STUDER 970

AUDIO CONSOLE

Prepared and edited by STUDER INTERNATIONAL TECHNICAL DOCUMENTATION
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1 Allgemeine Daten

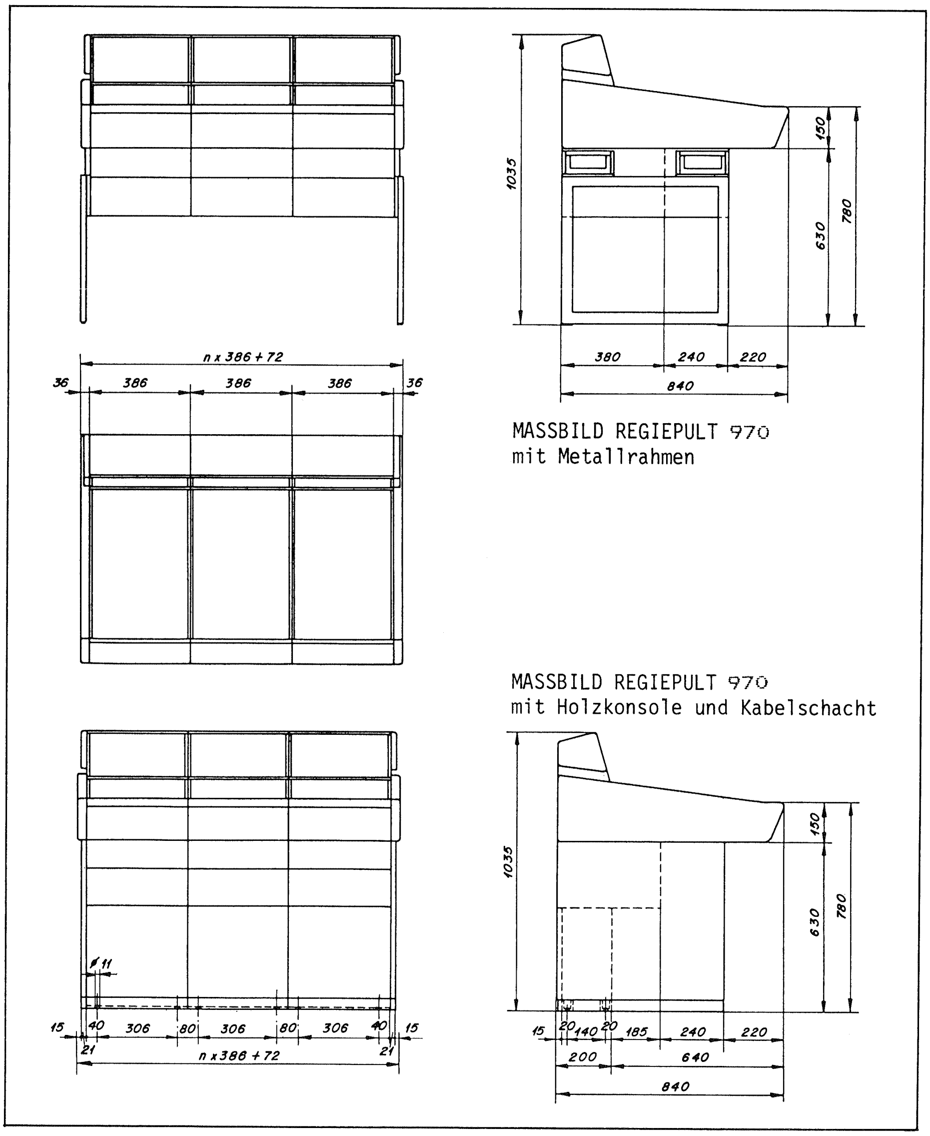
1 General Information

1 Allgemeine Daten

1. Mechanische Abmessungen

Die Regiepulte 970 werden wahlweise mit einfach demontierbarem Stahlrohrrahmen für den transportablen Einsatz oder mit Holzkonsole und Kabelschacht zum festen Einbau geliefert.

Die Regiepultbreite richtet sich nach der Anzahl der zusammengefügten mechanischen Grundeinheiten.



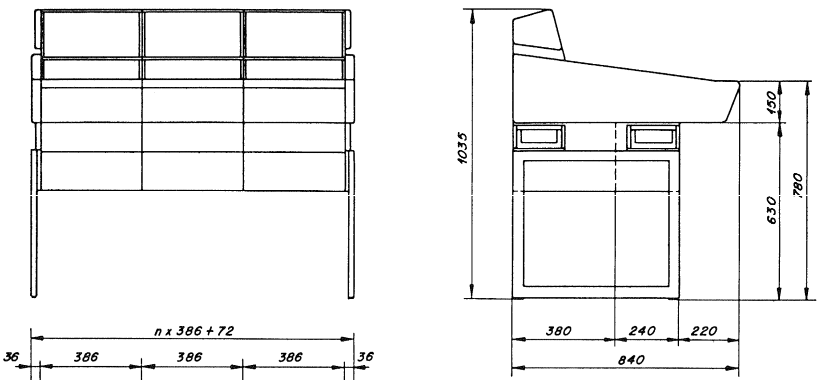
MASSBILD REGIEPULT 970
mit Metallrahmen

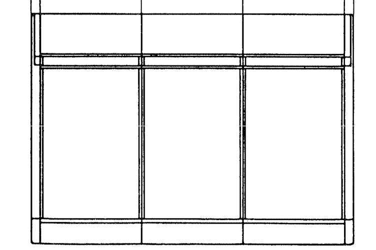
MASSBILD REGIEPULT 970
mit Holzkonsole und Kabelschacht

1. Dimensions

The audio console 970 is available with removable metal frame support for OB application as also as a wooden console with integrated cable duct for stationary use.

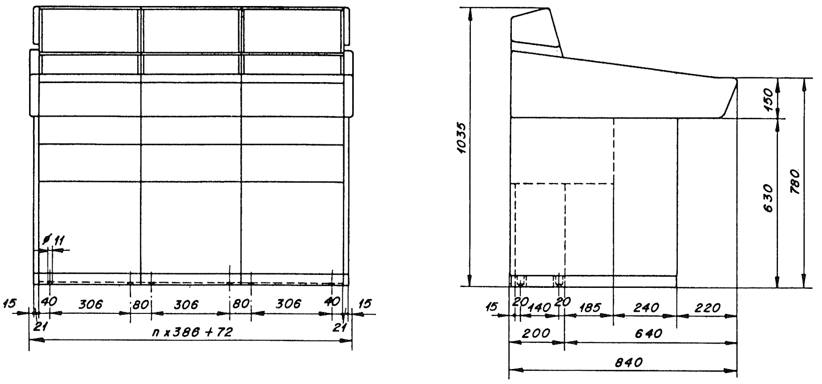
The console width depends on the number of combined baseframes.





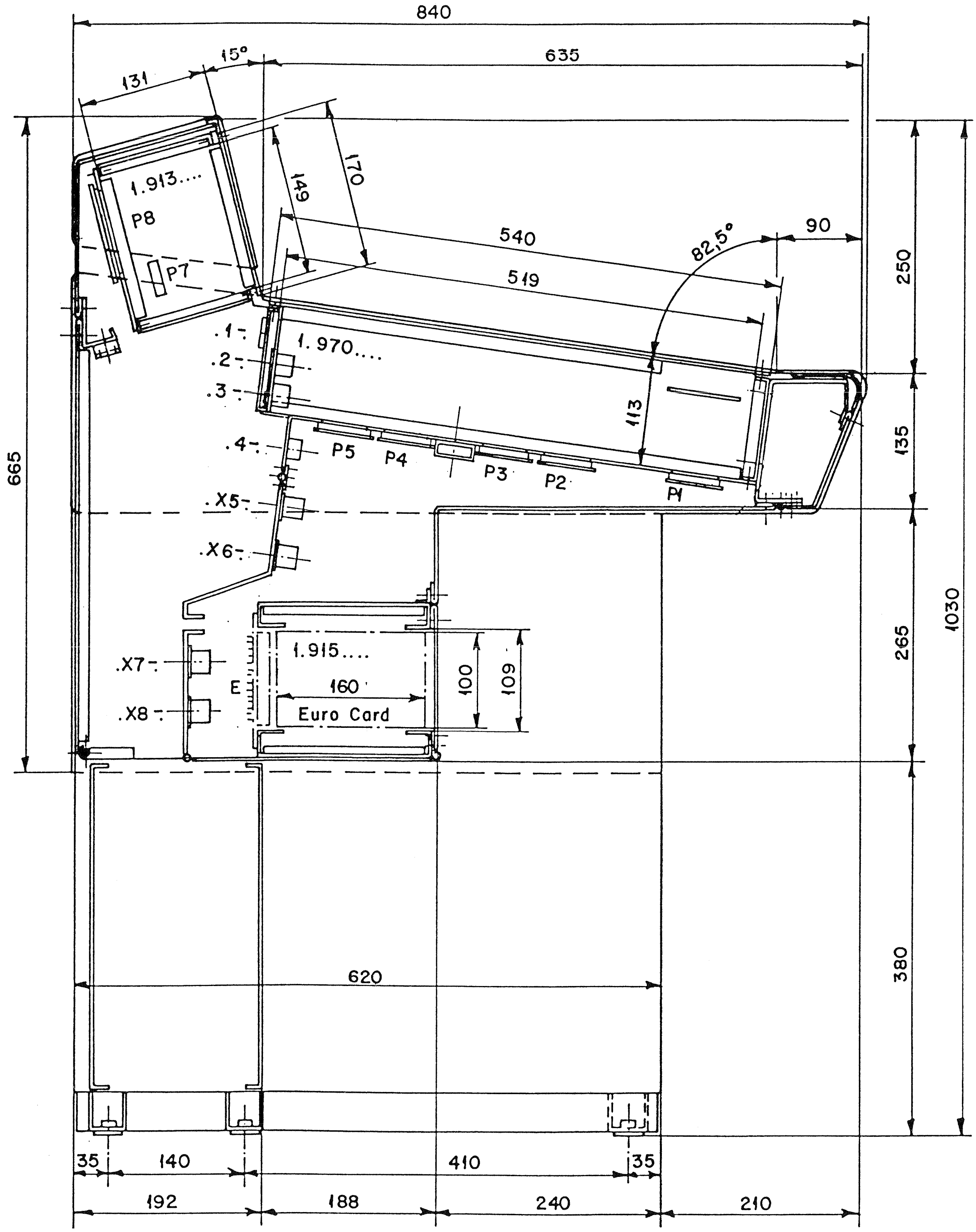
Dimension drawing audio console 970
with metal frame supports.

Dimension drawing audio console 970
with wooden console and cable duct.

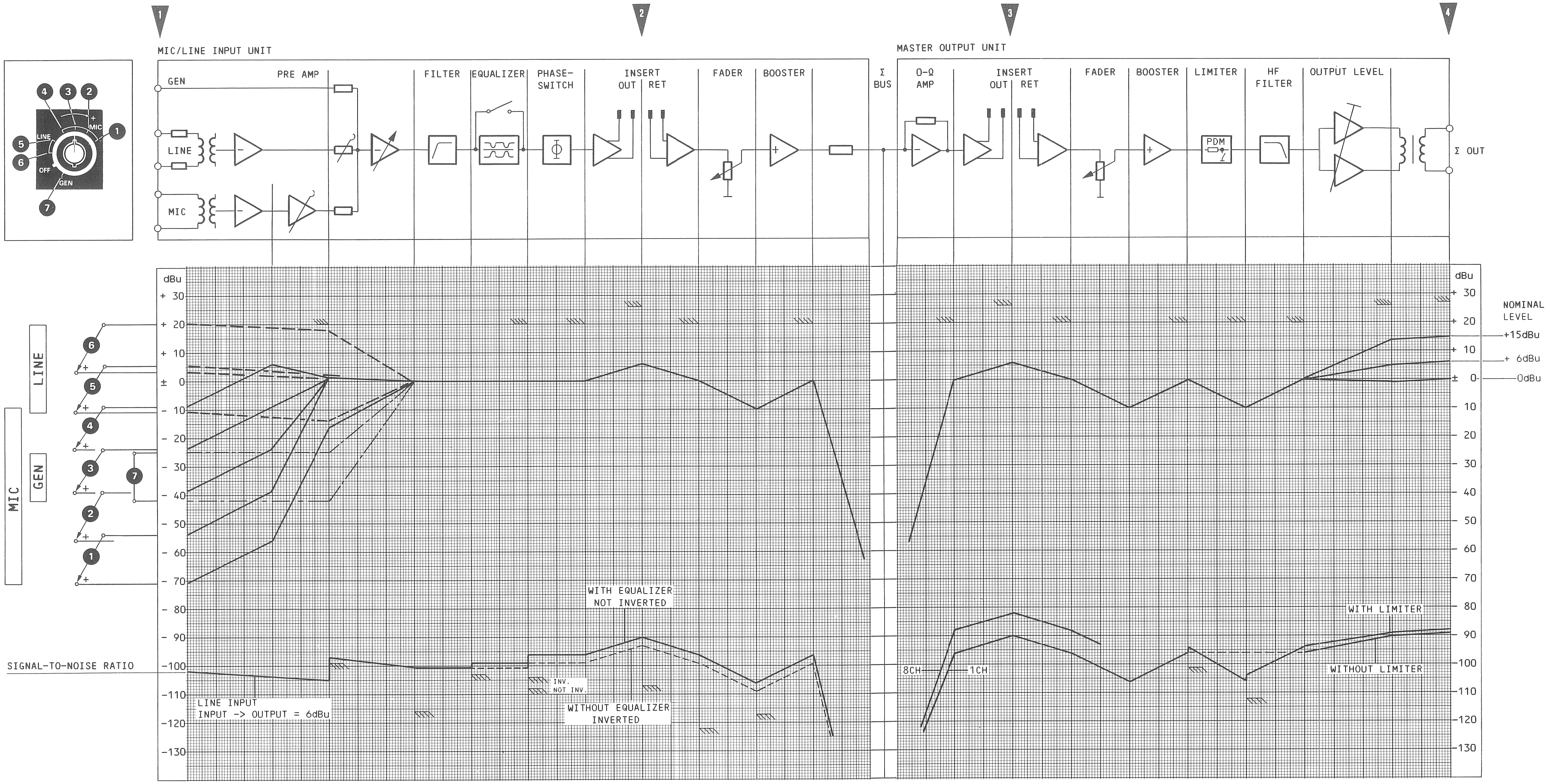


EDITION: 1. November 1990

1.1 Querschnitt Regiepult 970 / Cut Mixing Console 970



2. Pegeldiagramm / Level Diagram



Messpunkte; siehe Kap. 3. Einmessen
Measuring points for Calibration; c.f. Section 3.

3. Technische Daten

Allgemeines:	■ Spannungen in dBu beziehen sich immer auf 0,775V.	
	0 dBu ≙ 0,775 V	
	■ Alle Eingangskanal- und Summmen-Flachbahnregler sind in Stellung 0 dB positioniert.	
	■ Leitungsausgänge sind mit 600Ω abgeschlossen.	
	■ Externe Quellen haben einen Quellenwiderstand von ≤ 200Ω.	
	■ Die Angaben gelten im Bereich von 31,5 Hz...16 kHz.	
	■ PPM-Version, Leitungspegel +6 dBu VU-Version, nominaler Ausgangspegel 0 VU ≙ +4 dBu	
	■ Einsatzpunkt des Ausgangslimiters ≙ Spitzen-Ausgangspegel +6 VU ≙ +10 dBu	
Pegel:	■ Empfindlichkeit Mikrofoneingang	**-69...-9 dBu**
	■ Empfindlichkeit Leitungseingang	**-9...+21 dBu**
	■ Empfindlichkeit Tape Eingang	**+4...+21 dBu**
	■ Pegel an Einschleifpunkten und Direktausgängen	**+6 dBu**
	■ Ausgangspegel, Einstellbereich	**+6...+15 dBu**
	■ Monitorpegel (symmetrisch, unbelastet)	**+6...+15 dBu**
Gleichtaktunterdrückung:	■ Mikrofoneingang	**15 kHz ≥ 60 dB**
	■ Leitungseingang	**15 kHz ≥ 50 dB**
Impedanzen:	■ Mikrofoneingang	**≥1,6 kΩ**
	■ Leitungseingang/Tape Eingang	**≥10 kΩ**
	■ Quellenimpedanz der Leitungsausgänge	**≤40 Ω**
Frequenzgänge:	■ Filter ausgeschaltet 3 dB-Eckpunkte	**+0,5...-1 dB**
	■ Filter ausgeschaltet (ausserhalb kontinuierlich abfallend)	**ca. 4,5 Hz/40 kHz**
	■ Trittschallfilter 12 dB/Oktave, -3 dB	**75 Hz ± 5 Hz**
	■ Höhenregler, 20 kHz	**±15 dB**
	■ Tiefenregler, 20 Hz	**±15 dB**
	■ Präsenzfilter	**Q = 1**
	■ einstellbar von 150 Hz...7 kHz	**±11 dB**
Übersteuerungsreserven:	■ Mikrofoneingang, Maximalpegel für K_3=1%/31,5 Hz	**+6 dBu**
	■ Leitungseingang, Maximalpegel für K_3=1%/31,5 Hz	**+24 dBu**
	■ Vor Kanalregler (K_{tot}=1%)	**20 dB**
	■ Vor Summenregler (K_{tot}=1%)	**20 dB**
	■ Maximalpegel der Leitungsausgänge, R_L=300 Ω	**+24 dBu**

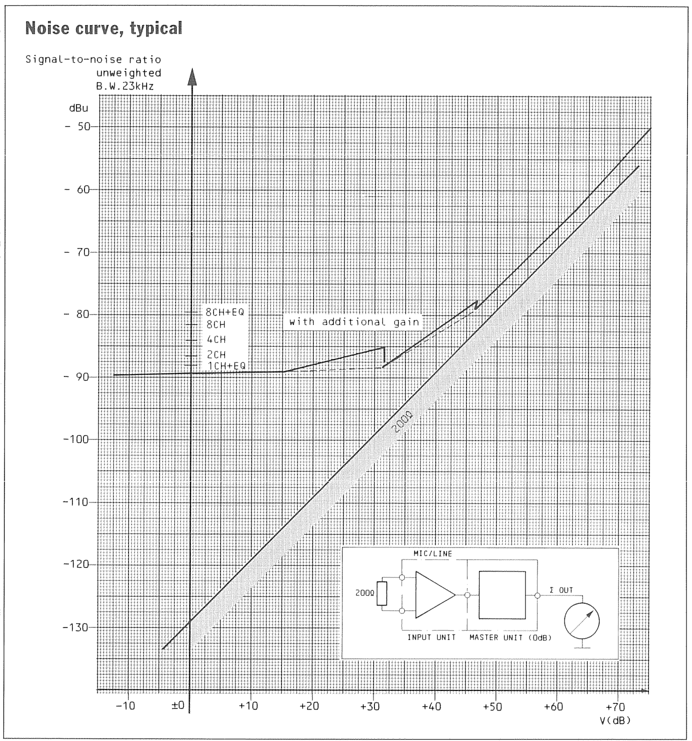
Rauschspannung, unbewertet, MIKROFON:	■ nach IEC 468-2 (DIN 45405) Äquivalente Eingangs-Rauschspannung mit einer Rauschbandbreite von 23 kHz, Quellenimpedanz = 200 Ω	**≤-125 dBu**
Störspannungsabstand:	■ PPM-Version, bezogen auf Leitungspegel +6 dBu	
	■ VU-Version, bezogen auf Spitzenausgangspegel +6 VU ≙ +10 dBu	
	■ Am Summenausgang, Summenregler geschlossen	**≥95 dB**
	■ Ein Kanal, Eingangs- und Summenregler in Position 0 dB, Verstärkung Eingang -> Ausgang = 1;	
	- ohne Filter	**≥93 dB**
	- mit Filter, linear	**≥92 dB**
	■ 11 Kanäle, alle Fader in Position 0 dB, Verstärkung Eingang -> Ausgang = 1;	
	- ohne Filter	**>85 dB**
	- mit Filter, linear	**>83 dB**
Klirrdämpfung:	■ PPM-Version, gemessen mit Leitungspegel +6 dBu.	
	■ VU-Version, gemessen mit nominalem Ausgangspegel 0 VU oder Spitzen-Ausgangspegel +6 VU	
	■ Verstärkung = 1, 31,5 Hz...16 kHz	**<70 dB**
	■ alle zulässigen Pegel, gemäss Pegeldiagramm, 60 Hz...10 kHz	**<60 dB**
Übersprechdämpfung:	■ von Kanal zu Kanal	
	- ohne Panorama-Potentiometer	**>80 dB**
	- mit Panorama-Potentiometer	**>70 dB**
	■ Kanalanwahlschalter ausgeschaltet	**>90 dB**
	■ Faderdämpfung - Eingangsregler	**>100 dB**
	- Ausgangsregler	**>90 dB**
Stromversorgung:	■ Netzspannungen, umschaltbar	**100...240V, ±10%**
	■ Leistungsaufnahme (970/3)	**ca. 150 VA**
	■ Interne Betriebsspannungen;	
	- Verstärkerschaltungen	**±15V**
	- Logik-Schaltkreise	**-6V**
	- Mikrofon-Phantomspeisung	**+48V**
Umgebungstemparatur:	■ Betriebs-Temperaturbereich	**0°C...+50°C (34°F...122°F)**
Luftfeuchtigkeit:	■ gemäss DIN 40040, Kategorie F	
Sicherheit-Standard:	■ gemäss IEC-Empfehlung, Publikation 65, Schutzklasse 1	

3. Technical Data

General:	■ Voltage specification dBu	
	0 dBu ≙ 0.775 V	
	■ Channel input faders and master faders are set to 0 dB mark.	
	■ Line outputs are terminated with 600Ω.	
	■ External sources have a source impedance of ≤ 200Ω	
	■ All data are valid within the frequency band from 31.5 Hz to 16 kHz.	
	■ PPM version, line level +6 dBu	
	■ VU version, nominal output level 0 VU ≙ +4 dBu	
	■ Attack point of output limiter ≙ peak output level +6 VU ≙ +10 dBu	
Levels:	■ Microphone input sensitivity	**-69 to -9 dBu**
	■ Line input sensitivity	**-9 to +21 dBu**
	■ Tape input sensitivity	**+4 to +21 dBu**
	■ Level at insertion points and tape inputs	**+6 dBu**
	■ Output level, adjustable within	**+6 to 15 dBu**
	■ Monitor level (transformerless, balanced, unloaded)	**+6 to +15 dBu**
Common mode rejection:	■ Microphone input	**15 kHz ≥ 60 dB**
	■ Line input	**15 kHz ≥ 50 dB**
Impedances:	■ Impedance of microphone input	**≥1.6 kΩ**
	■ Impedance of line input and tape input	**≥10 kΩ**
	■ Internal impedance of line outputs	**≤40 Ω**
Frequency response:	■ Filters switched off	**+0.5 to -1 dB**
	3 dB points	
	■ filters switched off (continuously decreasing outside this range)	**≈ 4.5 Hz/40 kHz**
	■ Bass cut 12 dB/octave, -3 dB	**75 Hz ± 5 Hz**
	■ High frequency equalizer, shelving at 20 kHz	**±15 dB**
	■ Low frequency equalizer, shelving at 20 Hz	**±15 dB**
	■ Presence equalizer	**Q = 1**
	■ mid-frequency adjustable from 150 Hz to 7 kHz	**±11 dB**
Overload margin:	■ Microphone input, max. level for 1% third harmonic at 31.5 Hz	**+6 dBu**
	■ Line input, max. level for 1% third harmonic at 31.5 Hz	**+24 dBu**
	■ Head room before channel fader (1% THD)	**20 dB**
	■ Head room before master fader (1% THD)	**20 dB**
	■ Max. line output level, R_L=300Ω	**+24 dBu**
Unweighted noise voltage MICROPHONE:	■ according to IEC 468-2 (DIN 454005) Equivalent input noise at bandwith 23 kHz, 200Ω terminated	**≤-125 dBu**

Signal-to-noise ratio:	■ PPM version, relative to line level +6 dBu	
	■ VU version, relative to peak output level +6 VU ≙ +10 dBU	
	■ On master output master fader closed	**≥95 dB**
	■ One channel Input and master faders at 0 dB mark,	
	unity gain, – filters off	**≥93 dB**
	– filters on, linear	**≥92 dB**
	■ 11 channels, all faders at 0 dB mark,	
	unity gain, – filters off	**>85 dB**
	– filters on, linear	**>83 dB**
Harmonic ratio:	■ PPM version, measured with line level +6 dBu	
	■ VU version, measured with nominal output level 0 VU or peak output level +6 dBu	
	■ unity gain, 31.5 to 16 kHz	**<70 dB**
	■ All permissible levels according to level diagram, 60 Hz to 10 kHz	**<60 dB**
Cross-talk attenuation:	■ channel to channel,	
	– without panorama potentiometer	**>80 dB**
	– with panorama potentiometer	**>70 dB**
	■ Channel bus selector switched off	**>90 dB**
	■ Fader attenuation input	**>100 dB**
	■ Fader attenuation master	**>90 dB**
Power supply:	■ Electrical power mains, switchable	**100 to 240V, ±10%**
	■ Power consumption (STUDER 970/3)	**≈ 150 VA**
	■ Internal supply voltages;	
	– Amplifiers	**±15V**
	– Logic circuits	**-6V**
	– Microphone phantom powering	**+48V**
Ambient temperature:	■ Operating temperature range	**0°C to +50°C (34°F to 122°F)**
Humidity:	■ according to DIN 40040, category F	
Safety standard:	■ Mains input according to IEC standard, publication 65, apparatur class 1	

3.1 Rauschkurve, typisch / Noise curve, typical

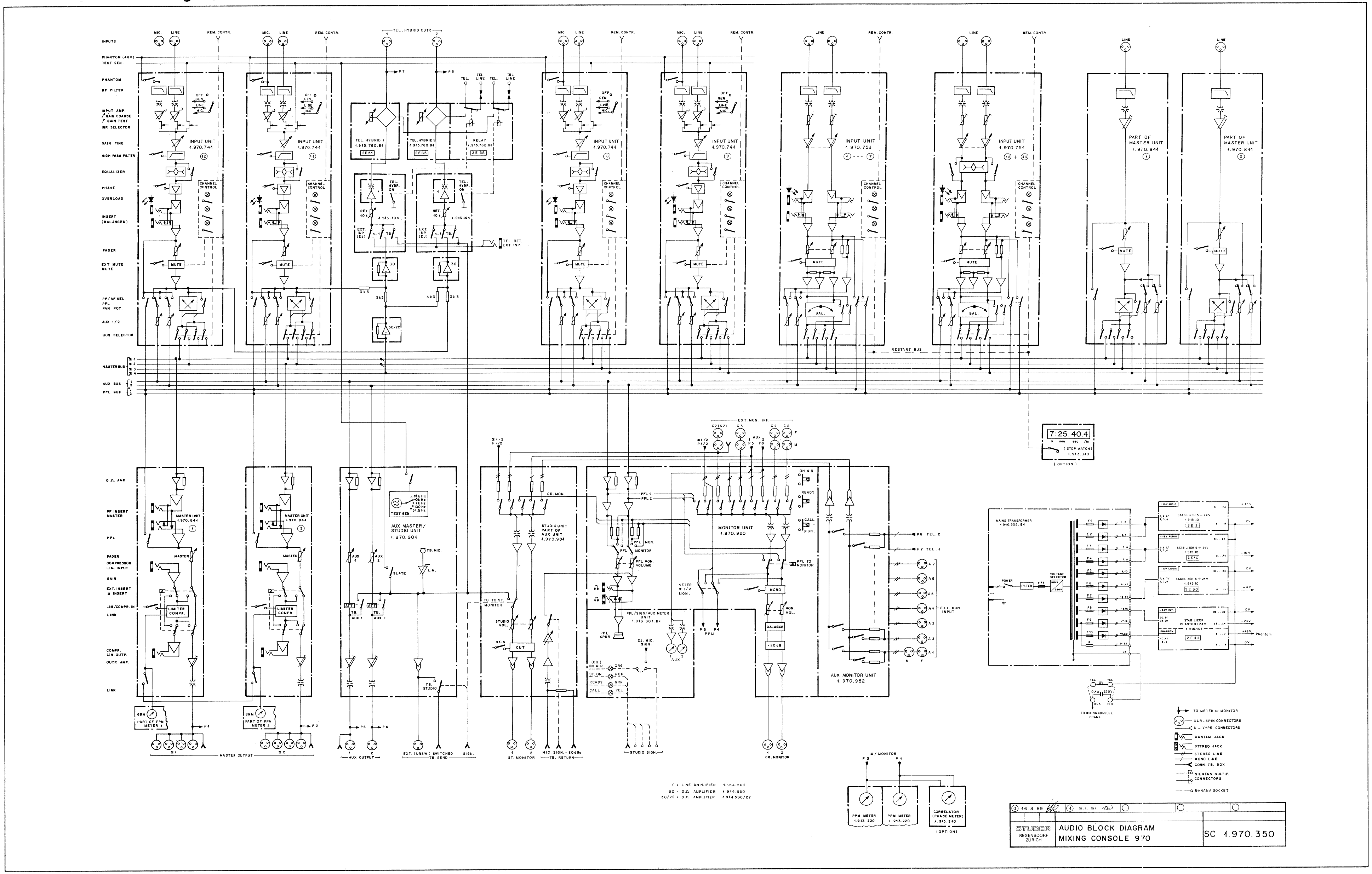


2 Blockschaltbilder

2 Block diagrams

1. Audio Block Diagram

1.970.350



2.1 Blockschaltbild: Signalisations und Fernsteuerungen 1.970.000
Block diagram: Signalization and Remote Control Facilities

2. Signalisation und Fernsteuerung

Das Mischpult 970 ist mit drei Signalisations- und Fernsteuersystemen ausgerüstet.

- Reglerstart mit galvanisch getrennten Relaiskontakten für jede Eingangseinheit.
- Studio Signalisation mit Rot-, Grün-, und Gelblicht.
- Fernsteuermöglichkeit der Kanalstummschaltung (Mute-Funktion) zum Einsatz als Räuspertaste oder "Video follow audio" Durchschaltung.

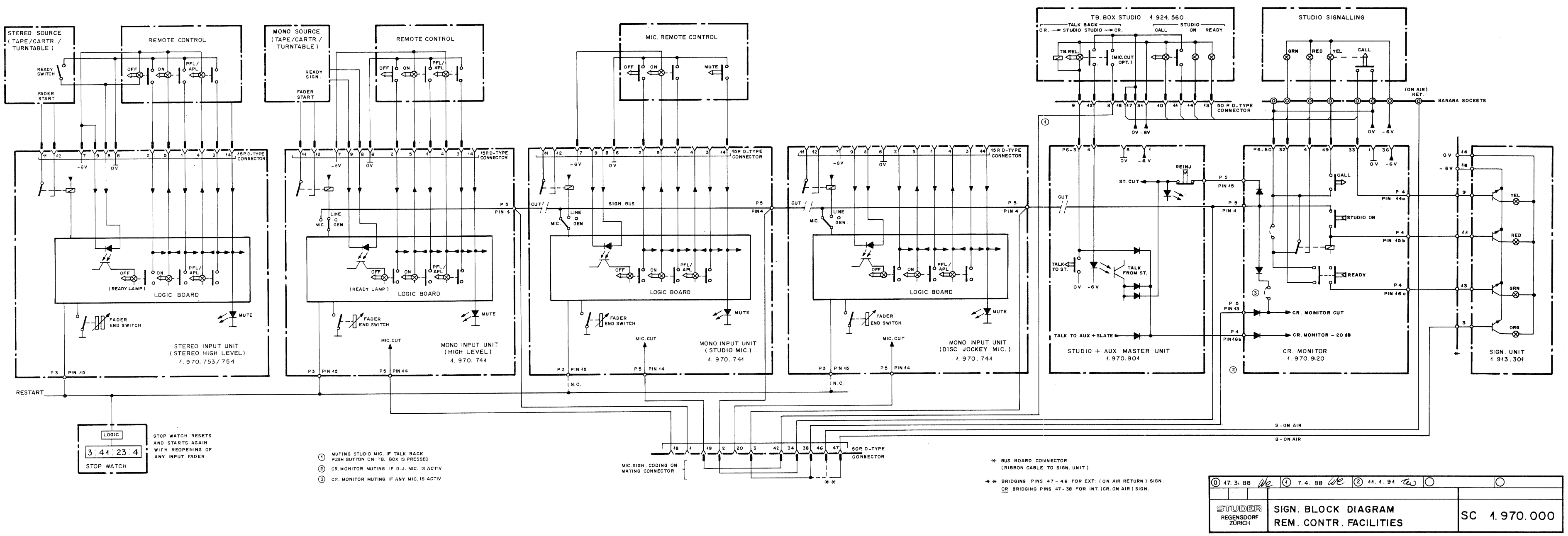
Mit der Funktion Restart wird die Stopuhr automatisch zurückgesetzt und neu gestartet, wenn der Flachbahnregler einer beliebigen Eingangseinheit geöffnet wird.

2. Signalization and Remote Control

The STUDER audio console 970 is equipped with three controlling systems:

- Faderstart with physically separated relay contacts per input unit.
- Studio signaling system with red, green and yellow lights.
- Remote control facility for the mute function. (cough button/"video follows audio")

The restart function resets and restarts the stop watch at the opening of any input fader.



3 Einmessen

3 Alignment

3 Einmessen

1. Allgemeines

1.1 Pegel-Definition

- Relative Pegelangaben in dBu

0 dBu ≙ 0,775 $V_{eff.}$

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

Die Bezugsgrösse 0,775V des relativen Spannungspegels in dBu wurde von der Wertdefinition des absoluten Spannungspegels in dBm übernommen; jedoch ohne Bindung an die Definition (600Ω/1mW).

- Nennpegel in dBu

Nennpegel = Studiopegel bei Vollaussteuerung

Der Nennpegel (auch Leitungspegel) entspricht dem Studiopegel bei Vollaussteuerung.

Typische Nennpegel sind:

+	6dBu	≙	1,55$V_{eff.}$
+	10dBu	≙	2,45$V_{eff.}$
+	15dBu	≙	4,36$V_{eff.}$

- Aussteuerungspegel

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

* entspricht einem verbreiteten Wert für den Vorlauf (Lead) des VU-Instrumentes.

- Verstärkungs-/Dämpfungsmasse in dB

Relative Pegelangaben in dB geben Auskunft über das Verstärkungs-/Dämpfungsmass einer aktiven (z.B. Verstärkerstufe), resp. passiven (z.B. Flachbahnregler) Schaltungskomponente, innerhalb eines Schaltkreises.

Einige Beziehungen (approximative Faktoren):

		dB	0	1	2	3	6	10	15	20
Faktor (≈)	Verstärkung		1	1,1	1,2	1,4	2	3,2	5,6	10
	Dämpfung		1	0,9	0,8	0,7	0,5	0,3	0,2	0,1

1.2 Voraussetzungen

Hinweise: 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. Eine turnusgemässe Wartungs-Einmessung wird bei dieser Generation von Mischpulten nicht mehr beansprucht.

Einzige Wartungsmassnahme bildet das nachfolgend beschriebene Entmagnetisieren der Eingangsübertrager.

1.3 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 empfielt sich deshalb, alle Mikrofon-Eingänge periodisch, und vor Einmessvorgängen, zu entmagnetisieren:

Vorgehen:

- Mischpult ausschalten
  (zum Schutze angeschlossener Lautsprecher).
- NF-Generator an Mikrofon-Eingang anschliessen.
  Dieser muss ein gleichspannungsfreies Signal einspeisen, um eine unerwünschte Magnetisierung des Übertragers zu vermeiden.

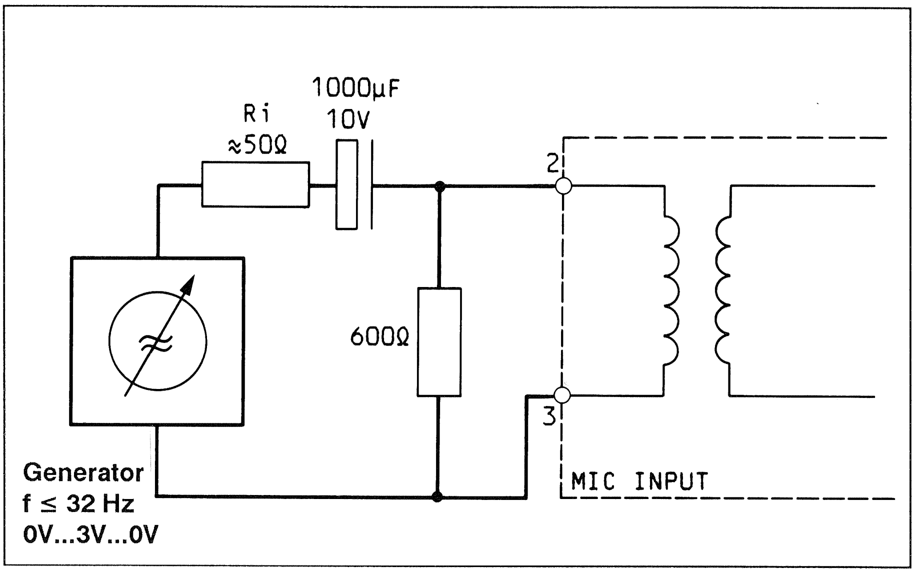


Fig. 1

- Kondensator C=1000µF/10V sperrt Gleichstrom-Anteile.
- Widerstand R600Ω dient der Entladung des Kondensators von Gleichstrom-Anteilen.

- Frequenz **≤32Hz** sukzessive auf Einspeispegel von 0V...3V erhöhen.
- Einspeispegel **langsam** auf 0V zurückregeln.

1.4 Benötigte Messgeräte und Hilfsmittel

- Tonfrequenz-Generator 1kHz Sinus / Rs ≤ 200Ω
- NF-Voltmeter, $Rz_{in} \leq 10k\Omega$
- 2 Kanal Kathodenstrahl Oszillograph
- Abgleich-Schraubenzieher, Grösse 2
- Sammelschienen-Adapter zur Kontaktierung ausgebauter Einschübe mit der Sammelschiene. Es werden benötigt:

  - 3 Adapter mit 32 pol. Kontaktierung Best.-Nr. 1.228.322
  - 1 Adapter mit 64 pol. Kontaktierung Best.-Nr. 1.228.327

- Schaumstoffmatte, Abmessung ca. 400 x 250 mm, als Unterlage für ausgebaute, über den Adapter mit der Sammelschiene kontaktierte Einschübe (werden mit Vorteil auf das Bedienungsfeld des Mischpultes gelegt).

1.5 Messgrundlagen

Hinweis: Ab Herstellerwerk ausgelieferte (Ersatz-) Einschübe sind werkseitig abgeglichen und können direkt in das einzumessende Mischpult eingesetzt werden.

- Das Einmessen des Mischpultes erfolgt bei erreichter Betriebstemperatur (ca. 15 Minuten nach Einschalten).
- Einschleifpunkte (INSERTs), Monitor-, Vorhör- und Kommando- (TB-) Ausgänge sind nicht zu belasten.
- Leitungsausgänge sind mit 600Ω Last abzuschliessen.

Prüfsignal: 1 kHz / Sinus

Pegelreferenz: 0 dBu ≙ $0{,}775V_{eff.}$

1.6 Messaufbau

NF-Millivoltmeter und NF-Generator müssen grundsätzlich über symmetrische Ein- resp. Ausgänge verfügen. Asymmetrischen Messgeräten ist ein Symmetrier-Übertrager vorzuschalten.

Hinweis: Stehen keine Messgeräte mit symmetrischen Ein- resp. Ausgängen zur Verfügung, können asymmetrische Messgeräte wie folgt (behelfsmässig) beschaltet werden:

b-Leitung (3) mit Audiomasse (1) verbunden, bilden mit der a-Leitung (2) einen asymmetrischen Messpunkt. Diese Schaltung ist jedoch nicht für Messungen höherer Aussteuerungen anwendbar (Clipping-Effekt bei den transformatorlosen INSERT's).

Beim Umpegeln oder Einmessen des Mischpultes ist die aufgeführte Kapitelfolge einzuhalten!
(manche Abgleiche bilden die Grundlage für nachfolgende Abgleichabläufe).

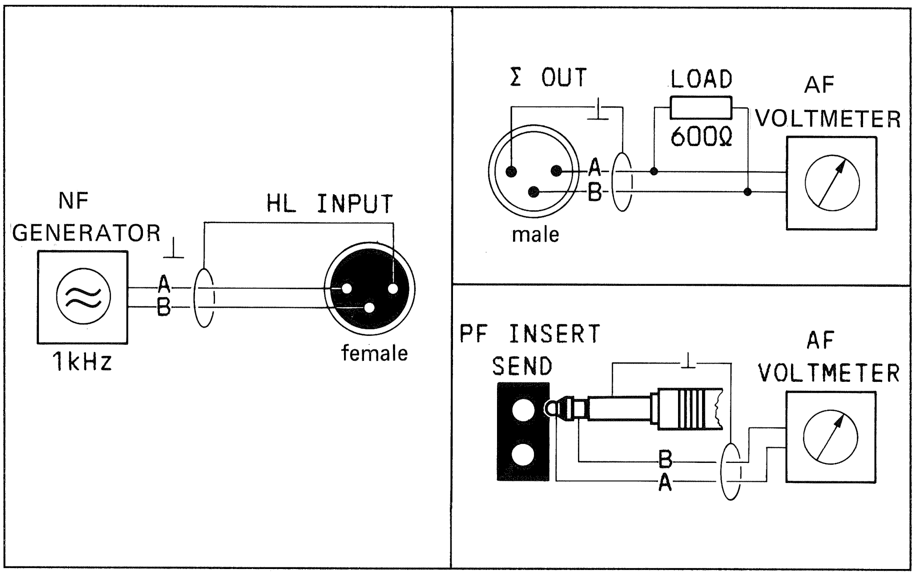


Fig. 2

3 Alignment

1. General

1.1 Level Definitions

- Relative level specification in dBu

0 dBu ≙ 0,775 $V_{eff.}$

The nominal levels specified in dBu are strictly based on a defined voltage as the reference quantity:

The reference quantity 0,775V of the relative voltage level in dBu has been taken from the value definition of the absolute voltage level in dBm; however the definition (600Ω/1mW) has not been adopted.

- Nominal level in dBu

Nominal level = Studio level at peak level

The nominal level (also line level) corresponds to the studio peak level.

Typical nominal levels are:

+	6dBu	≙	1,55$V_{eff.}$
+	10dBu	≙	2,45$V_{eff.}$
+	15dBu	≙	4,36$V_{eff.}$

- Modulation level

0 dB PPM = Nominal level **0 VU = Nominal level less 6 dB***

* Corresponds to a widely used value for VU instrument lead.

- Gain/attenuation in dB

Relative level specifications in dB give information on the gain/attenuation of an active (e.g. amplifier stage) or passive (e.g. linear fader) component within a circuit.

Some relationships (approximative factors):

		dB	0	1	2	3	6	10	15	20
Ratio (≈)	Gain		1	1,1	1,2	1,4	2	3,2	5,6	10
	Attenuation		1	0,9	0,8	0,7	0,5	0,3	0,2	0,1

1.2 Prerequisites

General Information: A test report is bypacked to each factory-shipped mixing console in which the data of a detailed test are recorded such as:

- Alignment to the nominal level specified by the customer
- Data from measurements concerning frequency response, distortion, S/N ratio, noise voltage and cross talk.

The mixing console needs to be recalibrated if the operating conditions (nominal level) at the place of service change or if modifications are made to the mixing console. Periodic recalibration is no longer required in this generation of mixing consoles.

The only maintenance required is the subsequently described demagnetization of the input transformers.

1.3 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 mixing 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.

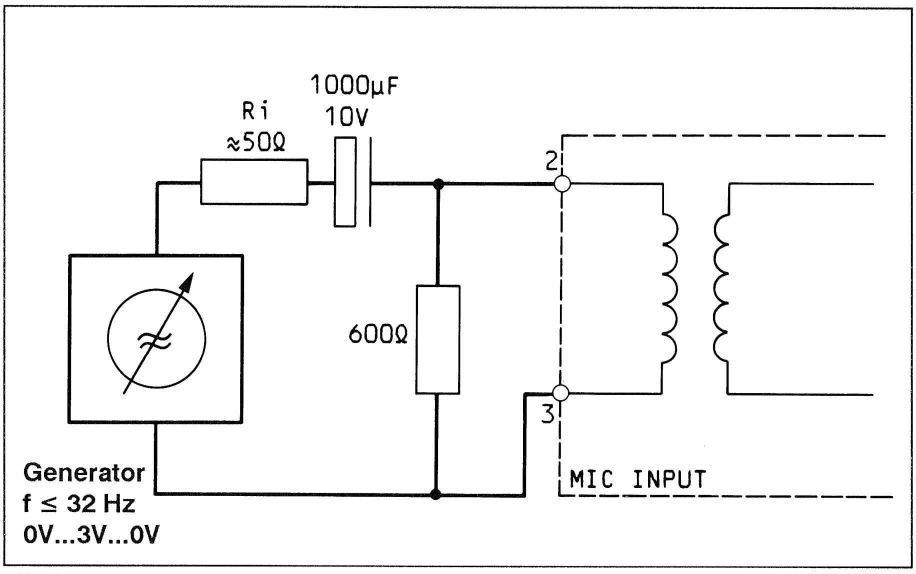


Fig. 1

- Capacitor C=1000µF/10V blocks the DC components.
- Resistor R600Ω removes DC components from the capacitors.

- Slowly increase **≤32 Hz** frequency to supply level from 0V...3V.
- **Slowly** decrease supply level to 0V.

EDITION: 22. Oktober 1990

1.4 Required Measuring Instruments and Aids

- AF generator 1 kHz sine-wave / Rs ≤ 200Ω
- AF-voltmeter, Rz_{in} ≤ 10kΩ
- 2 channel cathode-ray oscillograph
- Alignment screwdriver size 2
- Bus Adapter for connecting removed modules to the bus .The following are required:

  - 3 Adapter with 32 pin. Connector Order-No. 1.228.322
  - 1 Adapter with 64 pin. Connector Order-No. 1.228.327

- Foam rubber pad, approx. 400 x 250 mm as a soft surface for removed modules that are connected to the bus via the adapter (the pads are preferably placed on the operating panel of the mixing console).

1.5 Measuring Principles

Note: The factory-shipped (replacement) modules are already aligned and can be installed directly in the mixing console to be calibrated.

- The mixing console should only be calibrated when the operating temperature has been attained (15 minutes after power ON).

- Insertion points, monitor, prelistening, and talk-back outputs should not be loaded.

- The line outputs are to be terminated with 600Ω.

Test Signal: 1 kHz / sine-wave

Level Reference: 0 dBu ≙ $0{,}775V_{eff.}$

1.6 Measuring Setup

The AF millivoltmeter and AF generator must feature balanced inputs and outputs. A balancing unit is to be connected to the input of unbalanced measuring instruments.

Note: If no measuring instruments with balanced inputs and outputs are availabel, unbalanced measuring instruments can be connected (by way of expedient) in the following way:

b-line (3) connected to audio ground (1) together with the a-line (2) forms an unbalanced measuring point. However, this circuit is not suited for measuring higher levels (clipping effect on the transformerless INSERT's).

The specified sequence of the steps is to be followed for realigning the level or recalibrating the mixer! (certain alignments from the basis for subsequent alignment operations).

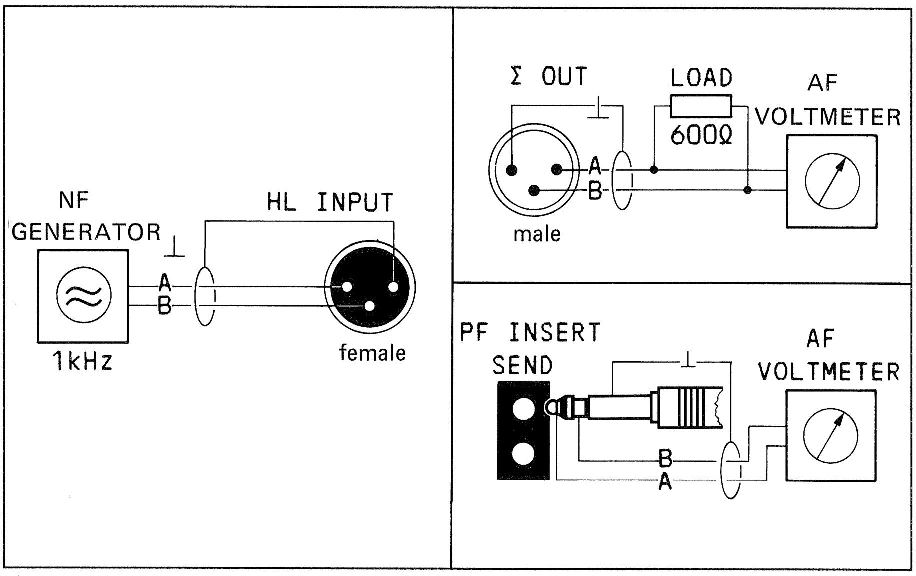


Fig. 2

2. Einmess - Anleitung der Einschub-Module

2.1 Mono Eingänge 1.970.741.81

TABELLE / TABLE		STATUS						
Bedienungselement / oper. element								
Feinabgleich / fine adjust				X				
Filter	off	X						
Phasenschalter / phase switch	ϕ off	X						
Equalizer	off	X						
Σ Anwahl / bus select	off	X						
Panpot	off						X	
ON-Taste / ON-key			X					

Line Input

- Eingangswahlschalter auf obere Stellung LINE positionieren.
- Status der Bedienungselemente gemäss Tabelle erstellen.
- NF Generator am LINE INPUT anschliessen.
- Leitungspegel / 1 kHz einspeisen.
- NF Voltmeter am INSERT SEND anschliessen.
- Kontrolle: Soll-Ausgangspegel am INSERT SEND = Leitungspegel.
- Korrektur: Feinabgleich am zentralen Potentiometer **R64**.

Fader Aufholverstärkung

- Eingangswahlschalter auf obere Stellung LINE positionieren.
- Status der Bedienungselemente gemäss Tabelle erstellen.
- Σ 1 anwählen.
- Eingangsfader auf Pos. 0 dB.
- NF Generator am LINE INPUT anschliessen.
- Leitungspegel / 1 kHz einspeisen.
- NF Voltmeter am Σ 1 INSERT SEND anschliessen.
- Kontrolle: Soll-Ausgangspegel am Σ 1 INSERT SEND = Leitungspegel.
- Korrektur: am Trimmpotentiometer **R164**.

2.2 Stereo Eingänge 1.970.753/754.81

TABELLE / TABLE	STATUS						
Bedienungselement / oper. element							
Feinabgleich / fine adjust (Gain)				X			
Equalizer off	X						
Σ / GR Anwahl / bus select off	X						
Balance off						X	
ON-Taste / ON-key		X					

Line Input L

- Status der Bedienungselemente gemäss Tabelle erstellen.
- NF Generator am LINE INPUT L anschliessen.
- Leitungspegel / 1 kHz einspeisen.
- NF Voltmeter am INSERT SEND L anschliessen.
- Kontrolle: Soll-Ausgangspegel am INSERT SEND L = Leitungspegel.
- Korrektur: am Trimmpotentiometer **R111**.

Line Input R

- Status der Bedienungselemente gemäss Tabelle erstellen.
- NF Generator am LINE INPUT R anschliessen.
- Leitungspegel / 1 kHz einspeisen.
- NF Voltmeter am INSERT SEND R anschliessen.
- Kontrolle: Soll-Ausgangspegel am INSERT SEND R = Leitungspegel.
- Korrektur: am Trimmpotentiometer **R211**.

Fader Aufholverstärkung L

- Status der Bedienungselemente gemäss Tabelle erstellen.
- Σ 1 anwählen.
- Eingangsfader auf 0 dB. positionieren.
- NF Generator am LINE INPUT L anschliessen.
- Leitungspegel / 1 kHz einspeisen.
- NF Voltmeter am Σ 1 INSERT SEND anschliessen.
- Kontrolle: Soll-Ausgangspegel am Σ 1 INSERT SEND = Leitungspegel.
- Korrektur: am Trimmpotentiometer **R182**.

Fader Aufholverstärkung R

- Status der Bedienungselemente gemäss Tabelle erstellen.
- Σ 2 anwählen.
- Eingangsfader auf 0 dB. positionieren.
- NF Generator am LINE INPUT R anschliessen.
- Leitungspegel / 1 kHz einspeisen.
- NF Voltmeter am Σ 2 INSERT SEND anschliessen.
- Kontrolle: Soll-Ausgangspegel am Σ 2 INSERT SEND = Leitungspegel.
- Korrektur: am Trimmpotentiometer **R282**.

2. Alignment Instruction for Level Meters

2.1 Mono Input 1.970.741.81

TABELLE / TABLE		STATUS						
Bedienungselement / oper. element								
Feinabgleich / fine adjust				X				
Filter	off	X						
Phasenschalter / phase switch	ϕ off	X						
Equalizer	off	X						
Σ Anwahl / bus select	off	X						
Panpot	off						X	
ON-Taste / ON-key			X					

Line Input

- turn the input selector to the upper LINE position.
- set controls to the states specified in table.
- connect audio generator to LINE INPUT.
- feed line level / 1 kHz.
- connect audio voltmeter to INSERT SEND.
- check: desired output level on INSERT SEND = line level.
- correction: fine adjustment on central potentiometer **R64**.

Fader Booster Gain

- turn the input selector to the upper LINE position.
- set controls to the states specified in table.
- select Σ 1 bus.
- Input fader to 0 dB position.
- connect audio generator to LINE INPUT.
- feed line level / 1 kHz.
- connect audio voltmeter to Σ 1 INSERT SEND.
- check: desired output level on Σ 1 INSERT SEND = line level.
- correction: with trimmer **R164**.

2.2 Stereo HL-Inputs 1.970.753/754.81

TABELLE / TABLE		STATUS						
Bedienungselement / oper. element								
Feinabgleich / fine adjust (Gain)					X			
Equalizer	off	X						
Σ / GR Anwahl / bus select	off	X						
Balance	off						X	
ON-Taste / ON-key			X					

Line Input L

- set controls to the states specified in table.
- connect audio generator to LINE INPUT L.
- feed line level / 1 kHz.
- connect audio voltmeter to INSERT SEND L.
- check: desired output level on INSERT SEND L = line level.
- correction: with trimmer **R111**.

Line Input R

- set controls to the states specified in table.
- connect audio generator to LINE INPUT R.
- feed line level / 1 kHz.
- connect audio voltmeter to INSERT SEND R.
- check: desired output level on INSERT SEND R = line level.
- correction: with trimmer **R211**.

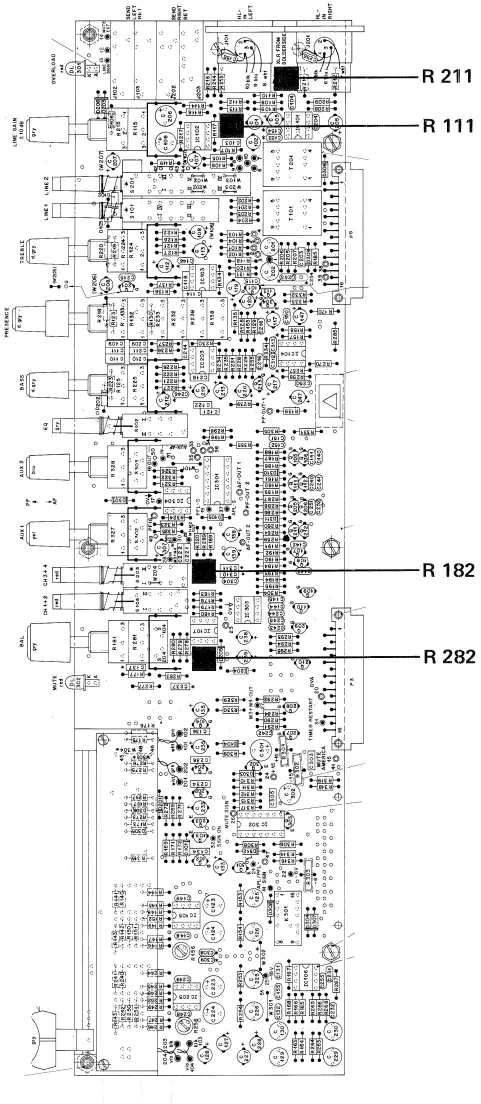
Fader Booster Gain L

- set controls to the states specified in table.
- select Σ 1 bus.
- input fader to 0 dB position.
- connect audio generator to LINE INPUT L.
- feed line level / 1 kHz.
- connect audio voltmeter to Σ 1 INSERT SEND.
- check: desired output level on Σ 1 INSERT SEND = line level.
- correction: with trimmer **R182**.

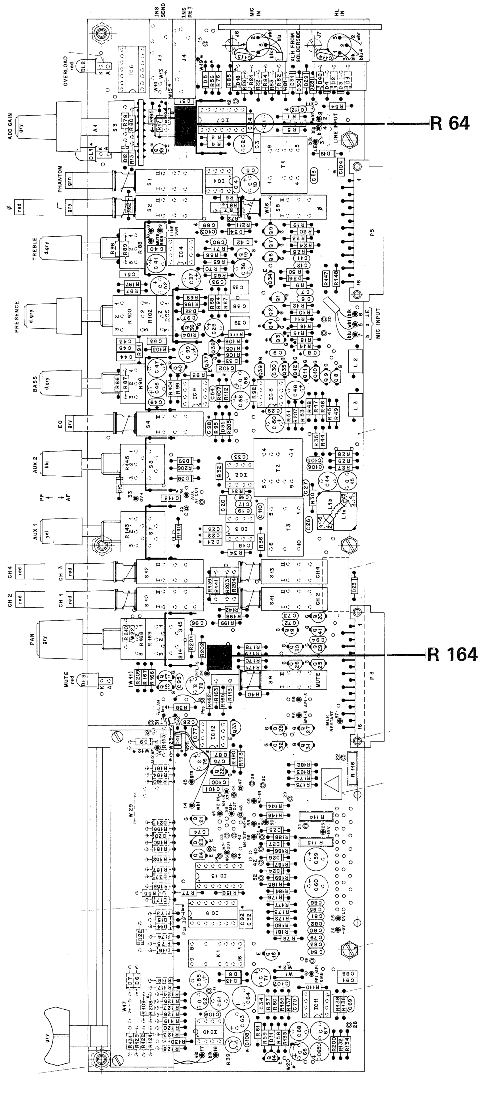
Fader Booster Gain R

- set controls to the states specified in table.
- select Σ 2 bus.
- input fader to 0 dB position.
- connect audio generator to LINE INPUT R
- feed line level / 1 kHz.
- connect audio voltmeter to Σ 2 INSERT SEND.
- check: desired output level on Σ 2 INSERT SEND = line level.
- correction: with trimmer **R282**.

Stereo HL Input Unit **1.970.753/754.81**



Mono Input Unit **1.970.741.81**



2.3 Summen Einheit 1.970.841.81

TABELLE / TABLE	STATUS						
Bedienungselement / oper. element							
Limiter / Compressor 'In' off	X						
Gain				X			
Σ	X						
Release					X		
Ratio					X		
HL Input					X		
Σ Anwahl / Σ select	X						
Panpot off						X	
Mute off	X						

HL Input

- Status der Bedienungselemente gemäss Tabelle erstellen.
- NF Generator am HL INPUT anschliessen.
- Leitungspegel / 1 kHz einspeisen.
- NF Voltmeter am Σ 1 INSERT SEND anschliessen.
- Kontrolle: Soll-Ausgangspegel am Σ 1 INSERT SEND = Leitungspegel +10 dB.
- Korrektur: am Trimmpotentiometer **R9**.

Summen Ausgang

- Status der Bedienungselemente gemäss Tabelle erstellen.
- NF Generator am LINE INPUT 1 anschliessen.
- Leitungspegel / 1 kHz einspeisen.
- NF Voltmeter am INSERT SEND anschliessen.
- Kontrolle: Soll-Ausgangspegel = Leitungspegel.
- NF Voltmeter am Σ OUT anschliessen, (mit 600Ω Last).
- Summenfader auf 0 dB Position.
- Zu messende Σ anwählen.

A) Limiter überbrückt

- Kontrolle: Soll-Ausgangspegel am Σ OUT = Leitungspegel.
- Korrektur: am Trimmpotentiometer **R104**.

B) Limiter eingeschaltet

- Generatorpegel um 20 dB reduzieren: Leitungspegel -20 dB.
- Kontrolle: Soll-Ausgangspegel am Σ OUT = Leitungspegel.
- Korrektur: am Trimmpotentiometer **R7** (PDM VCA Print).

Abgleichschritte wechselweise wiederholen bis optimale Einstellung erreicht ist.

Limiter Einsatzschwelle

- Status der Bedienungselemente gemäss Tabelle erstellen.
- NF Generator am LINE INPUT 1 anschliessen.
- Leitungspegel / 1 kHz einspeisen.
- NF Voltmeter am INSERT SEND anschliessen.
- Kontrolle: Soll-Ausgangspegel = Leitungspegel.
- NF Voltmeter am Σ OUT anschliessen, (mit 600Ω Last).
- Zu messende Σ anwählen.
- Flachbahnregler auf +10 dB positionieren.

A) Limiter überbrückt

- Kontrolle: Soll-Ausgangspegel = Leitungspegel +10 dB.
- Korrektur: am Input Gain.

B) Limiter eingeschaltet

- Kontrolle: Soll-Ausgangspegel = Leitungspegel +0,2 dB.
- Korrektur: am Trimmpotentiometer **R189**.

2.4 AUX Master / Studio Monitor 1.970.901.00

AUX Ausgang

- NF Generator am LINE INPUT 1 anschliessen.
- Leitungspegel / 1 kHz einspeisen.
- ~~Eingangswahlschalter auf obere Stellung LINE.~~
- NF Voltmeter am INSERT SEND anschliessen.
- Kontrolle: INSERT SEND = Leitungspegel.
- Korrektur: mit Feinabgleich einstellen bis INSERT SEND = Leitungspegel.
- AUX 1/AUX 2 Regler auf Eingangseinheit 1 ziehen. (Stellung PF) und auf Rechtsanschlag drehen.
- Ausgangsregler AUX Master 1+2 auf Rechtanschlag drehen.

AUX Ausgang 1

- NF Voltmeter am AUX AUSGANG 1 anschliessen, (mit 600Ω Last).
- Ausgangspegel am Ausgangsregler AUX 1 um 15 dB reduzieren. (Übersteuerungsreserve).
- Ausgangspegel am Trimmpotentiometer **R36** auf Leitungspegel abgleichen.

AUX Ausgang 2

- NF Voltmeter am AUX AUSGANG 2 anschliessen, (mit 600Ω Last).
- Ausgangspegel am Ausgangsregler AUX 2 um 15 dB reduzieren. (Übersteuerungsreserve).
- Ausgangspegel am Trimmpotentiometer **R62** auf Leitungspegel abgleichen.

TB Mikrofon

SLATE (TB auf Σ Sammelschiene).

- NF Generator anstelle vom TB Mic anschliessen.
- -40 dBu / 1 kHz einspeisen.
- NF Voltmeter am MASTER INSERT anschliessen.
- Beide Tasten SLATE drücken.
- Kontrolle: Soll-Ausgangspegel = Leitungspegel.
- Korrektur: am Trimmpotentiometer **R89**.

TB AUX

TB AUX (TB auf AUX).

- NF Voltmeter am AUX 1 OUTPUT anschliessen (mit 600Ω Last).
- Taste TB AUX drücken.
- Kontrolle: Soll-Ausgangspegel = Leitungspegel.
- Korrektur: an Trimmpotentiometer **R91**.

2.3 Master Unit 1.970.841.81

TABELLE / TABLE				STATUS			
Bedienungselement / oper. element							
Limiter / Compressor 'In' off	X						
Gain				X			
Σ	X						
Release					X		
Ratio					X		
HL Input					X		
Σ Anwahl / Σ select	X						
Panpot off						X	
Mute off	X						

HL Input

- set controls to the states specified in table.
- connect audio generator to HL INPUT.
- feed line level / 1 kHz.
- connect audio voltmeter to Σ 1 INSERT SEND.
- check: desired output level on Σ 1 INSERT SEND = line level +10 dB.
- correction: with trimmer **R9**.

Master Output

- set controls to the states specified in table.
- connect audio generator to LINE INPUT 1.
- feed line level / 1 kHz.
- connect audio voltmeter to INSERT SEND.
- check: desired output level = line level.
- connect audio voltmeter to Σ OUT, (with 600Ω load).
- set group / Σ fader to 0 dB position.
- press corresponding group selection key.

A) Limiter Bypassed

- check: desired output level on Σ OUT = line level.
- correction: with trimmer potentiometer **R104**.

B) Limiter Switched In:

- decrease generator level by 20 dB: line level -20 dB.
- check: desired output level on Σ OUT = line level -20 dB.
- correction: with trimmer potentiometer **R7** (on PDM VCA).

Alternatively repeat alignment steps A and B until optimal alignment is attained.

Limiter Attack Threshold

- set controls to the states specified in table.
- connect audio generator to LINE INPUT 1 fader to 0 dB position.
- feed line level / 1 kHz.
- connect audio voltmeter to INSERT SEND 1.
- check: desired output level = line level.
- select measured group / Σ.
- connect audio voltmeter to Σ OUT, (with 600Ω load).
- set group / Σ fader to the +10 dB position.

A) Limiter Bypassed

- check: desired output level = line level +10 dB.
- correction: with Input Gain.

B) Limiter Switched On

- check: desired output level on Σ / GROUP OUT = line level +0,2 dB.
- correction: with trimmer potentiometer **R189**.

2.4 AUX Master / Studio Monitor 1.970.901.00

AUX Output

- connect audio generator to LINE INPUT 1.
- feed line level / 1 kHz.
- ~~turn the input selector to the upper LINE position.~~
- connect audio voltmeter to INSERT SEND.
- check: INSERT SEND = line level.
- correction: on input selector within the LINE range, and fine adjustment potentiometer.
- pull the AUX 1/AUX 2 potentiometers (PF position) and turn them to the righthand limit position.
- turn AUX 1+2 SEND potentiometers to the right-hand limit position.

AUX 1 Out

- connect audio voltmeter to AUX 1 OUT (with 600Ω load).
- decrease output level with potentiometer AUX 1 by 15 dB (headroom).
- align output level to line level with trimmer potentiometer **R36**.

AUX 2 Out

- connect audio voltmeter to AUX 2 OUT (with 600Ω load).
- decrease output level with potentiometer AUX 2 by 15 dB (headroom).
- align output level to line level with trimmer potentiometer **R62**.

TB Microphone

SLATE (TB on Σ bus).

- connect audio generator instead of TB Mic.
- feed -40 dBu / 1 kHz.
- connect audio voltmeter to MASTER INSERT.
- press both SLATE buttons.
- check: desired output level on Σ INSERT = line level.
- correction: with trimmer potentiometer **R89**.

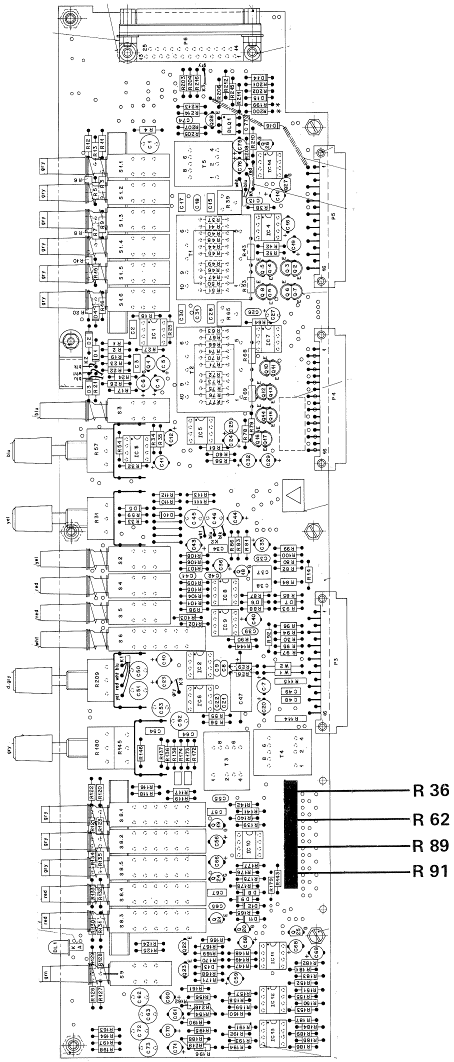
TB AUX

TB AUX (TB on AUX OUTPUT 1..4).

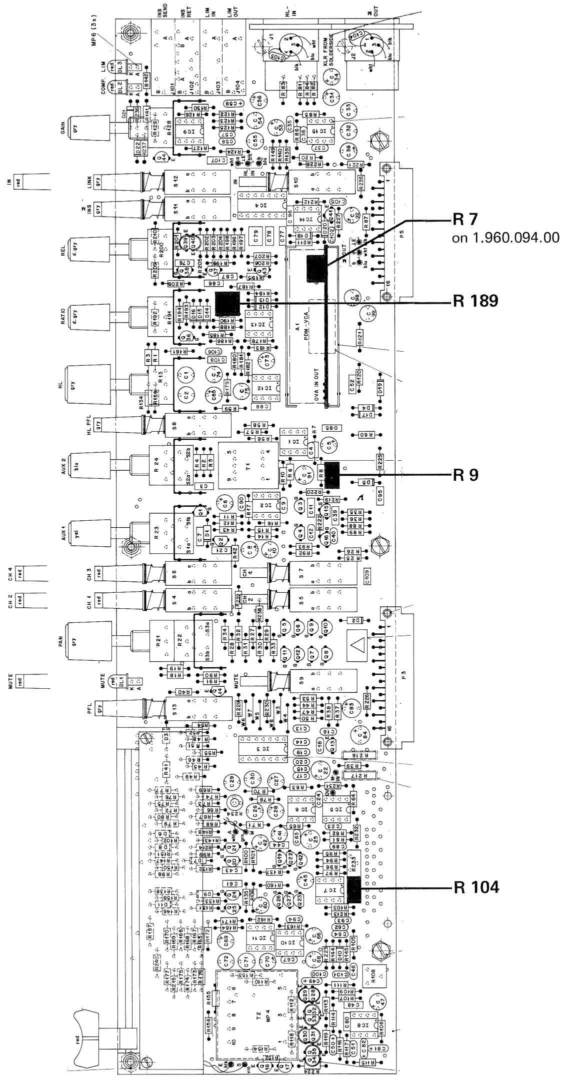
- connect audio voltmeter to AUX 1 OUTPUT (with 600Ω load).
- press TB button (AUX 1).
- check: desired output level on AUX OUT 1 (with 600Ω load) = line level.
- correction: with trimmer potentiometer **R91**.

EDITION: 22. Oktober 1990

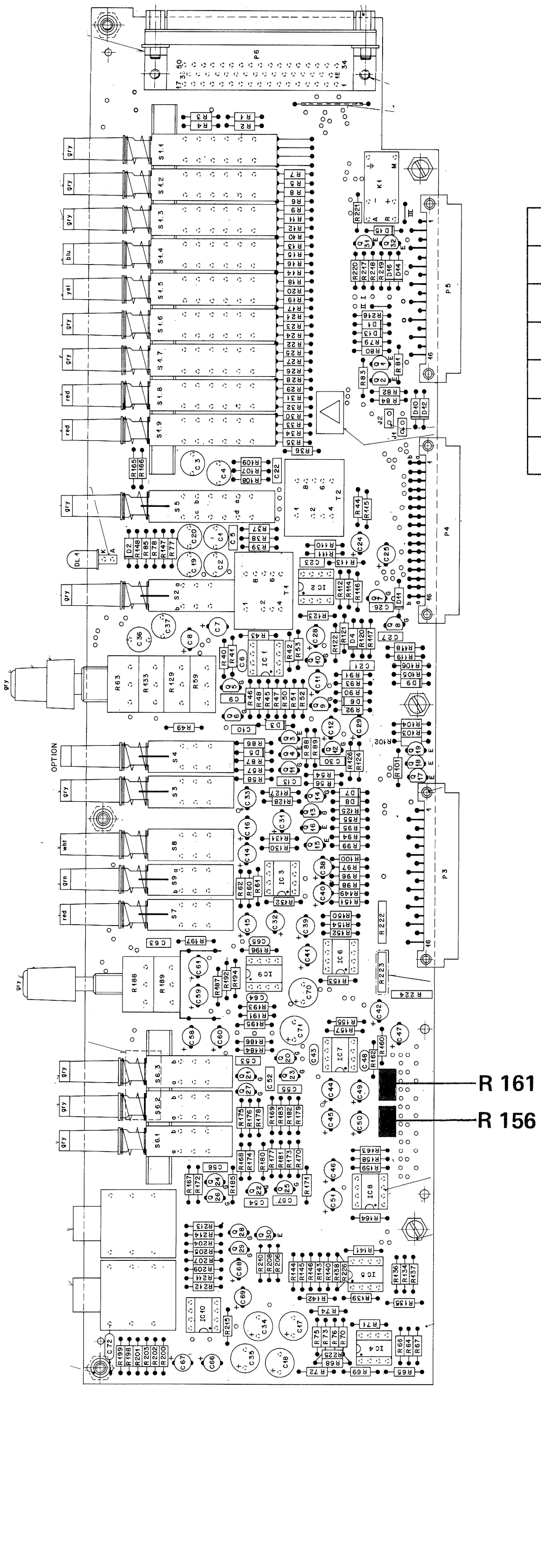
AUX Master / Studio Monitor 1.970.901.00



Master Unit 1.970.841.81



2.5 Kontrollraum Monitor Einheit 1.970.920.00



Voraussetzung:

Für die PFL Meter Einstellung muss zuerst das Anzeige-instrument eingestellt sein.

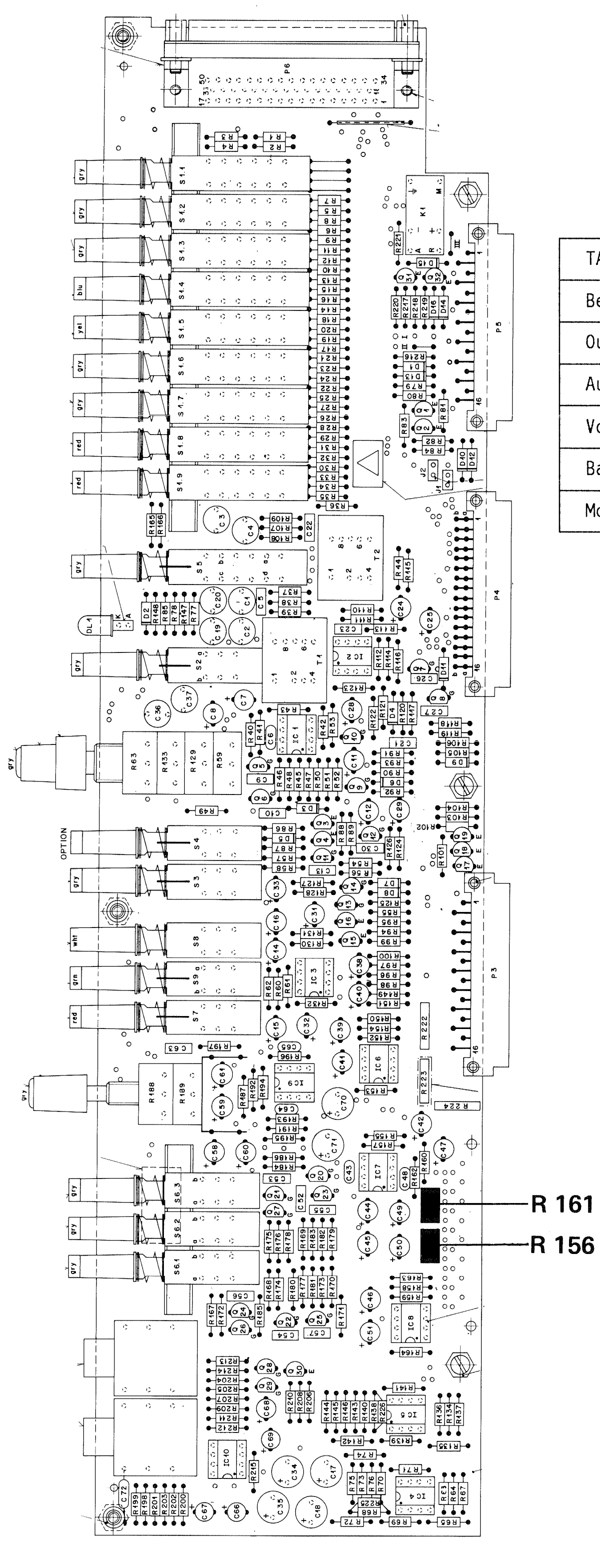
Vgl. 3. Einmessanleitung der Anzeigeninstrumente.

TABELLE / TABLE	STATUS						
Bedienungselement / oper. element							
Aussteuerungsanzeige METER Σ	X						
Automatik PFL TO MONITOR	X						
Volume CR MONITOR			X				
Balance BAL				X			
Monoschaltung MONO	X						

Vorhörkanal PFL

- NF Generator am LINE INPUT 1 anschliessen.
- Status der Bedienungselemente gemäss Tabelle erstellen.
- Eingangswahlschalter auf obere Stellung LINE positionieren.
- Leitungspegel / 1 kHz einspeisen.
- NF Voltmeter am INSERT SEND anschliessen.
- Kontrolle: Soll-Ausgangspegel am INSERT SEND = PPM Pulte > Leitungspegel.
  VU Pulte > Leitungspegel minus Meter Lead (+4 dBu Standard).
- PFL Taste am Input Unit 1 drücken.
- PFL Taste am C.R. Monitor drücken.
- Meterwahlschalter auf Stellung Monitor.
- Kontrolle: Soll-Anzeige am Aussteuerungsmessin-strument = 0 dB.
- Korrektur: am Trimmpotentiometer **R156** für **linken** Kanal, **R161** für **rechten** Kanal.

2.5 Control Room Monitor Unit 1.970.920.00



Note:

For PFL adjustment the meter adjustment has to be done first.

Refer to 3. Alignment Instruction for Level Meters.

TABELLE / TABLE	STATUS						
Bedienungselement / oper. element							
Output meter METER Σ	X						
Automatic mode PFL TO MONITOR	X						
Volume CR MONITOR			X				
Balance BAL				X			
Mono circuit MONO	X						

Prefader Listening Channel PFL

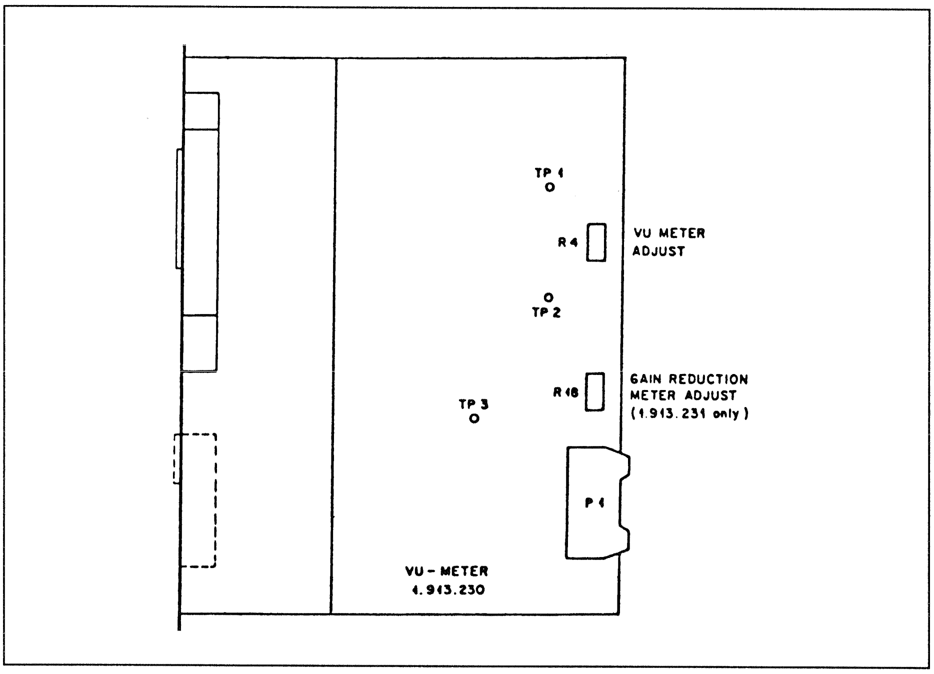
- connect audio generator to LINE INPUT.
- set controls to the states specified in the table.
- turn the input selector to the upper LINE position.
- feed line level / 1 kHz.
- connect audio voltmeter to INSERT SEND.
- check: desired output level on INSERT SEND = PPM consoles line level.
  VU consoles line level minus meter lead (+4 dBu standard).
- depress PFL button on INPUT UNIT 1.
- depress PFL button on C.R. MONITOR UNIT.
- depress METER button on the C.R. MONITOR's meter section (PFL level is shown on meters).
- check: meter indication, desired indication 0 dB.
- correction: with trimmer potentiometer **R156** for PFL **left** channel, **R161** for **right** channel.

3. Einmess - Anleitung der Anzeigeinstrumente

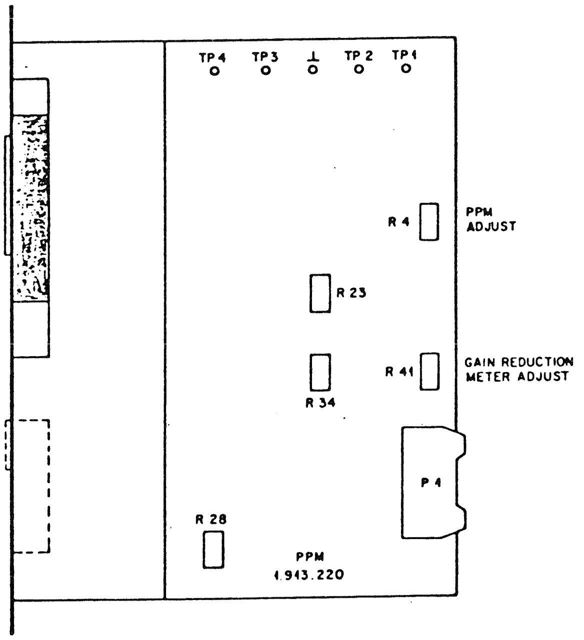
3.1 VU-Meter 1.913.230/231

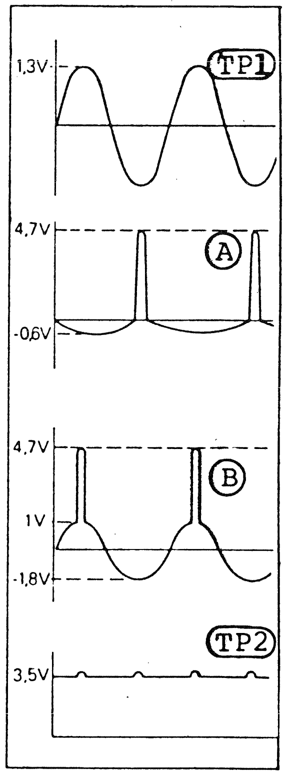
TP1: Variabel (0,1 V...0,35 $V_{eff.}$)
TP2: 1 $V_{eff.}$
TP3: -3,6 V p Vollweg-Gleichrichtung

Mit R4 kann die Referenzanzeige (0 VU) für Eingangssignale zwischen 0 dBu und + 10 dBu eingestellt werden.



3.2 Peak Program Meter (PPM) 1.913.220/221





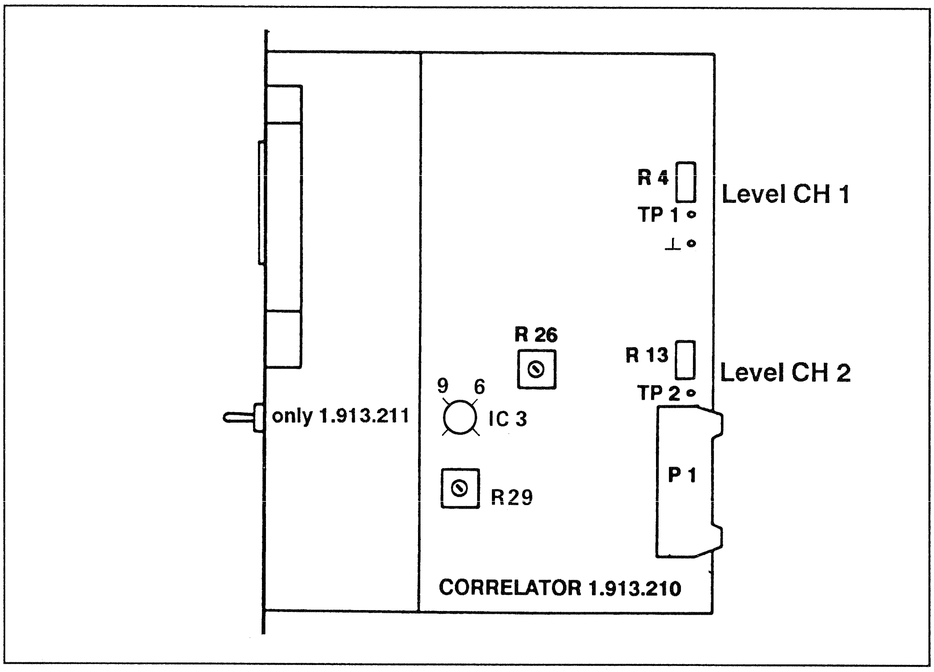
1. Summen-Ausgang auf Leitungspegel (1kHz) einstellen.

2. Mit **R4** (Fig. 4) am summenzugehörigen Instrument Zeigerausschlag auf 0 dB einstellen. (+3,5 V an TP2)

Hinweis: Die Trimmpotentiometer R23, R28 und R34 dienen dem werkseitigen Skalenabgleich.
R28: 0dB - Anzeige am Instrument
R34: -30dB - Anzeige am Instrument
R23: -40dB - Anzeige am Instrument

Die mechanische Nullstellung des Messwerkes liegt bei Referenzanzeige 0dB. Für Pegel, deren Anzeige 0 ...+6dB ergibt, wechselt die Polarität der Ausgangsspannung am Verstärker.

