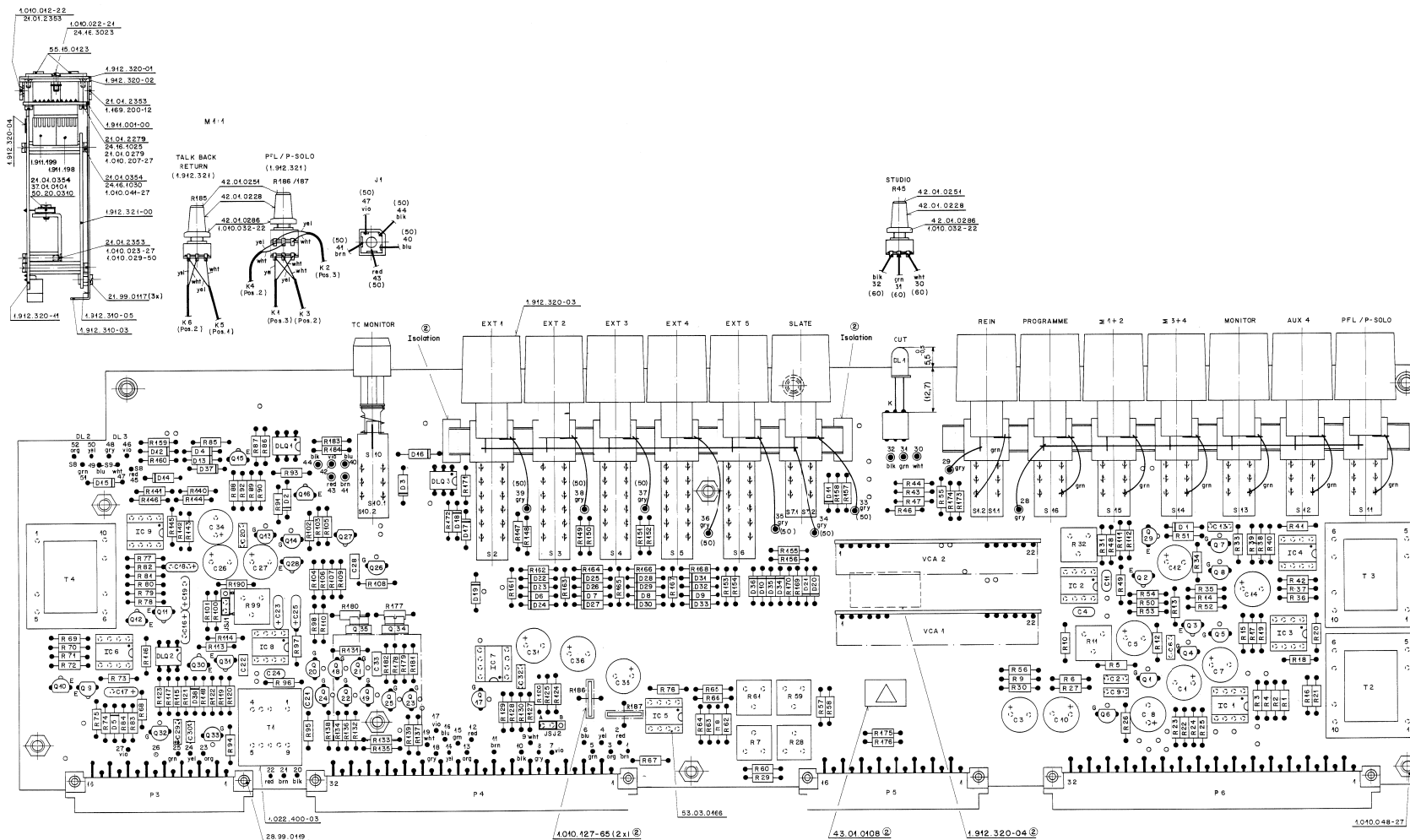
Talk Back / Studio Monitor 1.912.320 SC 1 of 3



Talk Back / Studio Monitor 1.912.320 SC 3 of 3



Talk Back / Studio Monitor 1.912.320



② Q34, Q35
Montage und Montagematerial
nach BV632

(---) Länge der Litzen
(Pos.) = Pos. Nr. von Kl. 1.912.320-94

| | | | | | | |
|---------------------------------|-------------------------|-----------------------------------|----------|-----------|-------|-------|
| Werkstoff | Norm-Nr.: | Stück | 26.5.86 | A.Ho | ✓ | ① |
| | DIN-Nr.: | Übersicht: | 12.12.83 | A.Ho | ✓ | ① |
| | Abmessung: | Ben: | 20.10.82 | A.Ho | ✓ | ① |
| | Zugehörige Zeichnungen: | Früherbestimmung: | 14 | 2 | 1 | ① |
| | PL, LL, KL | Material: | 14 | 2 | 1 | ① |
| | Ersetzt für: | Erwartet durch: | datum | Stat. | Gepl. | Index |
| | | | | | | |
| STÜCKER RECHENBERG ZÜRICH | | Talk Back / Studio Monitor ESE | | Kopie Nr. | | |

Talk Back / Studio Monitor 1.912.320

Table with columns: INDI POS NO, PART NO, VALUE, SPECIFICATIONS/EQUIVALENT, MFR. Rows include components like capacitors (C1-C15) and resistors (R1-R15).

Table with columns: INDI, DATE, NAME. Includes material specifications for CER, EL, PE, SAL and revision notes.

Table with columns: INDI POS NO, PART NO, VALUE, SPECIFICATIONS/EQUIVALENT, MFR. Rows include components like capacitors (C30-C36), diodes (DL1-DL3), and resistors (R1-R24).

Table with columns: INDI, DATE, NAME. Includes material specifications for CM, Ex, M, Ms, Rb, Si, T and revision notes.

Table with columns: INDI POS NO, PART NO, VALUE, SPECIFICATIONS/EQUIVALENT, MFR. Rows include components like capacitors (C16-C29) and resistors (R16-R30).

Table with columns: INDI, DATE, NAME. Includes material specifications for M, N, S and revision notes.

Table with columns: INDI POS NO, PART NO, VALUE, SPECIFICATIONS/EQUIVALENT, MFR. Rows include components like capacitors (C31-C34) and resistors (R31-R45).

Table with columns: INDI, DATE, NAME. Includes material specifications for M, N, S and revision notes.

Table with columns: INDI POS NO, PART NO, VALUE, SPECIFICATIONS/EQUIVALENT, MFR. Rows include components like resistors (R25-R44) and potentiometers (P1-P4).

Table with columns: INDI, DATE, NAME. Includes material specifications for M, N, S and revision notes.

Table with columns: INDI POS NO, PART NO, VALUE, SPECIFICATIONS/EQUIVALENT, MFR. Rows include components like resistors (R46-R84) and potentiometers (P5-P8).

Table with columns: INDI, DATE, NAME. Includes material specifications for M, N, S and revision notes.

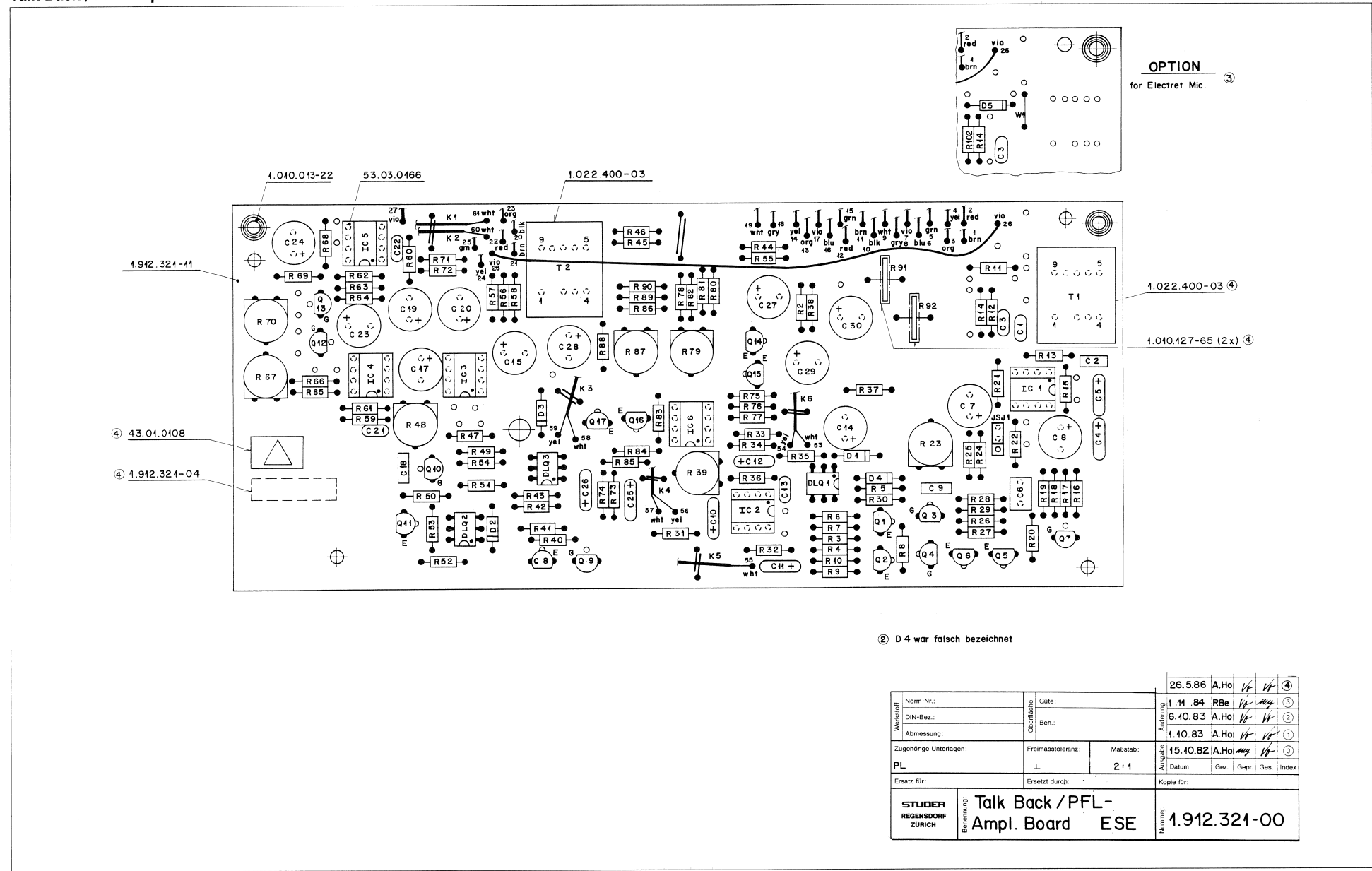
Table with columns: INDI POS NO, PART NO, VALUE, SPECIFICATIONS/EQUIVALENT, MFR. Rows include components like resistors (R85-R144) and potentiometers (P9-P12).

Table with columns: INDI, DATE, NAME. Includes material specifications for M, N, S and revision notes.

Table with columns: INDI POS NO, PART NO, VALUE, SPECIFICATIONS/EQUIVALENT, MFR. Rows include components like resistors (R46-R84) and potentiometers (P5-P8).

Table with columns: INDI, DATE, NAME. Includes material specifications for M, N, S and revision notes.

Talk Back / PFL Amplifier 1.912.321



② D 4 war falsch bezeichnet

| | | | | | |
|---------------------------------------|--|--|--|--------------------------------|--|
| Norm-Nr.: | | Güte: | | 26.5.86 A.Ho <i>lh</i> ④ | |
| DIN-Bez.: | | Ben.: | | 1.11.84 RBe <i>lh</i> ③ | |
| Abmessung: | | Anforderung: | | 6.10.83 A.Ho <i>lh</i> ② | |
| Zugehörige Unterlagen: | | Freimasstoleranz: | | 1.10.83 A.Ho <i>lh</i> ① | |
| PL | | Maßstab: | | 15.10.82 A.Ho <i>lh</i> ① | |
| Ersatz für: | | Ersetzt durch: | | Datum Gez. Gepr. Ges. Index | |
| STUDER REGENSDORF ZÜRICH | | Benennung: Talk Back / PFL- Ampl. Board ESE | | Nummer: 1.912.321-00 | |

Talk Back / PFL Amplifier 1.912.321

| IND POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------------|--------------|--------|---------------------------|-----|
| C 1 | 59.34.422.4 | 220µF | CER 5% | |
| C 2 | 59.06.033.3 | 33 nF | PE 40% | |
| C 3 | 59.34.247.0 | 47 nF | CER 5% | |
| C 4 | 59.26.433.0 | 33 µF | SAL 40V | |
| C 5 | 59.26.210.0 | 40 µF | SAL 46V | |
| C 6 | 59.06.047.4 | 470 nF | PE 40% | |
| C 7 | 59.22.440.4 | 100 µF | EL 46V | |
| C 8 | 59.22.440.4 | 100 µF | EL 46V | |
| C 9 | 59.06.068.2 | 68 nF | PE 40% | |
| C 10 | 59.26.210.0 | 40 µF | SAL 46V | |
| C 11 | 59.26.433.0 | 33 µF | SAL 40V | |
| C 12 | 59.22.641.00 | 40 µF | EL 46V | |
| C 13 | 59.34.247.0 | 47 nF | CER 5% | |
| C 14 | 59.22.440.4 | 100 µF | EL 46V | |
| C 15 | 59.22.440.4 | 100 µF | EL 46V | |
| C 17 | 59.22.440.4 | 100 µF | EL 46V | |
| C 18 | 59.06.068.2 | 68 nF | PE 40% | |
| C 19 | 59.22.222.4 | 220 µF | EL 6V | |
| C 20 | 59.22.222.4 | 220 µF | EL 6V | |
| C 21 | 59.34.422.4 | 220 µF | CER 5% | |
| C 22 | 59.34.422.4 | 220 µF | CER 5% | |
| C 23 | 59.22.440.4 | 100 µF | EL 46V | |
| C 24 | 59.22.440.4 | 100 µF | EL 46V | |
| C 25 | 59.26.515.9 | 15 µF | SAL 25V | |
| C 26 | 59.26.515.9 | 15 µF | SAL 25V | |
| C 27 | 59.22.440.4 | 100 µF | EL 46V | |
| C 28 | 59.22.440.4 | 100 µF | EL 46V | |
| C 29 | 59.22.422.4 | 220 µF | EL 46V | |
| C 30 | 59.22.422.4 | 220 µF | EL 46V | |

| IND | DATE | NAME | |
|-----|----------|------|-------------------------------|
| Q | | | CER Ceramic |
| Q | | | EL Electrolytic |
| Q | 19-04-85 | my | PE Polyester |
| Q | 25-2-85 | my | SAL Solid Aluminium Lacquered |
| Q | 05-04-82 | my | |

STUDER Talk Back/PFL-Ampl. Board PL 1.912.321 PAGE 4 OF 6

| IND POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------------|-------------|---------|---------------------------|----------|
| D 1 | 50.04.012.5 | 4N4488 | or equivalent | any |
| D 2 | 50.04.012.5 | 4N4488 | or equivalent | any |
| D 3 | 50.04.012.5 | 4N4488 | or equivalent | any |
| D 4 | 50.04.012.5 | 4N4488 | or equivalent | any |
| D 10 A | 50.89.042.6 | 4N26 | 4N28 | M, TI |
| D 10 Q | 50.89.042.6 | 4N26 | 4N28 | M, TI |
| D 10 S | 50.89.042.6 | 4N26 | 4N28 | M, TI |
| IC 1 | 50.08.010.7 | RC4558 | | Ro, TI |
| IC 2 | 50.08.010.7 | RC4558 | | Ro, TI |
| IC 3 | 50.08.010.3 | TL084CP | LF354N | TI, N |
| IC 4 | 50.08.010.7 | RC4558 | | Ro, TI |
| IC 5 | 50.09.040.7 | RC4559 | | Ro, TI |
| IC 6 | 50.08.040.5 | NE5532N | XR 5532N | Si, Ex |
| J5.1 | 54.04.022.1 | | Jumpers jack | |
| Q 1 | 50.03.054.5 | P-N-P | * | any |
| Q 2 | 50.03.054.5 | P-N-P | * | any |
| Q 3 | 50.03.015.0 | J-N-FET | JM2, MPF 4392 | Sx, N, M |
| Q 4 | 50.03.015.0 | J-N-FET | JM2, MPF 4392 | Sx, N, M |
| Q 5 | 50.03.015.0 | J-N-FET | * | any |
| Q 6 | 50.03.054.5 | P-N-P | * | any |
| Q 7 | 50.03.015.0 | J-N-FET | JM2, MPF 4392 | Sx, N, M |
| Q 8 | 50.03.054.5 | P-N-P | * | any |
| Q 9 | 50.03.015.0 | J-N-FET | JM2, MPF 4392 | Sx, N, M |
| Q 10 | 50.03.015.0 | J-N-FET | JM2, MPF 4392 | Sx, N, M |
| Q 11 | 50.03.054.5 | P-N-P | * | any |
| Q 12 | 50.03.015.0 | J-N-FET | JM2, MPF 4392 | Sx, N, M |
| Q 13 | 50.03.015.0 | J-N-FET | JM2, MPF 4392 | Sx, N, M |

| IND | DATE | NAME | |
|-----|----------|------|----------------------------------|
| Q | | | Ex Exar |
| Q | | | M Motorola |
| Q | 19-04-85 | my | N National |
| Q | 25-2-85 | my | Ro Polytron |
| Q | 05-04-82 | my | Si Siliconix |
| Q | | | TI Texas Instr. |
| Q | | | * universal type R>40, V<0, I<0V |

STUDER Talk Back/PFL-Ampl. Board PL 1.912.321 PAGE 2 OF 6

| IND POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------------|-------------|-------|---------------------------|-----|
| R51 | 57.11.410.4 | 100k | | |
| R52 | 57.11.433.3 | 33k | | |
| R58 | 57.11.410.4 | 100k | | |
| R59 | 57.11.438.2 | 3.8k | | |
| R60 | 57.11.438.2 | 3.8k | | |
| R61 | 57.11.410.3 | 10k | | |
| R62 | 57.11.410.3 | 10k | | |
| R63 | 57.11.610.6 | 10M | | |
| R64 | 57.11.610.6 | 10M | | |
| R65 | 57.11.456.2 | 56k | | |
| R66 | 57.11.448.4 | 480 | | |
| R67 | 58.02.547.2 | 4.7k | Trim-Pot. | |
| R68 | 57.11.456.2 | 56k | | |
| R68 | 57.11.448.4 | 480 | | |
| R70 | 58.02.547.2 | 4.7k | Trim-Pot. | |
| R71 | 57.11.410.7 | 47 | | |
| R72 | 57.11.410.7 | 47 | | |
| R73 | 57.11.448.3 | 45k | | |
| R74 | 57.11.448.3 | 45k | | |
| R75 | 57.11.448.4 | 450 | | |
| R76 | 57.11.448.4 | 450 | | |
| R77 | 57.11.448.4 | 450 | | |
| R78 | 57.11.448.2 | 4.7k | | |
| R79 | 58.02.522.2 | 2.2k | Trim-Pot | |
| R80 | 57.11.410.4 | 100k | | |
| R81 | 57.11.422.4 | 220 | | |
| R82 | 57.11.422.4 | 220 | | |
| R83 | 57.11.448.4 | 450 | | |
| R84 | 57.11.448.4 | 450 | | |
| R85 | 57.11.448.4 | 450 | | |

| IND | DATE | NAME | |
|-----|----------|------|--|
| Q | | | |
| Q | | | |
| Q | 19-04-85 | my | |
| Q | 25-02-85 | my | |
| Q | 05-04-82 | my | |

STUDER Talk Back/PFL-Ampl. Board PL 1.912.321 PAGE 5 OF 6

| IND POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------------|--------------|--------|-----------------------------|----------------|
| R86 | 57.11.447.2 | 4.7k | | |
| R87 | 58.02.522.2 | 2.2k | Trim-Pot. | |
| R88 | 57.11.447.4 | 470 | | |
| R89 | 57.11.427.4 | 270 | | |
| R90 | 57.11.427.4 | 270 | | |
| R91 | 57.89.020.9 | 5.6 | PTC Philips | |
| R92 | 57.89.020.9 | 5.6 | PTC Philips | 2522.662.84005 |
| T 1 | 1.022.441.00 | 1:3.46 | Mic-Trafo | Studer |
| T 2 | 1.022.405.00 | 1:1 | Input-Trafo | Studer |
| XIC | 53.03.04.66 | | IC-Socket, DIP 8 pins | |
| P | 54.01.002.0 | | Plug for Jumper J5.1 / P5.1 | |

| IND | DATE | NAME | |
|-----|----------|------|---------------------------------------|
| Q | | | Änderungen |
| Q | | | ⊗ Fehler im Text korrigiert |
| Q | 19-04-85 | my | ⊗ Cir: 59.26.2100 wird neu 59.22.6100 |
| Q | 25-02-85 | my | |
| Q | 05-04-82 | my | |

STUDER Talk Back/PFL-Ampl. Board PL 1.912.321 PAGE 6 OF 6

| IND POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------------|--------------|-------|------------------------------|-----|
| R 11 | 50.03.034.0 | N-P-N | ic. 800µA BC132-25 or equiv. | any |
| R 15 | 50.03.034.0 | P-N-P | ic. 800µA BC132-25 or equiv. | any |
| R 16 | 50.03.034.0 | N-P-N | ic. 800µA BC132-25 or equiv. | any |
| R 17 | 50.03.034.0 | P-N-P | ic. 800µA BC132-25 or equiv. | any |
| R 2 | 57.11.427.2 | 2.7k | | |
| R 3 | 57.11.468.3 | 68k | | |
| R 4 | 57.11.433.3 | 33k | | |
| R 5 | 57.11.610.6 | 10M | | |
| R 6 | 57.11.433.3 | 33k | | |
| R 7 | 57.11.441.05 | 1M | | |
| R 8 | 57.11.610.6 | 10M | | |
| R 9 | 57.11.441.05 | 1M | | |
| R 10 | 57.11.668.3 | 68k | | |
| R 11 | 57.11.448.3 | 45k | | |
| R 12 | 57.11.441.03 | 40k | | |
| R 13 | 57.11.441.02 | 4k | | |
| R 14 | 57.11.427.3 | 2.7k | | |
| R 15 | 57.11.427.3 | 2.7k | | |
| R 16 | 57.11.441.02 | 4k | | |
| R 17 | 57.11.468.3 | 68k | | |
| R 18 | 57.11.633.5 | 3.3M | | |
| R 19 | 57.11.633.5 | 3.3M | | |
| R 20 | 57.11.441.03 | 40k | | |
| R 21 | 57.11.433.3 | 33k | | |
| R 22 | 57.11.441.05 | 1M | | |
| R 23 | 58.02.522.3 | 2.2k | Trim-Pot. | |
| R 24 | 57.11.448.2 | 48k | | |
| R 25 | 57.11.422.4 | 220 | | |

| IND | DATE | NAME | |
|-----|----------|------|--|
| Q | | | |
| Q | | | |
| Q | 19-04-85 | my | |
| Q | 25-02-85 | my | |
| Q | 05-04-82 | my | |

STUDER Talk Back/PFL-Ampl. Board PL 1.912.321 PAGE 3 OF 6

| IND POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------------|--------------|-------|---------------------------|-----|
| R 26 | 57.11.410.4 | 100k | | |
| R 27 | 57.11.410.3 | 10k | | |
| R 28 | 57.11.433.3 | 33k | | |
| R 29 | 57.11.422.3 | 2.2k | | |
| R 30 | 57.11.468.2 | 68k | | |
| R 31 | 57.11.456.2 | 56k | | |
| R 32 | 57.11.468.2 | 68k | | |
| R 33 | 57.11.422.2 | 2.2k | | |
| R 34 | 57.11.422.2 | 2.2k | | |
| R 35 | 57.11.410.3 | 10k | | |
| R 36 | 57.11.427.3 | 2.7k | | |
| R 37 | 57.11.410.4 | 100k | | |
| R 38 | 57.11.410.7 | 47 | | |
| R 39 | 58.02.547.2 | 4.7k | Trim-Pot | |
| R 40 | 57.11.610.6 | 10M | | |
| R 41 | 57.11.441.05 | 1M | | |
| R 42 | 57.11.433.3 | 33k | | |
| R 43 | 57.11.468.3 | 68k | | |
| R 44 | 57.11.427.2 | 2.7k | | |
| R 45 | 57.11.433.2 | 4.7k | | |
| R 46 | 57.11.427.2 | 4.7k | | |
| R 47 | 57.11.422.2 | 2.2k | | |
| R 48 | 58.02.541.3 | 40k | Trim-Pot. | |
| R 49 | 57.11.468.3 | 68k | | |
| R 50 | 57.11.610.6 | 10M | | |
| R 51 | 57.11.433.4 | 330k | | |
| R 52 | 57.11.433.3 | 33k | | |
| R 53 | 57.11.468.3 | 68k | | |
| R 54 | 57.11.422.3 | 2.2k | | |
| R 55 | 57.11.427.2 | 2.7k | | |

| IND | DATE | NAME | |
|-----|----------|------|--|
| Q | | | |
| Q | | | |
| Q | 19-04-85 | my | |
| Q | 25-02-85 | my | |
| Q | 05-04-82 | my | |

STUDER Talk Back/PFL-Ampl. Board PL 1.912.321 PAGE 4 OF 6

Kontrollraum Monitor

Über gegenseitig auslösende Drucktasten können 15 verschiedene Abhörquellen angewählt werden. Um einen optimalen Gleichlauf des Stereoabhörens zu garantieren, steuert das Lautstärkepotentiometer zwei VCA. Allfällige, durch den Raum oder die Lautsprecher hervorgerufene Lautstärkeunsymmetrie, kann durch das schaltbare Balance-Potentiometer ausgeglichen werden. Tasten für Lautsprecher- und Phasenvertauschung sowie die Mono-Taste helfen dem Tonmeister beim Qualitäts- und Kompatibilitätstest. Der Ausgang des Abhörzuges ist auf zwei Monitorlautsprecher umschaltbar. Mit der METER-Taste können die Aussteuermesser 1 und 2 wahlweise an die Summenausgänge $\Sigma 1 + 2$ oder parallel zum Abhör Lautsprecher geschaltet werden.

Kopfhörerbuchsen (Impedanz 200 Ω) und Schalter zum Dämpfen (-20dB) bzw. Abschalten des Einschubes vervollständigen den Einschub.

METER: Pegelanzeige umschaltbar von der Summe auf den Kontrollraum Monitor.

Ø CH1: Kanalvertauschung am Lautsprecherausgang
Die Phase des linken Kanals wird um 180° gedreht

BALANCE IN: Das BALANCE Potentiometer wird eingeschaltet.
MONO: Die zwei Abhörkanäle werden als Monosumme auf beide Monitorlautsprecher geschaltet.

EXT-INT: Ausgang umschaltbar auf zwei Monitorsysteme.
VOLUME: Lautstärkeregler

MONITOR -20dB: Die Abhör Lautstärke wird um 20dB abgesenkt. (auch von extern, z.B. durch Talk Back)

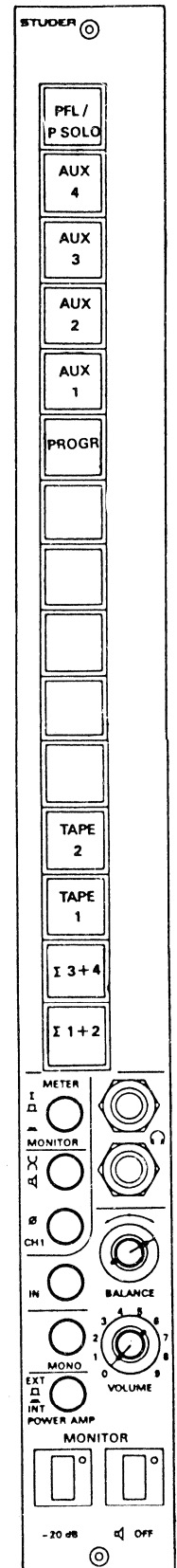
MONITOR OFF: Der Lautsprecherausgang wird abgeschaltet.

Speisung

| | Leerlauf |
|--------|------------|
| + 15 V | 120mA |
| - 15 V | 120mA |
| - 6 V | 60...120mA |
| - 24 V | 1mA |

Mechanische Daten

| | |
|-------------|------------|
| Frontplatte | 420 x 40mm |
| Tiefe | 135mm |
| Gewicht | 850 g |



CR MONITOR

C.R. Monitor unit

Fifteen different monitoring sources can be selected with interlocking push buttons. In order to ensure optimum stereo tracking, the volume potentiometer controls VCAs. Any volume imbalance caused by the room acoustics or the speakers can be compensated by the switchable balance potentiometer. Buttons for speaker and phase transposition as well as the mono button are useful for the sound engineer during quality and compatibility tests. The output of the monitoring circuit can be switched between two monitor speakers. With the METER button the peak program meters 1 and 2 can selectively be connected to the master outputs 1 + 2 or in parallel to the monitoring speaker.

Headphones socket (impedance 200 Ω) and switch for muting or toning down (-20dB) the speakers are also included with this module.

METER: Instrument switchable from master to CR monitor.

: Left- and right-hand speaker outputs are transposed.

Ø CH1: The phase of the left-hand channel is inverted by 180°.

BALANCE IN: The BALANCE potentiometer is looped into the circuit.

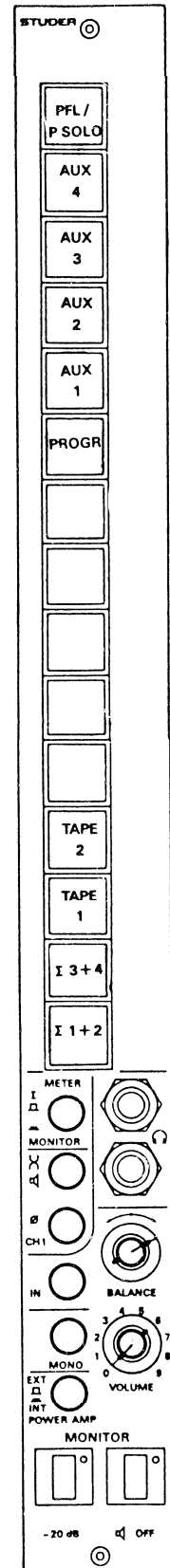
MONO: Both monitor speakers reproduce a mono signal.

EXT-INT: Output switchable to a second monitor system.

VOLUME: Volume control

MONITOR -20dB: Level is attenuated by 20dB (also from external outputs, e.g. talk back path)

MONITOR OFF: The speaker output is switched off.



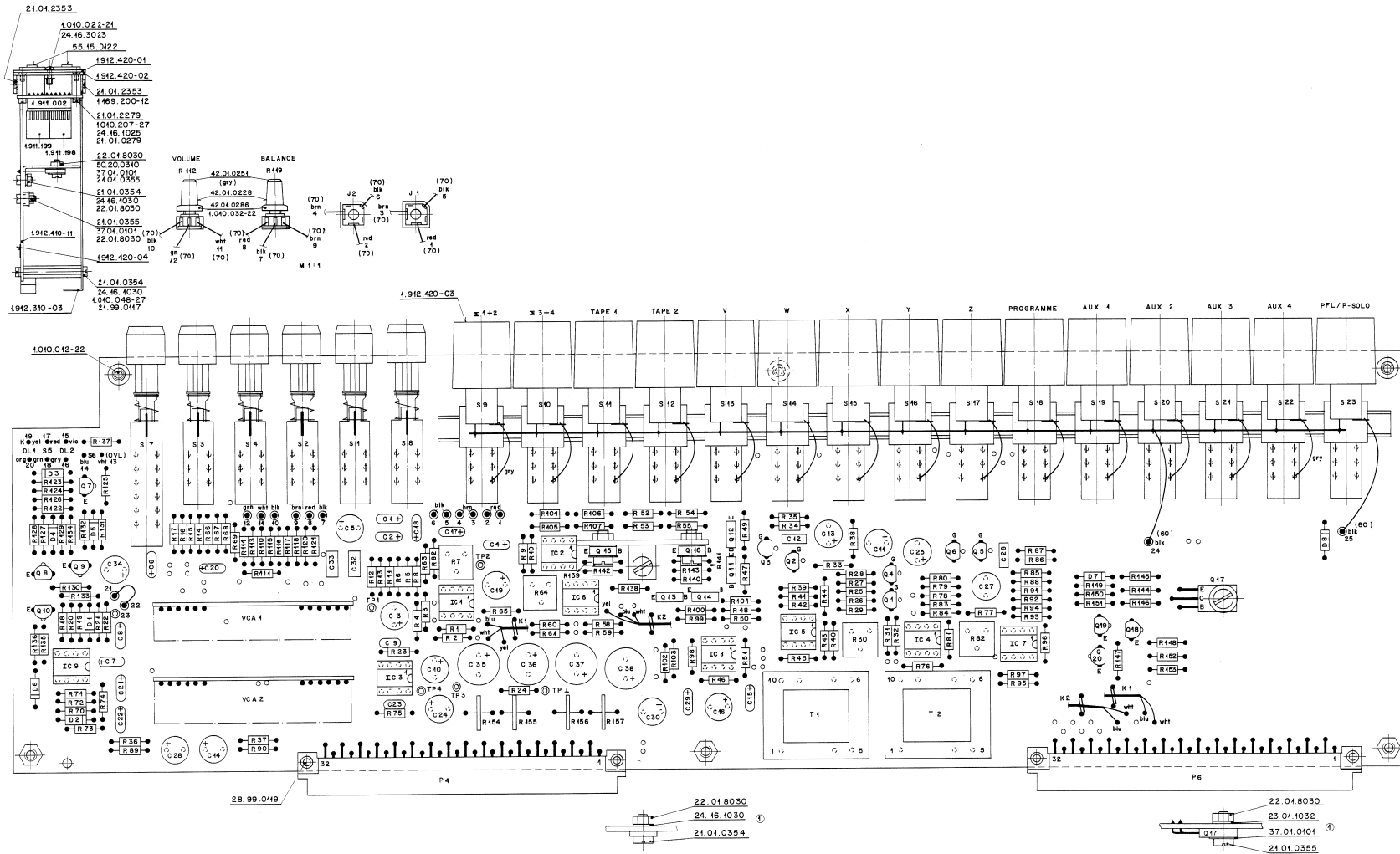
Power supply

| | No load |
|--------|------------|
| + 15 V | 120mA |
| - 15 V | 120mA |
| - 6 V | 60...120mA |
| - 24 V | 1mA |

Physical data

| | |
|-------------|------------|
| Front panel | 420 x 40mm |
| Depth | 135mm |
| Weight | 850 g |

Control Room Monitor Unit 1.912.420



| | | | | | |
|--------------------------------|-----|----------------------|----------|--------------|------|
| Norm-Nr. | 026 | | | | |
| Drh-Bez. | 026 | | | | |
| Abmessung | | | 1,5.84 | A.Hg | |
| Zugehörige Unterlagen | | Frageblätteranz. | | 11.10.82 | A.Hg |
| Erstellt für | | Datum | 1.4.2.4 | Gez. | Gez. |
| STUDER REGISCHOPF ZÜRICH | | Erstellt durch | Code für | | |
| | | Cr. Monitor Unit 2CH | | 1.912.420-00 | |

SECTION 5

STUDER AUDIO CONSOLE 900

Control Room Monitor Unit 1.912.420

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|----------|------------|------------|-------|---------------------------|-----|
| 04-01-82 | | 59.02.0144 | 10M | Lamp T4% | |
| C 1 | 59.26.2402 | 100uF | SAL | 46 V | |
| C 2 | 59.26.2402 | 100uF | SAL | 46 V | |
| C 3 | 59.22.5404 | 100uF | EL | 25V | |
| C 4 | 59.26.4330 | 33uF | SAL | 40V | |
| C 5 | 59.22.5404 | 100uF | EL | 25V | |
| C 6 | 59.26.4330 | 33uF | SAL | 40V | |
| C 7 | 59.26.2400 | 10uF | SAL | 46V | |
| C 8 | 59.26.9409 | 1uF | SAL | 40V | |
| C 9 | 59.34.4104 | 100pF | CER | 5% | |
| C 10 | 59.22.5404 | 100uF | EL | 25V | |
| C 11 | 59.22.5404 | 100uF | EL | 25V | |
| C 12 | 59.06.0682 | 6.8pF | PE | 10% | |
| C 13 | 59.22.5404 | 100uF | EL | 25V | |
| C 14 | 59.22.5404 | 100uF | EL | 25V | |
| C 15 | 59.26.2400 | 10uF | SAL | 46V | |
| C 16 | 59.22.5404 | 100uF | EL | 25V | |
| C 17 | 59.26.2400 | 10uF | SAL | 46V | |
| C 18 | 59.26.2400 | 10uF | SAL | 46V | |
| C 19 | 59.22.5404 | 100uF | EL | 25V | |
| C 20 | 59.26.4330 | 33uF | SAL | 40V | |
| C 21 | 59.26.2400 | 10uF | SAL | 46V | |
| C 22 | 59.26.9409 | 1uF | SAL | 40V | |
| C 23 | 59.34.4104 | 100pF | CER | 5% | |
| C 24 | 59.22.5404 | 100uF | EL | 25V | |
| C 25 | 59.22.5404 | 100uF | EL | 25V | |
| C 26 | 59.06.0682 | 6.8pF | PE | 10% | |
| C 27 | 59.22.5404 | 100uF | EL | 25V | |
| C 28 | 59.22.5404 | 100uF | EL | 25V | |
| C 29 | 59.26.2400 | 10uF | SAL | 46V | |

| IND | DATE | NAME | EL | ELECTROLYTIC |
|-----|----------|------|-----|---------------------------|
| ① | | | PE | POLYESTER |
| ② | | | CER | CERAMIC |
| ③ | | | SAL | SOLID ALUMINIUM LACQUERED |
| ④ | 04-01-82 | Any | | |

STUDER C.R. MONITOR UNIT 2CH PL 1.912.420 PAGE 1 OF 3

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------|-------------|---------|------------------------|---------------------------|----------|
| K 5 | 50.03.0405 | NE5532N | XR 5532N | | Si, Ex |
| K 6 | 50.03.0407 | RC4559 | | | Ro, TI |
| K 7 | 50.09.0405 | NE5532N | XR 5532N | | Si, Ex |
| K 8 | 50.09.0405 | NE5532N | XR 5532N | | Si, Ex |
| K 9 | 50.09.0407 | RC4559 | | | Ro, TI |
| J 1 | 54.24.0103 | | Jack | | |
| J 2 | 54.24.0103 | | Jack | | |
| J 3 | 54.69.20045 | | Jumper Jack | | |
| P 4 | 54.04.0259 | | Edge Connector 32p. | | |
| P 6 | 54.04.0259 | | Edge Connector 32p. | | |
| Q 1 | 50.03.0350 | J-N-FET | | | |
| Q 2 | 50.03.0350 | J-N-FET | | | |
| Q 3 | 50.03.0350 | J-N-FET | | | |
| Q 4 | 50.03.0350 | J-N-FET | J142F or MPF4382 | | S, N, M |
| Q 5 | 50.03.0350 | J-N-FET | | | |
| Q 6 | 50.03.0350 | J-N-FET | | | |
| Q 7 | 50.03.0345 | P-N-P | * | | any |
| Q 8 | 50.03.0345 | P-N-P | * | | any |
| Q 9 | 50.03.0345 | P-N-P | * | | any |
| Q 10 | 50.03.0340 | P-N-P | * | | any |
| Q 11 | 50.03.0495 | P-N-P | BD435-16 or equivalent | | S, M, RA |
| Q 12 | 50.03.0540 | P-N-P | BD435-16 or equivalent | | S, M, RA |
| Q 13 | 50.03.0495 | P-N-P | BD435-16 or equivalent | | S, M, RA |
| Q 14 | 50.03.0540 | P-N-P | BD435-16 or equivalent | | S, M, RA |
| Q 15 | 50.03.0495 | P-N-P | BD435-16 or equivalent | | S, M, RA |
| Q 16 | 50.03.0540 | P-N-P | BD435-16 or equivalent | | S, M, RA |
| Q 17 | 50.03.0495 | P-N-P | BD435-16 or equivalent | | S, M, RA |

| IND | DATE | NAME | Ex | Exar | M | Motorola |
|-----|----------|------|----|---|---|---------------------------|
| ① | | | Si | Signetics <td></td> <td>Ex Siliconix</td> | | Ex Siliconix |
| ② | | | Ro | Raytheon <td></td> <td>N National Semiconductors</td> | | N National Semiconductors |
| ③ | | | TI | Texas Instruments | | * minimal type 3-9-80 |
| ④ | 04-01-82 | Any | S | Siemens | | 3-9-80 |

STUDER C.R. MONITOR UNIT 2CH PL 1.912.420 PAGE 2 OF 3

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------|------------|---------|----------------|---------------------------|-----|
| R 26 | 57.11.4482 | 4.8k | 2% | | |
| R 27 | 57.11.4424 | 420 | | | |
| R 28 | 57.11.6406 | 40M | | | |
| R 29 | 57.11.4222 | 22k | 5% | | |
| R 30 | 58.04.8502 | 5k | 10% Trim-Potm. | | |
| R 31 | 57.11.4422 | 42k | 5% | | |
| R 32 | 57.11.4822 | 82k | 5% | | |
| R 33 | 57.11.4223 | 22k | | | |
| R 34 | 57.11.6406 | 40M | | | |
| R 35 | 57.11.6406 | 40M | | | |
| R 36 | 57.11.4473 | 47k | | | |
| R 37 | 57.11.4473 | 47k | | | |
| R 38 | 57.11.4223 | 22k | | | |
| R 39 | 57.11.5392 | 39k | 1% | | |
| R 40 | 57.11.3242 | 24k | 1% | | |
| R 41 | 57.11.3752 | 75k | 1% | | |
| R 42 | 57.11.4472 | 47k | 1% | | |
| R 43 | 57.11.4569 | 5.6k | 2% | | |
| R 44 | 57.11.4682 | 6.8k | 2% | | |
| R 45 | 57.11.4682 | 6.8k | 2% | | |
| R 46 | 57.11.4682 | 6.8k | 2% | | |
| R 47 | 57.11.4424 | 420 | | | |
| R 48 | 57.11.4424 | 420 | | | |
| R 49 | 57.11.4424 | 420 | | | |
| R 50 | 57.11.4562 | 5.6k | 2% | | |
| R 51 | 57.11.3202 | 2.0k | 1% | | |
| R 52 | 57.11.4224 | 22k | 1% | | |
| R 53 | 57.11.4224 | 22k | | | |
| R 54 | 57.11.4224 | 22k | | | |
| R 55 | 57.11.4224 | 22k | | | |

| IND | DATE | NAME |
|-----|----------|------|
| ① | | |
| ② | | |
| ③ | | |
| ④ | 04-01-82 | Any |

STUDER C.R. MONITOR UNIT 2CH PL 1.912.420 PAGE 5 OF 5

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-------|-------------|---------|-------|---------------------------|-----|
| R 86 | 57.11.6406 | 40M | | | |
| R 87 | 57.11.6406 | 40M | | | |
| R 88 | 57.11.4223 | 22k | | | |
| R 89 | 57.11.4473 | 47k | | | |
| R 90 | 57.11.4473 | 47k | | | |
| R 91 | 57.11.3392 | 39k | 1% | | |
| R 92 | 57.11.3242 | 24k | 1% | | |
| R 93 | 57.11.3752 | 75k | 1% | | |
| R 94 | 57.11.3472 | 47k | 1% | | |
| R 95 | 57.11.4569 | 5.6k | 2% | | |
| R 96 | 57.11.4682 | 6.8k | 2% | | |
| R 97 | 57.11.4682 | 6.8k | 2% | | |
| R 98 | 57.11.4682 | 6.8k | 2% | | |
| R 99 | 57.11.4424 | 420 | | | |
| R 100 | 57.11.4424 | 420 | | | |
| R 101 | 57.11.4424 | 420 | | | |
| R 102 | 57.11.4562 | 5.6k | 2% | | |
| R 103 | 57.11.3202 | 2.0k | 1% | | |
| R 104 | 57.11.4224 | 22k | | | |
| R 105 | 57.11.4224 | 22k | | | |
| R 106 | 57.11.4224 | 22k | | | |
| R 107 | 57.11.4224 | 22k | | | |
| R 110 | 57.11.4822 | 82k | 2% | | |
| R 111 | 57.11.4402 | 4.4k | 2% | | |
| R 112 | 1912.004.23 | 400k | | Potm. Lin. (Volume) | |
| R 113 | 57.11.4223 | 22k | | | |
| R 114 | 57.11.4223 | 22k | | | |
| R 115 | 57.11.4223 | 22k | 5% | | |

| IND | DATE | NAME |
|-----|----------|------|
| ① | | |
| ② | | |
| ③ | | |
| ④ | 04-01-82 | Any |

STUDER C.R. MONITOR UNIT 2CH PL 1.912.420 PAGE 7 OF 3

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------|------------|---------|-------|---------------------------|--------|
| C 30 | 59.22.5404 | 100uF | EL | 25V | |
| C 32 | 59.06.0224 | 220uF | PE | 10% | |
| C 33 | 59.06.0224 | 220uF | PE | 10% | |
| C 34 | 59.22.5404 | 100uF | EL | 25V | |
| C 35 | 59.22.4224 | 220uF | EL | 16V | |
| C 36 | 59.22.4224 | 220uF | EL | 16V | |
| C 37 | 59.22.4224 | 220uF | EL | 16V | |
| C 38 | 59.22.4224 | 220uF | EL | 16V | |
| D 1 | 50.04.0125 | 1N4448 | | or equivalent | |
| D 2 | 50.04.0125 | 1N4448 | | or equivalent | |
| D 3 | 50.04.0125 | 1N4448 | | or equivalent | |
| D 4 | 50.04.0125 | 1N4448 | | or equivalent | |
| D 5 | 50.04.0125 | 1N4448 | | or equivalent | |
| D 6 | 50.04.1144 | 10V 10% | | Zener Diode | |
| D 7 | 50.04.0125 | 1N4448 | | or equivalent | |
| D 8 | 50.04.0125 | 1N4448 | | or equivalent | |
| DL 1 | 50.04.2424 | C074NA | | LED red | T |
| DL 2 | 50.04.2424 | C074NA | | LED red | T |
| IC 1 | 50.09.0107 | RC4559 | | | Ro, TI |
| IC 2 | 50.09.0107 | RC4559 | | | Ro, TI |
| IC 3 | 50.09.0107 | RC4559 | | | Ro, TI |
| IC 4 | 50.09.0107 | RC4559 | | | Ro, TI |

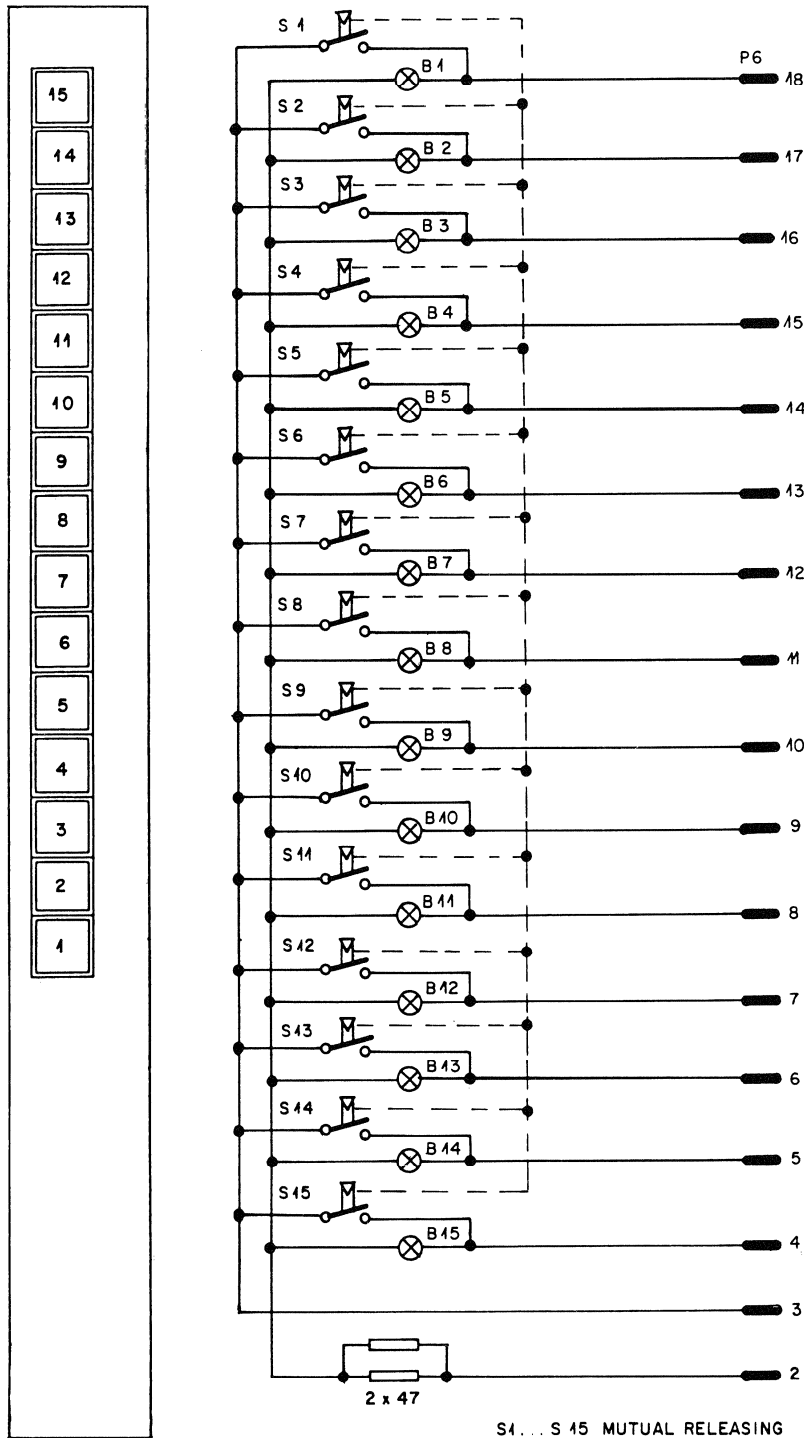
| IND | DATE | NAME | Ro | Raytheon | Ti | Texas Instruments | T | Telefunken |
|-----|----------|------|----|----------|----|-------------------|---|------------|
| ① | | | | | | | | |
| ② | | | | | | | | |
| ③ | | | | | | | | |
| ④ | 04-01-82 | Any | | | | | | |

STUDER C.R. MONITOR UNIT 2CH PL 1.912.420 PAGE 2 OF 9

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------|------------|---------|-----------------------------|---------------------------|-----|
| Q 18 | 50.03.0340 | P-N-P | * | | |
| Q 19 | 50.03.0345 | P-N-P | * | | |
| Q 20 | 50.03.0340 | P-N-P | L 800mA, BC537-25 or equiv. | | any |
| R 1 | 57.11.4682 | 6.8k | 2% | | |
| R 2 | 57.11.4682 | 6.8k | 2% | | |
| R 3 | 57.11.4682 | 6.8k | 2% | | |
| R 4 | 57.11.4682 | 6.8k | 2% | | |
| R 5 | 57.11.4223 | 22k | | | |
| R 6 | 57.11.4223 | 22k | | | |
| R 7 | 58.04.8502 | 5k | 10% Trim-Pot | | |
| R 8 | 57.11.4422 | 42k | | | |
| R 9 | 57.11.4372 | 47k | 1% | | |
| R 10 | 57.11.4372 | 47k | 1% | | |
| R 11 | 57.11.4223 | 22k | | | |
| R 12 | 57.11.4223 | 22k | | | |
| R 13 | 57.11.4223 | 22k | | | |
| R 14 | 57.11.4333 | 33k | | | |
| R 15 | 57.11.4452 | 4.5k | 2% | | |
| R 16 | 57.11.4222 | 2.2k | 2% | | |
| R 17 | 57.11.4222 | 2.2k | 2% | | |
| R 18 | 57.11.4103 | 40k | | | |
| R 19 | 57.11.4103 | 40k | | | |
| R 20 | 57.11.4222 | 22k | | | |
| R 21 | 57.11.4672 | 47k | | | |
| R 22 | 57.11.4682 | 6.8k | | | |
| R 23 | 57.11.4392 | 39k | 2% | | |
| R 24 | 57.11.4223 | 22k | | | |
| R 25 | 57.11.4182 | 4.8k | 2% | | |

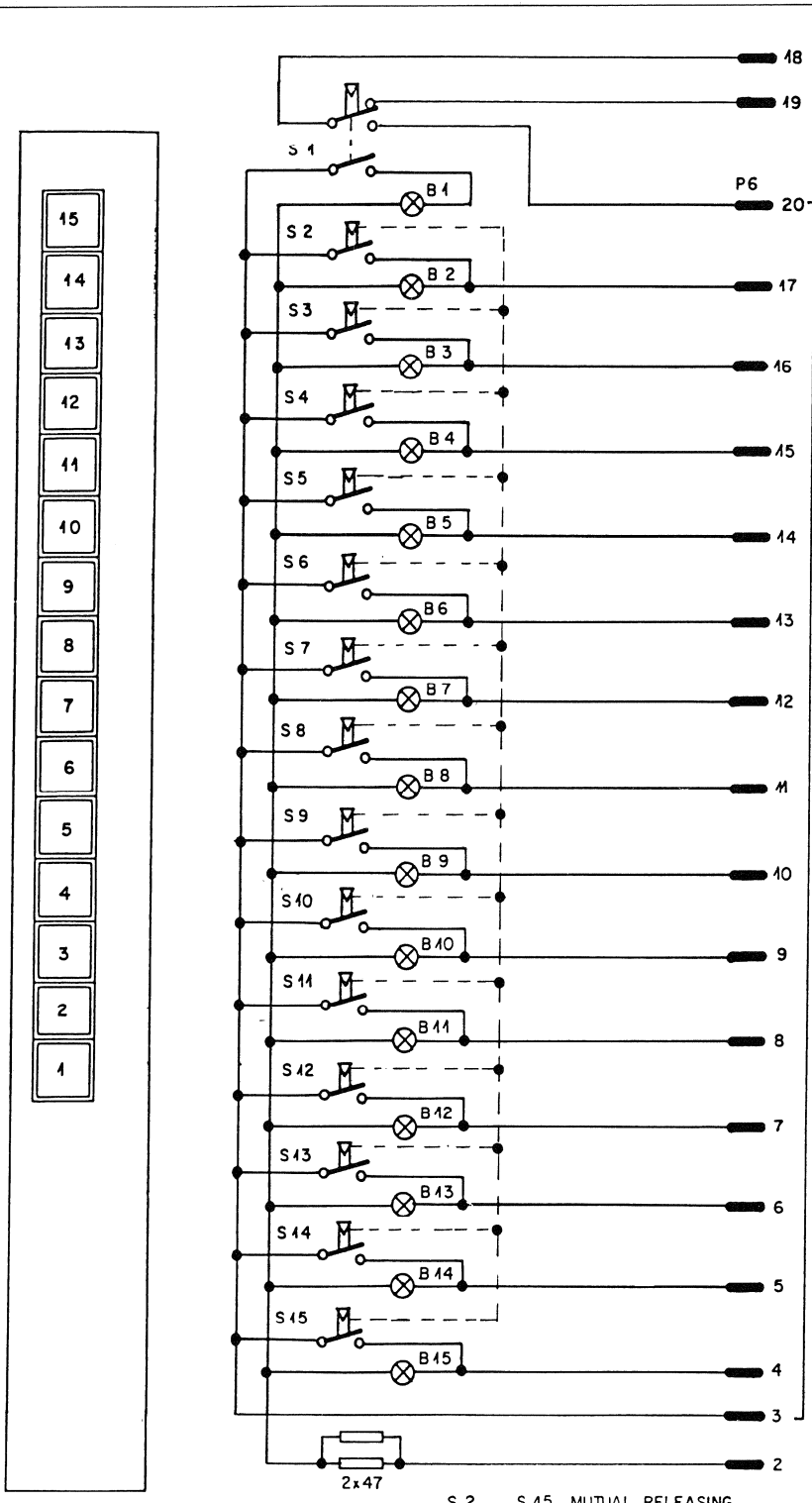
| IND | DATE | NAME |
|-----|------|------|
| ① | | |
| ② | | |

Auxiliary Monitor Selector 1.912.460



| | | | | | |
|--------------------------------|-------------|--|--|--------------|--|
| DATE: | 31. 5. 83 | | | | |
| SIGN: | <i>We</i> | | | | |
| STUDER REGENSDORF ZÜRICH | AUX MONITOR | | | SC 1.912.460 | |

Auxiliary Monitor Selector 1.912.460



S 2 ... S 15 MUTUAL RELEASING

| | | | | | |
|--------------------------------|-------------|--|--|--|-----------------|
| DATE: | 11. 10. 83 | | | | |
| SIGN: | <i>Ge</i> | | | | |
| STUDER REGENSDORF ZÜRICH | AUX MONITOR | | | | SC 1.912.460.81 |

Summen-Ausgangswähler

Dieser Ausgangswähler kann ein Summensignal auf vier Sammelschienen verteilen und bietet zusätzlich die Möglichkeit, auf vier Hilfswege einzuspeisen. Die Einheit kann bei Summen oder Gruppen eingesetzt werden. Da kanalweise getrennt geschaltet wird, sind alle Möglichkeiten der Kanalvertauschung, der Monobildung und der Verteilung auf mehrere Ausgangskanäle gegeben.

Das Summen- bzw. Gruppensignal wird hinter dem Masterfader abgegriffen und dem Ausgangswähler zugeführt. Ein Abgriff vor dem Regler speist die Anwahl zu den Hilfssummen.

Ausgangswahl bei Summen

In dieser Konfiguration kann jeder Summenkanal auf jeden der vier Summenausgänge einspeisen. Dazu werden die Sammelschienen OUTPUT BUS eingesetzt. Die Leitungsverstärker der Summeneinheiten greifen jeweils die Sammelschiene OUTPUT BUS gleicher Nummer ab und führen das Signal dem zugehörigen Summenausgang MAIN OUTPUT zu. Die Ausgangswahl zu den Summenausgängen muss in jedem Fall betätigt werden, ansonsten liegt kein Summensignal an.

Ausgangswahl bei Gruppen

Bei Gruppeneinheiten wird der Ausgangswähler als Summenanwahl eingesetzt. Die Gruppeneinheiten greifen jeweils einen GROUP BUS ab und speisen ihn auf den Gruppenausgang. Nach dem Gruppenregler wird nun das Signal abgezweigt und über den Ausgangswähler den Summensammelschienen zugeführt. Es stehen also sowohl die einzelnen Gruppenausgänge als auch vier beliebige, daraus gebildete Summen zur Verfügung.

Falls nur die Gruppensignale gebraucht werden, muss keine Ausgangswahl vorgenommen werden.

Hilfssummen AUX 1... 3

Die Modulation lässt sich über die mit dem Potentiometer gekoppelten Zug-/ Druckschalter vor (PF) oder nach (AF) dem Summenregler abgreifen. Aux 1... 3 sind Mono-Hilfswege.

AUX 4

Die Einspeisung auf den Stereo-Hilfsweg AUX 4 erfolgt über ein Panorama-Potentiometer.

Technische Daten

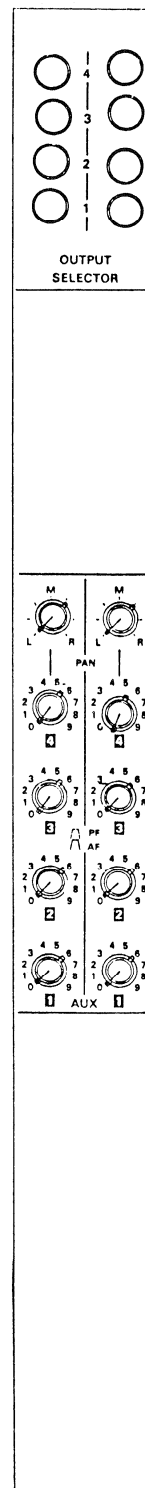
Frequenzgang 30Hz... 16kHz $\pm 0,5$ dB
 Klirrabstand -70dB
 Fremdspannungsabstand (B = 23kHz) 100dB
 Übersprechen 90dB

Speisung

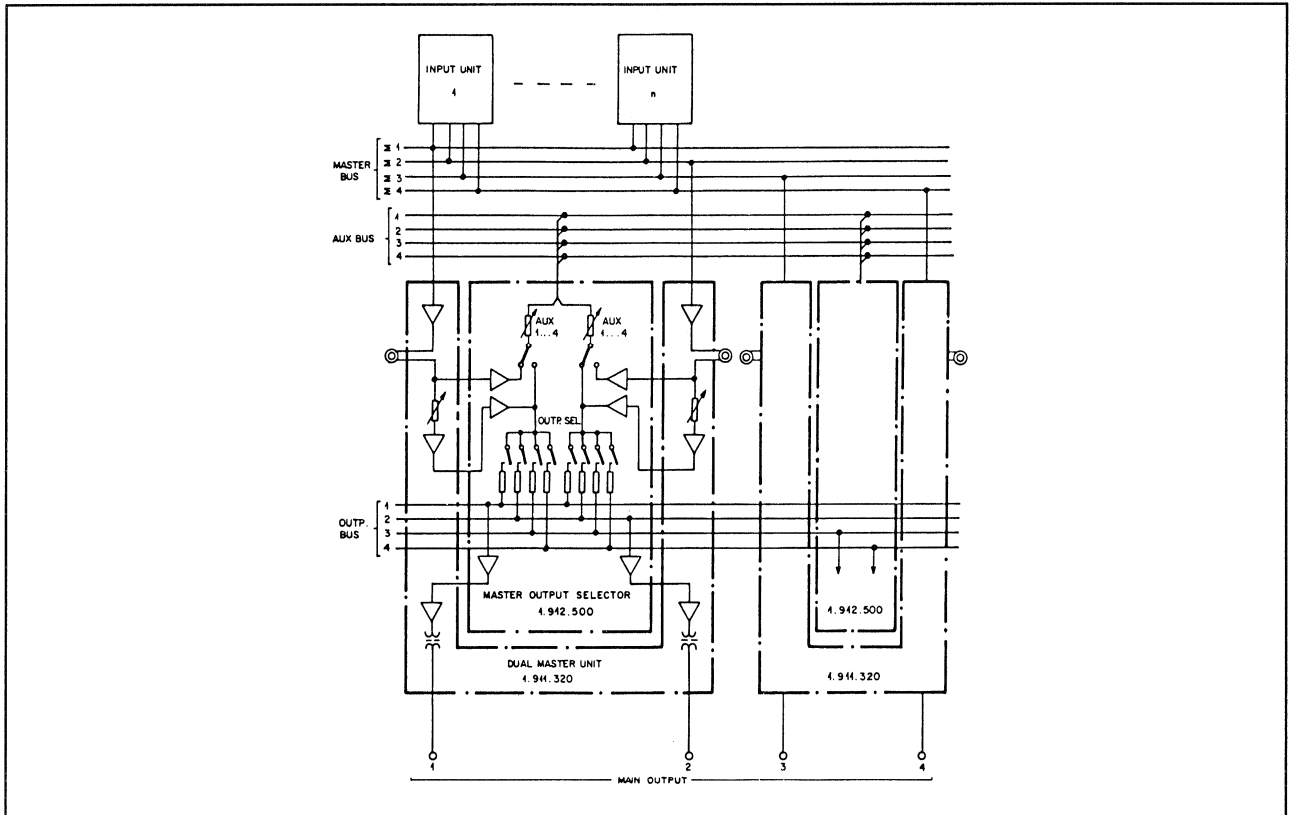
Speisespannung ± 15 V
 Leerlaufstrom 50mA

Mechanische Daten

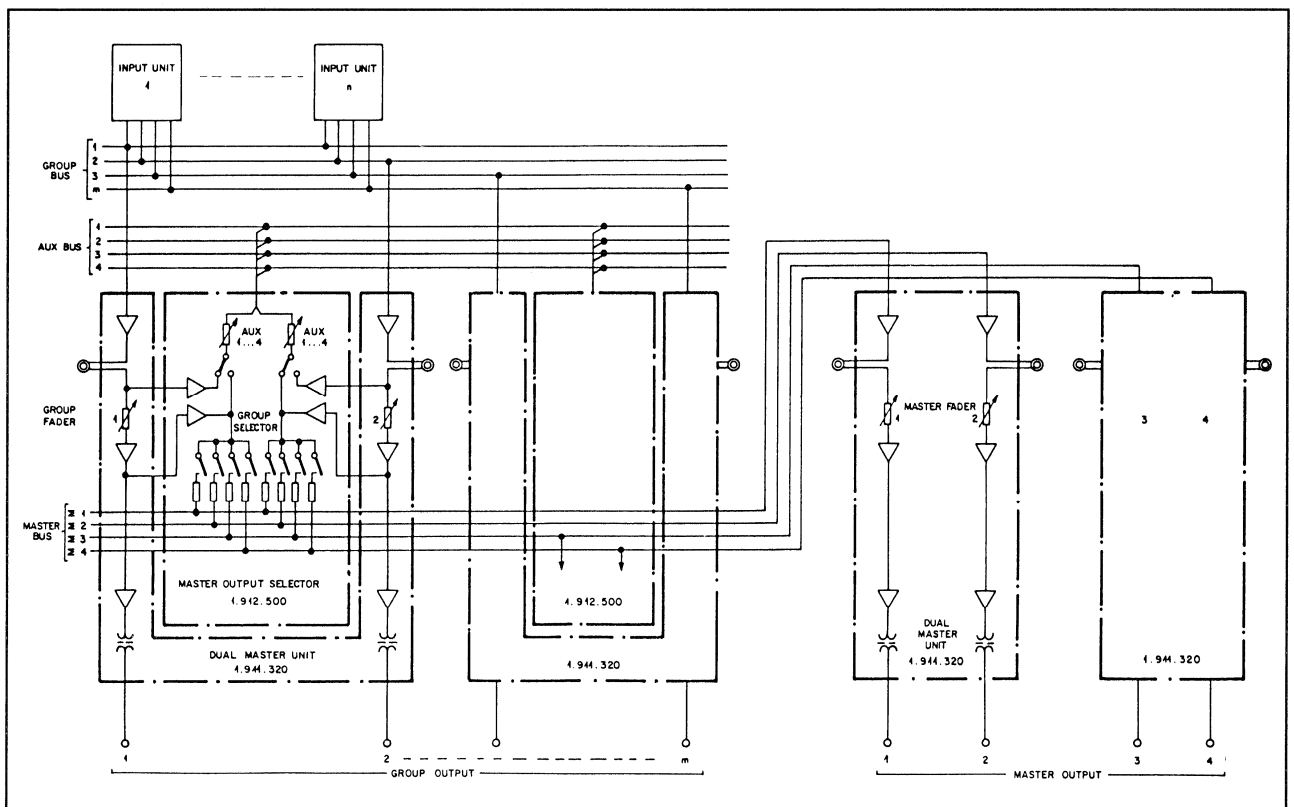
Abmessungen Frontplatte 520mm \times 40mm
 Tiefe 130mm
 Gewicht 680g



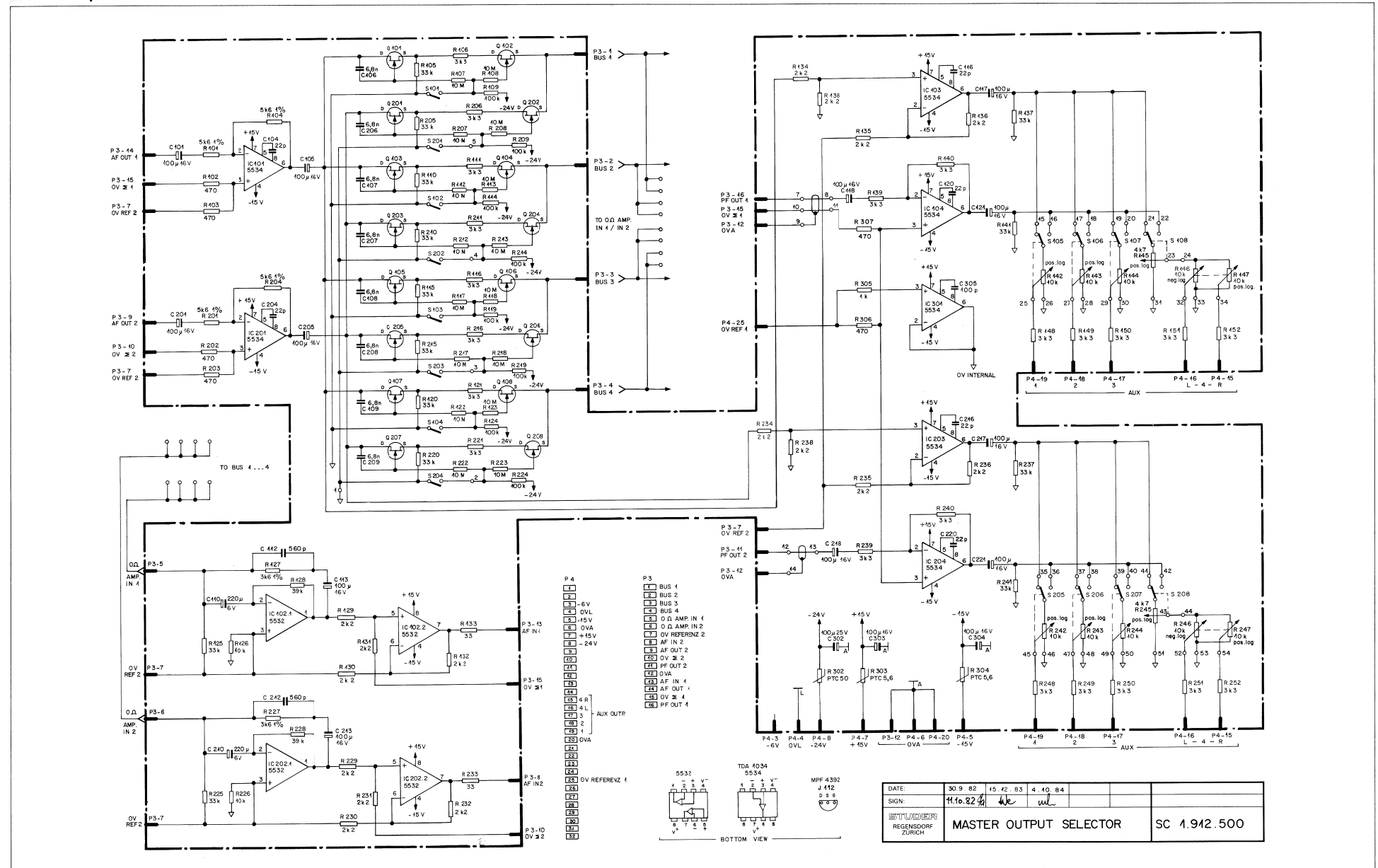
Summen-Ausgangswahl / Master Output Selection



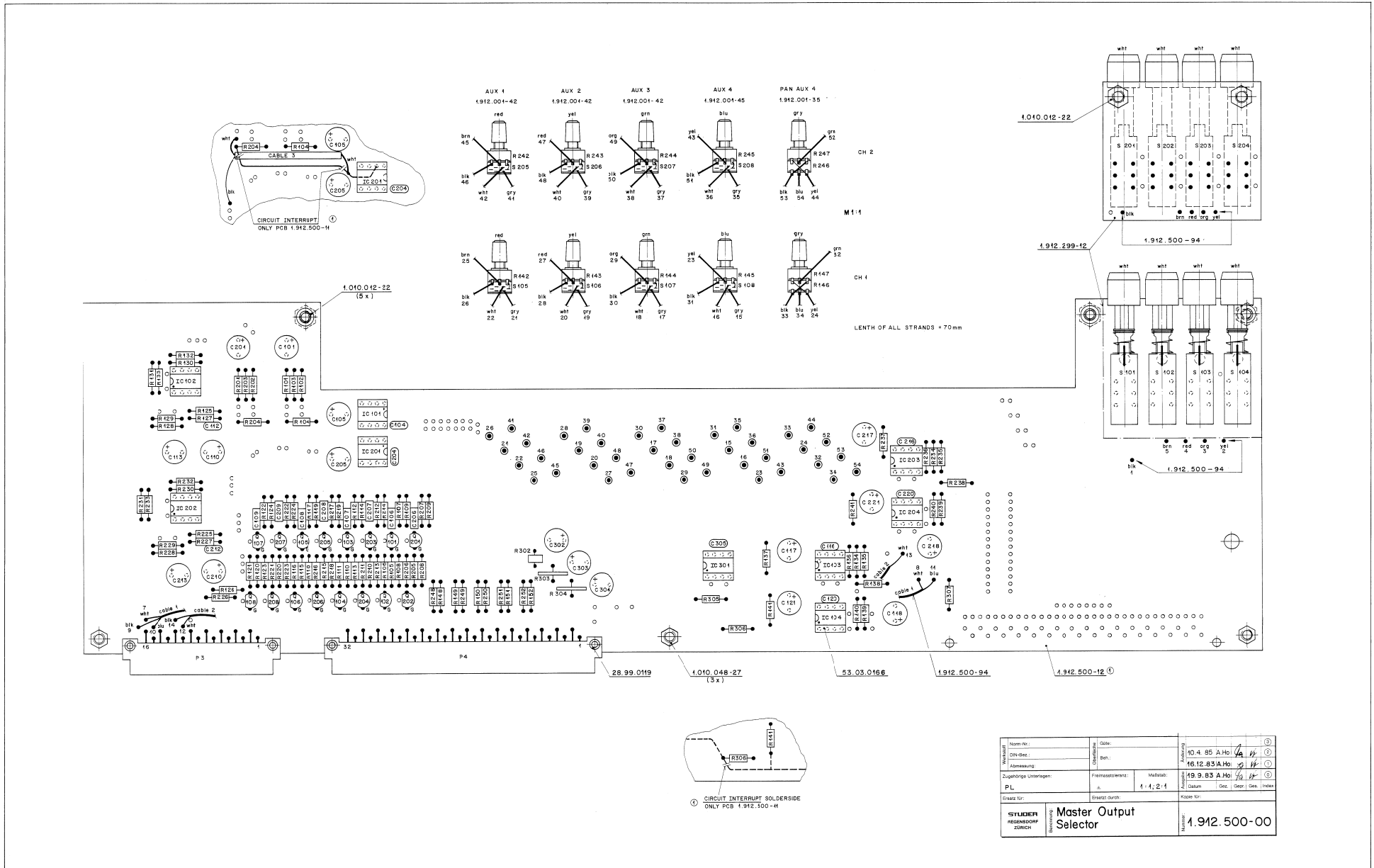
Gruppen-Ausgangswahl / Group Output Selection



Master Output Selector 1.912.500



Master Output Selector 1.912.500



| | | | |
|-------------------------------------|-----------|------------------------|---------------|
| Norm-Nr.: | 1.912.500 | Größe: | 10.4.85 A.Hd |
| Gründer-Nr.: | | Beh.: | 16.12.83 A.Hd |
| Abmessung: | | Maßstab: | 19.9.83 A.Hd |
| Zugfertige Unterlagen: | | Datum: | |
| PL: | | Gez.: | |
| Erstellt für: | | Gepr. durch: | |
| STUDER REGISSTRARFABRIK SÜRCH | | Master Output Selector | |
| | | 1.912.500-00 | |

Master Output Selector 1.912.500

| IND POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------------|------------|--------------|---------------------------|-----|
| 1./2. | | | | |
| C. 57 | 59.22.5101 | 100 μ | 46V EL | |
| .04 | 59.34.2220 | 22 Ω | CER | |
| .05 | 59.22.5101 | 100 μ | 46V EL | |
| .06 | 59.06.0682 | 6.8 n | 63V PE | |
| .07 | 59.06.0682 | 6.8 n | 63V PE | |
| .08 | 59.06.0682 | 6.8 n | 63V PE | |
| .09 | 59.06.0682 | 6.8 n | 63V PE | |
| .10 | 59.22.2221 | 220 Ω | 6V EL | |
| .12 | 59.34.5531 | 560 Ω | CER | |
| .13 | 59.22.5101 | 100 μ | 46V EL | |
| .16 | 59.34.2220 | 22 Ω | CER | |
| .17 | 59.22.5101 | 100 μ | 46V EL | |
| .18 | 59.22.5101 | 100 μ | 46V EL | |
| .20 | 59.34.2220 | 22 Ω | CER | |
| .21 | 59.22.5101 | 100 μ | 46V EL | |
| C. 304 | 59.22.5101 | 100 μ | 25V EL | |
| 353 | 59.22.5101 | 100 μ | 46V EL | |

| IND | DATE | NAME | |
|-----|---------|----------|---|
| ① | | | |
| ② | | | |
| ③ | 10.4.85 | /s | CER: CERAMIC EL: ELECTROLYTIC PE: POLYESTER |
| ④ | 4.10.84 | /s | |
| ⑤ | 17.8.82 | TAMAS /s | |

MASTER OUTPUT SELECTOR PL 1.912.500.00 PAGE 1 of 5

| IND POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------------|------------|------------|---------------------------|-----|
| C. 304 | 59.22.5101 | 100 μ | 46V EL | |
| A | 305 | 59.34.4101 | 100 p | CER |
| 1./2. | | | | |
| 1c. 01 | 50.05.0243 | NE 5534 | OP-AMP | SIG |
| .02 | 50.05.0105 | NE 5532 | DUAL OP-AMP | * |
| .03 | 50.05.0243 | NE 5534 | OP-AMP | * |
| .04 | 50.05.0243 | NE 5534 | OP-AMP | * |
| 1c. 304 | 50.05.0243 | NE 5534 | OP-AMP | SIG |
| P. 3 | 54.11.2007 | 2 * 8 | 1/2 EURO B-TYPE | BU |
| 4 | 54.01.0359 | 2 * 16 | EURO B-TYPE | BU |
| 1./2. | | | | |
| Q. 01 | 50.03.0350 | J 112 | | SX |
| .02 | 50.03.0350 | J 112 | | * |
| .03 | 50.03.0350 | J 112 | | * |
| .04 | 50.03.0350 | J 112 | | * |
| .05 | 50.03.0350 | J 112 | | * |
| .06 | 50.03.0350 | J 112 | | * |

| IND | DATE | NAME | |
|-----|---------|----------|--|
| ① | | | |
| ② | | | |
| ③ | 10.4.85 | /s | BU: BURNDY SIG: SIGNETICK SX: SILICONX |
| ④ | 4.10.84 | /s | |
| ⑤ | 17.8.82 | TAMAS /s | |

MASTER OUTPUT SELECTOR PL 1.912.500.00 PAGE 2 of 5

| IND POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------------|------------|--------------|---------------------------|-----|
| Q. 07 | 50.03.0350 | J 112 | | SX |
| .08 | 50.03.0350 | J 112 | | * |
| 1./2. | | | | |
| 2 R. 01 | 57.11.3562 | 5.6 k | 1% | |
| .02 | 57.11.4471 | 470 Ω | | |
| .03 | 57.11.4471 | 470 Ω | | |
| .04 | 57.11.3562 | 5.6 k | 1% | |
| .05 | 57.11.4333 | 33 k | | |
| .06 | 57.11.4332 | 33 k | | |
| .07 | 57.11.5106 | 10 M | | |
| .08 | 57.11.5106 | 10 M | | |
| .09 | 57.11.4104 | 100 k | | |
| .10 | 57.11.4332 | 33 k | | |
| .11 | 57.11.4332 | 33 k | | |
| .12 | 57.11.5106 | 10 M | | |
| .13 | 57.11.5106 | 10 M | | |
| .14 | 57.11.4104 | 100 k | | |
| .15 | 57.11.4333 | 33 k | | |
| .16 | 57.11.4332 | 33 k | | |
| .17 | 57.11.5106 | 10 M | | |
| .18 | 57.11.5106 | 10 M | | |
| .19 | 57.11.4104 | 100 k | | |
| .20 | 57.11.4333 | 33 k | | |
| .21 | 57.11.4332 | 33 k | | |
| .22 | 57.11.5106 | 10 M | | |
| .23 | 57.11.5106 | 10 M | | |
| .24 | 57.11.4104 | 100 k | | |

| IND | DATE | NAME | |
|-----|---------|----------|--|
| ① | | | |
| ② | | | |
| ③ | 10.4.85 | /s | |
| ④ | 4.10.84 | /s | |
| ⑤ | 17.8.82 | TAMAS /s | |

MASTER OUTPUT SELECTOR PL 1.912.500.00 PAGE 3 of 5

| IND POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------------|--------------|-------|---------------------------|-----|
| 2 R. 25 | 57.11.4333 | 33 k | | |
| .26 | 57.11.4104 | 100 k | | |
| .27 | 57.11.3362 | 3.6 k | 1% | |
| .28 | 57.11.4333 | 33 k | | |
| .29 | 57.11.4222 | 2.2 k | | |
| .30 | 57.11.4222 | 2.2 k | | |
| .31 | 57.11.4222 | 2.2 k | | |
| .32 | 57.11.4222 | 2.2 k | | |
| .33 | 57.11.4330 | 33 | | |
| .34 | 57.11.4222 | 2.2 k | | |
| .35 | 57.11.4222 | 2.2 k | | |
| .36 | 57.11.4222 | 2.2 k | | |
| .37 | 57.11.4333 | 33 k | | |
| .38 | 57.11.4222 | 2.2 k | | |
| .39 | 57.11.4332 | 33 k | | |
| .40 | 57.11.4332 | 33 k | | |
| .41 | 57.11.4333 | 33 k | | |
| .42 | 1.912.001.42 | 10 k | Pos. Loos. Pot | ST |
| .43 | 1.912.001.42 | 10 k | " " " | " |
| .44 | 1.912.001.42 | 10 k | " " " | " |
| .45 | 1.912.001.45 | 4.7 k | " " " | " |
| .46 | 1.912.001.35 | 10 k | Neo. Loos. Pot | ST |
| .47 | | 10 k | Pos. Loos. J | " |
| .48 | 1.912.001.35 | 10 k | Neo. Loos. Pot | ST |
| .49 | | 10 k | Pos. Loos. J | " |
| .50 | 57.11.4332 | 33 k | | |
| .51 | 57.11.4332 | 33 k | | |
| .52 | 57.11.4332 | 33 k | | |

| IND | DATE | NAME | |
|-----|---------|----------|------------|
| ① | | | |
| ② | | | |
| ③ | 10.4.85 | /s | ST: STUCER |
| ④ | 4.10.84 | /s | |
| ⑤ | 17.8.82 | TAMAS /s | |

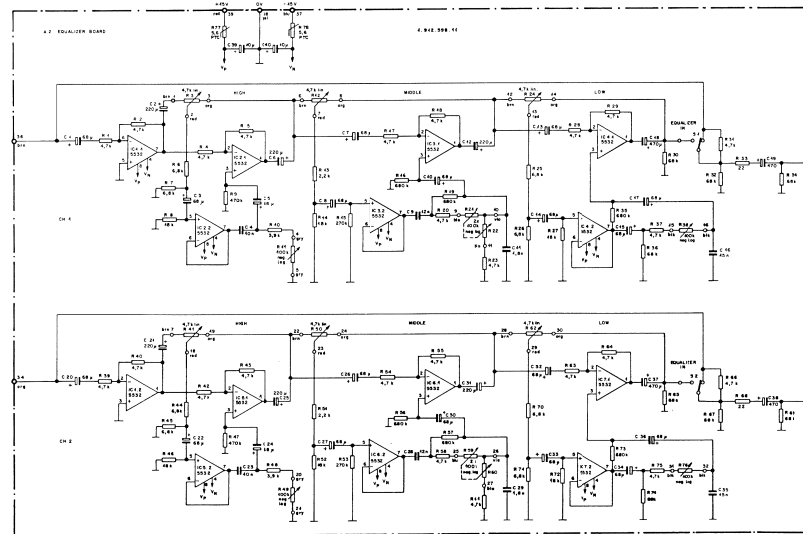
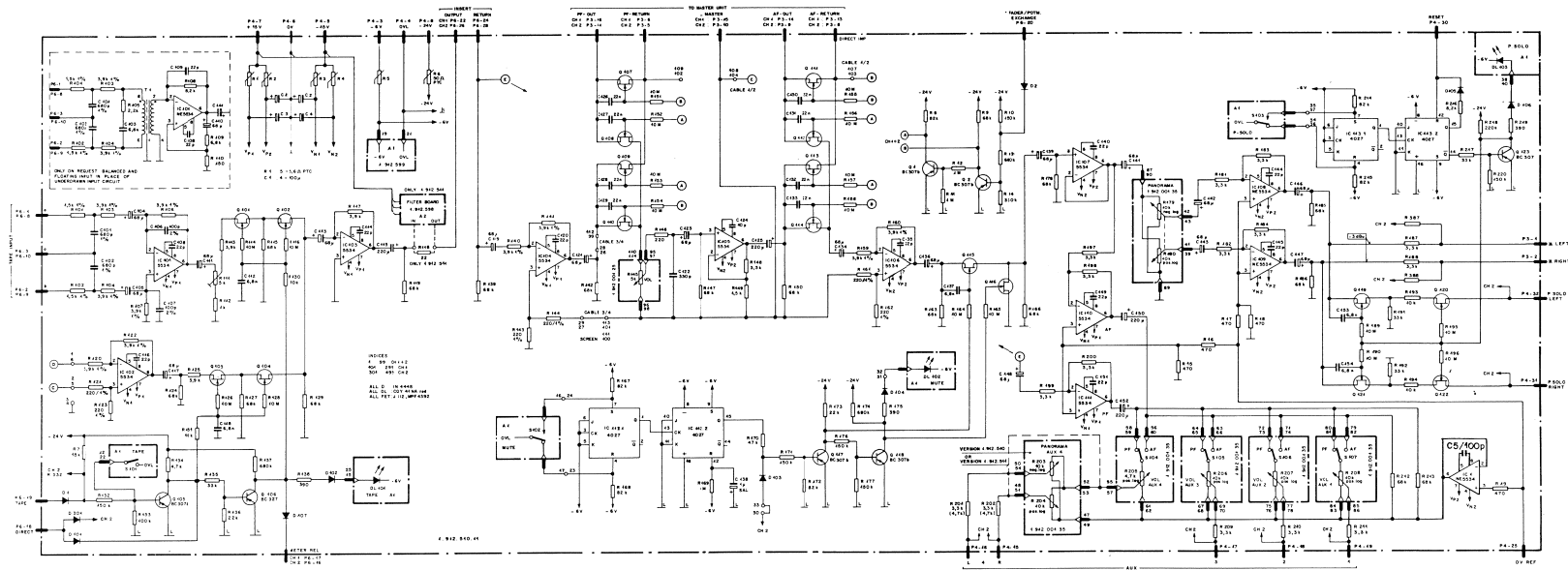
MASTER OUTPUT SELECTOR PL 1.912.500.00 PAGE 4 of 5

| IND POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------------|------------|--------------|---------------------------|-----|
| R. 302 | 57.99.0206 | 50 n | PTC | |
| 303 | 57.99.0208 | 50 n | PTC | |
| 304 | 57.99.0208 | 50 n | PTC | |
| 305 | 54.11.4402 | 1 k | | |
| 306 | 54.11.4411 | 470 Ω | | |
| 307 | 54.11.4411 | 470 Ω | | |
| 1./2. | | | | |
| S. 01 | 55.15.0002 | 2 p | PUSHBUTTON | |
| .02 | 55.03.0303 | | KNOB GREY/WITHE | |
| .03 | 55.15.0002 | 2 p | PUSHBUTTON | |
| .04 | 55.03.0303 | | KNOB GREY/WITHE | |
| .05 | 55.15.0002 | 2 p | PUSHBUTTON | |
| .06 | 55.03.0303 | | KNOB GREY/WITHE | |

| IND | DATE | NAME | |
|-----|---------|----------|--|
| ① | | | |
| ② | | | |
| ③ | 10.4.85 | /s | |
| ④ | 4.10.84 | /s | |
| ⑤ | 17.8.82 | TAMAS /s | |

MASTER OUTPUT SELECTOR PL 1.912.500.00 PAGE 5 of 5

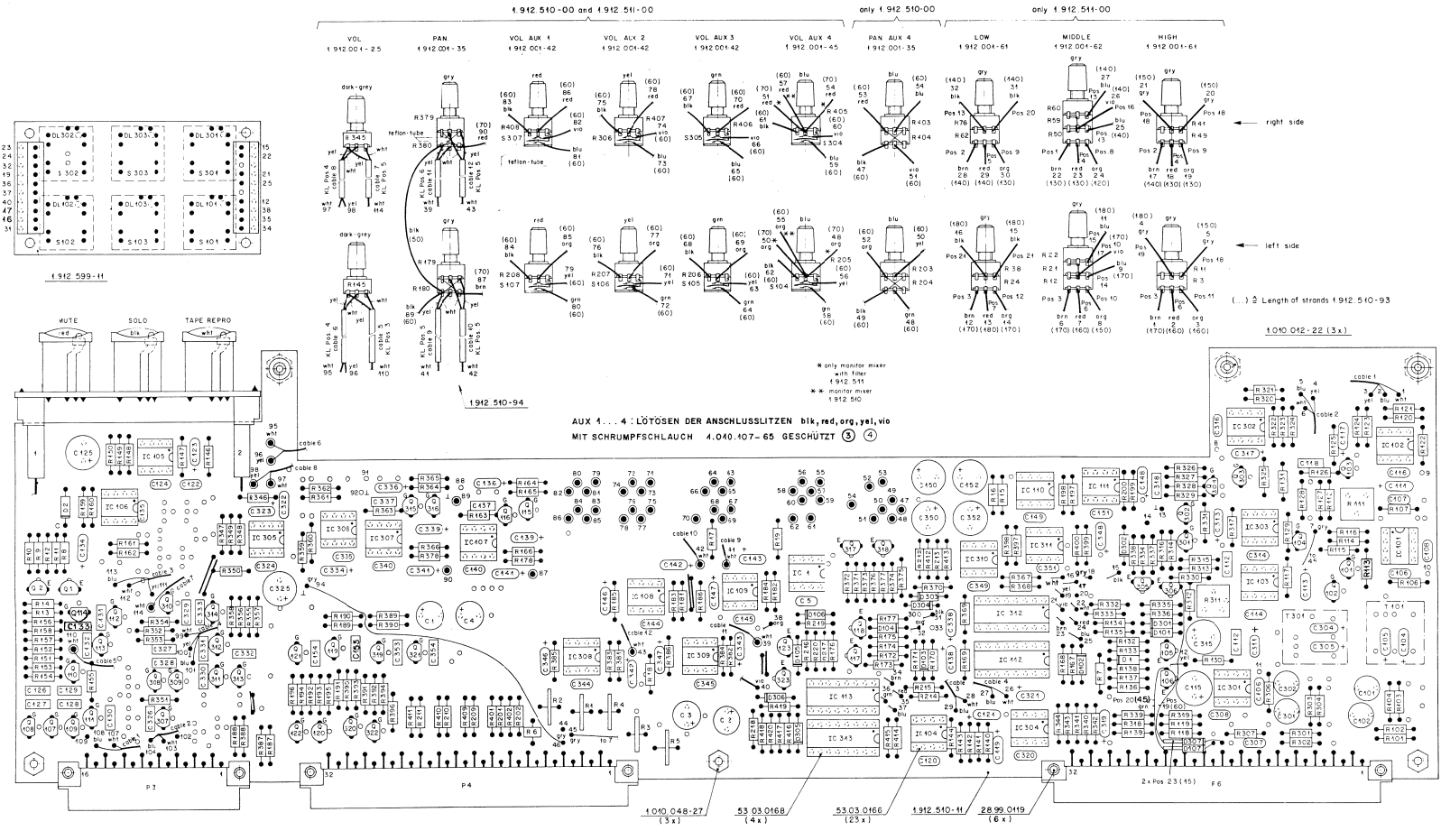
Monitor Mixer 1.912.510/511 / Filter Board 1.912.598



- PA.1
- PA.2
- PA.3
- PA.4
- PA.5
- PA.6
- PA.7
- PA.8
- CH.1
- CH.2
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| Nom.-Nr. 1.912.510/511 Adressierung Zugelieferter Umrüstungen | Güte Both Frequenzbereich Multistat | 1.10.84 11 10 10 |
| Ersatz für STUDER REZESSION ZÜRICH | Ersatzteil MONITOR MIXER FILTER BOARD | Ersatz für SC 1.912.510/511 SC 1.912.598 |

Monitor Mixer 1.912.510/511



| VALID FOR | NR UNIT | PL | FILTER BOARD |
|----------------------|--------------|--------------|--------------|
| MONITOR MIXER | 1.912.510-00 | 1.912.510-00 | — |
| MONITOR MIXER-FILTER | 1.912.511-00 | 1.912.510-00 | 1.912.598-00 |

| | | | |
|----------------------------------|---|--|-----------------------|
| Name No. Art-Nr. Abmessung | Größe Oberfläche Formschlüssel 100/100 1 1/2 1 1 1/2 1 | 17.2.88 SI 45.7.86 SI 4.7.84 SI 2.112.83 AHG 13.9.83 AHG | ④ ③ ② ① ① |
| Ersatz für Studer Nr. | Ersatz durch Studer Nr. | 1.912.510-00 | 1.912.510-00 |

⊕ D 107 und D 307 neu dazu

Monitor Mixer 1.912.510/511

Table with columns: IND/POS NO, PART NO, VALUE, SPECIFICATIONS/EQUIVALENT, MFR. Rows include components like resistors (C1, C2, C3, C4, C5), capacitors (C401, C402, C403, C404, C405, C406, C407, C408, C409, C410, C411, C412, C413, C414, C415, C416, C417, C418, C419, C420, C421, C422), and diodes (D1, D2, D401, D402, D403, D404, D405, D406, D407).

Table with columns: IND, DATE, NAME. Includes notes: 'option with input trim', '* only trim version', '† only normal version'. Includes a signature line for MONITOR MIXER, PL 1.912.510, PAGE 4 OF 10.

Table with columns: IND/POS NO, PART NO, VALUE, SPECIFICATIONS/EQUIVALENT, MFR. Rows include components like resistors (C453, C454, C301, C354, C404, C454), capacitors (D1, D2, D401, D402, D403, D404, D405, D406, D407), and diodes (DL101, DL102, DL103, DL301, DL302, DL303, DL401, DL402, DL403, DL301, DL302, DL303, DL401, DL402, DL403).

Table with columns: IND, DATE, NAME. Includes notes: 'option with input trim', '* only trim version', '† only normal version'. Includes a signature line for MONITOR MIXER, PL 1.912.510, PAGE 3 OF 10.

Table with columns: IND/POS NO, PART NO, VALUE, SPECIFICATIONS/EQUIVALENT, MFR. Rows include components like resistors (Q120, Q121, Q122, Q123), capacitors (R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15, R16, R17, R18, R19), and diodes (R401, R402, R403).

Table with columns: IND, DATE, NAME. Includes notes: '* only trim version', '† only normal version'. Includes a signature line for MONITOR MIXER, PL 1.912.510, PAGE 5 OF 10.

Table with columns: IND/POS NO, PART NO, VALUE, SPECIFICATIONS/EQUIVALENT, MFR. Rows include components like resistors (R134, R135, R136, R137, R138, R139, R140, R141, R142, R143, R144, R145, R146, R147, R148, R149, R150, R151, R152, R153, R154, R155, R156, R157, R158, R159, R160, R161, R162, R163).

Table with columns: IND, DATE, NAME. Includes notes: '* only trim version', '† only normal version'. Includes a signature line for MONITOR MIXER, PL 1.912.510, PAGE 7 OF 10.

Table with columns: IND/POS NO, PART NO, VALUE, SPECIFICATIONS/EQUIVALENT, MFR. Rows include components like resistors (C423, C424, C425, C426, C427, C428, C429, C430, C431, C432, C433, C434, C435, C436, C437, C438, C439, C440, C441, C442, C443, C444, C445, C446, C447, C448, C449, C450, C451, C452), capacitors (C401, C402, C403, C404, C405, C406, C407, C408, C409, C410, C411, C412, C413, C414, C415, C416, C417, C418, C419, C420, C421, C422), and diodes (D1, D2, D401, D402, D403, D404, D405, D406, D407).

Table with columns: IND, DATE, NAME. Includes notes: '* only trim version', '† only normal version'. Includes a signature line for MONITOR MIXER, PL 1.912.510, PAGE 2 OF 10.

Table with columns: IND/POS NO, PART NO, VALUE, SPECIFICATIONS/EQUIVALENT, MFR. Rows include components like resistors (C401, C402, C403, C404, C405, C406, C407, C408, C409, C410, C411, C412, C413, C414, C415, C416, C417, C418, C419, C420, C421, C422), capacitors (C423, C424, C425, C426, C427, C428, C429, C430, C431, C432, C433, C434, C435, C436, C437, C438, C439, C440, C441, C442, C443, C444, C445, C446, C447, C448, C449, C450, C451, C452), and diodes (D1, D2, D401, D402, D403, D404, D405, D406, D407).

Table with columns: IND, DATE, NAME. Includes notes: '* only trim version', '† only normal version'. Includes a signature line for MONITOR MIXER, PL 1.912.510, PAGE 4 OF 10.

Table with columns: IND/POS NO, PART NO, VALUE, SPECIFICATIONS/EQUIVALENT, MFR. Rows include components like resistors (R401, R402, R403, R404, R405, R406, R407, R408, R409, R410, R411, R412, R413, R414, R415, R416, R417, R418, R419, R420, R421, R422, R423, R424, R425, R426, R427, R428, R429, R430, R431, R432, R433), capacitors (Q1, Q2, Q401, Q402, Q403, Q404, Q405), and diodes (Q401, Q402, Q403, Q404, Q405).

Table with columns: IND, DATE, NAME. Includes notes: '* only trim version', '† only normal version'. Includes a signature line for MONITOR MIXER, PL 1.912.510, PAGE 6 OF 10.

Table with columns: IND/POS NO, PART NO, VALUE, SPECIFICATIONS/EQUIVALENT, MFR. Rows include components like resistors (R164, R165, R166, R167, R168, R169, R170, R171, R172, R173, R174, R175, R176, R177, R178, R179, R180, R181, R182, R183, R184, R185, R186, R187, R188, R189, R190, R191, R192, R193, R194, R195, R196, R197, R198, R199, R200, R201, R202, R203, R204, R205, R206, R207, R208, R209, R210, R211, R212, R213, R214, R215, R216, R217, R218, R219, R220, R221, R222, R223, R224, R225, R226, R227, R228, R229, R230, R231, R232, R233, R234, R235, R236, R237, R238, R239, R240, R241, R242, R243, R244, R245, R246, R247, R248, R249, R250, R251, R252, R253, R254, R255, R256, R257, R258, R259, R260, R261, R262, R263, R264, R265, R266, R267, R268, R269, R270, R271, R272, R273, R274, R275, R276, R277, R278, R279, R280, R281, R282, R283, R284, R285, R286, R287, R288, R289, R290, R291, R292, R293, R294, R295, R296, R297, R298, R299, R300, R301, R302, R303, R304, R305, R306, R307, R308, R309, R310, R311, R312, R313, R314, R315, R316, R317, R318, R319, R320, R321, R322, R323, R324, R325, R326, R327, R328, R329, R330, R331, R332, R333, R334, R335, R336, R337, R338, R339, R340, R341, R342, R343, R344, R345, R346, R347, R348, R349, R350, R351, R352, R353, R354, R355, R356, R357, R358, R359, R360, R361, R362, R363, R364, R365, R366, R367, R368, R369, R370, R371, R372, R373, R374, R375, R376, R377, R378, R379, R380, R381, R382, R383, R384, R385, R386, R387, R388, R389, R390, R391, R392, R393, R394, R395, R396, R397, R398, R399, R400, R401, R402, R403, R404, R405, R406, R407, R408, R409, R410, R411, R412, R413, R414, R415, R416, R417, R418, R419, R420, R421, R422, R423, R424, R425, R426, R427, R428, R429, R430, R431, R432, R433, R434, R435, R436, R437, R438, R439, R440, R441, R442, R443, R444, R445, R446, R447, R448, R449, R450, R451, R452, R453, R454, R455, R456, R457, R458, R459, R460, R461, R462, R463, R464, R465, R466, R467, R468, R469, R470, R471, R472, R473, R474, R475, R476, R477, R478, R479, R480, R481, R482, R483, R484, R485, R486, R487, R488, R489, 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R822, R823, R824, R825, R826, R827, R828, R829, R830, R831, R832, R833, R834, R835, R836, R837, R838, R839, R840, R841, R842, R843, R844, R845, R846, R847, R848, R849, R850, R851, R852, R853, R854, R855, R856, R857, R858, R859, R860, R861, R862, R863, R864, R865, R866, R867, R868, R869, R870, R871, R872, R873, R874, R875, R876, R877, R878, R879, R880, R881, R882, R883, R884, R885, R886, R887, R888, R889, R890, R891, R892, R893, R894, R895, R896, R897, R898, R899, R900, R901, R902, R903, R904, R905, R906, R907, R908, R909, R910, R911, R912, R913, R914, R915, R916, R917, R918, R919, R920, R921, R922, R923, R924, R925, R926, R927, R928, R929, R930, R931, R932, R933, R934, R935, R936, R937, R938, R939, R940, R941, R942, R943, R944, R945, R946, R947, R948, R949, R950, R951, R952, R953, R954, R955, R956, R957, R958, R959, R960, R961, R962, R963, R964, R965, R966, R967, R968, R969, R970, R971, R972, R973, R974, R975, R976, R977, R978, R979, R980, R981, R982, R983, R984, R985, R986, R987, R988, R989, R990, R991, R992, R993, R994, R995, R996, R997, R998, R999, R1000).

Table with columns: IND, DATE, NAME. Includes notes: '* only trim version', '† only normal version'. Includes a signature line for MONITOR MIXER, PL 1.912.510, PAGE 8 OF 10.

