

STUDER A-807 TLS-4000

INTERFACE DOKUMENTATION

Interface number : 1.812.402.20

IF - Doc number : 10.27.1610

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We reserve the right to make alterations

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1 General

1.1 Modules, numbers

Order Number

- | | |
|--|---------------|
| ■ Interface set, complete (interface, cable, documentation) | 21.812.402.20 |
| ■ Interface complete (HW,SW) | 1.812.402.20 |
| IF software set | 1.812.981.20 |
| IF-cable Studer Mk2 1,5m | 1.023.752.00 |
| IF-cable Studer Mk2 5m | 1.023.758.00 |

1.2 Slave models

- Studer A807-2/TC
- Studer A807-4/TC

1.3 Software

- | | |
|----------------------------|--------------------|
| ■ Initial version Index 20 | 1.812.981.20 51/89 |
|----------------------------|--------------------|

2 Installation

2.1 Requirements of TLS 4000

Order Number

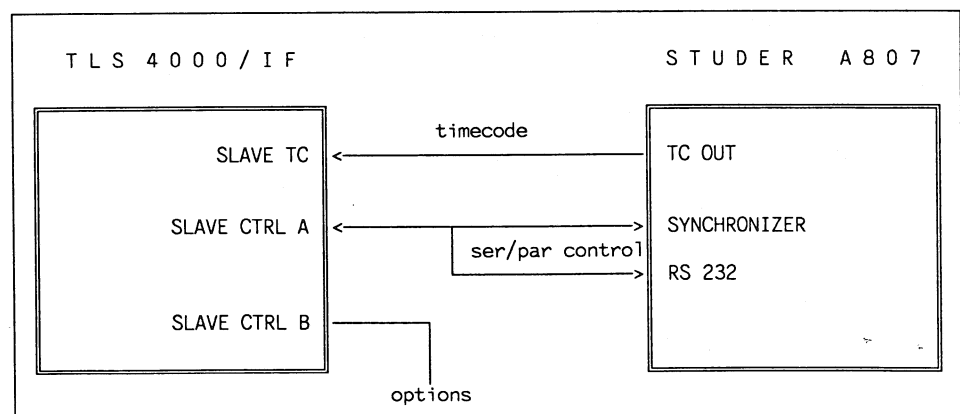
- Synchronizer board 1.812.320.23
- Interface: DIL switches set correctly (see Section 3.3)

2.2 Requirements of the slave machine

- Master software : 1.727.651.23
- TC board software : 1.727.711.21

Because in synchronizer mode the time code is compensated internally by the TLS to the setting of audio channel 1, the coupling of TC-CH1 with respect to the source selection (REPRO/SYNC/INP) should also be selected on the A807 in order to prevent errors when working with/without TLS. (Refer to the A807 operating instructions).

2.3 Cabling TLS 4000 - Slave



2.4 Quick test, alignment

- After power has been switched on no error message should appear on the indicator LED's (flashing, see Section 3.5).
- The correct wiring of the movepulses can be checked by displaying the slave time (LCU or controller) with interrupted slave TC line.

3 Operating instructions

3.1 Technical data

- Slave type:
 - SMPTE/EBU-TC Machine with movepulse information and code during spooling
 - GOTO funktion with PLAY-STOP sequence
 - Parking in LOCK mode with rollback offset
 - Transition CHASE-PLAY with preroll parking
- Tape deck control:
 - With serial remote control
- Capstan servo:
 - Frequency control, $f_{nom} = 9600$ Hz
- Move pulse information:
 - Clock and direction (LOW = forward)

| | |
|----------------|-------|
| 3.75 ips | 8 Hz |
| 7.5 ips | 16 Hz |
| 15 ips | 32 Hz |
| 30 ips | 64 Hz |
- Typical lockup time
 - (from CUED state, master start - SYNC) : < 2 sec
 - (from CHASE 10*vnom, master start - SYNC) : < 10 sec
- The drop-in/drop-out delays are compensated by the synchronizer.
- The time code correction is performed by the synchronizer. The reference point is determined by the status of audio channel 1. When the machine is changed over to INPUT, the last compensation time (REPRO or SYNC) remains active.
The internal TC correction of the A807 (TC processor) is switched off when a synchronizer is connected.

3.2 List of functions

Tape deck functions:

- STOP
 - PLAY,REC nominal (internal reference A807) or ext.varispeed (TLS-reference, +50% -30%, +30% - 0% at 3.75 ips)
 - EDIT identical to STOP
 - FORW,REW variwind with controlled wind command
 - SHTLF,SHTLR/FORW,REW with lifter defeat

- **LOC, LOCREL**
Machine locator funktion
- **MUTE and REHEARSE**
The functions are transmitted serially to the machine. For REHEARSE there is a parallel control capability on the SLAVE CONTROL B connector (see also Section 3.4).
- **EVENT RELAIS**
Control of this relay is supported (see Section 3.4).
- **CONDITIONAL COMMANDS**
Code-controlled initiation is possible for the following functions:
Tape deck commands STOP .. SHTLR,
Audio commands MUTEON .. RHRSOFF
Relay control EVON,EVOFF
- **STATUS INQUIRIES**
The tape deck states of the A807 are scanned every 100 ms. The nominal speed and the audio status are scanned once per second.
- **AUDIO CHANNEL REMOTE CONTROL**
Audio commands are transmitted serially to the machine when a change is necessary.
Channels 1 ... 4 correspond to the audio tracks 1 ... 4 of the A807. The setting of a DIL switch prevents that commands for tracks 3 and 4 are transmitted for a 2-track machine (see Section 3.3).
The interface does not support the TC channel control. If necessary, the code can be modified with TRANSPARENT commands.
- **TRANSPARENT COMMANDS**
A character chain can be transmitted directly to the machine.
Example: Play command = 'PLY' cr --> 50H 4CH 59H 0DH.
For a TRANSPARENT REQUEST the 'LF' character of the feedback is suppressed. (Termination character).
- **KEYBOARD DISABLE**
Is transmitted serially and suppresses all local keys of the A807 except those of the display functions.

3.3 DIL switch

On the DIL switch SZ81 the following functions can be set:

- Switch 1: Polarity of the RECEN-signal (see Section 3.4)
Record inhibition is set to
ON : active signal (LOW)
OFF : inactive signal (HIGH or open)
- Switch 2: Audio mute function
OFF : ENABLE MUTE: MUTE function admissible (TC channel)
ON : DISABLE MUTE: All MUTE commands are suppressed by the interface
(when TC is recorded on audio channel)
- Switch 3: Number of audio channels
OFF : 2 channels
ON : 4 channels
- All other switches are not used

3.4 Supplementary functions on SLAVE CONTROL B

- RECEN (Pin2):
Record enable for hardware-controlled inhibition of the RECORD function. Depending on the setting of DIL switch 1, the recording is inhibited by an active LOW or HIGH signal.
- REL1 (Pin6), REL2 (Pin7):
The EVENT relay contact REL1/REL2 can be used for any purpose. It is controlled with EVON, EVOFF commands via the serial TLS interface.
- SVRSPD (Pin 5), REFIN (Pin13):
With an active signal (LOW) on the SVRSPD input the tape speed can be controlled by applying a frequency to the REFIN pin. This external capstan control is only effective if no synchronizer function is active.
- BVRSPD (Pin 4):
Indicates when the synchronizer has enabled the capstan varispeed mode (active = LOW).
- SREHSL (Pin12), BREHSL (Pin15):
Parallel remote control of the REHEARSE function. The output BREHSL (open collector, active = LOW) signals the enabled rehearse mode. It can be switched on either serially (with RHRSON command) or parallel (active LOW on SREHSL).

- MVCL (Pin21), MVDR (Pin24):
Buffered move signal outputs for MASTER TALLY wiring.
MVDR : LOW = forward
MVCL : The frequency at nominal play speed is:

| | |
|----------|---------|
| 3.75 ips | : 8 Hz |
| 7.5 ips | : 16 Hz |
| 15 ips | : 32 Hz |
| 30 ips | : 64 Hz |

- REMON+ (Pin25):
Supply voltage of the A807 (24V, used for remote power-on of the synchronizer).

3.5 Indicator LEDs

Two LEDs for error diagnosis and status indication are located on the front of the interface:

DL 1 2 (viewed from the front)

- After the power has been switched on short self-test program is started. If an error is detected, the program stops and signals the error with a flashing LED.

DL 1 2 (- LED dark, # LED flashes)

| DL1 | DL2 | |
|-----|-----|--------------------|
| # | # | RAM error detected |

- After the program has been started, the 2 LEDs are used for status indication:

DL 1 2 (- LED dark, * LED lit)

| DL1 | DL2 | |
|-----|-----|-------------------------------------|
| - | - | All OK |
| * | * | No connection to synchronizer board |
| * | - | No connection to A807 |
| - | * | The A807 reports TAPE OUT |