3.3 Korrelator 2CH/4CH 1.913.210/211



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 ⊥ (Masse) erscheint.

2. Eingangspegel um 50 dB verringern. KO an den Ausgang 6 oder 9 von **IC3** gegen Masse ⊥ anschliessen. Die Amplituden beider Halbwellen mit **R29** auf gleiche Höhe einstellen.

3. Eingangspegel wieder auf Leitungspegel einstellen. Mit **R26** den Zeiger des Anzeigeinstrumentes auf +1 einstellen.

4. Einen der beiden Eingänge umpolen. Das Messinstrument soll -1 anzeigen.

5. Anzeigen gemäss Tabelle kontrollieren.

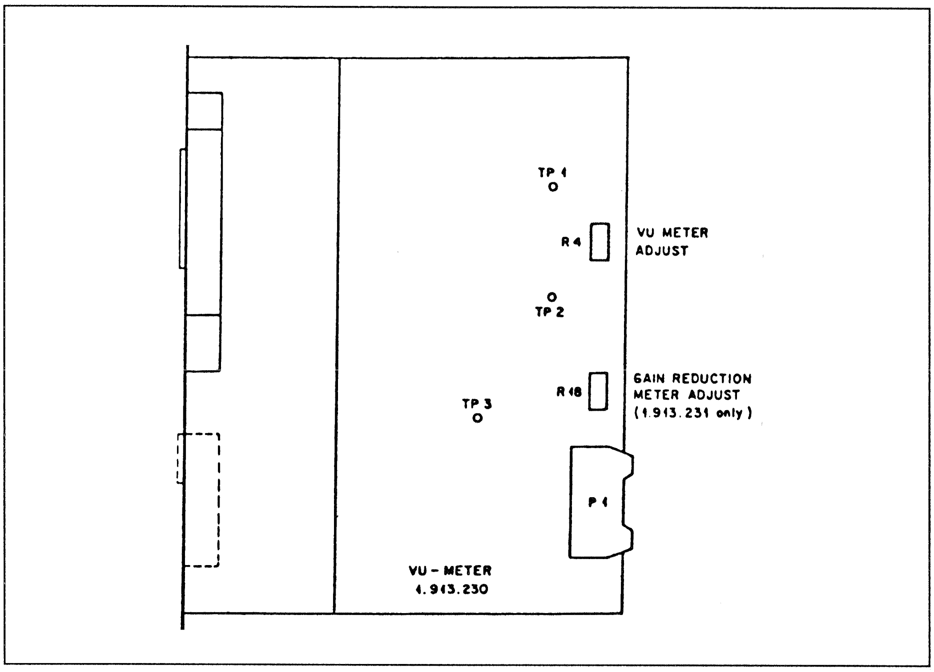
EINGANG	30 Hz	1 kHz	15 kHz
Leitungspegel = A	0,95	1	0,95
A + 20 dB	~ 1	1	~ 1
A - 20 dB	0,6	~ 1	0,5

3. Alignment Instruction for plug in Units

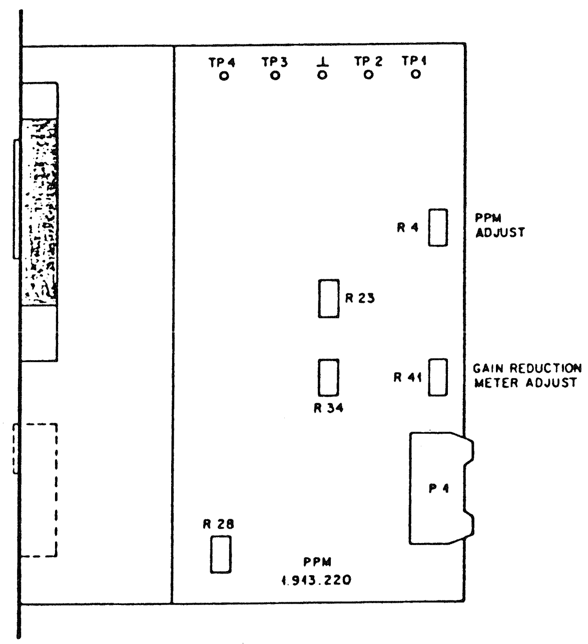
3.1 VU Meter 1.913.230/231

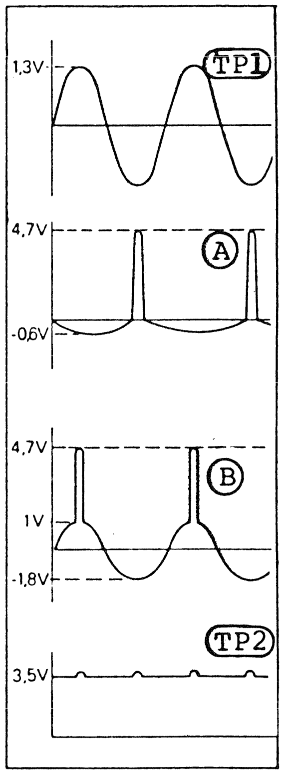
TP1: Variable (0,1 V ... 0,35 $V_{eff.}$)
TP2: 1 $V_{eff.}$
TP3: – 3,6 V p full-wave rectification

The reference indication (0 VU) for input signals between 0 dBu and +10 dBu can be adjusted with R4.



3.2 Peak Program Meter (PPM) 1.913.220/221





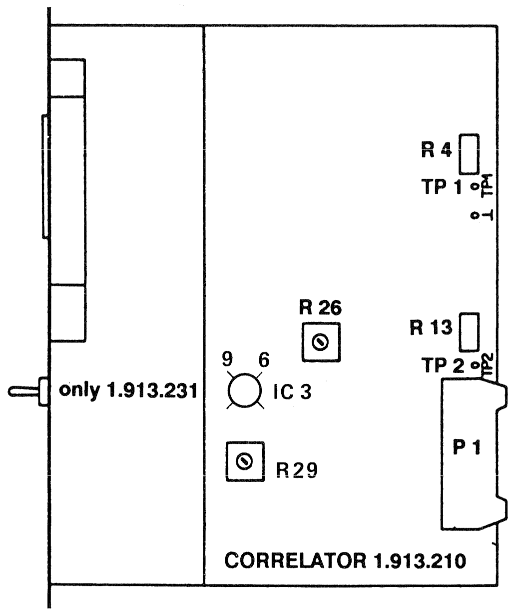
1. Line-level +6...+15 dB 1 kHz at input.

2. +3,5 V at TP2 adjust with **R4** (level PPM)

Note: The variable resistors R23, R28 and R34 are used for factory adjustment of the indicating scale.
R28 adjustment of 0dB indication.
R34 adjustment of -30dB indication.
R23 adjustment of -40dB indication.

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.

3.3 Correlater 2CH/4CH — 1.913.210/211



1. Feed both inputs with an in-phase signal (1 kHz, line level).
   Adjust **R4** and **R13** in such a manner that 100 mV ACCorrelation 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 halfwaves 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 the following table.

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

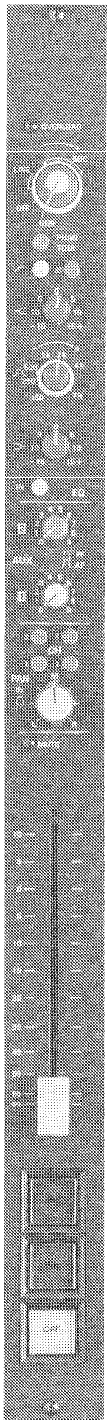
4 Einschubmodule 1.970...

4 Plug in Units 1.970....

4 Plug in Units 1.970....

1. Eingangseinheit Mono 1.970.741

1.1 Bedienungselemente



OVERLOAD: Die mit Overload bezeichnete LED leuchtet auf, sobald der maximal zulässige Pegel vor oder nach dem Flachbahnregler überschritten wird.

EINGANGSTEIL: **MIC:** Symmetrisch, erdfreier Mikrophoneingang. Eingangsempfindlichkeit -70...-10 dBu. Schaltbar in 4 Stufen zu 15 dB, dazwischen mit Potentiometer stetig einstellbar im Bereich 0...15 dB. Der maximale Eingangspegel am Mikrophoneingang darf +6 dB betragen.

PHANTOM: Zuschaltbare 48 Volt Phantomspeisung.

LINE: Hochpegeleingang, symmetrisch, erdfreier Eingang. Eingangsempfindlichkeit -10...+20 dBu. Schaltbar in 2 Stufen zu 15 dB, dazwischen stetig einstellbar im Bereich 0...15 dB.

GEN: Tongeneratoreingang über Sammelschiene vom pultinternen Tongenerator gespeist.

Ø: Phasenumkehrschalter, wirkt auf alle Eingänge.

FILTER: Schaltbare Tiefensperre mit 12 dB/Okt., Grenzfrequenz 75 Hz.

ENTZERRER: Siehe 1.4

HILFSAUSGÄNGE AUX 1 und AUX 2: Zwei getrennt regelbare Hilfsausgänge sind über die an den Potentiometer angebauten Zug-Druckschalter vor (PF) oder nach (AF) Flachbahnregler schaltbar.

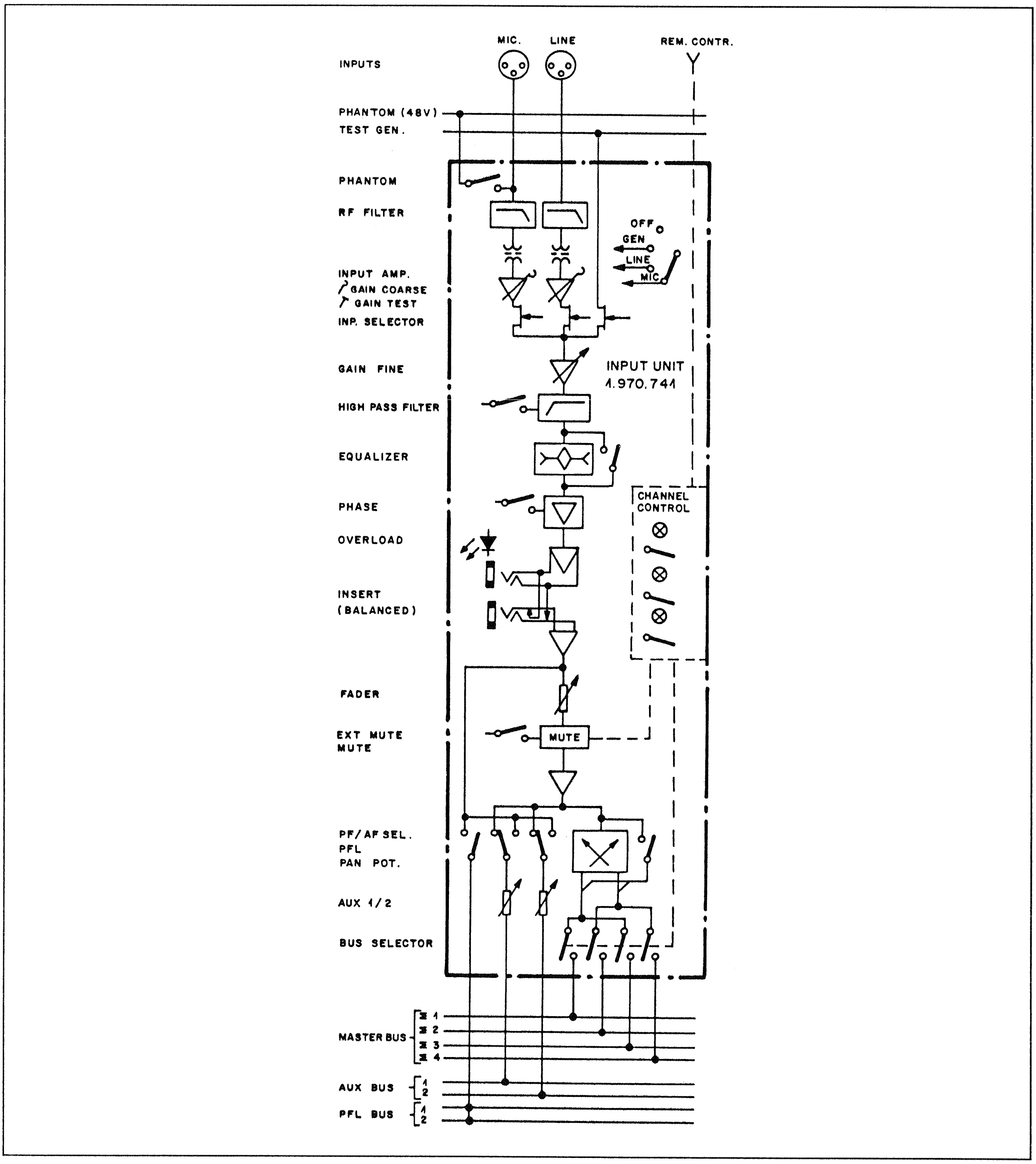
PAN. POT.: Das Panorama-Potentiometer kann mit dem Zug-Druckschalter aktiviert werden.

SUMMENWAHL: Stereo und 2 Kanal-Pulte sind mit zwei Tasten zur getrennten Anwahl der Sammelschienen Σ1 und Σ2 bestückt. 4 Kanal-Pulte sind mit vier Tasten Σ1 ... Σ4 bestückt.

MUTE-FUNKTION: Auf dem fünfzehnpoligen D-Type Stecker (REM-CONTR) kann der Kanal knackfrei stummgeschaltet werden. Die Mute LED-Anzeige signalisiert die aktivierte Funktion.

FLACHBAHN-REGLER:	Der Flachbahnregler ist mit einer Widerstandsschicht aus leitendem Kunststoff ausgerüstet.
STEUERTASTEN:	Die drei grossen Drucktasten sind unter Punkt 1.3 beschrieben.

1.2 Blockschaltbild 1.970.741



1.3 Steuertasten

Vor dem Flachbahnregler sind drei geräuscharme Drucktasten mit Signallampen angebracht. Die Funktionen können im Einschub durch umstecken von Miniatur-Brückensteckern verändert werden.

Es sind 3 Grundversionen vorgesehen:

Version 1 (Fig.1)

PFL

- Das Vorhörsignal PFL (Pre fader listening) wird zum Vorhörlautsprecher und zum Kopfhörer durchgeschaltet. Ein weiterer Tastendruck unterbricht dieses Signal wieder.
- Gleichzeitig wird die Signallampe ein- oder ausgeschaltet.

ON

- Schaltet den Modulationsweg durch, sofern Sammelschiene angewählt und Flachbahnregler geöffnet sind.
- ON-Lampe leuchtet.
- PFL wird unterbrochen, wobei aber die PFL-Lampe weiterleuchtet um den vorher angewählten Zustand anzuzeigen.
- Signalisation resp. Faderstart-Relais wird durchgeschaltet, sofern die übrigen Kriterien erfüllt sind (siehe 1.6, Signalisation und Faderstart).
- Automatische Stoppuhr wird zurückgesetzt. (Option)

OFF

- Modulation wird unterbrochen.
- Signalisation und Faderstart-Relais fallen ab.
- Falls die PFL-Taste angewählt war, wird nun das Vorhören wieder durchgeschaltet.
- ON-Lampe erlöscht.

OFF-Lampe:

- Wird von Extern aktiviert und kann den Bereitschaftszustand der Quelle signalisieren.

Fernsteuerung:

- Alle Tasten und Lampensignale sind auch auf einem fünfzehnpoligen D-Type Stecker verfügbar. Obige Funktionen können also auch ferngesteuert werden.

Blockschaltbild Fernsteuerung: (Standard)

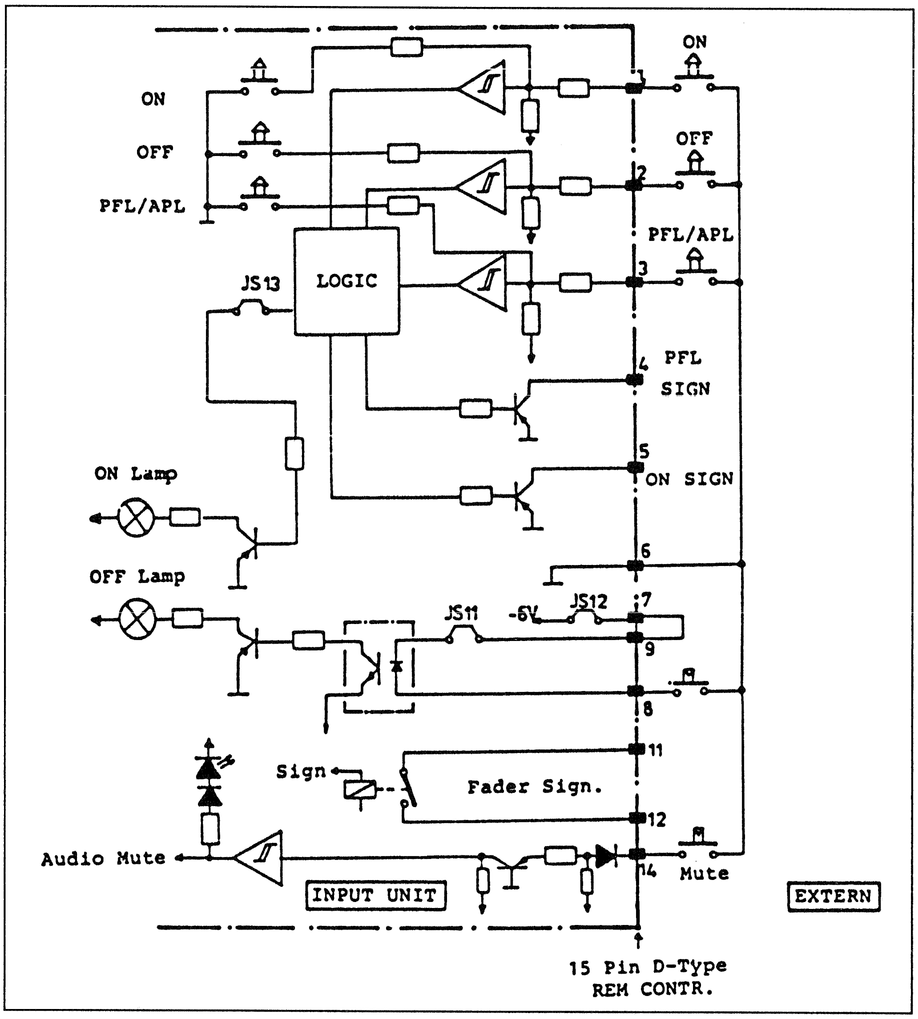


Fig. 1

Version 2

APL | ON | OFF

- Gleiche Funktion wie in Version 1, mit der Ausnahme, dass anstelle des Vorhörsignales vor Flachbahnregler, dasjenige nach Regler (APL) durchgeschaltet wird.

Version 3

AUDITION

- Schaltet den Kanal durch und wählt die Summen Σ3+Σ4 an (Eingangseinheiten dieser Version sind nicht mit Sammelschienenwahltasten ausgerüstet).
- AUDITION-Lampe wird eingeschaltet.
- Signalisation wird aktiviert.
- Timer Restart.

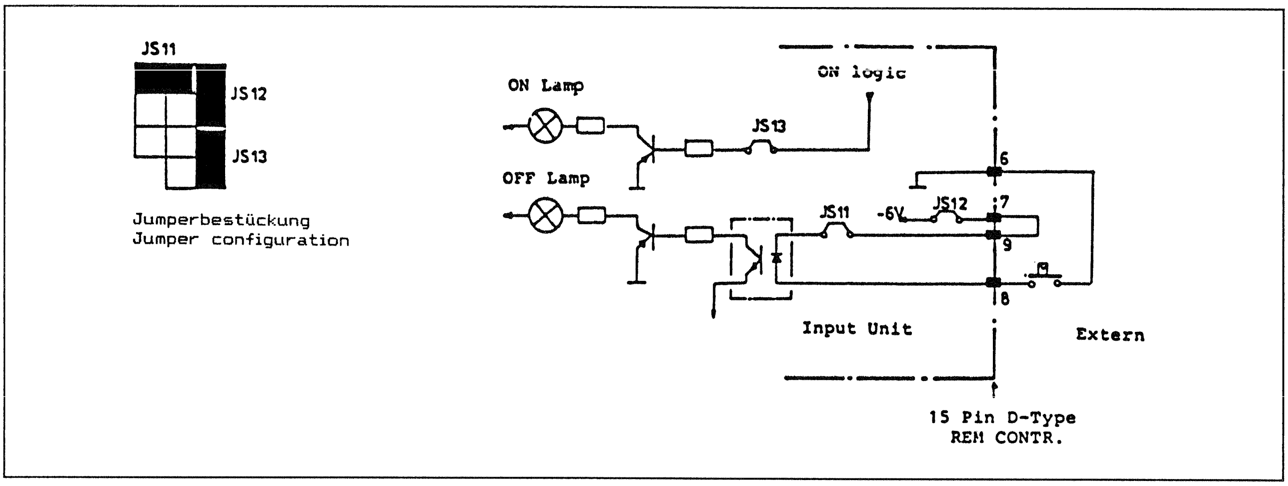
`ON AIR`

- Schaltet den Kanal durch und wählt die Summen $\Sigma 1 + \Sigma 2$ an.
- Die ON AIR Lampe wird eingeschaltet.
- Signalisation wird aktiviert
- Timer Restart.

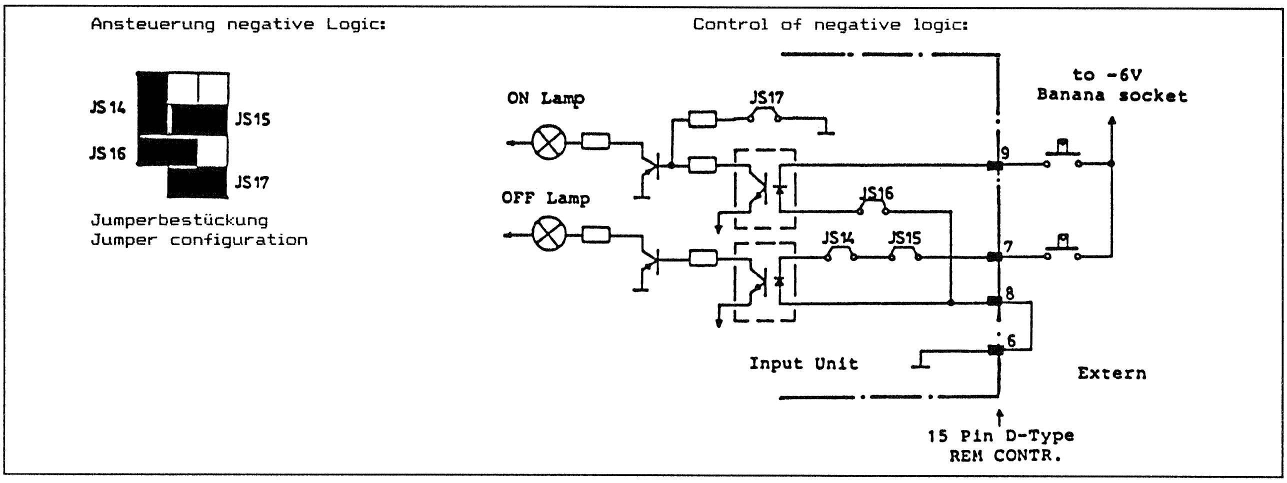
`OFF`

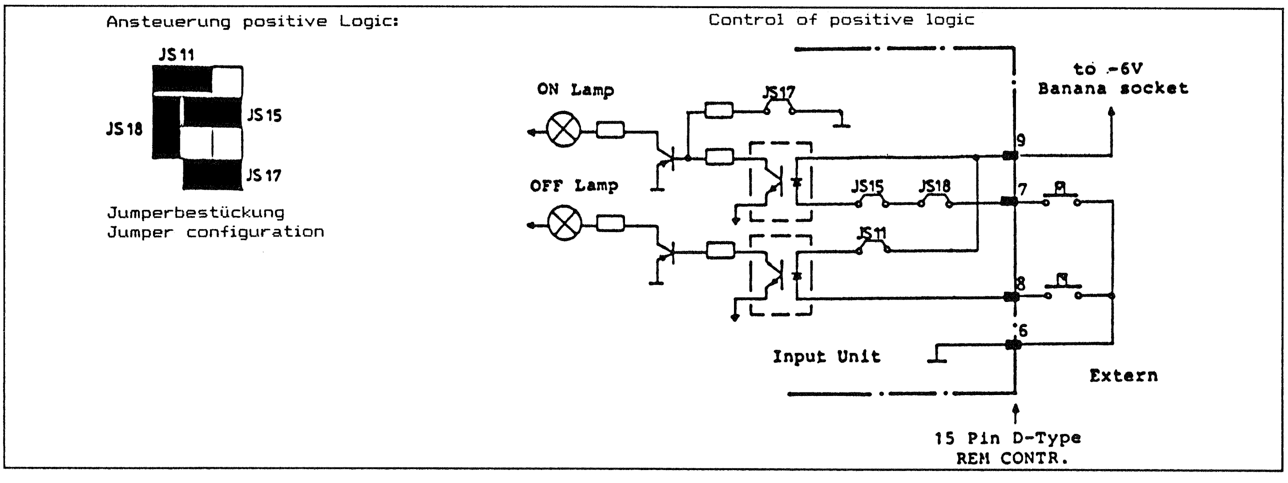
- Setzt sowohl AUDITION- als auch ON AIR-Taste zurück.
- Signalisation wird inaktiv.

Codierung für externe OFF-Lampensteuerung (Standard)

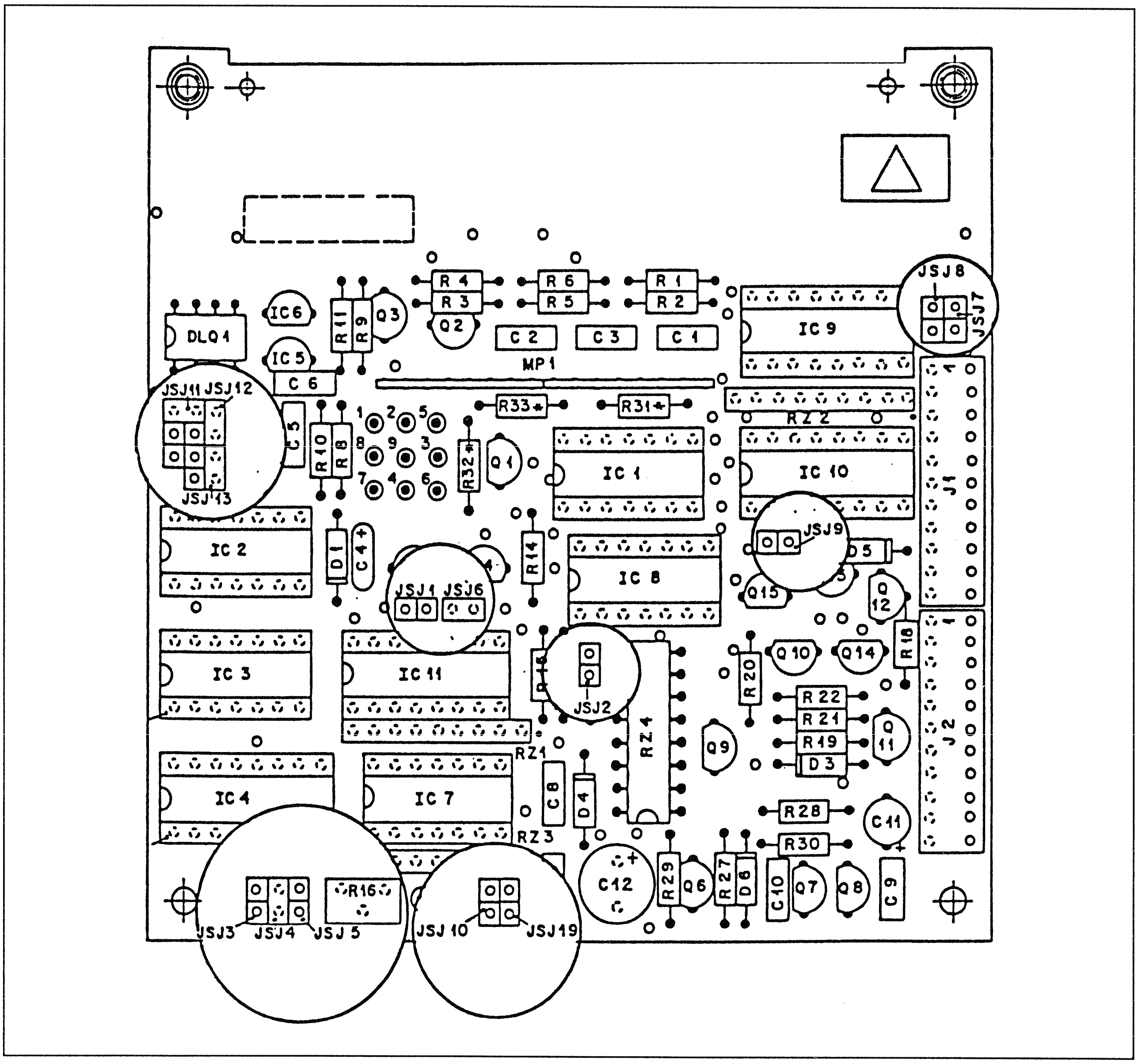


Codierung für externe ON- und OFF-Lampensteuerung





Jumpercodierung für Extension Unit 1.970.792



	JS 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	JS 19
Version 1 (STANDARD)				X						X	X	X	X						
Version 2				X		X				X	X	X	X						
Version 3					X		X	X		X	X	X	X						
....																			

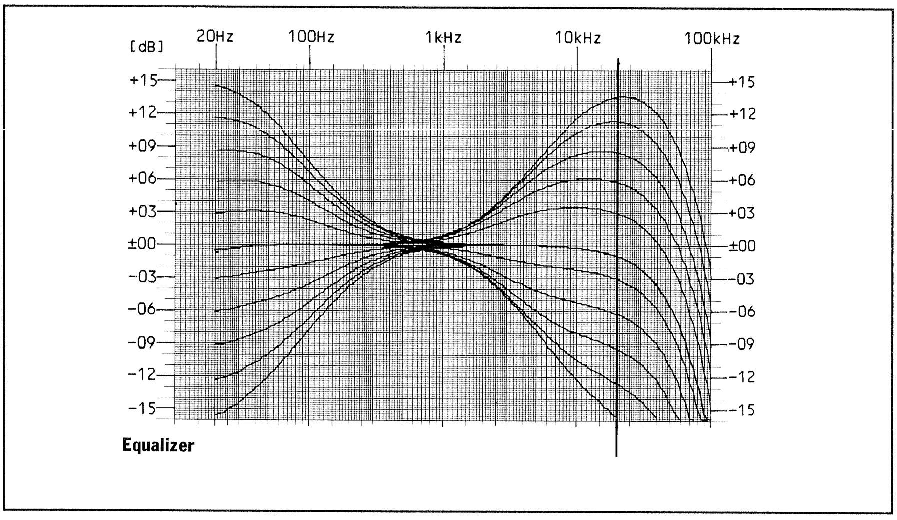
x = Jumper gesetzt   x = Jumper set

Optionen

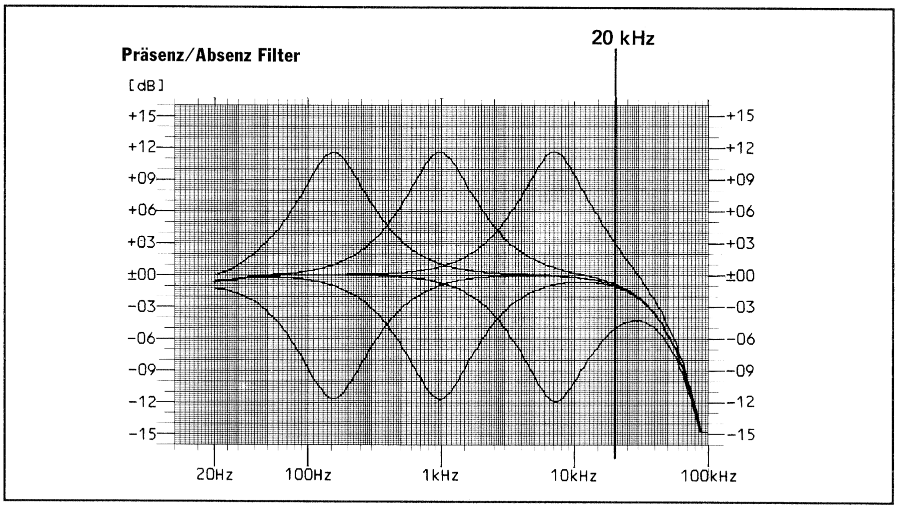
Ort	Jumper	Funktionen
JS1	gesetzt frei	OFF Lampe leuchtet, wenn ON–Taste ausgeschaltet ist. Keine Funktion
JS1 und JS2	gesetzt frei	OFF Lampe leuchtet, wenn ON–Taste und PFL/APL–Taste ausgeschaltet sind. Keine Funktion
JS3	gesetzt frei	PFL/APL–Taste <u>nur</u> einschaltend PFL/APL–Taste selbstauslösend (Toggle switch)
JS4	gesetzt frei	ON–Taste <u>nur</u> einschaltend ON–Taste selbstauslösend (Toggle switch)
JS5	gesetzt frei	OFF–Taste setzt die PFL/APL–Taste zurück Keine Funktion
JS6	gesetzt frei	APL (After Pan Listening) Version 2 PFL (Pre Fader Listening) Version 1 STANDARD
JS7	gesetzt frei	ON AIR–Taste schaltet Σ1+2 durch. AUDITION–Taste schaltet Σ3+4 durch. Version 3 Keine Funktion
JS9	gesetzt frei	PFL/APL–Taste steuert direkt das Line Relay an. Nur für Version 1+2! Keine Funktion
JS19	gesetzt frei	Timer–Restart Funktion ist ausgeschaltet. Timer–Restart Funktion ist eingeschaltet.

1.4 Entzerrer

Der Entzerrerteil ist mit der Drucktaste EQ IN überbrückbar. Die Tiefensperre ist davon nicht betroffen.
Fächerentzerrer für Höhen und Tiefen.
Bereich ±15 dB bei 20 Hz / 20 kHz.



Parametrisches Glockenkurven-Filter mit einstellbarer Mittenfrequenz von 150 Hz...7 kHz. (Q=1)
Anhebung/Abschwächung ±11 dB



1.5 Einschleifpunkt

Vor dem Flachbahnregler wird das Tonsignal elektronisch symmetriert und über zwei auf der Pultrückseite befindliche Bantam Jack Buchsen geführt. Der Einschleifpegel beträgt +6 dBu.

1.6 Signalisation und Faderstart

Steht der Eingangswahlschalter in MIC-Position, dann wird auf der Signalisationssammelschiene ein logisches Signal gegeben, sobald folgende Kriterien erfüllt sind:

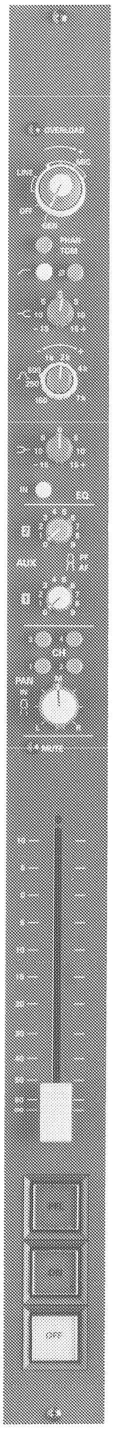
- Kanalregler geöffnet
- Summenregler geöffnet
- Summenwahltaste betätigt
- Mute Funktion nicht aktiv
- Kanal mit ON-Taste eingeschaltet

Das summierte Signal wird in der Monitoreinheit zur Steuerung der Studiosignalisierung weiterverwendet.

Steht der Eingangswahlschalter unter gleichen Bedingungen in Stellung LINE, so wird das im Eingangskanal eingebaute Fernsteuerrelais aktiviert. Der auf dem fünfzehnpoligen D-Type Stecker (REM-CONTR) greifbare Arbeitskontakt des Relais kann zur Fernsteuerung von Plattenspielern oder Tonbandgeräten eingesetzt werden.

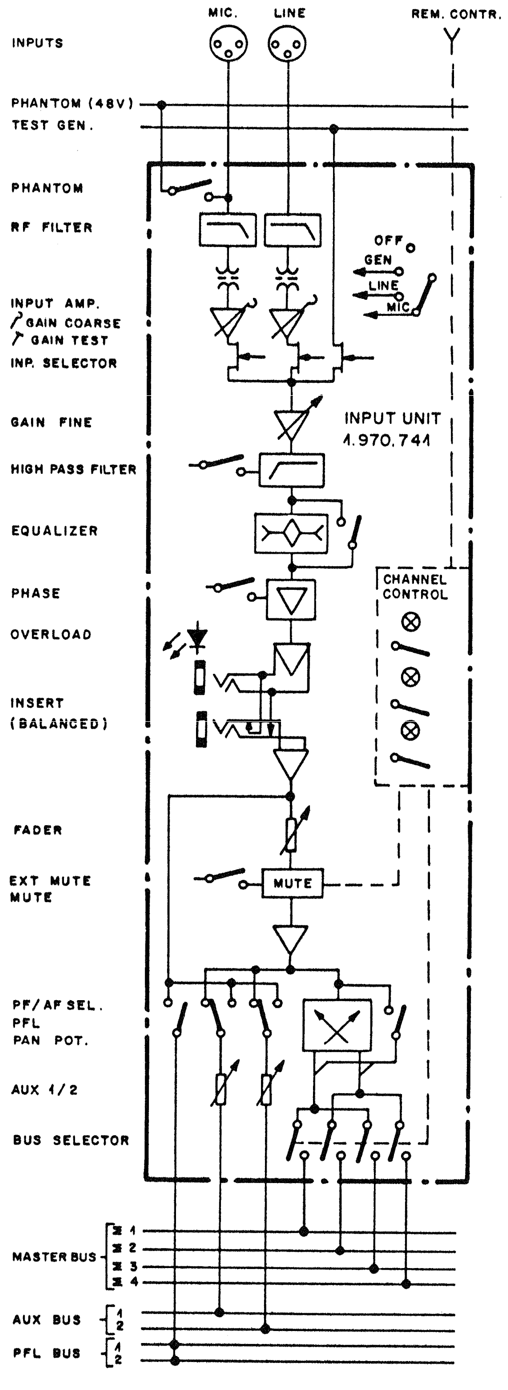
1. Input Unit Mono 1.970.741

1.1 Operating Elements



OVERLOAD:		The LED labelled "overload" turns on as soon as the maximum level before or after the fader has been exceeded.
INPUT SECTION:	**MIC:**	Balanced, floating Microphone input. Sensitivity -70...10 dBu, switchable in four 15 dB steps, continuously variable between steps from 0...15 dB by means of potentiometer. The maximum input must not exceed +6 dB.
	PHANTOM:	Switchable 48V supply voltage.
	LINE:	High-level input, balanced and floating input. Input sensitivity -10...+20 dBu, switchable in two 15 dB steps, continuosly variable between steps from 0...15 dB.
	GEN:	Tone generator input, supplied via bus from the built-in tone generator
	Ø:	Phase inversion switch, influence all inputs.
FILTER:		Switchable bass cut with 12 dB/oct., cut off frequency of 75 Hz.
EQUALIZER:		See 1.4
AUXILIARY OUTPUTS AUX 1 and AUX 2:		Two separately adjustable auxiliary outputs can be connected before or after the linear fader by means of the push-pull switches on each potentiometer.
PAN. POT AND:		The panorama potentiometer can be activated with the push-bull switch.
MASTER SELECTION:		Stereo and 2CH mixers are equiped with two push buttons for individual selection of master Σ1 and Σ2. 4CH mixers are equiped with four push buttons Σ1 ... Σ4.
MUTE FUNCTION:		The channel can be muted without switching clicks on the 15-pin D-type connector (REM-CONTR). The mute LED indicates that the function is active.
LINEAR FADER:		The linear fader is equiped with a resistive film made of conductive plastic.
CONTROL KEYS:		See 1.3

1.2 Block Diagram 1.970.741



1.3 Control Keys

Three low-noise keys with signal lamps are located before the fader. The functions of the keys can be altered by changing the position of the mini-jumpers on this unit.

Three basic versions are available:

Version 1 (Fig.1)

PFL

- The prefader listening signal (PFL) is connected to the prelistening speaker and to the headphones. The signal is interrupted when this key is pressed a second time.
- At the same time the signal lamp is turned on or off.

ON

- Trough-connects the modulation path, provided the bus is selected and the fader is opened.

- ON lamp is turned on.
- PFL is interrupted, however the PFL lamp remains switched on to signal the previously selected state.
- Signalization or fader start relay is through-connected, provided the other criteria are satisfied. (see 1.6, signalization and fader start)
- Automatic stopwatch is reset (option)

OFF

- Modulation is interrupted.
- Signalization and fader start relay droped out.
- If the PFL-key was selected, prelistening is again through-connected.
- ON lamp turns off.

OFF-Lamp:
- Is activated externally and can signal the ready state of the source.

Remote Control:
- All key and lamp signals are available on a 15-pin D-type connector. The above functions can also be remote-controlled.

Block diagram of remote controls:

(Standard)

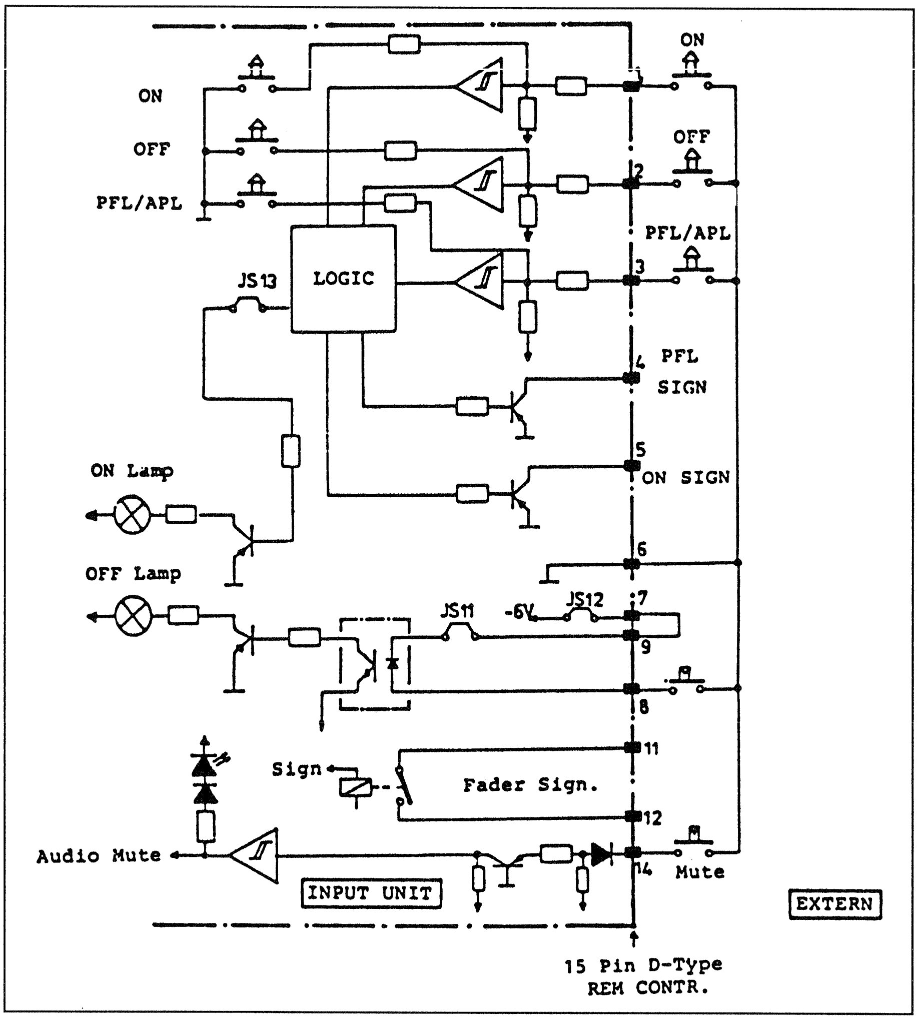


Fig. 1

Version 2

APL ON OFF

- Same function as version 1, except that the prelistening signal after the panorama potentiometer (APL) is connected rather than the signal before the fader.

Version 3

AUDITION

- Through-connects the channel and selects master Σ3+Σ4 (the input units of this version are not equiped with bus selection buttons).

- AUDITION lamp is turned on.
- Signalization is enabled.
- Timer restart.

`ON AIR`

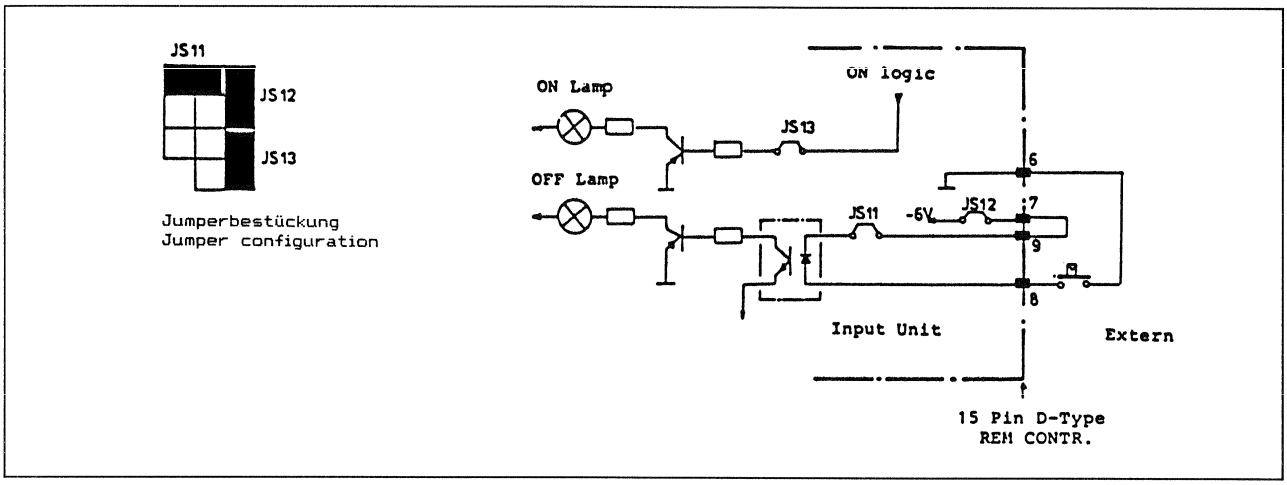
- Trough-connects the channel and selects the master $\Sigma1+\Sigma2$.
- The ON AIR lamp is turned on.
- Signalization is enabled.
- Timer restart.

`OFF`

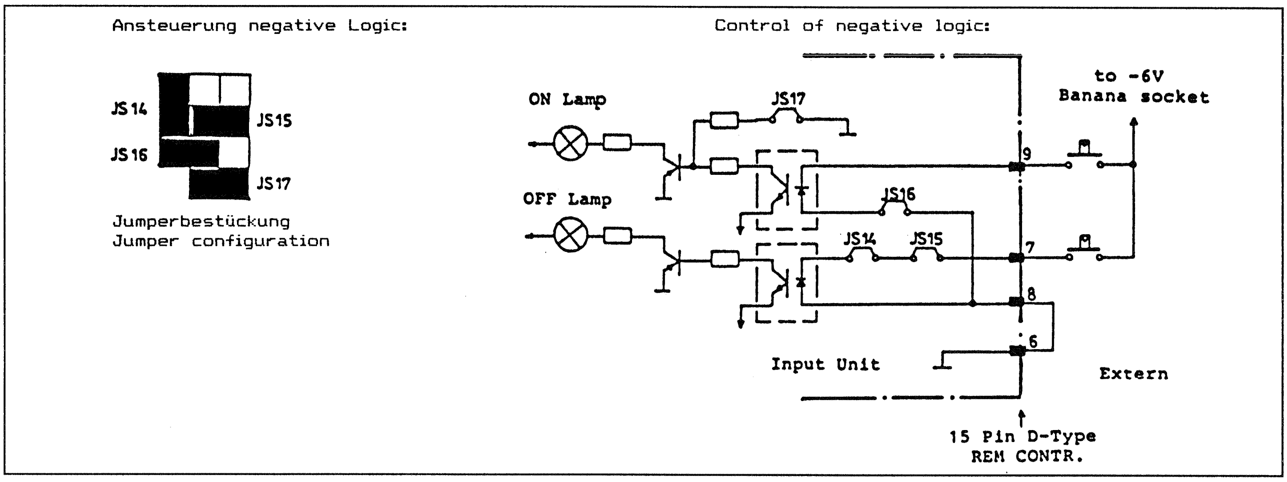
- Resets not only the AUDITION but also the ON AIR key.
- Signalization is disabled.

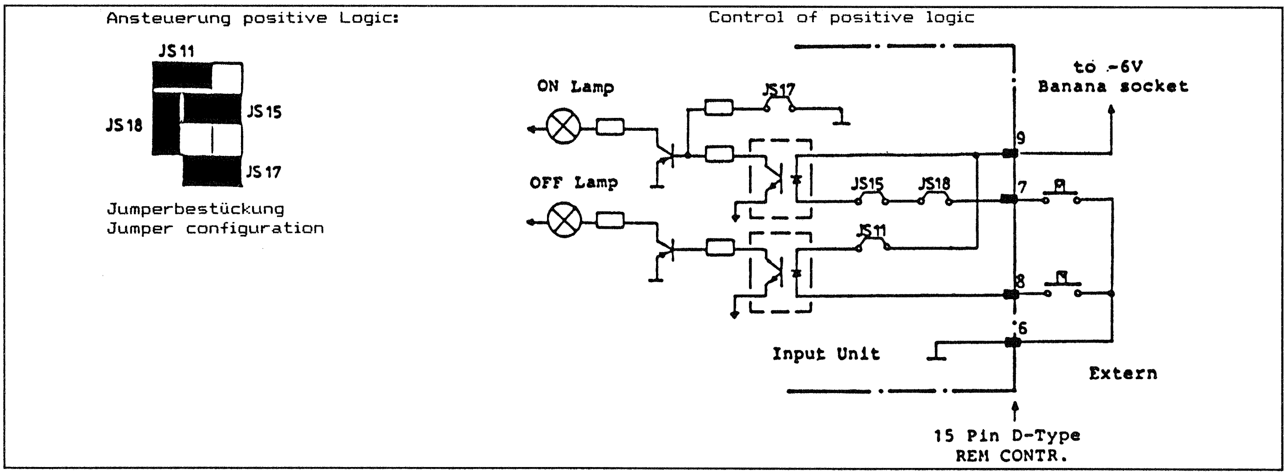
Coding for external OFF lamp control

(Standard)

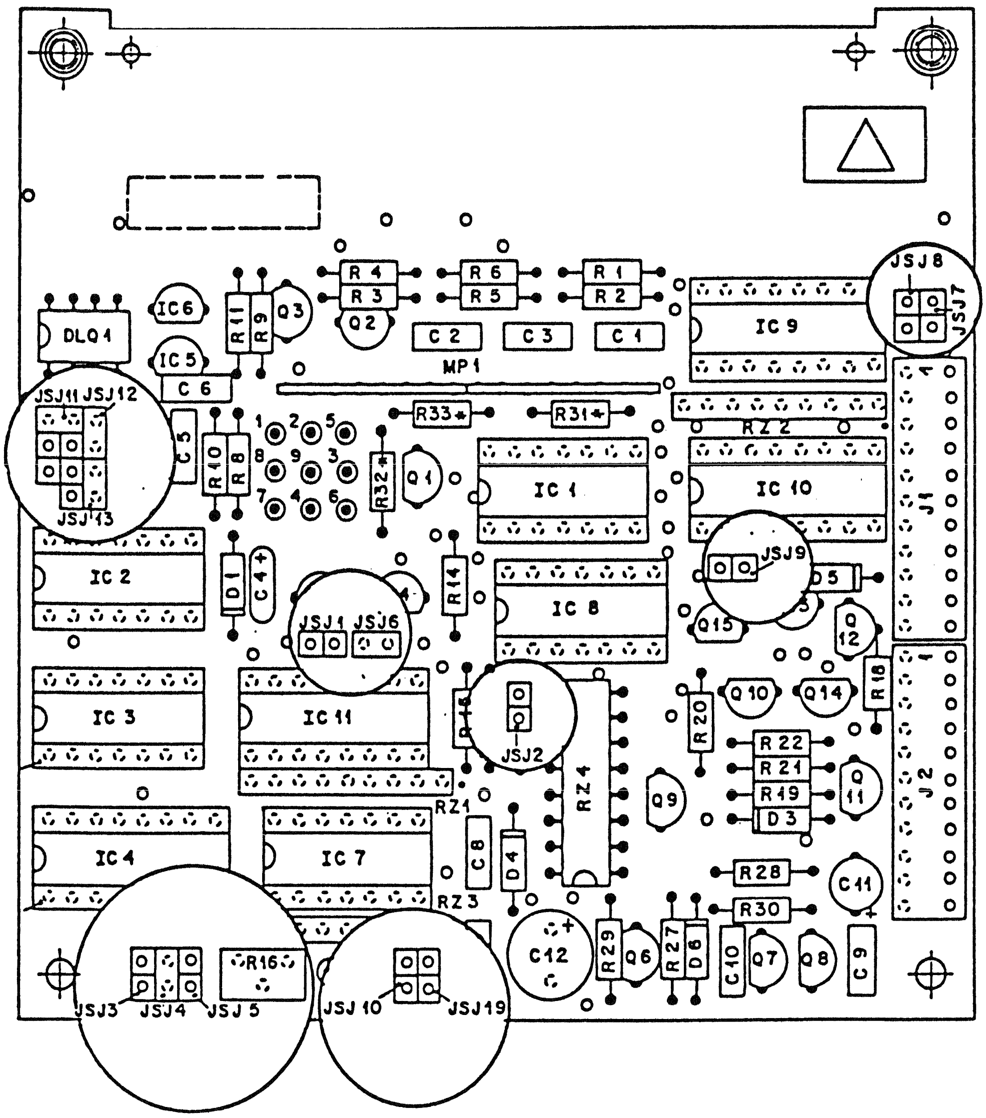


Coding for external ON and OFF lamp control





Jumper coding for extension unit 1.970.792



JS 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	JS 19	
			x						x	x	x	x							Version 1 (STANDARD)
			x		x				x	x	x	x							Version 2
				x		x	x		x	x	x	x							Version 3
																			....

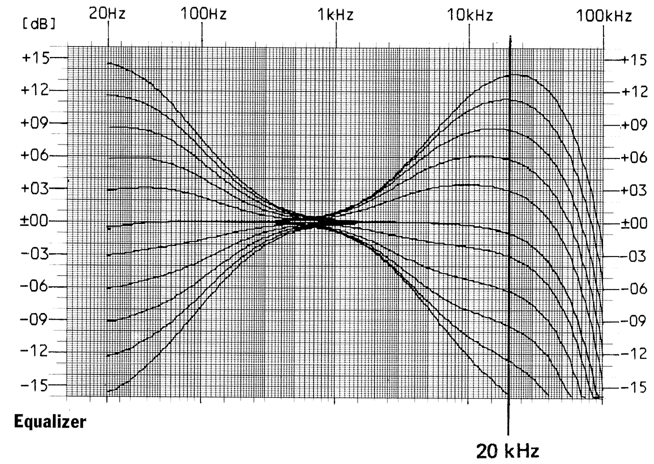
x = Jumper gesetzt   x = Jumper set

Options

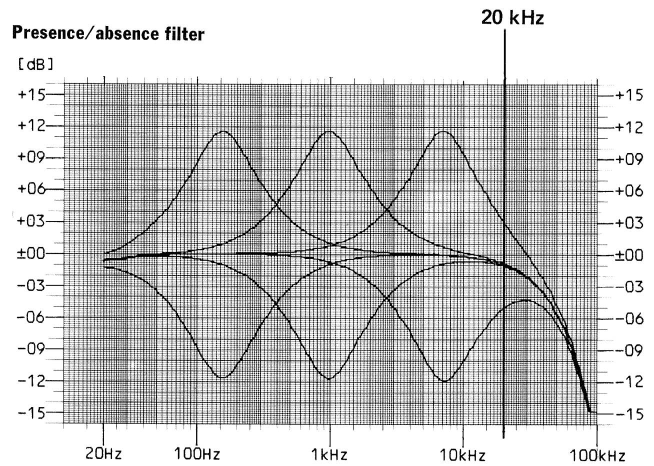
Location	Jumper	Function
JS1	Set Not set	OFF lamp is light when the ON keys switched off. No function
JS1 und JS2	Set Not set	OFF lamp is light when the ON key and the PFL/APL key are switched off. No function
JS3	Set Not set	PFL/APL key only on–switching PFL/APL key self–releasing (toggle switch)
JS4	Set Not set	ON key only on–switching ON key self–releasing (toggle switch)
JS5	Set Not set	OFF key resets the PFL/APL key No function
JS6	Set Not set	APL (after pan listening) version 2 PFL (prefader listening) version 1 STANDARD
JS7	Set Not set	ON AIR key enables Σ1+2. AUDITION key enables Σ3+4. Version 3 No function
JS9	Set Not set	PFL/APL key directly controls the line relay. Only for version 1+2! No function
JS19	Set Not set	Timer restart, function is disabled. Timer restart, function is enabled.

1.4 Equalizer

The entire equalizer section is only enabled if the EQUALIZER IN key is pressed. The bass cut filter is not affected by this.
Shelving equalizer for treble and bass. Range at 20 Hz / 20 kHz: ±15 dB.



Parametric filter with adjustable center frequenzy: 150 Hz...7 kHz (Q=1)
Emphasis / de-emphasis: ±11 dB



1.5 Insertion Point

Before the linear fader the audio signal is electronically balanced and taken to two rearpanel bantam jack sockets. The insertion level is +6 dBu.

1.6 Signalization and Fader Start

When the input selector switch is in the MIC position, a logical signal is applied to the signalization bus as soon as the following criteria are satisfied:

- Channel fader open
- Master fader open
- Master selection key pressed
- Mute function not active
- Channel enabled with ON key.

The aggregate signal is used in the monitor unit for controlling the studio signalization.

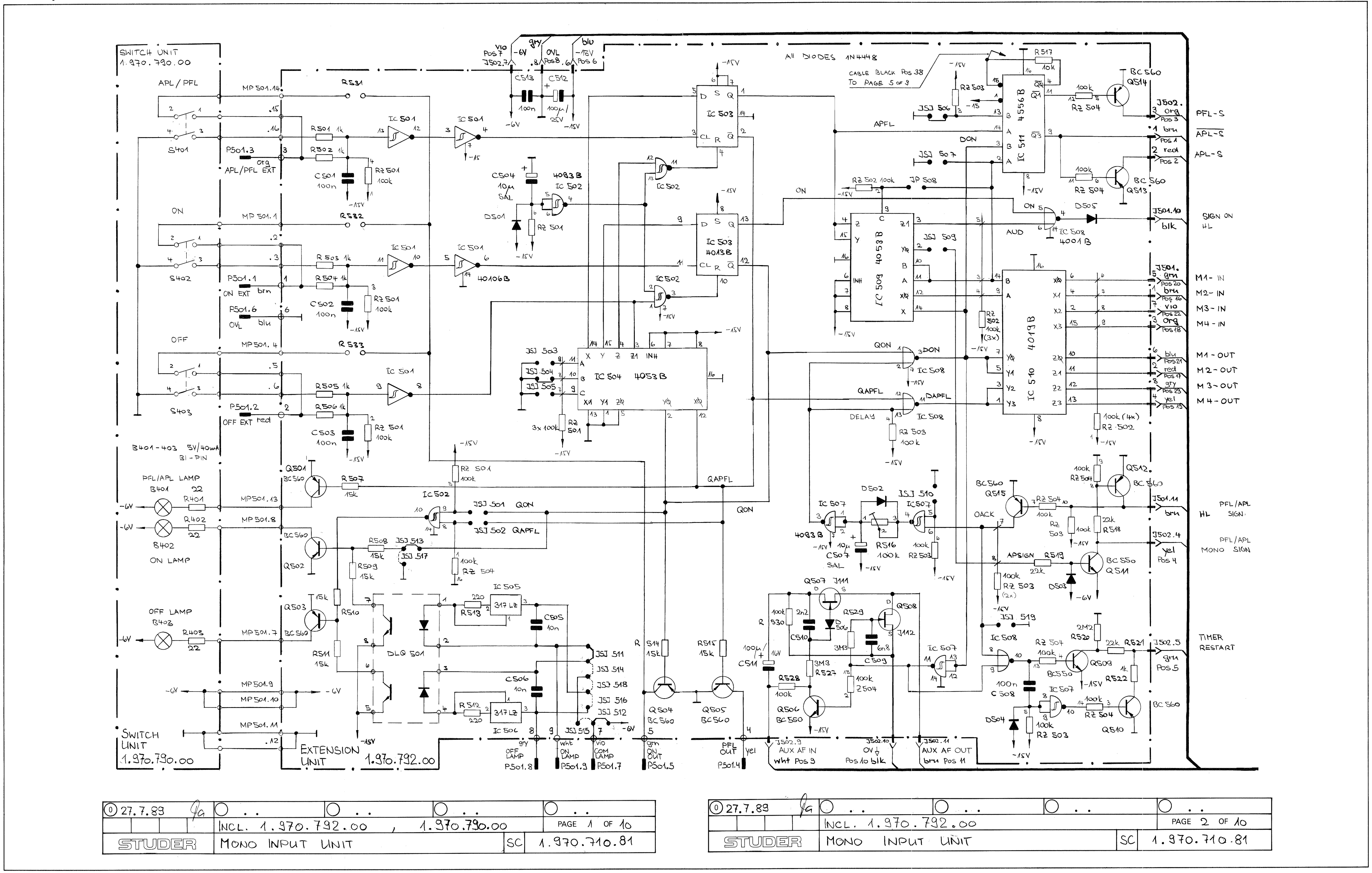
If under the same conditions the input selector is in the LINE position, the remote control relay built into the input channel is activated. The relay make contact available on the 15-pin D-type REM-CONTR connector can be used for the remote control of turntables or tape recorders.

1.7 Schemateil / Circuit Diagrams

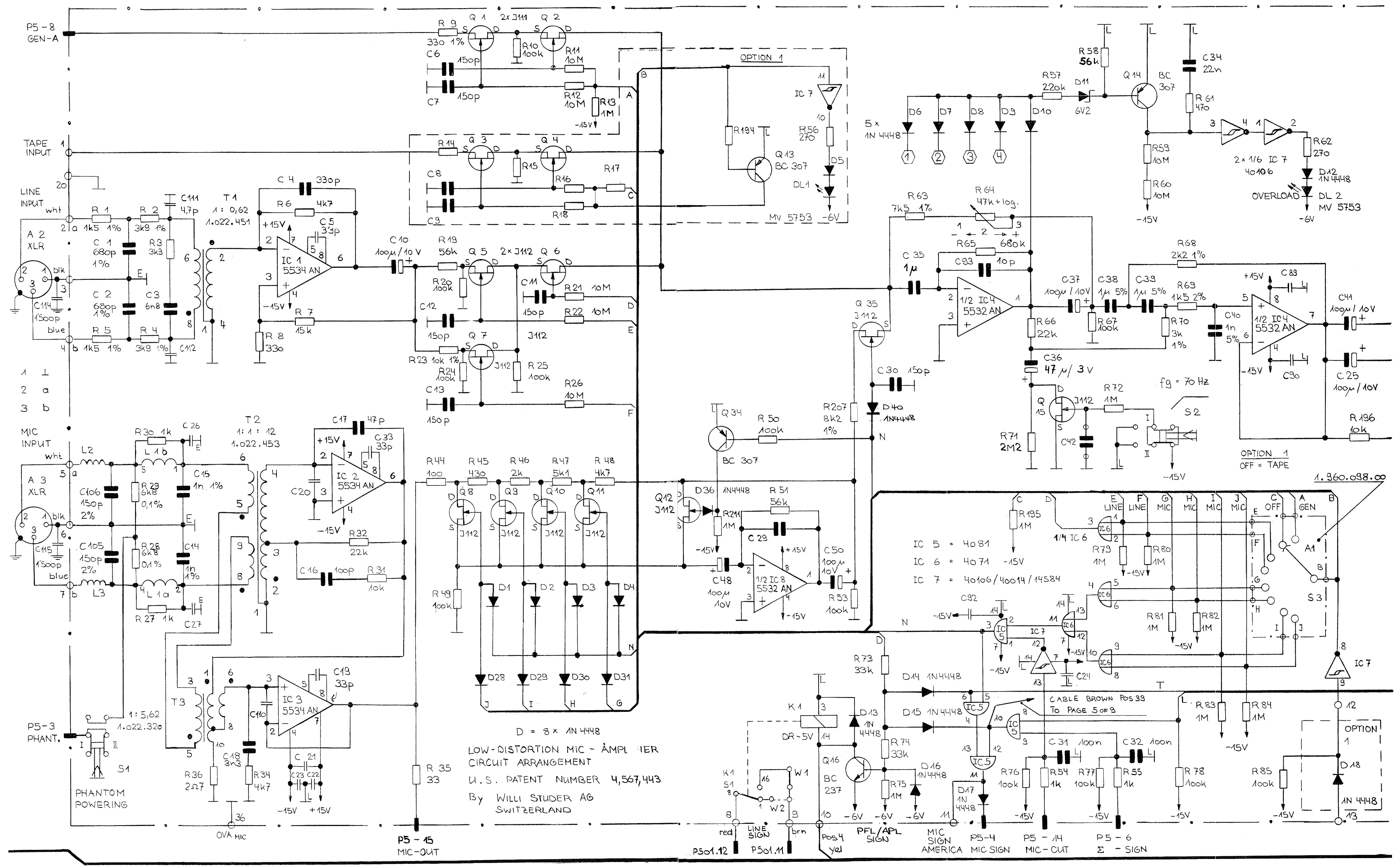
1.970.741.81

Mono Input 4CH

Part 1



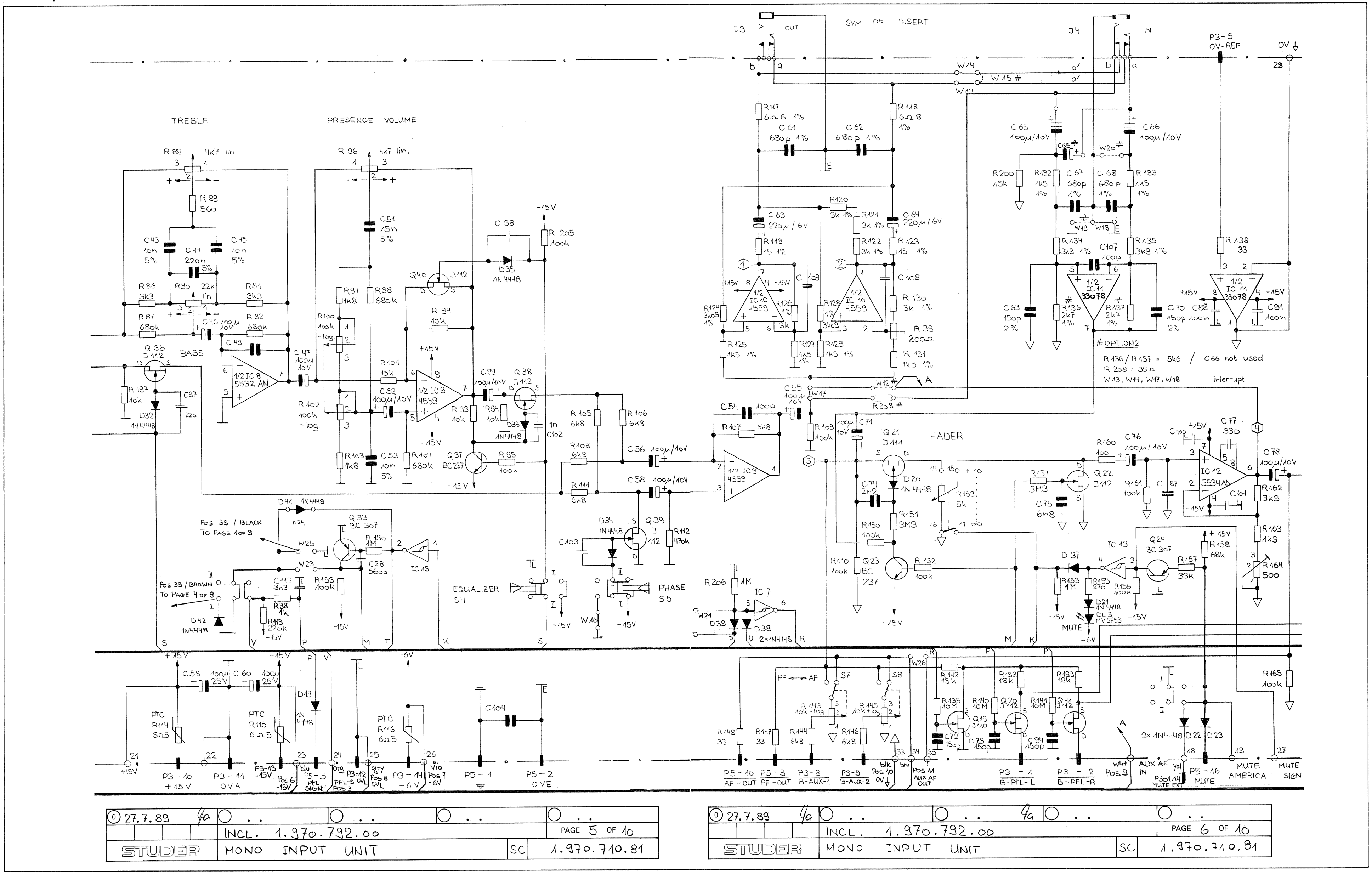
Mono Input Unit 4CH 1.970.741.81 Part 2



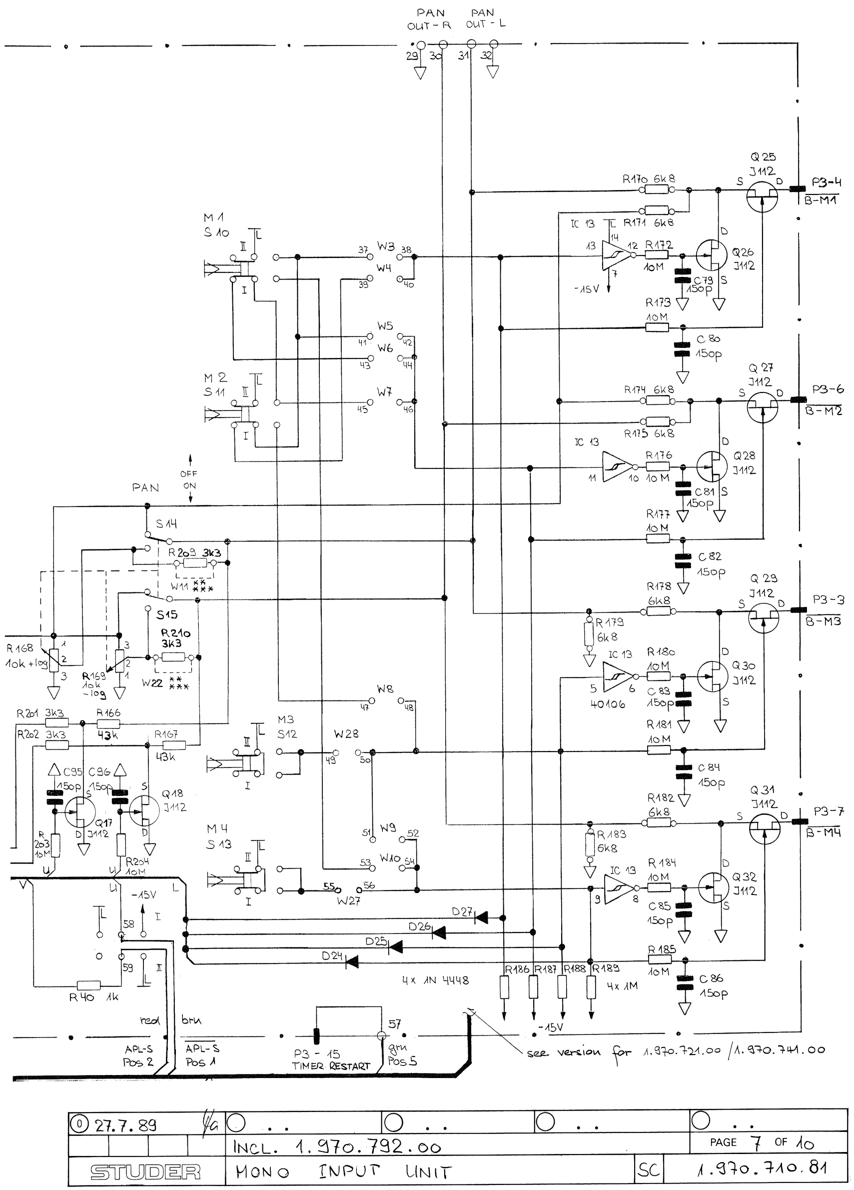
27.7.89				
	INCL. 1.970.792.00			PAGE 3 OF 10
STUDER	MONO INPUT UNIT		SC	1.970.710.81

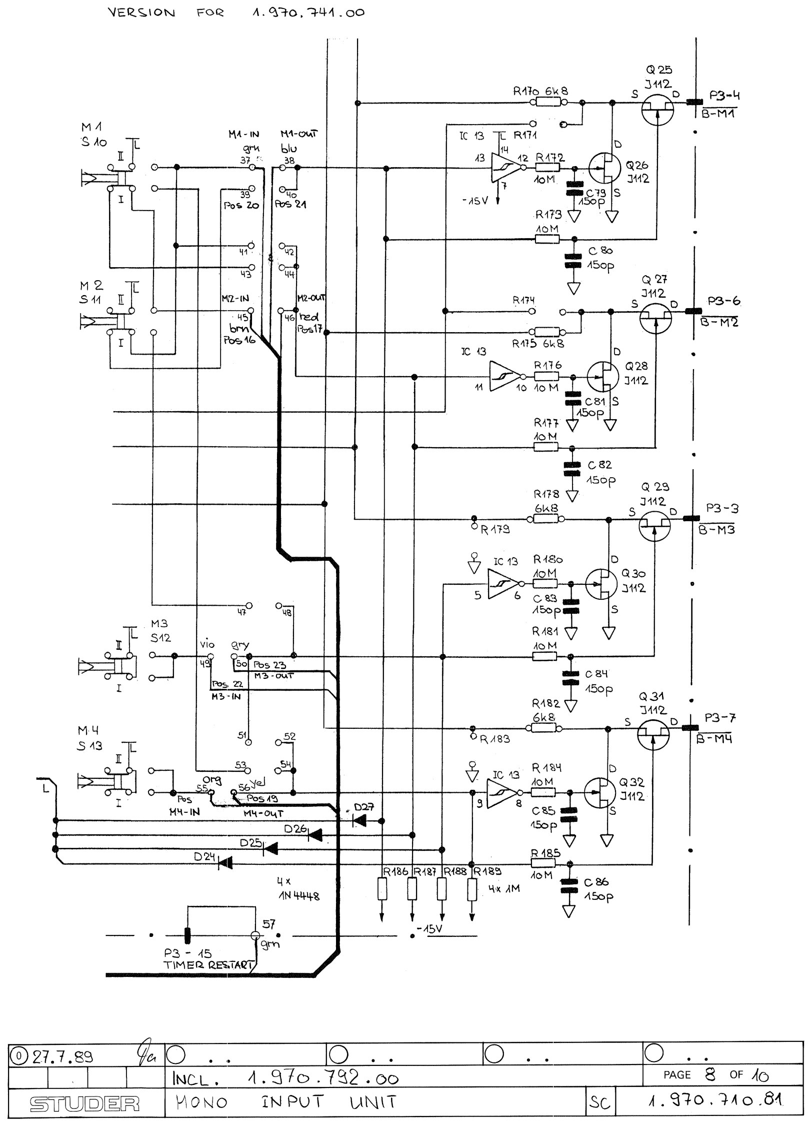
27.7.89				
	INCL. 1.970.792.00			PAGE 4 OF 10
STUDER	MONO INPUT UNIT		SC	1.970.710.81

Mono Input 4CH 1.970.741.81 **Part 3**



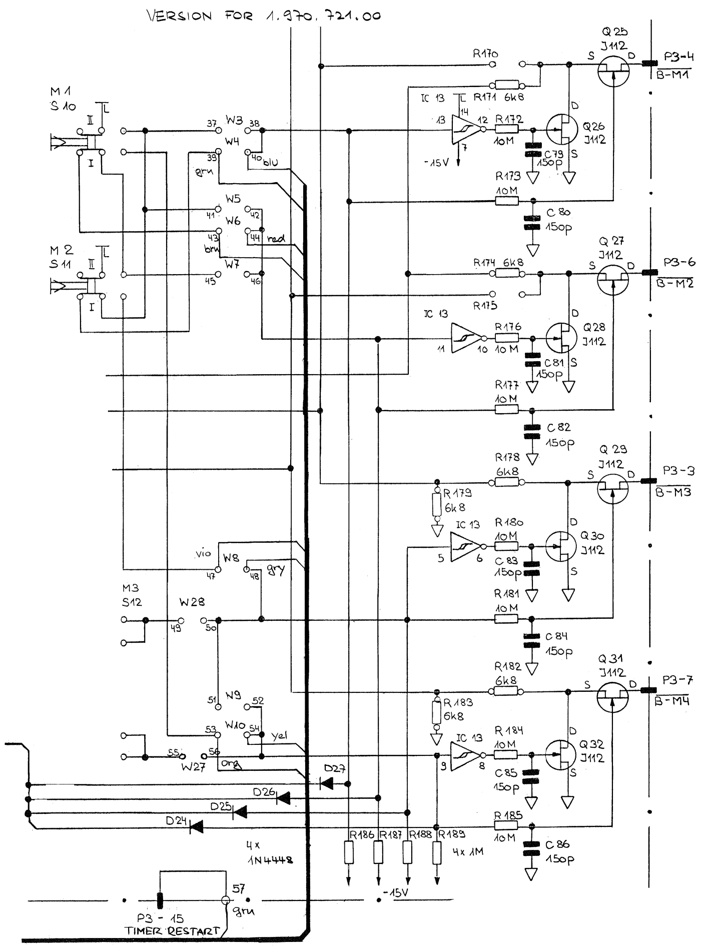
Mono Input 4CH 1.970.741 Part 4





Mono Input 4CH 1.970.741.81 Part 5

VERSION FOR 1.970.721.00

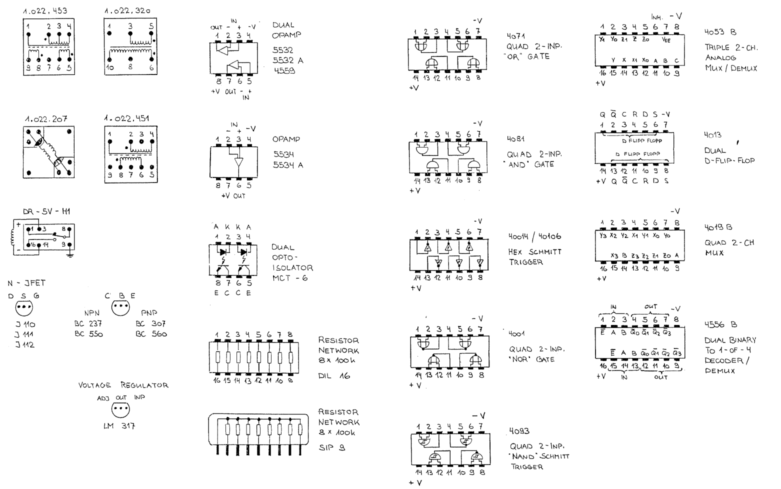


* VERSION NOT AVAILABLE / ONLY FOR INFORMATION

0 27.7.89	O . .	O . .	O . .	O . .
	INCL. 1.970.792.00			PAGE 9 OF 10
STUDER	MONO INPUT UNIT		SC	1.970.710.81

P	NO	NAME	REMARK (EURO 16-P)	B=BUS,O=CONNECTION
P5	1	CHASSIS	METAL FRAME	B
P5	2	OV-E	OV EXTERN	B
P5	4	MIC-SIGN	MIC SIGNALLING	B
P5	5	PFL-SIGN	OV=PFL/-6V=MON.	B
P5	5	PFL-SIGN.	OV=PFL/-6V=MON.	B
P5	6	M-SIGN.	MASTER SIGNALLING	B
P5	7	-	NC	B
P5	8	GEN-A	GENERATOR OUT. A	B
P5	9	PF-OUT	PF OUTPUT	O
P5	10	AF-OUT	AF OUTPUT	O
P5	11	-	RES	O
P5	12	-	RES	O
P5	13	-	RES	O
P5	14	MIC-CUT	MIC SWITCH	O
P5	15	MIC-OUT	MIC OUTPUT	O
P5	16	MUTE	CH. MUTE	O
P3	1	B-PFL-L	PFL 0-OHM BUS LEFT	B
P3	2	B-PFL-R	PFL 0-OHM BUS RIGHT	B
P3	3	B-M 3	MASTER 3;0-OHM BUS	B
P3	4	B-M 1	MASTER 1;0-OHM BUS	B
P3	5	OV-REF	OV REFERENCE	B
P3	6	B-M 2	MASTER 2;0-OHM BUS	B
P3	7	B-M 4	MASTER 4;0-OHM BUS	B
P3	8	B-AUX-1	AUX 1;0-OHM BUS	B
P3	9	B-AUX-2	AUX 2;0-OHM BUS	B
P3	10	+ 15 V	+ SUPPLY	B
P3	11	OV-A	GROUND AUDIO	B
P3	12	OV-L	GROUND SIGN (LOGIC)	B
P3	13	- 15 V	- SUPPLY	B
P3	14	- 6 V	- SUPPLY	B
P3	15	TIMER	TIMER RESTART	B
P3	16	-	RES	O
P2	--	-	RES	

P	NO	NAME	REMARK (C-TYPE 15-P)
P501	1	ON EXT	ON SWITCH EXTERN
P501	2	OFF EXT	OFF SWITCH EXTERN
P501	3	APL/PFL	APL/PFL SWITCH EXTERN
P501	4	PFL OUT	PFL SIGN
P501	5	ON CUT	ON SIGN
P501	6	OV-L	GROUND SIGN (LOGIC) OUT
P501	7	COM LAMP	COMMON FOR ON AND OFF LAMP EXTERN
P501	8	OFF LAMP	OFF LAMP EXTERN
P501	9	ON LAMP	ON LAMP EXTERN
P501	10	-	RES
P501	11	LINE SIGN	LINE SIGNALISATION
P501	12	LINE SIGN	LINE SIGNALISATION
P501	13	-	RES
P501	14	MUTE EXT	MUTE EXTERN
P501	15	-	RES



BOTTOM VIEW

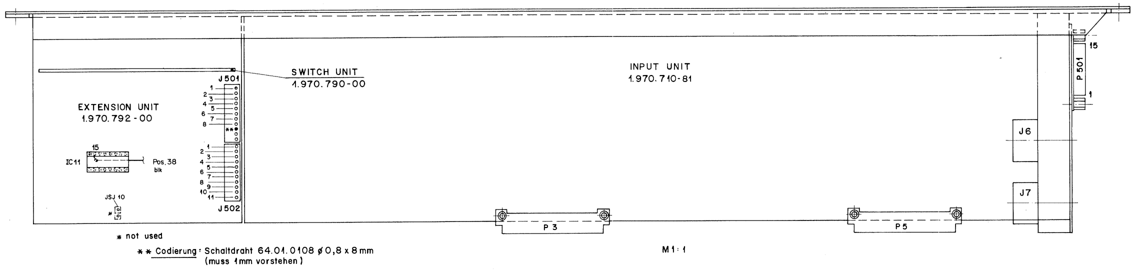
0 27.7.89	O . .	O . .	O . .	O . .
				PAGE 10 OF 10
STUDER	MONO INPUT UNIT		SC	1.970.710.81

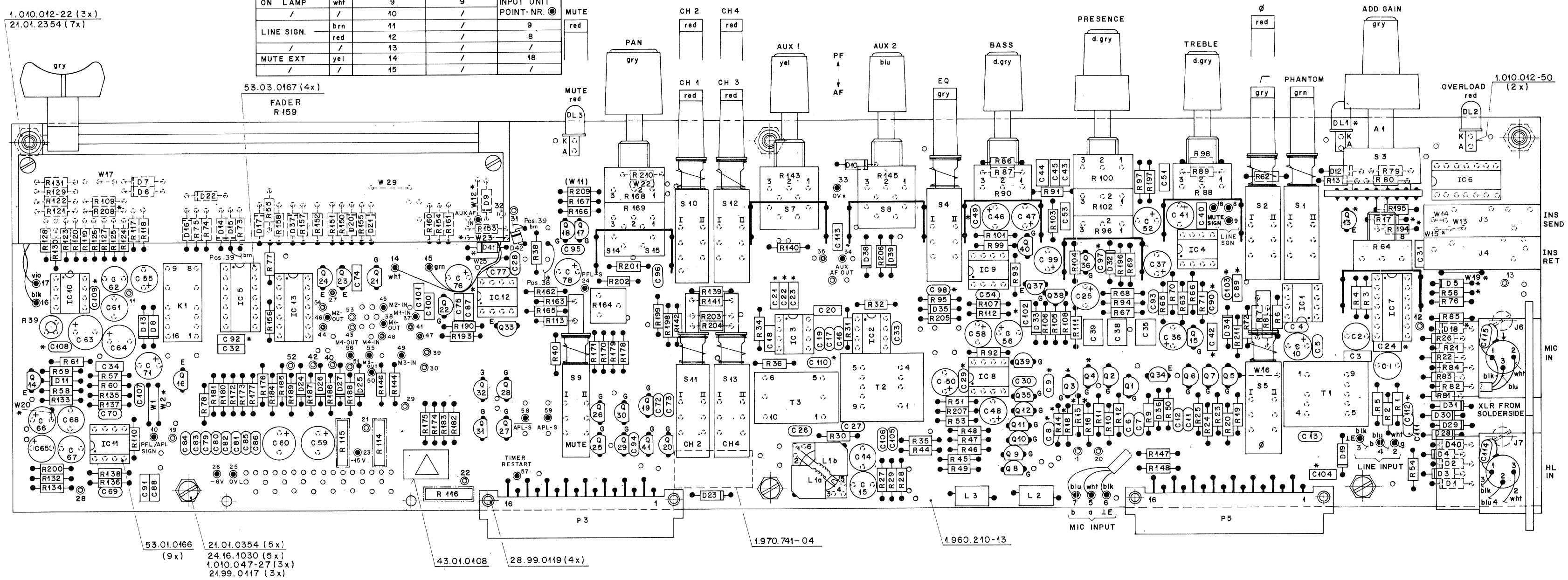
Mono Input Unit 4CH   1.970.741.81

SIGN. NAME	COL.	INPUT UNIT POINT-NR. ◉	EXTENSION UNIT J502 -
APL-S (overlined)	brn	58	1
APL-S	red	59	2
PFL-S	org	24	3
PFL / APL SIGN	yel	10	4
TIMER RESTART	grn	57	5
-15 V	blu	23	6
-6 V	vio	26	7
OV L	gry	25	8
AUX AF IN	wht	W12	9
OV ⏚	blk	33	10
AUX AF OUT	brn	34	11