Monitor Mixer 1.912.510/511

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|-------------|---------------|-------------|----------------------------|-----|
| | R194 | 57.11.4103 | 10k | | |
| | R195 | 57.11.6106 | 10M | | |
| | R196 | 57.11.6106 | 10M | | |
| | R197 | 57.11.4332 | 3,3k | | |
| | R198 | 57.11.4332 | 3,3k | | |
| | R199 | 57.11.4332 | 3,3k | | |
| | R200 | 57.11.4332 | 3,3k | | |
| | R201 | 57.11.4332 | 3,3k | 1.912.511: 4,7k 57.11.4472 | |
| | R202 | 57.11.4332 | 3,3k | 1.912.511: 4,7k 57.11.4472 | |
| | R203 | 1.912.001.35 | 10k -log | only 1.912.510 | |
| | R204 | | 10k +log | only 1.912.510 | |
| | R205 | 1.912.001.45 | 47k +log, S | | |
| | R206 | 1.912.001.45 | 47k +log, S | | |
| | R207 | 1.912.001.45 | 47k +log, S | | |
| | R208 | 1.912.001.45 | 47k +log, S | | |
| | R209 | 57.11.4332 | 3,3k | | |
| | R210 | 57.11.4332 | 3,3k | | |
| | R211 | 57.11.4332 | 3,3k | | |
| | R212 | 57.11.4683 | 68k | | |
| | R213 | 57.11.4683 | 68k | | |
| | R214 | 57.11.4823 | 82k | | |
| | R215 | 57.11.4823 | 82k | | |
| | R216 | 57.11.4822 | 82k | | |
| | R217 | 57.11.4333 | 33k | | |
| | R218 | 57.11.4224 | 220k | | |
| | R219 | 57.11.4391 | 390 | | |
| | R220 | 57.11.4154 | 150k | | |
| | R301...R420 | = R101...R220 | | | |

| IND | DATE | NAME |
|-----|----------|------|
| ④ | | |
| ③ | | |
| ② | 4-10-84 | fg |
| ① | 21-12-83 | my |
| ○ | 18-1-83 | my |

STUDER MONITOR MIXER PL 1.912.510 PAGE 9 OF 10

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|-------------|---------------|-------|----------------------------|-----|
| | S101 | 55.15.0113 | | double latching | |
| | S102 | 55.15.0112 | | latching - non latching | |
| | S103 | 55.15.0112 | | latching - non latching | |
| | S104 | | | → R205 (double latching) | |
| | S105 | | | → R206 . . | |
| | S106 | | | → R207 . . | |
| | S107 | | | → R208 . . | |
| | S301...S307 | = S101...S107 | | | |
| | T101 | T301 * | | | |
| | | 1.022.419 | | only trofo version | |
| | X1C | 53.03.0166 | | IC-socket DIL 8 pins | |
| | X1C | 53.03.0168 | | IC-socket DIL 16 pins | |
| | A2 | 1.912.598.00 | | filter board for 1.912.511 | |

| IND | DATE | NAME |
|-----|----------|------|
| ④ | | |
| ③ | | |
| ② | 4-10-84 | fg |
| ① | 21-12-83 | my |
| ○ | 18-1-83 | my |

STUDER MONITOR MIXER PL 1.912.510 PAGE 10 OF 10

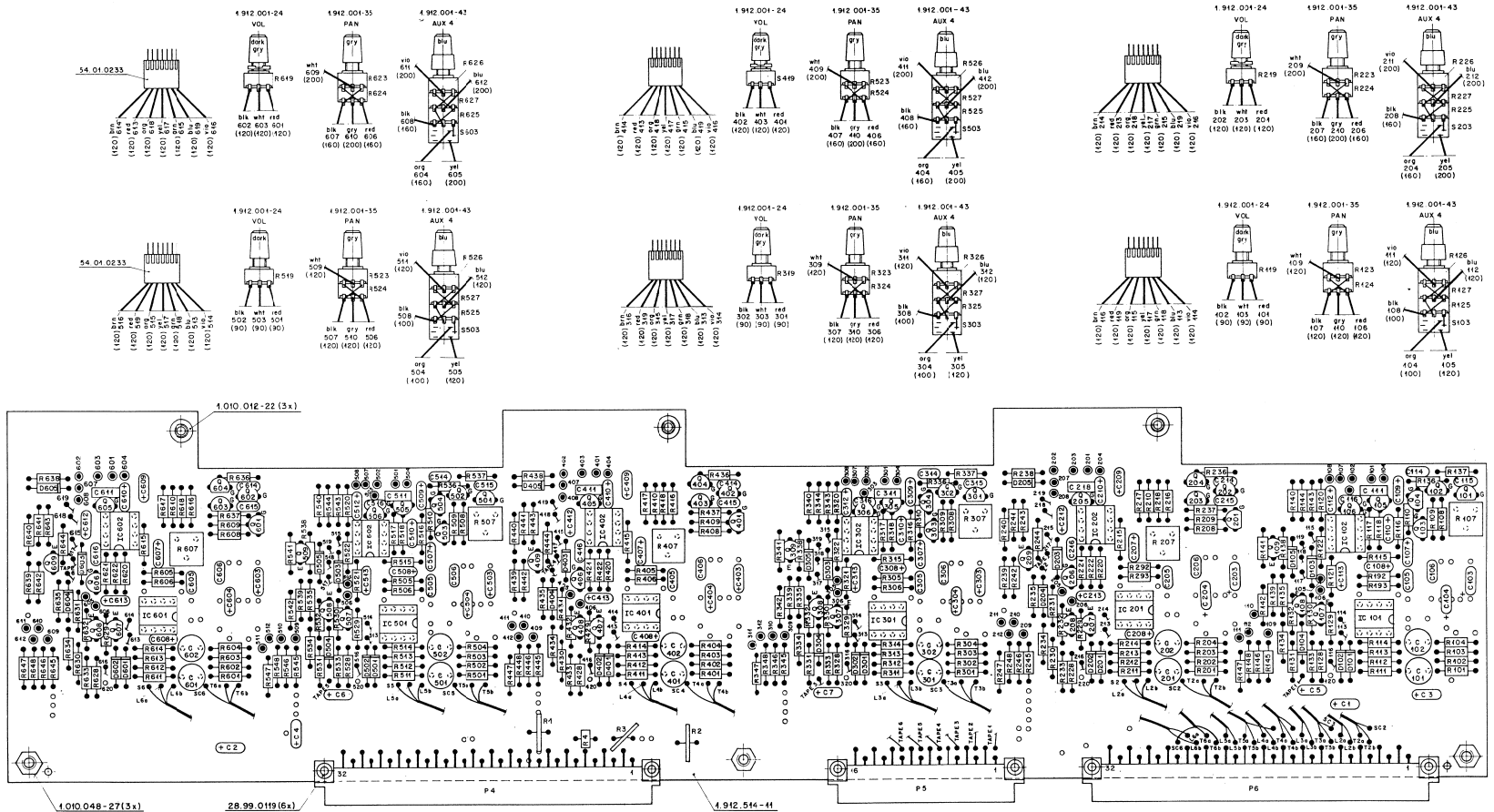
Monitor Mixer Filter Board 1.912.598.00

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------|--------|--------------|--------------|---------------------------|----------------|
| C1 | | 59.26.0680 | 68μ | 6V SAL | |
| C2 | | 59.22.2221 | 220μ | 6V EL radial | |
| C3 | | 59.26.0680 | 68μ | 6V SAL | |
| C4 | | 59.05.1103 | 10n | 1% PP | |
| C5 | | 59.26.0680 | 68μ | 6V SAL | |
| C6 | | 59.22.2221 | 220μ | 6V EL radial | |
| C7 | | 59.26.0680 | 68μ | 6V SAL | |
| C8 | | 59.26.0680 | 68μ | 6V SAL | |
| C9 | | 59.12.7123 | 12n | 1% PS | |
| C10 | | 59.26.0680 | 68μ | 6V SAL | |
| C11 | | 59.12.7182 | 18n | 1% PS | |
| C12 | | 59.22.2221 | 220μ | 6V EL radial | |
| C13 | | 59.26.0680 | 68μ | 6V SAL | |
| C14 | | 59.26.0680 | 68μ | 6V SAL | |
| C15 | | 59.26.0680 | 68μ | 6V SAL | |
| C16 | | 59.11.3153 | 15n | 5% PC | 59.02.5153 |
| C17 | | 59.26.0680 | 68μ | 6V SAL | |
| C18 | | 59.25.1471 | 470μ | 6V EL axial | |
| C19 | | 59.25.1471 | 470μ | 6V EL axial | |
| C20 | | 59.26.0680 | 68μ | 6V SAL | |
| C21 | | 59.22.2221 | 220μ | 6V EL radial | |
| C22 | | 59.26.0680 | 68μ | 6V SAL | |
| C23 | | 59.05.1103 | 10n | 1% PP | |
| C24 | | 59.26.0680 | 68μ | 6V SAL | |
| C25 | | 59.22.2221 | 220μ | 6V EL radial | |
| C26 | | 59.26.0680 | 68μ | 6V SAL | |
| C27 | | 59.26.0680 | 68μ | 6V SAL | |
| C28 | | 59.12.7123 | 12n | 1% PS | |
| C29 | | 59.12.7182 | 18n | 1% PS | |
| C30 | | 59.26.0680 | 68μ | 6V SAL | |
| C31 | | 59.22.2221 | 220μ | 6V EL radial | |
| C32 | | 59.26.0680 | 68μ | 6V SAL | |
| C33 | | 59.26.0680 | 68μ | 6V SAL | |
| C34 | | 59.26.0680 | 68μ | 6V SAL | |
| C35 | | 59.02.5153 | 15n | 5% PC | 59.11.3153 |
| C36 | | 59.26.0680 | 68μ | 6V SAL | |
| C37 | | 59.25.1471 | 470μ | 6V EL axial | |
| C38 | | 59.25.1471 | 470μ | 6V EL axial | |
| C39 | | 59.26.2100 | 10μ | 16V SAL | |
| C40 | | 59.26.2100 | 10μ | 16V SAL | |
| K1-7 | | 50.09.0105 | NE5532 | dual op.amp | |
| X1C | | 53.03.0166 | | IC-socket 8pins | |
| R1 | | 57.11.4472 | 47k | | |
| R2 | | 57.11.4472 | 47k | | |
| R3 | | 1.912.001.61 | 47k lin | potm. 1 | |
| R4 | | 57.11.4472 | 47k | | |
| R5 | | 57.11.4472 | 47k | | |
| R6 | | 57.11.4682 | 68k | | |
| R7 | | 57.11.4682 | 68k | | |
| R8 | | 57.11.4183 | 18k | | |
| R9 | | 57.11.4474 | 470k | | |
| R10 | | 57.11.4392 | 3,9k | | |
| R11 | | 1.912.001.61 | 100k neg.log | potm. 1 | |
| R12 | | 1.912.001.62 | 47k lin | potm. 2 | |
| R13 | | 57.11.4222 | 2,2k | | |
| R14 | | 57.11.4183 | 18k | | |
| R15 | | 57.11.4274 | 270k | | |
| R16 | | 57.11.4684 | 680k | | |
| R17 | | 57.11.4472 | 47k | | |
| R18 | | 57.11.4472 | 47k | | |
| R19 | | 57.11.4684 | 680k | | |
| R20 | | 57.11.4472 | 47k | | |
| R21 | | 1.912.001.62 | 100k neg.log | potm. 2 | |
| R22 | | | 100k neg.log | | |
| R23 | | 57.11.4472 | 47k | | |
| R24 | | 1.912.001.61 | 47k lin | potm. 3 | |
| R25 | | 57.11.4682 | 68k | | |
| R26 | | 57.11.4682 | 68k | | |
| R27 | | 57.11.4183 | 18k | | |
| R28 | | 57.11.4472 | 47k | | |
| R29 | | 57.11.4472 | 47k | | |
| R30 | | 57.11.4683 | 68k | | |
| R31 | | 57.11.4472 | 47k | | |
| R32 | | 57.11.4683 | 68k | | |
| R33 | | 57.11.4220 | 2,2 | | |
| R34 | | 57.11.4683 | 68k | | |
| R35 | | 57.11.4684 | 680k | | |
| R36 | | 57.11.4683 | 68k | | |
| R37 | | 57.11.4472 | 47k | | |
| R38 | | 1.912.001.61 | 100k neg.log | potm. 3 | |
| R39 | | 57.11.4472 | 47k | | |
| R40 | | 57.11.4472 | 47k | | |
| R41 | | 1.912.001.61 | 47k lin | potm. 4 | |
| R42 | | 57.11.4472 | 47k | | |
| R43 | | 57.11.4472 | 47k | | |
| R44 | | 57.11.4682 | 68k | | |
| R45 | | 57.11.4682 | 68k | | |
| R46 | | 57.11.4183 | 18k | | |
| R47 | | 57.11.4474 | 470k | | |
| R48 | | 57.11.4392 | 3,9k | | |
| R49 | | 1.912.001.61 | 100k neg.log | potm. 4 | |
| R50 | | 1.912.001.62 | 47k lin | potm. 5 | |
| R51 | | 57.11.4222 | 2,2k | | |
| R52 | | 57.11.4183 | 18k | | |
| R53 | | 57.11.4274 | 270k | | |
| R54 | | 57.11.4472 | 47k | | |
| R55 | | 57.11.4472 | 47k | | |
| R56 | | 57.11.4684 | 680k | | |
| R57 | | 57.11.4684 | 680k | | |
| R58 | | 57.11.4472 | 47k | | |
| R59 | | 1.912.001.62 | 100k neg.log | potm. 5 | |
| R60 | | | 100k neg.log | | |
| R61 | | 57.11.4472 | 47k | | |
| R62 | | 1.912.001.61 | 47k lin | potm. 6 | |
| R63 | | 57.11.4472 | 47k | | |
| R64 | | 57.11.4472 | 47k | | |
| R65 | | 57.11.4683 | 68k | | |
| R66 | | 57.11.4472 | 47k | | |
| R67 | | 57.11.4683 | 68k | | |
| R68 | | 57.11.4220 | 2,2 | | |
| R69 | | 57.11.4683 | 68k | | |
| R70 | | 57.11.4682 | 68k | | |
| R71 | | 57.11.4682 | 68k | | |
| R72 | | 57.11.4183 | 18k | | |
| R73 | | 57.11.4684 | 680k | | |
| R74 | | 57.11.4683 | 68k | | |
| R75 | | 57.11.4472 | 47k | | |
| R76 | | 1.912.001.61 | 100k neg.log | potm. 6 | |
| R77 | | 57.99.0209 | 5,6 | PTC | Philips |
| R78 | | 57.99.0209 | 5,6 | PTC | 2322.662.91005 |
| S1,2 | | 55.15.0003 | | | Schadow ITT |

| INDI | DATE | NAME |
|------|----------|------|
| ④ | | |
| ③ | | |
| ② | | |
| ① | | |
| ○ | 18-01-83 | NY |

| | | | | |
|--------|--------------|----------|----|-----------|
| STUDER | FILTER BOARD | Mon.Mix. | PL | 1.912.598 |
|--------|--------------|----------|----|-----------|

Compact (Hex) Density Mixer 1.912.514



| | | | | |
|----------------------------------|----------------|----------------------------------|--------------|--------------|
| Norm Nr | Umriss | Umriss | Umriss | Umriss |
| DN Bez | Umriss | Umriss | Umriss | Umriss |
| Adressierung | | | | |
| Zustimmung Unterlagen | Frempprüfung | Material | 6.11.84 A.Ho | 1 |
| PL | 2 | 2 | 2 | 2 |
| Erstellt von | Erstellt durch | Gepr. von | Gepr. durch | 1 |
| SYLINDER HERSTELLER ZURICH | | COMPACT (HEX) DENSITY MONITOR | | 1.912.514-00 |

Compact (Hex) Density Mixer 1.912.514

Table with columns: Ad, POS., REF. No., DESCRIPTION, MANUFACTURER. Contains component list for the mixer, including resistors, capacitors, and diodes.

Table with columns: Ad, POS., REF. No., DESCRIPTION, MANUFACTURER. Continuation of component list for the mixer.

Table with columns: Ad, POS., REF. No., DESCRIPTION, MANUFACTURER. Continuation of component list for the mixer.

Table with columns: Ad, POS., REF. No., DESCRIPTION, MANUFACTURER. Continuation of component list for the mixer.

Compact (Hex) Density Mixer 1.912.514

| Ad | ..POS.. | ..REF.No.. | DESCRIPTION | MANUFACTURER | Ad | ..POS.. | ..REF.No.. | DESCRIPTION | MANUFACTURER |
|------|---------|--------------|-------------|--|--------|---------|--------------|---------------------|--|
| R... | 393 | . | 100 Ohm | 1% 0.25W MF (only for trafo input) | R... | 591 | . | 1.8 kOhm | 2% 0.25W MF (only for trafo input) |
| R... | 401 | 57.11.3152 | 1.5 kOhm | 1% 0.25W MF | R... | 592 | . | 4.7 kOhm | 1% 0.25W MF (only for trafo input) |
| R... | 402 | 57.11.3392 | 3.9 kOhm | 1% 0.25W MF | R... | 593 | . | 100 Ohm | 1% 0.25W MF (only for trafo input) |
| R... | 403 | 57.11.3152 | 1.5 kOhm | 1% 0.25W MF | R... | 601 | 57.11.3152 | 1.5 kOhm | 1% 0.25W MF |
| R... | 404 | 57.11.3392 | 3.9 kOhm | 1% 0.25W MF | R... | 602 | 57.11.3392 | 3.9 kOhm | 1% 0.25W MF |
| R... | 405 | 57.11.3362 | 3.6 kOhm | 1% 0.25W MF (for trafoless input) | R... | 603 | 57.11.3152 | 1.5 kOhm | 1% 0.25W MF |
| R... | 406 | 57.11.3362 | 3.6 kOhm | 1% 0.25W MF (for trafoless input) | R... | 604 | 57.11.3392 | 3.9 kOhm | 1% 0.25W MF |
| R... | 407 | 58.01.8103 | 10 kOhm | 10% 0.50W PMG trimming resistor | R... | 605 | 57.11.3362 | 3.6 kOhm | 1% 0.25W MF (for trafoless input) |
| R... | 408 | 57.11.4182 | 1.8 kOhm | 5% 0.25W MF | R... | 606 | 57.11.3362 | 3.6 kOhm | 1% 0.25W MF (for trafoless input) |
| R... | 409 | 57.11.4103 | 10 kOhm | 2% 0.25W MF | R... | 607 | 58.01.8103 | 10 kOhm | 10% 0.50W PMG trimming resistor |
| R... | 410 | 57.11.4103 | 10 kOhm | 5% 0.25W MF | R... | 608 | 57.11.4182 | 1.8 kOhm | 5% 0.25W MF |
| R... | 411 | 57.11.3392 | 3.9 kOhm | 1% 0.25W MF | R... | 609 | 57.11.4103 | 10 kOhm | 2% 0.25W MF |
| R... | 412 | 57.11.3392 | 3.9 kOhm | 1% 0.25W MF | R... | 610 | 57.11.4103 | 10 kOhm | 5% 0.25W MF |
| R... | 413 | 57.11.3392 | 3.9 kOhm | 1% 0.25W MF | R... | 611 | 57.11.3392 | 3.9 kOhm | 1% 0.25W MF |
| R... | 414 | 57.11.3392 | 3.9 kOhm | 1% 0.25W MF | R... | 612 | 57.11.3392 | 3.9 kOhm | 1% 0.25W MF |
| R... | 415 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | R... | 613 | 57.11.3392 | 3.9 kOhm | 1% 0.25W MF |
| R... | 416 | 57.11.4103 | 10 kOhm | 2% 0.25W MF | R... | 614 | 57.11.3392 | 3.9 kOhm | 1% 0.25W MF |
| R... | 417 | 57.11.4103 | 10 kOhm | 2% 0.25W MF | R... | 615 | 57.11.4104 | 100 kOhm | 5% 0.25W MF |
| R... | 418 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | R... | 616 | 57.11.4103 | 10 kOhm | 2% 0.25W MF |
| R... | 419 | 1.912.001.24 | 10 kOhm | 10% pos.log.variable resistor | R... | 617 | 57.11.4103 | 10 kOhm | 2% 0.25W MF |
| R... | 420 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | R... | 618 | 57.11.4104 | 100 kOhm | 5% 0.25W MF |
| R... | 421 | 57.11.4822 | 8.2 kOhm | 2% 0.25W MF | R... | 619 | 1.912.001.24 | 10 kOhm | 10% pos.log.variable resistor |
| R... | 422 | 57.11.3362 | 3.6 kOhm | 1% 0.25W MF | R... | 620 | 57.11.4104 | 100 kOhm | 5% 0.25W MF |
| R... | 423 | 1.912.001.35 | 10 kOhm | 10% pos.log.variable resistor | R... | 621 | 57.11.4822 | 8.2 kOhm | 2% 0.25W MF |
| R... | 424 | . | 10 kOhm | 10% neg.log.variable resistor, see R423 St | R... | 622 | 57.11.3362 | 3.6 kOhm | 1% 0.25W MF |
| R... | 425 | 1.912.001.43 | 4.7 kOhm | 10% pos.log.variable resistor | R... | 623 | 1.912.001.35 | 10 kOhm | 10% pos.log.variable resistor |
| R... | 426 | . | 10 kOhm | 10% pos.log.variable resistor, see R425 St | R... | 624 | . | 10 kOhm | 10% neg.log.variable resistor, see R623 St |
| R... | 427 | . | 10 kOhm | 10% neg.log.variable resistor, see R425 St | R... | 625 | 1.912.001.43 | 4.7 kOhm | 10% pos.log.variable resistor |
| R... | 428 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | R... | 626 | . | 10 kOhm | 10% pos.log.variable resistor, see R625 St |
| R... | 429 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | R... | 627 | . | 10 kOhm | 10% neg.log.variable resistor, see R625 St |
| R... | 430 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | R... | 628 | 57.11.4104 | 100 kOhm | 5% 0.25W MF |
| R... | 431 | 57.11.4474 | 470 kOhm | 5% 0.25W MF | R... | 629 | 57.11.4104 | 100 kOhm | 5% 0.25W MF |
| R... | 432 | 57.11.4223 | 22 kOhm | 5% 0.25W MF | R... | 630 | 57.11.4104 | 100 kOhm | 5% 0.25W MF |
| R... | 433 | 57.11.4123 | 12 kOhm | 5% 0.25W MF | R... | 631 | 57.11.4474 | 470 kOhm | 5% 0.25W MF |
| R... | 434 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | R... | 632 | 57.11.4223 | 22 kOhm | 5% 0.25W MF |
| R... | 435 | 57.11.4391 | 390 Ohm | 5% 0.25W MF | R... | 633 | 57.11.4123 | 12 kOhm | 5% 0.25W MF |
| R... | 436 | 57.11.4105 | 1 MOhm | 5% 0.25W MF | R... | 634 | 57.11.4104 | 100 kOhm | 5% 0.25W MF |
| R... | 437 | 57.11.4105 | 1 MOhm | 5% 0.25W MF | R... | 635 | 57.11.4391 | 390 Ohm | 5% 0.25W MF |
| R... | 438 | 57.11.4391 | 390 Ohm | 5% 0.25W MF | R... | 636 | 57.11.4105 | 1 MOhm | 5% 0.25W MF |
| R... | 439 | 57.11.4223 | 22 kOhm | 5% 0.25W MF | R... | 637 | 57.11.4105 | 1 MOhm | 5% 0.25W MF |
| R... | 440 | 57.11.4474 | 470 kOhm | 5% 0.25W MF | R... | 638 | 57.11.4391 | 390 Ohm | 5% 0.25W MF |
| R... | 441 | 57.11.4474 | 470 kOhm | 5% 0.25W MF | R... | 639 | 57.11.4223 | 22 kOhm | 5% 0.25W MF |
| R... | 442 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | R... | 640 | 57.11.4474 | 470 kOhm | 5% 0.25W MF |
| R... | 443 | 57.11.4105 | 1 MOhm | 5% 0.25W MF | R... | 641 | 57.11.4474 | 470 kOhm | 5% 0.25W MF |
| R... | 444 | 57.11.6106 | 10 MOhm | 10% 0.25W MF | R... | 642 | 57.11.4104 | 100 kOhm | 5% 0.25W MF |
| R... | 445 | 57.11.4332 | 3.3 kOhm | 2% 0.25W MF | R... | 643 | 57.11.4105 | 1 MOhm | 5% 0.25W MF |
| R... | 446 | 57.11.4332 | 3.3 kOhm | 2% 0.25W MF | R... | 644 | 57.11.6106 | 10 MOhm | 10% 0.25W MF |
| R... | 447 | 57.11.4332 | 3.3 kOhm | 2% 0.25W MF | R... | 645 | 57.11.4332 | 3.3 kOhm | 2% 0.25W MF |
| R... | 448 | 57.11.4332 | 3.3 kOhm | 2% 0.25W MF | R... | 646 | 57.11.4332 | 3.3 kOhm | 2% 0.25W MF |
| R... | 490 | . | 4.3 kOhm | 1% 0.25W MF (only for trafo input) | R... | 647 | 57.11.4332 | 3.3 kOhm | 2% 0.25W MF |
| R... | 491 | . | 1.8 kOhm | 2% 0.25W MF (only for trafo input) | R... | 648 | 57.11.4332 | 3.3 kOhm | 2% 0.25W MF |
| R... | 492 | . | 4.7 kOhm | 1% 0.25W MF (only for trafo input) | R... | 690 | . | 4.3 kOhm | 1% 0.25W MF (only for trafo input) |
| R... | 493 | . | 100 Ohm | 1% 0.25W MF (only for trafo input) | R... | 691 | . | 1.8 kOhm | 2% 0.25W MF (only for trafo input) |
| R... | 501 | 57.11.3152 | 1.5 kOhm | 1% 0.25W MF | R... | 692 | . | 4.7 kOhm | 1% 0.25W MF (only for trafo input) |
| R... | 502 | 57.11.3392 | 3.9 kOhm | 1% 0.25W MF | R... | 693 | . | 100 Ohm | 1% 0.25W MF (only for trafo input) |
| R... | 503 | 57.11.3152 | 1.5 kOhm | 1% 0.25W MF | S... | 101 | . | 1*U | see 1.912.597.00 |
| R... | 504 | 57.11.3392 | 3.9 kOhm | 1% 0.25W MF | S... | 102 | . | 1*U | see 1.912.597.00 |
| R... | 505 | 57.11.3362 | 3.6 kOhm | 1% 0.25W MF (for trafoless input) | S... | 103 | . | 2*U | combined with variable resistor R 125 |
| R... | 506 | 57.11.3362 | 3.6 kOhm | 1% 0.25W MF (for trafoless input) | S... | 201 | . | 1*U | see 1.912.597.00 |
| R... | 507 | 58.01.8103 | 10 kOhm | 10% 0.50W PMG trimming resistor | S... | 202 | . | 1*U | see 1.912.597.00 |
| R... | 508 | 57.11.4182 | 1.8 kOhm | 5% 0.25W MF | S... | 203 | . | 2*U | combined with variable resistor R 225 |
| R... | 509 | 57.11.4103 | 10 kOhm | 2% 0.25W MF | S... | 301 | . | 1*U | see 1.912.597.00 |
| R... | 510 | 57.11.4103 | 10 kOhm | 5% 0.25W MF | S... | 302 | . | 1*U | see 1.912.597.00 |
| R... | 511 | 57.11.3392 | 3.9 kOhm | 1% 0.25W MF | S... | 303 | . | 2*U | combined with variable resistor R 325 |
| R... | 512 | 57.11.3392 | 3.9 kOhm | 1% 0.25W MF | S... | 401 | . | 1*U | see 1.912.597.00 |
| R... | 513 | 57.11.3392 | 3.9 kOhm | 1% 0.25W MF | S... | 402 | . | 1*U | see 1.912.597.00 |
| R... | 514 | 57.11.3392 | 3.9 kOhm | 1% 0.25W MF | S... | 403 | . | 2*U | combined with variable resistor R 425 |
| R... | 515 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | S... | 501 | . | 1*U | see 1.912.597.00 |
| R... | 516 | 57.11.4103 | 10 kOhm | 2% 0.25W MF | S... | 502 | . | 1*U | see 1.912.597.00 |
| R... | 517 | 57.11.4103 | 10 kOhm | 2% 0.25W MF | S... | 503 | . | 2*U | combined with variable resistor R 525 |
| R... | 518 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | S... | 601 | . | 1*U | see 1.912.597.00 |
| R... | 519 | 1.912.001.24 | 10 kOhm | 10% pos.log.variable resistor | S... | 602 | . | 1*U | see 1.912.597.00 |
| R... | 520 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | S... | 603 | . | 2*U | combined with variable resistor R 625 |
| R... | 521 | 57.11.4822 | 8.2 kOhm | 2% 0.25W MF | T... | 601 | . | . | input trafo 1:0.62 (only trafo input) |
| R... | 522 | 57.11.3362 | 3.6 kOhm | 1% 0.25W MF | XIC... | 1 | 53.03.0166 | IC-socket D1L 8 pin | |
| R... | 523 | 1.912.001.35 | 10 kOhm | 10% pos.log.variable resistor | XIC... | 2 | 53.03.0166 | IC-socket D1L 8 pin | |
| R... | 524 | . | 10 kOhm | 10% neg.log.variable resistor, see R523 St | XIC... | 3 | 53.03.0166 | IC-socket D1L 8 pin | |
| R... | 525 | 1.912.001.43 | 4.7 kOhm | 10% pos.log.variable resistor | XIC... | 4 | 53.03.0166 | IC-socket D1L 8 pin | |
| R... | 526 | . | 10 kOhm | 10% pos.log.variable resistor, see R525 St | XIC... | 5 | 53.03.0166 | IC-socket D1L 8 pin | |
| R... | 527 | . | 10 kOhm | 10% neg.log.variable resistor, see R525 St | XIC... | 6 | 53.03.0166 | IC-socket D1L 8 pin | |
| R... | 528 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | XIC... | 7 | 53.03.0166 | IC-socket D1L 8 pin | |
| R... | 529 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | XIC... | 8 | 53.03.0166 | IC-socket D1L 8 pin | |
| R... | 530 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | XIC... | 9 | 53.03.0166 | IC-socket D1L 8 pin | |
| R... | 531 | 57.11.4474 | 470 kOhm | 5% 0.25W MF | XIC... | 10 | 53.03.0166 | IC-socket D1L 8 pin | |
| R... | 532 | 57.11.4223 | 22 kOhm | 5% 0.25W MF | XIC... | 11 | 53.03.0166 | IC-socket D1L 8 pin | |
| R... | 533 | 57.11.4123 | 12 kOhm | 5% 0.25W MF | XIC... | 12 | 53.03.0166 | IC-socket D1L 8 pin | |
| R... | 534 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | | | | | |
| R... | 535 | 57.11.4391 | 390 Ohm | 5% 0.25W MF | | | | | |
| R... | 536 | 57.11.4105 | 1 MOhm | 5% 0.25W MF | | | | | |
| R... | 537 | 57.11.4105 | 1 MOhm | 5% 0.25W MF | | | | | |
| R... | 538 | 57.11.4391 | 390 Ohm | 5% 0.25W MF | | | | | |
| R... | 539 | 57.11.4223 | 22 kOhm | 5% 0.25W MF | | | | | |
| R... | 540 | 57.11.4474 | 470 kOhm | 5% 0.25W MF | | | | | |
| R... | 541 | 57.11.4474 | 470 kOhm | 5% 0.25W MF | | | | | |
| R... | 542 | 57.11.4104 | 100 kOhm | 5% 0.25W MF | | | | | |
| R... | 543 | 57.11.4105 | 1 MOhm | 5% 0.25W MF | | | | | |
| R... | 544 | 57.11.6106 | 10 MOhm | 10% 0.25W MF | | | | | |
| R... | 545 | 57.11.4332 | 3.3 kOhm | 2% 0.25W MF | | | | | |
| R... | 546 | 57.11.4332 | 3.3 kOhm | 2% 0.25W MF | | | | | |
| R... | 547 | 57.11.4332 | 3.3 kOhm | 2% 0.25W MF | | | | | |
| R... | 548 | 57.11.4332 | 3.3 kOhm | 2% 0.25W MF | | | | | |
| R... | 590 | . | 4.3 kOhm | 1% 0.25W MF (only for trafo input) | | | | | |

CE=Ceramic, CF=Carbon Film, EL=Electrolytic, MF=Metal Film, PE=Polyester, PP=Polypropylen, PS=Polystyrol

MANUFACTURER: Ra=Raytheon, Six=Siliconix, St=Studer

1.912.514.00 COMPACT (HEX) DENSITY MONITOR WM 84.02.2400

KAPITEL 6: Einschub-Module des Meterpanels 1.913. ...

INHALT

| | | |
|------|--|------------------------|
| 1. | Bus Board | 1.910.111 |
| 2.* | VU / PPM-Pegelmesser (30 LED) | 1/2CH..... 1.913.101.. |
| | | 4CH..... 1.913.321.. |
| 3.* | Bargraph-Pegelmesser (Gasplasma) | 2CH..... 1.913.111/112 |
| | | 8CH..... 1.913.411/412 |
| 4. | AUX-Pegelmesser..... | 1.913.130 |
| 5.* | Gain Reduction Meter (Zeigerinstrument)..... | 1.913.132/134 |
| 6. | Signalisations-Anzeigeeinheit..... | 1.913.140/141 |
| 7. | Test Generator..... | 1.913.150 |
| 8.* | Kompressor/Limiter/Gate..... | 1.913.155 |
| 9.* | Sammelschienenanwahl 9... 24 Kanäle..... | 1.913.160... 167 |
| 10.* | Sammelschienenanwahl 1... 24 Kanäle..... | 1.913.175... 178 |
| 11. | PFL-Verstärker | 1.913.200 |
| 12.* | Korrelator 2CH/4CH | 1.913.210/211 |
| 13.* | PPM-Zeigerinstrumente | 1.913.220/221 |
| 14.* | VU-Zeigerinstrumente | 1.913.230/231 |

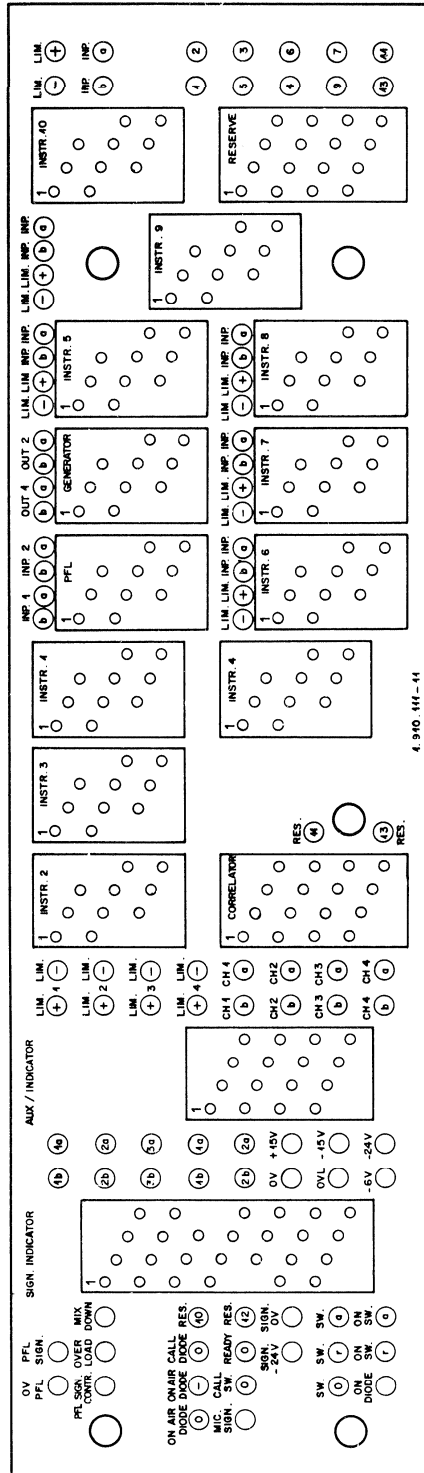
SECTION 6: Plug-in Units of the meter panel 1.913. ...

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| | | |
|------|--|------------------------|
| 1. | Bus board | 1.910.111 |
| 2.* | VU / PPM display (30 LED) | 1/2CH..... 1.913.101.. |
| | | 4CH..... 1.913.321.. |
| 3.* | Bargraph display (plasma) | 2CH..... 1.913.111/112 |
| | | 8CH..... 1.913.411/412 |
| 4. | AUX indicator..... | 1.913.130 |
| 5. | Gain Reduction Meter (pointer instrument)..... | 1.913.132/134 |
| 6. | Signalization indication unit..... | 1.913.140/141 |
| 7. | Audio generator..... | 1.913.150 |
| 8.* | Compressor/limiter/gate | 1.913.155 |
| 9.* | Bus selector 9... 24 channels | 1.913.160... 167 |
| 10.* | Bus selector 1... 24 channels | 1.913.175... 178 |
| 11. | PFL amplifier | 1.913.200 |
| 12.* | Correlator 2CH/4CH..... | 1.913.210/211 |
| 13.* | PPM (pointer instrument)..... | 1.913.220/221 |
| 14.* | VU meter (pointer instrument)..... | 1.913.230/231 |

- * Diese Beschreibungen werden kundenspezifisch bestückt.
 * These descriptions are supplied according to the customers requirements.

Distributor Board 1.910.111



4.940.111-41

| | | |
|---------------|------------------------------|-------------------|
| mh | 18.1.83 | AUDIO CONSOLE 900 |
| STUDER | Distributor Board (Lötseite) | 1.910.111 - 11 |

Level meter VU/PPM 30 LED and gain reduction meter 10 LED

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| 4. | Block diagram | 4 |
| 5. | Alignment instruction VU/PP meter | 4 |
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| | Gain reduction meter | |
| | ▪ Diagram | 9 |
| | ▪ Component layout, position list | 10 |

SCOPE OF VALIDITY

This manual applies to the following modules:

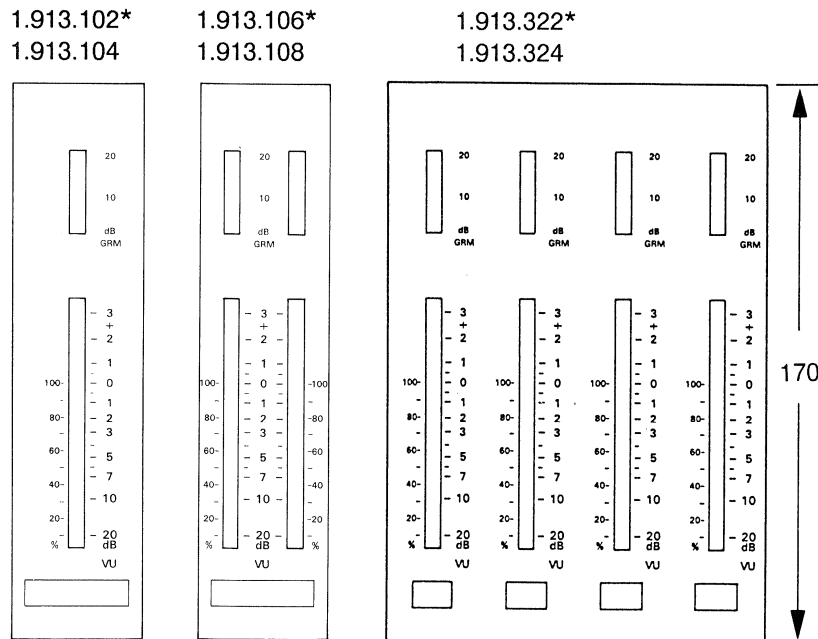
| Display | 1 Channel | 2 Channels | 4 Channels | PCB Nr. |
|----------------|------------------|-------------------|-------------------|----------------|
| PPM | 1.913.101 | 1.913.105 | 1.913.321 | 1.913.295 |
| VU | 1.913.102 | 1.913.106 | 1.913.322 | 1.913.295 |
| PPM / GRM | 1.913.103 | 1.913.107 | 1.913.323 | 1.913.295/297 |
| VU / GRM | 1.913.104 | 1.913.108 | 1.913.324 | 1.913.295/297 |

1. General

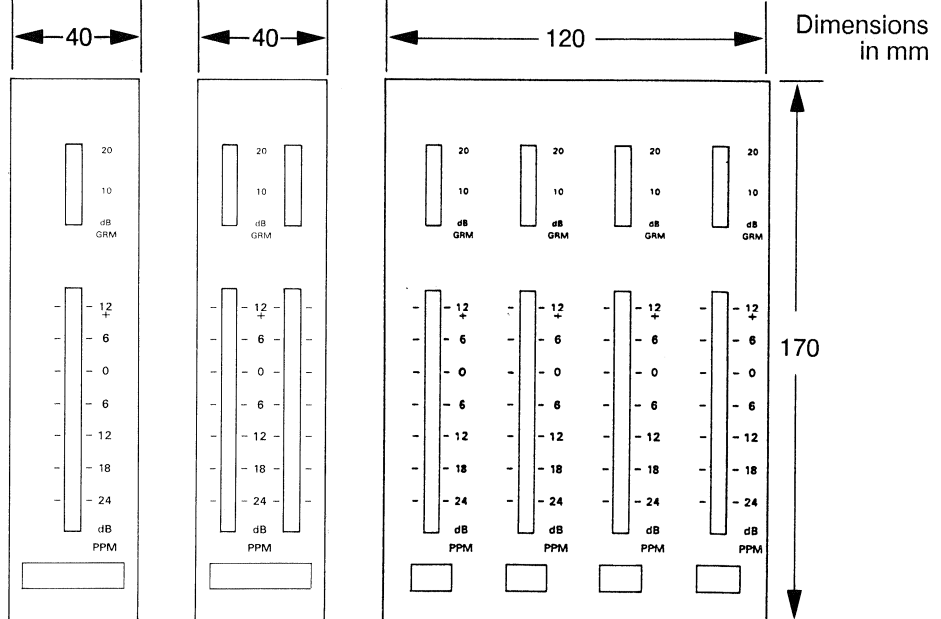
The **STUDER output meter VU-PPM 30 LED** has been developed for installation into the display panel of STUDER mixing consoles. Instruments with VU (volume unit) or PPM (peak program meter) characteristic are available. In place of the bar indication, an optional dot indication is available.

The instruments listed below are equipped with the two PCBs 1.913.295 (VU/PPM) and 1.913.297 (GRM) corresponding to the table on page 1. The circuit diagram relating to the corresponding circuit board number should be consulted.

«Volume Unit Meters»



«Peak Program Meters»



| | | |
|------------|------------|------------|
| 1.913.101* | 1.913.105* | 1.913.321* |
| 1.913.103 | 1.913.107 | 1.913.323 |

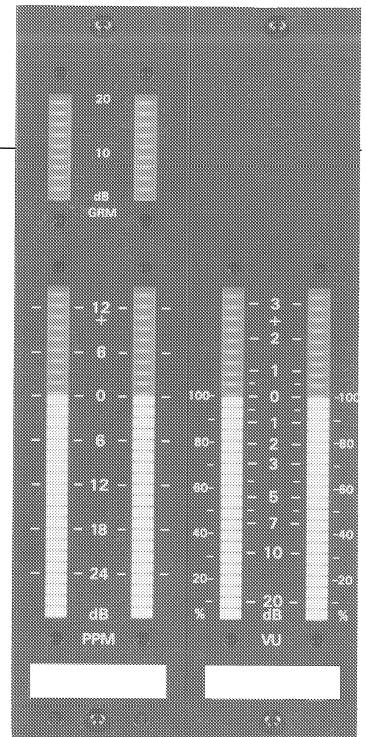
* = Version without gain reduction meter (GRM)

2. Functional description

PPM: The peak program meter is a quasi-peak value instrument with a long release time. When a signal voltage corresponding to a level of 0 dB is applied for 10 ms, the resulting indication should be -1 dB. The desired decay time to -20dB is 1.7 s.

VU-meter: The VU-meter indicates signals according to the standard defined by ANSI 1954. When a signal with a duration of 300 ms is applied, the indication should be 99% of the reference value. The rise and decay time on the VU-meter are identical. The factory set lead is 6 dB.

Gain reduction meter: When the limiter/compressor is switched on, the GRM indicates the magnitude of the gain reduction.



3. Technical data

General:

$0 \text{ dBu} \hat{=} 0.775 V_{\text{eff}}$

| | | | |
|--|-------------------|----|-----------------|
| Input sensitivity of the reference indication: | -1 dBu... +16 dBu | | |
| Input impedance | > 10 kΩ | | |
| Supply: | <u>DC ±15 V</u> | or | <u>DC +24 V</u> |
| Current consumption: Quiescent | 45mA | / | 35 mA |
| Medium load | 58mA | / | 56mA |
| Full load | 80mA | / | 80 mA |

| | | |
|------------------|--|----------------|
| VU-meter: | Indicating range: | -20VU... +30VU |
| | Accuracy: | ±1 segment |
| | (precond.: -10VU... +3VU/0°...50°C/31.5Hz...16kHz) | |
| | Response time to -1VU: | 207(±30)ms |

| | | |
|------------------|---|--------------------------|
| PP-meter: | Indicating range: | -30dBu... +15dBu |
| | Accuracy: | ±1 segment |
| | (precond.: -30dB... +15dB/0°...50°C/31.5Hz...16kHz) | |
| | Dynamic behavior: | |
| | Jumper normal: 0dB for 10 ms | →indication: -1dB ±0.5dB |
| | Jumper normal: 0dB for 3ms | →indication: -4dB ±1dB |
| | Jumper fast: 0dB for ~100µs | →indication: 1dB |
| | Decay time 0...-20dB: | 1.7(±0.3)s |

| | | |
|-----------------------------|-----------------------------------|-----------------|
| Circuit board sizes: | Height x depth, with connector: | 96 mm x 95 mm |
| | Width: | 18 mm |
| | Center between M3 mounting holes: | 85.1 mm (3.35") |

4. Block diagram

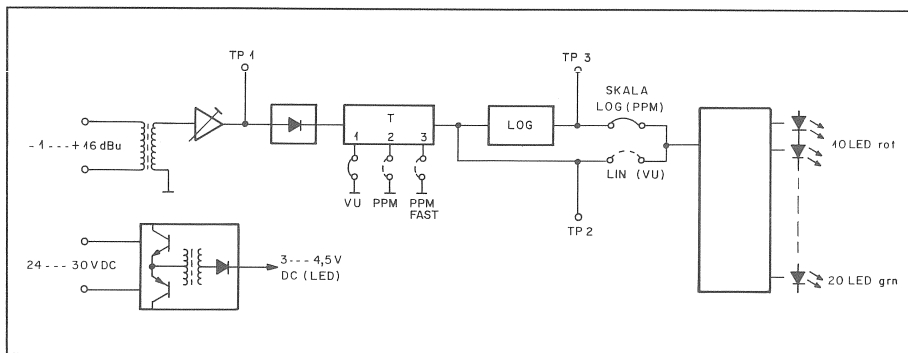


Fig. 2 VU-PPM block diagram: The settings VU/PPM/PPM fast or lin/log are established with the jumpers JS 1 and JS 2 respectively (see Fig. 3)

5. Alignment instructions VU/PP meter

PCB 1.913.295

Measuring instruments:

- AC voltmeter $R_i \geq 20 \text{ k}\Omega$
- DC voltmeter $R_i \geq 100 \text{ k}\Omega$, preferably digital VM
- Generator, 31.5Hz...16kHz, 0...16dBu; attenuator with 10dB increments.

Alignment elements

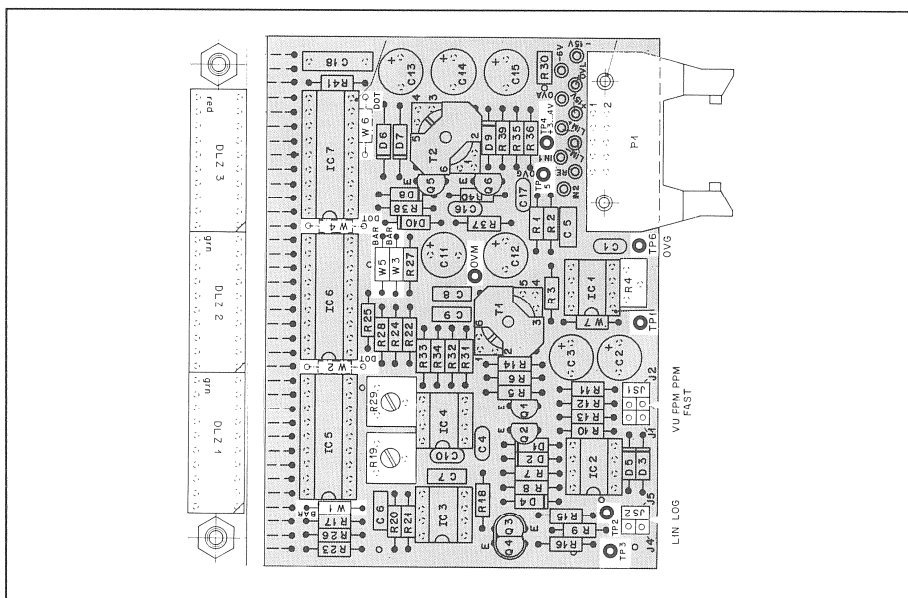


Fig. 3 Alignment elements of the VU/PPM 30 LED

Aligning the line level:

From the generator feed line level (-1dBu ... +16dBu) to the input. Align with R4 until all green LEDs are light and the red LEDs are still dark.
 [on TP3: $2.5(\pm 0.1)V$]

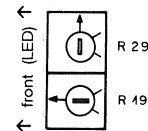
6. Maintenance instructions

PCB 1.913.295

Test input range: **Generator:** 1 kHz on input, level: -1dBu ... +16 dBu
AC VM: Hot to TP 1, cold to TP 6 (0V G)
 U_{TP1} adjustable with R4 to 290(±10)mV AC

Rectifier and indication: Both jumpers set to the VU/LIN position.
Generator: 1kHz with 0dBu level on input
 U_{TP1} : Adjust with R4 to 290(±2)mV AC. All green LEDs must be light.
DC VM: Hot to TP2, cold to TP6.
 $U_{TP2} = -380(±15)mV DC$
DC VM: Hot to TP3, cold to TP6
 $U_{TP3} = +2.575(±0.1)V DC$. All green LEDs are light.
Check: Adjust the generator level in such a way that:
 $U_{TP3} = +3.8(±0.1)V DC$. All diodes are light.
 $U_{TP3} = +0.17(±0.02)V DC$. Only the lowest green LED is light.

Logarithmation (PPM): Both jumpers are set to PPM/LOG.
Generator: 1kHz with +6dBu level on input.
 Set U_{TP2} with R4 to 1.18(±0.05V) DC.
 The two trimmers have the following basic setting:

**Alignment procedure:**

DC VM: hot to TP3, cold to TP6.

A: Align the upper value with R19. Desired: $U_{TP3} = 3.06(±0.10)V$.
 All green LEDs and 4 red LEDs are light. Indication +6dB.

B: Attenuation by 30 dB with attenuator.

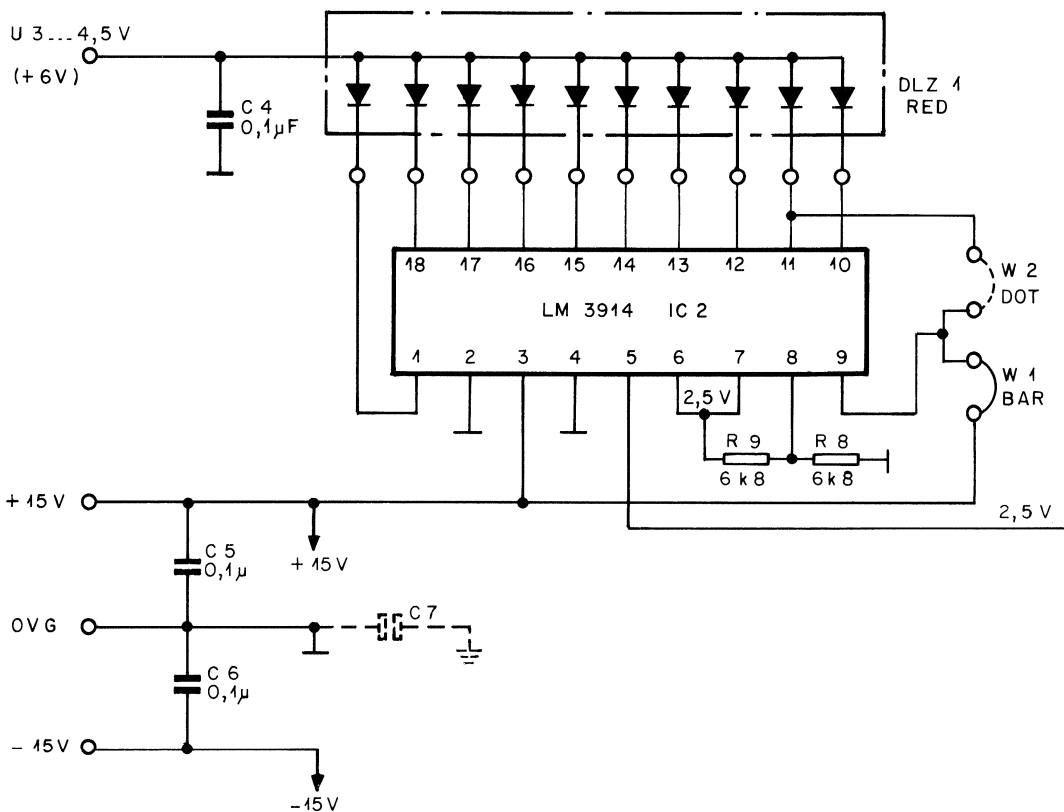
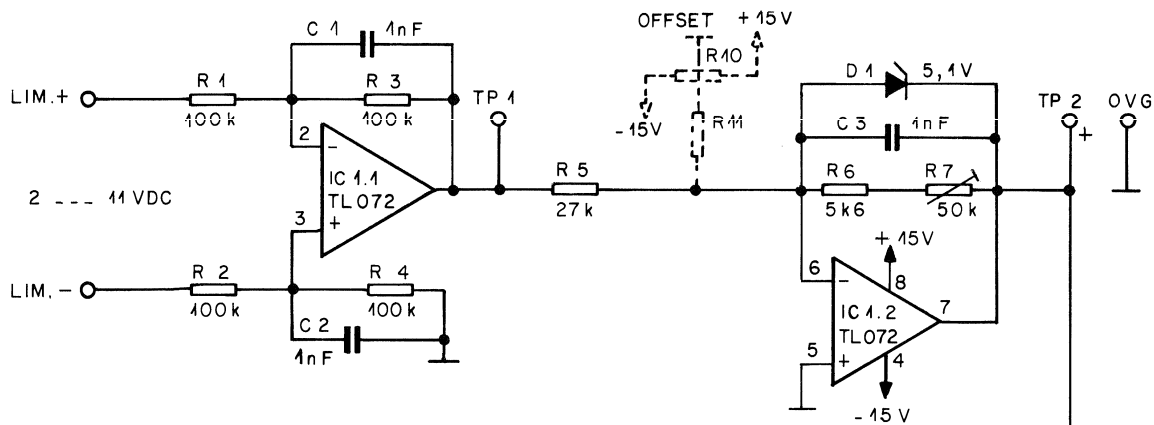
C: Align the lower value with R29. Desired: $U_{TP3} = 0.56(±0.02)V$.
 4 green LEDs are light. Indication -24 dB

Repeat the procedure A → B → C → A → ... several times.

DC/DC converter: To check, connect the DC VM hot to TP4, cold to TP5. Generator with line level on input causes all green LEDs to light.

Supply voltage: +24 V DC →TP4 = 3.1(±0.1)V
 +30 V DC →TP4 = 4.1(±0.1)V

Gain Reduction Meter 1.913.297.00

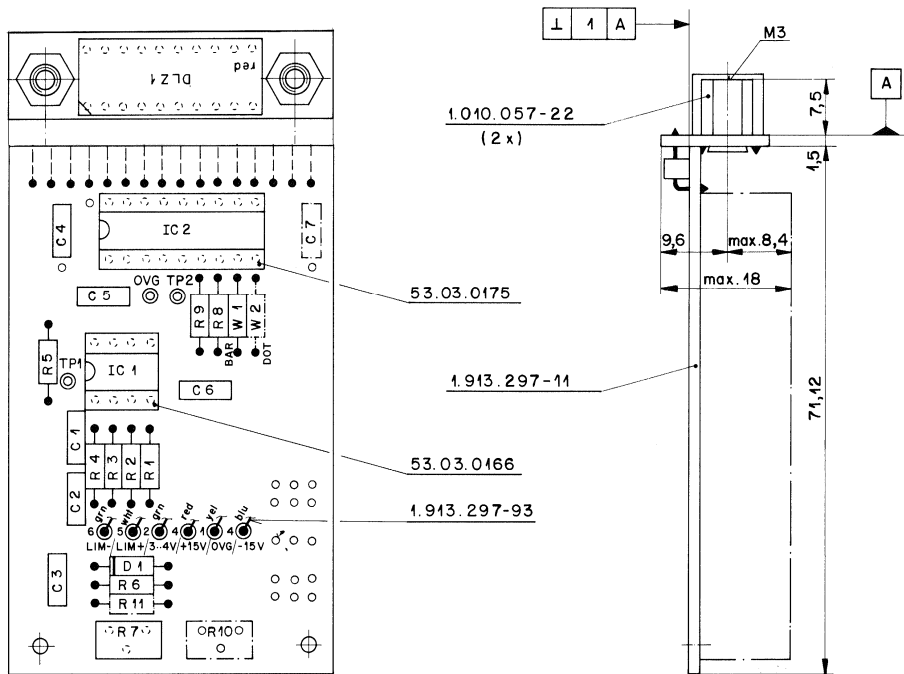


SPECIFICATIONS : UNIT WILL SUPPLIED BY VU/PPM METER 1.913.295.00 / 24V...30V
 CURRENT WILL INCREASE BY → IDLE : 10mA / LOAD : 25mA

| | | | |
|--------------------------------|------------------|-----------------|--|
| © 13.11.89 | | | |
| STUDER REGENSDORF ZÜRICH | GRM METER 10 LED | SC 1.913.297.00 | |

VU / PPM 30 LED

Gain Reduction Meter 1.913.297.00



Schilder 1.913.297-04 / 43.01.0108
aufgeklebt nach Fabrikationsmuster.

| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. | IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|-----------|---------|--------------|----------|-----------------------------|--------|------|---------|----------|-------|-----------------------------|--------|
| C... | 01 | 59.06.5102 | 1 nF | 5% PE | | | | | | | |
| C... | 02 | 59.06.5102 | 1 nF | 5% PE | | | | | | | |
| C... | 03 | 59.06.5102 | 1 nF | 5% PE | | | | | | | |
| C... | 04 | 59.06.0104 | 0.1 uF | PE | | | | | | | |
| C... | 05 | 59.06.0104 | 0.1 uF | PE | | | | | | | |
| C... | 06 | 59.06.0104 | 0.1 uF | PE | | | | | | | |
| D... | 01 | 50.04.1112 | ZPD 5.1 | V 5W 5.1V SI | any | | | | | | |
| DLZ... | 01 | 50.04.2150 | 10 LED | DISPLAY RED | HP | | | | | | |
| IC... | 01 | 50.09.0101 | TL 072 | dual op. amp. | NS, TI | | | | | | |
| IC... | 02 | 50.11.0119 | LM3914 | led bar/dot lin. | NS | | | | | | |
| MP... | 01 | 1.913.297.11 | 1 pcs | GRM METER 10 LED PCB | St | | | | | | |
| MF... | 02 | 1.010.057.22 | 2 pcs | Hexagon post NSM7.4 | | | | | | | |
| MF... | 03 | 53.03.0166 | 1 pcs | 8-pin IC-socket | | | | | | | |
| MF... | 04 | 53.03.0175 | 1 pcs | 18-pin IC-socket | | | | | | | |
| MF... | 05 | 54.11.0132 | 16 pcs | connection | | | | | | | |
| MF... | 06 | 54.02.0471 | 9 pcs | plug (Rund - Steckstift) | | | | | | | |
| MF... | 07 | 1.913.297.93 | Li-Li | 6 cable connections | St | | | | | | |
| R... | 01 | 57.11.3104 | 100 kOhm | 1% 0.25W | | | | | | | |
| R... | 02 | 57.11.3104 | 100 kOhm | 1% 0.25W | | | | | | | |
| R... | 03 | 57.11.3104 | 100 kOhm | 1% 0.25W | | | | | | | |
| R... | 04 | 57.11.3104 | 100 kOhm | 1% 0.25W | | | | | | | |
| (00) R... | 05 | 57.11.3473 | 47 kOhm | 0.25W | | | | | | | |
| (01) R... | 05 | 57.11.3273 | 27 kOhm | 0.25W | | | | | | | |
| (00) R... | 06 | 57.11.3103 | 10 kOhm | 0.25W | | | | | | | |
| (00) R... | 06 | 57.11.3562 | 5.6 kOhm | 0.25W | | | | | | | |
| R... | 07 | 58.01.9503 | 50 kOhm | 10% 0.50W trim | | | | | | | |
| R... | 08 | 57.11.3682 | 6.8 kOhm | 1% 0.25W | | | | | | | |
| R... | 09 | 57.11.3682 | 6.8 kOhm | 1% 0.25W | | | | | | | |
| W... | 01 | 57.11.3000 | | Wire link BAR, W2 DOT | | | | | | | |

ORIG 88/10/31 (01) 89/11/22

VU/PPM LED Level Meter Modules

Contents

1 General 2

2 Functional Description 3

3 Technical Specifications..... 3

4 Block Diagram 4

5 Alignment..... 4

| Diagrams | PCB No. | Diagram | Component Layout | Parts List |
|------------------------|--------------|--------------|------------------|--------------|
| VU/PPM 30 LED with GRM | 1.913.293.00 | 1.913.293.00 | 1.913.293.00 | 1.913.293.00 |
| VU/PPM 30 LED | 1.913.294.00 | | | 1.913.294.00 |
| LED PPM Meter (10 LED) | 1.913.291.00 | 1.913.291.00 | 1.913.291.00 | 1.913.291.00 |

Scope of Validity

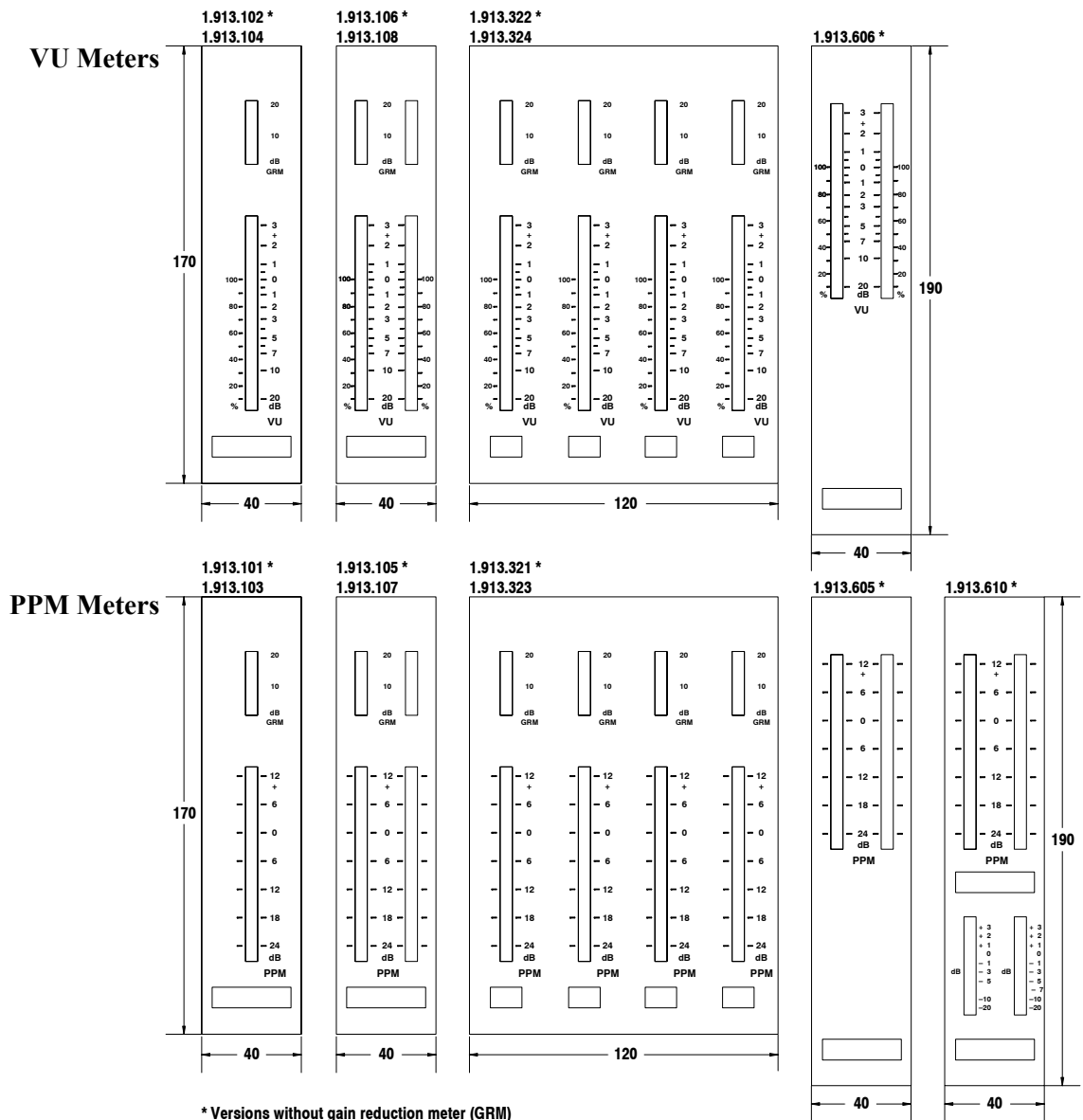
These instructions apply to the following assemblies:

| Display | 1 Channel, dark front panel | 2 Channels, dark front panel | 2 Channels, bright front panel | 4 Channels, dark front panel | PCB No. |
|--|--------------------------------|---------------------------------|-----------------------------------|---------------------------------|-------------------------|
| PPM | 1.913.101 | 1.913.105 | 1.913.605 | 1.913.321 | 1.913.294 |
| VU | 1.913.102 | 1.913.106 | 1.913.606 | 1.913.322 | 1.913.294 |
| PPM w. GRM | 1.913.103 | 1.913.107 | - | 1.913.323 | 1.913.293 |
| VU w. GRM | 1.913.104 | 1.913.108 | - | 1.913.324 | 1.913.293 |
| PPM w. additional small level meter | - | - | 1.913.610 | - | 1.913.294, 1.913.291 |

1 General

The Level Meter units with 30 LEDs have been developed for installation in the display panel of Studer Mixing Consoles. Instruments with VU (volume unit) and PPM (peak program meter) characteristics, with or without gain reduction meter (GRM) are available. Instead of bar-graph indication, also dot indication is optionally available.

The instruments listed below are equipped with the PCBs 1.913.294 (VU or PPM) or 1.913.293 (VU or PPM with gain reduction meter) according to the table above. Please consult the circuit diagram relating to the corresponding assembly number.



2 Functional Description

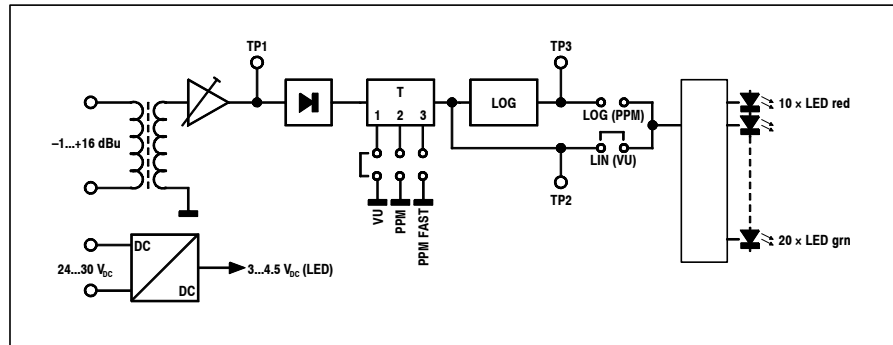
- PPM:** The peak program meter is a quasi-peak value instrument with long decay time. When a signal voltage corresponding to a level of 0 dB is applied for 10 ms, the resulting indication is -1 dB. Decay time (0 to -20 dB) is 1.7 s.
- VU Meter:** The VU meter indicates signals according to the standard defined by ANSI 1954. When a signal with a duration of 300 ms is applied, the indication is 99% of the reference value. Rise and decay times on a VU meter are identical. The factory-set lead is +6 dB.
- Gain Reduction Meter:** When the limiter/compressor is switched on, the GRM indicates the magnitude of the gain reduction.
- Small PPM:** The assembly 1.913.610 contains an additional small PPM meter with 10 LEDs, normally used for AUX level indication.
- Bar/Dot Display Selection:** On each of the PCBs, selection of bar or dot display mode is provided. All level meters are factory-set to bar display mode; dot display mode is unusual and recommended only if extra-low current consumption is required.

| PCB No. | Bar Display Mode (Default Factory Setting) | Dot Display Mode |
|--|--|--|
| 1.913.293.00 (VU/PPM 30 LED w. GRM) | insert: R3, R8, R10, R15 remove: R4, R9, R11, R14 | insert: R4, R9, R11, R14 remove: R3, R8, R10, R15 |
| 1.913.294.00 (VU/PPM 30 LED) | insert: R3, R8, R10 remove: R4, R9, R11 | insert: R4, R9, R11 remove: R3, R8, R10 |
| 1.913.291.00 (PPM 10 LED) | insert jumper JS201 | remove jumper JS201 |

3 Technical Specifications

| General: | 0 dBu \pm 0.775 V _{rms} | | |
|---|--|---|---------------------|
| | Sensitivity for reference indication | -1 dBu ... +16 dBu | |
| Input impedance | >10 k Ω | | |
| Supply | | \pm 15 V _{DC} | +24 V _{DC} |
| Current consumption without GRM (p. ch., bar display mode) | Quiescent: | 45 mA | 35 mA |
| | Full load: | 80 mA | 80 mA |
| Current consumption with GRM (p. ch., bar display mode) | Quiescent: | 55 mA | 45 mA |
| | Full load: | 105 mA | 105 mA |
| VU Meter (1.913.293): | Indication range | -20 VU ... +3 VU | |
| | Accuracy (conditions: -10...+3 VU, 0...+50° C, 31.5 Hz...16 kHz) | \pm 1 segment | |
| | Response time to -1 VU | 207 ms \pm 30 ms | |
| PPM (1.913.293): | Indication range | -30 dBu ... +15 dBu | |
| | Accuracy (conditions: -30...+15 VU, 0...+50° C, 31.5 Hz...16 kHz) | \pm 1 segment | |
| | Dynamic behavior | | |
| | Jumper "normal" 0 dB, 10 ms burst | Indication: | -1 dB \pm 0.5 dB |
| | 0 dB, 3 ms burst | Indication: | -4 dB \pm 1 dB |
| | Jumper "fast" 0 dB, 100 μ s burst | Indication: | -1 dB |
| Decay time: 0...-20 dB | 1.7 s \pm 0.3 s | | |
| GRM (1.913.294): | Input voltage range | min. control: 0 V ... +2 V _{DC} | |
| | | max. control: 0 V ... +11 V _{DC} | |
| Dimensions: | 1- and 2-channel units, dark front panel (w x h x d) | | 40 x 170 x 97 mm |
| | 2-channel units, bright front panel (w x h x d) | | 40 x 190 x 97 mm |
| | 4-channel units, dark front panel (w x h x d) | | 120 x 170 x 97 mm |

4 VU/PPM Meter Block Diagram



VU/PPM meter block diagram: VU/PPM/PPM FAST and LIN/LOG settings are established with jumpers J2 and J3, respectively.

5 Alignment

Required Instruments: AC voltmeter, $R_i \geq 20 \text{ k}\Omega$
 DC voltmeter, $R_i \geq 100 \text{ k}\Omega$
 AF generator, 31.5 Hz ... 16 kHz, 0...16 dBu; attenuator with 10 dB increments.

DC/DC Converter Check: Connect DC voltmeter to TP5 (hot) and TP4 (ground). Feed generator output signal with line level (-1...+16 dBu) to the input (pins 5 and 7 of P1, or TP8 and TP9); all green LEDs are on.
 DC voltmeter reading should be:
 $3.1 \pm 0.1 \text{ V}_{\text{DC}}$ (supply: +24 V_{DC}),
 $4.1 \pm 0.1 \text{ V}_{\text{DC}}$ (supply: +30 V_{DC}).

Input Range: Feed generator output signal with line level (1 kHz, -1...+16 dBu) to the input (pins 5 and 7 of P1, or TP8 and TP9).
 Connect AC voltmeter to test points TP1 (hot) and TP4 (ground). Reading must be adjustable with RA3 to $290 \pm 10 \text{ mV}_{\text{AC}}$ for the complete input level range.

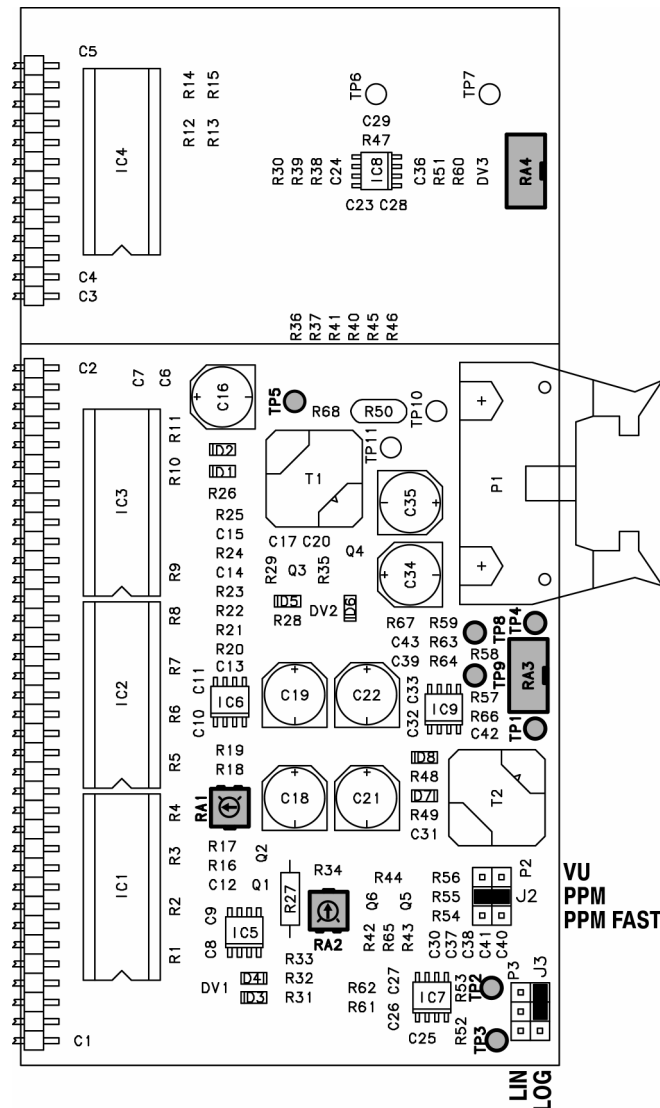
Line Level: Feed generator output signal with your line level (1 kHz, range: -1...+16 dBu) to the input (pins 5 and 7 of P1, or TP8 and TP9).
 Adjust RA3 until all green LEDs are on. The red LEDs must be dark.
 (TP3: $2.5 \pm 0.1 \text{ V}_{\text{DC}}$).

Rectifier and Indication: Set J2 to VU, J3 to LIN.
 Feed generator output signal with your line level (1 kHz, usually 0 dBu) to the input (pins 5 and 7 of P1, or TP8 and TP9).
 Connect AC voltmeter to test points TP1 (hot) and TP4 (ground). Adjust with RA3 to $290 \pm 10 \text{ mV}_{\text{AC}}$. All green LEDs must be on.
 Connect DC voltmeter to test points TP2 (hot) and TP4 (ground); the meter should read $-380 \pm 15 \text{ mV}_{\text{DC}}$.
 Connect DC voltmeter to test points TP3 (hot) and TP4 (ground); the meter should read $+2.575 \pm 0.100 \text{ V}_{\text{DC}}$. All green LEDs must be on.
Check: Set generator output for a DC voltmeter reading of $3.8 \pm 0.1 \text{ V}_{\text{DC}}$. All LEDs must be on. Set generator output for a DC voltmeter reading of $170 \pm 20 \text{ mV}_{\text{DC}}$. Only the lowest LED must be on.

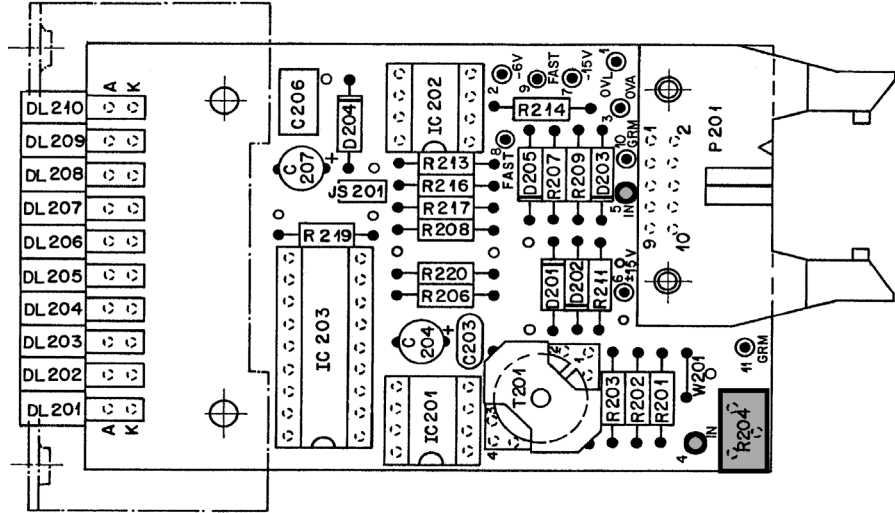
Log Converter (PPM only): Set J2 to PPM, J3 to LOG.
 Feed generator output signal (1 kHz, +6 dBu) to the input (pins 5 and 7 of P1, or TP8 and TP9).
 Connect DC voltmeter to test points TP2 (hot) and TP4 (ground). Adjust with RA3 to $1.18 \pm 0.05 V_{DC}$.
 RA1 and RA2: Basic setting according to the arrows in the diagram below.
 Procedure:

1. Upper value setting: Adjust with RA2 to $3.06 \pm 0.10 V_{DC}$. All green LEDs and four red LEDs must be on (+6 dB indication).
2. Set generator output to -24 dBu (i.e., attenuate the +6 dBu setting from above by 30 dB).
3. Lower value setting: Adjust with RA1 to $560 \pm 20 mV_{DC}$. Only the four lowest green LEDs must be on (-24 dB indication).
4. These two settings are interdependent, therefore repeat steps 1...3 several times.

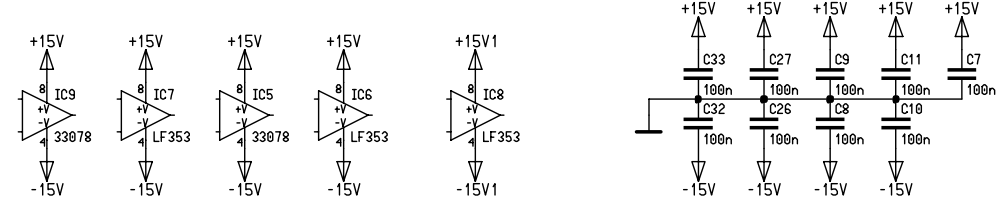
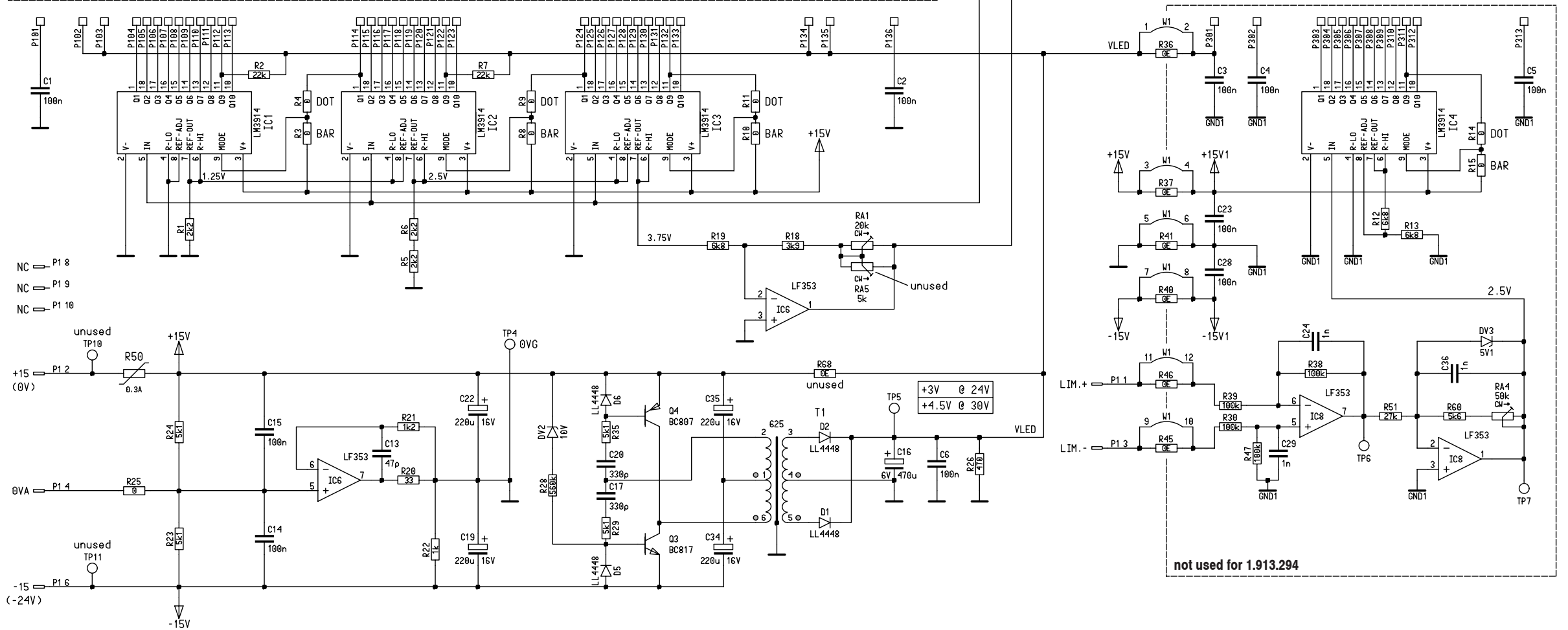
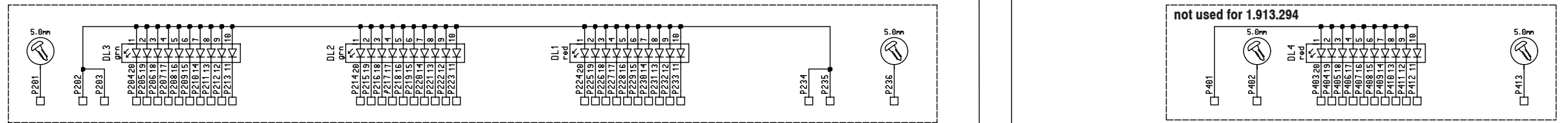
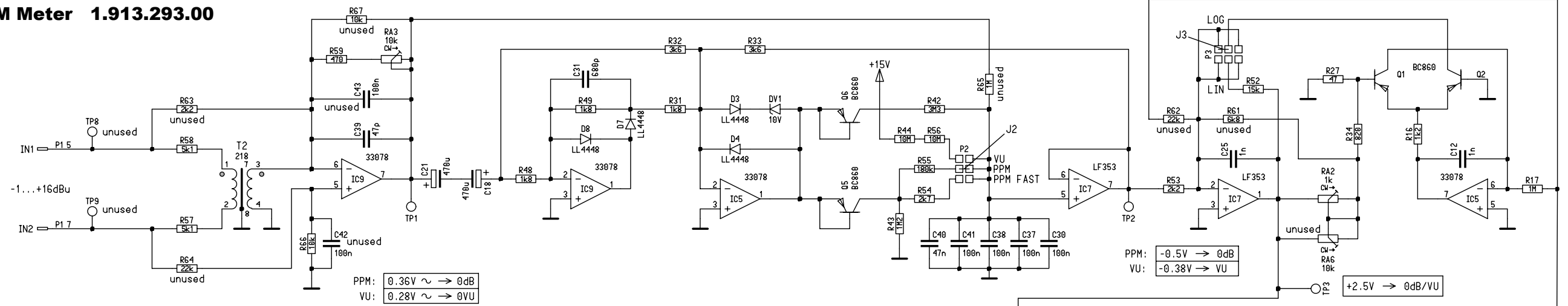
GRM (if included): Connect the Meter Unit to the console.
 Feed a test signal via an input channel. Set the level on the master output to nominal level +20 dB.
 Switch the limiter on.
 Align with RA4 to a GRM indication of 20 dB.



Line Level for 1.913.291: Feed generator output signal with your line level (1 kHz, range: +6...+15 dBu) to the input (pins 5 and 7 of P201, or TP5 and TP4). Adjust R204 until all green LEDs are on. The red LEDs must be dark.

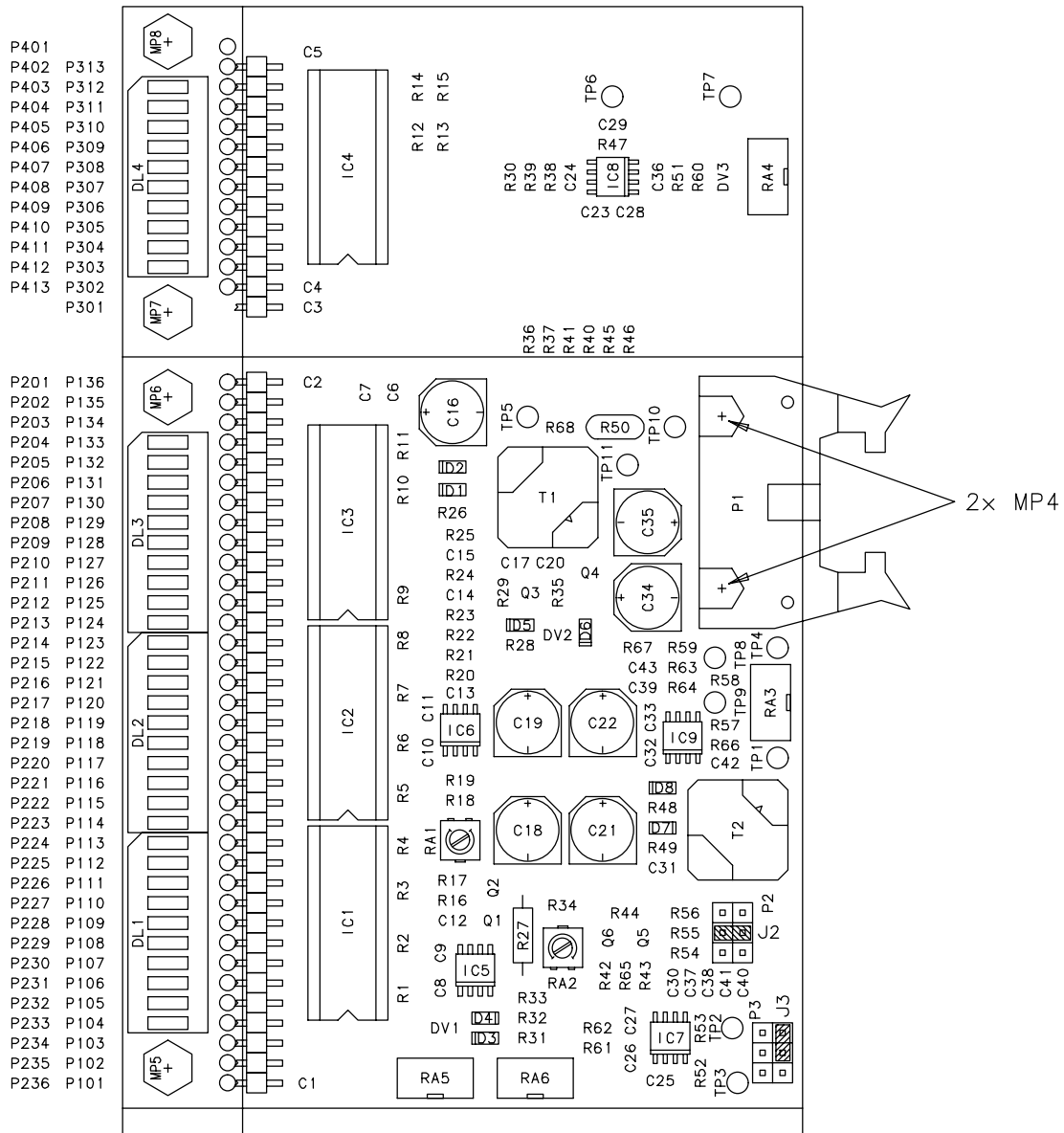
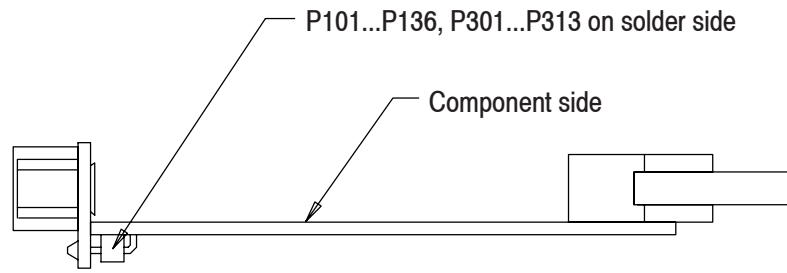


VU/PPM/GRM Meter 1.913.293.00



| | | | | | | | | | |
|------------------|------------|----|------------|----|-----------------|--|--|--|--|
| Erstellt | 29.10.2001 | ZT | 29.01.2002 | ZT | | | | | |
| STUDER | | | | | | | | | |
| VU/PPM/GRM METER | | | | | SC 1.913.293.00 | | | | |
| PAGE 1 OF 1 | | | | | | | | | |

VU/PPM/GRM Meter 1.913.293.00



| | | | | | | | | |
|---|--|---------------------------|----------------------------------|------------------------------------|--------------|------------------|--------------|-------|
| Accompanying documents: Zugehörige Unterlagen: PL | General tolerance: Freimasstoleranz: . | Scale: Masstab: 1:1 | Edition Ausgabe 29.10.2001 | ZT | ML | HW | 0 | |
| Substitute for: Ersatz fuer: | | | Page: Seite: 1 / 1 | Date Datum | Visa Gez. | Checked Gepr. | Seen Ges. | Index |
| STUDER REGENSDORF | Description: Benennung: VU/PPM/GRM METER , ESE | | Z | Number: Nummer: 1.913.293.00 | | | | |

VU/PPM/GRM Meter 1.913.293.00 (4)

| Idx. Pos. | Part No. | Qty. | Type/Val. | Description |
|-----------|--------------|-------|-----------|--------------------------------|
| 0 C 1 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 C 2 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 C 3 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 C 4 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 C 5 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 C 6 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 C 7 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 C 8 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 C 9 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 C 10 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 C 11 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 C 12 | 59.60.2373 | 1 pce | 1n0 | CER 50V, 5%, COG, 0805 |
| 0 C 13 | 59.60.2241 | 1 pce | 47p | CER 50V, 5%, COG, 0603 |
| 0 C 14 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 C 15 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 C 16 | 59.68.0033 | 1 pce | 470u | EL 6V, 8.0*10.7 |
| 0 C 17 | 59.60.2361 | 1 pce | 330p | CER 50V, 5%, COG, 0805 |
| 0 C 18 | 59.68.0033 | 1 pce | 470u | EL 6V, 8.0*10.7 |
| 0 C 19 | 59.68.0073 | 1 pce | 220u | EL 16V, 8.0*10.7 |
| 0 C 20 | 59.60.2361 | 1 pce | 330p | CER 50V, 5%, COG, 0805 |
| 0 C 21 | 59.68.0033 | 1 pce | 470u | EL 6V, 8.0*10.7 |
| 0 C 22 | 59.68.0073 | 1 pce | 220u | EL 16V, 8.0*10.7 |
| 0 C 23 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 C 24 | 59.60.2373 | 1 pce | 1n0 | CER 50V, 5%, COG, 0805 |
| 0 C 25 | 59.60.2373 | 1 pce | 1n0 | CER 50V, 5%, COG, 0805 |
| 0 C 26 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 C 27 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 C 28 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 C 29 | 59.60.2373 | 1 pce | 1n0 | CER 50V, 5%, COG, 0805 |
| 0 C 30 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 C 31 | 59.60.2369 | 1 pce | 680p | CER 50V, 5%, COG, 0805 |
| 0 C 32 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 C 33 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 C 34 | 59.68.0073 | 1 pce | 220u | EL 16V, 8.0*10.7 |
| 0 C 35 | 59.68.0073 | 1 pce | 220u | EL 16V, 8.0*10.7 |
| 0 C 36 | 59.60.2373 | 1 pce | 1n0 | CER 50V, 5%, COG, 0805 |
| 0 C 37 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 C 38 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 C 39 | 59.60.2241 | 1 pce | 47p | CER 50V, 5%, COG, 0603 |
| 0 C 40 | 59.60.3333 | 1 pce | 47n | CER 50V, 10%, X7R, 0805 |
| 0 C 41 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 D 1 | 50.60.8001 | 1 pce | 4448 | 200mA 75V 4ns SOD 80 |
| 0 D 2 | 50.60.8001 | 1 pce | 4448 | 200mA 75V 4ns SOD 80 |
| 0 D 3 | 50.60.8001 | 1 pce | 4448 | 200mA 75V 4ns SOD 80 |
| 0 D 4 | 50.60.8001 | 1 pce | 4448 | 200mA 75V 4ns SOD 80 |
| 0 D 5 | 50.60.8001 | 1 pce | 4448 | 200mA 75V 4ns SOD 80 |
| 0 D 6 | 50.60.8001 | 1 pce | 4448 | 200mA 75V 4ns SOD 80 |
| 0 D 7 | 50.60.8001 | 1 pce | 4448 | 200mA 75V 4ns SOD 80 |
| 0 D 8 | 50.60.8001 | 1 pce | 4448 | 200mA 75V 4ns SOD 80 |
| 0 DL 1 | 50.04.2150 | 1 pce | | 10*LED-Bargraf rot diffus |
| 0 DL 2 | 50.04.2161 | 1 pce | GRN | DLZ MV 54 164,LTA1000G 10*D GN |
| 0 DL 3 | 50.04.2161 | 1 pce | GRN | DLZ MV 54 164,LTA1000G 10*D GN |
| 0 DL 4 | 50.04.2150 | 1 pce | | 10*LED-Bargraf rot diffus |
| 0 DV 1 | 50.60.9017 | 1 pce | 10V | 5%, 0.2W, SOT 23 |
| 0 DV 2 | 50.60.9017 | 1 pce | 10V | 5%, 0.2W, SOT 23 |
| 0 DV 3 | 50.60.9010 | 1 pce | 5V1 | 5%, 0.2W, SOT 23 |
| 4 DV 4 | 50.04.1112 | 1 pce | 5V1 | Zener, 5%, 0.5W, DO-35 |
| 0 IC 1 | 50.11.0119 | 1 pce | | LM3914 |
| 0 IC 2 | 50.11.0119 | 1 pce | | IC LM 3914 N, |
| 0 IC 3 | 50.11.0119 | 1 pce | | IC LM 3914 N, |
| 0 IC 4 | 50.11.0119 | 1 pce | | IC LM 3914 N, |
| 0 IC 5 | 50.61.0204 | 1 pce | | MC33078 |
| 0 IC 6 | 50.61.0207 | 1 pce | | LF353 |
| 3 IC 7 | 50.61.0209 | 1 pce | | LF412 |
| 0 IC 8 | 50.61.0207 | 1 pce | | LF353 |
| 1 IC 9 | 50.61.0204 | 1 pce | | MC33078 |
| 0 J 2 | 54.01.0021 | 1 pce | | Jumper |
| 0 J 3 | 54.01.0021 | 1 pce | | Jumper |
| 0 MP 1 | 1.913.293.11 | 1 pce | | VU/PPM/GRM METER PCB |
| 0 MP 2 | 1.913.293.10 | 1 pce | | NR.-ETIKETTE 5 * 20 |
| 0 MP 3 | 43.01.0108 | 1 pce | | Label |
| 0 MP 4 | 28.99.0119 | 2 pcs | | ROHRNIETE D 2.5*0.15* 9 |
| 0 MP 5 | 1.010.057.22 | 1 pce | | M3*7.4 |
| 0 MP 6 | 1.010.057.22 | 1 pce | | M3*7.4 |
| 0 MP 7 | 1.010.057.22 | 1 pce | | M3*7.4 |
| 0 MP 8 | 1.010.057.22 | 1 pce | | M3*7.4 |
| 4 MP 9 | 43.10.0113 | 1 pce | | D |
| 0 P 1 | 54.14.2011 | 1 pce | | 10p |
| 0 P 2 | 54.11.0136 | 1 pce | | 2*3p |
| 0 P 3 | 54.11.0136 | 1 pce | | 2*3p |
| 0 P 102 | 54.11.0125 | 1 pce | | 1p |
| 0 P 103 | 54.11.0125 | 1 pce | | 1p |
| 0 P 104 | 54.11.0125 | 1 pce | | 1p |
| 0 P 105 | 54.11.0125 | 1 pce | | 1p |
| 0 P 106 | 54.11.0125 | 1 pce | | 1p |
| 0 P 107 | 54.11.0125 | 1 pce | | 1p |
| 0 P 108 | 54.11.0125 | 1 pce | | 1p |
| 0 P 109 | 54.11.0125 | 1 pce | | 1p |
| 0 P 110 | 54.11.0125 | 1 pce | | 1p |
| 0 P 111 | 54.11.0125 | 1 pce | | 1p |
| 0 P 112 | 54.11.0125 | 1 pce | | 1p |
| 0 P 113 | 54.11.0125 | 1 pce | | 1p |
| 0 P 114 | 54.11.0125 | 1 pce | | 1p |
| 0 P 115 | 54.11.0125 | 1 pce | | 1p |
| 0 P 116 | 54.11.0125 | 1 pce | | 1p |
| 0 P 117 | 54.11.0125 | 1 pce | | 1p |
| 0 P 118 | 54.11.0125 | 1 pce | | 1p |
| 0 P 119 | 54.11.0125 | 1 pce | | 1p |
| 0 P 120 | 54.11.0125 | 1 pce | | 1p |
| 0 P 121 | 54.11.0125 | 1 pce | | 1p |
| 0 P 122 | 54.11.0125 | 1 pce | | 1p |
| 0 P 123 | 54.11.0125 | 1 pce | | 1p |

| Idx. Pos. | Part No. | Qty. | Type/Val. | Description |
|-----------|--------------|-------|-----------|------------------------|
| 0 P 124 | 54.11.0125 | 1 pce | 1p | Pin, 1reihiig, winkel |
| 0 P 125 | 54.11.0125 | 1 pce | 1p | Pin, 1reihiig, winkel |
| 0 P 126 | 54.11.0125 | 1 pce | 1p | Pin, 1reihiig, winkel |
| 0 P 127 | 54.11.0125 | 1 pce | 1p | Pin, 1reihiig, winkel |
| 0 P 128 | 54.11.0125 | 1 pce | 1p | Pin, 1reihiig, winkel |
| 0 P 129 | 54.11.0125 | 1 pce | 1p | Pin, 1reihiig, winkel |
| 0 P 130 | 54.11.0125 | 1 pce | 1p | Pin, 1reihiig, winkel |
| 0 P 131 | 54.11.0125 | 1 pce | 1p | Pin, 1reihiig, winkel |
| 0 P 132 | 54.11.0125 | 1 pce | 1p | Pin, 1reihiig, winkel |
| 0 P 133 | 54.11.0125 | 1 pce | 1p | Pin, 1reihiig, winkel |
| 0 P 134 | 54.11.0125 | 1 pce | 1p | Pin, 1reihiig, winkel |
| 0 P 135 | 54.11.0125 | 1 pce | 1p | Pin, 1reihiig, winkel |
| 0 P 136 | 54.11.0125 | 1 pce | 1p | Pin, 1reihiig, winkel |
| 0 P 301 | 54.11.0125 | 1 pce | 1p | Pin, 1reihiig, winkel |
| 0 P 302 | 54.11.0125 | 1 pce | 1p | Pin, 1reihiig, winkel |
| 0 P 303 | 54.11.0125 | 1 pce | 1p | Pin, 1reihiig, winkel |
| 0 P 304 | 54.11.0125 | 1 pce | 1p | Pin, 1reihiig, winkel |
| 0 P 305 | 54.11.0125 | 1 pce | 1p | Pin, 1reihiig, winkel |
| 0 P 306 | 54.11.0125 | 1 pce | 1p | Pin, 1reihiig, winkel |
| 0 P 307 | 54.11.0125 | 1 pce | 1p | Pin, 1reihiig, winkel |
| 0 P 308 | 54.11.0125 | 1 pce | 1p | Pin, 1reihiig, winkel |
| 0 P 309 | 54.11.0125 | 1 pce | 1p | Pin, 1reihiig, winkel |
| 0 P 310 | 54.11.0125 | 1 pce | 1p | Pin, 1reihiig, winkel |
| 0 P 311 | 54.11.0125 | 1 pce | 1p | Pin, 1reihiig, winkel |
| 0 P 312 | 54.11.0125 | 1 pce | 1p | Pin, 1reihiig, winkel |
| 0 P 313 | 54.11.0125 | 1 pce | 1p | Pin, 1reihiig, winkel |
| 0 Q 1 | 50.60.1002 | 1 pce | | BC860C |
| 0 Q 2 | 50.60.1002 | 1 pce | | BC860C |
| 0 Q 3 | 50.60.0050 | 1 pce | | BC817-25 |
| 0 Q 4 | 50.60.1050 | 1 pce | | BC807-25 |
| 0 Q 5 | 50.60.1002 | 1 pce | | BC860C |
| 0 Q 6 | 50.60.1002 | 1 pce | | BC860C |
| 0 R 1 | 57.60.1222 | 1 pce | | 2k2 |
| 0 R 2 | 57.60.1223 | 1 pce | | 22k |
| 0 R 3 | 57.60.1000 | 1 pce | | 0R0 |
| 0 R 4 | not used | 1 pce | | 0R0 |
| 0 R 5 | 57.60.1222 | 1 pce | | 2k2 |
| 0 R 6 | 57.60.1222 | 1 pce | | 2k2 |
| 0 R 7 | 57.60.1223 | 1 pce | | 22k |
| 0 R 8 | 57.60.1000 | 1 pce | | 0R0 |
| 0 R 9 | not used | 1 pce | | 0R0 |
| 0 R 10 | 57.60.1000 | 1 pce | | 0R0 |
| 0 R 11 | not used | 1 pce | | 0R0 |
| 0 R 12 | 57.60.1682 | 1 pce | | 6k8 |
| 0 R 13 | 57.60.1682 | 1 pce | | 6k8 |
| 0 R 14 | not used | 1 pce | | 0R0 |
| 0 R 15 | 57.60.1000 | 1 pce | | 0R0 |
| 0 R 16 | 57.60.1122 | 1 pce | | 1k2 |
| 0 R 17 | 57.60.1105 | 1 pce | | 1M0 |
| 0 R 18 | 57.60.1392 | 1 pce | | 3k9 |
| 0 R 19 | 57.60.1682 | 1 pce | | 6k8 |
| 0 R 20 | 57.60.1330 | 1 pce | | 33R |
| 0 R 21 | 57.60.1122 | 1 pce | | 1k2 |
| 0 R 22 | 57.60.1102 | 1 pce | | 1k0 |
| 0 R 23 | 57.60.1512 | 1 pce | | 5k1 |
| 0 R 24 | 57.60.1512 | 1 pce | | 5k1 |
| 2 R 25 | not used | 1 pce | | 0R0 |
| 0 R 26 | 57.60.1471 | 1 pce | | 470R |
| 0 R 27 | 57.99.0252 | 1 pce | | 47 |
| 0 R 28 | 57.60.1564 | 1 pce | | 560k |
| 0 R 29 | 57.60.1512 | 1 pce | | 5k1 |
| 0 R 30 | 57.60.1104 | 1 pce | | 100k |
| 0 R 31 | 57.60.1182 | 1 pce | | 1k8 |
| 0 R 32 | 57.60.1362 | 1 pce | | 3k6 |
| 0 R 33 | 57.60.1362 | 1 pce | | 3k6 |
| 0 R 34 | 57.60.1821 | 1 pce | | 820R |
| 0 R 35 | 57.60.1512 | 1 pce | | 5k1 |
| 0 R 36 | 57.60.1000 | 1 pce | | 0R0 |
| 0 R 37 | 57.60.1000 | 1 pce | | 0R0 |
| 0 R 38 | 57.60.1104 | 1 pce | | 100k |
| 0 R 39 | 57.60.1104 | 1 pce | | 100k |
| 0 R 40 | 57.60.1000 | 1 pce | | 0R0 |
| 0 R 41 | 57.60.1000 | 1 pce | | 0R0 |
| 0 R 42 | 57.60.1335 | 1 pce | | 3M3 |
| 0 R 43 | 57.60.1125 | 1 pce | | 1M2 |
| 0 R 44 | 57.60.1106 | 1 pce | | 10M |
| 0 R 45 | 57.60.1000 | 1 pce | | 0R0 |
| 0 R 46 | 57.60.1000 | 1 pce | | 0R0 |
| 0 R 47 | 57.60.1104 | 1 pce | | 100k |
| 0 R 48 | 57.60.1182 | 1 pce | | 1k8 |
| 0 R 49 | 57.60.1182 | 1 pce | | 1k8 |
| 0 R 50 | 57.92.7012 | 1 pce | | 0.3A |
| 0 R 51 | 57.60.1273 | 1 pce | | 27k |
| 0 R 52 | 57.60.1153 | 1 pce | | 15k |
| 0 R 53 | 57.60.1222 | 1 pce | | 2k2 |
| 0 R 54 | 57.60.1272 | 1 pce | | 2k7 |
| 0 R 55 | 57.60.1184 | 1 pce | | 180k |
| 0 R 56 | 57.60.1106 | 1 pce | | 10M |
| 0 R 57 | 57.60.1512 | 1 pce | | 5k1 |
| 0 R 58 | 57.60.1512 | 1 pce | | 5k1 |
| 0 R 59 | 57.60.1471 | 1 pce | | 470R |
| 0 R 60 | 57.60.1562 | 1 pce | | 5k6 |
| 0 R 66 | 57.60.1103 | 1 pce | | 10k |
| 0 RA 1 | 58.60.0121 | 1 pce | | 20k |
| 0 RA 2 | 58.60.0113 | 1 pce | | 1k0 |
| 0 RA 3 | 58.01.9103 | 1 pce | | 10k |
| 0 RA 4 | 58.01.9503 | 1 pce | | 50k |
| 0 T 1 | 1.022.625.00 | 1 pce | | SCHALTTRAFO 3:1 |
| 0 T 2 | 1.022.218.00 | 1 pce | 1 : 1 | EINGANGSTRAFO 1 : 1 |
| 0 TP 1 | 54.02.0471 | 1 pce | | Stift d 1.5 * 5.5 lötl |
| 0 TP 2 | 54.02.0471 | 1 pce | | Stift d 1.5 * 5.5 lötl |
| 0 TP 3 | 54.02.0471 | 1 pce | | Stift d 1.5 * 5.5 lötl |
| 0 TP 4 | 54.02.0471 | 1 pce | | Stift d 1.5 * 5.5 lötl |

VU/PPM/GRM Meter 1.913.293.00 (4)

Page: 2 of 2

| Idx. Pos. | Part No. | Qty. | Type/Val. | Description |
|-----------|----------|------------|-----------|-----------------------|
| 0 | TP 5 | 54.02.0471 | 1 pce | Stift d 1.5 * 5.5 löf |
| 0 | TP 6 | not used | 1 pce | Stift d 1.5 * 5.5 löf |
| 0 | TP 7 | not used | 1 pce | Stift d 1.5 * 5.5 löf |

| Idx. Pos. | Part No. | Qty. | Type/Val. | Description |
|-----------|----------|------|-----------|-------------|
|-----------|----------|------|-----------|-------------|

End of List

Comments:

- (01) Offset-voltage of IC 9 LF 353 too large
->replaced by MC
- (02) R25 not used
- (03) IC7 LF353 replaced by LF412
- (04) DV4 added

VU/PPM Meter mod. 1.913.294.00 (3)

| Idx. Pos. | Part No. | Qty. | Type/Val. | Description |
|-----------|--------------|-------|-----------|--------------------------------|
| 0 C 1 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 C 2 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 C 6 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 C 7 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 C 8 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 C 9 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 C 10 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 C 11 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 C 12 | 59.60.2373 | 1 pce | 1n0 | CER 50V, 5%, COG, 0805 |
| 0 C 13 | 59.60.2241 | 1 pce | 47p | CER 50V, 5%, COG, 0603 |
| 0 C 14 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 C 15 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 C 16 | 59.68.0033 | 1 pce | 470u | EL 6V, 8.0*10.7 |
| 0 C 17 | 59.60.2361 | 1 pce | 330p | CER 50V, 5%, COG, 0805 |
| 0 C 18 | 59.68.0033 | 1 pce | 470u | EL 6V, 8.0*10.7 |
| 0 C 19 | 59.68.0073 | 1 pce | 220u | EL 16V, 8.0*10.7 |
| 0 C 20 | 59.60.2361 | 1 pce | 330p | CER 50V, 5%, COG, 0805 |
| 0 C 21 | 59.68.0033 | 1 pce | 470u | EL 6V, 8.0*10.7 |
| 0 C 22 | 59.68.0073 | 1 pce | 220u | EL 16V, 8.0*10.7 |
| 0 C 25 | 59.60.2373 | 1 pce | 1n0 | CER 50V, 5%, COG, 0805 |
| 0 C 26 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 C 27 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 C 30 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 C 31 | 59.60.2369 | 1 pce | 680p | CER 50V, 5%, COG, 0805 |
| 0 C 32 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 C 33 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 C 34 | 59.68.0073 | 1 pce | 220u | EL 16V, 8.0*10.7 |
| 0 C 35 | 59.68.0073 | 1 pce | 220u | EL 16V, 8.0*10.7 |
| 0 C 37 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 C 38 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 C 39 | 59.60.2241 | 1 pce | 47p | CER 50V, 5%, COG, 0603 |
| 0 C 40 | 59.60.3333 | 1 pce | 47n | CER 50V, 10%, X7R, 0805 |
| 0 C 41 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 D 1 | 50.60.8001 | 1 pce | 4448 | 200mA 75V 4ns SOD 80 |
| 0 D 2 | 50.60.8001 | 1 pce | 4448 | 200mA 75V 4ns SOD 80 |
| 0 D 3 | 50.60.8001 | 1 pce | 4448 | 200mA 75V 4ns SOD 80 |
| 0 D 4 | 50.60.8001 | 1 pce | 4448 | 200mA 75V 4ns SOD 80 |
| 0 D 5 | 50.60.8001 | 1 pce | 4448 | 200mA 75V 4ns SOD 80 |
| 0 D 6 | 50.60.8001 | 1 pce | 4448 | 200mA 75V 4ns SOD 80 |
| 0 D 7 | 50.60.8001 | 1 pce | 4448 | 200mA 75V 4ns SOD 80 |
| 0 D 8 | 50.60.8001 | 1 pce | 4448 | 200mA 75V 4ns SOD 80 |
| 0 DL 1 | 50.04.2150 | 1 pce | | 10*LED-Bargraf rot diffus |
| 0 DL 2 | 50.04.2161 | 1 pce | | DLZ MV 54 164,LTA1000G 10*D GN |
| 0 DL 3 | 50.04.2161 | 1 pce | | DLZ MV 54 164,LTA1000G 10*D GN |
| 0 DV 1 | 50.60.9017 | 1 pce | 10V | 5%, 0.2W, SOT 23 |
| 0 DV 2 | 50.60.9017 | 1 pce | 10V | 5%, 0.2W, SOT 23 |
| 3 DV 4 | 50.04.1112 | 1 pce | 5V1 | Zener, 5%, 0.5W, DO-35 |
| 0 IC 1 | 50.11.0119 | 1 pce | | IC LM 3914 N, |
| 0 IC 2 | 50.11.0119 | 1 pce | | IC LM 3914 N, |
| 0 IC 3 | 50.11.0119 | 1 pce | | IC LM 3914 N, |
| 0 IC 5 | 50.61.0204 | 1 pce | | Dual Op-Amp low noise |
| 0 IC 6 | 50.61.0207 | 1 pce | | Dual Op-Amp JFET SO 8 |
| 0 IC 7 | 50.61.0207 | 1 pce | | Dual Op-Amp JFET SO 8 |
| 1 IC 9 | 50.61.0204 | 1 pce | | Dual Op-Amp low noise |
| 0 J 2 | 54.01.0021 | 1 pce | | Jumper |
| 0 J 3 | 54.01.0021 | 1 pce | | Jumper |
| 0 MP 1 | 1.913.293.11 | 1 pce | | VU/PPM/GRM METER PCB |
| 0 MP 2 | 1.913.294.10 | 1 pce | | NR-ETIKETTE 5 * 20 |
| 0 MP 3 | 43.01.0108 | 1 pce | | ESE-Warnschild |
| 0 MP 4 | 28.99.0119 | 2 pcs | | M3*7.4 |
| 0 MP 5 | 1.010.057.22 | 1 pce | | M3*7.4 |
| 0 MP 6 | 1.010.057.22 | 1 pce | | M3*7.4 |
| 3 MP 7 | 43.10.0112 | 1 pce | | C |
| 0 P 1 | 54.14.2011 | 1 pce | 10p | Winkelstecker Au |
| 0 P 2 | 54.11.0136 | 1 pce | 2*3p | Pin 0.63*0.63, RM2.54 |
| 0 P 3 | 54.11.0136 | 1 pce | 2*3p | Pin 0.63*0.63, RM2.54 |
| 0 P 101 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 P 102 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 P 103 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 P 104 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 P 105 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 P 106 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 P 107 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 P 108 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 P 109 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 P 110 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 P 111 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 P 112 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 P 113 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 P 114 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 P 115 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 P 116 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 P 117 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 P 118 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 P 119 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 P 120 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 P 121 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 P 122 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 P 123 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 P 124 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 P 125 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 P 126 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 P 127 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 P 128 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 P 129 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 P 130 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 P 131 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 P 132 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 P 133 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 P 134 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 P 135 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 P 136 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |

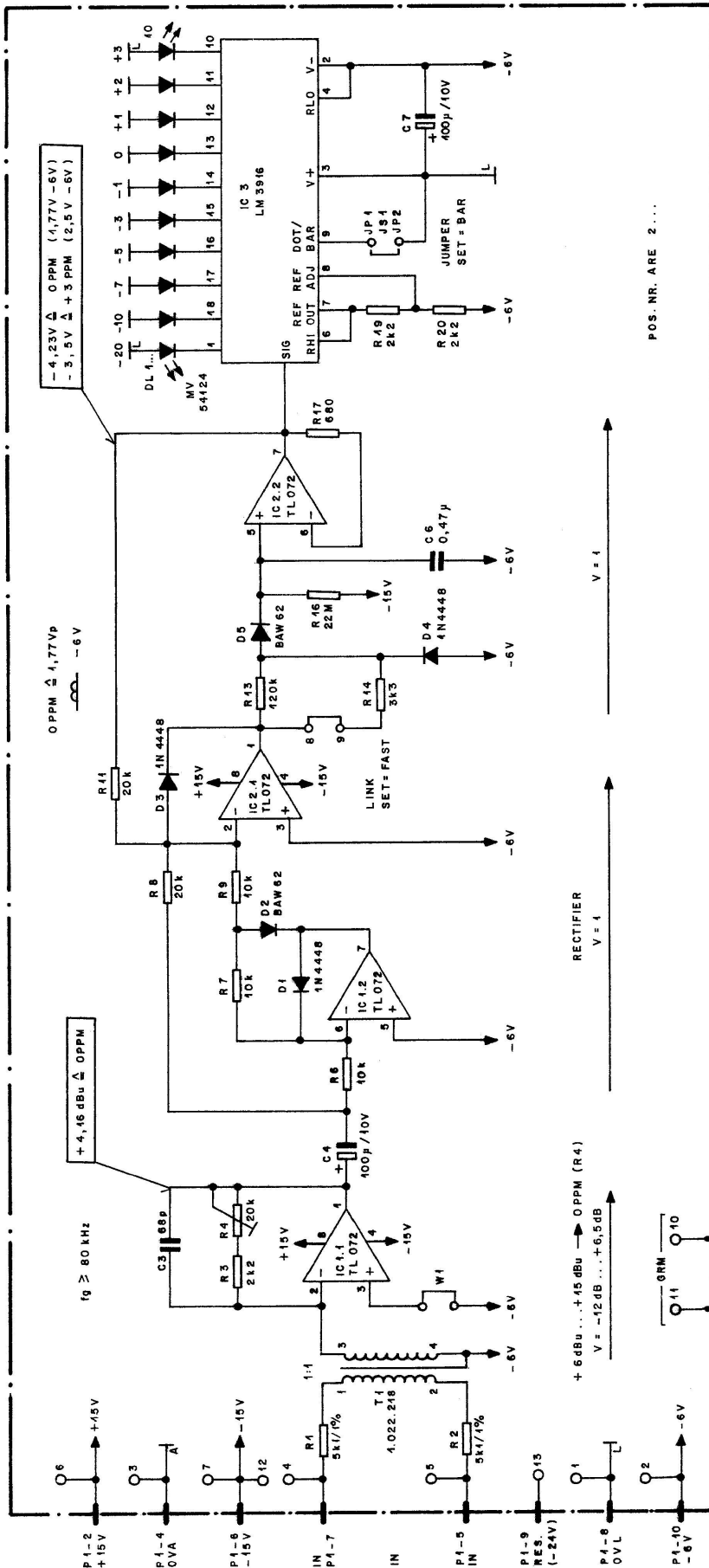
| Idx. Pos. | Part No. | Qty. | Type/Val. | Description |
|-----------|--------------|-------|-----------|-----------------------------|
| 0 Q 1 | 50.60.1002 | 1 pce | BC860C | PNP 45V 100mA SOT 23 |
| 0 Q 2 | 50.60.1002 | 1 pce | BC860C | PNP 45V 100mA SOT 23 |
| 0 Q 3 | 50.60.0050 | 1 pce | BC817-25 | NPN 45V 800mA SOT 23 |
| 0 Q 4 | 50.60.1050 | 1 pce | BC807-25 | PNP 45V 800mA SOT 23 |
| 0 Q 5 | 50.60.1002 | 1 pce | BC860C | PNP 45V 100mA SOT 23 |
| 0 Q 6 | 50.60.1002 | 1 pce | BC860C | PNP 45V 100mA SOT 23 |
| 0 R 1 | 57.60.1222 | 1 pce | 2k2 | MF, 1%, 0204, E24 |
| 0 R 2 | 57.60.1223 | 1 pce | 22k | MF, 1%, 0204, E24 |
| 0 R 3 | 57.60.1000 | 1 pce | 0R0 | MF, 0204 |
| 0 R 4 | | 1 pce | not used | MF, 0204 |
| 0 R 5 | 57.60.1222 | 1 pce | 2k2 | MF, 1%, 0204, E24 |
| 0 R 6 | 57.60.1222 | 1 pce | 2k2 | MF, 1%, 0204, E24 |
| 0 R 7 | 57.60.1223 | 1 pce | 22k | MF, 1%, 0204, E24 |
| 0 R 8 | 57.60.1000 | 1 pce | 0R0 | MF, 0204 |
| 0 R 9 | | 1 pce | not used | MF, 0204 |
| 0 R 10 | 57.60.1000 | 1 pce | 0R0 | MF, 0204 |
| 0 R 11 | | 1 pce | not used | MF, 0204 |
| 0 R 16 | 57.60.1122 | 1 pce | 1k2 | MF, 1%, 0204, E24 |
| 0 R 17 | 57.60.1105 | 1 pce | 1M0 | MF, 1%, 0204, E24 |
| 0 R 18 | 57.60.1392 | 1 pce | 3k9 | MF, 1%, 0204, E24 |
| 0 R 19 | 57.60.1682 | 1 pce | 6k8 | MF, 1%, 0204, E24 |
| 0 R 20 | 57.60.1330 | 1 pce | 33R | MF, 1%, 0204, E24 |
| 0 R 21 | 57.60.1122 | 1 pce | 1k2 | MF, 1%, 0204, E24 |
| 0 R 22 | 57.60.1102 | 1 pce | 1k0 | MF, 1%, 0204, E24 |
| 0 R 23 | 57.60.1512 | 1 pce | 5k1 | MF, 1%, 0204, E24 |
| 0 R 24 | 57.60.1512 | 1 pce | 5k1 | MF, 1%, 0204, E24 |
| 2 R 25 | | 1 pce | not used | MF, 0204 |
| 0 R 26 | 57.60.1471 | 1 pce | 470R | MF, 1%, 0204, E24 |
| 0 R 27 | 57.99.0252 | 1 pce | 47 | MF 10%, +4500ppm |
| 0 R 28 | 57.60.1564 | 1 pce | 560k | MF, 1%, 0204, E24 |
| 0 R 29 | 57.60.1512 | 1 pce | 5k1 | MF, 1%, 0204, E24 |
| 0 R 31 | 57.60.1182 | 1 pce | 1k8 | MF, 1%, 0204, E24 |
| 0 R 32 | 57.60.1362 | 1 pce | 3k6 | MF, 1%, 0204, E24 |
| 0 R 33 | 57.60.1362 | 1 pce | 3k6 | MF, 1%, 0204, E24 |
| 0 R 34 | 57.60.1821 | 1 pce | 820R | MF, 1%, 0204, E24 |
| 0 R 35 | 57.60.1512 | 1 pce | 5k1 | MF, 1%, 0204, E24 |
| 0 R 42 | 57.60.1335 | 1 pce | 3M3 | MF, 1%, 0204, E24 |
| 0 R 43 | 57.60.1125 | 1 pce | 1M2 | MF, 1%, 0204, E24 |
| 0 R 44 | 57.60.1106 | 1 pce | 10M | MF, 1%, 0204, E24 |
| 0 R 48 | 57.60.1182 | 1 pce | 1k8 | MF, 1%, 0204, E24 |
| 0 R 49 | 57.60.1182 | 1 pce | 1k8 | MF, 1%, 0204, E24 |
| 0 R 50 | 57.92.7012 | 1 pce | 0.3A | PTC 60V |
| 0 R 52 | 57.60.1153 | 1 pce | 15k | MF, 1%, 0204, E24 |
| 0 R 53 | 57.60.1222 | 1 pce | 2k2 | MF, 1%, 0204, E24 |
| 0 R 54 | 57.60.1272 | 1 pce | 2k7 | MF, 1%, 0204, E24 |
| 0 R 55 | 57.60.1184 | 1 pce | 180k | MF, 1%, 0204, E24 |
| 0 R 56 | 57.60.1106 | 1 pce | 10M | MF, 1%, 0204, E24 |
| 0 R 57 | 57.60.1512 | 1 pce | 5k1 | MF, 1%, 0204, E24 |
| 0 R 58 | 57.60.1512 | 1 pce | 5k1 | MF, 1%, 0204, E24 |
| 0 R 59 | 57.60.1471 | 1 pce | 470R | MF, 1%, 0204, E24 |
| 0 R 66 | 57.60.1103 | 1 pce | 10k | MF, 1%, 0204, E24 |
| 0 RA 1 | 58.60.0121 | 1 pce | 20k | SMD 20%, 0.25W, Cermet |
| 0 RA 2 | 58.60.0113 | 1 pce | 1k0 | SMD 20%, 0.25W, Cermet |
| 0 RA 3 | 58.01.9103 | 1 pce | 10k | Cermet, 10%, 0.5W, vertical |
| 0 T 1 | 1.022.625.00 | 1 pce | | SCHALTSTRAFO 3:1 |
| 0 T 2 | 1.022.218.00 | 1 pce | 1 : 1 | EINGANGSTRAFO 1 : 1 |
| 0 TP 1 | 54.02.0471 | 1 pce | | Stift d 1.5 * 5.5 lötl |
| 0 TP 2 | 54.02.0471 | 1 pce | | Stift d 1.5 * 5.5 lötl |
| 0 TP 3 | 54.02.0471 | 1 pce | | Stift d 1.5 * 5.5 lötl |
| 0 TP 4 | 54.02.0471 | 1 pce | | Stift d 1.5 * 5.5 lötl |
| 0 TP 5 | 54.02.0471 | 1 pce | | Stift d 1.5 * 5.5 lötl |

End of List

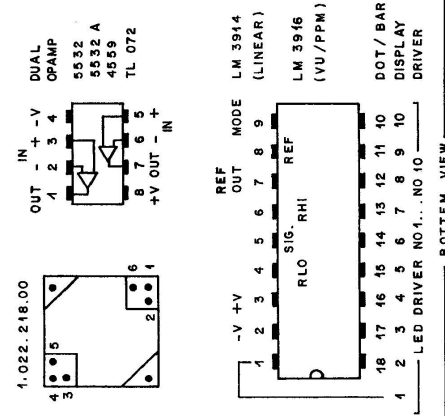
Comments:

- (01) Offset-voltage of IC 9 LF 353 too large
->replaced by MC 33078
- (02) R25 not used
- (03) DV4 added

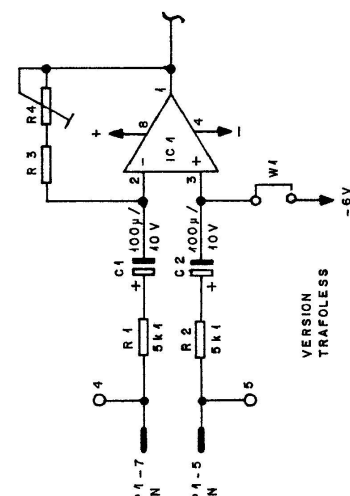
LED PPM Meter (10 LED) 1.913.291.00



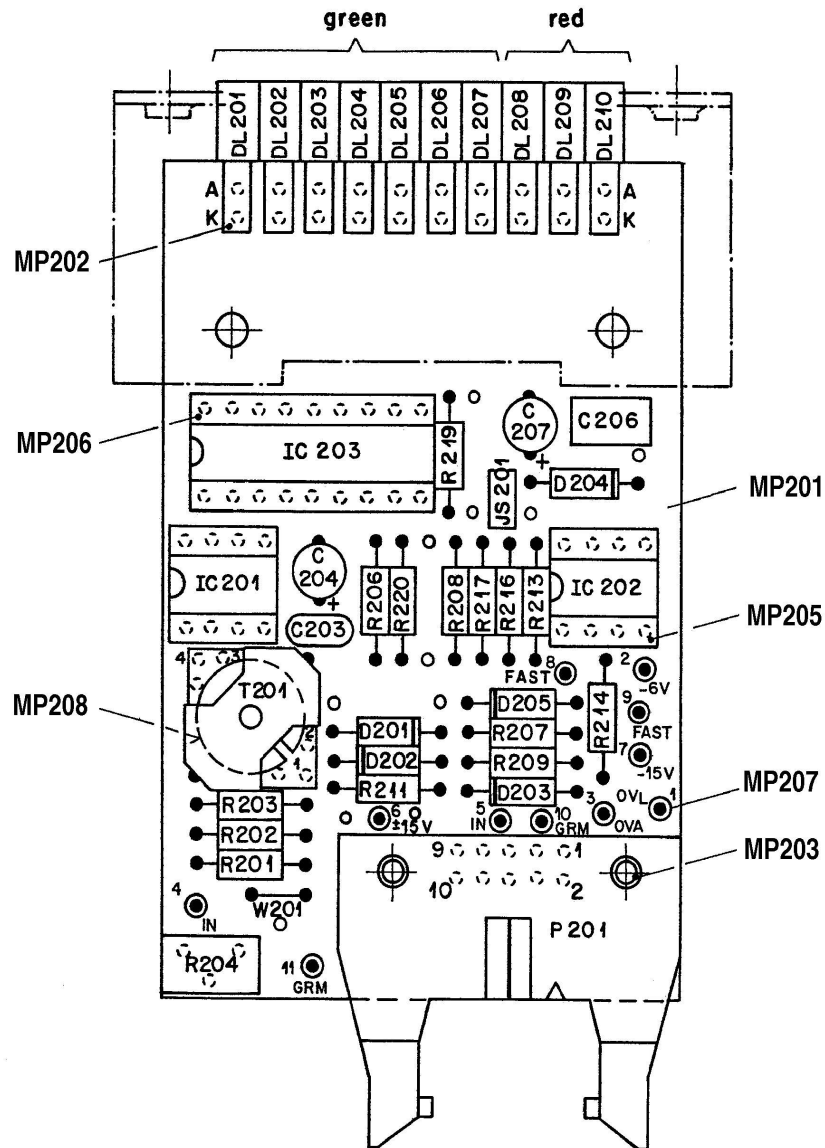
POS. NR. ARE 2...



| P | NO NAME | REMARK (PCB CONNECTOR) |
|--------|---------|------------------------|
| P...1 | 1 GRM | INPUT GRM |
| P...2 | 2 +10V | + SUPPLY |
| P...3 | 3 GRM | INPUT GRM |
| P...4 | 4 OV-A | GROUND AUDIO |
| P...5 | 5 IN | INPUT AUDIO |
| P...6 | 6 -45V | - SUPPLY |
| P...7 | 7 IN | INPUT AUDIO |
| P...8 | 8 OV-L | GROUND SIGN. (LOGIC) |
| P...9 | 9 RES. | RESERVE (-24V) |
| P...10 | 10 -6V | - SUPPLY |



LED PPM Meter (10 LED) 1.913.291.00



| | | | | | | | | | | |
|---------------------------------------|------------|-------------------------------------|----------|------------|----------|-----------------------------|------|-------|--|---|
| Werkstoff | Norm-Nr.: | Oberfläche | | Güte: | | | | | | ③ |
| | DIN-Bez.: | Beh.: | | | | | | | | ② |
| | Abmessung: | | | | | | | | | ① |
| Zugehörige Unterlagen: | | Freimasstoleranz: | Maßstab: | Ausgabe | 22.10.87 | A.Ho | Zi | Pa | | ④ |
| PL | | ± | | Datum | Gez. | Gepr. | Ges. | Index | | |
| Ersatz für: | | Ersetzt durch: | | Kopie für: | | | | | | |
| STUDER REGENSDORF ZÜRICH | | Benennung: LED PPM METER ESE | | | | Nummer: 1.913.291-00 | | | | |

LED PPM Meter (10 LED) 1.913.291.00 (1)

| Idx. Pos. | Part No. | Qty. | Type/Val. | Description | Idx. Pos. | Part No. | Qty. | Type/Val. | Description |
|-----------|----------|------|--------------|--------------------------|-----------|----------|------|-----------|-----------------------------|
| 0 | C 201 | | not used | not used | | | | | |
| 0 | C 202 | | not used | not used | | | | | |
| 0 | C 203 | | 59.34.2680 | 68p | | | | | CER 63V, 5%, N150 |
| 0 | C 204 | | 59.22.3101 | 100u | | | | | EL 10V 20% RM5 |
| 0 | C 205 | | not used | not used | | | | | not used |
| 0 | C 206 | | 59.06.5474 | 470n | | | | | PETP, 63V, 5%, RM5 |
| 0 | C 207 | | 59.22.3101 | 100u | | | | | EL 10V 20% RM5 |
| 0 | D 201 | | 50.04.0125 | 1N4448 | | | | | 75V, 150mA, 4ns, DO-35 |
| 0 | D 202 | | 50.04.0132 | BAW62 | | | | | D BAW 62 |
| 1 | D 203 | | 50.04.0125 | 1N4448 | | | | | 75V, 150mA, 4ns, DO-35 |
| 1 | D 204 | | 50.04.0125 | 1N4448 | | | | | 75V, 150mA, 4ns, DO-35 |
| 0 | D 205 | | 50.04.0132 | BAW62 | | | | | D BAW 62 |
| 0 | D 206 | | not used | not used | | | | | not used |
| 0 | DL 201 | | 50.04.2146 | MV54124A | | | | | LED green |
| 0 | DL 202 | | 50.04.2146 | MV54124A | | | | | LED green |
| 0 | DL 203 | | 50.04.2146 | MV54124A | | | | | LED green |
| 0 | DL 204 | | 50.04.2146 | MV54124A | | | | | LED green |
| 0 | DL 205 | | 50.04.2146 | MV54124A | | | | | LED green |
| 0 | DL 206 | | 50.04.2146 | MV54124A | | | | | LED green |
| 0 | DL 207 | | 50.04.2146 | MV54124A | | | | | LED green |
| 0 | DL 208 | | 50.04.2119 | MV57124A | | | | | LED red |
| 0 | DL 209 | | 50.04.2119 | MV57124A | | | | | LED red |
| 0 | DL 210 | | 50.04.2119 | MV57124A | | | | | LED red |
| 0 | IC 201 | | 50.09.0101 | TL072 | | | | | Dual op-amp biFET |
| 0 | IC 202 | | 50.09.0101 | TL072 | | | | | Dual op-amp biFET |
| 0 | IC 203 | | 50.11.0144 | LM3916 | | | | | LED Bar/Dot driver |
| 0 | JP 201 | | 54.01.0020 | 1p | | | | | Pin, 1reihig, gerade |
| 0 | JP 202 | | 54.01.0020 | 1p | | | | | Pin, 1reihig, gerade |
| 0 | JS 201 | | 54.01.0021 | Jumper | | | | | 0.63*0.63mm, Au |
| 0 | MP 201 | | 1.913.290.11 | 1 pce | | | | | LED METER PCB |
| 0 | MP 202 | | 1.010.012.50 | 10 pcs | | | | | LED-spacer universal |
| 0 | MP 203 | | 28.99.0119 | 2 pcs | | | | | ROHRNIETE D 2.5*0.15* 9 |
| 0 | MP 204 | | not used | not used | | | | | not used |
| 0 | MP 205 | | 53.03.0166 | 2 pcs | | | | | 8p DIL-socket 0.3" |
| 0 | MP 206 | | 53.03.0175 | 1 pce | | | | | 18p DIL 0.3", lötl, gerade |
| 0 | MP 207 | | 54.02.0471 | 11 pcs | | | | | Stift d 1.5 * 5.5 lötl |
| 0 | MP 208 | | 1.010.004.61 | 1 pce | | | | | RM5 Isolierscheibe d=10 |
| 0 | P 201 | | 54.14.2011 | 10p | | | | | Winkelstecker Au |
| 0 | R 201 | | 57.11.3512 | 5k1 | | | | | MF, 1%, 0207 |
| 0 | R 202 | | 57.11.3512 | 5k1 | | | | | MF, 1%, 0207 |
| 0 | R 203 | | 57.11.4222 | 2k2 | | | | | MF, 2%, 0207 |
| 0 | R 204 | | 58.01.9203 | 20k | | | | | Cermet, 10%, 0.5W, vertical |
| 0 | R 205 | | not used | not used | | | | | not used |
| | | | | <i>replaced by W 201</i> | | | | | |
| 0 | R 206 | | 57.11.4103 | 10k | | | | | MF, 2%, 0207 |
| 0 | R 207 | | 57.11.4103 | 10k | | | | | MF, 2%, 0207 |
| 0 | R 208 | | 57.11.3203 | 20k | | | | | MF, 1%, 0207 |
| 0 | R 209 | | 57.11.4103 | 10k | | | | | MF, 2%, 0207 |
| 0 | R 210 | | not used | not used | | | | | not used |
| 0 | R 211 | | 57.11.3203 | 20k | | | | | MF, 1%, 0207 |
| 0 | R 212 | | not used | not used | | | | | not used |
| | | | | <i>replaced by D 203</i> | | | | | |
| 0 | R 213 | | 57.11.4823 | 82k | | | | | MF, 2%, 0207 |
| 0 | R 214 | | 57.11.4332 | 3k3 | | | | | MF, 2%, 0207 |
| 0 | R 215 | | not used | not used | | | | | not used |
| | | | | <i>replaced by D 205</i> | | | | | |
| 0 | R 216 | | 57.11.6226 | 22M | | | | | MF, 10%, 0207 |
| 0 | R 217 | | 57.11.4681 | 680R | | | | | MF, 2%, 0207 |
| 0 | R 218 | | not used | not used | | | | | not used |
| 0 | R 219 | | 57.11.4222 | 2k2 | | | | | MF, 2%, 0207 |
| 0 | R 220 | | 57.11.4222 | 2k2 | | | | | MF, 2%, 0207 |
| 0 | R 221 | | not used | not used | | | | | not used |
| 0 | T 201 | | 1.022.218.00 | 1 : 1 | | | | | EINGANGSTRAFO 1 : 1 |
| 0 | W 201 | | 1.010.321.64 | RM5.0 | | | | | U shaped wire 0.6mm |

End of List

Comments:

(01) D203, D204 changed

Bargraph Display

Contents

page

| | |
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REFERENCE

This manual refers to the following units:

| | |
|-------------------------|-----------|
| Dual Bar Graph PPM | 1.913.111 |
| Dual Bar Graph VU | 1.913.112 |
| 8 Channel Bar Graph PPM | 1.913.411 |
| 8 Channel Bar Graph VU | 1.913.412 |

1. Technical Description

The output meter, whatever it may be called, is one of the most important tools in audio engineering. Wherever audio signals are being processed, it is an essential, because the output level is an important criterion. On the one hand, maximum output level is needed for achieving the best signal-to-noise ratio, on the other hand the reference level should not be exceeded, particularly in digital recordings, otherwise distortion will increase dramatically.

Two types of output meters with different dynamic characteristics have proven themselves useful in recording studios:

Volume Unit Meter (VU)

The most frequently used instrument for measuring audio frequency signal levels is the VU-meter. In the ANSI standard (American National Standards Institute, Inc.), the mechanical and electrical behavior of the VU-meter was already defined in 1954. The rule is that the indication shall be 99% of the ultimate value (0 VU) when a signal of 0.3 s (300 ms) duration is applied. The overshooting of the indication shall be between 1...1.5%. The rise and decay time are identical in the VU-meter.

In the conventional version a VU-meter consists of a suitable moving coil instrument and a full-wave rectifier connected to the input.

Peak Program Meter (PPM)

The PPM is a more recent instrument. Its behavior is defined in the applicable DIN or IEC standards. The principal difference to the VU-meter is in the integration time: the PPM is a quasi peak value instrument with a long release time. A peak value will be indicated even for very short peaks in a music program.

If a sine wave voltage is applied for 10 ms that yields a level of 0dB, the indication should be -1dB. A release time of 1.7 s is desired for levels down to -20dB (IEC).

Instrument Types

An advanced alternative to electromechanical analog displays are the gas discharge bargraph displays. Neon gas that is induced to glow between two glass plates emits visible light. The plasma display has some decisive advantages over all the other displays. For example: large reading angle and high contrast combined with low power consumption and long life. Its disadvantages are: high anode voltage (250 V), high price, and sophisticated electronic circuitry. Despite these drawbacks this excellent type of display has become the de-facto standard in professional studio applications.

Implementation of the Studer Bargraph Output Meters

The design specifications for a precision metering instrument that would not be too costly but still have a modular design resulted in the following arrangement; two individual circuit boards, one for the two-channel signal processing paths and one for the digital section with the switching power supply. In this way it became feasible to achieve a modular design: four signal modules for eight channels but only one digital module.

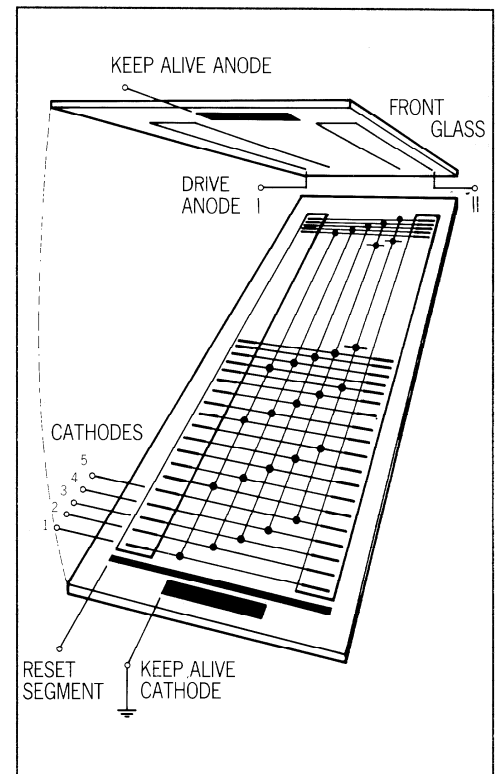
BARGRAPH

The operating principle of the individual elements that make up the bargraph display is depicted in the following picture:

Plasma Tube

After the 250 VDC supply voltage has been applied, a continuous glow discharge is triggered between the pre-ionization anode and cathode. Since the area around the pre-ionization segment is not physically isolated from the neighboring segments, the charge carriers diffuse into the area of the reset cathode. When the latter is energized first, a glow discharge occurs also here. The same effect causes the first segment to light up (ignite), if the reset cathode is switched off while cathode 1 is switched on. Although each 5th segment is electrically interconnected, only the lowest one glows because sufficient charge carriers are located in its vicinity.

The cathodes 1-2-3-4-5 / 1-2-3-4...etc. are now controlled in this order. The glow discharge migrates segment by segment to the last segment. A new cycle is then initiated by means of the reset segment.



Plasma tube

The length of the bargraph is controlled by the power-on duration of the corresponding anode while the cathodes are controlled cyclically in the dark segment. This design requires only 8 connections or driver stages (2 anodes, 1 reset cathode and 5 write cathodes) for controlling the 2 x 200 segments. In order to create a flicker-free bargraph the refresh rate must be at least 70 Hz. Unnoticeable to the viewer is, however, that only one segment glows at any one moment!

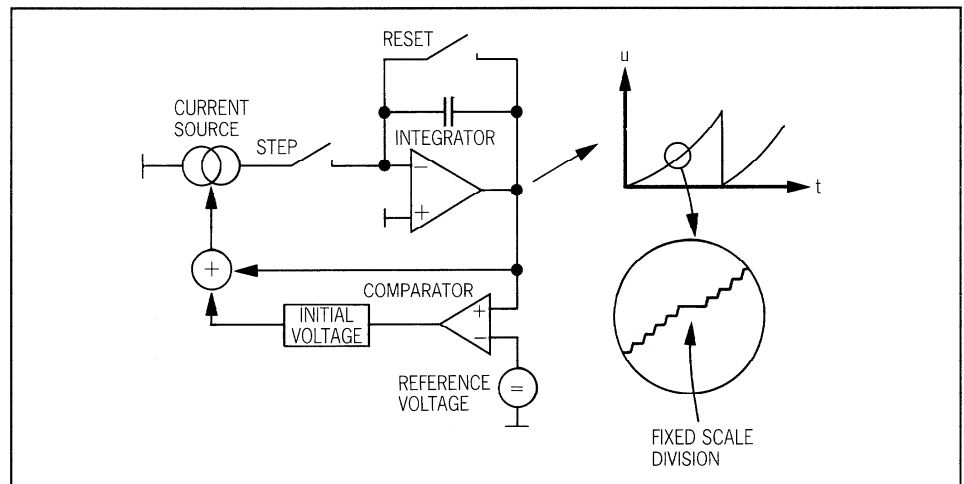
Analog Electronics

The audio section is shown in the block diagram (see p.12). The isolated AF signal is taken to the level stage; the large working range permits the connection of almost any level. For very small levels a +20 dB amplifier is provided. The low-pass filter of the 3rd order attenuates frequencies of over 20 kHz. This circuit is followed by a sophisticated rectifier stage that compensates very carefully with respect to the offset voltages.

For the VU representation, the rectified signal is fed to a filter that duplicates the characteristic of mechanical moving coil instruments. For the PPM representation, the peak value of the rectified signal is formed.

Digital Electronics

The digital section performs various functions. Not only does it process the signals for the plasma tube, it also is responsible for generating the ramp. A totally new approach has been selected for the ramp generation. Normally the audio signal is converted to logarithmic characteristic in an amplifier in order to achieve dB representation. The resulting signal is subsequently compared with a time-linear ramp. However, the same can be accomplished by comparing the linear AF signal with an exponential ramp, without the typical problems of a logarithmic circuit (temperature dependence, offset). In addition, more instruments can be controlled by means of a ramp (in the digital section); no logarithmic circuits are required.



Ramp generator

While a capacitor is charged with a constant current, the terminal voltage rises linearly. If this source is equipped with a positive feedback that converts the continually rising voltage to a continually increasing current, we obtain an exponentially progressing terminal voltage.

If the capacitor is discharged after a while, the initial voltage for starting the cycle is missing. A control circuit is available that prepares the initial voltage in such a way that a reference value is achieved after a certain time.

For inserting fixed scale divisions, the capacitor charging is interrupted during three cycle units. As a result the corresponding segment glows three times longer and consequently appears to be brighter.

By disconnecting the above mentioned positive feedback, the linear ramp is again obtained for representing VU values or representable DC values.

The ramp oscillator also supplies the input signal for a binary counter that increments until reset. The outputs of the counter are address lines for an EPROM which generates the 5-phase signal and a reset signal for creating the fixed scale divisions as well as a reset signal for the counter. With the two remaining address lines it is possible to insert different scale divisions.

Future Application

The new bargraph instrument also features a LED column for indicating limiter or compressor gain reduction signals. With the externally controllable selection of VU or PPM characteristic it is also possible to display DC voltages on linear or logarithmic scale. The built-in switching power supply supports a large range of DC supply voltages.

For PCM recordings a faster response time ($t = 0.1 \text{ ms}$) may be selected by a switch.

BARGRAPH

2. Technical Data

PEAK PROGRAM METER SPECIFICATION

| | |
|----------------------|--|
| Reference Indication | 0 dB = 0 dBu + 15 dBu |
| Indicating Range | + 5 dB - 40 dB |
| Error | ± 0.2 dB (± 2 segments) within + 5 dB and - 40 dB |
| Frequency Response | ± 0.5 dB between 31.5 Hz and 16 kHz at 0° C 50° C |
| Dynamic Response | according to IEC publication 268-10 1974: |

| SINGLE BURST | FREQUENCY | DEFLECTION VALUE | SLOW TOLERANCE | DEFLECTION FAST |
|--------------|-----------|------------------|----------------|-----------------|
| 10 ms | 3 kHz | - 1 dB | ± 0.5 dB | -0,3 dB |
| 5 ms | 3 kHz | - 2 dB | ± 1 dB | -0,6 dB |
| 3 ms | 3 kHz | - 4 dB | ± 1 dB | -0,8 dB |
| 0.4 ms | 10 kHz | - 15 dB | ± 3 dB | -1,0 dB |

| | |
|-------------|--------------------------------------|
| Overswing | none |
| Return Time | 0 dB - 20 dB: 1.7 ± 0.3 seconds |

VU-METER SPECIFICATION

| | |
|----------------------|---|
| Reference Indication | 0 VU = - 4 dBu + 11 dBu |
| Indicating Range | + 3 VU - 20 VU, voltage linear |
| Frequency Response | + 1.0/- 0.0 dB at 0 VU and 31.5 Hz; Temperature range 0° C 50° C |
| Response Time | 207 ms (± 30 ms) to - 1 VU of reference indication |
| Overswing | 1 ... 1.5 % |
| Return Time | 207 ms (± 30 ms). |

DC METER SPECIFICATION**Display Range**

| INDICATION | NORMAL | | | REVERSE |
|------------|---------|-------|-------|---------|
| | TOP END | 0 V | 0 V | - 1 V |
| BOTTOM | + 10 V | + 6 V | + 6 V | - 10 V |

There is mutual influence between the alignment of 'Top End' and 'Bottom' indication. The values in the row 'Normal' are ment to be examples for possible settings.

GENERAL SPECIFICATIONS

| | |
|------------------------------|--|
| Input Impedance | > 10 kOhm |
| Source Impedance | < 1 kOhm |
| Reversibility Error | < 0.5 dB |
| Temperature Range | error \pm 0.5 dB in the range - 10° C + 60° C (reference: 1 kHz at 25° C) |
| Supply Voltage | 24 V ... 34 V (or \pm 15 V) |
| Power Consumption | dual unit: 3.5 W typ., 5.0 W max. 8 channels: 9.5 W typ., 14.5 W max. |
| Mechanical Dimensions | dual unit: 40 mm(W) x 170 mm(H) x 130 mm(D) 8 channel unit: 160 mm(W) x 170 mm(H) x 130 mm(D) |
| Weight | dual unit: 640 g 8 channel unit: 1600 g |

GR METER SPECIFICATION

| | |
|--------------------|--|
| Input Range | \pm 2 V ... \pm 5 V for + 20 dB indication |
|--------------------|--|

BARGRAPH

3. Alignments and Settings

Note: The Analog Print 1.913.117 contains two channels, so each adjustment pot exists twice. All adjustments have to be performed on all channels.

The Digital Print 1.913.118 exists only once per unit, be it a two or eight channel device.

3.1 Adjustments

Level Setting

For adaptation to different line levels only the following adjustment is necessary:

- Feed reference level 1 kHz (e.g. +6 dBu)
- adjust 0 dB indication on bargraph with R 5 (R 105) Potentiometer is marked **AUDIO GAIN**

Complete Adjustment

In case of part exchange a full adjustment procedure may be necessary. In this case proceed in the following steps:

AC Input: Set unit to "PPM", "+20 dB off", and "Not fast" (see below)

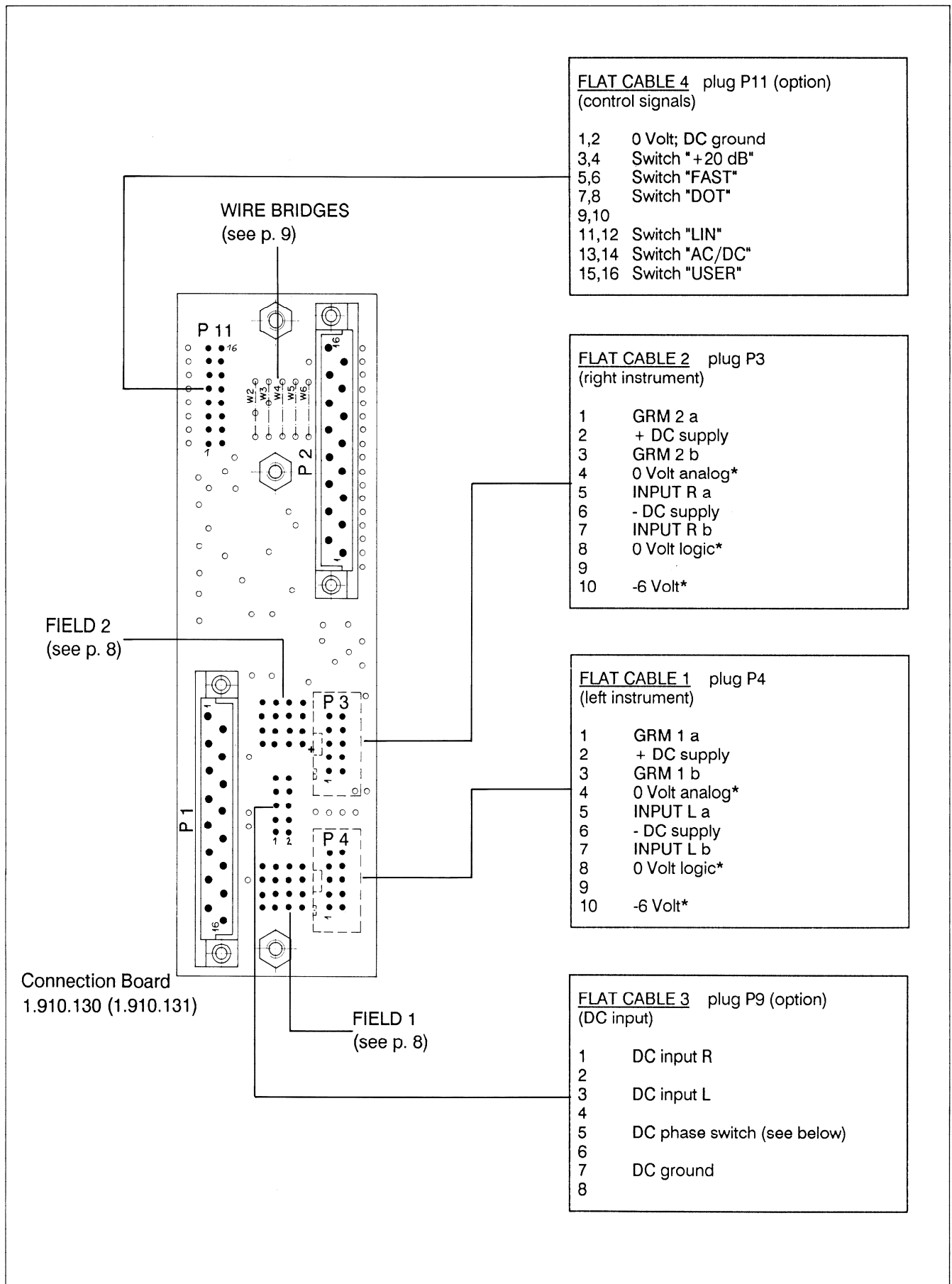
- Disconnect input, terminate input with 200 Ohm
- adjust minimal level (0 ± 1 mV) at pin 7 of IC 6 (internal potentiometer)
- Feed reference level 1 kHz (e.g. +6 dBu)
- adjust 0 dB indication on bargraph with R 5 (R 105). Potentiometer is marked **AUDIO GAIN**
- Feed 20 dB below reference level 1 kHz (e.g. -14 dBu)
- adjust -20 dB indication with R 64 (potentiometer on digital print; do not readjust after the first channel has been properly adjusted)
- Feed 30 dB below reference level 1 kHz (e.g. -24 dBu)
- adjust -30 dB indication with R 30 (R 130). Potentiometer is marked **AUDIO OFFSET**
- Repeat all steps until all indications are correct.

DC Input: Set unit to "DC" and adjust the wanted input phase configuration (see below).

- Feed maximum DC voltage.
- Adjust maximum indication with R 55 (R 155). Potentiometer is marked **DC GAIN**
- Feed minimum DC voltage
- Adjust minimum indication with R 63 (R 163). Potentiometer is marked **DC REF**
- Repeat all steps until all indications are correct.

- GRM Input:**
- Feed level 1 kHz required for a indication of +20 dB on the gain reduction meter.
 - Adjust indication with R 60 (R 160). Potentiometer is marked **GRM**

3.2 Connections

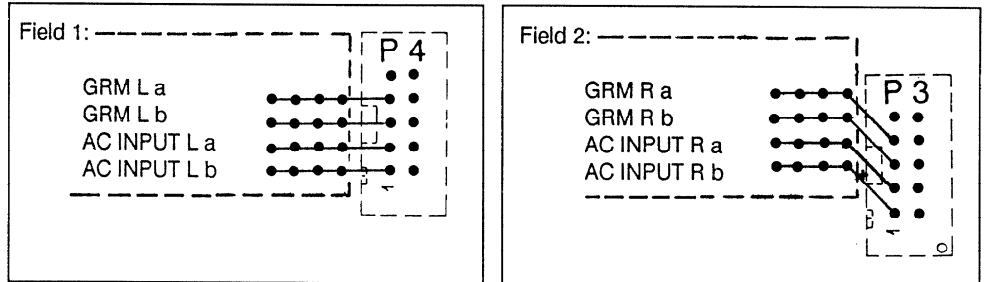


BARGRAPH

If the unit is powered by an unstabilized DC supply, an additional C may be installed (1000 μ F, 40 Volt, Order No. 59.22.6102).

Signals marked with an asterisk (*) are not required for the bargraph.

The lines carrying the AC bargraph input and the GRM input signals may also be soldered to the unit (instead of feeding those signals via the flat cables; especially useful for operation outside STUDER mixers). The connection points are:



DC Supply

DC can be fed either via flat cable 1 or 2 or directly to the pins marked "+" and "-".

3.3 Function Settings

Some functions can be set both by wire bridges and by external switches. Do not duplicate!

Wire Bridges

| BRIDGE | ON | OFF | |
|----------|----|--------|---|
| W2 | ■ | ■ | INSTRUMENT ATTACK TIME 0.1 ms STANDARD ATTACK TIME (10 ms in PPM mode) |
| W3 | ■ | ■ | GRM INDICATION AS SINGLE DOT GRM INDICATION AS BAR |
| W4 | | | (reserved for future use) |
| W5 W6 | | ■ ■ | PPM INDICATION |
| W5 W6 | ■ | ■ | VU INDICATION |
| W5 W6 | | ■ | DC LOG INDICATION |
| W5 W6 | ■ | ■ | DC LIN INDICATION |

External Switches

"ON" means that either the pin is connected to ground (pin 1/2) or that a TTL low level is connected. "OFF" means that either the switch is open (internal pull-up resistor) or that a TTL high level is connected.

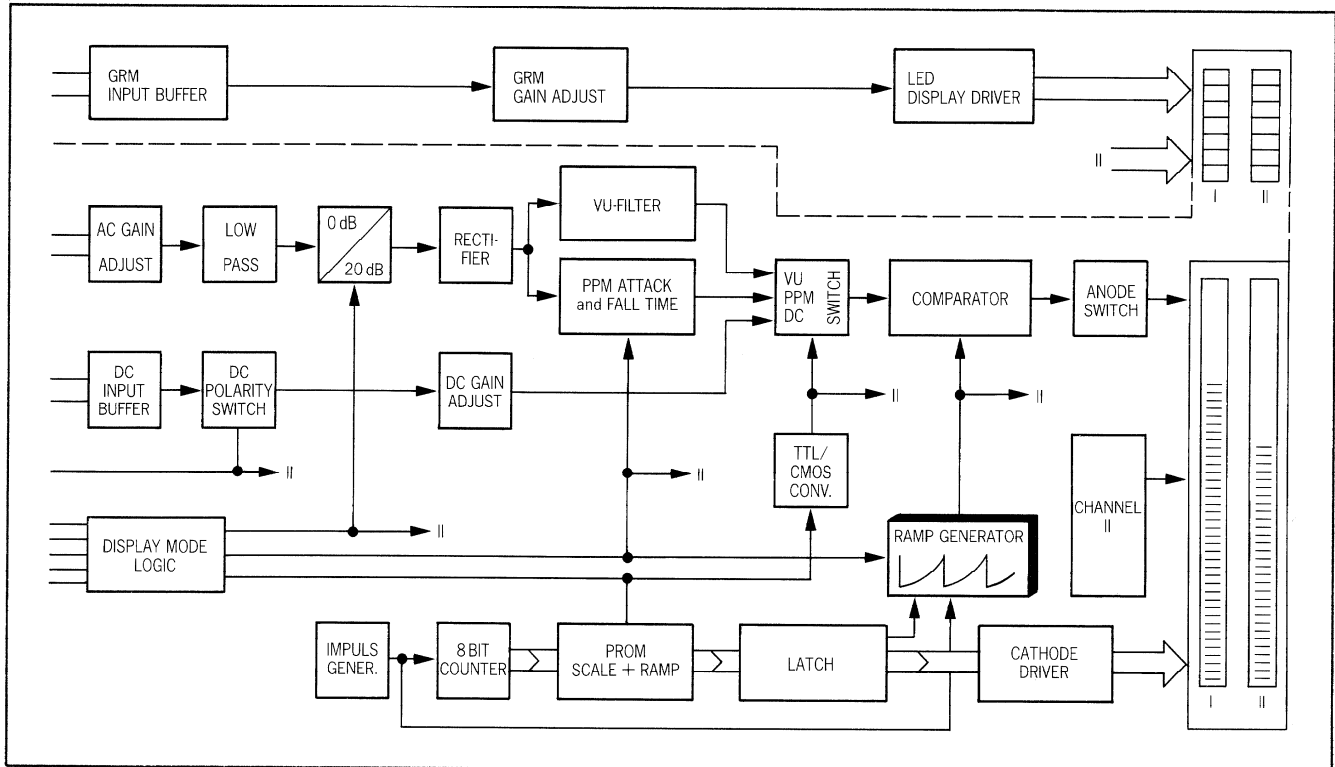
All external switches are connected via flat cable 4 (see above).

| PIN | ON | OFF | |
|-------|----|-----|---|
| 1,2 | | | 0 VOLT |
| 3,4 | ■ | ■ | AC GAIN +20 dB AC GAIN 0 dB |
| 5,6 | ■ | ■ | INSTRUMENT ATTACK TIME 0.1 ms STANDARD ATTACK TIME (10 ms in PPM mode) |
| 7,8 | ■ | ■ | GRM INDICATION AS SINGLE DOT GRM INDICATION AS BAR |
| 11,12 | ■ | ■ | LIN INDICATION (if DC selected), VU INDICATION (if AC selected, see 13/14) LOG INDICATION (if DC selected), PPM INDICATION (if AC selected, see 13/14) |
| 13,14 | ■ | ■ | DC AC |
| 15,16 | ■ | ■ | USER SWITCH: LED ON FRONT PLATE ON LED ON FRONT PLATE OFF |

BARGRAPH

4. Block Diagram

Block Diagram for Channel I



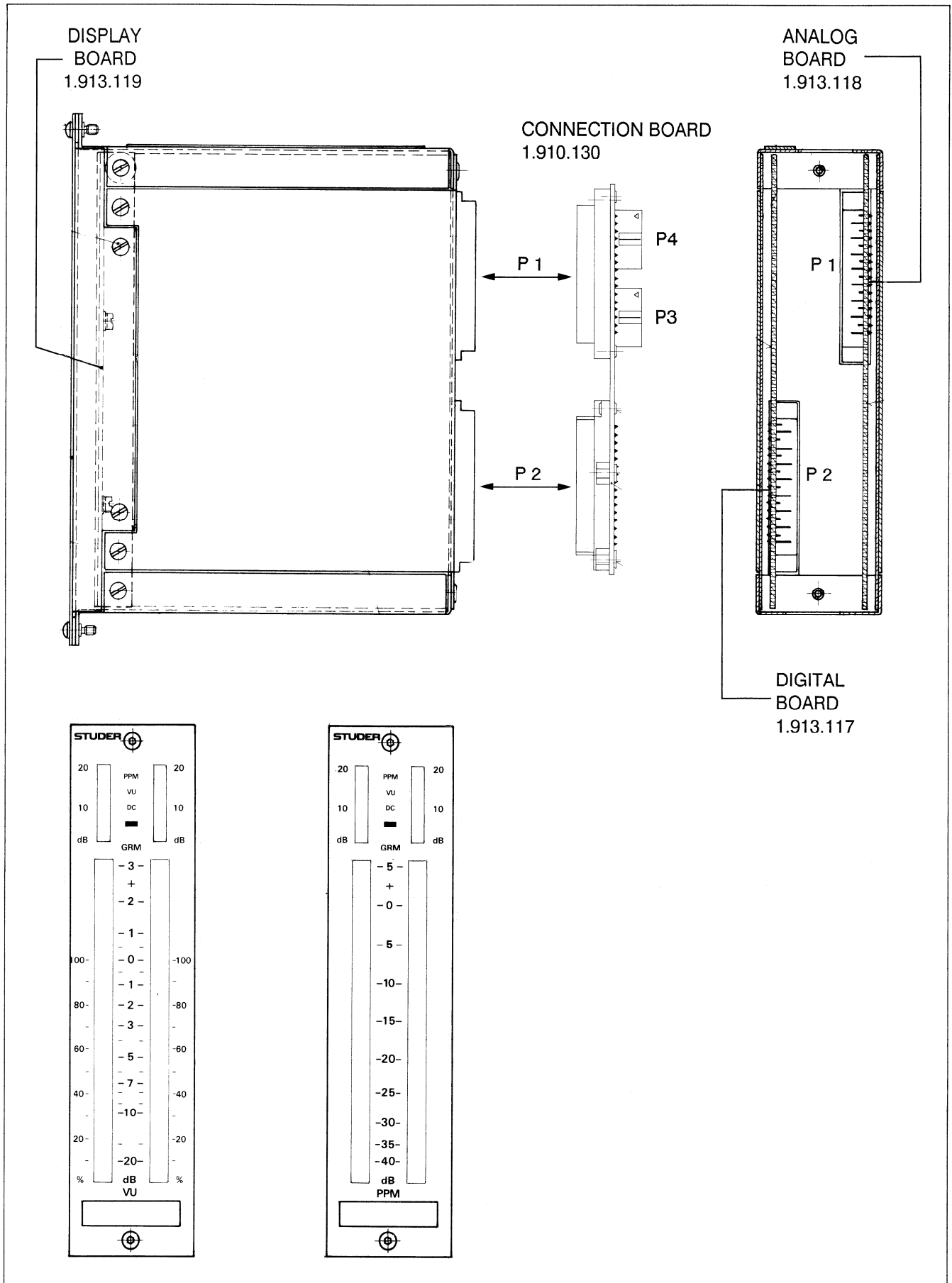
5. SCHEMATICS

1. **Bar Graph 1 Unit (VU or PPM)**
 - General..... 1.913.111 / 112
 - Display Board..... 1.913.119
 - Connection Board 1.910.130

2. **Bar Graph 4 Units (VU or PPM)**
 - General..... 1.913.411 / 412
 - Display Board..... 1.913.419
 - Connection Board 1.910.131

3. **Dual Bargraph circuit diagram..... 1.913.111/112**
 - Digital Board (1 Unit and 4 Units)..... 1.913.117
 - Analog Board (1 Unit and 4 Units) 1.913.118

Bargraph 1 Unit (PPM or VU) 1.913.111.81 / 112.81



BARGRAPH

Display Board 1 Unit 1.913.119.00

Bestückungsseite

Lötseite

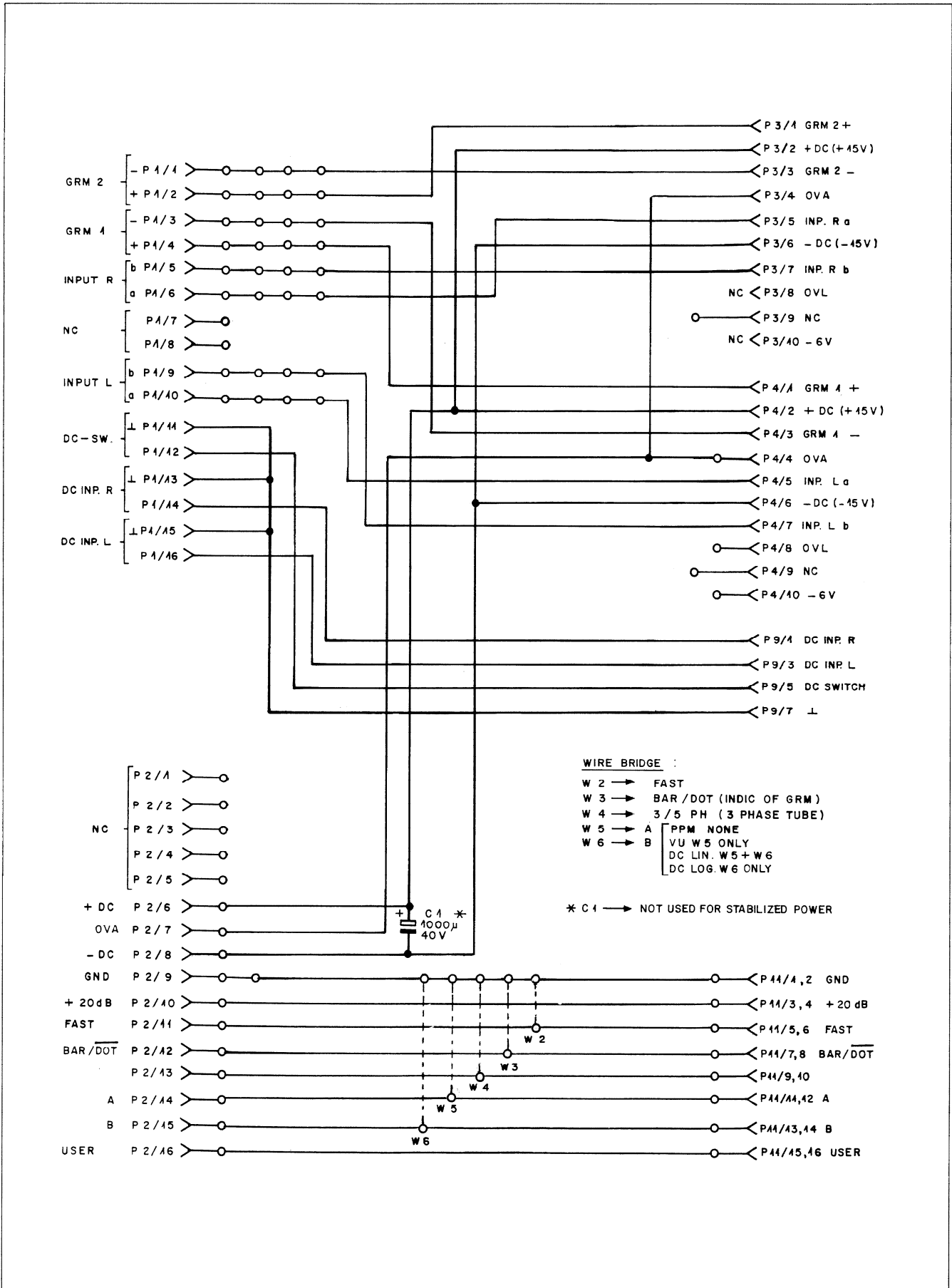
| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|----------|---------|--------------|----------|-------------------------------------|--------|
| B.....1 | | 89.01.4800 | | PLASMA-BAR-GRAPH 200 BARS, 5 PHASES | |
| C.....1 | | | not used | | |
| C.....2 | | 59.31.8333 | 33 nF | +5% 400V MPC | |
| C.....3 | | | not used | | |
| DL.....1 | | 50.04.2119 | MV57124 | red | |
| DL.....2 | | 50.04.2119 | MV57124 | red | |
| DL.....3 | | 50.04.2119 | MV57124 | red | |
| DL.....4 | | 50.04.2119 | MV57124 | red | |
| DLZ...1 | | 50.04.2150 | | led bar-graph red | |
| DLZ...2 | | 50.04.2150 | | led bar-graph red | |
| IC....1 | | 50.11.0119 | LM3914N | led bar driver linear | NS |
| IC....2 | | 50.11.0119 | LM3914N | led bar driver linear | NS |
| L.....1 | | 62.03.0005 | 250uH | coil | |
| L.....2 | | 62.03.0005 | 250uH | coil | |
| MP....1 | | 53.03.0175 | 2 pcs | IC-socket 18 pin | |
| MP....2 | | 1.913.119.11 | 1 pcs | Print | |
| MP....3 | | 1.913.111.03 | 1 pcs | Chassis 1E | 0 |
| MP....4 | | 1.913.111.07 | 1 pcs | Isolation 1E | |
| MP....5 | | 21.01.0352 | 2 pcs | Zylinder-schrauben M3x4 | |
| MP....6 | | 24.16.1030 | 2 pcs | Schnorr M3 | |
| MP....7 | | 23.01.1032 | 2 pcs | Unterlagsscheiben M3 | |
| P.....5 | | 54.01.0215 | | Cis Stecker 12 Pol | |
| P.....6 | | 54.01.0241 | | Cis Stecker 4 Pol | |
| P.....7 | | 54.01.0294 | | Cis Stecker 16 Pol | |
| P.....8 | | 54.01.0289 | | Cis Stecker 8 Pol | |
| R.....1 | | 57.11.3472 | 4.7 kOhm | 5% 0.25W | |
| R.....2 | | 57.11.3242 | 2.4 kOhm | 5% 0.25W | |
| R.....3 | | 57.11.3472 | 4.7 kOhm | 5% 0.25W | |
| R.....4 | | 57.11.3105 | 1 MOhm | 5% 0.25W | |

STUDER (00) 87/11/24 AE DISPLAY UNIT 1E PL 1.913.119.00 PAGE 1

| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|--|---------|----------|-------|-----------------------------|--------|
| <p>MANUFACTURER: Bu=Burdny, Ex=Exer, Fc=Fairchild, GI=General Instrument HP=Hewlett Packard, IIT=Intermetall, Mot=Motorola, Nat=National (Matsushita), NS=National Semiconductors, Ph=Philips, Ra=Raytheon, Sig=Signetics, Six=Siliconix, St=Studer, TI=Texas Instrument, Si=Siemens, Ie=Intersil, Un=Unitrode</p> | | | | | |

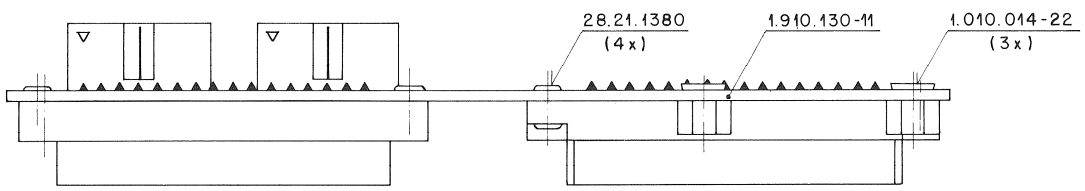
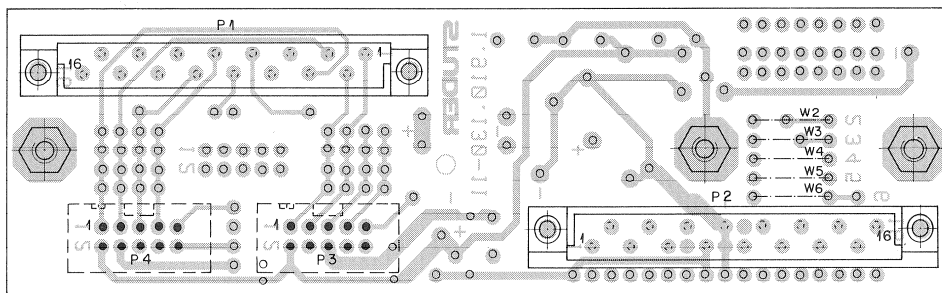
ORIG 87/11/24
STUDER (00) 87/11/24 AE DISPLAY UNIT 1E PL 1.913.119.00 PAGE 2

Bargraph Connection Board 1 Unit 1.913.130.00



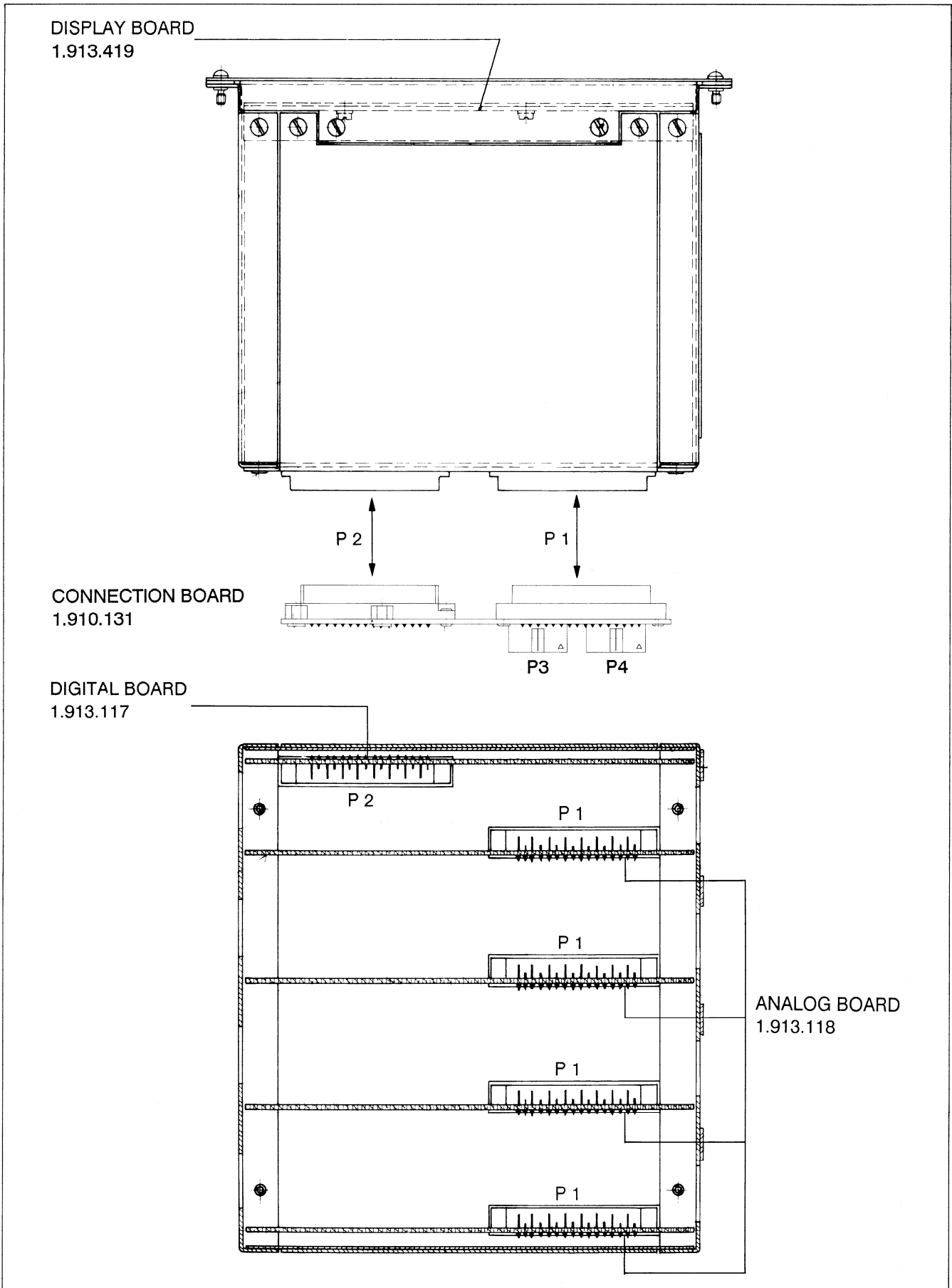
BARGRAPH

Bargraph Connection Board 1 Unit 1.913.130.00



W2 bis W6 nach Angabe Studio-Projektierung

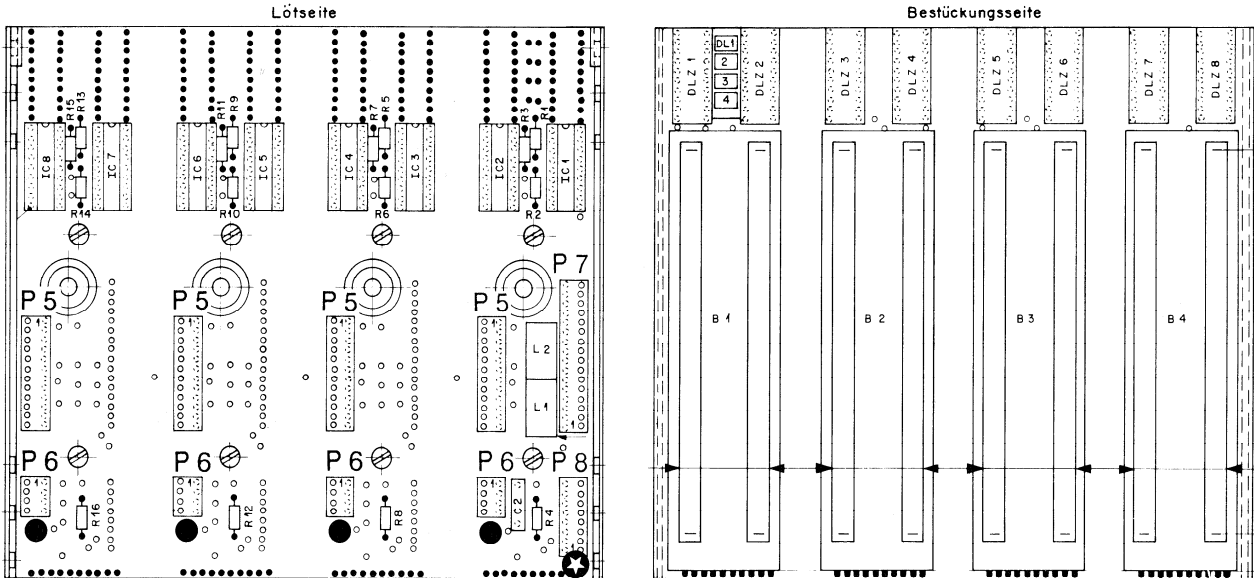
Bargraph 4 Units (PPM or VU) 1.913.411.81 / 412.81



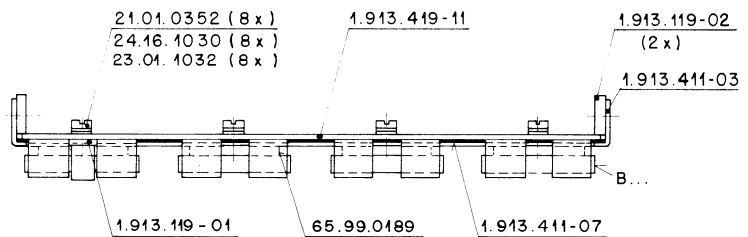
BARGRAPH

Display Board 4 Units 1.913.419.00

The Display Board 4 Units is adequate to four display boards for one unit each.
For details see schematic number 1.913.119.



- ANALOG BOARD
1.913.118
- ★ DIGITAL BOARD
1.913.117



Bargraph Connection Board 4 Units 1.910.131

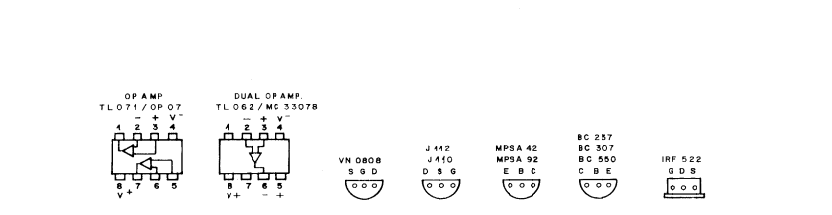
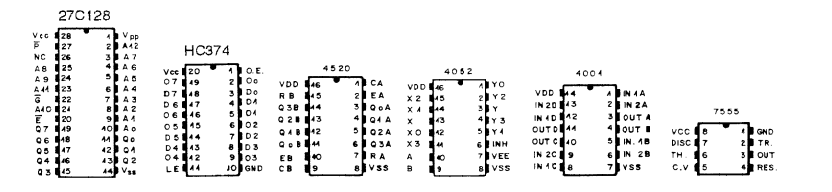
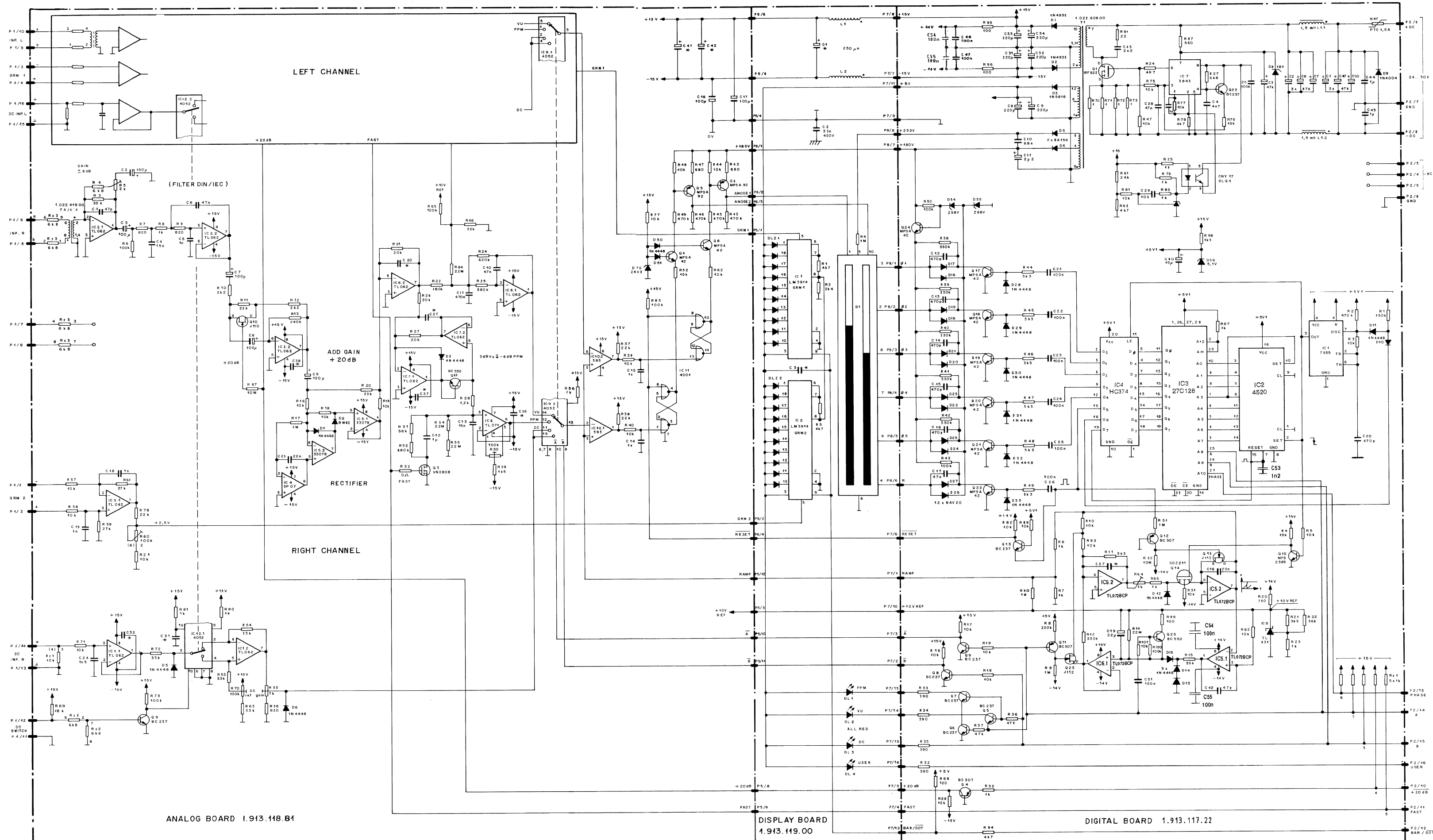
This Board combines four connection boards for one unit on a single print.
For details please see 'Connection Board 1 Unit 1.910.130'.

| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. | IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|---------|---------|--------------|----------|-------------------------------------|--------|---------|---------|------------|----------|-----------------------------|----------|
| B....1 | | 89.01.4800 | | PLASMA-BAR-GRAPH 200 BARS, 5 PHASES | | MP....3 | | | 1 pcs | Chassis 4E | |
| B....2 | | 89.01.4800 | | PLASMA-BAR-GRAPH 200 BARS, 5 PHASES | | MP....4 | | | 1 pcs | Isolation 4E | |
| B....3 | | 89.01.4800 | | PLASMA-BAR-GRAPH 200 BARS, 5 PHASES | | MP....5 | | 21.01.0352 | 2 pcs | Zylinderschrauben M3x4 | |
| B....4 | | 89.01.4800 | | PLASMA-BAR-GRAPH 200 BARS, 5 PHASES | | MP....6 | | 24.16.1030 | 2 pcs | Schraur M3 | |
| C....1 | | | not used | | | MP....7 | | 23.01.1032 | 2 pcs | Unterlagscheiben M3 | |
| C....2 | | 59.31.8333 | 33 nF | +-5% 400V MFC | | P....5 | | 54.01.0215 | | Cia Stecker 12 Pol | 4 Stueck |
| C....3 | | | not used | | | P....6 | | 54.01.0241 | | Cia Stecker 4 Pol | 4 Stueck |
| DL....1 | | 50.04.2119 | MV57124 | red | | P....7 | | 54.01.0294 | | Cia Stecker 16 Pol | 1 Stueck |
| DL....2 | | 50.04.2119 | MV57124 | red | | P....8 | | 54.01.0289 | | Cia Stecker 8 Pol | 1 Stueck |
| DL....3 | | 50.04.2119 | MV57124 | red | | R....1 | | 57.11.3472 | 4.7 kOhm | 5% 0.25W | |
| DL....4 | | 50.04.2119 | MV57124 | red | | R....2 | | 57.11.3242 | 2.4 kOhm | 5% 0.25W | |
| DLZ...1 | | 50.04.2150 | | led bar-graph red | | R....3 | | 57.11.3472 | 4.7 kOhm | 5% 0.25W | |
| DLZ...2 | | 50.04.2150 | | led bar-graph red | | R....4 | | 57.11.3105 | 1 MOhm | 5% 0.25W | |
| DLZ...3 | | 50.04.2150 | | led bar-graph red | | R....5 | | 57.11.3472 | 4.7 kOhm | 5% 0.25W | |
| DLZ...4 | | 50.04.2150 | | led bar-graph red | | R....6 | | 57.11.3242 | 2.4 kOhm | 5% 0.25W | |
| DLZ...5 | | 50.04.2150 | | led bar-graph red | | R....7 | | 57.11.3472 | 4.7 kOhm | 5% 0.25W | |
| DLZ...6 | | 50.04.2150 | | led bar-graph red | | R....8 | | 57.11.3105 | 1 MOhm | 5% 0.25W | |
| DLZ...7 | | 50.04.2150 | | led bar-graph red | | R....9 | | 57.11.3472 | 4.7 kOhm | 5% 0.25W | |
| DLZ...8 | | 50.04.2150 | | led bar-graph red | | R....10 | | 57.11.3242 | 2.4 kOhm | 5% 0.25W | |
| IC....1 | | 50.11.0119 | LM3914N | led bar driver linear | NS | R....11 | | 57.11.3472 | 4.7 kOhm | 5% 0.25W | |
| IC....2 | | 50.11.0119 | LM3914N | led bar driver linear | NS | R....12 | | 57.11.3105 | 1 MOhm | 5% 0.25W | |
| IC....3 | | 50.11.0119 | LM3914N | led bar driver linear | NS | R....13 | | 57.11.3472 | 4.7 kOhm | 5% 0.25W | |
| IC....4 | | 50.11.0119 | LM3914N | led bar driver linear | NS | R....14 | | 57.11.3242 | 2.4 kOhm | 5% 0.25W | |
| IC....5 | | 50.11.0119 | LM3914N | led bar driver linear | NS | R....15 | | 57.11.3472 | 4.7 kOhm | 5% 0.25W | |
| IC....6 | | 50.11.0119 | LM3914N | led bar driver linear | NS | R....16 | | 57.11.3105 | 1 MOhm | 5% 0.25W | |
| IC....7 | | 50.11.0119 | LM3914N | led bar driver linear | NS | | | | | | |
| IC....8 | | 50.11.0119 | LM3914N | led bar driver linear | NS | | | | | | |
| L....1 | | 62.03.0005 | 250uH | coil | | | | | | | |
| L....2 | | 62.03.0005 | 250uH | coil | | | | | | | |
| MP....1 | | 53.03.0175 | 8 pcs | IC-socket 18 pin | | | | | | | |
| MP....2 | | 1.913.419.11 | 1 pcs | Print | | | | | | | |

MANUFACTURER: Bu=Burndy, Ex=Exar, Fc=Fairchild, G=General Instrument
 HP=Hewlett Packard, ITT=International, Mot=Motorola, Nat=National
 (Matsushita), NS=National Semiconductors, Ph=Philips,
 Ra=Raytheon, Sig=Signetics, Six=Siliconix, St=Studer,
 TI=Texas Instrument, S=Siemens, In=Intertell, Un=Unitecra

ORIG 87/11/24

S T U D E R (00) 87/11/24 AE DISPLAY UNIT 4E PL 1.913.419.00 PAGE 1 S T U D E R (00) 87/11/24 AE DISPLAY UNIT 4E PL 1.913.419.00 PAGE 2



ANALOG BOARD 1.913.118.81

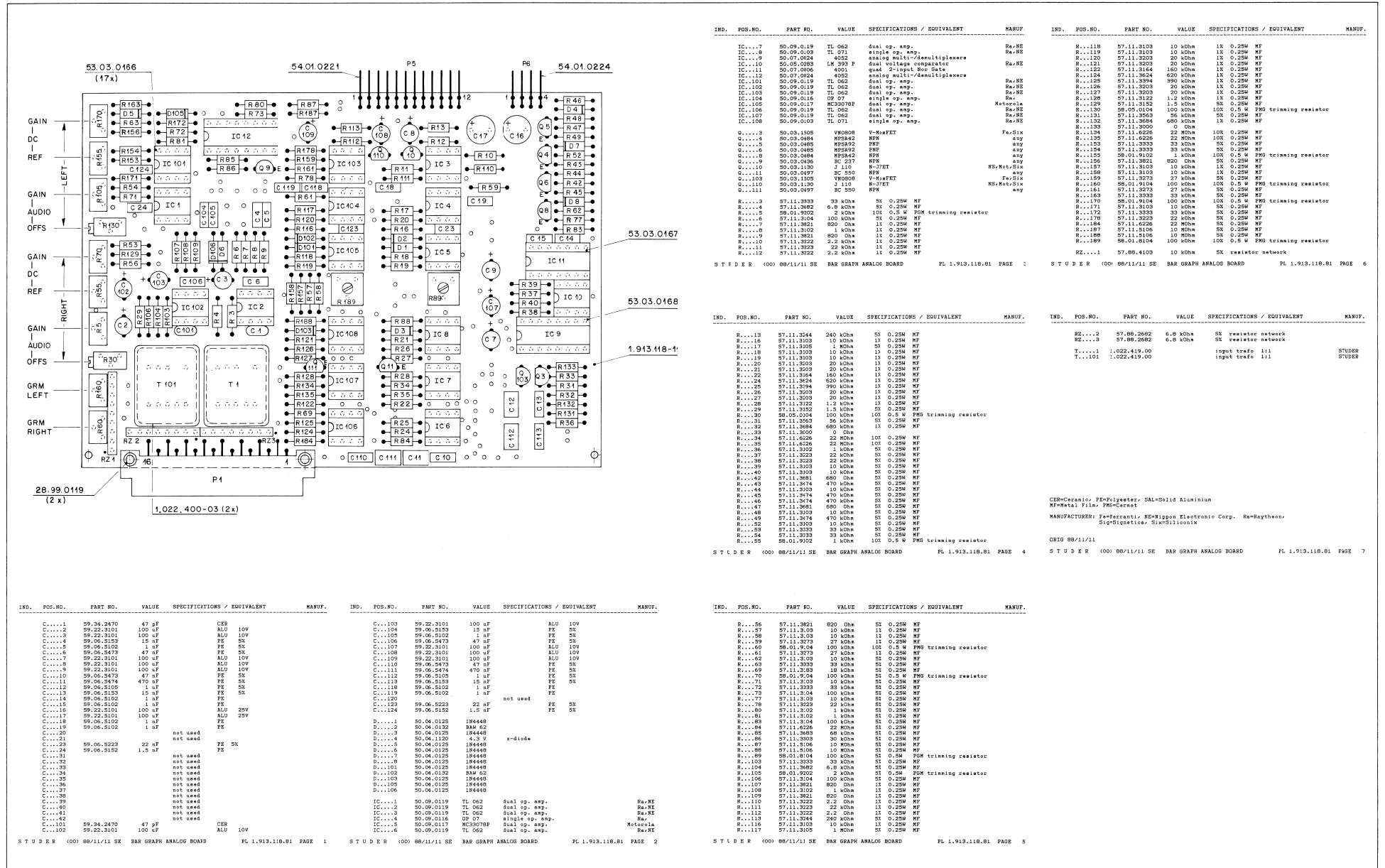
DISPLAY BOARD 1.913.119.00

DIGITAL BOARD 1.913.117.22

| | | |
|------------------|--------------------|-----------------|
| REGISDORF ZÜRICH | DUAL BAR GRAPH PPM | SC 1.913.111.81 |
| | DUAL BAR GRAPH VU | SC 1.913.112.81 |

BARGRAPH

Bargraph Analog Board ESE 1.913.118.81



AUX. Indicator Unit 1.913.130

Die vier Instrumente zeigen dauernd die Modulation der Hilfsausgänge AUX 1... 4 an. Um eine Uebereinstimmung mit dem Hauptinstrument zu erzielen, ist eine Wahl zwischen VU- und PPM Charakteristik möglich. Die Instrumente sind von hinten beleuchtet. Das oberste Instrument kann die Mono-Mischung eines Stereokanals anzeigen (nur bei Mischpulten der Serie 900).

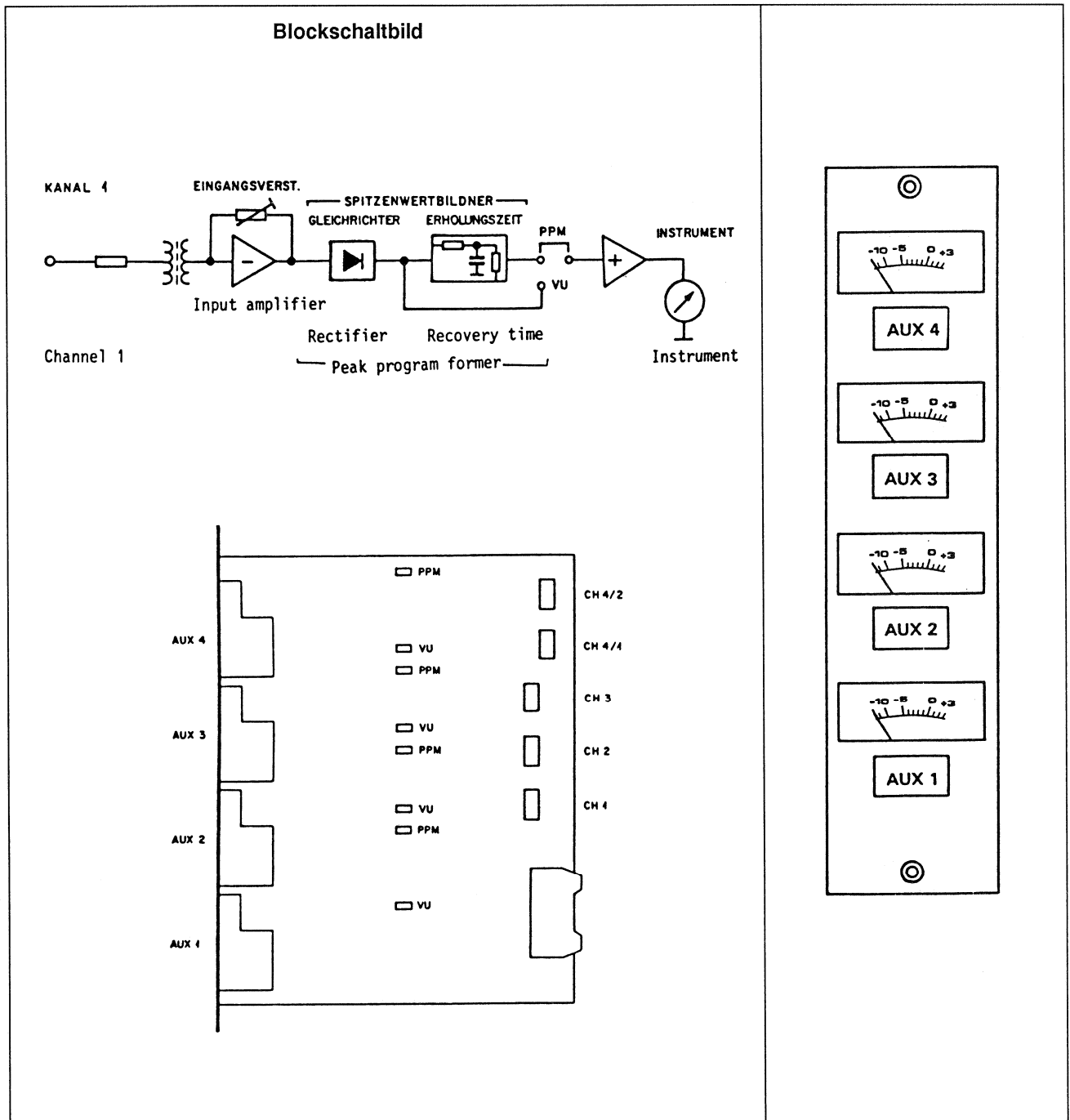


Fig. 1, 2, 3

1. Grundeinstellung

Wahl der Charakteristik

Brückenstecker auf den entsprechenden Stellen platzieren.

Charakteristik ist ebenfalls an der Lötseite der Printplatte bezeichnet mit:

V für VU und

P für PPM

2. Technische Daten

Speisespannungen:

| | |
|--------|--------|
| + 15 V | 40 mA |
| - 15 V | 40 mA |
| - 6 V | 120 mA |

Eingangswiderstand: $R_i > 10 \text{ k}\Omega$

Bereich: + 6 dBu ... + 15 dBu

Frequenzgang 30 Hz...15 kHz: - 1 dB

Dynamik:

PPM in Anlehnung an IEC 268 Norm.

Ansprechzeit in 10 ms auf ca. - 1 dB

Abfallzeit in 1,7 sec auf ca. - 20 dB

VU-Meter in Anlehnung an ANSI Norm.

Ansprechzeit in 200 ms auf ca. -1 VU

3. Mechanische Daten

Abmessungen Frontplatte: 170 x 40 mm

Tiefe: 135 mm

Gewicht: 200 g

AUX. Indicator Unit 1.913.130

The four instruments continuously indicate the modulation of the auxiliary outputs 1...4. To ensure that the readings correspond with those of the main instrument, a change-over between VU and PPM characteristic is possible. The instruments are illuminated from the back. The top instrument can indicate the mono-mix of a stereo-channel. (With audio consoles series 900 only).

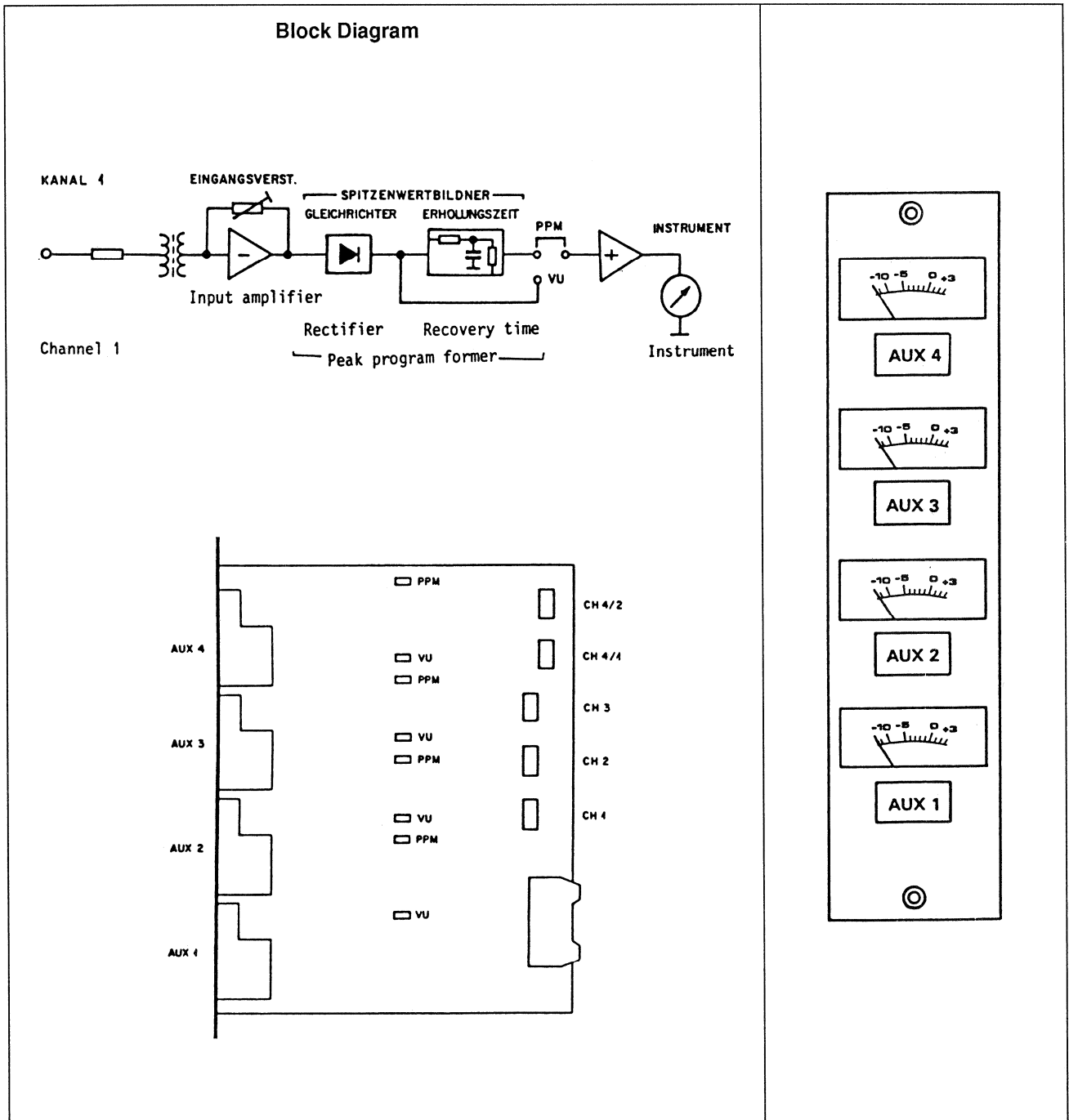


Fig. 1, 2, 3

1. Basic Setting

Selection of the characteristic

Insert jumper in the corresponding location.

The characteristic is also identified on the soldering side of the PCB with

V for VU and

P for PPM

2. Specifications

| | | |
|-------------------------|--------|--------|
| Supply voltages: | + 15 V | 40 mA |
| | - 15 V | 40 mA |
| | - 6 V | 120 mA |

Input impedance: $R_i > 10 \text{ k}\Omega$

Range: + 6 dBu ... +15 dBu

Frequency response 30 Hz...15 kHz: -1 dB

Dynamic response:

PPM similar to IEC 268 standard.

Attack time 10 ms to ca.-1 dB

Return time 1,7 sec to ca.-20 dB

VU-Meter similar to ANSI standard.

Attack time 200 ms to ca.-1 VU

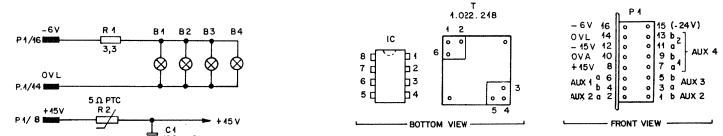
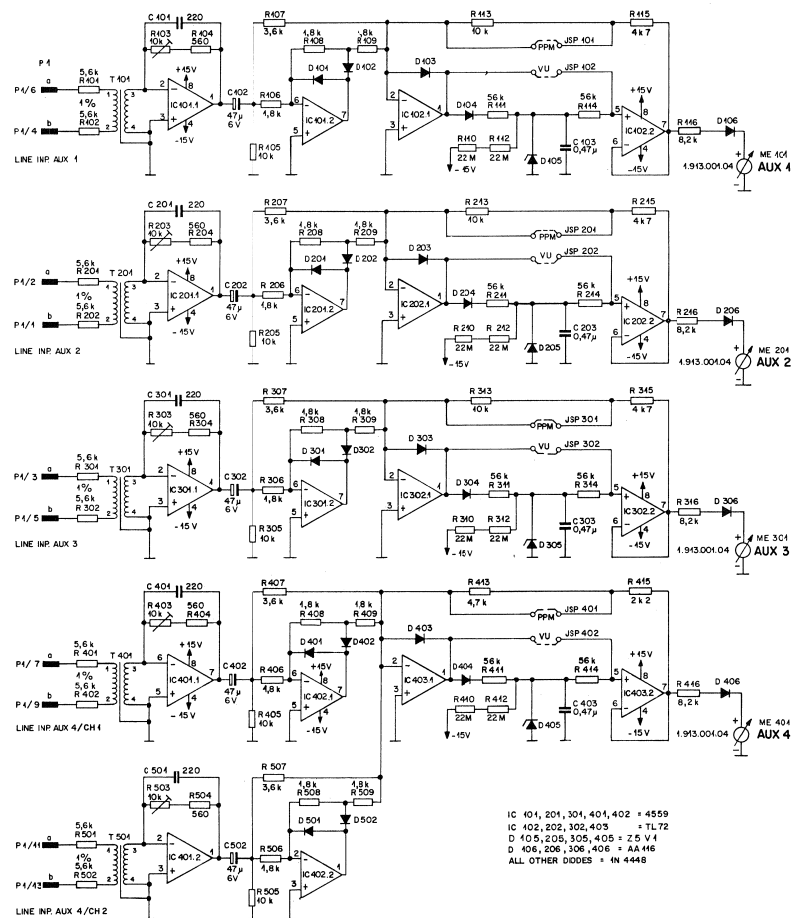
3. Physical Data

Dimensions of front panel: 170 x 40 mm

Depth: 135 mm

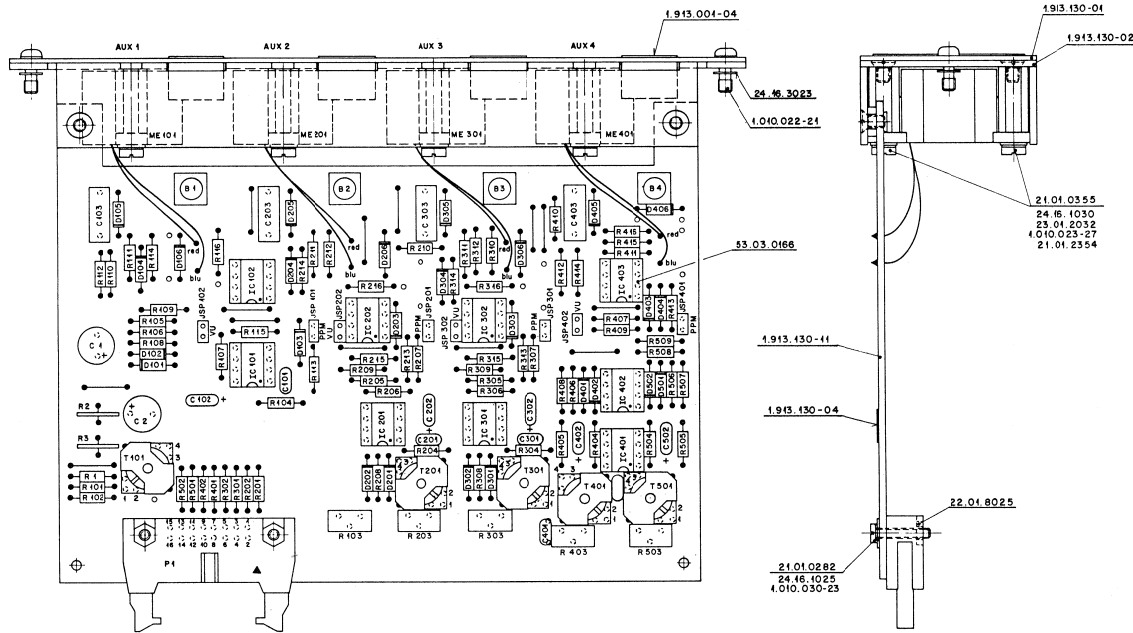
Weight: 200 g

AUX Indicator Unit 1.913.130.81



| | | |
|--------------------------------|---------------------|------------------|
| STUDER REGENSRORF ZÜRICH | AUX. INDICATOR UNIT | SC. 1.913.130.81 |
|--------------------------------|---------------------|------------------|

AUX Indicator Unit 1.913.130.81



| IND POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------------|------------|-----------|---------------------------|---------|
| C 1 | 59.22.5101 | 100µF 25V | | EL |
| C 2 | 53.22.5101 | 100µF 25V | | EL |
| C101 | 59.34.4221 | 220pF | | CER |
| C102 | 59.26.0470 | 47µF 6V | | EL |
| C103 | 59.02.0474 | 0.47µF 5% | | PC |
| C201 | 59.34.4221 | 220pF | | CER |
| C202 | 59.26.0470 | 47µF 6V | | EL |
| C203 | 59.02.0474 | 0.47µF 5% | | PC |
| C301 | 59.34.4221 | 220pF | | CER |
| C302 | 59.26.0470 | 47µF 6V | | EL |
| C303 | 59.02.0474 | 0.47µF 5% | | PC |
| C401 | 59.34.4221 | 220pF | | CER |
| C402 | 59.26.0470 | 47µF 6V | | EL |
| C403 | 59.02.0474 | 0.47µF 5% | | PC |
| C501 | 59.34.4221 | 220pF | | CER |
| C502 | 59.26.0470 | 47µF 6V | | EL |
| BA-4 | 51.02.0144 | 6V .30mA | | 0 |
| D101 | 50.04.0125 | IN4448 | | SI |
| D102 | 50.04.0125 | IN4448 | | SI |
| D103 | 50.04.0125 | IN4448 | | SI |
| D104 | 50.04.0125 | IN4448 | | SI |
| D105 | 50.04.1112 | 2D 5V1 | | SI |
| D106 | 50.04.0363 | AA 116 | | GE S,Se |

| IND | DATE | NAME | |
|-----|------|-------------|-------------------|
| ① | | O - OSRAM | SI - SILICIUM |
| ② | | S - SIEMENS | GE - GERMANIUM |
| ③ | | Se - SESCO | EL - ELECTROLYTIC |
| ④ | | | PC - POLYCARBONAT |
| ⑤ | | | CER - CERAMIC |

STUDER AUX. INDICATOR 1.913.130.81 PAGE 1 OF 6

| IND POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------------|------------|----------------|---------------------------|---------|
| D201 | 50.04.0125 | IN4448 | | SI |
| D202 | 50.04.0125 | IN4448 | | SI |
| D203 | 50.04.0125 | IN4448 | | SI |
| D204 | 50.04.0125 | IN4448 | | SI |
| D205 | 50.04.1112 | 2D 5V1 | | SI |
| D206 | 50.04.0363 | AA 116 | | GE S,Se |
| D301 | 50.04.0125 | IN4448 | | SI |
| D302 | 50.04.0125 | IN4448 | | SI |
| D303 | 50.04.0125 | IN4448 | | SI |
| D304 | 50.04.0125 | IN4448 | | SI |
| D305 | 50.04.1112 | 2D 5V1 | | SI |
| D306 | 50.04.0363 | AA 116 | | GE S,Se |
| D401 | 50.04.0125 | IN4448 | | SI |
| D402 | 50.04.0125 | IN4448 | | SI |
| D403 | 50.04.0125 | IN4448 | | SI |
| D404 | 50.04.0125 | IN4448 | | SI |
| D405 | 50.04.1112 | 2D 5V1 | | SI |
| D406 | 50.04.0363 | AA 116 | | GE S,Se |
| D501 | 50.04.0125 | IN4448 | | SI |
| D502 | 50.04.0125 | IN4448 | | SI |
| J5P | 54.01.0010 | JUMPER PLUG | | B |
| J5J | 54.01.0021 | JUMPER JACK | | B |
| IC401 | 50.09.0107 | ARCASSINB DUAL | OPA | RATI |
| IC402 | 50.09.0107 | ARCASSINB DUAL | B1-JFET LF 353 N TI | |

| IND | DATE | NAME | |
|-----|------|------------------|----------------|
| ① | | S - SIEMENS | SI - SILICIUM |
| ② | | Se - SESCO | GE - GERMANIUM |
| ③ | | B - BERG | |
| ④ | | T - TEXAS INSTR. | |
| ⑤ | | R - RAYNEON | |

STUDER AUX. INDICATOR 1.913.130.81 PAGE 2 OF 6

AUX Indicator Unit 1.913.130.81

| INDI POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-------------|------------|----------|---------------------------|--------|
| IC 201 | 50.09.0107 | RC4553NB | DUAL | RA, TI |
| IC 202 | 50.09.0101 | 72072ACP | DUAL BI-FET LF353N | TI |
| IC 301 | 50.09.0107 | RC4553NB | DUAL | RA, TI |
| IC 302 | 50.09.0101 | 72072ACP | DUAL BI-FET LF353N | TI |
| IC 401 | 50.09.0107 | RC4553NB | DUAL | |
| IC 402 | 50.09.0107 | RC4553NB | DUAL | RA, TI |
| IC 403 | 50.09.0101 | 72072ACP | DUAL BI-FET LF353N | TI |
| R 1 | 57.11.4339 | 3,3 | | |
| R 2 | 57.99.0209 | 5,62 PTC | | P |
| R 3 | 57.99.0209 | 5,62 PTC | | P |
| R 101 | 57.11.3562 | 5,6k | 1% | |
| R 102 | 57.11.3562 | 5,6k | 1% | |
| R 103 | 58.01.7103 | 10k | LIN 10% TRIM | AB, D |
| R 104 | 57.11.4561 | 560 | | |
| R 105 | 57.11.4103 | 10k | | |
| R 106 | 57.11.4182 | 1,8k | 2% | |
| R 107 | 57.11.3362 | 3,6k | 2% | |
| R 108 | 57.11.4182 | 1,8k | 2% | |
| R 109 | 57.11.4182 | 1,8k | 2% | |
| R 110 | 57.11.6226 | 22M | 10% | |
| R 111 | 57.11.4563 | 56k | | |
| R 112 | 57.11.6226 | 22M | 10% | |
| R 113 | 57.11.4103 | 10k | | |
| R 114 | 57.11.4563 | 56k | | |

| INDI | DATE | NAME | | |
|---------------|---------|--------|------------------------|--------------------------|
| ④ | | | RA - RAYTHEON | |
| ③ | | | TI - TEXAS INSTRUMENTS | |
| ② | | | AB - ALLEN BRADLEY | |
| ① | | | D - DIPLOMATICS | |
| ○ | 20.8.86 | ECKERT | P - PHILIPS | |
| STUDER | | | AUX. INDICATOR | 1.913.130.81 PAGE 3 OF 6 |

| INDI POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-------------|------------|-------|---------------------------|-------|
| R 311 | 57.11.4563 | 56k | | |
| R 312 | 57.11.6226 | 22M | | |
| R 313 | 57.11.4103 | 10k | | |
| R 314 | 57.11.4563 | 56k | | |
| R 315 | 57.11.4472 | 4,7k | | |
| R 316 | 57.11.4822 | 8,2k | | |
| R 401 | 57.11.3562 | 5,6k | 1% | |
| R 402 | 57.11.3562 | 5,6k | 1% | |
| R 403 | 58.01.7103 | 10k | LIN 10% TRIM | AB, D |
| R 404 | 57.11.4561 | 560 | | |
| R 405 | 57.11.4103 | 10k | | |
| R 406 | 57.11.4182 | 1,8k | 2% | |
| R 407 | 57.11.3362 | 3,6k | 2% | |
| R 408 | 57.11.4182 | 1,8k | 2% | |
| R 409 | 57.11.4182 | 1,8k | 2% | |
| R 410 | 57.11.6226 | 22M | | |
| R 411 | 57.11.4563 | 56k | | |
| R 412 | 57.11.6226 | 22M | | |
| R 413 | 57.11.4472 | 4,7k | | |
| R 414 | 57.11.4563 | 56k | | |
| R 415 | 57.11.4722 | 2,2k | | |
| R 416 | 57.11.4822 | 8,2k | | |
| R 501 | 57.11.3562 | 5,6k | 1% | |
| R 502 | 57.11.3562 | 5,6k | 1% | |
| R 503 | 58.01.7103 | 10k | LIN 10% TRIM | AB, D |
| R 504 | 57.11.4561 | 560 | | |
| R 505 | 57.11.4103 | 10k | | |
| R 506 | 57.11.4182 | 1,8k | 2% | |

| INDI | DATE | NAME | | |
|---------------|---------|--------|--------------------|--------------------------|
| ④ | | | AB - ALLEN BRADLEY | |
| ③ | | | D - DIPLOMATICS | |
| ② | | | | |
| ① | | | | |
| ○ | 20.8.86 | ECKERT | | |
| STUDER | | | AUX. INDICATOR | 1.913.130.81 PAGE 5 OF 6 |

| INDI POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-------------|------------|-------|---------------------------|-----|
| R 115 | 57.11.4472 | 4,7k | | |
| R 116 | 57.11.4822 | 8,2k | | |
| R 201 | 57.11.3562 | 5,6k | 1% | |
| R 202 | 57.11.3562 | 5,6k | 1% | |
| R 203 | 58.01.7103 | 10k | LIN 10% TRIM | |
| R 204 | 57.11.4561 | 560 | | |
| R 205 | 57.11.4103 | 10k | | |
| R 206 | 57.11.4182 | 1,8k | 2% | |
| R 207 | 57.11.3362 | 3,6k | 2% | |
| R 208 | 57.11.4182 | 1,8k | 2% | |
| R 209 | 57.11.4182 | 1,8k | 2% | |
| R 210 | 57.11.6226 | 22M | | |
| R 211 | 57.11.4563 | 56k | | |
| R 212 | 57.11.6226 | 22M | | |
| R 213 | 57.11.4103 | 10k | | |
| R 214 | 57.11.4563 | 56k | | |
| R 215 | 57.11.4472 | 4,7k | | |
| R 216 | 57.11.4822 | 8,2k | | |
| R 301 | 57.11.3562 | 5,6k | 1% | |
| R 302 | 57.11.3562 | 5,6k | 1% | |
| R 303 | 58.01.7103 | 10k | LIN 10% TRIM | |
| R 304 | 57.11.4561 | 560 | | |
| R 305 | 57.11.4103 | 10k | | |
| R 306 | 57.11.4182 | 1,8k | 2% | |
| R 307 | 57.11.3362 | 3,6k | 2% | |
| R 308 | 57.11.4182 | 1,8k | 2% | |
| R 309 | 57.11.4182 | 1,8k | 2% | |
| R 310 | 57.11.6226 | 22M | | |

| INDI | DATE | NAME | | |
|---------------|---------|--------|----------------|--------------------------|
| ④ | | | | |
| ③ | | | | |
| ② | | | | |
| ① | | | | |
| ○ | 20.8.86 | ECKERT | | |
| STUDER | | | AUX. INDICATOR | 1.913.130.81 PAGE 4 OF 6 |

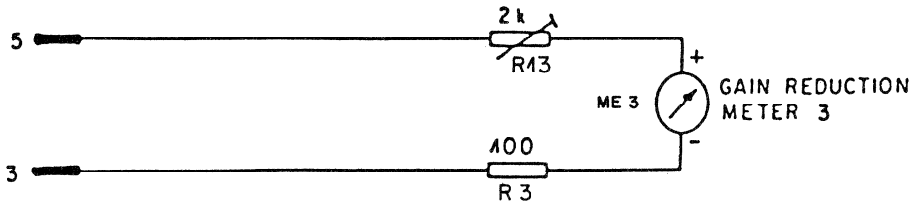
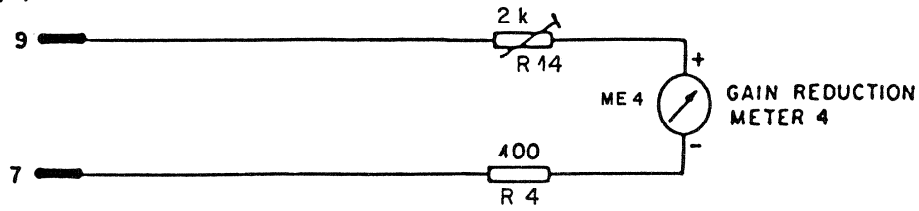
| INDI POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-------------|--------------|-------|---------------------------|-----|
| R 507 | 57.11.3362 | 3,6k | 2% | |
| R 508 | 57.11.4182 | 1,8k | 2% | |
| R 509 | 57.11.4182 | 1,8k | 2% | |
| T 101 | 1.022.218 | 1:1 | LINE TRAFD | ST |
| T 201 | 1.022.218 | 1:1 | LINE TRAFD | ST |
| T 301 | 1.022.218 | 1:1 | LINE TRAFD | ST |
| T 401 | 1.022.218 | 1:1 | LINE TRAFD | ST |
| T 501 | 1.022.218 | 1:1 | LINE TRAFD | ST |
| X B | 53.04.0118 | | LAMP HOLDER | |
| X I C | 53.03.0166 | | IC HOLDER | |
| ME 101 | 1.913.001.04 | 120µA | INDICATOR | ST |
| ME 201 | 1.913.001.04 | 120µA | INDICATOR | ST |
| ME 301 | 1.913.001.04 | 120µA | INDICATOR | ST |
| ME 401 | 1.913.001.04 | 120µA | INDICATOR | ST |
| P 1 | 54.14.2012 | | | |

| INDI | DATE | NAME | | |
|---------------|---------|--------|----------------|--------------------------|
| ④ | | | ST - STUDER | |
| ③ | | | | |
| ② | | | | |
| ① | | | | |
| ○ | 20.8.86 | ECKERT | | |
| STUDER | | | AUX. INDICATOR | 1.913.130.81 PAGE 6 OF 6 |

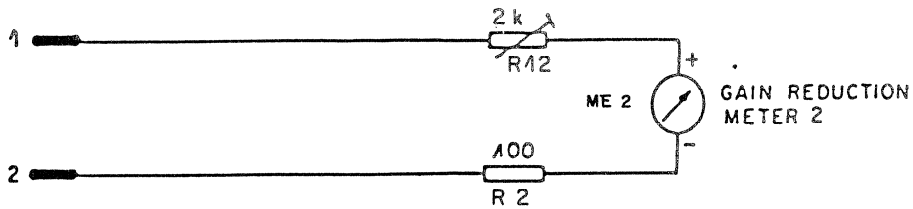
P 7

1.943.134

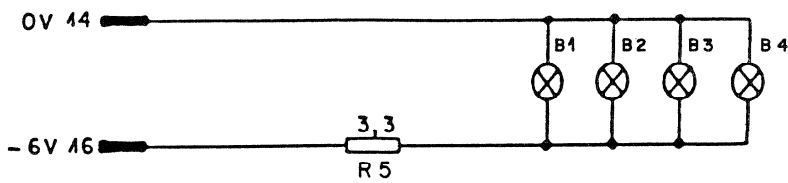
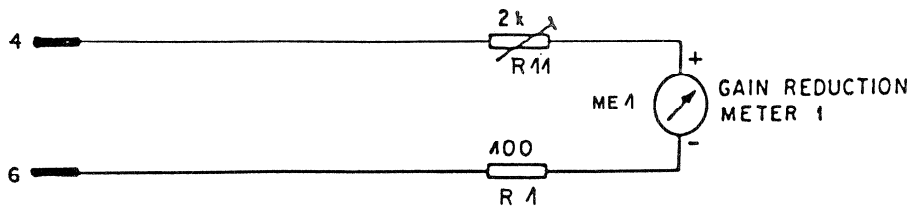
1.943.132



METER 2

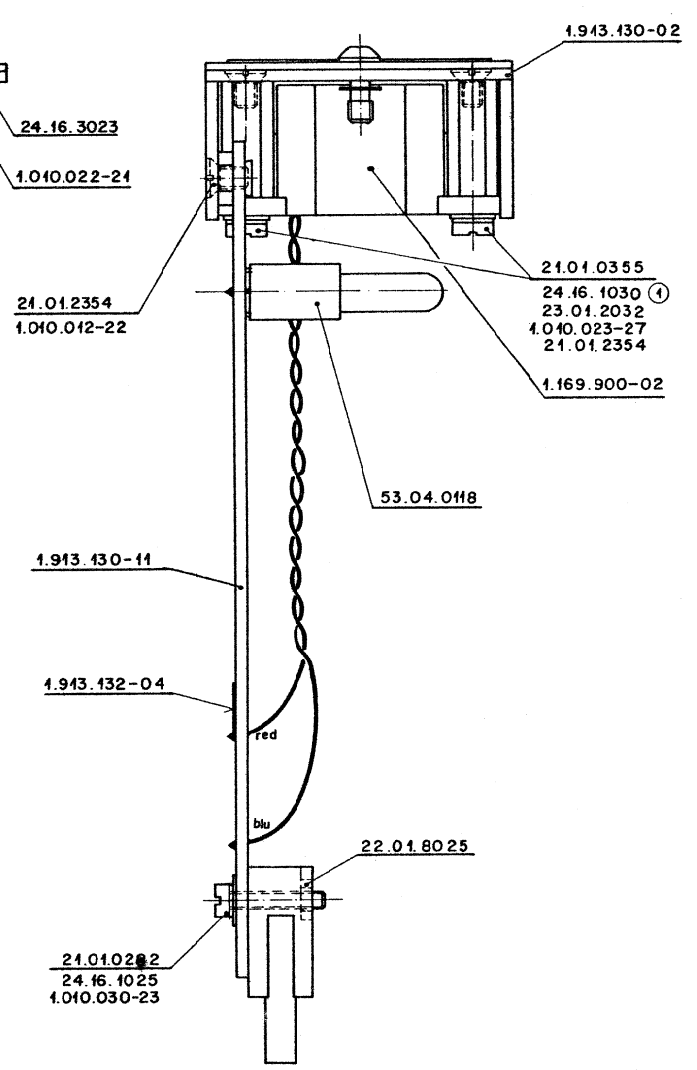
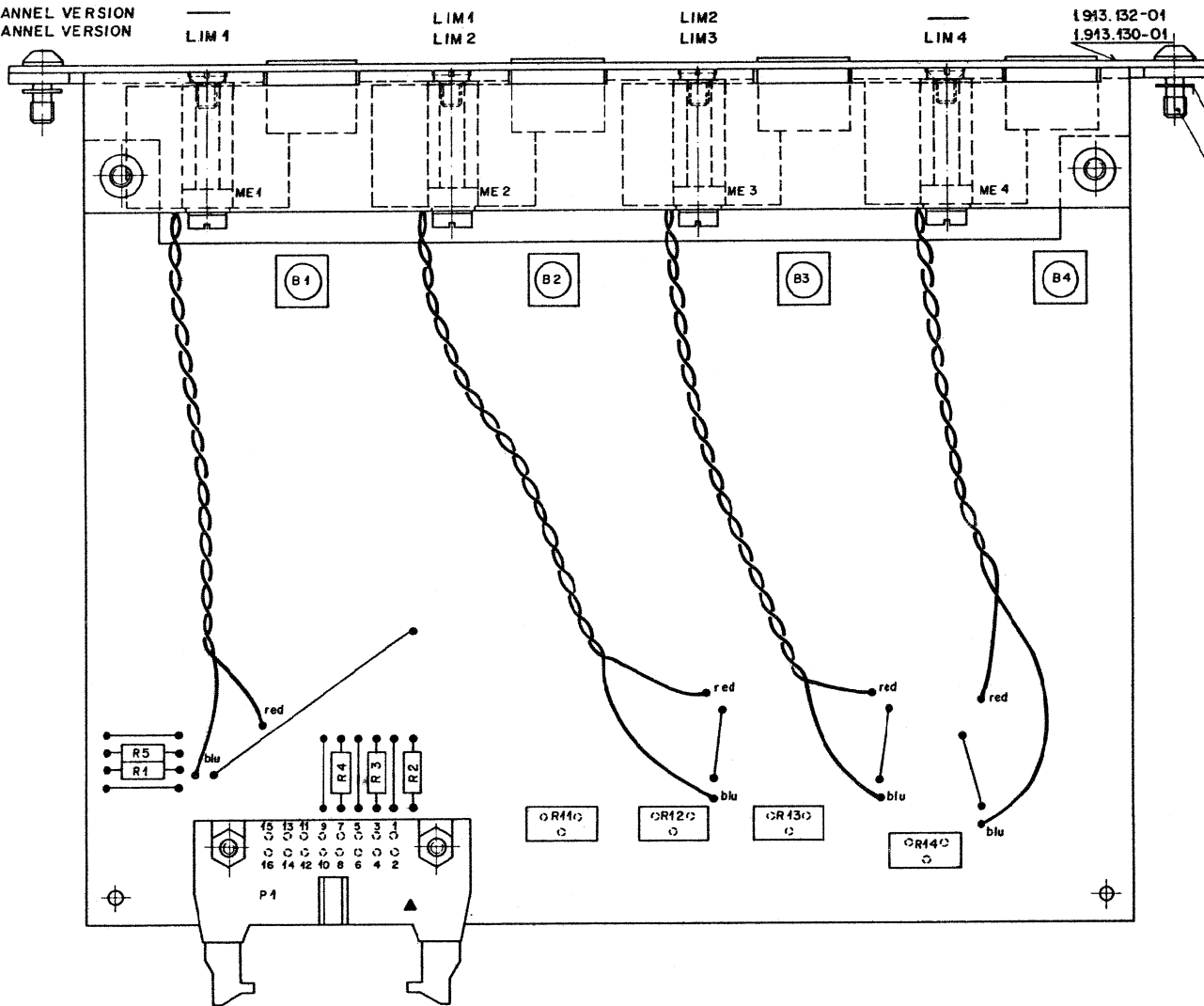


METER 4



| | | | | | | |
|--------------------------------|------------------------|-----------|--|--|--|------------------------|
| DATE: | 28.9.84 | 9.10.84 | | | | PRINT NR. 1.943.130-11 |
| SIGN: | <i>We</i> | <i>We</i> | | | | |
| STUDER REGENSDORF ZÜRICH | 2 GAIN REDUCTION-METER | | | | | SC 1.943.132 |
| | 4 GAIN REDUCTION-METER | | | | | SC 1.943.134 |

2 CHANNEL VERSION
4 CHANNEL VERSION



| VALID FOR | NR. UNIT | PARTS |
|-------------------|--------------|-----------------------------------|
| 2 CHANNEL VERSION | 1.913.132-00 | R2,R3,R5,R12,R13/ME2,ME3/B2, B3 |
| 4 CHANNEL VERSION | 1.913.134-00 | R 1- R 5, R11-R14/ME1- ME4/B1- B4 |

| | | | | |
|---------------------------------------|-------------------|-----------------|--|---|
| Werkstoff: | Norm-Nr.: | Güte: | Änderung: | ③ |
| | DIN-Bez.: | Oberflächliche: | | ② |
| | Abmessung: | Beh.: | 1.6.85 A Ho | ① |
| Zugehörige Unterlagen: | Freimasstoleranz: | Maßstab: | 2.40.84 | ④ |
| PL | ± | 2:1 | STJ We | |
| Ersatz für: | Ersetzt durch: | Kopie für: | | |
| STUDER REGENSDORF ZÜRICH | | | Benennung: LIMITER INDICATOR | |
| | | | Nummer: 1.913.134-00 | |

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|--------------|-------------|---------------------------|------|
| | B1+4 | 51.02.0144 | 6V | 30mA | 0 |
| | R1 | 57.M.4101 | 100 | | |
| | R2 | 57.M.4101 | 100 | | |
| | R3 | 57.M.4101 | 100 | | |
| | R4 | 57.M.4101 | 100 | | |
| | R5 | 57.M.4339 | 33 | | |
| | | | | | |
| | RA1 | 58.01.7202 | 2k | LIN 10% TRIM | AB,D |
| | RA2 | 58.01.7102 | 2k | LIN 10% TRIM | AB,D |
| | RA3 | 58.01.7202 | 2k | LIN 10% TRIM | AB,D |
| | RA4 | 58.01.7202 | 2k | LIN 10% TRIM | AB,D |
| | | | | | |
| ① | ME1 | A.169.900.02 | 120 μ A | INDICATOR | ST |
| ① | ME2 | A.169.900.02 | 120 μ A | INDICATOR | ST |
| ① | ME3 | A.169.900.02 | 120 μ A | INDICATOR | ST |
| ① | ME4 | A.169.900.02 | 120 μ A | INDICATOR | ST |
| | | | | | |
| | PA | 54.14.2013 | | | |
| | | | | | |
| | XB | 53.04.0118 | | LAMP HOLDER W2 x 4.60 | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

| IND | DATE | NAME | | |
|---------------|----------|-------------------|--------------------|-------------|
| ④ | | | 0 - OSRAM | |
| ③ | | | ST - STUDER | |
| ② | | | AB - ALLEN BRADLEY | |
| ① | 24.4.89 | Wc | D - DIPLOMATICS | |
| ○ | 10.12.84 | WVC | | |
| STUDER | | LIMITER INDICATOR | A.913.134.00 | PAGE 1 OF 1 |

Signalization Indication Unit 1.913.140 / 41

SIGN / INDICATION UNIT

Zentrale Bedienungs- und Anzeigeeinheit für die Studio Signalisation, für PFL und Mix-down, Warnsignale für Overload und On Air.