3.6 Test points

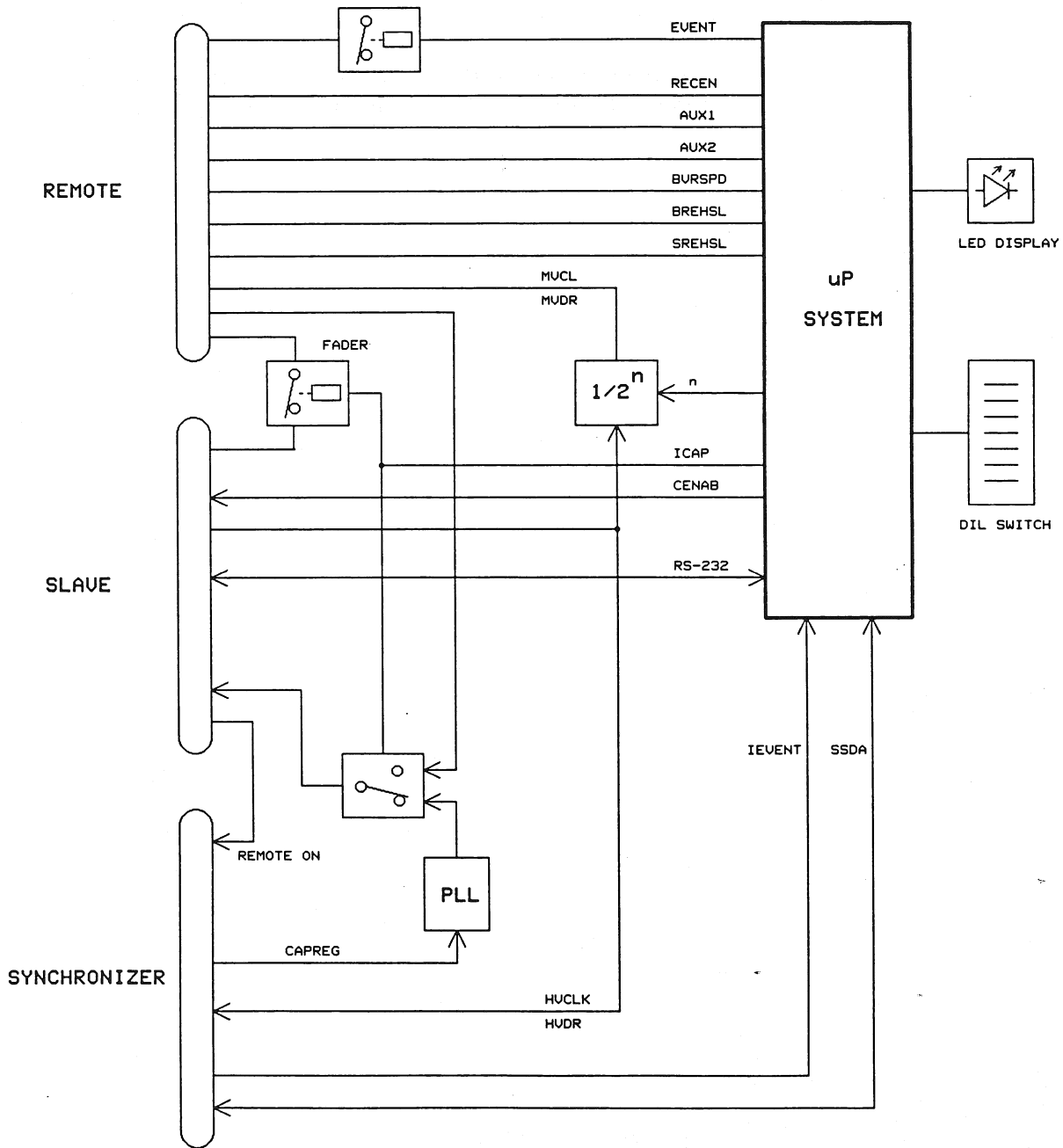
None

3.7 Application notes

- Because the synchronizer disables the internal TC processor, the time code at the output of the A807 has a difference to the corresponding audio signal!

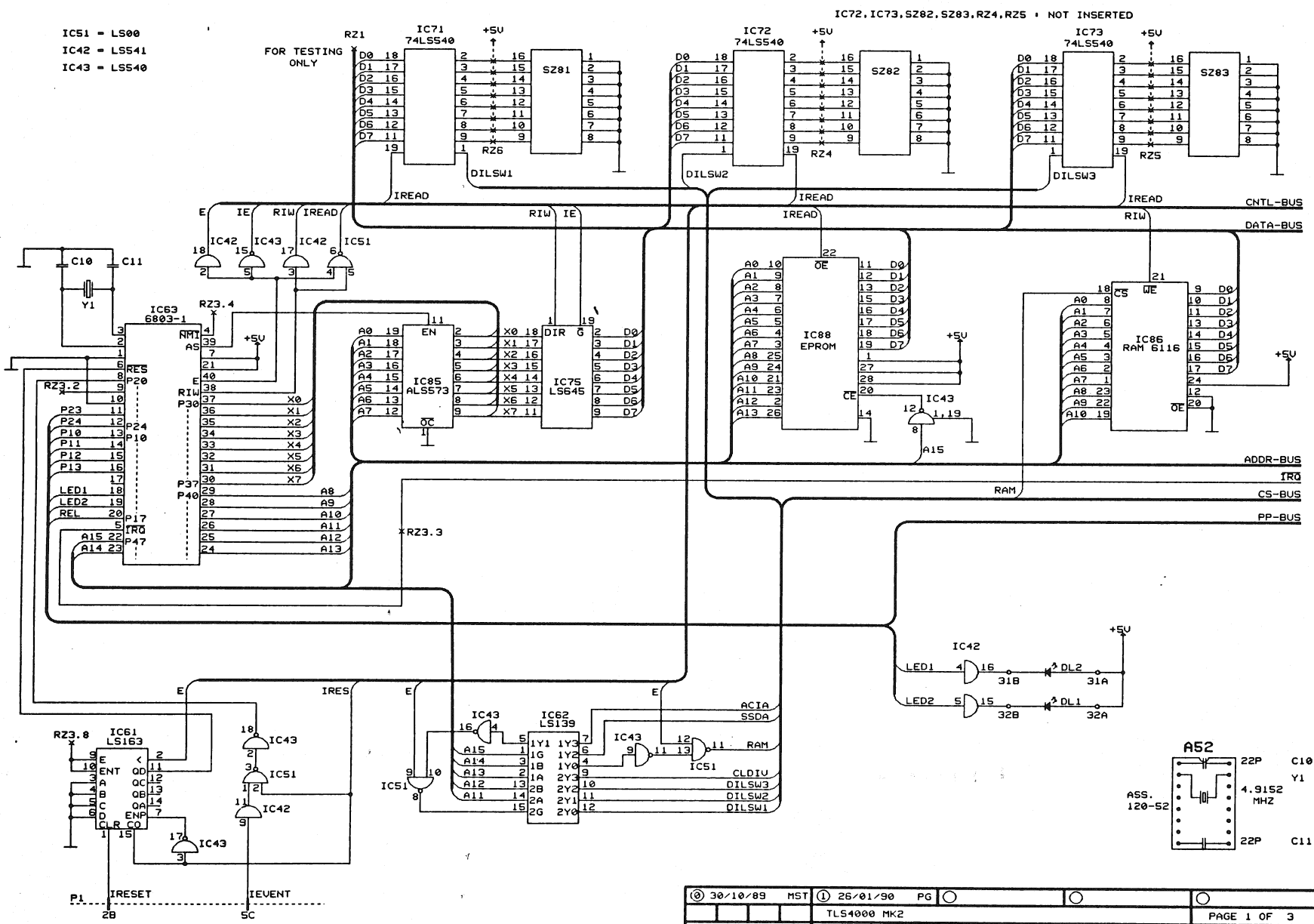
4 Service documents

4.1 Block diagram



| | | | | |
|-------------------------------------|----------------|------------------|---|-------------|
| © 03-JUL-90/ML | ① TLS2DOCU.P02 | ② VERSION : 1.00 | ③ | ④ |
| STUDER INTERNATIONAL AG | | | | PAGE 1 OF 1 |
| SYNCHRONIZER TLS-4000 MK2 | | | | |
| BLOCKDIAGRAM INTERFACE STUDER A-807 | | | | |

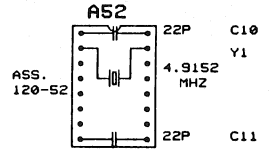
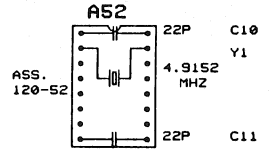
4.2 Diagrams



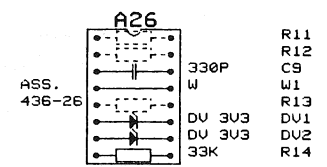
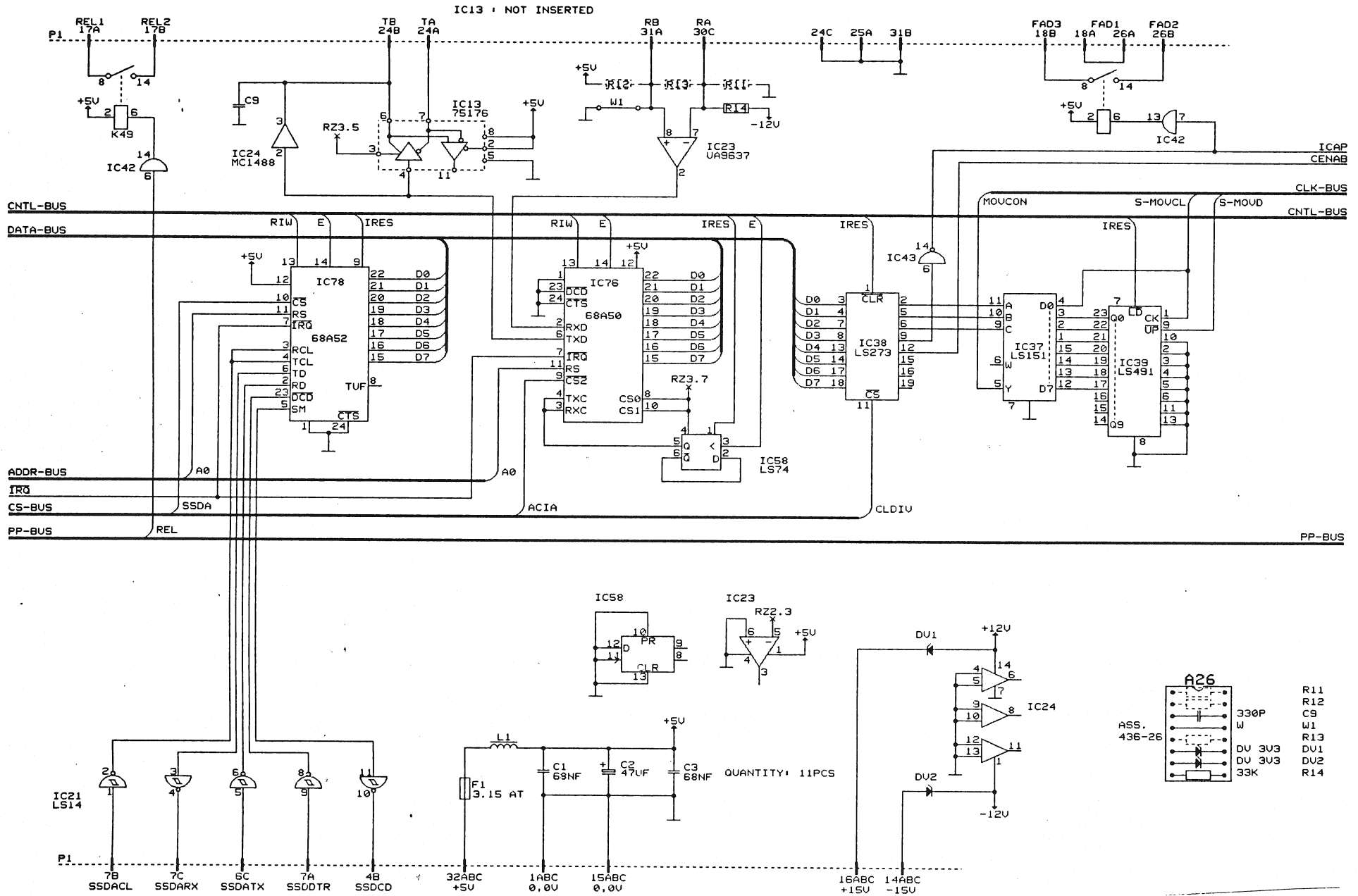
IC51 - LS00
 IC42 - LSS41
 IC43 - LSS40