SIGN NAME	COL.	INPUT UNIT POINT-NR. ◉	EXTENSION UNIT J501
M2 - IN	brn	45	1
M2 - OUT	red	46	2
M4 - IN	org	55	3
M4 - OUT	yel	56	4
M1 - IN	grn	37	5
M1 - OUT	blu	38	6
M3 - IN	vio	49	7
M3 - OUT	gry	50	8

SIGN. NAME	COL.	INPUT UNIT P 501 (D-Type)	EXTENSION UNIT POINT-NR. ◉	INPUT UNIT POINT-NR. ◉
ON EXT	brn	1	1	
OFF EXT	red	2	2	
APL / PFL EXT	org	3	3	
PFL OUT	yel	4	4	
ON OUT	grn	5	5	
OVL	blu	6	6	
COM LAMP	vio	7	7	
OFF LAMP	gry	8	8	
ON LAMP	wht	9	9	
/	/	10	/	
LINE SIGN.	brn	11	/	9
	red	12	/	8
/	/	13	/	/
MUTE EXT	yel	14	/	18
/	/	15	/	/





VALID FOR	NR. UNIT	NR. FRONT PANEL	NR. NUMBER LABEL
INPUT UNIT 4CH1,2,3,4	1.970.741-81	1.970.741-01	1.970.741-04

1.022.400-03 (2x)
unter T1, T2

* not used

C114 und C115
velötet nach BV 646

Mono-Input-Unit 970 1.970.710.81

Ad	..POS..	...REF.No...	DESCRIPTION	MANUFACTURER
	A.....1	1.960.098.00	SWITCH-BOARD	St
	A.....2	1.012.301.00	3 pin XLR female	St
	A.....3	1.012.301.00	3 pin XLR female	St
	C.....1	59.05.1681	680 pF 1% 500V PP	
	C.....2	59.05.1681	680 pF 1% 500V PP	
	C.....3	59.06.0682	6.8 nF 10% PE	
	C.....4	59.34.4331	330 pF CE	
	C.....5	59.34.2330	33 pF CE	
	C.....6	59.34.4151	150 pF CE	
	C.....7	59.34.4151	150 pF CE	
	C.....8	. .	not used	
	C.....9	. .	not used	
	C....10	59.22.3101	100 uF -20% 10V EL	
	C....11	59.34.4151	150 pF CE	
	C....12	59.34.4151	150 pF CE	
	C....13	59.34.4151	150 pF CE	
	C....14	59.05.1102	1 nF 1% 500V PP	
	C....15	59.05.1102	1 nF 1% 500V PP	
	C....16	59.34.4101	100 pF CE	
	C....17	59.34.2470	47 pF CE	
	C....18	59.06.0332	3.3 nF 10% PE	
	C....19	59.34.2330	33 pF CE	
	C....20	. .	not used	
	C....21	. .	not used	
	C....22	. .	not used	
	C....23	. .	not used	
	C....24	. .	not used	
	C....25	59.22.3101	100 uF -20% 10V EL	
	C....26	. .	not used	
	C....27	. .	not used	
	C....28	59.34.5561	560 pF CE	
	C....29	. .	not used	
	C....30	59.34.4151	150 pF CE	
	C....31	59.06.0104	100 nF PE	
	C....32	59.06.0104	100 nF PE	
	C....33	59.34.2330	33 pF CE	
	C....34	59.06.0223	22 nF PE	
	C....35	59.06.5105	1 uF PE	
	C....36	59.30.2470	47 uF -20% 6.3V TA	
	C....37	59.22.3101	100 uF -20% 10V EL	
	C....38	59.06.5105	1 uF 5% PE	
	C....39	59.06.5105	1 uF 5% PE	
	C....40	59.06.5102	1 nF 5% PE	
	C....41	59.22.3101	100 uF -20% 10V EL	
	C....42	. .	not used	
	C....43	59.06.5103	10 nF 5% PE	
	C....44	59.06.5224	220 nF 5% PE	
	C....45	59.06.5103	10 nF 5% PE	
	C....46	59.22.3101	100 uF -20% 10V EL	
	C....47	59.22.3101	100 uF -20% 10V EL	
	C....48	59.22.3101	100 uF -20% 10V EL	
	C....49	. .	not used	
	C....50	59.22.3101	100 uF -20% 10V EL	
	C....51	59.06.5153	15 nF 5% PE	
	C....52	59.22.3101	100 uF -20% 10V EL	
	C....53	59.06.5103	10 nF 5% PE	
	C....54	59.34.4101	100 pF CE	
	C....55	59.22.3101	100 uF -20% 10V EL	
	C....56	59.22.3101	100 uF -20% 10V EL	
	C....57	. .	not used	
	C....58	59.22.3101	100 uF -20% 10V EL	
	C....59	59.22.4101	100 uF -20% 16V EL	
	C....60	59.22.4101	100 uF -20% 16V EL	
	C....61	59.05.1681	680 pF 1% 500V PP	
	C....62	59.05.1681	680 pF 1% 500V PP	
	C....63	59.22.2221	220 uF -20% 6V EL	
	C....64	59.22.2221	220 uF -20% 6V EL	
	C....65	59.22.3101	100 uF -20% 10V EL	
	C....66	59.22.3101	100 uF -20% 10V EL option 2	
	C....67	59.05.1681	680 pF 1% 500V PP	
	C....68	59.05.1681	680 pF 1% 500V PP	
	C....69	59.34.7151	150 pF 2% CE	
	C....70	59.34.7151	150 pF 2% CE	
	C....71	59.22.3101	100 uF -20% 10V EL	
	C....72	59.34.4151	150 pF CE	
	C....73	59.34.4151	150 pF CE	
	C....74	59.06.0222	2.2 nF PE	
	C....75	59.06.0682	6.8 nF PE	
	C....76	59.22.3101	100 uF -20% 10V EL	
	C....77	59.34.2330	33 pF CE	
	C....78	59.22.3101	100 uF -20% 10V EL	
	C....79	59.34.4151	150 pF CE	
	C....80	59.34.4151	150 pF CE	
	C....81	59.34.4151	150 pF CE	
	C....82	59.34.4151	150 pF CE	
	C....83	59.34.4151	150 pF CE	
	C....84	59.34.4151	150 pF CE	
	C....85	59.34.4151	150 pF CE	
	C....86	59.34.4151	150 pF CE	
	C....87	. .	not used	
	C....88	59.06.0104	100 nF PE	
	C....89	. .	not used	
	C....90	. .	not used	
	C....91	59.06.0104	100 nF PE	
	C....92	. .	not used	
	C....93	59.34.1100	10 pF CE	
	C....94	59.34.4151	150 pF CE	
	C....95	59.34.4151	150 pF CE	
	C....96	59.34.4151	150 pF CE	
	C....97	59.34.2220	22 pF CE	
	C....98	. .	not used	
	C....99	59.22.3101	100 uF -20% 10V EL	
	C...100	59.06.0104	100 nF PE	
	C...101	59.06.0104	100 nF PE	
	C...102	59.06.5102	1 nF PE	
	C...103	. .	not used	
	C...104	. .	not used	
	C...105	59.34.7151	150 pF 2% CE	
	C...106	59.34.7151	150 pF 2% CE	
	C...107	59.34.4101	100 pF CE	
	C...108	. .	not used	
	C...109	. .	not used	
	C...110	. .	not used	
	C...111	59.34.0479	4.7 pF CE	
	C...112	. .	not used	
	C...113	59.06.0332	3.3 nF PE	
	C...114	59.99.0625	1500 pF 400V CE	
	C...115	59.99.0625	1500 pF 400V CE	
	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	50.04.0125	1N4448	any
	D.....8	50.04.0125	1N4448	any
	D.....9	50.04.0125	1N4448	any
	D....10	50.04.0125	1N4448	any
	D....11	50.04.1118	Z 6.2V 400mW BZX83C 6.2,BZX55C 6.2,ZPD 6.2	Ses,ITT
	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	. .	not used	
	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
	D....25	50.04.0125	1N4448	any
	D....26	50.04.0125	1N4448	any
	D....27	50.04.0125	1N4448	any
	D....28	50.04.0125	1N4448	any
	D....29	50.04.0125	1N4448	any
	D....30	50.04.0125	1N4448	any
	D....31	50.04.0125	1N4448	any
	D....32	50.04.0125	1N4448	any
	D....33	50.04.0125	1N4448	any
	D....34	50.04.0125	1N4448	any
	D....35	50.04.0125	1N4448	any
	D....36	50.04.0125	1N4448	any
	D....37	50.04.0125	1N4448	any
	D....38	50.04.0125	1N4448	any
	D....39	50.04.0125	1N4448	any
	D....40	50.04.0125	1N4448	any
	D....41	50.04.0125	1N4448	any
	D....42	50.04.0125	1N4448	any
	DL....1	. .	not used	
	DL....2	50.04.2111	MV5753 red	GI,HP
	DL....3	50.04.2111	MV5753 red	GI,HP
	IC....1	50.05.0244	NE5534NB single op. amp. low noise	Sig,Ra
	IC....2	50.05.0244	NE5534NB single op. amp. low noise	Sig,Ra
	IC....3	50.05.0244	NE5534NB single op. amp. low noise	Sig,Ra
	IC....4	50.09.0106	NE5532AN dual op. amp. low noise	Sig,Ex,Ra
	IC....5	50.07.0081	CD4081 2 input and-gate CMOS	Fc,Mot,RCA
	IC....6	50.07.0022	CD4071 2 input or-gate CMOS	Fc,Mot
	IC....7	50.07.0014	CD40106 hex.schmitt-trig. CMOS MC14584; 40014	Fc,Mot
	IC....8	50.09.0106	NE5532AN dual op. amp. low noise	Sig,Ex,Ra
	IC....9	50.09.0107	RC4559 dual op. amp.	Ra,NEC
	IC...10	50.09.0107	RC4559 dual op. amp.	Ra,NEC
	IC...11	50.09.0117	MC33078 dual op. amp. low offset	Mot
	IC...12	50.05.0244	NE5534NB single op. amp. low noise	Sig,Ra
	IC...13	50.07.0014	CD40106 hex.schmitt-trig. CMOS MC14584; 40014	Fc,Mot
	J.....1	. .	not used	
	J.....2	. .	not used	
	J.....3	54.24.0105	BANTAM- dual jack	Switchcraft,ACD
	J.....4	. .	combined with J3	
	J.....5	. .	not used	
	K.....1	56.04.0190	DR-5V-H1	Nat
	L.....1	1.022.207.00	hf-sym.choke	St
	L.....2	62.01.0115	hf-choke	St
	L.....3	62.01.0115	hf-choke	St
	MP....1	53.03.0166	11 pcs IC-socket 8 pin	
	MP....2	53.03.0167	4 pcs IC-socket 14 pin	
	P.....1	. .	not exist	
	P.....2	. .	not used	
	P.....3	54.11.2007	2*8 pin euroconnector	Bu
	P.....4	. .	not exist	
	P.....5	54.11.2007	2*8 pin euroconnector	Bu
	Q.....1	50.03.0216	J 111 N-JFET	NS,Mot,Six
	Q.....2	50.03.0216	J 111 N-JFET	NS,Mot,Six
	Q.....3	. .	not used	
	Q.....4	. .	not used	
	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.....9	50.03.0350	J 112 N-JFET	NS,Mot,Six
	Q....10	50.03.0350	J 112 N-JFET	NS,Mot,Six

Mono-Input-Unit 970 1.970.710.81

Ad	..POS..	...REF.No...	DESCRIPTION	MANUFACTURER
	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	. .	not used	
	Q....14	50.03.0515	BC 307 PNP IC>100mA, B>100	any
	Q....15	50.03.0350	J 112 N-JFET	NS,Mot,Six
	Q....16	50.03.0436	BC 237 NPN IC>100mA, B>100	any
	Q....17	50.03.0350	J 112 N-JFET	NS,Mot,Six
	Q....18	50.03.0350	J 112 N-JFET	NS,Mot,Six
	Q....19	50.03.1130	J 110 N-JFET	NS,Mot,Six
	Q....20	50.03.0350	J 112 N-JFET	NS,Mot,Six
	Q....21	50.03.0216	J 111 N-JFET	NS,Mot,Six
	Q....22	50.03.0350	J 112 N-JFET	NS,Mot,Six
	Q....23	50.03.0436	BC 237 NPN IC>100mA, B>100	any
	Q....24	50.03.0515	BC 307 PNP IC>100mA, B>100	any
	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
	Q....31	50.03.0350	J 112 N-JFET	NS,Mot,Six
	Q....32	50.03.0350	J 112 N-JFET	NS,Mot,Six
	Q....33	50.03.0515	BC 307 PNP IC>100mA, B>100	any
	Q....34	50.03.0515	BC 307 PNP IC>100mA, B>100	any
	Q....35	50.03.0350	J 112 N-JFET	NS,Mot,Six
	Q....36	50.03.0350	J 112 N-JFET	NS,Mot,Six
	Q....37	50.03.0436	BC 237 NPN IC>100mA, B>100	any
	Q....38	50.03.0350	J 112 N-JFET	NS,Mot,Six
	Q....39	50.03.0350	J 112 N-JFET	NS,Mot,Six
	Q....40	50.03.0350	J 112 N-JFET	NS,Mot,Six
	Q....41	50.03.0350	J 112 N-JFET	NS,Mot,Six
	R.....1	57.11.3152	1.5 kOhm 1% 0.25W	
	R.....2	57.11.3392	3.9 kOhm 1% 0.25W	
	R.....3	57.11.3392	3.9 kOhm 5% 0.25W	
	R.....4	57.11.3392	3.9 kOhm 1% 0.25W	
	R.....5	57.11.3152	1.5 kOhm 1% 0.25W	
	R.....6	57.11.3472	4.7 kOhm 5% 0.25W	
	R.....7	57.11.3153	15 kOhm 5% 0.25W	
	R.....8	57.11.3331	330 Ohm 5% 0.25W	
	R.....9	57.11.3331	330 Ohm 1% 0.25W	
	R....10	57.11.3104	100 kOhm 5% 0.25W	
	R....11	57.11.5106	10 MOhm 5% 0.25W	
	R....12	57.11.5106	10 MOhm 5% 0.25W	
	R....13	57.11.3105	1 MOhm 5% 0.25W	
	R....14	. .	not used	
	R....15	. .	not used	
	R....16	. .	not used	
	R....17	. .	not used	
	R....18	. .	not used	
	R....19	57.11.3563	56 kOhm 2% 0.25W	
	R....20	57.11.3104	100 kOhm 5% 0.25W	
	R....21	57.11.5106	10 MOhm 5% 0.25W	
	R....22	57.11.5106	10 MOhm 5% 0.25W	
	R....23	57.11.3103	10 kOhm 1% 0.25W	
	R....24	57.11.3104	100 kOhm 5% 0.25W	
	R....25	57.11.3104	100 kOhm 5% 0.25W	
	R....26	57.11.5106	10 MOhm 5% 0.25W	
	R....27	57.11.3102	1 kOhm 5% 0.25W	
	R....28	57.99.0250	6.8 kOhm 0.1% 0.25W	
	R....29	57.99.0250	6.8 kOhm 0.1% 0.25W	
	R....30	57.11.3102	1 kOhm 5% 0.25W	
	R....31	57.11.3103	10 kOhm 5% 0.25W	
	R....32	57.11.3223	22 kOhm 5% 0.25W	
	R....33	. .	not used	
	R....34	57.11.3472	4.7 kOhm 5% 0.25W	
	R....35	57.11.3330	33 Ohm 5% 0.25W	
	R....36	57.11.3279	2.7 Ohm 5% 0.25W	
	R....37	. .	not exist	
	R....38	57.11.3102	1 kOhm 5% 0.25W	
	R....39	58.11.6201	200 Ohm 30% trimpot cermet	
	R....40	57.11.3102	1 kOhm 5% 0.25W	
	R....41	. .	not exist	
	R....42	. .	not exist	
	R....43	. .	not exist	
	R....44	57.11.3101	100 Ohm 1% 0.25W	
	R....45	57.11.3431	430 Ohm 1% 0.25W	
	R....46	57.11.3202	2 kOhm 1% 0.25W	
	R....47	57.11.3512	5.1 kOhm 1% 0.25W	
	R....48	57.11.3472	4.7 kOhm 1% 0.25W	
	R....49	57.11.3104	100 kOhm 5% 0.25W	
	R....50	57.11.3104	100 kOhm 5% 0.25W	
	R....51	57.11.3563	56 kOhm 5% 0.25W	
	R....52	. .	not exist	
	R....53	57.11.3104	100 kOhm 5% 0.25W	
	R....54	57.11.3102	1 kOhm 5% 0.25W	
	R....55	57.11.3102	1 kOhm 5% 0.25W	
	R....56	. .	not used	
	R....57	57.11.3224	220 kOhm 5% 0.25W	
	R....58	57.11.3563	56 kOhm 5% 0.25W	
	R....59	57.11.5106	10 MOhm 5% 0.25W	
	R....60	57.11.5106	10 MOhm 5% 0.25W	
	R....61	57.11.3471	470 Ohm 5% 0.25W	
	R....62	57.11.3271	270 Ohm 5% 0.25W	
	R....63	57.11.3752	7.5 kOhm 1% 0.25W	
	R....64	1.010.022.58	47 kOhm 20% pos.log. variable resistor	St
	R....65	57.11.3684	680 kOhm 5% 0.25W	
	R....66	57.11.3223	22 kOhm 5% 0.25W	
	R....67	57.11.3104	100 kOhm 5% 0.25W	
	R....68	57.11.3222	2.2 kOhm 1% 0.25W	
	R....69	57.11.3152	1.5 kOhm 2% 0.25W	
	R....70	57.11.3302	3 kOhm 1% 0.25W	
	R....71	57.11.5225	2.2 MOhm 5% 0.25W	
	R....72	57.11.3105	1 MOhm 5% 0.25W	
	R....73	57.11.3333	33 kOhm 5% 0.25W	
	R....74	57.11.3333	33 kOhm 5% 0.25W	
	R....75	57.11.3105	1 MOhm 5% 0.25W	
	R....76	57.11.3104	100 kOhm 5% 0.25W	
	R....77	57.11.3104	100 kOhm 5% 0.25W	
	R....78	57.11.3104	100 kOhm 5% 0.25W	
	R....79	57.11.3105	1 MOhm 5% 0.25W	
	R....80	57.11.3105	1 MOhm 5% 0.25W	
	R....81	57.11.3105	1 MOhm 5% 0.25W	
	R....82	57.11.3105	1 MOhm 5% 0.25W	
	R....83	57.11.3105	1 MOhm 5% 0.25W	
	R....84	57.11.3105	1 MOhm 5% 0.25W	
	R....85	57.11.3104	100 kOhm 5% 0.25W	
	R....86	57.11.3332	3.3 kOhm 5% 0.25W	
	R....87	57.11.3684	680 kOhm 5% 0.25W	
	R....88	1.010.013.58	4.7 kOhm 10% lin. variable resistor	St
	R....89	57.11.3561	560 Ohm 5% 0.25W	
	R....90	1.010.014.58	22 kOhm 10% lin. variable resistor	St
	R....91	57.11.3332	3.3 kOhm 5% 0.25W	
	R....92	57.11.3684	680 kOhm 5% 0.25W	
	R....93	57.11.3103	10 kOhm 5% 0.25W	
	R....94	57.11.3103	10 kOhm 5% 0.25W	
	R....95	57.11.3104	100 kOhm 5% 0.25W	
	R....96	1.010.005.58	4.7 kOhm 10% lin. combined with R100/R102	St
	R....97	57.11.3182	1.8 kOhm 5% 0.25W	
	R....98	57.11.3684	680 kOhm 5% 0.25W	
	R....99	57.11.3103	10 kOhm 5% 0.25W	
	R...100	. .	100 kOhm 10% neg.log. see R96	
	R...101	57.11.3103	10 kOhm 5% 0.25W	
	R...102	. .	100 kOhm 10% neg.log. see R96	
	R...103	57.11.3182	1.8 kOhm 5% 0.25W	
	R...104	57.11.3684	680 kOhm 5% 0.25W	
	R...105	57.11.3682	6.8 kOhm 5% 0.25W	
	R...106	57.11.3682	6.8 kOhm 5% 0.25W	
	R...107	57.11.3682	6.8 kOhm 5% 0.25W	
	R...108	57.11.3682	6.8 kOhm 5% 0.25W	
	R...109	57.11.3104	100 kOhm 5% 0.25W	
	R...110	57.11.3104	100 kOhm 5% 0.25W	
	R...111	57.11.3682	6.8 kOhm 5% 0.25W	
	R...112	57.11.3474	470 kOhm 5% 0.25W	
	R...113	57.11.3224	220 kOhm 5% 0.25W	
	R...114	57.92.1271	6.5 Ohm I= 270mA PTC Philips Nr.2322 662 12711	
	R...115	57.92.1271	6.5 Ohm I= 270mA PTC Philips Nr.2322 662 12711	
	R...116	57.92.1271	6.5 Ohm I= 270mA PTC Philips Nr.2322 662 12711	
	R...117	57.11.3689	6.8 Ohm 1% 0.25W	
	R...118	57.11.3689	6.8 Ohm 1% 0.25W	
	R...119	57.11.3150	15 Ohm 1% 0.25W	
	R...120	57.11.3302	3 kOhm 1% 0.25W	
	R...121	57.11.3302	3 kOhm 1% 0.25W	
	R...122	57.11.3302	3 kOhm 1% 0.25W	
	R...123	57.11.3150	15 Ohm 1% 0.25W	
	R...124	57.39.3091	3.09 kOhm 1% 0.25W	
	R...125	57.11.3152	1.5 kOhm 1% 0.25W	
	R...126	57.11.3302	3 kOhm 1% 0.25W	
	R...127	57.11.3152	1.5 kOhm 1% 0.25W	
	R...128	57.39.3091	3.09 kOhm 1% 0.25W	
	R...129	57.11.3152	1.5 kOhm 1% 0.25W	
	R...130	57.11.3302	3 kOhm 1% 0.25W	
	R...131	57.11.3152	1.5 kOhm 1% 0.25W	
	R...132	57.11.3152	1.5 kOhm 1% 0.25W	
	R...133	57.11.3152	1.5 kOhm 1% 0.25W	
	R...134	57.11.3392	3.9 kOhm 1% 0.25W	
	R...135	57.11.3392	3.9 kOhm 1% 0.25W	
	R...136	57.11.3272	2.7 kOhm 1% 0.25W option 2	
	R...137	57.11.3272	2.7 kOhm 1% 0.25W option 2	
	R...138	57.11.3330	33 Ohm 5% 0.25W	
	R...139	57.11.5106	10 MOhm 5% 0.25W	
	R...140	57.11.5106	10 MOhm 5% 0.25W	
	R...141	57.11.5106	10 MOhm 5% 0.25W	
	R...142	57.11.3153	15 kOhm 2% 0.25W	
	R...143	1.369.150.03	10 kOhm 20% pos.log. variable resistor	St
	R...144	57.11.3682	6.8 kOhm 5% 0.25W	
	R...145	1.369.150.03	10 kOhm 20% pos.log. variable resistor	St
	R...146	57.11.3682	6.8 kOhm 5% 0.25W	
	R...147	57.11.3330	33 Ohm 5% 0.25W	
	R...148	57.11.3330	33 Ohm 5% 0.25W	
	R...149	. .	not used	
	R...150	57.11.3104	100 kOhm 5% 0.25W	
	R...151	57.11.5335	3.3 MOhm 5% 0.25W	
	R...152	57.11.3104	100 kOhm 5% 0.25W	
	R...153	57.11.3105	1 MOhm 5% 0.25W	
	R...154	57.11.5335	3.3 MOhm 5% 0.25W	
	R...155	57.11.3271	270 Ohm 5% 0.25W	
	R...156	57.11.3104	100 kOhm 5% 0.25W	
	R...157	57.11.3333	33 kOhm 5% 0.25W	
	R...158	57.11.3683	68 kOhm 5% 0.25W	
	R...159	1.960.011.00	5 kOhm pos.log mono fader	St
	R...160	57.11.3101	100 Ohm 5% 0.25W	
	R...161	57.11.3104	100 kOhm 5% 0.25W	
	R...162	57.11.3332	3.3 kOhm 5% 0.25W	
	R...163	57.11.3132	1.3 kOhm 5% 0.25W	
	R...164	58.01.8501	500 Ohm 10%	
	R...165	57.11.3104	100 kOhm 5% 0.25W	
	R...166	57.11.3433	43 kOhm 2% 0.25W	
	R...167	57.11.3433	43 kOhm 2% 0.25W	
	R...168	. .	10 kOhm pos.log. see note A)	St
	R...169	. .	10 kOhm neg.log. combined with R168	
	R...170	57.11.3682	6.8 kOhm 5% 0.25W ****/*****	
	R...171	57.11.3682	6.8 kOhm 5% 0.25W */**/***	
	R...172	57.11.5106	10 MOhm 5% 0.25W	
	R...173	57.11.5106	10 MOhm 5% 0.25W	
	R...174	57.11.3682	6.8 kOhm 5% 0.25W **/***	
	R...175	57.11.3682	6.8 kOhm 5% 0.25W ****/*****	
	R...176	57.11.5106	10 MOhm 5% 0.25W	

Mono-Input-Unit 970 — 1.970.710.81

Ad	..POS..	...REF.No...	DESCRIPTION	MANUFACTURER
	R...177	57.11.5106	10 MOhm 5% 0.25W	
	R...178	57.11.3682	6.8 kOhm 5% 0.25W **/***/****/*****	
	R...179	57.11.3682	6.8 kOhm 5% 0.25W **/***	
	R...180	57.11.5106	10 MOhm 5% 0.25W	
	R...181	57.11.5106	10 MOhm 5% 0.25W	
	R...182	57.11.3682	6.8 kOhm 5% 0.25W **/***/****/*****	
	R...183	57.11.3682	6.8 kOhm 5% 0.25W **/***	
	R...184	57.11.5106	10 MOhm 5% 0.25W	
	R...185	57.11.5106	10 MOhm 5% 0.25W	
	R...186	57.11.3105	1 MOhm 5% 0.25W	
	R...187	57.11.3105	1 MOhm 5% 0.25W	
	R...188	57.11.3105	1 MOhm 5% 0.25W	
	R...189	57.11.3105	1 MOhm 5% 0.25W	
	R...190	57.11.3105	1 MOhm 5% 0.25W	
	R...191	. .	not used	
	R...192	. .	not used	
	R...193	57.11.3104	100 kOhm 5% 0.25W	
	R...194	. .	not used	
	R...195	57.11.3105	1 MOhm 5% 0.25W	
	R...196	57.11.3103	10 kOhm 5% 0.25W	
	R...197	57.11.3103	10 kOhm 5% 0.25W	
	R...198	57.11.3183	18 kOhm 2% 0.25W	
	R...199	57.11.3183	18 kOhm 2% 0.25W	
	R...200	57.11.3153	15 kOhm 5% 0.25W	
	R...201	57.11.3332	3.3 kOhm 2% 0.25W	
	R...202	57.11.3332	3.3 kOhm 2% 0.25W	
	R...203	57.11.5106	10 MOhm 5% 0.25W	
	R...204	57.11.5106	10 MOhm 5% 0.25W	
	R...205	57.11.3104	100 kOhm 5% 0.25W	
	R...206	57.11.3105	1 MOhm 5% 0.25W	
	R...207	57.11.3822	8.2 kOhm 1% 0.25W	
	R...208	. .	not used option 2	
	R...209	57.11.3332	3.3 kOhm 5% 0.25W * not used; **/*** repl. by W11	
	R...210	57.11.3332	3.3 kOhm 5% 0.25W * not used; **/*** repl. by W22	
	R...211	57.11.3105	1 MOhm 5% 0.25W	
	S.....1	55.15.0019	2*U button: green	ITT
	S.....2	55.15.0019	2*U button: grey	ITT
	S.....3	. .	1*8U (196009801 ; used in A1)	St
	S.....4	55.15.0019	2*U button: grey	ITT
	S.....5	55.15.0019	2*U button: red	ITT
	S.....6	. .	not used	
	S.....7	. .	2*U combined with R143	
	S.....8	. .	2*U combined with R145	
	S.....9	. .	not used	
	S....10	55.15.0019	2*U button: red	ITT
	S....11	55.15.0019	2*U button: red ***/*****	ITT
	S....12	55.15.0019	2*U button: red ****/*****	ITT
	S....13	55.15.0019	2*U button: red *****	ITT
	S....14	. .	1*U see note A)	
	S....15	. .	1*U see note A)	
	S....16	. .	not used	
	T.....1	1.022.451.00	input trafo 1:0.62	St
	T.....2	1.022.453.00	input trafo 1:1:12	St
	T.....3	1.022.320.00	output trafo 5.67:1	St
	W.....1	57.11.3000		
	W.....2	. .	not used	
	W.....3	. .	not used	
	W.....4	. .	not used	
	W.....5	. .	not used	
	W.....6	. .	not used	
	W.....7	. .	not used	
	W.....8	. .	not used	
	W.....9	. .	not used	
	W....10	. .	not used	
	W....11	. .	**/***	
	W....12	. .	not used option 2	
	W....13	. .	conductor-track option 2	
	W....14	. .	conductor-track option 2	
	W....15	. .	not used option 2	
	W....16	57.11.3000		
	W....17	. .	conductor-track option 2	
	W....18	. .	conductor-track option 2	
	W....19	. .	not used option 2	
	W....20	. .	not used option 2	
	W....21	. .	not used (replaced by D39)	
	W....22	57.11.3000	**/***	
	W....23	. .	not used	
	W....24	. .	not used	
	W....25	. .	not used	
	W....26	. .	not used	
	W....27	. .	not used	
	W....28	. .	not used	
	W....29	57.11.3000		
	XDL...1	1.010.012.50	LED-holder	St
	XDL...2	1.010.012.50	LED-holder	St
	XDL...3	. .	not used	
	B...401	51.02.0154	5V 40mA	Osh
	B...402	51.02.0154	5V 40mA	Osh
	B...403	51.02.0154	5V 40mA	Osh
	MP..401	21.01.0354	2 pcs lotted pan head screw M3*6	
01	MP..401	. .	not exist	
	MP..402	24.16.1030	2 pcs screw locking devices D3.2 / 5.5 * 0.45	
01	MP..402	. .	not exist	
	MP..403	1.010.025.27	2 pcs hexagon post M3*25	ST
01	MP..403	. .	not exist	
	MP..404	1.970.790.04	0 pcs Studer-number-label	ST
	MP..405	55.15.0202	3 pcs push-button assembly	EAO
	MP..406	55.15.0221	3 pcs push-button assembly	EAO
	MP..407	55.15.0228	3 pcs push-button knob	EAO
	MP..408	1.970.790.11	1 pcs Switch unit PCB	
	MP..409	55.15.0212	1 pcsp ush-button-assembly red	
	MP..410	55.15.0215	1 pcsp ush-button-assemblygreen	

Ad	..POS..	...REF.No...	DESCRIPTION	MANUFACTURER
	R...401	57.11.3220	22 Ohm 5% 0.25W	
	R...402	57.11.3220	22 Ohm 5% 0.25W	
	R...403	57.11.3220	22 Ohm 5% 0.25W	
	S...401	55.15.0232	2* a Push button switch	EAO
	S...402	55.15.0232	2* a Push button switch	EAO
	S...403	55.15.0232	2* a Push button switch	EAO
	C...501	59.06.0104	100 nF 10% PE	
	C...502	59.06.0104	100 nF 10% PE	
	C...503	59.06.0104	100 nF 10% PE	
	C...504	59.26.2100	10 uF 20% 16V SAL	
	C...505	59.06.0103	10 nF 10% PE	
	C...506	59.06.0103	10 nF 10% PE	
	C...507	59.26.2100	10 uF 20% 16V SAL	
	C...508	59.06.0104	100 nF 10% PE	
	C...509	59.06.0682	6.8 nF 10% PE	
	C...510	59.06.0222	2.2 nF 10% PE	
	C...511	59.22.3101	100 uF -20% 10V EL	
	C...512	59.22.5101	100 uF -20% 25V EL	
	C...513	59.06.0104	100 nF 10% PE	
	D...501	50.04.0125	1N4448	any
	D...502	50.04.0125	1N4448	any
	D...503	50.04.0125	1N4448	any
	D...504	50.04.0125	1N4448	any
	D...505	50.04.0125	1N4448	any
	D...506	50.04.0125	1N4448	any
	DLQ.501	50.99.0111	MCT - 6 Dual Optokoppler	
	IC..501	50.07.0014	40106B Hex Schmitt Trigger	
	IC..502	50.07.0008	4093B Nand Schmitt Trigger	
	IC..503	50.07.0013	4013B D-Flip-Flop	
	IC..504	50.07.0015	4053B Mux-Demux	
	IC..505	50.10.0108	LM 317L Voltage Regulator	
	IC..506	50.10.0108	LM 317L Voltage Regulator	
	IC..507	50.07.0008	4093B Nand Schmitt Trigger	
	IC..508	50.07.0006	4001B Quad Nor Gate	
	IC..509	50.07.0015	4053B Mux-Demux	
	IC..510	50.07.0019	4019B Quad 2-Input Mux	
	IC..511	50.07.0004	4556B Decoder	
	J...501	54.01.0291	CIS-Connector 11 pin	
	J...502	54.01.0291	CIS-Connector 11 pin	
	JSJ.501	. .	not used option 6	
	JSJ.502	. .	not used option 6	
	JSJ.503	. .	not used option 4	
	JSJ.504	54.01.0021	Jumper option 4	
	JSJ.505	. .	not used option 5	
	JSJ.506	54.01.0021	Jumper option 10	
	JSJ.507	. .	not used option 13	
	JSJ.508	. .	not used option 14	
	JSJ.509	. .	not used option 9	
	JSJ.510	. .	not used in 1.970.741.00 option 11	
	JSJ.510	. .	Jumper used in 1.970.753 / 754.00	
	JSJ.511	54.01.0021	Jumper option 8	
	JSJ.512	54.01.0021	Jumper option 7 / option 8	
	JSJ.513	54.01.0021	Jumper option 7 / option 8	
	JSJ.514	. .	not used option 7	
	JSJ.515	. .	not used option 7 / option 8	
	JSJ.516	. .	not used option 7	
	JSJ.517	. .	not used option 7 / option 8	
	JSJ.518	. .	not used option 8	
	JSJ.519	. .	not used option 12	
	MP..501	1.010.300.64	2 pcs Flat-band-cable 40mm	
02	MP..501	64.03.0502	2 pcs Flat-band-cable 40mm	
	MP..502	53.03.0168	4 pcs IC-socket 16 pin	
02	MP..502	53.03.0168	3 pcs IC-socket 16 pin	
	MP..503	53.03.0167	5 pcs IC-socket 14 pin	
	MP..504	1.970.792.11	1 pcs Extension unit PCB	
	MP..505	54.01.0020	33 pcs Wire Wrap pins	
	MP..506	. .	not exist	
	MP..507	1.010.014.22	2 pcs hexagon rivetting-nut M3*4.5	St
	MP..508	1.970.792.04	0 pcs STUDER-number-label	St
	MP..509	43.01.0108	1 pcs ESE-caution-label see note 1)	St
	Q...501	50.03.0496	BC 560 PNP IC>100mA, B>200	any
	Q...502	50.03.0496	BC 560 PNP IC>100mA, B>200	any
	Q...503	50.03.0496	BC 560 PNP IC>100mA, B>200	any
	Q...504	50.03.0496	BC 560 PNP IC>100mA, B>200	any
	Q...505	50.03.0496	BC 560 PNP IC>100mA, B>200	any
	Q...506	50.03.0497	BC 550 NPN IC>100mA, B>200	any
	Q...507	50.03.0216	J 111 J-FET	Six
	Q...508	50.03.0350	J 112 J-FET	Six
	Q...509	50.03.0497	BC 550 NPN IC>100mA, B>200	any
	Q...510	50.03.0496	BC 560 PNP IC>100mA, B>200	any
	Q...511	50.03.0497	BC 550 NPN IC>100mA, B>200	any
	Q...512	50.03.0496	BC 560 PNP IC>100mA, B>200	any
	Q...513	50.03.0496	BC 560 PNP IC>100mA, B>200	any
	Q...514	50.03.0496	BC 560 PNP IC>100mA, B>200	any
	Q...515	50.03.0496	BC 560 PNP IC>100mA, B>200	any
	R...501	57.11.3102	1 kOhm 5% 0.25W	
	R...502	57.11.3102	1 kOhm 5% 0.25W	
	R...503	57.11.3102	1 kOhm 5% 0.25W	
	R...504	57.11.3102	1 kOhm 5% 0.25W	
	R...505	57.11.3102	1 kOhm 5% 0.25W	
	R...506	57.11.3102	1 kOhm 5% 0.25W	
	R...507	57.11.3153	15 kOhm 5% 0.25W	
	R...508	57.11.3153	15 kOhm 5% 0.25W	
	R...509	57.11.3153	15 kOhm 5% 0.25W	
	R...510	57.11.3153	15 kOhm 5% 0.25W	
	R...511	57.11.3153	15 kOhm 5% 0.25W	
	R...512	57.11.3221	220 Ohm 5% 0.25W	
	R...513	57.11.3221	220 Ohm 5% 0.25W	
	R...514	57.11.3153	15 kOhm 5% 0.25W	
	R...515	57.11.3153	15 kOhm 5% 0.25W	
	R...516	58.01.9104	100 kOhm 10% var. resistor	
	R...517	. .	not exist	

Mono-Input-Unit 970 — 1.970.710.81

Ad	..POS..	...REF.No...	DESCRIPTION	MANUFACTURER
01	R...517	57.11.3103	10 kOhm 5% 0.25W	
	R...518	57.11.3223	22 kOhm 5% 0.25W	
	R...519	57.11.3223	22 kOhm 5% 0.25W	
	R...520	57.11.5225	2.2 MOhm 5% 0.25W	
	R...521	57.11.3223	22 kOhm 5% 0.25W	
	R...522	57.11.3102	1 kOhm 5% 0.25W	
	R...523	. .	not exist	
	R...524	. .	not exist	
	R...525	. .	not exist	
	R...526	. .	not exist	
	R...527	57.11.5335	3.3 MOhm 5% 0.25W	
	R...528	57.11.3104	100 kOhm 5% 0.25W	
	R...529	57.11.5335	3.3 MOhm 5% 0.25W	
	R...530	57.11.3104	100 kOhm 5% 0.25W	
	R...531	. .	not used	
	R...532	. .	not used	
	R...533	. .	not used	
	RZ..501	57.88.4104	100 kOhm 5% single line	
	RZ..502	57.88.4104	100 kOhm 5% single line	
	RZ..503	57.88.4104	100 kOhm 5% single line	
	RZ..504	57.88.3104	100 kOhm 5% dual in line	

```
88/06/17 - PFL-,ON-key activ :
           fader open -> PFL audiosignal mute
           fader closed -> PFL audiosignal on
           additional D41/D42  1N4448
           see also poslst 1.970.792.xx   88/06/17

88/11/18 - click suppression           : IC11      MC33078
                                         R138       33 Ohm

89/07/27 - click suppression of high   : C35        1uF
           pass filter after starting    C36       47uF 6.3V  TA
           the console                   R71        2.2MOhm

         - overload threshold          : R58         56kOhm

         - improvement of faderswitch  : R153         1MOhm

         - oscillating suppression of  : R124      3.09kOhm
           insert send                   R128      3.09kOhm
```

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===================================================================
| 1) ATTENTION : EXTENSION UNIT contains electro static sensitivity |
|                elements                                           |
===================================================================

===================================================================
|  *     only  1 CH            1.970.710.XX  wird nicht hergestellt |
|  **    only  2 CH  1+2       1.970.720.XX  wird nicht hergestellt |
|  ***   only  2 CH  1,2       1.970.721.XX  wird nicht hergestellt |
|  ****  only  4 CH  1+2,3+4   1.970.740.XX  wird nicht hergestellt |
|  ***** only  4 CH  1,2,3,4,  1.970.741.XX                         |
===================================================================

====================================
|  Optionen :  siehe Optionenliste  |
====================================