MIXDOWN-Taste zum Umschalten aller Eingangseinheiten auf Tape (nur bei Mehrkanalversion /1.913.141)

PFL Rückstelltaste für alle PFL- und P.Solo-Tasten. LED leuchtet sobald eine oder mehrere PFL / P.Solo Tasten gedrückt sind.

OVERLOAD zeigt die Uebersteuerung eines oder mehrerer Eingänge an.

ON AIR Rückmeldelampe des Zustandes der Sendeleitung im Schaltraum.

STUDIOSIGNALISATION

CALL Impulstaste für gelbes Licht im Studio, gelbe LED zur Rückmeldung.

READY Haltende-Taste für grünes Vorbereitungssignal mit Zustandsanzeige am LED.

ON Haltende-Taste für rotes Studio-Warnsignal. Das Signal wird durchgeschaltet sobald wenigstens bei einer Eingangseinheit der Mikrofonkanal durchgeschaltet ist.

Bemerkung:

Die Zusammenhänge der

PFL - Funktion
Mix-Down - Funktion
Sign - Funktion

werden in anderen Beschreibungen aufgezeigt.

TECHNISCHE DATEN

| | | |
|-------------------|--------|----------|
| Speisespannungen: | + 15 V | 5 mA |
| | - 15 V | 5 mA |
| | - 6 V | variabel |
| | - 24 V | variabel |

MECHANISCHE DATEN

| | |
|----------------------------------|-------------|
| Frontplatte dunkelgrau gespritzt | |
| Abmessungen Frontplatte | 170 x 40 mm |
| Tiefe | 135 mm |
| Gewicht | 170 gr |

SIGN / INDICATION UNIT

Central operating and indication unit for the studio signalling, for PFL and mix down, warning signals for overload and on air.

MIXDOWN button for changing over all input units to tape (only for multichannel version 1.913.141).

PFL reset button for all PFL and P. SOLO buttons. LED turns on as soon as one or more PFL / P. SOLO buttons have been pressed.

OVERLOAD indicates that an overload condition on one or several inputs have been detected.

The ON AIR pilot lamp signals the status of the on air line in the master control room.

STUDIO SIGNALLING

CALL, momentary-action push button for yellow light in the studio, yellow status LED.

READY, self-locking push button for green preparation signal with status LED.

ON, self-locking push button for red studio warning signal. The signal is connected through as soon as the microphone channel of at least one input unit and one master channel has been connected through.

NOTE

The interaction between

PFL function
Mix down function
Sign function

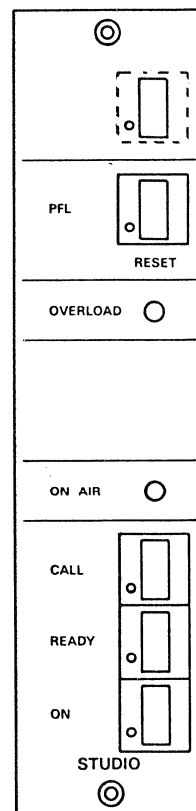
is described elsewhere.

Specifications

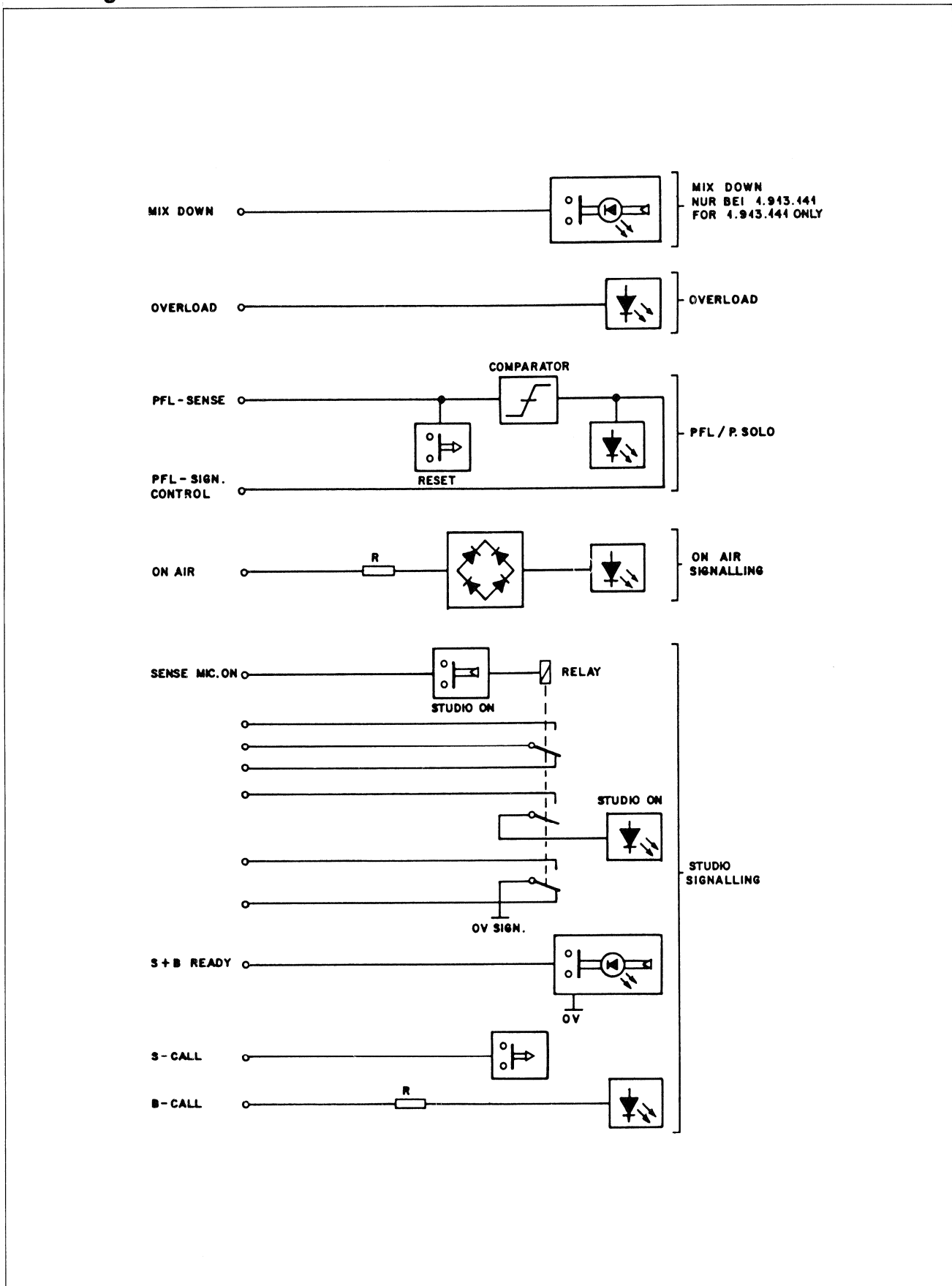
| | | |
|-----------------|-------|----------|
| Supply voltages | +15 V | 5 mA |
| | -15 V | 5 mA |
| | - 6 V | variable |
| | -24 V | variable |

PHYSICAL DATA

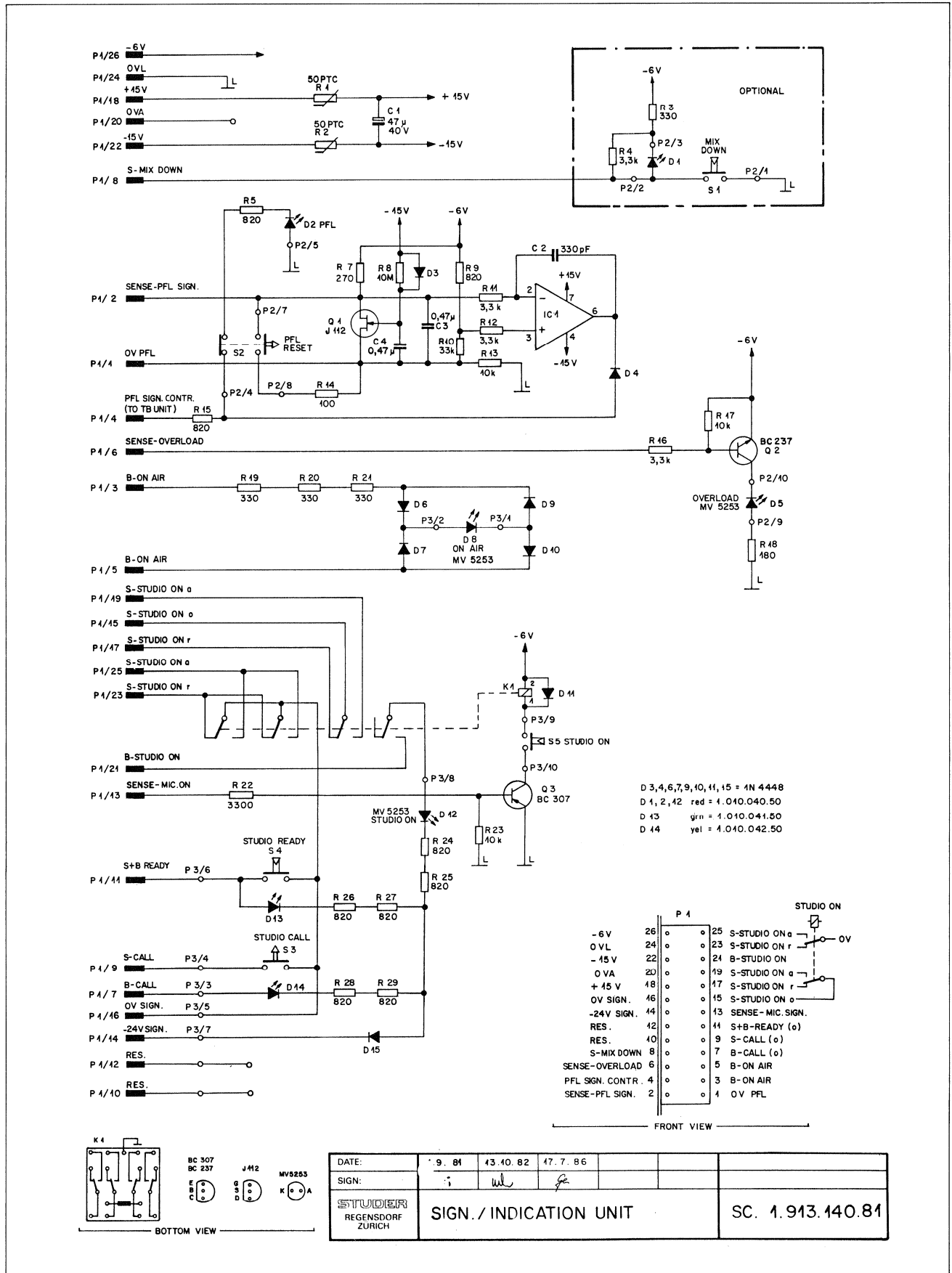
| | |
|--------------------------------|-------------|
| Front panel laquered dark grey | |
| Dimensions of front panel | 170 x 40 mm |
| Depth | 135 mm |
| Weight | 170 g |



Block Diagram 1.913.140 / 141

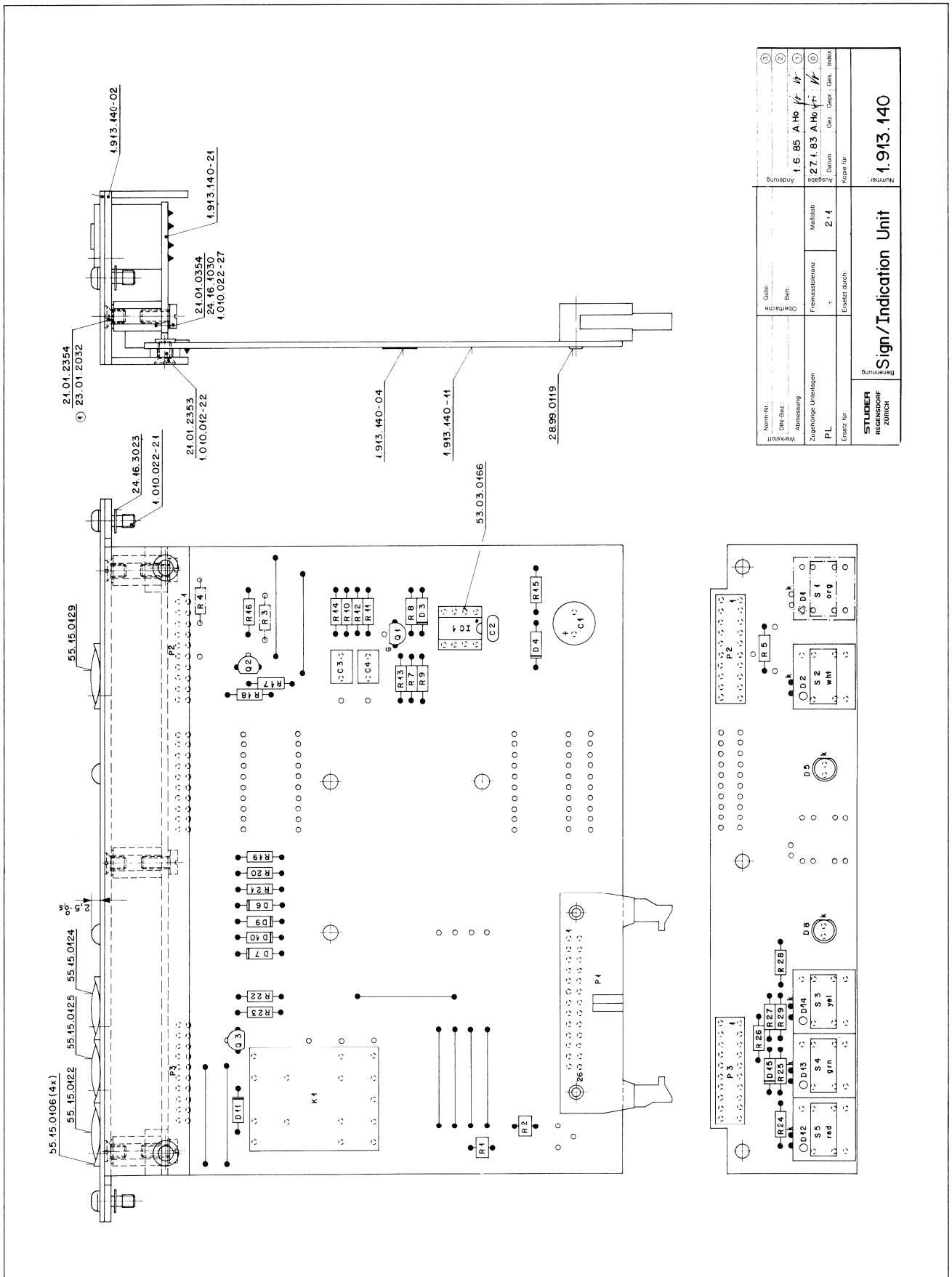


Signalization / Indication Unit 1.913.140.81



| | | | | |
|--------------------------------|-----------------------|----------|---------|------------------|
| DATE: | 9. 81 | 43.10.82 | 17.7.86 | |
| SIGN: | | | | |
| STUDER REGENSDORF ZURICH | SIGN./INDICATION UNIT | | | SC. 1.913.140.81 |

Signalization Indication Unit 1.913.140



| | | | | |
|---|---------------|---------|-------|-----------|
| Norm-Nr. | Geib. | 1.6.85 | A.Ho | hr |
| DN-Bez. | Defläche | 27.1.83 | A.Ho | hr |
| Abmessung | Prüfmaschenz. | Datum | Gez. | Ges. |
| Zugehörige Unterlagen | 1. | 2.1 | Index | |
| Erz. | Erz. | Erz. | Erz. | Erz. |
| STUDER REGENSCHNITT ZÜRICH | | | | |
| Sign/Indication Unit | | | | 1.913.140 |

Signalization / Indication Unit 1.913.140.81

| INDI POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-------------|------------|---------|---------------------------|---------------|
| C 1 | 59.22.6430 | 47µF | 40 V ELECTRN. | |
| C 2 | 59.34.4331 | 330pF | CERAMIC | |
| C 3 | 59.06.0474 | 0.47µF | POLYSTYRENE | |
| C 4 | 59.06.0474 | 0.47µF | POLYSTYRENE | |
| D 1 | 50.04.2121 | CQY41N | LED RED (MIX DOWN) | T |
| D 2 | 50.04.2121 | CQY41N | LED RED | T |
| D 3 | 50.04.0125 | M4448 | | |
| D 4 | 50.04.0125 | M4448 | | |
| D 5 | 50.04.2111 | MV5753 | LED RED | MS |
| D 6 | 50.04.0125 | M4448 | | |
| D 7 | 50.04.0125 | M4448 | | |
| D 8 | 50.04.2111 | MV5753 | LED RED | MS |
| D 9 | 50.04.0125 | M4448 | | |
| D 10 | 50.04.0125 | M4448 | | |
| D 11 | 50.04.0125 | M4448 | | |
| D 12 | 50.04.2121 | CQY41N | LED RED | T |
| D 13 | 50.04.2132 | CQY78N | LED GRN | T |
| D 14 | 50.04.2133 | CQY75N | LED YEL | T |
| D 15 | 50.04.0125 | M4448 | | |
| IC 1 | 50.09.0103 | TL071CP | LF351 | TI |
| K 1 | 56.04.0146 | 4U | RELAY | SA |
| Q 1 | 50.03.0350 | J 112 | FET | SX |
| Q 2 | 50.03.0436 | BC 237B | NPN | BC 650 B IS.P |
| Q 3 | 50.03.0515 | BC 207B | PNP | BC 650 B IS.P |

| INDI | DATE | NAME | |
|------|---------|-------------------|------------------|
| ④ | | SA - SAUER SDS | I - ITT |
| ③ | | T - TELEFUNKEN | S - SIE HENS |
| ② | | MS - MORGANTON | P - PHILIPS |
| ① | | TI - TEXAS INSTR. | |
| ○ | 17.7.86 | ECKERT | SX - SLLI CON 11 |

STUDER SIGN/INDICATION UNIT 1.913.140.81 PAGE 1 OF 3

| INDI POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-------------|------------|-----------|---------------------------|-----|
| S 1 | 55.15.0113 | LATCHING | MODULAR SWITCH (MIX DOWN) | U |
| S 2 | 55.15.0112 | MOMENTARY | MODULAR SWITCH | U |
| S 3 | 55.15.0112 | MOMENTARY | MODULAR SWITCH | U |
| S 4 | 55.15.0113 | LATCHING | MODULAR SWITCH | U |
| S 5 | 55.15.0113 | LATCHING | MODULAR SWITCH | U |

| INDI | DATE | NAME | |
|------|---------|--------|------------|
| ④ | | | U - UNIMEC |
| ③ | | | |
| ② | | | |
| ① | | | |
| ○ | 17.7.86 | ECKERT | |

STUDER SIGN/INDICATION UNIT 1.913.140.81 PAGE 2 OF 3

| INDI POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-------------|------------|-------|---------------------------|-----|
| R 1 | 57.99.0206 | 50 | PTC | P |
| R 2 | 57.99.0206 | 50 | PTC | P |
| R 3 | 57.11.4331 | 330 | (MIX DOWN) | |
| R 4 | 57.11.4332 | 3,3k | (MIX DOWN) | |
| R 5 | 57.11.4821 | 820 | | |
| R 6 | | | | |
| R 7 | 57.11.4271 | 270 Ω | | |
| R 8 | 57.11.4106 | 10M | | |
| R 9 | 57.11.4821 | 820 | | |
| R 10 | 57.11.4333 | 3,3k | | |
| R 11 | 57.11.4332 | 3,3k | | |
| R 12 | 57.11.4332 | 3,3k | | |
| R 13 | 57.11.4103 | 10k | | |
| R 14 | 57.11.4101 | 100 | | |
| R 15 | 57.11.4821 | 820 | | |
| R 16 | 57.11.4332 | 3,3k | | |
| R 17 | 57.11.4103 | 10k | | |
| R 18 | 57.11.4181 | 180 | | |
| R 19 | 57.11.4331 | 330 | | |
| R 20 | 57.11.4331 | 330 | | |
| R 21 | 57.11.4331 | 330 | | |
| R 22 | 57.11.4332 | 3,3k | | |
| R 23 | 57.11.4103 | 10k | | |
| R 24 | 57.11.4821 | 820 | | |
| R 26 | 57.11.4821 | 820 | | |
| R 26 | 57.11.4821 | 820 | | |
| R 27 | 57.11.4821 | 820 | | |
| R 28 | 57.11.4821 | 820 | | |
| R 29 | 57.11.4821 | 820 | | |

| INDI | DATE | NAME | |
|------|---------|--------|-------------|
| ④ | | | P - PHILIPS |
| ③ | | | |
| ② | | | |
| ① | | | |
| ○ | 17.7.86 | ECKERT | |

STUDER SIGN/INDICATION UNIT 1.913.140.81 PAGE 2 OF 3

Audio Generator 1.913.150

Test Generator 1.913.150

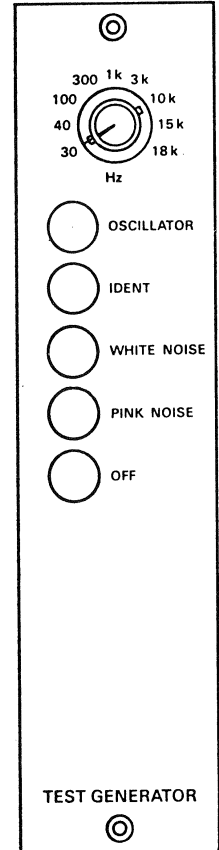
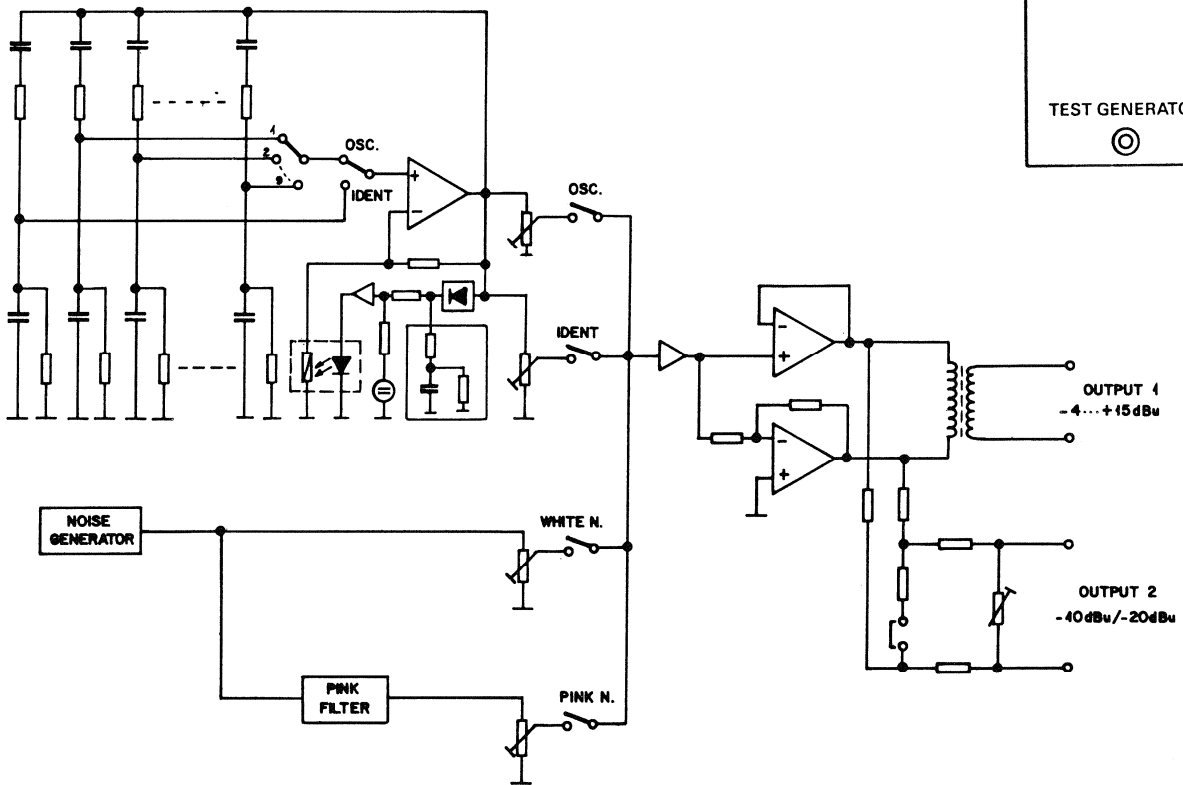
Klirrarmer NF-Oszillator mit stabilisierter Ausgangsspannung.
 Neun Frequenzen.
 Weisses- und rosa Rauschen.
 Identifikationston (Frequenz 1900 Hz oder nach Kundenwunsch).
 Leitungsverstärker mit zwei verschiedenen Ausgangspegeln.

AUDIO GENERATOR 1.913.150

Low-distortion AF generator with stabilized output voltage.
 Nine frequencies
 White and pink noise.
 Identification tone (frequency 1900 Hz or as specified by customer)
 Line amplifier with two different output levels.

Blockschaltbild

BLOCK DIAGRAM



Audio Generator 1.913.150

Technische DatenAusgangsfrequenzen

Neun Festfrequenzen mit Drehschalter wählbar.

Identifikationston

Einschwingzeit 30 Hz
1 kHz

Ausgang 1

symmetrisch, erdfrei
Ausgangspegel mit Trimpotentiometer einstellbar

Ausgangsimpedanz

Lastwiderstand

Frequenzgang

Klirrfaktor 30 Hz...18 kHz
100 Hz...10 kHz

Ausgang 2

symmetrisch
Ausgangspegel einstellbar

Ausgangsimpedanz

Weisses Rauschen

Frequenzgang 20 Hz . 20 kHz

Rosa Rauschen

Frequenzgang

Auf Wunsch

schaltbarer Abschwächer

Stromversorgung

Betriebsspannung

Stromverbrauch

Abmessungen

Frontplatte

Tiefe über alles

Gewicht

SPECIFICATIONSOutput frequencies

Nine fixed frequencies, selectable with rotary switch

30 Hz)
40 Hz)
100 Hz)
300 Hz)
1 kHz)
3 kHz) $\pm 5\%$
10 kHz)
15 kHz)
18 kHz)

Identification frequency

1,9 kHz ± 10 Hz

Settling time 1 kHz 30 Hz

~ 4 sec
 ~ 1 sec

Output 1

Balanced and floating
Output level variable with trimmer potentiometer

-4 dBu...+15dBu

Output impedance

< 40 Ohm

Load impedance

≥ 200 Ohm

Frequency response

$\pm 0,2$ dB

Harmonic distortion 30 Hz ... 18 kHz
100 Hz ... 10 kHz

$< 0,1\%$
 $< 0,05\%$

Output 2

Balanced
Output level adjustable

-10dBu/-20dBu

Output impedance

~ 1 kOhm

White noise

Frequency response 20 Hz ... 20 kHz

digital noise source
with pseudo-random
sequence generator
 ± 1 dB

Pink noise

Frequency response

4 stage cascade filter
-3dB / octave
 ± 1 dB

Switchable attenuator available on request

0/-10/-20 dB

Supply

Operating voltage

± 15 V

Connected load

30 mA

Physical data

Front panel sprayed charcoal grey
Dimensions of front panel

170 x 40,4 mm

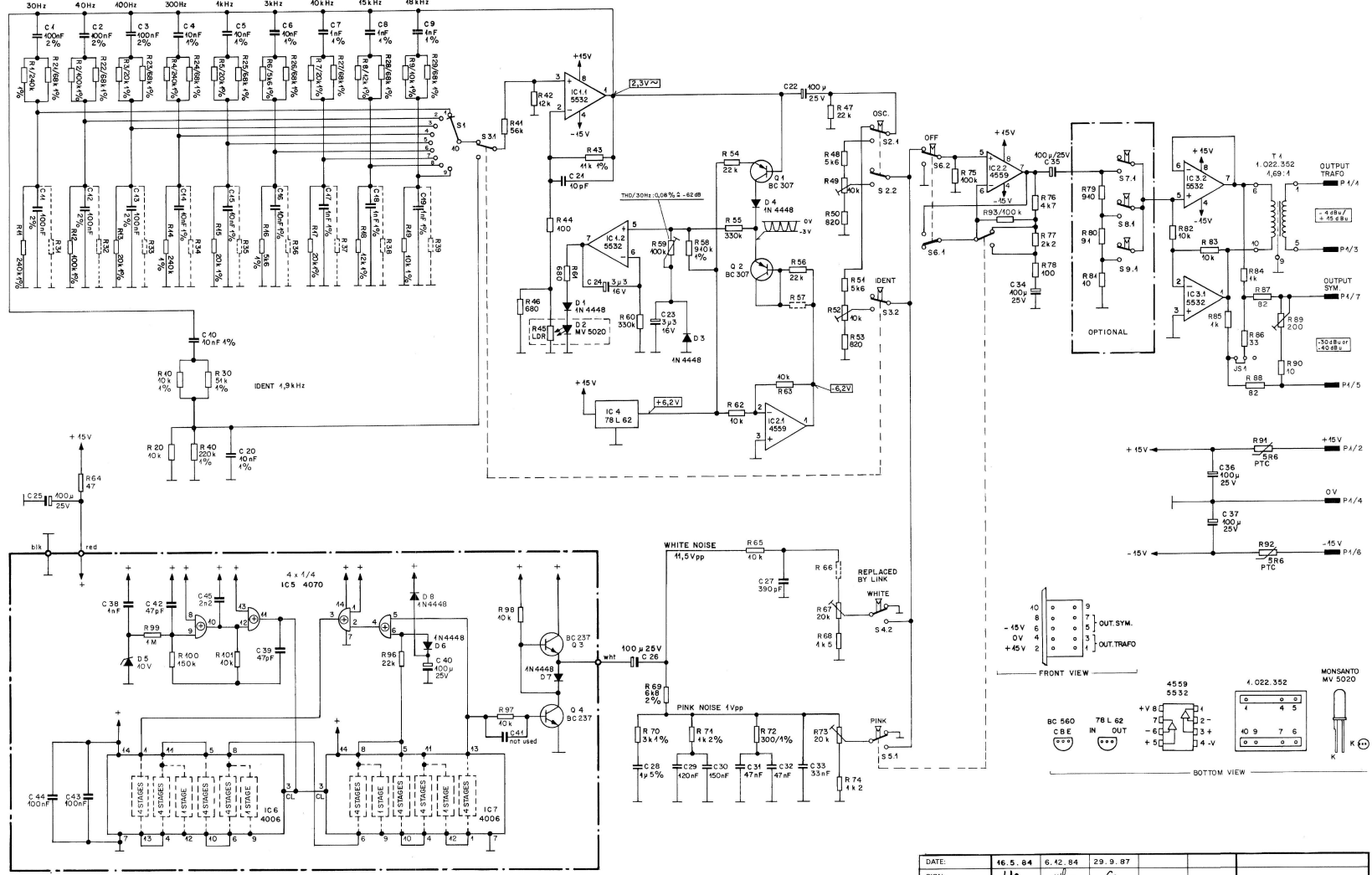
Over all depth

135 mm

Weight

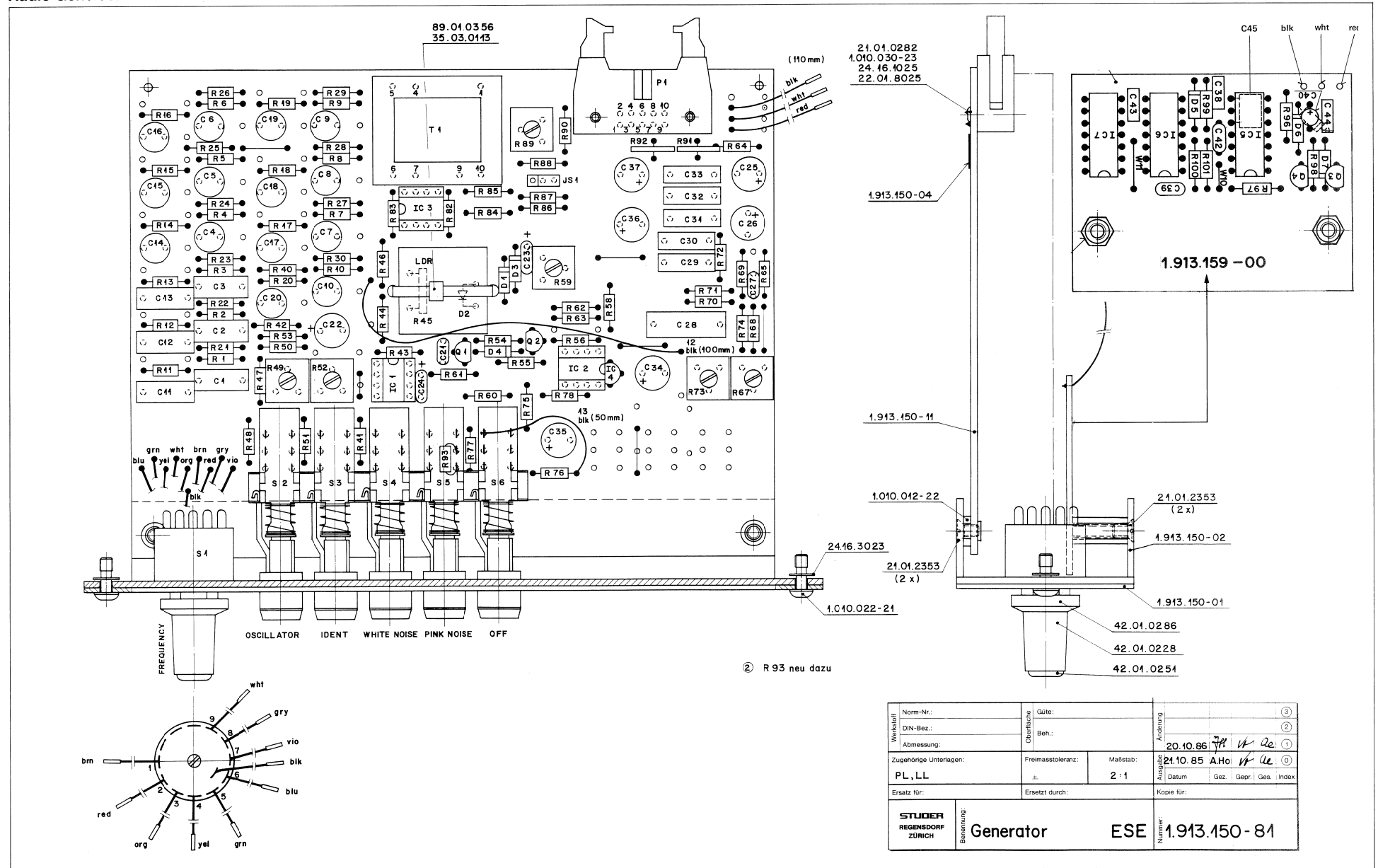
approx. 250 gr

Audio Generator 1.913.150



| | | | | | |
|-------------------------------|-----------|---------|---------|-----------------|--|
| DATE: | 16.5.84 | 6.42.84 | 29.9.87 | | |
| SIGN: | We | ul | Se | | |
| STUDER REGENDORF ZURICH | GENERATOR | | | SC 1.913.150.81 | |

Audio Generator 1.913.150



| | | | | | |
|---------------------------------------|-----------|--------------------------------|----------|------------------------------------|-----------------------|
| Werkstoff: | Norm-Nr.: | Oberfläche: | Güte: | Änderung: | ① |
| | DIN-Bez.: | | Beh.: | | ② |
| Abmessung: | 20.10.86 | Freimasstoleranz: | Maßstab: | Ausgabe: | ③ |
| | PL, LL | | | | ± |
| Zugehörige Unterlagen: | | Ersetzt durch: | | Datum: | Gez. Gepr. Ges. Index |
| Ersetzt für: | | | | Kopie für: | |
| STUDER REGENSDORF ZÜRICH | | Benennung: Generator | | Nummer: ESE 1.913.150-84 | |

Audio Generator 1.913.150

| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. | IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|----------|------------|----------|-------|-----------------------------|-------------------|---------------|--------------|-----------|-----------------------|-----------------------------|---------------------------|
| C.....1 | 59.99.0234 | 100 nF | 2% | PE | | R....56 | 57.11.4223 | 22 kOhm | 5% | 0.25W MF | |
| C.....2 | 59.99.0234 | 100 nF | 2% | PE | | R....57 | | not used | | | |
| C.....3 | 59.99.0234 | 100 nF | 2% | PE | | R....58 | 57.11.3914 | 910 kOhm | 1% | 0.25W MF | |
| C.....4 | 59.05.1103 | 10 nF | 2% | PE | | R....59 | 58.01.8104 | 100 kOhm | 10% | 0.50W | trimming resistor |
| C.....5 | 59.05.1103 | 10 nF | 2% | PE | | R....60 | 57.11.4334 | 330 kOhm | 5% | 0.25W MF | |
| C.....6 | 59.05.1103 | 10 nF | 2% | PE | | R....61 | 57.11.4681 | 680 Ohm | 5% | 0.25W MF | |
| C.....7 | 59.05.1102 | 1 nF | 2% | PE | | R....62 | 57.11.4103 | 10 kOhm | 5% | 0.25W MF | |
| C.....8 | 59.05.1102 | 1 nF | 2% | PE | | R....63 | 57.11.4103 | 10 kOhm | 5% | 0.25W MF | |
| C.....9 | 59.05.1102 | 1 nF | 2% | PE | | R....64 | 57.11.4470 | 47 Ohm | 5% | 0.25W MF | |
| C.....10 | 59.05.1103 | 10 nF | 2% | PE | | R....65 | 57.11.4103 | 10 kOhm | 5% | 0.25W MF | |
| C.....11 | 59.99.0234 | 100 nF | 2% | PE | | R....66 | | 1nK | | | |
| C.....12 | 59.99.0234 | 100 nF | 2% | PE | | R....67 | 58.01.8203 | 20 kOhm | 10% | 0.50W | trimming resistor |
| C.....13 | 59.99.0234 | 100 nF | 2% | PE | | R....68 | 57.11.4152 | 1.5 kOhm | 5% | 0.25W MF | |
| C.....14 | 59.05.1103 | 10 nF | 2% | PE | | R....69 | 57.11.4682 | 6.8 kOhm | 2% | 0.25W MF | |
| C.....15 | 59.05.1103 | 10 nF | 2% | PE | | R....70 | 57.11.3902 | 3 kOhm | 1% | 0.25W MF | |
| C.....16 | 59.05.1103 | 10 nF | 2% | PE | | R....71 | 57.11.4102 | 1 kOhm | 2% | 0.25W MF | |
| C.....17 | 59.05.1102 | 1 nF | 2% | PE | | R....72 | 57.11.3301 | 300 Ohm | 2% | 0.25W MF | |
| C.....18 | 59.05.1102 | 1 nF | 2% | PE | | R....73 | 58.01.8203 | 20 kOhm | 10% | 0.50W | trimming resistor |
| C.....19 | 59.05.1102 | 1 nF | 2% | PE | | R....74 | 57.11.4122 | 1.2 kOhm | 5% | 0.25W MF | |
| C.....20 | 59.05.1103 | 10 nF | 2% | PE | | R....75 | 57.11.4104 | 100 kOhm | 5% | 0.25W MF | |
| C.....21 | 59.34.1100 | 10 pF | 5% | CE | | R....76 | 57.11.4472 | 4.7 kOhm | 2% | 0.25W MF | |
| C.....22 | 59.22.5101 | 100 uF | -20% | 16V EL | | R....77 | 57.11.4222 | 2.2 kOhm | 2% | 0.25W MF | |
| C.....23 | 59.26.2399 | 3.3 uF | -20% | 16V SAL | | R....78 | 57.11.4101 | 100 Ohm | 2% | 0.25W MF | |
| C.....24 | 59.26.2399 | 3.3 uF | -20% | 16V SAL | | R....79 | | 3.3 Ohm | 1% | 57113911 option | |
| C.....25 | 59.22.5101 | 100 uF | -20% | 16V EL | | R....80 | | 91 Ohm | 1% | 57113910 option | |
| C.....26 | 59.22.5101 | 100 uF | -20% | 16V EL | | R....81 | | 10 Ohm | 1% | 57113100 option | |
| C.....27 | 59.34.0391 | 390 pF | | CE | | R....82 | 57.11.4103 | 10 kOhm | 5% | 0.25W MF | |
| C.....28 | 59.02.0125 | 1 uF | 5% | PC | | R....83 | 57.11.4103 | 10 kOhm | 5% | 0.25W MF | |
| C.....29 | 59.02.0124 | 120 nF | 5% | PC | | R....84 | 57.11.4102 | 1 kOhm | 2% | 0.25W MF | |
| C.....30 | 59.02.0154 | 150 nF | 5% | PC | | R....85 | 57.11.4102 | 1 kOhm | 2% | 0.25W MF | |
| C.....31 | 59.02.0473 | 47 nF | 5% | PC | | R....86 | 57.11.4330 | 33 Ohm | 2% | 0.25W MF | |
| C.....32 | 59.02.0473 | 47 nF | 5% | PC | | R....87 | 57.11.4820 | 82 Ohm | 2% | 0.25W MF | |
| C.....33 | 59.02.0473 | 33 nF | 5% | PC | | R....88 | 57.11.4820 | 82 Ohm | 2% | 0.25W MF | |
| C.....34 | 59.22.5101 | 100 uF | -20% | 16V EL | | R....89 | 58.01.8201 | 200 Ohm | 10% | 0.50W | trimming resistor |
| C.....35 | 59.22.5101 | 100 uF | -20% | 16V EL | | R....90 | 57.11.4100 | 10 Ohm | 5% | 0.25W MF | |
| C.....36 | 59.22.5101 | 100 uF | -20% | 16V EL | | R....91 | 57.99.0209 | 5.6 Ohm | | PTC | Philips Nr.2322 662 91005 |
| C.....37 | 59.22.5101 | 100 uF | -20% | 16V EL | | R....92 | 57.99.0209 | 5.6 Ohm | | PTC | Philips Nr.2322 662 91005 |
| D.....1 | 50.04.0125 | IN4448 | | any | | R....93 | 57.11.4104 | 100 kOhm | 5% | 0.25W MF | |
| D.....2 | 50.04.2104 | MV5020 | red | GI.Lix | | S.....1 | 55.13.0025 | 1#9 | | rotary-switch | St |
| D.....3 | 50.04.0125 | IN4448 | | any | | S.....2 | 55.15.0005 | 2#U | | 2u gold | |
| D.....4 | 50.04.0125 | IN4448 | | any | | S.....3 | | 2#U | | see S 2 | |
| IC.....1 | 50.09.0105 | NE5532 N | dual | op. amp. | Ti+Sig,Ra | S.....4 | | 2#U | | see S 2 | |
| IC.....2 | 50.09.0107 | RC4558 N | dual | op. amp. | Ti+Sig,Ra | S.....5 | | 2#U | | see S 2 | |
| IC.....3 | 50.09.0105 | NE5532 N | dual | op. amp. | Ti+Sig,Ra | S.....6 | | 2#U | | see S 2 | |
| IC.....4 | 50.10.0101 | 78L62 | 6.2V | | Fc | S.....7 | | 2#U | | 2u gold option | |
| P.....7 | 54.14.2011 | 10 pin | | | Yamahaichi | S.....8 | | 2#U | | see S 7 option | |
| P.....1 | 50.03.0496 | 8C 560 | PNP | IC>100mA, B>100 | any | S.....9 | | 2#U | | see S 7 option | |
| P.....2 | 50.03.0496 | 8C 560 | PNP | IC>100mA, B>100 | any | T.....1 | 1.022.352.00 | | | output trafo 1.69:1 | St |
| R.....1 | 57.11.3244 | 240 kOhm | 1% | 0.25W MF | | (10) C....38 | 59.06.5102 | 1 nF | 10% | PE | |
| R.....2 | 57.11.3104 | 100 kOhm | 1% | 0.25W MF | | (10) C....39 | 59.34.2470 | 47 pF | 5% | CE | |
| R.....3 | 57.11.3203 | 20 kOhm | 1% | 0.25W MF | | (10) C....40 | 59.26.9109 | 22 uF | -20% | SAL | |
| R.....4 | 57.11.3244 | 240 kOhm | 1% | 0.25W MF | | (10) C....41 | | not used | | | |
| R.....5 | 57.11.3203 | 20 kOhm | 1% | 0.25W MF | | (10) C....42 | 59.34.2470 | 47 pF | 5% | CE | |
| R.....6 | 57.11.3562 | 5.6 kOhm | 1% | 0.25W MF | | (10) C....43 | 59.06.5104 | 100 nF | 20% | PE | |
| R.....7 | 57.11.3203 | 20 kOhm | 1% | 0.25W MF | | (10) C....44 | 59.06.5104 | 100 nF | 20% | PE | |
| R.....8 | 57.11.3123 | 12 kOhm | 1% | 0.25W MF | | (10) D.....5 | 50.04.1108 | 2.5kV | 400mW | | |
| R.....9 | 57.11.3103 | 10 kOhm | 1% | 0.25W MF | | (10) D.....6 | 50.04.0125 | IN4448 | | | any |
| R.....10 | 57.11.3103 | 10 kOhm | 1% | 0.25W MF | | (10) D.....7 | 50.04.0125 | IN4448 | | | any |
| R.....11 | 57.11.3244 | 240 kOhm | 1% | 0.25W MF | | (10) IC....5 | 50.07.0070 | CD4070 | 2-input EXOR | | Fc,MoT |
| R.....12 | 57.11.3104 | 100 kOhm | 1% | 0.25W MF | | (10) IC....6 | 50.07.1006 | CD4006 | 18 bit SHIFT-REGISTER | | Fc,MoT |
| R.....13 | 57.11.3203 | 20 kOhm | 1% | 0.25W MF | | (10) IC....7 | 50.07.1006 | CD4006 | 18 bit SHIFT-REGISTER | | Fc,MoT |
| R.....14 | 57.11.3244 | 240 kOhm | 1% | 0.25W MF | | (10) Q.....3 | 50.03.0436 | 8C 237 | NPN | IC>100mA, B>100 | any |
| R.....15 | 57.11.3203 | 20 kOhm | 1% | 0.25W MF | | (10) Q.....4 | 50.03.0436 | 8C 237 | NPN | IC>100mA, B>100 | any |
| R.....16 | 57.11.3562 | 5.6 kOhm | 1% | 0.25W MF | | (10) R....94 | | not exist | | | |
| R.....17 | 57.11.3203 | 20 kOhm | 1% | 0.25W MF | | (10) R....95 | | not exist | | | |
| R.....18 | 57.11.3123 | 12 kOhm | 1% | 0.25W MF | | (10) R....96 | 57.11.4223 | 22 kOhm | 2% | 0.25W MF | |
| R.....19 | 57.11.3103 | 10 kOhm | 1% | 0.25W MF | | (10) R....97 | 57.11.4103 | 10 kOhm | 2% | 0.25W MF | |
| R.....20 | 57.11.3103 | 10 kOhm | 1% | 0.25W MF | | (10) R....98 | 57.11.4103 | 10 kOhm | 2% | 0.25W MF | |
| R.....21 | 57.11.3683 | 68 kOhm | 1% | 0.25W MF | | (10) R....99 | 57.11.4105 | 1 kOhm | 5% | 0.25W MF | |
| R.....22 | 57.11.3683 | 68 kOhm | 1% | 0.25W MF | | (10) R....100 | 57.11.4194 | 150 kOhm | 2% | 0.25W MF | |
| R.....23 | 57.11.3683 | 68 kOhm | 1% | 0.25W MF | | (10) R....101 | 57.11.4103 | 10 kOhm | 2% | 0.25W MF | |
| R.....24 | 57.11.3683 | 68 kOhm | 1% | 0.25W MF | | | | | | | |
| R.....25 | 57.11.3683 | 68 kOhm | 1% | 0.25W MF | | | | | | | |
| R.....26 | 57.11.3683 | 68 kOhm | 1% | 0.25W MF | | | | | | | |
| R.....27 | 57.11.3683 | 68 kOhm | 1% | 0.25W MF | | | | | | | |
| R.....28 | 57.11.3683 | 68 kOhm | 1% | 0.25W MF | | | | | | | |
| R.....29 | 57.11.3683 | 68 kOhm | 1% | 0.25W MF | | | | | | | |
| R.....30 | 57.11.3513 | 51 kOhm | 1% | 0.25W MF | | | | | | | |
| R.....31 | | not used | | | | | | | | | |
| R.....32 | | not used | | | | | | | | | |
| R.....33 | | not used | | | | | | | | | |
| R.....34 | | not used | | | | | | | | | |
| R.....35 | | not used | | | | | | | | | |
| R.....36 | | not used | | | | | | | | | |
| R.....37 | | not used | | | | | | | | | |
| R.....38 | | not used | | | | | | | | | |
| R.....39 | | not used | | | | | | | | | |
| R.....40 | 57.11.4224 | 220 kOhm | 5% | 0.25W MF | | | | | | | |
| R.....41 | 57.11.4563 | 56 kOhm | 5% | 0.25W MF | | | | | | | |
| R.....42 | 57.11.3123 | 12 kOhm | 1% | 0.25W MF | | | | | | | |
| R.....43 | 57.11.3113 | 11 kOhm | 2% | 0.25W MF | | | | | | | |
| R.....44 | 57.11.4101 | 100 Ohm | 5% | 0.25W MF | | | | | | | |
| R.....45 | 57.99.0136 | 1 kOhm | | LDR | heimann | | | | | | |
| R.....46 | 57.11.4661 | 680 Ohm | 5% | 0.25W MF | | | | | | | |
| R.....47 | 57.11.4223 | 22 kOhm | 5% | 0.25W MF | | | | | | | |
| R.....48 | 57.11.4662 | 5.6 kOhm | 5% | 0.25W MF | | | | | | | |
| R.....49 | 58.01.8103 | 10 kOhm | 10% | 0.50W | trimming resistor | | | | | | |
| R.....50 | 57.11.4821 | 820 Ohm | 5% | 0.25W MF | | | | | | | |
| R.....51 | 57.11.4662 | 5.6 kOhm | 5% | 0.25W MF | | | | | | | |
| R.....52 | 58.01.8103 | 10 kOhm | 10% | 0.50W | trimming resistor | | | | | | |
| R.....53 | 57.11.4821 | 820 Ohm | 5% | 0.25W MF | | | | | | | |
| R.....54 | 57.11.4223 | 22 kOhm | 5% | 0.25W MF | | | | | | | |
| R.....55 | 57.11.4334 | 330 kOhm | 5% | 0.25W MF | | | | | | | |

CE=Ceramic, CF=Carbon Film, EL=Electrolytic, MF=Metal Film
 PE=Polyester, PP=Polypropylen, PS=Polystyrol, SAL=Solid aluminium
 1accuard
 MANUFACTURER: Bu=Burdyn, Ex=Exor, Fc=Fairchild, GI=General Instrument
 HP=Hewlett Packard, ITT=Intermetall, Mo=Motorola
 NS=National Semiconductors, Ph=Philips, Ra=Raytheon,
 Sig=Signetics, Six=Siliconix, St=Studer,
 TI=Texas Instrument, CK=CCK

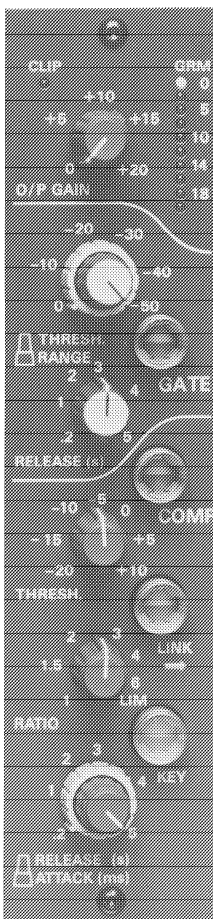
Compressor/Limiter/Noise gate

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1. General:



The Compressor/Limiter/Noise gate unit 1.913.155 can be installed in the instrument panel of the mixing console versions 900, 963 and 970. The unit can be routed to any input or output channel by using the insert points (insert patch panel).

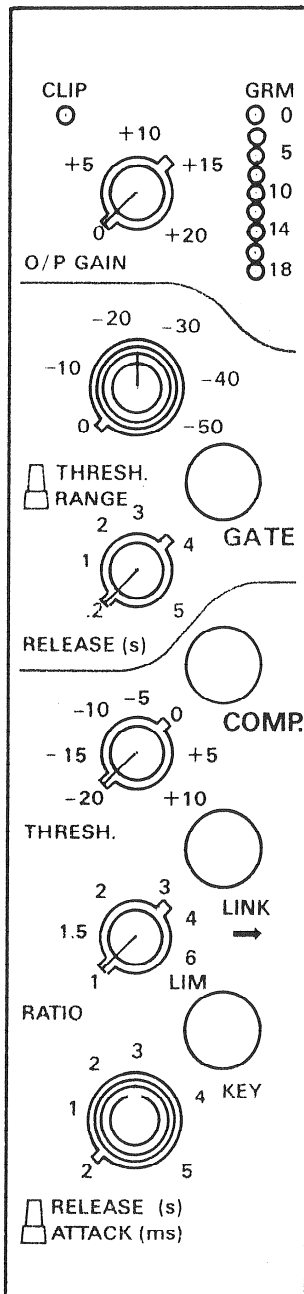
The main applications of this unit are twofold:

- The Limiter/Compressor part allows a compression of the dynamic range including the limitation of the maximum output level by an adjustable limiter threshold. Attack and decay times are adjustable; the decay characteristic is additionally determined by the program structures to avoid unwanted pumping effects.
- The noise gate reduces the basic noise of connected sources in program intermissions by reducing the gain of the channel if a preset value is undershot. Further applications can be found in drum and bass recordings where a noise gate can be used to produce a dry sound with high presence character.

The use of STUDER VCA's enables a high S/N ratio with minimal distortion.

COMPRESSOR / LIMITER / NOISE GATE

2. Operating elements

**General:**

CLIP: Overload LED

LED threshold: 2 dB below limiter threshold.

GRM: Gain reduction meter, shows gain reduction of compressor/noise gate path in dB.

GAIN: Potentiometer for increasing the output level up to 20 dB.

Noise gate:

GATE: Key to activate the noise gate.

THRESH: Noise gate threshold, adjustable in the range of 0 to -50 dB.

RANGE: Noise gate gain reduction, adjustable in the range of 0 to -50dB.

RELEASE: Time between the undershooting of the noise gate threshold and the start of the noise gate action. Adjustable range: 0.2 to 5 seconds. (see fig. 1)

Compressor / Limiter:

COMPR.: Key to activate the compressor.

LINK: Control voltage coupling with the adjacent compressor/limiter/noise gate unit on the right hand side. The higher voltage of either one takes control over both.

KEY: Key to activate the AC input voltage at the auxiliary input KEY to control the VCA gain. Applications: De-essing, voice-over, delayed gate. (see fig. 4)

THRESH: Compressor threshold, adjustable range -20 to +10 dB. (see fig. 2)

RATIO: Compression ratio, adjustable range 1:1 (no compression effect) to 20:1 (limiter effect).

ATTACK: Compressor attack time. Adjustable range 0.2 to 5 ms. (see fig. 3)

RELEASE: Compressor decay time. The scale refers to a static 6 dB gain reduction and LIM setting of ratio. The actual decay time is program dependent and optimized, thus differences to the pot position may occur. (see fig. 3)

3. Noise Gate: Release time diagram

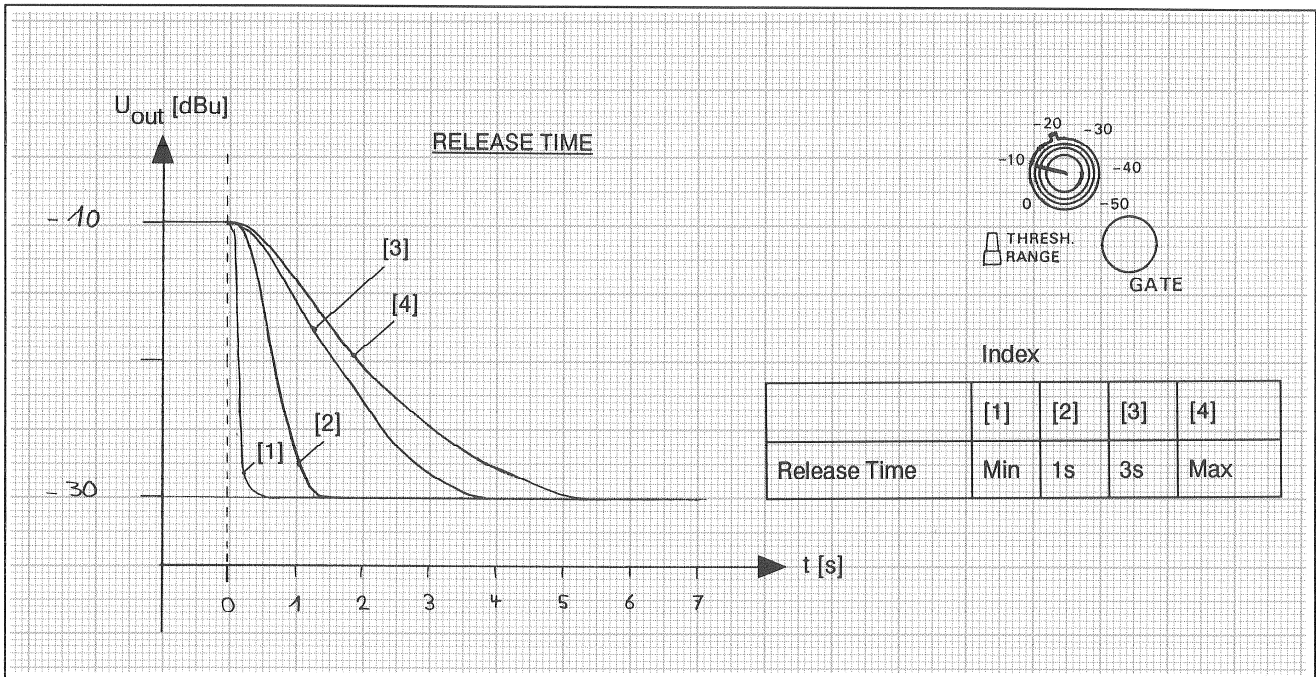


Fig. 1: Four different release time characteristics at a threshold of -10dBu and a noise gate gain reduction range of -20dBu.

4. Compressor / Limiter: Threshold range diagram

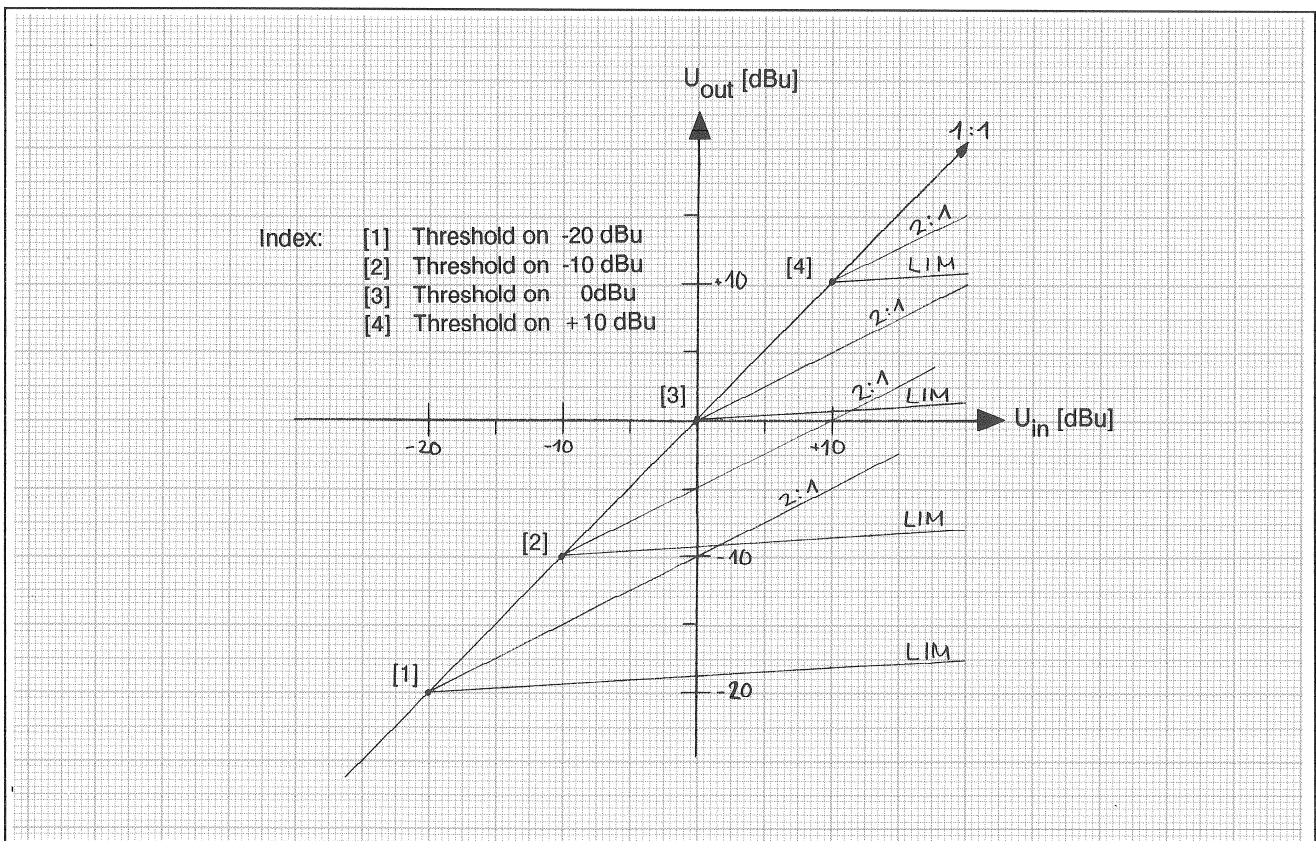


Fig. 2: Compressor threshold at four different input voltage levels (U_{in}).

5. Compressor / Limiter: Attack and release time

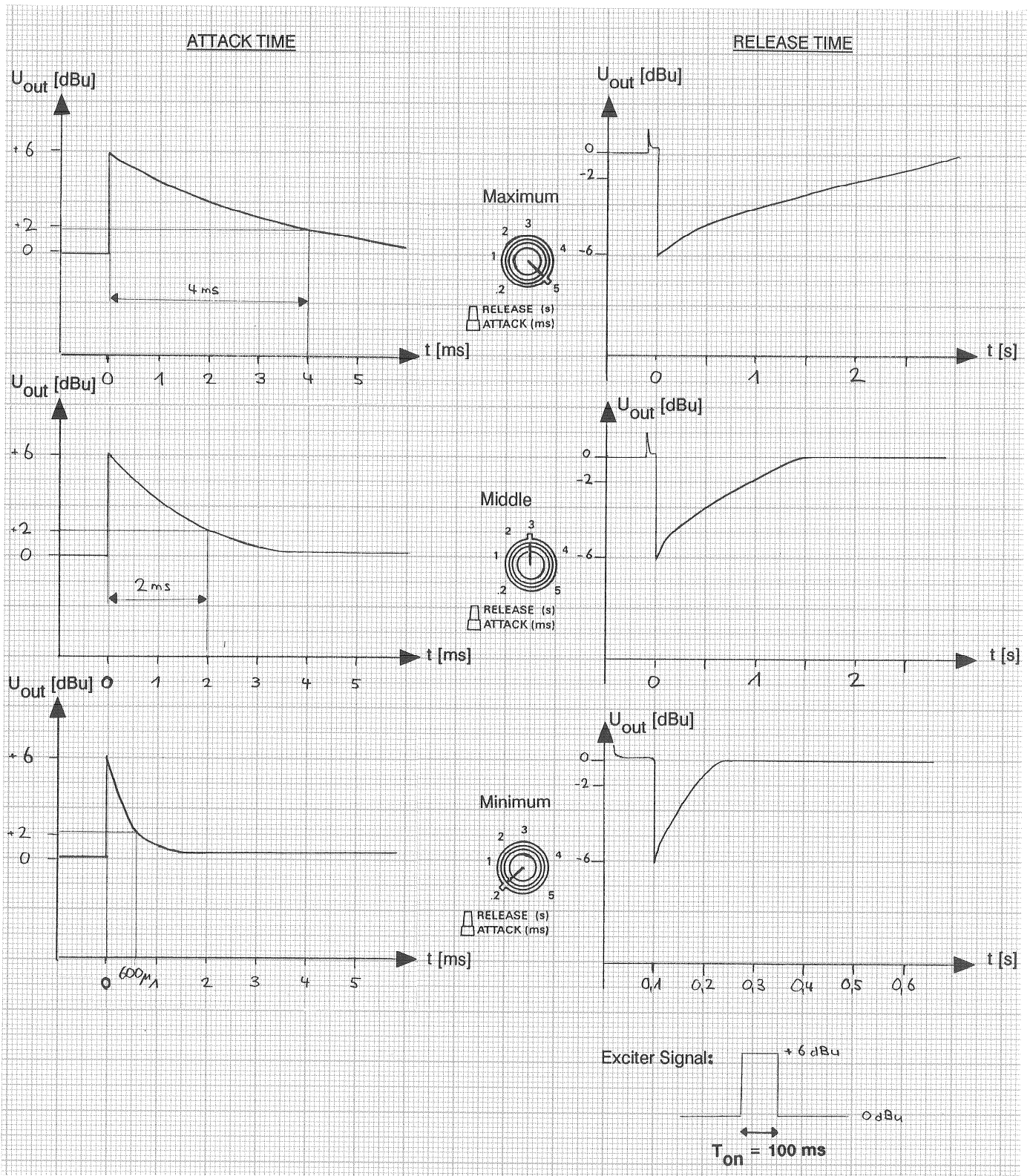


Fig. 3: The compressor/ limiter - characteristics at three different values of the attack- and release time.

6. Block diagram

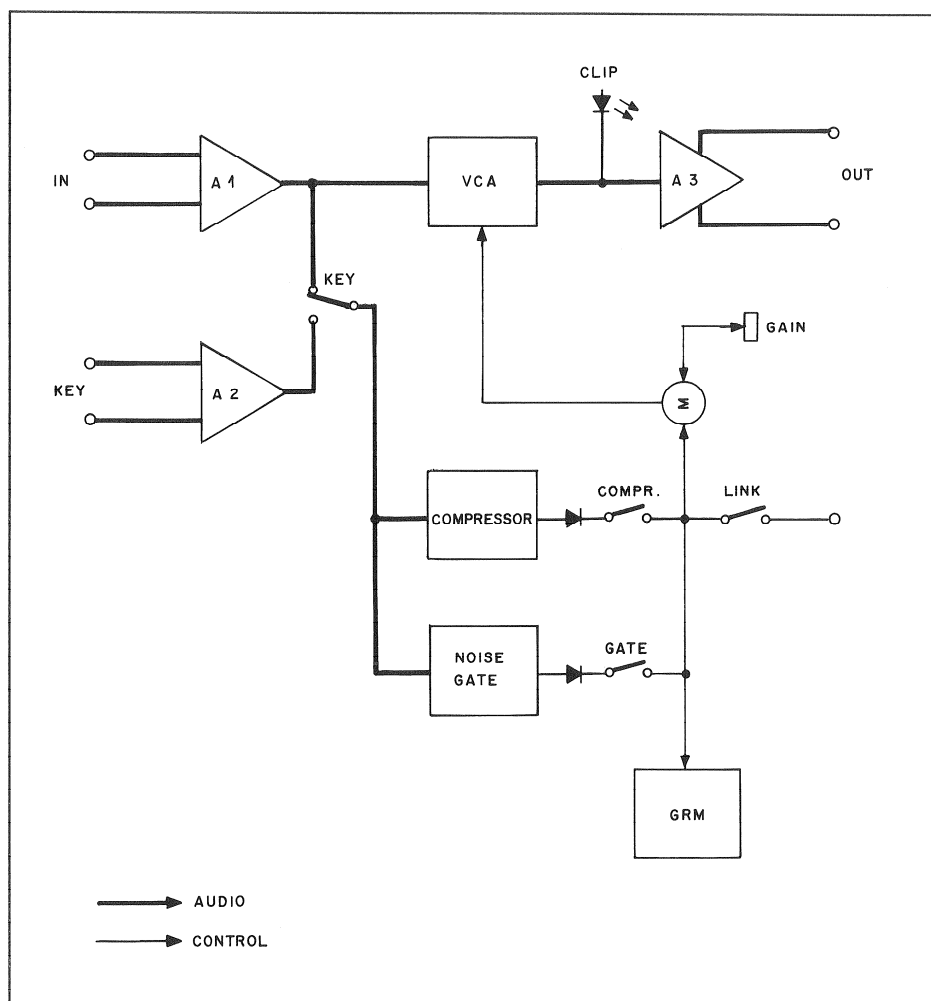


Fig. 4

7. Technical data:

| | | |
|-----------------------------|----------------------------------|--|
| Current consumption: | $\pm 15\text{ V:}$ | typ. 86 mA, max. 130 mA |
| | -6 V: | typ. 10 mA, max. 20 mA |
| Frequency response: | $\leq 0.3\text{ dB}$ | 30 to 15.000 Hz |
| Noise level: | $\leq -95\text{ dBu}$ | with gain 0 dB and noise gate off. |
| | $\leq -100\text{ dBu}$ | with gain 0 dB and noise gate on. |
| Distortion: | $\leq -60\text{ dB}$ | with input +16 dBu, output 0 dBu, threshold 0 dB, compressor on, Ratio LIM, max release time, in the range of 30 to 15.000 Hz. |
| Adjustments: | No service adjustments required. | |

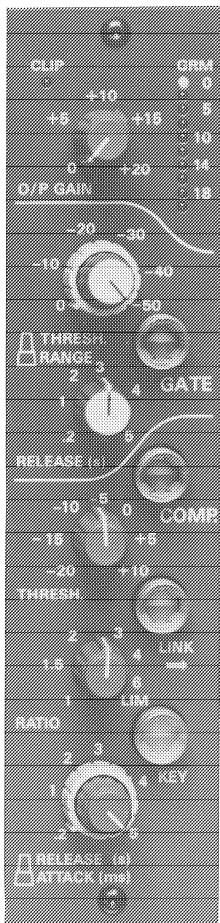
Kompressor / Limiter / Noise gate

INHALT

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1. Allgemeines



Die Kompressor / Limiter / Noise-gate Baugruppe Nr. 1.913.155 kann ins Instrumentenpanel der Mischpulte STUDER 900, 963 und 970 eingebaut werden. Unter Benützung der Einschleifpunkte (Insert patch panel) kann die Einheit auf jeden gewünschten Ein- oder Ausgangskanal geschaltet werden.

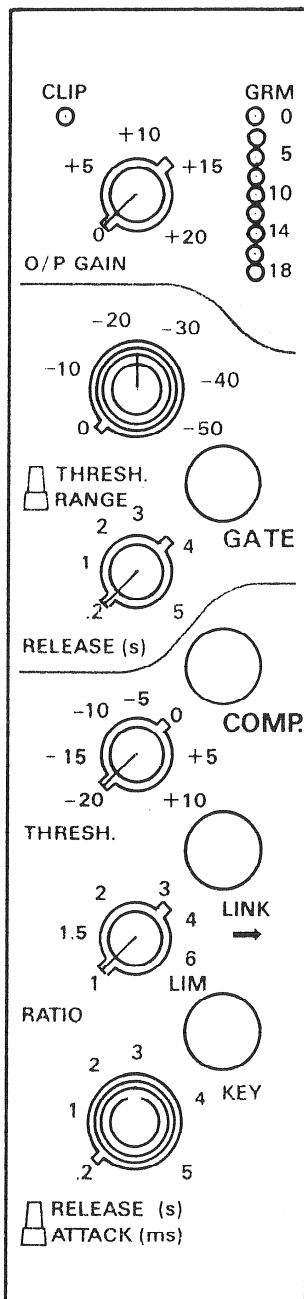
Die Baugruppe dient folgenden Hauptanwendungen:

- Der Begrenzer / Kompressor Teil erlaubt eine Kompression des Dynamikbereichs in wählbarem Ausmass. Der verstellbare Schwellenwert (threshold) ermöglicht die Begrenzung des maximalen Ausgangspegels. Die Ansprech- und Rücklaufzeiten sind frei wählbar. Um unerwünschte Pumpeffekte zu verhindern, wird die Rücklaufzeit zusätzlich von der Programmstruktur beeinflusst.
- Das Noise-gate vermindert das Grundgeräusch zugeschalteter Quellen bei Programmunterbrüchen. Die Verstärkung des betreffenden Kanals wird reduziert, sobald ein vorgewählter Signalpegel unterschritten wird. Weitere Anwendungen bieten sich bei Schlagzeug- und Bass - Aufnahmen um einen trockenen Klang mit hoher Präsenz zu erzielen.

Aus der Verwendung von STUDER VCA's resultieren der hohe Geräuschspannungsabstand und die minimalen Verzerrungen.

COMPRESSOR / LIMITER / NOISE GATE

2. Bedienungselemente

**Allgemein:**

CLIP: Übersteuerungs - Leuchtdiode

LED Schwellenwert: 2dB unterhalb der Begrenzerschwelle.

GRM: (Gain reduction meter) Anzeigeelement für die Verstärkungsreduktion des Kompressor / Noise-gate Signalweges. (in dB)

GAIN: Potentiometer zur Anpassung des Ausgangspegels bis 20 dB.

Noise-gate:

GATE.: Diese Drucktaste schaltet die Noise-gate Funktion ein bzw. aus.

THRESH.: Noise-gate Einsatzschwelle, einstellbar im Bereich von 0 bis -50dB.

RANGE: Verstärkungsreduktion des Noise-gate, einstellbar im Bereich von 0 bis -50 dB

RELEASE: Intervall vom Zeitpunkt des Unterschreitens der Noise-gate Einsatzschwelle bis zum Erreichen der vollen Noise-gate Funktion. Es ist zwischen 0,2 und 5 Sekunden einstellbar. (vgl. Fig. 1)

Kompressor / Begrenzer:

COMPR.: Drucktaste zur Aktivierung der Kompressor / Begrenzer Funktion.

LINK: Koppelung der Kompressor/Begrenzer/Noise-gate Funktionen mit der rechts benachbarten Einheit. Dabei kontrolliert die jeweils höhere Steuerungspannung beide Einheiten.

KEY: Diese Umschalttaste verwendet die Spannung des Hilfeingangs KEY für die Steuerung der VCA Verstärkung. Anwendungen: 'De-essing' (Hochtonbegrenzung), 'Voice-over' (Pegelregelung von Hintergrundmusik durch Sprechersignal), Gate mit Verzögerung.

THRESH.: Einsatzschwelle des Begrenzers einstellbar von -20 bis +10 dB. (vgl. Fig. 2)

RATIO: Das Kompressionsverhältnis [U_{in}/U_{out}] ist einstellbar von 1:1 (keine Kompressionswirkung) bis 20:1 (Begrenzerwirkung).

ATTACK: Kompressor Ansprechzeit. Einstellbereich von 0,2 bis 5 Sekunden. (vgl. Fig. 3)

RELEASE: Kompressor Rücklaufzeit. Die Skala bezieht sich auf eine konstante Verstärkungsreduktion von 6dB bei Limitereinstellung des Ratioreglers. Die wirkliche Rücklaufzeit ist programmabhängig und optimiert. Es können demzufolge Unterschiede zur Reglerposition auftreten. (vgl. Fig. 3)

3. Noise-gate: Ansprechzeit Charakteristik

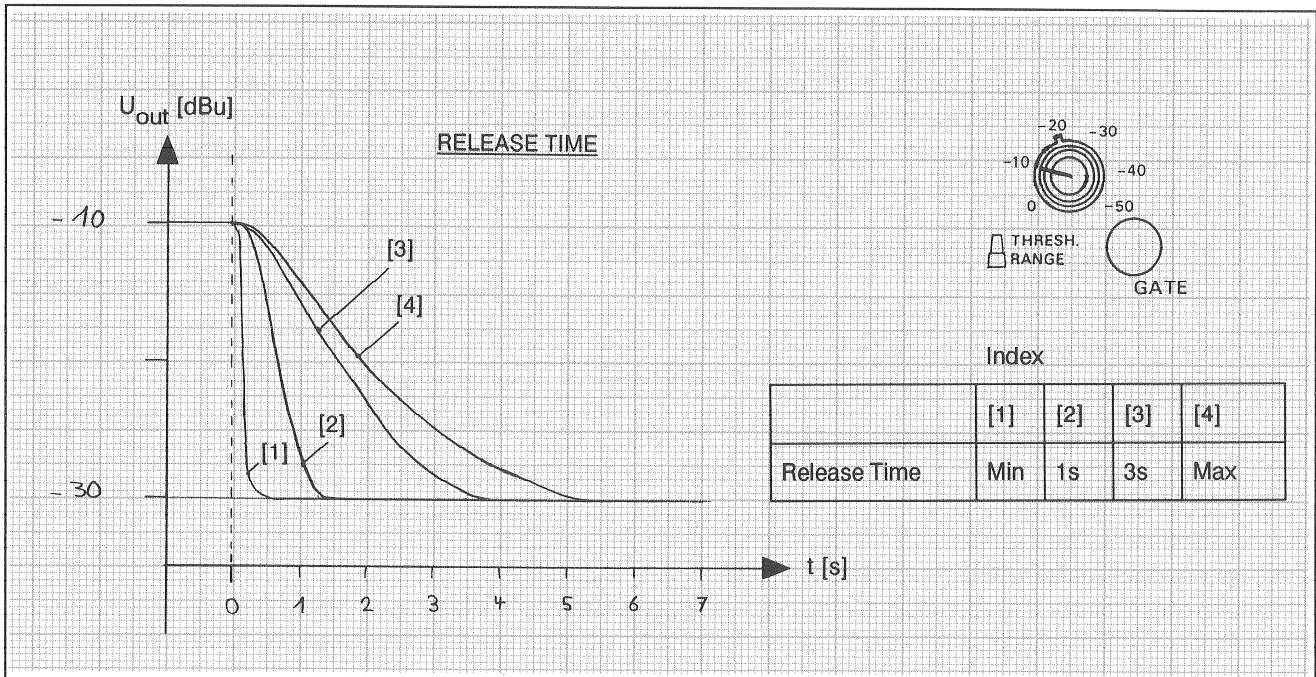


Fig. 1: Vier unterschiedliche Einstellungen der Ansprechzeit bei einem Schwellenwert von -10dBu und einer Verstärkungsreduktion (Range) von -20dBu.

4. Kompressor / Limiter: Schwellenwert Diagramm

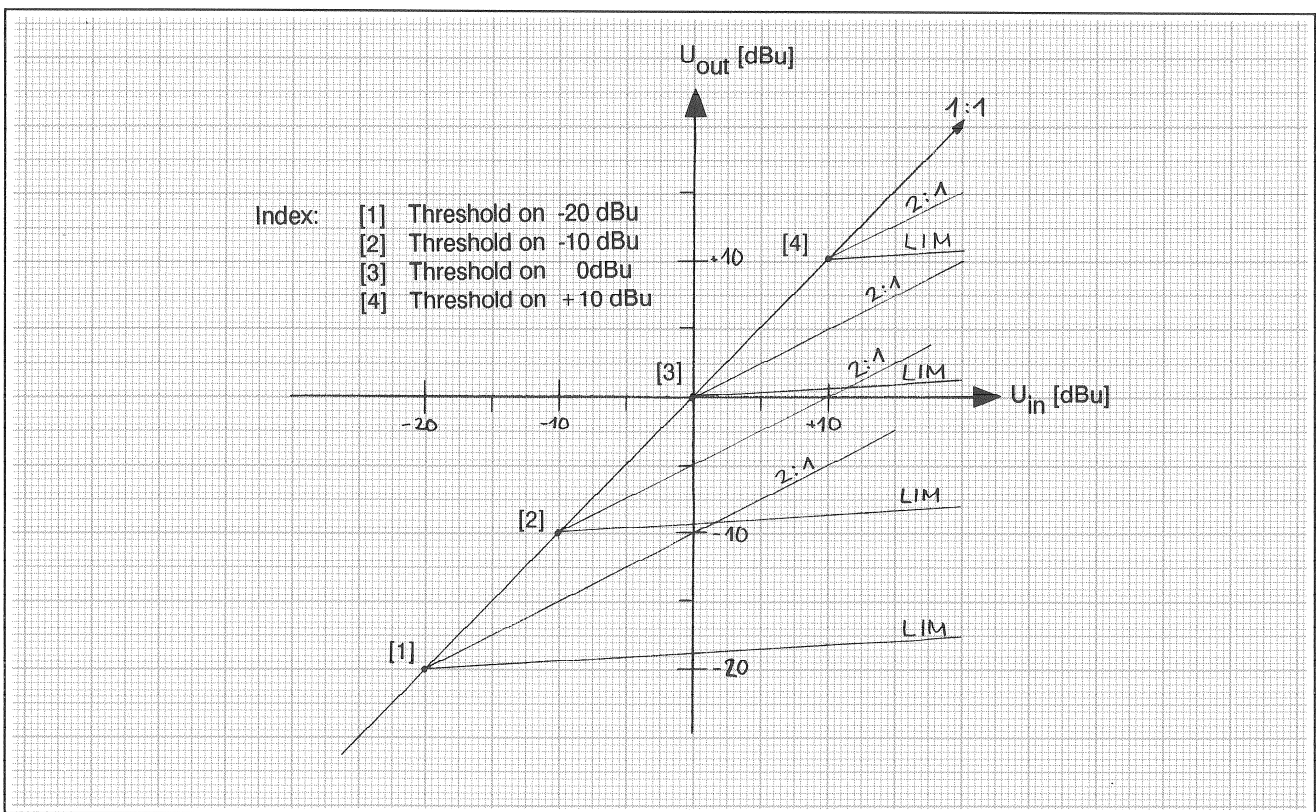


Fig. 2: Wirkung des Kompressors bei vier verschiedenen Schwellenwerten. Das Kompressionsverhältnis (Ratio) ist jeweils schwach (2:1) und maximal (Limiter) gewählt.

5. Kompressor Limiter: Ansprech- und Rücklaufzeit

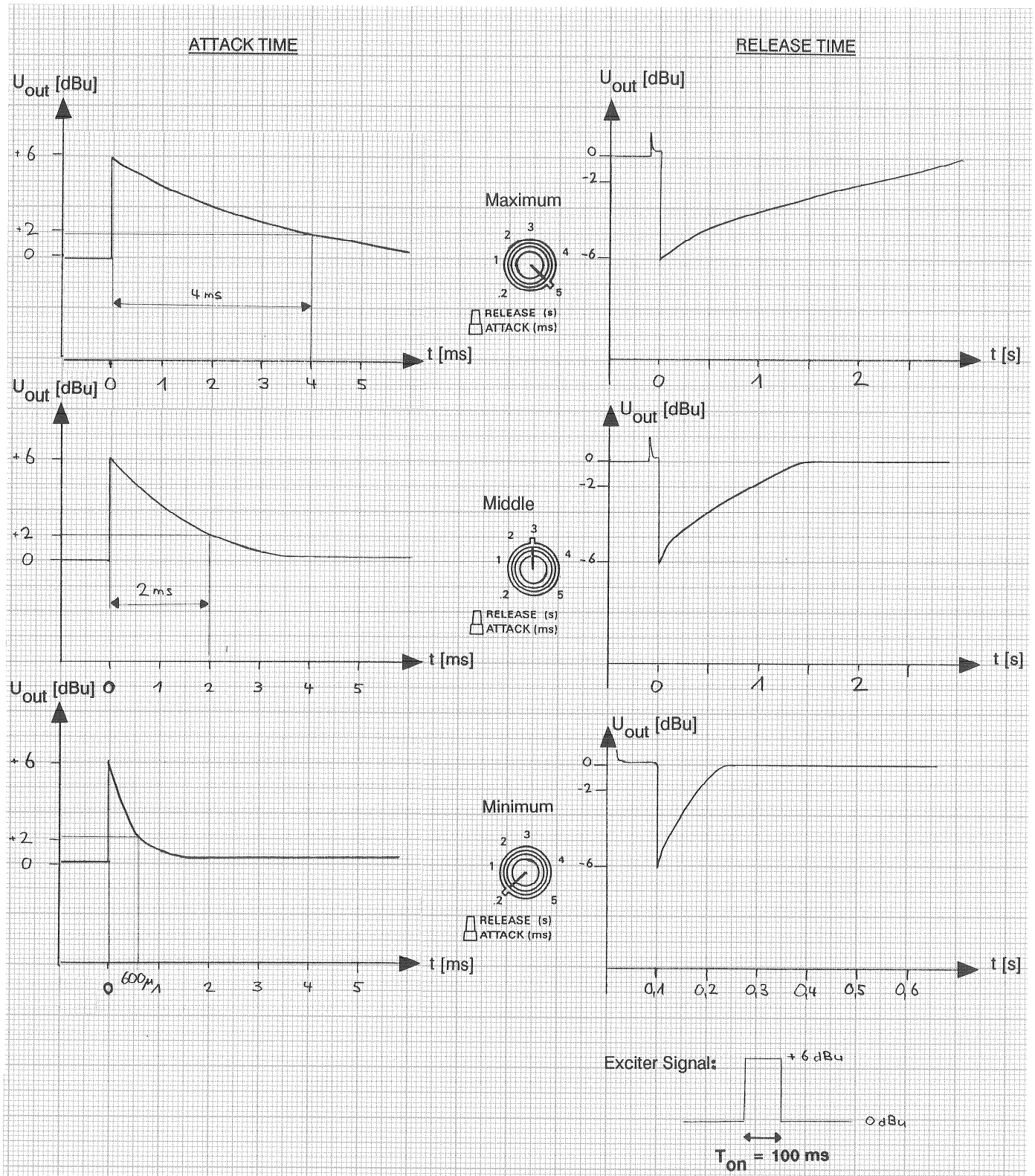


Fig. 3: Charakteristik des Kompressor / Begrenzers bei drei unterschiedlichen Werten der Ansprech- und Rücklaufzeit.