IC72, IC73, S282, S283, RZ4, RZ5 + NOT INSERTED

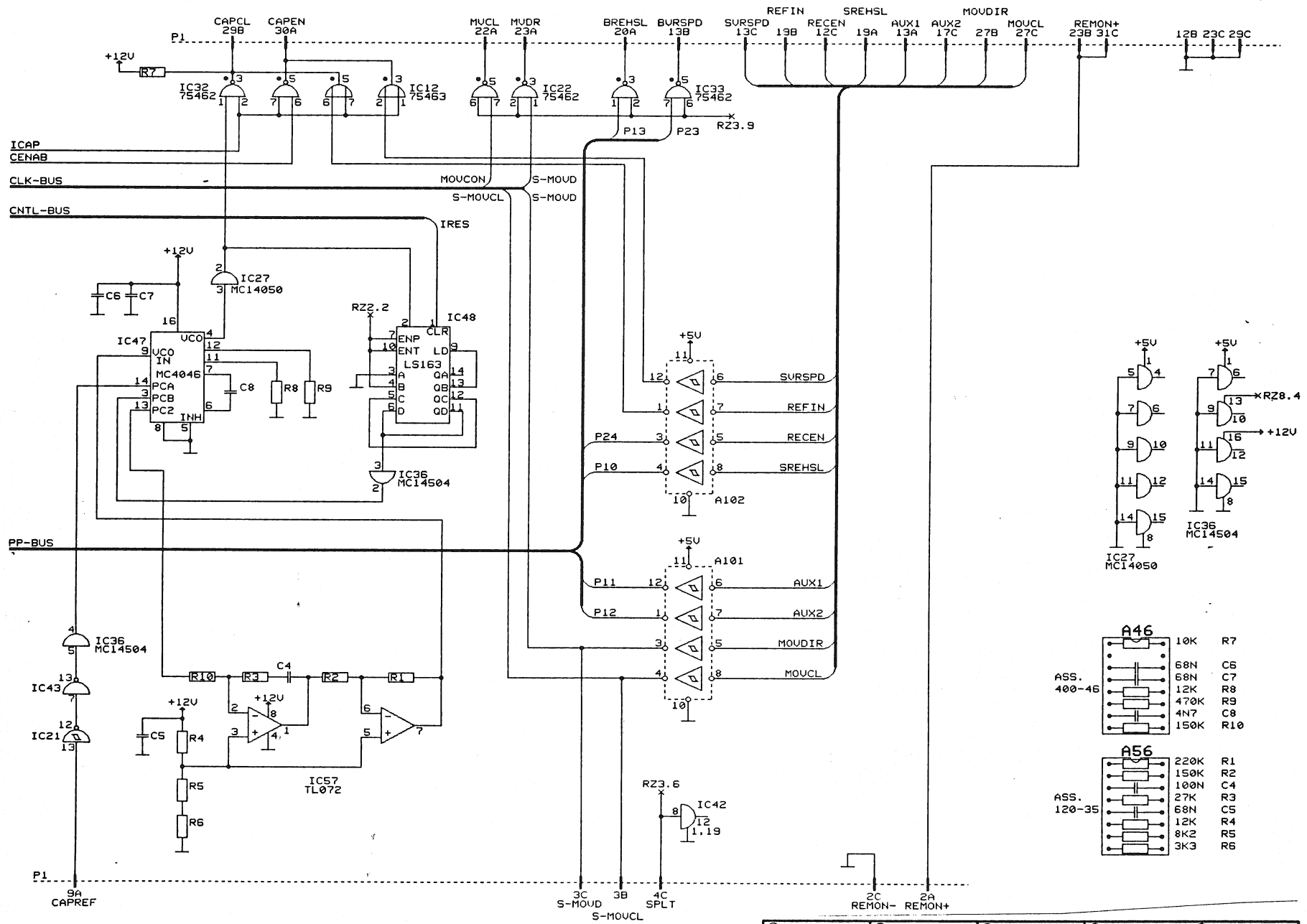
FOR TESTING ONLY



| | | | | | | |
|----------|-----|----------|----|-----------------------|--|-----------------|
| 30/10/89 | MST | 26/01/90 | PG | | | |
| STUDER | | | | INTERFACE STUDER A807 | | SC 1.812.402.20 |
| | | | | PAGE 1 OF 3 | | |

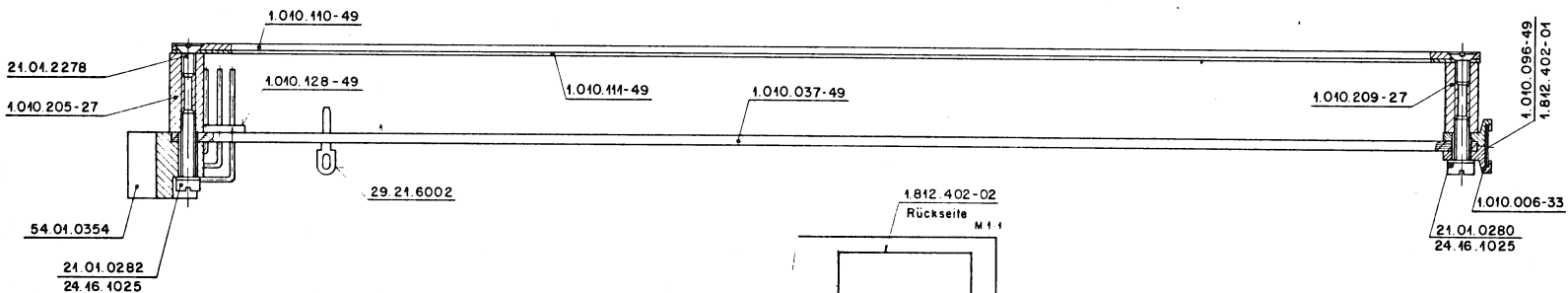
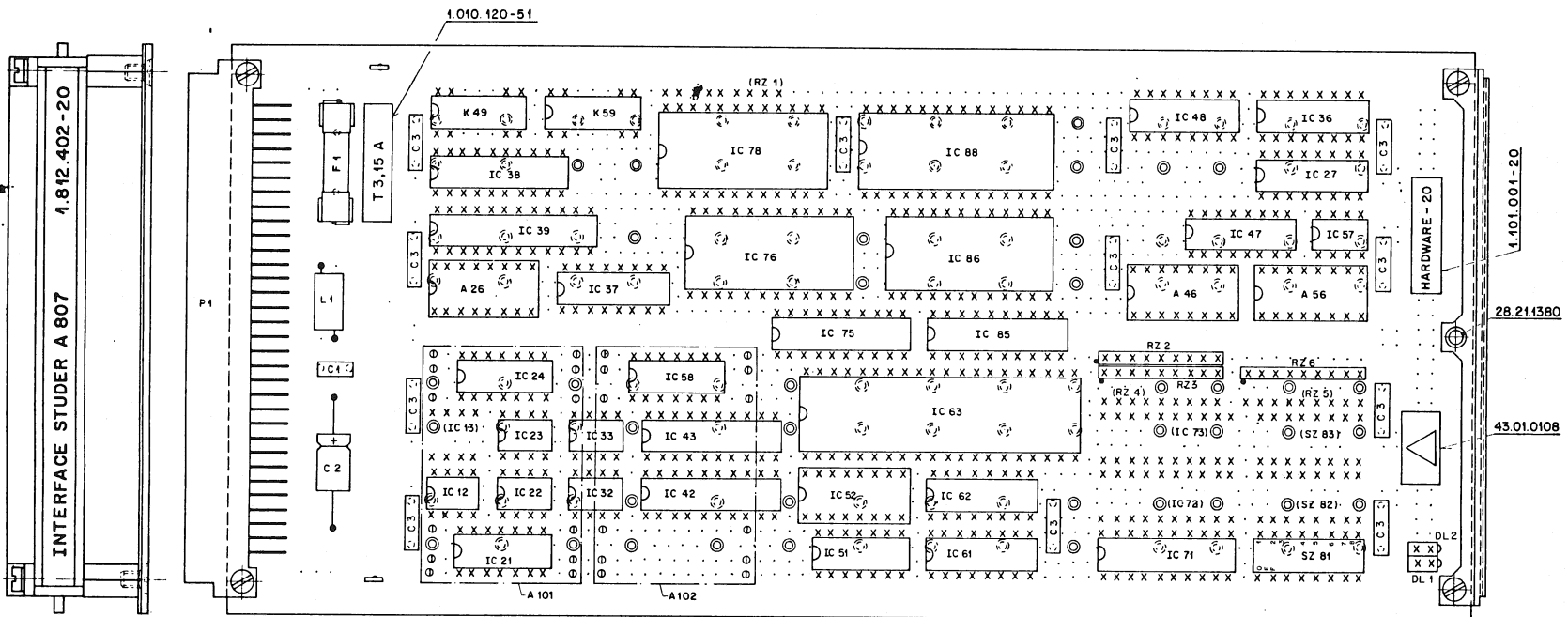


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|------------|-----|------------|-----------------------|---|-------------|
| © 30/10/89 | MST | ① 26/01/90 | PG | ○ | ○ |
| STUDER | | | INTERFACE STUDER A807 | | SC |
| | | | 1.812.402.20 | | PAGE 2 OF 3 |



- A46**
- | | |
|------|-----|
| 10K | R7 |
| 68N | C6 |
| 68N | C7 |
| 12K | R8 |
| 470K | R9 |
| 4N7 | C8 |
| 150K | R10 |
- A56**
- | | |
|------|----|
| 220K | R1 |
| 150K | R2 |
| 100N | C4 |
| 27K | R3 |
| 68N | C5 |
| 12K | R4 |
| 8K2 | R5 |
| 3K3 | R6 |