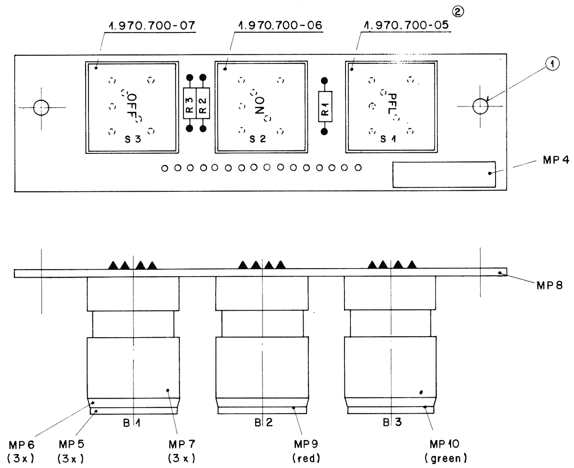
===================================================================
|  A)  pan - pot   ( R168/R169 )                                    |
|  *****************************                                    |
|  Version:  *      R168/R169    not used                           |
|            **     R168/R169    1.010.004.58   without switch      |
|            ***    R168/R169    1.010.004.58   without switch      |
|            ****   R168/R169    1.010.021.58   with  S14/S15       |
|            *****  R168/R169    1.010.021.58   with  S14/S15       |
===================================================================
```

CE=Ceramic, CF=Carbon Film, EL=Electrolytic, MF=Metal Film,
PE=Polyester, PP=Polypropylen, PS=Polystyrol, TA=Tantal

MANUFACTURER: Bu=Burndy, Ex=Exar, Fc=Fairchild, GI=General Instrument
HP=Hewlett Packard, ITT=Intermetall, Mot=Motorola, Nat=National
(Matsushita), NS=National Semiconductors, Ph=Philips,
Ra=Raytheon, Sig=Signetics, Six=Siliconix, St=Studer,
TI=Texas Instrument

1.970.710.81 MONO-INPUT-UNIT 970 TA89/07/2700

1.8 Switch Unit 1.970.790.00



Numbers of positions are 4...

Switch Unit 1.970.790.00

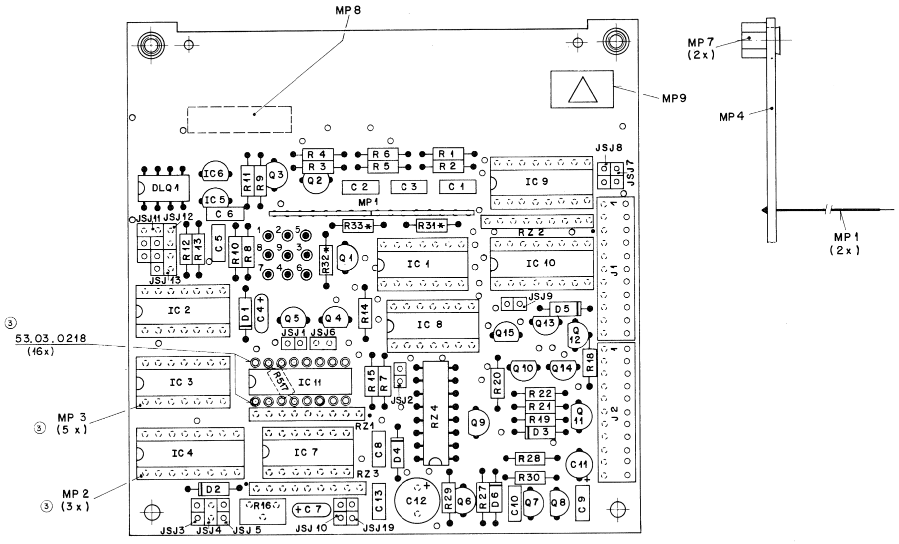
Ad	..POS..	...REF.No...		DESCRIPTION	MANUFACTURER
	B...401	51.02.0154		5V 40mA	Osh
	B...402	51.02.0154		5V 40mA	Osh
	B...403	51.02.0154		5V 40mA	Osh
	MP..401	21.01.0354	2 pcs	lotted pan head screw M3*6	
01	MP..401	. .	not exist		
	MP..402	24.16.1030	2 pcs	screw locking devices D3.2 / 5.5 * 0.45	
01	MP..402	. .	not exist		
	MP..403	1.010.025.27	2 pcs	hexagon post M3*25	ST
01	MP..403	. .	not exist		
	MP..404	1.970.790.04	0 pcs	Studer-number-label	ST
	MP..405	55.15.0202	3 pcs	push-button assembly	EAO
	MP..406	55.15.0221	3 pcs	push-button assembly	EAO
	MP..407	55.15.0228	3 pcs	push-button knob	EAO
	MP..408	1.970.790.11	1 pcs	Switch unit PCB	
	MP..409	55.15.0212	1 pcsp	ush-button-assembly red	
	MP..410	55.15.0215	1 pcsp	ush-button-assemblygreen	
	R...401	57.11.3220	22 Ohm	5% 0.25W	
	R...402	57.11.3220	22 Ohm	5% 0.25W	
	R...403	57.11.3220	22 Ohm	5% 0.25W	
	S...401	55.15.0232	2* a	Push button switch	EAO
	S...402	55.15.0232	2* a	Push button switch	EAO
	S...403	55.15.0232	2* a	Push button switch	EAO

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=National
{Matsushita}, NS=National Semiconductors, Ph=Philips,
Ra=Raytheon, Sig=Signetics, Six=Siliconix, St=Studer,
TI=Texas Instrument, Sie=Siemens, Is=Intersil, Un=Unitrode
Osh=Oshino

1.970.790.00	SWITCH UNIT	HGA86/07/1500
1.970.790.00	SWITCH UNIT	TA 87/01/0801

1.9 Extension Unit ESE 1.970.792.00



Numbers of positions are 5...

* not used

② R517 neu dazu

Extension Unit 1.970.792.00

Ad	..POS..	...REF.No...	DESCRIPTION	MANUFACTURER
	C...501	59.06.0104	100 nF 10% PE	
	C...502	59.06.0104	100 nF 10% PE	
	C...503	59.06.0104	100 nF 10% PE	
	C...504	59.26.2100	10 uF 20% 16V SAL	
	C...505	59.06.0103	10 nF 10% PE	
	C...506	59.06.0103	10 nF 10% PE	
	C...507	59.26.2100	10 uF 20% 16V SAL	
	C...508	59.06.0104	100 nF 10% PE	
	C...509	59.06.0682	6.8 nF 10% PE	
	C...510	59.06.0222	2.2 nF 10% PE	
	C...511	59.22.3101	100 uF -20% 10V EL	
	C...512	59.22.5101	100 uF -20% 25V EL	
	C...513	59.06.0104	100 nF 10% PE	
	D...501	50.04.0125	1N4448	any
	D...502	50.04.0125	1N4448	any
	D...503	50.04.0125	1N4448	any
	D...504	50.04.0125	1N4448	any
	D...505	50.04.0125	1N4448	any
	D...506	50.04.0125	1N4448	any
	DLQ.501	50.99.0111	MCT - 6 Dual Optokoppler	
	IC..501	50.07.0014	40106B Hex Schmitt Trigger	
	IC..502	50.07.0008	4093B Nand Schmitt Trigger	
	IC..503	50.07.0013	4013B D-Flip-Flop	
	IC..504	50.07.0015	4053B Mux-Demux	
	IC..505	50.10.0108	LM 317L Voltage Regulator	
	IC..506	50.10.0108	LM 317L Voltage Regulator	
	IC..507	50.07.0008	4093B Nand Schmitt Trigger	
	IC..508	50.07.0006	4001B Quad Nor Gate	
	IC..509	50.07.0015	4053B Mux-Demux	
	IC..510	50.07.0019	4019B Quad 2-Input Mux	
	IC..511	50.07.0004	4556B Decoder	
	J...501	54.01.0291	CIS-Connector 11 pin	
	J...502	54.01.0291	CIS-Connector 11 pin	
	JSJ.501	. .	not used option 6	
	JSJ.502	. .	not used option 6	
	JSJ.503	. .	not used option 4	
	JSJ.504	54.01.0021	Jumper option 4	
	JSJ.505	. .	not used option 5	
	JSJ.506	54.01.0021	Jumper option 10	
	JSJ.507	. .	not used option 13	
	JSJ.508	. .	not used option 14	
	JSJ.509	. .	not used option 9	
	JSJ.510	. .	not used in 1.970.741.00 option 11	
	JSJ.510	. .	Jumper used in 1.970.753 / 754.00	
	JSJ.511	54.01.0021	Jumper option 8	
	JSJ.512	54.01.0021	Jumper option 7 / option 8	
	JSJ.513	54.01.0021	Jumper option 7 / option 8	
	JSJ.514	. .	not used option 7	
	JSJ.515	. .	not used option 7 / option 8	
	JSJ.516	. .	not used option 7	
	JSJ.517	. .	not used option 7 / option 8	
	JSJ.518	. .	not used option 8	
	JSJ.519	. .	not used option 12	
	MP..501	1.010.300.64	2 pcs Flat-band-cable 40mm	
02	MP..501	64.03.0502	2 pcs Flat-band-cable 40mm	
	MP..502	53.03.0168	4 pcs IC-socket 16 pin	
02	MP..502	53.03.0168	3 pcs IC-socket 16 pin	
	MP..503	53.03.0167	5 pcs IC-socket 14 pin	
	MP..504	1.970.792.11	1 pcs Extension unit PCB	
	MP..505	54.01.0020	33 pcs Wire Wrap pins	
	MP..506	. .	not exist	
	MP..507	1.010.014.22	2 pcs hexagon rivetting-nut M3*4.5	St
	MP..508	1.970.792.04	0 pcs STUDER-number-label	St
	MP..509	43.01.0108	1 pcs ESE-caution-label see note 1)	St
	Q...501	50.03.0496	BC 560 PNP IC>100mA, B>200	any
	Q...502	50.03.0496	BC 560 PNP IC>100mA, B>200	any
	Q...503	50.03.0496	BC 560 PNP IC>100mA, B>200	any
	Q...504	50.03.0496	BC 560 PNP IC>100mA, B>200	any
	Q...505	50.03.0496	BC 560 PNP IC>100mA, B>200	any
	Q...506	50.03.0497	BC 550 NPN IC>100mA, B>200	any
	Q...507	50.03.0216	J 111 J-FET	Six
	Q...508	50.03.0350	J 112 J-FET	Six
	Q...509	50.03.0497	BC 550 NPN IC>100mA, B>200	any
	Q...510	50.03.0496	BC 560 PNP IC>100mA, B>200	any
	Q...511	50.03.0497	BC 550 NPN IC>100mA, B>200	any
	Q...512	50.03.0496	BC 560 PNP IC>100mA, B>200	any
	Q...513	50.03.0496	BC 560 PNP IC>100mA, B>200	any
	Q...514	50.03.0496	BC 560 PNP IC>100mA, B>200	any
	Q...515	50.03.0496	BC 560 PNP IC>100mA, B>200	any
	R...501	57.11.3102	1 kOhm 5% 0.25W	
	R...502	57.11.3102	1 kOhm 5% 0.25W	
	R...503	57.11.3102	1 kOhm 5% 0.25W	
	R...504	57.11.3102	1 kOhm 5% 0.25W	
	R...505	57.11.3102	1 kOhm 5% 0.25W	
	R...506	57.11.3102	1 kOhm 5% 0.25W	
	R...507	57.11.3153	15 kOhm 5% 0.25W	
	R...508	57.11.3153	15 kOhm 5% 0.25W	
	R...509	57.11.3153	15 kOhm 5% 0.25W	
	R...510	57.11.3153	15 kOhm 5% 0.25W	
	R...511	57.11.3153	15 kOhm 5% 0.25W	
	R...512	57.11.3221	220 Ohm 5% 0.25W	
	R...513	57.11.3221	220 Ohm 5% 0.25W	
	R...514	57.11.3153	15 kOhm 5% 0.25W	
	R...515	57.11.3153	15 kOhm 5% 0.25W	
	R...516	58.01.9104	100 kOhm 10% var. resistor	
	R...517	. .	not exist	
01	R...517	57.11.3103	10 kOhm 5% 0.25W	
	R...518	57.11.3223	22 kOhm 5% 0.25W	
	R...519	57.11.3223	22 kOhm 5% 0.25W	
	R...520	57.11.5225	2.2 MOhm 5% 0.25W	
	R...521	57.11.3223	22 kOhm 5% 0.25W	
	R...522	57.11.3102	1 kOhm 5% 0.25W	
	R...523	. .	not exist	
	R...524	. .	not exist	
	R...525	. .	not exist	
	R...526	. .	not exist	
	R...527	57.11.5335	3.3 MOhm 5% 0.25W	
	R...528	57.11.3104	100 kOhm 5% 0.25W	
	R...529	57.11.5335	3.3 MOhm 5% 0.25W	
	R...530	57.11.3104	100 kOhm 5% 0.25W	
	R...531	. .	not used	
	R...532	. .	not used	
	R...533	. .	not used	
	RZ..501	57.88.4104	100 kOhm 5% single line	
	RZ..502	57.88.4104	100 kOhm 5% single line	
	RZ..503	57.88.4104	100 kOhm 5% single line	
	RZ..504	57.88.3104	100 kOhm 5% dual in line	

88/06/17 - PFL-,ON-key activ : fader open -> PFL audiosignal mute
fader closed -> PFL audiosignal on
additional R517 10kOhm
see also poslst 1.970.710.xx 88/06/17

89/12/12 - change of MP part number

==

1) ATTENTION : EXTENSION UNIT contains electro static sensitivitly elements

==

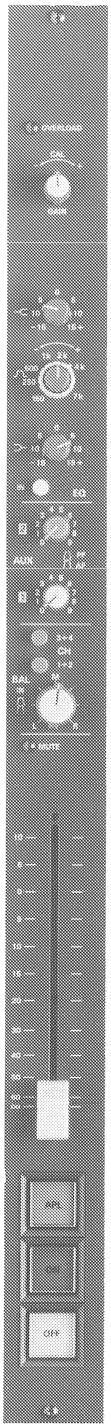
CE=Ceramic, CF=Carbon Film, EL=Electrolytic, MF=Metal Film, PE=Polyester, PP=Polypropylen, PS=Polystyrol

MANUFACTURER: Bu=Burndy, Ex=Exar, Fc=Fairchild, GI=General Instrument HP=Hewlett Packard, ITT=Intermetall, Mot=Motorola, Nat=National {Matsushita}, NS=National Semiconductors, Ph=Philips, Ra=Raytheon, Sig=Signetics, Six=Siliconix, St=Studer, TI=Texas Instrument, Sie=Siemens, Is=Intersil, Un=Unitrode Osh=Oshino

1.970.792.00	EXTENSION UNIT	TA86/09/0500
1.970.792.00	EXTENSION UNIT	TA88/06/1701
1.970.792.00	EXTENSION UNIT	TA89/12/1202

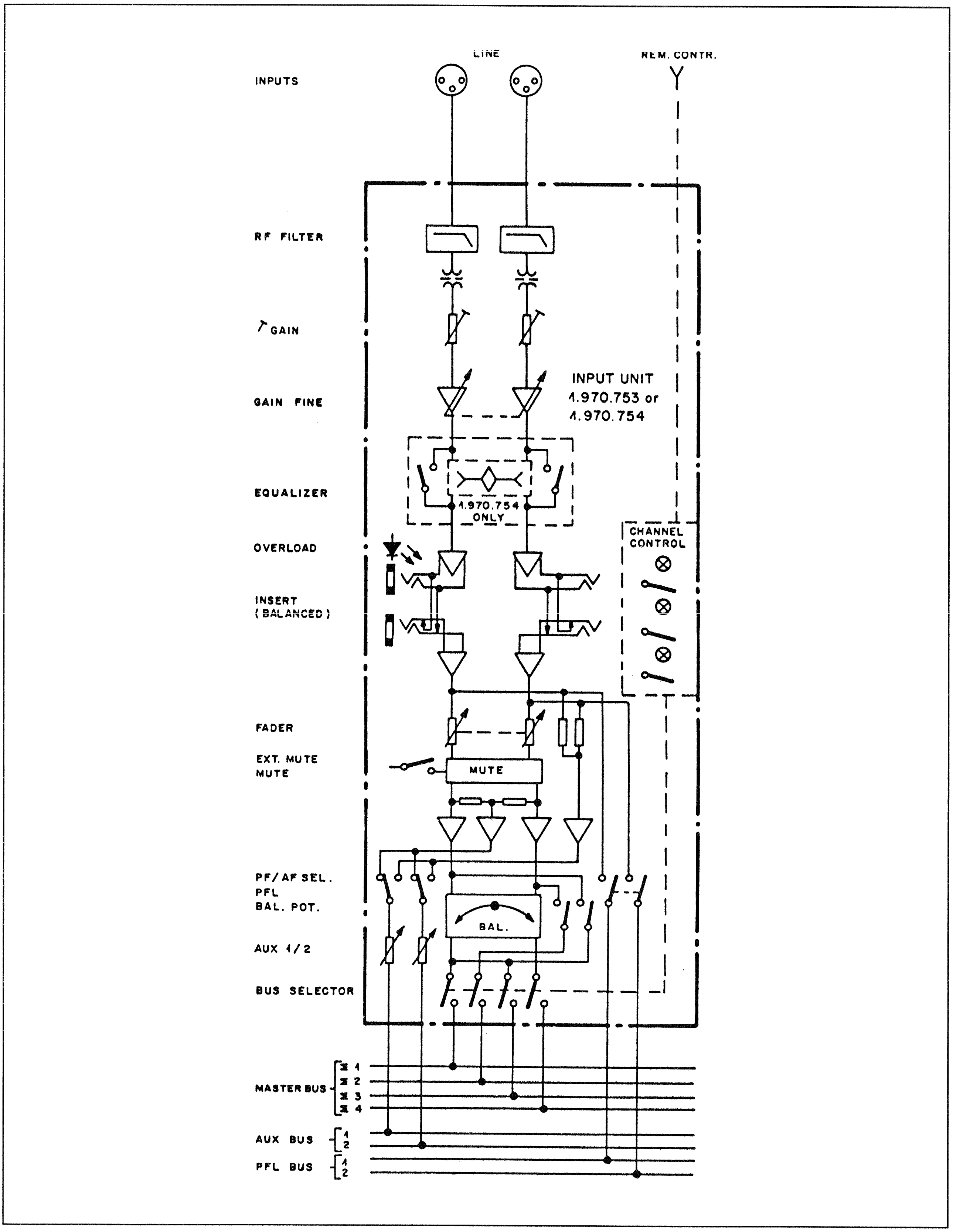
2. Stereo Hochpegeleinheit ohne Entzerrer 1.970.753
Stereo Hochpegeleinheit mit Entzerrer 1.970.754

2.1 Bedienungselemente



OVERLOAD:	Die mit Overload bezeichnete LED leuchtet auf, sobald der maximal zulässige Pegel vor oder nach dem Flachbahnregler überschritten wird.
EINGANGSTEIL:	Stereophonischer Hochpegeleingang, symmetrisch und erdfrei. Eingangsempfindlichkeit wird auf kundenspezifischen Nennpegel abgeglichen. Eine Verstärkungsänderung um ±10 dB ist am Gain-Potentiometer möglich.
ENTZERRER:	Siehe 2.4
HILFSAUSGÄNGE AUX 1 und AUX 2:	Zwei getrennt regelbare Hilfsausgänge sind über die an den Potentiometer angebauten Zug-Druckschaltern vor oder nach Flachbahnregler schaltbar.
PAN. POT. SUMMENWAHL:	Das Panorama Potentiometer kann mit dem Zug-Druckschalter aktiviert werden. Stereo und 2 Kanal-Pulte sind mit einer Taste zur gemeinsamen Anwahl der Sammelschienen Σ1 und Σ2 bestückt. 4-Kanal Pulte sind mit zwei Tasten zur getrennten Anwahl der Sammelschiene Σ1+Σ2 und Σ3+Σ4 bestückt.
MUTE-FUNKTION:	Auf dem fünfzehnpoligen D-Type Stecker (REM-CONTR) kann der Kanal knackfrei stummgeschaltet werden. Die Mute LED-Anzeige signalisiert die aktivierte Funktion.
FLACHBAHN-REGLER:	Der Flachbahnregler ist mit einer Widerstandsschicht aus leitendem Kunststoff ausgerüstet. Beide Kanäle werden über einen Reglerknopf gemeinsam bedient.
STEUERTASTEN:	Siehe 2.3

2.2 Blockschaltbild 1.970.753



2.3 Steuertasten

Vor dem Flachbahnregler sind drei geräuscharme Drucktasten mit Signallampen angebracht. Die Funktionen dieser Tasten können im Einschub durch Umstecken von Miniatur-Brückensteckern verändert werden.

Es sind 3 Grundversionen vorgesehen:

Version 1 (Fig.1)

PFL

- Das Vorhörsignal PFL (Pre fader listening) wird zum Vorhörlautsprecher und zum Kopfhörer durchgeschaltet. Ein weiterer Tastendruck unterbricht dieses Signal wieder.
- Gleichzeitig wird die Signallampe ein- oder ausgeschaltet.

ON

- Schaltet den Modulationsweg durch, sofern eine Summe angewählt und der Flachbahnregler geöffnet ist.
- ON-Lampe leuchtet.
- PFL wird unterbrochen, wobei aber die PFL-Lampe weiterleuchtet um den vorher angewählten Zustand anzuzeigen.
- Signalisation resp. Faderstart-Relais wird durchgeschaltet, sofern die übrigen Kriterien erfüllt sind (siehe 2.6 Sign. und Faderstart).
- Automatische Stoppuhr wird zurückgesetzt. (Option)

OFF

- Modulation wird unterbrochen.
- Signalisation und Faderstart-Relais fallen ab.
- Falls die PFL-Taste angewählt war, wird nun das Vorhören wieder durchgeschaltet.
- ON-Lampe erlöscht.

OFF-Lampe:

- Wird von Extern aktiviert und kann den Bereitschaftzustand der Quelle signalisieren.

Fernsteuerung:

- Alle Tasten- und Lampensignale sind auch auf einem fünfzehnpoligen D-Type Stecker verfügbar. Obige Funktionen können also auch ferngesteuert werden.

Version 2

APL ON OFF

- Gleiche Funktionen wie in Version 1, mit der Ausnahme, dass anstelle des Vorhörsignales vor Flachbahnregler, dasjenige nach Regler (APL) durchgeschaltet wird.

Version 3

AUDITION

- Schaltet den Kanal durch und wählt die Summen 3+4 an. (Eingangseinheiten dieser Version sind nicht mit Sammelschienenwahltasten ausgerüstet).
- AUDITION-Lampe wird eingeschaltet.
- Signalisation wird aktiviert.
- Timer Restart.

ON AIR

- Schaltet den Kanal durch und wählt die Summenwahlschienen 1+2 an.
- ON AIR-Lampe wird eingeschaltet.
- Signalisation wird aktiviert.
- Timer Restart.

OFF

- Setzt sowohl AUDITION- als auch ON AIR-Taste zurück.
- Signalisation wird inaktiv.

Blockschema Remote Control:

(Standard)

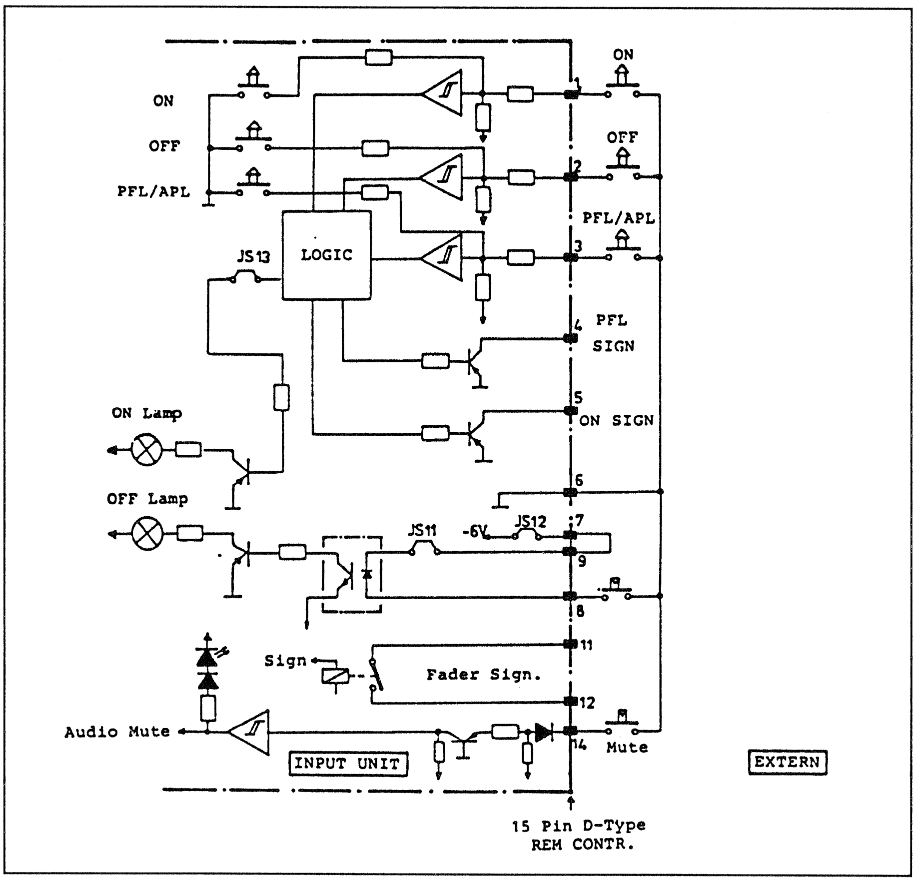
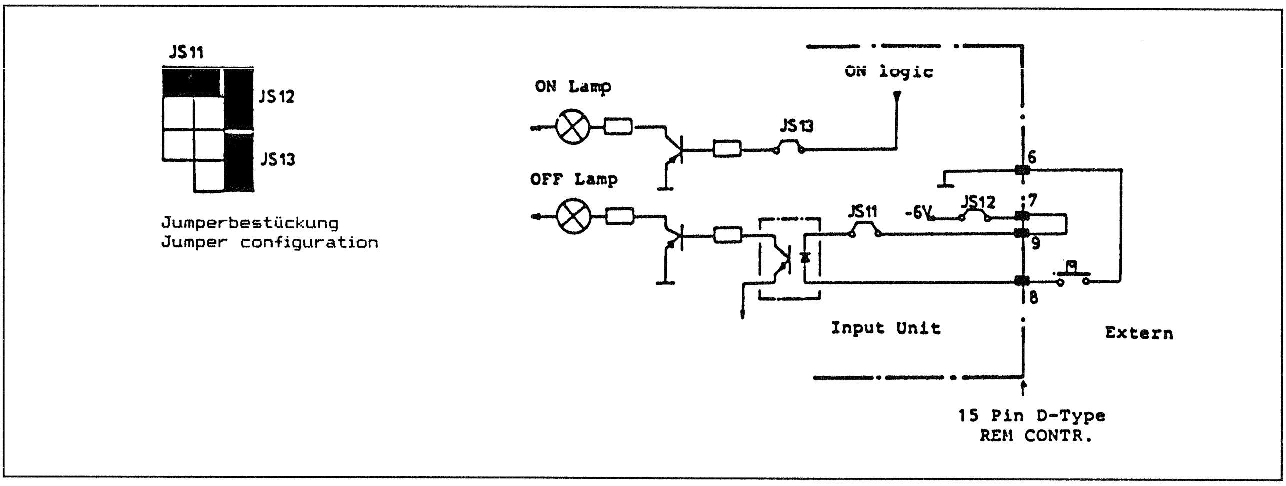
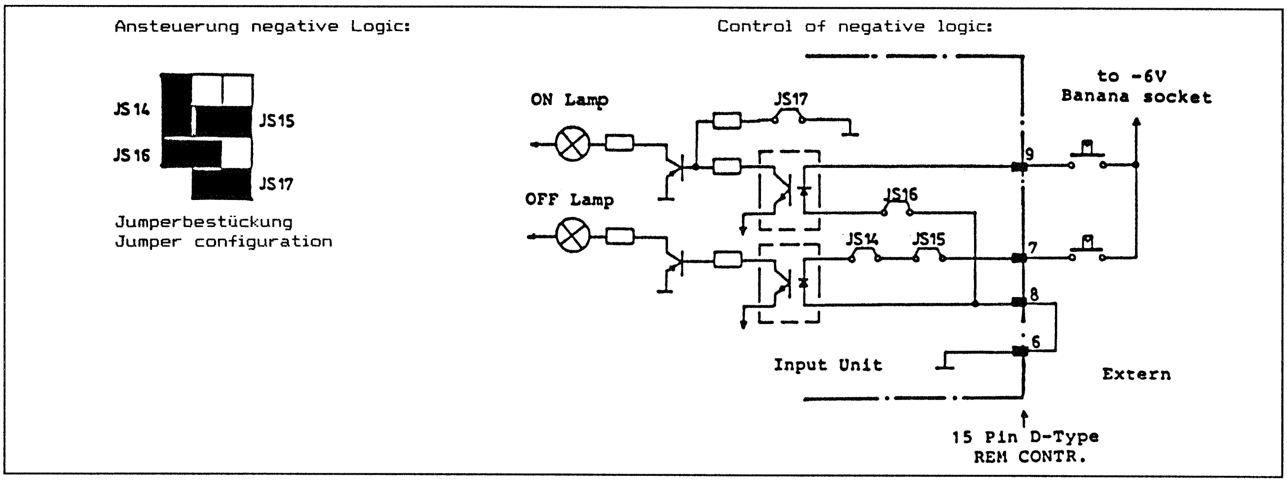


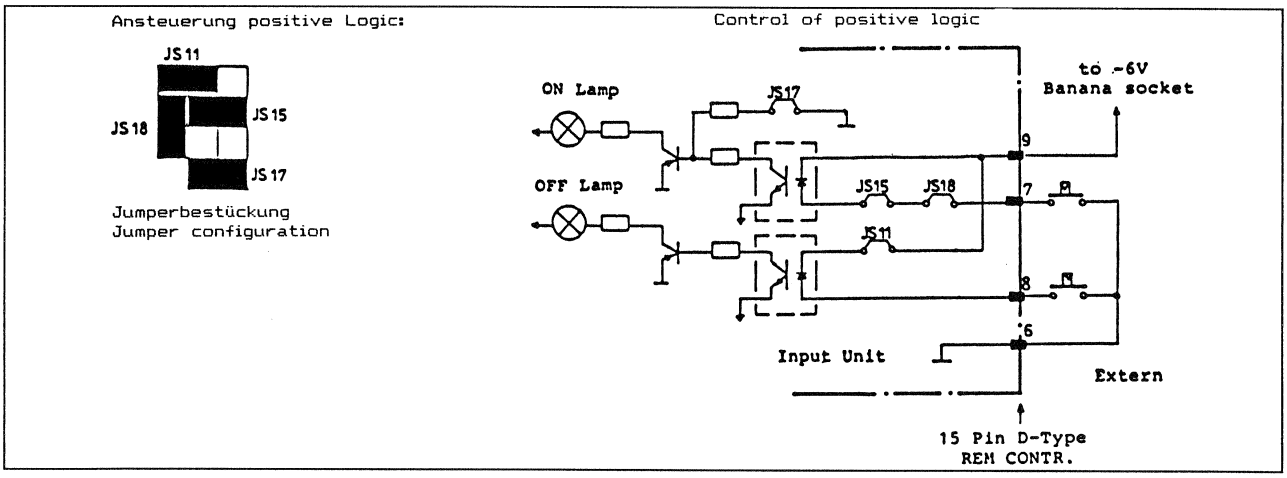
Fig. 1

Codierung für externe OFF–Lampensteuerung (Standard)



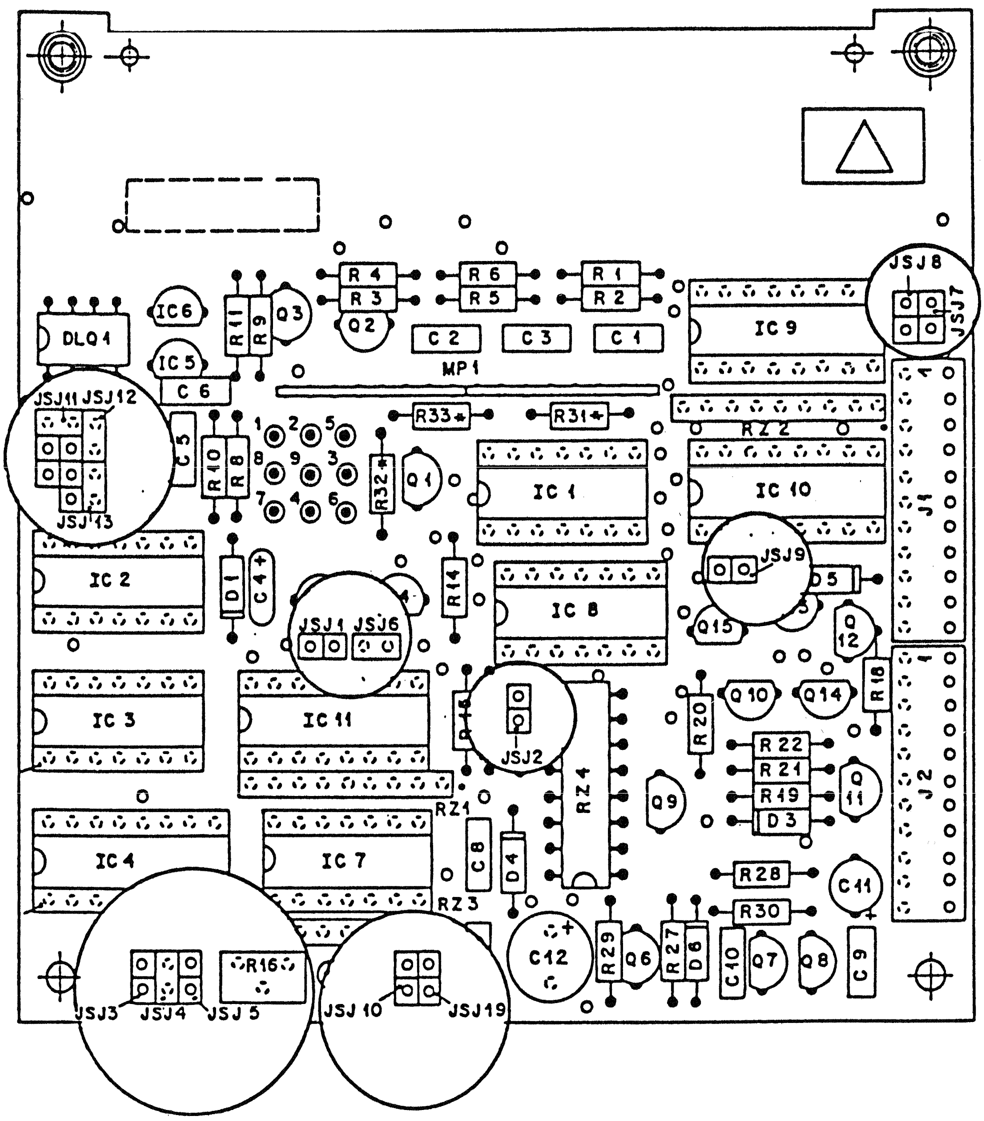
Codierung für externe ON- und OFF–Lampensteuerung





Jumpercodierung für Extension Unit

1.970.792



JS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
				X						X	X	X	X							Version 1 (STANDARD)
				X		X				X	X	X	X							Version 2
					X		X	X		X	X	X	X							Version 3
																				....

x = Jumper gesetzt x = Jumper set

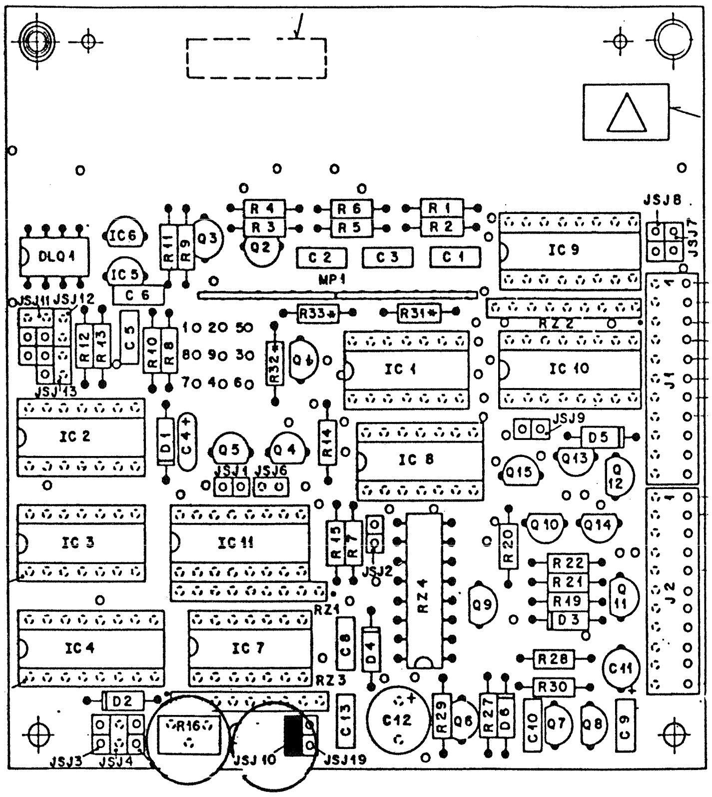
Optionen

Ort	Jumper	Funktionen
JS1	gesetzt frei	OFF Lampe leuchtet, wenn ON–Taste ausgeschaltet ist. Keine Funktion
JS1 und JS2	gesetzt frei	OFF Lampe leuchtet, wenn ON–Taste und PFL/APL–Taste ausgeschaltet sind. Keine Funktion
JS3	gesetzt frei	PFL/APL–Taste <u>nur</u> einschaltend PFL/APL–Taste selbstauslösend (Toggle switch)
JS4	gesetzt frei	ON–Taste <u>nur</u> einschaltend ON–Taste selbstauslösend (Toggle switch)
JS5	gesetzt frei	OFF–Taste setzt die PFL/APL–Taste zurück Keine Funktion
JS6	gesetzt frei	APL (After Pan Listening) Version 2 PFL (Pre Fader Listening) Version 1 STANDARD
JS7	gesetzt	ON AIR–Taste schaltet $\Sigma 1+2$ durch. AUDITION–Taste schaltet $\Sigma 3+4$ durch. Version 3
JS7 und JS8	gesetzt frei frei	AUDITION–Taste steuert die Signalisation des HL–Einganges an. Nur Version 3 Keine Funktion Keine Funktion
JS9	gesetzt frei	PFL/APL–Taste steuert direkt das Line Relay an. Nur für Version 1+2! Keine Funktion
JS10	gesetzt frei	Time Delay justierbar mit R16 zwischen 0 ... 1 sec. Keine Verzögerung
JS19	gesetzt frei	Timer–Restart Funktion ist ausgeschaltet. Timer–Restart Funktion ist eingeschaltet.

Zeit-Verzögerung

Diese Funktion ist nur für die Hochpegel Eingangseinheit 1.970.753/754.81 verfügbar.

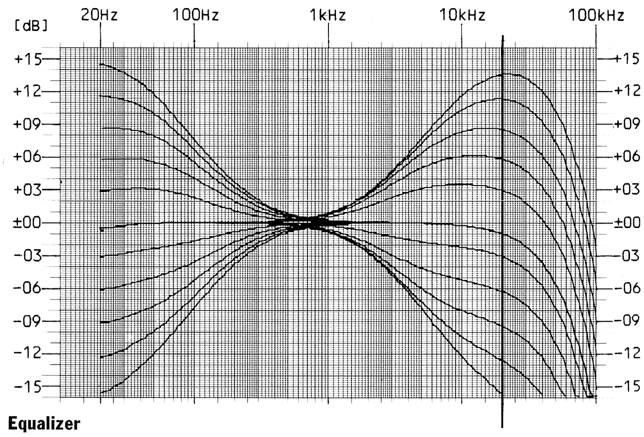
Extension unit 1.970.792.00



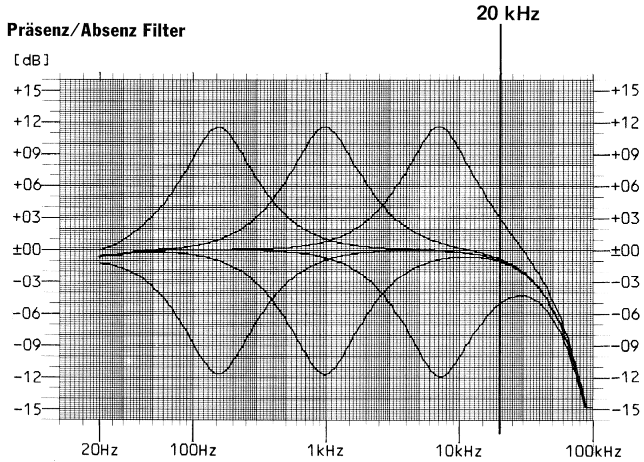
Zwischen dem Faderstart und dem Durchschalten des Audiosignals kann eine Verzögerungszeit von 0...1 sec. mit R16 (PCB 1.970.792) eingestellt werden.
Der Jumper J10 muss wie oben dargestellt gesetzt sein
(=Zeit-Verzögerung aktiv).

2.4 Entzerrer

Der ganze Entzerrer ist mit der Drucktaste EQUALIZER IN überbrückbar. Fächerentzerrer für Höhen und Tiefen.
Bereich ±15 dB.



Parametrisches Glockenkurven-Filter mit einstellbarer Mittenfrequenz von 150 Hz...7 kHz (Q=1)
Anhebung / Abschwächung ±11 dB.
Beide Kanäle werden gemeinsam beeinflusst.



2.5 Einschleifpunkt

Vor dem Flachbahnregler werden die Tonsignale elektronisch symmetriert und über je zwei auf der Pultrückseite befindliche Bantam Jack Buchsen geführt. Der Einschleifpegel beträgt +6 dBu.

2.6 Signalisation und Faderstart

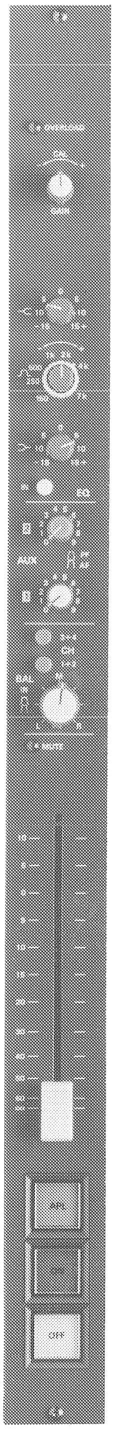
Das im Einschub untergebrachte Fernsteuerrelais wird aktiviert, sobald folgende Kriterien erfüllt sind:

- Kanalregler geöffnet
- Summenregler geöffnet
- Summenwahltaste betätigt
- Mute Funktion nicht aktiv
- Kanal mit ON-Taste eingeschaltet

Der auf dem 15 poligen D-Type Stecker (REM-CONTR.) greifbare Arbeitskontakt des Relais kann zur Fernsteuerung von Plattenspielern oder Tonbandgeräten eingesetzt werden.

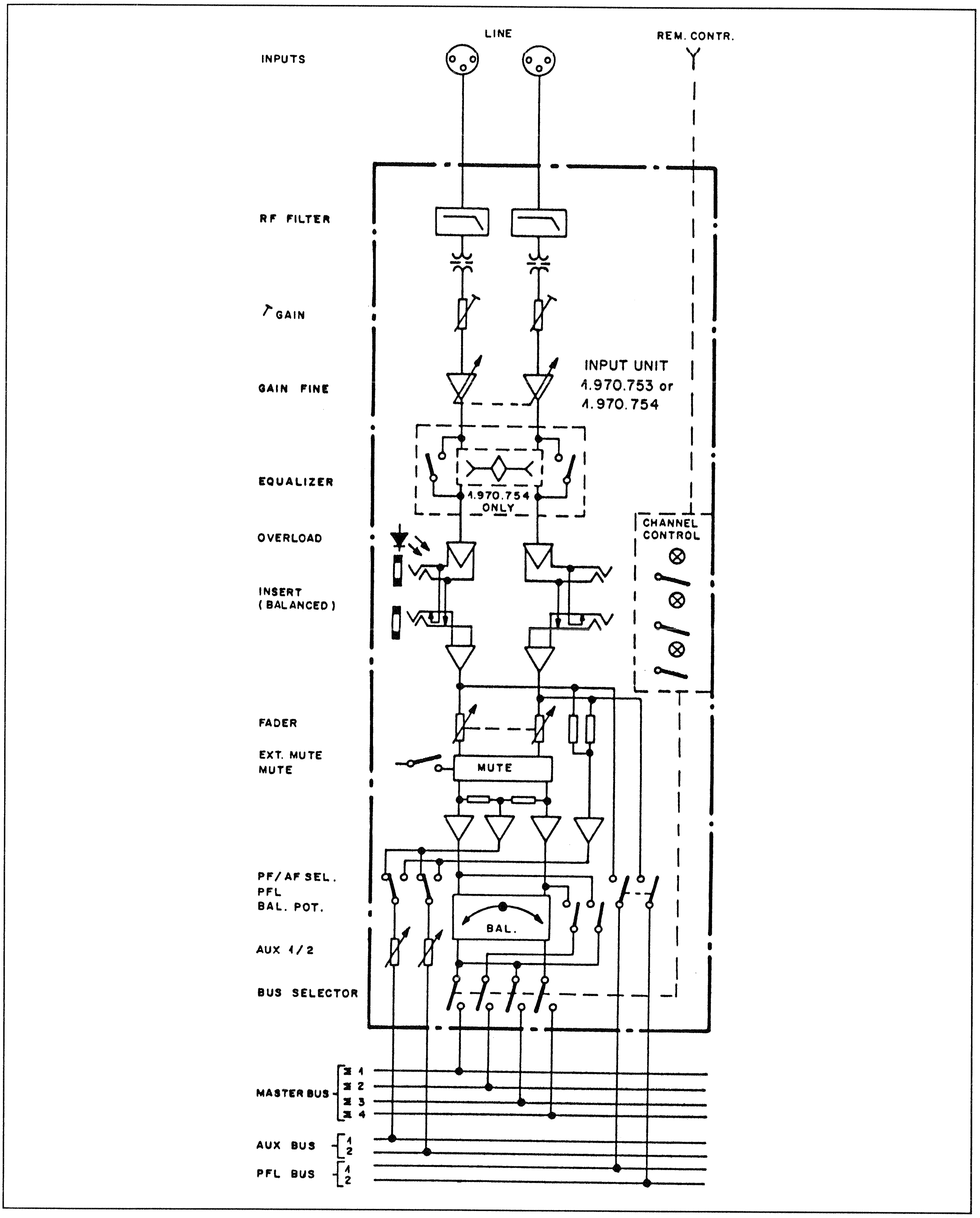
2. Stereo High-Level Unit without Equalizer 1.970.753
Stereo High-Level Unit with Equalizer 1.970.754

2.1 Operating Elements



OVERLOAD:	The LED labelled "overload" turns on as soon as the maximum admissible level before or after the fader has been exceeded.
INPUT SECTION:	Stereophonic high-level input, balanced and floating. The input sensitivity is aligned to the nominal level specified by the customer. The gain can be varied by ±10 dB on the GAIN potentiometer.
EQUALIZER:	See 2.4
AUXILIARY OUTPUTS AUX 1 and AUX 2	Two separately adjustable auxiliary outputs can be connected before or after the fader via the push-pull switches built into the potentiometers.
PAN. POT AND MASTER SELECTION:	The panorama potentiometer can be activated with the push-bull switch. Stereo and 2CH mixers are equiped with a single button for joint selection of master buses $\Sigma 1$ and $\Sigma 2$. 4CH mixers are equiped with two buttons for seperate selection of the master buses $\Sigma 1+\Sigma 2$ and $\Sigma 3+\Sigma 4$.
MUTE FUNCTION:	The channel can be muted without switching clicks on the 15-pin D-type connector (REM-CONTR). The mute LED indicates that the function is active.
LINEAR FADER:	The linear fader is equiped with a resistance film made of conductive plastic. Both channels are operated jointly via a single control knob.
CONTROL KEYS:	See 2.3

2.2 Block Diagram 1.970.753



2.3 Control Keys

Three low-noise push keys with signal lamps are located before the fader. The functions of the keys can be altered by changing the position of the mini-jumpers on this unit.

Three basic versions are available:

Version 1 (Fig.1)

PFL

- The prefader listening signal (PFL) is connected to the prelistening speaker and to the headphones. The signal is interrupted when this key is pressed a second time.
- At the same time the signal lamp is switched on or off.

ON

- Through-connects the modulation path, provided the bus is selected and the fader opened.

- ON lamp is turns on.
- PFL is interrupted, however the PFL lamp remains switched on to signal the previously selected state.
- Signalization or fader start relay is through-connected, provided the other criteria are satisfied. (see 2.6, signalization and fader start).
- Automatic stopwatch is reset (option).

OFF

- Modulation is interrupted.
- Signalization and fader start relays drop out.
- If the PFL-key was activated, prelistening is again through-connected, if the PFL key has been actuated.
- ON lamp turns off.

OFF-Lamp:
- Is activated externally and can signal the ready state of the source.

Remote control:
- All key and lamp signals are available on a 15-pin D-type connector. The above functions can also be remote-controlled.

Version 2

APL ON OFF

- Same function as version 1, except that the prelistening signal after the panorama potentiometer (APL) is connected rather than the signal before the fader.

Version 3

AUDITION

- Through-connects the channel and selects master buses 3+4 (the input units of this version are not equiped with bus selection buttons).

- AUDITION lamp is turned on.
- Signalization is enabled.
- Timer restart.

ON AIR

- Through-connects the channel and selects master buses 1+2.
- ON AIR lamp is turned on.
- Signalization is enabled.
- Timer restart.

OFF

- Resets not only the AUDITION but also the ON AIR key.
- Signalization is disabled.

Block diagram of remote controls:

(Standard)

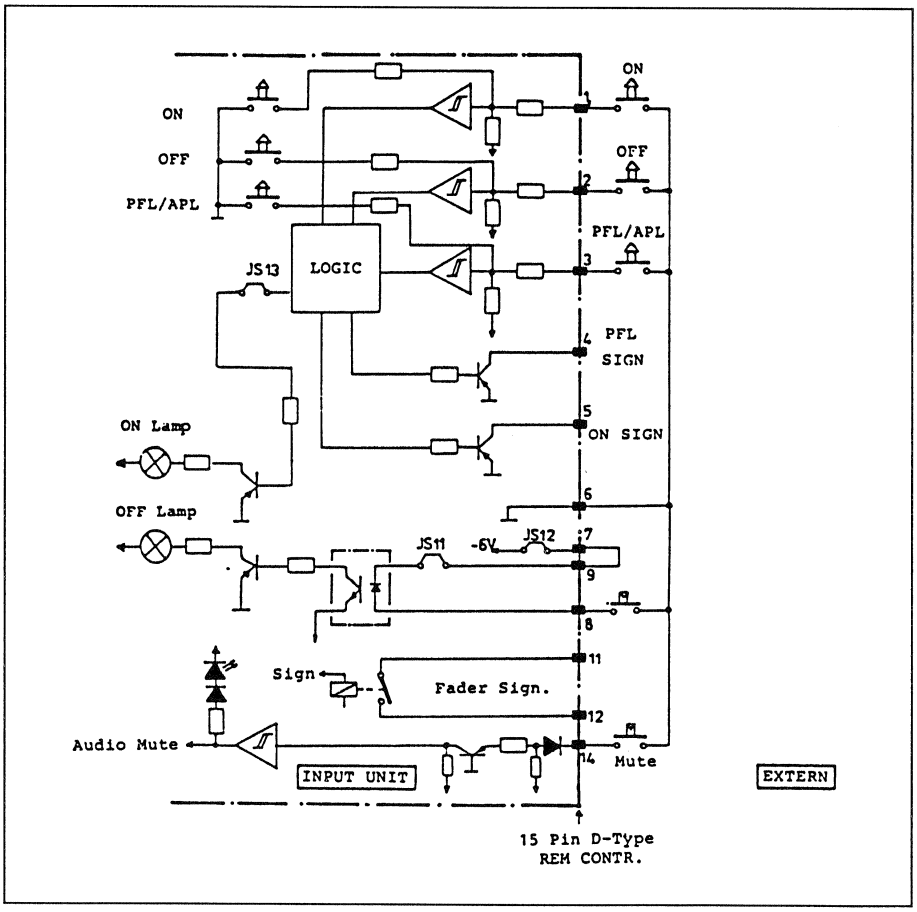
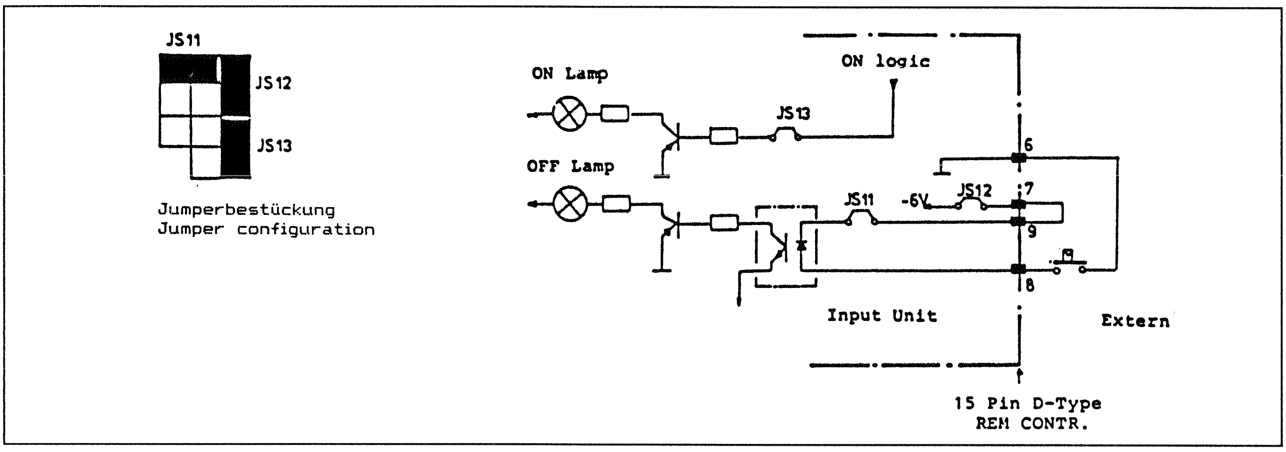


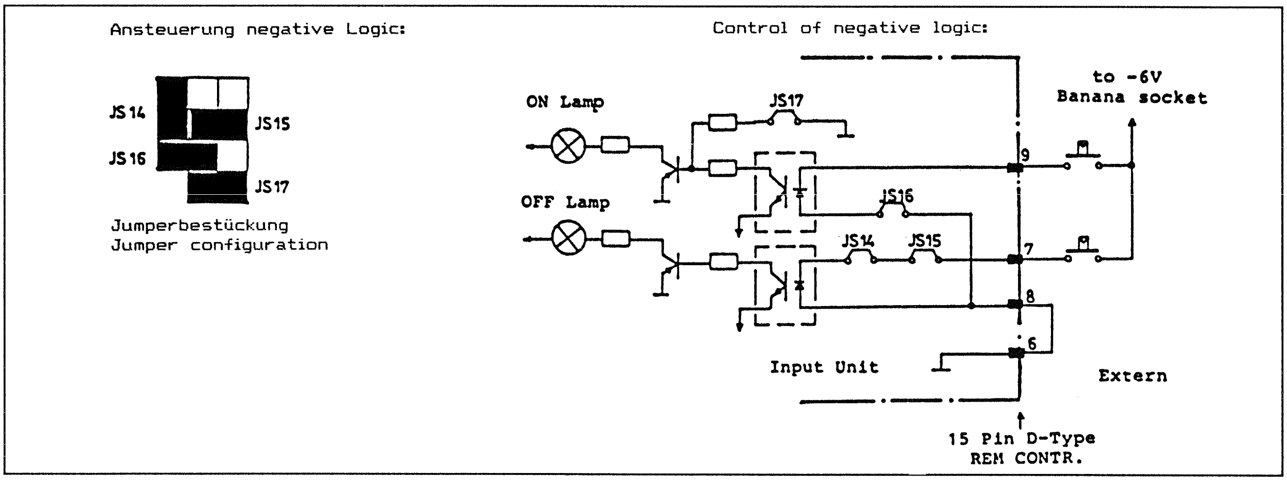
Fig. 1

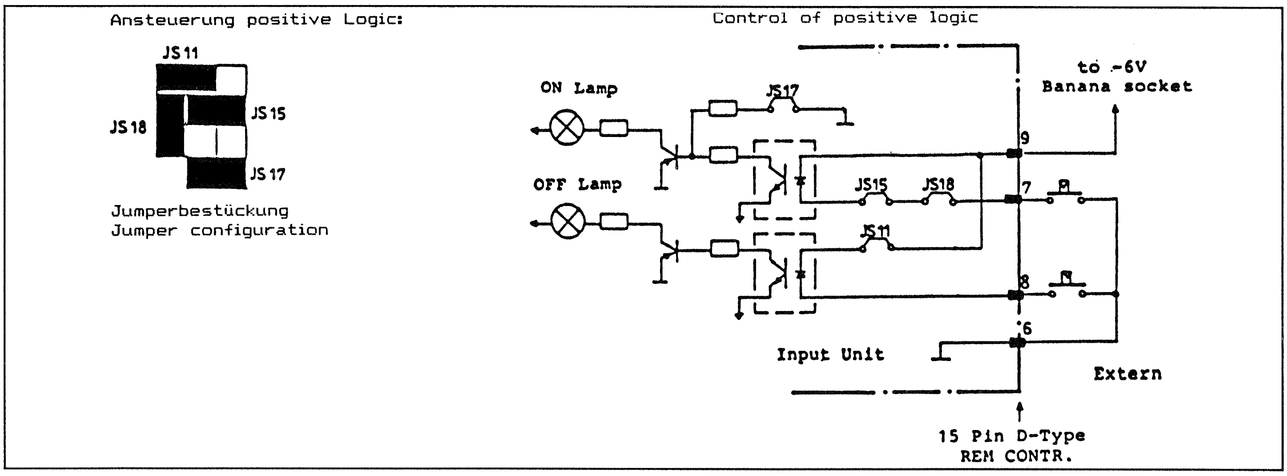
Coding for external OFF lamp control

(Standard)

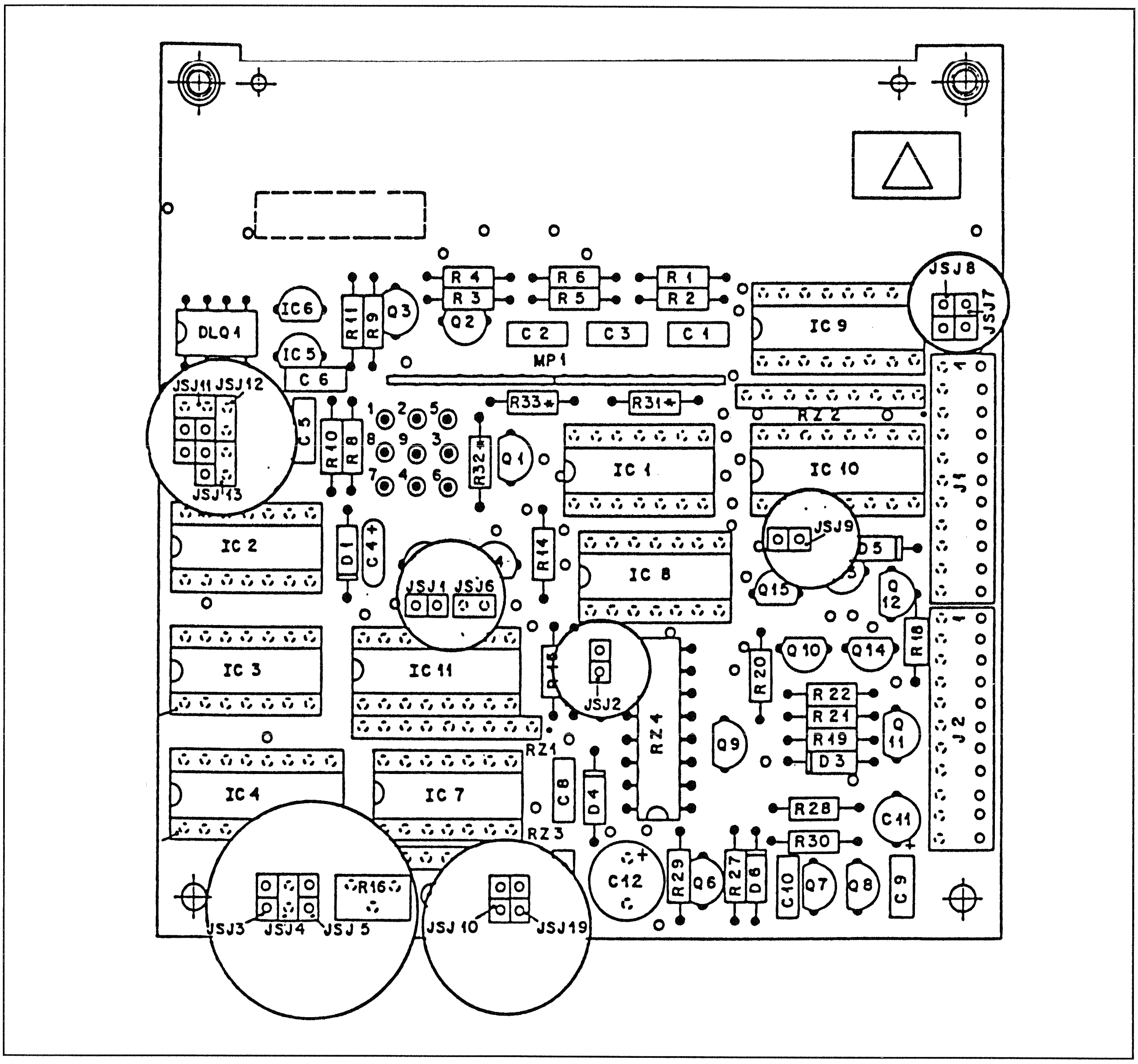


Coding for external ON and OFF lamp control





Jumper coding for extension unit **1.970.792**



JS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
				X						X	X	X	X							Version 1 (STANDARD)
				X		X				X	X	X	X							Version 2
					X		X	X		X	X	X	X							Version 3
																				....

x = Jumper gesetzt x = Jumper set

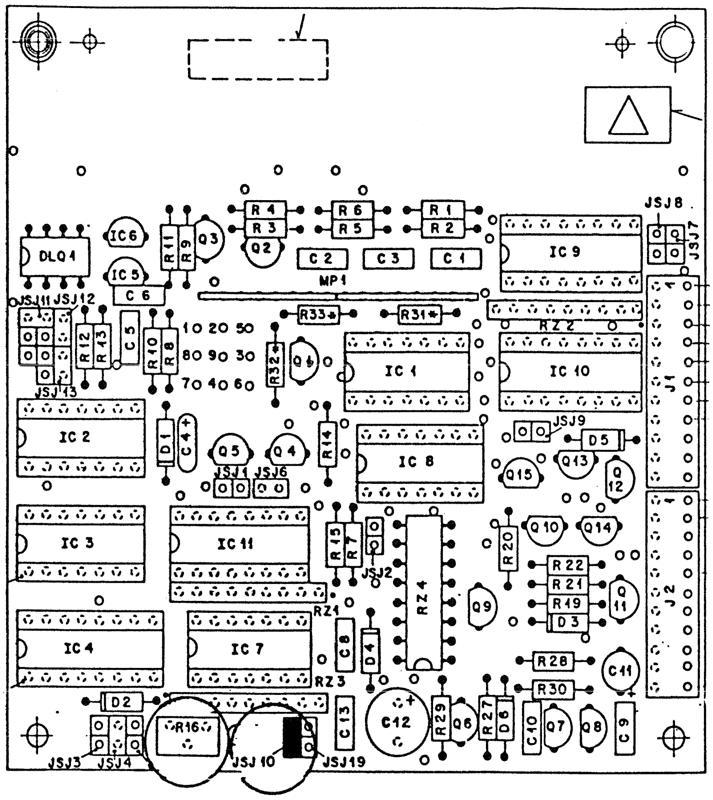
Options

Location	Jumper	Functionen
JS1	Set Not set	OFF lamp is light when the ON keys switched off. No function
JS1 und JS2	Set Not set	OFF lamp is light when the ON key and the PFL/APL key are switched off. No function
JS3	Set Not set	PFL/APL key only on-switching PFL/APL key self-releasing (toggle switch)
JS4	Set Not set	ON key only on-switching ON key self-releasing (toggle switch)
JS5	Set Not set	OFF key resets the PFL/APL key No function
JS6	Set Not set	APL (after pan listening) version 2 PFL (prefader listening) version 1 STANDARD
JS7	Set Not set	ON AIR key enables Σ1+2. AUDITION key enables Σ3+4. Version 3 No function
JS7 and JS8	Set Not set	AUDITION key controls the signalization of the HL input (ONLY version 3) No function
JS9	Set Not set	PFL/APL key directly controls the line relay. (Version 1+2) No function
JS10	Set Not set	Time delay adjustable with R16 batween 0...1 sec. No delay
JS19	Set Not set	Timer restart, function is disabled. Timer restart.

Time delay

This function is only available for HL input unit 1.970.753/754.81

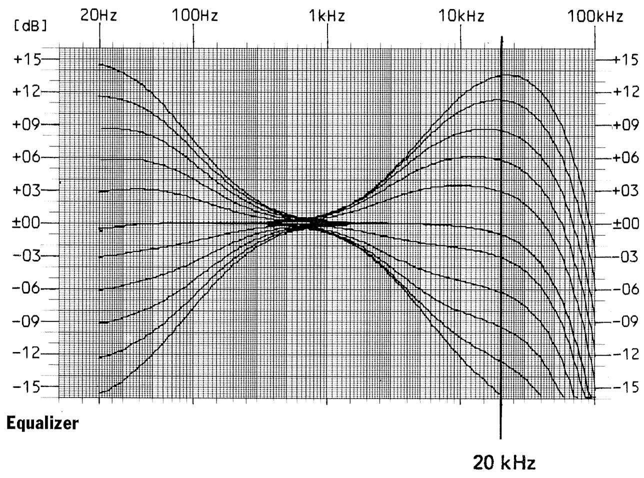
Extension unit 1.970.792.00



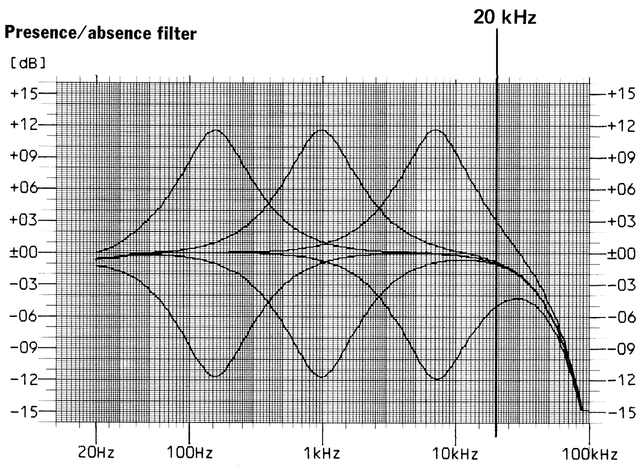
The time delay between the faderstart and the switching on of the audio signal is adjustable between 0...1 sec. with R16 (PCB 1.970.792)
Jumper 10 must be set as shown! (Time delay = activ)

2.4 Equalizer

The entire equalizer section is only enabled if the EQUALIZER IN key is pressed.
Shelving equalizer for treble and bass.
Range at 20 Hz/20 kHz: ±15 dB.



Parametric filter with adjustable center frequenzy: 150 Hz...7 kHz (Q=1).
Emphasis / de-emphasis: ±11 dB.
Both channels are jointly influenced.



2.5 Insertion Point

The audio signals are electronically balanced before the stereo fader and taken to two bantam jack sockets each, located on the rear panel of the unit. The insertion level is +6 dBu.

2.6 Signalization and Fader Start

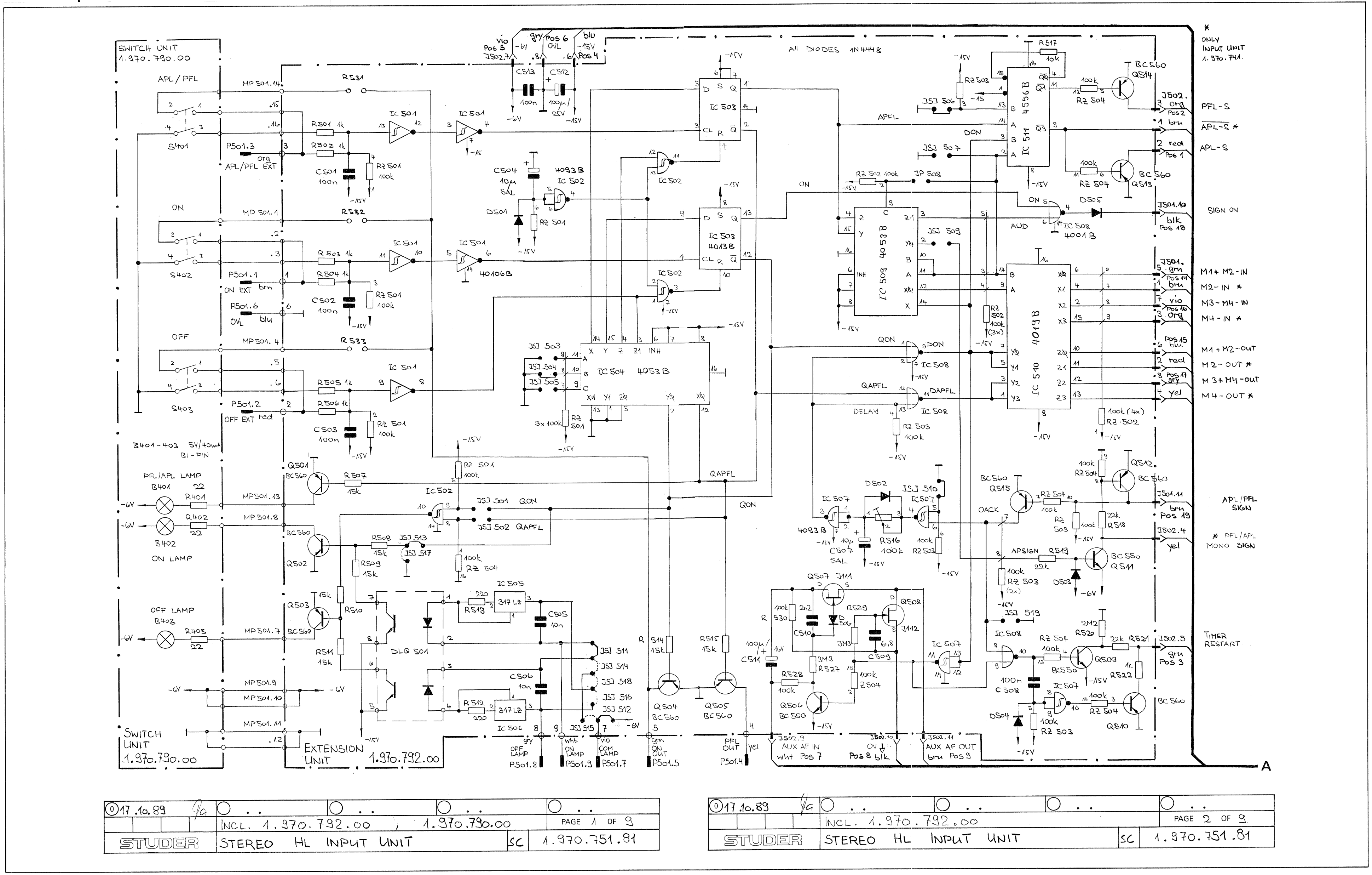
The remote control relay of this module is activated as soon as the following criteria are satisfied:

- Channel fader open
- Master fader open
- Master selection button actuated
- Mute function not active
- Channel enabled with ON key.

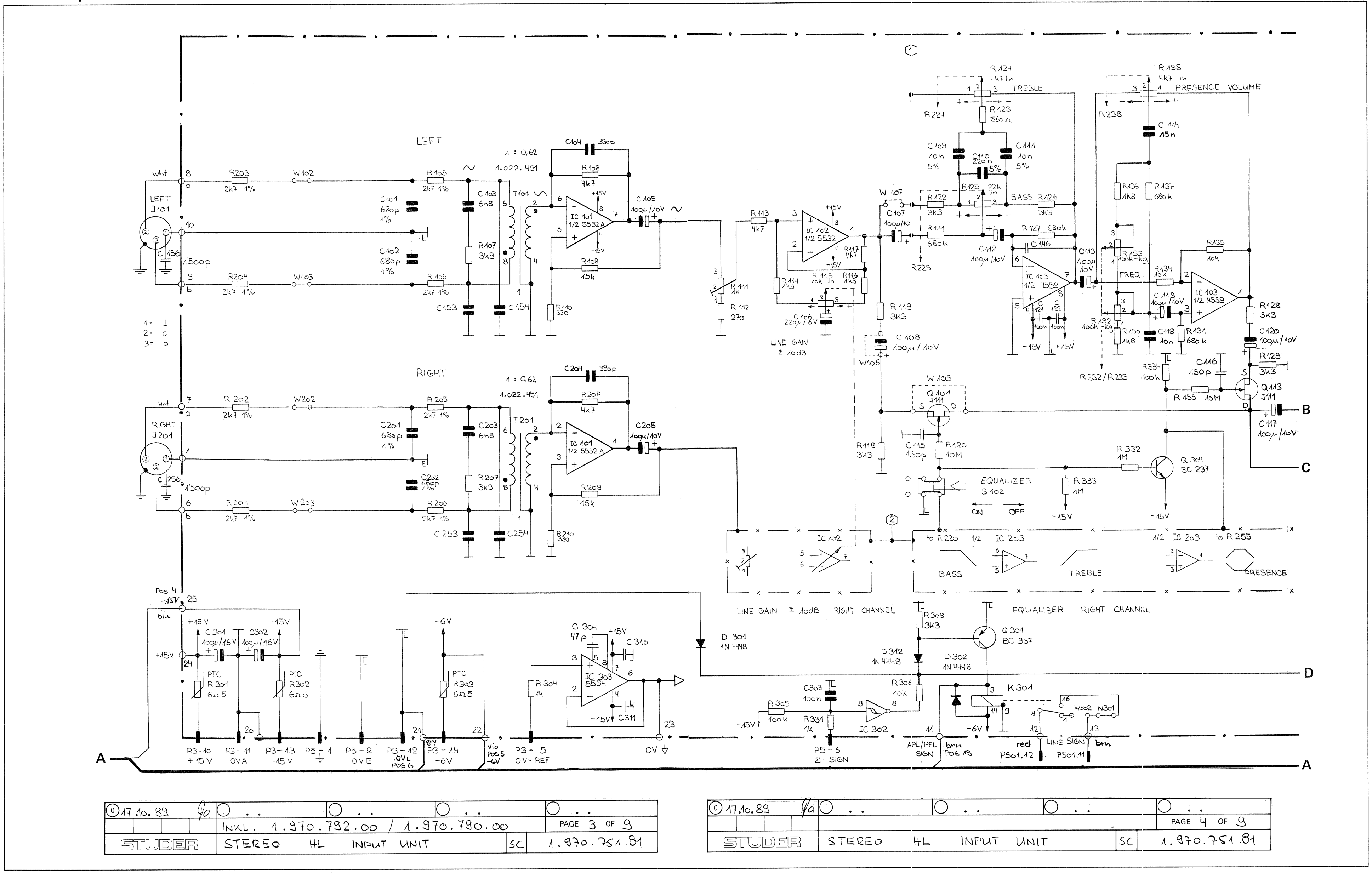
The relay make contact available on the 15-pin D-type REM-CONTR connector can be used for the remote control of turntables or tape recorders.

2.7 Schemateil / Circuit Diagrams

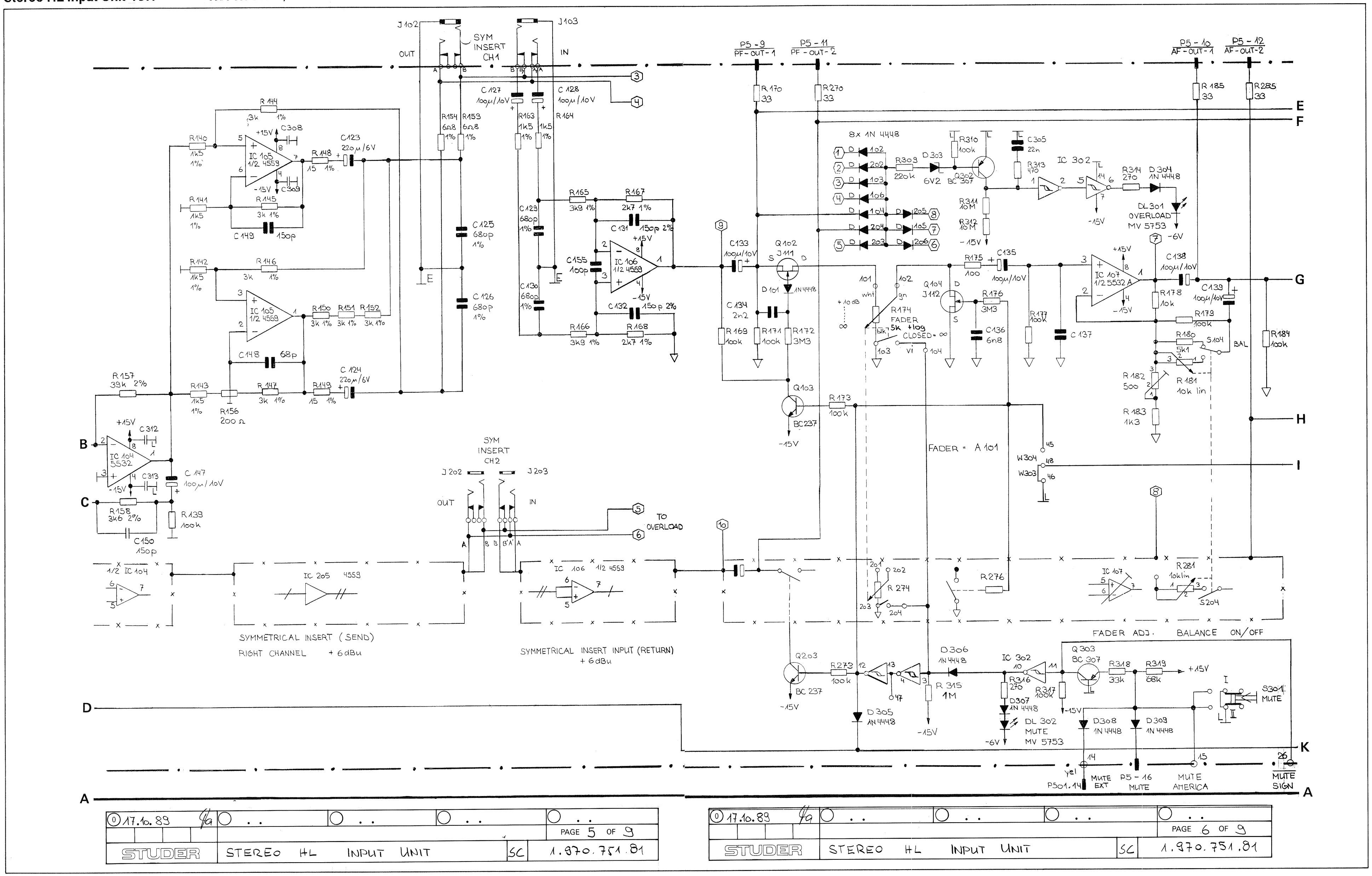
Stereo HL Input Unit — **Part 1**



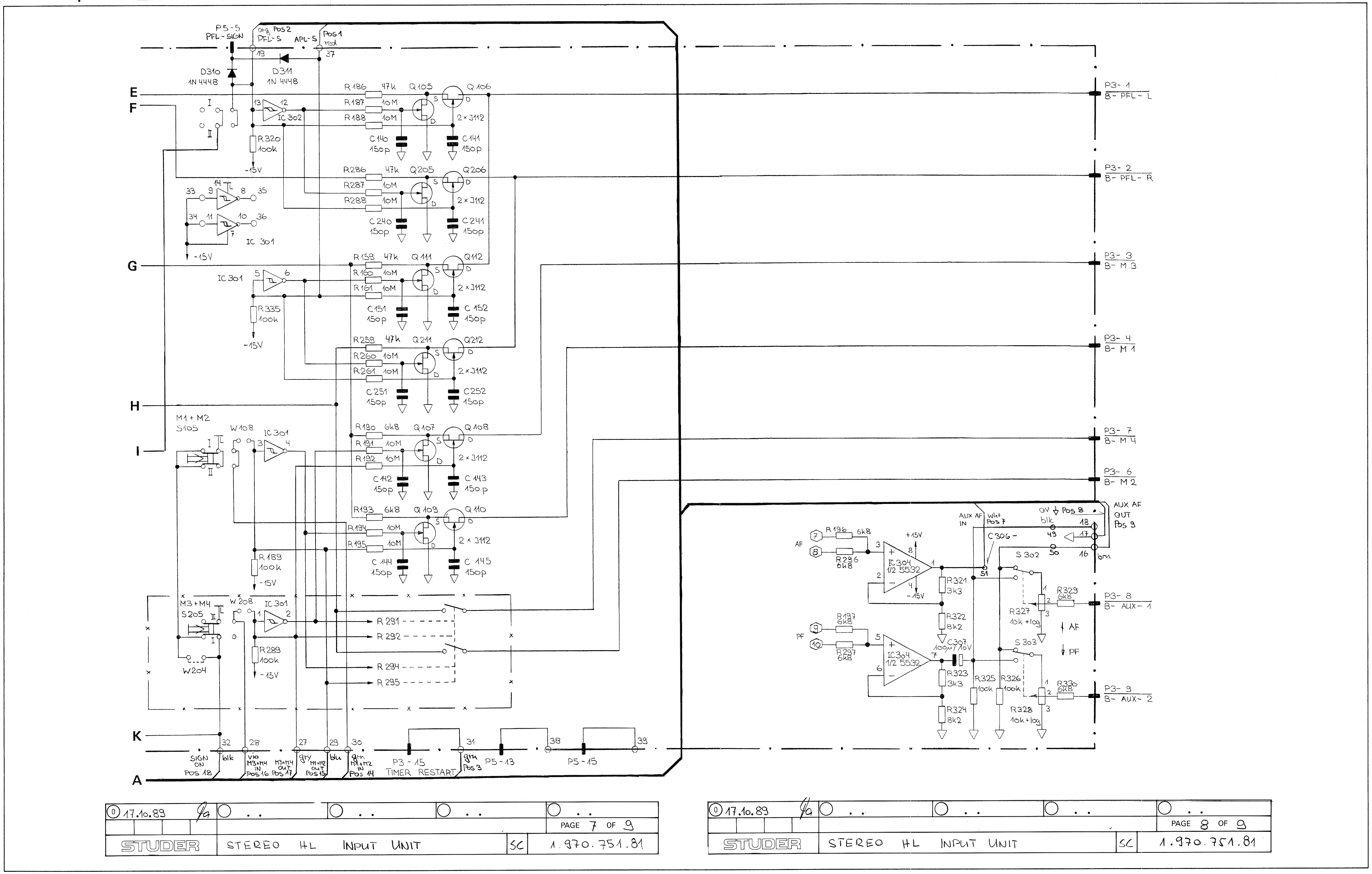
Stereo HL Input Unit 4CH 1.970.753.81/1.970.754.81 w. EQ **Part 2**



Stereo HL Input Unit 4CH 1.970.753.81/1.970.754.81 w. EQ Part 3



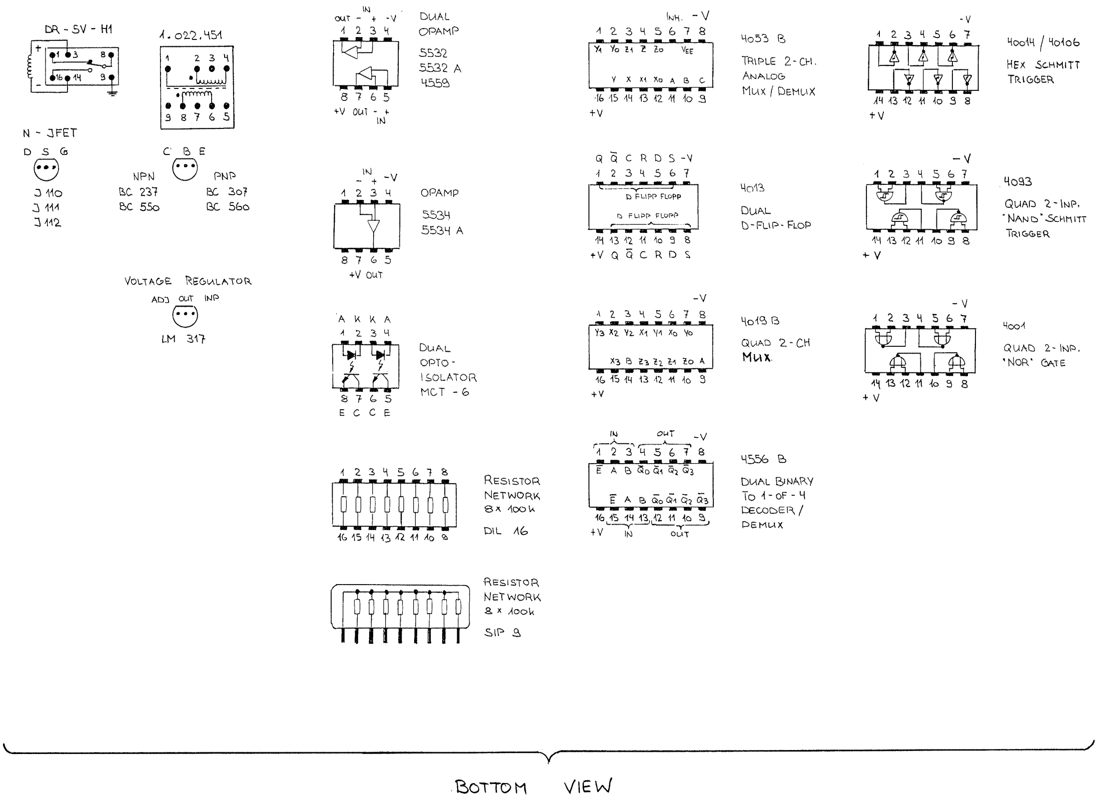
Stereo HL Input Unit 4CH 1.970.753.81/1.970.754.81 w. EQ **Part 4**



Stereo HL Input Unit 4CH **1.970.753.81 / 1.970.754.81 (w. EQ)** **Part 5**

P	NC	NAME	REMARK (EURO 16-P)	B=BUS,O=CONNECTION
P5	1	CHASSIS	METAL FRAME	B
P5	2	OV-E	OV EXTERN	B
P5	3	-	NC	B
P5	4	-	NC	B
P5	5	PFL-SIGN.	OV=PFL/-6V=MON.	B
P5	6	M-SIGN.	MASTER SIGN.	B
P5	7	-	NC	B
P5	8	-	NC	B
P5	9	PF-OUT-1	PF OUTPUT CH. 1	O
P5	10	AF-OUT-1	AF OUTPUT CH. 1	O
P5	11	PF-OUT-2	PF OUTPUT CH. 2	O
P5	12	AF-OUT-2	AF OUTPUT CH. 2	O
P5	13	-	RES	O
P5	14	-	RES	O
P5	15	-	RES	O
P5	16	MUTE	CH. MUTE	O
P3	1	B-PFL-L	PFL O-OHM BUS LEFT	B
P3	2	B-PFL-R	PFL O-OHM BUS RIGHT	B
P3	3	B-M 3	MASTER 3;O-OHM BUS	B
P3	4	B-M 1	MASTER 1;O-OHM BUS	B
P3	5	OV-REF	OV REFERENCE	B
P3	6	B-M 2	MASTER 2;O-OHM BUS	B
P3	7	B-M 4	MASTER 4;O-OHM BUS	B
P3	8	B-AUX-1	AUX 1;O-OHM BUS	B
P3	9	B-AUX-2	AUX 2;O-OHM BUS	B
P3	10	+ 15 V	+ SUPPLY	B
P3	11	OV-A	GROUND AUDIO	B
P3	12	OV-L	GROUND SIGN (LOGIC)	B
P3	13	- 15 V	- SUPPLY	B
P3	14	- 6 V	- SUPPLY	B
P3	15	TIMER	TIMER RESTART	B
P3	16	-	RES	O
P2	--	-	RES	-

P	NC	NAME	REMARK (D-TYPE 15-P)
P501	1	ON EXT	ON SWITCH EXTERN
P501	2	OFF EXT	OFF SWITCH EXTERN
P501	3	APL/PFL	APL/PFL SWITCH EXTERN
P501	4	PFL OUT	PFL SIGN
P501	5	ON OUT	ON SIGN
P501	6	OV-L	GROUND SIGN (LOGIC) OUT
P501	7	COM LAMP	COMMON FOR ON AND OFF LAMP EXTERN
P501	8	OFF LAMP	OFF LAMP EXTERN
P501	9	ON LAMP	ON LAMP EXTERN
P501	10	-	RES
P501	11	LINE SIGN	LINE SIGNALISATION
P501	12	LINE SIGN	LINE SIGNALISATION
P501	13	-	RES
P501	14	MUTE EXT	MUTE EXTERN
P501	15	-	RES



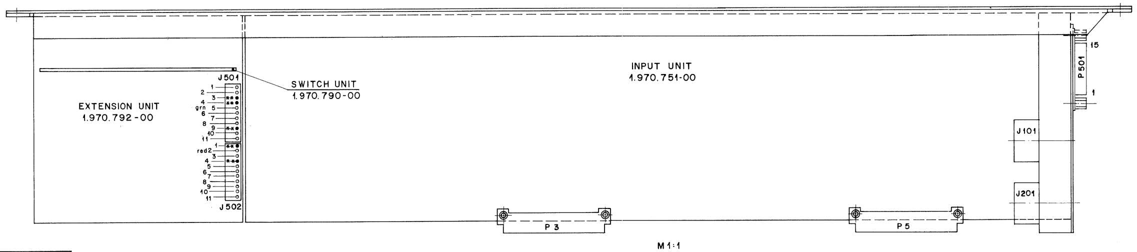
0 17.10.89				
				PAGE 9 OF 9
STUDER	STEREO HL INPUT UNIT		SC	1.970.751.81

Stereo HL Input Unit 4CH 1.970.753.81 / 1.970.754.81 (w. EQ)

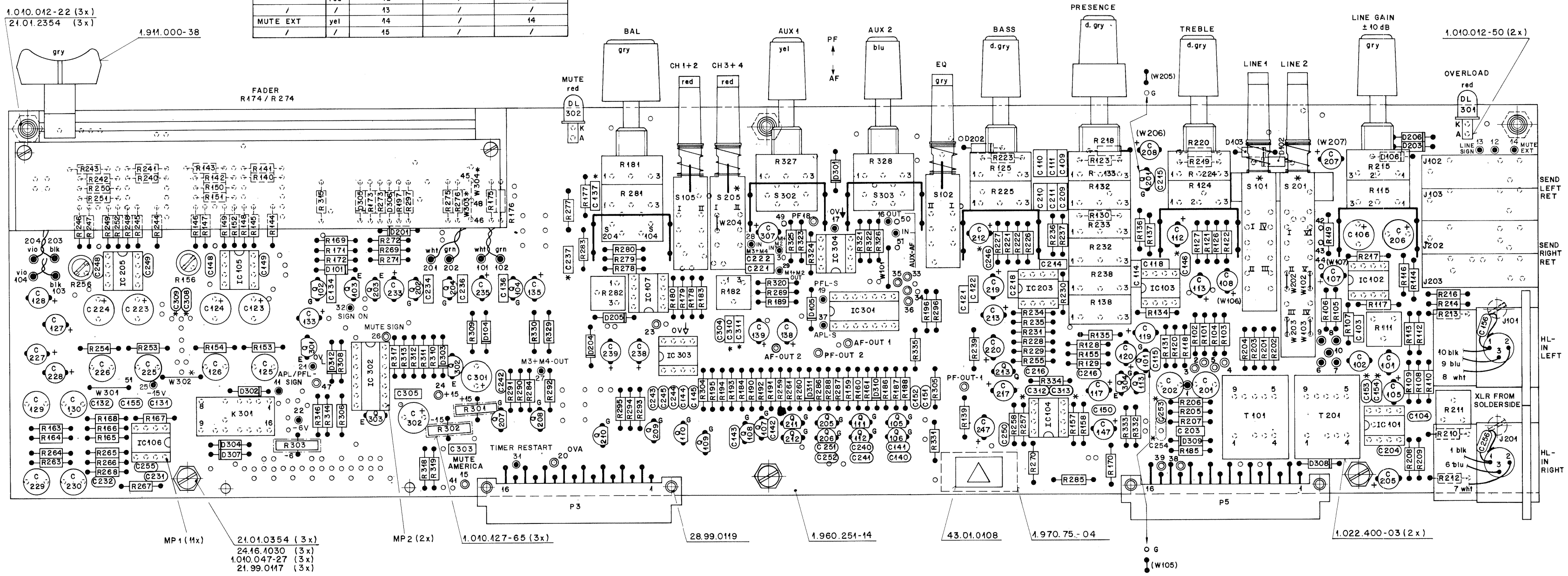
SIGN. NAME		COL.	INPUT UNIT POINT-Nr. ◉	EXTENSION UNIT POINT-NR. ◉
APL-S		red	37	2
PFL-S		org	19	3
TIMER RESTART		grn	31	5
-15 V		blu	25	6
-6 V		vio	22	7
OVL		gry	21	8
AUX-AF	IN	wht	51	9
	OV ↓	blk	17	10
	OUT	brn	16	11

SIGN. NAME		COL.	INPUT UNIT POINT-NR. ◉	EXTENSION UNIT J 501
M1+M2	IN	grn	30	5
	OUT	blu	29	6
M3+M4	IN	vio	28	7
	OUT	gry	27	8
SIGN. ON		blk	32	10
APL / PFL SIGN.		brn	11	11

SIGN. NAME	COL.	INPUT UNIT P 501 (D-Type)	EXTENSION UNIT POINT-NR. ◉	INPUT UNIT POINT-NR. ◉
ON EXT	brn	1	1	
OFF EXT	red	2	2	
APL/PFL EXT	org	3	3	
PFL OUT	yel	4	4	
ON OUT	grn	5	5	
OVL	blu	6	6	
COM LAMP	vio	7	7	
OFF LAMP	gry	8	8	
ON LAMP	wht	9	9	
/	/	10	/	
LINE SIGN.	brn	11	/	13
	red	12	/	12
/	/	13	/	/
MUTE EXT	yel	14	/	14
/	/	15	/	/



** Codierung: Schaltdraht 64.01.0108 ∅ 0,8x8mm (muss 1mm vorstehen)



* not used

C156 und C256 verlötet nach BV646

VALID FOR	NR. UNIT	NR. FRONT PANEL	NR. NUMBER LABEL	
4 CH	1.970.753-00	1.970.753-01	1.970.751-04	
4 CH + FILTER	1.970.754-00	1.970.754-01	1.970.751-04	

1.970.753-00 Q 101, Q 201, C 107, C 108, C 207, C 208 replaced by link (W···)

Stereo HL Input Unit 970 1.970.751.81

Ad	..POS..	...REF.No...	DESCRIPTION	MANUFACTURER
	A...101	1.960.012.00	stereo fader 2*5kOhm pos.log. see R174/R274	
	C...101	59.05.1681	680 pF 1% 500V PP	
	C...102	59.05.1681	680 pF 1% 500V PP	
	C...103	59.06.0682	6.8 nF PE	
	C...104	59.34.5391	390 pF 5% CE	
	C...105	59.22.3101	100 uF -20% 10V EL	
	C...106	59.22.2221	220 uF -20% 6V EL	
	C...107	59.22.3101	100 uF -20% 10V EL **/****	
	C...108	59.22.3101	100 uF -20% 10V EL **/****	
	C...109	59.06.5103	10 nF 5% PE **/****	
	C...110	59.06.5224	220 nF 5% PE **/****	
	C...111	59.06.5103	10 nF 5% PE **/****	
	C...112	59.22.3101	100 uF -20% 10V EL **/****	
	C...113	59.22.3101	100 uF -20% 10V EL **/****	
	C...114	1.960.252.06	15 nF PE **/**** matched with C214	
	C...115	59.34.4151	150 pF CE **/****	
	C...116	59.34.4151	150 pF CE **/****	
	C...117	59.22.3101	100 uF -20% 10V EL	
	C...118	1.960.252.05	10 nF PE **/**** matched with C218	
	C...119	59.22.3101	100 uF -20% 10V EL **/****	
	C...120	59.22.3101	100 uF -20% 10V EL **/****	
	C...121	59.06.0104	100 nF PE	
	C...122	59.06.0104	100 nF PE	
	C...123	59.22.2221	220 uF -20% 6V EL	
	C...124	59.22.2221	220 uF -20% 6V EL	
	C...125	59.05.1681	680 pF 1% 500V PP	
	C...126	59.05.1681	680 pF 1% 500V PP	
	C...127	59.22.3101	100 uF -20% 10V EL	
	C...128	59.22.3101	100 uF -20% 10V EL	
	C...129	59.05.1681	680 pF 1% 500V PP	
	C...130	59.05.1681	680 pF 1% 500V PP	
	C...131	59.34.7151	150 pF 2% CE	
	C...132	59.34.7151	150 pF 2% CE	
	C...133	59.22.3101	100 uF -20% 10V EL	
	C...134	59.06.0222	2.2 nF PE	
	C...135	59.22.3101	100 uF -20% 10V EL	
	C...136	59.06.0682	6.8 nF PE	
	C...137	. .	not used	
	C...138	59.22.3101	100 uF -20% 10V EL	
	C...139	59.22.3101	100 uF -20% 10V EL	
	C...140	59.34.4151	150 pF CE	
	C...141	59.34.4151	150 pF CE	
	C...142	59.34.4151	150 pF CE	
	C...143	59.34.4151	150 pF CE	
	C...144	59.34.4151	150 pF CE	
	C...145	59.34.4151	150 pF CE	
	C...146	. .	not used	
	C...147	59.22.3101	100 uF -20% 10V EL	
	C...148	59.34.4680	68 pF CE	
	C...149	59.34.4151	150 pF CE	
	C...150	59.34.4151	150 pF CE	
	C...151	59.34.4151	150 pF CE	
	C...152	59.34.4151	150 pF CE	
	C...153	. .	not used	
	C...154	. .	not used	
	C...155	59.34.4101	100 pF CE	
	C...156	59.99.0625	1500 pF 400V CE	
	C...201	59.05.1681	680 pF 1% 500V PP	
	C...202	59.05.1681	680 pF 1% 500V PP	
	C...203	59.06.0682	6.8 nF PE	
	C...204	59.34.5391	390 pF 5% CE	
	C...205	59.22.3101	100 uF -20% 10V EL	
	C...206	59.22.2221	220 uF -20% 6V EL	
	C...207	59.22.3101	100 uF -20% 10V EL **/****	
	C...208	59.22.3101	100 uF -20% 10V EL **/****	
	C...209	59.06.5103	10 nF 5% PE **/****	
	C...210	59.06.5224	220 nF 5% PE **/****	
	C...211	59.06.5103	10 nF 5% PE **/****	
	C...212	59.22.3101	100 uF -20% 10V EL **/****	
	C...213	59.22.3101	100 uF -20% 10V EL **/****	
	C...214	. .	15 nF PE **/**** see C114	
	C...215	59.34.4151	150 pF CE **/****	
	C...216	59.34.4151	150 pF CE **/****	
	C...217	59.22.3101	100 uF -20% 10V EL	
	C...218	. .	10 nF PE **/**** see C118	
	C...219	59.22.3101	100 uF -20% 10V EL **/****	
	C...220	59.22.3101	100 uF -20% 10V EL **/****	
	C...221	59.06.0104	100 nF PE **/****	
	C...222	59.06.0104	100 nF PE **/****	
	C...223	59.22.2221	220 uF -20% 6V EL	
	C...224	59.22.2221	220 uF -20% 6V EL	
	C...225	59.05.1681	680 pF 1% 500V PP	
	C...226	59.05.1681	680 pF 1% 500V PP	
	C...227	59.22.3101	100 uF -20% 10V EL	
	C...228	59.22.3101	100 uF -20% 10V EL	
	C...229	59.05.1681	680 pF 1% 500V PP	
	C...230	59.05.1681	680 pF 1% 500V PP	
	C...231	59.34.7151	150 pF 2% CE	
	C...232	59.34.7151	150 pF 2% CE	
	C...233	59.22.3101	100 uF -20% 10V EL	
	C...234	59.06.0222	2.2 nF PE	
	C...235	59.22.3101	100 uF -20% 10V EL	
	C...236	59.06.0682	6.8 nF PE	
	C...237	. .	not used	
	C...238	59.22.3101	100 uF -20% 10V EL	
	C...239	59.22.3101	100 uF -20% 10V EL	
	C...240	59.34.4151	150 pF CE	
	C...241	59.34.4151	150 pF CE	
	C...242	59.34.4151	150 pF CE	
	C...243	59.34.4151	150 pF CE	
	C...244	59.34.4151	150 pF CE	
	C...245	59.34.4151	150 pF CE	
	C...246	. .	not used	

Ad	..POS..	...REF.No...	DESCRIPTION	MANUFACTURER
	C...247	59.22.3101	100 uF -20% 10V EL	
	C...248	59.34.4680	68 pF CE	
	C...249	59.34.4151	150 pF CE	
	C...250	59.34.4151	150 pF CE	
	C...251	59.34.4151	150 pF CE	
	C...252	59.34.4151	150 pF CE	
	C...253	. .	not used	
	C...254	. .	not used	
	C...255	59.34.4101	100 pF CE	
	C...256	59.99.0625	1500 pF 400V CE	
	C...301	59.22.4101	100 uF -20% 16V EL	
	C...302	59.22.4101	100 uF -20% 16V EL	
	C...303	59.06.0104	100 nF PE	
	C...304	59.34.2470	47 pF CE	
	C...305	59.06.0223	22 nF 10% PE	
	C...306	. .	not used	
	C...307	59.22.3101	100 uF -20% 10V EL	
	C...308	. .	not used	
	C...309	. .	not used	
	C...310	. .	not used	
	C...311	. .	not used	
	C...312	. .	not used	
	C...313	. .	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...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...301	50.04.0125	1N4448	any
	D...302	50.04.0125	1N4448	any
	D...303	50.04.1118	Z 6.2V 400mW BZX83C 6.2,BZX55C 6.2,ZPD 6.2	Ses,ITT
	D...304	50.04.0125	1N4448	any
	D...305	50.04.0125	1N4448	any
	D...306	50.04.0125	1N4448	any
	D...307	50.04.0125	1N4448	any
	D...308	50.04.0125	1N4448	any
	D...309	50.04.0125	1N4448	any
	D...310	50.04.0125	1N4448	any
	D...311	50.04.0125	1N4448	any
	D...312	50.04.0125	1N4448	any
	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	Sig,Ex,Ra
	IC..102	50.09.0106	NE5532AN dual op. amp. low noise	Sig,Ex,Ra
	IC..103	50.09.0107	RC4559NB dual op. amp. **/****	NEC,Ra
	IC..104	50.09.0106	NE5532AN dual op. amp. low noise	Sig,Ex,Ra
	IC..105	50.09.0107	RC4559NB dual op. amp.	NEC,Ra
	IC..106	50.09.0107	RC4559NB dual op. amp.	NEC,Ra
	IC..107	50.09.0106	NE5532AN dual op. amp. low noise	Sig,Ex,Ra
	IC..201	. .	not exist	
	IC..202	. .	not exist	
	IC..203	50.09.0107	RC4559NB dual op. amp. **/****	NEC,Ra
	IC..204	. .	not exist	
	IC..205	50.09.0107	RC4559NB dual op. amp.	NEC,Ra
	IC..206	. .	not exist	
	IC..207	. .	not exist	
	IC..301	50.07.0014	CD40106 hex.schmitt-trig.CMOS MC14584	Fc,Mot,RCA
	IC..302	50.07.0014	CD40106 hex.schmitt-trig.CMOS MC14584	Fc,Mot,RCA
	IC..303	50.05.0243	NE5534N single op. amp.	TI,Sig,Ra
	IC..304	50.09.0106	NE5532AN dual op. amp. low noise	Sig,Ex,Ra
	J...101	1.012.301.00	3 pin XLR female (option 1)	St
	J...102	54.24.0105	BANTAM dual jack	Switchcraft,ACD
	J...103	. .	combined with J102	Switchcraft,ACD
	J...201	1.012.301.00	3 pin XLR female (option 1)	St
	J...202	54.24.0105	BANTAM dual jack	Switchcraft,ACD
	J...203	. .	combined with J202	Switchcraft,ACD
	J...301	. .	not used	
	J...302	. .	not used	
	J...303	. .	not used	
	K...301	56.04.0190	DR-5V-H1	Nat
	MP....3	1.960.251.14	1 pcs Stereo-HL-PCB	St
	MP....4	53.03.0166	11 pcs IC-socket 8 pin	
	MP....5	53.03.0167	2 pcs IC-socket 14 pin	
	P.....1	. .	not exist	
	P.....2	. .	not used	
	P.....3	54.11.2007	2*8 pin euroconnector	Bu
	P.....4	. .	not exist	
	P.....5	54.11.2007	2*8 pin euroconnector	Bu
	Q...101	50.03.0216	J 111 N-JFET **/****	NS,Mot,Six
	Q...102	50.03.0216	J 111 N-JFET	NS,Mot,Six
	Q...103	50.03.0436	BC 237 NPN IC>100mA, B>100	any
	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

Stereo HL Input Unit 970 1.970.751.81

Ad	..POS..	...REF.No...	DESCRIPTION	MANUFACTURER
	Q...112	50.03.0350	J 112 N-JFET	NS,Mot,Six
	Q...113	50.03.0216	J 111 N-JFET **/****	NS,Mot Six
	Q...114	. .	not exist	
	Q...201	50.03.0216	J 111 N-JFET **/****	NS,Mot,Six
	Q...202	50.03.0216	J 111 N-JFET	NS,Mot,Six
	Q...203	50.03.0436	BC 237 NPN IC>100mA, B>100	any
	Q...204	50.03.0350	J 112 N-JFET	NS,Mot,Six
	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	50.03.0216	J 111 N-JFET **/****	NS,Mot,Six
	Q...214	. .	not exist	
	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	50.03.0515	BC 307 PNP IC>100mA, B>100	any
	Q...304	50.03.0436	BC 237 NPN IC>100mA, B>100 **/****	any
	R...101	. .	2.7 kOhm 1% 0.25W 57113272 option 1	
	R...102	. .	2.7 kOhm 1% 0.25W 57113272 option 1	
	R...103	. .	2.7 kOhm 1% 0.25W 57113272 option 1	
	R...104	. .	2.7 kOhm 1% 0.25W 57113272 option 1	
	R...105	57.11.3272	2.7 kOhm 1% 0.25W	
	R...106	57.11.3272	2.7 kOhm 1% 0.25W	
	R...107	57.11.4392	3.9 kOhm 5% 0.25W	
	R...108	57.11.4472	4.7 kOhm 5% 0.25W	
	R...109	57.11.3153	15 kOhm 5% 0,25W	
	R...110	57.11.4331	330 Ohm 5% 0.25W	
	R...111	58.01.8102	1 kOhm 10%	
	R...112	57.11.4271	270 Ohm 5% 0,25W	
	R...113	57.11.4472	4.7 kOhm 2% 0.25W	
	R...114	57.11.3132	1.3 kOhm 2% 0.25W	
	R...115	1.010.007.58	10 kOhm 10% lin. combined with R215	St
	R...116	57.11.3132	1.3 kOhm 2% 0.25W	
	R...117	57.11.4472	4.7 kOhm 2% 0.25W	
	R...118	57.11.4332	3.3 kOhm 5% 0.25W **/****	
	R...119	57.11.4332	3.3 kOhm 5% 0.25W	
	R...120	57.11.5106	10 MOhm 5% 0.25W **/****	
	R...121	57.11.4684	680 kOhm 5% 0.25W **/****	
	R...122	57.11.4332	3.3 kOhm 5% 0.25W **/****	
	R...123	57.11.4561	560 Ohm 5% 0.25W **/****	
	R...124	1.010.018.58	4.7 kOhm 10% lin. combined with R224 **/****	St
	R...125	1.010.017.58	22 kOhm 10% lin. combined with R225 **/****	St
	R...126	57.11.4332	3.3 kOhm 5% 0.25W **/****	
	R...127	57.11.4684	680 kOhm 5% 0.25W **/****	
	R...128	57.11.4332	3.3 kOhm 5% 0.25W **/****	
	R...129	57.11.4332	3.3 kOhm 5% 0.25W **/****	
	R...130	57.11.4182	1.8 kOhm 5% 0.25W **/****	
	R...131	57.11.4684	680 kOhm 5% 0.25W **/****	
	R...132	1.010.016.58	100 kOhm 10% neg.log.R133/138/232/233/238 **/****	St
	R...133	. .	100 kOhm 10% neg.log. see R132	
	R...134	57.11.4103	10 kOhm 5% 0.25W **/****	
	R...135	57.11.4103	10 kOhm 5% 0.25W **/****	
	R...136	57.11.4182	1.8 kOhm 5% 0.25W **/****	
	R...137	57.11.4684	680 kOhm 5% 0.25W **/****	
	R...138	. .	4.7 kOhm 10% lin. see R132	
	R...139	57.11.4104	100 kOhm 5% 0.25W	
	R...140	57.11.3152	1.5 kOhm 1% 0.25W	
	R...141	57.11.3152	1.5 kOhm 1% 0.25W	
	R...142	57.11.3152	1.5 kOhm 1% 0.25W	
	R...143	57.11.3152	1.5 kOhm 1% 0.25W	
	R...144	57.11.3302	3 kOhm 1% 0.25W	
	R...145	57.11.3302	3 kOhm 1% 0.25W	
	R...146	57.11.3302	3 kOhm 1% 0.25W	
	R...147	57.11.3302	3 kOhm 1% 0.25W	
	R...148	57.11.3150	15 Ohm 1% 0.25W	
	R...149	57.11.3150	15 Ohm 1% 0.25W	
	R...150	57.11.3302	3 kOhm 1% 0.25W	
	R...151	57.11.3302	3 kOhm 1% 0.25W	
	R...152	57.11.3302	3 kOhm 1% 0.25W	
	R...153	57.11.3689	6.8 Ohm 1% 0.25W	
	R...154	57.11.3689	6.8 Ohm 1% 0.25W	
	R...155	57.11.5106	10 MOhm 5% 0.25W **/****	
	R...156	58.11.6201	200 Ohm 30% trimpot cermet	
	R...157	57.11.4393	39 kOhm 2% 0.25W	
	R...158	57.11.3362	3.6 kOhm 2% 0.25W	
	R...159	57.11.4473	47 kOhm 2% 0.25W	
	R...160	57.11.5106	10 MOhm 5% 0.25W	
	R...161	57.11.5106	10 MOhm 5% 0.25W	