6. Blockdiagramm

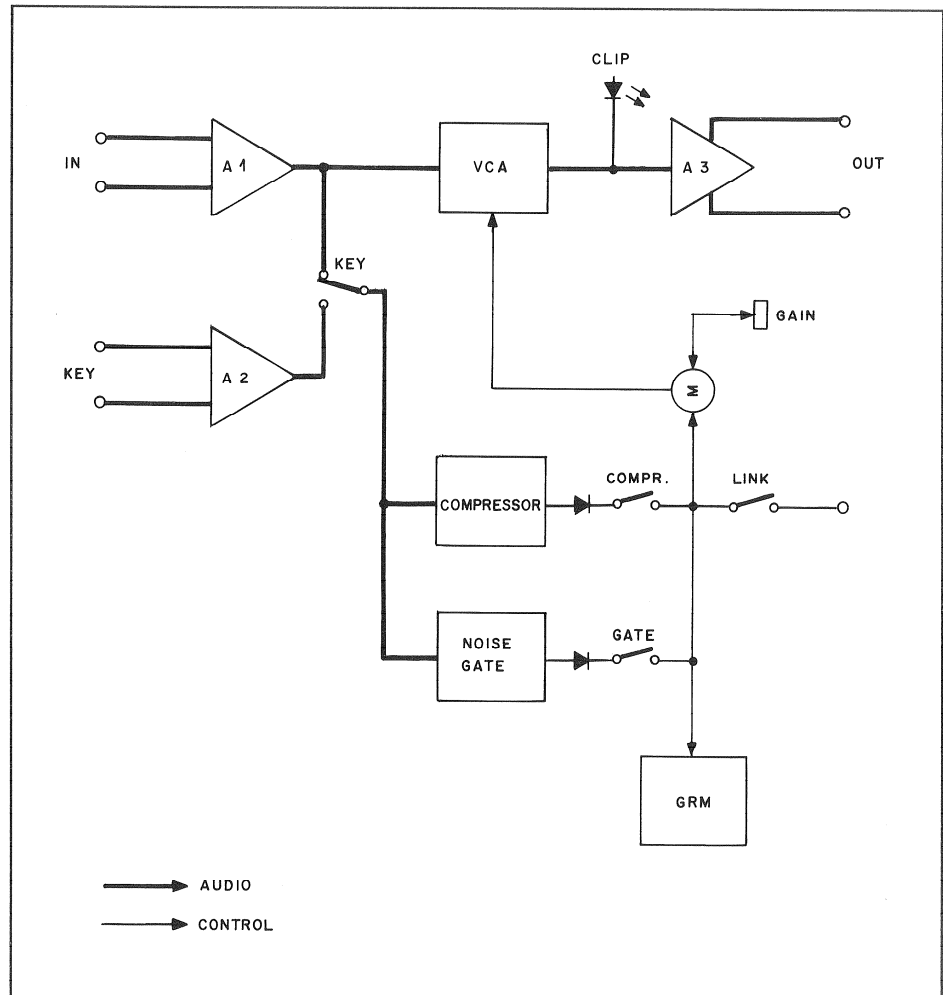


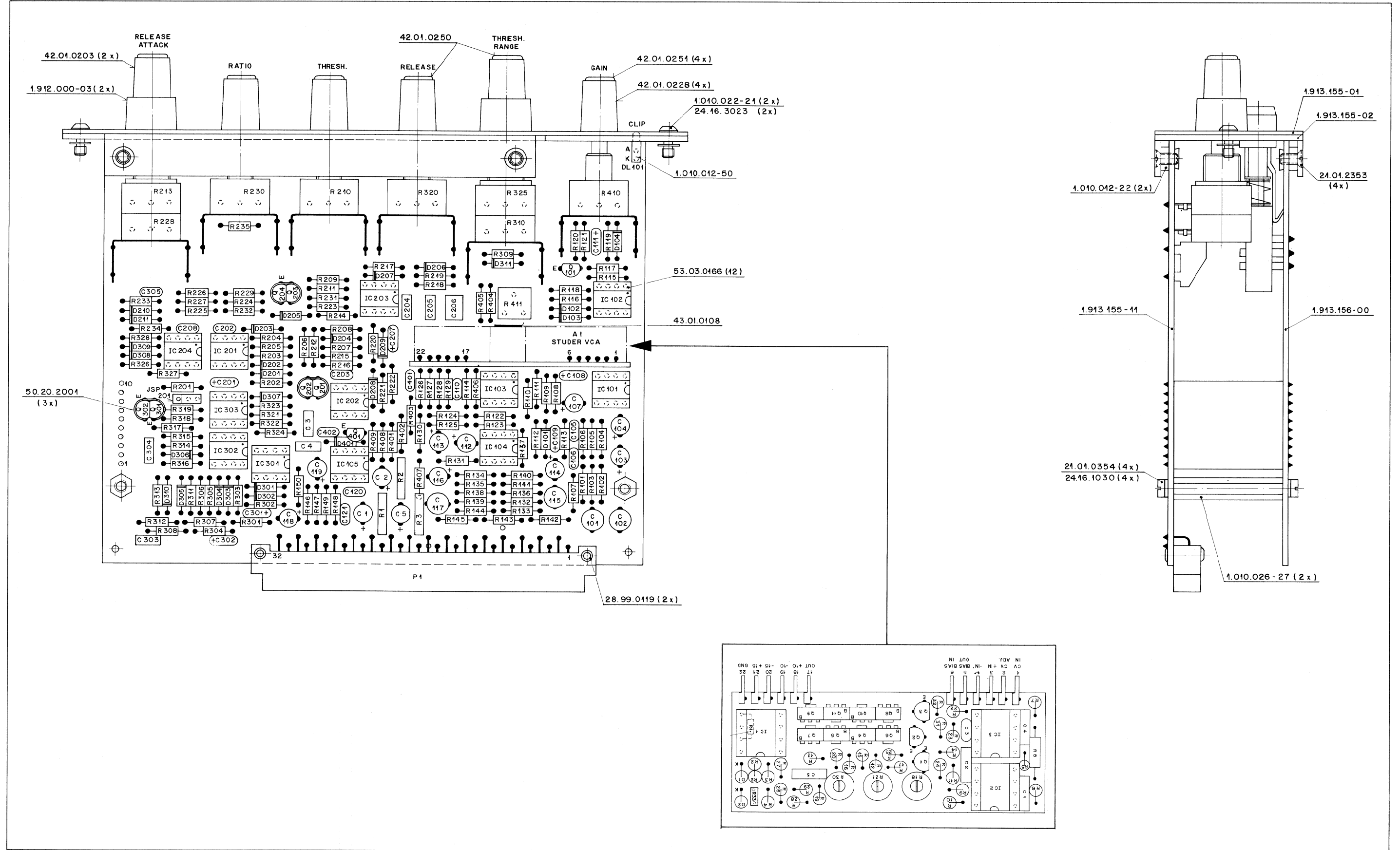
Fig. 4

7. Technische Daten

| | | |
|-----------------------|---|--|
| Stromaufnahme: | $\pm 15\text{ V}$: $- 6\text{ V}$ | typ. 86mA, max. 130mA, typ. 10mA, max. 20mA, |
| Frequenzgang: | $\leq 0,3\text{dB}$ | 30 bis 15'000Hz |
| Rauschpegel: | $\leq -95\text{dBu}$ $\leq -100\text{dBu}$ | bei Verstärkung 0dB und Noise-gate ausgeschaltet bei Verstärkung 0dB und Noise-gate eingeschaltet |
| Verzerrungen: | $\leq -60\text{dB}$ | im Bereich von 30 bis 15'000Hz unter den Bedingungen: Eingang +16dBu; Ausgang 0dBu; Threshold 0dB; Kompressor ein; Ratio LIM; Release maximal; |
| Abgleich: | Nicht erforderlich. | |

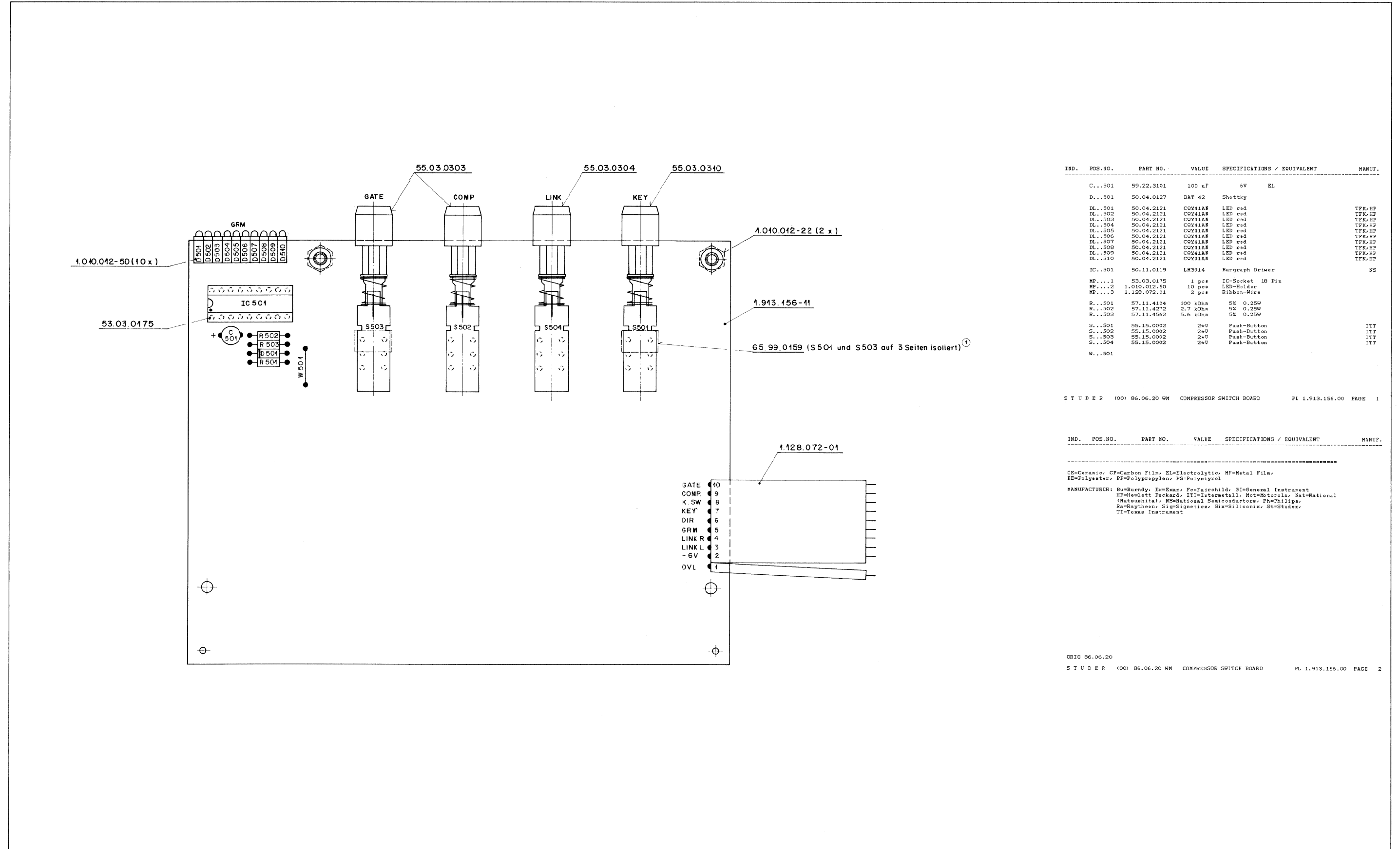
COMPRESSOR / LIMITER / NOISE GATE

Compressor / Limiter / Noise gate 1.913.155



COMPRESSOR / LIMITER / NOISE GATE

Compressor Switch Board 1.913.156



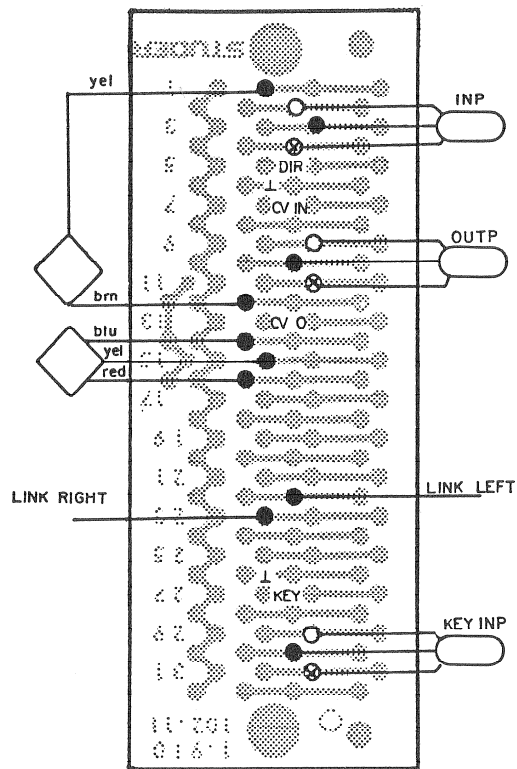
| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|-------|---------|--------------|----------|-----------------------------|--------|
| C... | 501 | 59.22.3101 | 100 uF | 6V EL | |
| D... | 501 | 50.04.0127 | BAT 42 | Shottky | |
| DL... | 501 | 50.04.2121 | COV41A8 | LED red | TFK/HP |
| DL... | 502 | 50.04.2121 | COV41A8 | LED red | TFK/HP |
| DL... | 503 | 50.04.2121 | COV41A8 | LED red | TFK/HP |
| DL... | 504 | 50.04.2121 | COV41A8 | LED red | TFK/HP |
| DL... | 505 | 50.04.2121 | COV41A8 | LED red | TFK/HP |
| DL... | 506 | 50.04.2121 | COV41A8 | LED red | TFK/HP |
| DL... | 507 | 50.04.2121 | COV41A8 | LED red | TFK/HP |
| DL... | 508 | 50.04.2121 | COV41A8 | LED red | TFK/HP |
| DL... | 509 | 50.04.2121 | COV41A8 | LED red | TFK/HP |
| DL... | 510 | 50.04.2121 | COV41A8 | LED red | TFK/HP |
| IC... | 501 | 50.11.0119 | LM3914 | Bargraph Driver | NS |
| MP... | 1 | 53.03.0175 | 1 pcs | IC-Socket 18 Pin | |
| MP... | 2 | 1.010.012.50 | 10 pcs | LED-Holder | |
| MP... | 3 | 1.128.072.01 | 2 pcs | Ribbon-Wire | |
| R... | 501 | 57.11.4104 | 100 kOhm | 5% 0.25W | |
| R... | 502 | 57.11.4272 | 2.7 kOhm | 5% 0.25W | |
| R... | 503 | 57.11.4562 | 5.6 kOhm | 5% 0.25W | |
| S... | 501 | 55.15.0002 | 2xU | Push-Button | ITT |
| S... | 502 | 55.15.0002 | 2xU | Push-Button | ITT |
| S... | 503 | 55.15.0002 | 2xU | Push-Button | ITT |
| S... | 504 | 55.15.0002 | 2xU | Push-Button | ITT |
| W... | 501 | | | | |

S T U D E R (00) 86.06.20 WM COMPRESSOR SWITCH BOARD PL 1.913.156.00 PAGE 1

| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|--|---------|----------|-------|-----------------------------|--------|
| ----- | | | | | |
| CE=Ceramic, CF=Carbon Film, EL=Electrolytic, MF=Metal Film, | | | | | |
| PE=Polyester, PP=Polypolyphen, PS=Polystyrol | | | | | |
| MANUFACTURER: Bu=Burrndy, Ex=Emar, Fo=Fairchild, GI=General Instrument | | | | | |
| HP=Hewlett Packard, ITT=Intermetall, Mo=Motorola, Nat=National | | | | | |
| (Matsushita), NS=National Semiconductors, Ph=Philips, | | | | | |
| Ra=Raytheon, Sig=Signetics, Six=Siliconix, St=Studer, | | | | | |
| TI=Texas Instrument | | | | | |

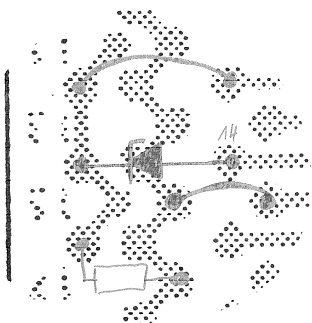
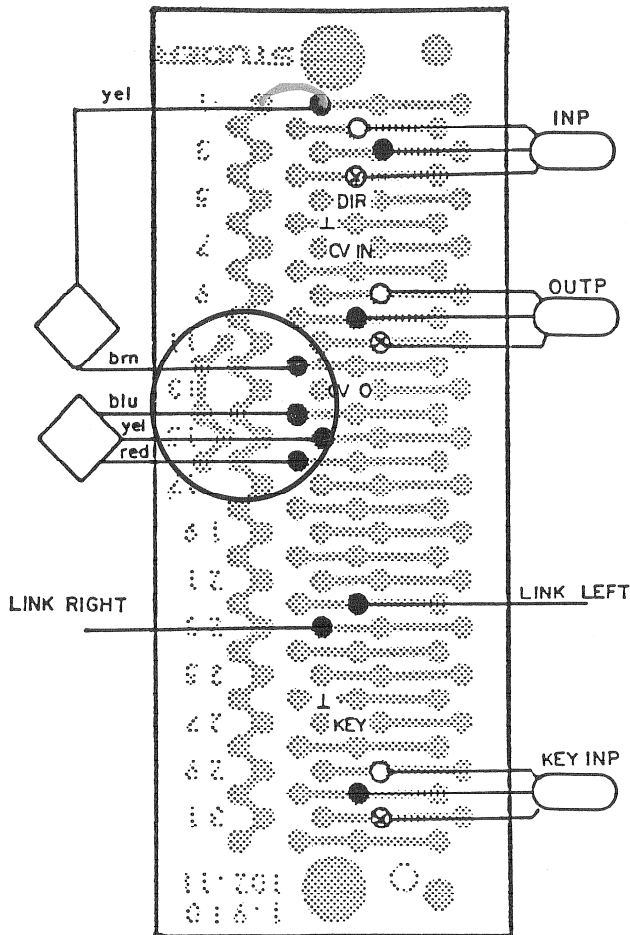
ORIG 86.06.20
S T U D E R (00) 86.06.20 WM COMPRESSOR SWITCH BOARD PL 1.913.156.00 PAGE 2

LIM./COMPR./NOISE G.
1.913.155



P

LIM./COMPR./NOISE G.
1.913.155

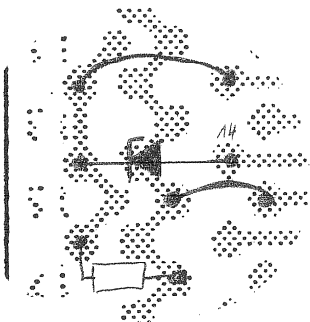
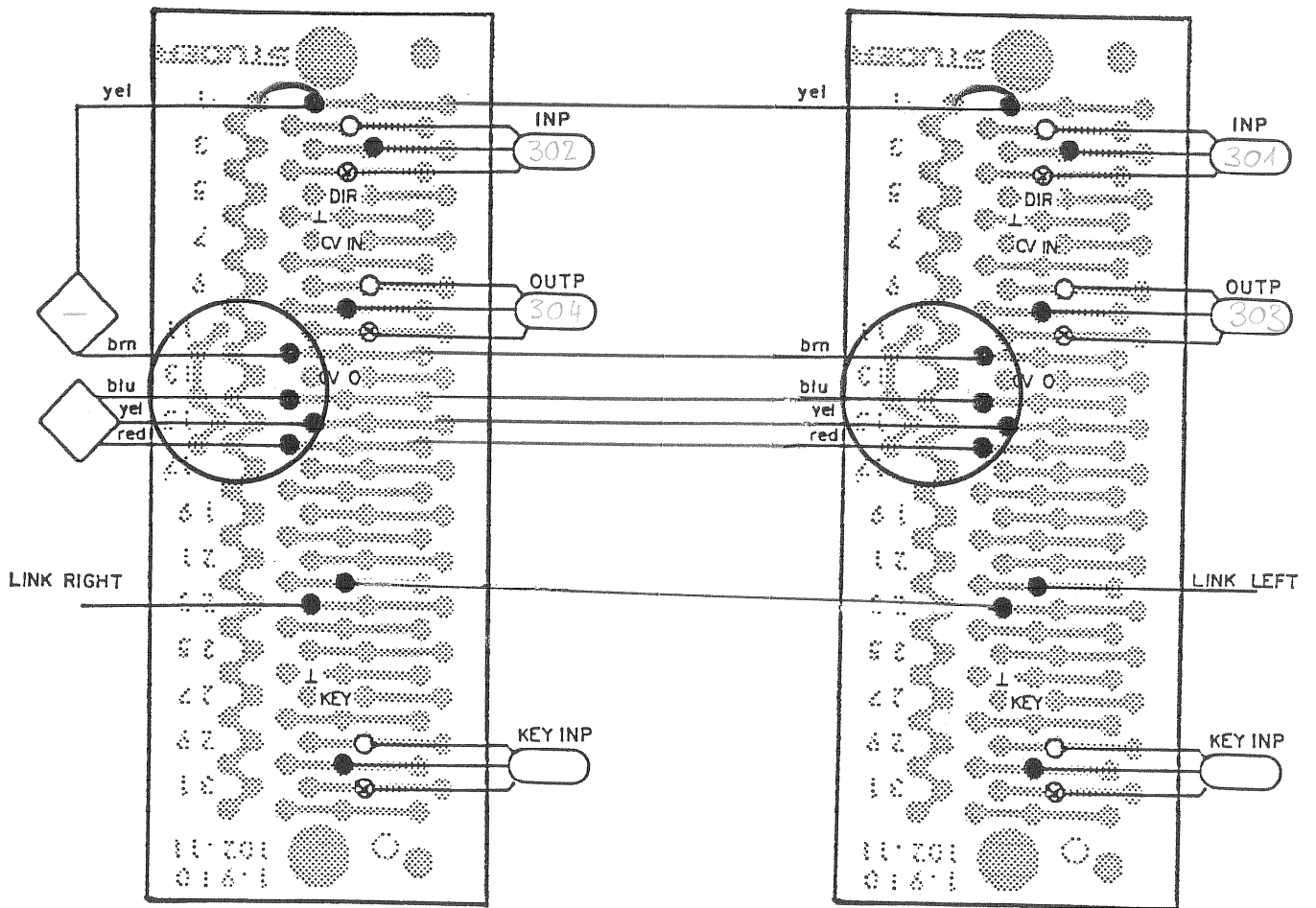


$R = 1k2 \Omega$
 $ZD = 9V1 \quad 1,3W$

| | | | | | |
|----------|----|--------------------|----|----|---------|
| 08.02.93 | Zd | .. | .. | .. | .. |
| | | Print 1.910.102.M | | | PAGE OF |
| STUDER | | Limiter Compressor | | | |

LIM./COMPR./NOISE G.
1.913.155

LIM./COMPR./NOISE G.
1.913.155

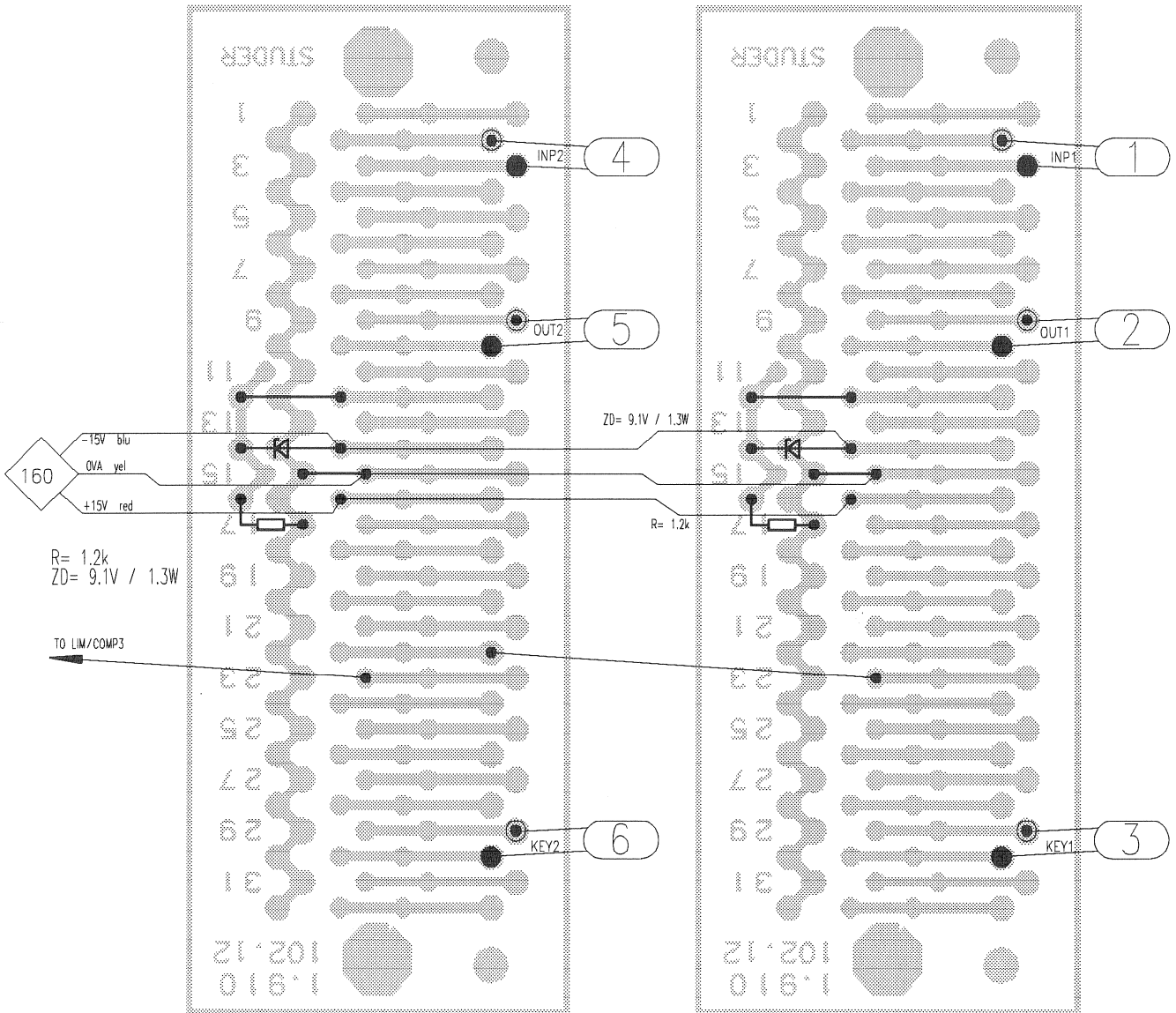


$R = 1k2 \Omega$
 $ZD = 9VA \ 1,3W$

| | | | | | | | | | |
|--------|----|--------------------|--------------------|---|----|---|----|------|----|
| ① | .. | ○ | .. | ○ | .. | ○ | .. | ○ | .. |
| | | | Print 1.510.102.11 | | | | | PAGE | OF |
| STUDER | | Limiter Compressor | | | | | | | |

LIMITER / COMPRESSOR 2

LIMITER / COMPRESSOR 1



P:\ACAD\Busboards\BOARDS\910\91010212lc_w.dwg

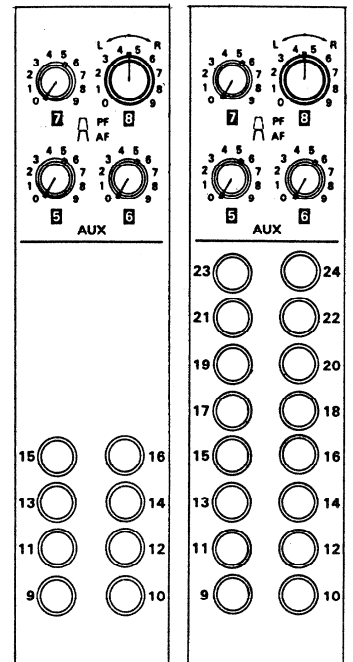
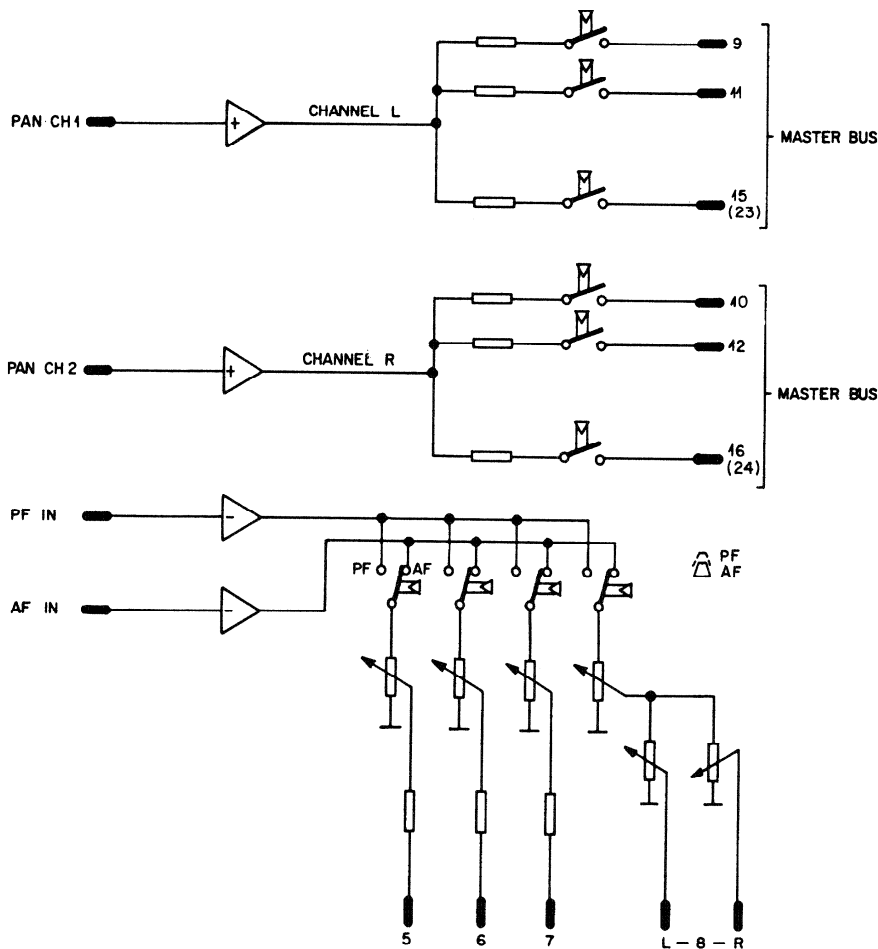
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| 07.06.00 / GY | | | | |
| 91010212lc_w | MUSTER | | | Page 1 of 1 |
| STUDER REGENSDORF SWITZERLAND | LIMITER / COMPRESSOR | | | MUSTER |

SAMMELSCHIENEN ANWAHL 9...16BUS SELECTOR 9...16 CHSAMMELSCHIENEN ANWAHL 9...24BUS SELECTOR 9...24 CH

Die Sammelschieneanwahl-Einheit enthält Tasten, um das Eingangssignal auf 9...16 oder 9...24 aufzuschalten. Drei Mono Hilfsausgänge (Aux 5..7) und ein Stereo Hilfsausgang (Aux 8) sind ebenfalls eingebaut.

The bus selector-unit comprises buttons to switch the input signal to 9...16 or 9...24 master buses.

Three mono (Aux 5...7) and 1 stereo-aux-outputs (Aux 8) are also built-in.

BLOCKSCHALTBILDBLOCK DIAGRAMTECHNISCHE DATEN

Speisespannungen

MECHANISCHE DATEN

Frontplatte dunkelgrau gespritzt

Abmessungen Frontplatte

Tiefe

Gewicht

SPECIFICATIONS

Supply

+15 V 30mA

DIMENSIONS

Front panel laquered charcoal grey

Dimensions of front panel

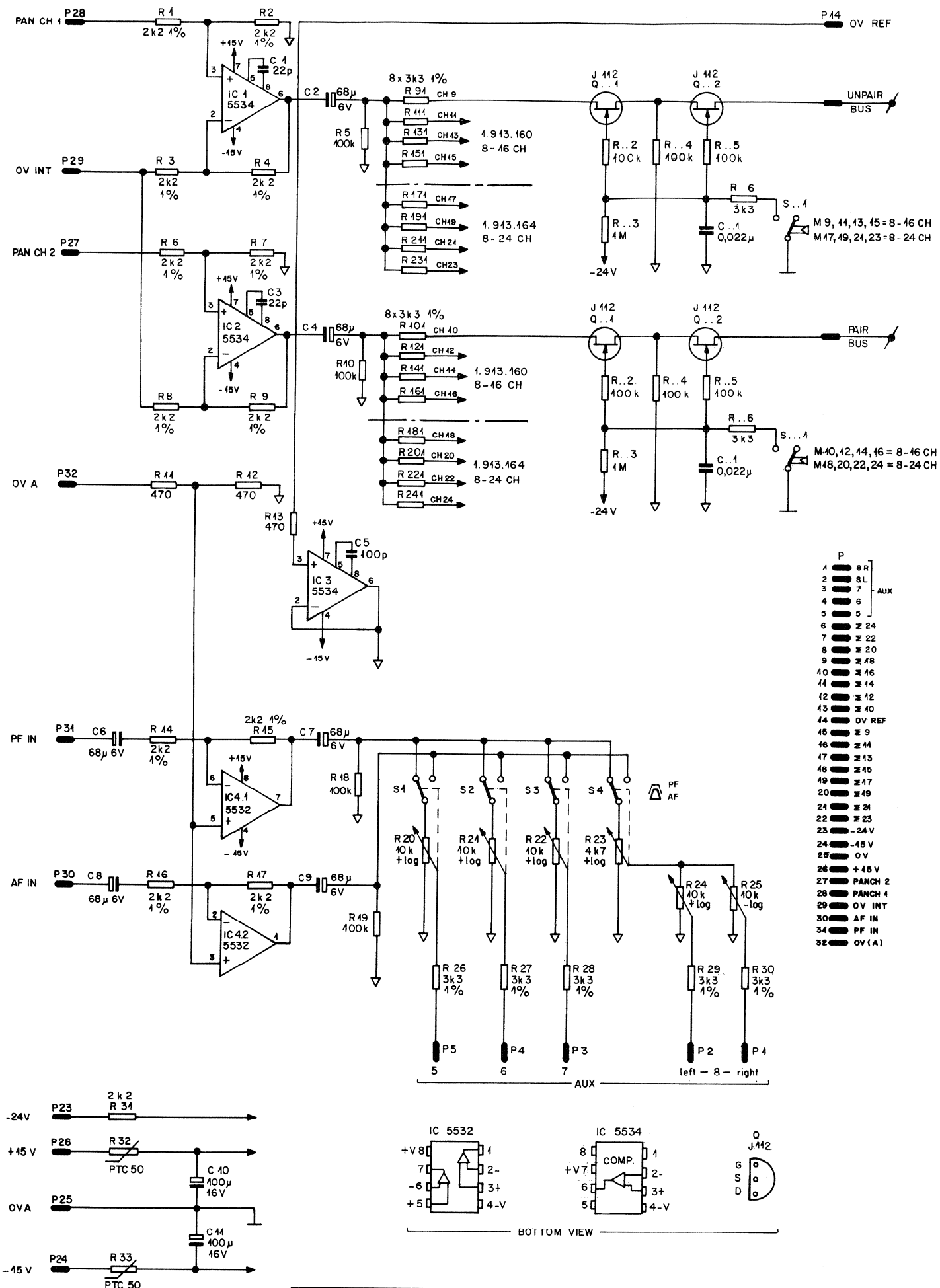
170x40 mm

Depth

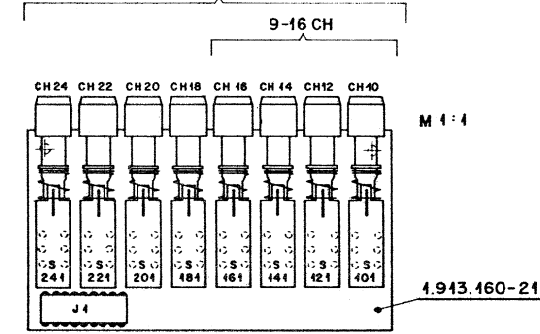
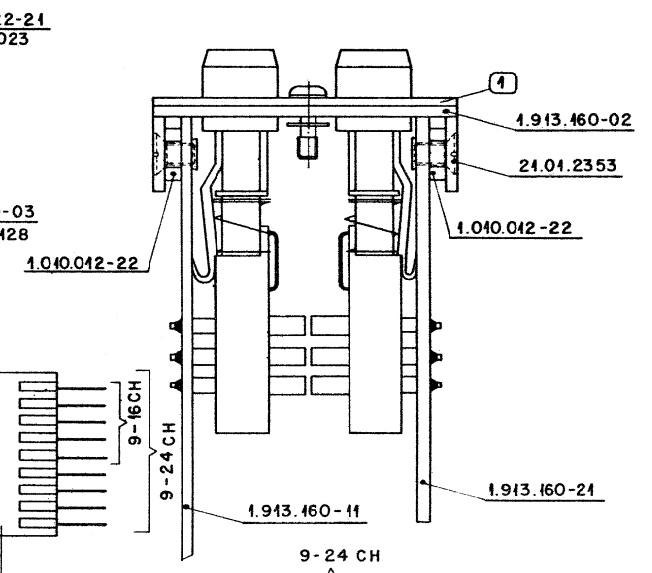
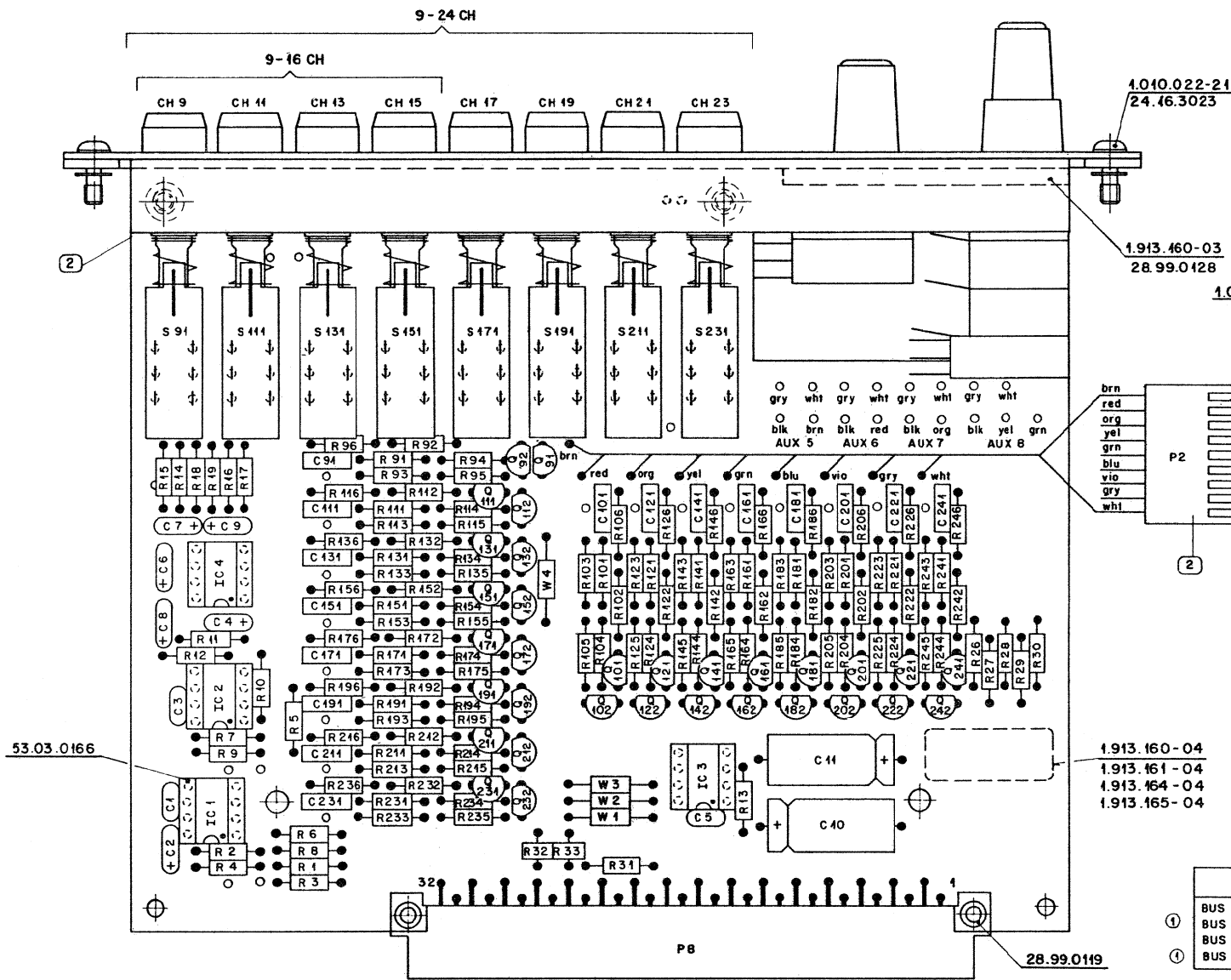
135 mm

Weight

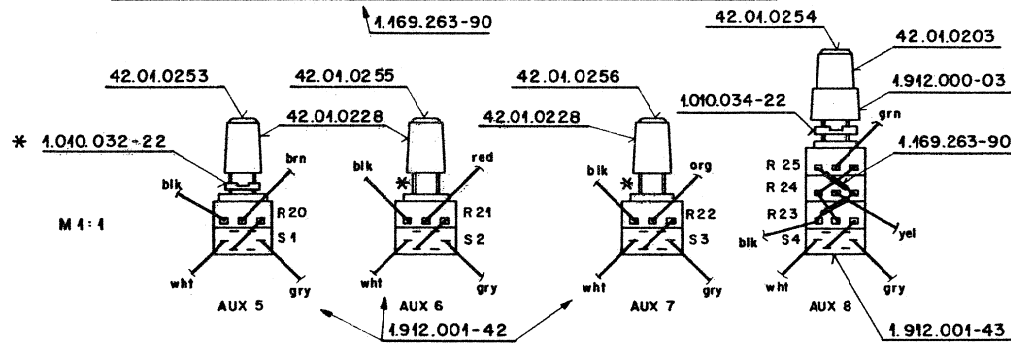
300 gr



| | | | | | |
|--------------------------------|--------------|-----------|-----------|--------------|--|
| DATE: | 47.11.82 | 45.11.83 | 18.7.84 | 4.10.84 | |
| SIGN: | <i>ge</i> | <i>ge</i> | <i>ml</i> | <i>ml</i> | |
| STUDER REGENSDORF ZÜRICH | BUS SELECTOR | | 9-16 CH | SC 1.913.160 | |
| | | | 9-24 CH | SC 1.913.164 | |



| VALID FOR | NR. UNIT | NR. PL | (1) | (2) |
|-----------------------|--------------|-----------|--------------|--------------|
| BUS SEL. 9-16 CH+ AUX | 1.913.460-00 | 1.913.460 | 1.913.460-04 | 1.913.460-93 |
| BUS SEL. 9-16 CH | 1.913.461-00 | 1.913.461 | 1.913.465-02 | 1.913.461-93 |
| BUS SEL. 9-24 CH+ AUX | 1.913.464-00 | 1.913.460 | 1.913.464-04 | 1.913.464-93 |
| BUS SEL. 9-24 CH | 1.913.465-00 | 1.913.461 | 1.913.465-01 | 1.913.465-93 |



| | | | | |
|--------------------------------|------------------|---|-------------------------------|-----------------------------|
| Werkstoff: | Norm-Nr.: | Güte: | 22.40.85A.Ho <i>Vf Vf</i> (3) | |
| DIN-Bez.: | | Beh.: | 1.4.84 A.Ho <i>Vf Vf</i> (2) | |
| Abmessung: | | | 3.2.83 A.Ho <i>Vf Vf</i> (1) | |
| Zugehörige Unterlagen: | Freimastoleranz: | Maßstab: | 5.4.83 A.Ho <i>Vf Vf</i> (0) | |
| Ersatz für: | Ersetzt durch: | Datum Gez. Gepr. Ges. Index | | |
| Ersatz für: | | Ersetzt durch: | | Kopie für: |
| STUDER REGENSDORF ZÜRICH | | Benennung: Bus Selector 9-16 CH | | Nummer: 1.913.160-00 |

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-------|------------|---------|-----------|---------------------------|---------|
| C 1 | 59.34.2220 | 22 pF | | | CER |
| C 2 | 59.26.0680 | 68 μF | 6V | | SAL |
| C 3 | 59.34.2220 | 22 pF | | | CER |
| C 4 | 59.26.0680 | 68 μF | 6V | | SAL |
| 2 C 5 | 59.34.4101 | 100 pF | | | CER |
| C 6 | 59.26.0680 | 68 μF | 6V | | SAL |
| C 7 | 59.26.0680 | 68 μF | 6V | | SAL |
| C 8 | 59.26.0680 | 68 μF | 6V | | SAL |
| C 9 | 59.26.0680 | 68 μF | 6V | | SAL |
| C 10 | 59.25.3101 | 100 μF | 16V | | EL |
| C 11 | 59.25.3101 | 100 μF | 16V | | EL |
| IC 1 | 50.05.0244 | MS534AN | Low noise | | Si,Te,R |
| IC 2 | 50.05.0244 | MS534AN | Low noise | | Si,Te,R |
| IC 3 | 50.05.0244 | MS534AN | Low noise | | Si,Te,R |
| IC 4 | 50.09.0106 | MS532AN | Low noise | | Si,Te,R |
| R 1 | 57.11.3222 | 2k2 | 1% | | |
| R 2 | 57.11.3222 | 2k2 | 1% | | |
| R 3 | 57.11.3222 | 2k2 | 1% | | |
| R 4 | 57.11.3222 | 2k2 | 1% | | |
| R 5 | 57.11.4104 | 100 k | | | |
| R 6 | 57.11.3222 | 2k2 | 1% | | |
| R 7 | 57.11.3222 | 2k2 | 1% | | |
| R 8 | 57.11.3222 | 2k2 | 1% | | |
| R 9 | 57.11.3222 | 2k2 | 1% | | |
| R 10 | 57.11.4104 | 100k | | | |
| R 11 | 57.11.4471 | 470 | 2% | | |
| R 12 | 57.11.4471 | 470 | 2% | | |
| R 13 | 57.11.4471 | 470 | | | |

| IND | DATE | NAME | | | |
|--------|--------------|---------|----------------------|----------------|-------------|
| ④ | | | CER - CERAMIC | Si - SIGNETICS | |
| ③ | | | SAL - SOLID ALUMINUM | Te - TEXAS | |
| ② | 4.10.84 | JG | EL - ELECTROLYTIC | R - RAYTHEON | |
| ① | 18.7.84 | W | | | |
| ○ | 25.10.82 | JG | 9-24 CH | 1.913.164.00 | |
| STUDER | BUS SELECTOR | 9-16 CH | PL | 1.913.160.00 | PAGE 1 OF 3 |

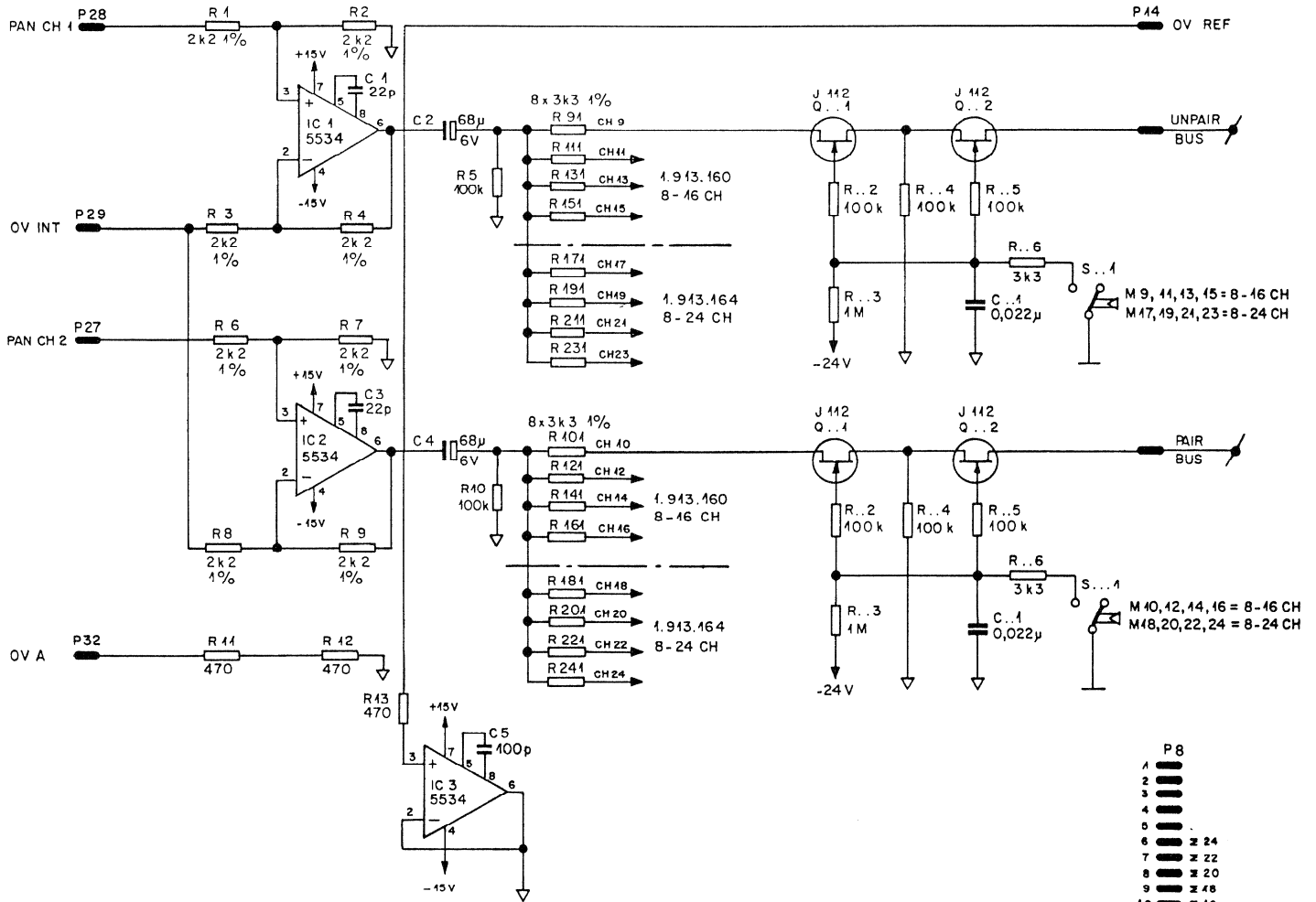
| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|--------|------------|---------|-------|---------------------------|---------|
| R..1 | 57.11.3332 | 3k3 | 1% | | |
| ① R..2 | 57.11.4104 | 100kΩ | | | |
| R..3 | 57.11.4105 | 1MΩ | | | |
| R..4 | 57.11.4104 | 100kΩ | | | |
| ① R..5 | 57.11.4104 | 100kΩ | | | |
| R..6 | 57.11.3332 | 3k3 | | | |
| S..1 | 55.05.0002 | 2 XU | | SWITCH | Schadow |
| | 65.03.0303 | GREY | | KNOB RED INDIC | Schadow |
| | 42.01.0228 | GREY | | KNOB 10/4 | |
| | 42.01.0253 | RED | | COVER | |
| | 42.01.0254 | BLUE | | COVER | |
| | 42.01.0255 | YELLOW | | COVER | |
| | 42.01.0256 | GREEN | | COVER | |
| J | 54.01.0305 | CIS 5P | | | |
| P | 54.01.0359 | 32 P | | 2 x 16 EURO PRINT | |
| | 53.03.0166 | | | XIC DIL 8P | |

| IND | DATE | NAME | | | |
|--------|--------------|---------|---------|--------------|-------------|
| ④ | | | | | |
| ③ | | | | | |
| ② | 4.10.84 | JG | | | |
| ① | 18.7.84 | W | | | |
| ○ | 25.10.82 | JG | 9-24 CH | 1.913.164.00 | |
| STUDER | BUS SELECTOR | 9-16 CH | PL | 1.913.160.00 | PAGE 3 OF 3 |

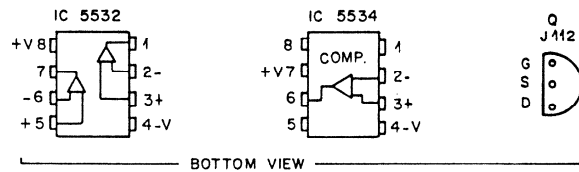
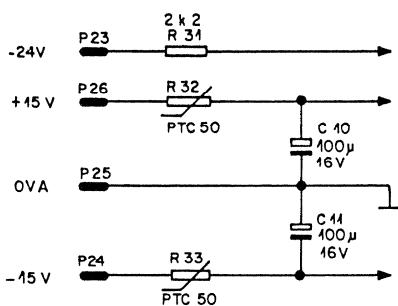
| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------|--------------|---------|-------|---------------------------|-----|
| R 14 | 57.11.3222 | 2k2 | 1% | | |
| R 15 | 57.11.3222 | 2k2 | 1% | | |
| R 16 | 57.11.3222 | 2k2 | 1% | | |
| R 17 | 57.11.3222 | 2k2 | 1% | | |
| R 18 | 57.11.4104 | 100k | | | |
| R 19 | 57.11.4104 | 100k | | | |
| R 20 | 1.912.001.42 | 10k | | pos. Log | |
| R 21 | 1.912.001.42 | 10k | | pos. Log | |
| R 22 | 1.912.001.42 | 10k | | pos. Log | |
| R 23 | 1.912.001.43 | 10k | | pos. Log | |
| R 24 | 1.912.001.43 | 10k | | pos. Log | |
| R 25 | 1.912.001.43 | 10k | | pos. Log | |
| R 26 | 57.11.3332 | 3k3 | 1% | | |
| R 27 | 57.11.3332 | 3k3 | 1% | | |
| R 28 | 57.11.3332 | 3k3 | 1% | | |
| R 29 | 57.11.3332 | 3k3 | 1% | | |
| R 30 | 57.11.3332 | 3k3 | 1% | | |
| R 31 | 57.11.3222 | 2k2 | | | |
| R 32 | 57.99.0206 | 50 | | PTC | |
| R 33 | 57.99.0206 | 50 | | PTC | |

| CHANNEL ELEMENT | | 9 | 11 | 13 | 15 | 17 | 19 | 21 | 23 | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 24 | |
|-----------------|------------|---------|-----|-------------------------------|-----|--------|-----|-----|-----|--------|-----|-----|-----|--------|-----|-----|-----|-------|
| W | | 9. | 11. | 13. | 15. | 17. | 19. | 21. | 23. | 10. | 12. | 14. | 16. | 18. | 20. | 22. | 24. | |
| | | 8-16CH | | | | 8-24CH | | | | 8-16CH | | | | 8-24CH | | | | |
| C..1 | 59.06.0223 | 0.022μF | | | | | | | | | | | | | | | | |
| Q..1 | 50.02.0350 | J M2 | | J M2 F-18 / J M2 A / MPF 4392 | | | | | | | | | | | | | | V-FET |
| Q..2 | 50.03.0350 | J M2 | | J M2 F-18 / J M2 A / MPF 4392 | | | | | | | | | | | | | | V-FET |

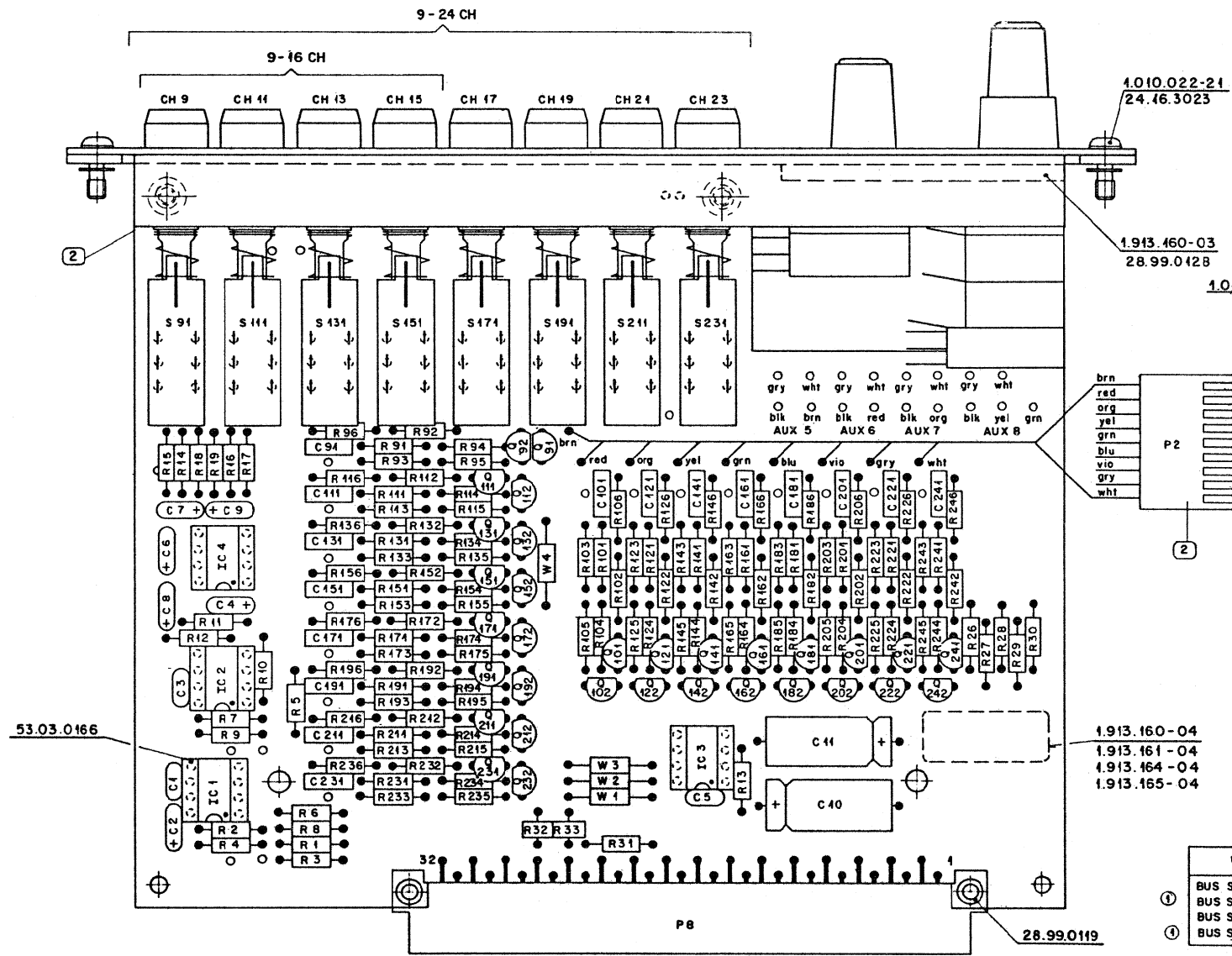
| IND | DATE | NAME | | | |
|--------|--------------|---------|---------|--------------|-------------|
| ④ | | | | | |
| ③ | | | | | |
| ② | 4.10.84 | JG | | | |
| ① | 18.7.84 | W | | | |
| ○ | 25.10.82 | JG | 9-24 CH | 1.913.164.00 | |
| STUDER | BUS SELECTOR | 9-16 CH | PL | 1.913.160.00 | PAGE 2 OF 3 |



- P8
- 1
 - 2
 - 3
 - 4
 - 5
 - 6 $\neq 24$
 - 7 $\neq 22$
 - 8 $\neq 20$
 - 9 $\neq 18$
 - 10 $\neq 16$
 - 11 $\neq 14$
 - 12 $\neq 12$
 - 13 $\neq 10$
 - 14 OV REF
 - 15 $\neq 9$
 - 16 $\neq 11$
 - 17 $\neq 13$
 - 18 $\neq 15$
 - 19 $\neq 17$
 - 20 $\neq 19$
 - 21 $\neq 21$
 - 22 $\neq 23$
 - 23 -24V
 - 24 -15V
 - 25 0V
 - 26 +15V
 - 27 PAN CH 2
 - 28 PAN CH 1
 - 29 OV INT
 - 30 AF IN
 - 34 PF IN
 - 32 OV (A)



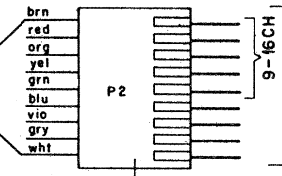
| | | | | | |
|--------------------------------|--------------|-----------|-----------|--------------|--|
| DATE: | 26.3.84 | 18.7.84 | 4.10.84 | | |
| SIGN: | <i>ml</i> | <i>ml</i> | <i>ml</i> | | |
| STUDER REGENSDORF ZURICH | BUS SELECTOR | | 9-16 CH | SC 1.913.161 | |
| | | | 9-24 CH | SC 1.913.165 | |



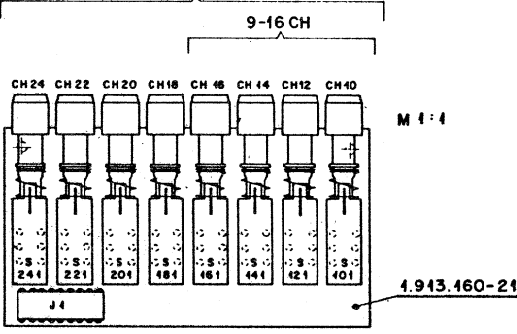
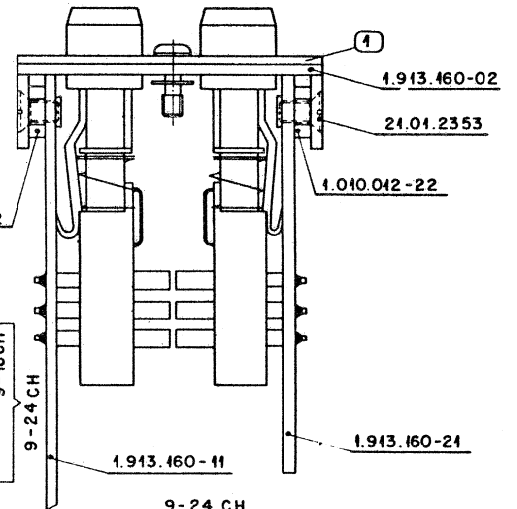
1.010.022-21
24.46.3023

1.913.460-03
28.99.042B

1.010.012-22



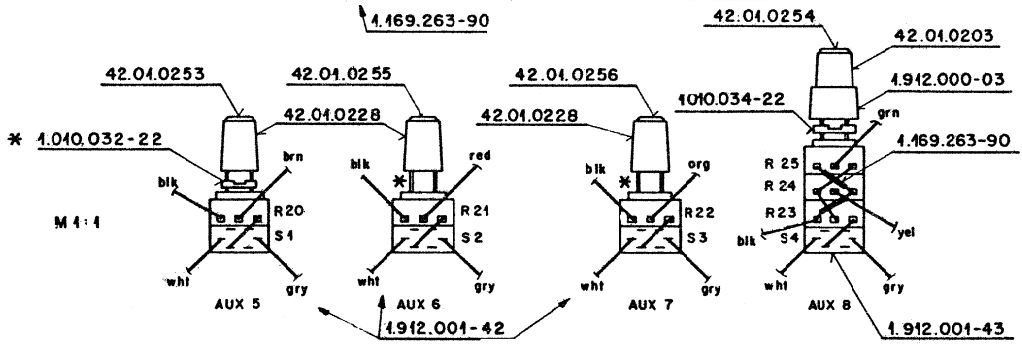
2



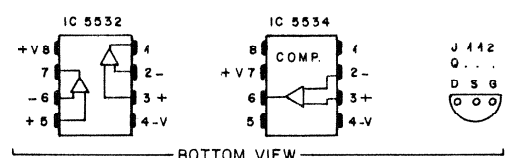
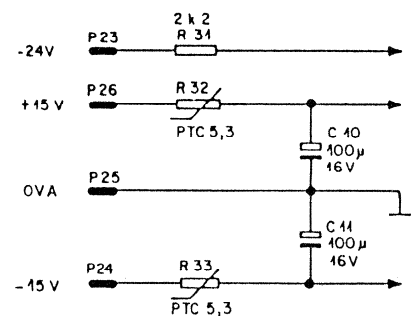
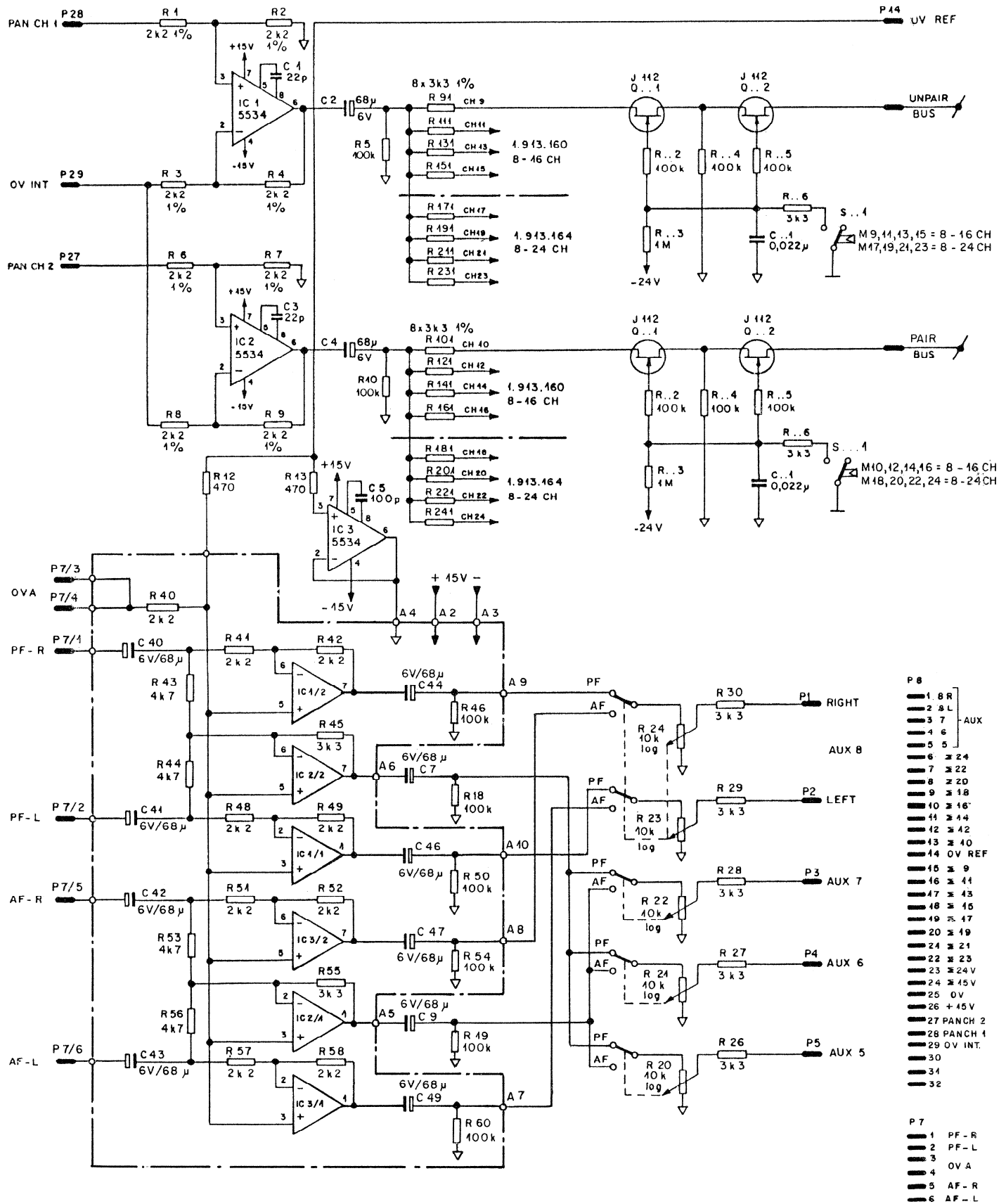
1.913.160-04
1.913.161-04
1.913.164-04
1.913.165-04

| VALID FOR | NR. UNIT | NR. PL | ① | ② |
|----------------------|--------------|-----------|--------------|--------------|
| BUS SEL. 9-16 CH+AUX | 1.913.460-00 | 1.913.460 | 1.913.160-04 | 1.913.160-93 |
| BUS SEL. 9-16 CH | 1.913.461-00 | 1.913.461 | 1.913.165-02 | 1.913.161-93 |
| BUS SEL. 9-24 CH+AUX | 1.913.464-00 | 1.913.460 | 1.913.164-04 | 1.913.164-93 |
| BUS SEL. 9-24 CH | 1.913.465-00 | 1.913.461 | 1.913.165-01 | 1.913.165-93 |

53.03.0166

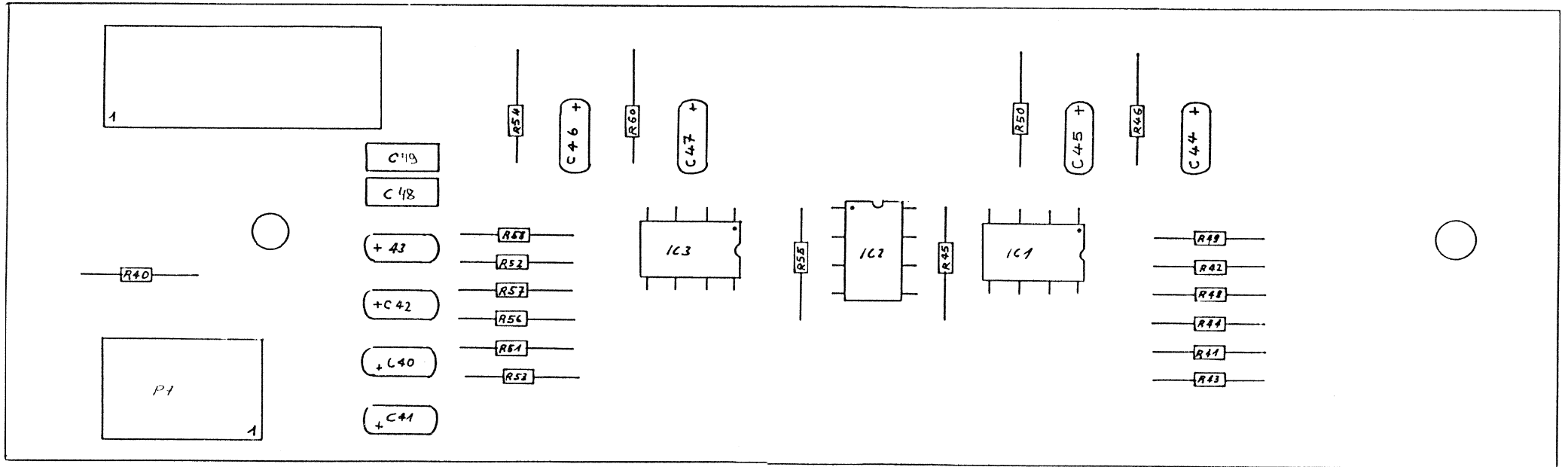


| | | | | | | | |
|--------------------------------|-------------------|---|------------|-----------------------------|---------------|------|-------|
| Werkstoff: | Norm-Nr.: | Oberfläche: | Güte: | Änderung: | 22.10.85 A.Ho | ③ | |
| | DIN-Bes.: | | Beh.: | | 14.84 A.Ho | ② | |
| | Abmessung: | | | | 3.2.83 A.Ho | ① | |
| Zugehörige Unterlagen: | Freimasstoleranz: | Maßstab: | Ausgabe: | Datum | Gez. | Ges. | Index |
| | ± | | 1:1; 2:1 | | | | |
| Ersatz für: | Ersetzt durch: | | Kopie für: | | | | |
| STUDER REGENSDORF ZÜRICH | | Benennung: Bus Selector 9-16 CH | | Nummer: 1.913.160-00 | | | |

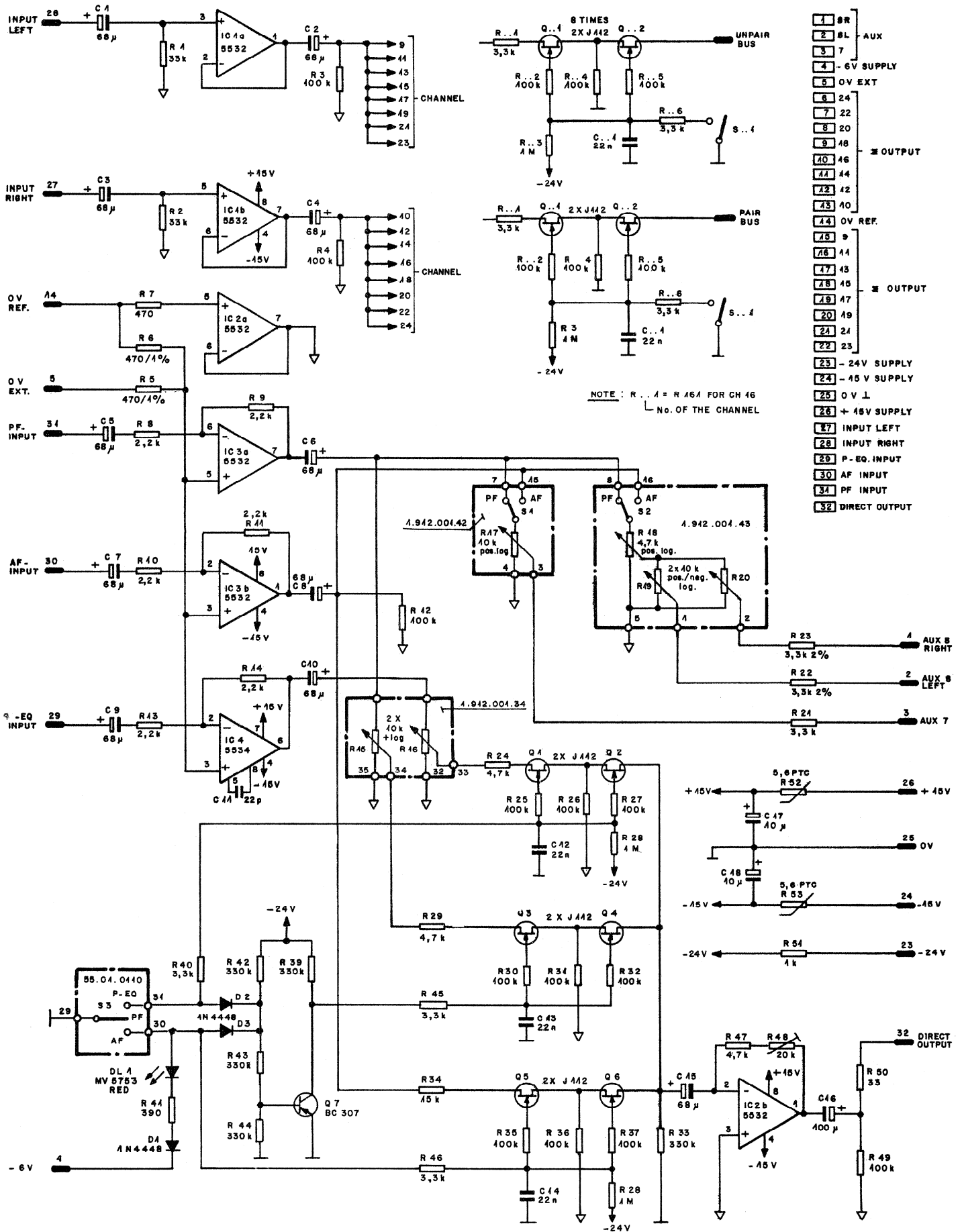


- P 8**
- 1 8 R
 - 2 8 L
 - 3 7
 - 4 6
 - 5 5
 - 6 24
 - 7 22
 - 8 20
 - 9 18
 - 10 16
 - 11 44
 - 12 42
 - 13 40
 - 14 OV REF
 - 15 9
 - 16 41
 - 17 43
 - 18 15
 - 19 17
 - 20 19
 - 21 21
 - 22 23
 - 23 24V
 - 24 45V
 - 25 OV
 - 26 +15V
 - 27 PANCH 2
 - 28 PANCH 1
 - 29 OV INT.
 - 30
 - 31
 - 32
- P 7**
- 1 PF - R
 - 2 PF - L
 - 3 OV A
 - 4 AF - R
 - 5 AF - L
 - 6 AF - L

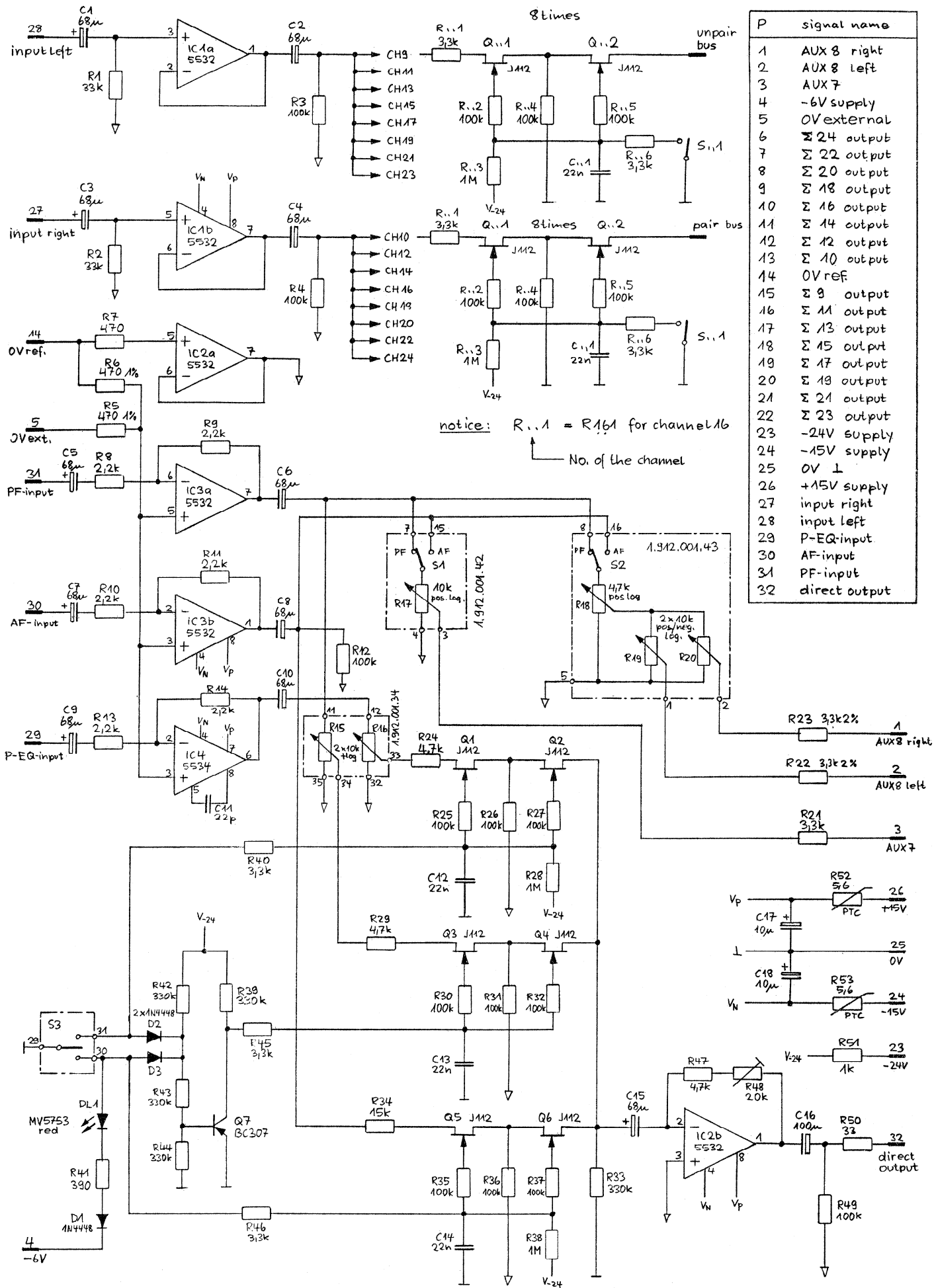
| | | | | |
|----------------------------------|---------------------|--|--|--------------|
| DATE: | 40.10.90 | | | |
| SIGN: | | | | |
| STUUBOER REGENSDORF ZURICH | BUS SELECTOR STEREO | | | SC 1.913.163 |



1.913.163.11



| | | | |
|------------------------------------|---------------------|------------------------|------------------------------|
| ① 24.8.83 <i>Wk</i> | ② 27.5.86 <i>Wk</i> | ○ | ○ |
| STUDER REGENSDORF ZÜRICH | | 9...16 CH 9...24 CH | SC 1.913.162 SC 1.913.166 |
| 9-24 CH SEL. WITH DIRECT OUTPUT | | | |



Ae.-Index C1 Ae.-Datum 03.02.86
 Kopieausgabe 14.14 Uhr am 24.03.86

Visum WY

| Ae. | Nummer | Titel | Remerkungen |
|-----|--------------|------------------------------|-------------|
| C1 | 1.913.166.00 | 9-24CH.Sel.+ direct function | |

| Ind. | Pos.Nr. | Teil Nr. | Wert (Menge) | Bezeichnung | Hersteller |
|------|----------|------------|--------------|---------------------|-------------|
| CU | C.....1 | 59.26.0680 | 68 uF | SAL | |
| CU | C.....2 | 59.26.0680 | 68 uF | SAL | |
| CU | C.....3 | 59.26.0680 | 68 uF | SAL | |
| CU | C.....4 | 59.26.0680 | 68 uF | SAL | |
| CU | C.....5 | 59.26.0680 | 68 uF | SAL | |
| CU | C.....6 | 59.26.0680 | 68 uF | SAL | |
| CU | C.....7 | 59.26.0680 | 68 uF | SAL | |
| CU | C.....8 | 59.26.0680 | 68 uF | SAL | |
| CU | C.....9 | 59.26.0680 | 68 uF | SAL | |
| CU | C.....10 | 59.26.0680 | 68 uF | SAL | |
| CU | C.....11 | 59.34.2220 | 22 pF | CEK | |
| CU | C.....12 | 59.06.0223 | 22 nF | PE | |
| CU | C.....13 | 59.06.0223 | 22 nF | PE | |
| CU | C.....14 | 59.06.0223 | 22 nF | PE | |
| CU | C.....15 | 59.26.0680 | 68 uF | SAL | |
| CU | C.....16 | 59.22.4101 | 100 uF | EL | |
| CU | C.....17 | 59.26.2100 | 10 uF | SAL | |
| CU | C.....18 | 59.26.2100 | 10 uF | SAL | |
| CU | C...xx1 | 59.06.0223 | 22 nF | PE | see note 1) |
| CU | C.....1 | 50.04.0125 | 1N4448 | | any |
| CU | C.....2 | 50.04.0125 | 1N4448 | | any |
| CU | C.....3 | 50.04.0125 | 1N4448 | | any |
| CU | CL.....1 | 50.04.2111 | MV5753 | red | GI,HP |
| CU | IC.....1 | 50.09.0105 | NE5532N | dual op.amp. | Sig,Ex,Pa |
| CU | IC.....2 | 50.09.0105 | NE5532N | dual op.amp. | Sig,Ex,Pa |
| CU | IC.....3 | 50.09.0105 | NE5532N | dual op.amp. | Sig,Ex,Pa |
| CU | IC.....4 | 50.05.0243 | NE5534N | single op.amp. | Ti,Sig,Pa |
| CU | P.....1 | 54.01.0359 | 2*16pin | euroconnector | Pu |
| CU | Q.....1 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| CU | Q.....2 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| CU | Q.....3 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| CU | Q.....4 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| CU | Q.....5 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| CU | Q.....6 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| CU | Q.....7 | 50.03.0515 | BC 307 | PNP IC>100mA, B>100 | any |
| CU | Q...xx1 | 50.03.0350 | J 112 | N-JFET see note 1) | NS,Mot,Six |
| CU | Q...xx2 | 50.03.0350 | J 112 | N-JFET see note 1) | NS,Mot,Six |
| CU | R.....1 | 57.11.4333 | 33 kOhm | | |
| CU | R.....2 | 57.11.4333 | 33 kOhm | | |
| CU | R.....3 | 57.11.4104 | 100 kOhm | | |
| CU | R.....4 | 57.11.4104 | 100 kOhm | | |
| CU | R.....5 | 57.11.3471 | 470 Ohm | 1% | |
| CU | R.....6 | 57.11.3471 | 470 Ohm | 1% | |

Ae.-Index 01 Ae.-Datum C3.02.86
 Kopieausgabe 14.14 Uhr am 24.03.86

Visum WY

| Ind. | Pos.-Nr. | Teil Nr. | Wert (Menge) | Bezeichnung | Hersteller |
|------|-----------|--------------|--------------|---|------------|
| CO | R.....7 | 57.11.3471 | 470 Ohm | | |
| CO | R.....8 | 57.11.4222 | 2.2 kOhm | 2% | |
| CO | R.....9 | 57.11.4222 | 2.2 kOhm | 2% | |
| CO | R.....10 | 57.11.4222 | 2.2 kOhm | 2% | |
| CO | R.....11 | 57.11.4222 | 2.2 kOhm | 2% | |
| CO | R.....12 | 57.11.4104 | 100 kOhm | | |
| CO | R.....13 | 57.11.4222 | 2.2 kOhm | 2% | |
| CO | R.....14 | 57.11.4222 | 2.2 kOhm | 2% | |
| CO | R.....15 | 1.912.001.34 | 10 kOhm | pos.log. potm. R15,R16 | |
| CO | R.....16 | | 10 kOhm | pos.log. | |
| CO | R.....17 | 1.912.001.42 | 10 kOhm | pos.log. potm. and switch S1 | |
| CO | R.....18 | 1.912.001.43 | 4.7 kOhm | pos.log. potm.R18,R19,R20 and switch S2 | |
| CO | R.....19 | | 10 kOhm | pos.log. | |
| CO | R.....20 | | 10 kOhm | neg.log. | |
| CO | R.....21 | 57.11.4332 | 3.3 kOhm | 2% | |
| CO | R.....22 | 57.11.4332 | 3.3 kOhm | 2% | |
| CO | R.....23 | 57.11.4332 | 3.3 kOhm | 2% | |
| CI | R.....24 | 57.11.4472 | 4.7 kOhm | | |
| CO | R.....25 | 57.11.4104 | 100 kOhm | | |
| CO | R.....26 | 57.11.4104 | 100 kOhm | | |
| CO | R.....27 | 57.11.4104 | 100 kOhm | | |
| CO | R.....28 | 57.11.4105 | 1 MOhm | | |
| CO | R.....29 | 57.11.4472 | 4.7 kOhm | | |
| CO | R.....30 | 57.11.4104 | 100 kOhm | | |
| CO | R.....31 | 57.11.4104 | 100 kOhm | | |
| CO | R.....32 | 57.11.4104 | 100 kOhm | | |
| CO | R.....33 | 57.11.4334 | 330 kOhm | | |
| CO | R.....34 | 57.11.4153 | 15 kOhm | | |
| CO | R.....35 | 57.11.4104 | 100 kOhm | | |
| CO | R.....36 | 57.11.4104 | 100 kOhm | | |
| CO | R.....37 | 57.11.4104 | 100 kOhm | | |
| CO | R.....38 | 57.11.4105 | 1 MOhm | | |
| CO | R.....39 | 57.11.4334 | 330 kOhm | | |
| CO | R.....40 | 57.11.4332 | 3.3 kOhm | | |
| CO | R.....41 | 57.11.4391 | 390 Ohm | | |
| CO | R.....42 | 57.11.4334 | 330 kOhm | | |
| CO | R.....43 | 57.11.4334 | 330 kOhm | | |
| CO | R.....44 | 57.11.4334 | 330 kOhm | | |
| CO | R.....45 | 57.11.4332 | 3.3 kOhm | | |
| CO | R.....46 | 57.11.4332 | 3.3 kOhm | | |
| CO | R.....47 | 57.11.4472 | 4.7 kOhm | | |
| CO | R.....48 | 58.01.9203 | 20 kOhm | trimming resistor | |
| CO | R.....49 | 57.11.4104 | 100 kOhm | | |
| CO | R.....50 | 57.11.4330 | 33 Ohm | | |
| CO | R.....51 | 57.11.4102 | 1 kOhm | | |
| CO | R.....52 | 57.99.0209 | 5.6 Ohm | PTC Philips Nr.2322 662 91005 | |
| CO | R.....53 | 57.99.0209 | 5.6 Ohm | PTC Philips Nr.2322 662 91005 | |
| CO | R.....xx1 | 57.11.4332 | 3.3 kOhm | see note 1) | |
| CO | R.....xx2 | 57.11.4104 | 100 kOhm | see note 1) | |
| CO | R.....xx3 | 57.11.4105 | 1 MOhm | see note 1) | |
| CO | R.....xx4 | 57.11.4104 | 100 kOhm | see note 1) | |
| CO | R.....xx5 | 57.11.4104 | 100 kOhm | see note 1) | |
| CO | R.....xx6 | 57.11.4332 | 3.3 kOhm | see note 1) | |

Ae.-Index 01 Ae.-Datum 03.02.86
 Kopieausgabe 14.14 Uhr am 24.03.86

Visum WY

| Ind. | Pos.Nr. | Teil Nr. | Wert (Menge) | Bezeichnung | Hersteller |
|------|---------|------------|--------------|--------------------|---------------|
| CO | S...x1 | 55.15.0002 | 2*U | see note 1) | Schadow ITT |
| CO | S.....3 | 55.01.0110 | toggle | switch 1:on-off-on | Dialight, C&K |

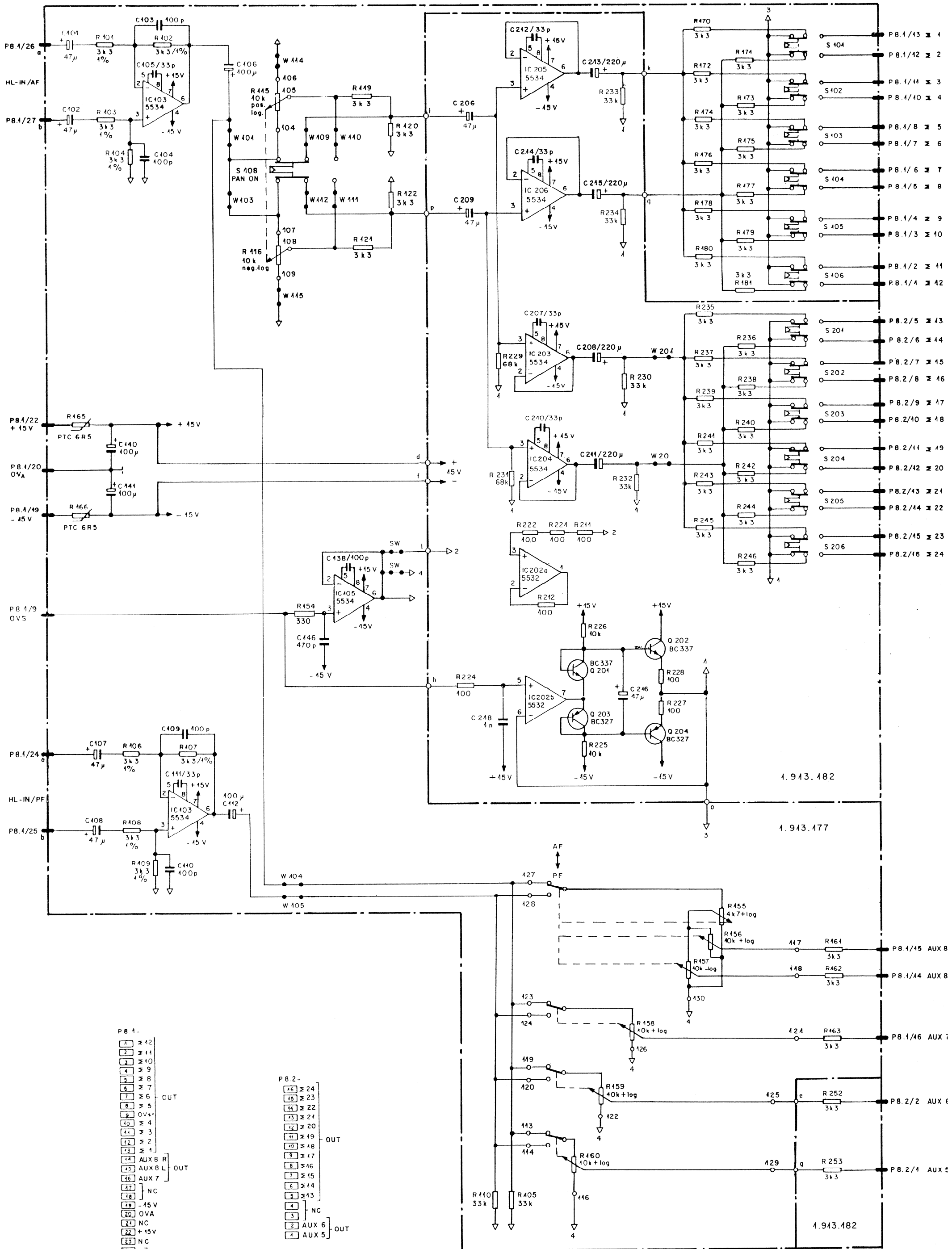
CER =ceramic, PE=polyester, SAL=solid aluminium lacquard

MANUFACTURER: Bu=Burdny, C&K=C&K Components Inc, GI=General Instrument
 HP=Hewlett Packard, IIT=Intermetall, Mot=Motorola,
 NS=National Semiconductors, Ra=Raytheon, Sig=Signetics,
 Six=Siliconix, TI=Texas Instruments, Ex=Exar

 * This positions list is also valid for 1.913.162.00 *
 * Diese Positionsliste ist auch für 1.913.162.00 gültig *
 * 9-16CH.SEL. + DIRECT FUNCTION *

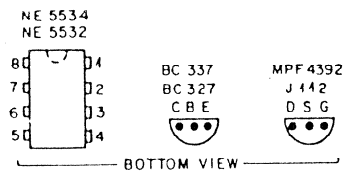
note 1): xx means the number of the channel
 xx steht für die Kanalnummer
 1.913.162.00 bestückt sind Kanal 9-16 (8x)
 1.913.166.00 bestückt sind Kanal 9-24 (16x)

Ende der Positions Liste.

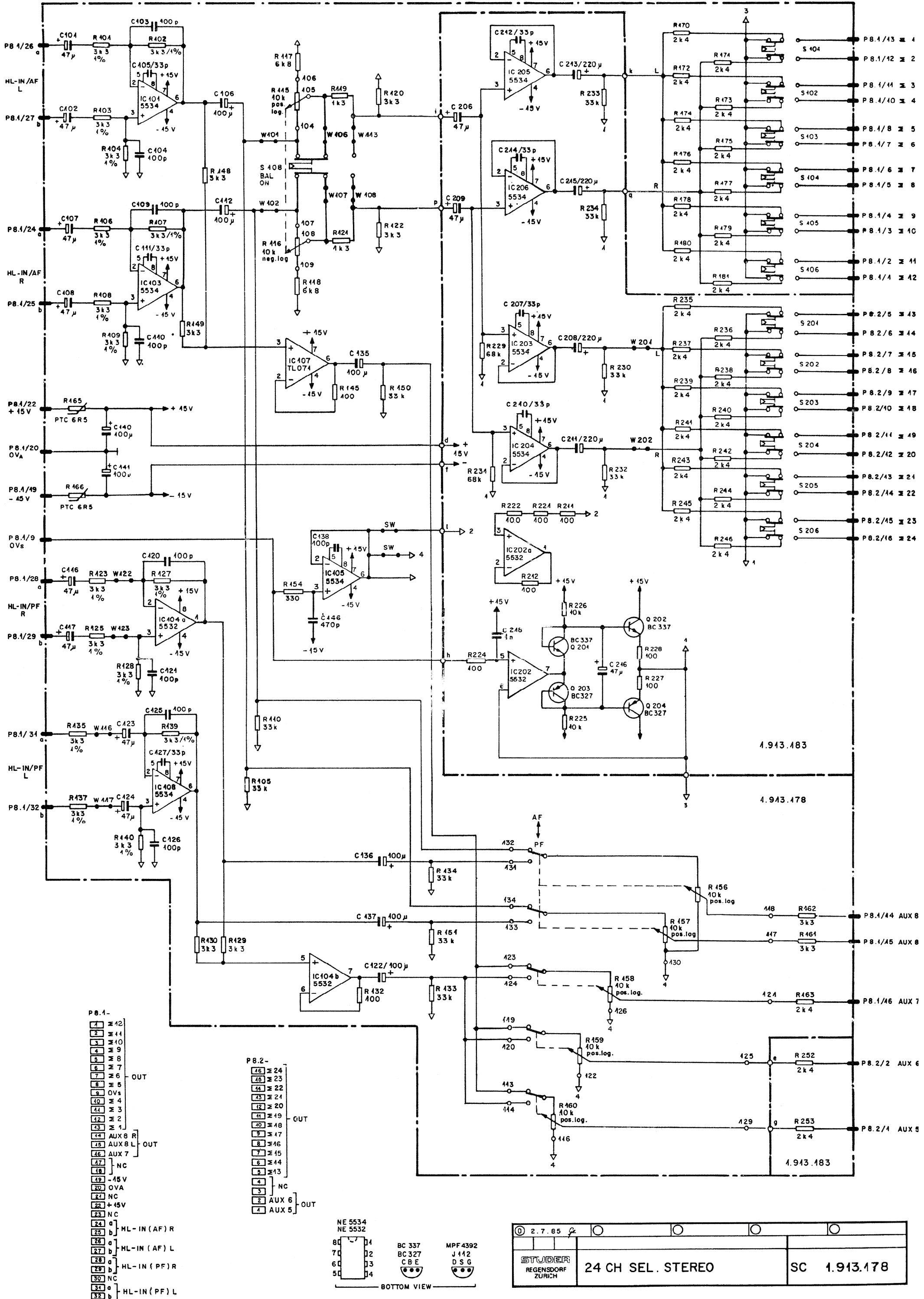


- PB.1-
- 12
 - 14
 - 10
 - 9
 - 8
 - 7
 - 6
 - 5
 - 4
 - 3
 - 2
 - 1
 - AUX B R
 - AUX B L
 - AUX 7
 - NC
 - 15V
 - OVA
 - NC
 - +15V
 - NC
 - a
 - b
 - HL-IN (PF)
 - a
 - b
 - HL-IN (AF)
 - NC
 - NC
 - NC

- PB.2-
- 24
 - 23
 - 22
 - 21
 - 20
 - 19
 - 18
 - 17
 - 16
 - 15
 - 14
 - 13
 - 12
 - 11
 - 10
 - 9
 - 8
 - 7
 - 6
 - 5
 - 4
 - 3
 - 2
 - AUX 6
 - AUX 5

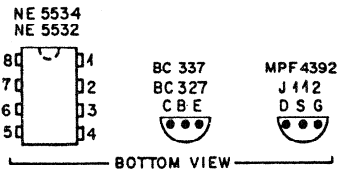


| | | | |
|-----------------|--|--------------|--|
| 27 6.86 | | | |
| | | | |
| | | | |
| 24 CH SEL. MONO | | SC 1.913.177 | |

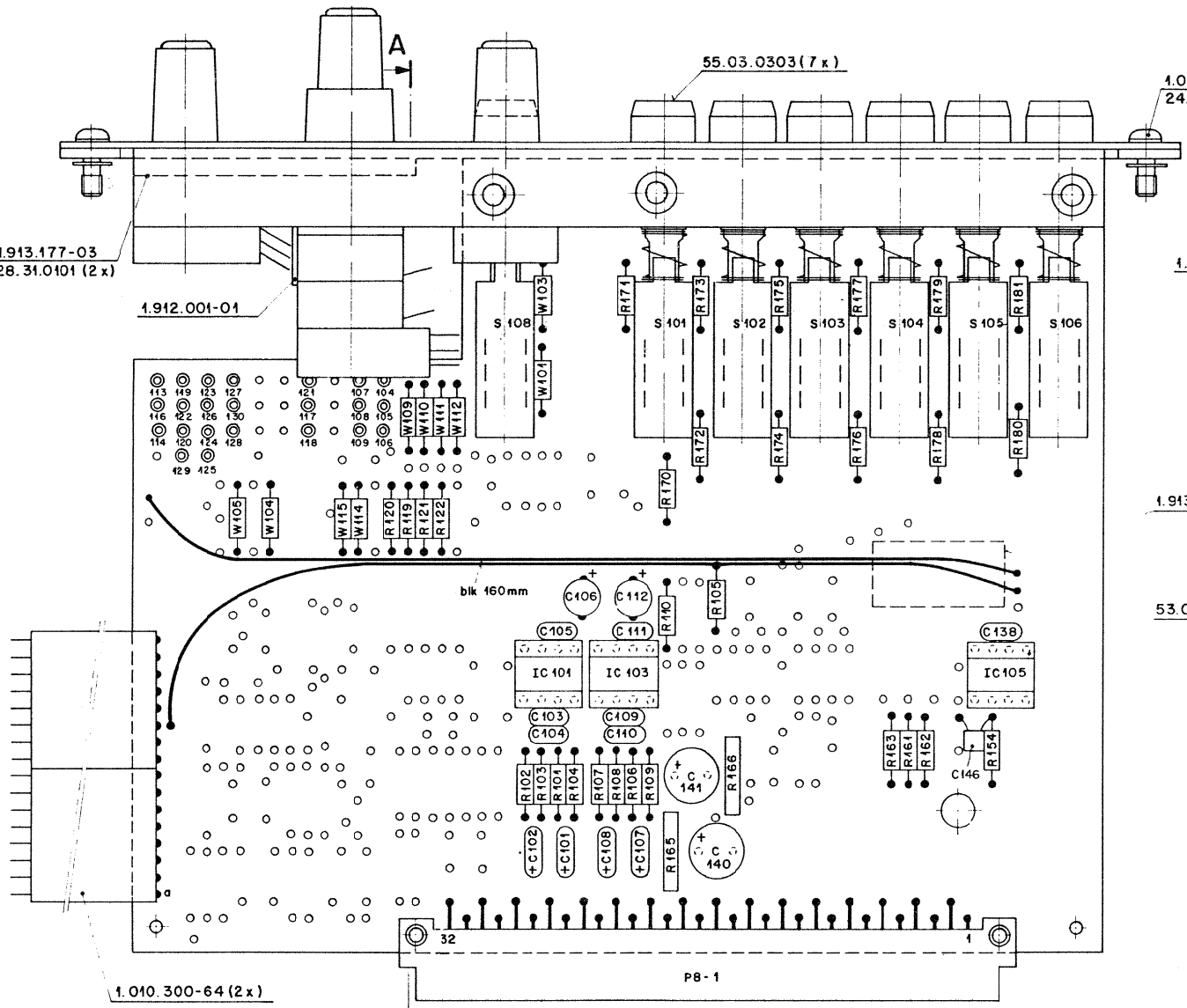


- PB.1-
- 1 ≙ 12
 - 2 ≙ 11
 - 3 ≙ 10
 - 4 ≙ 9
 - 5 ≙ 8
 - 6 ≙ 7
 - 7 ≙ 6
 - 8 ≙ 5
 - 9 OVs
 - 10 ≙ 4
 - 11 ≙ 3
 - 12 ≙ 2
 - 13 ≙ 1
 - 14 AUX 8 R
 - 15 AUX 8 L
 - 16 AUX 7
 - 17 ≙ 11
 - 18 ≙ 10
 - 19 -15V
 - 20 OVA
 - 21 NC
 - 22 +15V
 - 23 NC
 - 24 a HL-IN (AF) R
 - 25 b HL-IN (AF) L
 - 26 a HL-IN (PF) R
 - 27 b HL-IN (PF) L
 - 28 a HL-IN (PF) R
 - 29 b HL-IN (PF) L
 - 30 NC
 - 31 a
 - 32 b

- PB.2-
- 1 ≙ 24
 - 2 ≙ 23
 - 3 ≙ 22
 - 4 ≙ 21
 - 5 ≙ 20
 - 6 ≙ 19
 - 7 ≙ 18
 - 8 ≙ 17
 - 9 ≙ 16
 - 10 ≙ 15
 - 11 ≙ 14
 - 12 ≙ 13
 - 13 ≙ 12
 - 14 ≙ 11
 - 15 ≙ 10
 - 16 ≙ 9
 - 17 ≙ 8
 - 18 ≙ 7
 - 19 ≙ 6
 - 20 ≙ 5
 - 21 ≙ 4
 - 22 ≙ 3
 - 23 ≙ 2
 - 24 ≙ 1



| | | | |
|--------------------------------|--|-------------------|--|
| 2.7.85 | | SC 1.913.178 | |
| STUDER REGENSDORF ZÜRICH | | 24 CH SEL. STEREO | |



1.010.022-21 (2x)
24.16.3023 (2x)

1.010.012-22 (2x)

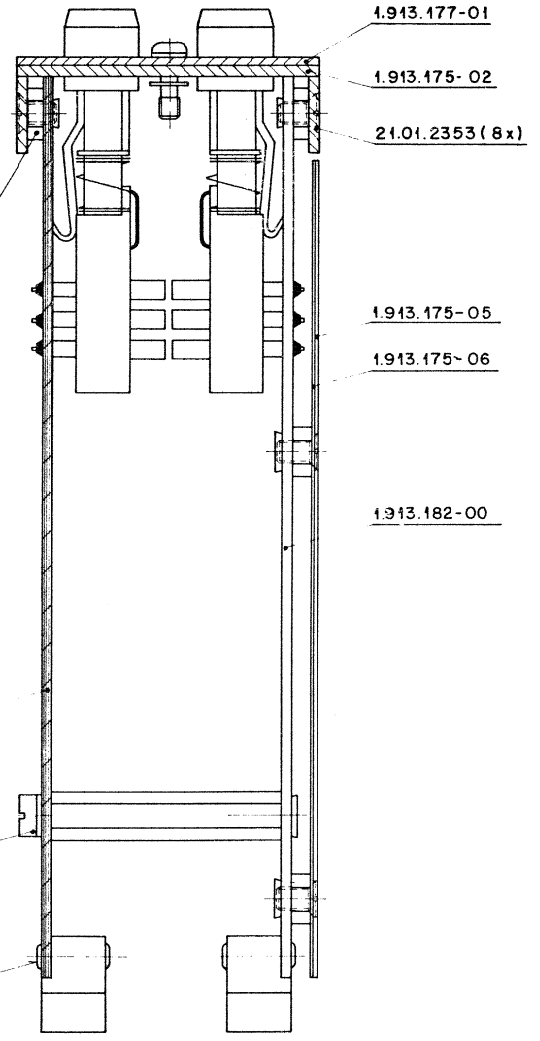
1.913.177-04

53.03.0166 (3x)

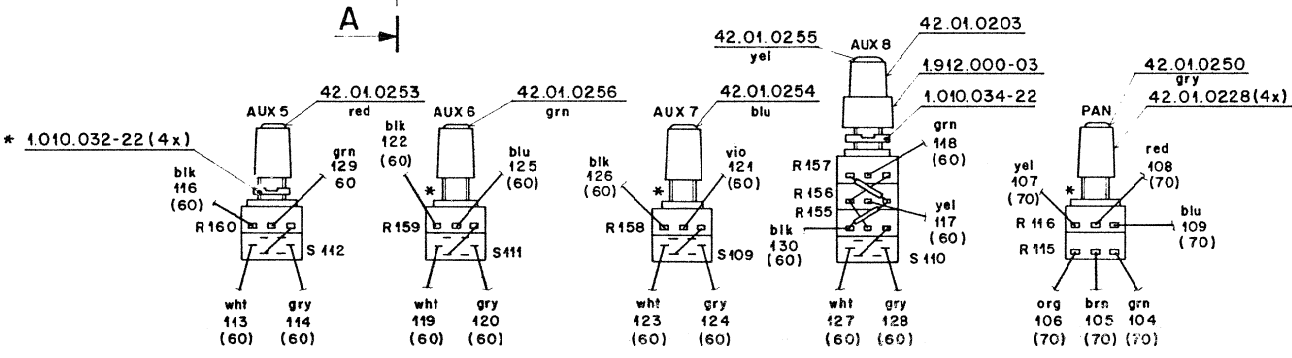
1.913.175-12

21.01.0354
24.16.4030

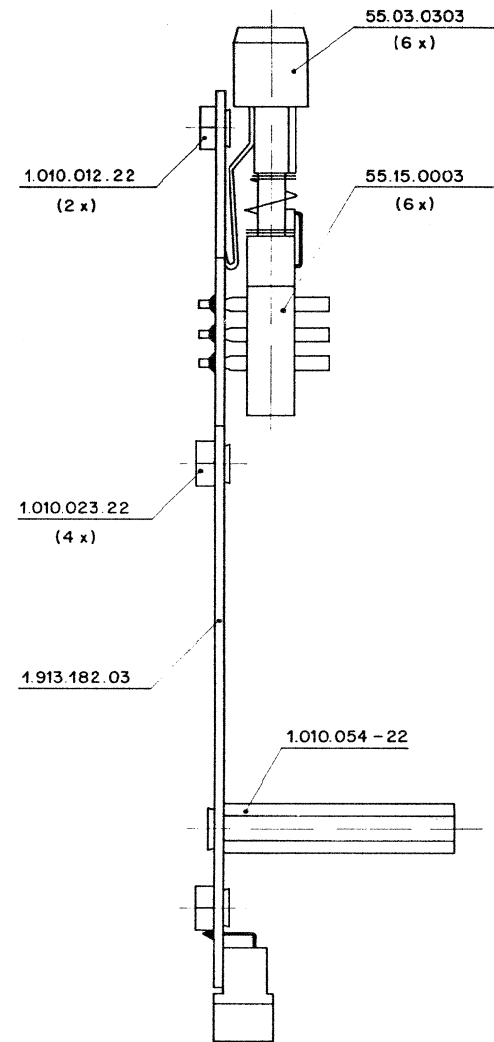
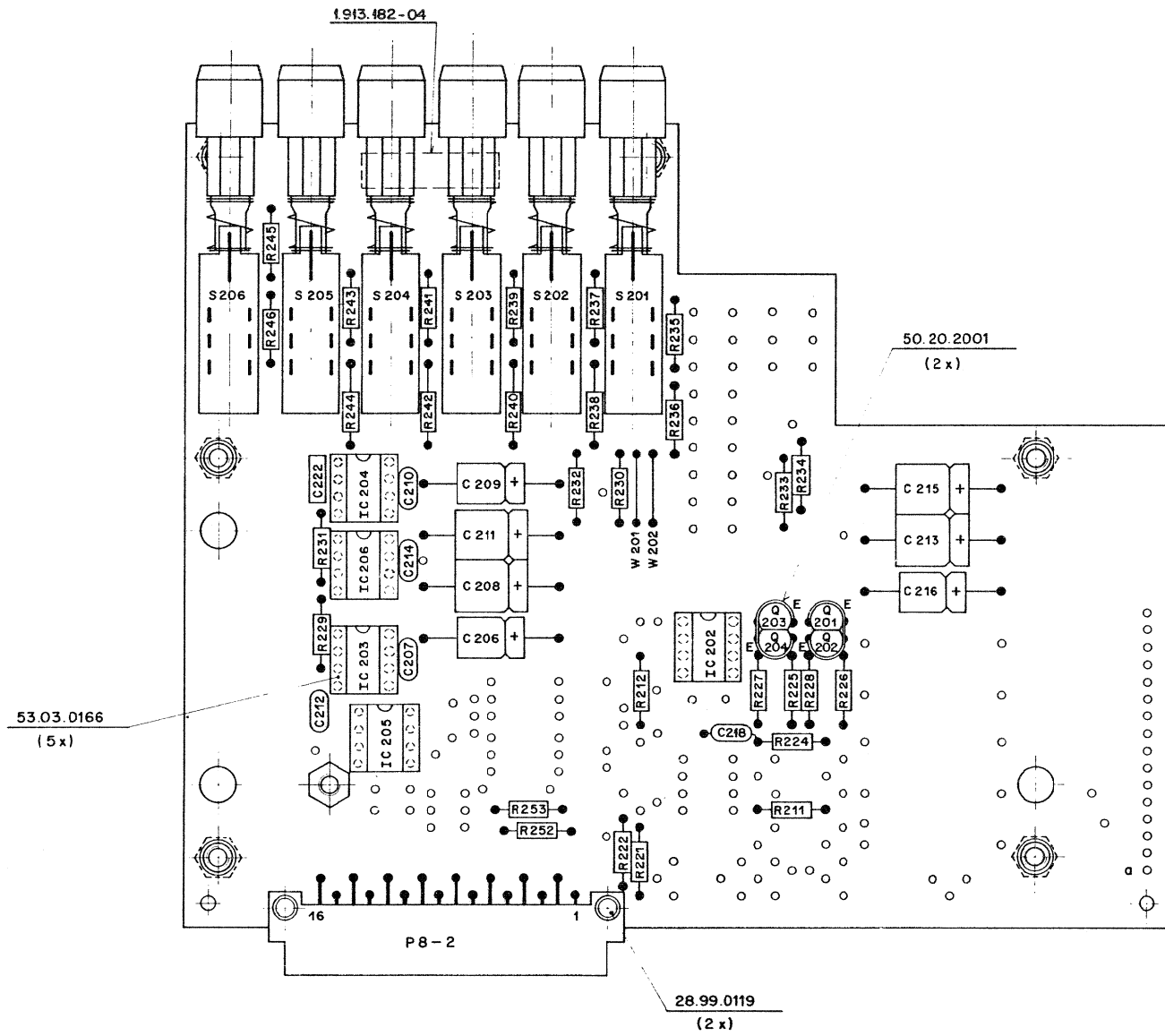
28.99.0119 (2x)



Schnitt A-A



| | | | | |
|---------------------------------------|------------|-------------------|----------|--------------------------------|
| Werkstoff | Norm-Nr.: | Gute: | Änderung | ③ |
| | DIN-Bez.: | Oberfläche | | ② |
| | Abmessung: | Beh.: | | ① |
| Zugehörige Unterlagen: | PL | Freimasstoleranz: | Maßstab: | 13.3.86 A Ho |
| | | + | 4:1; 2:1 | ④ |
| Ersatz für: | | Ersetzt durch: | | PL |
| | | | | ⑤ |
| STUDER REGENSDORF ZÜRICH | | | | Nummer: 1.913.177-00 |



| | | | | | |
|--------------------------------|-------------------|---------------|---------|-----------------------|--------------|
| Werkstoff | Norm-Nr.: | Oberfläche | Güte. | Änderung | ③ |
| | DIN-Bez.: | | Beh. | | ② |
| | Abmessung: | | | | ① |
| Zugehörige Unterlagen: | Freimasstoleranz: | Maßstab: | Ausgabe | 19.11.85 | ① |
| PL 1.913.177-00 | ± | 2:1 | Datum | Gez. Gepr. Ges. Index | |
| Ersatz für: | Ersetzt durch: | Kopie für: | | | |
| STUDER REGENSDORF ZÜRICH | Benennung: | 6 SWITCH MONO | | Nummer: | 1.913.182-00 |

Ae.-Index CU Ae.-Datum 03.05.85
 Kopieausgabe 16.44 Uhr am 15.04.86

Visum TA

Ae. Nummer Titel Bemerkungen

 GO 1.913.177.00 24-CH-SEL. MOND

| Ind. | Pcs.Nr. | Teil Nr. | Wert (Menge) | Bezeichnung | Hersteller |
|-------|----------|------------|--------------|-----------------|------------|
| ----- | | | | | |
| 00 | C...101 | 59.26.0470 | 47 uF | 20% 6.3V | SAL |
| 00 | C...102 | 59.26.0470 | 47 uF | 20% 6.3V | SAL |
| 00 | C...103 | 59.34.4101 | 100 pF | | CE |
| 00 | C...104 | 59.34.4101 | 100 pF | | CE |
| 00 | C...105 | 59.34.2330 | 33 pF | | CE |
| 00 | C...106 | 59.22.3101 | 100 uF | -20% 10V | EL |
| 00 | C...107 | 59.26.0470 | 47 uF | 20% 6.3V | SAL |
| 00 | C...108 | 59.26.0470 | 47 uF | 20% 6.3V | SAL |
| 00 | C...109 | 59.34.4101 | 100 pF | | CE |
| 00 | C...110 | 59.34.4101 | 100 pF | | CE |
| 00 | C...111 | 59.34.2330 | 33 pF | | CE |
| 00 | C...112 | 59.22.3101 | 100 uF | -20% 10V | EL |
| 00 | C...113 | | not used | | |
| 00 | C...114 | | not used | | |
| 00 | C...115 | | not used | | |
| 00 | C...116 | | not used | | |
| 00 | C...117 | | not used | | |
| 00 | C...118 | | not used | | |
| 00 | C...119 | | not used | | |
| 00 | C...120 | | not used | | |
| 00 | C...121 | | not used | | |
| 00 | C...122 | | not used | | |
| 00 | C...123 | | not used | | |
| 00 | C...124 | | not used | | |
| 00 | C...125 | | not used | | |
| 00 | C...126 | | not used | | |
| 00 | C...127 | | not used | | |
| 00 | C...128 | | not used | | |
| 00 | C...129 | | not used | | |
| 00 | C...130 | | not used | | |
| 00 | C...131 | | not used | | |
| 00 | C...132 | | not used | | |
| 00 | C...133 | | not used | | |
| 00 | C...134 | | not used | | |
| 00 | C...135 | | not used | | |
| 00 | C...136 | | not used | | |
| 00 | C...137 | | not used | | |
| 00 | C...138 | 59.34.4101 | 100 pF | | CE |
| 00 | C...139 | | not exist | | |
| 00 | C...140 | 59.22.4101 | 100 uF | -20% 16V | EL |
| 00 | C...141 | 59.22.4101 | 100 uF | -20% 16V | EL |
| 00 | C...142 | | not used | | |
| 00 | C...143 | | not used | | |
| 00 | C...144 | | not used | | |
| 00 | C...145 | | not used | | |
| 02 | C...146 | 59.34.5471 | 470 pF | | CE |
| 00 | IC...101 | 03.05.0243 | NE5534N | single op. amp. | Sig,Ra |
| 00 | IC...102 | | not used | | |