4.3 Component arrangement



4.4 Component position list

IF STUDER A807 1.812.402.20

| Ad | POS | REF.No | DESCRIPTION | MANUFACTURER |
|-------|-----|--------------|--|--------------|
| A... | 26 | 1.812.231.00 | Assembly 436-26 | St |
| A... | 46 | 1.812.213.00 | Assembly 400-46 | St |
| A... | 52 | 1.812.201.00 | Assembly I20-52 | St |
| A... | 56 | 1.812.203.00 | Assembly I20-35 | St |
| A... | 101 | 1.812.250.00 | Input Network | St |
| A... | 102 | 1.812.250.00 | Input Network | St |
| C.... | 1 | 59.99.0205 | 68 nF -20%, 63V, CER | |
| C.... | 2 | 59.25.3470 | 47 uF -20%, 16V, EL | |
| C.... | 3 | 59.99.1200 | 68 nF 20%, 63V, PET Quantity: 11 | |
| DL... | 1 | 50.04.2107 | LED red ,555-2007 | Di |
| DL... | 2 | 50.04.2107 | LED red ,555-2007 | Di |
| F.... | 1 | 51.01.0122 | 3.15 AT 250V, 5 * 20 | |
| IC... | 12 | 50.05.0203 | SN 75 463 JG, DS 75 463 | |
| IC... | 21 | 50.06.0014 | SN 74 LS 14 | |
| IC... | 22 | 50.05.0227 | SN 75 462 JG, SN 75 472 P | |
| IC... | 23 | 50.15.0114 | uA 9637 ACP ,A | |
| IC... | 24 | 50.15.0106 | MC 1488 P, DS 1488 | |
| IC... | 27 | 50.07.0050 | MC 14050 | |
| IC... | 32 | 50.05.0227 | SN 75 462 JG, SN 75 472 P | |
| IC... | 33 | 50.05.0227 | SN 75 462 JG, SN 75 472 P | |
| IC... | 36 | 50.15.0103 | MC 14504 | |
| IC... | 37 | 50.06.0151 | SN 74 LS 151 | |
| IC... | 38 | 50.06.0273 | SN 74 LS 273 | |
| IC... | 39 | 50.06.0491 | SN 74 LS 491 | |
| IC... | 42 | 50.06.0541 | SN 74 LS 541 | |
| IC... | 43 | 50.06.0540 | SN 74 LS 540 | |
| IC... | 47 | 50.07.0046 | CD 4046 BE, MC 14046 BCP ,A | RCA, Mot |
| IC... | 48 | 50.06.0163 | SN 74 LS 163 | |
| IC... | 51 | 50.06.0000 | SN 74 LS 00 | |
| IC... | 57 | 50.09.0101 | TL 072 CP | TI |
| IC... | 58 | 50.06.0074 | SN 74 LS 74 | |
| IC... | 61 | 50.06.0163 | SN 74 LS 163 | |
| IC... | 62 | 50.06.0139 | SN 74 LS 139 | |
| IC... | 63 | 50.16.0107 | MC 6803P-1, HD 6803P-1 ,A | Mot, Hi |
| IC... | 71 | 50.06.0540 | SN 74 LS 540 | |
| IC... | 75 | 50.06.0645 | SN 74 LS 645 | |
| IC... | 76 | 50.16.0101 | MC 68A50 P ,A | |
| IC... | 78 | 50.16.0114 | MC 68A52 P ,A | |
| IC... | 85 | 50.06.1573 | SN 74ALS 573 | |
| IC... | 86 | 50.14.0107 | HM 6116 LP-4, SRAM 2k x 8, 200nsec | |
| IC... | 88 | 50.14.0125 | see note HM 4827128 G-25, EPROM 16k x 8, 300nsec | |
| K.... | 49 | 56.02.1003 | 5 V 1*A 100V/0.5A, Print | |
| K.... | 59 | 56.02.1003 | 5 V 1*A 100V/0.5A, Print | |
| L.... | 1 | 62.01.0115 | Wide Band HF-Choke | |
| P.... | 1 | 54.01.0354 | Card Connector 3 * 32 Euro Wrap | |
| RZ... | 2 | 57.88.4332 | 8 * 3.3K 2%, Single Line | |
| RZ... | 3 | 57.88.4332 | 8 * 3.3K 2%, Single Line | |
| RZ... | 6 | 57.88.4332 | 8 * 3.3K 2%, Single Line | |
| SZ... | 81 | 55.01.0168 | 8 * ON, DIL-Switch | |

Notes : Software release 1.812.981.20 (IC 88)

The following elements are not inserted :
 IC 13,72,73
 RZ 4,5
 SZ 82,83

CER = Ceramic, EL = Electrolytic, PET = Met. Polyester

MANUFACTURERS : Di = Dialco
 Hi = Hitachi
 Mot = Motorola
 RCA = RCA Corporation
 St = Studer
 TI = Texas Instruments

1.812.402.20 INTERFACE STUDER A807 MST89/10/2700

4.5 Signal description, slave connectors

SLAVE CONTROL A:

| Pin | Signal | Type | Description |
|-----|--------|-------|----------------------------|
| 1 | GND | | 0.0V |
| 2 | TA | | n.c. |
| 3 | TB | RS232 | serial data line to A807 |
| 4 | GND | | 0.0V |
| 5 | GND | | 0.0V |
| 6 | - | | |
| 7 | - | | |
| 8 | FAD1 | | n.c. |
| 9 | FAD2 | | n.c. |
| 10 | - | | |
| 11 | - | | |
| 12 | MOVDIR | I in | move direction of A807 |
| 13 | MOVCL | I in | move clock of A807 |
| 14 | - | | |
| 15 | - | | |
| 16 | - | | |
| 17 | - | | |
| 18 | CAPCL | I out | capstan varispeed clock |
| 19 | GND | | 0.0 |
| 20 | CAPEN | I out | enable capstan varispeed |
| 21 | - | | |
| 22 | RA | RS232 | serial data line from A807 |
| 23 | RB | | n.c. |
| 24 | GND | | n.c. |
| 25 | REMON+ | +24V | supply voltage of A807 |

- Signaltypes:
 - I in logic input, active low
(with internal pullup resistor)
 - I out logic output, active low
(open collector, max 28V/0.3A)
 - RS232 serial line, RS232 standard

SLAVE CONTROL B:

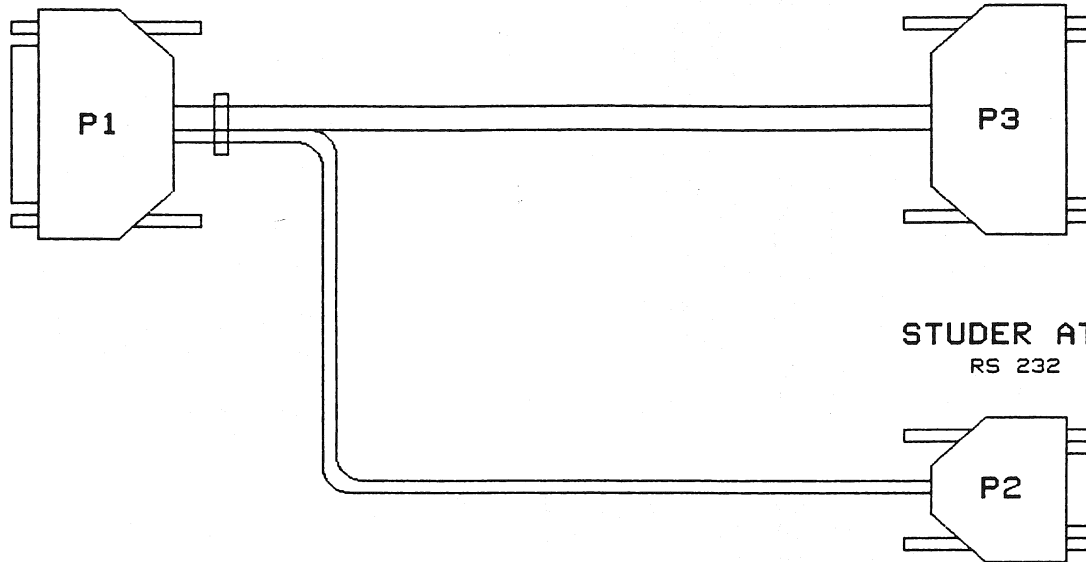
| Pin | Signal | Type | Description |
|-----|--------|-------|---------------------------------------|
| 1 | GND | | signal ground |
| 2 | RECEN | I in | record enable/safe (see DIL switches) |
| 3 | AUX1 | I in | n.c. |
| 4 | BVRSPD | I out | external varispeed active |
| 5 | SVRSPD | I in | enable external varispeed |
| 6 | REL1 | | relay contact 1 (100V/0.5A) |
| 7 | REL2 | | relay contact 2 (100V/0.5A) |
| 8 | AUX2 | | n.c. |
| 9 | FAD1 | | n.c. |
| 10 | FAD3 | | n.c. |
| 11 | - | | |
| 12 | SREHSL | I in | set rehearse mode |
| 13 | REFIN | I in | external varispeed frequency |
| 14 | - | | |
| 15 | BREHSL | I out | rehearse mode active |
| 16 | - | | |
| 17 | - | | |
| 18 | - | | |
| 19 | - | | |
| 20 | - | | |
| 21 | MVCL | I out | move clock output |
| 22 | - | | |
| 23 | - | | |
| 24 | MVDR | I out | move direction output |
| 25 | REMON+ | +24V | supply voltage of A807 |

- Signaltypes: I in logic input, active low (with internal pullup resistor)
- I out logic output, active low (open collector, max 28V/0.3A)

4.6 Interface cable for STUDER A807

TLS 4000
SLAVE CONTROL A

STUDER ATR
SYNCHRONIZER



| | | | | |
|-------|-------|--------|-------|-------|
| P1. 1 | ..... | GND | ..... | P3. 1 |
| 8 | ..... | FAD1 | ..... | 11 |
| 9 | ..... | FAD2 | ..... | 12 |
| 12 | ..... | MOUDIR | ..... | 10 |
| 13 | ..... | MOUCL | ..... | 7 |
| 18 | ..... | CAPCL | ..... | 13 |
| 20 | ..... | CAPEN | ..... | 5 |
| 25 | ..... | REMON+ | ..... | 25 |
| 19 | ..... | SCREEN | ..... |  |

| | | | | |
|----|-------|-----------|-------|-------|
| 2 | ..... | TA | ..... | P2. 3 |
| 3 | ..... | TB (RX) | ..... | 8 |
| 5 | ..... | GND (GND) | ..... | 9 |
| 22 | ..... | RA (TX) | ..... | 2 |
| 23 | ..... | RB | ..... | 7 |
| 4 | ..... | SCREEN | ..... |  |

| | | | | | |
|---------------|----|----------------------|--|-------------|------------------------------|
| © 23/01/90 | PG | | | | |
| TLS 4000 MKII | | | | PAGE 1 OF 1 | |
| STUDER | | IF-CABLE STUDER A807 | | Z | 1.023.752.00 1.023.758.00 |

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1 Allgemeines

1.1 Baugruppen, Nummern

Order Number

- | | |
|---|---------------|
| ■ Interfacesatz komplett (Interface,Kabel,Dokumentation) | 21.812.402.20 |
| ■ Interface komplett (HW,SW) | 1.812.402.20 |
| IF Softwaresatz | 1.812.981.20 |
| IF-Kabel Studer Mk2 1,5m | 1.023.752.00 |
| IF-Kabel Studer Mk2 5m | 1.023.758.00 |