	R...162	. .	not exist	
	R...163	57.11.3152	1.5 kOhm 1% 0.25W	
	R...164	57.11.3152	1.5 kOhm 1% 0.25W	
	R...165	57.11.3392	3.9 kOhm 1% 0.25W	
	R...166	57.11.3392	3.9 kOhm 1% 0.25W	
	R...167	57.11.3272	2.7 kOhm 1% 0.25W	
	R...168	57.11.3272	2.7 kOhm 1% 0.25W	
	R...169	57.11.4104	100 kOhm 5% 0.25W	
	R...170	57.11.4330	33 Ohm 5% 0.25W	
	R...171	57.11.4104	100 kOhm 5% 0.25W	
	R...172	57.11.5335	3.3 MOhm 5% 0.25W	
	R...173	57.11.4104	100 kOhm 5% 0.25W	
	R...174	. .	5 kOhm pos.log fader see A102	St
	R...175	57.11.4101	100 Ohm 5% 0.25W	
	R...176	57.11.5335	3.3 MOhm 5% 0.25W	
	R...177	57.11.4104	100 kOhm 5% 0.25W	
	R...178	57.11.4103	10 kOhm 5% 0.25W	
	R...179	57.11.4104	100 kOhm 5% 0.25W	
	R...180	57.11.3512	5.1 kOhm 5% 0.25W	
	R...181	1.010.019.58	10 kOhm 10% lin. comb. with R281/S104/S204	St

Ad	..POS..	...REF.No...	DESCRIPTION	MANUFACTURER
	R...182	58.01.8501	500 Ohm 10%	
	R...183	57.11.3132	1.3 kOhm 5% 0.25W	
	R...184	57.11.4104	100 kOhm 5% 0.25W	
	R...185	57.11.4330	33 Ohm 5% 0.25W	
	R...186	57.11.4473	47 kOhm 5% 0.25W	
	R...187	57.11.5106	10 MOhm 5% 0.25W	
	R...188	57.11.5106	10 MOhm 5% 0.25W	
	R...189	57.11.4104	100 kOhm 5% 0.25W	
	R...190	57.11.4682	6.8 kOhm 5% 0.25W	
	R...191	57.11.5106	10 MOhm 5% 0.25W	
	R...192	57.11.5106	10 MOhm 5% 0.25W	
	R...193	57.11.4682	6.8 kOhm 5% 0.25W	
	R...194	57.11.5106	10 MOhm 5% 0.25W	
	R...195	57.11.5106	10 MOhm 5% 0.25W	
	R...196	57.11.4682	6.8 kOhm 5% 0.25W	
	R...197	57.11.4682	6.8 kOhm 5% 0.25W	
	R...201	57.11.3272	2.7 kOhm 1% 0.25W	
	R...202	57.11.3272	2.7 kOhm 1% 0.25W	
	R...203	57.11.3272	2.7 kOhm 1% 0.25W	
	R...204	57.11.3272	2.7 kOhm 1% 0.25W	
	R...205	57.11.3272	2.7 kOhm 1% 0.25W	
	R...206	57.11.3272	2.7 kOhm 1% 0.25W	
	R...207	57.11.4392	3.9 kOhm 5% 0.25W	
	R...208	57.11.4472	4.7 kOhm 5% 0.25W	
	R...209	57.11.3153	15 kOhm 5% 0,25W	
	R...210	57.11.4331	330 Ohm 5% 0.25W	
	R...211	58.01.8102	1 kOhm 10%	
	R...212	57.11.4271	270 Ohm 5% 0,25W	
	R...213	57.11.4472	4.7 kOhm 2% 0.25W	
	R...214	57.11.3132	1.3 kOhm 2% 0.25W	
	R...215	. .	10 kOhm 10% lin. see R115	
	R...216	57.11.3132	1.3 kOhm 2% 0.25W	
	R...217	57.11.4472	4.7 kOhm 2% 0.25W	
	R...218	57.11.4332	3.3 kOhm 5% 0.25W **/****	
	R...219	57.11.4332	3.3 kOhm 5% 0.25W	
	R...220	57.11.5106	10 MOhm 5% 0.25W **/****	
	R...221	57.11.4684	680 kOhm 5% 0.25W **/****	
	R...222	57.11.4332	3.3 kOhm 5% 0.25W **/****	
	R...223	57.11.4561	560 Ohm 5% 0.25W **/****	
	R...224	. .	4.7 kOhm 10% lin. see R124	
	R...225	. .	22 kOhm 10% lin. see R125	
	R...226	57.11.4332	3.3 kOhm 5% 0.25W **/****	
	R...227	57.11.4684	680 kOhm 5% 0.25W **/****	
	R...228	57.11.4332	3.3 kOhm 5% 0.25W **/****	
	R...229	57.11.4332	3.3 kOhm 5% 0.25W **/****	
	R...230	57.11.4182	1.8 kOhm 5% 0.25W **/****	
	R...231	57.11.4684	680 kOhm 5% 0.25W **/****	
	R...232	. .	100 kOhm 10% neg.log. see R 132	
	R...233	. .	100 kOhm 10% neg.log. see R 132	
	R...234	57.11.4103	10 kOhm 5% 0.25W **/****	
	R...235	57.11.4103	10 kOhm 5% 0.25W **/****	
	R...236	57.11.4182	1.8 kOhm 5% 0.25W **/****	
	R...237	57.11.4684	680 kOhm 5% 0.25W **/****	
	R...238	. .	4.7 kOhm 10% lin. see R132	
	R...239	57.11.4104	100 kOhm 5% 0.25W	
	R...240	57.11.3152	1.5 kOhm 1% 0.25W	
	R...241	57.11.3152	1.5 kOhm 1% 0.25W	
	R...242	57.11.3152	1.5 kOhm 1% 0.25W	
	R...243	57.11.3152	1.5 kOhm 1% 0.25W	
	R...244	57.11.3302	3 kOhm 1% 0.25W	
	R...245	57.11.3302	3 kOhm 1% 0.25W	
	R...246	57.11.3302	3 kOhm 1% 0.25W	
	R...247	57.11.3302	3 kOhm 1% 0.25W	
	R...248	57.11.3150	15 Ohm 1% 0.25W	
	R...249	57.11.3150	15 Ohm 1% 0.25W	
	R...250	57.11.3302	3 kOhm 1% 0.25W	
	R...251	57.11.3302	3 kOhm 1% 0.25W	
	R...252	57.11.3302	3 kOhm 1% 0.25W	
	R...253	57.11.3689	6.8 Ohm 1% 0.25W	
	R...254	57.11.3689	6.8 Ohm 1% 0.25W	
	R...255	57.11.5106	10 MOhm 5% 0.25% **/****	
	R...256	58.11.6201	200 Ohm 30% trimpot cermet	
	R...257	57.11.4393	39 kOhm 2% 0.25W	
	R...258	57.11.3362	3.6 kOhm 2% 0.25W	
	R...259	57.11.4473	47 kOhm 2% 0.25W	
	R...260	57.11.5106	10 MOhm 5% 0.25W	
	R...261	57.11.5106	10 MOhm 5% 0.25W	
	R...262	. .	not exist	
	R...263	57.11.3152	1.5 kOhm 1% 0.25W	
	R...264	57.11.3152	1.5 kOhm 1% 0.25W	
	R...265	57.11.3392	3.9 kOhm 1% 0.25W	
	R...266	57.11.3392	3.9 kOhm 1% 0.25W	
	R...267	57.11.3272	2.7 kOhm 1% 0.25W	
	R...268	57.11.3272	2.7 kOhm 1% 0.25W	
	R...269	57.11.4104	100 kOhm 5% 0.25W	
	R...270	57.11.4330	33 Ohm 5% 0.25W	
	R...271	57.11.4104	100 kOhm 5% 0.25W	
	R...272	57.11.5335	3.3 MOhm 5% 0.25W	
	R...273	57.11.4104	100 kOhm 5% 0.25W	
	R...274	. .	5 kOhm pos.log fader see A102	St
	R...275	57.11.4101	100 Ohm 5% 0.25W	
	R...276	57.11.5335	3.3 MOhm 5% 0.25W	
	R...277	57.11.4104	100 kOhm 5% 0.25W	
	R...278	57.11.4103	10 kOhm 5% 0.25W	
	R...279	57.11.4104	100 kOhm 5% 0.25W	
	R...280	57.11.3512	5.1 kOhm 5% 0.25W	
	R...281	. .	10 kOhm 10% lin. see R181	
	R...282	58.01.8501	500 Ohm 10%	
	R...283	57.11.3132	1.3 kOhm 5% 0.25W	
	R...284	57.11.4104	100 kOhm 5% 0.25W	
	R...285	57.11.4330	33 Ohm 5% 0.25W	
	R...286	57.11.4473	47 kOhm 5% 0.25W	
	R...287	57.11.5106	10 MOhm 5% 0.25W	
	R...288	57.11.5106	10 MOhm 5% 0.25W	

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Ad	..POS..	...REF.No...	DESCRIPTION	MANUFACTURER
	R...289	57.11.4104	100 kOhm 5% 0.25W	
	R...290	57.11.4682	6.8 kOhm 5% 0.25W	
	R...291	57.11.5106	10 MOhm 5% 0.25W	
	R...292	57.11.5106	10 MOhm 5% 0.25W	
	R...293	57.11.4682	6.8 kOhm 5% 0.25W	
	R...294	57.11.5106	10 MOhm 5% 0.25W	
	R...295	57.11.5106	10 MOhm 5% 0.25W	
	R...296	57.11.4682	6.8 kOhm 5% 0.25W	
	R...297	57.11.4682	6.8 kOhm 5% 0.25W	
	R...301	57.92.1271	6.5 Ohm I= 270mA PTC Philips Nr.2322 662 12711	
	R...302	57.92.1271	6.5 Ohm I= 270mA PTC Philips Nr.2322 662 12711	
	R...303	57.92.1271	6.5 Ohm I= 270mA PTC Philips Nr.2322 662 12711	
	R...304	57.11.4102	1 kOhm 5% 0.25W	
	R...305	57.11.4104	100 kOhm 5% 0.25W	
	R...306	57.11.4103	10 kOhm 5% 0.25W	
	R...307	. .	not exist	
	R...308	57.11.4332	3.3 kOhm 5% 0.25W	
	R...309	57.11.4224	220 kOhm 5% 0.25W	
	R...310	57.11.4104	100 kOhm 5% 0.25W	
	R...311	57.11.5106	10 MOhm 5% 0.25W	
	R...312	57.11.5106	10 MOhm 5% 0.25W	
	R...313	57.11.4471	470 Ohm 5% 0.25W	
	R...314	57.11.4271	270 Ohm 5% 0.25W	
	R...315	57.11.3105	1 MOhm 5% 0.25W	
	R...316	57.11.4271	270 Ohm 5% 0.25W	
	R...317	57.11.4104	100 kOhm 5% 0.25W	
	R...318	57.11.4333	33 kOhm 5% 0.25W	
	R...319	57.11.4683	68 kOhm 5% 0.25W	
	R...320	57.11.4104	100 kOhm 5% 0.25W	
	R...321	57.11.4332	3.3 kOhm 5% 0.25W	
	R...322	57.11.4822	8.2 kOhm 5% 0.25W	
	R...323	57.11.4332	3.3 kOhm 5% 0.25W	
	R...324	57.11.4822	8.2 kOhm 5% 0.25W	
	R...325	57.11.4104	100 kOhm 5% 0.25W	
	R...326	57.11.4104	100 kOhm 5% 0.25W	
	R...327	1.369.150.03	10 kOhm 20% pos.log. combined with S302	St
	R...328	1.369.150.03	10 kOhm 20% pos.log. combined with S303	St
	R...329	57.11.4682	6.8 kOhm 5% 0.25W	
	R...330	57.11.4682	6.8 kOhm 5% 0.25W	
	R...331	57.11.4102	1 kOhm 5% 0.25W	
	R...332	57.11.4105	1 MOhm 5% 0.25W **/****	
	R...333	57.11.4105	1 MOhm 5% 0.25W **/****	
	R...334	57.11.4104	100 kOhm 5% 0.25W **/****	
	R...335	57.11.4104	100 kOhm 5% 0.25W	
	S...101	. .	4*U au (option 1)	St
	S...102	55.15.0019	2*U button: grey **/****	
	S...103	. .	not exist	
	S...104	. .	1*U BAL on/off see R181	
	S...105	55.15.0019	2*U button: red	ITT
	S...201	. .	6*U au see S101	
	S...202	. .	not exist	
	S...203	. .	not exist	
	S...204	. .	1*U BAL on/off see R181	
	S...205	55.15.0019	2*U button: red ***/****	ITT
	S...301	. .	not used	
	S...302	. .	1*U AUX AF/PF see R327	
	S...303	. .	1*U AUX AF/PF see R328	
	S...304	. .	not used	
	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...101	. .		
	W...102	. .	option 1 not used	
	W...103	. .	option 1 not used	
	W...104	. .	not exist	
	W...105	. .	*/*** replaces Q101	
	W...106	. .	*/*** replaces C108	
	W...107	. .	*/*** replaces C107	
	W...108	. .	not used	
	W...201	. .	not exist	
	W...202	. .	option 1 not used	
	W...203	. .	option 1 not used	
	W...204	. .	*/**	
	W...205	. .	*/*** replaced Q201	
	W...206	. .	*/*** replaced C208	
	W...207	. .	*/*** replaced C207	
	W...208	. .	not used	
	W...301	. .	option 2 not used	
	W...302	. .	not used	
	W...303	1.010.321.64	5mm link (option 3)	
	W...304	. .	not used (option 3)	
	XDL.301	1.010.012.50	LED holder	St
	XDL.302	1.010.012.50	LED holder	St
	B...401	51.02.0154	5V 40mA	Osh
	B...402	51.02.0154	5V 40mA	Osh
	B...403	51.02.0154	5V 40mA	Osh
	MP..401	21.01.0354	2 pcs lotted pan head screw M3*6	
01	MP..401	. .	not exist	
	MP..402	24.16.1030	2 pcs screw locking devices D3.2 / 5.5 * 0.45	
01	MP..402	. .	not exist	
	MP..403	1.010.025.27	2 pcs hexagon post M3*25	ST
01	MP..403	. .	not exist	
	MP..404	1.970.790.04	0 pcs Studer-number-label	ST
	MP..405	55.15.0202	3 pcs push-button assembly	EAO
	MP..406	55.15.0221	3 pcs push-button assembly	EAO
	MP..407	55.15.0228	3 pcs push-button knob	EAO
	MP..408	1.970.790.11	1 pcs Switch unit PCB	
	MP..409	55.15.0212	1 pcsp ush-button-assembly red	
	MP..410	55.15.0215	1 pcsp ush-button-assemblygreen	

Ad	..POS..	...REF.No...	DESCRIPTION	MANUFACTURER
	R...401	57.11.3220	22 Ohm 5% 0.25W	
	R...402	57.11.3220	22 Ohm 5% 0.25W	
	R...403	57.11.3220	22 Ohm 5% 0.25W	
	S...401	55.15.0232	2* a Push button switch	EAO
	S...402	55.15.0232	2* a Push button switch	EAO
	S...403	55.15.0232	2* a Push button switch	EAO
	C...501	59.06.0104	100 nF 10% PE	
	C...502	59.06.0104	100 nF 10% PE	
	C...503	59.06.0104	100 nF 10% PE	
	C...504	59.26.2100	10 uF 20% 16V SAL	
	C...505	59.06.0103	10 nF 10% PE	
	C...506	59.06.0103	10 nF 10% PE	
	C...507	59.26.2100	10 uF 20% 16V SAL	
	C...508	59.06.0104	100 nF 10% PE	
	C...509	59.06.0682	6.8 nF 10% PE	
	C...510	59.06.0222	2.2 nF 10% PE	
	C...511	59.22.3101	100 uF -20% 10V EL	
	C...512	59.22.5101	100 uF -20% 25V EL	
	C...513	59.06.0104	100 nF 10% PE	
	D...501	50.04.0125	1N4448	any
	D...502	50.04.0125	1N4448	any
	D...503	50.04.0125	1N4448	any
	D...504	50.04.0125	1N4448	any
	D...505	50.04.0125	1N4448	any
	D...506	50.04.0125	1N4448	any
	DLQ.501	50.99.0111	MCT - 6 Dual Optokoppler	
	IC..501	50.07.0014	40106B Hex Schmitt Trigger	
	IC..502	50.07.0008	4093B Nand Schmitt Trigger	
	IC..503	50.07.0013	4013B D-Flip-Flop	
	IC..504	50.07.0015	4053B Mux-Demux	
	IC..505	50.10.0108	LM 317L Voltage Regulator	
	IC..506	50.10.0108	LM 317L Voltage Regulator	
	IC..507	50.07.0008	4093B Nand Schmitt Trigger	
	IC..508	50.07.0006	4001B Quad Nor Gate	
	IC..509	50.07.0015	4053B Mux-Demux	
	IC..510	50.07.0019	4019B Quad 2-Input Mux	
	IC..511	50.07.0004	4556B Decoder	
	J...501	54.01.0291	CIS-Connector 11 pin	
	J...502	54.01.0291	CIS-Connector 11 pin	
	JSJ.501	. .	not used option 6	
	JSJ.502	. .	not used option 6	
	JSJ.503	. .	not used option 4	
	JSJ.504	54.01.0021	Jumper option 4	
	JSJ.505	. .	not used option 5	
	JSJ.506	54.01.0021	Jumper option 10	
	JSJ.507	. .	not used option 13	
	JSJ.508	. .	not used option 14	
	JSJ.509	. .	not used option 9	
	JSJ.510	. .	not used in 1.970.741.00 option 11	
	JSJ.510	. .	Jumper used in 1.970.753 / 754.00	
	JSJ.511	54.01.0021	Jumper option 8	
	JSJ.512	54.01.0021	Jumper option 7 / option 8	
	JSJ.513	54.01.0021	Jumper option 7 / option 8	
	JSJ.514	. .	not used option 7	
	JSJ.515	. .	not used option 7 / option 8	
	JSJ.516	. .	not used option 7	
	JSJ.517	. .	not used option 7 / option 8	
	JSJ.518	. .	not used option 8	
	JSJ.519	. .	not used option 12	
	MP..501	1.010.300.64	2 pcs Flat-band-cable 40mm	
02	MP..501	64.03.0502	2 pcs Flat-band-cable 40mm	
	MP..502	53.03.0168	4 pcs IC-socket 16 pin	
02	MP..502	53.03.0168	3 pcs IC-socket 16 pin	
	MP..503	53.03.0167	5 pcs IC-socket 14 pin	
	MP..504	1.970.792.11	1 pcs Extension unit PCB	
	MP..505	54.01.0020	33 pcs Wire Wrap pins	
	MP..506	. .	not exist	
	MP..507	1.010.014.22	2 pcs hexagon rivetting-nut M3*4.5	St
	MP..508	1.970.792.04	0 pcs STUDER-number-label	St
	MP..509	43.01.0108	1 pcs ESE-caution-label see note 1)	St
	Q...501	50.03.0496	BC 560 PNP IC>100mA, B>200	any
	Q...502	50.03.0496	BC 560 PNP IC>100mA, B>200	any
	Q...503	50.03.0496	BC 560 PNP IC>100mA, B>200	any
	Q...504	50.03.0496	BC 560 PNP IC>100mA, B>200	any
	Q...505	50.03.0496	BC 560 PNP IC>100mA, B>200	any
	Q...506	50.03.0497	BC 550 NPN IC>100mA, B>200	any
	Q...507	50.03.0216	J 111 J-FET	Six
	Q...508	50.03.0350	J 112 J-FET	Six
	Q...509	50.03.0497	BC 550 NPN IC>100mA, B>200	any
	Q...510	50.03.0496	BC 560 PNP IC>100mA, B>200	any
	Q...511	50.03.0497	BC 550 NPN IC>100mA, B>200	any
	Q...512	50.03.0496	BC 560 PNP IC>100mA, B>200	any
	Q...513	50.03.0496	BC 560 PNP IC>100mA, B>200	any
	Q...514	50.03.0496	BC 560 PNP IC>100mA, B>200	any
	Q...515	50.03.0496	BC 560 PNP IC>100mA, B>200	any
	R...501	57.11.3102	1 kOhm 5% 0.25W	
	R...502	57.11.3102	1 kOhm 5% 0.25W	
	R...503	57.11.3102	1 kOhm 5% 0.25W	
	R...504	57.11.3102	1 kOhm 5% 0.25W	
	R...505	57.11.3102	1 kOhm 5% 0.25W	
	R...506	57.11.3102	1 kOhm 5% 0.25W	
	R...507	57.11.3153	15 kOhm 5% 0.25W	
	R...508	57.11.3153	15 kOhm 5% 0.25W	
	R...509	57.11.3153	15 kOhm 5% 0.25W	
	R...510	57.11.3153	15 kOhm 5% 0.25W	
	R...511	57.11.3153	15 kOhm 5% 0.25W	
	R...512	57.11.3221	220 Ohm 5% 0.25W	
	R...513	57.11.3221	220 Ohm 5% 0.25W	
	R...514	57.11.3153	15 kOhm 5% 0.25W	
	R...515	57.11.3153	15 kOhm 5% 0.25W	

Stereo HL Input Unit 970 1.970.751.81

Ad	..POS..	...REF.No...	DESCRIPTION		MANUFACTURER
	R...516	58.01.9104	100 kOhm	10% var. resistor	
	R...517	. .	not exist		
01	R...517	57.11.3103	10 kOhm	5% 0.25W	
	R...518	57.11.3223	22 kOhm	5% 0.25W	
	R...519	57.11.3223	22 kOhm	5% 0.25W	
	R...520	57.11.5225	2.2 MOhm	5% 0.25W	
	R...521	57.11.3223	22 kOhm	5% 0.25W	
	R...522	57.11.3102	1 kOhm	5% 0.25W	
	R...523	. .	not exist		
	R...524	. .	not exist		
	R...525	. .	not exist		
	R...526	. .	not exist		
	R...527	57.11.5335	3.3 MOhm	5% 0.25W	
	R...528	57.11.3104	100 kOhm	5% 0.25W	
	R...529	57.11.5335	3.3 MOhm	5% 0.25W	
	R...530	57.11.3104	100 kOhm	5% 0.25W	
	R...531	. .	not used		
	R...532	. .	not used		
	R...533	. .	not used		
	RZ..501	57.88.4104	100 kOhm	5% single line	
	RZ..502	57.88.4104	100 kOhm	5% single line	
	RZ..503	57.88.4104	100 kOhm	5% single line	
	RZ..504	57.88.3104	100 kOhm	5% dual in line	

* only	2 CH		1.970.751.XX	wird nicht hergestellt
** only	2 CH	with EQ	1.970.752.XX	wird nicht hergestellt
*** only	4 CH		1.970.753.XX	
**** only	4 CH	with EQ	1.970.754.XX	

| Optionen : siehe Optionliste |

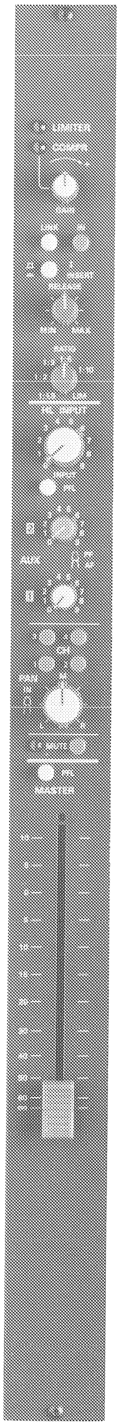
CE=Ceramic, CF=Carbon Film, EL=Electrolytic, MF=Metal Film,
PE=Polyester, PP=Polypropylen, PS=Polystyrol

MANUFACTURER: Bu=Burndy, Ex=Exar, Fc=Fairchild, GI=General Instrument
HP=Hewlett Packard, ITT=Intermetall, Mot=Motorola, Nat=National
(Matsushita), NS=National Semiconductors, Ph=Philips,
Ra=Raytheon, Sig=Signetics, Six=Siliconix, St=Studer,
TI=Texas Instrument

1.970.751.81 STEREO HL INPUT UNIT 970 TA89/10/1700

3. Master Unit 1.970.841

3.1 Bedienungselemente



LIMITER/ KOMPRESSOR: Die Summen-Einheit vereinigt drei Funktionsblöcke:

- Summenteil
- Limiter/Kompressor-Stufe mit eigenem Einschleifpfad
- Hochpegeleingang

Über Potentiometer sind folgende Parameter einstellbar:

Ratio: Kompressionsverhältnis: 1:1.5...1:20 (Limiter)

Release: Rücklaufzeit programmabhängig beeinflussbar am Potentiometer.

Gain: Der Limiter/Kompressor-Einschleifpfad verfügt am Eingang über eine eigene, an Potentiometer GAIN einstellbare Kanalverstärkung. Bei ausgeschaltetem Limiter/Kompressor kann dieser Verstärker für beliebige Pegelanpassungen verwendet werden.

Der Regelteil des Kompressor / Limiters arbeitet auf dem Puls-Dauer-Modulations (PDM) Prinzip. Ein- und Ausgang sind elektronisch symmetriert. Der Nennpegel beträgt +6 dBu.
Funktionsbeschreibung unter Punkt 3.2.

HL INPUT: Jeder Summenkanal ist mit einem zusätzlichen HOCHPEGELEINGANG ausgerüstet. Eine PFL-Taste erlaubt das Vorhören des Eingangssignales. Zur Lautstärkeregulierung ist ein Potentiometer eingesetzt. Analog zu den Eingangseinheiten sind zwei Hilfsausgänge AUX 1 und AUX 2 vorhanden. Nebst Sammelschienenanwahl und Panoramasteller verfügt der Eingang auch über eine MUTE-Taste zur Stummschaltung.

SUMMENTEIL: An einem Null-Ohm-Verstärker wird das Sammelschienensignal summiert und auf den elektronisch symmetrierten Einschleifpunkt (Bantam-Jack Buchsen) gebracht. Das zurückkommende Signal gelangt auf die Vorhörtaste und auf den Summenregler. Über den Schalter zum Einschleifen des Limiters gelangt das Signal auf den Ausgangsverstärker mit symmetrischem, erdfreiem Ausgang.

PFL Master: Das unabhängig von der Flachbahnregler-Stellung abgegriffene Vorhörsignal wird mittels Tastendruck auf beide PFL-Sammelschienen geleitet. Dies ermöglicht ein Abhören des Summenkanals, auch bei geschlossenem Flachbahnregler.

3.2 Limiter / Kompressor

Die Limiter / Kompressorstufe, mittels Taste IN zuschaltbar, wird zur Pegel- (Limiter) und Dynamik- (Kompressor) Begrenzung eingesetzt. Sie kann wahlweise dem Summenkanal zugeschaltet, oder für externe Anwendungen in den separaten LIMITER/ COMPR-Einschleifpfad eingeschaltet werden (Taste Σ/INSERT):

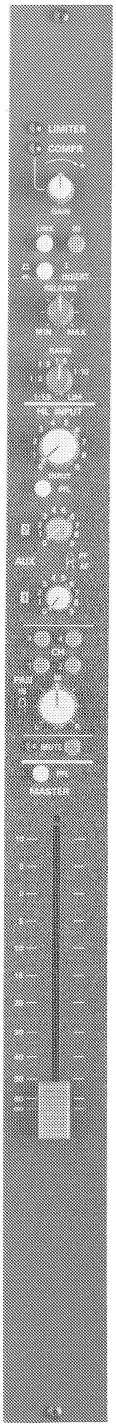
STEREOKOPPLUNG **LINK** Über die eingerastete Taste LINK werden die Limiter-Regelkreise der Summeneinheiten, über welche ein Signal verarbeitet wird, miteinander gekoppelt. Dies bewirkt eine Verstärkungsregelung, bei der die Regelgrösse vom Kanal mit dem jeweils höheren Pegel bestimmt wird.

SUMMENKANAL **Σ** Die ausgerastete Vorwahltaste (Position Σ) schaltet den Limiterteil in den Summenkanal (LED LIMITER leuchtet) und dient der Pegelbegrenzung, zum Schutze der Ausgangsleitung vor Übersteuerung. Der RATIO- und der GAIN-Regler sind bei dieser Anwendung nicht wirksam. Der Pegelgrenzwert liegt bei +6dBu und lässt sich schaltungsintern abgleichen.

LIMITER/KOMPRESSOR -EINSCHLEIFPFAD **INSERT** Bei eingerasteter vorwahltaste [4] (Stellung INSERT) steht der Limiter/Kompressor-Schaltkreis zum Einschleifen in den PF-Einschleifpfad einer beliebigen Eingangs- oder Summeneinheit zur Verfügung.
Folgende Parameter der Limiter-/Kompressorfunktion können verändert werden:

3. Master Unit 1.970.841

3.1 Operating Elements



LIMITER/ COMPRESSOR: The master unit comprises three functional blocks:

- Master section
- Limiter/compressor stage with separate insertion path
- High-level input

The following parameters can be adjusted via potentiometers:

Ratio: Compression ratio: 1:1.5...1:20 (LIMITER)

Release: Program dependent release time, adjustable with the potentiometer.

Gain: The gain of the limiter/compressor insertion path can be varied on the input with the GAIN potentiometer. This amplifier is also available for any other application when the limiter/compressor is switched off.

The control section of the compressor/limiter employs the pulse duration modulation (PDM) principle. The input and the output are electronically balanced. The nominal level is +6 dBu.

HIGH-LEVEL INPUT: Each master channel is equiped with an additional high-level input. A PFL button is available for prelistening the input signal. The volume can be controlled with a potentiometer. Two auxiliary output units AUX 1 and AUX 2 are available, analogously to the input units. The buses are selected in the same way as on the input units and differ in the arrangement and design of the selection keys.

MASTER SECTION: The bus signal is added by a zero-ohm amplifier and taken to the electronically balanced insertion point (bantam jack socket). The return signal is taken to the prelistening key and to the master fader. Via the limiter insertion switch the signal is taken to the output amplifier which has a balanced and floating output.

PFL Master: The PFL signal which is tapped independently of the fader setting can be connected to the two PFL buses by pressing button which means that the master channel can also be prelistened when the linear fader is closed.

3.2 Limiter / Compressor

The limiter/compressor stage which can be brought into the circuit with the IN button, is used for limiting the level (limiter) and the dynamic range (compressor). For external applications it can be connected to the separate LIMITER/COMPR insertion path (with button Σ /INSERT):

STEREO COUPLING **LINK**

When the LINK button is engaged, the limiter control circuits of the master unit processing a signal are coupled. This results in a gain control in which the controlled variable is determined by the channel on which the higher control voltage is available.

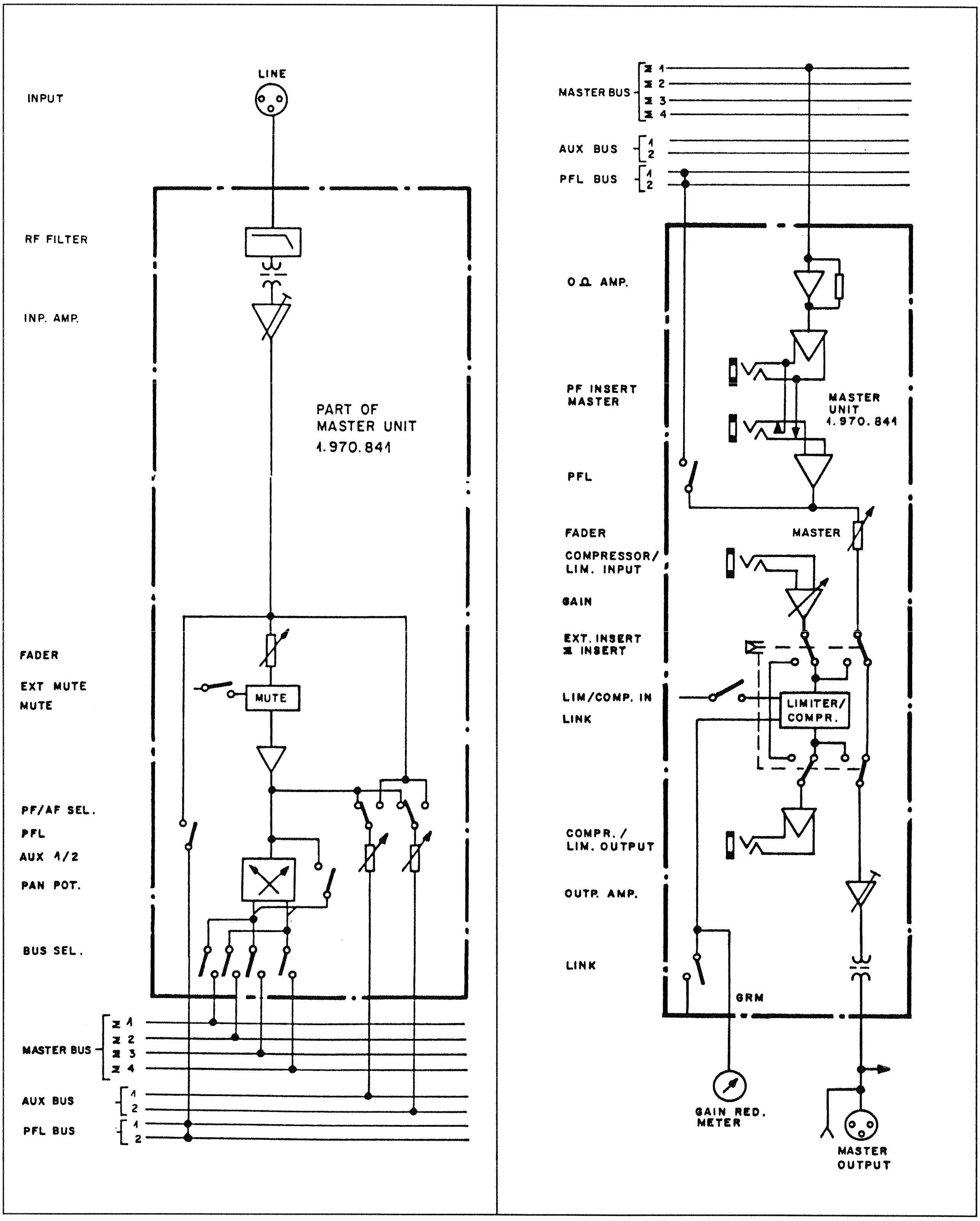
MASTER CHANNEL **Σ**

When the preselection button is released (position Σ), the limiter section connects the master channel (LIMITER LED is on) and serves as a level limiter for protecting the output line from overloads. The RATIO and the GAIN controls are disabled in this application. The level limit is +6 dBu and can be aligned internally.

LIMITER/COMPRESSOR
-INSERTION PATH
INSERT

When the preselection button is engaged (INSERT position), the limiter/compressor circuit is available on the balanced jack sockets [C] for insertion into the PF insertion path of any input or master module.
The following parameters of the limiter/compressor function can be altered:

3.3 Blockschaltbild / Block Diagram

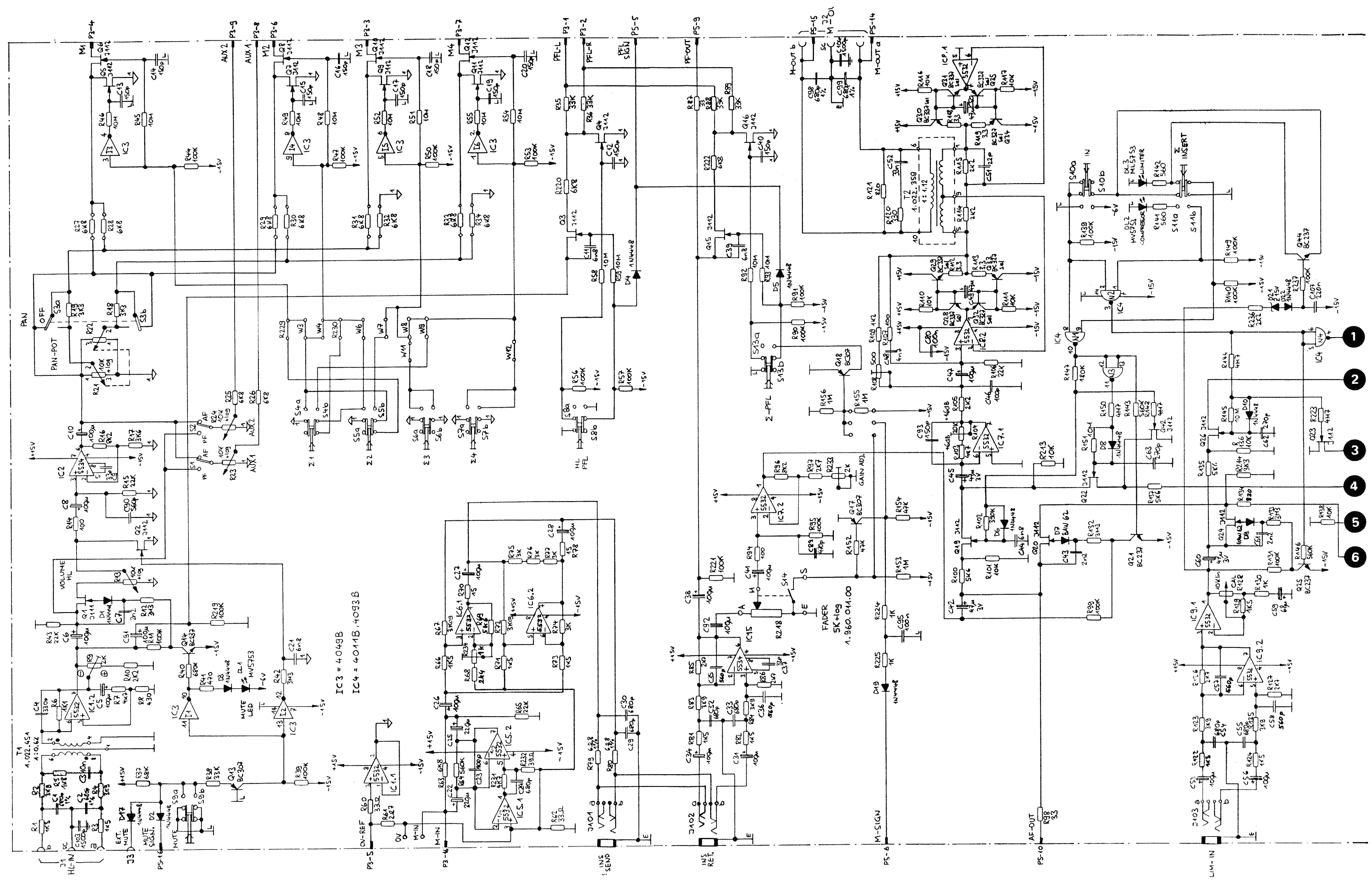


3.4 Schemateil / Circuit Diagrams

1.970.841.81

Master Unit 4CH

Part 1



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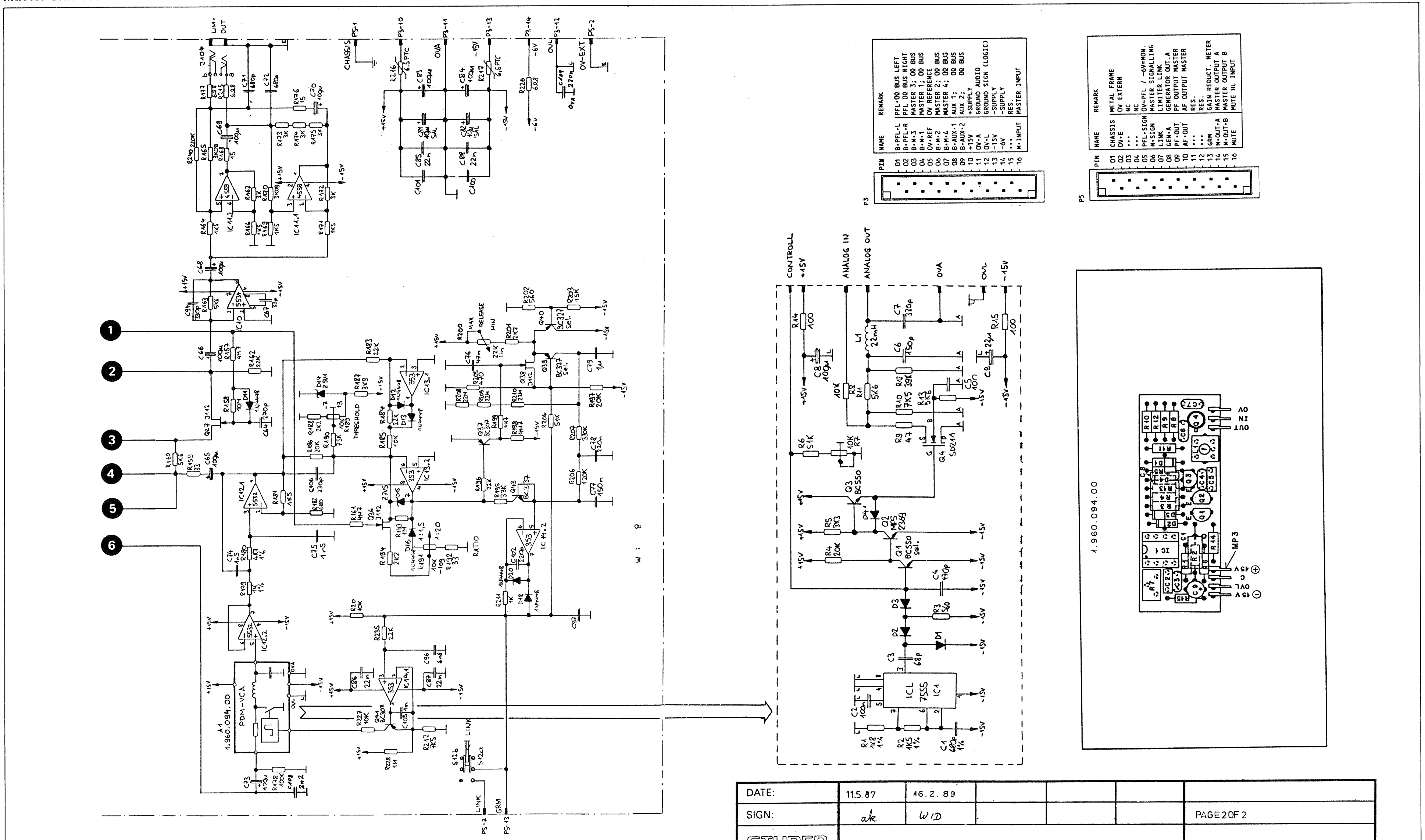
STUDER REGENSDORF ZÜRICH	MASTER UNIT 4CH					SC 1.970.841.81

Master Unit 4CH 1.970.841.81 **Part 2**



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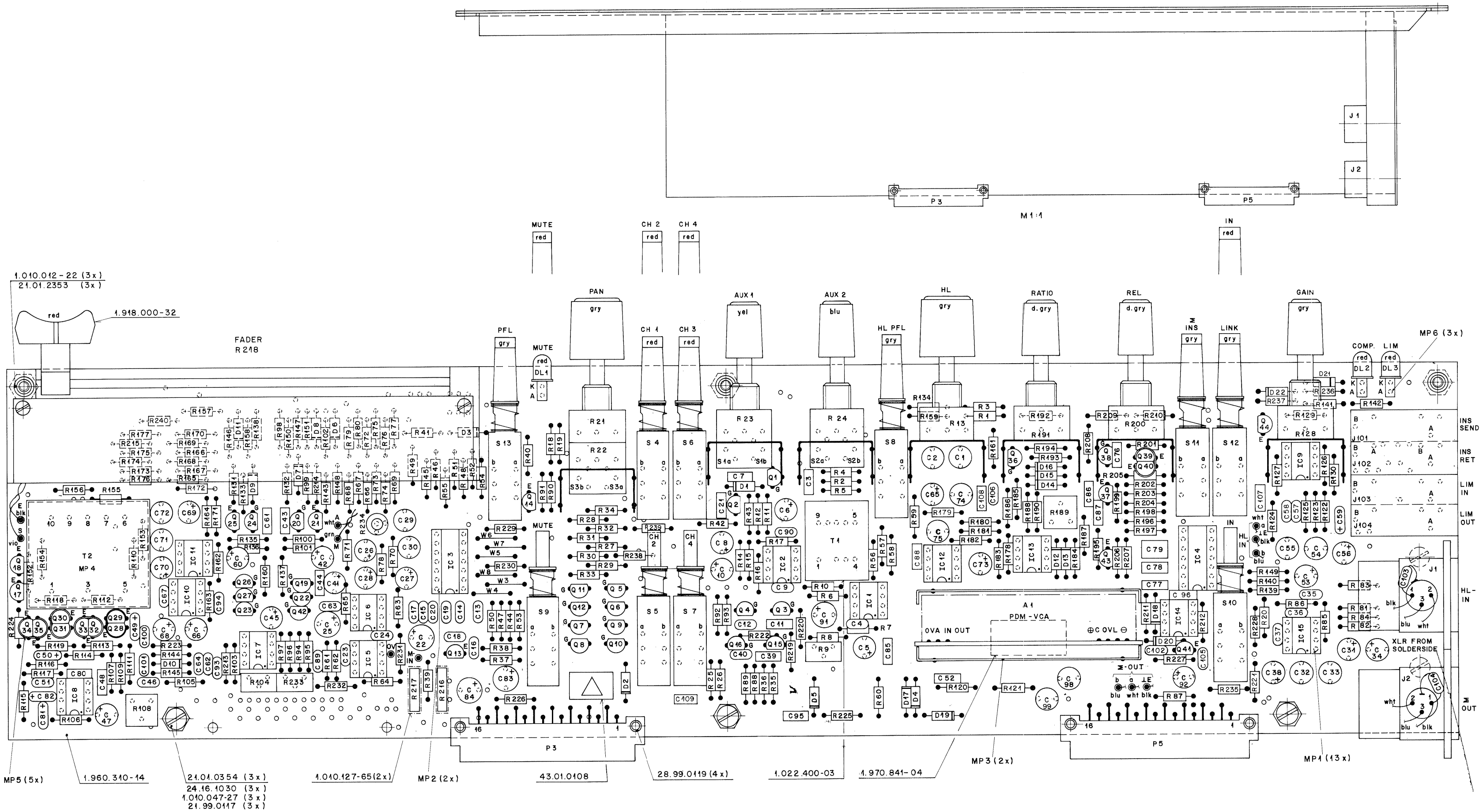
STUDER REGENSDORF ZÜRICH	MASTER UNIT 4CH					SC 1.970.841.81

Master Unit 4CH **1.970.810.81**



C 103 und C 104
verlötet nach BV 646

VALID FOR	NR.UNIT	NR.FRONT PANEL	NR.NUMBER LABEL	
4CH 1,2,3,4	1.970.841-81	1.970.841-01	1.970.841-04	

Master Unit 970 — 1.970.810.81

Ad	..POS..	...REF.No...	DESCRIPTION	MANUFACTURER
01	A.....1	1.960.094.00	PDM-VCA	St
	C.....1	59.05.1681	680 pF 1% 500V PP	
	C.....2	59.05.1681	680 pF 1% 500V PP	
	C.....3	59.06.0103	10 nF 10% PE	
	C.....4	59.34.4331	330 pF CE	
	C.....5	59.22.3101	100 uF -20% 10V EL	
	C.....6	59.22.3101	100 uF -20% 10V EL	
	C.....7	59.06.0222	2.2 nF 10% PE	
	C.....8	59.22.3101	100 uF -20% 10V EL	
	C.....9	59.34.2330	33 pF CE	
	C....10	59.22.3101	100 uF -20% 10V EL	
	C....11	59.06.0682	6.8 nF PE	
	C....12	59.34.4151	150 pF CE	
	C....13	59.34.4151	150 pF CE	
	C....14	59.34.4151	150 pF CE	
	C....15	59.34.4151	150 pF CE	
	C....16	59.34.4151	150 pF CE	
	C....17	59.34.4151	150 pF CE	
	C....18	59.34.4151	150 pF CE	
	C....19	59.34.4151	150 pF CE	
	C....20	59.34.4151	150 pF CE	
	C....21	59.06.0682	6.8 nF PE	
	C....22	59.30.1221	220 uF -20% 3V TA	
	C....23	59.34.4101	100 pF CE	
	C....24	59.32.2681	680 pF CE	
	C....25	59.30.1221	220 uF -20% 3V TA	
	C....26	59.22.3101	100 uF -20% 10V EL	
	C....27	59.22.3101	100 uF -20% 10V EL	
	C....28	59.22.3101	100 uF -20% 10V EL	
	C....29	59.05.1681	680 pF 1% 500V PP	
	C....30	59.05.1681	680 pF 1% 500V PP	
	C....31	59.22.3101	100 uF -20% 10V EL	
	C....32	59.05.1681	680 pF 1% 500V PP	
	C....33	59.05.1681	680 pF 1% 500V PP	
	C....34	59.22.3101	100 uF -20% 10V EL	
	C....35	59.34.5561	560 pF CE	
	C....36	59.34.5561	560 pF CE	
	C....37	59.34.2330	33 pF CE	
	C....38	59.22.3101	100 uF -20% 10V EL	
	C....39	59.06.0682	6.8 nF PE	
	C....40	59.34.4151	150 pF CE	
	C....41	59.22.3101	100 uF -20% 10V EL	
	C....42	59.30.1470	47 uF -20% 3V TA	
	C....43	59.06.0222	2.2 nF PE	
	C....44	59.06.0682	6.8 nF PE	
	C....45	59.30.1470	47 uF -20% 3V TA	
	C....46	59.34.4101	100 pF CE	
	C....47	59.22.3101	100 uF -20% 10V EL	
	C....48	59.06.0472	4.7 nF PE	
	C....49	59.26.0470	47 uF 20% 6.3V SAL	
	C....50	59.26.0470	47 uF 20% 6.3V SAL	
	C....51	59.34.2220	22 pF CE	
	C....52	59.06.0333	33 nF PE	
	C....53	59.22.3101	100 uF -20% 10V PE	
	C....54	59.05.1681	680 pF 1% 500V PP	
	C....55	59.05.1681	680 pF 1% 500V PP	
	C....56	59.22.3101	100 uF -20% 10V EL	
	C....57	59.34.5561	560 pF CE	
	C....58	59.34.5561	560 pF CE	
	C....59	59.26.0680	68 uF 20% 6.3V SAL	
	C....60	59.30.1470	47 uF -20% 3V TA	
	C....61	59.06.0222	2.2 nF PE	
	C....62	59.34.4271	270 pF CE	
	C....63	59.34.4271	270 pF CE	
	C....64	59.34.4271	270 pF CE	
	C....65	59.22.3101	100 uF -20% 10V EL	
	C....66	59.22.3101	100 uF -20% 10V EL	
	C....67	59.34.2330	33 pF CE	
	C....68	59.22.3101	100 uF -20% 10V EL	
	C....69	59.22.3101	100 uF -20% 10V EL	
	C....70	59.22.3101	100 uF -20% 10V EL	
	C....71	59.05.1681	680 pF 1% 500V PP	
	C....72	59.05.1681	680 pF 1% 500V PP	
	C....73	59.22.3101	100 uF -20% 10V EL	
	C....74	59.05.2152	1.5 nF 2.5% PP	
	C....75	59.05.2152	1.5 nF 2.5% PP	
	C....76	59.06.0473	47 nF PE	
	C....77	59.06.5154	150 nF PE	
	C....78	59.06.0224	220 nF PE	
	C....79	59.06.0105	1 uF PE	
	C....80	59.06.0104	100 nF PE	
	C....81	59.26.2100	10 uF 20% 16V SAL	
	C....82	59.26.2100	10 uF 20% 16V SAL	
	C....83	59.22.4101	100 uF -20% 16V EL	
	C....84	59.22.4101	100 uF -20% 16V EL	
	C....85	59.06.0223	22 nF PE	
	C....86	59.06.0223	22 nF PE	
	C....87	59.06.0223	22 nF PE	
	C....88	59.06.0223	22 nF PE	
	C....89	59.34.5471	470 pF CE	
	C....90	59.34.5561	560 pF CE	
	C....91	59.22.3101	100 uF -20% 10V EL	
	C....92	59.22.3101	100 uF -20% 10V EL	
	C....93	59.34.4151	150 pF CE	
	C....94	59.34.4331	330 pF CE	
	C....95	59.06.0104	100 nF PE	
	C....96	59.06.0682	6,8 nF PE	
	C....97	. .	not used	
	C....98	59.05.1681	680 pF 1% 500V PP	
	C....99	59.05.1681	680 pF 1% 500V PP	
	C...100	. .	not used	
	C...101	. .	not used	
	C...102	59.34.4221	220 pF CE	
	C...103	59.99.0625	1500 pF 400V CE	
	C...104	59.99.0625	1500 pF 400V CE	
	C...105	59.32.4102	1 nF CE	
	C...106	59.34.4331	330 pF CE	
	C...107	59.06.0224	220 nF PE	
	C...108	59.06.0222	2.2 nF 10% PE	
	C...109	59.06.0224	220 nF 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.....6	50.04.0125	1N4448	any
	D.....7	50.04.0132	BAW 62	Ph
	D.....8	50.04.0125	1N4448	any
	D.....9	50.04.0132	BAW 62	Ph
	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	50.04.1112	Z 5.1V 400mW BZX83C 5.1,BZX55C 5.1,ZPD 5.1	Ses,ITT
	D....15	50.04.1103	Z 7.5V 400mW BZX83C 7.5,BZX55C 7.5,ZPD 7.5	Ses,ITT
	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	50.04.1119	Z 15 V 400mW BZX83C 15, BZX55C 15, ZPD 15	Ses,ITT
	D....22	50.04.0125	1N4448	any
	DL....1	50.04.2111	MV5753 red	GI,HP
	DL....2	50.04.2111	MV5753 red	GI,HP
	DL....3	50.04.2111	MV5753 red	GI,HP
	IC....1	50.09.0105	NE5532 dual op. amp.	Sig,Ex,Ra
02	IC....1	50.09.0117	MC33078 dual op. amp. low offset	Mot
04	IC....1	1.010.051.50	NE5532 dual op. amp. selected	ST
	IC....2	50.05.0244	NE5534NB single op. amp. low noise	Sig,Ra
	IC....3	50.07.0014	CD40106 Hex. Schmitt INV CMOS	Fc,Mot
	IC....4	50.07.1011	CD4011 Quad 2-Input NAND CMOS	Fc,Mot
	IC....5	50.09.0105	NE5532 dual op. amp.	Sig,Ex,Ra
	IC....6	50.09.0105	NE5532 dual op. amp.	Sig,Ex,Ra
	IC....7	50.09.0105	NE5532 dual op. amp.	Sig,Ex,Ra
	IC....8	50.09.0105	NE5532 dual op. amp.	Sig,Ex,Ra
	IC....9	50.09.0105	NE5532 dual op. amp.	Sig,Ex,Ra
	IC...10	50.05.0244	NE5534NB single op. amp. low noise	Sig,Ra
	IC...11	50.09.0107	RC4559 dual op. amp.	Ra,NEC
	IC...12	50.09.0105	NE5532 dual op. amp.	Sig,Ex,Ra
	IC...13	50.09.0101	LF353 dual op. amp. J-FET	NS,TI
	IC...14	50.09.0101	LF353 dual op. amp. J-FET	NS,TI
	IC...15	50.05.0244	NE5534NB single op. amp. low noise	Sig,Ra
	J.....1	1.012.301.00	XLR female	
	J.....2	1.012.300.00	XLR male	
	J.....3	. .	not used	
	J...101	54.24.0105	dual BANTAM-JACK	
	J...102	. .	part of J101	
	J...103	54.24.0105	dual BANTAM-JACK	
	J...104	. .	part of J103	
	MP....1	53.03.0166	13 pcs IC-Socket 8 pin	
	MP....2	53.03.0167	2 pcs IC-Socket 14 pin	
	MP....3	1.960.300.01	2 pcs HF-Screen	
	MP....4	1.960.300.02	1 pce Magnetic-Shield	
	MP....5	50.20.2001	5 pcs clip 2* TO 92	
	MP....6	1.010.012.50	3 pcs LED-Holder	St
	P.....2	. .	not used	
	P.....3	54.11.2007	2*8 pin euroconnector	Bu
	P.....5	54.11.2007	2*8 pin euroconnector	Bu
	Q.....1	50.03.0216	J 111 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	50.03.0350	J 112 N-JFET	NS,Mot,Six
	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	50.03.0515	BC 307 PNP	any
	Q....14	50.03.0436	BC 237 NPN IC>100mA, B>100	any
	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	50.03.0515	BC 307 PNP	any
	Q....18	50.03.0515	BC 307 PNP	any
	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	50.03.0436	BC 237 NPN IC>100mA, B>100	any
	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	50.03.0436	BC 237 NPN IC>100mA, B>100	any
	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	1.010.037.50	BC 337 NPN selected	St
03	Q....28	50.03.0516	BC 337 NPN	St
	Q....29	1.010.037.50	BC 337 NPN selected	St
03	Q....29	50.03.0516	BC 337 NPN	St
	Q....30	1.010.037.50	BC 337 NPN selected	St
03	Q....30	50.03.0516	BC 337 NPN	St
	Q....31	1.010.037.50	BC 337 NPN selected	St
03	Q....31	50.03.0516	BC 337 NPN	St
	Q....32	1.010.036.50	BC 327 PNP selected	St
03	Q....32	50.03.0625	BC 327 PNP	St

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Ad	..POS..	...REF.No...	DESCRIPTION	MANUFACTURER
	Q....33	1.010.036.50	BC 327 PNP selected	St
03	Q....33	50.03.0625	BC 327 PNP	St
	Q....34	1.010.036.50	BC 327 PNP selected	St
03	Q....34	50.03.0625	BC 327 PNP	St
	Q....35	1.010.036.50	BC 327 PNP selected	St
03	Q....35	50.03.0625	BC 327 PNP	St
	Q....36	50.03.0350	J 112 N-JFET	NS,Mot,Six
	Q....37	50.03.0515	BC 307 PNP	any
	Q....38	50.03.0350	J 112 N-JFET	NS,Mot,Six
	Q....39	1.010.036.50	BC 327 PNP selected	St
03	Q....39	50.03.0625	BC 327 PNP	St
	Q....40	1.010.036.50	BC 327 PNP selected	St
03	Q....40	50.03.0625	BC 327 PNP	St
	Q....41	50.03.0515	BC 307 PNP	any
	Q....42	50.03.0350	J 112 N-JFET	NS,Mot,Six
	Q....43	1.010.037.50	BC 337 NPN selected	St
03	Q....43	50.03.0516	BC 337 NPN	St
	Q....44	50.03.0436	BC 237 NPN IC>100mA, B>100	any
	R.....1	57.11.3152	1.5 kOhm 1% 0.25W	
	R.....2	57.11.3392	3.9 kOhm 1% 0.25W	
	R.....3	57.11.3152	1.5 kOhm 1% 0.25W	
	R.....4	57.11.3392	3.9 kOhm 1% 0.25W	
	R.....5	57.11.4182	1.8 kOhm 5% 0.25W	
	R.....6	57.11.3112	1.1 kOhm 1% 0.25W	
	R.....7	57.11.3472	4.7 kOhm 1% 0.25W	
	R.....8	57.11.3431	430 Ohm 1% 0.25W	
	R.....9	58.01.9202	2 kOhm 10% variable resistor PMG	
	R....10	57.11.4222	2.2 kOhm 5% 0.25W	
	R....11	57.11.4104	100 kOhm 5% 0.25W	
	R....12	57.11.5335	3.3 MOhm 5% 0.25W	
	R....13	1.010.011.58	10 kOhm 10% pos.log. variable resistor	St
	R....14	57.11.4101	100 Ohm 5% 0.25W	
	R....15	57.11.4223	22 kOhm 5% 0.25W	
	R....16	57.11.3822	8.2 kOhm 1% 0.25W	
	R....17	57.11.3362	3.6 kOhm 1% 0.25W	
	R....18	57.11.4332	3.3 kOhm 5% 0.25W *** repl. by W1	
	R....19	57.11.4332	3.3 kOhm 5% 0.25W *** repl. by W2	
	R....20	57.11.4103	10 kOhm 5% 0.25W	
	R....21	. .	10 kOhm pos.log. see note A)	St
	R....22	. .	10 kOhm neg.log. combined with R 21	
	R....23	1.369.150.03	10 kOhm 20% pos.log. variable resistor	St
	R....24	1.369.150.03	10 kOhm 20% pos.log. variable resistor	St
	R....25	57.11.4682	6.8 kOhm 5% 0.25W	
	R....26	57.11.4682	6.8 kOhm 5% 0.25W	
	R....27	57.11.4682	6.8 kOhm 5% 0.25W ***	
	R....28	57.11.4682	6.8 kOhm 5% 0.25W *****	
	R....29	57.11.4682	6.8 kOhm 5% 0.25W ***	
	R....30	57.11.4682	6.8 kOhm 5% 0.25W *****	
	R....31	57.11.4682	6.8 kOhm 5% 0.25W *** / *****	
	R....32	57.11.4682	6.8 kOhm 5% 0.25W ***	
	R....33	57.11.4682	6.8 kOhm 5% 0.25W *** / *****	
	R....34	57.11.4682	6.8 kOhm 5% 0.25W ***	
	R....35	57.11.4333	33 KOhm 5% 0.25W	
	R....36	57.11.4333	33 KOhm 5% 0.25W	
	R....37	57.11.4683	68 kOhm 5% 0.25W	
	R....38	57.11.4333	33 kOhm 5% 0.25W	
	R....39	57.11.4104	100 kOhm 5% 0.25W	
	R....40	57.11.4684	680 kOhm 5% 0.25W	
	R....41	57.11.4471	470 Ohm 5% 0.25W	
	R....42	57.11.5335	3.3 MOhm 5% 0.25W	
	R....43	57.11.4223	22 kOhm 5% 0.25W	
	R....44	57.11.4104	100 kOhm 5% 0.25W	
	R....45	57.11.5106	10 MOhm 5% 0.25W	
	R....46	57.11.5106	10 MOhm 5% 0.25W	
	R....47	57.11.4104	100 kOhm 5% 0.25W	
	R....48	57.11.5106	10 MOhm 5% 0.25W	
	R....49	57.11.5106	10 MOhm 5% 0.25W	
	R....50	57.11.4104	100 kOhm 5% 0.25W	
	R....51	57.11.5106	10 MOhm 5% 0.25W	
	R....52	57.11.5106	10 MOhm 5% 0.25W	
	R....53	57.11.4104	100 kOhm 5% 0.25W	
	R....54	57.11.5106	10 MOhm 5% 0.25W	
	R....55	57.11.5106	10 MOhm 5% 0.25W	
	R....56	57.11.4104	100 kOhm 5% 0.25W	
	R....57	57.11.4104	100 kOhm 5% 0.25W	
	R....58	57.11.5106	10 MOhm 5% 0.25W	
	R....59	57.11.5106	10 MOhm 5% 0.25W	
	R....60	57.11.4330	33 Ohm 5% 0.25W	
	R....61	57.11.4279	2.7 Ohm 5% 0.25W	
	R....62	57.11.4330	33 Ohm 5% 0.25W	
	R....63	57.11.4682	6.8 kOhm 2% 0.25W	
	R....64	57.11.4564	560 kOhm 2% 0.25W	
	R....65	57.11.4223	22 kOhm 5% 0.25W	
	R....66	57.11.3152	1.5 kOhm 1% 0.25W	
	R....67	57.39.3091	3090 Ohm 1% 0.25W	
	R....68	57.11.3242	2.4 kOhm 1% 0.25W	
	R....69	57.11.4562	5.6 kOhm 5% 0.25W	
	R....70	57.11.3150	15 Ohm 1% 0.25W	
	R....71	57.11.3152	1.5 kOhm 1% 0.25W	
	R....72	57.39.3091	3090 Ohm 1% 0.25W	
	R....73	57.11.3152	1.5 kOhm 1% 0.25W	
	R....74	57.11.3302	3 kOhm 1% 0.25W	
	R....75	57.11.3302	3 kOhm 1% 0.25W	
	R....76	57.11.3302	3 kOhm 1% 0.25W	
	R....77	57.11.3302	3 kOhm 1% 0.25W	
	R....78	57.11.3150	15 Ohm 1% 0.25W	
	R....79	57.11.3689	6.8 Ohm 1% 0.25W	
	R....80	57.11.3689	6.8 Ohm 1% 0.25W	
	R....81	57.11.3152	1.5 kOhm 1% 0.25W	
	R....82	57.11.3152	1.5 kOhm 1% 0.25W	
	R....83	57.11.3392	3.9 kOhm 1% 0.25W	
	R....84	57.11.3392	3.9 kOhm 1% 0.25W	
	R....85	57.11.3272	2.7 kOhm 1% 0.25W	
	R....86	57.11.3272	2.7 kOhm 1% 0.25W	
	R....87	57.11.4330	33 Ohm 5% 0.25W	
	R....88	57.11.4333	33 kOhm 5% 0.25W	
	R....89	57.11.4333	33 kOhm 5% 0.25W	
	R....90	57.11.4104	100 kOhm 5% 0.25W	
	R....91	57.11.4104	100 kOhm 5% 0.25W	
	R....92	57.11.5106	10 MOhm 5% 0.25W	
	R....93	57.11.5106	10 MOhm 5% 0.25W	
	R....94	57.11.4101	100 Ohm 5% 0.25W	
	R....95	57.11.4104	100 kOhm 5% 0.25W	
	R....96	57.11.3822	8.2 kOhm 1% 0.25W	
	R....97	57.11.4272	2.7 kOhm 5% 0.25W	
	R....98	57.11.4330	33 Ohm 5% 0.25W	
	R....99	57.11.4104	100 kOhm 5% 0.25W	
	R...100	57.11.3562	5.6 kOhm 1% 0.25W	
	R...101	57.11.4103	10 kOhm 5% 0.25W	
	R...102	57.11.4394	390 kOhm 5% 0.25W	
	R...103	57.11.4472	4.7 kOhm 5% 0.25W	
	R...104	58.01.9203	20 kOhm 10% variable resistor PMG	
	R...105	57.11.4222	2.2 kOhm 5% 0.25W	
	R...106	57.11.4223	22 kOhm 5% 0.25W	
	R...107	57.11.4101	100 Ohm 5% 0.25W	
	R...108	58.01.8501	500 Ohm 10% variable resistor PMG	
	R...109	57.11.4122	1.2 kOhm 5% 0.25W	
	R...110	57.11.3103	10 kOhm 1% 0.25W	
	R...111	57.11.3103	10 kOhm 1% 0.25W	
	R...112	57.11.4339	3.3 Ohm 5% 0.25W	
	R...113	57.11.4339	3.3 Ohm 5% 0.25W	
	R...114	57.11.3222	2.2 kOhm 1% 0.25W	
	R...115	57.11.3222	2.2 kOhm 1% 0.25W	
	R...116	57.11.3103	10 kOhm 1% 0.25W	
	R...117	57.11.3103	10 kOhm 1% 0.25W	
	R...118	57.11.4339	3.3 Ohm 5% 0.25W	
	R...119	57.11.4339	3.3 Ohm 5% 0.25W	
	R...120	57.11.4331	330 Ohm 5% 0.25W	
	R...121	57.11.4821	820 Ohm 5% 0.25W	
	R...122	57.11.3152	1.5 kOhm 1% 0.25W	
	R...123	57.11.3392	3.9 kOhm 1% 0.25W	
	R...124	57.11.3152	1.5 kOhm 1% 0.25W	
	R...125	57.11.3392	3.9 kOhm 1% 0.25W	
	R...126	57.11.3272	2.7 kOhm 1% 0.25W	
	R...127	57.11.3272	2.7 kOhm 1% 0.25W	
	R...128	1.010.001.58	10 kOhm 10% lin. variable resistor	St
	R...129	57.11.3152	1.5 kOhm 1% 0.25W	
	R...130	57.11.3102	1 kOhm 1% 0.25W	
	R...131	57.11.4104	100 kOhm 5% 0.25W	
	R...132	57.11.5335	3.3 MOhm 5% 0.25W	
	R...133	57.11.5335	3.3 MOhm 5% 0.25W	
	R...134	57.11.4821	820 Ohm 5% 0.25W	
	R...135	57.11.3562	5.6 kOhm 1% 0.25W	
	R...136	57.11.4103	10 kOhm 5% 0.25W	
	R...137	57.11.3562	5.6 kOhm 1% 0.25W	
	R...138	57.11.4103	10 kOhm 5% 0.25W	
	R...139	57.11.4104	100 kOhm 5% 0.25W	