Ae.-Index 00 Ae.-Datum 03.05.85
 Kopieausgabe 16.44 Uhr am 15.04.86

Visum 7A

| Ind. | Pos.Nr. | Teil Nr. | Wert (Menge) | Bezeichnung | Hersteller |
|------|---------|--------------|--------------|--------------------------------|------------|
| 00 | IC..103 | 50.05.0243 | NE5534N | single op. amp. | Sig,Ra |
| 00 | IC..104 | | not used | | |
| 00 | IC..105 | 50.05.0243 | NE5534N | single op. amp. | Sig,Ra |
| 00 | IC..106 | | not used | | |
| 00 | IC..107 | | not used | | |
| 00 | IC..108 | | not used | | |
| 00 | MP....1 | 53.03.0166 | 3 pcs | IC-socket 8 pin | |
| 00 | P...8.1 | 54.01.0359 | 2*16pin | euroconnector | Bu |
| 00 | R...101 | 57.11.3332 | 3.3 kOhm | 1% 0.25W | |
| 00 | R...102 | 57.11.3332 | 3.3 kOhm | 1% 0.25W | |
| 00 | R...103 | 57.11.3332 | 3.3 kOhm | 1% 0.25W | |
| 00 | R...104 | 57.11.3332 | 3.3 kOhm | 1% 0.25W | |
| 00 | R...105 | 57.11.4333 | 33 kOhm | 5% 0.25W | |
| 00 | R...106 | 57.11.3332 | 3.3 kOhm | 1% 0.25W | |
| 00 | R...107 | 57.11.3332 | 3.3 kOhm | 1% 0.25W | |
| 00 | R...108 | 57.11.3332 | 3.3 kOhm | 1% 0.25W | |
| 00 | R...109 | 57.11.3332 | 3.3 kOhm | 1% 0.25W | |
| 00 | R...110 | 57.11.4333 | 33 kOhm | 5% 0.25W | |
| 00 | R...111 | | not used | | |
| 00 | R...112 | | not used | | |
| 00 | R...113 | | not used | | |
| 00 | R...114 | | not used | | |
| 00 | R...115 | 1.912.001.35 | 10 kOhm | pos.log. combined with R116 St | |
| 00 | R...116 | | 10 kOhm | neg.log. see R115 | |
| 00 | R...117 | | not used | | |
| 00 | R...118 | | not used | | |
| 00 | R...119 | 57.11.4332 | 3.3 kOhm | 5% 0.25W | |
| 00 | R...120 | 57.11.4332 | 3.3 kOhm | 5% 0.25W | |
| 00 | R...121 | 57.11.4332 | 3.3 kOhm | 5% 0.25W | |
| 00 | R...122 | 57.11.4332 | 3.3 kOhm | 5% 0.25W | |
| 00 | R...123 | | not used | | |
| 00 | R...124 | | not used | | |
| 00 | R...125 | | not used | | |
| 00 | R...126 | | not used | | |
| 00 | R...127 | | not used | | |
| 00 | R...128 | | not used | | |
| 00 | R...129 | | not used | | |
| 00 | R...130 | | not used | | |
| 00 | R...131 | | not used | | |
| 00 | R...132 | | not used | | |
| 00 | R...133 | | not used | | |
| 00 | R...134 | | not used | | |
| 00 | R...135 | | not used | | |
| 00 | R...136 | | not used | | |
| 00 | R...137 | | not used | | |
| 00 | R...138 | | not used | | |
| 00 | R...139 | | not used | | |
| 00 | R...140 | | not used | | |
| 00 | R...141 | | not used | | |
| 00 | R...142 | | not used | | |
| 00 | R...143 | | not used | | |

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 Kopieausgabe 16.44 Uhr am 15.04.86

Visum TA

| Ind. | Pos.Nr. | Teil Nr. | Wert(Menge) | Bezeichnung | Hersteller |
|------|---------|--------------|--------------|-------------------------|---------------------------|
| 00 | R...144 | | not used | | |
| 00 | R...145 | | not used | | |
| 00 | R...146 | | not used | | |
| 00 | R...147 | | not used | | |
| 00 | R...148 | | not used | | |
| 00 | R...149 | | not used | | |
| 00 | R...150 | | not used | | |
| 00 | R...151 | | not used | | |
| 00 | R...152 | | not used | | |
| 00 | R...153 | | not used | | |
| 00 | R...154 | 57.11.4331 | 330 Ohm | 5% 0.25W | |
| 00 | R...155 | 1.912.001.43 | 4.7 kOhm | | |
| | | | 10% pos.log. | combined with R156/R157 | St |
| 00 | R...156 | | 10 kOhm | 10% pos.log. | see R155 |
| 00 | R...157 | | 10 kOhm | 10% neg.log. | see R155 |
| 00 | R...158 | 1.912.001.42 | 1C kOhm | | |
| | | | 10% pos.log. | variable resistor | St |
| 00 | R...159 | 1.912.001.42 | 10 kOhm | | |
| | | | 10% pos.log. | variable resistor | St |
| 00 | R...160 | 1.912.001.42 | 10 kOhm | | |
| | | | 10% pos.log. | variable resistor | St |
| 00 | R...161 | 57.11.4332 | 3.3 kOhm | 5% 0.25W | |
| 00 | R...162 | 57.11.4332 | 3.3 kOhm | 5% 0.25W | |
| 00 | R...163 | 57.11.4332 | 3.3 kOhm | 5% 0.25W | |
| 00 | R...164 | | not used | | |
| 00 | R...165 | 57.92.1271 | 6.5 Ohm | | |
| | | | I = 270mA | PTC | Philips Nr.2322 662 12711 |
| 00 | R...166 | 57.92.1271 | 6.5 Ohm | | |
| | | | I = 270mA | PTC | Philips Nr.2322 662 12711 |
| 00 | R...167 | | not used | | |
| 00 | R...168 | | not used | | |
| 00 | R...169 | | not used | | |
| 00 | R...170 | 57.11.4332 | 3.3 kOhm | 2% 0.25W | |
| 00 | R...171 | 57.11.4332 | 3.3 kOhm | 2% 0.25W | |
| 00 | R...172 | 57.11.4332 | 3.3 kOhm | 2% 0.25W | |
| 00 | R...173 | 57.11.4332 | 3.3 kOhm | 2% 0.25W | |
| 00 | R...174 | 57.11.4332 | 3.3 kOhm | 2% 0.25W | |
| 00 | R...175 | 57.11.4332 | 3.3 kOhm | 2% 0.25W | |
| 00 | R...176 | 57.11.4332 | 3.3 kOhm | 2% 0.25W | |
| 00 | R...177 | 57.11.4332 | 3.3 kOhm | 2% 0.25W | |
| 00 | R...178 | 57.11.4332 | 3.3 kOhm | 2% 0.25W | |
| 00 | R...179 | 57.11.4332 | 3.3 kOhm | 2% 0.25W | |
| 00 | R...180 | 57.11.4332 | 3.3 kOhm | 2% 0.25W | |
| 00 | R...181 | 57.11.4332 | 3.3 kOhm | 2% 0.25W | |
| 00 | R...182 | | not used | | |
| 00 | R...183 | | not used | | |
| 00 | R...184 | | not used | | |
| 00 | R...185 | | not used | | |
| 00 | S...101 | 55.15.0003 | 2*U | 3u Au | button : red ITT |
| 00 | S...102 | 55.15.0003 | 2*U | 3u Au | button : red ITT |
| 00 | S...103 | 55.15.0003 | 2*U | 3u Au | button : red ITT |
| 00 | S...104 | 55.15.0003 | 2*U | 3u Au | button : red ITT |
| 00 | S...105 | 55.15.0003 | 2*U | 3u Au | button : red ITT |

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 Kopieausgabe 16.44 Uhr am 15.04.86

Visum TA

| Ind. | Pos.-Nr. | Teil Nr. | Wert (Menge) | Bezeichnung | Hersteller |
|------|----------|--------------|--------------|-------------|------------------|
| 00 | S...106 | 55.15.0003 | 2*U | 3u Au | button : red ITT |
| 00 | S...107 | | not used | | |
| 00 | S...108 | 55.15.0003 | 2*U | 3u Au | button : red ITT |
| 00 | W...101 | | | | |
| 00 | W...102 | | not used | | |
| 00 | W...103 | | | | |
| 00 | W...104 | | | | |
| 00 | W...105 | | | | |
| 00 | W...106 | | not used | | |
| 00 | W...107 | | not used | | |
| 00 | W...108 | | not used | | |
| 00 | W...109 | | | | |
| 00 | W...110 | | | | |
| 00 | W...111 | | | | |
| 00 | W...112 | | | | |
| 00 | W...113 | | not used | | |
| 00 | W...114 | | | | |
| 00 | W...115 | | | | |
| 00 | W...116 | | not used | | |
| 00 | W...117 | | not used | | |
| 00 | W...118 | | not used | | |
| 00 | W...119 | | not used | | |
| 00 | W...120 | 1.010.300.64 | 8-wire | flatcable | 40 mm |
| 00 | W...121 | 1.010.300.64 | 8-wire | flatcable | 40 mm |
| 00 | W...122 | | not used | | |
| 00 | W...123 | | not used | | |
| 00 | W...124 | | not used | | |
| 00 | W...125 | | not used | | |
| 00 | C...201 | | not used | | |
| 00 | C...202 | | not used | | |
| 00 | C...203 | | not used | | |
| 00 | C...204 | | not used | | |
| 00 | C...205 | | not used | | |
| 00 | C...206 | 59.25.3470 | 47 uF | -20% 16V | EL |
| 00 | C...207 | 59.34.2330 | 33 pF | | CE |
| 00 | C...208 | 59.25.1221 | 220 uF | -20% 6.3V | EL |
| 00 | C...209 | 59.25.3470 | 47 uF | -20% 16V | EL |
| 00 | C...210 | 59.34.2330 | 33 pF | | CE |
| 00 | C...211 | 59.25.1221 | 220 uF | -20% 6.3V | EL |
| 00 | C...212 | 59.34.2330 | 33 pF | | CE |
| 00 | C...213 | 59.25.1221 | 220 uF | -20% 6.3V | EL |
| 00 | C...214 | 59.34.2330 | 33 pF | | CE |
| 00 | C...215 | 59.25.1221 | 220 uF | -20% 6.3V | EL |
| 00 | C...216 | 59.25.3470 | 47 uF | -20% 16V | EL |
| 00 | C...217 | | not used | | |
| 01 | C...218 | 59.32.4102 | 1 nF | | CE |
| 00 | C...219 | | not used | | |
| 00 | C...220 | | not used | | |
| 00 | C...221 | | not used | | |
| 00 | C...222 | 59.06.0223 | 22 nF | | PE |
| 00 | C...223 | | not used | | |
| 00 | C...224 | | not used | | |

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 Kopieausgabe 16.44 Uhr am 15.04.86

Visum TA

| Ind. | Pos.Nr. | Teil Nr. | Wert (Menge) | Bezeichnung | Hersteller |
|------|---------|------------|--------------|------------------------|------------|
| 00 | IC..201 | | not used | | |
| 00 | IC..202 | 50.09.0105 | NE5532 | dual op. amp. | Sig,Ex,Ra |
| 00 | IC..203 | 50.05.0243 | NE5534N | single op. amp. | Sig,Ra |
| 00 | IC..204 | 50.05.0243 | NE5534N | single op. amp. | Sig,Ra |
| 00 | IC..205 | 50.05.0243 | NE5534N | single op. amp. | Sig,Ra |
| 00 | IC..206 | 50.05.0243 | NE5534N | single op. amp. | Sig,Ra |
| 00 | MP....1 | 53.03.0166 | 5 pcs | IC-socket 8 pin | |
| 00 | MP....2 | 50.20.2001 | 2 pcs | CLIP ; 2 * TD 92 | St |
| 00 | P...8.2 | 54.11.2007 | 2*8 pin | euroconnector | Bu |
| 00 | C...201 | 50.03.0516 | BC 337 | NPN matched with Q 202 | Sie |
| 00 | Q...202 | 50.03.0516 | BC 337 | NPN | Sie |
| 00 | C...203 | 50.03.0625 | BC 327 | PNP matched with Q 204 | Sie |
| 00 | C...204 | 50.03.0625 | BC 327 | PNP | Sie |
| 00 | R...201 | | not used | | |
| 00 | R...202 | | not used | | |
| 00 | R...203 | | not used | | |
| 00 | R...204 | | not used | | |
| 00 | R...205 | | not used | | |
| 00 | R...206 | | not used | | |
| 00 | R...207 | | not used | | |
| 00 | R...208 | | not used | | |
| 00 | R...209 | | not used | | |
| 00 | R...210 | | not used | | |
| 00 | R...211 | 57.11.4101 | 100 Ohm | 2% 0.25W | |
| 00 | R...212 | 57.11.4101 | 100 Ohm | 2% 0.25W | |
| 00 | R...213 | | not used | | |
| 00 | R...214 | | not used | | |
| 00 | R...215 | | not used | | |
| 00 | R...216 | | not used | | |
| 00 | R...217 | | not used | | |
| 00 | R...218 | | not used | | |
| 00 | R...219 | | not used | | |
| 00 | R...220 | | not used | | |
| 00 | R...221 | 57.11.4101 | 100 Ohm | 5% 0.25W | |
| 00 | R...222 | 57.11.4101 | 100 Ohm | 5% 0.25W | |
| 00 | R...223 | | not used | | |
| 00 | R...224 | 57.11.4101 | 100 Ohm | 5% 0.25W | |
| 00 | R...225 | 57.11.4103 | 10 kOhm | 5% 0.25W | |
| 00 | R...226 | 57.11.4103 | 10 kOhm | 5% 0.25W | |
| 00 | R...227 | 57.11.4101 | 100 Ohm | 5% 0.25W | |
| 00 | R...228 | 57.11.4101 | 100 Ohm | 5% 0.25W | |
| 00 | R...229 | 57.11.4683 | 68 kOhm | 5% 0.25W | |
| 00 | R...230 | 57.11.4333 | 33 kOhm | 5% 0.25W | |
| 00 | R...231 | 57.11.4683 | 68 kOhm | 5% 0.25W | |
| 00 | R...232 | 57.11.4333 | 33 kOhm | 5% 0.25W | |
| 00 | R...233 | 57.11.4333 | 33 kOhm | 5% 0.25W | |
| 00 | R...234 | 57.11.4333 | 33 kOhm | 5% 0.25W | |
| 00 | R...235 | 57.11.4332 | 3.3 kOhm | 2% 0.25W | |
| 00 | R...236 | 57.11.4332 | 3.3 kOhm | 2% 0.25W | |

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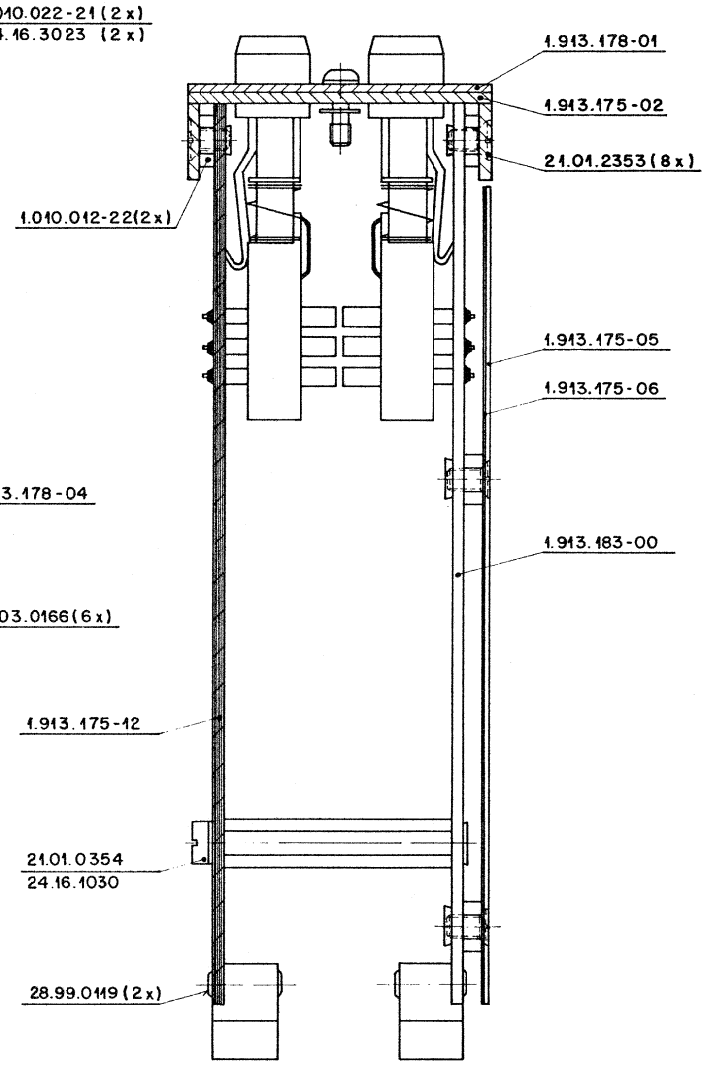
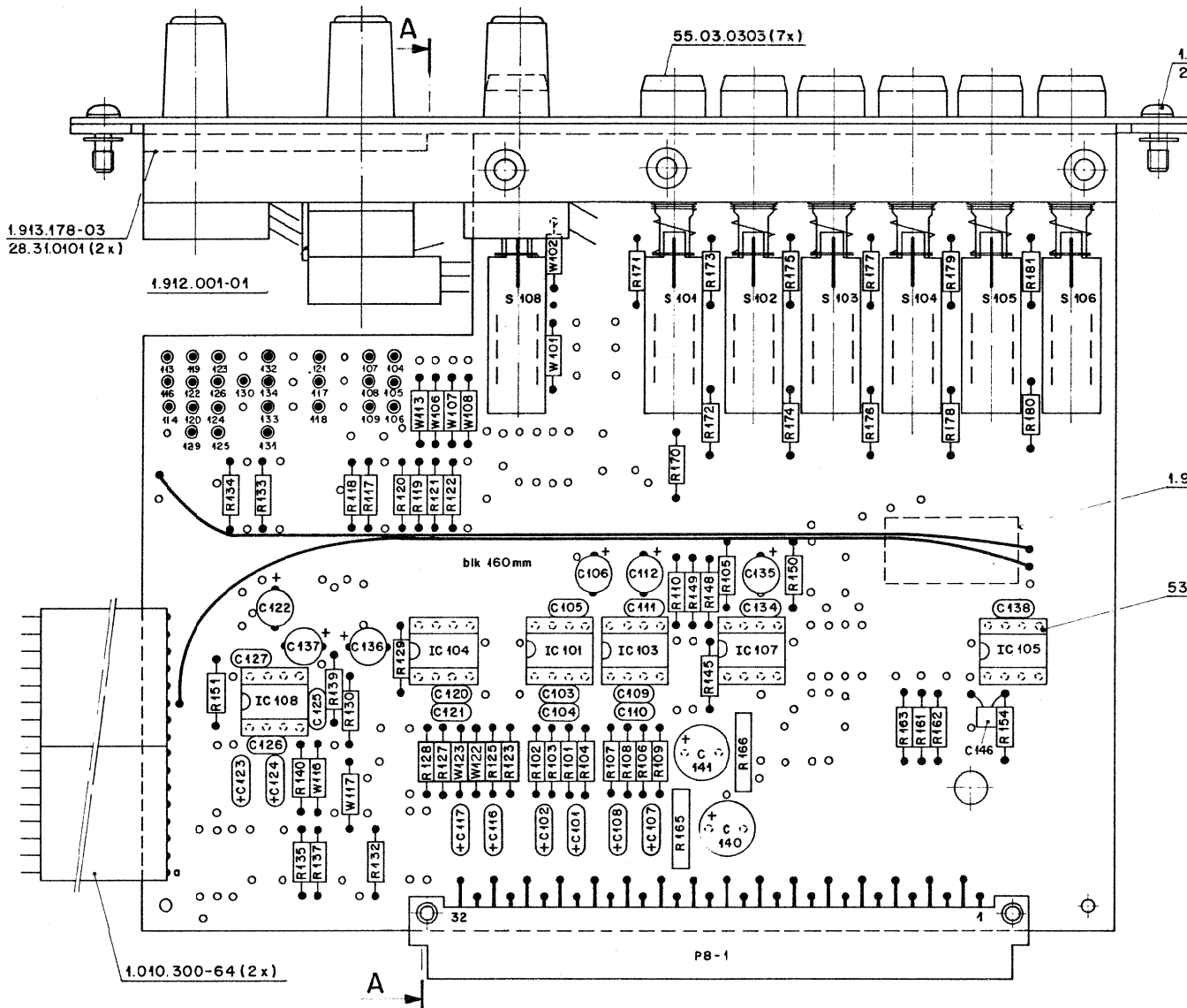
Visum TA

| Ind. | Pos.Nr. | Teil Nr. | Wert (Menge) | Bezeichnung | | Hersteller |
|------|---------|------------|--------------|-------------|--------------|------------|
| 00 | R...237 | 57.11.4332 | 3.3 kOhm | 2% | 0.25W | |
| 00 | R...238 | 57.11.4332 | 3.3 kOhm | 2% | 0.25W | |
| 00 | R...239 | 57.11.4332 | 3.3 kOhm | 2% | 0.25W | |
| 00 | R...240 | 57.11.4332 | 3.3 kOhm | 2% | 0.25W | |
| 00 | R...241 | 57.11.4332 | 3.3 kOhm | 2% | 0.25W | |
| 00 | R...242 | 57.11.4332 | 3.3 kOhm | 2% | 0.25W | |
| 00 | R...243 | 57.11.4332 | 3.3 kOhm | 2% | 0.25W | |
| 00 | R...244 | 57.11.4332 | 3.3 kOhm | 2% | 0.25W | |
| 00 | R...245 | 57.11.4332 | 3.3 kOhm | 2% | 0.25W | |
| 00 | R...246 | 57.11.4332 | 3.3 kOhm | 2% | 0.25W | |
| 00 | R...247 | | not used | | | |
| 00 | R...248 | | not used | | | |
| 00 | R...249 | | not used | | | |
| 00 | R...250 | | not used | | | |
| 00 | R...251 | | not used | | | |
| 00 | R...252 | 57.11.4332 | 3.3 kOhm | 5% | 0.25W | |
| 00 | R...253 | 57.11.4332 | 3.3 kOhm | 5% | 0.25W | |
| 00 | S...201 | 55.15.0003 | 2*U | 3u Au | button : red | ITT |
| 00 | S...202 | 55.15.0003 | 2*U | 3u Au | button : red | ITT |
| 00 | S...203 | 55.15.0003 | 2*U | 3u Au | button : red | ITT |
| 00 | S...204 | 55.15.0003 | 2*U | 3u Au | button : red | ITT |
| 00 | S...205 | 55.15.0003 | 2*U | 3u Au | button : red | ITT |
| 00 | S...206 | 55.15.0003 | 2*U | 3u Au | button : red | ITT |
| 00 | W...201 | | | | | |
| 00 | W...202 | | | | | |

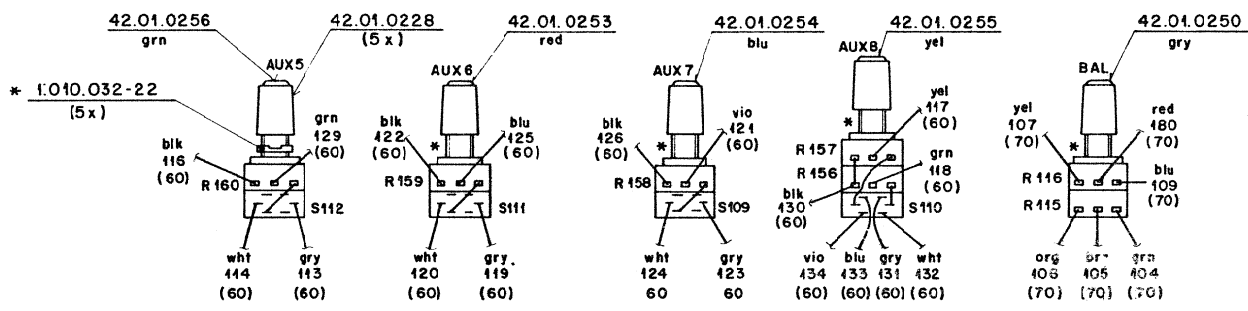
CE=Ceramic, CF=Carbon Film, EL=Electrolytic, MF=Metal Film,
 PE=Polyester, PP=Polypropylen, PS=Polystyrol

MANUFACTURER: Bu=Burndy, Ex=Exar, Fc=Fairchild, GI=General Instrument
 HP=Hewlett Packard, ITT=Intermetall, Mot=Motorola, Nat=N
 (Matsushita), NS=National Semiconductors, Ph=Philips,
 Ra=Raytheon, Sig=Signetics, Six=Siliconix, St=Studer,
 TI=Texas Instrument

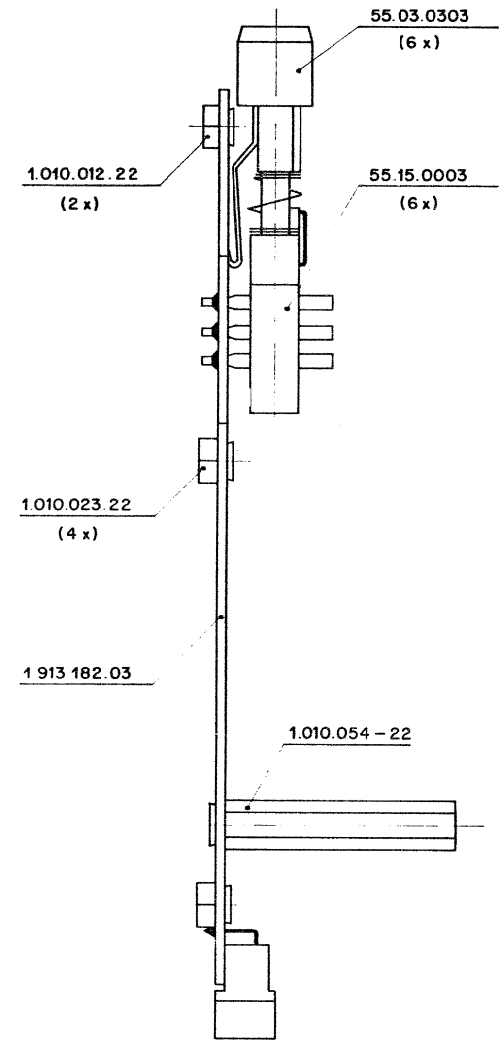
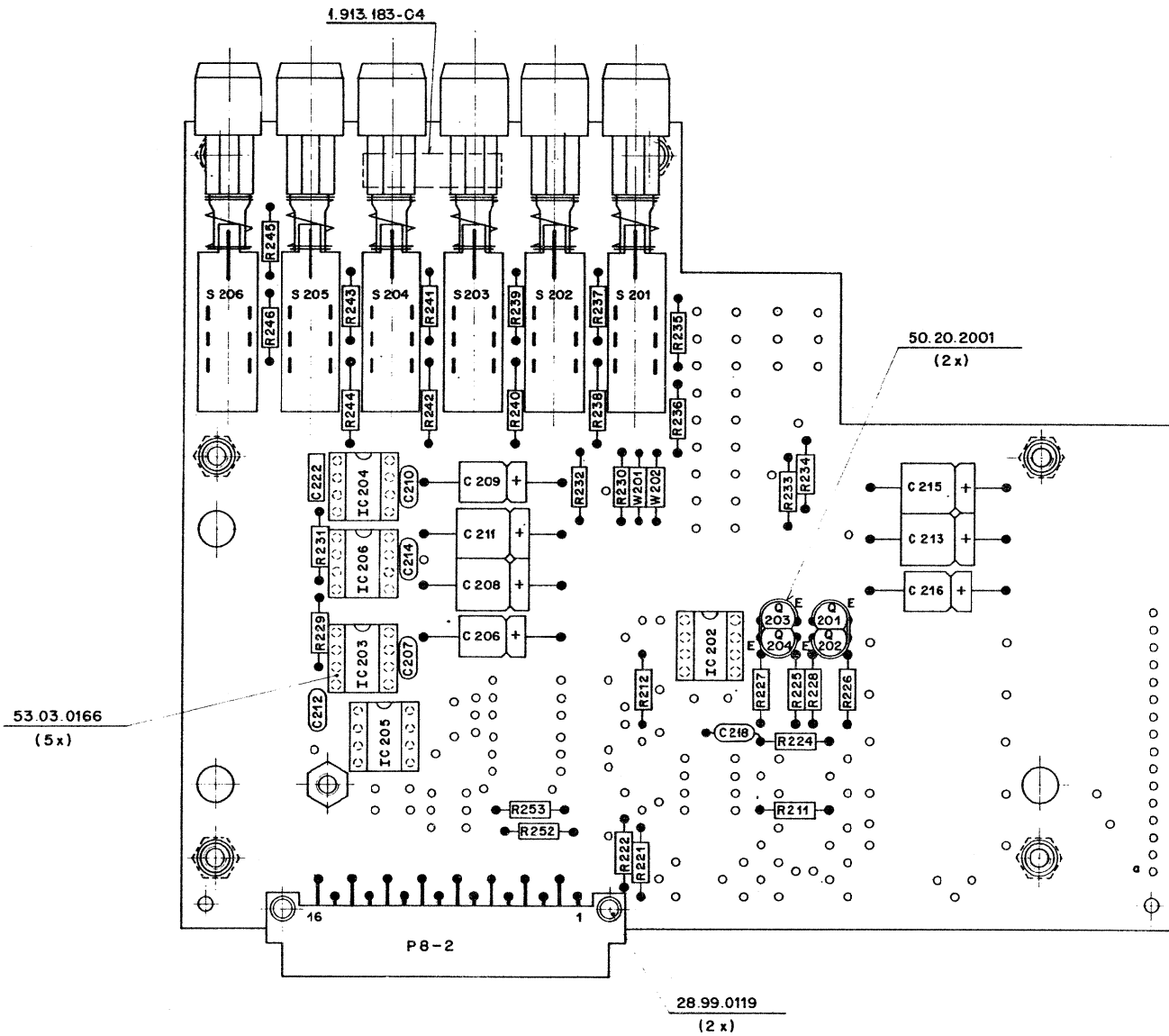
Ende der Positions Liste.



Schnitt A-A



| | | | |
|--------------------------------|-------------------|--|-------------------------------------|
| Norm-Nr.: | Güte: | | Änderung |
| DIN-Bez.: | Oberfläche: | | |
| Abmessung: | Beh.: | | |
| Zugehörige Unterlagen: | Freimasstoleranz: | Maßstab: | 12.3.86 A.Ho. <i>W</i> |
| PL | + | 1:4; 2:1 | Ausgabe Datum Gez. Gepr. Ges. Index |
| Ersatz für: | Ersatz durch: | Kopie für: | |
| STUDER REGENSDORF ZÜRICH | | Benennung: 24-CH SEL. STEREO | |
| | | | Nummer: 1.913.178-00 |



| | | | |
|---|-------------------|------------------|------------------------------|
| Werkstoff DIN-Bez Abmessung | Norm-Nr Güte | | Änderung |
| | Oberfläche Beh | | |
| Zugehörige Unterlagen PL 1.913.478-00 | Freimasstoleranz | Maßstab 2 : 1 | 19.11.85 Ausgabe Datum |
| Ersatz für | Ersetzt durch | Kopie für | |
| Benennung STUDER REGENSDORF ZÜRICH | 6 SWITCH STEREO | | 1.913.183 - 00 Nummer |

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 Kopieausgabe 16.44 Uhr am 15.04.86

Visum TA

| Ae. | Nummer | Titel | Bemerkungen |
|-----|--------------|-------------------|-------------|
| 00 | 1.913.178.00 | 24-CH-SEL. STEREO | |

| Indo | Pcs.Nr. | Teil Nr. | Wert(Menge) | Bezeichnung | Hersteller |
|------|----------|------------|-------------|-----------------|------------|
| 00 | C...101 | 59.26.0470 | 47 uF | 20% 6.3V | SAL |
| 00 | C...102 | 59.26.0470 | 47 uF | 20% 6.3V | SAL |
| 00 | C...103 | 59.34.4101 | 100 pF | | CE |
| 00 | C...104 | 59.34.4101 | 100 pF | | CE |
| 00 | C...105 | 59.34.2330 | 33 pF | | CE |
| 00 | C...106 | 59.22.3101 | 100 uF | -20% 10V | EL |
| 00 | C...107 | 59.26.0470 | 47 uF | 20% 6.3V | SAL |
| 00 | C...108 | 59.26.0470 | 47 uF | 20% 6.3V | SAL |
| 00 | C...109 | 59.34.4101 | 100 pF | | CE |
| 00 | C...110 | 59.34.4101 | 100 pF | | CE |
| 00 | C...111 | 59.34.2330 | 33 pF | | CE |
| 00 | C...112 | 59.22.3101 | 100 uF | -20% 10V | EL |
| 00 | C...113 | | not used | | |
| 00 | C...114 | | not used | | |
| 00 | C...115 | | not used | | |
| 00 | C...116 | 59.26.0470 | 47 uF | 20% 6.3V | SAL |
| 00 | C...117 | 59.26.0470 | 47 uF | 20% 6.3V | SAL |
| 00 | C...118 | | not used | | |
| 00 | C...119 | | not used | | |
| 00 | C...120 | 59.34.4101 | 100 pF | | CE |
| 00 | C...121 | 59.34.4101 | 100 pF | | CE |
| 00 | C...122 | 59.22.3101 | 100 uF | -20% 10V | EL |
| 00 | C...123 | 59.26.0470 | 47 uF | 20% 6.3V | SAL |
| 00 | C...124 | 59.26.0470 | 47 uF | 20% 6.3V | SAL |
| 00 | C...125 | 59.34.4101 | 100 pF | | CE |
| 00 | C...126 | 59.34.4101 | 100 pF | | CE |
| 00 | C...127 | 59.34.2330 | 33 pF | | CE |
| 00 | C...128 | | not used | | |
| 00 | C...129 | | not used | | |
| 00 | C...130 | | not used | | |
| 00 | C...131 | | not used | | |
| 00 | C...132 | | not used | | |
| 00 | C...133 | | not used | | |
| 00 | C...134 | 59.34.2330 | 33 pF | | CE |
| 00 | C...135 | 59.22.3101 | 100 uF | -20% 10V | EL |
| 00 | C...136 | 59.22.3101 | 100 uF | -20% 10V | EL |
| 00 | C...137 | 59.22.3101 | 100 uF | -20% 10V | EL |
| 00 | C...138 | 59.34.4101 | 100 pF | | CE |
| 00 | C...139 | | not exist | | |
| 00 | C...140 | 59.22.4101 | 100 uF | -20% 16V | EL |
| 00 | C...141 | 59.22.4101 | 100 uF | -20% 16V | EL |
| 00 | C...142 | | not used | | |
| 00 | C...143 | | not used | | |
| 00 | C...144 | | not used | | |
| 00 | C...145 | | not used | | |
| C2 | C...146 | 59.34.5471 | 470 pF | | CE |
| 00 | IC...101 | 50.05.0243 | NE5534N | single op. amp. | Sig.Ra |
| 00 | IC...102 | | not used | | |

Ae.-Index 00 Ae.-Datum 03.05.85
 Kopieausgabe 16.44 Uhr am 15.04.86

Visum TA

| Ind. | Pos.Nr. | Teil Nr. | Wert(Menge) | Bezeichnung | Hersteller |
|------|---------|--------------|-------------|-----------------------------|------------|
| 00 | IC..103 | 50.05.0243 | NE5534N | single op. amp. | Sig,Ra |
| C0 | IC..104 | 50.09.0105 | NE5532 | dual op. amp. | Sig,Ex,Ra |
| 00 | IC..105 | 50.05.0243 | NE5534N | single op. amp. | Sig,Ra |
| 00 | IC..106 | | not used | | |
| C0 | IC..107 | 50.05.0243 | NE5534N | single op. amp. | Sig,Ra |
| 00 | IC..108 | 50.05.0243 | NE5534N | single op. amp. | Sig,Ra |
| 00 | MP....1 | 53.03.0166 | 6 pcs | IC-socket 8 pin | |
| C0 | P...8.1 | 54.01.0359 | 2*16pin | euroconnector | Bu |
| C0 | R...101 | 57.11.3332 | 3.3 kOhm | 1% 0.25W | |
| C0 | R...102 | 57.11.3332 | 3.3 kOhm | 1% 0.25W | |
| 00 | R...103 | 57.11.3332 | 3.3 kOhm | 1% 0.25W | |
| C0 | R...104 | 57.11.3332 | 3.3 kOhm | 1% 0.25W | |
| 00 | R...105 | 57.11.4333 | 33 kOhm | 5% 0.25W | |
| 00 | R...106 | 57.11.3332 | 3.3 kOhm | 1% 0.25W | |
| C0 | R...107 | 57.11.3332 | 3.3 kOhm | 1% 0.25W | |
| 00 | R...108 | 57.11.3332 | 3.3 kOhm | 1% 0.25W | |
| C0 | R...109 | 57.11.3332 | 3.3 kOhm | 1% 0.25W | |
| C0 | R...110 | 57.11.4333 | 33 kOhm | 5% 0.25W | |
| C0 | R...111 | | not used | | |
| 00 | R...112 | | not used | | |
| 00 | R...113 | | not used | | |
| C0 | R...114 | | not used | | |
| 00 | R...115 | 1.912.001.35 | 10 kOhm | pos.log. combined with R116 | St |
| 00 | R...116 | | 10 kOhm | neg.log. see R115 | |
| C0 | R...117 | 57.11.4682 | 6.8 kOhm | 5% 0.25W | |
| 00 | R...118 | 57.11.4682 | 6.8 kOhm | 5% 0.25W | |
| C0 | R...119 | 57.11.3132 | 1.3 kOhm | 5% 0.25W | |
| C0 | R...120 | 57.11.4332 | 3.3 kOhm | 5% 0.25W | |
| C0 | R...121 | 57.11.3132 | 1.3 kOhm | 5% 0.25W | |
| C0 | R...122 | 57.11.4332 | 3.3 kOhm | 5% 0.25W | |
| C0 | R...123 | 57.11.3332 | 3.3 kOhm | 1% 0.25W | |
| C0 | R...124 | | not used | | |
| 00 | R...125 | 57.11.3332 | 3.3 kOhm | 1% 0.25W | |
| 00 | R...126 | | not used | | |
| C0 | R...127 | 57.11.3332 | 3.3 kOhm | 1% 0.25W | |
| C0 | R...128 | 57.11.3332 | 3.3 kOhm | 1% 0.25W | |
| C0 | R...129 | 57.11.4332 | 3.3 kOhm | 5% 0.25W | |
| 00 | R...130 | 57.11.4332 | 3.3 kOhm | 5% 0.25W | |
| C0 | R...131 | | not used | | |
| C0 | R...132 | 57.11.4101 | 100 Ohm | 5% 0.25W | |
| 00 | R...133 | 57.11.4333 | 33 kOhm | 5% 0.25W | |
| C0 | R...134 | 57.11.4333 | 33 kOhm | 5% 0.25W | |
| 00 | R...135 | 57.11.3332 | 3.3 kOhm | 1% 0.25W | |
| C0 | R...136 | | not used | | |
| C0 | R...137 | 57.11.3332 | 3.3 kOhm | 1% 0.25W | |
| C0 | R...138 | | not used | | |
| 00 | R...139 | 57.11.3332 | 3.3 kOhm | 1% 0.25W | |
| C0 | R...140 | 57.11.3332 | 3.3 kOhm | 1% 0.25W | |
| 00 | R...141 | | not used | | |
| C0 | R...142 | | not used | | |
| 00 | R...143 | | not used | | |

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 Kopieausgabe 16.44 Uhr am 15.04.86

Visum TA

| Ind. | Pos.Nr. | Teil Nr. | Wert (Menge) | Bezeichnung | Hersteller |
|------|---------|--------------|--------------|-------------------------------|------------|
| CO | R...144 | | not used | | |
| CO | R...145 | 57.11.4101 | 100 Ohm | 5% 0.25W | |
| CO | R...146 | | not used | | |
| CO | R...147 | | not used | | |
| CO | R...148 | 57.11.4332 | 3.3 kOhm | 2% 0.25W | |
| CO | R...149 | 57.11.4332 | 3.3 kOhm | 2% 0.25W | |
| CO | R...150 | 57.11.4333 | 33 kOhm | 5% 0.25W | |
| CO | R...151 | 57.11.4333 | 33 kOhm | 5% 0.25W | |
| CO | R...152 | | not used | | |
| CO | R...153 | | not used | | |
| CO | R...154 | 57.11.4331 | 330 Ohm | 5% 0.25W | |
| CO | R...155 | | not used | | |
| CO | R...156 | 1.912.001.44 | 10 kOhm | | |
| | | | 10% pos.log. | combined with R157 | St |
| CO | R...157 | | 10 kOhm | 10% pos.log. see R156 | |
| CO | R...158 | 1.912.001.42 | 10 kOhm | | |
| | | | 10% pos.log. | variable resistor | St |
| CO | R...159 | 1.912.001.42 | 10 kOhm | | |
| | | | 10% pos.log. | variable resistor | St |
| CO | R...160 | 1.912.001.42 | 10 kOhm | | |
| | | | 10% pos.log. | variable resistor | St |
| CO | R...161 | 57.11.4332 | 3.3 kOhm | 2% 0.25W | |
| CO | R...162 | 57.11.4332 | 3.3 kOhm | 2% 0.25W | |
| CO | R...163 | 57.11.3242 | 2.4 kOhm | 2% 0.25W | |
| CO | R...164 | | not used | | |
| CO | R...165 | 57.92.1271 | 6.5 Ohm | | |
| | | | I = 270mA | PTC Philips Nr.2322 662 12711 | |
| CO | R...166 | 57.92.1271 | 6.5 Ohm | | |
| | | | I = 270mA | PTC Philips Nr.2322 662 12711 | |
| CO | R...167 | | not used | | |
| CO | R...168 | | not used | | |
| CO | R...169 | | not used | | |
| CO | R...170 | 57.11.3242 | 2.4 kOhm | 2% 0.25W | |
| CO | R...171 | 57.11.3242 | 2.4 kOhm | 2% 0.25W | |
| CO | R...172 | 57.11.3242 | 2.4 kOhm | 2% 0.25W | |
| CO | R...173 | 57.11.3242 | 2.4 kOhm | 2% 0.25W | |
| CO | R...174 | 57.11.3242 | 2.4 kOhm | 2% 0.25W | |
| CO | R...175 | 57.11.3242 | 2.4 kOhm | 2% 0.25W | |
| CO | R...176 | 57.11.3242 | 2.4 kOhm | 2% 0.25W | |
| CO | R...177 | 57.11.3242 | 2.4 kOhm | 2% 0.25W | |
| CO | R...178 | 57.11.3242 | 2.4 kOhm | 2% 0.25W | |
| CO | R...179 | 57.11.3242 | 2.4 kOhm | 2% 0.25W | |
| CO | R...180 | 57.11.3242 | 2.4 kOhm | 2% 0.25W | |
| CO | R...181 | 57.11.3242 | 2.4 kOhm | 2% 0.25W | |
| CO | R...182 | | not used | | |
| CO | R...183 | | not used | | |
| CO | R...184 | | not used | | |
| CO | R...185 | | not used | | |
| CO | S...101 | 55.15.0003 | 2*U | 3u Au button : red | ITT |
| CO | S...102 | 55.15.0003 | 2*U | 3u Au button : red | ITT |
| CO | S...103 | 55.15.0003 | 2*U | 3u Au button : red | ITT |
| CO | S...104 | 55.15.0003 | 2*U | 3u Au button : red | ITT |
| CO | S...105 | 55.15.0003 | 2*U | 3u Au button : red | ITT |

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Visum TA

| Ind. | Pos.Nr. | Teil Nr. | Wert (Menge) | Bezeichnung | Hersteller |
|------|---------|--------------|--------------|--------------------|------------|
| CO | S...106 | 55.15.0003 | 2*U | 3u Au button : red | ITT |
| CO | S...107 | | not used | | |
| CO | S...108 | 55.15.0003 | 2*U | 3u Au button : red | ITT |
| 00 | W...101 | | | | |
| 00 | W...102 | | | | |
| CO | W...103 | | not used | | |
| CO | W...104 | | not used | | |
| 00 | W...105 | | not used | | |
| 00 | W...106 | | | | |
| CO | W...107 | | | | |
| CO | W...108 | | | | |
| CO | W...109 | | not used | | |
| CO | W...110 | | not used | | |
| 00 | W...111 | | not used | | |
| CO | W...112 | | not used | | |
| 00 | W...113 | | | | |
| CO | W...114 | | not used | | |
| CO | W...115 | | not used | | |
| CO | W...116 | | | | |
| CO | W...117 | | | | |
| CO | W...118 | | not used | | |
| QQ | W...119 | | not used | | |
| 00 | W...120 | 1.010.300.64 | 8-wire | flatcable | 40 mm |
| CO | W...121 | 1.010.300.64 | 8-wire | flatcable | 40 mm |
| 00 | W...122 | | | | |
| 00 | W...123 | | | | |
| 00 | W...124 | | not used | | |
| CO | W...125 | | not used | | |
| CO | C...201 | | not used | | |
| CO | C...202 | | not used | | |
| CO | C...203 | | not used | | |
| CO | C...204 | | not used | | |
| 00 | C...205 | | not used | | |
| CO | C...206 | 59.25.3470 | 47 uF | -20% 16V | EL |
| CO | C...207 | 59.34.2330 | 33 pF | | CE |
| 00 | C...208 | 59.25.1221 | 220 uF | -20% 6.3V | EL |
| 00 | C...209 | 59.25.3470 | 47 uF | -20% 16V | EL |
| 00 | C...210 | 59.34.2330 | 33 pF | | CE |
| CO | C...211 | 59.25.1221 | 220 uF | -20% 6.3V | EL |
| CO | C...212 | 59.34.2330 | 33 pF | | CE |
| 00 | C...213 | 59.25.1221 | 220 uF | -20% 6.3V | EL |
| 00 | C...214 | 59.34.2330 | 33 pF | | CE |
| CO | C...215 | 59.25.1221 | 220 uF | -20% 6.3V | EL |
| 00 | C...216 | 59.25.3470 | 47 uF | -20% 16V | EL |
| 00 | C...217 | | not used | | |
| 01 | C...218 | 59.32.4102 | 1 nF | | CE |
| 00 | C...219 | | not used | | |
| CO | C...220 | | not used | | |
| 00 | C...221 | | not used | | |
| CO | C...222 | 59.06.0223 | 22 nF | | PE |
| CO | C...223 | | not used | | |
| 00 | C...224 | | not used | | |

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 Kopieausgabe 16.44 Uhr am 15.04.86

Visum TA

| Ind. | Pos.-Nr. | Teil Nr. | Wert(Menge) | Bezeichnung | Hersteller |
|------|----------|------------|-------------|------------------------|------------|
| CO | IC..201 | | not used | | |
| 00 | IC..202 | 50.09.0105 | NE5532 | dual op. amp. | Sig,Ex,Ra |
| CO | IC..203 | 50.05.0243 | NE5534N | single op. amp. | Sig,Ra |
| 00 | IC..204 | 50.05.0243 | NE5534N | single op. amp. | Sig,Ra |
| 00 | IC..205 | 50.05.0243 | NE5534N | single op. amp. | Sig,Ra |
| CO | IC..206 | 50.05.0243 | NE5534N | single op. amp. | Sig,Ra |
| 00 | MP....1 | 53.03.0166 | 5 pcs | IC-socket 8 pin | |
| 00 | MP....2 | 50.20.2001 | 2 pcs | CLIP ; 2 * TO 92 | St |
| 00 | P...8.2 | 54.11.2007 | 2*8 pin | euroconnector | Bu |
| CO | Q...201 | 50.03.0516 | BC 337 | NPN matched with Q 202 | Sie |
| CO | Q...202 | 50.03.0516 | BC 337 | NPN | Sie |
| 00 | Q...203 | 50.03.0625 | BC 327 | PNP matched with Q 204 | Sie |
| CO | Q...204 | 50.03.0625 | BC 327 | PNP | Sie |
| CO | R...201 | | not used | | |
| CO | R...202 | | not used | | |
| CO | R...203 | | not used | | |
| CO | R...204 | | not used | | |
| CO | R...205 | | not used | | |
| 00 | R...206 | | not used | | |
| CO | R...207 | | not used | | |
| 00 | R...208 | | not used | | |
| 00 | R...209 | | not used | | |
| CO | R...210 | | not used | | |
| CO | R...211 | 57.11.4101 | 100 Ohm | 5% 0.25W | |
| 00 | R...212 | 57.11.4101 | 100 Ohm | 5% 0.25W | |
| CO | R...213 | | not used | | |
| 00 | R...214 | | not used | | |
| CO | R...215 | | not used | | |
| CO | R...216 | | not used | | |
| CO | R...217 | | not used | | |
| CO | R...218 | | not used | | |
| CO | R...219 | | not used | | |
| CO | R...220 | | not used | | |
| 00 | R...221 | 57.11.4101 | 100 Ohm | 5% 0.25W | |
| 00 | R...222 | 57.11.4101 | 100 Ohm | 5% 0.25W | |
| CO | R...223 | | not used | | |
| 00 | R...224 | 57.11.4101 | 100 Ohm | 5% 0.25W | |
| CO | R...225 | 57.11.4103 | 10 kOhm | 5% 0.25W | |
| 00 | R...226 | 57.11.4103 | 10 kOhm | 5% 0.25W | |
| 00 | R...227 | 57.11.4101 | 100 Ohm | 5% 0.25W | |
| CO | R...228 | 57.11.4101 | 100 Ohm | 5% 0.25W | |
| 00 | R...229 | 57.11.4683 | 68 kOhm | 5% 0.25W | |
| 00 | R...230 | 57.11.4333 | 33 kOhm | 5% 0.25W | |
| CO | R...231 | 57.11.4683 | 68 kOhm | 5% 0.25W | |
| 00 | R...232 | 57.11.4333 | 33 kOhm | 5% 0.25W | |
| CO | R...233 | 57.11.4333 | 33 kOhm | 5% 0.25W | |
| 00 | R...234 | 57.11.4333 | 33 kOhm | 5% 0.25W | |
| 00 | R...235 | 57.11.3242 | 2.4 kOhm | 2% 0.25W | |
| 00 | R...236 | 57.11.3242 | 2.4 kOhm | 2% 0.25W | |

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Visum TA

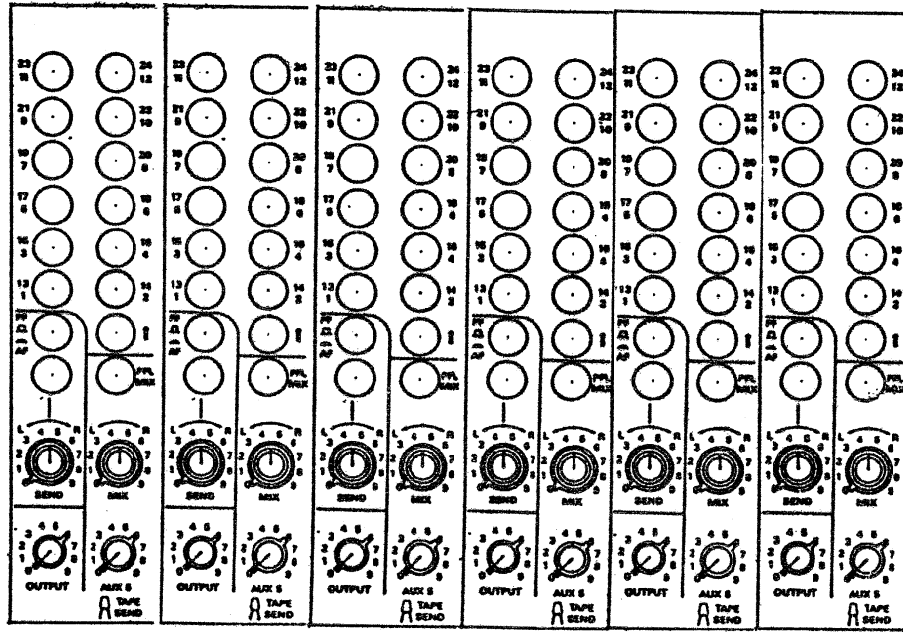
| Ind. | Pos.Nr. | Teil Nr. | Wert (Menge) | Bezeichnung | Hersteller |
|------|---------|------------|--------------|--------------------|------------|
| 00 | R...237 | 57.11.3242 | 2.4 kOhm | 2% 0.25W | |
| C0 | R...238 | 57.11.3242 | 2.4 kOhm | 2% 0.25W | |
| C0 | R...239 | 57.11.3242 | 2.4 kOhm | 2% 0.25W | |
| 00 | R...240 | 57.11.3242 | 2.4 kOhm | 2% 0.25W | |
| C0 | R...241 | 57.11.3242 | 2.4 kOhm | 2% 0.25W | |
| C0 | R...242 | 57.11.3242 | 2.4 kOhm | 2% 0.25W | |
| 00 | R...243 | 57.11.3242 | 2.4 kOhm | 2% 0.25W | |
| 00 | R...244 | 57.11.3242 | 2.4 kOhm | 2% 0.25W | |
| 00 | R...245 | 57.11.3242 | 2.4 kOhm | 2% 0.25W | |
| C0 | R...246 | 57.11.3242 | 2.4 kOhm | 2% 0.25W | |
| C0 | R...247 | | not used | | |
| C0 | R...248 | | not used | | |
| C0 | R...249 | | not used | | |
| 00 | R...250 | | not used | | |
| C0 | R...251 | | not used | | |
| C0 | R...252 | 57.11.3242 | 2.4 kOhm | 5% 0.25W | |
| C0 | R...253 | 57.11.3242 | 2.4 kOhm | 5% 0.25W | |
| 00 | S...201 | 55.15.0003 | 2*U | 3u Au button : red | ITT |
| 00 | S...202 | 55.15.0003 | 2*U | 3u Au button : red | ITT |
| C0 | S...203 | 55.15.0003 | 2*U | 3u Au button : red | ITT |
| 00 | S...204 | 55.15.0003 | 2*U | 3u Au button : red | ITT |
| C0 | S...205 | 55.15.0003 | 2*U | 3u Au button : red | ITT |
| 00 | S...206 | 55.15.0003 | 2*U | 3u Au button : red | ITT |
| C0 | h...201 | | | | |
| C0 | h...202 | | | | |

CE=Ceramic, CF=Carbon Film, EL=Electrolytic, MF=Metal Film,
 PE=Polyester, PP=Polypropylen, PS=Polystyrol

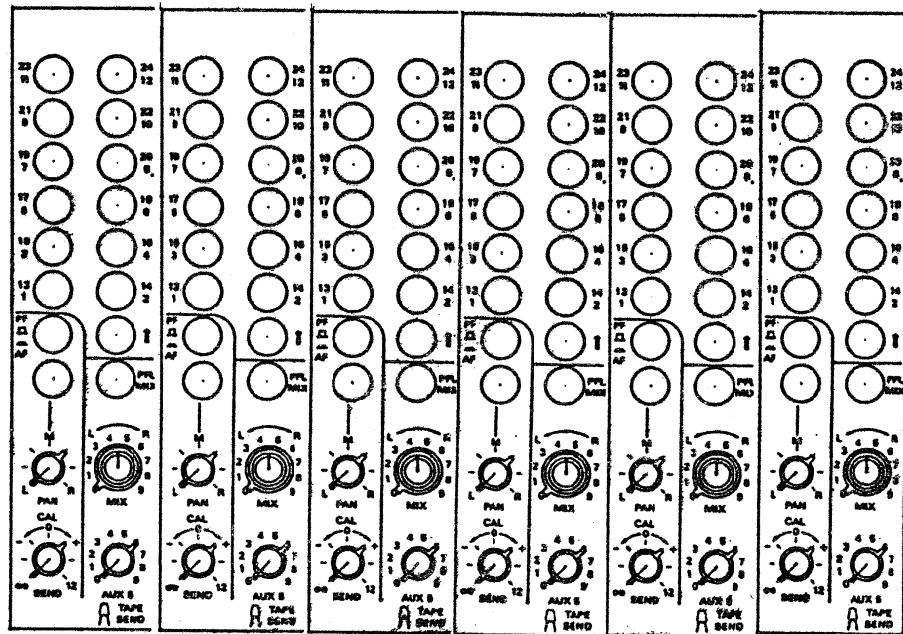
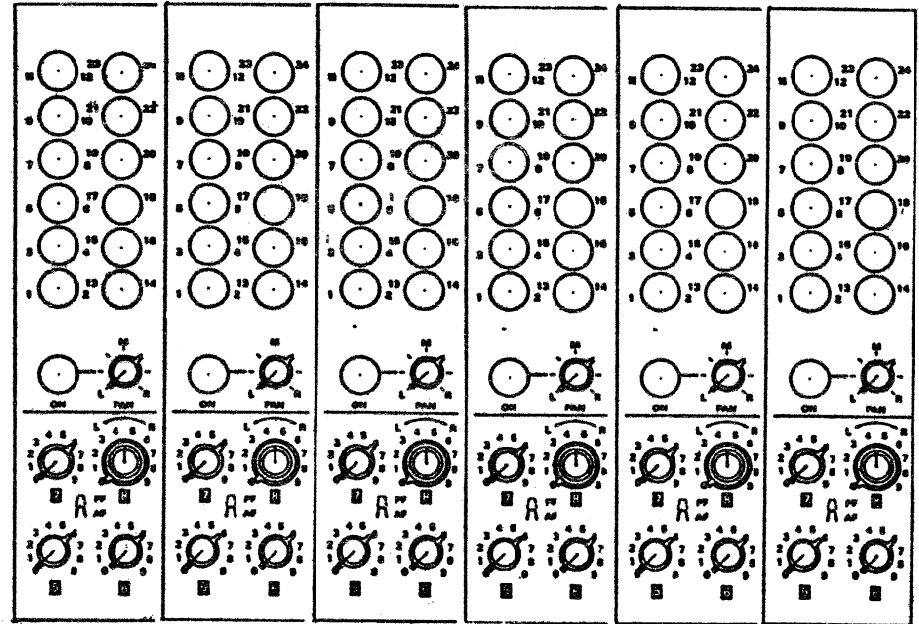
MANUFACTURER: Bu=Burndy, Ex=Exar, Fc=Fairchild, GI=General Instrument
 HP=Hewlett Packard, ITT=Intermetall, Mot=Motorola, Nat=N
 [Matsushita], NS=National Semiconductors, Ph=Philips,
 Ra=Raytheon, Sig=Signetics, Six=Siliconix, St=Studer,
 TI=Texas Instrument

Ende der Positions Liste.

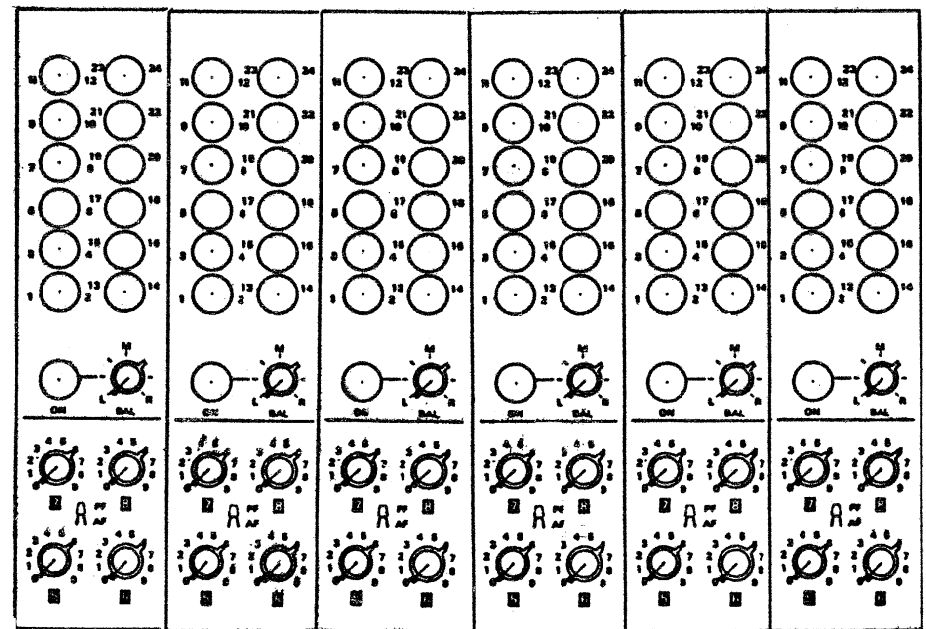
1.913.176



1.913.177



1.913.175

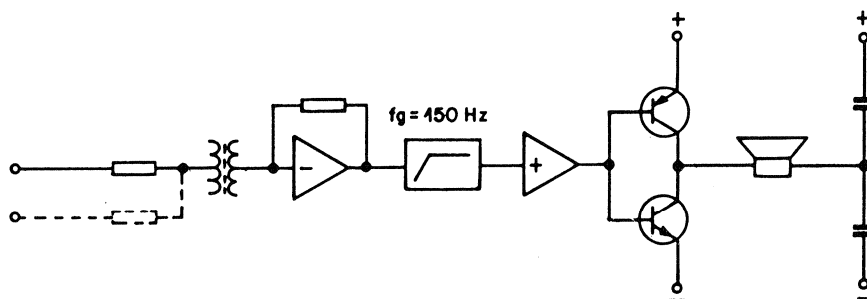


1.913.178

PFL Amplifier 1.913.200

PFL-AMPLIFIER

3 Watt Verstärker mit Lautsprecher für Vorhören und Intercom.

Blockschaltbild:PFL AMPLIFIER

3-Watt amplifier with speaker for pre-listening and intercom.

BLOCK DIAGRAM

TECHNISCHE DATEN

| | |
|---|-----------------------|
| Eingangsspannung: 0 dB für | 0,3 Watt |
| Eingangswiderstand | > 10 kOhm |
| Isolation | 500 V |
| Verstärkung | 9 dB |
| Frequenzgang @ 15 kHz | -0,5 dB |
| Filter fg | 150 Hz / 12 dB / Oct. |
| Klirrfaktor @ 2 Watt | < 0,5 % |
| Max. Ausgangsleistung | 3 Watt |
| Speisespannung | - 24 V |
| Ruhestrom / Strom bei max. Aussteuerung | 33 / 220 mA |
| Fremdspannung | < - 90 dBu |

MECHANISCHE DATEN

| | |
|----------------------------------|-------------|
| Frontplatte dunkelgrau gespritzt | 170 x 80 mm |
| Abmessung der Frontplatte | 135 mm |
| Tiefe | 350 gr |
| Gewicht | |

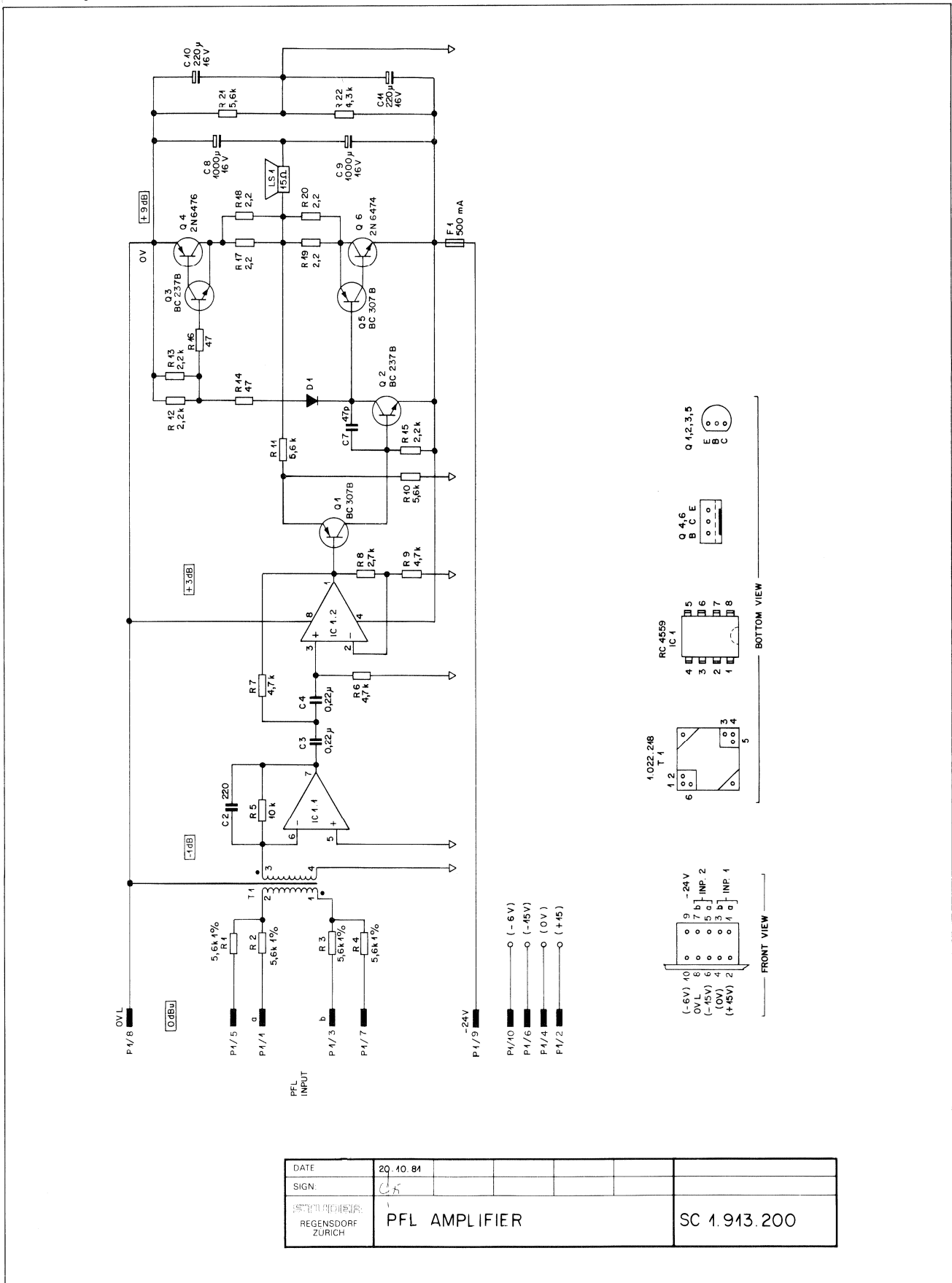
Specifications

| | |
|------------------------------------|----------------------|
| Input voltage: 0 dBu for | 0,3 W |
| Input impedance | > 10 kohm |
| Insulation rating | 500 V |
| Gain | 9 dB |
| Frequency response at | 15 kHz |
| Filter fg | - 0,5 dB |
| Distortion at 2 W | 150 Hz / 12 dB / oct |
| Maximum output power | < 0,5 % |
| Supply voltage | 3 W |
| Current open-circuit/ fully driven | -24 V |
| Output noise | 33/220 mA |
| | < -90 dBu |

Physical Data

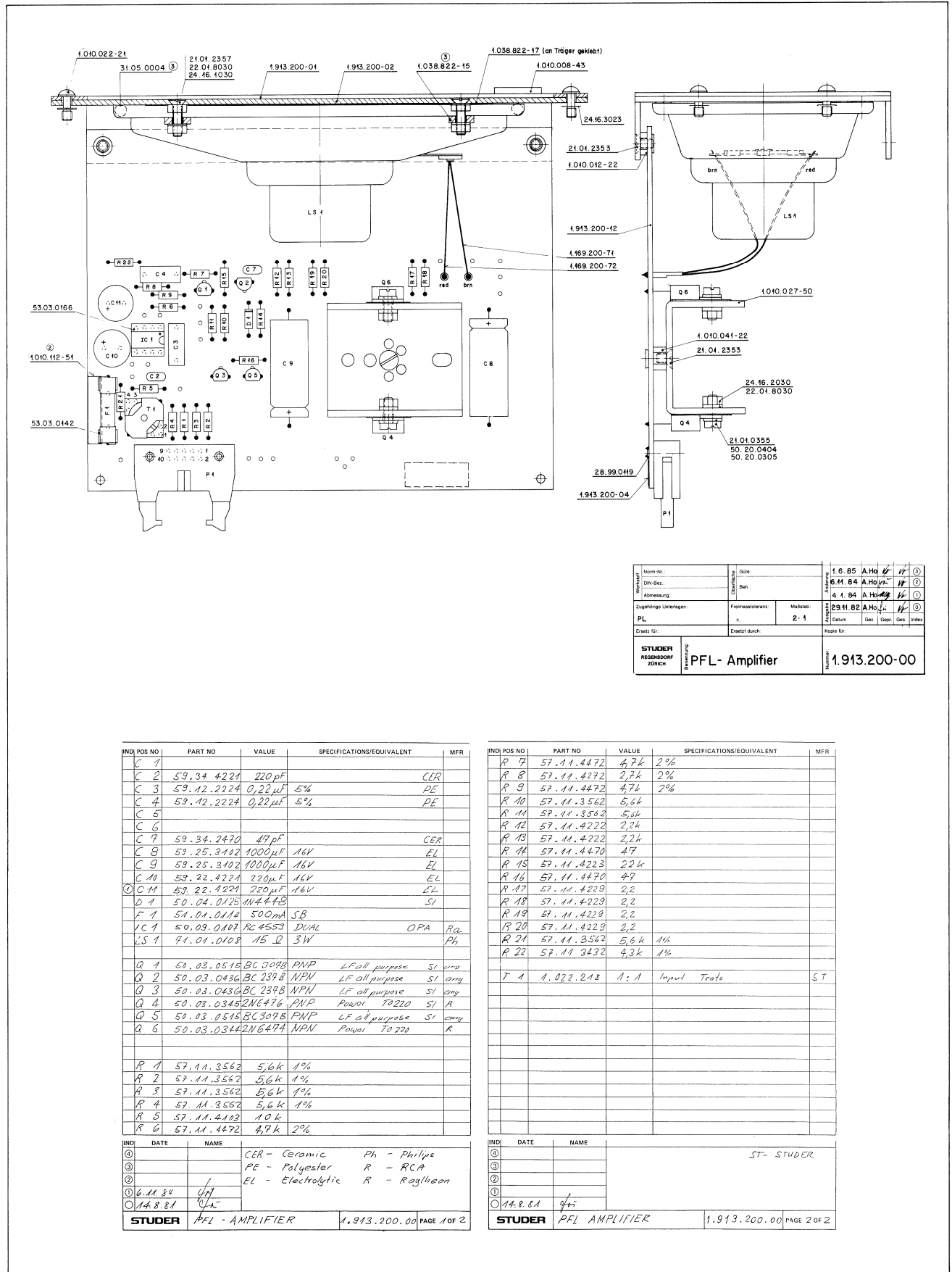
| | |
|------------------------------------|-------------|
| Front panel laquered charcoal grey | |
| Dimensions of front panel | 170 x 80 mm |
| Depth | 135 mm |
| Weight | 350 g |

PFL Amplifier 1.913.200



| | | | | | |
|----------------------|---------------|--|--|--|--------------|
| DATE | 20.10.84 | | | | |
| SIGN. | <i>CS</i> | | | | |
| REGENSDORF ZÜRICH | PFL AMPLIFIER | | | | SC 1.913.200 |

PFL Amplifier 1.913.200



| | | | | | |
|--------------------------------|-----------------|----------------|------|--------------|-----|
| Norm-Nr.: | Qüte: | 1.6.85 | A.Ho | 1/1 | 1/1 |
| DIN-Bez.: | Umfeld: | 6.11.84 | A.Ho | 1/1 | 1/1 |
| Abmessung: | Maßstab: | 4.1.84 | A.Ho | 1/1 | 1/1 |
| Zugehörige Unterlagen: | Freigezeichnet: | 2.1 | | | |
| PL | z | | | | |
| Erstellt für: | Erstellt durch: | | | | |
| STUDER REGENSDORF ZÜRICH | | PFL- Amplifier | | 1.913.200-00 | |

| INDI POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-------------|------------|---------|---------------------------|--------|
| C 1 | | | | |
| C 2 | 59.34.4221 | 220 pF | | CER |
| C 3 | 59.12.2224 | 0,22 µF | 5% | PE |
| C 4 | 59.12.2224 | 0,22 µF | 5% | PE |
| C 5 | | | | |
| C 6 | | | | |
| C 7 | 59.34.2470 | 47 pF | | CER |
| C 8 | 59.25.3102 | 1000 µF | 16V | EL |
| C 9 | 59.25.3102 | 1000 µF | 16V | EL |
| C 10 | 59.22.4221 | 220 µF | 16V | EL |
| C 11 | 59.22.4221 | 220 µF | 16V | EL |
| D 1 | 50.04.0125 | M4448 | | SI |
| F 1 | 50.04.0114 | 500 mA | SB | |
| IC 1 | 50.09.0102 | RC4553 | DUAL | OPA Pz |
| LS 1 | 71.01.0108 | 15 Ω | 3W | Ph |
| Q 1 | 50.03.0515 | BC107B | PNP LF all purpose | SI om4 |
| Q 2 | 50.03.0436 | BC239B | NPN LF all purpose | SI om4 |
| Q 3 | 50.03.0436 | BC239B | NPN LF all purpose | SI om4 |
| Q 4 | 50.03.0345 | 2N6476 | PNP Power T0220 | SI A |
| Q 5 | 50.03.0515 | BC107B | PNP LF all purpose | SI om4 |
| Q 6 | 50.03.0344 | 2N6474 | NPN Power T0220 | R |
| R 1 | 57.11.3562 | 5,6k | 1% | |
| R 2 | 57.11.3562 | 5,6k | 1% | |
| R 3 | 57.11.3562 | 5,6k | 1% | |
| R 4 | 57.11.3562 | 5,6k | 1% | |
| R 5 | 57.11.4102 | 10k | | |
| R 6 | 57.11.4472 | 4,7k | 2% | |

| INDI POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-------------|------------|-------|---------------------------|-----|
| R 7 | 57.11.4472 | 4,7k | 2% | |
| R 8 | 57.11.4222 | 2,2k | 2% | |
| R 9 | 57.11.4472 | 4,7k | 2% | |
| R 10 | 57.11.3562 | 5,6k | | |
| R 11 | 57.11.3562 | 5,6k | | |
| R 12 | 57.11.4222 | 2,2k | | |
| R 13 | 57.11.4222 | 2,2k | | |
| R 14 | 57.11.4470 | 4,7k | | |
| R 15 | 57.11.4223 | 2,2k | | |
| R 16 | 57.11.4470 | 4,7k | | |
| R 17 | 57.11.4229 | 2,2k | | |
| R 18 | 57.11.4229 | 2,2k | | |
| R 19 | 57.11.4229 | 2,2k | | |
| R 20 | 57.11.4229 | 2,2k | | |
| R 21 | 57.11.3562 | 5,6k | 1% | |
| R 22 | 57.11.3432 | 4,3k | 1% | |
| T 1 | 1.022.248 | 1:1 | Input Trans | ST |

| INDI | DATE | NAME |
|------|---------|------|
| ③ | | |
| ② | | |
| ① | 6.11.84 | Uff |
| ① | 14.8.81 | Uff |

CER - Ceramic Ph - Philips
PE - Polyester R - RCA
EL - Electrolytic R - Raytheon

| INDI | DATE | NAME |
|------|---------|------|
| ④ | | |
| ③ | | |
| ② | | |
| ① | 14.8.81 | Uff |

ST - STUDER

KORRELATOR

Der Korrelator zeigt die Phasenkorrelation einer Stereoaufnahme an.

Die Phasenkorrelation ist die gegenseitige Beziehung der Phasen beider Kanäle.

Wenn die Signale beider Kanäle gleichphasig sind, z.B. bei Monoaufnahmen, zeigt das Korrelationsinstrument +1 an; wenn sie gegenphasig ($+180^\circ$) sind, zeigt das Instrument -1 an. Bei einem Stereo-Programm wird ein Mittelwert von gleich- und gegenphasigen Signalen angezeigt.

Stereoprogramme weisen normalerweise einen positiven Korrelationswert auf, vorzugsweise um +0,5. Negative Werte zeigen eine Phasenvertauschung im System an.

ANWENDUNGEN, DIE EINEN KORRELATOR ERFORDERN:Monokompatibilität von Stereoprogrammen

Damit eine stereophone Aufnahme auch monophon abgehört werden kann, muss die Korrelation überwacht werden.

Gegenphasige Anteile führen zu partiellen Auslöschungen.

Tiefe Frequenzen auf Stereo-Schallplatten

Die Abtastfähigkeit eines Abtastsystems ist für vertikale Auslenkung viel geringer als für horizontale Auslenkung.

Gegenphasige Signale mit hohem Pegel und tiefen Frequenzen weisen eine grosse vertikale Auslenkung auf und müssen deshalb vermieden werden.

Modulation von FM-Stereosendern

Die FM-Strecke Sender-Empfänger ist sehr empfindlich auf übermässig hohe Frequenzdifferenz-Signale. Es entstehen dabei unzulässige Verzerrungen.

CORRELATOR

The correlator indicates the phase correlation of a stereo program.

The phase correlation is the mutual relation of the phases on both channels.

If the signals of both channels are in phase, e.g. in a mono production, the correlation instrument indicates +1, if they are phased inversely ($+180^\circ$), the instrument indicates -1. The correlator always indicates the average of in-phase and antiphase signals of a stereo production.

Stereo programs normally show a positive correlation value, preferably around +0.5. Negative values indicate that the phase in the system is inverted.

APPLICATION WHICH REQUIRE A CORRELATORMono compatibility of stereo programs

To ensure that a stereo recording can also be reproduced in mono mode it is necessary to monitor the correlation.

No phased-inversed components are allowed because they partially cancel during monophonic reproduction.

Low frequencies on stereo records

The tracking capability of a cartridge is much lower for vertical excursion than for horizontal excursion.

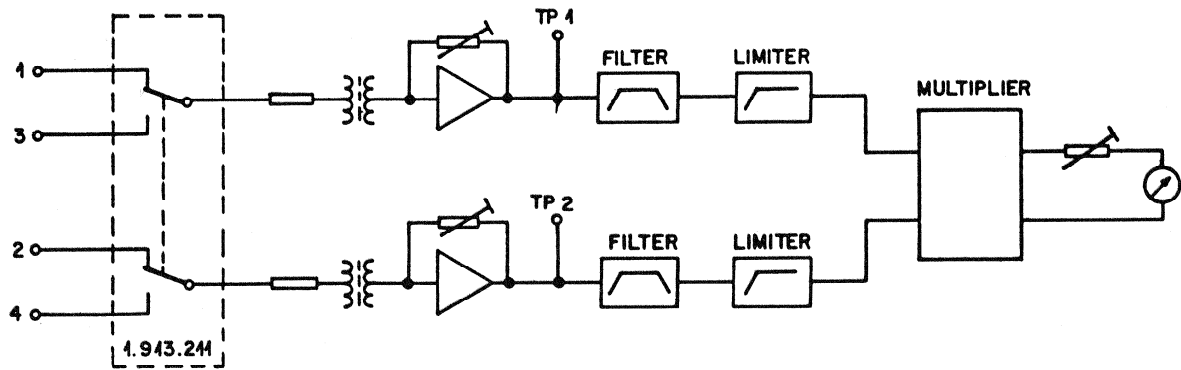
Antiphase signals with high levels and low frequencies result in high vertical excursion and should, therefore, be avoided.

Modulation from FM stereo transmitters

The FM path from the transmitter to the receiver is very sensitive to excessively high frequency-difference signals. They produce unacceptable distortion.

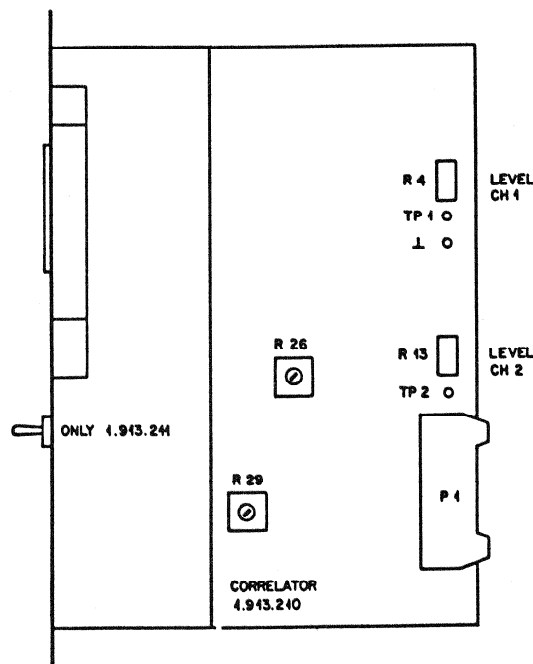
Blockschaltbild

Block Diagram



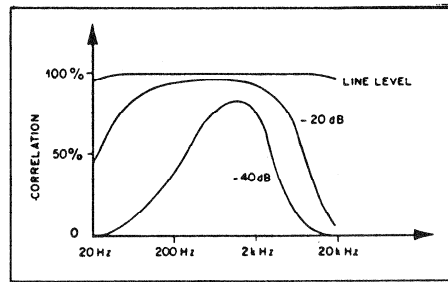
Abgleich

Calibration



1. An beiden Eingängen wird ein gleichphasiges 1 kHz-Signal mit Leitungspegel eingespiesen. R4 bzw. R13 so einstellen, dass an den Messpunkten TP1 bzw. TP2 ein Pegel von 100 mV AC gegen \perp (Masse) erscheint.
2. Eingangspegel um 50 dB verringern. KO an den Ausgang 6 oder 9 von IC3 gegen Masse \perp anschliessen. Die Amplituden beider Halbwellen mit R29 auf gleiche Höhe einstellen.
3. Eingangspegel wieder auf Leitungspegel einstellen. Mit R26 den Zeiger des Anzeigementes auf +1 einstellen.
4. Einen der beiden Eingänge umpolen. Das Messinstrument soll -1 anzeigen.
5. Anzeigen gemäss Fig A kontrollieren.

1. Feed both inputs with an in-phase signal (1 kHz, line level). Adjust R4 and R13 in such a manner that 100 mV AC appear at both test points TP1 or TP2, against ground.
2. Reduce the input level by 50 dB. Connect oscilloscope to pin 6 or 9 of IC3 to ground. With R29 adjust the amplitudes of both half-waves to equal height.
3. Restore input level to line level. With R26 adjust the pointer of the meter to +1.
4. Reverse the polarity of one of the inputs. The meter should indicate -1.
5. Check meter readings according to Fig. A.



| EINGANG | 30 Hz | 1 kHz | 15 kHz |
|-------------------|-------|-------|--------|
| Leitungspegel = A | 0,95 | 1 | 0,95 |
| A + 20 dB | ~1 | 1 | ~1 |
| A - 20 dB | 0,6 | ~1 | 0,5 |

| INPUT | 30 Hz | 1 kHz | 15 kHz |
|----------------|-------|-------|--------|
| Line level = A | 0,95 | 1 | 0,95 |
| A + 20 dB | ~1 | 1 | ~1 |
| A - 20 dB | 0,6 | ~1 | 0,5 |

TECHNISCHE DATEN

Eingang

symmetrisch und erdfrei
 Eingangsimpedanz 20 Hz ... 20 kHz: >10 kOhm
 Eingangspegel, einstellbar: +6 ... +15 dBu

Filter

Hochpass 6 dB/Oktave: f_u . ca. 340 Hz
 Tiefpass 12 dB/Oktave: f_o . ca. 3,4 kHz

Ausgang

Ausgangstrom für Instrumente, einstellbar \pm 300 μ A

Temperatureinfluss

Fehler bei 0° C ... 50° C, bezüglich Raumtemperatur: +3 ... -1 %

Stromaufnahme bei \pm 15 V: ca. 15 mA

Mechanische Daten

Frontplatte dunkelgrau gespritzt
 Abmessung Frontplatte 170 x 180 mm
 Tiefe 135 mm
 Gewicht 390 gr

SPECIFICATIONS

Input

Balanced and floating
 Input impedance 20 Hz ... 20 kHz: 10 kOhm
 Input level, variable: + 6 ... + 15 dBu

Filter

High-pass 6 dB/octave: f_1 approx. 340 Hz
 Low-pass 12 dB/octave: f_u . approx. 3.4 kHz

Output

Output current for instruments, variable
 \pm 300 μ A.

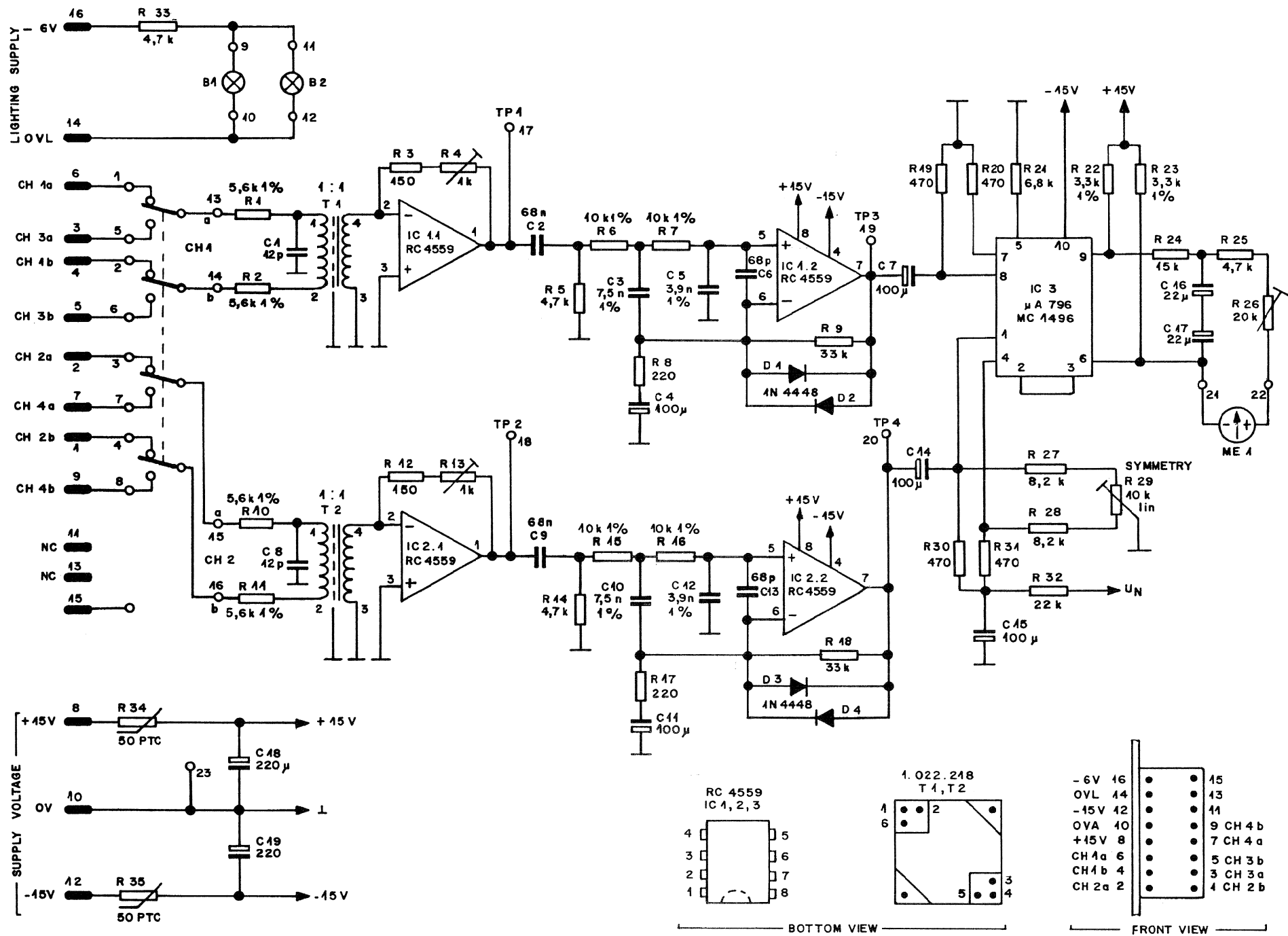
Influence of temperature

Error at 0 C ... 50 C, relative to room temperature: + 3 ... - 1 %.

Connected load at \pm 15 V: approx. 15 mA

Physical data

Front panel laquered charcoal grey
 Dimensions of front panel 170 x 180 mm
 Depth 135 mm
 Weight 390 g



| | | | | |
|--------------------------------|--------------------|--|--|------------------|
| DATE: | 18.10.82 | | | |
| SIGN: | | | | |
| STUDER REGENSDORF ZÜRICH | CORRELATOR 2CH/4CH | | | SC 1.913.210/211 |

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|------------|----------|---------------------------|--------|
| | C1 | 59.34.1120 | 12pF | 5% | |
| | C2 | 59.02.5683 | 68nF | 5% | |
| | C3 | 59.12.7752 | 75nF | 1% | |
| | C4 | 59.22.5101 | 100μF | 16V | |
| | C5 | 59.12.7392 | 39nF | 1% | |
| | C6 | 59.34.4680 | 68pF | 5% | |
| | C7 | 59.22.5101 | 100μF | 16V | |
| | C8 | 59.34.1120 | 12pF | 5% | |
| | C9 | 59.02.5683 | 68nF | 5% | |
| | C10 | 59.12.7752 | 75nF | 1% | |
| | C11 | 59.22.5101 | 100μF | 16V | |
| | C12 | 59.12.7392 | 39nF | 1% | |
| | C13 | 59.34.4680 | 68pF | 5% | |
| | C14 | 59.22.5101 | 100μF | 16V | |
| | C15 | 59.22.5101 | 100μF | 16V | |
| | C16 | 59.26.1220 | 22μF | 10V | |
| | C17 | 59.26.1220 | 22μF | 10V | |
| | C18 | 59.22.4221 | 220μF | 16V | |
| | C19 | 59.22.4221 | 220μF | 16V | |
| | D1 | 50.04.0125 | 1N4448 | | |
| | D2 | 50.04.0125 | 1N4448 | | |
| | D3 | 50.04.0125 | 1N4448 | | |
| | D4 | 50.04.0125 | 1N4448 | | |
| | IC1 | 50.09.0107 | 4559 | | Ra, TI |
| | IC2 | 50.09.0107 | 4559 | | |
| | IC3 | 50.05.0122 | MC4496 6 | μA796 HC | M, F |

| IND | DATE | NAME | |
|---------------|---------------------------------|------|-------------|
| ④ | | | |
| ③ | | | |
| ② | | | |
| ① | | | |
| ○ | 20-8-81 | 114 | |
| STUDER | CORRELATOR 2CH 1.913.211 | | PAGE 1 OF 3 |

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|------------|-------|---------------------------|-----|
| | R1 | 57.11.3562 | 5,6k | 1% | |
| | R2 | 57.11.3562 | 5,6k | 1% | |
| | R3 | 57.11.4151 | 150 | | |
| | R4 | 58.01.7102 | 1k | TRIM-POTM. | |
| | R5 | 57.11.4472 | 47k | | |
| | R6 | 57.11.3103 | 10k | 1% | |
| | R7 | 57.11.3103 | 10k | 1% | |
| | R8 | 57.11.4221 | 220 | | |
| | R9 | 57.11.4333 | 33k | | |
| | R10 | 57.11.3562 | 5,6k | 1% | |
| | R11 | 57.11.3562 | 5,6k | 1% | |
| | R12 | 57.11.4151 | 150 | | |
| | R13 | 58.01.7102 | 1k | TRIM-POTM. | |
| | R14 | 57.11.4472 | 47k | | |
| | R15 | 57.11.3103 | 10k | 1% | |
| | R16 | 57.11.3103 | 10k | 1% | |
| | R17 | 57.11.4221 | 220 | | |
| | R18 | 57.11.4333 | 33k | | |
| | R19 | 57.11.4471 | 470 | | |
| | R20 | 57.11.4471 | 470 | | |
| | R21 | 57.11.4682 | 6,8k | | |
| | R22 | 57.11.3332 | 3,3k | 1% | |
| | R23 | 57.11.3332 | 3,3k | 1% | |
| | R24 | 57.11.4153 | 15k | | |
| | R25 | 57.11.4472 | 47k | | |
| | R26 | 58.01.8203 | 20k | TRIM-POTM. | |
| | R27 | 57.11.4822 | 8,2k | | |
| | R28 | 57.11.4822 | 8,2k | | |
| | R29 | 58.01.8103 | 10k | TRIM-POTM. | |
| | R30 | 57.11.4471 | 470 | | |

| IND | DATE | NAME | |
|---------------|---------------------------------|------|-------------|
| ④ | | | |
| ③ | | | |
| ② | | | |
| ① | | | |
| ○ | 20-8-81 | 114 | |
| STUDER | CORRELATOR 2CH 1.913.211 | | PAGE 2 OF 3 |

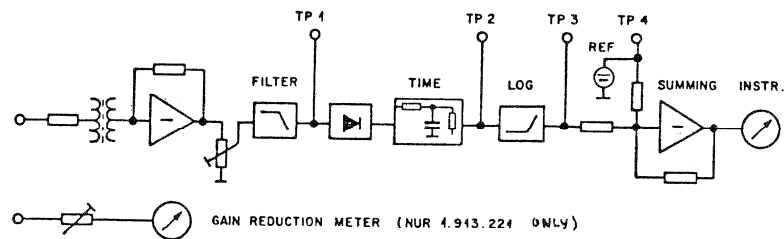
| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|--------------|----------|---------------------------|--------|
| | R31 | 57.11.4471 | 470 | | |
| | R32 | 57.11.4223 | 22k | | |
| | R33 | 57.11.4479 | 47 | | |
| | R34 | 57.99.0206 | 50 | PTC | |
| | R35 | 57.99.0206 | 50 | PTC | |
| | S1 | 55.01.0115 | 4x ON-ON | only 1.913.211 | |
| | T1 | 1.022.218 | 1:1 | INPUT TRAFO | STUDER |
| | T2 | 1.022.218 | 1:1 | INPUT TRAFO | STUDER |
| | B1 | 51.02.0144 | 6V,30mA | Lamp | |
| | B2 | 51.02.0144 | 6V,30mA | Lamp | |
| | ME1 | 1.913.001.03 | | Corr-Meter | |
| | P1 | 54.14.2012 | | Connector, 16pins | |
| | XIC | 53.03.0166 | | IC-socket, 8pins | |

| IND | DATE | NAME | |
|---------------|---------------------------------|------|-------------|
| ④ | | | |
| ③ | | | |
| ② | | | |
| ① | | | |
| ○ | 20-8-81 | 114 | |
| STUDER | CORRELATOR 2CH 1.913.211 | | PAGE 3 OF 3 |

PEAK PROGRAM METER

Aussteuerungsmesser mit symmetrisch, erd-freiem Eingang. Dynamisches Verhalten gemäss IEC / DIN Normen.

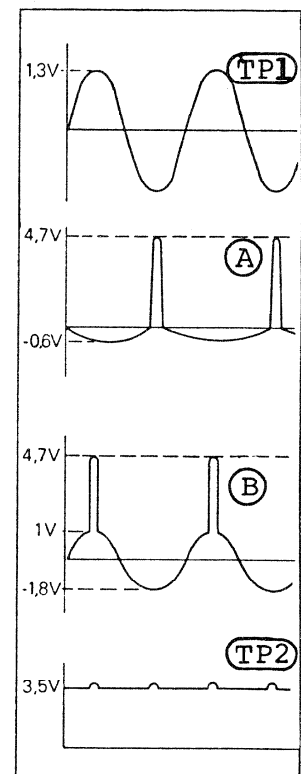
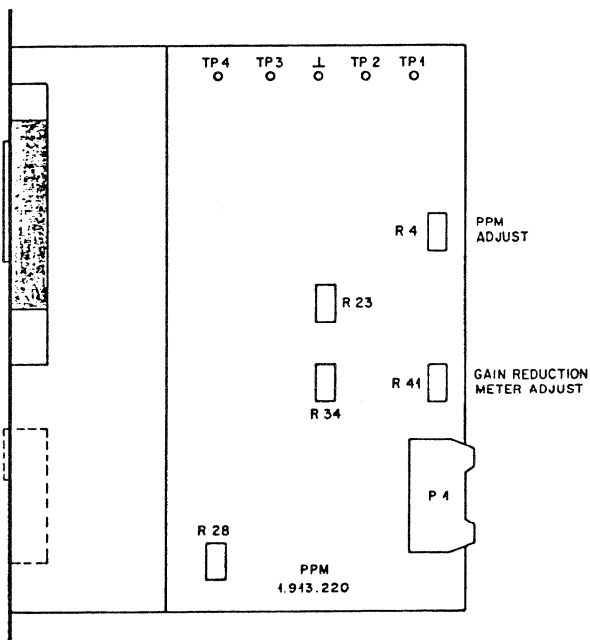
Blockschaltbild



PEAK PROGRAM METER

Level indicator with balanced and floating input. Dynamic response according to IEC / DIN standards.

Block Diagram



Abgleich

- 1) Leitungspegel + 6 ... + 15 dB 1 kHz am Eingang.
- 2) + 3,5 V an TP2 mit R4 (Pegel PPM)
- 3) 0 dB am Instrument mit R28
- 4) - 30 dB am Instrument mit R34
- 5) - 40 dB am Instrument mit R23

Calibration

- 1) Line level +6 ... +15 dB 1 kHz at input
- 2) +3.5 V at TP2, adjust with R4 (level PPM)
- 3) 0 dB at instrument adjust with R28
- 4) -30 dB at instrument adjust with R34
- 5) -40 dB at instrument adjust with R23

Die mechanische Nullstellung des Messwerkes liegt bei Referenzanzeige 0 dB. Für Pegel, deren Anzeige 0 ... + 6 dB ergibt, wechselt die Polarität der Ausgangsspannung am Verstärker 4.2.

The mechanical zero position of the instrument corresponds to the reference indication 0 dB. For levels which give a deflection of 0 ... +6 dB on the scale, the amplifier 4.2 changes the polarity of the output voltage.

TECHNISCHE DATEN

Eingangsempfindlichkeit für Referenzanzeige (0 dB):
 + 6 dBu ... + 15 dBu
 Eingangsimpedanz >10 kOhm

Anzeigebereich:
 - 40 dB ... + 6 dB

Genauigkeit bei 20° C, 1 kHz
 - 40 dB ... + 6 dB: ± 0,5 dB

Frequenzgang bei Referenzanzeige 0° C ... 50° C,
 31,5 Hz ... 15 kHz: ± 0,5 dB

Temperatureinfluss bei Referenzanzeige, 1 kHz,
 0° C ... 50° C: < Fehler 0,5 dB

Dynamisches Verhalten:

Überschwingen: ≤ 1 dB

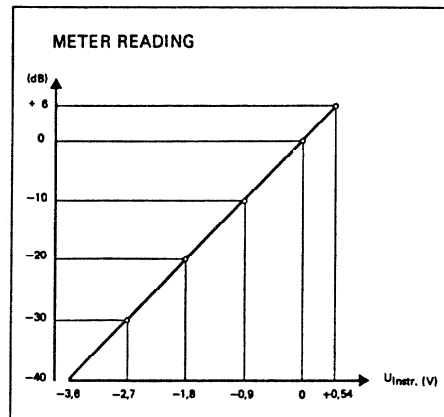
Ansprechzeit auf
 - 1 dB + 0,5 dB: 10 ms
 - 4 dB ± 1 dB: 3 ms

Rücklaufzeit 0 ... - 20 dB: 1,7 s ± 0,3 s

Stromaufnahme bei ± 15 V: Ca 15 mA

MECHANISCHE DATEN

Frontplatte dunkelgrau gespritzt
 Abmessungen Frontplatte 170 x 80 mm
 Tiefe 135 mm
 Gewicht 360 gr



SPECIFICATIONS

Input sensitivity for reference indication (0 dB):
 +6 dBu ... +15 dBu
 Input impedance >10 kOhm

Indicating range
 -40 dB ... +6 dB

Accuracy at 20° C, 1 kHz
 -40 dB ... +6 dB: ± 0.5 dB

Frequency response at reference indication
 0° C ... 50° C
 31.5 Hz ... 15 kHz: ± 0.5 dB

Influence of temperature at reference indication,
 1 kHz 0° C ... 50° C: error 0.5 dB

Dynamic response:

Overswing: 1 dB

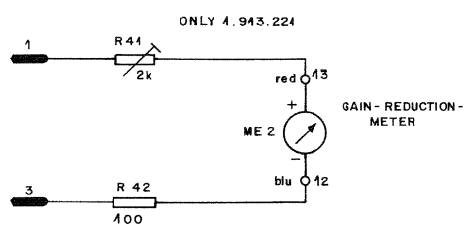
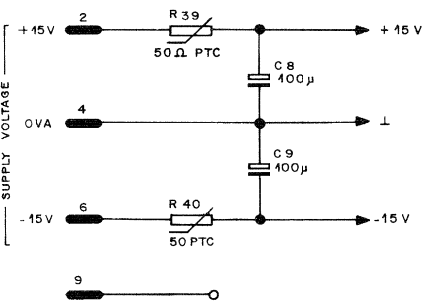
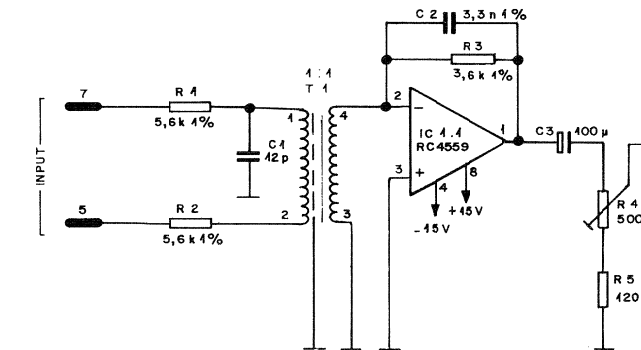
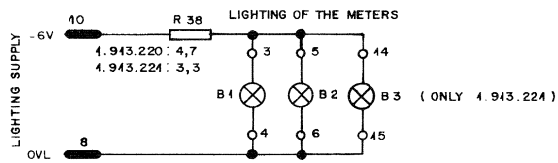
Attack time to
 -1 dB + 0.5 dB: 10 ms
 -4 dB ± 1 dB: 3 ms

Return time 0 ... -20 dB: 1.7 s ± 0.3 s

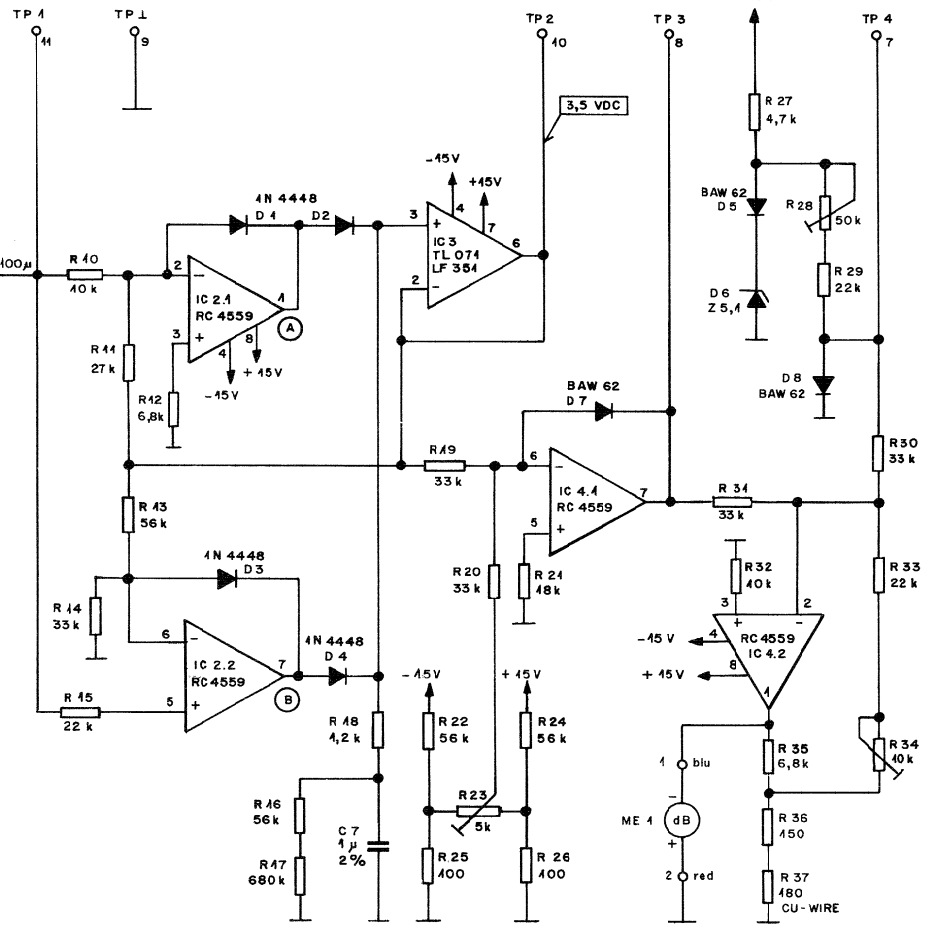
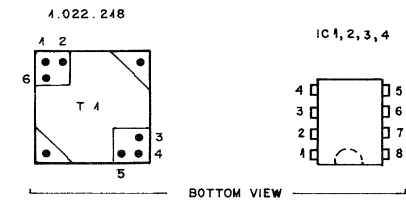
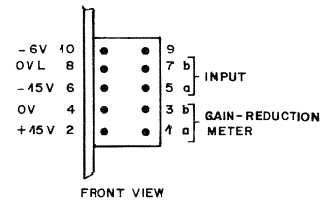
Connected load at ± 15 V: approx. 15 mA

PHYSICAL DATA

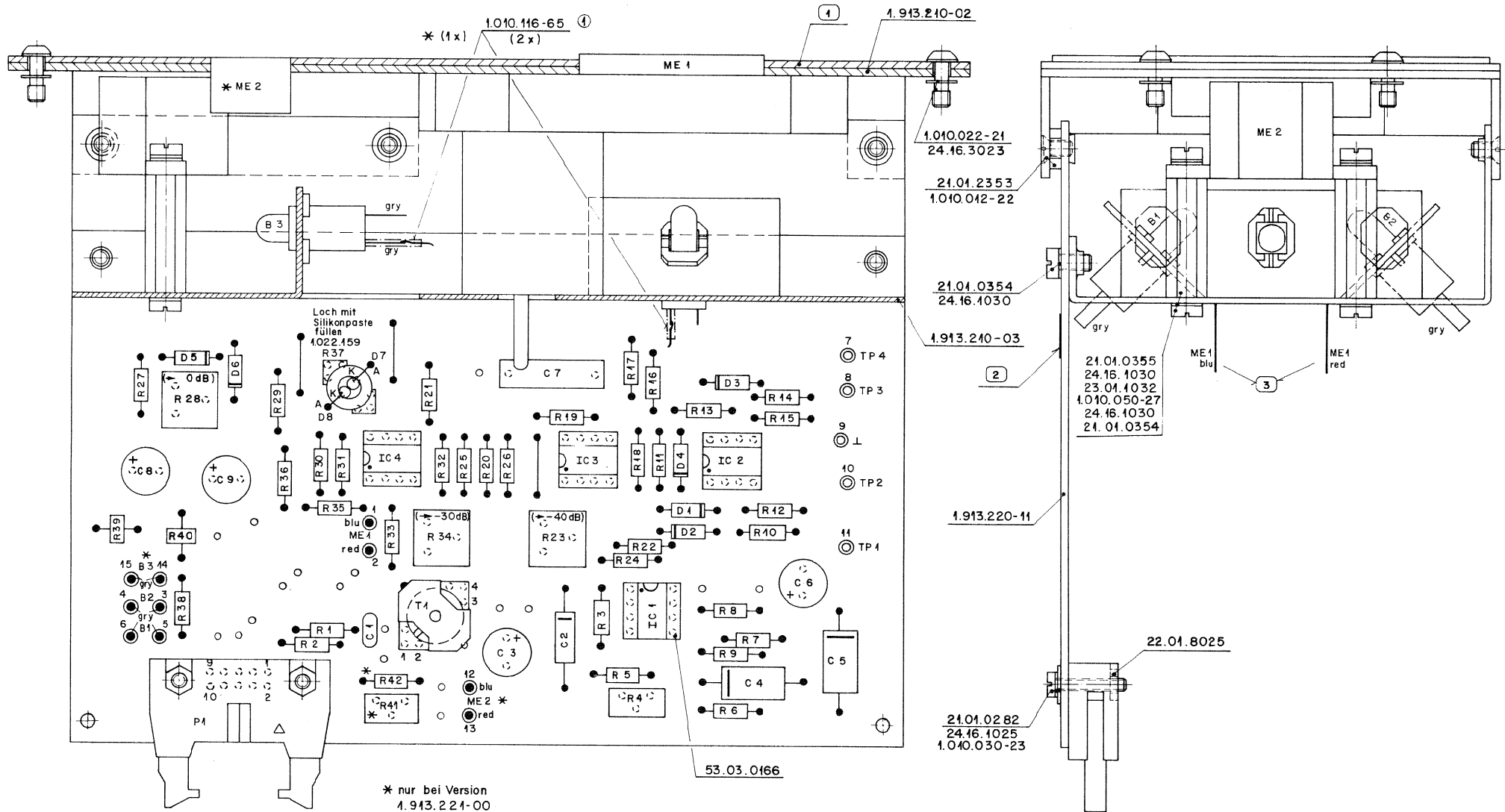
Front panel laquered charcoal grey
 Dimensions of front panel 170 x 80 mm
 Depth 135 mm
 Weight 360 g



- ADJUSTMENT :**
- 3,5 V DC AT TP 2 - R 4
 - 0 dB AT ME 1 - R 28
 - 30 dB AT ME 1 - R 34
 - 40 dB AT ME 1 - R 23



| | | | |
|--------------------|----------------------|------------------|--|
| DATE | 21.10.82 | | |
| SIGN | <i>My</i> | | |
| REGENSCHORF ZÜRICH | PEAK PROGRAMME METER | SC 1.913.220/221 | |



| Gültig für : | 1 | 2 | 3 |
|--------------|--------------|--------------|--------------|
| 1.913.220-00 | 1.913.210-01 | 1.913.220-04 | 1.913.210-93 |
| 1.913.221-00 | 1.913.221-01 | 1.913.221-04 | 1.913.221-93 |

| | | | |
|--------------------------------------|--|-----------|--|
| Werkstoff Norm-Nr DIN-Bez. | Gute | | Anmerkung 10.12.84 A.Ho <i>MM</i> <i>VR</i> |
| | Oberfläche Ben. | | |
| Abmessung | | | 11.2.83 A.Ho <i>MM</i> <i>VR</i> |
| Zugehörige Unterlagen | Freimasstoleranz | Maßstab | Ausgabe Datum Gez Gepr Gcs Index |
| PL | | 2:1 | |
| Ersatz für: | Ersetzt durch: | Kopie für | |
| STUDER REGENDORF ZÜRICH | Benennung Peak Programme Meter | | Nummer 1.913.220-00 |

| INDI | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------|--------|--------------|----------|---------------------------------------|---------|
| | C1 | 59.34.1120 | 12pF | 5% | |
| | C2 | 59.12.7332 | 3,3nF | 1% | |
| | C3 | 59.22.5101 | 100μF | 16V | |
| | C4 | 59.12.9102 | 1 nF | 1% | |
| | C5 | 59.12.9102 | 1 nF | 1% | |
| | C6 | 59.22.5101 | 100μF | 16V | |
| | C7 | 59.99.0508 | 1 μF | 2% | |
| | C8 | 59.22.5101 | 100μF | 16V | |
| | C9 | 59.22.5101 | 100μF | 16V | |
| | D1 | 50.04.0125 | 1N4448 | | any |
| | D2 | 50.04.0125 | 1N4448 | | any |
| | D3 | 50.04.0125 | 1N4448 | | any |
| | D4 | 50.04.0125 | 1N4448 | | any |
| | D5 | 50.04.0132 | BAW62 | | only PH |
| | D6 | 50.04.1112 | ZPD 5,1 | 5,1V at 5mA, 5% | ITT |
| | D7 | 50.04.0132 | BAW62 | | only PH |
| | D8 | 50.04.0132 | BAW62 | | only PH |
| | IC1 | 50.09.0107 | RC4559NB | | RA, TI |
| | IC2 | 50.09.0107 | RC4559NB | | RA, TI |
| | IC3 | 50.09.0103 | TL071CP | LF351N | TI, N |
| | IC4 | 50.09.0107 | RC4559NB | | RA, TI |
| | ME1 | 1.913.001.01 | | Peak Programme Meter | |
| | ME2 | 1.169.900.02 | | Gain-Reduction-Meter (only 1.913.221) | |

| INDI | DATE | NAME | |
|---------------|---------|----------------------|--------------------------------|
| ④ | | | PH Philips N National Sem. |
| ③ | | | RA Raytheon |
| ② | | | TI Texas Instr. |
| ① | | | also valid for PPM with |
| ○ | 20-8-81 | NY | gain reduction meter 1.913.221 |
| STUDER | | PEAK PROGRAMME METER | 1.913.220 PAGE 1 OF 3 |

| INDI | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------|--------|------------|-------|---------------------------|-----|
| | R1 | 57.11.3562 | 5,6k | 1% | |
| | R2 | 57.11.3562 | 5,6k | 1% | |
| | R3 | 57.11.3362 | 3,6k | 1% | |
| | R4 | 58.01.7501 | 500 | TRIM | |
| | R5 | 57.11.4121 | 120 | | |
| | R6 | 57.11.3752 | 7,5k | 1% | |
| | R7 | 57.11.3912 | 9,1k | 1% | |
| | R8 | 57.11.3152 | 1,5k | 1% | |
| | R9 | 57.11.3102 | 1k | 1% | |
| | R10 | 57.11.4103 | 10k | | |
| | R11 | 57.11.4273 | 27k | | |
| | R12 | 57.11.4682 | 6,8k | | |
| | R13 | 57.11.4563 | 56k | | |
| | R14 | 57.11.4333 | 33k | | |
| | R15 | 57.11.4223 | 22k | | |
| | R16 | 57.11.4563 | 56k | | |
| | R17 | 57.11.4684 | 680k | 2% | |
| | R18 | 57.11.4122 | 1,2k | | |
| | R19 | 57.11.4333 | 33k | | |
| | R20 | 57.11.4333 | 33k | | |
| | R21 | 57.11.4183 | 18k | | |
| | R22 | 57.11.4563 | 56k | | |
| | R23 | 58.01.8502 | 5k | TRIM | |
| | R24 | 57.11.4563 | 56k | | |
| | R25 | 57.11.4101 | 100 | | |
| | R26 | 57.11.4101 | 100 | | |
| | R27 | 57.11.4472 | 4,7k | | |
| | R28 | 58.01.8503 | 50k | TRIM | |
| | R29 | 57.11.4223 | 22k | | |
| | R30 | 57.11.4333 | 33k | | |

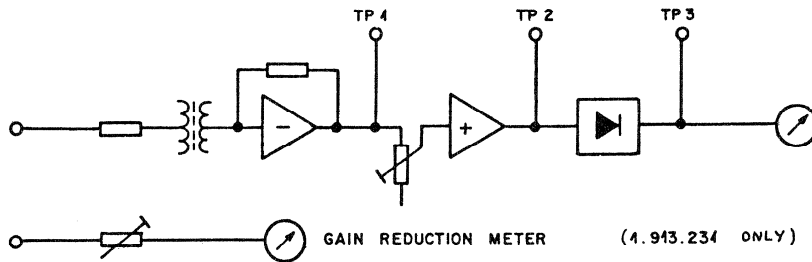
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| ① | | | |
| ○ | 20-8-81 | NY | |
| STUDER | | PEAK PROGRAMME METER | 1.913.220 PAGE 2 OF 3 |

| INDI | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------|--------|--------------|----------|---------------------------|--------|
| | R31 | 57.11.4333 | 33k | | |
| | R32 | 57.11.4103 | 10k | | |
| | R33 | 57.11.4223 | 22k | | |
| | R34 | 58.01.8103 | 10k | TRIM | |
| | R35 | 57.11.4682 | 6,8k | | |
| | R36 | 57.11.4151 | 150 | | |
| | R37 | 1.022.159.00 | 180 | Cu-Wire | STUDER |
| | R38 | 57.11.4479 | 47Ω | 1.913.221 : 3,3Ω | |
| | R39 | 57.99.0206 | 50Ω | PTC | |
| | R40 | 57.99.0206 | 50Ω | PTC | |
| | R41 | 58.01.7202 | 2k | TRIM only 1.913.221 | |
| | R42 | 57.11.4101 | 100 | only 1.913.221 | |
| | T1 | 1.022.218.00 | 1:1 | Input Trafo | STUDER |
| | B1 | 51.02.0144 | 6V, 30mA | Lamp | |
| | B2 | 51.02.0144 | 6V, 30mA | Lamp | |
| | B3 | 51.02.0144 | 6V, 30mA | Lamp | |
| | P1 | 54.14.2011 | | Connector | |
| | X1C | 53.03.0166 | | IC-Socket 8pins | |

| INDI | DATE | NAME | |
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| ○ | 20-8-81 | NY | |
| STUDER | | PEAK PROGRAMME METER | 1.913.220 PAGE 3 OF 3 |

VU-METER

VU-Meter mit symmetrisch, erdfreiem und hoch-ohmigem Eingang. Dynamische Daten gemäss IEC.