1.2 Slave Modelle

- Studer A807-2/TC
- Studer A807-4/TC

1.3 Software

- | | | |
|------------------------|--------------|-------|
| ■ Erstversion Index 20 | 1.812.981.20 | 51/89 |
|------------------------|--------------|-------|

2 Inbetriebnahme

2.1 Anforderungen an TLS4000

Order Number

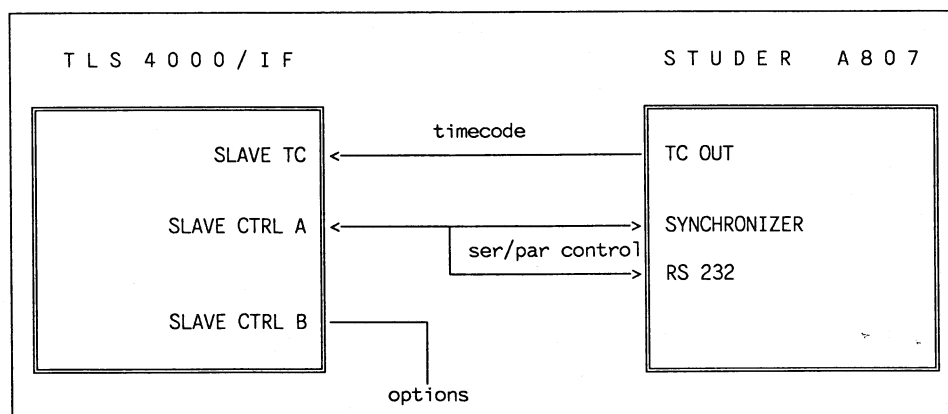
- Synchronizer Board 1.812.320.23
- Interface : korrektes Setzen der DIL-Schalter (siehe 3.3)

2.2 Anforderungen an Slavemaschine

- Master Software : 1.727.651.23
- TC Board Software : 1.727.711.21

Da im Synchronizerbetrieb der Zeitcode TLS-intern auf die Einstellung vom Audiokanal 1 kompensiert wird, sollte auch bei der A807 die Verkopplung TC-CH1 bezüglich Quellenwahl (REPRO/SYNC/INP) gewaehlt werden, um Fehlbedienungen beim Arbeiten mit/ohne TLS zu vermeiden. (Siehe Gebrauchsanweisung der A807).

2.3 Verkablung TLS4000 - Slave



2.4 Kurztest, Abgleich

- Nach dem Einschalten darf auf der LED-Anzeige keine Fehlermeldung erscheinen (blinkend, siehe auch Kapitel 3.5)
- Durch Anzeige der Slavezeit (LCU oder Controller) bei unterbrochener Slave TC Leitung kann die korrekte Verdrahtung der Movepulse ueberpueft werden.

3 Bedienungsanleitung

3.1 Technische Daten

- Slavetyp:
SMPTE/EBU-TC Maschine mit Movepulsinformation mit Code während dem Umspulen
 - GOTO Funktion mit PLAY-STOP Sequenz
 - Parkieren in LOCK mit Vorhalt
 - Übergang CHASE-PLAY mit Vorparkieren

 - Laufwerkansteuerung:
mit serieller Fernsteuerung

 - Capstannachsteuerung:
Frequenzsteuerung, $f_{nom} = 9600$ Hz

 - Movepulsinformation:
Clock und Richtung (LOW = forward)
- | | |
|----------------|-------|
| 3.75 ips | 8 Hz |
| 7.5 ips | 16 Hz |
| 15 ips | 32 Hz |
| 30 ips | 64 Hz |
- Typische Lockup Zeit
(aus CUED Zustand, Master Start - SYNC) : < 2 sec
(aus CHASE 10*vnom, Master Start - SYNC) : < 10 sec

 - Die Dropin/Dropout Verzögerungen werden vom Synchronizer kompensiert.

 - Die Korrektur des Zeitcodes wird vom Synchronizer vorgenommen.
Der Bezugspunkt wird vom Zustand des Audiokanals 1 bestimmt.
Beim Umschalten auf INPUT bleibt die letzte Kompensationszeit (REPRO oder SYNC) aktiv.
Die interne TC-Korrektur der A807 (TC Processor) bleibt beim Anschluss eines Synchronizers ausgeschaltet.

3.2 Funktionsliste

Laufwerkfunktionen:

- STOP
PLAY, REC nominal (interne Referenz A807) oder
ext. varispeed (TLS-Referenz, +50% -30%, +30% - 0% bei 3.75 ips)
EDIT identisch mit STOP
FORW, REW Variwind mit controlled wind command
SHTLF, SHTLR/FORW, REW mit lifter defeat

- **LOC, LOCREL**
Maschine locator Funktion
- **MUTE und REHEARSE**
Die Funktionen werden der Maschine seriell uebermittelt.
Fuer REHEARSE besteht eine parallele Steuermoeglichkeit am SLAVE CONTROL B Stecker (siehe auch Kapitel 3.4).
- **EVENT RELAIS**
Die Steuerung des Relais ist verfuegbar (siehe Kapitel 3.4).
- **CONDITIONAL COMMANDS**
Die codegesteuerte Ausloesung ist fuer folgende Funktionen moeglich:
Laufwerkbehele STOP .. SHTLR,
Audiobefehle MUTEON .. RHRSOFF
Relaisansteuerung EVON,EVOFF
- **STATUS ABFRAGEN**
Der Laufwerkstatus der A807 wird seriell alle 100 ms abgefragt.
Die Nominalgeschwindigkeit und der Audiostatus werden einmal pro Sekunde abgefragt.
- **AUDIO KANALFERNSTEUERUNG**
Audio Befehle werden der Maschine seriell uebermittelt sofern eine Aenderung notwendig ist.
Kanal 1 .. 4 entsprechen den Audiospuren 1 ..4 der A807.
Mit einem Dil-Schalter kann verhindert werden, dass einer Zweispurmaschine Befehle fuer Spur 3 und 4 uebermittelt werden (siehe Kap. 3.3).
Das Interface unterstuetzt die TC-Kanalansteuerung nicht.
Er kann jedoch bei Bedarf mit TRANSPARENT-Commands veraendert werden.
- **TRANSPARENT COMMANDS**
Ein Charakterkette kann der Maschine direkt uebermittelt werden.
Beispiel : Play command = 'PLY' cr ---> 50H 4CH 59H 0DH
Bei einem TRANSPARENT REQUEST wird der 'LF' Charakter der Rueckmeldung unterdrueckt. (Abschlusscharakter).
- **KEYBOARD DISABLE**
Wird seriell uebermittelt und unterdrueckt alle lokale Tasten der A807 ausser denen der Anzeigefunktionen.

3.3 DIL Schalter

Am DIL-Schalter SZ81 sind folgende Funktionen einstellbar:

- Switch 1: Polarität des RECEN-Signals (siehe Kapitel 3.4)
Eine Aufnahmesperre wird bewirkt durch
ON : aktives Signal (LOW)
OFF : inaktives Signal (HIGH oder offen)
- Switch 2: Audio Mute Funktion
OFF : ENABLE MUTE: MUTE Funktion ist zugelassen (TC Kanal)
ON : DISABLE MUTE: Alle MUTE Befehle werden vom Interface unterdrückt (bei TC Aufzeichnungen auf Audiokanal)
- Switch 3: Anzahl der Audio Kanäle
OFF : 2 Kanäle
ON : 4 Kanäle
- alle weiteren Schalter sind unbenutzt

3.4 Zusatzfunktionen an SLAVE CONTROL B

- RECEN (Pin2):
Record Enable zur hardwaremassigen Sperrung der RECORD Funktion. Je nach Stellung des DIL-Schalters 1 wird eine Sperrung durch ein aktives LOW oder HIGH Signal bewirkt.
- REL1 (Pin6), REL2 (Pin7):
Der EVENT-Relaiskontakt REL1/REL2 kann fuer beliebige Zwecke eingesetzt werden. Er wird mit den Befehlen EVON,EVOFF ueber die serielle TLS-Schnittstelle angesteuert.
- SVRSPD (Pin 5), REFIN (Pin13):
Ein aktives Signal (LOW) auf dem SVRSPD-Eingang ermöglicht eine Steuerung der Bandgeschwindigkeit mit einer Frequenz am REFIN-Pin. Diese externe Capstansteuerung ist nur wirksam, wenn keine Synchronizerfunktion aktiv ist.
- BVRSPD (Pin 4):
Zeigt an, wenn der Synchronizer den Capstan Varispeed Mode eingeschaltet hat (aktiv = LOW).
- SREHSL (Pin12), BREHSL (Pin15):
Parallelfernsteuerung der REHEARSE Funktion. Der Ausgang BREHSL (open collector, aktiv = LOW) zeigt den eingeschalteten Rehearse-betrieb an. Er kann entweder seriell (mit Befehl RHRSON) oder parallel (aktiv LOW an SREHSL) eingeschaltet worden sein.

- MVCL (Pin21), MVDR (Pin24):
Gebufferte Movesignal-Ausgaenge, fuer MASTER TALLY-Verdrahtung.
MVDR : LOW = forward
MVCL : Die Frequenz betraegt bei nominaler Playgeschwindigkeit:

3.75 ips : 8 Hz
7.5 ips : 16 Hz
15 ips : 32 Hz
30 ips : 64 Hz

- REMON+ (Pin25):
Versorgungsspannung der A807 (24V, wird fuer die Ferneinschaltung des Synchronizers verwendet).

3.5 LED Anzeige

An der Frontseite des Interfaces sind 2 LED's zur Fehlerdiagnose und Statusanzeige angeordnet:

DL 1 2 (Sicht von vorne)

- Nach dem Einschalten wird ein kurzes Selbstestprogramm gestartet. Wird ein Fehler detektiert, stoppt das Programm und signalisiert ihn mit einer blinkenden Anzeige.