	R...140	57.11.4104	100 kOhm 5% 0.25W	
	R...141	57.11.4561	560 Ohm 5% 0.25W	
	R...142	57.11.4561	560 Ohm 5% 0.25W	
	R...143	57.11.4564	560 kOhm 5% 0.25W	
	R...144	57.11.5475	4.7 MOhm 5% 0.25W	
	R...145	57.11.5106	10 MOhm 5% 0.25W	
	R...146	57.11.4564	560 kOhm 5% 0.25W	
	R...147	57.11.4184	180 kOhm 5% 0.25W	
	R...148	57.11.5475	4.7 MOhm 5% 0.25W	
	R...149	57.11.4104	100 kOhm 5% 0.25W	
	R...150	57.11.5475	4.7 MOhm 5% 0.25W	
	R...151	57.11.5106	10 MOhm 5% 0.25W	
	R...152	57.11.4473	47 kOhm 5% 0.25W	
	R...153	57.11.4105	1 MOhm 5% 0.25W	
	R...154	57.11.4473	47 kOhm 5% 0.25W	
	R...155	57.11.4105	1 MOhm 5% 0.25W	
	R...156	57.11.4105	1 MOhm 5% 0.25W	
	R...157	57.11.5475	4.7 MOhm 5% 0.25W	
	R...158	57.11.5106	10 MOhm 5% 0.25W	
	R...159	57.11.4330	33 Ohm 5% 0.25W	
	R...160	57.11.3562	5.6 kOhm 1% 0.25W	
	R...161	57.11.5475	4.7 MOhm 5% 0.25W	
	R...162	57.11.4223	22 kOhm 5% 0.25W	
	R...163	57.11.3562	5.6 kOhm 1% 0.25W	
	R...164	57.11.3152	1.5 kOhm 1% 0.25W	
	R...165	57.39.3091	3090 Ohm 1% 0.25W	
	R...166	57.11.3152	1.5 kOhm 1% 0.25W	
	R...167	57.11.3302	3 kOhm 1% 0.25W	
	R...168	57.11.3150	15 Ohm 1% 0.25W	
	R...169	57.11.3152	1.5 kOhm 1% 0.25W	
	R...170	57.39.3091	3090 Ohm 1% 0.25W	
	R...171	57.11.3152	1.5 kOhm 1% 0.25W	
	R...172	57.11.3302	3 kOhm 1% 0.25W	
	R...173	57.11.3302	3 kOhm 1% 0.25W	
	R...174	57.11.3302	3 kOhm 1% 0.25W	
	R...175	57.11.3302	3 kOhm 1% 0.25W	
	R...176	57.11.3150	15 Ohm 1% 0.25W	
	R...177	57.11.3689	6.8 Ohm 1% 0.25W	
	R...178	57.11.4104	100 kOhm 5% 0.25W	
	R...179	57.11.3102	1 kOhm 1% 0.25W	
	R...180	57.11.3472	4.7 kOhm 1% 0.25W	
	R...181	57.11.3152	1.5 kOhm 1% 0.25W	
	R...182	57.11.3681	680 Ohm 1% 0.25W	
	R...183	57.11.3223	22 kOhm 1% 0.25W	
	R...184	57.11.3223	22 kOhm 1% 0.25W	
	R...185	57.11.3103	10 kOhm 1% 0.25W	
	R...186	57.11.3203	20 kOhm 1% 0.25W	
	R...187	57.11.4392	3.9 kOhm 5% 0.25W	
	R...188	57.11.4222	2.2 kOhm 5% 0.25W	
	R...189	58.01.8103	10 kOhm 10% variable resistor PMG	
	R...190	57.11.3753	75 kOhm 1% 0.25W	

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Ad	..POS..	...REF.No...	DESCRIPTION				MANUFACTURER
	R...191	1.010.020.58	10 kOhm	10%	neg.log.	variable resistor	St
	R...192	57.11.4330	33 Ohm	5%	0.25W		
	R...193	57.11.4105	1 MOhm	5%	0.25W		
	R...194	57.11.4222	2,2 kOhm	5%	0.25W		
	R...195	57.11.4333	33 kOhm	5%	0.25W		
	R...196	57.11.4223	22 kOhm	5%	0.25W		
	R...197	57.11.3203	20 kOhm	1%	0.25W		
	R...198	57.11.5475	4.7 MOhm	5%	0.25W		
	R...199	57.11.4472	4.7 kOhm	5%	0.25W		
	R...200	1.010.014.58	22 kOhm	10%	lin.	variable resistor	St
	R...201	57.11.4272	2.7 kOhm	5%	0.25W		
	R...202	57.11.3561	560 Ohm	1%	0.25W		
	R...203	57.11.3153	15 kOhm	1%	0.25W		
	R...204	57.11.3513	51 kOhm	1%	0.25W		
	R...205	57.11.3471	470 Ohm	1%	0.25W		
	R...206	57.11.4124	120 kOhm	5%	0.25W		
	R...207	57.11.4334	330 kOhm	5%	0.25W		
	R...208	57.11.6226	22 MOhm	5%	0.25W		
	R...209	57.11.6226	22 MOhm	5%	0.25W		
	R...210	57.11.6226	22 MOhm	5%	0.25W		
	R...211	57.11.4102	1 kOhm	5%	0.25W		
	R...212	57.11.3752	7.5 kOhm	2%	0.25W		
	R...213	57.11.4103	10 kOhm	5%	0.25W		
	R...214	57.11.4332	3.3 kOhm	5%	0.25W		
	R...215	57.11.3689	6.8 Ohm	1%	0.25W		
	R...216	57.92.1271	6.5 Ohm	I= 270mA	PTC	Philips Nr.2322 662 12711	
	R...217	57.92.1271	6.5 Ohm	I= 270mA	PTC	Philips Nr.2322 662 12711	
	R...218	1.960.011.00	5 KOhm	FADER			St
	R...219	57.11.4104	100 kOhm	5%	0.25W		
	R...220	57.11.4682	6.8 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	57.11.5475	4.7 MOhm	5%	0.25W		
	R...224	57.11.4102	1 kOhm	5%	0.25W		
	R...225	57.11.4102	1 kOhm	5%	0.25W		
	R...226	57.11.3689	6.8 Ohm	1%	0.25W		
	R...227	57.11.4103	10 kOhm	5%	0.25W		
	R...228	57.11.4105	1 MOhm	5%	0.25W		
	R...229	57.11.4000	0 Ohm	***			
	R...230	57.11.4000	0 Ohm	***			
	R...231	57.11.4472	4.7 kOhm	5%	0.25W		
	R...232	57.11.4390	39 Ohm	5%	0.25W		
	R...233	58.01.9202	2 kOhm	10%	variable resistor	PMG	
	R...234	58.11.6102	1 kOhm	10%	variable resistor	PMG	
	R...235	57.11.4223	22 kOhm	5%			
	R...236	57.11.4222	2.2 kOhm	5%			
	R...237	57.11.4104	100 kOhm	5%			
	R...238	57.11.4000	0 Ohm				
	R...239	57.11.4000	0 Ohm				
	R...240	57.11.4224	220 kOhm	5%			
	S.....1	. .	2*U	combined with R 23			
	S.....2	. .	2*U	combined with R 24			
	S.....3	. .	2*U	see note A)			
	S.....4	55.15.0019	2*U	button: red			ITT
	S.....5	55.15.0019	2*U	button: red	*** / *****		ITT
	S.....6	55.15.0019	2*U	button: red	*****		ITT
	S.....7	55.15.0019	2*U	button: red	*****		ITT
	S.....8	55.15.0019	2*U	button: grey			ITT
	S.....9	55.15.0019	2*U	button: red			ITT
	S....10	55.15.0019	2*U	button: red			ITT
	S....11	55.15.0019	2*U	button: grey			ITT
	S....12	55.15.0019	2*U	button: grey			ITT
	S....13	55.15.0019	2*U	button: grey			ITT
	S....14	. .	1*On	combined with FADER R 218			
	T.....1	1.022.451.00		input trafo	1:0.62		St
	T.....2	1.022.359.00		output trafo	1:1.12		St
	W.....1	. .		***			
	W.....2	. .		***			
	W.....3	. .		*****			
	W.....4	. .	not used				
	W.....5	. .		*****			
	W.....6	. .		***			
	W.....7	. .	not used				
	W.....8	. .		***			

==

(1) change of PDM-VCA part number

(2) click suppresion : IC1 MC33078

(3) change of transistor part number

(4) IC1, 50090117 replaced by 101005150

==

***	only	2 CH 1,2	1.970.821.81
*****	only	4 CH 1,2,3,4,	1.970.841.81

==

A) pan - pot (R21 / R22)

Version:	***	R21 / R22	1.010.004.58	without switch
	*****	R21 / R22	1.010.021.58	with S14/S15

==

CE=Ceramic, CF=Carbon Film, EL=Electrolytic, MF=Metal Film,
PE=Polyester, PP=Polypropylen, PS=Polystyrol

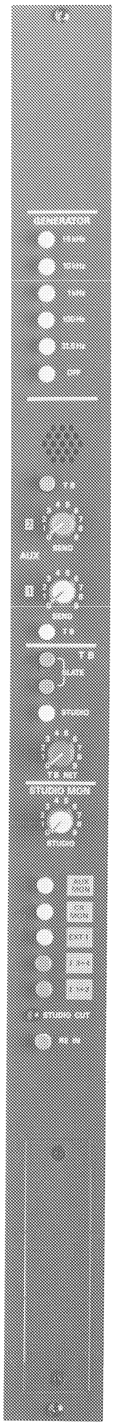
MANUFACTURER: Bu=Burndy, Ex=Exar, Fc=Fairchild, GI=General Instrument
HP=Hewlett Packard, ITT=Intermetall, Mot=Motorola, Nat=N
(Matsushita), NS=National Semiconductors, Ph=Philips,
Ra=Raytheon, Sig=Signetics, Six=Siliconix, St=Studer,
TI=Texas Instrument

1.970.810.81 MASTER UNIT 970 WM 88.01.0401

Ad	..POS..	...REF.No...	DESCRIPTION	MANUFACTURER
		1.970.810.81	MASTER UNIT 970	TA 88.11.1802
		1.970.810.81	MASTER UNIT 970	TA 89.10.0503
		1.970.810.81	MASTER UNIT 970	WM 90.10.2404

4. Studio Monitor, Aux Master- und Kommandoeinheit 1.970.901

4.1 Bedienungselemente



TESTGENERATOR: Der eingebaute Testgenerator wird über eine Sammelschiene allen Mono Eingangseinheiten zugeführt. Fünf Frequenzen können eingestellt werden (31.5 Hz, 100 Hz, 1 kHz, 10 kHz und 15 kHz).

KOMMANDO: Dem Talk Back Mikrofon folgt ein Mikrofonverstärker mit integriertem Limiter. Über Drucktasten kann auf die beiden Hilfsausgänge, (TB Aux1; TB Aux2) die Summensammelschienen TB SLATE und auf den Studiolautsprecher TB STUDIO gesprochen werden.

HILFSSUMMEN AUX 1 und AUX 2: Zwei Null-Ohm Verstärker summieren die Signale der AUX Sammelschienen. Der Ausgangspegel kann an zwei Potentiometern eingestellt werden.

Zwei TB Drucktasten erlauben Kommandogabe auf die Hilfsausgänge.

Die Ausgänge der Hilfssummen sind symmetrisch und erdfrei.

TB RETURN: An den eingebauten TB Return Verstärker kann ein im Studio plaziertes Gegensprechmikrofon angeschlossen werden. Ein externes Steuersignal schaltet den Gegensprechweg auf den Vorhörlautsprecher.

STUDIO MONITOR: Der Monitor Selector erlaubt die Anwahl folgender Quellen:

Bei Stereopulten:

- Summen $\Sigma 1+2$
- C.R. Monitor
- den Hilfseinschub AUX Monitor
- 2 Externe Quellen

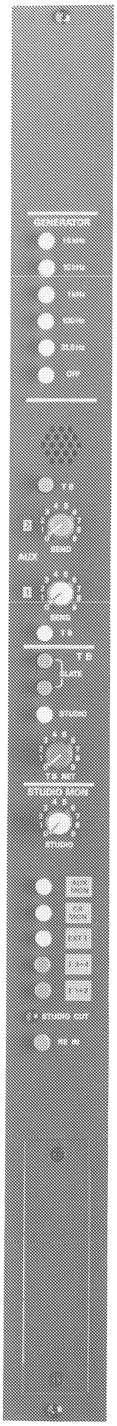
Bei 4 Kanal Pulten:

- Summen $\Sigma 1+2$
- Summen $\Sigma 3+4$
- C.R. Monitor
- den Hilfseinschub AUX Monitor
- 1 Externe Quelle

STUDIO CUT: Nach dem Lautstärkepotentiometer folgt ein MUTE Schalter der das Studioabhören unterbricht, sobald ein Mikrofonkanal geöffnet wird. Die RE IN Taste erlaubt das Einspielen bei offenem Mikrofonkanal.
Das Ausgangssignal wird elektronisch symmetriert.

4. Studio Monitor, Aux Master and Talk-back Unit 1.970.901

4.1 Operating Elements



TEST GENERATOR: The built-in test generator is connected to all mono input units via a bus. Five frequencies can be set (31.5 Hz, 100 Hz, 1 kHz, 10 kHz and 15 kHz).

TALK-BACK: The talk-back microphone is followed by a microphone amplifier with integrated limiter. Talkback on the two auxiliary outputs, (TB Aux1; TB Aux2) the master bus TB SLATE and on the studio speakers TB STUDIO is possible by pressing the corresponding buttons.

AUXILIARY MASTERS AUX 1... AUX 4: Two zero-ohm amplifiers add the signals of the AUX buses. The output level can be adjusted with two potentiometers.

Two TB push buttons are available for talk-pack on the auxiliary outputs.

The outputs of the auxiliary masters are balanced and floating.

TB RETURN: An intercom microphone can be connected to the built-in TB return amplifier. An external control signal connects the intercom path to the prelistening speaker.

STUDIO MONITOR: The following sources can be accessed with the monitor selector:

On stereo consoles:

- Masters Σ1+2
- C.R. monitor
- Auxiliary module AUX Monitor
- 2 External sources

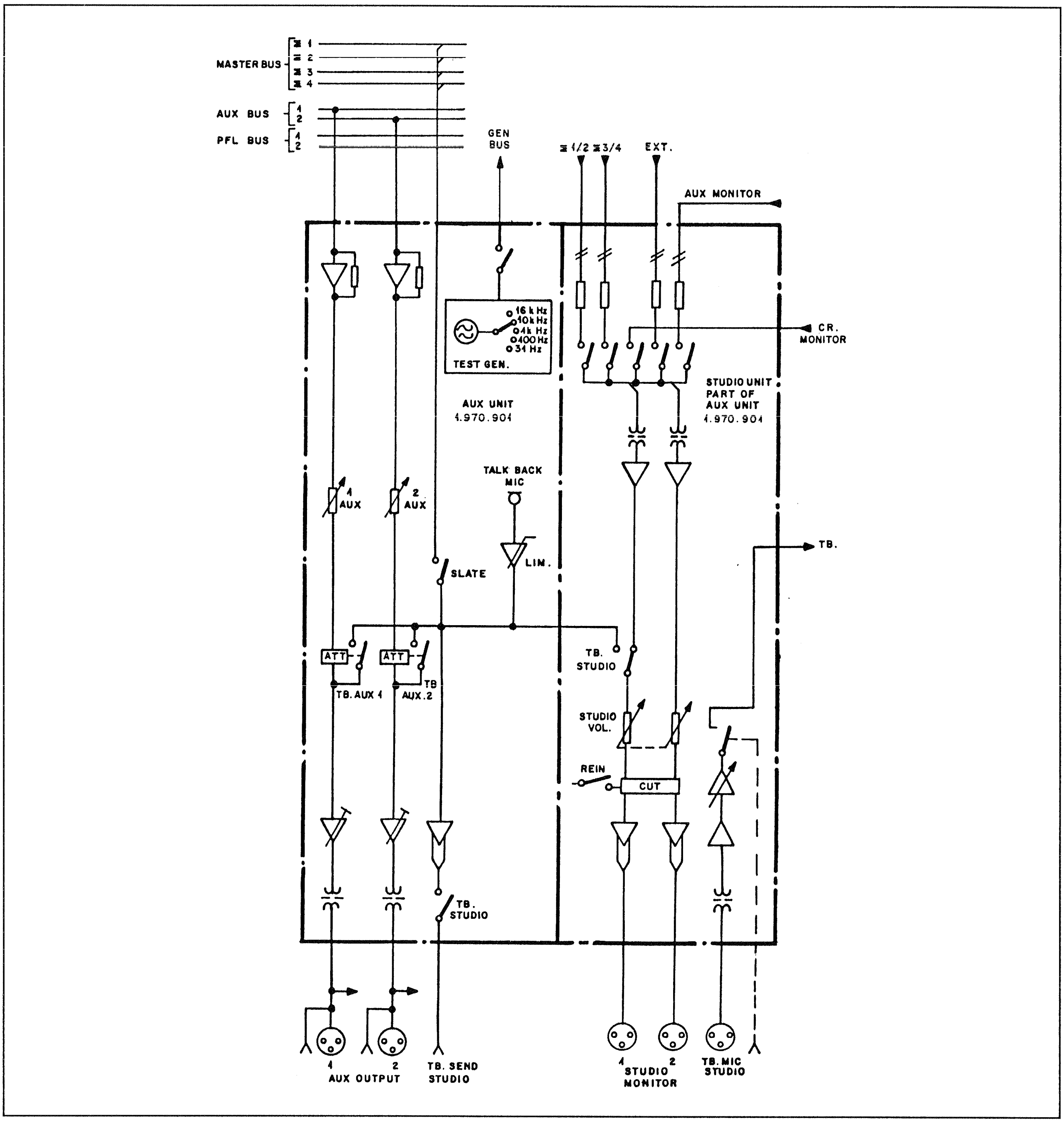
On 4-channel consoles:

- Masters Σ1+2
- Masters Σ3+4
- C.R. monitor
- Auxiliary module AUX Monitor
- 1 External source

STUDIO CUT: The volume potentiometer is followed by a MUTE switch that interrupts studio monitoring as soon as a microphone channel is opened. Insertion with open microphone channel is possible with the RE IN button.

The output signal is electronically balanced.

4.2 Blockschaltbild/Block Diagram 1.970.901

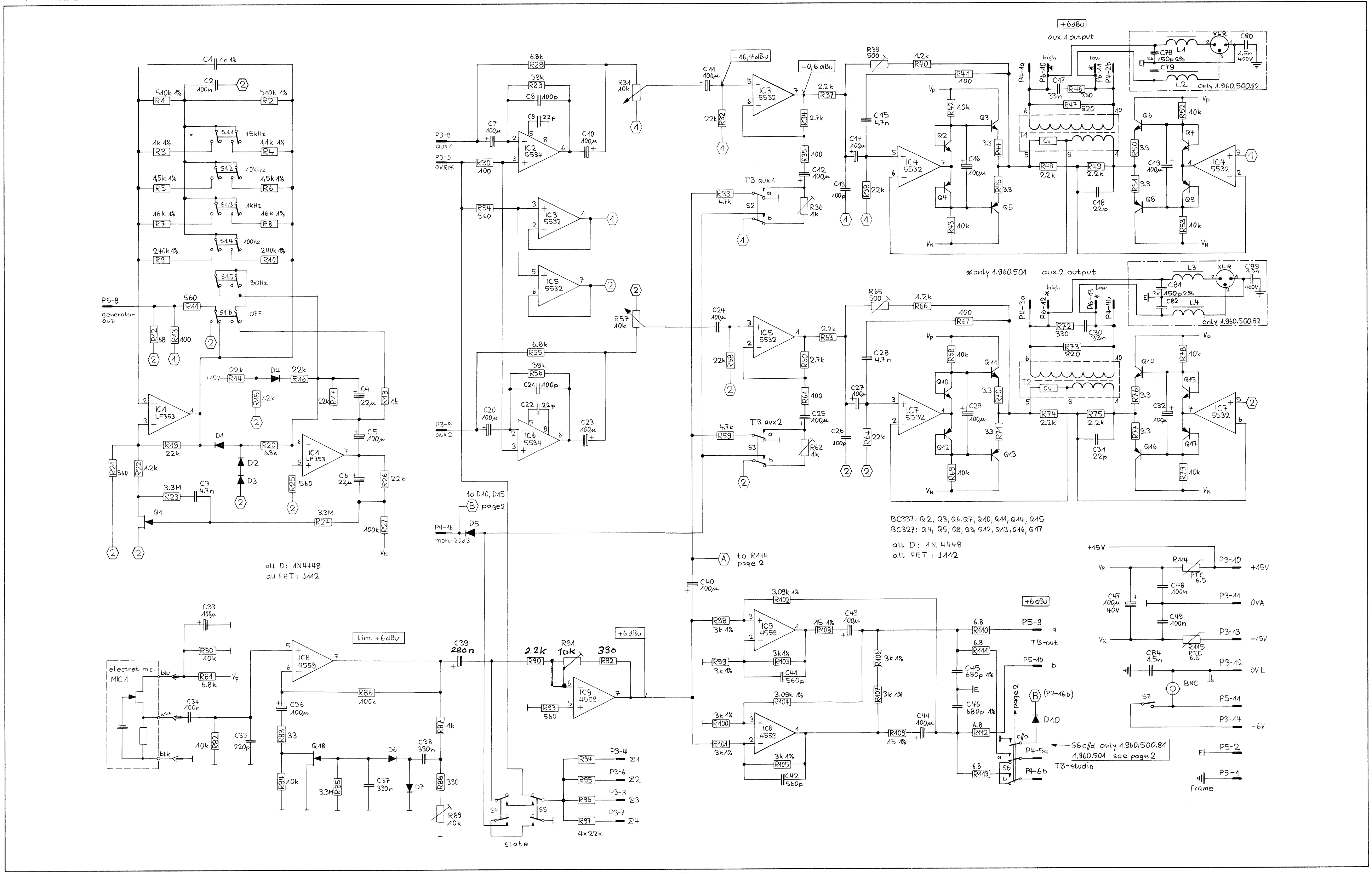


4.3 Schemateil / Circuit Diagrams

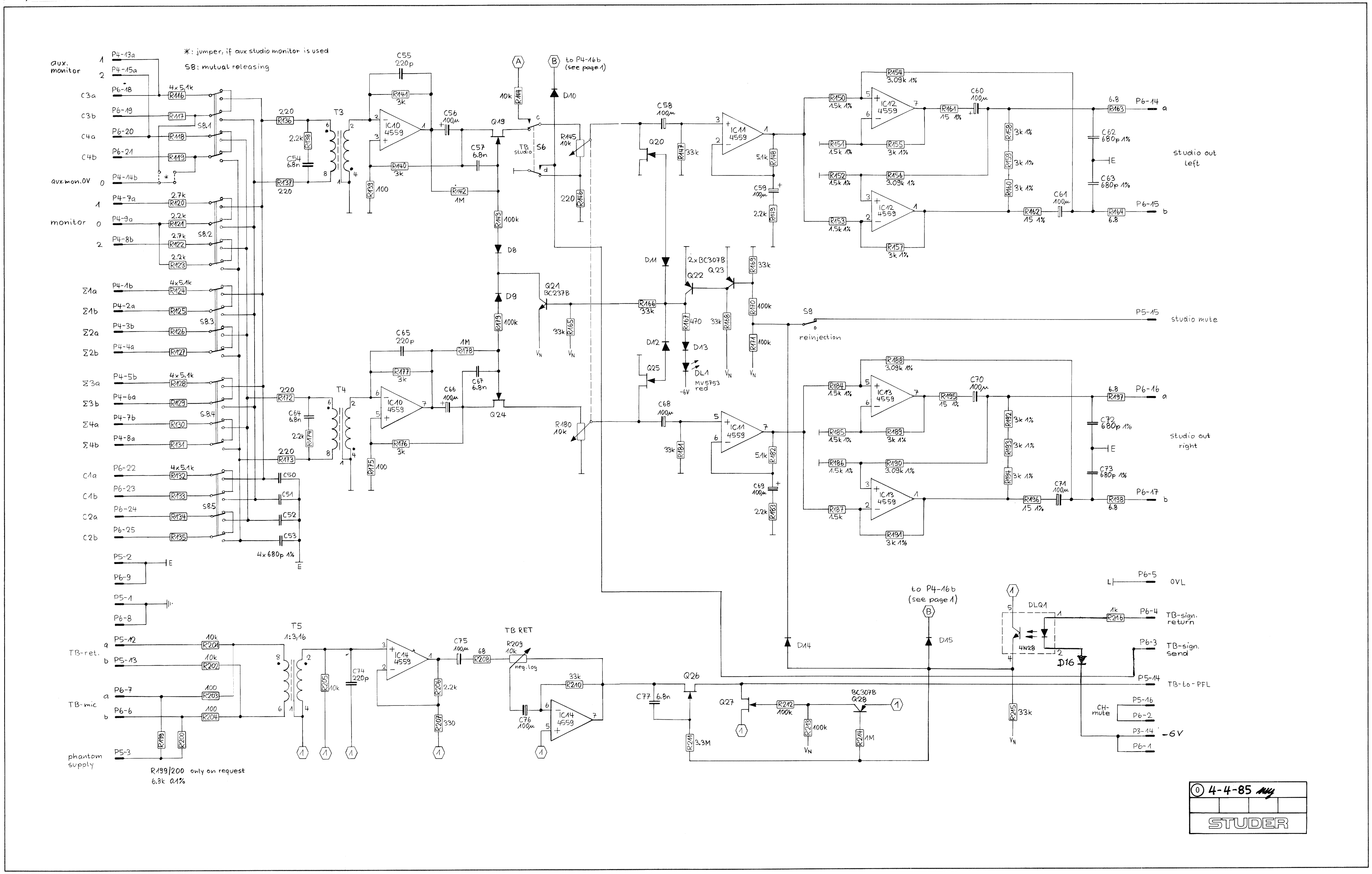
1.970.901.00

Aux/Studio Master Unit

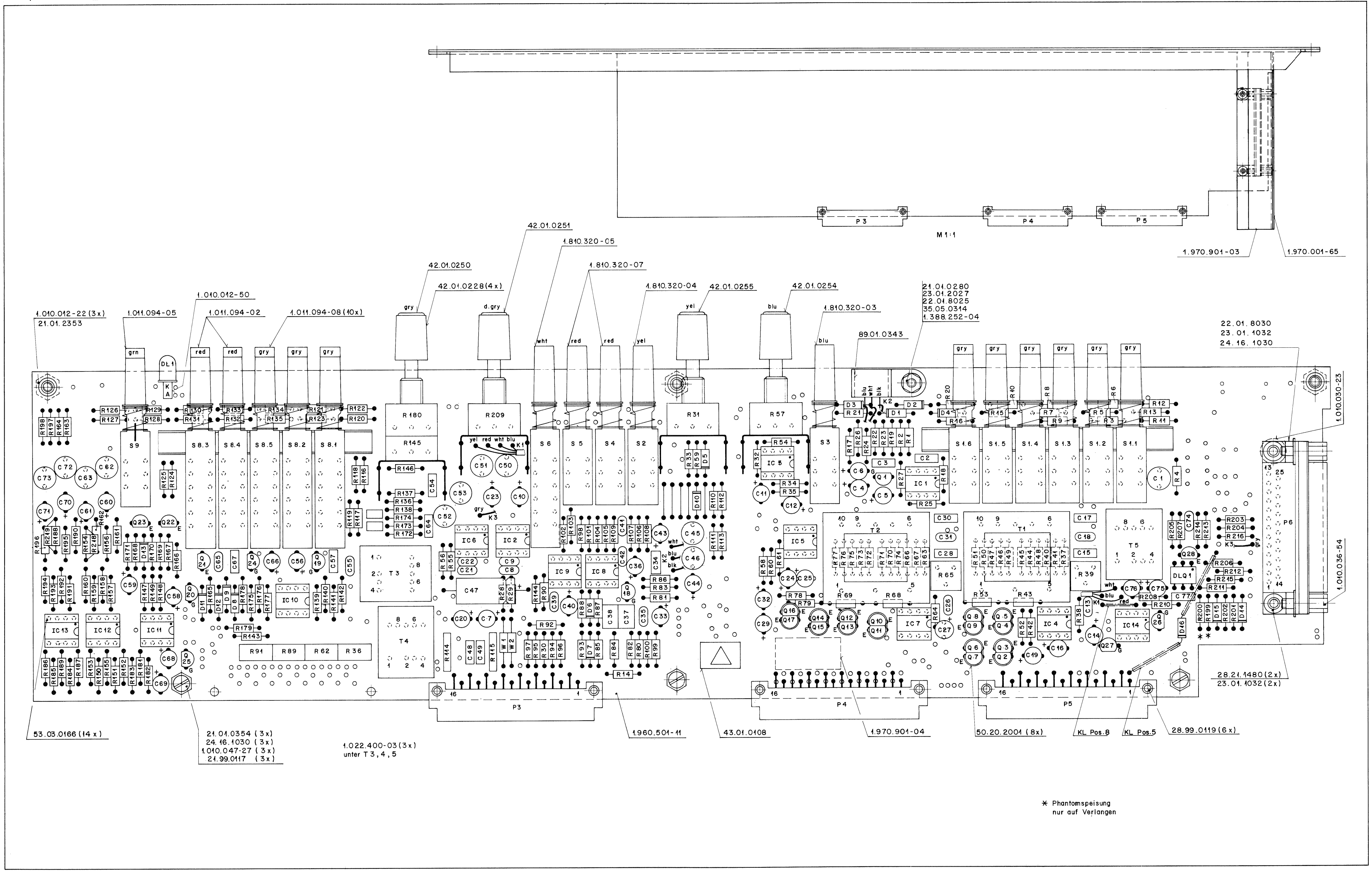
Part 1



Aux/Studio Master Unit 1.970.901.00 Part 2



Aux / Studio Master Unit **1.970.901.00**



Aux Unit/Studio Monitor 1.970.901.00

Ad	..POS..	...REF.No...	DESCRIPTION				MANUFACTURER
	C.....1	59.05.1102	1 nF	1%	PP		
	C.....2	59.06.5104	100 nF	5%	PE		
	C.....3	59.06.0472	4.7 nF		PE		
	C.....4	59.22.6220	22 uF	35V	EL		
	C.....5	59.22.3101	100 uF	10V	EL		
	C.....6	59.22.6220	22 uF	35V	EL		
	C.....7	59.22.3101	100 uF	10V	EL		
	C.....8	59.34.4101	100 pF		CER		
	C.....9	59.34.2220	22 pF		CER		
	C....10	59.22.3101	100 uF	10V	EL		
	C....11	59.22.3101	100 uF	10V	EL		
	C....12	59.22.3101	100 uF	10V	EL		
	C....13	59.34.4101	100 pF		CER		
	C....14	59.22.3101	100 uF	10V	EL		
	C....15	59.06.0472	4.7 nF		PE		
	C....16	59.22.3101	100 uF	10V	EL		
	C....17	59.06.0333	33 nF		PE		
	C....18	59.34.2220	22 pF		CER		
	C....19	59.22.3101	100 uF	10V	EL		
	C....20	59.22.3101	100 uF	10V	EL		
	C....21	59.34.4101	100 pF		CER		
	C....22	59.34.2220	22 pF		CER		
	C....23	59.22.3101	100 uF	10V	EL		
	C....24	59.22.3101	100 uF	10V	EL		
	C....25	59.22.3101	100 uF	10V	EL		
	C....26	59.34.4101	100 pF		CER		
	C....27	59.22.3101	100 uF	10V	EL		
	C....28	59.06.0472	4.7 nF		PE		
	C....29	59.22.3101	100 uF	10V	EL		
	C....30	59.06.0333	33 nF		PE		
	C....31	59.34.2220	22 pF		CER		
	C....32	59.22.3101	100 uF	10V	EL		
	C....33	59.22.3101	100 uF	10V	EL		
	C....34	59.06.5104	100 nF		PE		
	C....35	59.34.4221	220 pF		CER		
	C....36	59.22.3101	100 uF	10V	EL		
	C....37	59.06.0334	330 nF		PE		
	C....38	59.06.0334	330 nF		PE		
	C....39	59.06.0224	220 nF		PE		
	C....40	59.22.3101	100 uF	10V	EL		
	C....41	59.34.5561	560 pF		CER		
	C....42	59.34.5561	560 pF		CER		
	C....43	59.22.3101	100 uF	10V	EL		
	C....44	59.22.3101	100 uF	10V	EL		
	C....45	59.05.1681	680 pF	1%	PP		
	C....46	59.05.1681	680 pF	1%	PP		
	C....47	59.25.5101	100 uF	40V	EL	axial	
	C....48	59.06.5104	100 nF		PE		
	C....49	59.06.5104	100 nF		PE		
	C....50	59.05.1681	680 pF	1%	PP		
	C....51	59.05.1681	680 pF	1%	PP		
	C....52	59.05.1681	680 pF	1%	PP		
	C....53	59.05.1681	680 pF	1%	PP		
	C....54	59.06.0682	6.8 nF		PE		
	C....55	59.34.4221	220 pF		CER		
	C....56	59.22.3101	100 uF	10V	EL		
	C....57	59.06.0682	6.8 nF		PE		
	C....58	59.22.3101	100 uF	10V	EL		
	C....59	59.22.3101	100 uF	10V	EL		
	C....60	59.22.3101	100 uF	10V	EL		
	C....61	59.22.3101	100 uF	10V	EL		
	C....62	59.05.1681	680 pF	1%	PP		
	C....63	59.05.1681	680 pF	1%	PP		
	C....64	59.06.0682	6.8 nF		PE		
	C....65	59.34.4221	220 pF		CER		
	C....66	59.22.3101	100 uF	10V	EL		
	C....67	59.06.0682	6.8 nF		PE		
	C....68	59.22.3101	100 uF	10V	EL		
	C....69	59.22.3101	100 uF	10V	EL		
	C....70	59.22.3101	100 uF	10V	EL		
	C....71	59.22.3101	100 uF	10V	EL		
	C....72	59.05.1681	680 pF	1%	PP		
	C....73	59.05.1681	680 pF	1%	PP		
	C....74	59.34.4221	220 pF		CER		
	C....75	59.22.3101	100 uF	10V	EL		
	C....76	59.22.3101	100 uF	10V	EL		
	C....77	59.06.0682	6.8 nF		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.....6	50.04.0125	1N4448				any
	D.....7	50.04.0125	1N4448				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
	DL....1	50.04.2111	MV5753	red		CM4-284B, HLMP-3301	GI, CM, HP
	DLQ...1	50.99.0126	4N28			4N26	
	IC....1	50.09.0101	TL 072CP	dual J-FET-op.amp.	LF353N		TI, NS
	IC....2	50.05.0244	NE5534AN	dual op.amp. low noise	5534ANB		Sig, Ra
	IC....3	50.09.0105	NE5532N	dual op.amp.	XR5532N, RC5532NB		Sig,Ex,Ra
	IC....4	50.09.0105	NE5532N	dual op.amp.	XR5532N, RC5532NB		Sig,Ex,Ra
	IC....5	50.09.0105	NE5532N	dual op.amp.	XR5532N, RC5532NB		Sig,Ex,Ra
	IC....6	50.05.0244	NE5534AN	dual op.amp. low noise	5534ANB		Sig,Ra
	IC....7	50.09.0105	NE5532N	dual op.amp.	XR5532N, RC5532NB		Sig,Ex,Ra
	IC....8	50.09.0107	RC4559	dual op. amp.			Ra
	IC....9	50.09.0107	RC4559	dual op. amp.			Ra
	IC...10	50.09.0107	RC4559	dual op. amp.			Ra
	IC...11	50.09.0107	RC4559	dual op. amp.			Ra
	IC...12	50.09.0107	RC4559	dual op. amp.			Ra
	IC...13	50.09.0107	RC4559	dual op. amp.			Ra
	IC...14	50.09.0107	RC4559	dual op. amp.			Ra
	P.....3	54.11.2007	2*8 pin	1/2-eurocard connector, male			
	P.....4	54.11.2013	2*16 pin	1/2-eurocard connector, male	(note 1)		
	P.....5	54.11.2007	2*8 pin	1/2-eurocard connector, male			
	P.....6	54.13.0013	25 pin	D-type connector, male			AMP
	MIC...1	89.01.0343		electret microphone			
	Q.....1	50.03.0350	J112	N-JFET		TM00062	Mot
	Q.....2	50.03.0516	BC337	NPN	800mA		Sie
	Q.....3	50.03.0516	BC337	NPN	800mA		Sie
	Q.....4	50.03.0625	BC327	PNP	800mA		Sie
	Q.....5	50.03.0625	BC327	PNP	800mA		Sie
	Q.....6	50.03.0516	BC337	NPN	800mA		Sie
	Q.....7	50.03.0516	BC337	NPN	800mA		Sie
	Q.....8	50.03.0625	BC327	PNP	800mA		Sie
	Q.....9	50.03.0625	BC327	PNP	800mA		Sie
	Q....10	50.03.0516	BC337	NPN	800mA		Sie
	Q....11	50.03.0516	BC337	NPN	800mA		Sie
	Q....12	50.03.0625	BC327	PNP	800mA		Sie
	Q....13	50.03.0625	BC327	PNP	800mA		Sie
	Q....14	50.03.0516	BC337	NPN	800mA		Sie
	Q....15	50.03.0516	BC337	NPN	800mA		Sie
	Q....16	50.03.0625	BC327	PNP	800mA		Sie
	Q....17	50.03.0625	BC327	PNP	800mA		Sie
	Q....18	50.03.0350	J112	N-JFET		TM00062	Mot
	Q....19	50.03.0350	J112	N-JFET		TM00062	Mot
	Q....20	50.03.0350	J112	N-JFET		TM00062	Mot
01	Q....20	50.03.1130	J110	N-JFET			Mot
	Q....21	50.03.0436	BC237B	NPN, Ic<100mA, B>150		BC547B, BC550B	any
	Q....22	50.03.0515	BC307B	PNP, Ic<100mA, B>150		BC557B, BC560B	any
	Q....23	50.03.0515	BC307B	PNP, Ic<100mA, B>150		BC557B, BC560B	any
	Q....24	50.03.0350	J112	N-JFET		TM00062	Mot
	Q....25	50.03.0350	J112	N-JFET		TM00062	Mot
01	Q....25	50.03.1130	J110	N-JFET			Mot
	Q....26	50.03.0350	J112	N-JFET		TM00062	Mot
	Q....27	50.03.0350	J112	N-JFET		TM00062	Mot
	Q....28	50.03.0515	BC307B	PNP, Ic<100mA, B>150		BC557B, BC560B	any
	R.....1	57.11.3514	510 kOhm	1%			
	R.....2	57.11.3514	510 kOhm	1%			
	R.....3	57.11.3102	1 kOhm	1%			
	R.....4	57.11.3112	1.1 kOhm	1%			
	R.....5	57.11.3152	1.5 kOhm	1%			
	R.....6	57.11.3152	1.5 kOhm	1%			
	R.....7	57.11.3163	16 kOhm	1%			
	R.....8	57.11.3163	16 kOhm	1%			
	R.....9	57.11.3244	240 kOhm	1%			
	R....10	57.11.3244	240 kOhm	1%			
	R....11	57.11.4561	560 Ohm				
	R....12	57.11.4680	68 Ohm				
	R....13	57.11.4101	100 Ohm				
	R....14	57.11.4223	22 kOhm				
	R....15	57.11.4122	1.2 kOhm				
	R....16	57.11.4223	22 kOhm				
	R....17	57.11.4223	22 kOhm				
	R....18	57.11.4102	1 kOhm				
	R....19	57.11.4223	22 kOhm				
	R....20	57.11.4682	6.8 kOhm				
	R....21	57.11.4561	560 Ohm				
	R....22	57.11.4122	1.2 kOhm				
	R....23	57.11.5335	3.3 MOhm				
	R....24	57.11.5335	3.3 MOhm				
	R....25	57.11.4561	560 Ohm				
	R....26	57.11.4223	22 kOhm				
	R....27	57.11.4104	100 kOhm				
	R....28	57.11.4682	6.8 kOhm				
	R....29	57.11.4393	39 kOhm				
	R....30	57.11.4101	100 Ohm				
	R....31	1.010.011.58	10 kOhm	pos.log			
	R....32	57.11.4223	22 kOhm				
	R....33	57.11.4472	4.7 kOhm				
	R....34	57.11.4272	2.7 kOhm				
	R....35	57.11.4101	100 Ohm				
	R....36	58.01.9102	1 kOhm				
	R....37	57.11.4222	2.2 kOhm				
	R....38	57.11.4223	22 kOhm				
	R....39	58.01.8501	500 Ohm				
	R....40	57.11.4122	1.2 kOhm				
	R....41	57.11.4101	100 Ohm				
	R....42	57.11.4103	10 kOhm				
	R....43	57.11.4103	10 kOhm				
	R....44	57.11.4339	3.3 Ohm				
	R....45	57.11.4339	3.3 Ohm				
	R....46	57.11.4331	330 Ohm				
	R....47	57.11.4821	820 Ohm				
	R....48	57.11.4222	2.2 kOhm				
	R....49	57.11.4222	2.2 kOhm				
	R....50	57.11.4339	3.3 Ohm				
	R....51	57.11.4339	3.3 Ohm				
	R....52	57.11.4103	10 kOhm				
	R....53	57.11.4103	10 kOhm				
	R....54	57.11.4561	560 Ohm				
	R....55	57.11.4682	6.8 kOhm				
	R....56	57.11.4393	39 kOhm				
	R....57	1.010.011.58	10 kOhm	pos.log			
	R....58	57.11.4223	22 kOhm				
	R....59	57.11.4472	4.7 kOhm				
	R....60	57.11.4272	2.7 kOhm				
	R....61	57.11.4101	100 Ohm				
	R....62	58.01.9102	1 kOhm				
	R....63	57.11.4222	2.2 kOhm				
	R....64	57.11.4223	22 kOhm				
	R....65	58.01.8501	500 Ohm				
	R....66	57.11.4122	1.2 kOhm				
	R....67	57.11.4101	100 Ohm				
	R....68	57.11.4103	10 kOhm				
	R....69	57.11.4103	10 kOhm				
	R....70	57.11.4339	3.3 Ohm				
	R....71	57.11.4339	3.3 Ohm				
	R....72	57.11.4331	330 Ohm				
	R....73	57.11.4821	820 Ohm				
	R....74	57.11.4222	2.2 kOhm				
	R....75	57.11.4222	2.2 kOhm				
	R....76	57.11.4339	3.3 Ohm				
	R....77	57.11.4339	3.3 Ohm				
	R....78	57.11.4103	10 kOhm				
	R....79	57.11.4103	10 kOhm				
	R....80	57.11.4103	10 kOhm				
	R....81	57.11.4682	6.8 kOhm				
	R....82	57.11.4103	10 kOhm				
	R....83	57.11.4330	33 Ohm				
	R....84	57.11.4103	10 kOhm				
	R....85	57.11.5335	3.3 MOhm				
	R....86	57.11.4104	100 kOhm				
	R....87	57.11.4102	1 kOhm				
	R....88	57.11.4331	330 Ohm				
	R....89	58.01.9103	10 kOhm				
	R....90	57.11.4222	2.2 kOhm				
	R....91	58.01.9103	10 kOhm				
	R....92	57.11.4331	330 Ohm				
	R....93	57.11.4561	560 Ohm				
	R....94	57.11.4223	22 kOhm				
	R....95	57.11.4223	22 kOhm				
	R....96	57.11.4223	22 kOhm				
	R....97	57.11.4223	22 kOhm				
	R....98	57.11.3302	3 kOhm	1%			
	R....99	57.11.3302	3 kOhm	1%			
	R...100	57.11.3302	3 kOhm	1%			
	R...101	57.11.3302	3 kOhm	1%			
	R...102	57.39.3091	3.09 kOhm	1%			
	R...103	57.11.3302	3 kOhm	1%			
	R...104	57.39.3091	3.09 kOhm	1%			
	R...105	57.11.3302	3 kOhm	1%			
	R...106	57.11.3302	3 kOhm	1%			
	R...107	57.11.3302	3 kOhm	1%			
	R...108	57.11.3150	15 Ohm	1%			
	R...109	57.11.3150	15 Ohm	1%			
	R...110	57.11.3689	6.8 Ohm	1%			
	R...111	57.11.3689	6.8 Ohm	1%			
	R...112	57.11.3689	6.8 Ohm	1%			
	R...113	57.11.3689	6.8 Ohm	1%			
	R...114	57.92.1271	6.5 Ohm	PTC, 270mA		Philips No. 2322 662	
	R...115	57.92.1271	6.5 Ohm	PTC, 270mA		Philips No. 2322 662	
	R...116	57.11.3512	5.1 kOhm	1%			
	R...117	57.11.3512	5.1 kOhm	1%			
	R...118	57.11.3512	5.1 kOhm	1%			
	R...119	57.11.3512	5.1 kOhm	1%			
	R...120	57.11.3272	2.7 kOhm	1%			
	R...121	57.11.3222	2.2 kOhm	1%			
	R...122	57.11.3272	2.7 kOhm	1%			
	R...123	57.11.3222	2.2 kOhm	1%			
	R...124	57.11.3512	5.1 kOhm	1%			
	R...125	57.11.3512	5.1 kOhm	1%			
	R...126	57.11.3512	5.1 kOhm	1%			
	R...127	57.11.3512	5.1 kOhm	1%			
	R...128	57.11.3512	5.1 kOhm	1%			
	R...129	57.11.3512	5.1 kOhm	1%			
	R...130	57.11.3512	5.1 kOhm	1%			
	R...131	57.11.3512	5.1 kOhm	1%			
	R...132	57.11.3512	5.1 kOhm	1%			
	R...133	57.11.3512	5.1 kOhm	1%			
	R...134	57.11.3512	5.1 kOhm	1%			
	R...135	57.11.3512	5.1 kOhm	1%			
	R...136	57.11.3221	220 Ohm	1%			
	R...137	57.11.3221	220 Ohm	1%			
	R...138	57.11.4222	2.2 kOhm				
	R...139	57.11.3111	110 Ohm				
	R...140	57.11.3302	3 kOhm				
	R...141	57.11.3302	3 kOhm				
	R...142	57.11.4105	1 MOhm				
	R...143	57.11.4104	100 kOhm				
	R...144	57.11.4103	10 kOhm				
	R...145	1.010.012.58	10 kOhm	pos.log. stereo			
	R...146	57.11.4221	220 Ohm				
	R...147	57.11.4333	33 kOhm				
	R...148	57.11.3512	5.1 kOhm				
	R...149	57.11.4222	2.2 kOhm				
	R...150	57.11.3152	1.5 kOhm	1%			
	R...151	57.11.3152	1.5 kOhm	1%			
	R...152	57.11.3152	1.5 kOhm	1%			
	R...153	57.11.3152	1.5 kOhm	1%			
	R...154	57.39.3091	3.09 kOhm	1%			
	R...155	57.11.3302	3 kOhm	1%			
	R...156	57.39.3091	3.09 kOhm	1%			
	R...157	57.11.3302	3 kOhm	1%			
	R...158	57.11.3302	3 kOhm	1%			
	R...159	57.11.3302	3 kOhm	1%			
	R...160	57.11.3302	3 kOhm	1%			
	R...161	57.11.3150	15 Ohm	1%			
	R...162	57.11.3150	15 Ohm	1%			
	R...163	57.11.3689	6.8 Ohm	1%			
	R...164	57.11.3689	6.8 Ohm	1%			
	R...165	57.11.4333	33 kOhm				
	R...166	57.11.4333	33 kOhm				
	R...167	57.11.4471	470 Ohm				
	R...168	57.11.4333	33 kOhm				
	R...169	57.11.4333	33 kOhm				
	R...170	57.11.4104	100 kOhm				
	R...171	57.11.4104	100 kOhm				
	R...172	57.11.3221	220 Ohm	1%			
	R...173	57.11.3221	220 Ohm	1%			
	R...174	57.11.4222	2.2 kOhm				
	R...175	57.11.3111	110 Ohm				
	R...176	57.11.3302	3 kOhm				
	R...177	57.11.3302	3 kOhm				
	R...178	57.11.4105	1 MOhm				
	R...179	57.11.4104	100 kOhm				
	R...180	1.010.012.58	10 kOhm	pos.log. stereo			
	R...181	57.11.4333	33 kOhm				
	R...182	57.11.3512	5.1 kOhm				
	R...183	57.11.4222	2.2 kOhm				
	R...184	57.11.3152	1.5 kOhm	1%			
	R...185	57.11.3152	1.5 kOhm	1%			
	R...186	57.11.3152	1.5 kOhm	1%			
	R...187	57.11.3152	1.5 kOhm	1%			
	R...188	57.39.3091	3.09 kOhm	1%			
	R...189	57.11.3302	3 kOhm	1%			
	R...190	57.39.3091	3.09 kOhm	1%			
	R...191	57.11.3302	3 kOhm	1%			
	R...192	57.11.3302	3 kOhm	1%			
	R...193	57.11.3302	3 kOhm	1%			
	R...194	57.11.3302	3 kOhm	1%			
	R...195	57.11.3150	15 Ohm	1%			
	R...196	57.11.3150	15 Ohm	1%			
	R...197	57.11.3689	6.8 Ohm	1%			
	R...198	57.11.3689	6.8 Ohm	1%			
	R...201	57.11.4103	10 kOhm				
	R...202	57.11.4103	10 kOhm				
	R...203	57.11.4101	100 Ohm				
	R...204	57.11.4101	100 Ohm				
	R...205	57.11.4103	10 kOhm				
	R...206	57.11.4222	2.2 kOhm				
	R...207	57.11.4331	330 Ohm				
	R...208	57.11.4680	68 Ohm				
	R...209	1.010.020.58	10 kOhm	neg.log.			
	R...210	57.11.4333	33 kOhm				
	R...211	57.11.5335	3.3 MOhm				
	R...212	57.11.4104	100 kOhm				
	R...213	57.11.4104	100 kOhm				
	R...214	57.11.4105	1 MOhm				
	R...215	57.11.4333	33 kOhm				
	R...216	57.11.4102	1 kOhm				
	R...218	57.11.4224	220 kOhm				
	R...219	57.11.4224	220 kOhm				
	S.....1	55.15.0024	6*2*u	S1.1...S1.6 mutual releasing			Sch
	S.....2	55.15.0020	2*u	non latching			Sch
	S.....3	55.15.0020	2*u	non latching			Sch
	S.....4	55.15.0020	2*u	non latching			Sch
	S.....5	55.15.0020	2*u	non latching			Sch
	S.....6	55.15.0021	4*u	non latching			Sch
	S.....8	55.15.0023	5*4*u	S8.1...S8.5 mutual releasing			Sch
	S.....9	55.15.0019	2*u				Sch
	T.....1	1.022.359.00					St
	T.....2	1.022.359.00					St
	T.....3	1.022.451.00					St
	T.....4	1.022.451.00					St
	T.....5	1.022.417.00	1:3.16				St
	W.....1	57.11.4000	0 Ohm				
	W.....2	57.11.4000	0 Ohm				

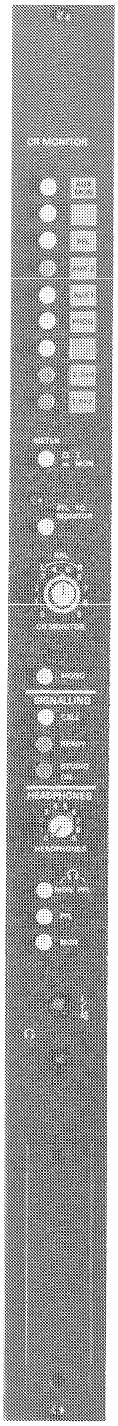
CER = ceramic, EL = electrolytic, PE = polyester, PP = polypropylen

MANUFACTURER: CM=Chicago Miniatur, GI=General Instruments, Ex=Exar
NS=National Sem. Mot=Motorola, Ra=Raytheon, Sie=Siemens
Sig=Signetics, Sch=Schadow-ITT, St=Studer,
TI=Texas Instruments

1.970.901.00 AUX UNIT/STUDIO MONITOR WY 86/08/2200
1.970.901.00 AUX UNIT/STUDIO MONITOR WY 89/01/1301

5. Kontrollraum (CR) Monitoreinheit 1.970.920

5.1 Bedienungselemente



REGIEABHÖREN: Über gegenseitig auslösende Drucktasten können 9 verschiedene Abhörquellen angewählt werden.

CR Monitor: Die Lautstärke der Abhörlautsprecher kann an einem Potentiometer eingestellt werden. Das auf der gleichen Achse untergebrachte Balance Potentiometer erlaubt es, allfällige durch den Raum oder die Lautsprecher hervorgerufene Lautstärkeunsymmetrien auszugleichen.

Meter: Mit der METER TO MONITOR Taste können die Aussteuerungsmesser 1 und 2 wahlweise an die Summenausgänge Σ1+2 oder parallel zu den Abhörlautsprechern geschaltet werden.

PFL to Monitor: Bei eingeschalteter PFL-TO-MONITOR-Funktion wird automatisch das PFL-Signal auf den Monitor geschaltet, sobald eine PFL/APL-Taste gedrückt wird. Die laufende Aufnahme oder Sendung wird dabei nicht beeinflusst. Sobald alle PFL/APL Tasten wieder ausgeschaltet sind, wird das angewählte Monitorprogramm wieder hörbar.

Die MONO-Taste erlaubt das abhören von Stereoquellen in Mono.

Während der Kommandogabe über das eingebaute Mikrofon wird der Abhörpegel um 20 dB gedämpft.

SIGNALISATION: Drei Drucktasten sind zur Signalgabe ins Studio vorgesehen. Der Signalisationszustand wird an drei LED auf dem Instrumentenpanel des Regiepultes angezeigt.

CALL: Der Arbeitskontakt der Impulstaste kann ein Warnsignal (Gelb) im Studio steuern. Die gelbe LED im Instrumentenpanel von aussen (Taste im Studio) aktiviert werden.

READY: Über den Arbeitskontakt der haltenden Drucktaste kann ein Achtung-Signal im Studio gesteuert werden. (Grün)

STUDIO ON: Diese Taste aktiviert das Studio Rotlicht, wenn gleichzeitig wenigstens ein Mikrofonkanal geöffnet ist. Zur Rotlichtsteuerung steht ein Relaisarbeitskontakt zur Verfügung.

KOPFHÖRER: Über einen dreiteiligen Tastenschalter kann entweder das am Monitor Selector angewählte Signal (MON) oder das Vorhörsignal (PFL) abgehört werden. In der dritten Stellung ist das Monitorsignal solange hörbar, als keine PFL Taste angewählt ist (MON PFL). Nach dem Betätigen einer PFL Taste wird die Monomischung des Monitorsignales in der einen Hörmuschel und das PFL Signal in der anderen Muschel hörbar.

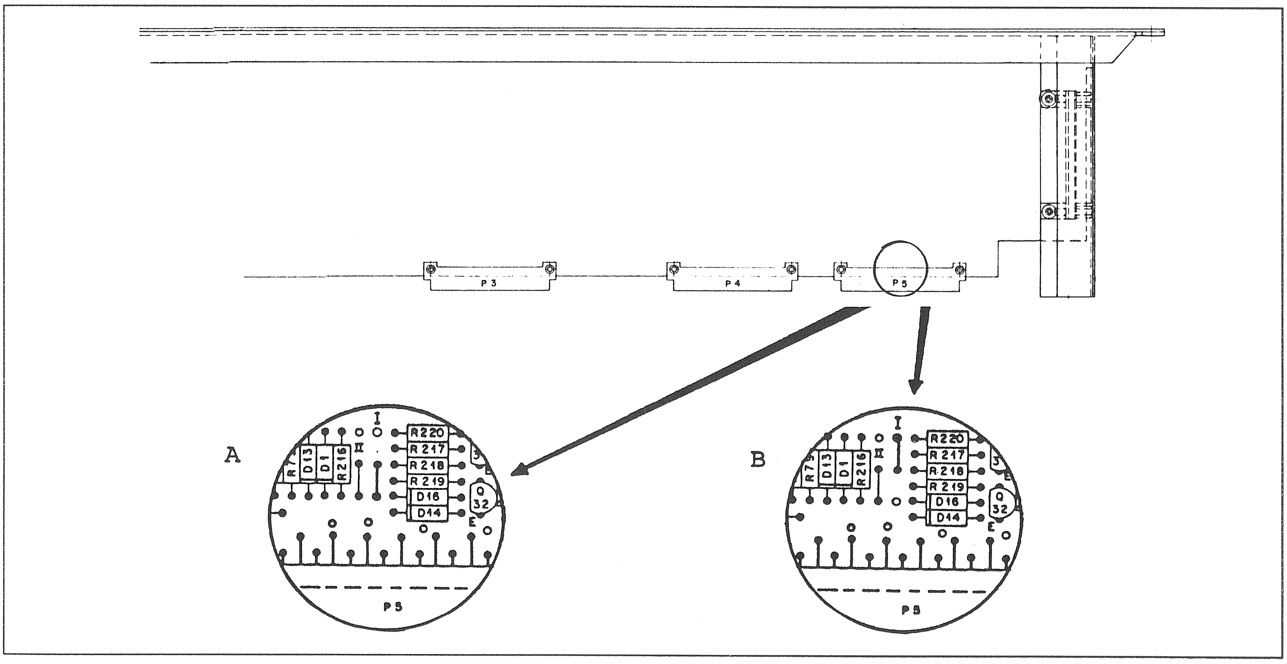
Wird in der oberen Kopfhörerbuchse kein Jack eingesteckt, so wird das Signal auch über den eingebauten Vorhörlautsprecher hörbar.

STEUERTASTEN: Im Vorderteil des Einschubes können auf Kundenwunsch bis zu drei Steuertasten eingebaut werden.

5.2 Option

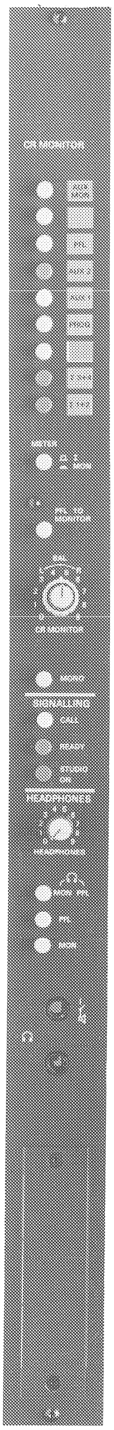
Brücke I einlöten wie in Zeichnung A:
Bei DJ Betrieb wird das Abhörsignal automatisch unterbrochen, wenn an einer Eingangseinheit der Eingangswahlschalter auf MIC steht und der Flachbahnregler geöffnet ist.

Brücke I einlöten wie in Zeichnung B:
STUDIO ON Taste muss gedrückt werden, dann gleiche Funktion wie vorher beschrieben.



5. Control Room Monitor Unit 1.970.920

5.1 Operating Elements



CONTROL ROOM MONITORING: Nine different monitoring sources can be selected by means of interlocking push buttons.

CR Monitor The volume of the monitor speakers can be set with a potentiometer. Possible volume imbalances caused by the room characteristics or by the speakers can be compensated with the coaxial balance potentiometer. Stereo sources can be monitored in mono mode by pressing the MONO button.

Meter With the METER TO MONITOR button output meters 1 and 2 can be selectively connected to the master outputs Σ1+2 or in parallel to the monitor speakers.

PFL to Monitor With the PFL TO MONITOR button, monitoring is interrupted and the selected PFL signal is connected to the monitor speakers as soon as one or more PFL or APL keys are pressed. The current recording or broadcast is not influenced. As soon as all PFL/APL keys are switched off again, the selected monitor program can be heard again.

The monitoring level is attenuated by 20 dB, while commands are given trough the built-in microphone.

SIGNALIZATION: Three push buttons are available for transmitting signals to the studio. The signalization status is indicated by three LEDs on the instrument panel of the audio mixer.

CALL The make contact of the momentaryaction push button can control a warning signal in the studio (yellow light). The yellow LED in the instrument panel can be activated externally (push button in the studio).

READY An attention signal in the studio can be controlled via the make contact of the self-holding push button. (green light)

STUDIO ON This key activates the red on-air light when at least one microphone channel is open. A relay make contact is available for controlling the red light.

HEADPHONES: By means of 3 interlocking push button switches either the signal available from the monitor selector (MON) or the prefader listening signal (PFL) can be monitored. In the third position (MON PFL) the monitor signal can be heard as long as no PFL key is active. After a PFL key has been actuated, the mono mix of the monitor signal becomes audible in one earpiece and the PFL signal in the other earpiece.

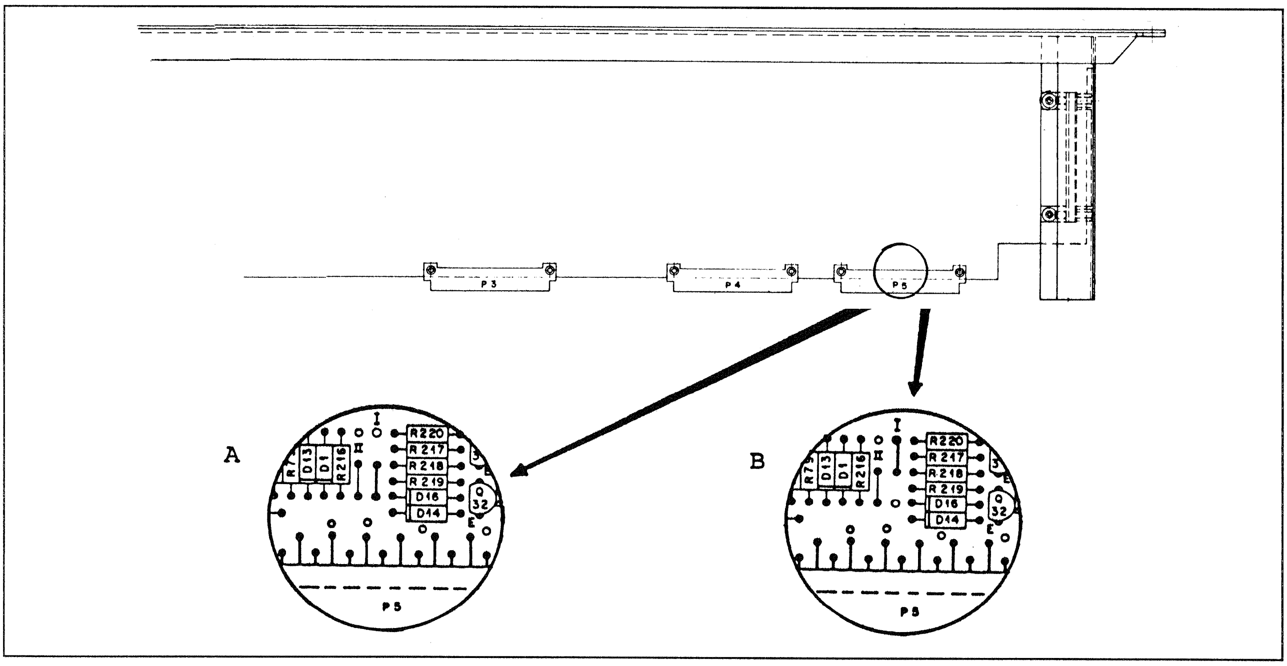
If no Jack is inserted in the upper headphones socket, the signal can also be heard via the built-in monitor speaker.

CONTROL KEYS: Up to three control keys can be installed on the front of the module according to the customer's specifications.

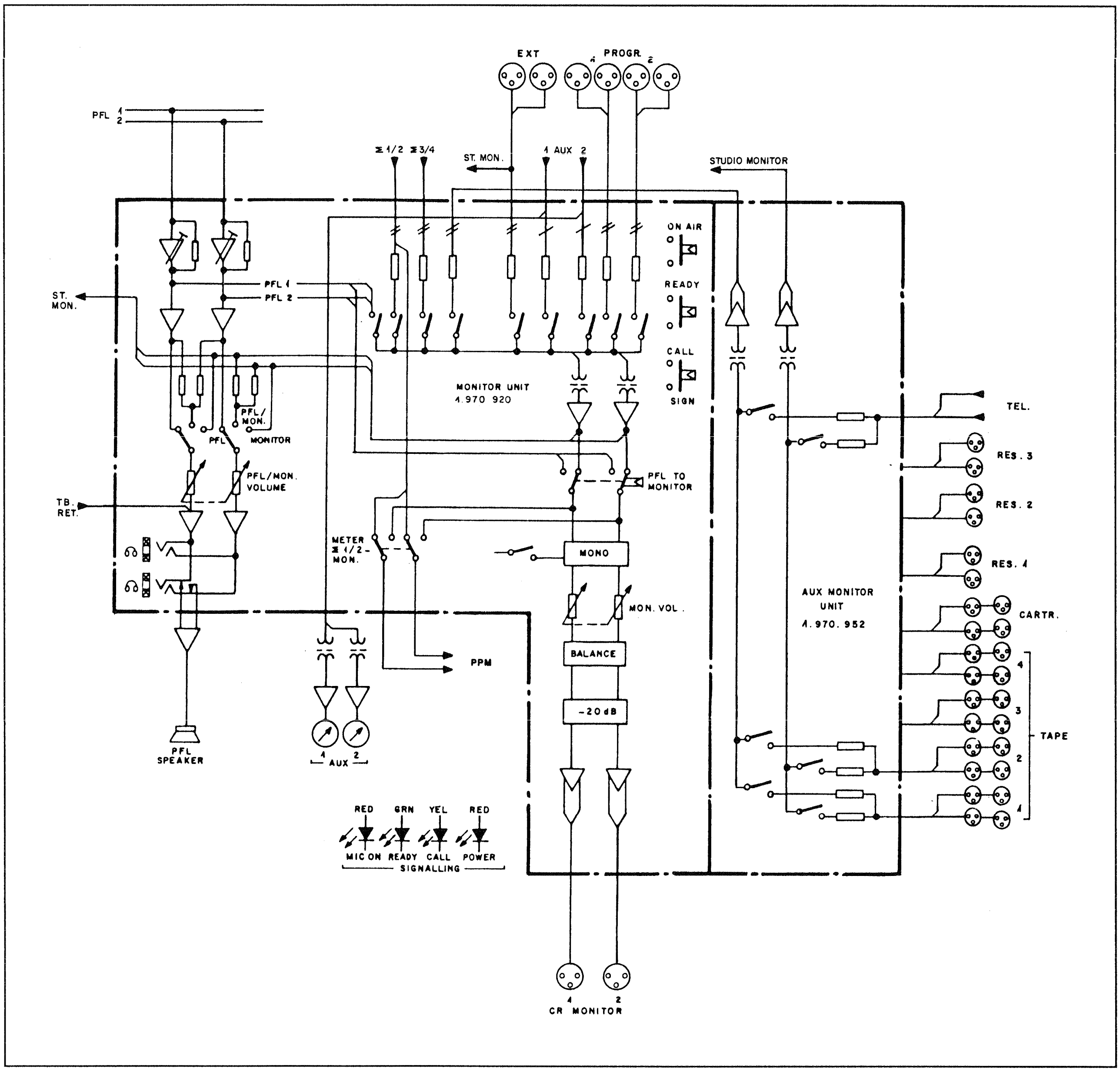
5.2 Option

Solder in jumper I as shown in diagram A:
In DJ mode the monitoring signal is automatically interrupted when the input selector of an input module is in the MIC position and the fader is open.

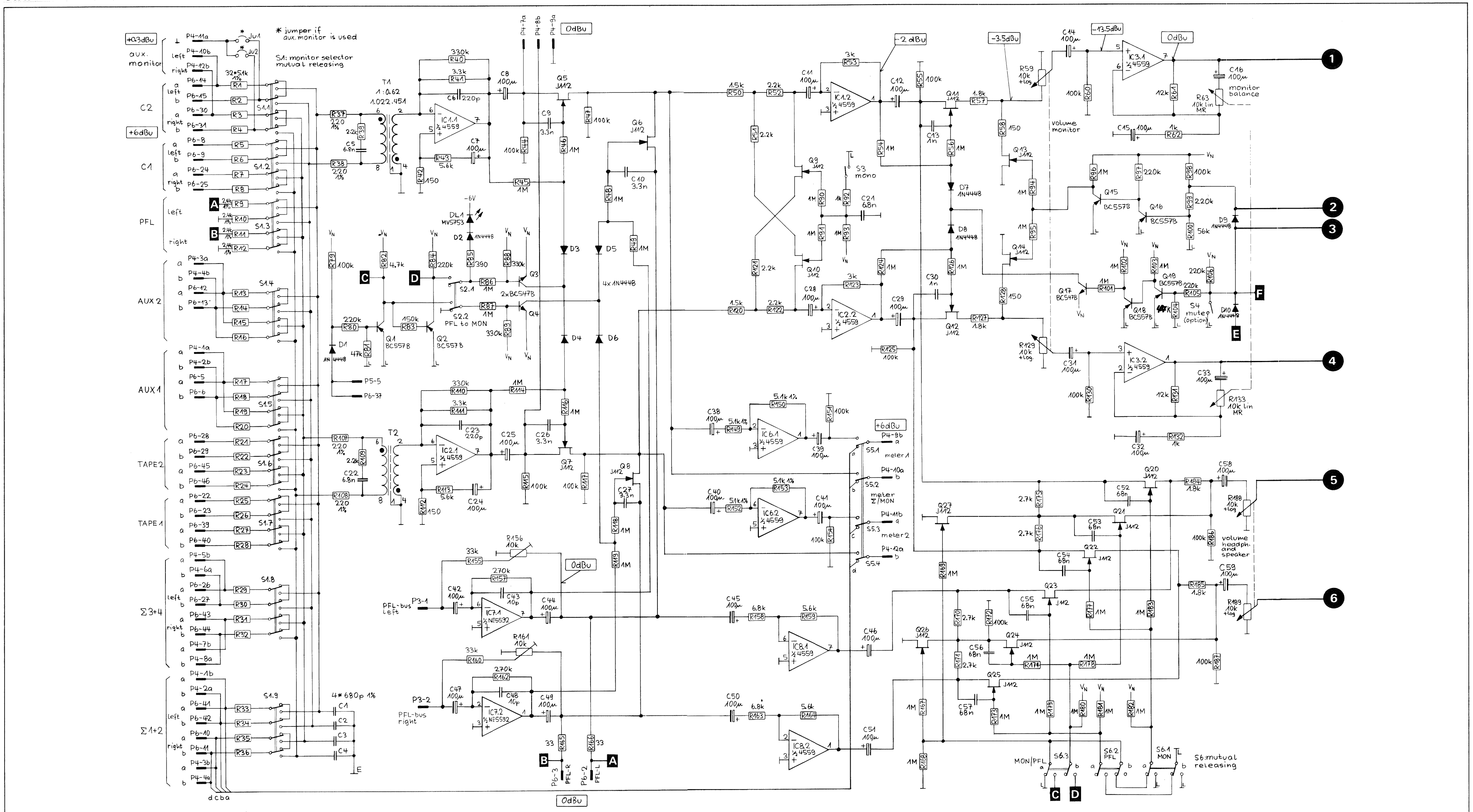
Solder in jumper I as shown in diagram B:
STUDIO ON key must be pressed, otherwise same function as described above.



5.3 Blockschaltbild / Block Diagram 1.970.920



C.R. Monitor Unit Part 1



DATE:	11.5.87					
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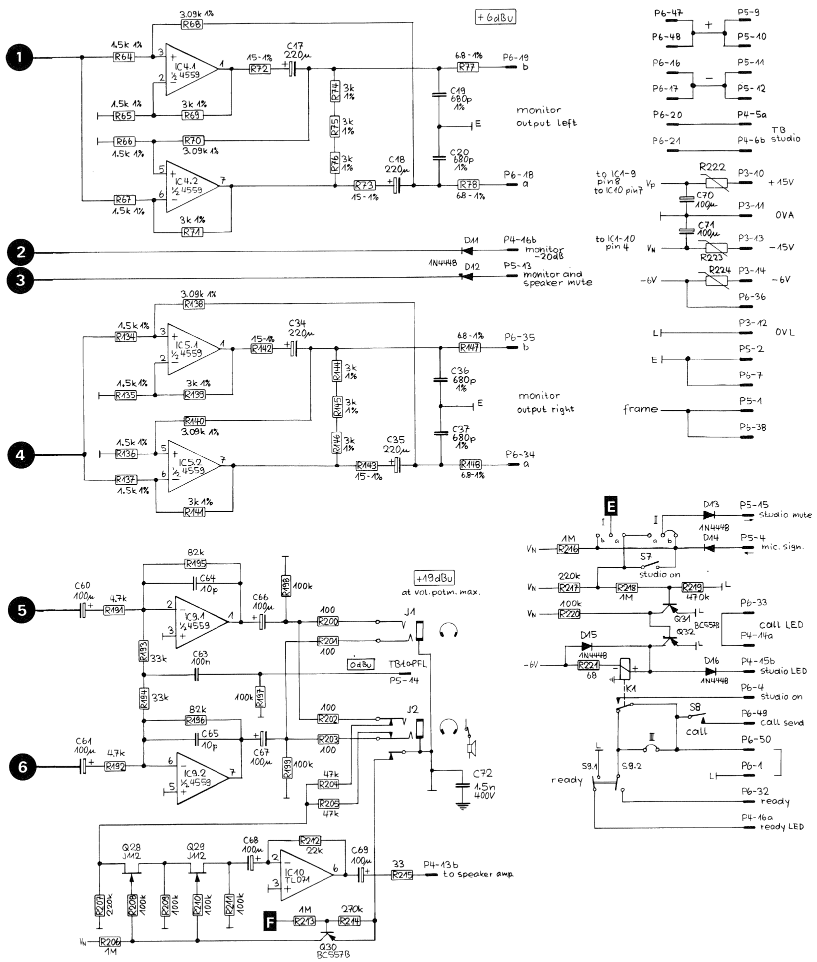
STUDER REGENSDORF ZÜRICH	C.R. MONITOR UNIT					1.970.920

C.R. Monitor Unit **1.970.920** **Part 2**



P3

PIN	NAME	REMARK
01	B•PFL•L	PFL 0Ω BUS LEFT
02	B•PFL•R	PFL 0Ω BUS RIGHT
03	•••	NC
04	•••	NC
05	0V•REF	0V REFERENCE
06	•••	NC
07	•••	NC
08	•••	NC
09	•••	NC
10	+15V	+SUPPLY
11	0V•A	GROUND AUDIO
12	0V•L	GROUND SIGN (LOGIC)
13	-15V	-SUPPLY
14	-6V	-SUPPLY
15	•••	RES.
16	•••	RES.

P4

PIN	A NAME	A REMARK	B NAME	B REMARK
01	AUX•1•A	AUX 1A OUTPUT	M•1•A	MASTER 1A OUTPUT
02	M•1•B	MASTER 1B OUTPUT	AUX•1•B	AUX 1B OUTPUT
03	AUX•2•A	AUX 2A OUTPUT	M•2•A	MASTER 2A OUTPUT
04	M•2•B	MASTER 2B OUTPUT	AUX•2•B	AUX•2B OUTPUT
05	TBS•A	TALK BACK STUDIO A	M•3•A	MASTER 3A OUTPUT
06	M•3•B	MASTER 3B OUTPUT	TBS•B	TALK BACK STUDIO-B
07	MON•1•A	MONITOR 1A OUTPUT	M•4•A	MASTER 4A OUTPUT
08	M•4•B	MASTER 4B OUTPUT	MON•2•A	MONITOR 2A OUTPUT
09	MON•0V	MONITOR 0V SUPPLY	MET•1•A	METER 1A
10	MET•1•B	METER 1B	AM•1•A	AUX MONITOR 1A INP.
11	AM•0V	AUX MON. 0V INP.	MET•2•A	METER 2A
12	MET•2•B	METER 2B	AM•2•A	AUX MONITOR 2A INP.
13			PFL•SP	PFL SPEAKER
14	CAL•LED	CALL LED SIGN.		
15			STU•LED	STUDIO LED SIGN.
16	REY•LED	READY LED SIGN.	MON-20dB	MONITOR 20dB ATTEN.

P5

PIN	NAME	REMARK
01	CHASSIS	METAL FRAME
02	0V•E	0V EXTERN
03	•••	NC
04	MIC•SIGN	MIC SIGNALLING
05	PFL•SIGN	PFL SIGNALLING
06	•••	NC
07	•••	NC
08	•••	NC
09	+SUPPLY	EXTERN DC POWER +
10	+SUPPLY	EXTERN DC POWER +
11	-SUPPLY	EXTERN DC POWER -
12	-SUPPLY	EXTERN DC POWER -
13	MON•MUTE	MONITOR MUTE
14	TBtoPFL	TB RETURN TO PFL
15	STU•MUTE	STUDIO MUTE
16	•••	RES.

50pin D-TYPE CONNECTOR P6

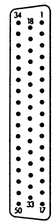
Signal protocol

PIN NO.	SIGNAL NAME	FUNCTION	INPUTS	OUTPUTS	PRELISTENING	CR MONITOR OUTPUTS	TALK-BACK/INTERCOM	SIGNALIZATION	SUPPLY VOLTAGES
01	0V•L	0V SIGN.							•
02	PFL•L	PRE FADE LISTENING LEFT		•	•				
03	PFL•R	PRE FADE LISTENING RIGHT		•	•				
04	STU•ON	STUDIO ON						•	
05	AUX•1•A	AUXILIARY OUTPUT 1-A		•					
06	AUX•1•B	AUXILIARY OUTPUT 1-B		•					
07	0V•E	0V SCREEN CABLE							•
08	C•1•1•A	CONNECTOR C1 INPUT 1-A	•						
09	C•1•1•B	CONNECTOR C1 INPUT 1-B	•						
10	M•2•A	MASTER Σ2 OUTPUT A		•					
11	M•2•B	MASTER Σ2 OUTPUT B		•					
12	AUX•2•A	AUXILIARY OUTPUT 2-A		•					
13	AUX•2•B	AUXILIARY OUTPUT 2-B		•					
14	C•2•1•A	CONNECTOR C2 INPUT 1-A	•						
15	C•2•1•B	CONNECTOR C2 INPUT 1-B	•						
16	-SUPPLY	EXTERN POWER -							•
17	-SUPPLY	EXTERN POWER -							•
18	CR•1•A	CR MONITOR OUTPUT L-A				•			
19	CR•1•B	CR MONITOR OUTPUT L-B				•			
20	TB•A	TALK BACK OUTPUT A					•		
21	TB•B	TALK BACK OUTPUT B					•		
22	T•1•1•A	TAPE1 RETURN 1-A	•						
23	T•1•1•B	TAPE1 RETURN 1-B	•						
24	C•1•2•A	CONNECTOR C1 INPUT 2-A	•						
25	C•1•2•B	CONNECTOR C1 INPUT 2-B	•						
26	M•3•A	MASTER Σ3 OUTPUT A		•					
27	M•3•B	MASTER Σ3 OUTPUT B		•					
28	T•2•1•A	TAPE2 RETURN 1-A	•						
29	T•2•1•B	TAPE2 RETURN 1-B	•						
30	C•2•2•A	CONNECTOR C2 INPUT 2-A	•						
31	C•2•2•B	CONNECTOR C2 INPUT 2-B	•						
32	READY	READY SIGNALISATION						•	
33	CAL•LED	CALL LED SIGNALISATION						•	
34	CR•2•A	CR MONITOR OUTPUT R-A				•			
35	CR•2•B	CR MONITOR OUTPUT R-B				•			
36	-6V	- SUPPLY							•
37	PFL•SIGN	PFL SIGNALISATION						•	
38	CHASSIS	METAL FRAME							
39	T•1•2•A	TAPE1 RETURN 2-A	•						
40	T•1•2•B	TAPE1 RETURN 2-B	•						
41	M•1•A	MASTER Σ1 OUTPUT A		•					
42	M•1•B	MASTER Σ1 OUTPUT B		•					
43	M•4•A	MASTER Σ4 OUTPUT A		•					
44	M•4•B	MASTER Σ4 OUTPUT B		•					
45	T•2•2•A	TAPE2 RETURN 2-A	•						
46	T•2•2•B	TAPE2 RETURN 2-B	•						
47	+SUPPLY	EXTERN POWER +							•
48	+SUPPLY	EXTERN POWER +							•
49	CAL•SEND	CALL SEND SIGNALISATION						•	
50	G.S	GROUND SIGNALISATION						•	

Pin assignment

CR MONITOR CONNECTOR to CR MONITOR 1.970.920 (P6) — CABLE PLUG CR MONITOR to - Terminal box

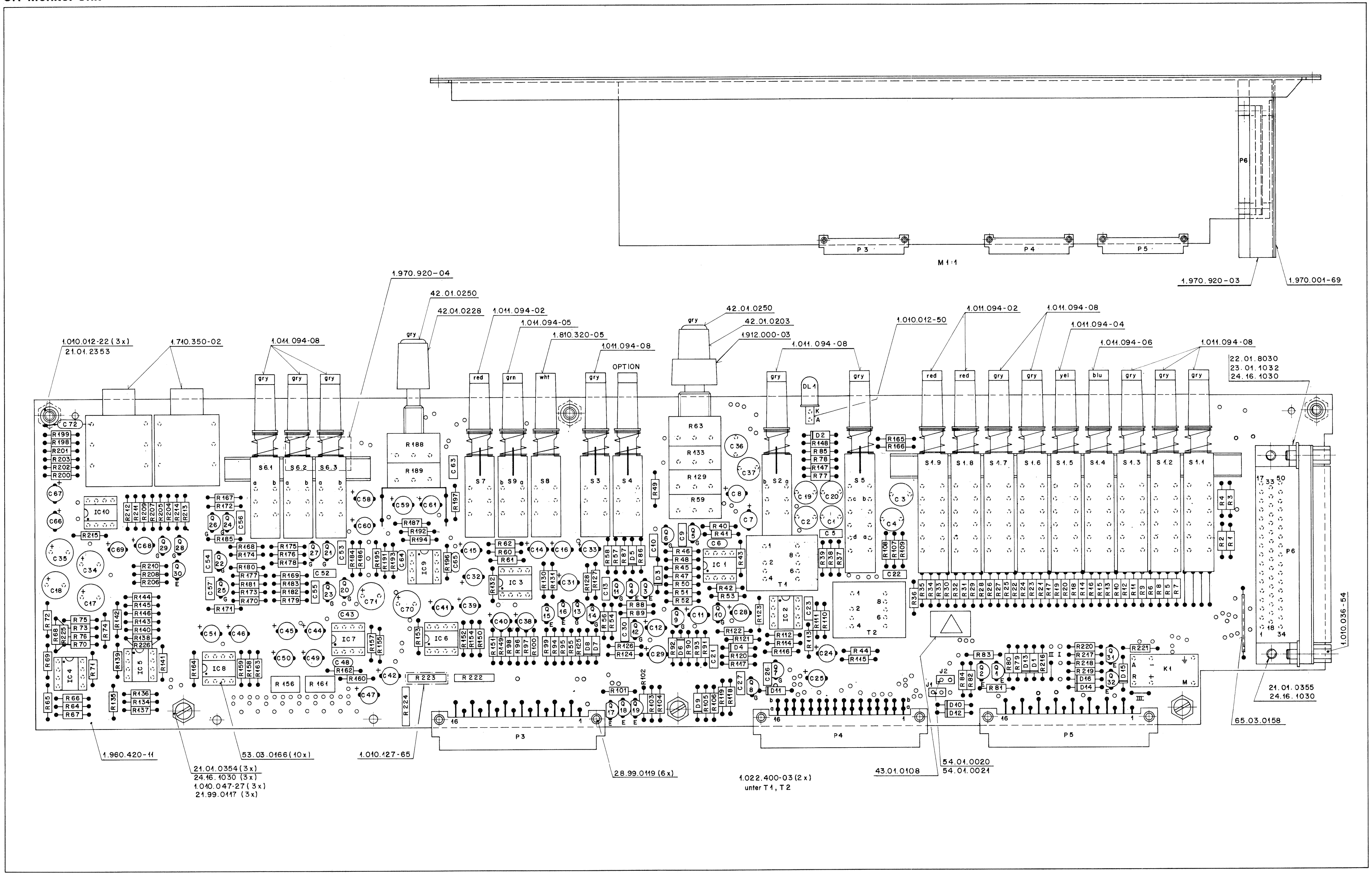
D-TYP MALE VIEW FROM CONNECTOR SIDE — D-TYP FEMALE VIEW FROM SOLDER SIDE



PIN	WIRE COLOR
01	wht
02	brn
03	grn
04	blk/gry/pnk
05	gry/wht
06	yel/brn
07	red/blk/blu
08	yel/blk/wht
09	yel/blk/brn
10	vio
11	pnk/gry
12	red/blu
13	grn/wht
14	grn/brn
15	yel/wht
16	blk+red+blu
17	
18	gry/brn
19	pnk/wht
20	pnk/brn
21	blu/wht
22	blu/brn
23	red/wht
24	red/brn
25	blk/wht
26	brn/blk
27	grn/gry
28	yel/gry
29	pnk/grn
30	pnk/yel
31	blu/grn
32	yel/blu
33	red/grn
34	yel/red
35	grn/blk
36	yel/blk
37	blu/gry
38	blu/pnk
39	red/gry
40	red/pnk
41	blk/gry
42	blk/pnk
43	blu/blk
44	red/blk
45	brn/wht/blk
46	grn/yel/blk
47	red+yel+gry
48	
49	grn/wht/blk
50	brn/blk/grn

DATE:	11.5.87	
SIGN:	ak	PAGE 2 OF 2
STUDER REGENSDORF ZÜRICH	C.R. MONITOR UNIT	1.970.920

CR-Monitor Unit **1.970.920.00**



Control room Monitor Unit 1.970.920.00

Ad	..POS..	...REF.No...	DESCRIPTION			MANUFACTURER
	C.....1	59.05.1681	680 pF	1%	PP	
	C.....2	59.05.1681	680 pF	1%	PP	
	C.....3	59.05.1681	680 pF	1%	PP	
	C.....4	59.05.1681	680 pF	1%	PP	
	C.....5	59.06.0682	6.8 nF		PE	
	C.....6	59.34.4221	220 pF		CER	
	C.....7	59.22.3101	100 uF	10V	EL	
	C.....8	59.22.3101	100 uF	10V	EL	
	C.....9	59.06.0332	3.3 nF		PE	
	C....10	59.06.0332	3.3 nF		PE	
	C....11	59.22.3101	100 uF	10V	EL	
	C....12	59.22.3101	100 uF	10V	EL	
	C....13	59.06.0102	1 nF		PE	
	C....14	59.22.3101	100 uF	10V	EL	
	C....15	59.22.3101	100 uF	10V	EL	
	C....16	59.22.3101	100 uF	10V	EL	
	C....17	59.22.3221	220 uF	10V	EL	
	C....18	59.22.3221	220 uF	10V	EL	
	C....19	59.05.1681	680 pF	1%	PP	
	C....20	59.05.1681	680 pF	1%	PP	
	C....21	59.06.0682	6.8 nF		PE	
	C....22	59.06.0682	6.8 nF		PE	
	C....23	59.34.4221	220 pF		CER	
	C....24	59.22.3101	100 uF	10V	EL	
	C....25	59.22.3101	100 uF	10V	EL	
	C....26	59.06.0332	3.3 nF		PE	
	C....27	59.06.0332	3.3 nF		PE	
	C....28	59.22.3101	100 uF	10V	EL	
	C....29	59.22.3101	100 uF	10V	EL	
	C....30	59.06.0102	1 nF		PE	
	C....31	59.22.3101	100 uF	10V	EL	
	C....32	59.22.3101	100 uF	10V	EL	
	C....33	59.22.3101	100 uF	10V	EL	
	C....34	59.22.3221	220 uF	6V	EL	
	C....35	59.22.3221	220 uF	6V	EL	
	C....36	59.05.1681	680 pF	1%	PP	
	C....37	59.05.1681	680 pF	1%	PP	