BlockschaltbildEinmessen:

TP1: Variabel (0,1 V ... 0,35 Veff)

TP2: 1 Veff

TP3: - 3,6 V p Vollweg-Gleichrichtung

Mit R4 kann die Referenzanzeige (0 VU) für Eingangssignale zwischen 0 dBu und +10 dBu eingestellt werden.

Calibration

TP1: Variable (0.1 V ... 0.35 Veff)

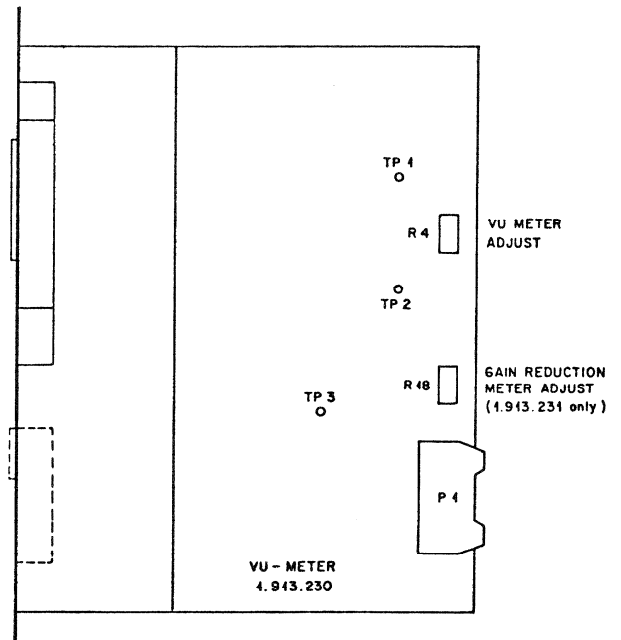
TP2: 1 Veff

TP3: -3.6V p full-wave rectification

The reference indication (0 VU) for input signals between 0 dBu and +10 dBu can be adjusted with R4.

VU-Meter

VU-meter with balanced, floating and high-impedance input. Dynamic response according to IEC.

Block diagramTECHNISCHE DATEN

| | |
|---|---|
| Eingangsempfindlichkeit für Referenzanzeige (0 VU) | 0 dBu ... +10 dBu |
| Eingangsimpedanz | > 10 kOhm |
| Anzeigebereich | - 20 VU ... + 3 VU |
| Genauigkeit bei 20°C, 1 kHz, -10 VU ... +3 VU | ± 0,5 VU |
| Frequenzgang für Referenzanzeige 0°C ... 50°C, 31,5 Hz ... 15 kHz | ± 0,5 VU |
| Ansprechzeit auf - 1 VU | 207 ms ± 30 ms |
| Speisung | + 15 V 10 mA - 15 V 10 mA - 6 V 60 mA (90 mA) |

MECHANISCHE DATEN

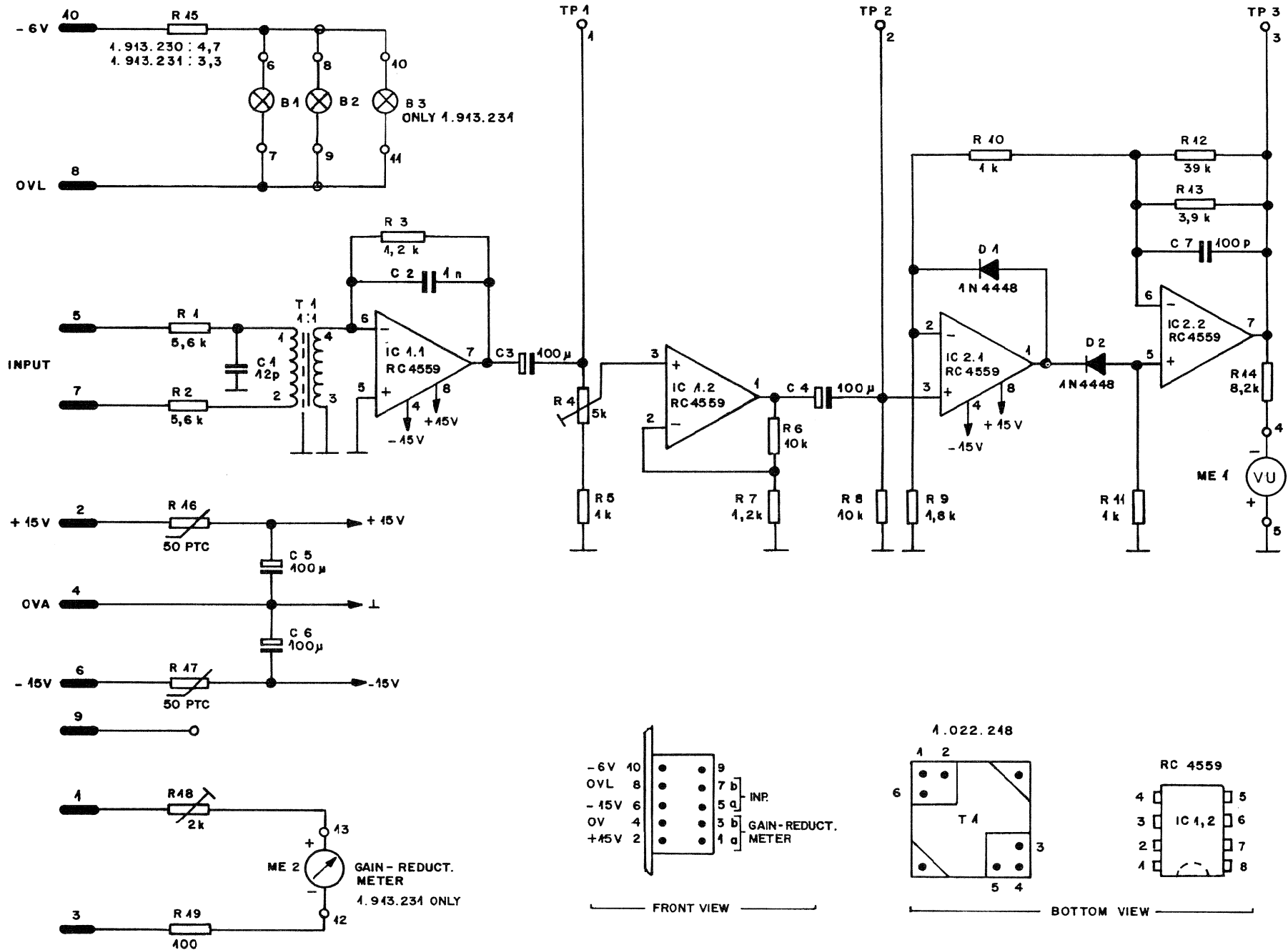
| | |
|----------------------------------|-------------|
| Frontplatte dunkelgrau gespritzt | |
| Abmessungen Frontplatte | 170 x 80 mm |
| Tiefe | 135 mm |
| Gewicht | 310 gr |

SPECIFICATIONS

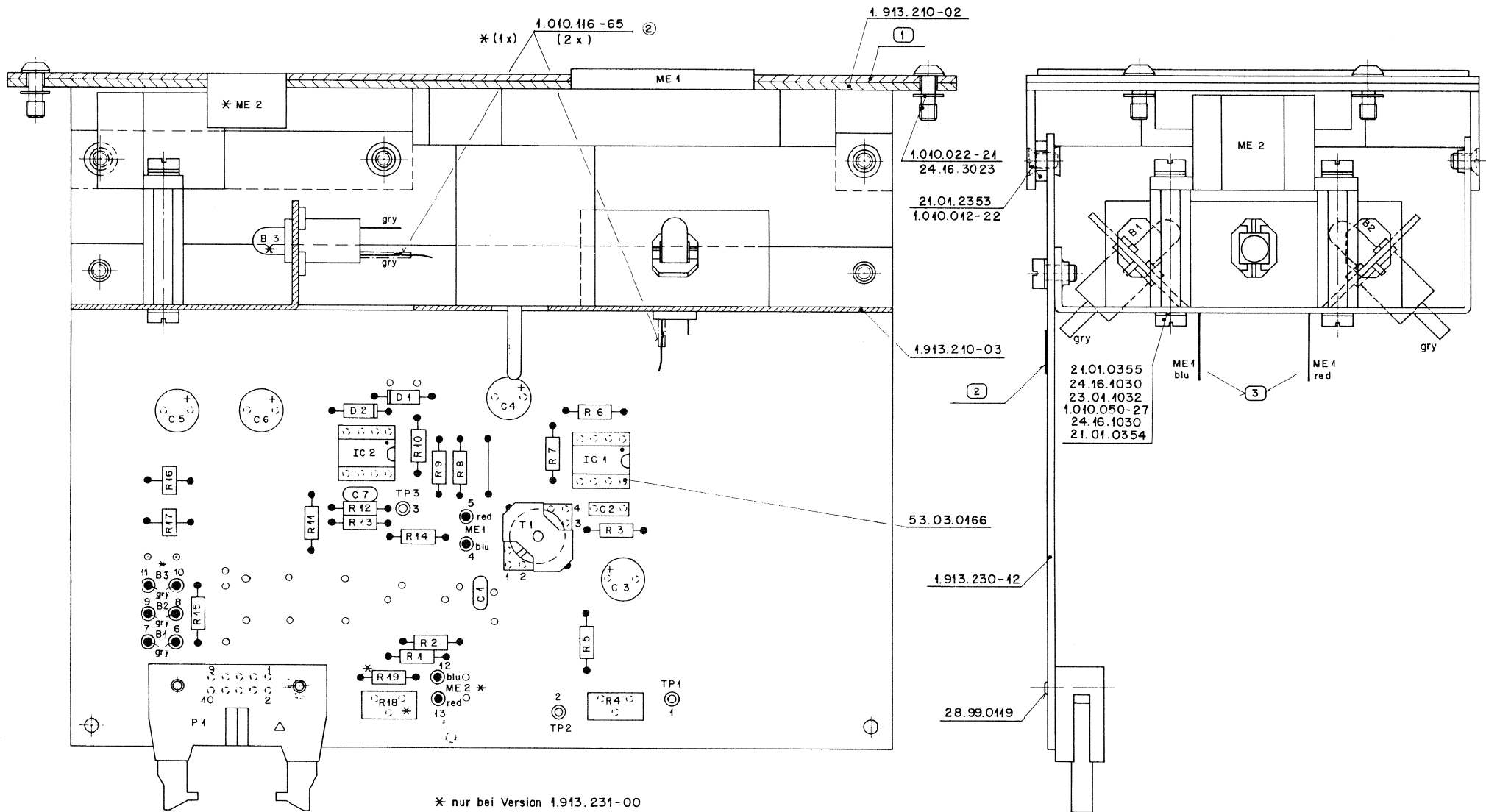
| | |
|---|---|
| Input sensitivity for reference indication (0 VU) | 0 dBu ... +10 dBu |
| Input impedance | >10 kOhm |
| Indicating range | -20 VU ... + 3 VU |
| Accuracy at 20°C, 1 kHz, -10 VU ... +3 VU | ±0.5 VU |
| Frequency response for reference 0°C ... 50°C, 31.5 Hz ... 15 kHz | ±0.5 VU |
| Attack time to -1 VU | 207 ms ±30 ms |
| Supply | +15 V 10mA -15 V 10mA - 6 V 60mA (90mA) |

PHYSICAL DATA

| | |
|-----------------------------------|------------|
| Front panel sprayed charcoal grey | |
| Dimension of front panel | 170 x 80mm |
| Depth | 135mm |
| Weight | 310 g |



| | | | | | | |
|--------------------------------|--------------------|--------------------|----------|--|--|------------------|
| DATE: | 10.10.88 | 0.1.89 | | | | |
| SIGN: | <i>[Signature]</i> | <i>[Signature]</i> | | | | |
| STUDEF REGENSDORF ZÜRICH | | | VU-METER | | | SC 1.913.230/231 |



| Gültig für : | ① | ② | ③ |
|--------------|--------------|--------------|--------------|
| 1.913.230-00 | 1.913.210-01 | 1.913.230-04 | 1.913.210-93 |
| 1.913.231-00 | 1.913.224-01 | 1.913.231-04 | 1.913.224-93 |

| | | | | | |
|---------------------------------------|-------------------|-------------------------------|------------|--------------------------------|-------|
| Weisstoff | Norm-Nr.: | | | Änderung | ③ |
| | DIN-Bez.: | | | | ② |
| | Abmessung: | | | | ① |
| Zugehörige Unterlagen: | Freimasstoleranz: | Maßstab: | 2:1 | Ausgabe | ④ |
| | | | | | Datum |
| Ersatz für: | Ersetzt durch: | | Kopie für: | | |
| STUDER REGENSDORF ZÜRICH | | Benennung: VU-Meter | | Nummer: 1.913.230-00 | |

| INDI | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------|--------|------------|-------------|---------------------------|--------|
| | C1 | 59.34.1120 | 12 pF | 5% | |
| | C2 | 59.06.0102 | 1 nF | 10% | |
| | C3 | 59.22.5101 | 100 μ F | $\geq 16V$ | |
| | C4 | 59.22.5101 | 100 μ F | $\geq 16V$ | |
| | C5 | 59.22.5101 | 100 μ F | $\geq 16V$ | |
| | C6 | 59.22.5101 | 100 μ F | $\geq 16V$ | |
| | C7 | 59.34.4101 | 100 pF | 5% | |
| | D1 | 50.04.0125 | 1N4448 | | any |
| | D2 | 50.04.0125 | 1N4448 | | any |
| | IC1 | 50.09.0107 | RC4559NB | Dual OP AMP | Ro, TI |
| | IC2 | 50.09.0107 | RC4559NB | Dual OP AMP | Ro, TI |
| | R1 | 57.11.3562 | 5.6 k | 1% | |
| | R2 | 57.11.3562 | 5.6 k | 1% | |
| | R3 | 57.11.4122 | 12k | | |
| | R4 | 58.01.7502 | 5k | TRIM-POTM. | |
| | R5 | 57.11.4102 | 1k | | |
| | R6 | 57.11.4103 | 10k | | |
| | R7 | 57.11.4122 | 12k | | |
| | R8 | 57.11.4103 | 10k | | |
| | R9 | 57.11.4182 | 18k | | |
| | R10 | 57.11.4102 | 1k | | |
| | R11 | 57.11.4102 | 1k | | |
| | R12 | 57.11.4393 | 39k | | |
| | R13 | 57.11.4392 | 39k | | |
| | R14 | 57.11.4822 | 8.2k | | |

| INDI | DATE | NAME | | |
|---------------|---------|-----------|--------------------------------|-------------|
| ④ | | | Ro Raytheon | |
| ③ | | | TI Texas Instr. | |
| ② | | | also valid for VU-meter with | |
| ① | | | gain reduction meter 1.913.231 | |
| ○ | 20-8-81 | <i>MJ</i> | | |
| STUDER | | VU-METER | 1.913.230 | PAGE 1 OF 2 |

| INDI | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|------|--------|--------------|-------------|---------------------------------------|-----|
| | R15 | 57.11.4479 | 47 Ω | 1.913.231: 3,3 Ω (57.11.4339) | |
| | R16 | 57.99.0206 | 50 | PTC PHILIPS 2.322.661.91002 | |
| | R17 | 57.99.0206 | 50 | PTC PHILIPS 2.322.661.91002 | |
| | R18 | 58.01.7202 | 2k | Trim-Pot. (only 1.913.231) | |
| | R19 | 57.11.4101 | 100 | (only 1.913.231) | |
| | T1 | 1.022.218.00 | 1:1 | Input Trafo | |
| | B1 | 51.02.0144 | 6V, 30mA | Lamp | |
| | B2 | 51.02.0144 | 6V, 30mA | Lamp | |
| | ME1 | 1.913.001.02 | | VU-Meter | |
| | ME2 | 1.169.900.02 | | Gain-Reduction Meter (only 1.913.231) | |
| | P1 | 54.14.2011 | | Connector 10 pins | |
| | X1C | 53.03.0166 | | IC-Socket 8pins DIP | |
| | B3 | 51.02.0144 | 6V, 30mA | Lamp (only 1.913.231) | |

| INDI | DATE | NAME | | |
|---------------|---------|-----------|--------------------------------|-------------|
| ④ | | | | |
| ③ | | | | |
| ② | | | also valid for VU-meter with | |
| ① | | | gain reduction meter 1.913.231 | |
| ○ | 20-8-81 | <i>MJ</i> | | |
| STUDER | | VU-METER | 1.913.230 | PAGE 2 OF 2 |

SECTION 7: Modular Sub Cards

1.914 ...

INHALT

| | |
|--|-----------------------|
| MSC – Mother Board | 1.915.770.00 |
| * Line Output Amplifier | 1.914.501.00 |
| * High Level Input Amplifier | 1.914.502.00...504.00 |
| * Loudspeaker Amplifier | 1.914.505.00 |
| * Microphone Pre-Amp. for dynamic mic. | 1.914.506.81 |
| * Microphone Pre-Amp. for electret | 1.914.507.81 |
| * Voltage contr. amp., balanced in-/output | 1.914.515.00 |
| * Voltage controlled Amplifiers (VCA)..... | 1.914.518.00 |
| * Limiter Voltage Proc. | 1.914.519.81 |
| * 1900 Hz Signal Generator + Decoder..... | 1.914.520.00...522.00 |
| * Relay Sub-Card | 1.914.523.00...526.00 |
| * VCA, 3 kontr. Eingänge | 1.914.528.00 |
| * (Breadboarding Card)=Experimental Board..... | 1.914.529.00 |
| * Zero-Ohm-Input Amp. with PFL | 1.914.530.00 |
| * High Level Input Amp. with PFL | 1.914.531.00 |
| * Flip-Flop..... | 1.914.532.00 |
| * 90° Filter stereo/mono..... | 1.914.533.00 |
| * Dual Vox Detector..... | 1.914.534.00 |
| * Tel Trafo Unit..... | 1.914.536.00 |
| * Mic Amp.with Limiter (TB) | 1.914.539.00 |
| * VCA control voltage IF | 1.914.540.00 |

* Diese Beschreibungen werden kundenspezifisch bestückt.

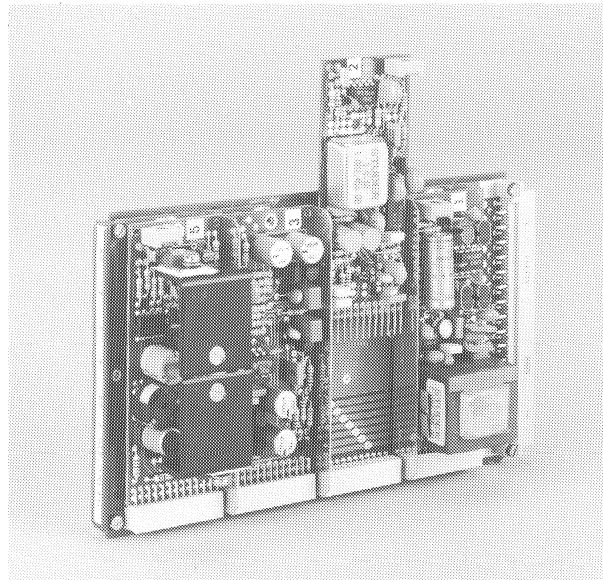
* These descriptions are supplied according to the customers requirements.

MSC System

1.914....

Die Planung professioneller Tonstudioanlagen erfordert Komponenten von höchster Flexibilität. STUDER Ingenieure haben ein völlig neuartiges Konzept entwickelt.

Die Europakarte ist bezüglich Grösse und Anschlüsse eine verbreitete Platinen-norm. Viele Schaltungen nutzen jedoch nur einen kleinen Teil dieser Karte aus. Daraus entstand die Idee, die Europakarte nur als Träger für kleinere Schaltungen einzusetzen, die frei kombiniert werden können. Die so entstandene Trägerkarte (Mother Board) kann vier Subkarten (Modular Sub Cards) aufnehmen.



Die modularen Subkarten MSC sind in reicher Vielfalt lieferbar:

- Mikrophon Vorverstärker
- Lautsprecher Verstärker
- Ω -Verstärker
- Limiter
- VCA
- VCA-Steuerspannungsinterface
- Relaiskarten
- Hochpegel-Eingangsverstärker
- Leitungsausgangs-Verstärker
- Signalgenerator / Decoder 1900Hz
- 90° Filter Stereo / Mono
- Flip-Flop
- Experimentierkarte

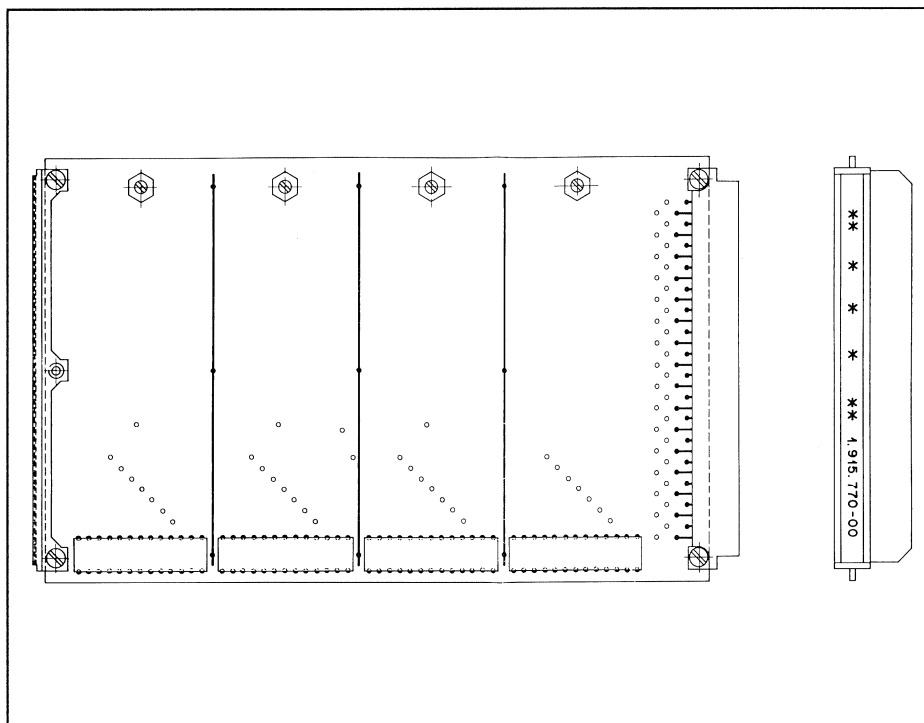
Bei der Projektierung können spezifische Systemanforderungen im Baukasten-system umgesetzt werden. Zur Verfügung stehen sowohl ein Sortiment an Standard-Europakarten als auch das flexible MSC-System, das den Aufbau individueller Europakarten ermöglicht.

Eine detaillierte Beschreibung der Europakarten und MSC gibt die Broschüre "STUDER Audio Components" (Best. Nr. 10.26.0104).

MSC – Mother Board

Die 'Modular Sub Cards' werden auf einer Trägerplatine frei kombiniert. Dieses 'Mother Board' im Europakartenformat gliedert sich nahtlos ins Programm der STUDER Audiokomponenten ein.

Die Trägerplatine kann vier Subkarten über je einen 13-poligen Winkelstecker und eine Befestigungsschraube aufnehmen. Alle vier Steckplätze sind über gedruckte Leiterbahnen mit dem 32-poligen Printstecker verbunden. Sechs gemeinsame Verbindungen liefern die Versorgungsspannungen, weitere sechs Leitungen stehen für jede Subkarte individuell zur Verfügung. Die restlichen beiden Bahnen bilden je eine getrennte Busverbindung zu den Steckplätzen 1 + 2 bzw. 3 + 4.



Abmessungen

Europakartenformat

100 x 160mm

Anschlüsse

1x EUROstecker 32-polig; DIN 41612;
 4x CIS-Stecker 13-polig; (for MSC)

Bestellinformation

MSC Mother Board

1.915.770.00

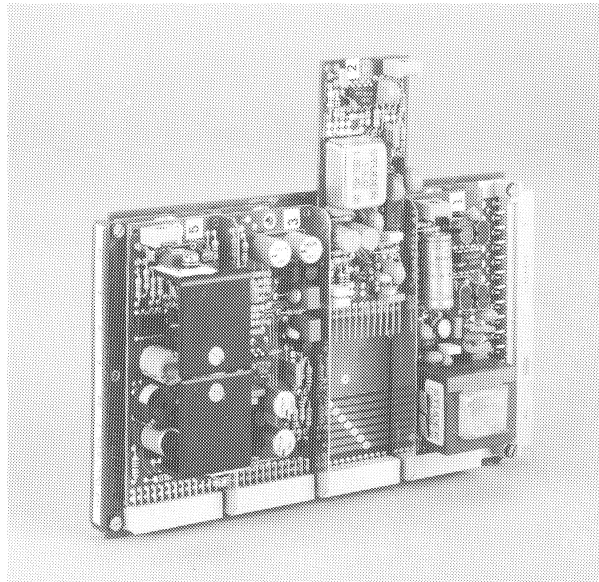
MSC SYSTEM

MSC System

1.914....

To provide highest possible flexibility for the designer of professional sound systems, STUDER engineers have pursued a completely new concept.

The EURO-card is a convenient circuit board as far as its size and its plugin features are concerned, however, often it offers space in excess to that required for a particular circuit. This has triggered the idea to utilize the EURO-card simply as a carrier of smaller circuit boards that can be plugged onto the EURO-card, converting it into a master board that holds 4 small printed circuits - the "Modular Sub-Card" (MSC).



A great variety of different circuits is available in form of MSC's such as

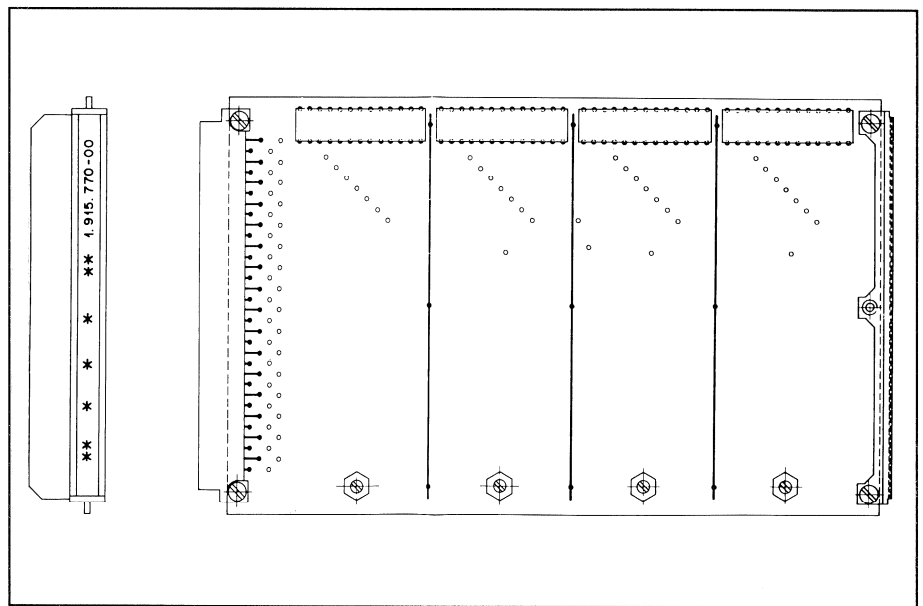
- Microphone preamplifier
- Speaker amplifier
- O-Ohm amplifier
- Limiter
- Voltage controlled amplifier
- VCA control voltage interface
- Relay sub card
- High level input amplifier
- Line output amplifier
- Signal generator / decoder 1900Hz
- 90° filter stereo / mono
- Flip-Flop
- Experimental board

To meet the requirements of a system concept, a designer will be able to build up individual circuits similar to working with a constructions set: He either selects from the available circuits on EURO-cards or makes up his own EURO-card by simply arranging the most suitable combination of Modular Sub-Cards on the master card.

MSC - Mother Board

1.915.770

The Modular Sub-Cards require a Mother Board of the standard EURO-card size for integration into the STUDER audio components system. The Mother Board carries 32 printed tracks from its edge-connector to four small plug-in sockets. Each socket has 13 contacts of which six are common supply lines, while another six are individual to each socket. Then there is a separate busline for circuits 1 + 2 and another for 3 + 4.

**Dimensions:**

EURO-card size

100 x 160mm

Connectors:

1x EURO connector

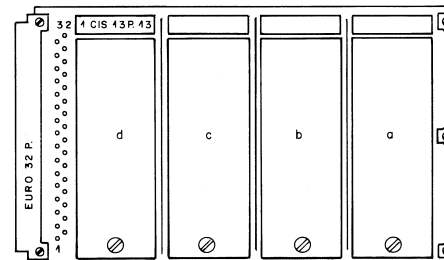
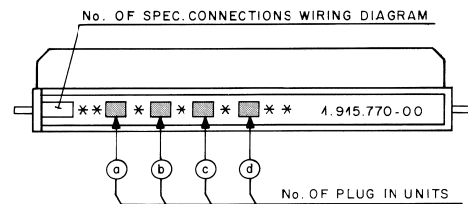
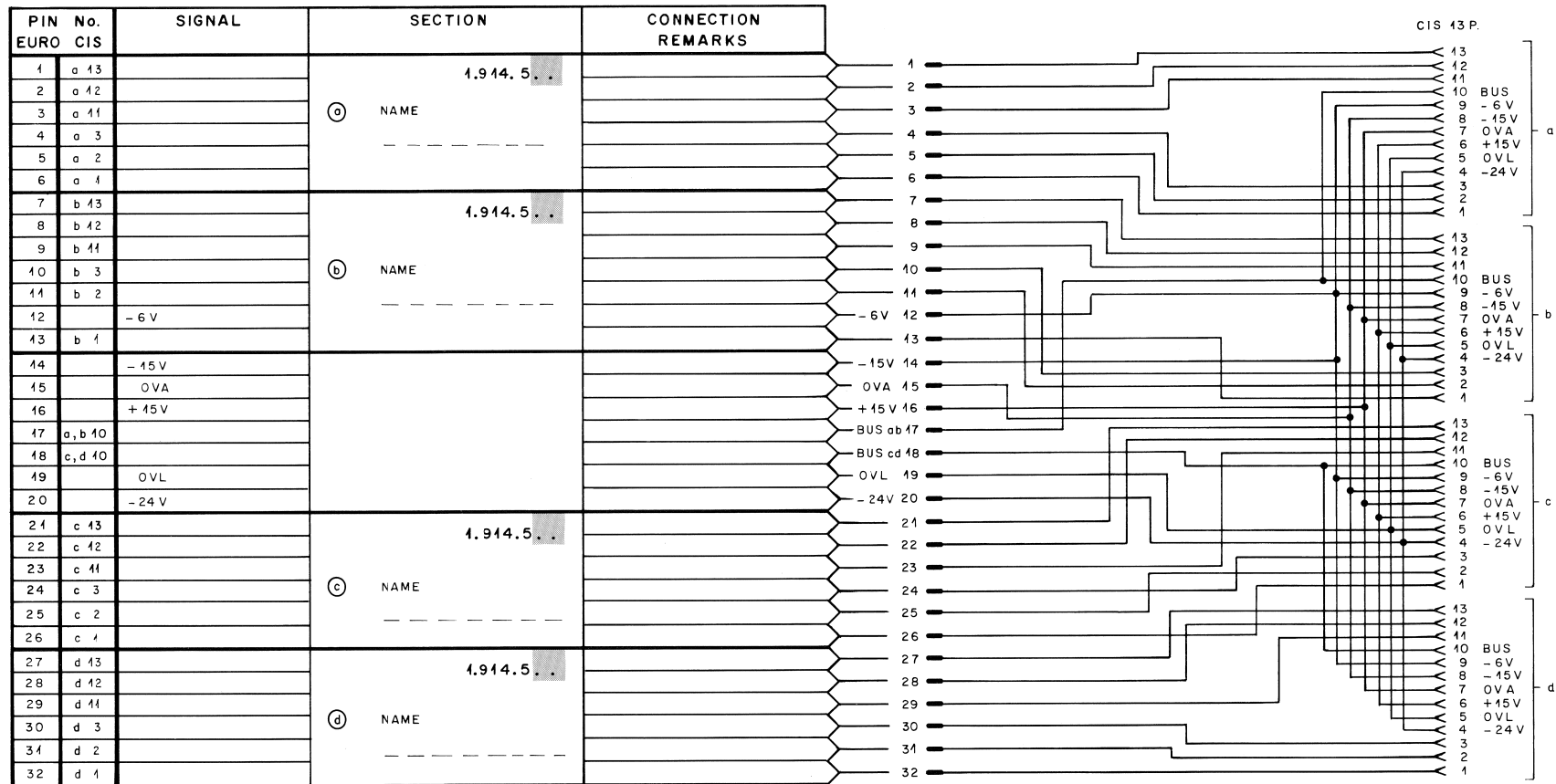
32 pin DIN 41'612

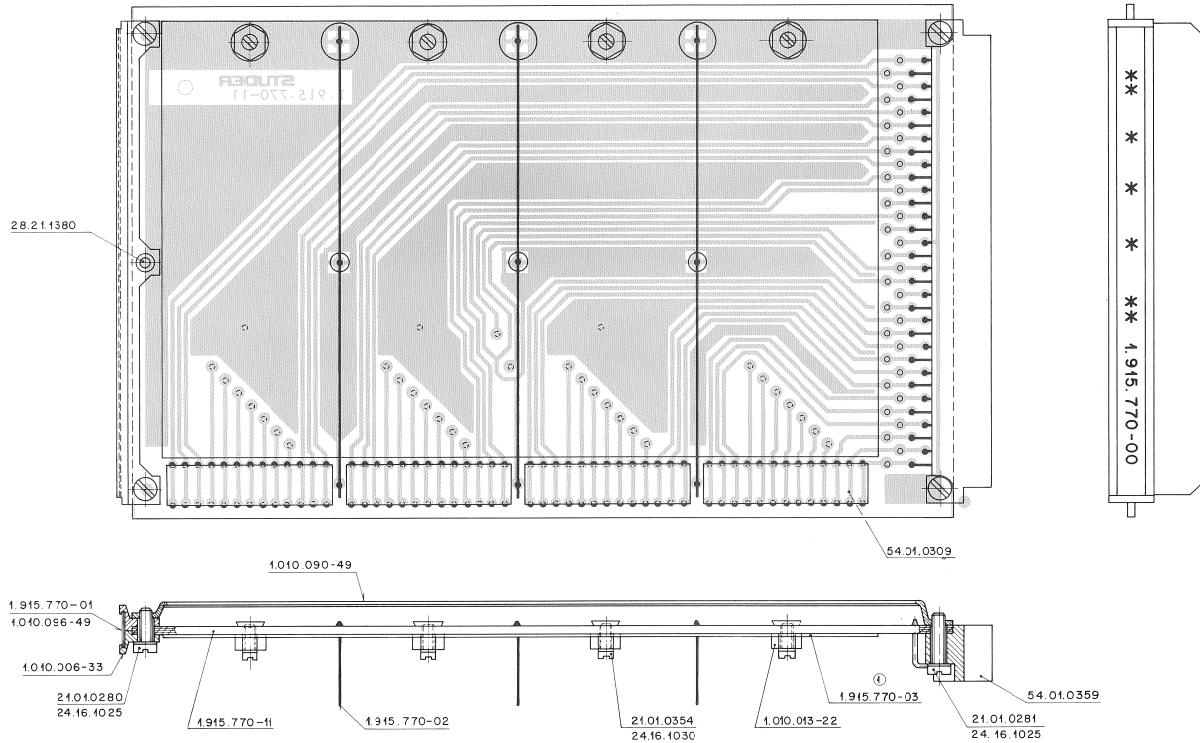
4x CIS connector

13 pin plug-in socket for MSC

Ordering InformationEURO-card:
MSC Mother Board

1.915.770.00





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| STUDER REGENSDORF ZÜRICH | Benennung | BASIS BOARD | Datum | Gez | Gepr | Ges | Index | Änderung |
| | | | | | | | | 8.2.85 |
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|------------|-----------|--------------|
| STUDER | Benennung | 1.915.770-00 |
| REGENSDORF | | |
| ZÜRICH | | |

KAPITEL 8: Europakarten und Stromversorgung 1.915 / 1.916. ...

INHALT

| | | |
|----|--|------------------|
| 1. | Bestückungsansicht des Europakartenträgers | |
| 2. | Transformer Block | 1.910.5XX |
| 3. | Stabilisator 5... 24V..... | 1.915.106... 108 |
| 4. | Monitor Verstärker | 1.915.304 |
| 5. | Monitor Relais | 1.915.601 |
| 6. | Monitor Relais | 1.915.602 |
| 7. | Signalisations-Relais | 1.915.603 |
| 8. | Relais 8/1 | 1.915.605 |
| | MSC Mother Board: siehe Kapitel 7..... | 1.915.770 |
| 9. | Stereo-Symmetrierverstärker..... | 1.915.904 |

Weitere kundenspezifisch ausgewählte Europakarten.

SECTION 8: EU standard PCB and Power Supply 1.915 / 1.916. ...

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| | | |
|----|---------------------------------------|------------------|
| 1. | Layout of the Eurocard frame | |
| 2. | Transformer block | 1.910.5XX |
| 3. | Stabilizer 5... 24V..... | 1.915.106... 108 |
| 4. | Monitor amplifier | 1.915.304 |
| 5. | Monitor relay | 1.915.601 |
| 6. | Monitor relay | 1.915.602 |
| 7. | Signalization relay | 1.915.603 |
| 8. | Relay 8/1 | 1.915.605 |
| | MSC mother board: see section 7 | 1.915.770 |
| 9. | Dual balancing amplifier | 1.915.904 |

Further EU standard PCB's according to the specific customer requirements.

Trafoblock mit Gleichrichter 1.910.50X

Trafoblock mit Gleichrichter. Es bestehen zwei Grundausführungen:

- mit Netzschalter
- mit Netzrelais

1. Beschreibung

- Die Ausgangsspannungen sind programmierbar.
- Die Gleichrichter sind stark überdimensioniert.
- Die Sekundärseite ist mit 4 kV Prüfspannung von der Primärseite isoliert.
- Der Trafoblock ist allseitig geschlossen und liegt isoliert im Mischpult.
- Alle Primär- und Sekundärspannungen sind einzeln abgesichert.

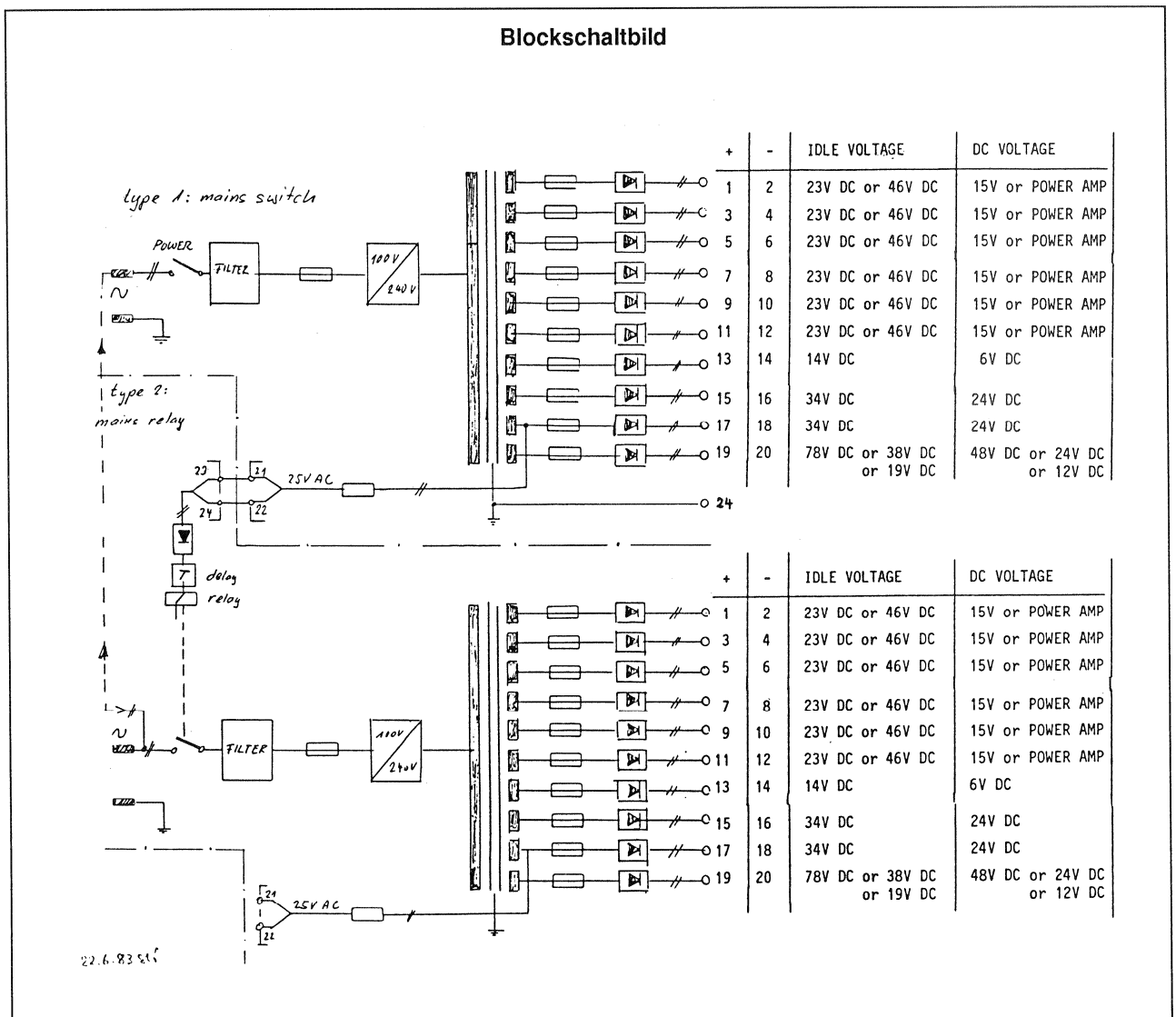


Fig. 1

2. Sicherheit

Der Trafoblock ist aufgebaut wie ein schutzisoliertes Gerät nach IEC 65, Klasse II. Als zusätzliche Sicherheit wird der **Erdeleiter** eingeführt. Der Trafoblock 1.910.50X ist im Mischpult isoliert eingebaut, so dass die Verbindung zwischen Schutzleiter und Mischpultgehäuse gefahrlos aufgetrennt werden kann.

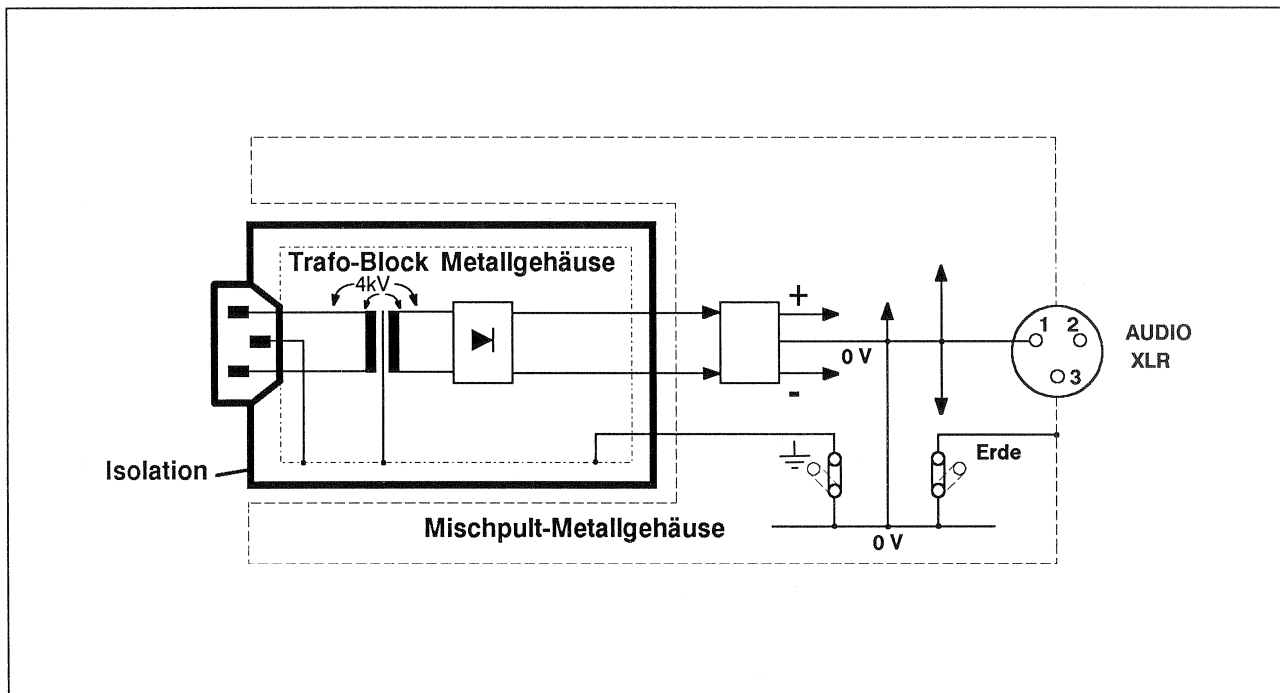


Fig. 2

3. Spezielle Daten

Siehe unter spezielle Datenblätter 1.910.500
 1.190.505

4. Mechanische Daten

Sekundär Buchse: 24P Molex

Gewicht: 9400 g

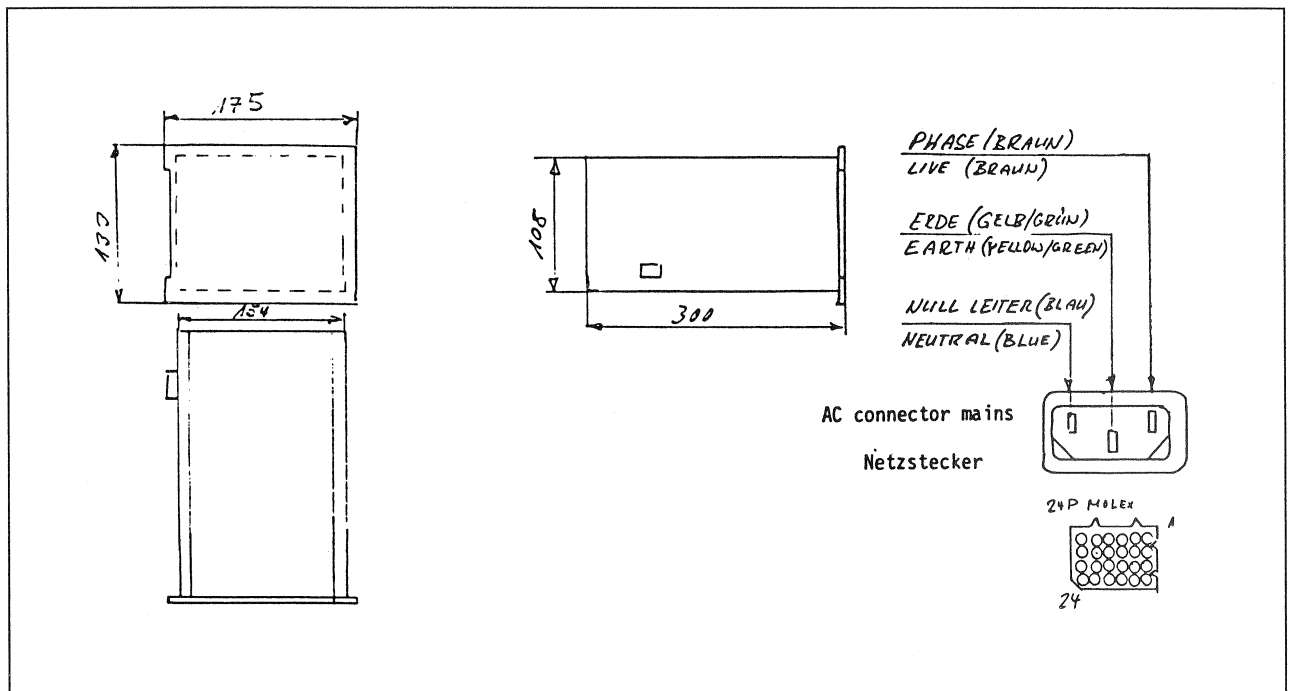


Fig. 3

Trafo Block 1.910.5XX

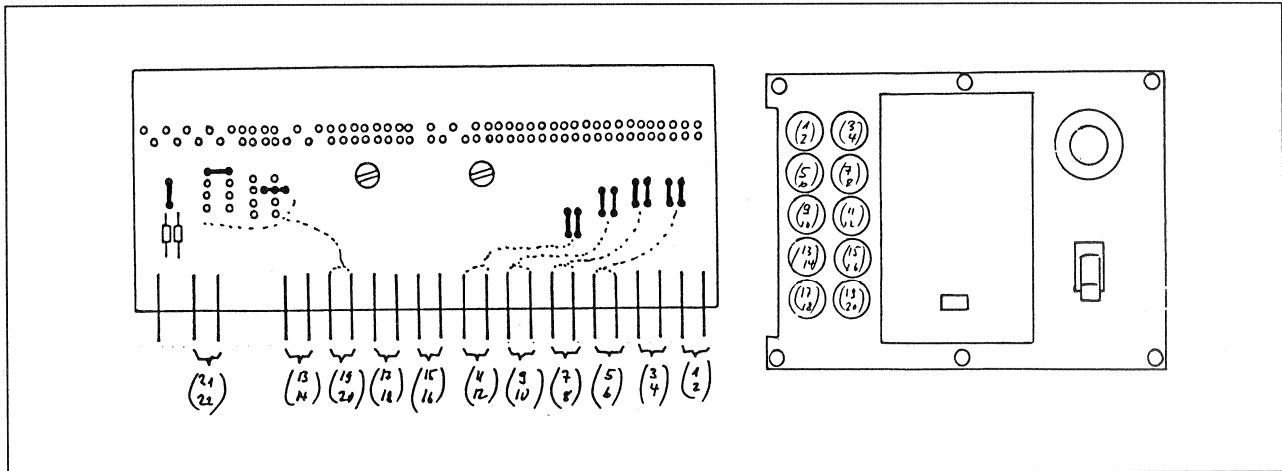


Fig. 4

| TRAFO BLOCK | | | TRAFO BLOCK | | |
|-------------------|----------------------|-------------------------|------------------|------------------------------|------------|
| Grenzwerte: | Einzel max. Strom | Stabikarte Sicherung | Limiting values | SINGLE STABI max. current | PC FUSE |
| 6V Wicklung (13) | 4A | T 5A | 6V winding (13) | 4A | T 5A |
| (14) | | | 6V winding (14) | | |
| 12V Wicklung | 2,4A | T 5A | 12V winding | 2,4A | T 5A |
| 24V Wicklung (19) | | | 24V winding (19) | | |
| (20) | 1,2A | T 5A | (20) | 1,2A | T 5A |
| 48V Wicklung | | | 48V winding | | |
| 15V Wicklung | 0,6A | T 2A | 15V winding | 0,6A | T 2A |
| 24V Wicklung | 2,1A | T 5A | 24V winding | 2,1A | T 5A |
| 40V Wicklung | 1,2A | T 5A | 40V winding | 1,2A | T 5A |
| | 1,2A | T 2A | | 1,2A | T 2A |

| Grenzwerte: | Doppel max. Strom | Stabikarte Sicherung | Limiting values | DUAL STABI max. current | PC FUSE | parallel schalten parallel connection | | | | | |
|-------------------|----------------------|-------------------------|------------------|----------------------------|------------|--|------------|------------|------------|-------------|--------------|
| 6V Wicklung (13) | 8A | 2 x T 5A | 6V winding (13) | 8A | 2 x T 5A | (1) (2) | | | | | |
| (14) | | | 6V winding (14) | | | | | | | | |
| 12V Wicklung | 5A | 2 x T 4A | 12V winding | 5A | 2 x T 4A | | (3) (4) | | | | |
| 24V Wicklung (19) | | | 24V winding (19) | | | | | | | | |
| (20) | 1,2A | T 5A | (20) | 1,2A | T 5A | | | (5) (6) | | | |
| 48V Wicklung | | | 48V winding | | | | | | | | |
| 15V Wicklung | 0,6A | T 2A | 15V winding | 0,6A | T 2A | | | | (7) (8) | | |
| 24V Wicklung | 2,1A | T 5A | 24V winding | 2,1A | T 5A | | | | | (9) (10) | |
| 40V Wicklung | 1,2A | T 5A | 40V winding | 1,2A | T 5A | | | | | | (11) (12) |
| | 1,2A | T 2A | | 1,2A | T 2A | | | | | | |

Fig. 5

Die maximale Belastung darf auf der gleichgerichteten Seite 350W nicht überschreiten.

Trafo - Block 1.910.500.81

1.910.500.81 1 x 6 V DC 2 x 24 V DC
 2 x 15 V DC
 4 x 40 V DC 1 x 48 V DC PHANTOM

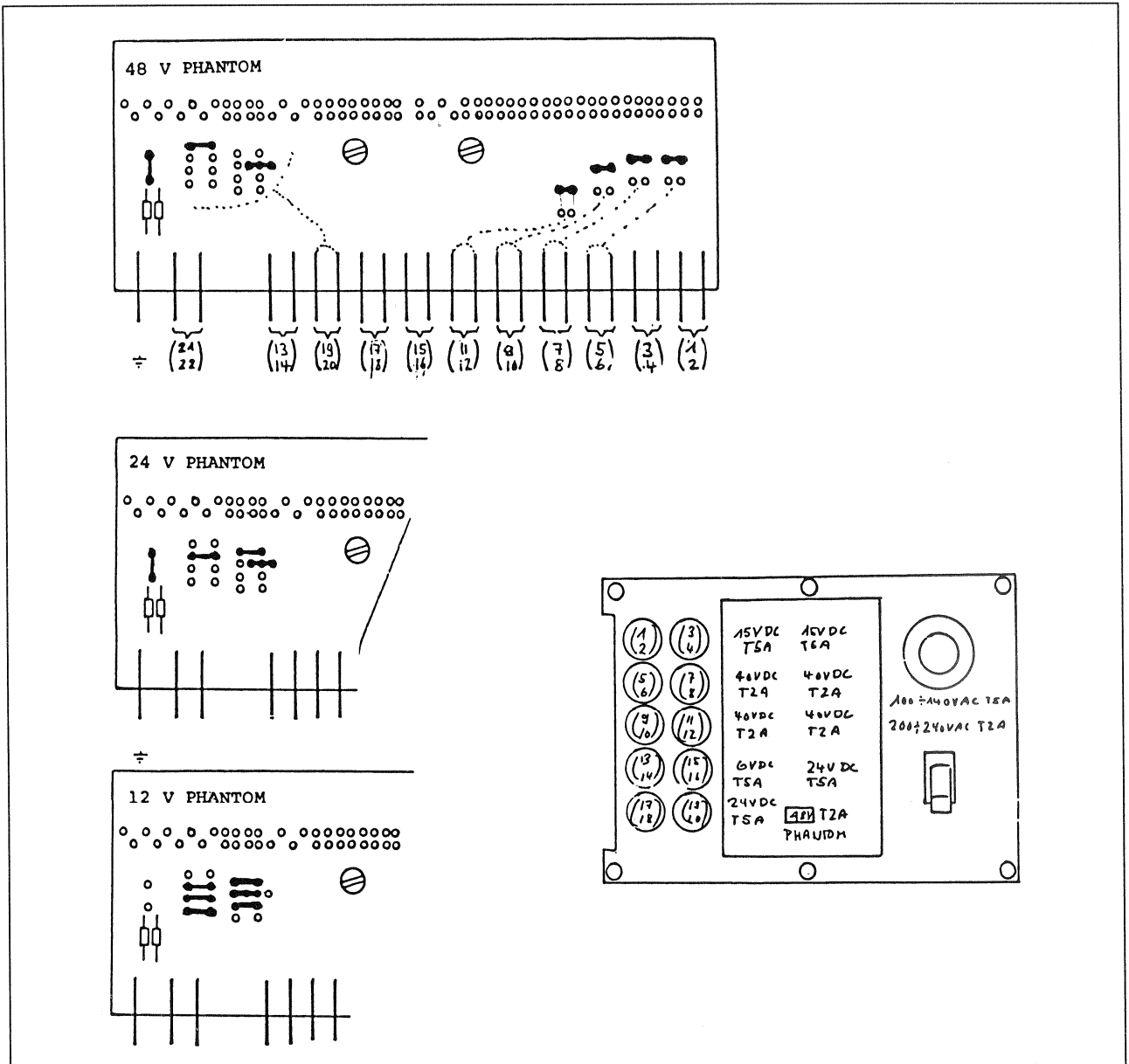


Fig. 6

Umbau auf andere Phantomspannungen

- Trafo-Block umbauen
- Widerstände auf dem Anschlussprint der Eingangseinheit ändern
 48V 6,8 kOhm/0,4 % 1.169.200.21
 24V 4,3 kOhm/0,4 % Entwurf IEC 268-15A
 12V 580 Ohm/0,4 % 1.169.200.20
- Stabilisatorkarte 1.915.107 Litze umstecken

Trafo-Block 1.910.505.81

1.910.505.81 1 x 6 V DC 2 x 24 V DC
 4 x 15 V DC
 2 x 40 V DC 1 x 48 V DC PHANTOM

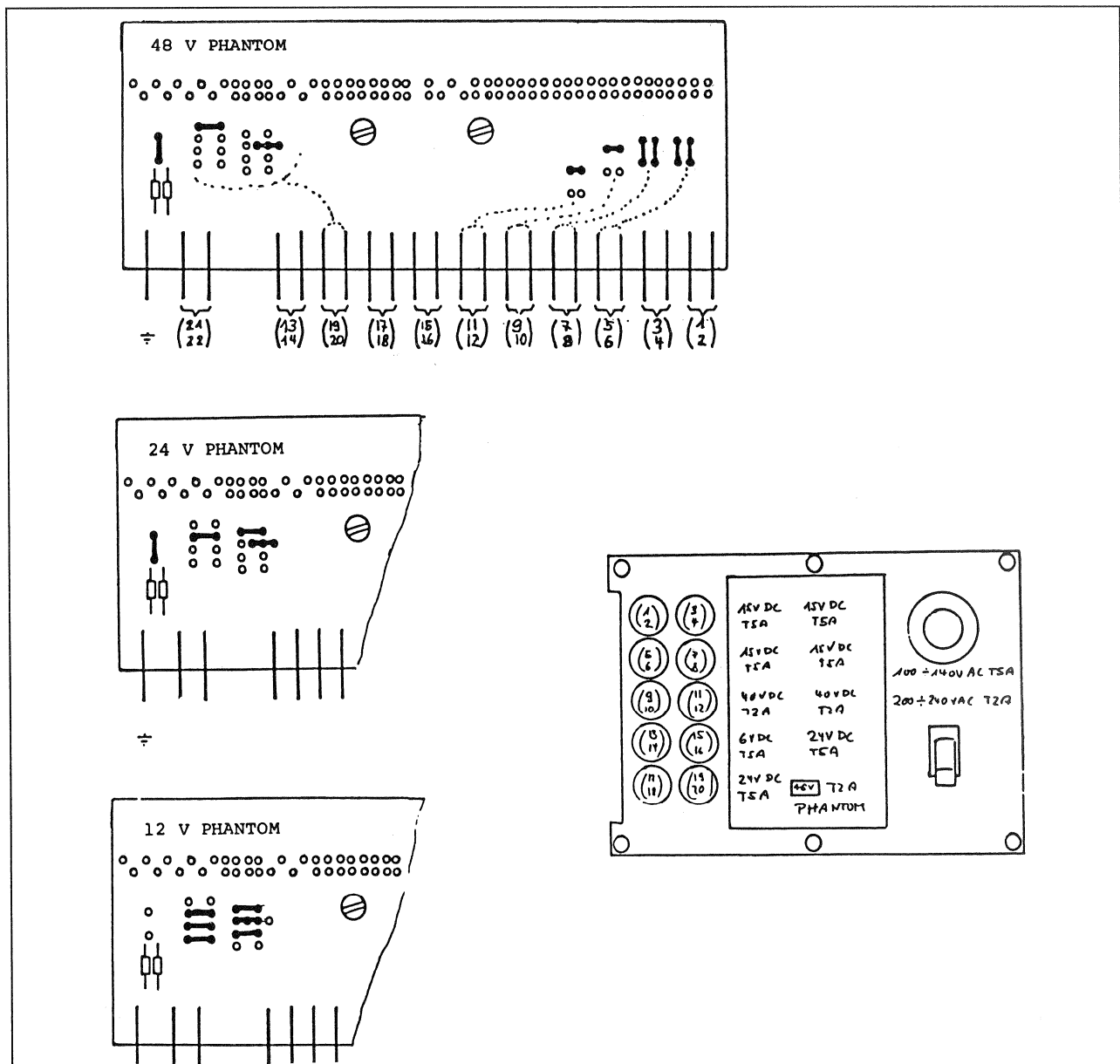


Fig. 6

Umbau auf andere Phantomspannungen

- Trafo-Block umbauen
- Widerstände auf dem Anschlussprint der Eingangseinheit ändern
 48V 6,8 kOhm/0,4 % 1.169.200.21
 24V 4,3 kOhm/0,4 % Entwurf IEC 268-15A
 12V 580 Ohm/0,4 % 1.169.200.20
- Stabilisatorkarte 1.915.107 Litze umstecken

Mains Trafo Block 1.910.50X

Trafo with rectifier. Two basic types are available:

- with mains switch
- with mains relay

1. Features

- Output voltages are programmable.
- Rectifiers are heavily oversized.
- Secondary windings are isolated by 4 kV against the primary side.
- The trafo-block is separately boxed and fixture by means of isolators.
- All voltages are protected by fuses individually.

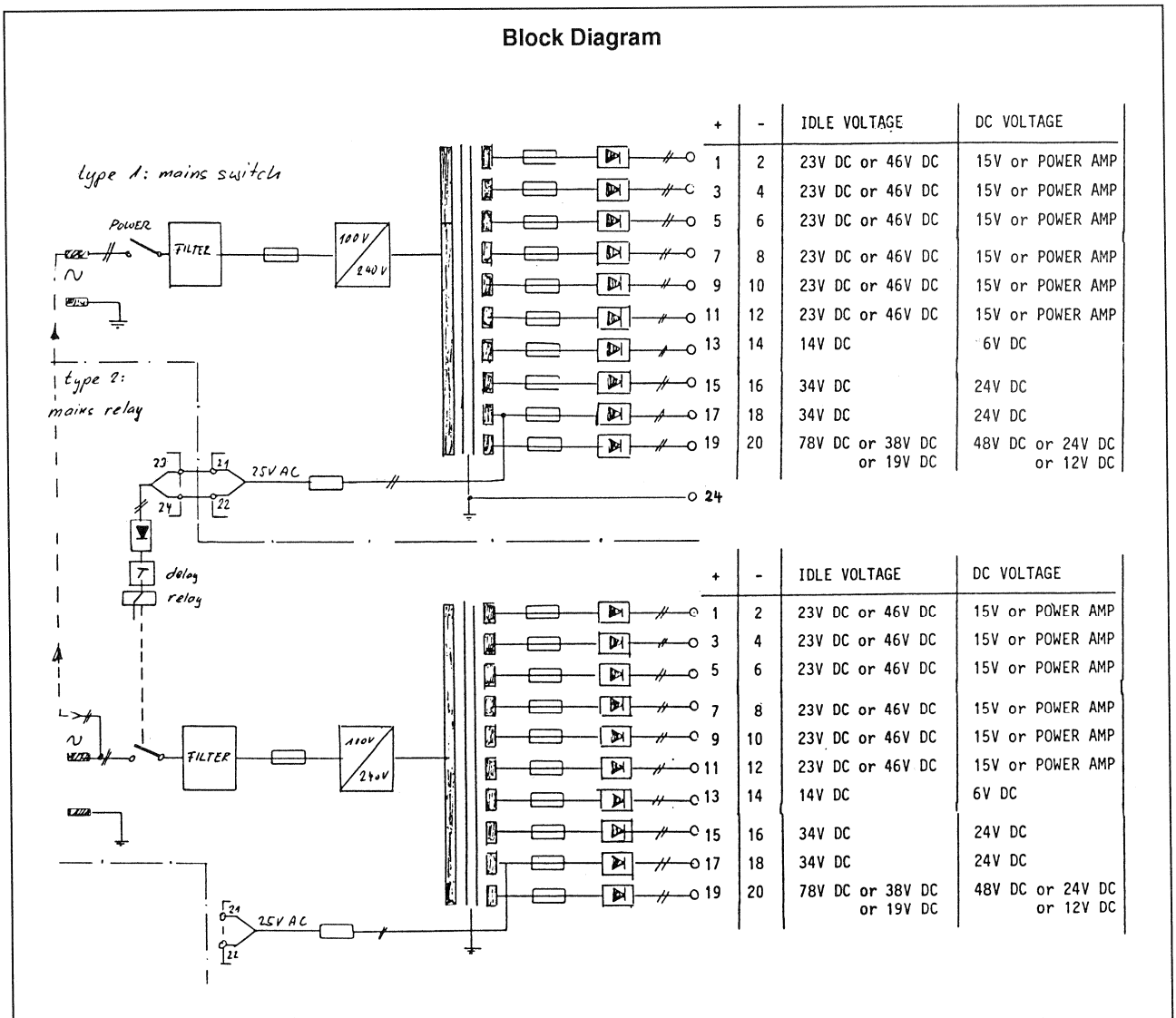


Fig. 1

2. Safety

The trafo-block is built like a double-isolated electric device (IEC 65 clause II). For improved safety, the connection to earth is also wired. In the mixer, the trafo-block 1.910.50X is built-in isolated. On the back side of the mixer the connection between earth and ground can be opened without the danger of an electric shock.

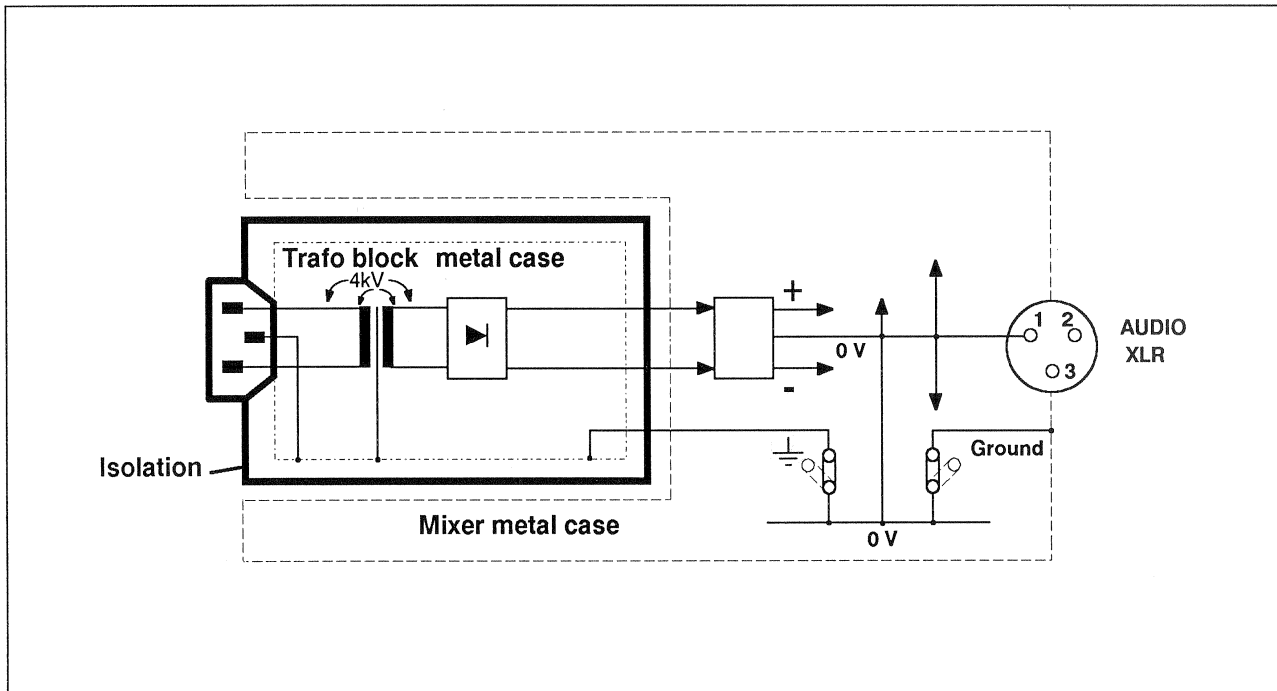


Fig. 2

3. Specifications

See special data sheet 1.910.500
 1.190.505

4. Dimensions

Secondary connector: 24P Molex

Weight: 9400 g

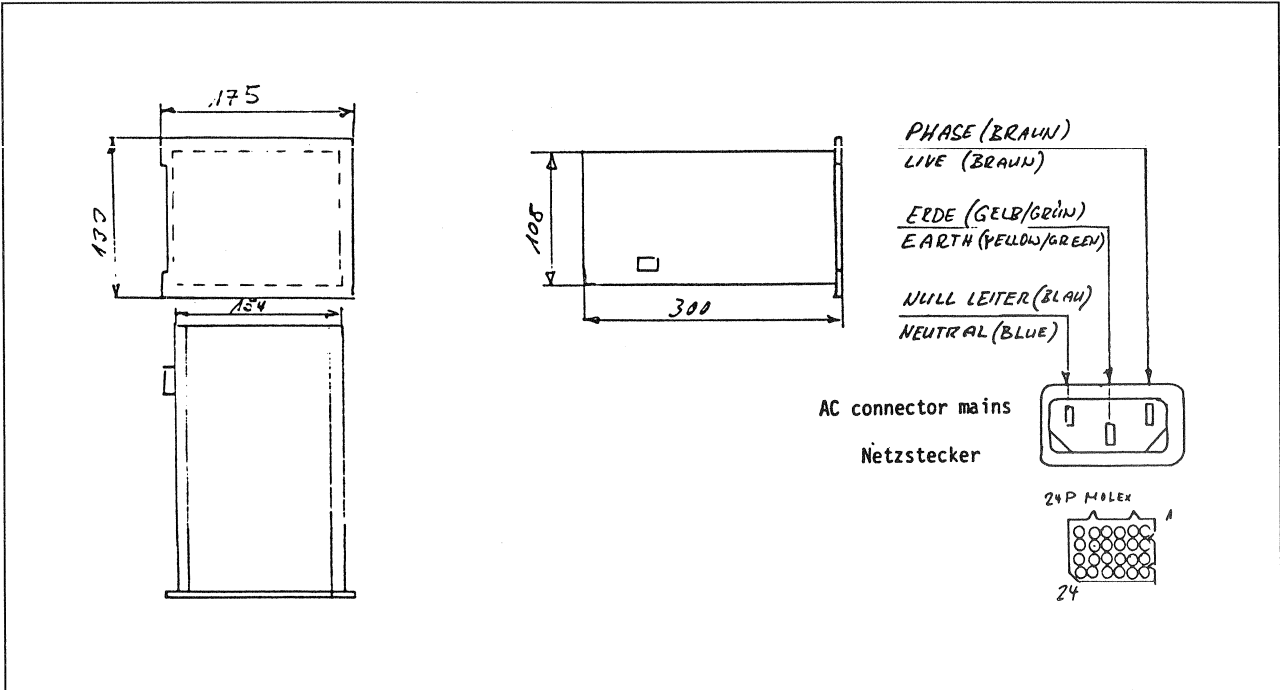


Fig. 3

Trafo Block 1.910.5XX

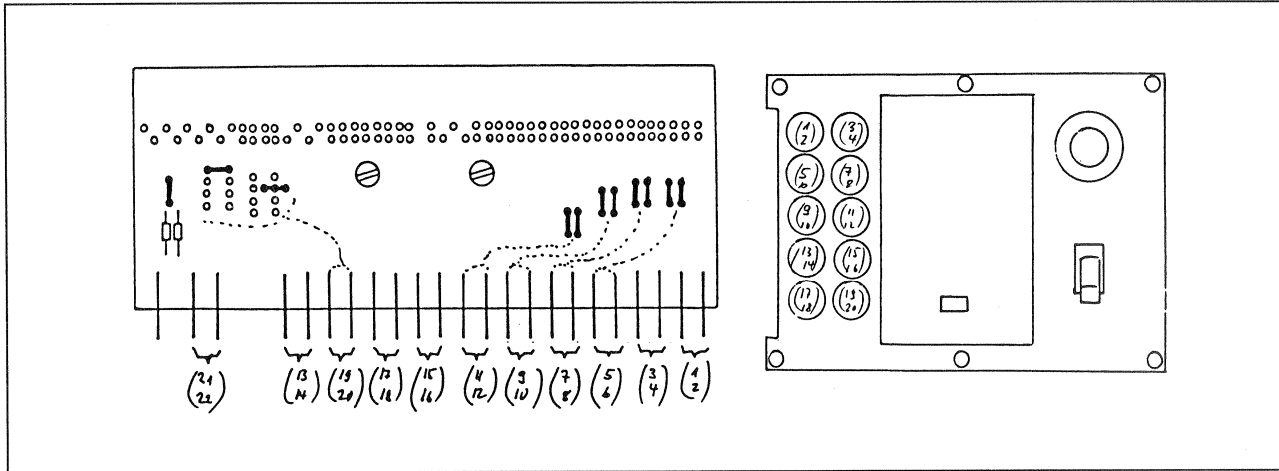


Fig. 4

| TRAFO BLOCK | | | TRAFO BLOCK | | |
|--------------------------|-------------------|-----------|-------------------------|-----------------|------|
| Grenzwerte: | Einzel Stabikarte | | Limiting values | SINGLE STABI PC | |
| | max. Strom | Sicherung | | max. current | FUSE |
| 6V Wicklung (13) (14) | 4A | T 5A | 6V winding (13) (14) | 4A | T 5A |
| 12V Wicklung } (19) | 2,4A | T 5A | 12V winding } (19) | 2,4A | T 5A |
| 24V Wicklung } (20) | 1,2A | T 5A | 24V winding } (20) | 1,2A | T 5A |
| 48V Wicklung | 0,6A | T 2A | 48V winding | 0,6A | T 2A |
| 15V Wicklung | 2,1A | T 5A | 15V winding | 2,1A | T 5A |
| 24V Wicklung | 1,2A | T 5A | 24V winding | 1,2A | T 5A |
| 40V Wicklung | 1,2A | T 2A | 40V winding | 1,2A | T 2A |

| Grenzwerte: | Doppel Stabikarte | | Limiting values | DUAL STABI PC | | parallel schalten parallel connection |
|--------------------------|-------------------|-----------|-------------------------|---------------|----------|---|
| | max. Strom | Sicherung | | max. current | FUSE | |
| 6V Wicklung (13) (14) | 8A | 2 x T 5A | 6V winding (13) (14) | 8A | 2 x T 5A | |
| 12V Wicklung } (19) | 5A | 2 x T 4A | 12V winding } (19) | 5A | 2 x T 4A | |
| 24V Wicklung } (20) | | | 24V winding } (20) | | | |
| 48V Wicklung | | | 48V winding | | | |
| 15V Wicklung | 4-5 A | 2 x T 4A | 15V winding | 4-5A | 2 x T 4A | (1)(2)(3)(4)/(5)(6)(7)(8)/(9)(10)(11)(12) |
| 24V Wicklung | 2,5 A | - | 24V winding | 2,5A | - | |
| 40V Wicklung | - | - | 40V winding | - | - | |

Fig. 5

The maximum load should not exceed 350 W on the rectifier side.

Trafo - Block 1.910.500.81

1.910.500.81 1 x 6 V DC 2 x 24 V DC
 2 x 15 V DC
 4 x 40 V DC 1 x 48 V DC PHANTOM

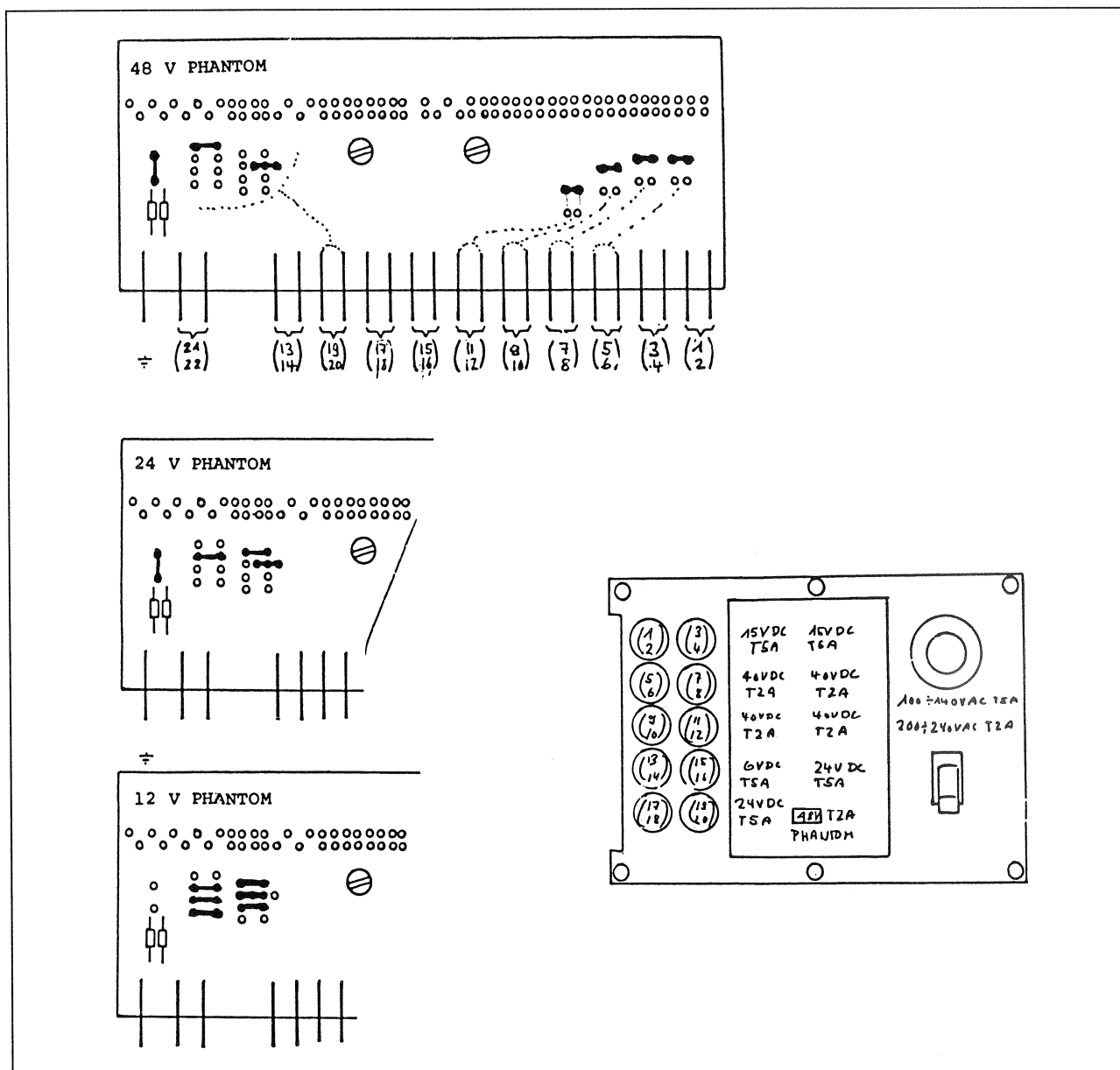


Fig. 6

Conversion of phantom powering

- Convert trafo-block
- Change resistor on the connection PCB of the input unit
 - 48V 6,8 kOhm/0,4 % 1.169.200.21
 - 24V 4,3 kOhm/0,4 % Draft IEC 268-15A
 - 12V 580 Ohm/0,4 % 1.169.200.20
- Reconnect the stranded wire on the stabilizer PCB 1.915.107

Trafo-Block 1.910.505.81

| | | |
|--------------|-------------|---------------------|
| 1.910.505.81 | 1 x 6 V DC | 2 x 24 V DC |
| | 4 x 15 V DC | |
| | 2 x 40 V DC | 1 x 48 V DC PHANTOM |

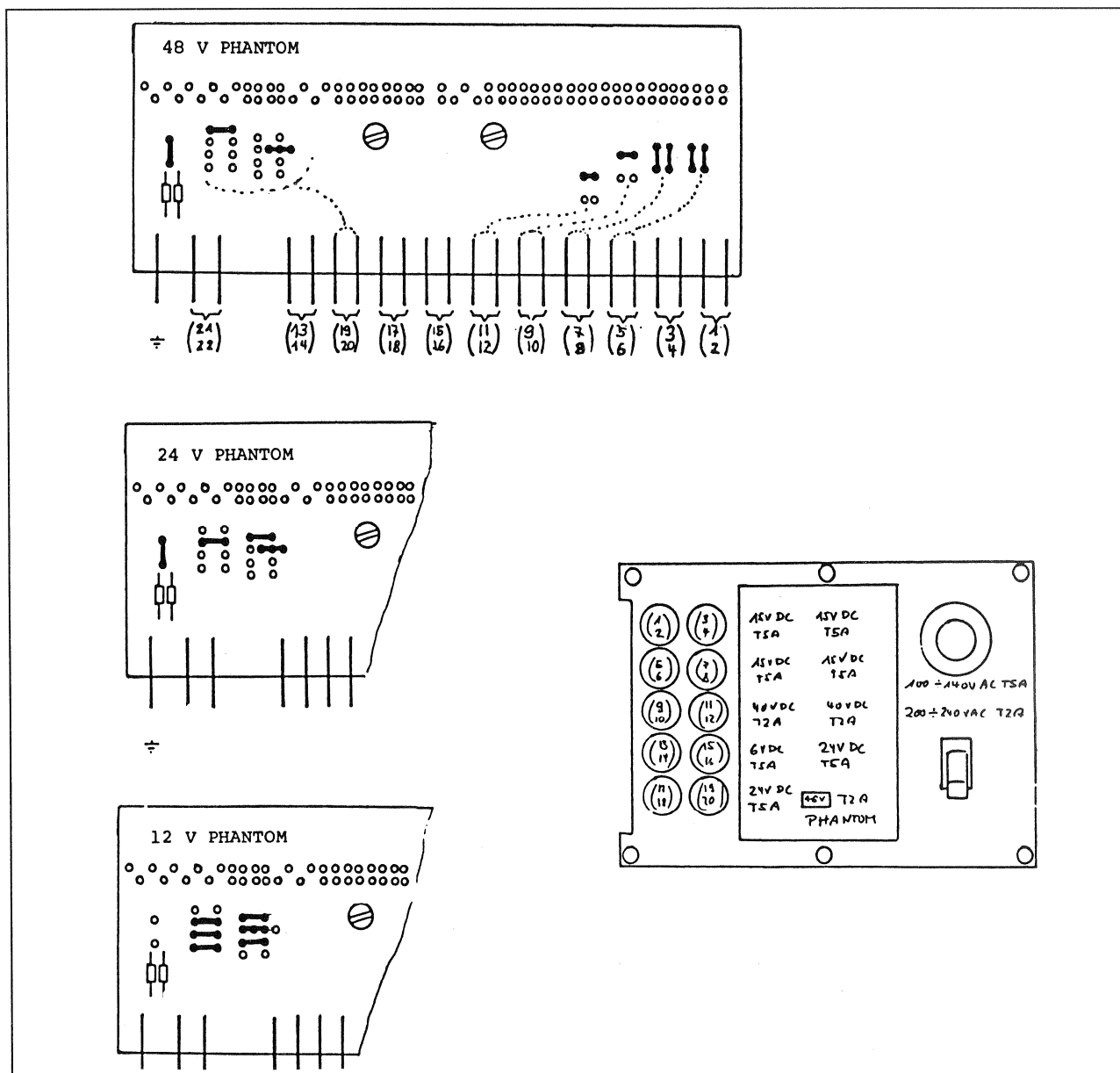
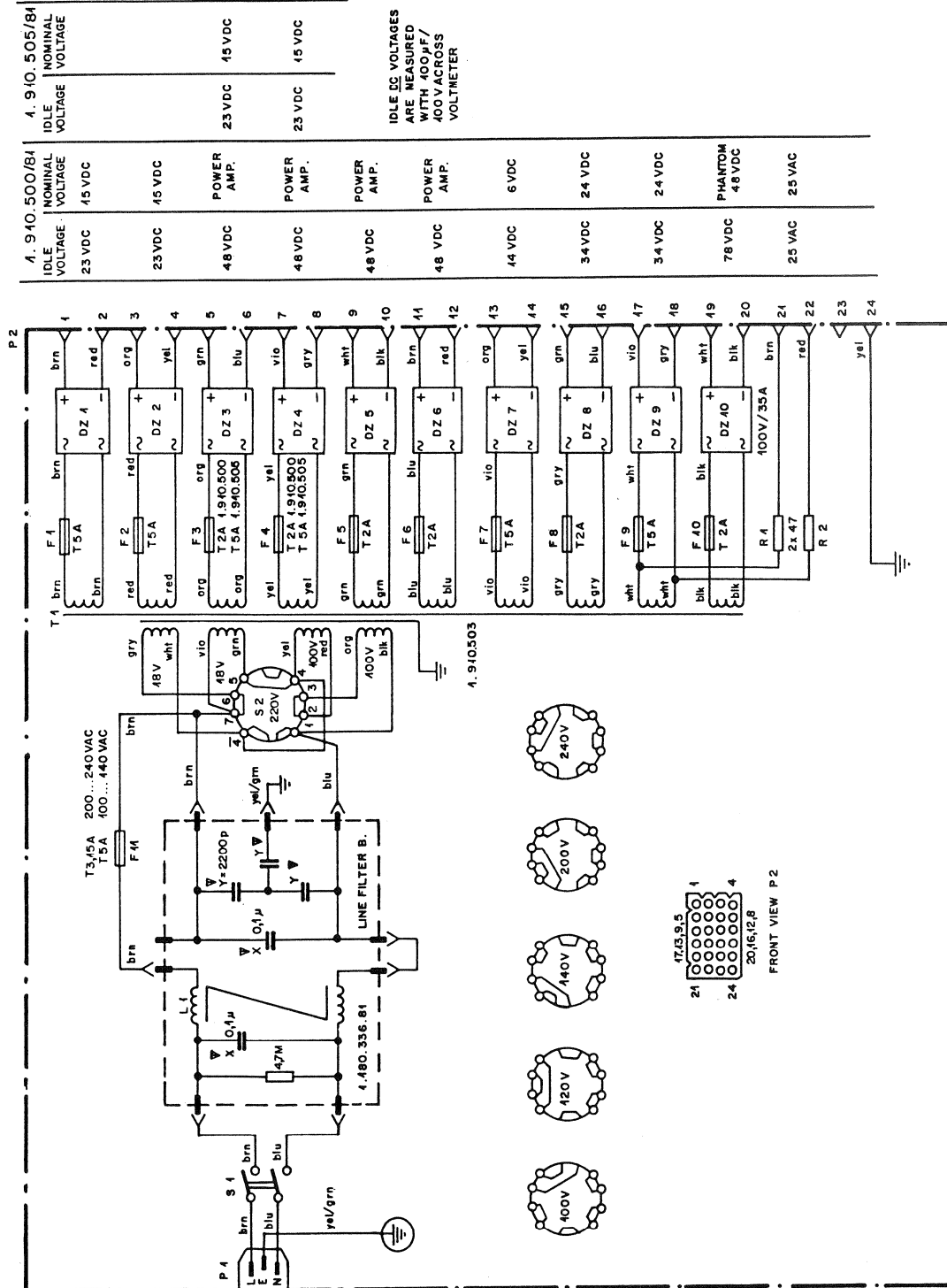


Fig. 7

Conversion of phantom powering

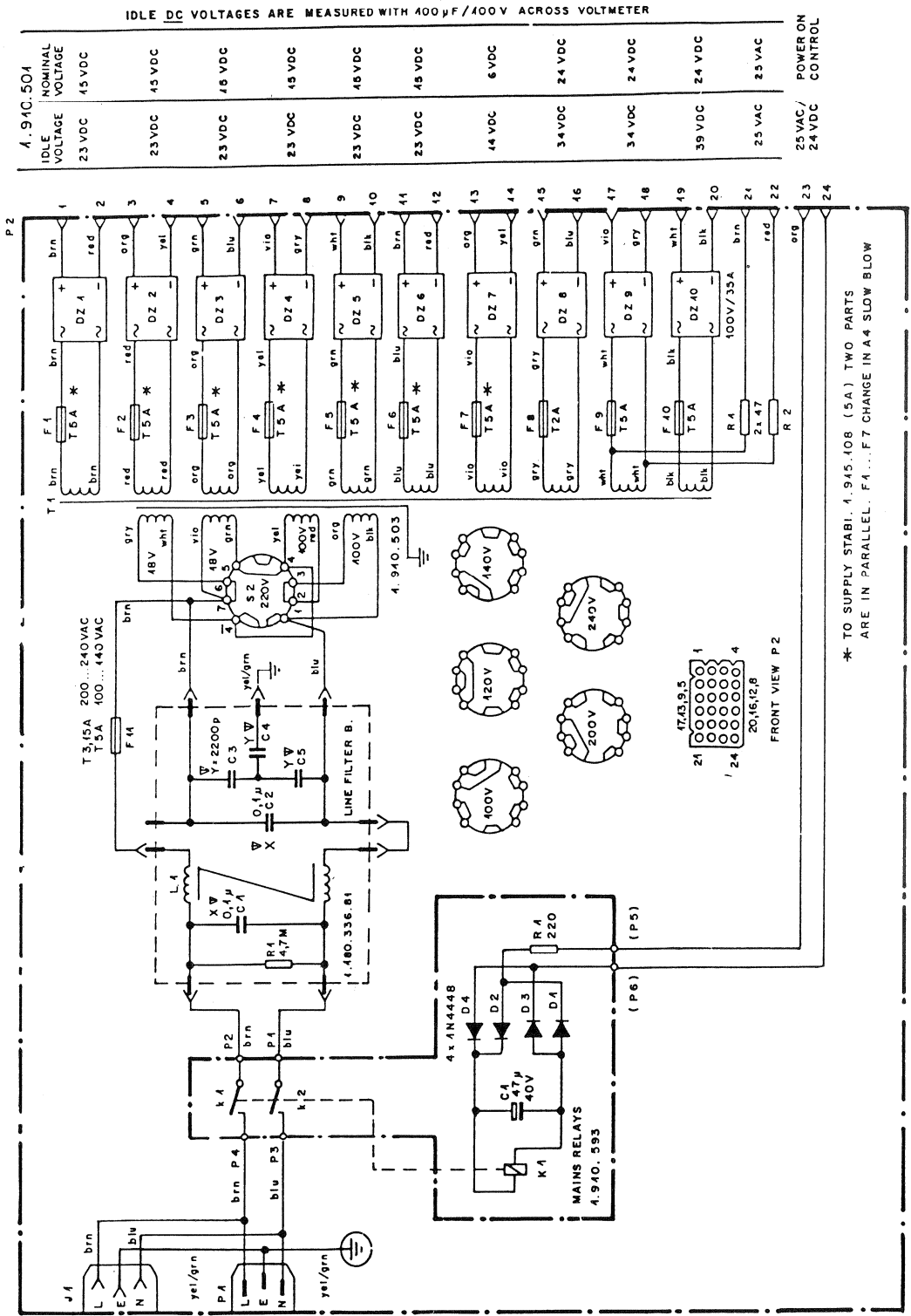
- Convert trafo-block
- Change resistor on the connection PCB of the input unit
 - 48V 6,8 kOhm/0,4 % 1.169.200.21
 - 24V 4,3 kOhm/0,4 % Draft IEC 268-15A
 - 12V 680 Ohm/0,4 % 1.169.200.20
- Reconnect the stranded wire on the stabilizer PCB 1.915.107

MAINS—TRANSFORMER—BLOCK 1.910.500.81 / 1.910.505.81



| | | | | | |
|--|------------------------------------|-----------|-----------|-----------|------------------------------------|
| DATE: | 28.4.82 | 19.8.83 | 2.3.84 | 3.6.85 | |
| SIGN: | <i>fr</i> | <i>me</i> | <i>wh</i> | <i>ml</i> | |
| STUDER REGENS DORF ZURICH | MAINS - TRANSFORMER - BLOCK | | | | SC 1.910.500/81 SC 1.910.505/81 |

MAINS-TRANSFORMER-BLOCK REMOTE 1.910.501



| | | | | | |
|---------------------------------|---------------------------------------|-----------|-----------|-----------|--------------|
| DATE: | 30. 5. 83 | 49. 8. 83 | 2. 3. 84 | 6. 8. 84 | 3. 6. 85 |
| SIGN: | <i>ml</i> | <i>ml</i> | <i>ml</i> | <i>ml</i> | <i>ml</i> |
| STUDER REGENS DORF ZURICH | MAINS - TRANSFORMER - BLOCK REMOTE | | | | SC 1.910.501 |

Stabilisator 5 ... 24 V 1.915.106 /1.915.108

Spannungsstabilisator dessen Ausgangsspannung und Kurzschlussstrom mit Widerständen extern einstellbar ist. Mit Ausnahme der Phantom Stromversorgung werden alle in den Mischpulten der Serie 900 benötigten Betriebsspannungen mit den beiden Kartentypen 1.915.106 und 1.915.108 stabilisiert.

Leuchtdiode zur Anzeige des Betriebszustandes.

Drei von vorne zugängliche Messpunkte zur Kontrolle der Referenz- und Ausgangsspannung.

1. Schutzeinrichtungen

- "Crow Bar" schaltet ab bei zu hoher Ausgangsspannung
- Temperaturüberwachung am Regeltransistor
- Verpolungsschutz am Ausgang
- Langsames Hochfahren der Spannung beim Einschalten

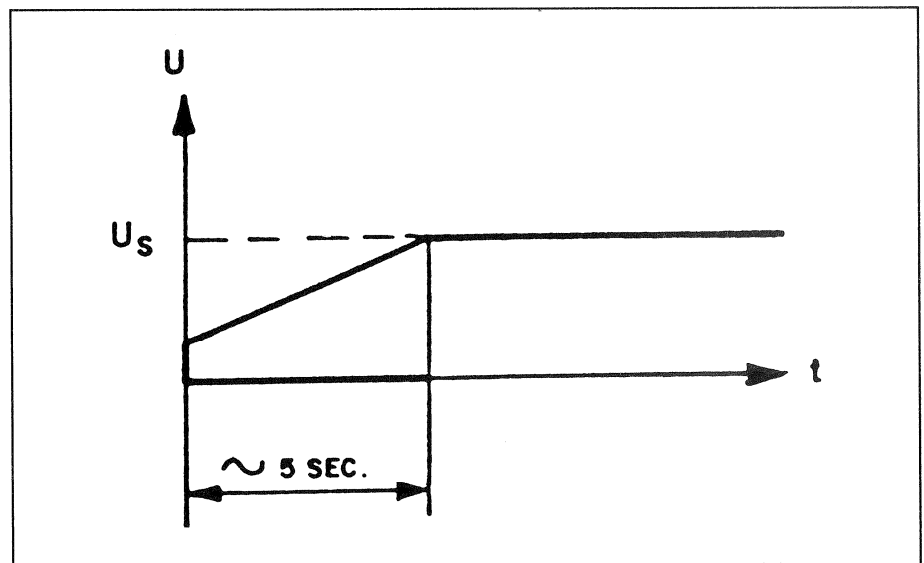


Fig. 7

Beim Betrieb als Doppelstabilisator für die Stromversorgung von Verstärkern mit positiver und negativer Speisespannung werden zwei Stabilisatorkarten gekoppelt.

Die Ausgangsspannung des einen Stabilisators steuert die Ausgangsspannung des anderen (Tracking). Damit werden die Koppelkondensatoren der angeschlossenen Audioverstärker nicht unnötig belastet.