DL 1 2 (- LED dunkel, # LED blinkt)

| DL1 | DL2 | |
|-----|-----|--------------------|
| # | # | RAM error detected |

- Ist das Programm gestartet, werden die 2 LED's als Statusanzeige benuetzt:

DL 1 2 (- LED dunkel, * LED leuchtet)

| DL1 | DL2 | |
|-----|-----|---|
| - | - | Alles OK |
| * | * | keine Verbindung mit Synchronizer Board |
| * | - | keine Verbindung mit A807 |
| - | * | Die A807 meldet TAPE OUT |

3.6 Testpunkte

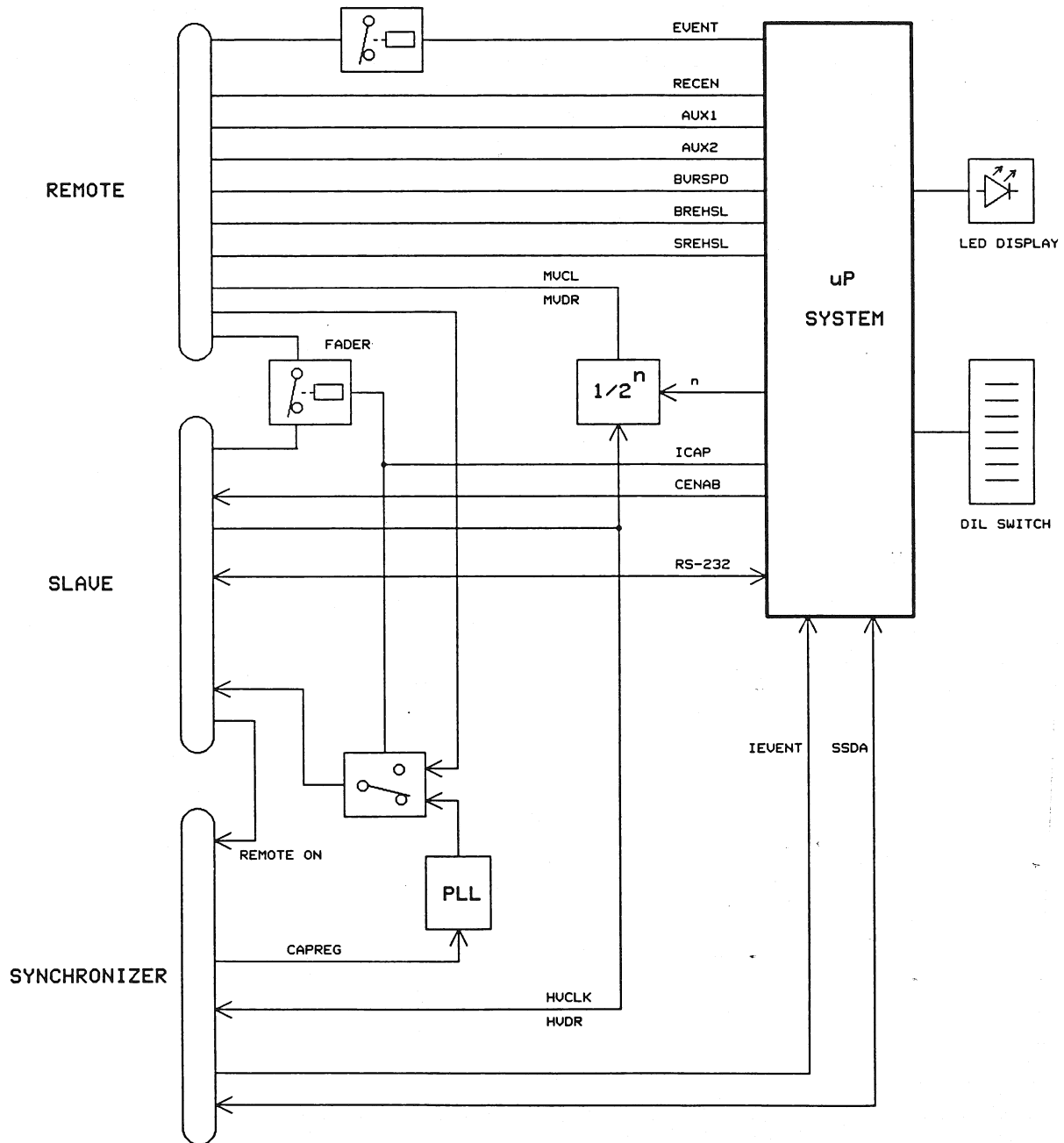
keine

3.7 Applikationshinweise

- Da der Synchronizer den internen TC-Processor ausschaltet, weist der Zeitcode am Ausgang der A807 eine Differenz zum dazugehörigen Audiosignal auf!

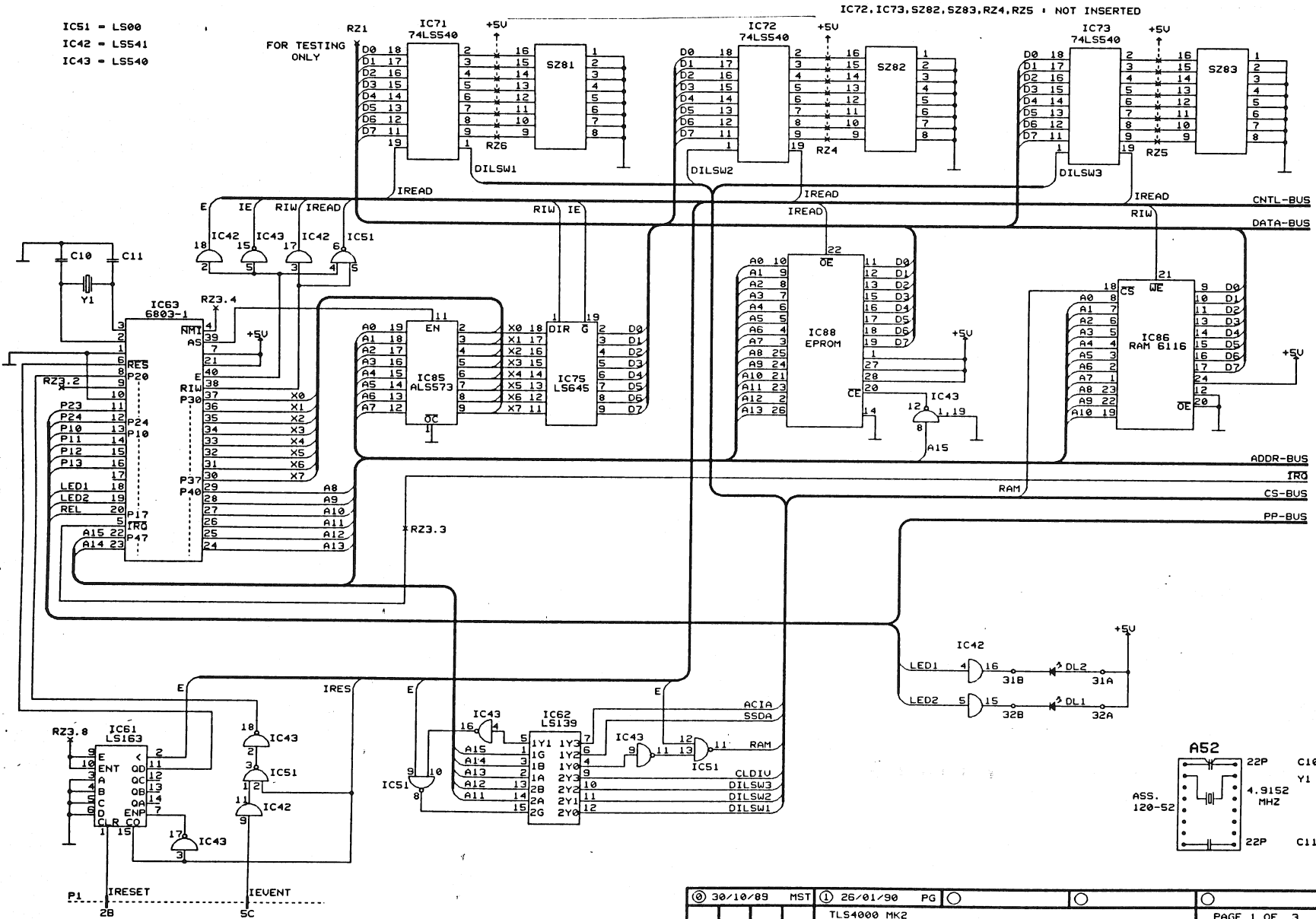
4 Service Unterlagen

4.1 Blockschaubild

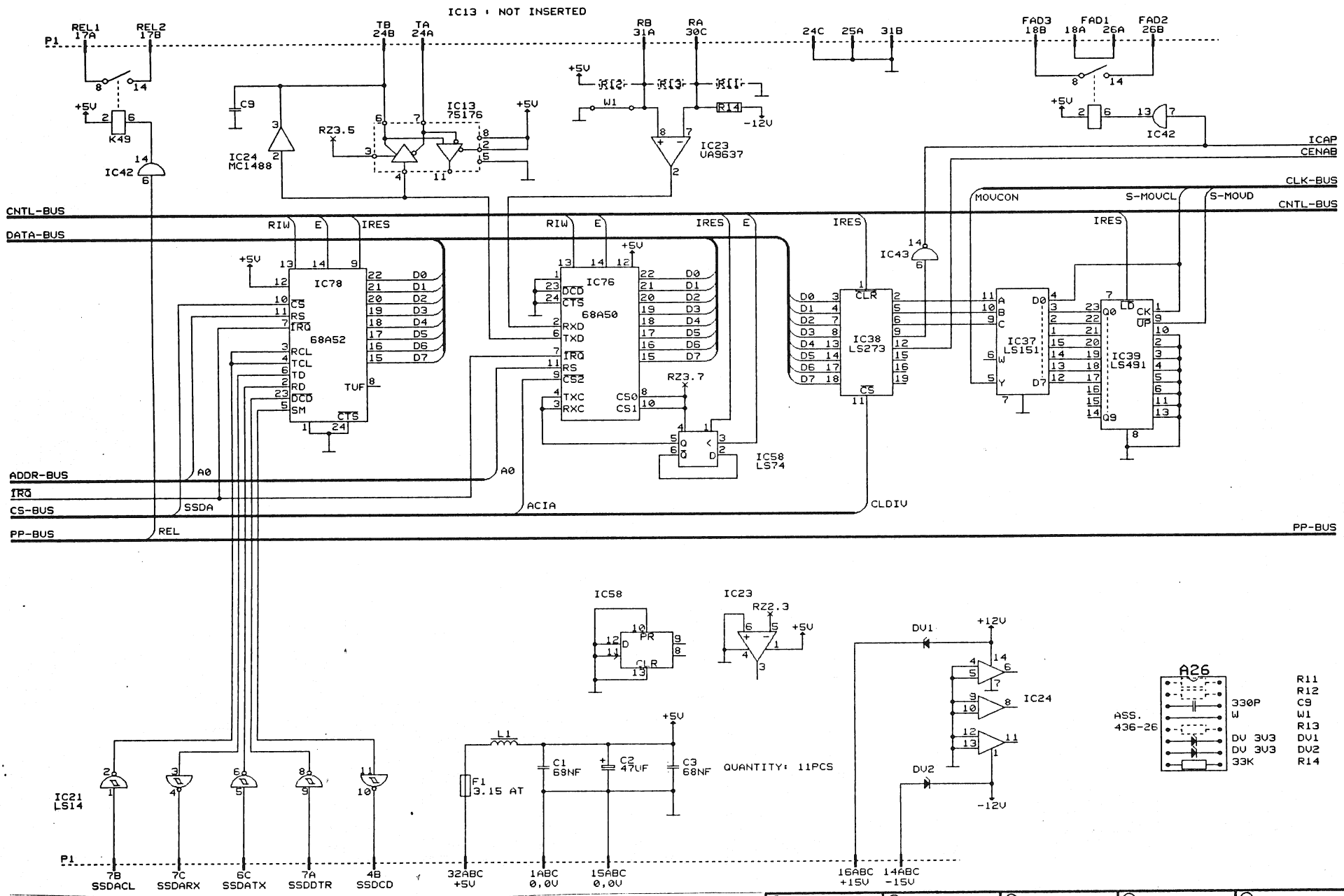


| | | | |
|-------------------------------------|----------------|---------------------------|-------------|
| ① 03-JUL-90/ML | ② TLS2DOCU.P02 | ③ VERSION • 1.00 | ④ |
| STUDER INTERNATIONAL AG | | SYNCHRONIZER TLS-4000 MK2 | PAGE 1 OF 1 |
| BLOCKDIAGRAM INTERFACE STUDER A-807 | | | |

