Studer 928

Analog Mixing System

STUDER
professional audio equipment

Studer 928

Concentrated functionality

Rarely does an analog mixing console offer such a concentration of functions. The Studer 928 provides a wealth of features and facilities at a cost effective price with no compromise on Studers traditional quality. The 30 mm module architecture, the low-current technology (no ventilators required) and the possibility of integrating Studer modules from the existing mixing console families make this unit extremly versatile. As a consequence, the 928 is already used in many studios around the world as production or on-air console, in radio and TV OB vans, as a live console in sports and concert broadcasts, or for concert and theater PA applications. ■

- Up to 96 inputs
- Eight groups, four masters
- 10 AUX channels
- Direct output, also as n-1, from each input module
- Four-band parametric equalizer
- All switches are electronic; where this is not possible only goldplated contacts are used.
- Quality VCAs; VCA grouping with linear faders as group masters
- Studer transformers on all inputs and outputs
- Limiter/compressor, can be assigned to any input via the insert patch panel; time constants are optimized according to psycho-acoustical principles.
- Studer Euro boards can be installed in a 19" card chassis.

Reliability
For maximum reliability a redundant power supply is available which in the event of a failure in the primary supply allows uninterrupted operation. ■

Patch panel
An integrated, large-capacity patch panel for inserting external effect machines or the built-in limiter/compressor are standard features of the Studer 928. ■

Standard Modules - functional, logically designed elements

Mono Input Module

The input module provides a direct output that can also be switched to n-1. Individual talkback on this output is possible with the talkback key. The mono input module feeds 8 mono group and 2 stereo master busses.

The Mono Input Module features two completely separate, high-quality microphone/line inputs. Signaling and monitoring can be switched between DJ or studio microphone. The microphone input is equipped with transformers. Line inputs are electronically balanced (transformer optional). A 48 V phantom supply can be switched to the mic input.

The Parametric Equalizer comprises high, low and two band passes, with adjustable center/corner frequencies. The Q of the bandpass equalizer is switchable. The high-pass filter contains a phase inverter.

6 Mono AUX outputs are fed via single potentiometers, 2 stereo AUX outputs with level and pancontrols. Each AUX path can be derived pre or post channel fader.

The Pancontrol is connected directly to the stereo master output. The panselection can be enabled/disabled, also by remote control.

The Main Fader is a Penny & Giles (100 mm) linear fader; it controls a high-quality VCA. Up to four VCA groups can be defined. The master faders for these groups are located in the CR and studio monitor modules. Fader start is selectable as pulse or hold function. CUE can be derived pre or post fader. A small LED bargraph will display the level before or after the equalizer or the level of the direct (n-1) output. ■

Stereo Input Module

The Stereo Input Module is equipped with electronically balanced, high-level inputs (transformer optional) for line 1 and line 2.

The signal can be channel swapped via the L/R key, or switched to mono individually for each channel.

By means of a rotary control the signal to the master output can be varied from mono to expanded stereo. ■

Group module

The Group Module is equipped with an additional stereo return with level and pan control and prelistening output. High-level stereo sources can be routed directly into the master channels.

In each group module a limiter/compressor unit is installed. This can be inserted directly into the group or assigned to any input via the integrated insert patch panel. ■

Master module

The Master Module features a limiter with adjustable threshold and release time. The attack time is selectable in two steps.

The master fader of the AUX paths and the corresponding prelistening keys are also arranged on the master module.

Each of the two stereo master modules is equipped with a separately controllable mono output which can be derived before or after the output fader. ■

Monitoring, Talkback

The Monitoring Module has a source selector for internal and external sources, as well as selectors for listening via headphones, monitor speakers, or near-field monitors. The cue signal can be derived either pre channel fader of the selected input module or post (solo function without influence on the mixdown).