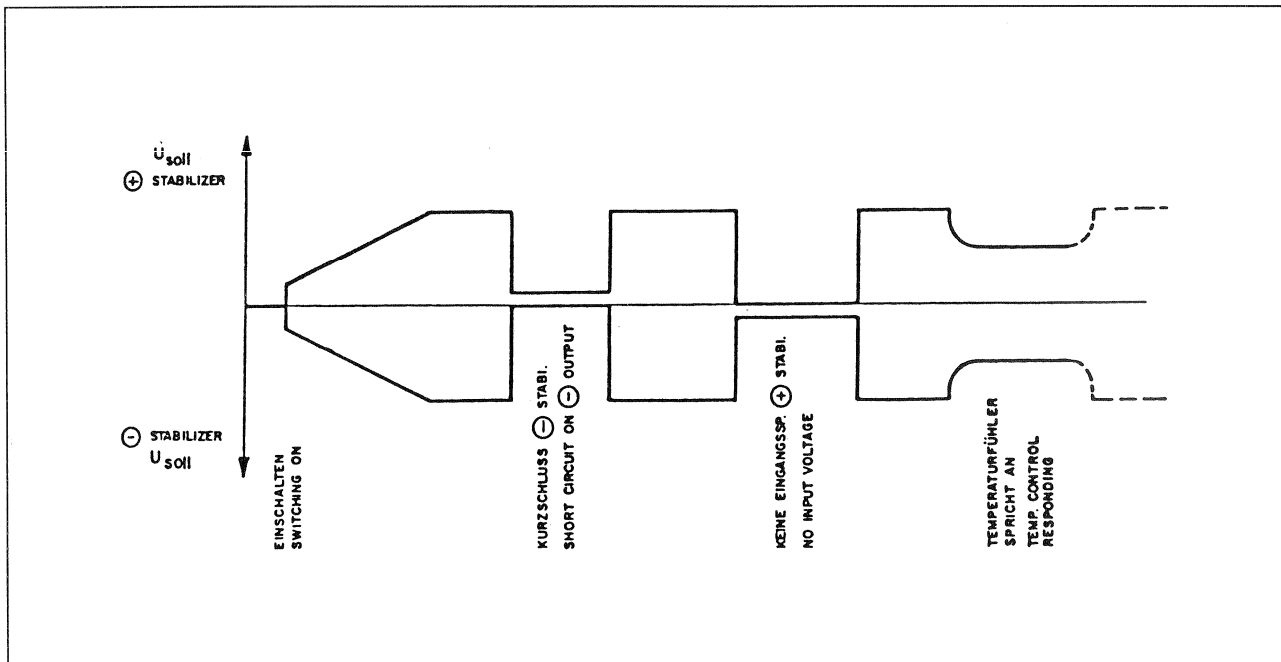


Fig. 8

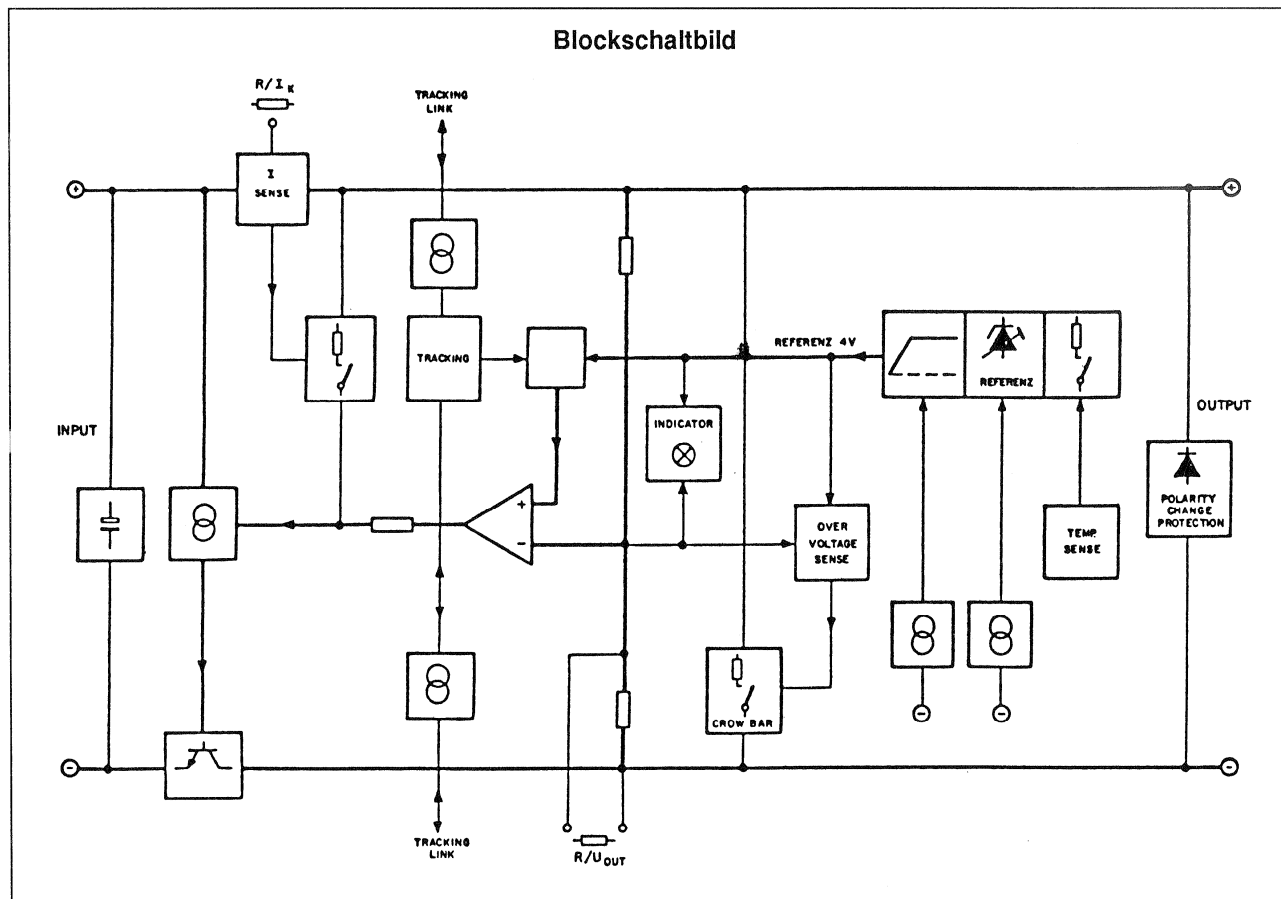


Fig. 9

2. Technische Daten

1.915.106

1.915.108

| | | |
|---|--------------------------|--------------------------|
| Ausgangsspannung extern programmierbar | $U = 5...24V$ | $U = 5...24V$ |
| Minimale Eingangsspannung (ohne Rippel) | $U_{min} = U + 1,5V$ | $U_{min} = U + 1,5V$ |
| Maximale Eingangsspannung | $U_{max} = 36V$ | $U_{max} = 36V$ |
| Kurzschlussstrom extern programmierbar | $I_k \approx 0,5...4,5A$ | $I_k \approx 0,5...8,0A$ |
| Max. Verlustleistung am Kühlblech | $P \approx 18 W$ | $P \approx 30 W$ |

Kurzschlussverhalten

Bei Ueberlast regelt der Temperatursensor die Ausgangsspannung zurück.

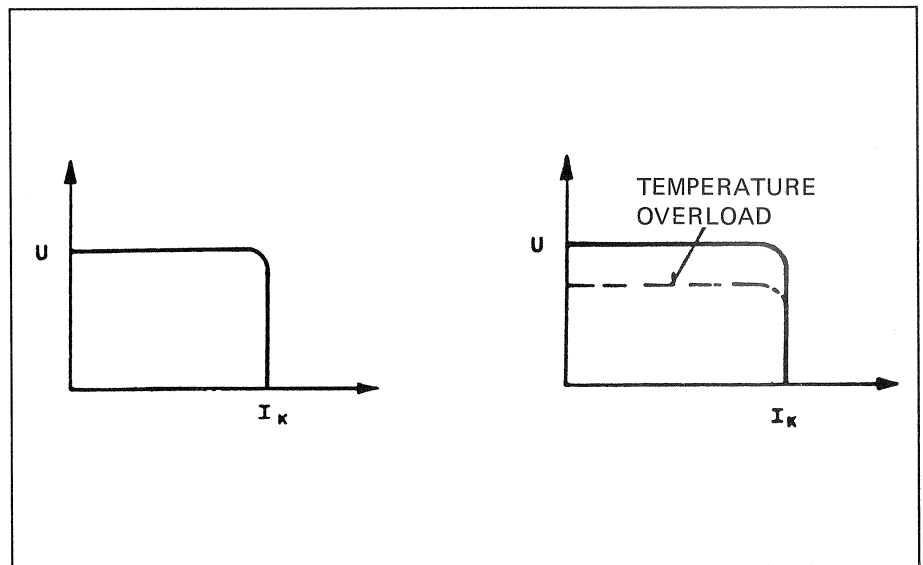


Fig. 10

Ueberspannungsschutz spricht an bei ca. 15% Ueberspannung am Ausgang

| | | |
|----------------------------|-------------------------------------|-------------------------------------|
| Max. Ausgangsstrom | @ $U_{15V} : 5A$ @ $U_{6V} : 8A$ | @ $U_{15V} : 5A$ @ $U_{6V} : 8A$ |
| Ueberlagerte Brummspannung | $U_{Br} \leq 100\mu V$ | $U_{Br} \leq 100\mu V$ |
| Leerlaufstrom | $I_o (@U_{in} 30V) = 30mA$ | $I_o (@U_{in} 30V) = 30mA$ |

3. Mechanische Daten**1.915.106****1.915.108**

| | | |
|---------------|------------------------------|------------------------------|
| Abmessungen | Europakarte 100mm x 160mm | Europakarte 100mm x 160mm |
| Breite | 33mm, 7 E | 66mm, 14 E |
| Steckersystem | DIN 41 612 TYP B | DIN 41 612 TYP B |
| Gewicht | ca. 360 gr | ca. 560 gr |

Stabilisator 5 ... 24 V 1.915.106 / 1.915.108

The output voltage and the short-circuit current of this voltage stabilizer are externally adjustable with resistors. Except for the phantom supply, all operating voltages of the Series 900 mixers are stabilized with the two types of circuit board numbered as 1.915.106 and 1.915.108.

Pilot LED for indicating the operating status.

Three test points for checking the reference voltage and the output voltage are accessible from the front.

1. Protective features

- "Crow Bar" disconnects if overvoltages are detected
- Temperature monitoring at regulating transistor
- Polarity confusion protection at output
- Slow voltage run-up when unit is switched on

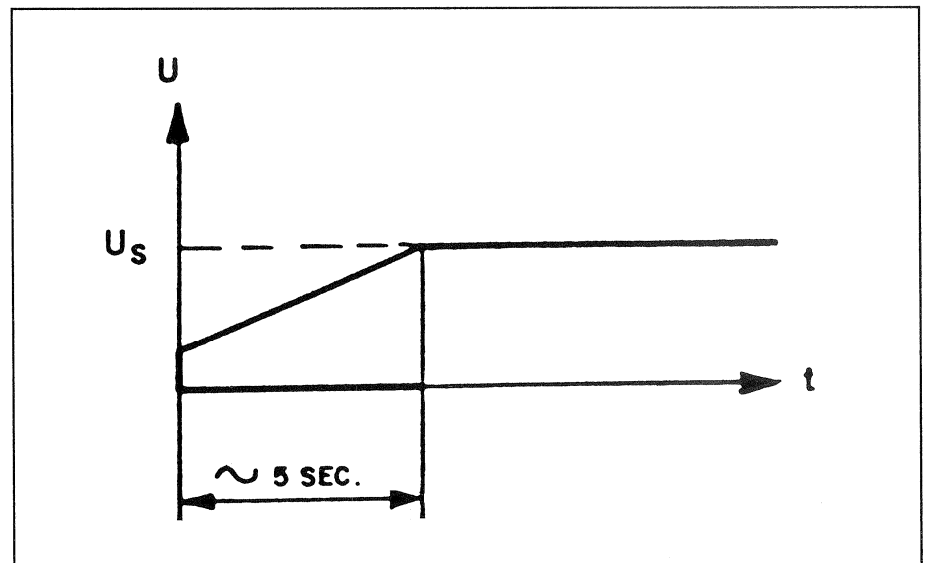


Fig. 8

Dual stabilizer operation for supplying amplifiers with negative and positive supply voltages is possible by coupling two stabilizer boards.

The output voltage of the first stabilizer controls the output voltage of the other (tracking). In this manner the coupling capacitors of the audio amplifiers are not unnecessarily loaded.

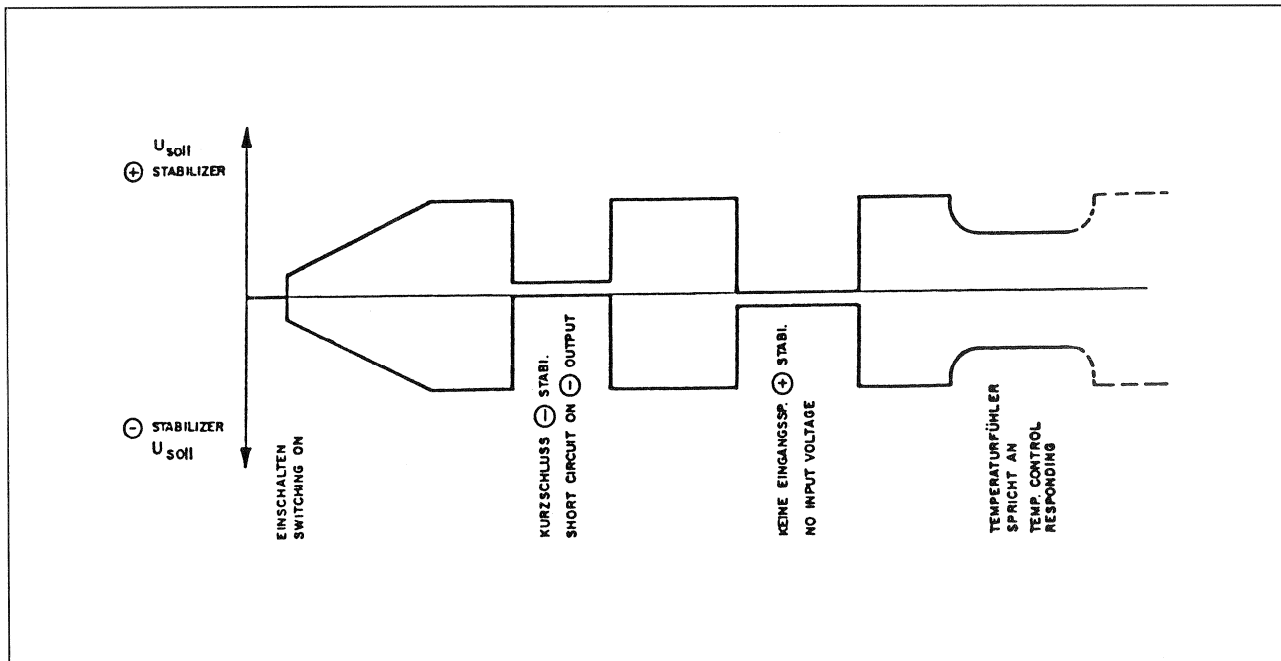


Fig. 9

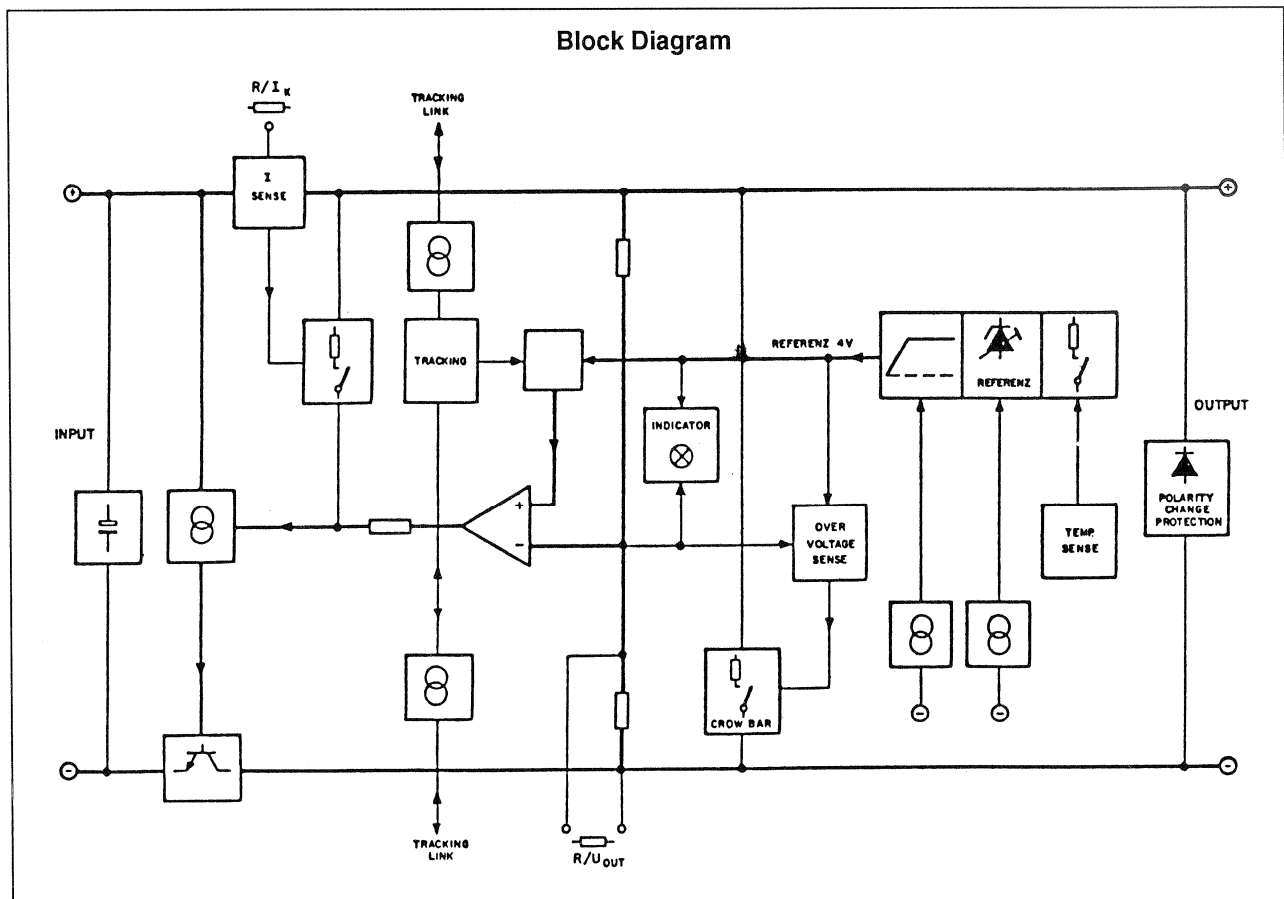


Fig. 10

2. Specifications

1.915.106

1.915.108

| | | |
|---|--------------------------|--------------------------|
| Output voltage externally programmable | $U = 5...24V$ | $U = 5...24V$ |
| Minimum input voltage without ripple | $U_{\min} = U + 1,5V$ | $U_{\min} = U + 1,5V$ |
| Maximum input voltage | $U_{\max} = 36V$ | $U_{\max} = 36V$ |
| Short-circuit current externally progr. | $I_k \approx 0,5...4,5A$ | $I_k \approx 0,5...8,0A$ |
| Max. power dissipation at heat sink | $P \approx 18W$ | $P \approx 30W$ |

Short circuit response:

In the event of an overload the output voltage is regulated down by the temperature sensor.

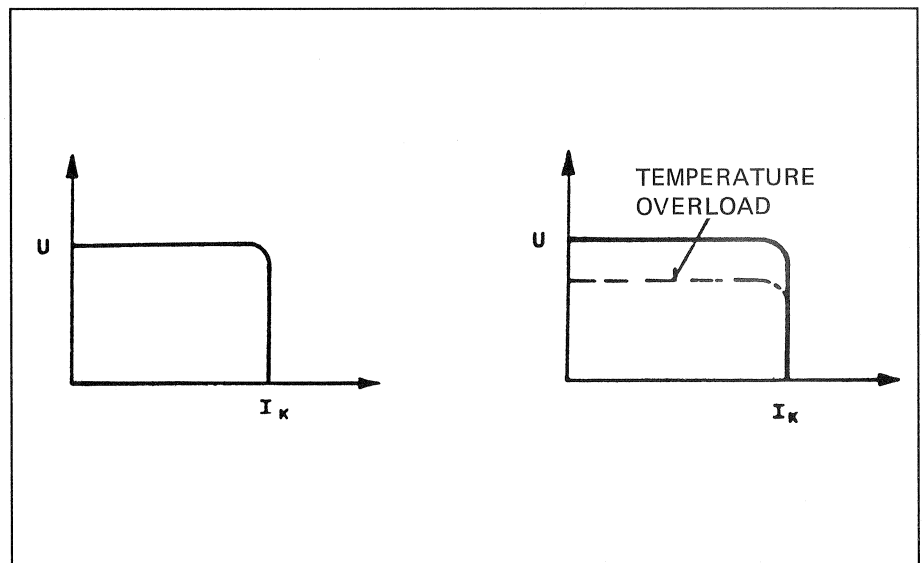


Fig. 11

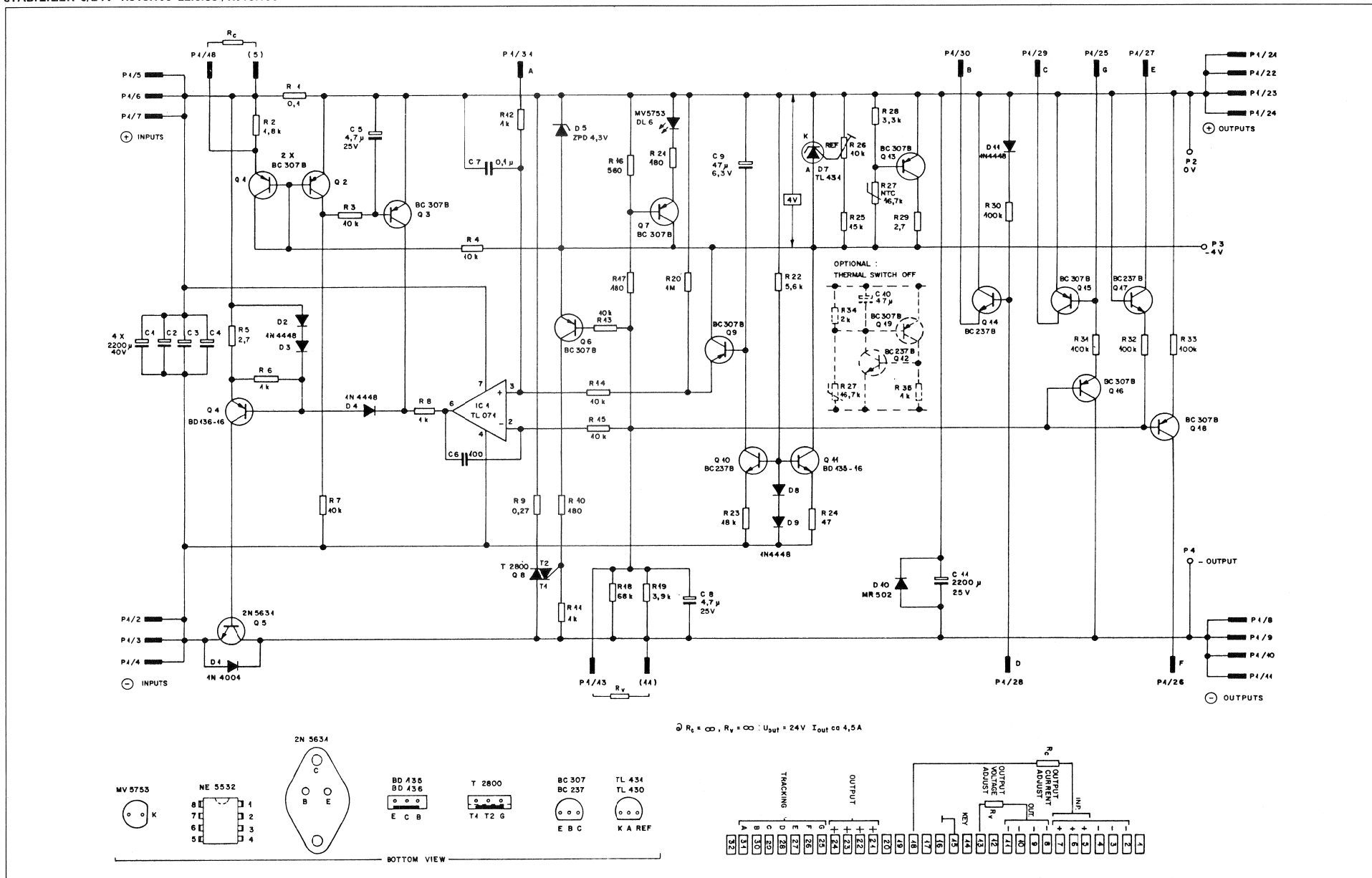
Over-voltage sense responds at approx. 15% excess output voltage

| | | |
|-----------------------------|-------------------------------------|-------------------------------------|
| Maximum output current | @ U_{15V} : 5A @ U_{6V} : 8A | @ U_{15V} : 5A @ U_{6V} : 8A |
| Superimposed ripple voltage | $U_{Br} 100 V$ | $U_{Br} 100 V$ |
| Idle current | $I_o(@U_{in} 30V) = 30mA$ | $I_o(@U_{in} 30V) = 30mA$ |

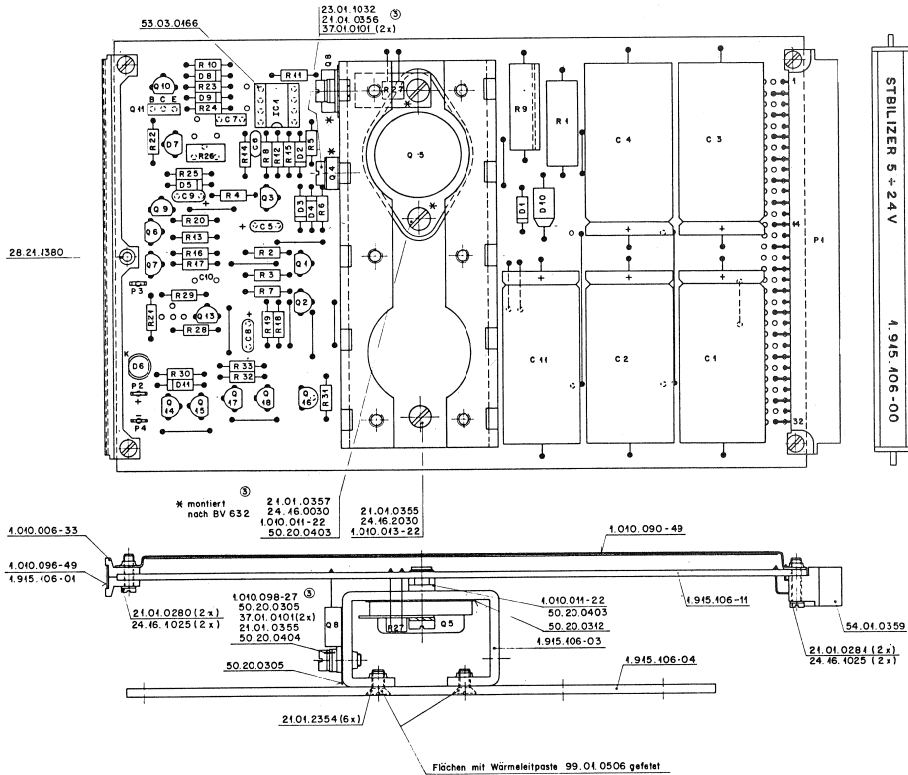
3. Mechanical Data**1.915.106****1.915.108**

| | | |
|------------------|--------------------------------|--------------------------------|
| Dimensions | "Europe" PCB 100mm x 160 mm | "Europe" PCB 100mm x 160 mm |
| Width | 33mm, 7 U | 66mm, 14 U |
| Connector system | DIN 41 612 type B | DIN 41 612 type B |
| Weight | 360 gr | 560 gr |

STABILIZER 5/24V 1.915.106 22.6.83 /1.915.108



STABILIZER 5/24V 1.915.106



| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|------------|--------|---------------------------|-----------------|
| C | 1 | 53.25.2222 | 2200µF | 4W | EL |
| C | 2 | 53.25.2222 | 2200µF | 4W | EL |
| C | 3 | 53.25.2222 | 2200µF | 4W | EL |
| C | 4 | 53.25.2222 | 2200µF | 4W | EL |
| C | 5 | 53.26.5479 | 4,7µF | 25V | SAL |
| C | 6 | 53.38.4101 | 100pF | | CER |
| C | 7 | 53.04.0104 | 0,1µF | | PE |
| C | 8 | 53.26.5479 | 4,7µF | 25V | SAL |
| C | 9 | 53.26.0470 | 4,7µF | 6,3V | SAL |
| C | 10 | | | | |
| C | 11 | 53.25.2222 | 2200µF | 75V | EL |
| D | 1 | 50.14.0145 | 1N4004 | 1A | |
| D | 2 | 50.04.0125 | 1N4448 | | |
| D | 3 | 50.14.0125 | 1N4448 | | |
| D | 4 | 50.14.0125 | 1N4448 | | |
| D | 5 | 50.04.1170 | ZPD431 | 5% | |
| D | 6 | 50.04.2444 | 1N5253 | LED | CHA-284-B MOSEM |
| D | 7 | 50.10.0106 | 7L430 | 1L A 430 CLP | IC THF |
| D | 8 | 50.04.0125 | 1N4448 | | |
| D | 9 | 50.04.0125 | 1N4448 | | |
| D | 10 | 50.04.0507 | HR502 | 3A/30V | |
| D | 11 | 50.04.0125 | 1N4448 | | |
| IC | A | 50.03.0103 | 7L071 | LF351 SINGLE FET OPA | TII/II |

| IND | DATE | NAME | EL - Electrolytic | MS - Monsanto |
|-----|---------|------|--|------------------------|
| ① | | | SAL - Solid Aluminium <td>CM - Chicago Miniature </td> | CM - Chicago Miniature |
| ② | | | PE - Polyester <td>TI - Texas Instruments </td> | TI - Texas Instruments |
| ③ | 22.6.83 | th | CER - CERAMIC <td>N - National </td> | N - National |
| ④ | 22.7.81 | th | | F - Fairchild |

STUDER Stabilizer 5 ÷ 24V 1.915.106.00 page 1 of 3

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|------------|---------|------------------------------------|------|
| Q | 1 | 50.03.0515 | BC307B | NPN (General purpose 50/100mA 40V) | ang |
| Q | 2 | 50.03.0515 | BC307B | NPN | |
| Q | 3 | 50.03.0515 | BC307B | NPN | |
| Q | 4 | 50.03.0515 | BC307B | NPN | |
| Q | 5 | 50.03.0542 | 2N5631 | NPN min 1A/40V | 485J |
| Q | 6 | 50.03.0515 | BC307B | NPN min 1A/40V/200W | N |
| Q | 7 | 50.03.0515 | BC307B | NPN | |
| Q | 8 | 50.03.0515 | BC307B | NPN | |
| Q | 9 | 50.03.0515 | BC307B | NPN | |
| Q | 10 | 50.03.0436 | BC237B | NPN (General purpose 50/100mA 40V) | ang |
| Q | 11 | 50.03.0495 | BD135-K | NPN P min 2W | 485J |
| Q | 12 | | | | |
| Q | 13 | 50.03.0515 | BC307B | NPN | |
| Q | 14 | 50.03.0436 | BC237B | NPN | |
| Q | 15 | 50.03.0515 | BC307B | NPN | |
| Q | 16 | 50.03.0515 | BC307B | NPN | |
| Q | 17 | 50.03.0436 | BC237B | NPN | |
| Q | 18 | 50.03.0515 | BC307B | NPN | |
| R | 1 | 57.55.5108 | 0,1Ω | 4W | |
| R | 2 | 57.11.4182 | 1,8k | 2% | |
| R | 3 | 57.11.4103 | 10k | | |
| R | 4 | 57.11.4103 | 10k | | |
| R | 5 | 57.11.4279 | 9,7Ω | | |
| R | 6 | 57.11.4102 | 1k | | |
| R | 7 | 57.11.4103 | 10k | | |
| R | 8 | 57.11.4102 | 1k | | |
| R | 9 | 57.55.5277 | 0,27Ω | 4W | |

| IND | DATE | NAME | H - Matsushita | R - RCA |
|-----|---------|------|-----------------------|----------------|
| ① | | | S - Siemens | T - Telefunken |
| ② | 22.6.83 | th | GE - General Electric | |
| ③ | 22.7.81 | th | | |

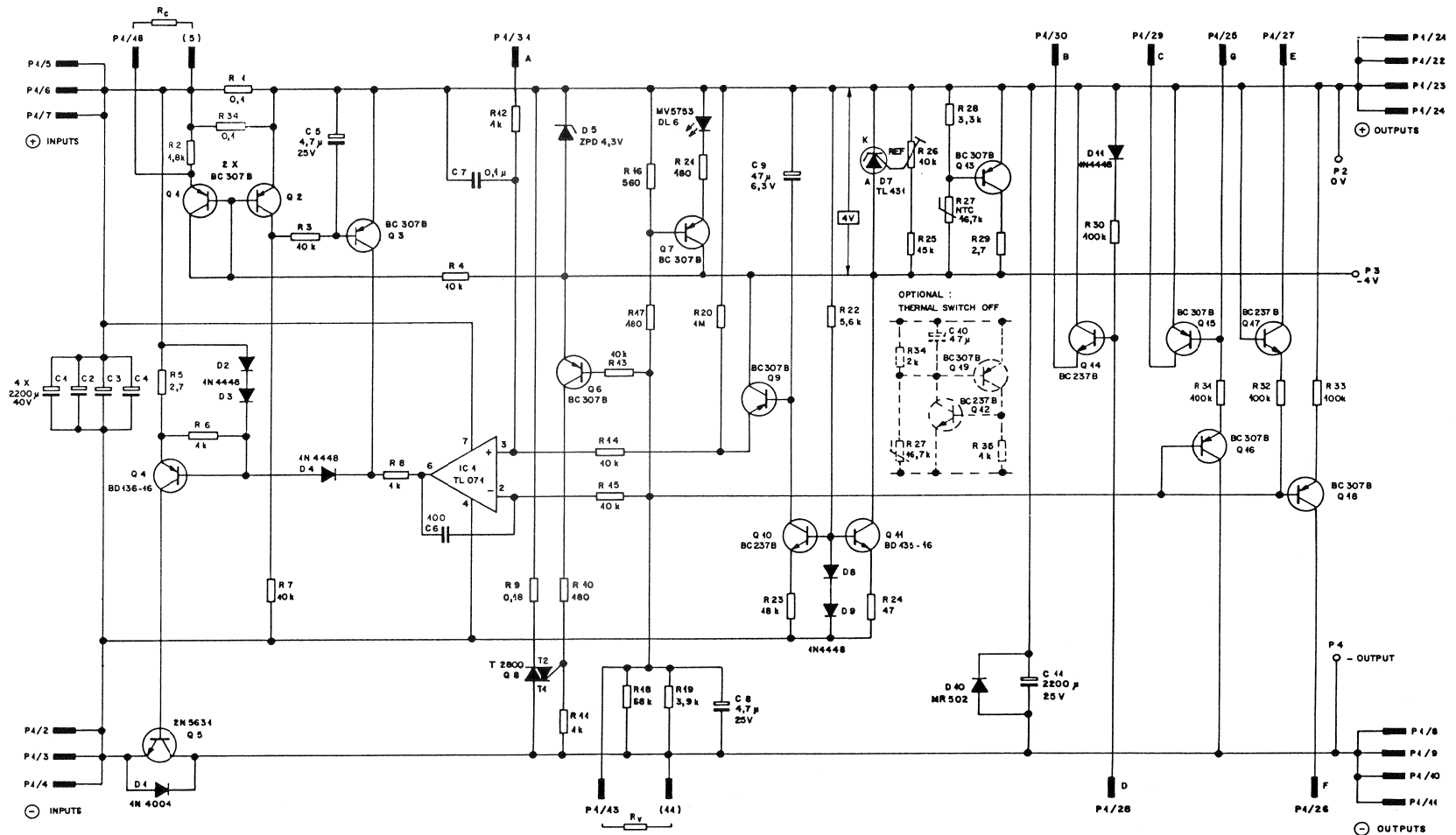
STUDER Stabilizer 5 ÷ 24V 1.915.106.00 page 2 of 3

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|------------|-------|---------------------------|-----|
| R | 10 | 57.11.4111 | 180Ω | | |
| R | 11 | 57.11.4102 | 1k | | |
| R | 12 | 57.11.4102 | 1k | | |
| R | 13 | 57.11.4103 | 10k | | |
| R | 14 | 57.11.4103 | 10k | | |
| R | 15 | 57.11.4103 | 10k | | |
| R | 16 | 57.11.4561 | 510Ω | 2% | |
| R | 17 | 57.11.4111 | 180Ω | 2% | |
| R | 18 | 57.11.4683 | 68k | 2% | |
| R | 19 | 57.11.4392 | 3,9k | 2% | |
| R | 20 | 57.11.4105 | 1M | | |
| R | 21 | 57.11.4111 | 180Ω | | |
| R | 22 | 57.11.4562 | 5,1k | | |
| R | 23 | 57.11.4103 | 10k | | |
| R | 24 | 57.11.4470 | 47Ω | | |
| R | 25 | 57.11.4153 | 15k | | |
| R | 26 | 58.01.7183 | 10k | LIN 114 CERMET | |
| R | 27 | 57.98.0234 | 167k | 2100°C NTC 2322 640 38005 | PH |
| R | 28 | 57.11.4392 | 3,9k | | |
| R | 29 | 57.11.4279 | 9,7Ω | | |
| R | 30 | 57.11.4103 | 10k | | |
| R | 31 | 57.11.4103 | 10k | | |
| R | 32 | 57.11.4103 | 10k | | |
| R | 33 | 57.11.4103 | 10k | | |

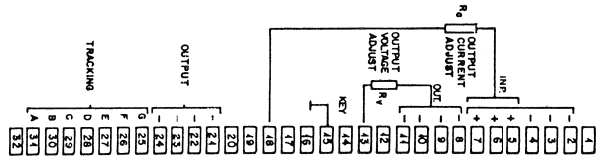
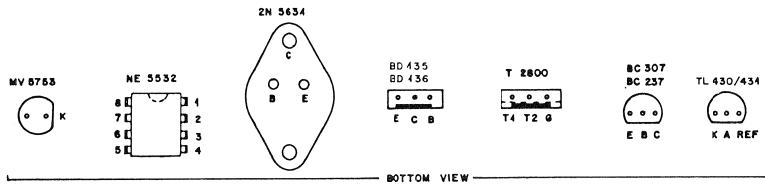
| IND | DATE | NAME | PH - Philips |
|-----|---------|------|--------------|
| ① | | | |
| ② | | | |
| ③ | | | |
| ④ | 22.6.83 | th | |
| ⑤ | 22.7.81 | th | |

STUDER Stabilizer 5 ÷ 24V 1.915.106.00 page 3 of 3

STABILIZER 5/24V/5A 1.915.108 22.6.83

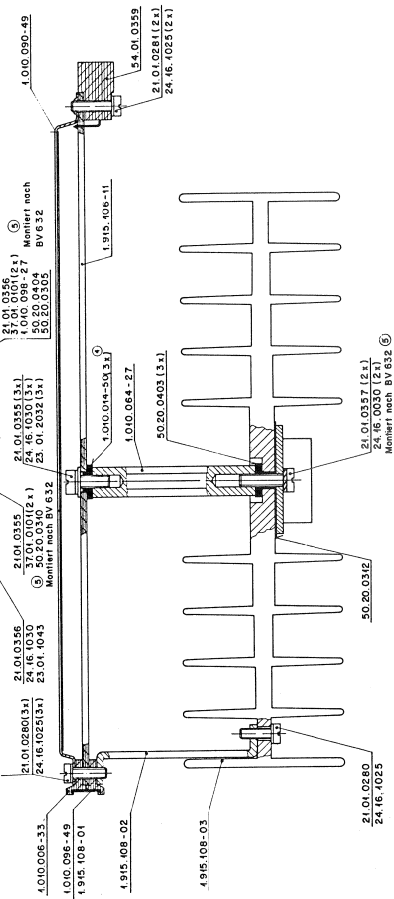
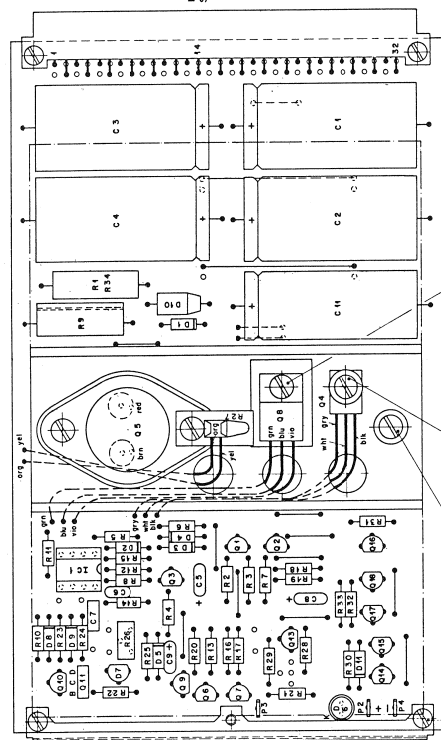


@ $R_v = \infty : U_{ref} = 24V$



STABILIZER 5/24V/5A 1.915.108

STABILIZER 5 + 24 V 1.915.108-00



| INDX POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-------------|------------|---------|---------------------------|---------------|
| C 1 | 59.75.5222 | 2200 µF | 40V | EL |
| C 2 | 59.25.5222 | 2200 µF | 40V | EL |
| C 3 | 59.25.5222 | 2200 µF | 40V | EL |
| C 4 | 59.25.5222 | 2200 µF | 40V | EL |
| C 5 | 59.75.5479 | 4,7 µF | 25 V | SAL |
| C 6 | 59.34.4101 | 100 pF | | CER |
| C 7 | 59.04.0104 | 0,1 µF | | PE |
| C 8 | 59.76.5479 | 4,7 µF | 25V | SAL |
| C 9 | 59.76.0470 | 4,7 µF | 6,3V | SAL |
| C 10 | | | | |
| C 11 | 59.25.4222 | 2200 µF | 25V | EL |
| D 1 | 50.04.0105 | 1N4004 | 1A | |
| D 2 | 50.04.0125 | 1N4448 | | |
| D 3 | 50.04.0125 | 1N4448 | | |
| D 4 | 50.04.0125 | 1N4448 | | |
| D 5 | 50.04.1170 | ZPD 43V | 5%Z | |
| D 6 | 50.04.2411 | MY5753 | LED | CH-284 B WSKM |
| D 7 | 50.10.0106 | 7L 430 | 12 A 430 CLP | IC TIF |
| D 8 | 50.04.0125 | 1N4448 | | |
| D 9 | 50.04.0125 | 1N4448 | | |
| D 10 | 50.04.0507 | HR502 | 3A/30V | |
| D 11 | 50.04.0125 | 1N4448 | | |
| IC 1 | 50.03.0103 | 7L 071 | LF351 SINGLE FET OPA | TIN |

| INDX | DATE | NAME | CL - Electrolytic | MS - Monsanto |
|------|----------|------|---|------------------------|
| ① | | | SAL - Solid Aluminium <td>CM - Chicago Miniatur </td> | CM - Chicago Miniatur |
| ② | | | PE - Polyester <td>TI - Texas Instruments </td> | TI - Texas Instruments |
| ③ | 22.6.83 | HW | CER - CERAMIC <td>N - National </td> | N - National |
| ④ | 22.11.82 | HW | | F - Fairchild |

STUDER Stabilizer 5 + 24V/5A 1.915.108.00 page 1 of 3

| INDX POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-------------|------------|--------|---------------------------|-----|
| R 10 | 57.11.1111 | 180 Ω | | |
| R 11 | 57.11.1102 | 1 k | | |
| R 12 | 57.11.1102 | 1 k | | |
| R 13 | 57.11.1103 | 10 k | | |
| R 14 | 57.11.1102 | 10 k | | |
| R 15 | 57.11.1103 | 10 k | | |
| R 16 | 57.11.1104 | 510 Ω | 2% | |
| R 17 | 57.11.1111 | 180 Ω | 2% | |
| R 18 | 57.11.1103 | 68 k | 2% | |
| R 19 | 57.11.1102 | 3,9 k | 2% | |
| R 20 | 57.11.1105 | 1 M | | |
| R 21 | 57.11.1111 | 180 Ω | | |
| R 22 | 57.11.1102 | 5,6 k | | |
| R 23 | 57.11.1103 | 18 k | | |
| R 24 | 57.11.1103 | 47 Ω | | |
| R 25 | 57.11.1103 | 15 k | LIN 1/4 CERMET | |
| R 26 | 58.71.7103 | 10 k | | |
| R 27 | 57.99.0204 | 16,7 k | 2100°C NTC 2322 640 38005 | PH |
| R 28 | 57.11.1102 | 3,3 k | | |
| R 29 | 57.11.1102 | 2,7 Ω | | |
| R 30 | 57.11.1104 | 100 k | | |
| R 31 | 57.11.1104 | 100 k | | |
| R 32 | 57.11.1104 | 100 k | | |
| R 33 | 57.11.1104 | 100 k | | |
| R 34 | 57.56.5108 | 0,18 Ω | 4W | |

| INDX | DATE | NAME | PH - Philips |
|------|----------|------|--------------|
| ① | | | |
| ② | | | |
| ③ | | | |
| ④ | 22.6.83 | HW | |
| ⑤ | 22.11.82 | HW | |

STUDER Stabilizer 5 + 24V/5A 1.915.108.00 page 3 of 3

| INDX POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-------------|------------|--------|------------------------------------|-----|
| Q 1 | 50.03.0515 | BC307B | PNP General purpose 0,4A/100V 140V | WAG |
| Q 2 | 50.03.0515 | BC307B | PNP | |
| Q 3 | 50.03.0515 | BC307B | PNP | |
| Q 4 | 50.03.0510 | BD135C | PNP min 1A/140V | WST |
| Q 5 | 50.03.0342 | 2N5631 | NPN min 10A/min 40V 200W | M |
| Q 6 | 50.03.0515 | BC307B | PNP | |
| Q 7 | 50.03.0515 | BC307B | PNP | |
| Q 8 | 50.03.0101 | T 2800 | TRIAC 8A 8-116 D | R/G |
| Q 9 | 50.13.0515 | BC307B | PNP | |
| Q 10 | 50.03.0436 | BC237B | NPN General purpose 0,4A/100V 140V | |
| Q 11 | 50.03.0495 | BD135C | NPN P min 2A | WST |
| Q 12 | | | | |
| Q 13 | 50.03.0515 | BC307B | PNP | |
| Q 14 | 50.03.0436 | BC237B | NPN | |
| Q 15 | 50.03.0515 | BC307B | PNP | |
| Q 16 | 50.03.0515 | BC307B | PNP | |
| Q 17 | 50.03.0436 | BC237B | NPN | |
| Q 18 | 50.03.0515 | BC307B | PNP | |

| INDX | DATE | NAME | M - Motorola |
|------|----------|------|-----------------------|
| ① | | | |
| ② | | | R - RCA |
| ③ | | | S - Siemens |
| ④ | 22.6.83 | HW | T - Telefunken |
| ⑤ | 22.11.82 | HW | GE - General Electric |

STUDER Stabilizer 5 + 24V/5A 1.915.108.00 page 2 of 3

Phantom / 24 V Stabilisator 1.915.107

Stabilisatorkarte mit zwei getrennten, isoliert aufgebauten Spannungsstabilisatoren für die Phantom- und 24 V Stromversorgung. Zwei Leuchtdioden zeigen den Betriebszustand an. Zwei Messpunktpaare sind mit Messklemmen von vorne zugänglich.

1. Phantomversorgung

Die Ausgangsspannung von 12V, 24V oder 48V ist mit einer Brücke einstellbar (Beachten Sie, dass eine Änderung der Phantomspannung auch eine Anpassung der Eingangsspannung und eine Änderung der Phantomeinspeisewiderstände im Mikrokanal bedingt).

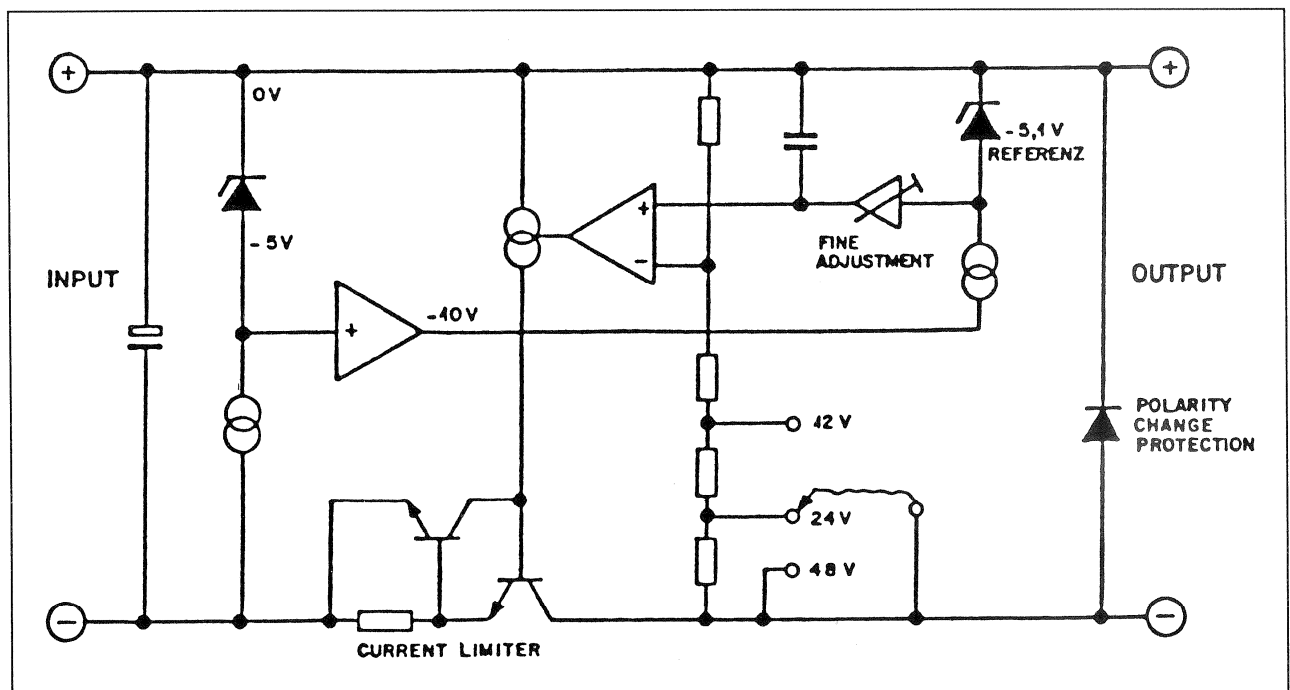


Fig. 11

2. Technische Daten

**Ausgangsspannung
einstellbar** $U = 12V, 24V, 48V$

Minimale Eingangsspannung für 12V $U_{min} = 13V$

Max. Eingangsspannung $U_{max} = 100V$

Kurzschlussstrom $I_k = 350mA$

Laststrom $I_{max} = 300mA$

Kurzschlussverhalten mit automatisch, spannungsabhängigem "Fold Back"

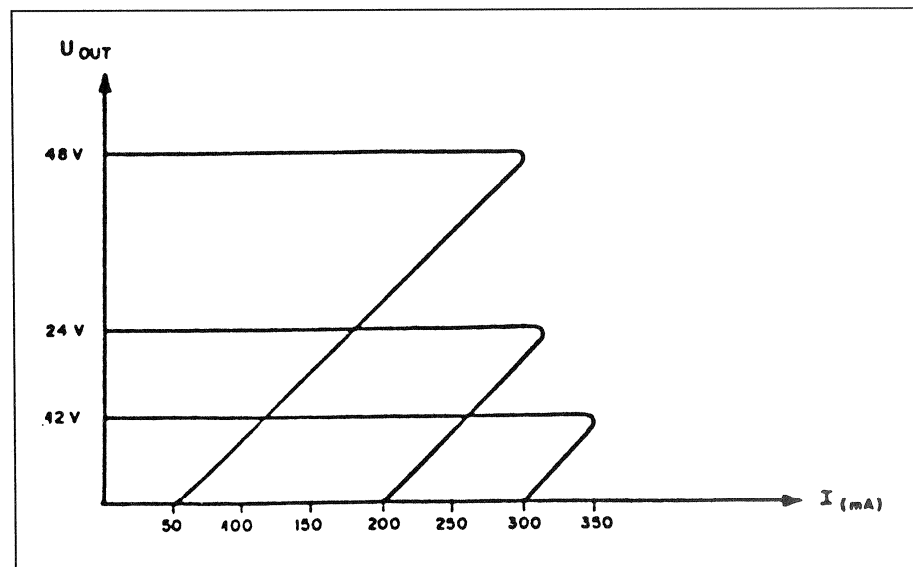


Fig. 12

Überlagerte Brummspannung $U_{Br} \leq 100\mu V$

Leerlaufstrom $I_{O@80V} U_{in} = 25mA$

3. 24V Stabilisator

Die Ausgangsspannung ist fest eingestellt auf 24V DC.

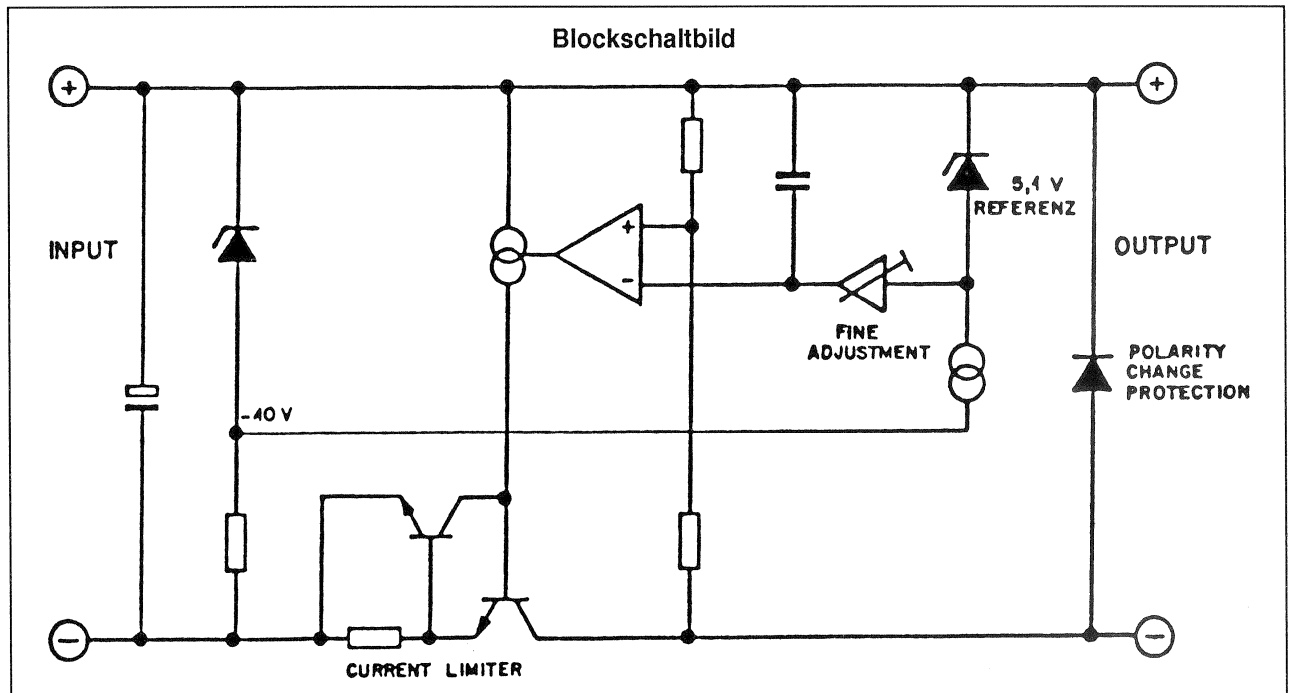


Fig. 13

4. Technische Daten

| | |
|---|--|
| Ausgangsspannung | $U = 24V$ |
| Minimale Eingangsspannung (ohne Ripple) | $U_{\min} = 25V$ |
| Maximale Eingangsspannung | $U_{\max} = 36V$ |
| Kurzschlussstrom | $I_k \sim 660mA$ |
| Laststrom | $I_{\max} = 600mA$ |
| | Kurzschlussverhalten mit automatischem "Fold Back" |

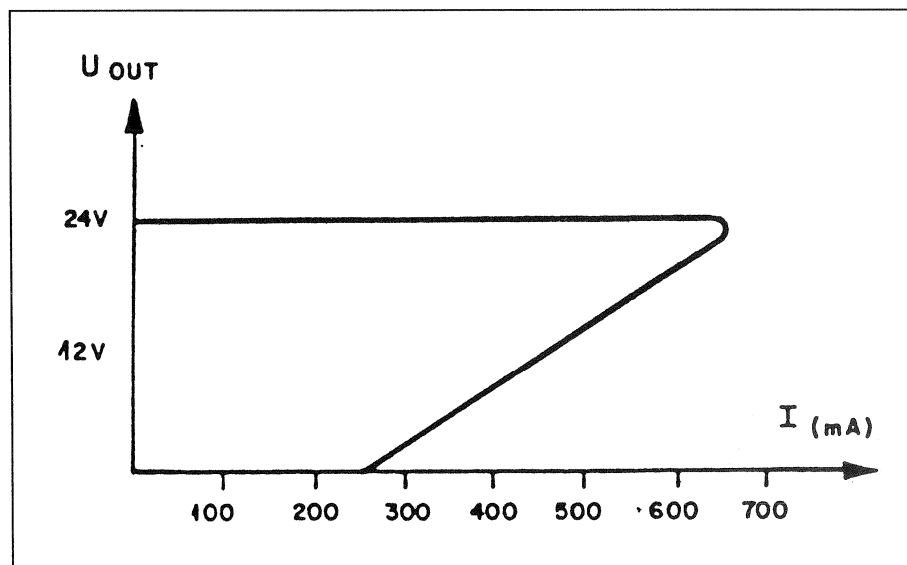


Fig. 14

Ueberlagerte
Brummspannung $U_{Br} \leq 100 \mu V$

Leerlaufstrom $I_{O@Uin30V} = 20mA$

5. Mechanische Daten

Abmessungen "EUROPE" PCB 100mm x 160mm

Steckersystem DIN 416 12 Typ B

Breite 33mm 7m

Gewicht ca. 320 gr

Phantom / 24 V Stabilizer 1.915.107

Stabilizer board with two separate and isolated voltage stabilizers for the phantom supply and the 24V supply. The two pilot LEDs indicate the operating status. Two pairs of test points are accessible from the front with rest clips.

1. Phantom Supply

The 12V, 24V or 48V output voltage can be adjusted with a bridge. (Please note that any change of the phantom voltage requires a corresponding adjustment of the input voltage and the replacement of the phantom supply resistors is the microphone channel).

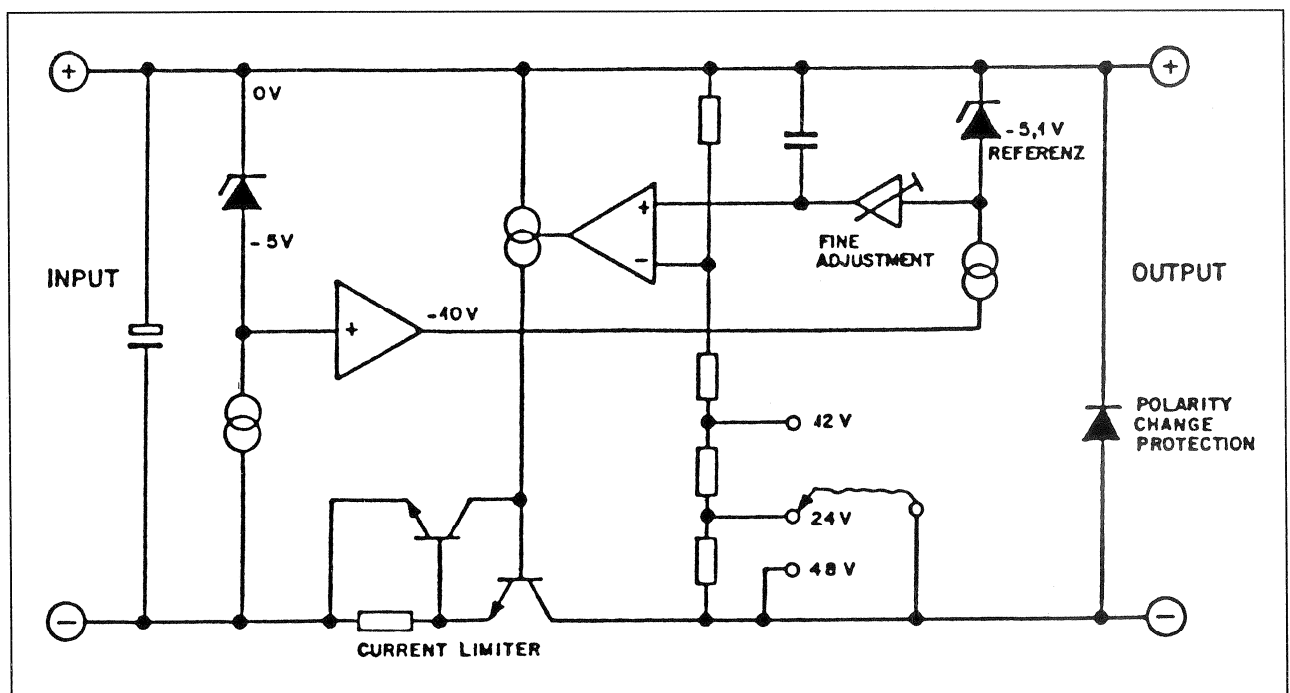


Fig. 12

2. Specifications

Output voltage, variable $U = 12V, 24V, 48V$

Minimum input voltage for 12V $U_{min} = 13V$

Max. input voltage $U_{max} = 100V$

Short-circuit current $I_k = 350mA$

Load current $I_{max} = 300mA$

Short-circuit response with automatic, voltage-dependent fold-back

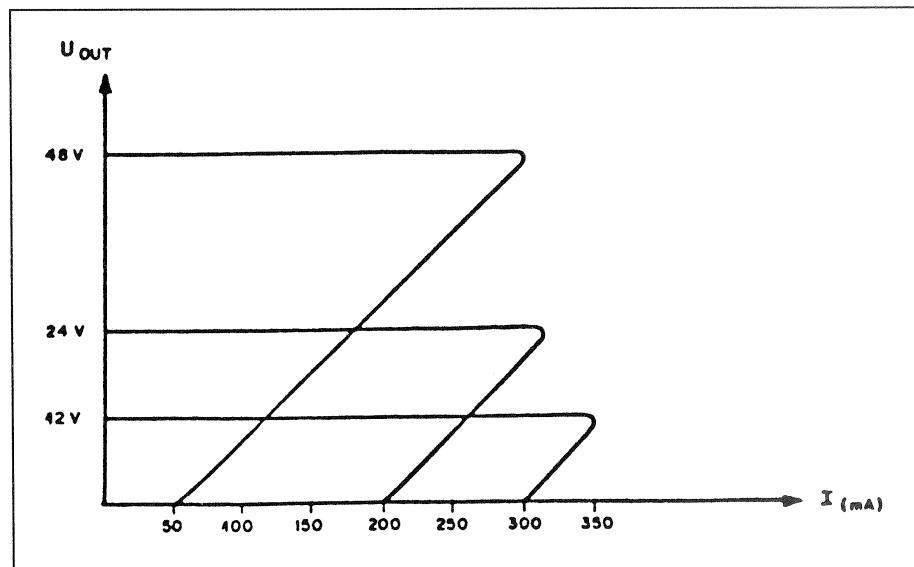


Fig. 13

Superimposed ripple voltage $U_{Br} \leq 100\mu V$

No-load current $I_{O@80V} U_{in} = 25mA$

3. 24V Stabilizer

The output voltage is permanently set to 24 VDC.

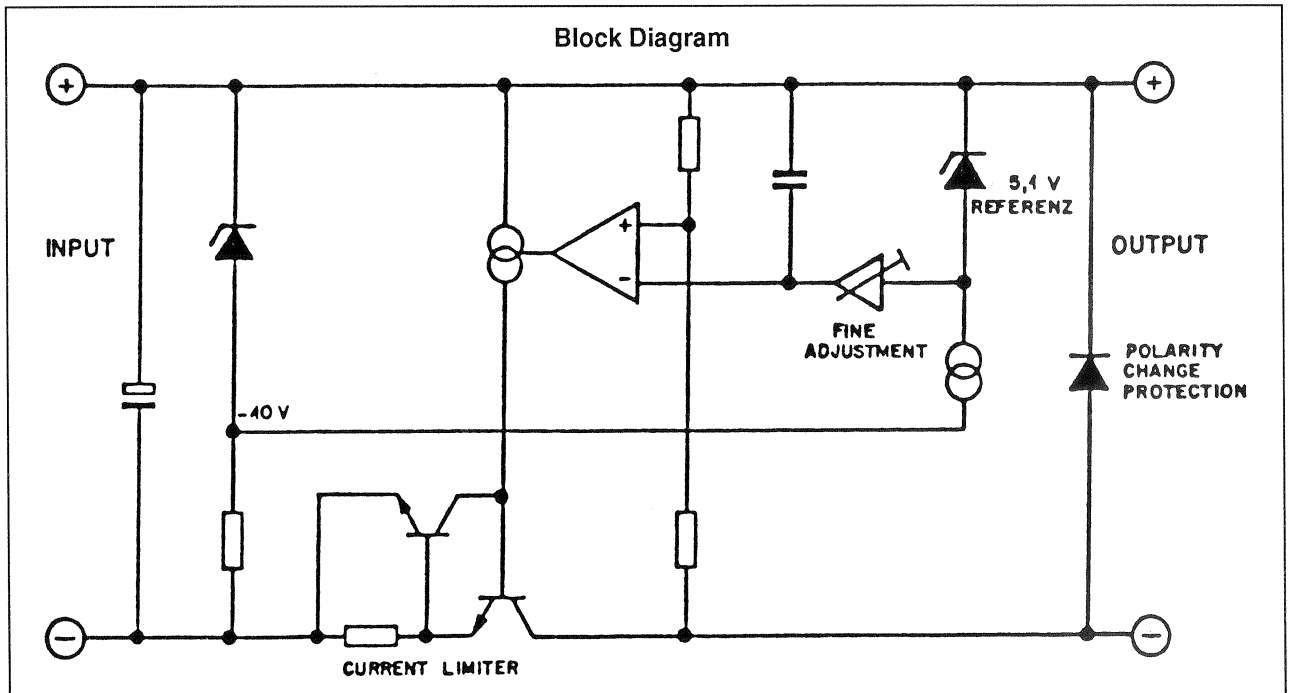


Fig. 14

4. Specifications

| | |
|---|--------------------|
| Output voltage | $U = 24V$ |
| Minimum input voltage (without ripple) | $U_{\min} = 25V$ |
| Maximum input voltage | $U_{\max} = 36V$ |
| Short-circuit current | $I_k \sim 660mA$ |
| Load current | $I_{\max} = 600mA$ |

Short-circuit response with automatic fold-back

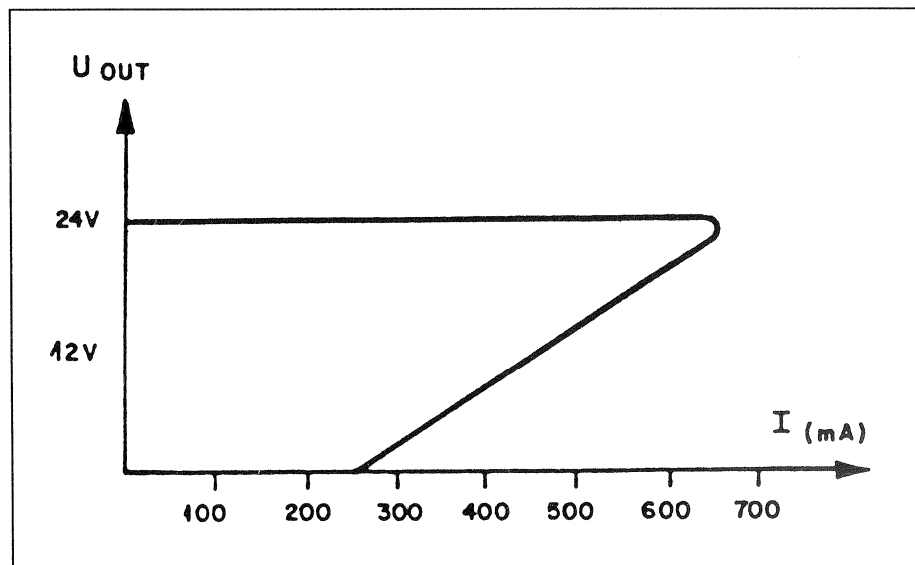


Fig. 15

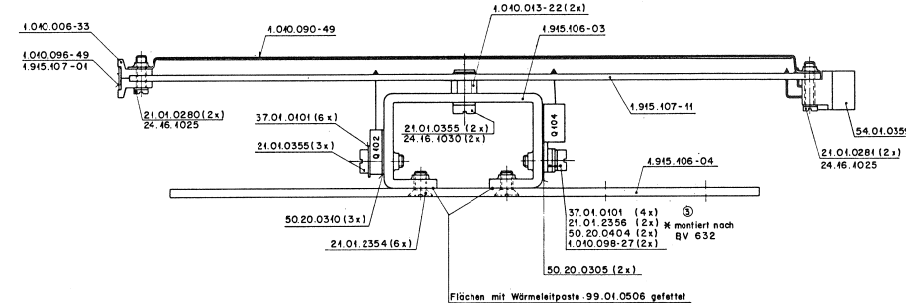
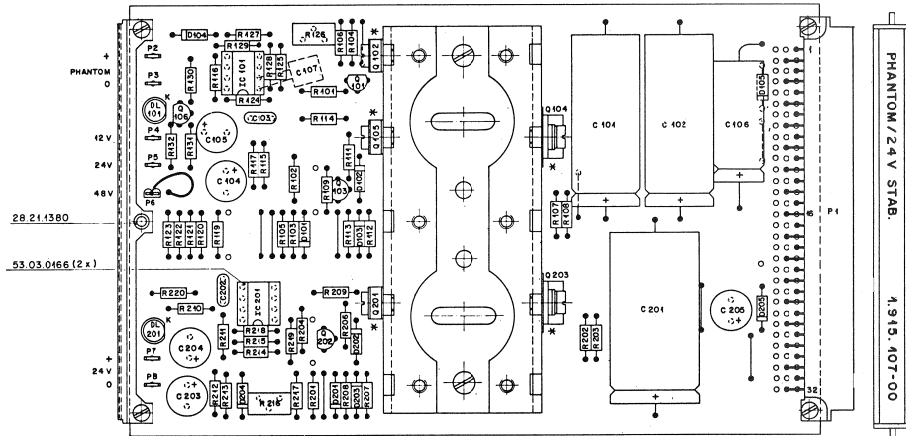
Superimposed ripple voltage $U_{Br} \leq 100 \mu V$

No-load current $I_{O@U_{in}30V} = 20 \text{ mA}$

5. Mechanical Data

| | |
|------------------|----------------------------|
| Dimensions | "EUROPE" PCB 100mm x 160mm |
| Connector system | DIN 416 12 type B |
| Width | 33mm 7m |
| Weight | ca. 320 gr |

PHANTOM 24V STABILIZER 1.915.107



| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|------------|--------|---------------------------|-----|
| C | 101 | 59.25.7224 | 220µF | 100V EL | |
| C | 102 | 59.25.7224 | 220µF | 100V EL | |
| C | 103 | 59.34.4224 | 220µF | CER | |
| C | 104 | 59.22.8220 | 22µF | 63V EL | |
| C | 105 | 59.22.5104 | 100µF | 25V EL | |
| C | 106 | 59.25.6471 | 470µF | 63V EL | |
| C | 201 | 59.25.5222 | 2200µF | 40V EL | |
| C | 202 | 59.34.4224 | 220µF | CER | |
| C | 203 | 59.22.5104 | 100µF | 25V EL | |
| C | 204 | 59.22.5104 | 100µF | 25V EL | |
| C | 205 | 59.22.5104 | 100µF | 25V EL | |
| C | 107 | 59.34.2220 | 22pF | CER | |
| D | 101 | 50.04.4142 | Z 51V | 51V @ 5mA 5% | |
| D | 102 | 50.04.0125 | 1N4448 | | |
| D | 103 | 50.04.0125 | 1N4448 | | |
| D | 104 | 50.04.4142 | Z 51V | 51V @ 5mA 5% | |
| D | 105 | 50.04.0105 | 1N4004 | 14V @ 4A | |
| D | 201 | 50.04.4144 | Z 10V | 10V @ 5mA 5% | |
| D | 202 | 50.04.0125 | 1N4448 | | |
| D | 203 | 50.04.0125 | 1N4448 | | |
| D | 204 | 50.04.4142 | Z 51V | 51V @ 5mA 5% | |
| D | 205 | 50.04.0105 | 1N4004 | 14V @ 4A | |
| DL | 101 | 50.04.2144 | MV5753 | CM4-2848 Hs/Gn | |
| DL | 201 | 50.04.2144 | MV5753 | CM4-2848 Hs/Gn | |

| IND | DATE | NAME | EL ELECTROLYTIC | MS MONSANTO |
|-----|---------|------|---|---------------------|
| ① | | | CER CERAMIC <td>CM CHICAGO MINIATUR </td> | CM CHICAGO MINIATUR |
| ② | | | | |
| ③ | | | | |
| ④ | 13.4.83 | 1/2 | | |
| ⑤ | 9.6.81 | 1/2 | | |

STUDER PHANTOM / 24V STAB. 1.915.107.00 page 1 of 4

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|------------|-------|---------------------------|-----|
| R | 116 | 57.11.4332 | 33k | | |
| R | 117 | 57.11.4332 | 33k | | |
| R | 118 | 57.11.4332 | 33k | | |
| R | 119 | 57.11.4332 | 33k | 2% | |
| R | 120 | 57.11.4224 | 220k | 2% | |
| R | 121 | 57.11.4682 | 68k | 2% | |
| R | 122 | 57.11.4223 | 22k | 2% | |
| R | 123 | 57.11.4333 | 33k | 2% | |
| R | 124 | 57.11.4103 | 10k | | |
| R | 125 | 57.11.4332 | 33k | | |
| R | 126 | 58.01.7103 | 10k | LIN. 10% | |
| R | 127 | 57.11.4333 | 33k | | |
| R | 128 | 57.11.4181 | 180 | | |
| R | 129 | 57.11.4332 | 33k | | |
| R | 130 | 57.11.4682 | 68k | | |
| R | 131 | 57.11.4332 | 33k | | |
| R | 132 | 57.11.4181 | 180 | | |
| R | 201 | 57.11.4332 | 33k | | |
| R | 202 | 57.11.4189 | 48 | | |
| R | 203 | 57.11.4189 | 48 | | |
| R | 204 | 57.11.4181 | 180 | | |
| R | 205 | | | | |
| R | 206 | 57.11.4103 | 10k | | |
| R | 207 | 57.11.4150 | 45 | | |
| R | 208 | 57.11.4331 | 330 | | |
| R | 209 | 57.11.4681 | 680 | | |
| R | 210 | 57.11.4332 | 33k | | |
| R | 211 | 57.11.4332 | 33k | | |
| R | 212 | 57.11.4103 | 10k | 2% | |
| R | 213 | 57.11.4332 | 33k | 2% | |

| IND | DATE | NAME |
|-----|---------|------|
| ① | | |
| ② | | |
| ③ | | |
| ④ | | |
| ⑤ | 13.4.83 | 1/2 |
| ⑥ | 9.6.81 | 1/2 |

STUDER PHANTOM / 24V STAB. 1.915.107.00 page 3 of 4

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|------------|---------|------------------------------|-------|
| IC | 101 | 50.09.0404 | TL 072 | DUAL OPA LF 353 | N, TI |
| IC | 201 | 50.09.0404 | TL 072 | DUAL OPA LF 353 | N, TI |
| Q | 101 | 50.03.0492 | BC 556 | PNP 01A U _{ces} 80V | S, I |
| Q | 102 | 50.03.0451 | BD 139 | NPN | P, S |
| Q | 103 | 50.03.0340 | BC 337 | NPN 08A | P, TI |
| Q | 104 | 50.03.0344 | 2N 6474 | NPN | R |
| Q | 105 | 50.03.0452 | BD 140 | PNP | P, S |
| Q | 106 | 50.03.0496 | BC 560 | PNP 01A | S |
| Q | 201 | 50.03.0452 | BD 140 | PNP | P, S |
| Q | 202 | 50.03.0340 | BC 337 | NPN 08A | P, TI |
| Q | 203 | 50.03.0344 | 2N 6474 | NPN | R |
| R | 101 | 57.11.4332 | 33k | | |
| R | 102 | 57.11.4332 | 33k | | |
| R | 103 | 57.11.4332 | 33k | | |
| R | 104 | 57.11.4103 | 10k | | |
| R | 105 | 57.11.4682 | 68k | | |
| R | 106 | 57.11.4103 | 10k | | |
| R | 107 | 57.11.4339 | 33 | | |
| R | 108 | 57.11.4338 | 33 | | |
| R | 109 | 57.11.4181 | 180 | | |
| R | 110 | | | | |
| R | 111 | 57.11.4223 | 22k | | |
| R | 112 | 57.11.4450 | 45 | | |
| R | 113 | 57.11.4334 | 330 | | |
| R | 114 | 57.11.4681 | 680 | | |
| R | 115 | 57.11.4332 | 33k | 2% | |

| IND | DATE | NAME | S SIEMENS | I ITT |
|-----|---------|------|-----------------|------------|
| ① | | | RA RAYTHEON | N NATIONAL |
| ② | | | TI TEXAS INSTR. | |
| ③ | | | P PHILIPS | |
| ④ | 13.4.83 | 1/2 | R RCA | |
| ⑤ | 9.6.81 | 1/2 | | |

STUDER PHANTOM / 24V STAB. 1.915.107.00 page 2 of 4

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|-----|--------|------------|-------|---------------------------|-----|
| R | 214 | 57.11.4103 | 10k | | |
| R | 215 | 57.11.4332 | 33k | | |
| R | 216 | 58.01.7103 | 10k | LIN. 10% | |
| R | 217 | 57.11.4333 | 33k | | |
| R | 218 | 57.11.4181 | 180 | | |
| R | 219 | 57.11.4332 | 33k | | |
| R | 220 | 57.11.4332 | 33k | | |

Modification List

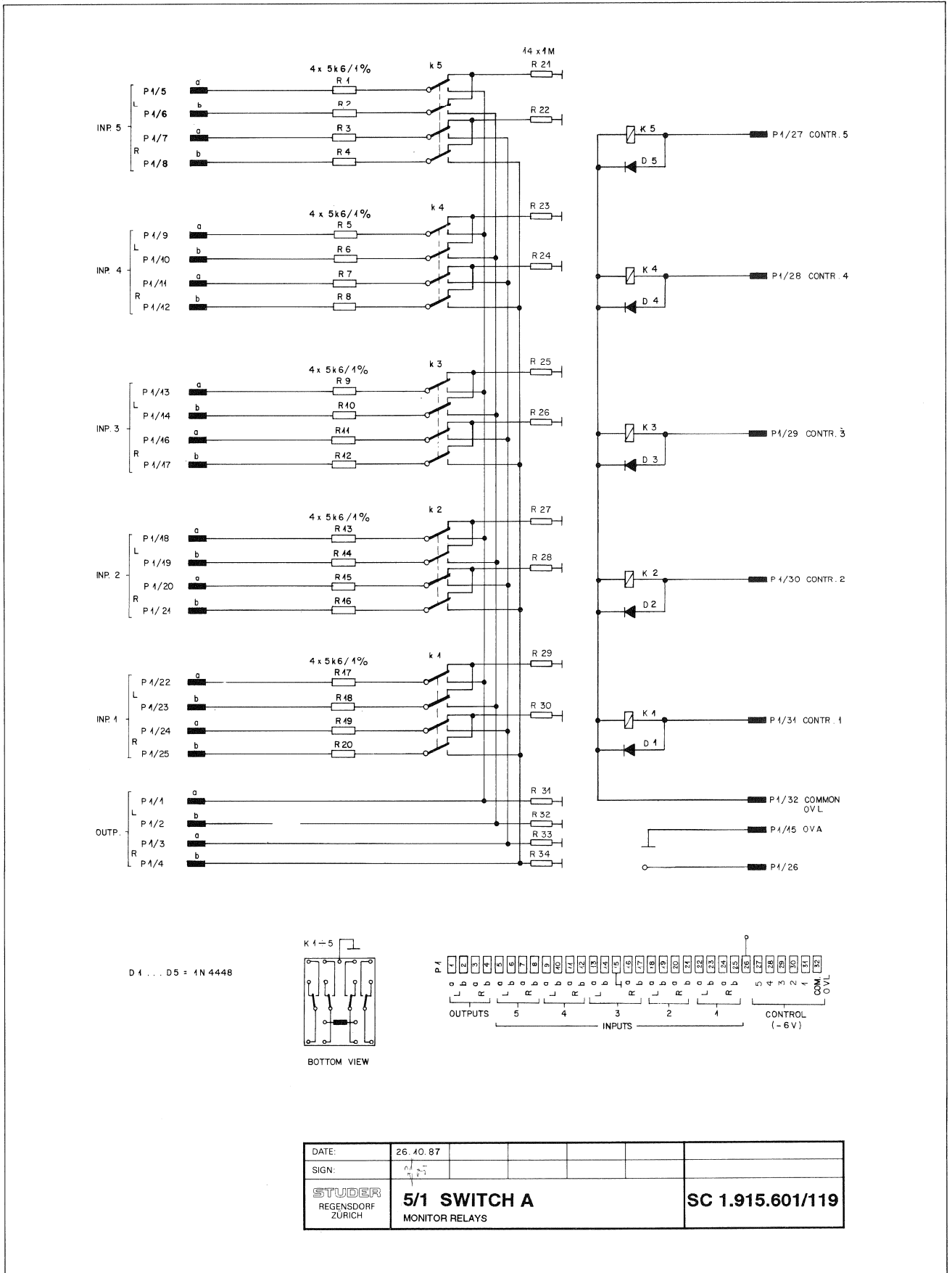
| | | |
|-----------|--------|-------------|
| Daf. | | HF Problems |
| 1 13.4.83 | | |
| C106 | 22µF = | 470pF |
| C107 | 22pF = | new |

| IND | DATE | NAME |
|-----|---------|------|
| ① | | |
| ② | | |
| ③ | | |
| ④ | | |
| ⑤ | 13.4.83 | 1/2 |
| ⑥ | 9.6.81 | 1/2 |

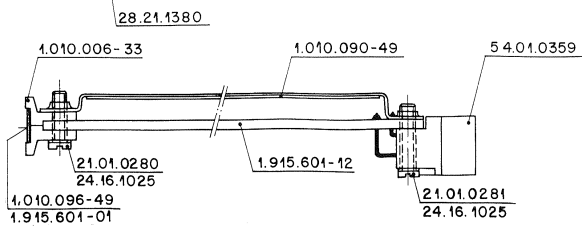
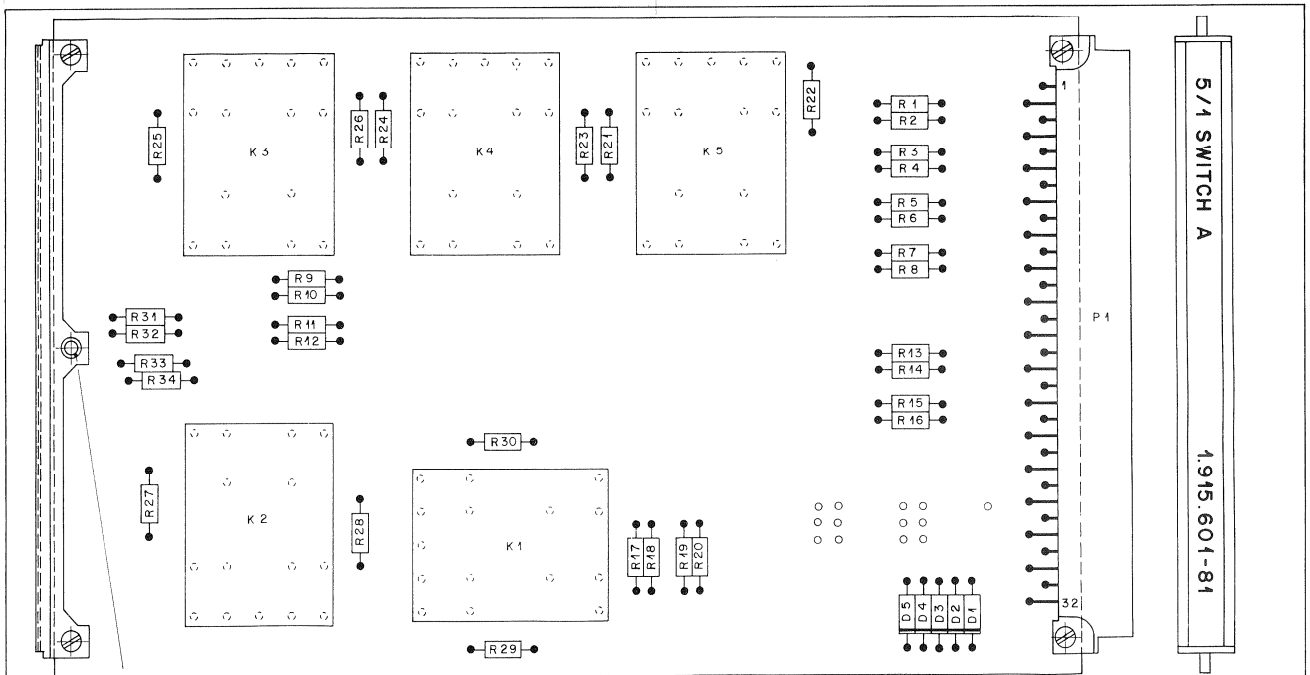
STUDER PHANTOM / 24V STAB. 1.915.107.00 page 4 of 4

Relaiskarte Monitor Switch 5/1

1.915.601



Relaiskarte Monitor Switch 5/1 1.915.601.81

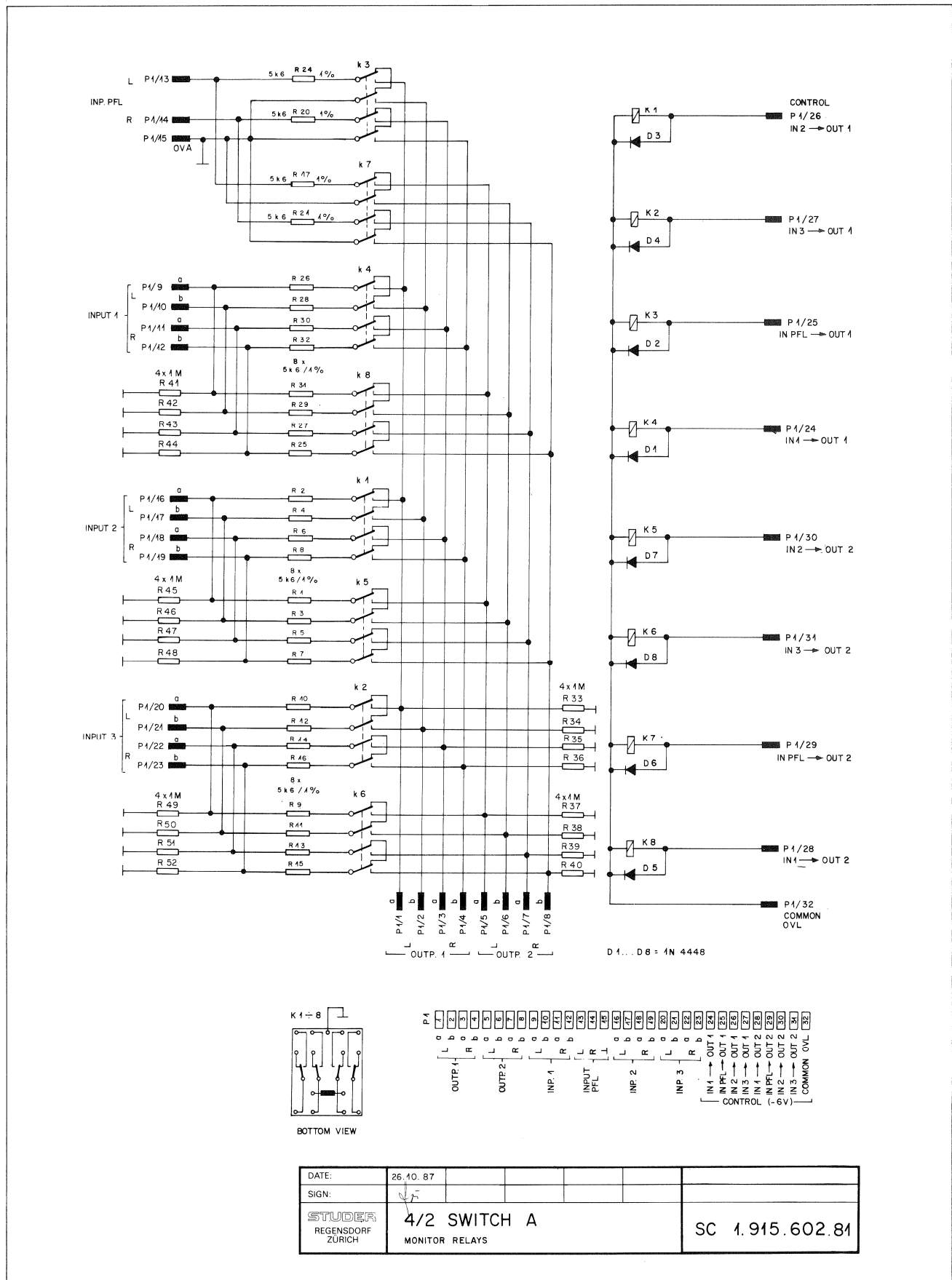


| | | | |
|---------------------------------------|-------------------|-----------------------------------|--------------------------------|
| Norm-Nr.: | Güte: | Änderung: | ③ |
| DIN-Bez.: | Beh.: | | ② |
| Abmessung: | | | ① |
| Zugehörige Unterlagen: | Freimasstoleranz: | Maßstab: | ④ |
| PL | ± | 2 : 1 | |
| Ersatz für: 1.915.601-00 | Ersetzt durch: | Kopie für: | |
| STUDER REGENSDORF ZÜRICH | | Benennung: 5/1 SWITCH A | Nummer: 1.915.601-81 |
| Ausgabe: | | 9.10.87 | A.Ho |
| Datum: | | Gez. | Ges. Index |

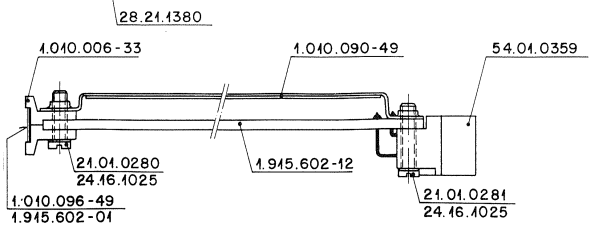
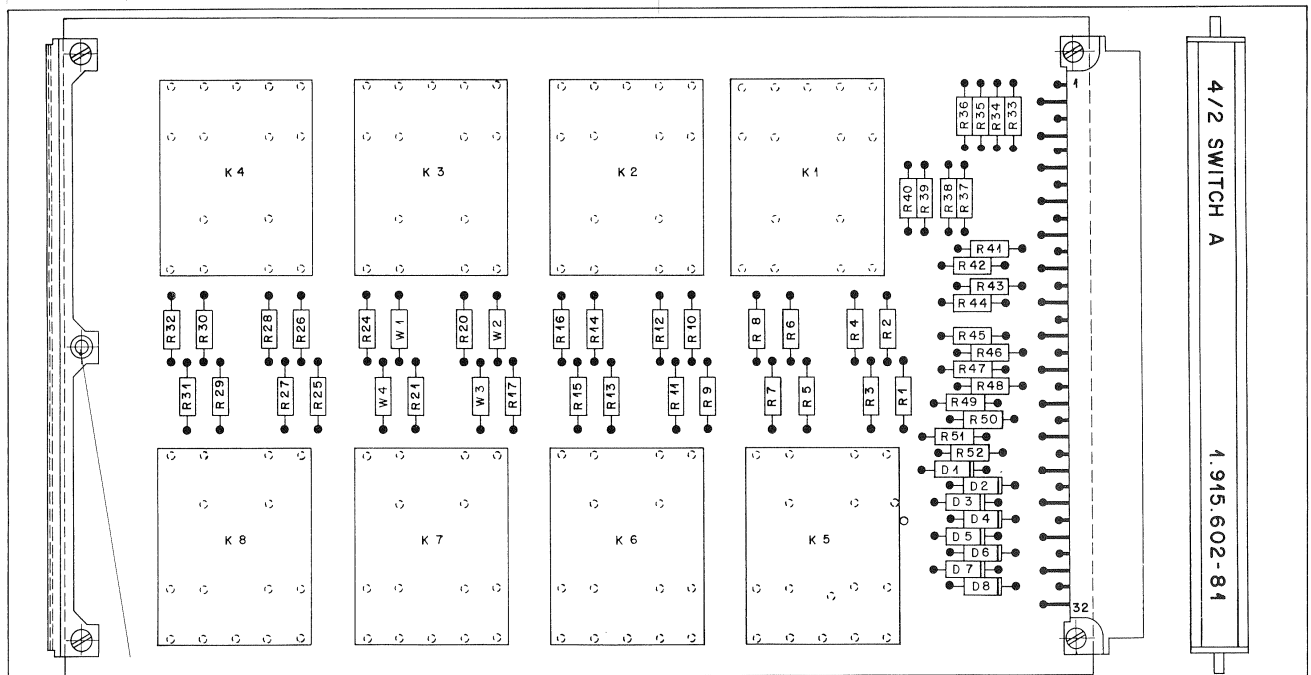
| Ad | POS. | REF.No. | DESCRIPTION | MANUFACTURER |
|----------|------------|----------|-------------|----------------|
| D.....1 | 50.04.0125 | 1N4448 | SILICIUM | |
| D.....2 | 50.04.0125 | 1N4448 | SILICIUM | |
| D.....3 | 50.04.0125 | 1N4448 | SILICIUM | |
| D.....4 | 50.04.0125 | 1N4448 | SILICIUM | |
| D.....5 | 50.04.0125 | 1N4448 | SILICIUM | |
| K.....1 | 56.04.0146 | 4U/6V | | NATIONAL/OMRON |
| K.....2 | 56.04.0146 | 4U/6V | | NATIONAL/OMRON |
| K.....3 | 56.04.0146 | 4U/6V | | NATIONAL/OMRON |
| K.....4 | 56.04.0146 | 4U/6V | | NATIONAL/OMRON |
| K.....5 | 56.04.0146 | 4U/6V | | NATIONAL/OMRON |
| R.....1 | 57.11.3562 | 5.6kΩ 1% | | |
| R.....2 | 57.11.3562 | 5.6kΩ 1% | | |
| R.....3 | 57.11.3562 | 5.6kΩ 1% | | |
| R.....4 | 57.11.3562 | 5.6kΩ 1% | | |
| R.....5 | 57.11.3562 | 5.6kΩ 1% | | |
| R.....6 | 57.11.3562 | 5.6kΩ 1% | | |
| R.....7 | 57.11.3562 | 5.6kΩ 1% | | |
| R.....8 | 57.11.3562 | 5.6kΩ 1% | | |
| R.....9 | 57.11.3562 | 5.6kΩ 1% | | |
| R.....10 | 57.11.3562 | 5.6kΩ 1% | | |
| R.....11 | 57.11.3562 | 5.6kΩ 1% | | |
| R.....12 | 57.11.3562 | 5.6kΩ 1% | | |
| R.....13 | 57.11.3562 | 5.6kΩ 1% | | |
| R.....14 | 57.11.3562 | 5.6kΩ 1% | | |
| R.....15 | 57.11.3562 | 5.6kΩ 1% | | |
| R.....16 | 57.11.3562 | 5.6kΩ 1% | | |
| R.....17 | 57.11.3562 | 5.6kΩ 1% | | |
| R.....18 | 57.11.3562 | 5.6kΩ 1% | | |
| R.....19 | 57.11.3562 | 5.6kΩ 1% | | |
| R.....20 | 57.11.3562 | 5.6kΩ 1% | | |
| R.....21 | | 1MΩ | | |
| R.....22 | | 1MΩ | | |
| R.....23 | | 1MΩ | | |
| R.....24 | | 1MΩ | | |
| R.....25 | | 1MΩ | | |
| R.....26 | | 1MΩ | | |
| R.....27 | | 1MΩ | | |
| R.....28 | | 1MΩ | | |
| R.....29 | | 1MΩ | | |
| R.....30 | | 1MΩ | | |
| R.....31 | | 1MΩ | | |
| R.....32 | | 1MΩ | | |
| R.....33 | | 1MΩ | | |
| R.....34 | | 1MΩ | | |

Relaiskarte Monitor Switch 4/2

1.915.602



Relaiskarte Monitor Switch 4/2 1.915.602.81



| | | | | | |
|--------------------------------|-------------------|-----------------------------------|------------|--------------------------------|-----|
| Werkstoff | Norm-Nr. | Oberfläche | Güte | Änderung | ③ |
| | DIN-Bez.: | Beh.: | | | ② |
| | Abmessung: | | | | ① |
| Zugehörige Unterlagen: | Freimasstoleranz: | Maßstab: | 9.10.87 | A.Ho | ④ |
| PL | ± | 2:1 | Datum | Gez. | Gas |
| Ersatz für: 1.915.602-00 | | Ersetzt durch: | Kopie für: | | |
| STUDER REGENSDORF ZÜRICH | | Benennung: 4/2 SWITCH A | | Nummer: 1.915.602-81 | |

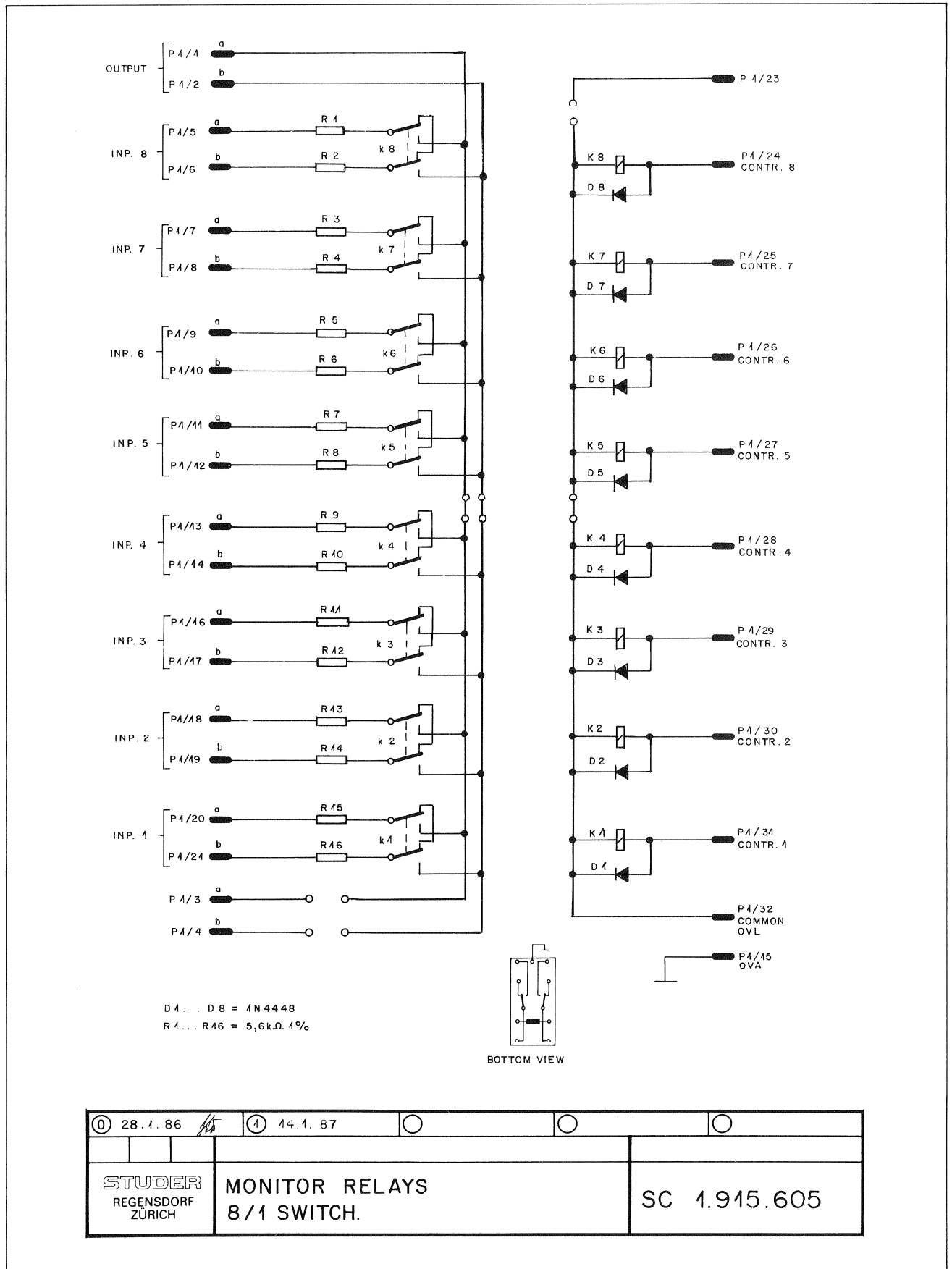
| Ad | ..POS.. | ..REF.No.. | DESCRIPTION | MANUFACTURER |
|----------|------------|------------|-------------|----------------|
| D.....1 | 50.04.0125 | 1N4448 | SILICIUM | |
| D.....2 | 50.04.0125 | 1N4448 | SILICIUM | |
| D.....3 | 50.04.0125 | 1N4448 | SILICIUM | |
| D.....4 | 50.04.0125 | 1N4448 | SILICIUM | |
| D.....5 | 50.04.0125 | 1N4448 | SILICIUM | |
| D.....6 | 50.04.0125 | 1N4448 | SILICIUM | |
| D.....7 | 50.04.0125 | 1N4448 | SILICIUM | |
| D.....8 | 50.04.0125 | 1N4448 | SILICIUM | |
| K.....1 | 56.04.0146 | 4U/6V | | NATIONAL/OMRON |
| K.....2 | 56.04.0146 | 4U/6V | | NATIONAL/OMRON |
| K.....3 | 56.04.0146 | 4U/6V | | NATIONAL/OMRON |
| K.....4 | 56.04.0146 | 4U/6V | | NATIONAL/OMRON |
| K.....5 | 56.04.0146 | 4U/6V | | NATIONAL/OMRON |
| K.....6 | 56.04.0146 | 4U/6V | | NATIONAL/OMRON |
| K.....7 | 56.04.0146 | 4U/6V | | NATIONAL/OMRON |
| K.....8 | 56.04.0146 | 4U/6V | | NATIONAL/OMRON |
| R.....1 | 57.11.3562 | 5.6kΩ 1% | | |
| R.....2 | 57.11.3562 | 5.6kΩ 1% | | |
| R.....3 | 57.11.3562 | 5.6kΩ 1% | | |
| R.....4 | 57.11.3562 | 5.6kΩ 1% | | |
| R.....5 | 57.11.3562 | 5.6kΩ 1% | | |
| R.....6 | 57.11.3562 | 5.6kΩ 1% | | |
| R.....7 | 57.11.3562 | 5.6kΩ 1% | | |
| R.....8 | 57.11.3562 | 5.6kΩ 1% | | |
| R.....9 | 57.11.3562 | 5.6kΩ 1% | | |
| R.....10 | 57.11.3562 | 5.6kΩ 1% | | |
| R.....11 | 57.11.3562 | 5.6kΩ 1% | | |
| R.....12 | 57.11.3562 | 5.6kΩ 1% | | |
| R.....13 | 57.11.3562 | 5.6kΩ 1% | | |
| R.....14 | 57.11.3562 | 5.6kΩ 1% | | |
| R.....15 | 57.11.3562 | 5.6kΩ 1% | | |
| R.....16 | 57.11.3562 | 5.6kΩ 1% | | |
| R.....17 | 57.11.3562 | 5.6kΩ 1% | | |
| R.....18 | 57.11.4109 | 1Ω | | |
| R.....19 | 57.11.4109 | 1Ω | | |
| R.....20 | 57.11.3562 | 5.6kΩ 1% | | |
| R.....21 | 57.11.3562 | 5.6kΩ 1% | | |
| R.....22 | 57.11.4109 | 1Ω | | |
| R.....23 | 57.11.4109 | 1Ω | | |
| R.....24 | 57.11.3562 | 5.6kΩ 1% | | |
| R.....25 | 57.11.3562 | 5.6kΩ 1% | | |
| R.....26 | 57.11.3562 | 5.6kΩ 1% | | |
| R.....27 | 57.11.3562 | 5.6kΩ 1% | | |
| R.....28 | 57.11.3562 | 5.6kΩ 1% | | |
| R.....29 | 57.11.3562 | 5.6kΩ 1% | | |

| Ad | ..POS.. | ..REF.No.. | DESCRIPTION | MANUFACTURER |
|---------|------------|------------|-------------|--------------|
| R....30 | 57.11.3562 | 5.6kΩ 1% | | |
| R....31 | 57.11.3562 | 5.6kΩ 1% | | |
| R....32 | 57.11.3562 | 5.6kΩ 1% | | |
| R....33 | | 1MΩ | | |
| R....34 | | 1MΩ | | |
| R....35 | | 1MΩ | | |
| R....36 | | 1MΩ | | |
| R....37 | | 1MΩ | | |
| R....38 | | 1MΩ | | |
| R....39 | | 1MΩ | | |
| R....40 | | 1MΩ | | |
| R....41 | | 1MΩ | | |
| R....42 | | 1MΩ | | |
| R....43 | | 1MΩ | | |
| R....44 | | 1MΩ | | |
| R....45 | | 1MΩ | | |
| R....46 | | 1MΩ | | |
| R....47 | | 1MΩ | | |
| R....48 | | 1MΩ | | |
| R....49 | | 1MΩ | | |
| R....50 | | 1MΩ | | |

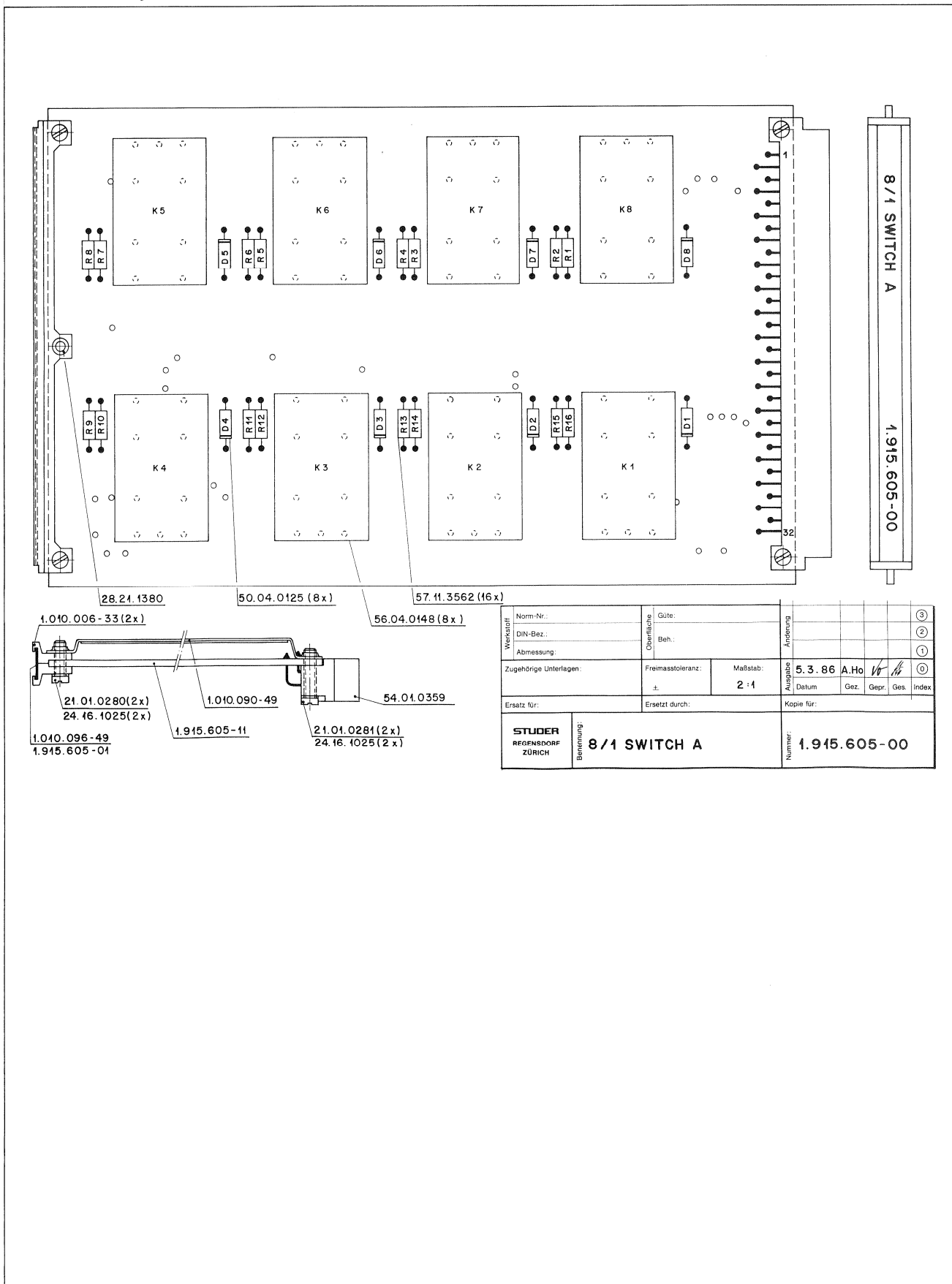
STUDER (00) 87/10/26 4/2 SWITCH A 1.915.602.81

Monitor Relays 8/1

1.915.605



Monitor Relays 8/1 1.915.605



| | | | | | |
|--------------------------------|-------------------|--------------|----------|-----------------------|------|
| Verzinsung: | Norm-Nr.: | Güte: | Änderung | | ③ |
| DIN-Bez.: | Abmessung: | Oberfläche: | Beh.: | | ② |
| Zugehörige Unterlagen: | Freimasstoleranz: | Maßstab: | Ausgabe | | ① |
| | ± | 2:1 | Datum | | ④ |
| Ersatz für: | Ersetzt durch: | Kopie für: | | 5.3.86 | A.Ho |
| STUDER REGENSDORF ZÜRICH | | Benennung: | | Datum | |
| | | 8/1 SWITCH A | | Gez. Gepr. Ges. Index | |
| | | Benennung: | | Kopie für: | |
| | | 8/1 SWITCH A | | 1.915.605-00 | |
| | | Benennung: | | Datum | |
| | | 8/1 SWITCH A | | Gez. Gepr. Ges. Index | |