4.2 Schemata



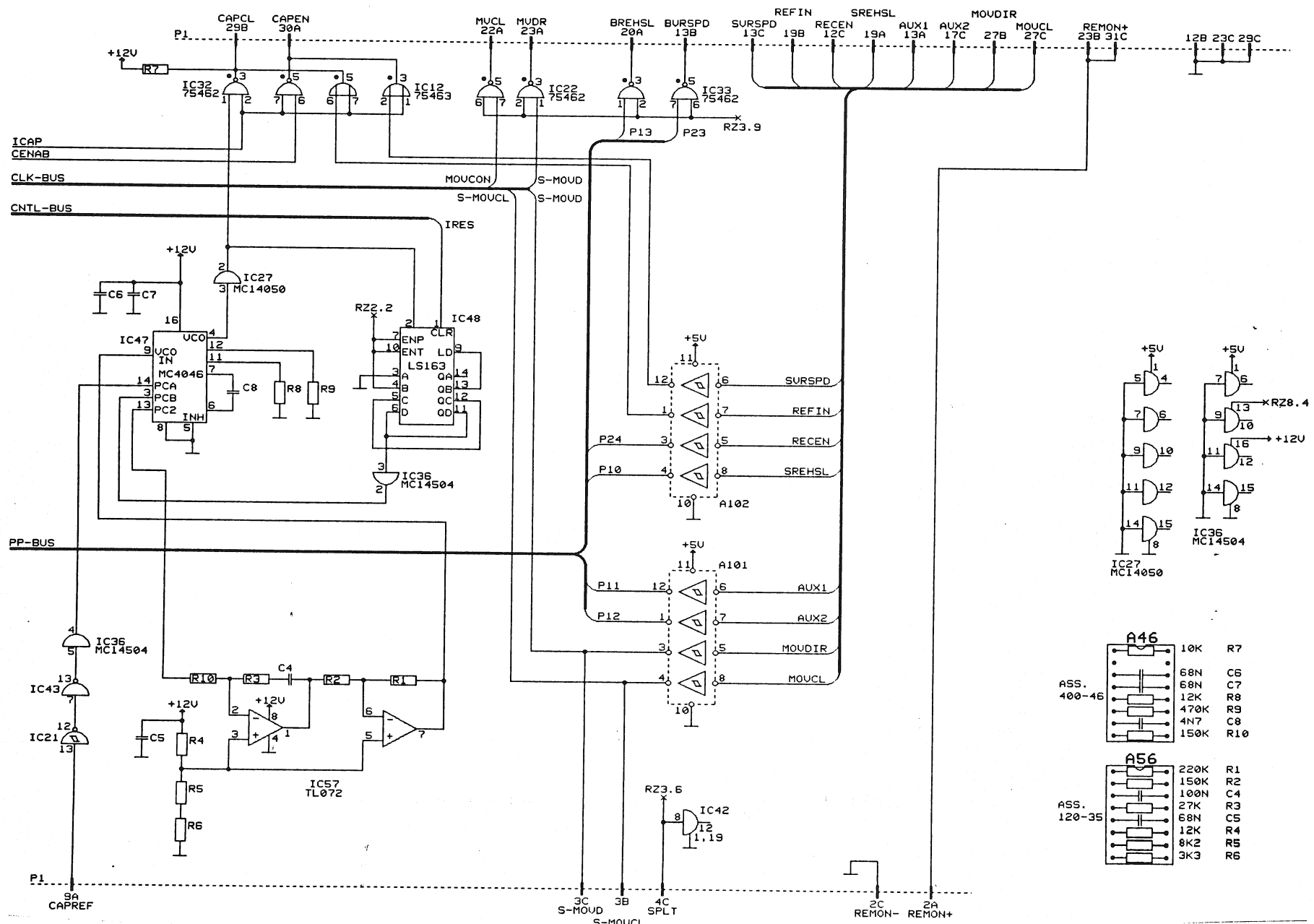
| | | | | | |
|---------------|-----|-----------------------|-------------|----|--------------|
| © 30/10/89 | MST | ① 25/01/90 | PG | | |
| TLS4000 MK2 | | | PAGE 1 OF 3 | | |
| STUDER | | INTERFACE STUDER A807 | | SC | 1.812.402.20 |



| | | | | | | | | |
|-------------|-----|------------|----|---|---|-----------------------|----|--------------|
| © 30/10/89 | HST | ① 26/01/90 | PG | ○ | ○ | ○ | | |
| STUDER | | | | | | INTERFACE STUDER A807 | SC | 1.812.402.20 |
| TLS4000 MK2 | | | | | | PAGE 2 OF 3 | | |

D1/10

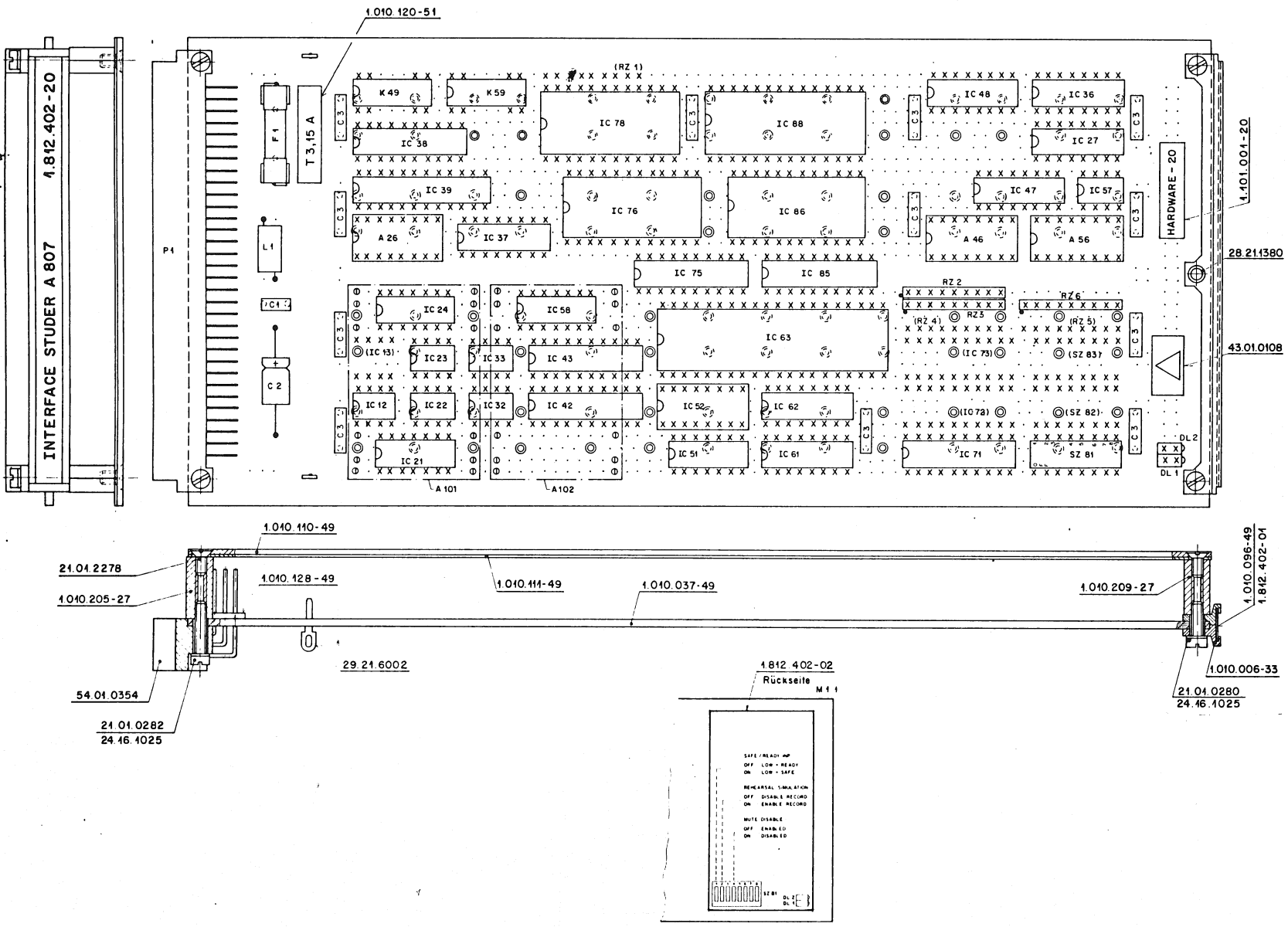
EDITION: 2. Juli 1990



- A46**
- | | |
|------|-----|
| 10K | R7 |
| 68N | C6 |
| 68N | C7 |
| 12K | R8 |
| 470K | R9 |
| 4N7 | C8 |
| 150K | R10 |
- A56**
- | | |
|------|----|
| 220K | R1 |
| 150K | R2 |
| 100N | C4 |
| 27K | R3 |
| 68N | C5 |
| 12K | R4 |
| 8K2 | R5 |
| 3K3 | R6 |

| | | | | |
|-------------|-----|-----------------------|----|-----------------|
| 30/10/89 | NST | 26/01/90 | PG | |
| STUDER | | INTERFACE STUDER A807 | | SC 1.812.402.20 |
| PAGE 3 OF 3 | | | | |