The Talkback Module consists of a test generator, talkback control and studio monitoring control. Talkback can be routed to all AUX paths, groups, as well as masters and also into the studio and to external lines. Communication to the direct (n-1) outputs of individual inputs can be preselected directly in the corresponding input modules. The volume for the studio can be adjusted individually for two headphone sets as well as for the studio speaker. Two user-assignable keys are available for signaling.

Both units are equipped with two linear faders each which act as VCA group faders. ■

The meter bridge can hold all Studer modules 170 x 40 mm. Shown as example are:

- VU Meter with Gain Reduction Meter 1.913.231
- 2CH PPM Meter 30LED 1.913.105
- 2CH VU Meter 30LED 1.913.106
- 1CH PPM Meter 30LED 1.913.101
- Correlator 2CH 30LED 1.913.109
- Bargraph 2CH PPM 1.913.111

Further possible modules are (not shown):

- Correlator 4CH 1.913.211
- PPM with Gain Reduction Meter 1.913.221
- Correlator 4CH 30LED 1.913.100
- Correlator 4CH 1.913.210
- PPM Meter 1.913.220
- VU Meter 1.913.230
- 2CH PPM Meter 30LED with Gain Reduction Meter 1.913.107
- 2CH VU Meter 30LED with Gain Reduction Meter 1.913.108
- Dual Bargraph VU 1.913.112
- Stereo-Display DK-Audio MSD 200 1.913.400

Surround sound

The Studer 928 can be equipped for multiformat film or TV surround productions. By means of a special multichannel monitor, monitoring can be set to any format between mono and 6-channel mode, and controlled direct, encoded or decoded. In this way quality monitoring is possible also including the codec processing. The individual speakers can be switched on/off, including near-field monitors. Multiformat mixdown is eased by the use of joysticks (optional). ■

Special Modules -
expanded functionality in a consistent design

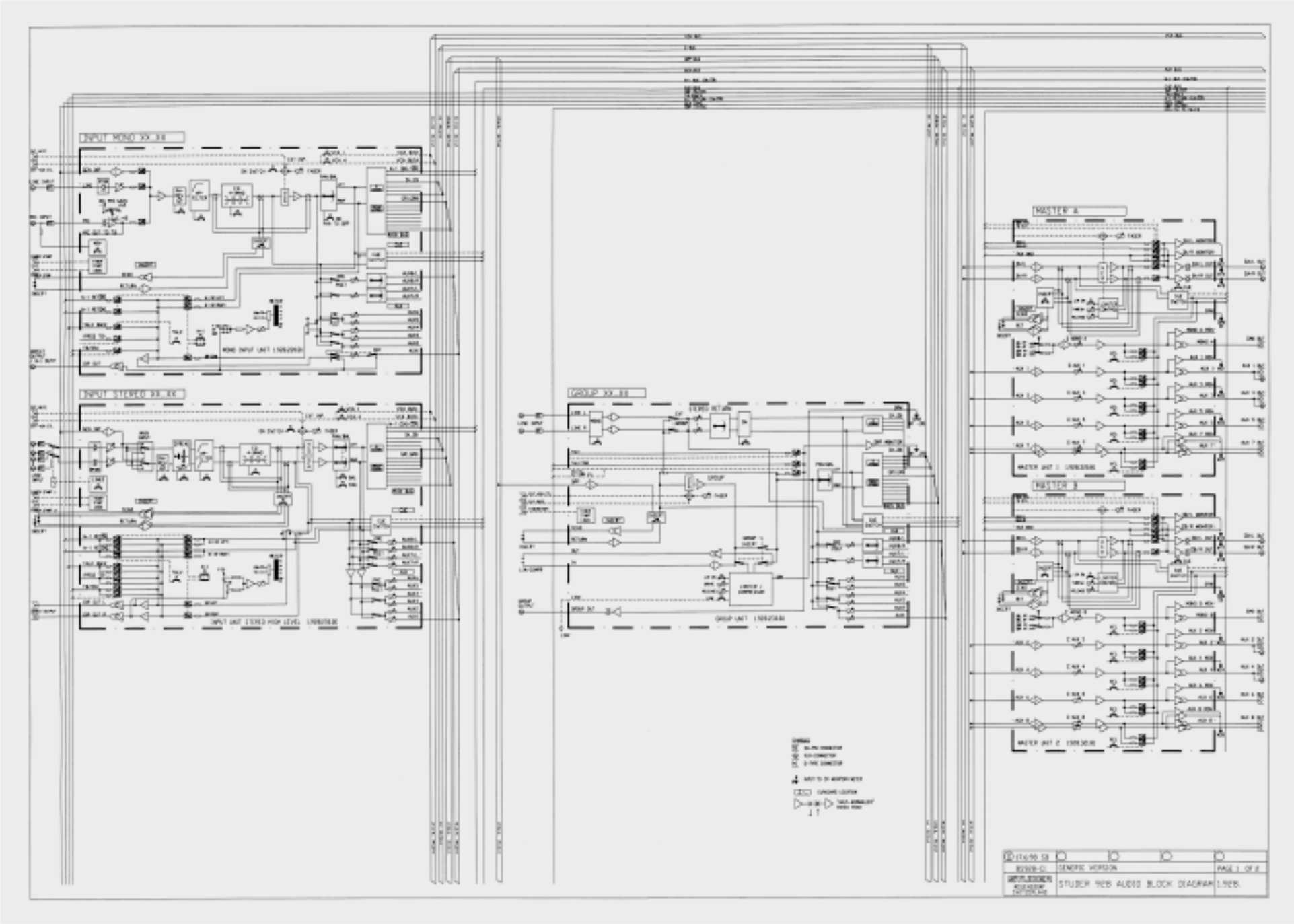
Monitor Mixer for multichannel recording