	C....38	59.22.3101	100 uF	10V	EL	
	C....39	59.22.3101	100 uF	10V	EL	
	C....40	59.22.3101	100 uF	10V	EL	
	C....41	59.22.3101	100 uF	10V	EL	
	C....42	59.22.3101	100 uF	10V	EL	
	C....43	59.34.1100	10 pF		CER	
	C....44	59.22.3101	100 uF	10V	EL	
	C....45	59.22.3101	100 uF	10V	EL	
	C....46	59.22.3101	100 uF	10V	EL	
	C....47	59.22.3101	100 uF	10V	EL	
	C....48	59.34.1100	10 pF		CER	
	C....49	59.22.3101	100 uF	10V	EL	
	C....50	59.22.3101	100 uF	10V	EL	
	C....51	59.22.3101	100 uF	10V	EL	
	C....52	59.06.0683	68 nF		PE	
	C....53	59.06.0683	68 nF		PE	
	C....54	59.06.0683	68 nF		PE	
	C....55	59.06.0683	68 nF		PE	
	C....56	59.06.0683	68 nF		PE	
	C....57	59.06.0683	68 nF		PE	
	C....58	59.22.3101	100 uF	10V	EL	
	C....59	59.22.3101	100 uF	10V	EL	
	C....60	59.22.3101	100 uF	10V	EL	
	C....61	59.22.3101	100 uF	10V	EL	
	C....63	59.06.0104	100 nF		PE	
	C....64	59.34.1100	10 pF		CER	
	C....65	59.34.1100	10 pF		CER	
	C....66	59.22.3101	100 uF	10V	EL	
	C....67	59.22.3101	100 uF	10V	EL	
	C....68	59.22.3101	100 uF	10V	EL	
	C....69	59.22.3101	100 uF	10V	EL	
	C....70	59.22.5101	100 uF	25V	EL	
	C....71	59.22.5101	100 uF	25V	EL	
	C....72	59.99.0625	1.5 nF	400V	CER	
	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.....6	50.04.0125	1N4448			any
	D.....7	50.04.0125	1N4448			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
	DL....1	50.04.2111	MV5753	red	CM4-284B, HLMP-3301	GI, CM, HP
	IC....1	50.09.0107	RC4559	dual op. amp.		Ra
	IC....2	50.09.0107	RC4559	dual op. amp.		Ra
	IC....3	50.09.0107	RC4559	dual op. amp.		Ra
	IC....4	50.09.0107	RC4559	dual op. amp.		Ra
	IC....5	50.09.0107	RC4559	dual op. amp.		Ra
	IC....6	50.09.0107	RC4559	dual op. amp.		Ra
	IC....7	50.09.0105	NE5532	dual op. amp.		Ra
	IC....8	50.09.0107	RC4559	dual op. amp.		Ra
	IC....9	50.09.0107	RC4559	dual op. amp.		Ra
	IC...10	50.09.0103	TL071	op. amp.		TI
	K.....1	56.04.0190		5V-		
	P.....3	54.11.2007	2*8 pin	1/2-eurocard connector, male		
	P.....4	54.11.2013	2*16 pin	1/2-eurocard connector, male		
	P.....5	54.11.2007	2*8 pin	1/2-eurocard connector, male		
	P.....6	54.13.0015	50 pin	D-type connector, male		AMP
	Q.....1	50.03.0515	BC307B	PNP, Ic<100mA, B>150	BC557B, BC560B	any
	Q.....2	50.03.0515	BC307B	PNP, Ic<100mA, B>150	BC557B, BC560B	any
	Q.....3	50.03.0436	BC237B	NPN, Ic<100mA, B>150	BC547B, BC550B	any
	Q.....4	50.03.0436	BC237B	NPN, Ic<100mA, B>150	BC547B, BC550B	any
	Q.....5	50.03.0350	J112	N-JFET	TM00062	Mot
	Q.....6	50.03.0350	J112	N-JFET	TM00062	Mot
	Q.....7	50.03.0350	J112	N-JFET	TM00062	Mot
	Q.....8	50.03.0350	J112	N-JFET	TM00062	Mot
	Q.....9	50.03.0350	J112	N-JFET	TM00062	Mot
	Q....10	50.03.0350	J112	N-JFET	TM00062	Mot
	Q....11	50.03.0350	J112	N-JFET	TM00062	Mot
	Q....12	50.03.0350	J112	N-JFET	TM00062	Mot
	Q....13	50.03.0350	J112	N-JFET	TM00062	Mot
	Q....14	50.03.0350	J112	N-JFET	TM00062	Mot
	Q....15	50.03.0515	BC307B	PNP, Ic<100mA, B>150	BC557B, BC560B	any
	Q....16	50.03.0515	BC307B	PNP, Ic<100mA, B>150	BC557B, BC560B	any
	Q....17	50.03.0436	BC237B	NPN, Ic<100mA, B>150	BC547B, BC550B	any
	Q....18	50.03.0515	BC307B	PNP, Ic<100mA, B>150	BC557B, BC560B	any
	Q....19	50.03.0515	BC307B	PNP, Ic<100mA, B>150	BC557B, BC560B	any
	Q....20	50.03.0350	J112	N-JFET	TM00062	Mot
	Q....21	50.03.0350	J112	N-JFET	TM00062	Mot
	Q....22	50.03.0350	J112	N-JFET	TM00062	Mot
	Q....23	50.03.0350	J112	N-JFET	TM00062	Mot
	Q....24	50.03.0350	J112	N-JFET	TM00062	Mot
	Q....25	50.03.0350	J112	N-JFET	TM00062	Mot
	Q....26	50.03.0350	J112	N-JFET	TM00062	Mot
	Q....27	50.03.0350	J112	N-JFET	TM00062	Mot
	Q....28	50.03.0350	J112	N-JFET	TM00062	Mot
	Q....29	50.03.0350	J112	N-JFET	TM00062	Mot
	Q....30	50.03.0515	BC307B	PNP, Ic<100mA, B>150	BC557B, BC560B	any
	Q....31	50.03.0515	BC307B	PNP, Ic<100mA, B>150	BC557B, BC560B	any
	Q....32	50.03.0515	BC307B	PNP, Ic<100mA, B>150	BC557B, BC560B	any
	R.....1	57.11.3512	5.1 kOhm	1%		
	R.....2	57.11.3512	5.1 kOhm	1%		
	R.....3	57.11.3512	5.1 kOhm	1%		
	R.....4	57.11.3512	5.1 kOhm	1%		
	R.....5	57.11.3512	5.1 kOhm	1%		
	R.....6	57.11.3512	5.1 kOhm	1%		
	R.....7	57.11.3512	5.1 kOhm	1%		
	R.....8	57.11.3512	5.1 kOhm	1%		
	R.....9	57.11.3242	2.4 kOhm	1%		
	R....10	57.11.3242	2.4 kOhm	1%		
	R....11	57.11.3242	2.4 kOhm	1%		
	R....12	57.11.3242	2.4 kOhm	1%		
	R....13	57.11.3512	5.1 kOhm	1%		
	R....14	57.11.3512	5.1 kOhm	1%		
	R....15	57.11.3512	5.1 kOhm	1%		
	R....16	57.11.3512	5.1 kOhm	1%		
	R....17	57.11.3512	5.1 kOhm	1%		
	R....18	57.11.3512	5.1 kOhm	1%		
	R....19	57.11.3512	5.1 kOhm	1%		
	R....20	57.11.3512	5.1 kOhm	1%		
	R....21	57.11.3512	5.1 kOhm	1%		
	R....22	57.11.3512	5.1 kOhm	1%		
	R....23	57.11.3512	5.1 kOhm	1%		
	R....24	57.11.3512	5.1 kOhm	1%		
	R....25	57.11.3512	5.1 kOhm	1%		
	R....26	57.11.3512	5.1 kOhm	1%		
	R....27	57.11.3512	5.1 kOhm	1%		
	R....28	57.11.3512	5.1 kOhm	1%		
	R....29	57.11.3512	5.1 kOhm	1%		
	R....30	57.11.3512	5.1 kOhm	1%		
	R....31	57.11.3512	5.1 kOhm	1%		
	R....32	57.11.3512	5.1 kOhm	1%		
	R....33	57.11.3512	5.1 kOhm	1%		
	R....34	57.11.3512	5.1 kOhm	1%		
	R....35	57.11.3512	5.1 kOhm	1%		
	R....36	57.11.3512	5.1 kOhm	1%		
	R....37	57.11.3221	220 Ohm	1%		
	R....38	57.11.3221	220 Ohm	1%		
	R....39	57.11.4222	2.2 kOhm			
	R....40	57.11.4334	330 kOhm			
	R....41	57.11.4332	3.3 kOhm			
	R....42	57.11.4151	150 Ohm			
	R....43	57.11.4472	4.7 kOhm			
	R....44	57.11.4104	100 kOhm			
	R....45	57.11.4105	1 MOhm			
	R....46	57.11.4105	1 MOhm			
	R....47	57.11.4104	100 kOhm			
	R....48	57.11.4105	1 MOhm			
	R....49	57.11.4105	1 MOhm			
	R....50	57.11.3152	1.5 kOhm			
	R....51	57.11.4222	2.2 kOhm			
	R....52	57.11.4222	2.2 kOhm			
	R....53	57.11.3302	3 kOhm			
	R....54	57.11.4105	1 MOhm			
	R....55	57.11.4104	100 kOhm			
	R....56	57.11.4105	1 MOhm			
	R....57	57.11.4182	1.8 kOhm			
	R....58	57.11.4151	150 Ohm			
	R....59	1.010.015.58	10 kOhm	potm. 2*10k +log, 2*10k lin MR		
	R....60	57.11.4104	100 kOhm			
	R....61	57.11.4123	12 kOhm			
	R....62	57.11.4102	1 kOhm			
	R....63	. .	10 kOhm	see R59		
	R....64	57.11.3152	1.5 kOhm	1%		
	R....65	57.11.3152	1.5 kOhm	1%		
	R....66	57.11.3152	1.5 kOhm	1%		
	R....67	57.11.3152	1.5 kOhm	1%		
	R....68	57.39.3091	3.09 kOhm	1%		
	R....69	57.11.3302	3 kOhm	1%		
	R....70	57.39.3091	3.09 kOhm	1%		
	R....71	57.11.3302	3 kOhm	1%		
	R....72	57.11.3150	15 Ohm	1%		
	R....73	57.11.3150	15 Ohm	1%		
	R....74	57.11.3302	3 kOhm	1%		
	R....75	57.11.3302	3 kOhm	1%		
	R....76	57.11.3302	3 kOhm	1%		
	R....77	57.11.3689	6.8 Ohm	1%		
	R....78	57.11.3689	6.8 Ohm	1%		
	R....79	57.11.4104	100 kOhm			
	R....80	57.11.4224	220 kOhm			
	R....81	57.11.4473	47 kOhm			
	R....82	57.11.4472	4.7 kOhm			
	R....83	57.11.4154	150 kOhm			
	R....84	57.11.4224	220 kOhm			
	R....85	57.11.4391	390 Ohm			
	R....86	57.11.4105	1 MOhm			
	R....87	57.11.4105	1 MOhm			
	R....88	57.11.4334	330 kOhm			
	R....89	57.11.4334	330 kOhm			
	R....90	57.11.4105	1 MOhm			
	R....91	57.11.4105	1 MOhm			
	R....92	57.11.4102	1 kOhm			
	R....93	57.11.4105	1 MOhm			
	R....94	57.11.4105	1 MOhm			
	R....95	57.11.4105	1 MOhm			
	R....96	57.11.4105	1 MOhm			
	R....97	57.11.4224	220 kOhm			
	R....98	57.11.4104	100 kOhm			
	R....99	57.11.4224	220 kOhm			
	R...100	57.11.4563	56 kOhm			
	R...101	57.11.4105	1 MOhm			
	R...102	57.11.4105	1 MOhm			
	R...103	57.11.4105	1 MOhm			
	R...104	57.11.4104	100 kOhm			
01	R...104	57.11.4473	47 kOhm			
	R...105	57.11.4224	220 kOhm			
	R...106	57.11.4224	220 kOhm			
	R...107	57.11.3221	220 Ohm	1%		
	R...108	57.11.3221	220 Ohm	1%		
	R...109	57.11.4222	2.2 kOhm			
	R...110	57.11.4334	330 kOhm			
	R...111	57.11.4332	3.3 kOhm			
	R...112	57.11.4151	150 Ohm			
	R...113	57.11.4472	4.7 kOhm			
	R...114	57.11.4105	1 MOhm			
	R...115	57.11.4104	100 kOhm			
	R...116	57.11.4105	1 MOhm			
	R...117	57.11.4104	100 kOhm			
	R...118	57.11.4105	1 MOhm			
	R...119	57.11.4105	1 MOhm			
	R...120	57.11.3152	1.5 kOhm			
	R...121	57.11.4222	2.2 kOhm			
	R...122	57.11.4222	2.2 kOhm			
	R...123	57.11.3302	3 kOhm			
	R...124	57.11.4105	1 MOhm			
	R...125	57.11.4104	100 kOhm			
	R...126	57.11.4105	1 MOhm			
	R...127	57.11.4182	1.8 kOhm			
	R...128	57.11.4151	150 Ohm			
	R...129	. .	10 kOhm	see R59		
	R...130	57.11.4104	100 kOhm			
	R...131	57.11.4123	12 kOhm			
	R...132	57.11.4102	1 kOhm			
	R...133	. .	10 kOhm	see R59		
	R...134	57.11.3152	1.5 kOhm	1%		
	R...135	57.11.3152	1.5 kOhm	1%		
	R...136	57.11.3152	1.5 kOhm	1%		
	R...137	57.11.3152	1.5 kOhm	1%		
	R...138	57.39.3091	3.09 kOhm	1%		
	R...139	57.11.3302	3 kOhm	1%		
	R...140	57.39.3091	3.09 kOhm	1%		
	R...141	57.11.3302	3 kOhm	1%		
	R...142	57.11.3150	15 Ohm	1%		
	R...143	57.11.3150	15 Ohm	1%		
	R...144	57.11.3302	3 kOhm	1%		
	R...145	57.11.3302	3 kOhm	1%		
	R...146	57.11.3302	3 kOhm	1%		
	R...147	57.11.3689	6.8 Ohm	1%		
	R...148	57.11.3689	6.8 Ohm	1%		
	R...149	57.11.3512	5.1 kOhm	1%		
	R...150	57.11.3512	5.1 kOhm	1%		
	R...151	57.11.4104	100 kOhm			
	R...152	57.11.3512	5.1 kOhm	1%		
	R...153	57.11.3512	5.1 kOhm	1%		
	R...154	57.11.4104	100 kOhm			
	R...155	57.11.4333	33 kOhm			
	R...156	58.01.9103	10 kOhm	trimpot		
	R...157	57.11.4274	270 kOhm			
	R...158	57.11.4682	6.8 kOhm			
	R...159	57.11.4562	5.6 kOhm			
	R...160	57.11.4333	33 kOhm			
	R...161	58.01.9103	10 kOhm	trimpot		
	R...162	57.11.4274	270 kOhm			
	R...163	57.11.4682	6.8 kOhm			
	R...164	57.11.4562	5.6 kOhm			
	R...165	57.11.4330	33 Ohm			
	R...166	57.11.4330	33 Ohm			
	R...167	57.11.4105	1 MOhm			
	R...168	57.11.4105	1 MOhm			
	R...169	57.11.4105	1 MOhm			
	R...170	57.11.4272	2.7 kOhm			
	R...171	57.11.4272	2.7 kOhm			
	R...172	57.11.4104	100 kOhm			
	R...173	57.11.4105	1 MOhm			
	R...174	57.11.4105	1 MOhm			
	R...175	57.11.4272	2.7 kOhm			
	R...176	57.11.4272	2.7 kOhm			
	R...177	57.11.4105	1 MOhm			
	R...178	57.11.4105	1 MOhm			
	R...179	57.11.4105	1 MOhm			
	R...180	57.11.4105	1 MOhm			
	R...181	57.11.4105	1 MOhm			
	R...182	57.11.4105	1 MOhm			
	R...183	57.11.4105	1 MOhm			
	R...184	57.11.4182	1.8 kOhm			
	R...185	57.11.4182	1.8 kOhm			
	R...186	57.11.4104	100 kOhm			
	R...187	57.11.4104	100 kOhm			
	R...188	1.010.012.58	10 kOhm	potm. 2*10k +log		
	R...189	. .	10 kOhm	see R188		
	R...191	57.11.4472	4.7 kOhm			
	R...192	57.11.4472	4.7 kOhm			
	R...193	57.11.4333	33 kOhm			
	R...194	57.11.4333	33 kOhm			
	R...195	57.11.4823	82 kOhm			
	R...196	57.11.4823	82 kOhm			
	R...197	57.11.4104	100 kOhm			
	R...198	57.11.4104	100 kOhm			
	R...199	57.11.4104	100 kOhm			
	R...200	57.11.4101	100 Ohm			
	R...201	57.11.4101	100 Ohm			
	R...202	57.11.4101	100 Ohm			
	R...203	57.11.4101	100 Ohm			
	R...204	57.11.4473	47 kOhm			
	R...205	57.11.4473	47 kOhm			
	R...206	57.11.4105	1 MOhm			
	R...207	57.11.4224	220 kOhm			
	R...208	57.11.4104	100 kOhm			
	R...209	57.11.4104	100 kOhm			
	R...210	57.11.4104	100 kOhm			
	R...211	57.11.4104	100 kOhm			
	R...212	57.11.4223	22 kOhm			
	R...213	57.11.4105	1 MOhm			
	R...214	57.11.4274	270 kOhm			
	R...215	57.11.4330	33 Ohm			
	R...216	57.11.4105	1 MOhm			
	R...217	57.11.4224	220 kOhm			
	R...218	57.11.4105	1 MOhm			
	R...219	57.11.4474	470 kOhm			
	R...220	57.11.4104	100 kOhm			
	R...221	57.11.4680	68 Ohm			
	R...222	57.92.1271	6.5 Ohm	PTC, 270mA	Philips No. 2322 662	
	R...223	57.92.1271	6.5 Ohm	PTC, 270mA	Philips No. 2322 662	
	R...224	57.92.1271	6.5 Ohm	PTC, 270mA	Philips No. 2322 662	
	R...225	57.11.4224	220 kOhm			
	R...226	57.11.4224	220 kOhm			
	S.....1	55.15.0025	9*4*u	S1.1...S1.9 mutual releasing		Sch
	S.....2	55.15.0019	2*u			Sch
	S.....3	55.15.0019	2*u			Sch
	S.....4	55.15.0019	2*u	only on request / nur auf Verlangen		Sch
	S.....5	55.15.0021	4*u			Sch
	S.....6	55.15.0022	3*2*u	S6.1...S6.3 mutual releasing		Sch
	S.....7	55.15.0019	2*u			Sch
	S.....8	55.15.0020	2*u	non latching		Sch
	S.....9	55.15.0019	2*u			Sch
	T.....1	1.022.451.00				St
	T.....2	1.022.451.00				St

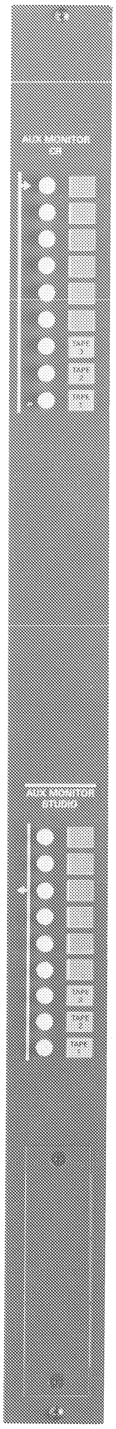
CER = ceramic, EL = electrolytic, PE = polyester, PP = polypropylen

MANUFACTURER: CM=Chicago Miniatur, GI=General Instruments,
HP=Hewlett-Packard, Mot=Motorola, Ra=Raytheon
Sch=Schadow-ITT, St=Studer, TI=Texas Instruments,

1.970.920.00 CR MONITOR UNIT WY 86/08/2200
1.970.920.00 CR MONITOR UNIT WY 88/05/2001

Control room Monitor Unit 1.970.920.00

6. Monitorerweiterung 1.970.952



Erweiterung für CR Monitor	1.970.920
und Studio Monitor	1.970.901

QUELLENANWAHL:

Je ein Tastensatz von neun, sich gegenseitig auslösenden Quellenwahltasten ergänzen den CR MONITOR resp. den STUDIO MONITOR um neun Programm-Eingänge.
Neun Eingänge führen parallel auf die zwei Tastensätze für den CR- und Studio Monitor.

EINGANGSSCHALTUNG:

(Beschrieben wird ein Kanal, der zwei möglichen Eingangsstufen).
Die Eingangsstufe ist als symmetrisch, erdfreier Knotenpunktverstärker ausgelegt. Die angewählte Signalquelle führt über die entsprechenden Koppelwiderstände (R1...36) und (R37/38) an den Eingansübertrager (T1). C1...4 leiten hochfrequente Störsignale auf Massenpotential ab. Das RC-Glied (R39-C5) unterstützt das Rechteckverhalten des Eingangssignals. Das sekundärseitig ausgekoppelte asymmetrische NF-Signal führt zum invertierenden Eingang des OpAmp (IC1.1). Die Widerstände (R42/43) kompensieren, zwecks Optimierung des Klirrabstandes, den Kupferwiderstand der sekundärseitigen Transformatorwicklung.

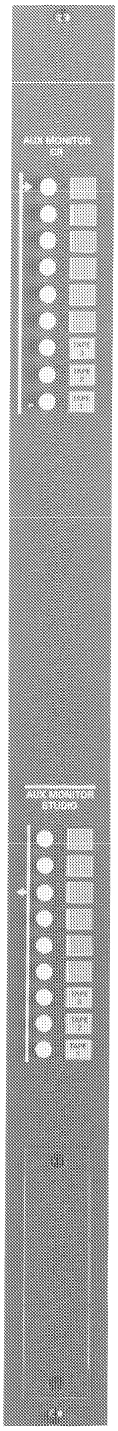
ANKOPPLUNG AN CR-STUDIO MONITOR:

Über P4 führt das NF-Signal auf den reservierten Eingang des CR-, resp. STUDIO-Monitors. Dieser erfährt, bei erweiterter Monitoreinheit, eine Änderung; Siehe entsprechendes Schema:

CR/MONITOR	1.970.920
STUDIO MONITOR	1.970.901

Durch das Setzen der Drahtbrücken (*) werden die "b"-Signaladern auf 0V geführt, was eine asymmetrische Signalverarbeitung über Eingangsübertrager, und eine Signalverstärkung durch den nachfolgenden OpAmp, von den zugeführten +0dBu auf Nennpegel +6dBu zur Folge hat.

6. Monitor Expansion Unit 1.970.952



Monitor expansion for CR Monitor	1.970.920
and for Studio Monitor	1.970.901

SOURCE SELECTION:

On set of nine interlocked source selection buttons each expand the CR MONITOR or the STUDIO MONITOR respectively by nine program inputs.
The nine inputs are taken in parallel to both sets of correspondingly arranged selector buttons.

INPUT CIRCUIT:

(Described is one channel of the two possible input stages)
the input stage is designed as an unbalanced and floating nodal point amplifier. The selected signal source is taken via the corresponding coupling resistor (R1...36) and (R37/38) to the input transformer (T1). C1...4 discharge high-frequency noise signals to ground potential. The RC element (R39-C9) supports the square-wave behavior of the input signal. The unbalanced audio signal decoupled on the secondary side is taken to the inverting input of opamp (IC1.1). The resistors (R42/43) compensate the copper resistance of the secondary transformer winding in order to optimize the distortion factor.

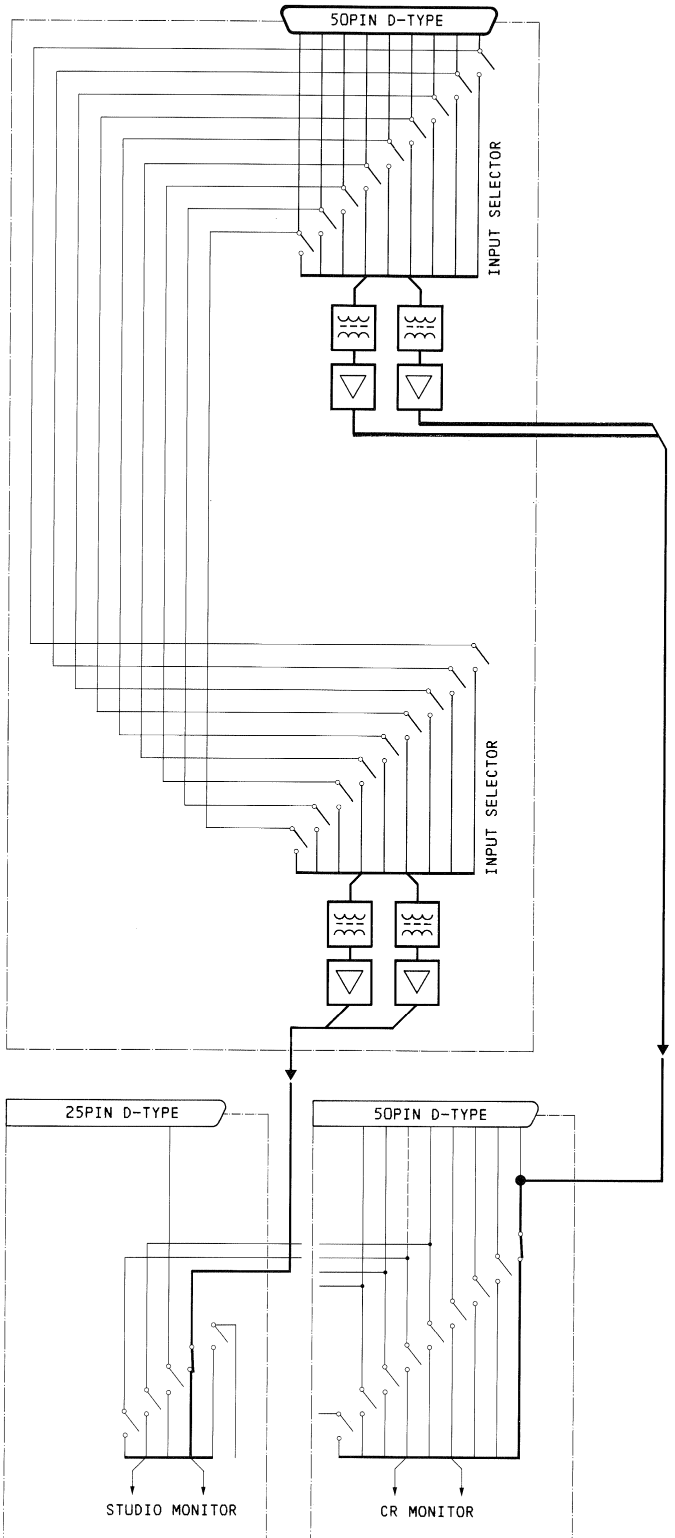
COUPLING TO CR/ STUDIO MONITOR:

The audio signal is taken via P4 to the reserved input of the CR or STUDIO monitor. The latter is modified when the monitor module is expanded;
refer to corresponding diagram.

CR/MONITOR	1.970.920
STUDIO MONITOR	1.970.901

Wehn the two jumpers (*) are set, the b-signal conductors are connected to 0 V with the result that the signals are processed unbalanced via input transformers and the signals are amplified by the subsequent opamp from the available 0.3 dBu to the nominal level of +6 dBu.

6.1 Blockschaltbild / Block Diagram

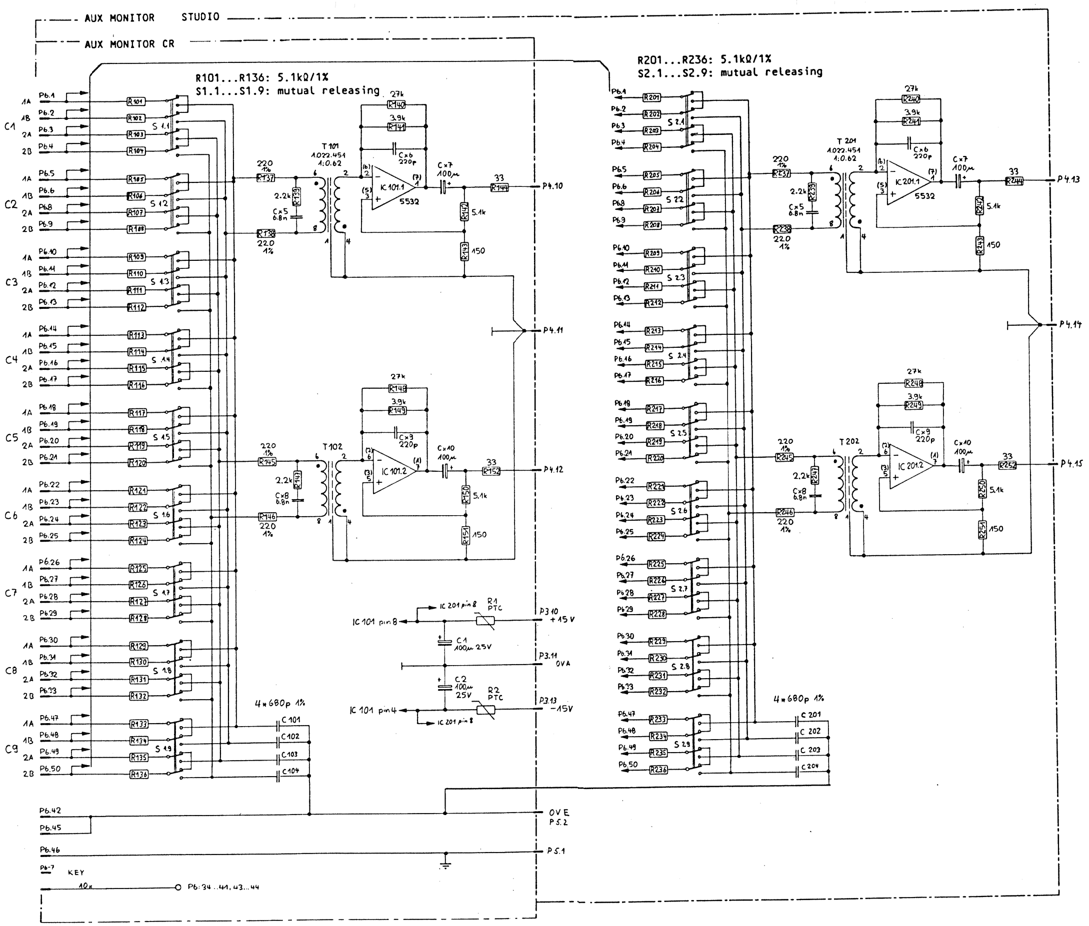


Part of Studio Monitor
1.970.901

Part of CR Monitor
1.970.920

Aux Monitor

Part 1



50pin D-TYPE CONNECTOR P6

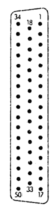
Signal protocol

PIN NO.	SIGNAL NAME	FUNCTION	UNASSIGNED	CONNECTOR CODING	AUDIO GROUND	B-LINE (INPUTS)	A-LINE (INPUTS)	CH2/R	CH1/L
01	C·1·1·A	CONNECT.C1 (CH1) INPUT 1-A					●		●
02	C·1·1·B	CONNECT.C1 (CH1) INPUT 1-B				●			●
03	C·1·2·A	CONNECT.C1 (CH2) INPUT 2-A					●	●	
04	C·1·2·B	CONNECT.C1 (CH2) INPUT 2-B				●		●	
05	C·2·1·A	CONNECT.C2 (CH1) INPUT 1-A					●		●
06	C·2·1·B	CONNECT.C2 (CH1) INPUT 1-B				●			●
07	···	KEY		●					
08	C·2·2·A	CONNECT.C2 (CH2) INPUT 2-A					●	●	
09	C·2·2·B	CONNECT.C2 (CH2) INPUT 2-B				●		●	
10	C·3·1 A	CONNECT.C3 (CH1) INPUT 1-A					●		●
11	C·3·1·B	CONNECT.C3 (CH1) INPUT 1-B				●			●
12	C·3·2·A	CONNECT.C3 (CH2) INPUT 2-A					●	●	
13	C·3·2·B	CONNECT.C3 (CH2) INPUT 2-B				●		●	
14	C·4·1·A	CONNECT.C4 (CH1) INPUT 1-A					●		●
15	C·4·1·B	CONNECT.C4 (CH1) INPUT 1-B				●			●
16	C·4·2·A	CONNECT.C4 (CH2) INPUT 2-A					●	●	
17	C·4·2·B	CONNECT.C4 (CH2) INPUT 2-B				●		●	
18	C·5·1·A	CONNECT.C5 (CH1) INPUT 1-A					●		●
19	C·5·1·B	CONNECT.C5 (CH1) INPUT 1-B				●			●
20	C·5·2·A	CONNECT.C5 (CH2) INPUT 2-A					●	●	
21	C·5·2·B	CONNECT.C5 (CH2) INPUT 2-B				●		●	
22	C·6·1·A	CONNECT.C6 (CH1) INPUT 1-A					●		●
23	C·6·1·B	CONNECT.C6 (CH1) INPUT 1-B				●			●
24	C·6·2·A	CONNECT.C6 (CH2) INPUT 2-A					●	●	
25	C·6·2·B	CONNECT.C6 (CH2) INPUT 2-B				●		●	
26	C·7·1·A	CONNECT.C7 (CH1) INPUT 1-A					●		●
27	C·7·1·B	CONNECT.C7 (CH1) INPUT 1-B				●			●
28	C·7·2·A	CONNECT.C7 (CH2) INPUT 2-A					●	●	
29	C·7·2·B	CONNECT.C7 (CH2) INPUT 2-B				●		●	
30	C·8·1·A	CONNECT.C8 (CH1) INPUT 1-A					●		●
31	C·8·1·B	CONNECT.C8 (CH1) INPUT 1-B				●			●
32	C·8·2·A	CONNECT.C8 (CH2) INPUT 2-A					●	●	
33	C·8·2·B	CONNECT.C8 (CH2) INPUT 2-B				●		●	
34	RES	----------	●						
35	RES	----------	●						
36	RES	----------	●						
37	RES	----------	●						
38	RES	----------	●						
39	RES	----------	●						
40	RES	----------	●						
41	RES	----------	●						
42	0V·E	0V SCREEN CABLE			●				
43	RES	----------	●						
44	RES	----------	●						
45	0V·E	0V SCREEN CABLE			●				
46	CHASSIS	METAL FRAME							
47	C·9·1·A	CONNECT.C9 (CH1) INPUT 1-A					●		●
48	C·9·1·B	CONNECT.C9 (CH1) INPUT 1-B				●			●
49	C·9·2·A	CONNECT.C9 (CH2) INPUT 2-A					●	●	
50	C·9·2·B	CONNECT.C9 (CH2) INPUT 2-B				●		●	

Pin assignment

AUX MONITOR CONNECTOR to AUX MONITOR UNIT 1.970.952 — D-TYP MALE VIEW FROM CONNECTOR SIDE

CABLE CONNECTOR AUX MONITOR to - Terminal box — D-TYP FEMALE VIEW FROM SOLDER SIDE



PIN	WIRE COLOR
01	wht
02	brn
03	grn
04	yel
05	grn
06	pnk
07	KEY
08	red
09	blk
10	vio
11	pnk/gry
12	red/blu
13	grn/wht
14	grn/brn
15	yel/wht
16	yel/brn
17	gry/wht
18	gry/brn
19	pnk/wht
20	pnk/brn
21	blu/wht
22	blu/brn
23	red/wht
24	red/brn
25	blk/wht
26	blk/brn
27	grn/gry
28	yel/gry
29	grn/pnk
30	yel/pnk
31	grn/blu
32	yel/blu
33	grn/red
34	yel/red
35	grn/blk
36	yel/blk
37	blu/gry
38	blu/pnk
39	red/gry
40	red/pnk
41	gry/blk
42	pnk/blk
43	blu/blk
44	red/blk
45	brn/wht/blk
46	grn/yel/blk
47	pnk/gry/blk
48	red/blu/blk
49	grn/wht/blk
50	grn/brn/blk

P3

PIN	NAME	REMARK
01		
02		
03		
04		
05	0V·REF	0V REFERENCE
06		
07		
08		
09		
10	+15V	+SUPPLY
11	0V·A	GROUND AUDIO
12	0V·L	GROUND SIGN (LOGIC)
13	-15V	-SUPPLY
14	-6V	-SUPPLY
15		
16		

P4

PIN	NAME	REMARK
01		
02		
03		
04		
05		
06		
07		
08		
09		
10	AM·1·A	AUX MON. 1A OUTPUT
11	AM·0V	AUX MONITOR 0V
12	AM·2·A	AUX MON. 2A OUTPUT
13	ASM·1·A	AUX STUDIO MON. 1A
14	ASM·0V	AUX STUDIO MON. 0V
15	ASM·2·A	AUX STUDIO MON. 2A
16		

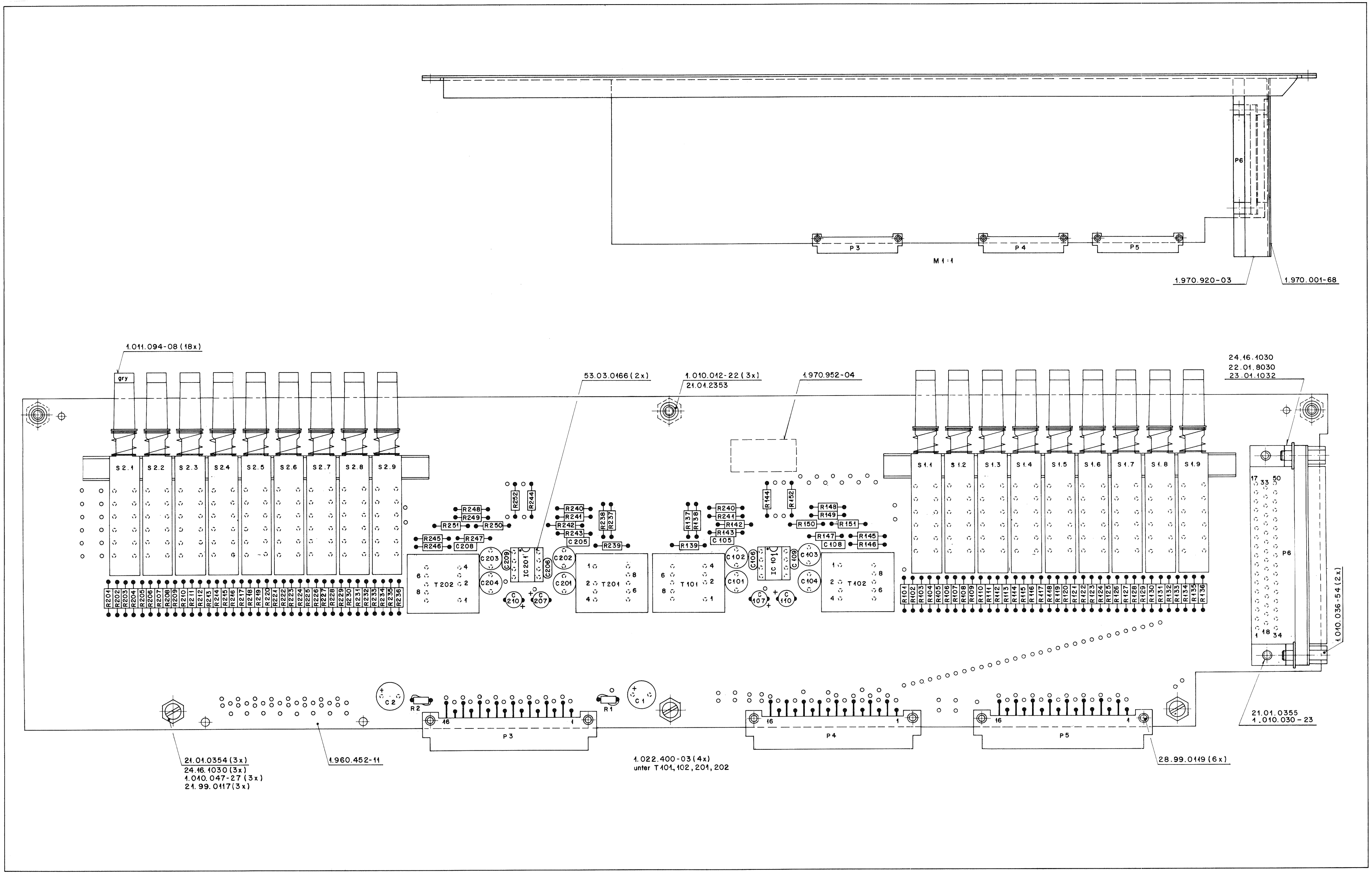
1.970.952

P5

PIN	NAME	REMARK
01	CHASSIS	METAL FRAME
02	0V·E	0V EXTERN
03		
04		
05		
06		
07		
08		
09		
10		
11		
12		
13		
14		
15		
16		

DATE:	11.5.87					
SIGN:	ak					PAGE 1 OF 1
STUDER REGENSDORF ZURICH	AUX MONITOR					1.970.952

AUX MONITOR 1.970.952.00



AUX / Control Room / Studio Monitor 1.970.952.00

Ad ..POS..	...REF.No...	DESCRIPTION			...MANUFACTURER
C.....1	59.22.5101	100 uF	25V	EL	
C.....2	59.22.5101	100 uF	25V	EL	
C.....0	59.05.1681	680 pF	1%	PP	
C.....0	59.05.1681	680 pF	1%	PP	
C.....0	59.05.1681	680 pF	1%	PP	
C.....0	59.05.1681	680 pF	1%	PP	
C.....0	59.06.0682	6.8 nF		PE	
C.....0	59.34.4221	220 pF		CER	
C.....0	59.22.3101	100 uF	10V	EL	
C.....0	59.06.0682	6.8 nF		PE	
C.....0	59.34.4221	220 pF		CER	
C.....0	59.22.3101	100 uF	10V	EL	
IC....0	50.09.0105	NE5532	RC5532NB, XR5532N		Sig,Ra,Ex
P.....3	54.11.2007	2*8 pin	1/2-eurocard connector, male		
P.....4	54.11.2007	2*8 pin	1/2-eurocard connector, male		
P.....5	54.11.2007	2*8 pin	1/2-eurocard connector, male		
P.....6	54.13.0015	50 pin	D-type connector, male		AMP
R.....1	57.92.1820	42 Ohm	PTC, 80mA		
R.....2	57.92.1820	42 Ohm	PTC, 80mA		
R.....0	57.11.3512	5.1 kOhm	1%		
R.....0	57.11.3512	5.1 kOhm	1%		
R.....0	57.11.3512	5.1 kOhm	1%		
R.....0	57.11.3512	5.1 kOhm	1%		
R.....0	57.11.3512	5.1 kOhm	1%		
R.....0	57.11.3512	5.1 kOhm	1%		
R.....0	57.11.3512	5.1 kOhm	1%		
R.....0	57.11.3512	5.1 kOhm	1%		
R.....0	57.11.3512	5.1 kOhm	1%		
R.....0	57.11.3512	5.1 kOhm	1%		
R.....0	57.11.3512	5.1 kOhm	1%		
R.....0	57.11.3512	5.1 kOhm	1%		
R.....0	57.11.3512	5.1 kOhm	1%		
R.....0	57.11.3512	5.1 kOhm	1%		
R.....0	57.11.3512	5.1 kOhm	1%		
R.....0	57.11.3512	5.1 kOhm	1%		
R.....0	57.11.3512	5.1 kOhm	1%		
R.....0	57.11.3512	5.1 kOhm	1%		
R.....0	57.11.3512	5.1 kOhm	1%		
R.....0	57.11.3512	5.1 kOhm	1%		
R.....0	57.11.3512	5.1 kOhm	1%		
R.....0	57.11.3512	5.1 kOhm	1%		
R.....0	57.11.3512	5.1 kOhm	1%		
R.....0	57.11.3512	5.1 kOhm	1%		
R.....0	57.11.3512	5.1 kOhm	1%		
R.....0	57.11.3512	5.1 kOhm	1%		
R.....0	57.11.3512	5.1 kOhm	1%		
R.....0	57.11.3512	5.1 kOhm	1%		
R.....0	57.11.3512	5.1 kOhm	1%		
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R.....0	57.11.3512	5.1 kOhm	1%		
R.....0	57.11.3512	5.1 kOhm	1%		
R.....0	57.11.3512	5.1 kOhm	1%		
R.....0	57.11.3512	5.1 kOhm	1%		
R.....0	57.11.3512	5.1 kOhm	1%		
R.....0	57.11.3512	5.1 kOhm	1%		
R.....0	57.11.3221	220 Ohm	1%		
R.....0	57.11.3221	220 Ohm	1%		
R.....0	57.11.4222	2.2 kOhm			
R.....0	57.11.4273	27 kOhm			
R.....0	57.11.4392	3.9 kOhm			
R.....0	57.11.3512	5.1 kOhm			
R.....0	57.11.4151	150 Ohm			
R.....0	57.11.4330	33 Ohm			
R.....0	57.11.3221	220 Ohm	1%		
R.....0	57.11.3221	220 Ohm	1%		
R.....0	57.11.4222	2.2 kOhm			
R.....0	57.11.4273	27 kOhm			
R.....0	57.11.4392	3.9 kOhm			
R.....0	57.11.3512	5.1 kOhm			
R.....0	57.11.4151	150 Ohm			
R.....0	57.11.4330	33 Ohm			
S.....0	55.15.0025	9*4*u	S1.1...S1.9 mutual releasing		Sch
T.....0	1.022.451.00				St
T.....0	1.022.451.00				St

indices x=1: aux control room monitor
x=2: aux studio monitor

CER = ceramic, EL = electrolytic, PE = polyester, PP = polypropylen

MANUFACTURER: Ex=Exar, Ra=Raytheon, Sig=Signetics,
Sch=Schadow-ITT, St=Studer, TI=Texas Instruments,

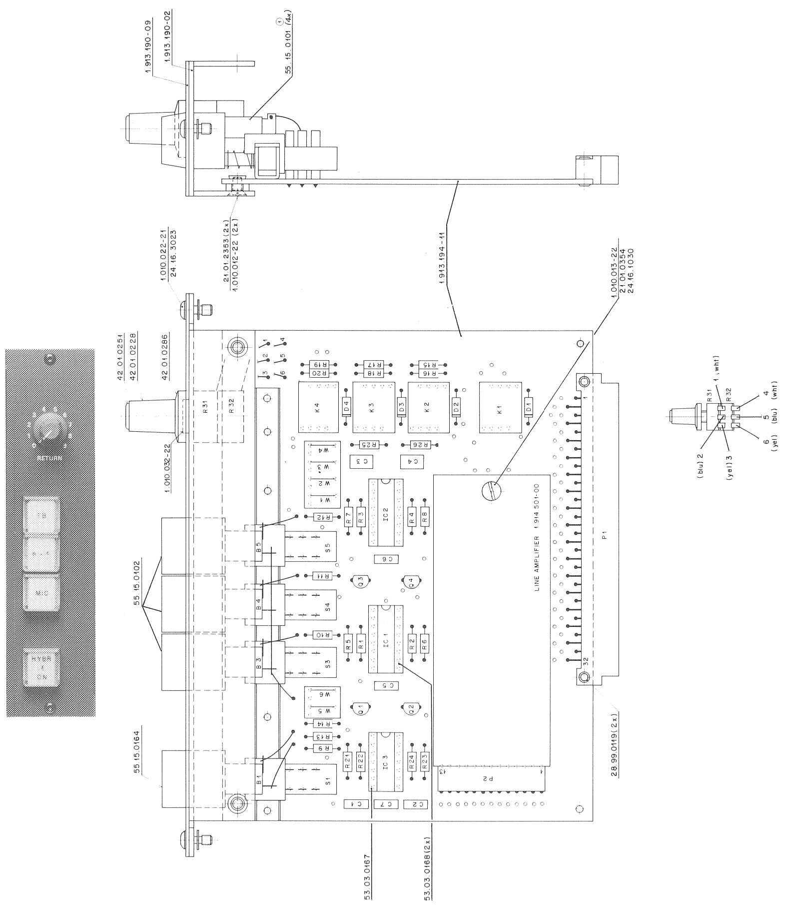
1.970.952.00 AUX CR/STUDIO MONITOR WY 86/08/2200

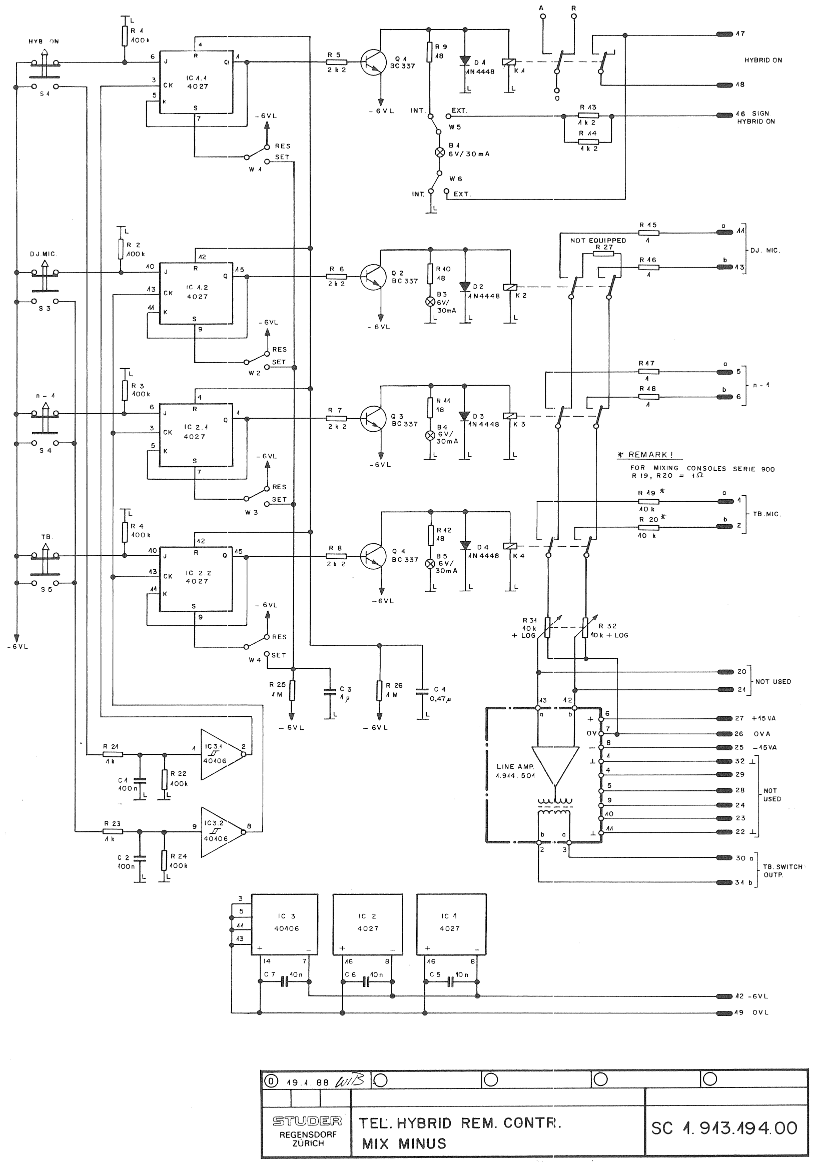
5 Einschubmodule 1.913...

5 Plug in Units 1.913....

5 Plug in Units 1.913....

1. Telephone Hybrid Remote Control / Mix Minus 1.913.194.00





Tel. Hybrid Remote Control Mix Minus 1.913.194.00

Ad	..POS..	...REF.No...	DESCRIPTION	....	MANUFACTURER
	B.....1	51.02.0144	6V/30MA	LAMP	
	B.....2	51.02.0144	6V/30MA	LAMP	
	B.....3	51.02.0144	6V/30MA	LAMP	
	B.....4	51.02.0144	6V/30MA	LAMP	
	C.....1	59.06.0104	100 NF	-10% PETP	
	C.....2	59.06.0104	100 NF	-10% PETP	
	C.....3	59.06.0105	1 UF	-10% PETP	
	C.....4	59.06.0474	0.47UF	-10% PETP	
	C.....5	59.06.0103	0.01UF	-10% PETP	
	C.....6	59.06.0103	0.01UF	-10% PETP	
	C.....7	59.06.0103	0.01UF	-10% PETP	
	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
	IC....1	50.07.0027	4027	DUAL JK-FLIP-FLOP	ANY
	IC....2	50.07.0027	4027	DUAL JK-FLIP-FLOP	ANY
	IC....3	50.07.0014	40106	HEX INVERTING SCHMITT TRIGGER	ANY
	K.....1	56.04.0170	2U/6V	RELAY 2U 6V	ITT
	K.....2	56.04.0170	2U/6V	RELAY 2U 6V	ITT
	K.....3	56.04.0170	2U/6V	RELAY 2U 6V	ITT
	K.....4	56.04.0170	2U/6V	RELAY 2U 6V	ITT
	MP....1	1.913.194.11	1 PCS	PRINTED CIRQUIT BOARD	
	MP....2	53.03.0167	1 PCS	IC SOCKET 14 PIN	
	MP....3	53.03.0168	2 PCS	IC SOCKET 16 PIN	
	MP....4	55.15.0102	3 PCS	PUSH BUTTON GREY CALOT. WHT	
	MP....5	55.15.0164	1 PCS	PUSH BUTTON GREY CALOT. YEL	
	MP....6	42.01.0228	1 PCS	KNOP GREY D 10/4	
	MP....7	42.01.0251	1 PCS	COVER GREY TO KNOP D 10	
	MP....8	42.01.0286	1 PCS	KNOP SKIRT GREY TO KNOP D 10	
	MP....9	21.01.0354	1 PCS	C-SCREW M 3 * 6	
	MP...10	21.01.2353	2 PCS	S-SCREW M 3 * 5	
	MP...11	1.010.022.21	2 PCS	OVAL HEAD SCREW IS SPEC M 3 * 8	
	MP...12	24.16.1030	1 PCS	LOCK WASHER M 3	
	MP...13	24.16.3023	2 PCS	CIRCLIP D 2.3	
	MP...14	1.010.012.22	2 PCS	RIVET NUT SW 6 M 3 * 2	
	MP...15	1.010.013.22	1 PCS	RIVET NUT SW 6 M 3 * 3	
	MP...16	28.99.0119	2 PCS	RIVET D2.5 * 0.15 * 10	
	MP...17	1.913.190.02	1 PCS	MOUNTING PANEL	
	MP...18	1.913.190.09	1 PCS	FRONT SHIELD	
	P.....1	54.01.0359		CONNECTOR 2 * 16 PIN	ANY
	P.....2	54.01.0309		CONNECTOR CIS 13 PIN	ANY
	Q.....1	50.03.0497	BC 550	NPN	ANY
	Q.....2	50.03.0497	BC 550	NPN	ANY
	Q.....3	50.03.0497	BC 550	NPN	ANY
	Q.....4	50.03.0497	BC 550	NPN	ANY
	R.....1	57.11.3104	100 KOHM	1% 0.25W	
	R.....2	57.11.3104	100 KOHM	1% 0.25W	
	R.....3	57.11.3104	100 KOHM	1% 0.25W	
	R.....4	57.11.3104	100 KOHM	1% 0.25W	
	R.....5	57.11.3222	2.2 KOHM	1% 0.25W	
	R.....6	57.11.3222	2.2 KOHM	1% 0.25W	
	R.....7	57.11.3222	2.2 KOHM	1% 0.25W	
	R.....8	57.11.3222	2.2 KOHM	1% 0.25W	
	R.....9	57.11.3180	18 OHM	1% 0.25W	
	R....10	57.11.3180	18 OHM	1% 0.25W	
	R....11	57.11.3180	18 OHM	1% 0.25W	
	R....12	57.11.3180	18 OHM	1% 0.25W	
	R....13	57.11.3122	1.2 KOHM	1% 0.25W	
	R....14	57.11.3122	1.2 KOHM	1% 0.25W	
	R....15	57.11.3109	1 OHM	1% 0.25W	
	R....16	57.11.3109	1 OHM	1% 0.25W	
	R....17	57.11.3109	1 OHM	1% 0.25W	
	R....18	57.11.3109	1 OHM	1% 0.25W	
	R....19	57.11.3103	10 KOHM	1% 0.25W	
	R....20	57.11.3103	10 KOHM	1% 0.25W	
	R....21	57.11.3102	1 KOHM	1% 0.25W	
	R....22	57.11.3104	100 KOHM	1% 0.25W	
	R....23	57.11.3102	1 KOHM	1% 0.25W	
	R....24	57.11.3104	100 KOHM	1% 0.25W	
	R....25	57.11.3105	1 MOHM	1% 0.25W	
	R....26	57.11.3105	1 MOHM	1% 0.25W	
	R....27	. .	NOT USED		
	R....31	1.912.001.34	10 KOHM	10 KOHM POS LOG COMBINATED WITH R32	ST
	R....32	. .	10 KOHM	SEE POS R031	ST
	S.....1	55.15.0001	1 * 2U	PUSH BUTTON COMBINATED WITH S3,S4,S5	ST
	S.....3	. .	1 * 2U	SEE POS S001	ST
	S.....4	. .	1 * 2U	SEE POS S001	ST
	S.....5	. .	1 * 2U	SEE POS S001	ST
	W.....1	55.12.1002	1 * 1U	DIL SWITCHER	SIE
	W.....2	55.12.1002	1 * 1U	DIL SWITCHER	SIE
	W.....3	55.12.1002	1 * 1U	DIL SWITCHER	SIE
	W.....4	55.12.1002	1 * 1U	DIL SWITCHER	SIE
	W.....5	55.12.1002	1 * 1U	DIL SWITCHER	SIE
	W.....6	55.12.1002	1 * 1U	DIL SWITCHER	SIE

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

1.913.194.00 TEL.HYBR.REM.CONTR./MIX.MINUS WIB87/12/0700

2. Korrelator 1.913.210/211

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°) sind, zeigt das Instrument -1 an. Bei einem Stereoprogramm 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.

2.1 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

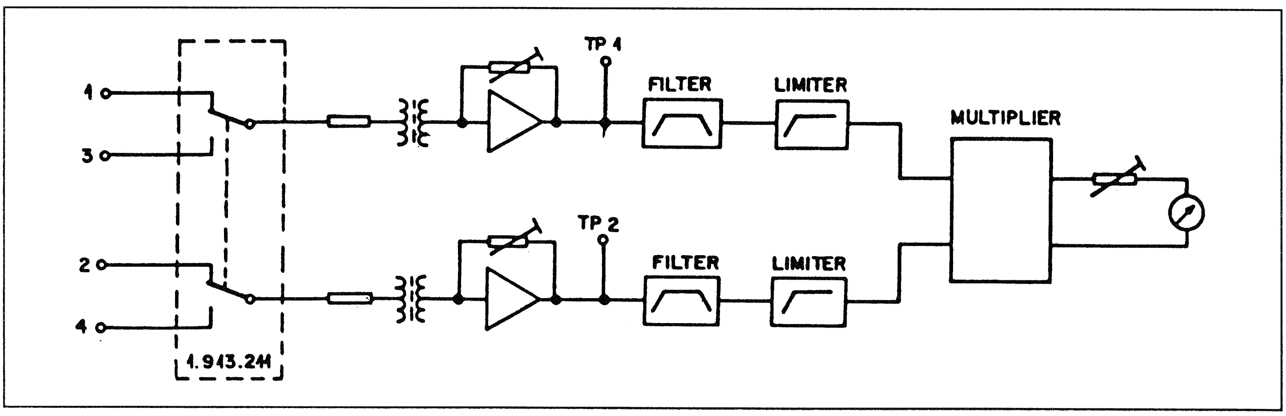
Die Abtastfähigkeit eines Abtastsystems ist für vertikale Auslenkung viel geringer als für horizontale Auslenkung.

Gegenphasige Signale mit hohem Pegel und tiefen Frequenzen weisen eine grosse vertikale Auslenkung auf und müssen deshalb vermieden werden.

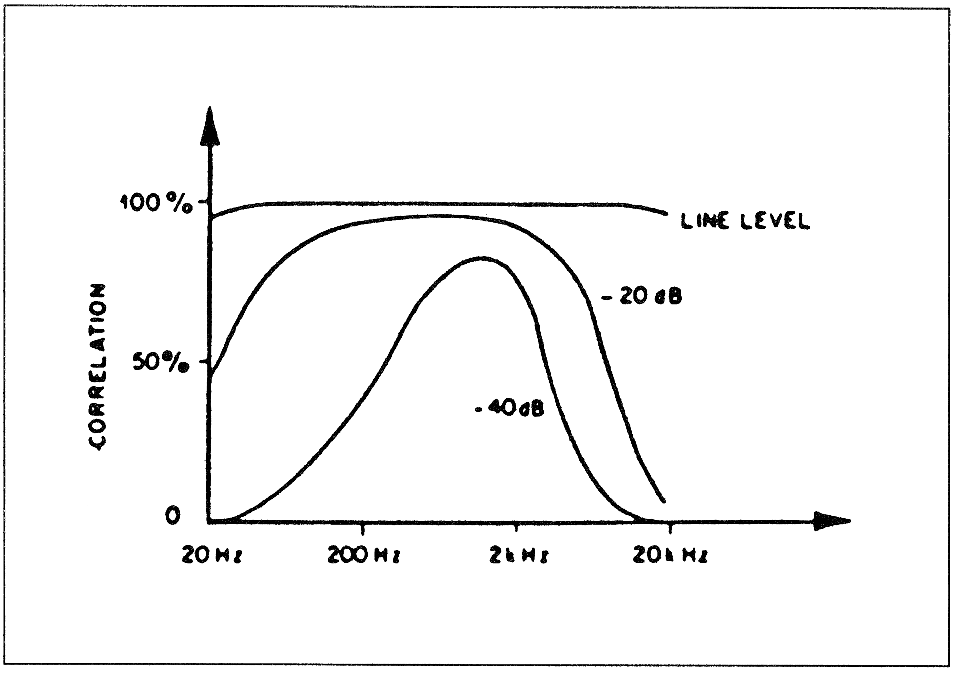
Modulation von FM-Stereosendern

Die FM-Strecke Sender-Empfänger ist sehr empfindlich auf übermässig hohe Frequenzdifferenz-Signale. Es entstehen dabei unzulässige Verzerrungen.

2.2 Blockschaltbild



Korrelation



2.3 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 ± 300 µA

Temperatureinfluss: Fehler bei 0° C ... 50° C, bezüglich Raumtemperatur: +3 ... -1 %

Stromaufnahme bei ± 15 V: ca. 15 mA

Abmessung Frontplatte: 170 x 180 mm

Tiefe: 135 mm

Gewicht: 390 gr

2. Correlator — 1.913.210/211

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°) the instrument indicates -1. The correlator always indicates the average of in-phase and antiphase signals of a stereo production.

Stereo programs normally shown a positive correlation value, preferably around +0,5. Negative values indicate that the phase in the system is inversed.

2.1 Application which require a Correlator

Mono 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

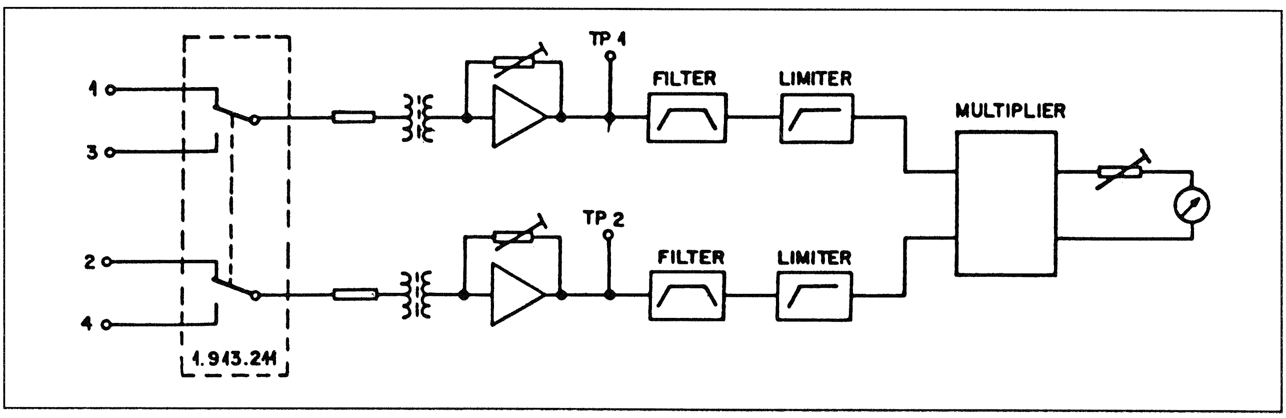
The tracking capability of a cartridge is much lower for vertical excursion than for horizontal excursion.

Antiphase signals with high levels and low frequencies result in high vertical excursion and should, therefore, be avoided.

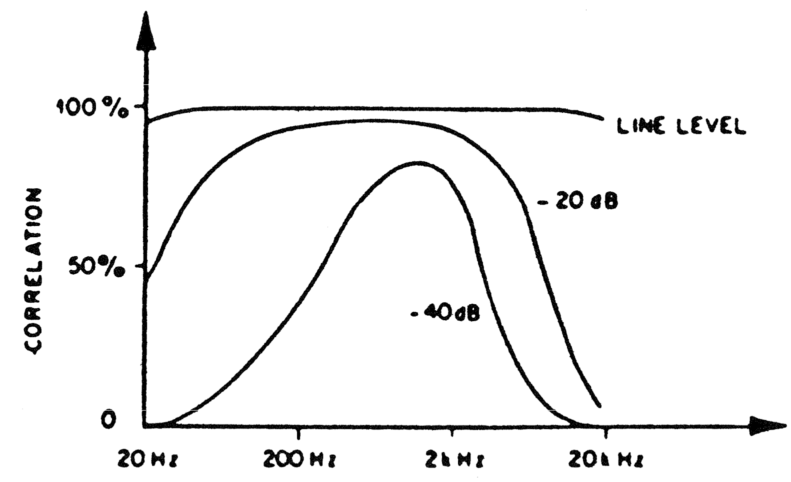
Modulation from FM stereo transmitters

The FM path from the transmitter to the receiver is very sensitive to excessively high frequency-difference signals. They produce inacceptable distortion.

2.2 Block Diagram



Correlation

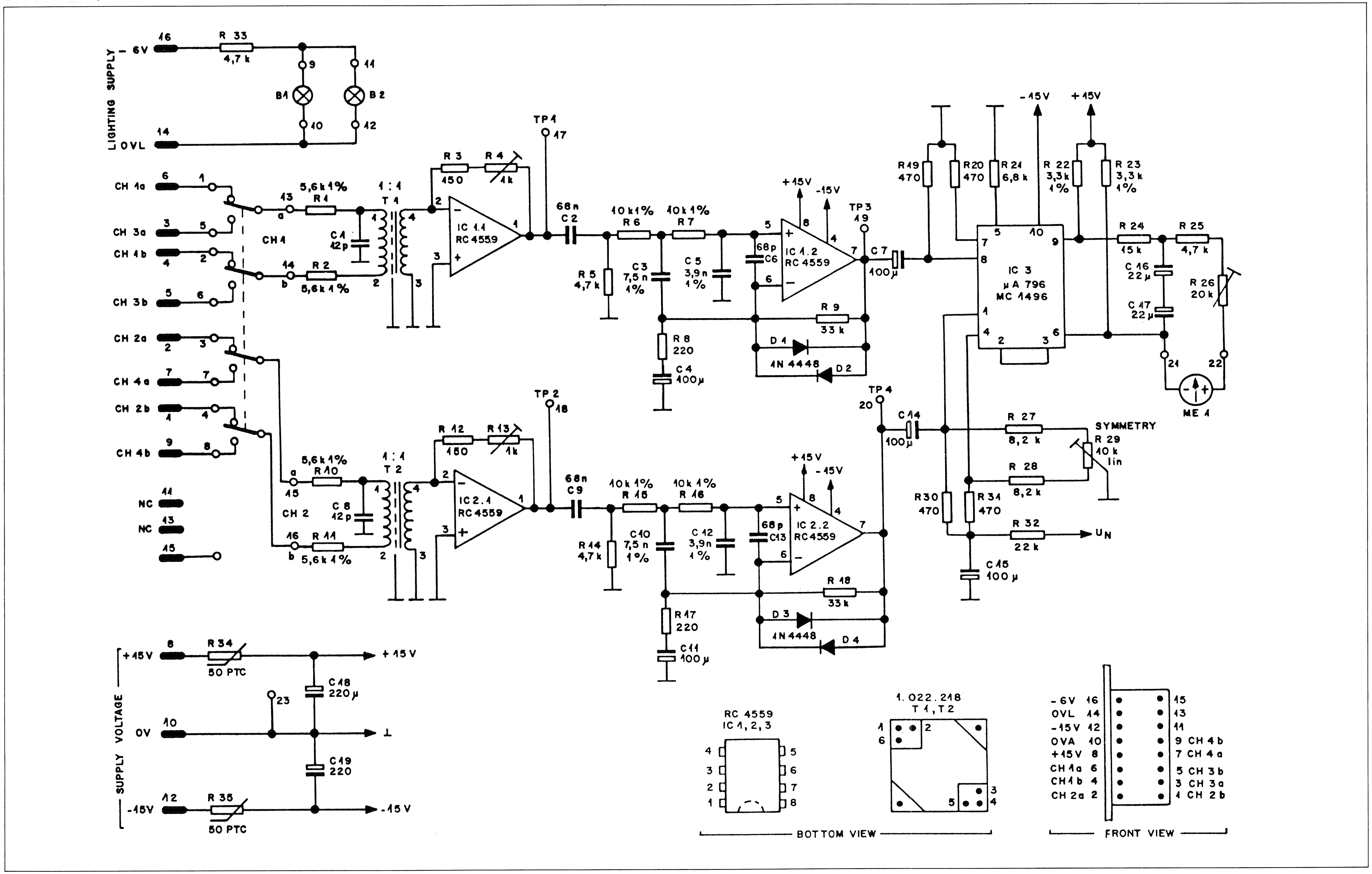


2.3 Specifications

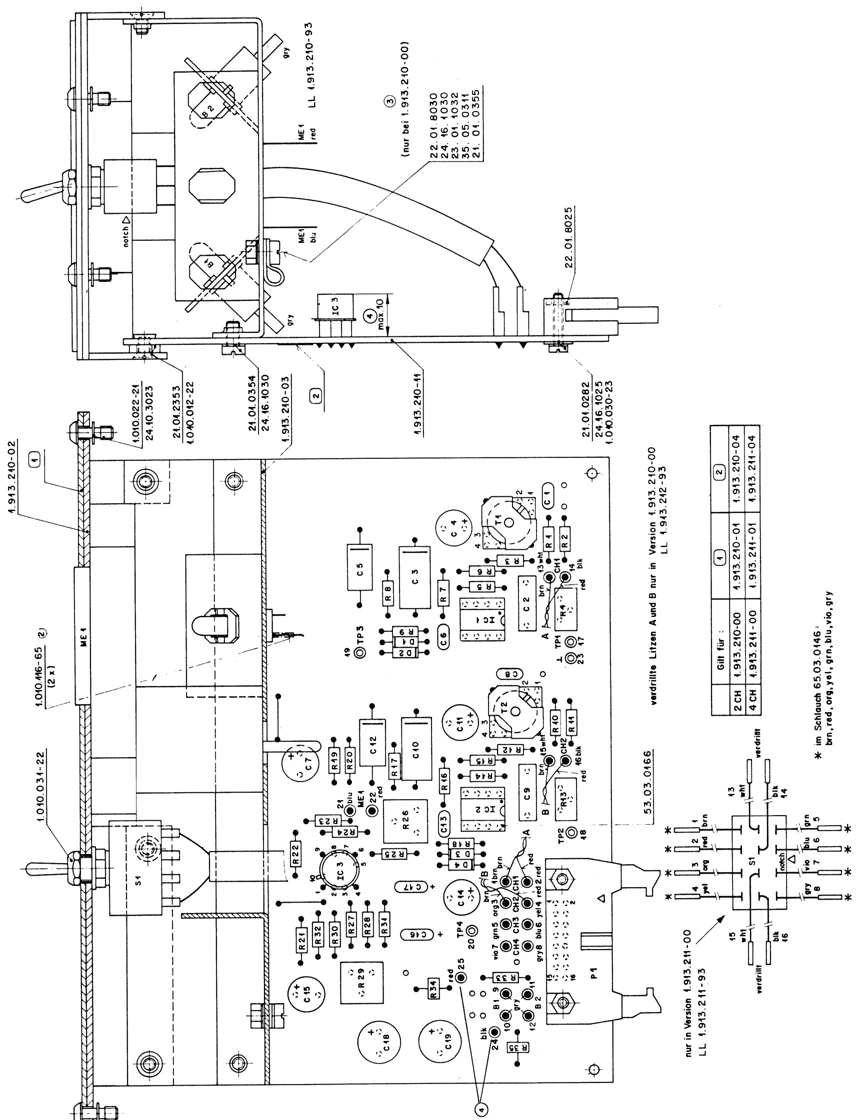
Input:	Balanced and floating Input impedance 20 Hz ... 20 kHz: > 10 kOhm Input level, variable: +6 ... +15 dBu
Filter:	High–pass 6 dB/octave: f_l. ca. 340 Hz Low–pass 12 dB/octave: f_u. ca. 3,4 kHz
Output:	Output current for instruments, variable ± 300 µA
Influence of temperature:	Error at 0°C ... 50°C, relative to room temperature: +3 ... -1 %
	Connected load at ± 15 V: approx. 15 mA
Dimensions of front panel:	170 x 180 mm
Depth:	135 mm
Weight:	390 g

EDITION: 22. Oktober 1990

Correlator 2CH / 4CH 1.913.210/211



Correlator 2CH / 4CH 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	7,5nF	1%	
	C4	59.22.5101	100µF	16V	
	C5	59.12.7392	3,9nF	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	7,5nF	1%	
	C11	59.22.5101	100µF	16V	
	C12	59.12.7392	3,9nF	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	MC1496 G	µA796 HC	M, F

IND	DATE	NAME	
④			F Fairchild TI Texas Instruments
③			M Motorola
②			Ra Raytheon
①			also valid for correlator 4CH 1.913.211
○	20-8-81	¹¹ᵍ	
STUDER	CORRELATOR 2CH	1.913.210	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	4,7k		
	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	4,7k		
	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	4,7k		
	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			also valid for correlator 4CH 1.913.211
○	20-8-81	¹¹ᵍ	
STUDER	CORRELATOR 2CH	1.913.210	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	4,7		
	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	

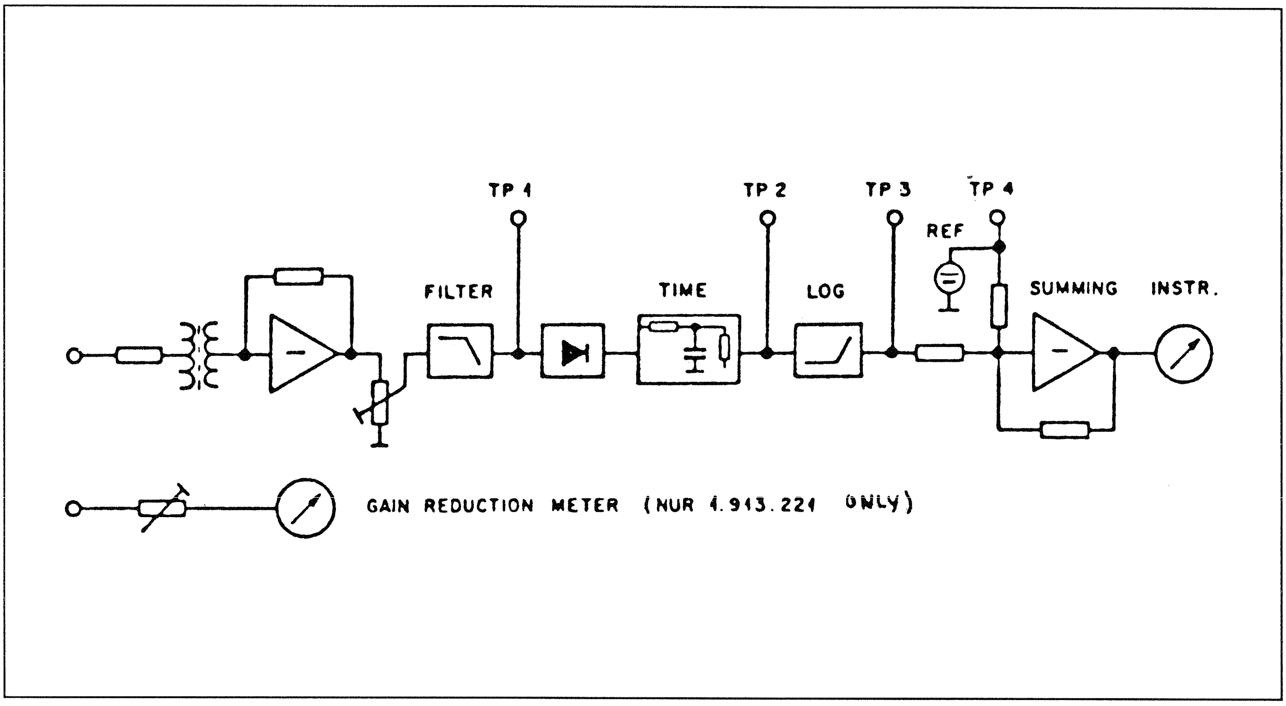
IND	DATE	NAME	
④			
③			
②			
①			also valid for correlator 4CH 1.913.211
○	20-8-81	¹¹ᵍ	
STUDER	CORRELATOR 2CH	1.913.210	PAGE 3 OF 3

EDITION: 23. Oktober 1990

3. Peak Program Meter (PPM) 1.913.220/221

Aussteuerungsmesser mit symmetrisch, erdfreiem Eingang. Dynamisches Verhalten gemäss IEC/DIN Normen.

3.1 Blockschaltbild



3.2 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**

<u>Dynamisches Verhalten</u>

Überschwingen		**≤ 1 dB**
Ansprechzeit	auf - 1 dB ± 0,5 dB auf - 4 dB ± 1 dB	**10 ms** **3 ms**
Rücklaufzeit	0 ...-20 dB	**1,7 s ± 0,3 s**
Stromaufnahme	bei ± 15 V	**ca 15 mA**

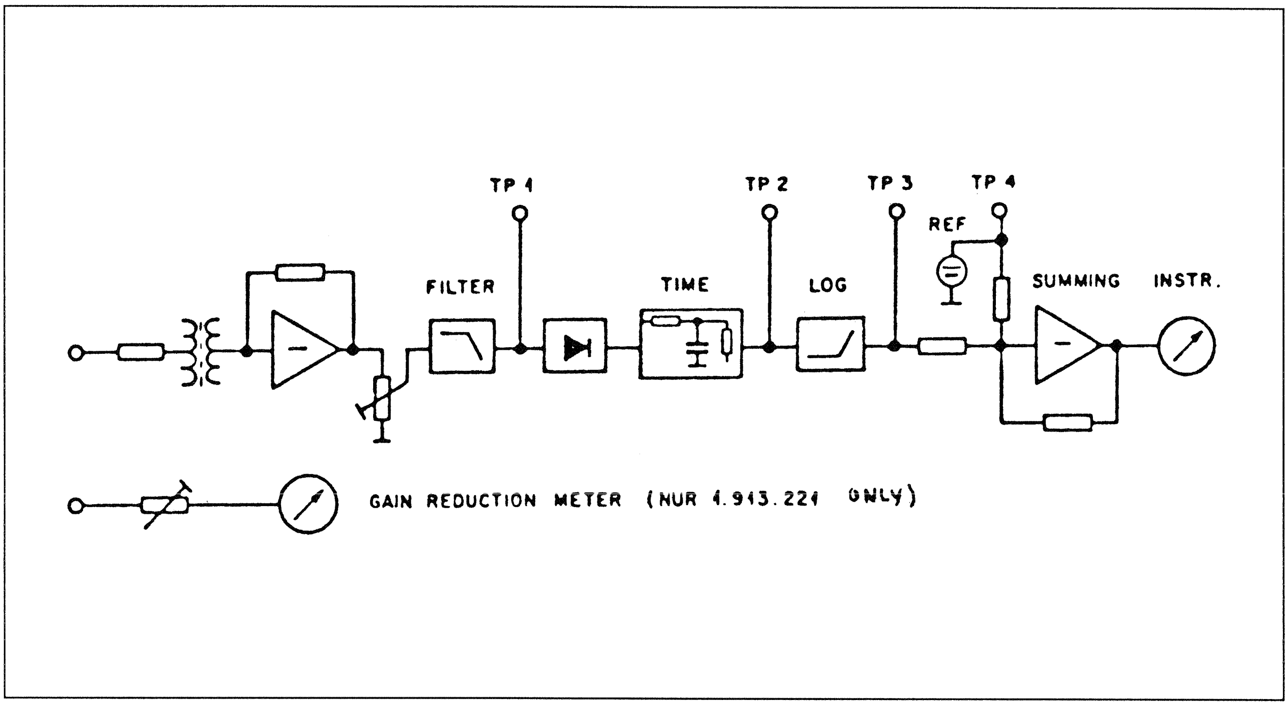
<u>Mechanische Daten</u>

Abmessung Frontplatte:	170 x 80 mm
Tiefe:	135 mm
Gewicht:	360 gr

3. Peak Program Meter (PPM) 1.913.220/221

Level indicator with balanced and floating input. Dynamic response according to IEC/DIN standards.

3.1 Block Diagram



3.2 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**

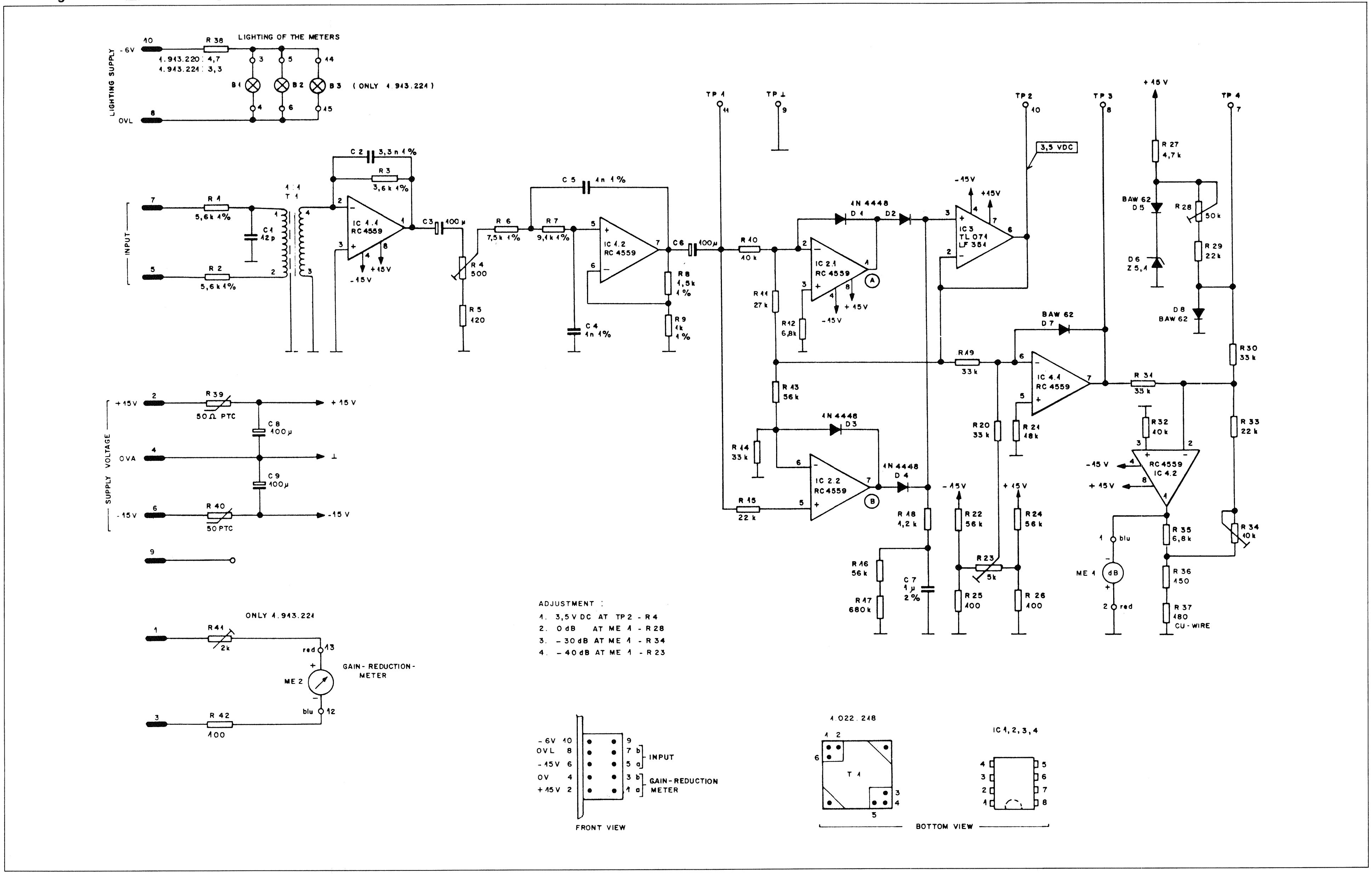
<u>Dynamic response</u>

Overswing		**≤ 1 dB**
Attack time	- 1 dB ± 0,5 dB - 4 dB ± 1 dB	**10 ms** **3 ms**
Return time 0 ...-20 dB		**1,7 s ± 0,3 s**
Connected load at ± 15 V		**ca 15 mA**

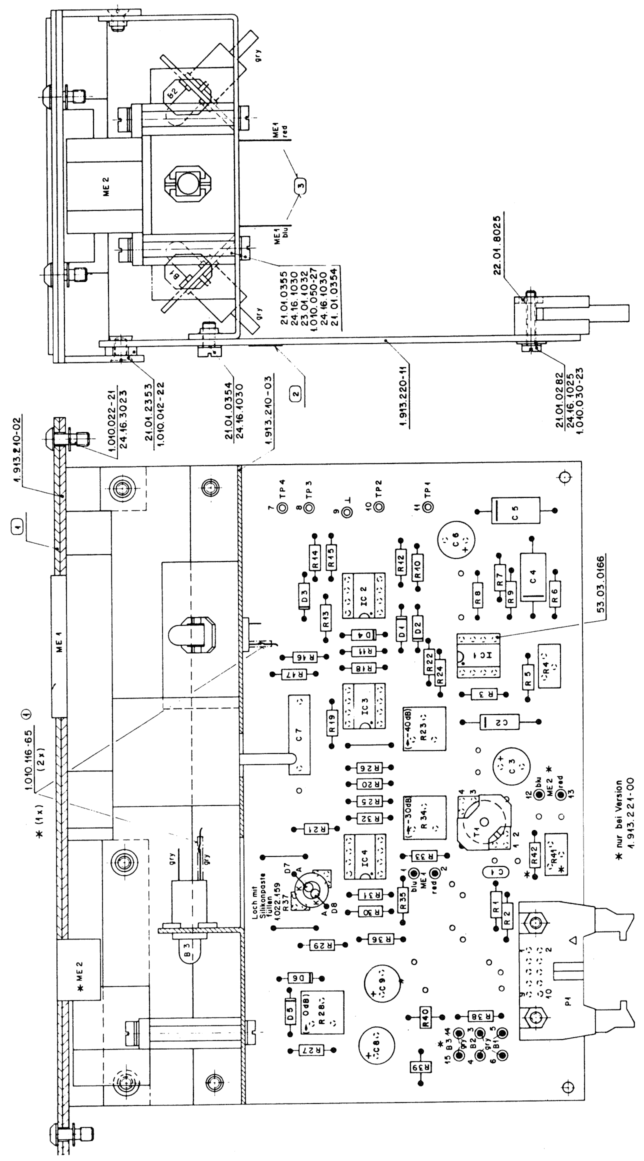
<u>Physical Data</u>

Dimensions of front panel:	170 x 80 mm
Depth:	135 mm
Weight:	360 gr

Peak Programme Meter 1.913.220/221



Peak Programme Meter 1.913.220/221



IND	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)	

IND	DATE	NAME	
④			PH Philips N National Sem.
③			RA Raytheon
②			TI Texas Instr.
①			also valid for PPM with
○	20-8-81	My	gain reduction meter 1.913.221
STUDER	PEAK PROGRAMME METER	1.913.220	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	57.11.3362	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		

IND	DATE	NAME	
④			
③			
②			
①			
○	20-8-81	My	
STUDER	PEAK PROGRAMME METER	1.913.220	PAGE 2 OF 3

IND	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	4,7Ω	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	
	XIC	53.03.0166		IC-Socket 8pins	

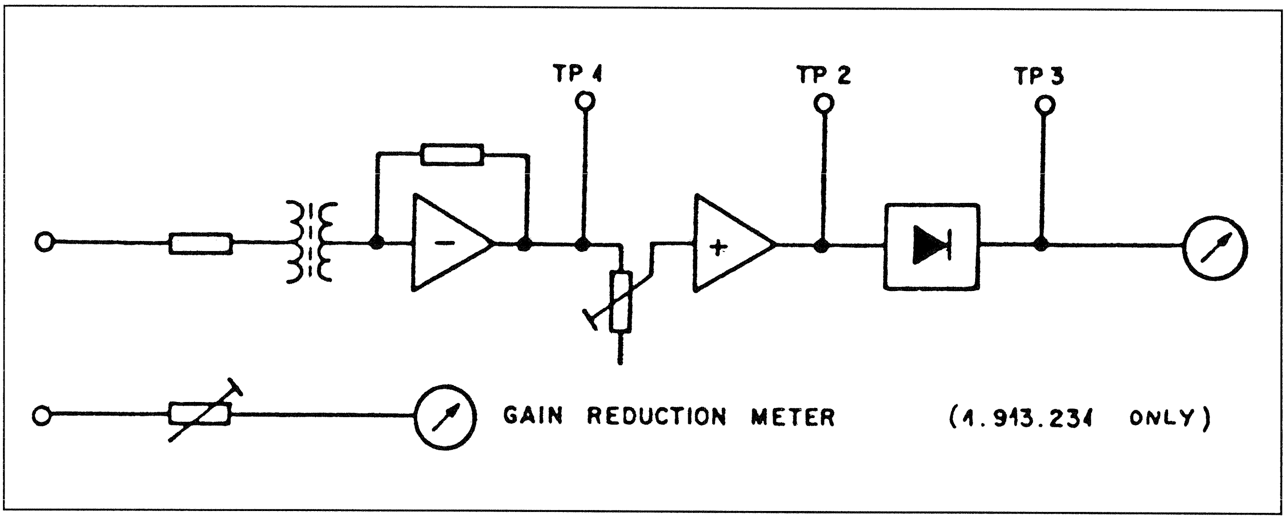
IND	DATE	NAME	
④			
③			
②			
①			
○	20-8-81	My	
STUDER	PEAK PROGRAMME METER	1.913.220	PAGE 3 OF 3

EDITION: 23. Oktober 1990

4. VU-Meter 1.913.230/231

VU-Meter mit symmetrisch, erdfreiem und hoch-ohmigem Eingang. Dynamische Daten gemäss IEC.

4.1 Blockschaltbild



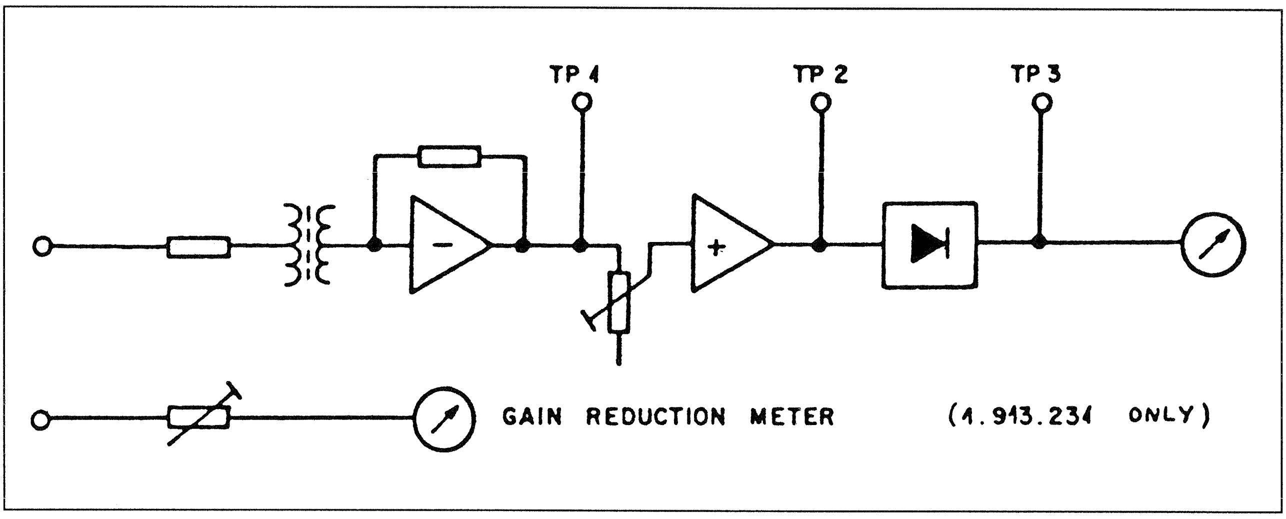
4.2 Technische Daten

Eingangsempfindlichkeit	für Referenzanzeige (0 VU)	**0 dBu ... + 10 dBu**
~~Eingangsimpedanz~~		**~~> 10 kOhm~~**
Anzeigebereich		**- 20 VU ... + 3 VU**
Genauigkeit	bei 20°C, 1kHz, -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 (90mA)**
Abmessungen Frontplatte:		**170 x 80 mm**
Tiefe:		**135 mm**
Gewicht:		**310 gr**

4. VU-Meter 1.913.230/231

VU-meter with balanced, floating and high-impedance input. Dynamic response according to IEC.

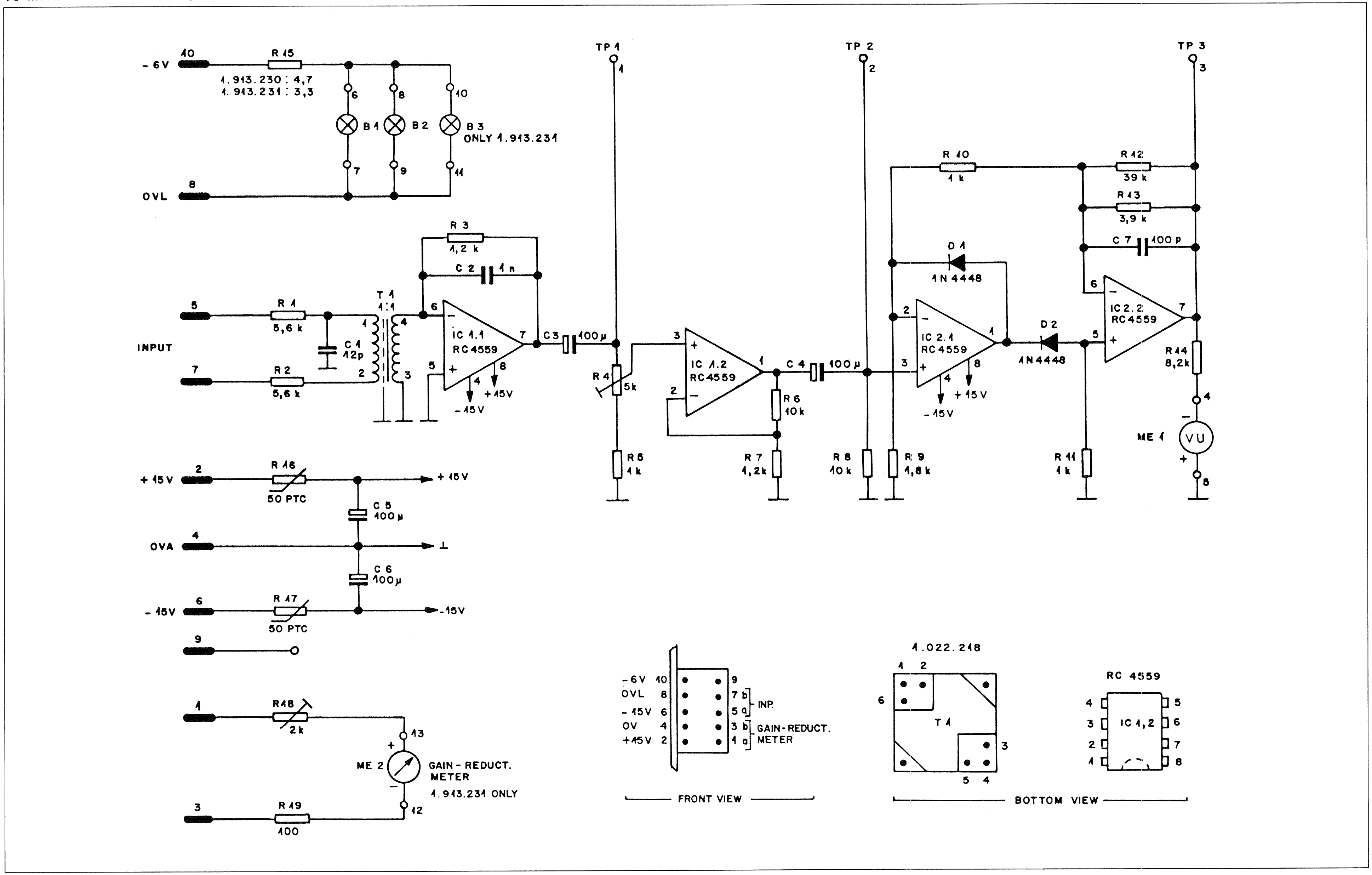
4.1 Block Diagram



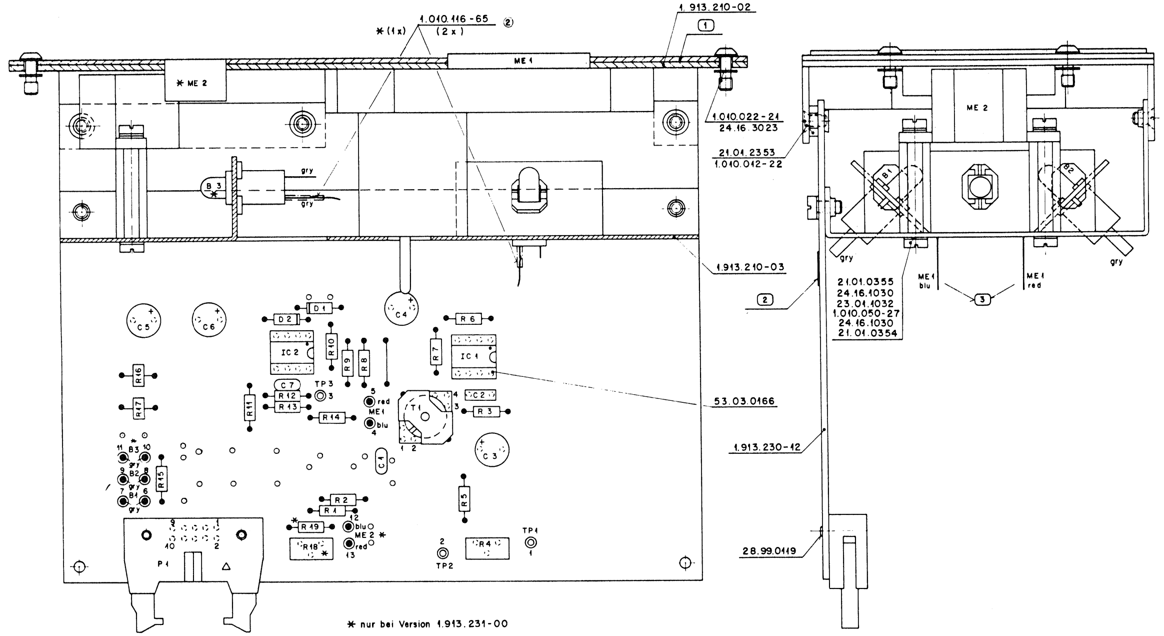
4.2 Specifications

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 10 mA** **- 15 V 10 mA** **- 6 V 60 mA**
Dimensions of front panel:		**170 x 80 mm**
Depth:		**135 mm**
Weight:		**310 gr**

VU-Meter 1.913.230/231



VU-Meter 1.913.230/231



* nur bei Version 1.913.231-00

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	1.913.221-01	1.913.231-04	1.913.221-93

IND	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 µF	≥ 16V	
	C4	59.22.5101	100 µF	≥ 16V	
	C5	59.22.5101	100 µF	≥ 16V	
	C6	59.2[illegible]	100 µF	≥ 16V	
	C7	59.34[illegible]	100 pF	5%	
	D1	50.04.0125	1N4448		any
	D2	50.04.0125	1N4448		any
	IC1	50.09.0107	RC4559NB	Dual OP AMP	Ra, TI
	IC2	50.09.0107	RC4559NB	Dual OP AMP	Ra, TI
	R1	57.11.3562	5,6 k	1%	
	R2	57.11.3562	5,6 k	1%	
	R3	57.11.4122	1,2 k		
	R4	58.01.7502	5 k	TRIM-POTM.	
	R5	57.11.4102	1 k		
	R6	57.11.4103	10 k		
	R7	57.11.4122	1,2 k		
	R8	57.11.4103	10 k		
	R9	57.11.4182	1,8 k		
	R10	57.11.4102	1 k		
	R11	57.11.4102	1 k		
	R12	57.11.4393	39 k		
	R13	57.11.4392	3,9 k		
	R14	57.11.4822	8,2 k		

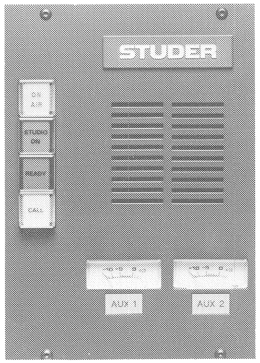
IND	DATE	NAME	
④			Ra Raytheon
③			TI Texas Instr.
②			also valid for VU-meter with
①			gain reduction meter 1.913.231
○	20-8-81		
STUDER	VU-METER	1.913.230	PAGE 1 OF 2

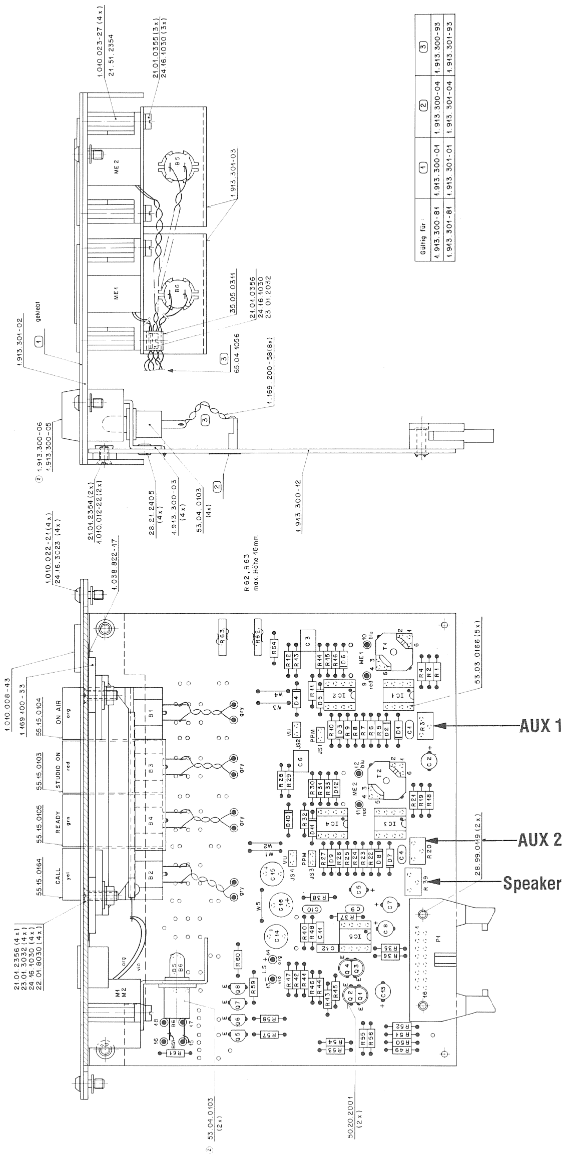
IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	R15	57.11.4479	4,7 Ω	1.913.231 : 3,3 Ω (57.11.4339)	
	R16	57.99.0206	50	PTC PHILIPS 2.322.661 91002	
	R17	57.99.0206	50	PTC PHILIPS 2.322.661 91002	
	R18	58.01.7202	2k	Trim-Pot. (only 1.913.231)	
	R19	57.11.4101	100	(only 1.913.231)	
	T1	1.022.218.00	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	
	XIC	53.03.0166		IC-Socket 8 pins DIP	
	B3	51.02.0144	6V, 30mA	Lamp (only 1.913.231)	

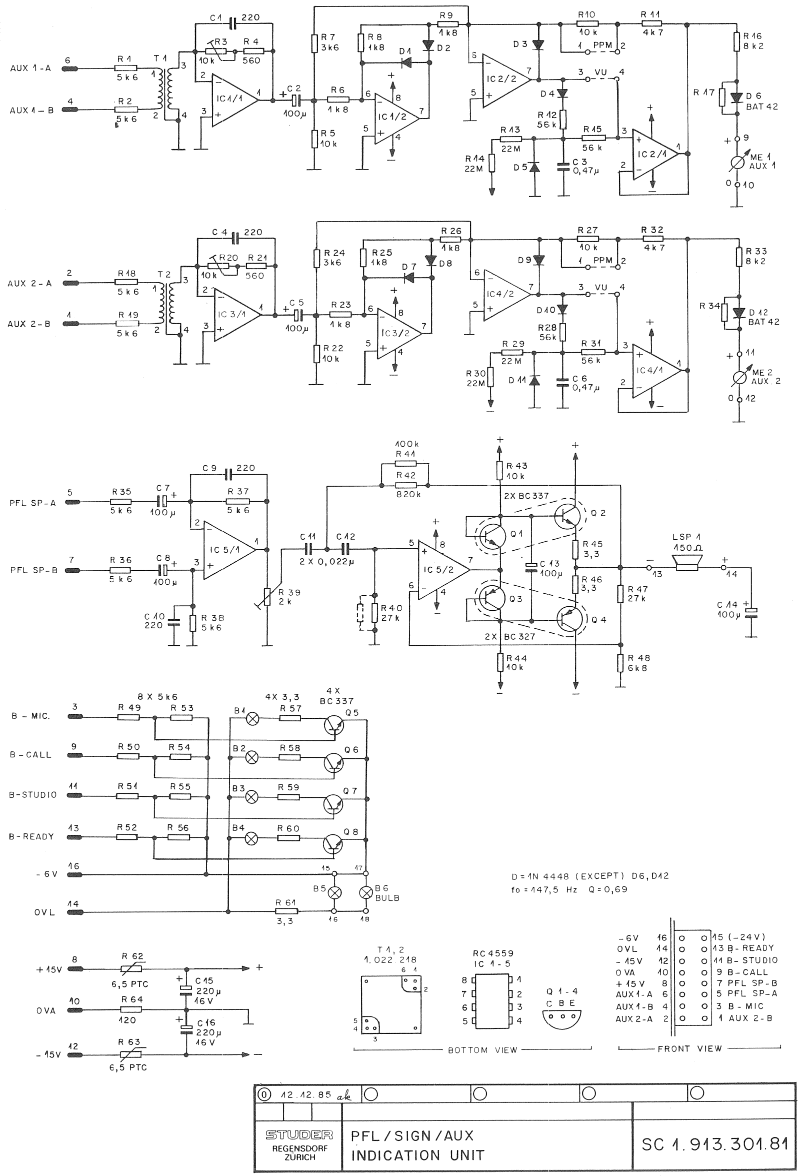
IND	DATE	NAME	
④			
③			
②			also valid for VU-meter with
①			gain reduction meter 1.913.231
○	20-8-81		
STUDER	VU-METER	1.913.230	PAGE 2 OF 2

EDITION: 23. Oktober 1990

5. PFL / SIGN. / AUX Indication Unit 1.913.301.81







PFL/SIGN7AUX INDICATION UNIT 1.913.301.81

Ad	..POS..	...REF.No...	DESCRIPTION	MANUFACTURER
	B.....1	51.02.0143	6 V 166mA W2*4.6D	
	B.....2	51.02.0143	6 V 166mA W2*4.6D	
	B.....3	51.02.0143	6 V 166mA W2*4.6D	
	B.....4	51.02.0143	6 V 166mA W2*4.6D	
	B.....5	51.02.0144	6 V 30mA W2*4.6D	
	B.....6	51.02.0144	6 V 30mA W2*4.6D	