4.3 Bestückungsplan



4.4 Positionsliste

IF STUDER A807 1.812.402.20

| Ad | POS. | REF.No. | DESCRIPTION | MANUFACTURER |
|---------|------|--------------|--|--------------|
| A... | 26 | 1.812.231.00 | Assembly 436-26 | St |
| A... | 46 | 1.812.213.00 | Assembly 400-46 | St |
| A... | 52 | 1.812.201.00 | Assembly 120-52 | St |
| A... | 56 | 1.812.203.00 | Assembly 120-35 | St |
| A... | 101 | 1.812.250.00 | Input Network | St |
| A... | 102 | 1.812.250.00 | Input Network | St |
| C..... | 1 | 59.99.0205 | 68 nF -20%, 63V, CER | |
| C..... | 2 | 59.25.3470 | 47 uF -20%, 16V, EL | |
| C..... | 3 | 59.99.1200 | 68 nF 20%, 63V, PET Quantity: 11 | |
| DL.... | 1 | 50.04.2107 | LED red ,555-2007 | Di |
| DL.... | 2 | 50.04.2107 | LED red ,555-2007 | Di |
| F..... | 1 | 51.01.0122 | 3.15 AT 250V, 5 * 20 | |
| IC...12 | | 50.05.0203 | SN 75 463 JG, DS 75 463 | |
| IC...21 | | 50.06.0014 | SN 74 LS 14 | |
| IC...22 | | 50.05.0227 | SN 75 462 JG, SN 75 472 P | |
| IC...23 | | 50.15.0114 | uA 9637 ACP ,A | |
| IC...24 | | 50.15.0106 | MC 1488 P, DS 1488 | |
| IC...27 | | 50.07.0050 | MC 14050 | |
| IC...32 | | 50.05.0227 | SN 75 462 JG, SN 75 472 P | |
| IC...33 | | 50.05.0227 | SN 75 462 JG, SN 75 472 P | |
| IC...36 | | 50.15.0103 | MC 14504 | |
| IC...37 | | 50.06.0151 | SN 74 LS 151 | |
| IC...38 | | 50.06.0273 | SN 74 LS 273 | |
| IC...39 | | 50.06.0491 | SN 74 LS 491 | |
| IC...42 | | 50.06.0541 | SN 74 LS 541 | |
| IC...43 | | 50.06.0540 | SN 74 LS 540 | |
| IC...47 | | 50.07.0046 | CD 4046 BE, MC 14046 BCP ,A | RCA,Mot |
| IC...48 | | 50.06.0163 | SN 74 LS 163 | |
| IC...51 | | 50.06.0000 | SN 74 LS 00 | |
| IC...57 | | 50.09.0101 | TL 072 CP | TI |
| IC...58 | | 50.06.0074 | SN 74 LS 74 | |
| IC...61 | | 50.06.0163 | SN 74 LS 163 | |
| IC...62 | | 50.06.0139 | SN 74 LS 139 | |
| IC...63 | | 50.16.0107 | MC 6803P-1, HD 6803P-1 ,A | Mot,Hi |
| IC...71 | | 50.06.0540 | SN 74 LS 540 | |
| IC...75 | | 50.06.0645 | SN 74 LS 645 | |
| IC...76 | | 50.16.0101 | MC 68A50 P ,A | |
| IC...78 | | 50.16.0114 | MC 68A52 P ,A | |
| IC...85 | | 50.06.1573 | SN 74ALS 573 | |
| IC...86 | | 50.14.0107 | HM 6116 LP-4, SRAM 2k x 8, 200nsec | |
| IC...88 | | 50.14.0125 | see note HM 4827128 G-25, EPROM 16k x 8, 300nsec | |
| K....49 | | 56.02.1003 | 5 V 1*A 100V/0.5A, Print | |
| K....59 | | 56.02.1003 | 5 V 1*A 100V/0.5A, Print | |
| L....1 | | 62.01.0115 | Wide Band HF-Choke | |
| P....1 | | 54.01.0354 | Card Connector 3 * 32 Euro Wrap | |
| RZ....2 | | 57.88.4332 | 8 * 3.3K 2%, Single Line | |
| RZ....3 | | 57.88.4332 | 8 * 3.3K 2%, Single Line | |
| RZ....6 | | 57.88.4332 | 8 * 3.3K 2%, Single Line | |
| SZ...81 | | 55.01.0168 | 8 * ON, DIL-Switch | |

Notes : Software release 1.812.981.20 (IC 88)

The following elements are not inserted :

- IC 13,72,73
- RZ 4,5
- SZ 82,83

CER = Ceramic, EL = Electrolytic, PET = Met. Polyester

MANUFACTURERS : D1 = Dialco
 Hi = Hitachi
 Mot = Motorola
 RCA = RCA Corporation
 St = Studer
 TI = Texas Instruments

1.812.402.20 INTERFACE STUDER A807 MST89/10/2700

4.5 Signalbeschreibung Slave Connectors

SLAVE CONTROL A:

| Pin | Signal | Typ | Beschreibung |
|-----|--------|-------|----------------------------|
| 1 | GND | | 0.0V |
| 2 | TA | | n.c. |
| 3 | TB | RS232 | serial data line to A807 |
| 4 | GND | | 0.0V |
| 5 | GND | | 0.0V |
| 6 | - | | |
| 7 | - | | |
| 8 | FAD1 | | n.c. |
| 9 | FAD2 | | n.c. |
| 10 | - | | |
| 11 | - | | |
| 12 | MOVDIR | I in | move direction of A807 |
| 13 | MOVCL | I in | move clock of A807 |
| 14 | - | | |
| 15 | - | | |
| 16 | - | | |
| 17 | - | | |
| 18 | CAPCL | I out | capstan varispeed clock |
| 19 | GND | | 0.0 |
| 20 | CAPEN | I out | enable capstan varispeed |
| 21 | - | | |
| 22 | RA | RS232 | serial data line from A807 |
| 23 | RB | | n.c. |
| 24 | GND | | n.c. |
| 25 | REMON+ | +24V | supply voltage of A807 |

- Signaltypen:
 - I in logic input, active low
(with internal pullup resistor)
 - I out logic output, active low
(open collector, max 28V/0.3A)
 - RS232 serial line, RS232 standard

SLAVE CONTROL B:

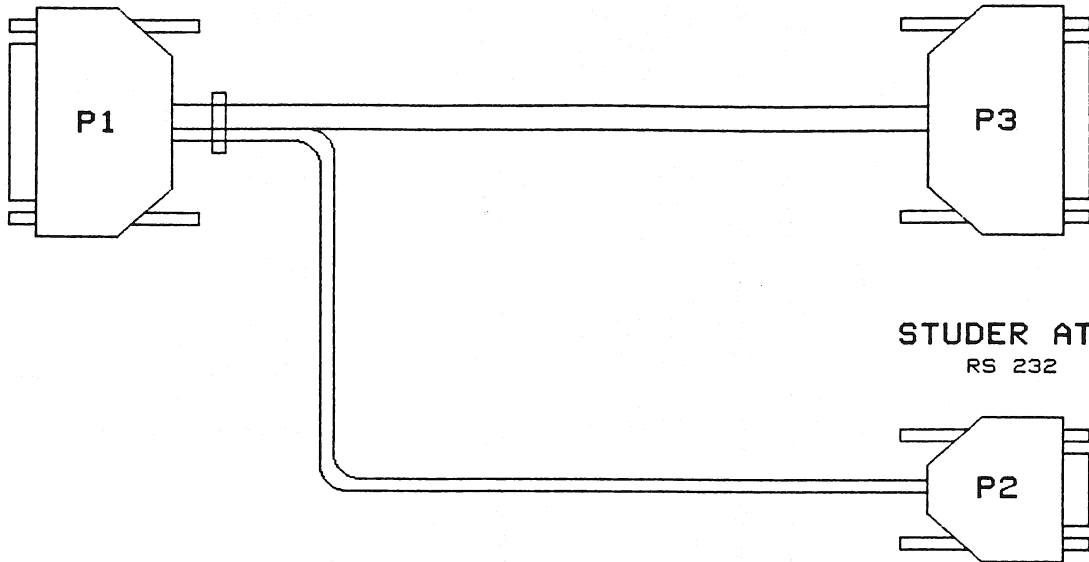
| Pin | Signal | Typ | Beschreibung |
|-----|--------|-------|---------------------------------------|
| 1 | GND | | signal ground |
| 2 | RECEN | I in | record enable/safe (see DIL switches) |
| 3 | AUX1 | I in | n.c. |
| 4 | BVRSPD | I out | external varispeed active |
| 5 | SVRSPD | I in | enable external varispeed |
| 6 | REL1 | | relay contact 1 (100V/0.5A) |
| 7 | REL2 | | relay contact 2 (100V/0.5A) |
| 8 | AUX2 | | n.c. |
| 9 | FAD1 | | n.c. |
| 10 | FAD3 | | n.c. |
| 11 | - | | |
| 12 | SREHSL | I in | set rehearse mode |
| 13 | REFIN | I in | external varispeed frequency |
| 14 | - | | |
| 15 | BREHSL | I out | rehearse mode active |
| 16 | - | | |
| 17 | - | | |
| 18 | - | | |
| 19 | - | | |
| 20 | - | | |
| 21 | MVCL | I out | move clock output |
| 22 | - | | |
| 23 | - | | |
| 24 | MVDR | I out | move direction output |
| 25 | REMON+ | +24V | supply voltage of A807 |

- Signaltypen: I in logic input, active low
(with internal pullup resistor)
- I out logic output, active low
(open collector, max 28V/0.3A)

4.6 Interface Kabel zu STUDER A807

TLS 4000
SLAVE CONTROL A

STUDER ATR
SYNCHRONIZER



| | | | | |
|-------|-------|--------|-------|-------|
| P1. 1 | ..... | GND | ..... | P3. 1 |
| 8 | ..... | FAD1 | ..... | 11 |
| 9 | ..... | FAD2 | ..... | 12 |
| 12 | ..... | MOUDIR | ..... | 10 |
| 13 | ..... | MOVCL | ..... | 7 |
| 18 | ..... | CAPCL | ..... | 13 |
| 20 | ..... | CAPEN | ..... | 5 |
| 25 | ..... | REMON+ | ..... | 25 |
| 19 | ..... | SCREEN | ..... |  |

| | | | | |
|----|-------|-----------|-------|-------|
| 2 | ..... | TA | ..... | P2. 3 |
| 3 | ..... | TB (RX) | ..... | 8 |
| 5 | ..... | GND (GND) | ..... | 9 |
| 22 | ..... | RA (TX) | ..... | 2 |
| 23 | ..... | RB | ..... | 7 |
| 4 | ..... | SCREEN | ..... |  |

| | | | | | |
|---------------|----|----------------------|--|-------------|------------------------------|
| © 23/01/90 | PG | | | | |
| TLS 4000 MKII | | | | PAGE 1 OF 1 | |
| STUDER | | IF-KABEL STUDER A807 | | Z | 1.023.752.00 1.023.758.00 |