The optional monitor mixer is available in a 2-channel or a multiformat surround version. The level control pots are combined with a panpot function. 8, 12, 24 or 48 channel recorders can be connected and mixed down on stereo or multiformat surround.

The AUX channels are expanded by two mono and one stereo channel for additional headphone feed or effect unit insertion. ■


STEREO RETURN
LIM / COMPR
LIMITER
AUX MASTER
MONO OUTPUT
PAN TO GROUPS
DIR OUT → AUX 1
EXT MUTE
CUE MASTER
STUDIO
VCA MASTER
TEST GEN
HEADPHONE
MONITOR LSP
TALK BACK
EXTERN EFFECT

Block Diagram



Technical Data

General Measuring Conditions

0 dBu = 0.775 V.
All linear faders are set to the 0 dB position.
Line outputs are terminated with 600 Ohms.
Sources have source impedance of less than 200 Ohms.
All data are valid in the frequency band between 31.5 Hz and 16 kHz.

The nominal line output level is (Sinus, 1 kHz):	in the PPM version:	100% = +6 dBu
	in the VU-Meter version:	0 VU = +4 dBu

Levels

Microphone input sensitivity:	-71 ... +10 dBu
Line input sensitivity:	+6 dBu ±14 dB
In/output at insert points:	+6 dBu
At Direct (n-1) output:	+6 dBu
Output level:	+6 dBu ±10 dB
Monitor output level (unloaded):	+6 ... +15 dBu

Overload margin

Microphone input: Max level for 1% 3rd harmonic distortion @ 31.5 Hz:	+13 dBu
Line input: Max level for 1% 2nd harmonic distortion @ 31.5 Hz:	+24 dBu
Before channel fader (T.H.D. = 1%):	+20 dBu
Before master fader (T.H.D. = 1%):	+20 dBu
Max. Output level with transformer:	+23.5 dBu
without transformer:	+23 dBu

Impedances

Microphone input (transformer):	> 1.6 kOhms
Line input (electronically balanced, transformer optional):	> 10 kOhms
Line output (all electronically balanced, master outputs with optional transfomer):	< 40 Ohms

Common mode rejection

Microphone input (U_{in} = 0 dBu, v = 0 dB, fine adjust = min)	@ 15 kHz:	> 50 dB
	@ 50 Hz:	> 75 dB
Line input (50 Hz ... 15 kHz): with transformer:		> 50 dB
electronically balanced:		> 46 dB

Frequncy response

with EQ switched off:	± 0.5 dB
3 dB points approx.:	4.5 Hz, 40 kHz
Bass cut (18 dB/Oct.):	3 dB @ 75 Hz
High frequency equalizer	1 ... 16 kHz: ±15 dB
High/mid equalizer	500 ... 8k Hz: ±15 dB
Low/mid equalizer	125 ... 2k Hz: ±15 dB
Low frequency equalizer	32 ... 500 Hz: ±15 dB

Unweighted noise (acc. to IEC 468-2, DIN 45405)

Equivalent microphone input noise, 200 Ohm source for 23 kHz bandwith:		-126 dBu
S/N ratio at output, referred to line level (+6 dBu PPM-Version, +6 VU peak VU-version)		
on master output, master fader closed:		> 95 dB
one channel, all faders at 0 dB, unity gain	EQ off:	> 93 dB
	EQ on, linear:	> 91 dB
11 channels, all faders at 0 dB, unity gain	EQ off:	> 85 dB
	EQ on, linear:	> 83 dB

T.H.D. ratio

T.H.D. ratio at output, referred to line level	
(+6 dBu PPM-Version, +6 VU peak VU-version) all faders at 0 dB, unity gain:	> 70 dB

Crosstalk attenuation

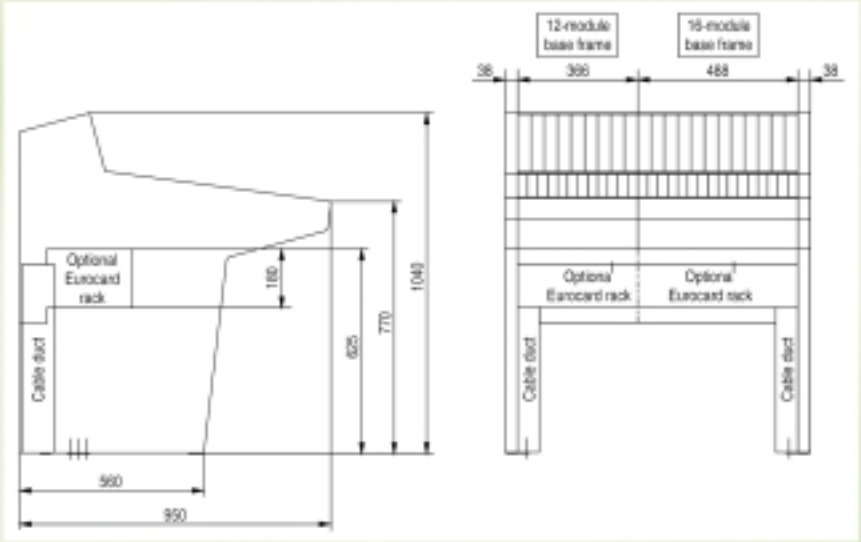
Channel to channel without panpot:	> 80 dB
with panpot:	> 70 dB
Channel bus selector switched off:	> 90 dB
Fader attenuation, input:	> 100 dB
Fader attenuation, output:	> 90 dB

Power supply

Mains voltage range:	100 ... 240 V, 50/60 Hz
Power consumption (32/8/4 console)	375 VA
(±15 V	9 A
5 V	3 A
48 V phantom supply	0.5 A)
Weight of power supply unit	5.1 kg

The data described refer to a typical console configuration. In special cases, they may differ. We reserve the right to make changes as technological progress may warrant without prior notice.

Dimensions



Remote Power Supply

Rear Connector Panel

The picture shows an example of the clear layout of the rear connector panel. Top: Signalling, Talkback, Inserts and Remote Control; Middle: Audio; Multipin connectors: Studio, Monitor and AUX outputs.

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