	C.....1	59.34.4221	220 pF CER	
	C.....2	59.22.3101	100 uF 10V EL	
	C.....3	59.06.0474	470 nF 10% PE	
	C.....4	59.34.4221	220 pF CER	
	C.....5	59.22.3101	100 uF 10V EL	
	C.....6	59.06.0474	470 nF 10% PE	
	C.....7	59.22.3101	100 uF 10V EL	
	C.....8	59.22.3101	100 uF 10V EL	
	C.....9	59.34.4221	220 pF 5% CER	
	C....10	59.34.4221	220 pF 5% CER	
	C....11	59.06.5223	22 nF 5% PE	
	C....12	59.06.5223	22 nF 5% PE	
	C....13	59.22.3101	100 uF 10V EL	
	C....14	59.22.4101	100 uF 16V EL	
	C....15	59.22.4221	220 uF 16V EL	
	C....16	59.22.4221	220 uF 16V EL	
	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	50.04.1112	ZD 5V1	any
	D.....6	50.04.0127	BAS40-02 (Sie),400mV at 10mA; BAT85 (Ph), BAT42 (Tho)	
	D.....7	50.04.0125	1N4448	any
	D.....8	50.04.0125	1N4448	any
	D.....9	50.04.0125	1N4448	any
	D....10	50.04.0125	1N4448	any
	D....11	50.04.1112	ZD 5V1	any
	D....12	50.04.0127	BAS40-02 (Sie),400mV at 10mA; BAT85 (Ph), BAT42 (Tho)	
	IC....1	50.09.0107	RC4559NB dual op.amp.	Ra
	IC....2	50.09.0107	RC4559NB dual op.amp.	Ra
	IC....3	50.09.0107	RC4559NB dual op.amp.	Ra
	IC....4	50.09.0107	RC4559NB dual op.amp.	Ra
	IC....5	50.09.0107	RC4559NB dual op.amp.	Ra
	LS....1	71.01.0114	150 Ohm loud-speaker, 2403.257.2356/AD3371 Y150,	Ph
	ME....1	1.913.001.04	meter	St
	ME....2	1.913.001.04	meter	St
	P.....1	54.14.2012	16 pin	
	Q.....1	50.03.0340	BC337-25 NPN, 800mA	Sie, Ph, ITT
	Q.....2	50.03.0340	BC337-25 NPN, 800mA	Sie, Ph, ITT
	Q.....3	50.03.0351	BC327-25 PNP, 800mA	Sie, Ph, ITT
	Q.....4	50.03.0351	BC327-25 PNP, 800mA	Sie, Ph, ITT
	Q.....5	50.03.0340	BC337-25 NPN, 800mA	Sie, Ph, ITT
	Q.....6	50.03.0340	BC337-25 NPN, 800mA	Sie, Ph, ITT
	Q.....7	50.03.0340	BC337-25 NPN, 800mA	Sie, Ph, ITT
	Q.....8	50.03.0340	BC337-25 NPN, 800mA	Sie, Ph, ITT
	R.....1	57.11.4562	5.6 kOhm	
	R.....2	57.11.4562	5.6 kOhm	
	R.....3	58.01.9103	10 kOhm trimpot.	
	R.....4	57.11.4561	560 Ohm	
	R.....5	57.11.4103	10 kOhm	
	R.....6	57.11.4182	1.8 kOhm	
	R.....7	57.11.3362	3.6 kOhm	
	R.....8	57.11.4182	1.8 kOhm	
	R.....9	57.11.4182	1.8 kOhm	
	R....10	57.11.4103	10 kOhm	
	R....11	57.11.4472	4.7 kOhm	
	R....12	57.11.4563	56 kOhm	
	R....13	57.11.6226	22 MOhm	
	R....14	57.11.6226	22 MOhm	
	R....15	57.11.4563	56 kOhm	
	R....16	57.11.4822	8.2 kOhm	
	R....18	57.11.4562	5.6 kOhm	
	R....19	57.11.4562	5.6 kOhm	
	R....20	58.01.9103	10 kOhm trimpot.	
	R....21	57.11.4561	560 Ohm	
	R....22	57.11.4103	10 kOhm	
	R....23	57.11.4182	1.8 kOhm	
	R....24	57.11.3362	3.6 kOhm	
	R....25	57.11.4182	1.8 kOhm	
	R....26	57.11.4182	1.8 kOhm	
	R....27	57.11.4103	10 kOhm	
	R....28	57.11.4563	56 kOhm	
	R....29	57.11.6226	22 MOhm	
	R....30	57.11.6226	22 MOhm	
	R....31	57.11.4563	56 kOhm	
	R....32	57.11.4472	4.7 kOhm	
	R....33	57.11.4822	8.2 kOhm	
	R....35	57.11.4562	5.6 kOhm	
	R....36	57.11.4562	5.6 kOhm	
	R....37	57.11.4562	5.6 kOhm	
	R....38	57.11.4562	5.6 kOhm	
	R....39	58.01.9202	2 kOhm trimpot	
	R....40	57.11.4273	27 kOhm	
	R....41	57.11.4104	100 kOhm	
	R....42	57.11.4124	120 kOhm	
01	R....42	57.11.4824	820 kOhm	
	R....43	57.11.4103	10 kOhm	
	R....44	57.11.4103	10 kOhm	
	R....45	57.11.4339	3.3 Ohm	
	R....46	57.11.4339	3.3 Ohm	
	R....47	57.11.4273	27 kOhm	
	R....48	57.11.4682	6.8 kOhm	
	R....49	57.11.4562	5.6 kOhm	
	R....50	57.11.4562	5.6 kOhm	
	R....51	57.11.4562	5.6 kOhm	
	R....52	57.11.4562	5.6 kOhm	
	R....53	57.11.4562	5.6 kOhm	
	R....54	57.11.4562	5.6 kOhm	
	R....55	57.11.4562	5.6 kOhm	
	R....56	57.11.4562	5.6 kOhm	
	R....57	57.11.4339	3.3 Ohm	
	R....58	57.11.4339	3.3 Ohm	
	R....59	57.11.4339	3.3 Ohm	
	R....60	57.11.4339	3.3 Ohm	
	R....61	57.11.4339	3.3 Ohm	
	R....62	57.92.1271	6.5 Ohm PTC	
	R....63	57.92.1271	6.5 Ohm PTC	
	R....64	57.11.4101	100 Ohm	
	T.....1	1.022.218.00	input trafo 1:1	St
	T.....2	1.022.218.00	input trafo 1:1	St

CER = ceramic, EL = electrolytic, PE = polyester

MANUFACTURER: ITT=ITT-Intermetall, Ph=Philips, Ra=Raytheon, Sie=Siemens, St=Studer,

This position list is valid for:
Diese Positionsliste ist gultig fur:

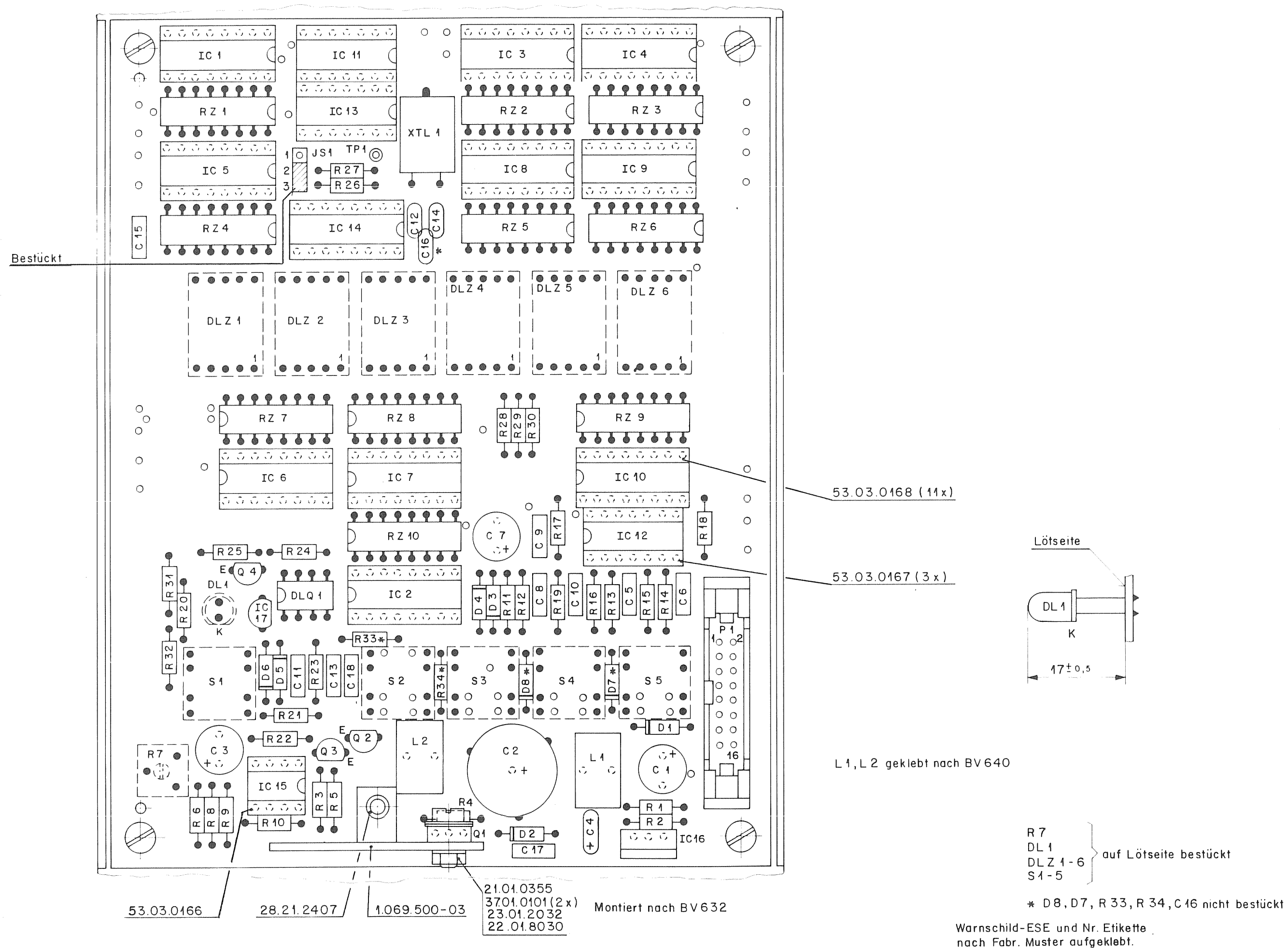
- 1.913.300.81 PFL-SIGN-INDICATION UNIT
  folgende Positionen sind bestuckt:
  B1-B4, C7-C16, IC5, LS1, P1, Q1-Q8, R35-R64 ohne R61
- 1.913.301.81 PFL-SIGN-AUX-INDICATION UNIT
  alle Positionen sind bestuckt

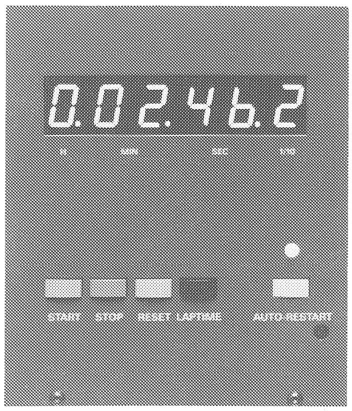
1.913.300.81 PFL-SIGN-INDICATION UNIT WY 86/10/2900

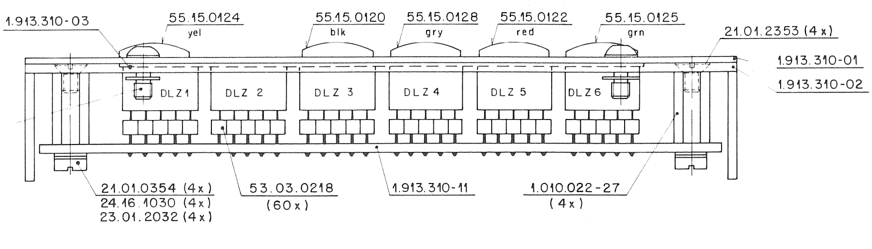
EDITION: 19. Oktober 1990

6. Stop Watch Unit 1.913.310.81

Stop watch Unit 1.913.310.81







Stop Watch 1.913.310.81

Ad	..POS..	...REF.No...	DESCRIPTION	MANUFACTURER
	C.....1	59.22.6470	47 uF -20% 40V EL	
	C.....2	59.22.6102	1000 uF -20% 40V EL	
	C.....3	59.22.4101	100 uF -20% 16V EL	
	C.....4	59.26.2100	10 uF -20% 16V EL	
	C.....5	59.06.0104	100 nF 10% PE	
	C.....6	59.06.0104	100 nF 10% PE	
	C.....7	59.22.4101	100 uF -20% 16V EL	
	C.....8	59.06.0104	100 nF 10% PE	
	C.....9	59.06.0104	100 nF 10% PE	
	C....10	59.06.0104	100 nF 10% PE	
	C....11	59.06.0104	100 nF 10% PE	
	C....12	59.34.4101	100 pF CE	
	C....13	59.06.0104	100 nF 10% PE	
	C....14	59.34.1829	8.2 pF CE	
	C....15	59.06.0104	100 nF 10% PE	
	C....16	. .	not used	
	C....17	59.06.0104	100 nF 10% PE	
	C....18	59.06.0104	100 nF 10% PE	
	D.....1	50.04.0512	1N5818 Schottky Diode	any
	D.....2	50.04.0512	1N5818 Schottky Diode	any
	D.....3	50.04.0125	1N4448	any
	D.....4	50.04.0125	1N4448	any
	D.....5	50.04.1112	Z 5V1 400mW BZX83C5V1 ,BZX55C5V1 ,ZPD 5V1	Ses,ITT
	D.....6	50.04.0125	1N4448	any
	D.....7	. .	not used	
	D.....8	. .	not used	
	DL....1	50.04.2112	LED Led gb dif.	
	DLQ...1	50.99.0111	MCT6 Dual Optokoppler	
	DLZ...1	73.01.0140	HDSP 550 3 Display	HP
	DLZ...2	73.01.0140	HDSP 550 3 Display	HP
	DLZ...3	73.01.0140	HDSP 550 3 Display	HP
	DLZ...4	73.01.0140	HDSP 550 3 Display	HP
	DLZ...5	73.01.0140	HDSP 550 3 Display	HP
	DLZ...6	73.01.0140	HDSP 550 3 Display	HP
	JS....1	54.01.0020	Jumper Plug 3 Pin	
	JP....1	54.01.0021	Jumper Jack	
	IC....1	50.07.0566	MC14566B ind. time base generator	Mot
	IC....2	50.07.0566	MC14566B ind. time base generator	Mot
	IC....3	50.07.0566	MC14566B ind. time base generator	Mot
	IC....4	50.07.0566	MC14566B ind. time base generator	Mot
	IC....5	50.07.0511	MC14511B latch/decoder/display-driver	Mot
	IC....6	50.07.0511	MC14511B latch/decoder/display-driver	Mot
	IC....7	50.07.0511	MC14511B latch/decoder/display-driver	Mot
	IC....8	50.07.0511	MC14511B latch/decoder/display-driver	Mot
	IC....9	50.07.0511	MC14511B latch/decoder/display-driver	Mot
	IC...10	50.07.0511	MC14511B latch/decoder/display-driver	Mot
	IC...11	50.07.0006	HEF4001 Quad 2-Input NOR Gate	
	IC...12	50.07.0008	HEF4093 NAND Schmitt trigger	
	IC...13	50.07.0013	HEF4013 Dual D-flip-flop	
	IC...14	50.07.0060	HEF4060 Binary Counter	Mot
	IC...15	50.09.0101	TL 072 dual op. amp. (LF 353 N)	TI
	IC...16	50.10.0104	LM 317 Voltage Reg.	
	IC...17	50.10.0108	LM 317 Voltage Reg.	
01	IC...17	50.10.0107	7805 Voltage Reg.	
	L.....1	62.03.0005	L 250uH RFI-suppression coil	Tokin
	L.....2	62.03.0005	L 250uH RFI-suppression coil	Tokin
	MP....1	53.03.0166	1pcs Ic-socket 8 Pin	
	MP....2	53.03.0167	3pcs Ic-socket 14 Pin	
	MP....3	53.03.0168	11pcs Ic-socket 16 Pin	
	MP....4	1.069.500.03	1pcs Head sink	
	MP....5	1.010.012.22	1pcs Nietbolzen M3*2	
	MP....6	55.15.0124	1pcs yel.Botton for S1	
	MP....7	55.15.0120	1pcs blk.Botton for S2	
	MP....8	55.15.0128	1pcs gray Botton for S3	
	MP....9	55.15.0122	1pcs red.Botton for S4	
	MP...10	55.15.0125	1pcs grn.Botton for S5	
	P.....1	54.14.2052	16 Pin ribbon cable connector	
	Q.....1	50.03.0493	Bd 437 npn	
	Q.....2	50.03.0351	Bc 327 pnp	
	Q.....3	50.03.0436	Bc 237 npn	
	Q.....4	50.03.0436	Bc 237 npn	
	R.....1	57.11.4152	1.5 kOhm 5% 0.25W	
	R.....2	57.11.4221	220 Ohm 5% 0.25W	
	R.....3	57.11.4471	470 Ohm 5% 0.25W	
	R.....4	57.11.4121	120 Ohm 5% 0.25W	
	R.....5	57.11.4332	3.3 kOhm 5% 0.25W	
	R.....6	57.11.4681	680 Ohm 2% 0.25W	
	R.....7	58.01.8102	1 kOhm 10% 0.50W trimming resistor	
	R.....8	57.11.4821	820 Ohm 2% 0.25W	
	R.....9	57.11.4102	1 kOhm 5% 0.25W	
	R....10	57.11.4105	1 MOhm 5% 0.25W	
	R....11	57.11.4102	1 kOhm 5% 0.25W	
	R....12	57.11.4104	100 kOhm 5% 0.25W	
	R....13	57.11.4104	100 kOhm 5% 0.25W	
	R....14	57.11.4104	100 kOhm 5% 0.25W	
	R....15	57.11.4102	1 kOhm 5% 0.25W	
	R....16	57.11.4102	1 kOhm 5% 0.25W	
	R....17	57.11.4104	100 kOhm 5% 0.25W	
	R....18	57.11.4472	4.7 kOhm 5% 0.25W	
	R....19	57.11.4104	100 kOhm 5% 0.25W	
	R....20	57.11.4102	1 kOhm 5% 0.25W	
	R....21	57.11.4472	4.7 kOhm 5% 0.25W	
	R....22	57.11.4103	10 kOhm 5% 0.25W	
	R....23	57.11.4221	220 Ohm 5% 0.25W	
	R....24	57.11.4152	1.5 kOhm 5% 0.25W	
01	R....24	57.11.3221	220 Ohm 5% 0.25W	
	R....25	57.11.4152	1.5 kOhm 5% 0.25W	
	R....26	57.11.4104	100 kOhm 5% 0.25W	
	R....27	57.11.4222	2.2 kOhm 5% 0.25W	
	R....28	57.11.4331	330 Ohm 5% 0.25W	
	R....29	57.11.4331	330 Ohm 5% 0.25W	
	R....30	57.11.4331	330 Ohm 5% 0.25W	
	R....31	57.11.4104	100 kOhm 5% 0.25W	
	R....32	57.11.4104	100 kOhm 5% 0.25W	
01	R....32	57.11.3102	1 kOhm 5% 0.25W	
	R....33	. .	not used	
	R....34	. .	not used	
	RZ....1	57.88.3473	47 kOhm Interface Network	
	~~RZ....2~~	~~57.88.3473~~	~~47 kOhm Interface Network~~	
	RZ....3	57.88.3473	47 kOhm Interface Network	
	RZ....4	57.88.3221	220 Ohm Interface Network	
	RZ....5	57.88.3221	220 Ohm Interface Network	
	RZ....6	57.88.3221	220 Ohm Interface Network	
	RZ....7	57.88.3221	220 Ohm Interface Network	
	RZ....8	57.88.3221	220 Ohm Interface Network	
	RZ....9	57.88.3221	220 Ohm Interface Network	
	RZ...10	57.88.3473	47 kOhm Interface Network	
	S.....1	55.15.0113	2P switch , latching	
	S.....2	55.15.0112	2P switch , non latching	
	S.....3	55.15.0112	2P switch , non latching	
	S.....4	55.15.0112	2P switch , non latching	
	S.....5	55.15.0112	2P switch , non latching	
	TP....1	54.01.0020	Jumper Plug 1 Pin	
	XTL...1	89.01.0376	3.2768MHZ Quarz	ITT

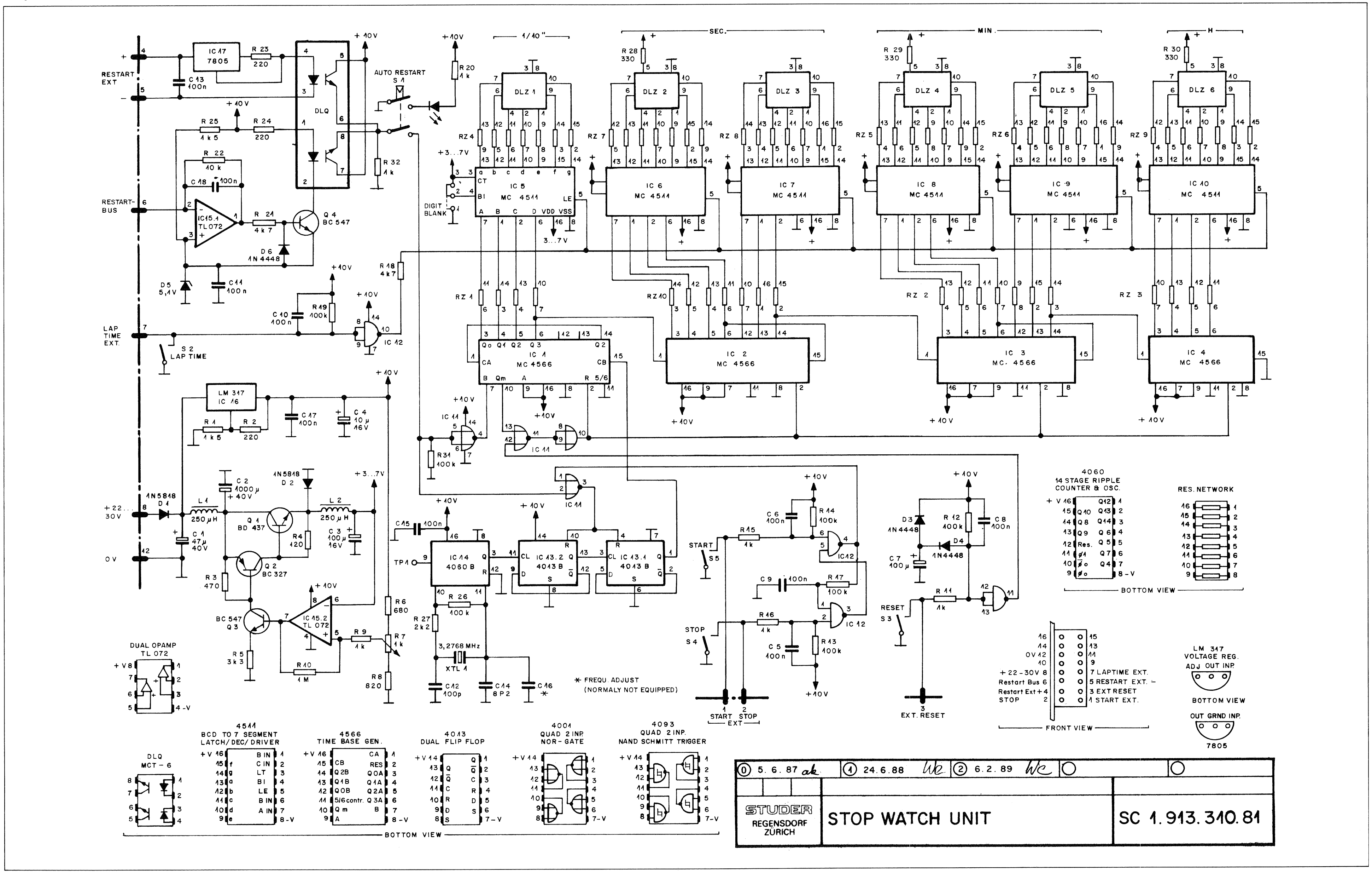
(01) faster rise time for optocoupler

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=National
{Matsushita}, NS=National Semiconductors, Ph=Philips,
Ra=Raytheon, Sig=Signetics, Six=Siliconix, St=Studer,
TI=Texas Instrument

1.913.310.81	STOP WATCH	SE 88/01/0400
1.913.310.81	STOP WATCH	SE 88/06/2401

Stop watch Unit **1.913.310.81**



EDITION: 19. Oktober 1990

CONTENTS

1 INTRODUCTION

The individual descriptions and application notes contained in this brochure are intended to acquaint designers and project engineers with the Studer Audio System Components. They allow to realize custom-tailored signal distribution, signal switching and amplifying systems to satisfy almost any individual requirement.

Euro-Cards (1.915....)

The backbone of the system is the so-called Euro-card, a circuit board measuring 100 × 160 mm, which comes in a great variety of different circuit configurations.

Modular Sub-Cards (1.914....)

Furthermore, there are the Modular Sub-Cards, small plug-in cards. Four of them can be accommodated on one Euro-size motherboard, allowing to make up a system which provides the ultimate in flexibility.

Racks, Frames (1.918....)

Matching 19” mounting frames and 19” sub-racks for Euro-cards with or without power supply are available as well as installation hardware.

For prices please consult your local Studer distributor or contact:

Studer Professional Audio GmbH
Althardstrasse 30
CH-8105 Regensdorf
Switzerland

Phone: +41 44 870 75 11
Fax: +41 44 870 71 34
e-mail: sales@studer.ch

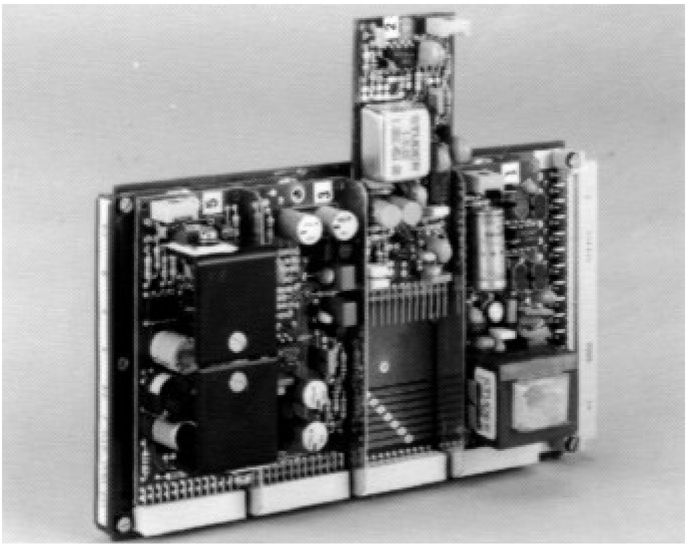
We reserve the right to change the design and the performance specifications of the products listed here as technical progress may warrant.

2 MSC SYSTEM

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 plug-in features are concerned. However, it often offers excess space for a particular circuit. This has triggered the idea to utilize the Euro-card simply as a carrier (“motherboard”, order no. 1.915.770) for four smaller plug-in circuit boards, the “Modular Sub-Cards” (MSC).

The 32 connections of the Euro-card are divided into 6 supply lines common to the modular sub-cards, and 4 × 6 individual lines joining the plug-in sockets for each sub-card. The remaining 2 connections are used as separate bus lines, one of them leading to sub-cards 1 and 2, the other one to sub-cards 3 and 4, resulting in a total of 13 connections to each MSC. A small motherboard for only one MSC is available as well (order no. 1.914.500).



A great variety of different circuits is available in form of MSCs, such as

- Balancing amplifiers
- Microphone pre-amplifiers
- Speaker amplifiers
- 0-Ω input amplifiers
- Limiters
- Voltage controlled amplifiers (VCAs)
- Relay sub-cards
- High level input amplifiers
- Line output amplifiers
- 1900 Hz signal generator/decoder
- 90° filter, stereo/mono
- Flip-flop
- Breadboarding card (0.1”/2.54 mm grid)

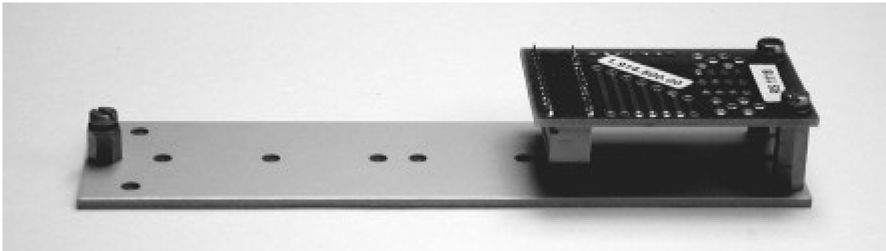
To meet the requirements of a system concept, a designer will be able to build individual circuits similar to working with a construction set: He either selects from the available circuits on Euro-cards or makes up his own Euro-card by simply arranging the most suitable combination of Modular Sub-Cards on the motherboard.

2.1 Modular Sub-Cards (MSCs)

2.1.1 Motherboard for 1 MS-Card 1.914.500

If only one MS-card is used, this motherboard is helpful for both mechanical and electrical interfacing. It consists of an aluminium mounting base (135 × 36 mm) and a small PCB with a connector for the MS-card; for wiring, this PCB contains solder terminals.

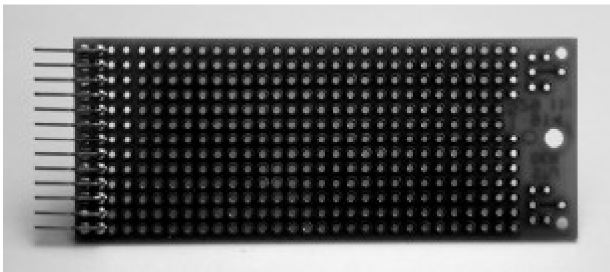
Note: For installation of up to four MS-cards, there is a second, Euro-card format motherboard available (1.915.770) that can be installed into an Euro-card rack. Please refer to chapter 2.2.1.



Ordering Information Motherboard for 1 MS-card 1.914.500.xx

2.1.2 Breadboarding Card 1.914.529

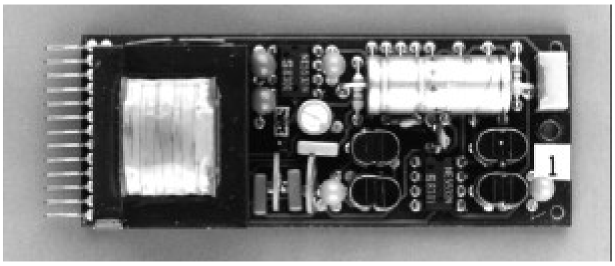
This experimental board is an empty plug-in PCB compatible with the MSC system. It offers a punched 0.1" grid (2.54 × 2.54 mm) for individual component placement.

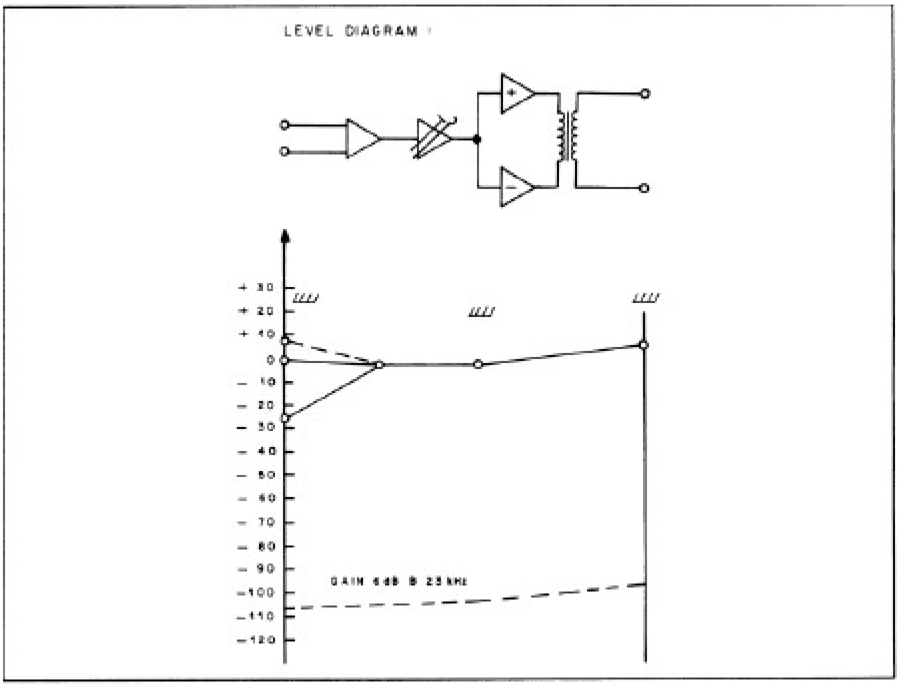


Ordering Information: Breadboarding card 1.914.529.xx

2.1.3 Line Output Amplifier 1.914.501

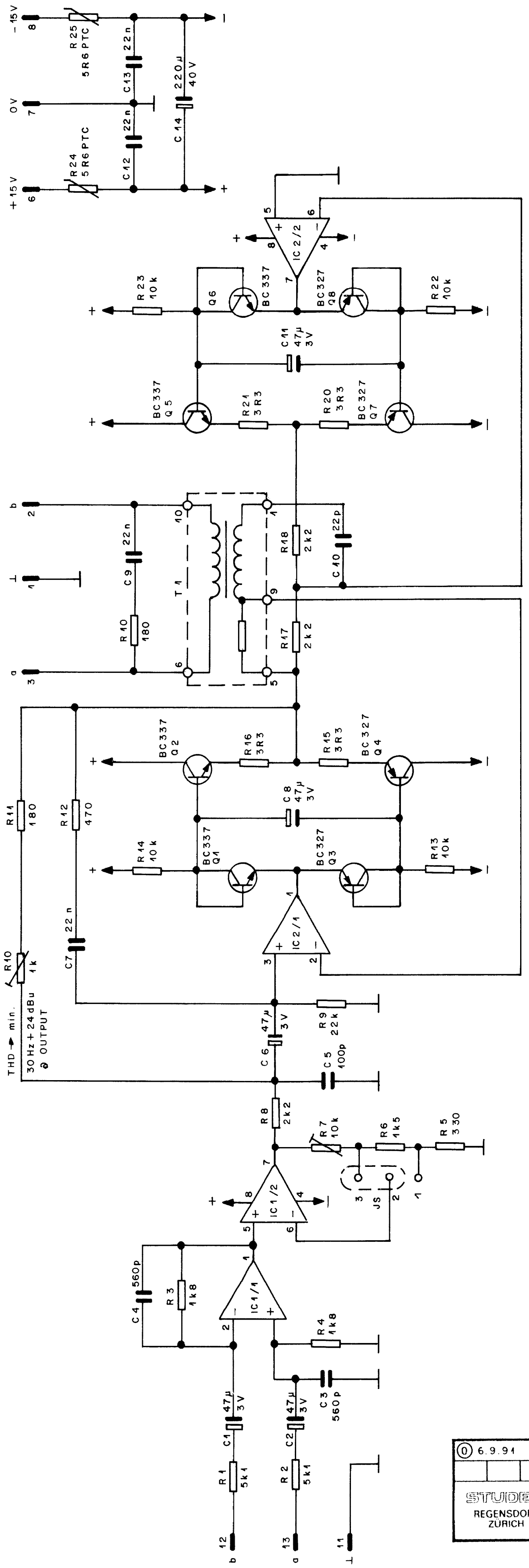
Designed for operation at a nominal line level of +6 dBu (1.55 V_{rms}), this amplifier can handle levels of up to +24 dBu (12.3 V_{rms}), providing an excellent overload margin without the risk of clipping. A unique circuit around the primary of the amplifier's output transformer ensures excellent frequency response performance throughout the audible range. Fine and coarse gain adjustment is provided which allows to accommodate input levels in the range from –22...+8 dBu for a nominal +6 dBu output.

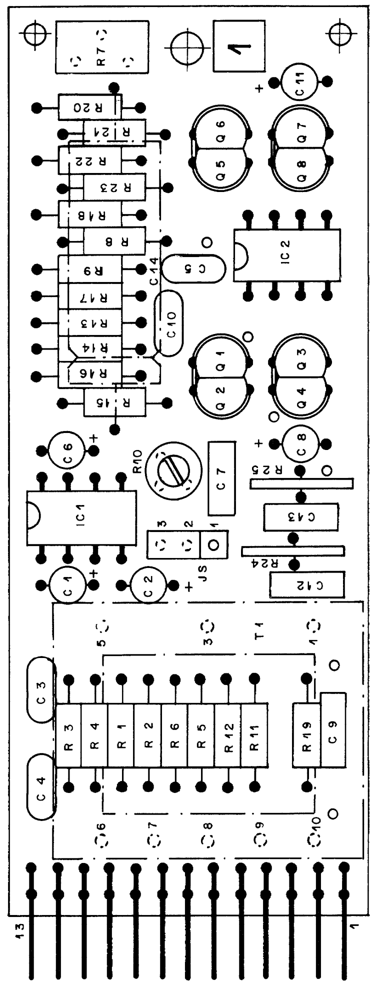


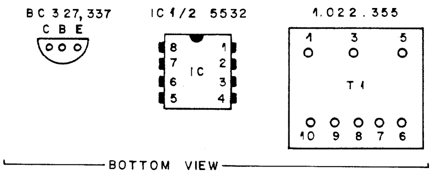


Technical Specifications

Input:	Impedance	**> 10 kW**, electronically balanced (transformerless)
	Overload point	**+24 dBu**
Output:	Impedance	**< 50 W**, balanced and floating
	Minimum load	**200 W**
	Maximum level	**+24 dBu**
	Gain	**–2 dB...+28 dB**; adjustment: coarse 0 or 15 dB/fine –2 dB...+13 dB
	Frequency response	**±0.2 dB**, 30 Hz...16 kHz
	THD	**< 0.01%**, 30 Hz...16 kHz
	Equivalent input noise	**< –106 dB**, linear, at 6 dB gain
Supply:		**±15 V** (25 mA idling; max. 170 mA at +24 dBu into 200 Ω)
Dimensions:		**MS-card**, 34 × 85 mm
Ordering Information:		Line output amplifier 1.914.501.xx







PIN		EURO 32 PIN			
		a	b	c	d
INP a	13	1	7	21	27
INP b	12	2	8	22	28
⊥	11	3	9	23	29
OUT a	3	4	10	24	30
OUT b	2	5	11	25	31
⊥	1	6	13	26	32
+15 V	6	16	—	—	—
0 V	7	15	—	—	—
−15 V	8	14	—	—	—

0 6.9.91		
STUDER REGENSDORF ZÜRICH	LINE AMPLIFIER (NR 1)	SC 1.914.501.00

MSC LINE AMPLIFIER

Ad	POS.	REF.No.	DESCRIPTION				MANUFACTURER
①	C.....1	59.30.1470	47µ	3V	TA		
①	C.....2	59.30.1470	47µ	3V	TA		
	C.....3	59.34.5561	560pF	5%	CER		
	C.....4	59.34.5561	560pF	5%	CER		
	C.....5	59.34.4101	100pF		CER		
	C.....6	59.30.1470	47µF	3V	TA		
	C.....7	59.06.0222	2200pF		PE		
	C.....8	59.30.1470	47µF	3V	TA		
	C.....9	59.06.0223	0,022µF		PE		
	C....10	59.34.2220	22pF		CER		
	C....11	59.30.1470	47µF	3V	TA		
	C....12	59.06.0223	0,022µF		PE		
	C....13	59.06.0223	0,022µF		PE		
	C....14	59.25.5221	220µF	40V	EL		
	IC....1	50.09.0105	NE5532	XR5532 DUAL OP LOW NOISE			SIG/EX
	IC....2	50.09.0105	NE5532	XR5532 DUAL OP LOW NOISE			SIG/EX
	JSJ	54.01.0021		JUMPER JACK			
	JSP	54.01.0020		JUMPER PLUG 3PIN			
	Q.....1	50.03.0516	BC337	NPN IC 0,8A		MATCHED	ST
	Q.....2	50.03.0516	BC337	NPN IC 0,8A			ST
	Q.....3	50.03.0625	BC327	PNP IC 0,8A		MATCHED	ST
	Q.....4	50.03.0625	BC327	PNP IC 0,8A			ST
	Q.....5	50.03.0516	BC337	NPN IC 0,8A		MATCHED	ST
	Q.....6	50.03.0516	BC337	NPN IC 0,8A			ST
	Q.....7	50.03.0625	BC327	PNP IC 0,8A		MATCHED	ST
	Q.....8	50.03.0625	BC327	PNP IC 0,8A			ST
	R.....1	57.11.3512	5k1	1%			
	R.....2	57.11.3512	5k1	1%			
	R.....3	57.11.3182	1k8	1%			
	R.....4	57.11.3182	1k8	1%			
	R.....5	57.11.4331	330				
	R.....6	57.11.4152	1k5				
	R.....7	58.11.9103	10k	TRIM LIN			
	R.....8	57.11.4222	2k2				
	R.....9	57.11.4223	22k				
	R....10	58.11.6102	1k	TRIM LIN			
	R....11	57.11.4681	680				
	R....12	57.11.4471	470				
	R....13	57.11.4103	10k				
	R....14	57.11.4103	10k				
	R....15	57.11.4339	3,3				
	R....16	57.11.4339	3,3				
	R....17	57.11.4222	2k2				
	R....18	57.11.4222	2k2				
	R....19	57.11.4181	180				
	R....20	57.11.4339	3,3				
	R....21	57.11.4339	3,3				
	R....22	57.11.4103	10k				
	R....23	57.11.4103	10k				
	R....24	57.11.0209	5,6	PTC			PH
	R....25	57.11.0209	5,6	PTC			PH
		50.20.2001		CLIP			
	T.....1	1.022.355.00		LINE OUTPUT TRAFO			ST

CER=Ceramic, EL=Electrolytic, PE=Polyester, TA=Tantalum

MANUFACTURER: ST=Studer, SIG=Signetics, EX=Exar, PH=Philips

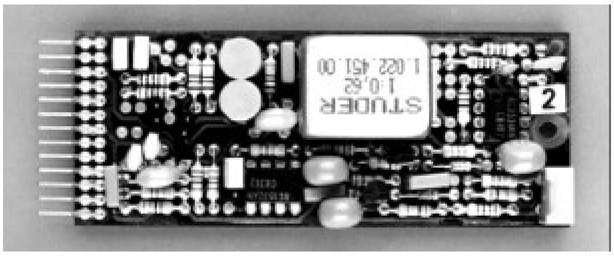
1.914.501.00 LINE AMPLIFIER (Nr. 1) FRI 06/06/83

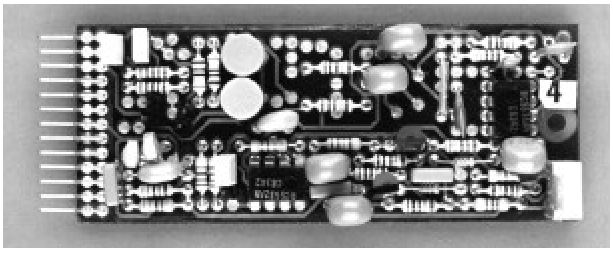
1.914.501.00 LINE AMPLIFIER (Nr. 1) ① FRI 17/11/83

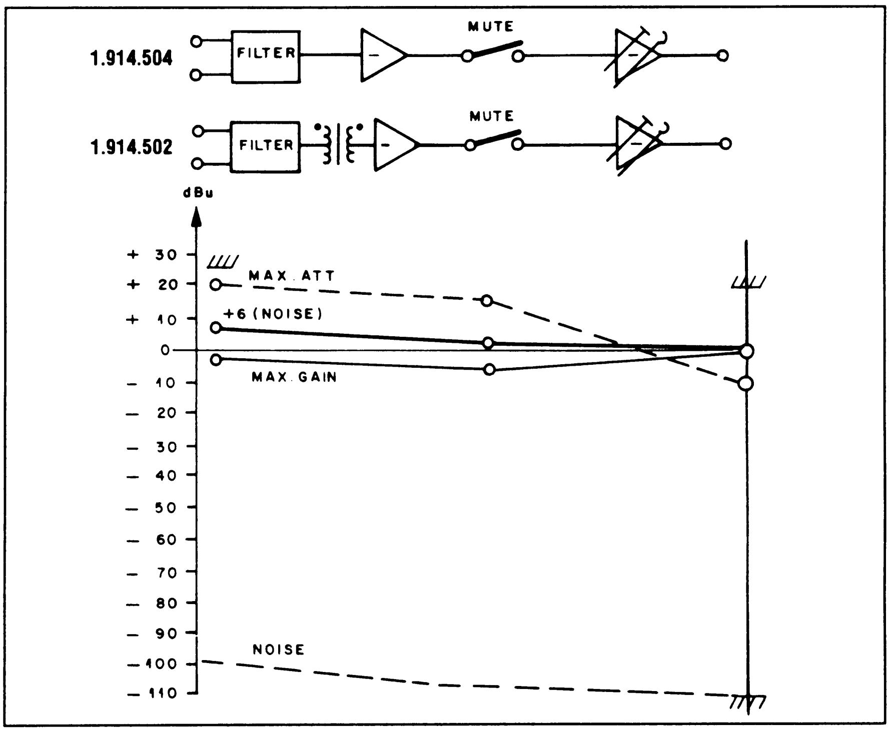
END
→

2.1.4 High-Level Input Amplifier 1.914.502/504

Basically, this is an amplifier with near 0 dB gain for high-level applications, yet with additional features, such as remote muting facility, RF input filter, and choice of two input and output impedances. The input configuration is balanced, whereas the output is unbalanced. Jumpers in the primary of the input circuit permit selection of either high-impedance operation with RF filter or a 0-Ω input without filter, for summing-bus applications. The combining (mixing) resistors have to be added externally. By switching pin3 of the amplifier's 13-pin plug to ground (via a corresponding connection on the motherboard) the amplifier may be muted from a remote point. If only 20 dB level reduction is desirable instead of muting, this can be programmed by connecting a resistor across two solder points.







The amplifier may be used, for example, to work into a 600 Ω load, or into the input of a 0-Ω input amplifier of another summing circuit.

If transformerless yet balanced input configuration is desired, an MSC amplifier with basically the same performance characteristics is available as well. Refer to the ordering information below.

Technical Specifications

Input:	Impedance	**> 10 kW** (transformer- or electronically balanced versions available; input with RF filter; 0-Ω input selectable with jumpers)
	Common mode rejection	**> 50 dB**
	Overload point	**+24 dBu** (12.3 V_{rms})
Output:	Impedance	**33 W** (pin1), unbalanced
	Minimum load	**600 W**
	Maximum level	**+20 dBu** (7.75 V_{rms})
	Impedance	**3.3 kW** (pin2), unbalanced, for 0-Ω operation
	Maximum gain	**1 dB**
	Maximum attenuation	**30 dB**
	Frequency response	**±0.3 dB**, 30 Hz...16 kHz
	THD	**< 0.03%**, 30 Hz...16 kHz
	Equivalent input noise	**–100 dBu**, unweighted, at 6 dB attenuation
	Programmable attenuation	**20 dB** (resistor 33 kΩ across muting circuit)
Supply:		**±15 V** (11 mA idling)
Dimensions:		**MS-card**, 34 × 85 mm
Ordering Information:		High level input amp with transformer-balanced input 1.914.502.xx
		High level input amp with electronically balanced input 1.914.504.xx

STUDER

0	1	2
19.4.85	7.11.85	8.2.93

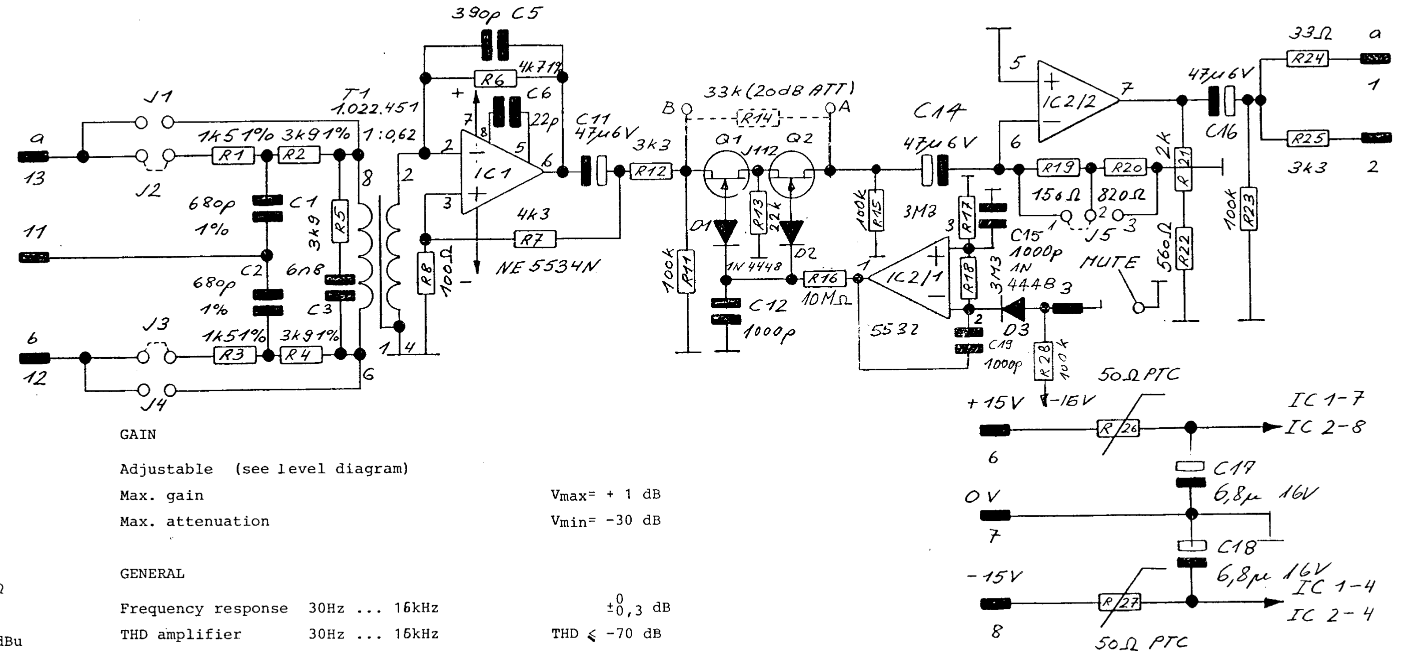
HL. INPUT AMP. FLOATING (NR 2)

MIXING CONSOLE 900

1.914.502.81

PAGE 1 OF 1

CIS	PIN	EURO 32 P (a)	(b)	(c)	(d)
IN a	13	1	7	21	27
IN b	12	2	8	22	28
IN ⊥	11	3	9	23	29
	10				
	9				
−15V	8	14			
0 V	7	15			
+15V	6	16			
	5				
	4				
MUTE ⊥	3	4	10	24	30
OUT (3k3)	2	5	11	25	31
OUT	1	6	13	26	32



INPUT

Balanced, floating, RF-filter	
Input impedance	R_i > 10 kΩ
0Ω input with jumper	
Max. input level	U_{in} = +24 dBu
Common mode rejection ratio	> 50 dB
Source impedance	R_s ⩽ 200 Ω

OUTPUT

Max. output level	U_{out} = +20 dBu
Output impedance pin 1	R_{out} = 33 Ω
Load	R_L ⩾ 600 Ω
Output impedance pin 2 (to a 0Ω amp.)	R_{out} = 3k3

GAIN

Adjustable (see level diagram)	
Max. gain	V_{max} = + 1 dB
Max. attenuation	V_{min} = −30 dB

GENERAL

Frequency response	30Hz ... 16kHz	$\pm^{0}_{0,3}$ dB
THD amplifier	30Hz ... 16kHz	THD ⩽ −70 dB
Noise (B 23kHz), gain −6 dB		U_{NOISE} = −106 dBu

ATTENUATOR

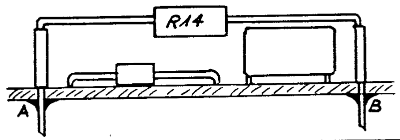
Mute switch, with resistor programable to a attenuator of 20 dB

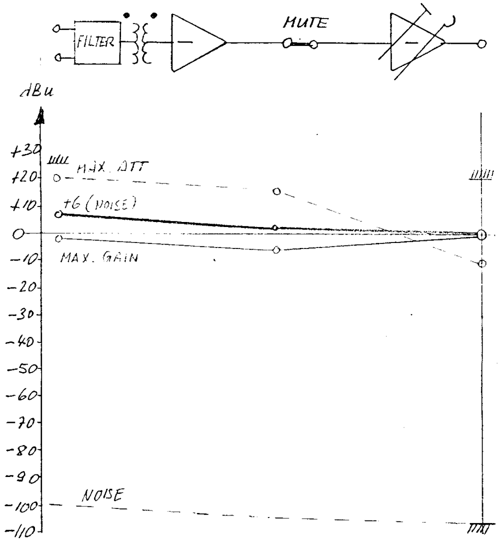
SUPPLY

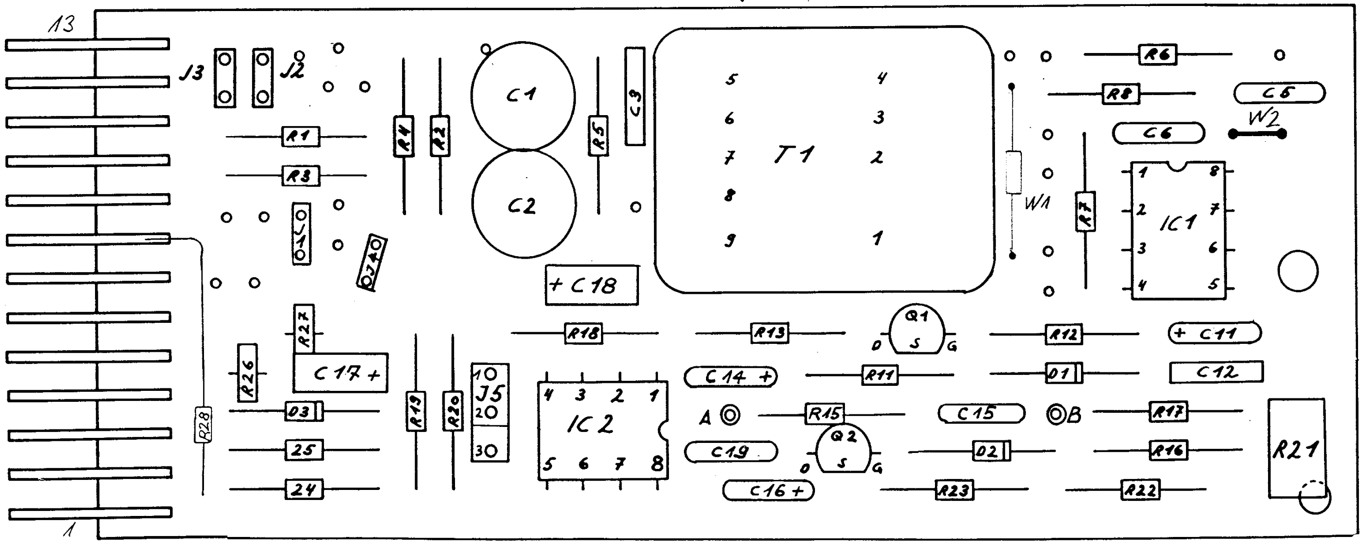
Supply voltage	U = ± 15 V
Idle current	I = 11 mA

OPTION

33k (20 dB Attenuation)







HL Input Amp, transformer-balanced 1.914.502.81 (1)

Idx.	Pos.	Part No.	Qty.	Type/Val.	Description
0	C 1	59.05.1681		680p	PP, 1%, 630V
0	C 2	59.05.1681		680p	PP, 1%, 630V
0	C 3	59.06.5682		6n8	PETP, 63V, 5%, RM5
0	C 5	59.34.5391		390p	CER 63V, 5%, N1500
0	C 6	59.34.2220		22p	CER 63V, 5%, N150
0	C 11	59.26.0470		47u	SAL 6.3V 20%
0	C 12	59.32.4102		1n0	CER 20%, 50V
0	C 13	not used		1n0	PETP, 63V, 10%, RM5
0	C 14	59.26.0470		47u	SAL 6.3V 20%
0	C 15	59.06.0102		1n0	PETP, 63V, 10%, RM5
0	C 16	59.26.0470		47u	SAL 6.3V 20%
0	C 17	59.26.2689		6u8	SAL 16V 20%
0	C 18	59.26.2689		6u8	SAL 16V 20%
0	C 19	59.06.0102		1n0	PETP, 63V, 10%, RM5
0	D 1	50.04.0125		1N4448	75V, 150mA, 4ns, DO-35
0	D 2	50.04.0125		1N4448	75V, 150mA, 4ns, DO-35
0	D 3	50.04.0125		1N4448	75V, 150mA, 4ns, DO-35
0	IC 1	50.05.0244		5534A	Single Op-amp, low noise
0	IC 2	50.09.0106		5532A	Dual Op-Amp, low noise
0	J 1	54.01.0021		Jumper	0.63*0.63mm, Au
0	J 2	54.01.0021		Jumper	0.63*0.63mm, Au
0	J 3	54.01.0021		Jumper	0.63*0.63mm, Au
0	P 1	54.01.0273		13p	Stecker CIS parallelsteck
0	P 2	54.01.0020	11 pcs	1p	Pin, 1reihig, gerade
0	Q 1	50.03.0350		J112	JFET N-Channel
0	Q 2	50.03.0350		J112	JFET N-Channel
0	R 1	57.11.3152		1k5	MF, 1%, 0207
0	R 2	57.11.3392		3k9	MF, 1%, 0207
0	R 3	57.11.3152		1k5	MF, 1%, 0207
0	R 4	57.11.3392		3k9	MF, 1%, 0207
0	R 5	57.11.3392		3k9	MF, 1%, 0207
0	R 6	57.11.3472		4k7	MF, 1%, 0207
0	R 7	57.11.3432		4k3	MF, 1%, 0207
0	R 8	57.11.3101		100R	MF, 1%, 0207
0	R 11	57.11.3104		100k	MF, 1%, 0207
0	R 12	57.11.3332		3k3	MF, 1%, 0207
0	R 13	57.11.3223		22k	MF, 1%, 0207
0	R 14	not used		33k	MF, 1%, 0207
				optional (20 dB attenuation)	
0	R 15	57.11.3104		100k	MF, 1%, 0207
0	R 16	57.11.5106		10M	MF, 5%, 0207
0	R 17	57.11.5335		3M3	MF, 5%, 0207
0	R 18	57.11.5335		3M3	MF, 5%, 0207
0	R 19	57.11.3151		150R	MF, 1%, 0207
0	R 20	57.11.3821		820R	MF, 1%, 0207
0	R 21	58.01.9202		2k0	Cermet, 10%, 0.5W, vertical
0	R 22	57.11.3561		560R	MF, 1%, 0207
0	R 23	57.11.3104		100k	MF, 1%, 0207
0	R 24	57.11.3330		33R	MF, 1%, 0207
0	R 25	57.11.3332		3k3	MF, 1%, 0207
0	R 26	57.99.0206		50R	PTC, 25V, 0.5W
0	R 27	57.99.0206		50R	PTC, 25V, 0.5W
0	R 28	57.11.3104		100k	MF, 1%, 0207
0	T 1	1.022.451.00		1:0.62	EINGANGSTRAFO 1 : 0,62
1	W 1	57.11.3000		0R0	MF, 0207
1	W 2	64.01.0106		0.6mm	Schaltdraht Cu

End of List

Comments:

(01) W1, W2 added

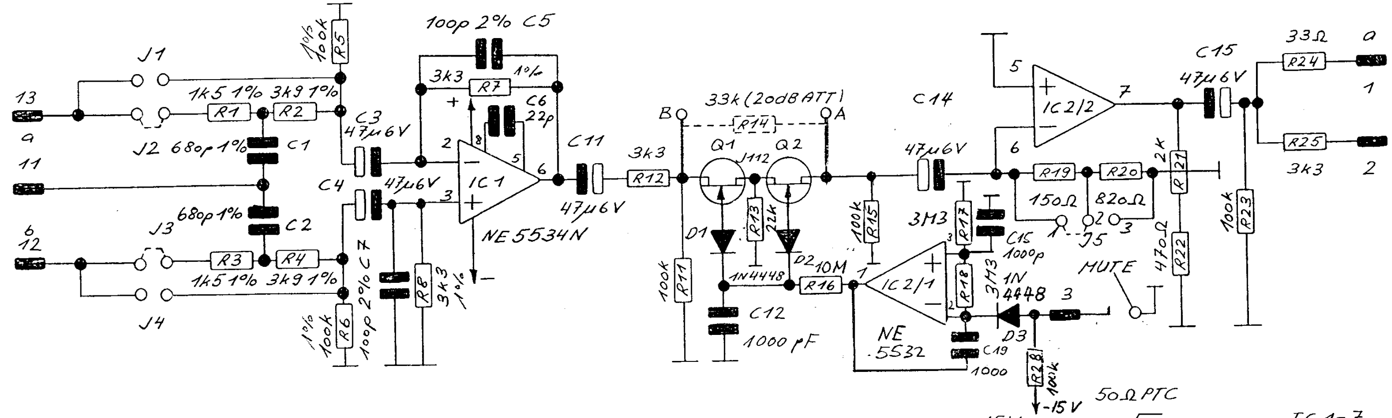
STUDER

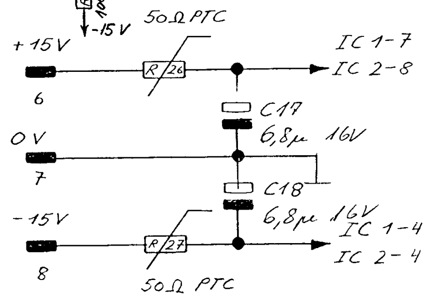
HL.INPUT AMP. BALANCED (IIR4)

1.914.504.81

○	19.4.85	
①	14.10.85	
②	8.2.93	

CIS	PIN	EURO 32 P (a)	(b)	(c)	(d)
INa	13	1	7	21	27
INb	12	2	8	22	28
IN⊥	11	3	9	23	29
	10				
	9				
−15V	8	14	—	—	—
0 V	7	15	—	—	—
+15V	6	16	—	—	—
	5				
	4				
MUTE I	3	4	10	24	30
OUT (3k3)	2	5	11	25	31
OUT	1	6	13	26	32





INPUT

Balanced, RF-filter	
Input impedance	R_i > 10 kΩ
0Ω input with jumper	
Max. input level	Uin = +24 dBu
Source impedance	Rs ⩽ 200 Ω

OUTPUT

Max. output level	Uout= +20 dBu
Output impedance pin 1	Rout= 33 Ω
Load	RL ⩾ 600 Ω
Output impedance pin 2 (to a 0Ω amp.)	Rout= 3k3

GAIN

Adjustable (see level diagram)	
Max. gain	V_{max}= + 1 dB
Max. attenuation	V_{min}= −30 dB

GENERAL

Frequency response 30Hz ... 16kHz	$^{+0}_{-0,3}$ dB
THD amplifier 30Hz ... 16kHz	THD ⩽ 80 dB
Noise (B 23kHz), gain −6 dB	U_{NOISE}= −107 dBu

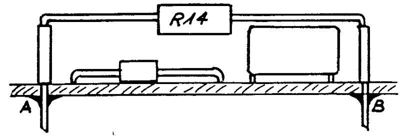
ATTENUATOR

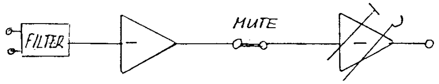
Mute switch, with resistor programable to a attenuator of 20 dB

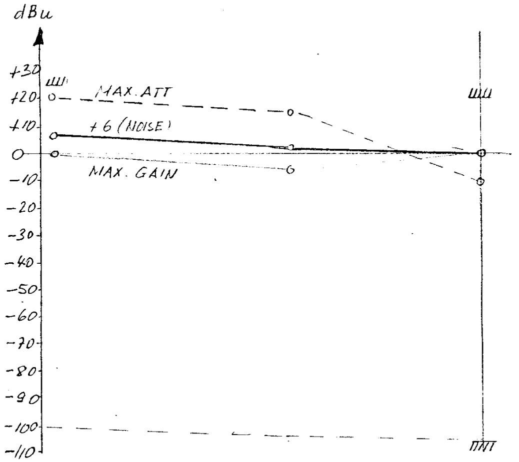
SUPPLY

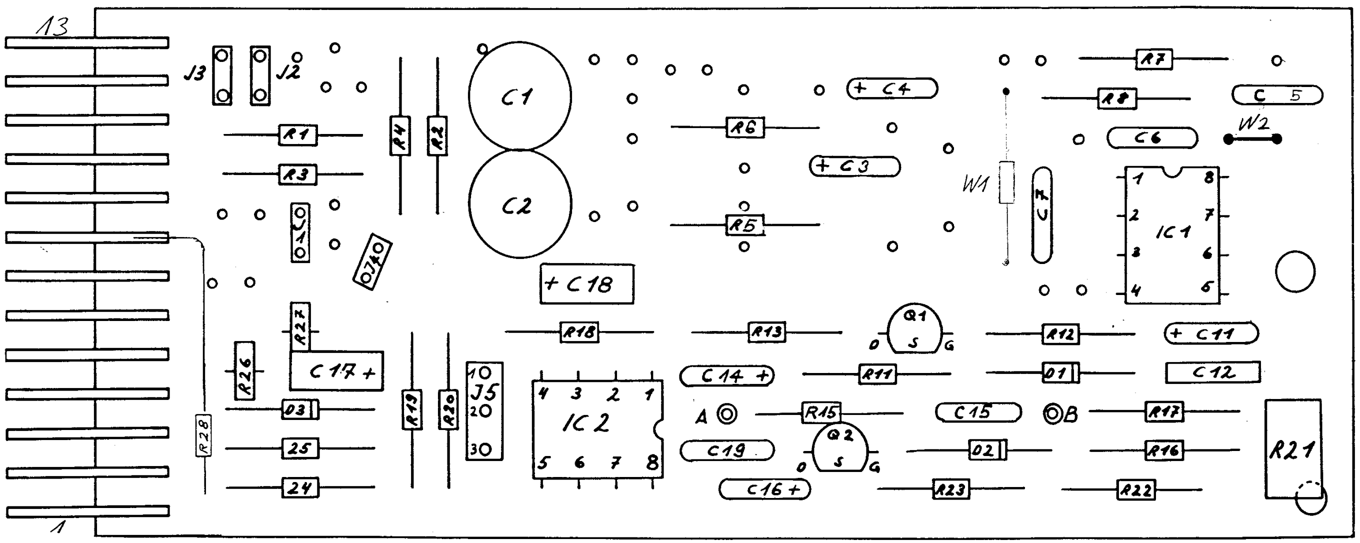
Supply voltage	U = ± 15 V
Idle current	I = 11 mA

OPTION
33k (20 dB Attenuation)









HL Input Amp, electronically balanced 1.914.504.81 (1)

Idx.	Pos.	Part No.	Qty.	Type/Val.	Description
0	C 1	59.05.1681		680p	PP, 1%, 630V
0	C 2	59.05.1681		680p	PP, 1%, 630V
0	C 3	59.26.0470		47u	SAL 6.3V 20%
0	C 4	59.26.0470		47u	SAL 6.3V 20%
0	C 5	59.34.2101		100p	CER 63V, 5%, N150
0	C 6	59.34.2220		22p	CER 63V, 5%, N150
0	C 7	59.34.2101		100p	CER 63V, 5%, N150
0	C 11	59.26.0470		47u	SAL 6.3V 20%
0	C 12	59.32.4102		1n0	CER 20%, 50V
0	C 14	59.26.0470		47u	SAL 6.3V 20%
0	C 15	59.06.0102		1n0	PETP, 63V, 10%, RM5
0	C 16	59.26.0470		47u	SAL 6.3V 20%
0	C 17	59.26.2689		6u8	SAL 16V 20%
0	C 18	59.26.2689		6u8	SAL 16V 20%
0	C 19	59.06.0102		1n0	PETP, 63V, 10%, RM5
0	D 1	50.04.0125		1N4448	75V, 150mA, 4ns, DO-35
0	D 2	50.04.0125		1N4448	75V, 150mA, 4ns, DO-35
0	D 3	50.04.0125		1N4448	75V, 150mA, 4ns, DO-35
0	IC 1	50.05.0244		5534A	Single Op-amp, low noise
0	IC 2	50.09.0106		5532A	Dual Op-Amp, low noise
0	J 1	54.01.0021		Jumper	0.63*0.63mm, Au
0	J 2	54.01.0021		Jumper	0.63*0.63mm, Au
0	J 3	54.01.0021		Jumper	0.63*0.63mm, Au
0	P 1	54.01.0273		13p	Stecker CIS parallelsteck
0	P 2	54.01.0020	9 pcs	1p	Pin, 1reihig, gerade
0	Q 1	50.03.0350		J112	JFET N-Channel
0	Q 2	50.03.0350		J112	JFET N-Channel
0	R 1	57.11.3152		1k5	MF, 1%, 0207
0	R 2	57.11.3392		3k9	MF, 1%, 0207
0	R 3	57.11.3152		1k5	MF, 1%, 0207
0	R 4	57.11.3392		3k9	MF, 1%, 0207
0	R 5	57.11.3104		100k	MF, 1%, 0207
0	R 6	57.11.3104		100k	MF, 1%, 0207
0	R 7	57.11.3332		3k3	MF, 1%, 0207
0	R 8	57.11.3332		3k3	MF, 1%, 0207
0	R 11	57.11.3104		100k	MF, 1%, 0207
0	R 12	57.11.3332		3k3	MF, 1%, 0207
0	R 13	57.11.3223		22k	MF, 1%, 0207
0	R 14	not used		33k *optional (20 dB attenuation)*	MF, 1%, 0207
0	R 15	57.11.3104		100k	MF, 1%, 0207
0	R 16	57.11.5106		10M	MF, 5%, 0207
0	R 17	57.11.5335		3M3	MF, 5%, 0207
0	R 18	57.11.5335		3M3	MF, 5%, 0207
0	R 19	57.11.3151		150R	MF, 1%, 0207
0	R 20	57.11.3821		820R	MF, 1%, 0207
0	R 21	58.01.9202		2k0	Cermet, 10%, 0.5W, vertical
0	R 22	57.11.3471		470R	MF, 1%, 0207
0	R 23	57.11.3104		100k	MF, 1%, 0207
0	R 24	57.11.3330		33R	MF, 1%, 0207
0	R 25	57.11.3332		3k3	MF, 1%, 0207
0	R 26	57.99.0206		50R	PTC, 25V, 0.5W
0	R 27	57.99.0206		50R	PTC, 25V, 0.5W
1	R 28	57.11.3104		100k	MF, 1%, 0207
1	W 1	57.11.3000		0R0	MF, 0207
1	W 2	64.01.0106		0.6mm	Schaltdraht Cu

End of List

Comments:

(01) R28, W1, W2 added

2.1.5 Loudspeaker Amplifier 1.914.505

This low-power amplifier on a modular sub-card is designed to drive a 10...15 Ω speaker. Power output is about 2...3 W. As can be concluded from this specification, the amplifier is not intended for high-quality monitoring. It will be ideally suited, however, for pre-fader listening and similar applications. The amplifier's input is balanced and floating, with adjustable gain.

Technical Specifications

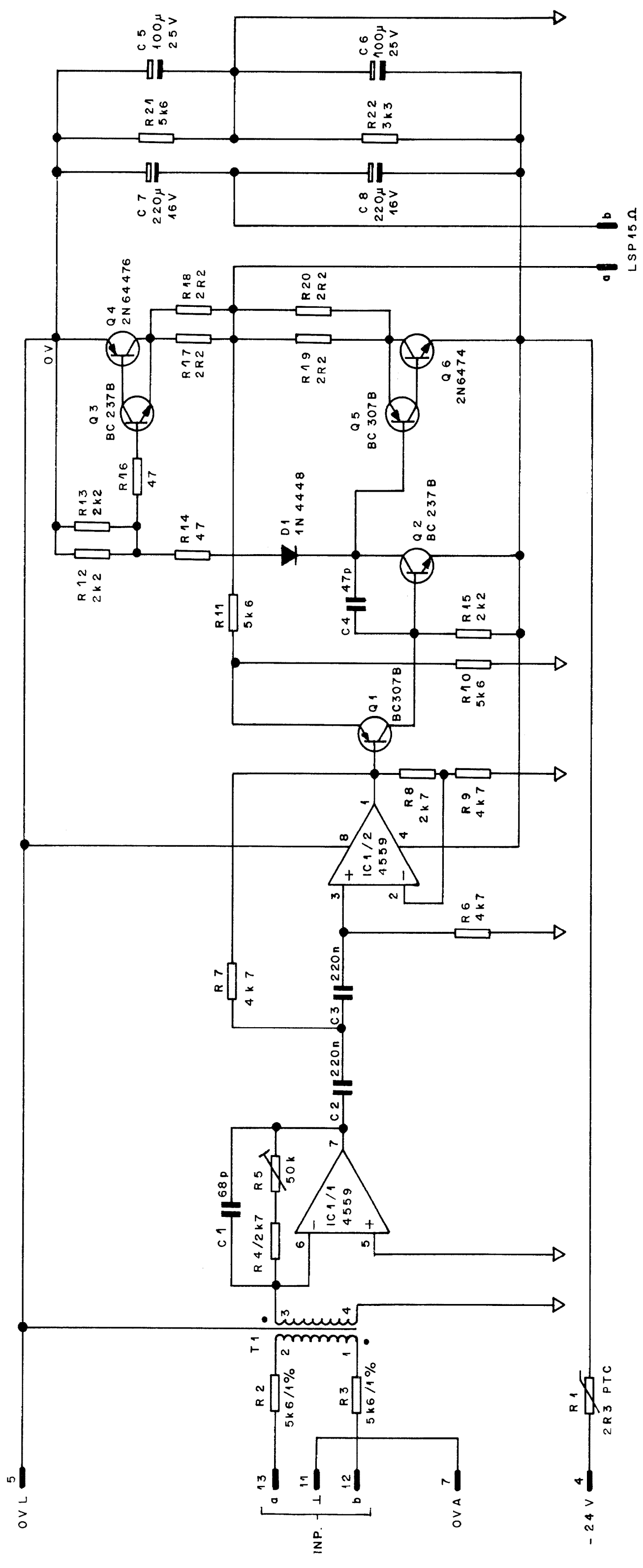
Input impedance	> **10 kW,** balanced and floating (with transformer)
Nominal power output	**2 W** into 15 Ω
Power output	**25 mW...2.5 W** into 15 Ω, with 0 dBu input
Distortion	< **0.5%** at 2 W
	< **0.15%** at 500 mW
S/N	**99 dB,** ref. to 2 W at max. gain
Frequency response	**–0.5 dB** at 15 kHz
High pass filter	**150 Hz,** 12 dB/oct.

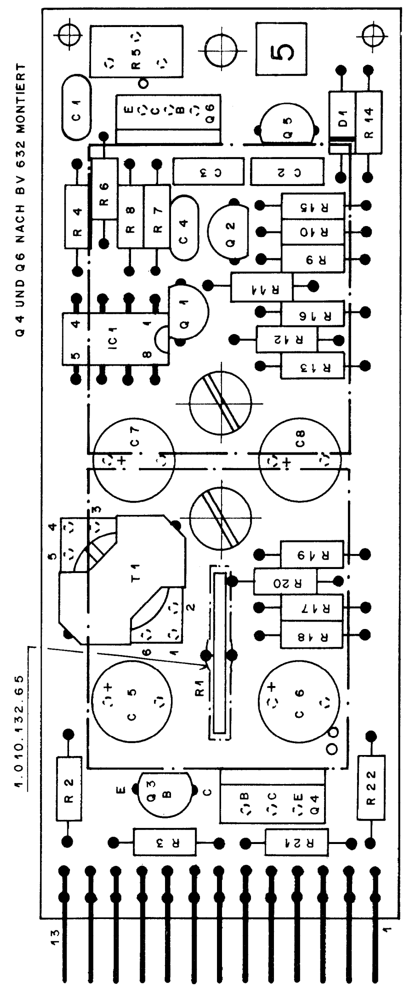
Supply: **–24 V** (40 mA idling, max. 220 mA fully driven)

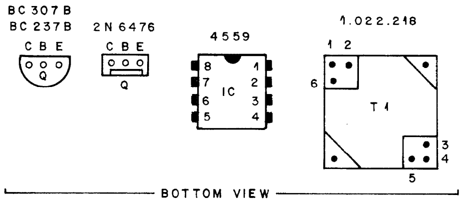
Dimensions: **MS-card,** 34 × 85 mm

Ordering Information: Loudspeaker amplifier 1.914.505.xx

MSC SPEAKER AMPLIFIER







CIS	PIN	EURO 32 PIN ⓐ	ⓑ	ⓒ	ⓓ
INP a	13	1	7	21	27
INP b	12	2	8	22	28
(⊥)	11	3	9	23	29
	10				
	9				
	8				
(⊥)	7				
	6				
0V	5	19			
-24V	4	20			
OUT a	3	4	10	24	30
OUT b	2	5	11	25	31
	1				

⓪ 13.9.91 Ge		
STUDER REGENSDORF ZÜRICH	LSP AMPLIFIER 3W (NR. 5)	1.914.505.00

MSC SPEAKER AMPLIFIER

Ad	POS.	REF.No.	DESCRIPTION		MANUFACTURER
	C.....1	59.34.4680	68pF		CER
	C.....2	59.06.0224	0,22µF		PE
	C.....3	59.06.0224	0,22µF		PE
①	C.....4	59.34.2470	47pF		CER
	C.....5	59.22.5101	100µF	25V	EL
	C.....6	59.22.5101	100µF	25V	EL
	C.....7	59.22.4221	220µF	16V	EL
	C.....8	59.22.4221	220µF	16V	EL
	D.....1	50.04.0125	1N4448		
	IC....1	50.09.0107	RC4559		
	P.....1	54.01.0273	13P	CIS	
	Q.....1	50.03.0515	BC307B		
	Q.....2	50.03.0436	BC237B		
	Q.....3	50.03.0436	BC237B		
	Q.....4	50.03.0345	2N6476		
	Q.....5	50.03.0515	BC307B		
	Q.....6	50.03.0344	2N6474		
	R.....1	57.99.0210	2,3Ω		PTC
	R.....2	57.11.3562	5,6kΩ		
	R.....3	57.11.3562	5,6kΩ		
	R.....4	57.11.4272	2,7kΩ		
	R.....5	58.01.9503	50kΩ		PMG
	R.....6	57.11.4472	4,7kΩ		
	R.....7	57.11.4472	4,7kΩ		
	R.....8	57.11.4272	2,7kΩ		
	R.....9	57.11.4472	4,7kΩ		
	R....10	57.11.3562	5,6kΩ		
	R....11	57.11.3562	5,6kΩ		
	R....12	57.11.4222	2,2kΩ		
	R....13	57.11.4222	2,2kΩ		
	R....14	57.11.4470	47Ω		
	R....15	57.11.4222	2,2kΩ		
	R....16	57.11.4470	47Ω		
	R....17	57.11.4229	2,2Ω		
	R....18	57.11.4229	2,2Ω		
	R....19	57.11.4229	2,2Ω		
	R....20	57.11.4229	2,2Ω		
	R....21	57.11.3562	5,6kΩ		
	R....22	57.11.4332	3,3kΩ		
	T.....1	1.022.218.00	1:1		

CER=Ceramic, PE=Polyester, EL=Electrolytic, PTC=Pos. Temp. Coif., PMG=Cermet

1.914.505.00 LSP AMPLIFIER 3W (Nr. 5) P. Casutt 07/09/83

1.914.505.00 LSP AMPLIFIER 3W (Nr. 5) ① A. Ho 30/11/83

END

→

2.1.6 Microphone Pre-Amplifiers

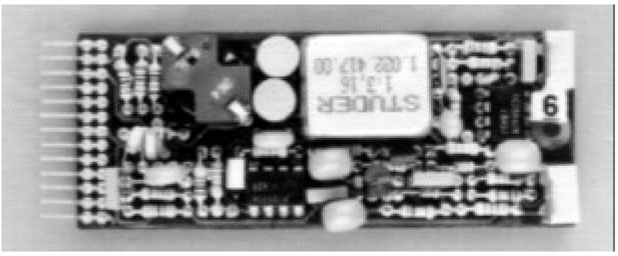
1.914.506/507

Two different microphone pre-amplifiers are available, for dynamic or condenser microphones, and for electret microphones. Both offer high gain and low noise, as is required for microphone pre-amplification.

1.914.506 features a balanced and floating input. It is designed for dynamic or condenser microphones with a source impedance of 200 Ω or less. An RF filter is incorporated at the input transformer's primary. Furthermore, the input is equipped with the resistors required for phantom powering of condenser microphones.

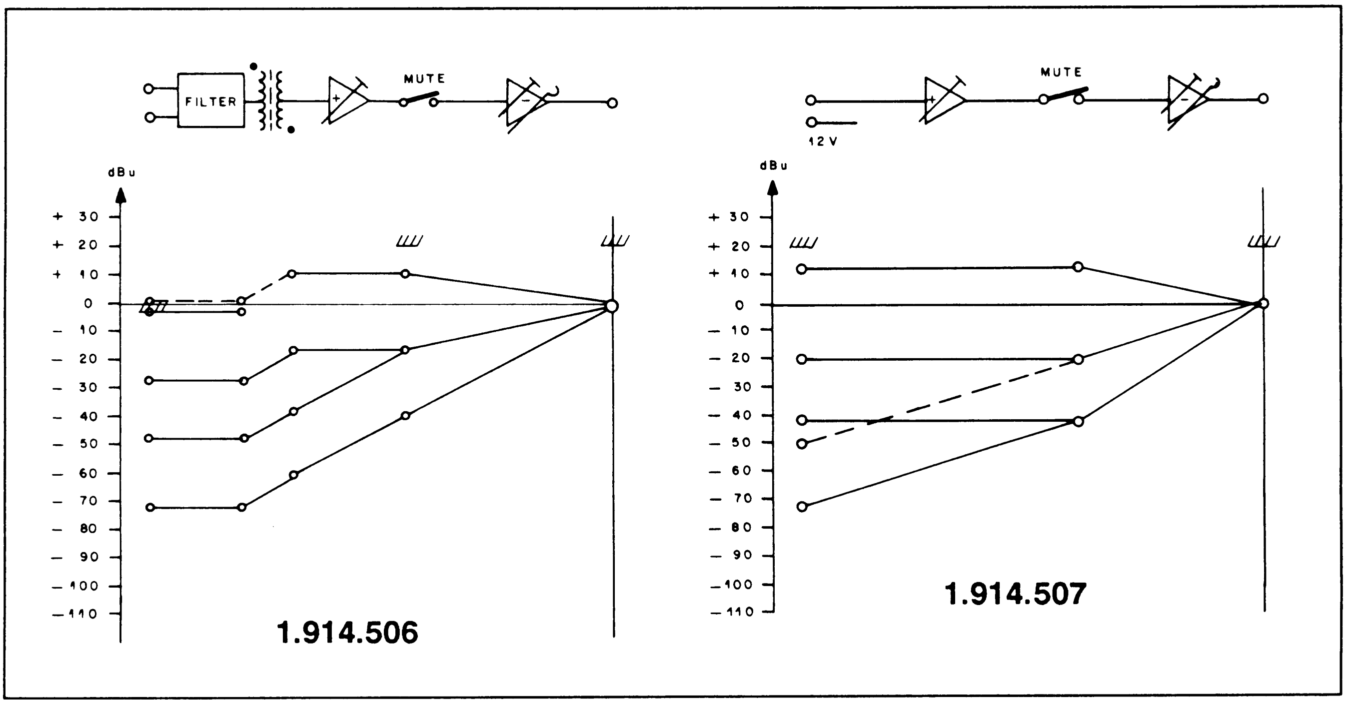
1.914.507 is designed for unbalanced electret microphones requiring a 12 V supply.

A wide range of input levels can be accommodated (see level diagram).



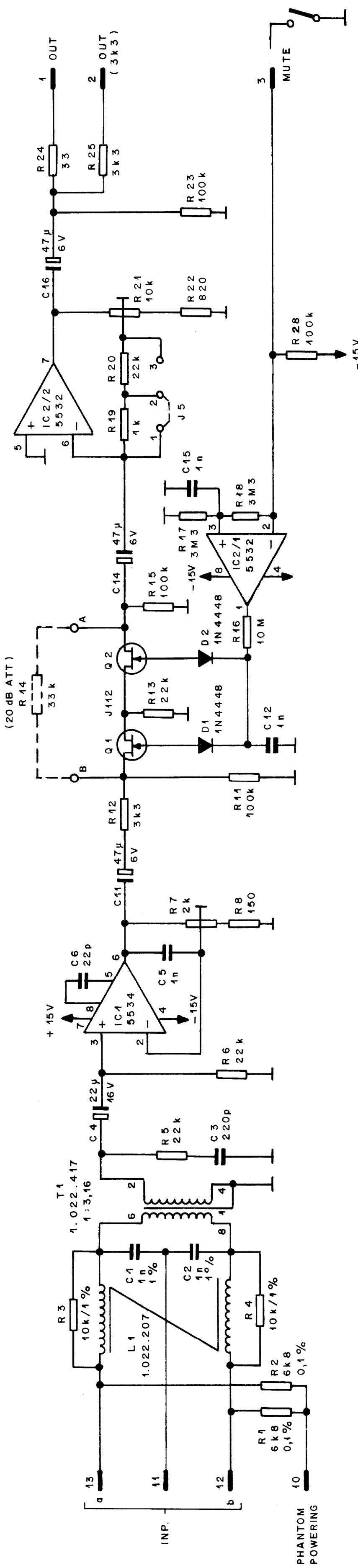
By using the same solid-state switching circuit as can be found in the line and high-level amplifiers, remote muting or activation of a fixed amount of attenuation are possible as well.

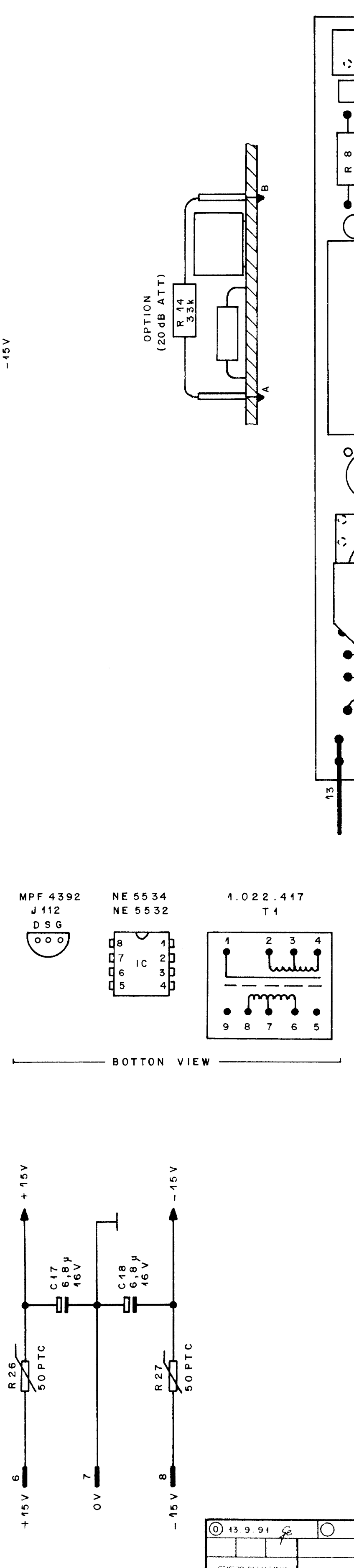
The amplifier's two outputs are unbalanced, with impedances of 3.3 kΩ or 33 Ω, respectively.

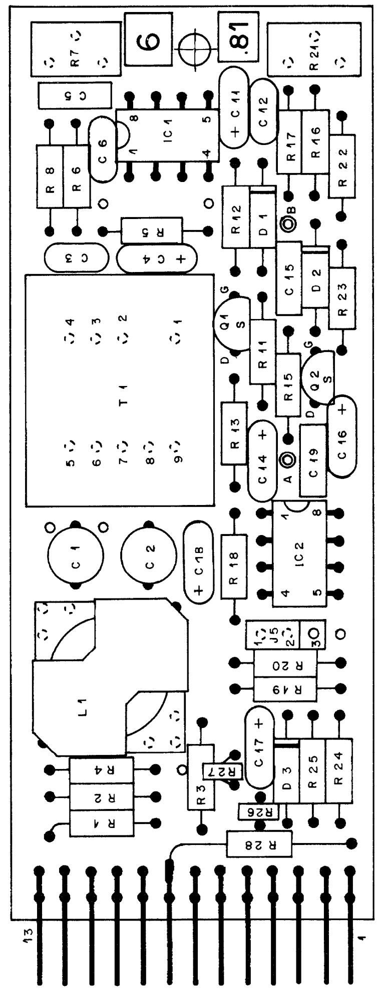


Technical Specifications

Input:		Transformer-balanced and floating, with RF filter	(1.914.506)
		Unbalanced, with RF filter and electret supply	(1.914.507)
	Impedance	**> 1 kW,** for microphones with an impedance of 200 Ω or less.	
	Max. input level	**–2 dBu** (615 mV_{rms}); THD at 30 Hz: approx. 1%	
	Common mode rejection	> **60 dB**, unbalanced, to ground	
Output:	Max. level	**+20 dBu** (7.75 V_{rms})	
	Nominal level	**0 dBu** (0.775 V_{rms})	
	Impedance	**33 W** (pin1)	
		3.3 kW (pin2; to a 0-Ω amp.)	
	Minimum load	**600 W**	
	Max. gain	**71 dB** (see level diagram)	
	Frequency response	**±0.5 dB,** 30 Hz...16 kHz	
	THD	< **0.3%,** 30 Hz...16 kHz at 20 dB gain	
	Noise figure, linear	< **4.5 dB**, input terminated with 200 Ω	
Supply:		**±15 V** (11 mA idling)	
		+48 V (1.914.506, only if phantom powering required)	
Dimensions:		**MS-card,** 34 × 85 mm	
Ordering Information:	•	Microphone pre-amplifier for dynamic microphones	1.914.506.xx
	•	Microphone pre-amplifier for electret microphones	1.914.507.xx







CIS	PIN	EURO 32 PIN ⓐ	ⓑ	ⓒ	ⓓ
IN a	13	1	7	21	27
IN b	12	2	8	22	28
IN ⊥	11	3	9	23	29
PHANTOM	10	17	17	18	18
	9				
-15V	8	14			
0 V	7	15			
+15 V	6	16			
	5				
	4				
MUTE	3	4	10	24	30
OUT(3k3)	2	5	11	25	31
OUT	1	6	13	26	32

0 13.9.91		
STUDER REGENSDORF ZÜRICH	MIC. AMPLIFIER FLOATING (NR. 6)	1.914.506.81

MICROPHONE PRE-AMP. MSC

Ad	POS.	REF.No.	DESCRIPTION			MANUFACTURER
	C.....1	59.05.1102	1000pF	630V 1%	PP	
	C.....2	59.05.1102	1000pF	630V 1%	PP	
	C.....3	59.34.4221	220pF		CER	
	C.....4	59.30.4220	22µF	16V	TA	
	C.....5	59.06.0102	1000pF		PE	
	C.....6	59.34.2220	22pF		CER	
	C....11	59.26.0470	47µF	6,3V	SAL	
	C....12	59.32.4102	1000pF		CER	
	C....13					
	C....14	59.26.0470	47µF	6,3V	SAL	
	C....15	59.06.0102	1000pF		PE	
	C....16	59.26.0470	47µF	6,3V	SAL	
	C....17	59.26.2689	6,8µF	16V	SAL	
	C....18	59.26.2689	6,8µF	16V	SAL	
	C....19	59.06.0102	1000pF		PE	
	D.....1	50.04.0125	1N4448			
	D.....2	50.04.0125	1N4448			
	D.....3	50.04.0125	1N4448			
	IC....1	50.05.0244	NE5534AN	LOW NOISE OP AMP		SIG
	IC....2	50.09.0106	NE5532AN	DUAL LOW NOISE OP AMP		SIG
	J.....5	54.01.0021		JUMPER		
	L.....1	1.022.207.00		HF SYM. COIL		ST
	P	54.01.0273	13PIN	CIS		
	P (J5)	54.01.0020	PIN	JUMPER PLUG		
	Q.....1	50.03.0350	J112	N	N-FET	
	Q.....2	50.03.0350	J112	N	N-FET	
	R.....1	57.99.0250	6,8kΩ	0,1%		
	R.....2	57.99.0250	6,8kΩ	0,1%		
	R.....3	57.11.3103	10kΩ	1%		
	R.....4	57.11.3103	10kΩ	1%		
	R.....5	57.11.4123	12kΩ			
	R.....6	57.11.4223	22kΩ			
	R.....7	58.01.9202	2kΩ	POT		
	R.....8	57.11.4151	150			
	R....11	57.11.4104	100kΩ			
	R....12	57.11.4332	3,3kΩ			
	R....13	57.11.4223	22kΩ			
	R....14	57.11.4333	33kΩ	OPTIONAL (20dB ATT)		
	R....15	57.11.4104	100kΩ			
	R....16	57.11.5106	10MΩ			
	R....17	57.11.5335	3,3MΩ	5%		
	R....18	57.11.5335	3,3MΩ	5%		
	R....19	57.11.4102	1kΩ			
	R....20	57.11.4223	22kΩ			
	R....21	58.01.9103	10kΩ	POT		
	R....22	57.11.4821	820Ω			
	R....23	57.11.4104	100kΩ			
	R....24	57.11.4330	33Ω			
	R....25	57.11.4332	3,3kΩ			
	R....26	57.99.0206	50Ω	PTC		PH
	R....27	57.99.0206	50Ω	PTC		PH
	R....28	57.11.4104	100kΩ			
	T.....1	1.022.417.00	1:3,16	TRAFO		ST

CER=Ceramic, PE=Polystyrene, SAL=Solid Aluminium, PP=Polypropylen, TA=Tantalum

MANUFACTURER: ST=Studer, SIG=Signetics, PH=Philips

1.914.506.81 MIC. AMPLIFIER, FLOATING (Nr. 6) FRI 19/04/85

END

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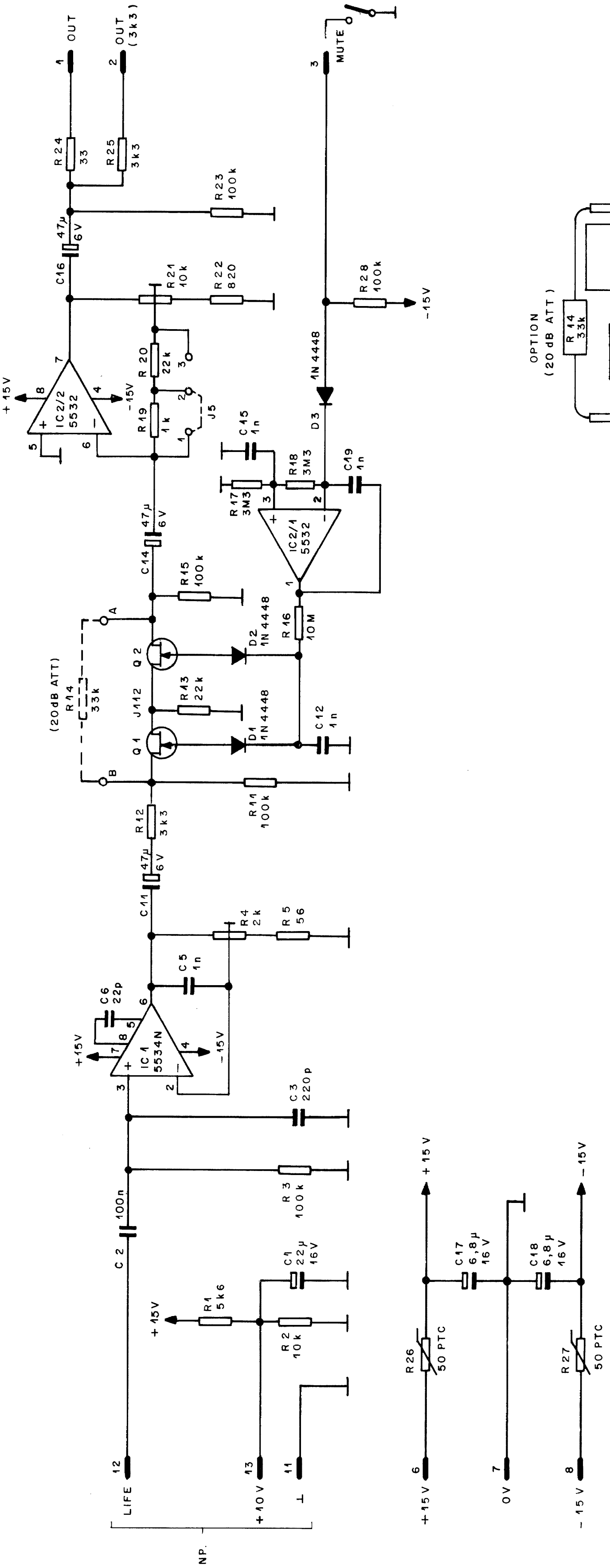
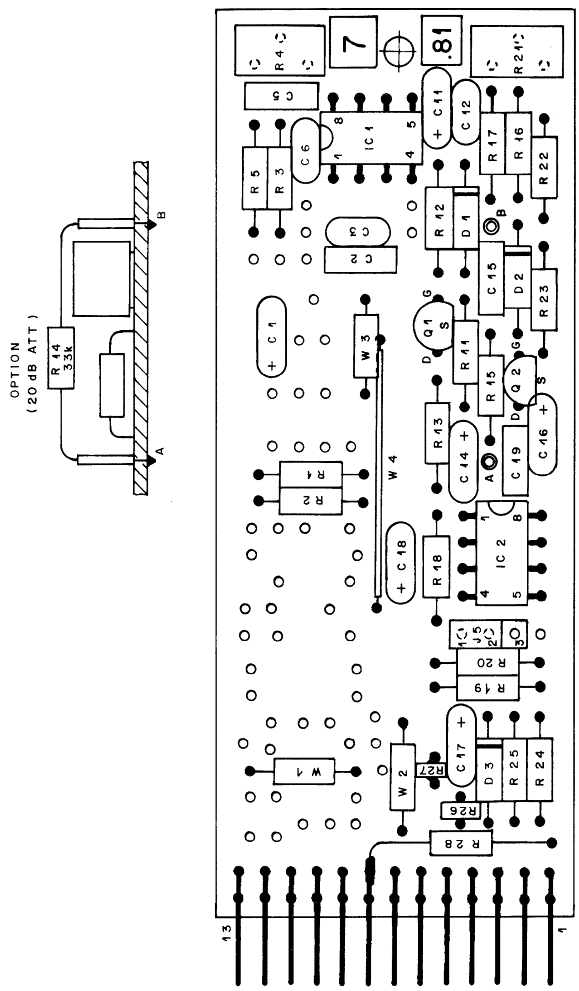
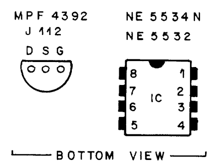






CIS	PIN	EURO 32 PIN ⓐ	ⓑ	ⓒ	ⓓ
+ 10 V	13	1	7	21	27
IN	12	2	8	22	28
IN ⊥	11	3	9	23	29
	10				
	9				
− 15 V	8	14			
0 V	7	15			
+ 15 V	6	16			
	5				
	4				
MUTE	3	4	10	24	30
OUT(3k3)	2	5	11	25	31
OUT	1	6	13	26	32

0 12.9.91				
STUDER REGENSDORF ZÜRICH	ELECTRET MIC. AMP. (NR.7)		1.914.507.81	

MICROPHONE PRE-AMP. MSC

Ad	POS.	REF.No.	DESCRIPTION			MANUFACTURER
	C.....1	59.30.4220	22µF	16V	TA	
	C.....2	59.06.5104	0,1µF	63V	PE	
	C.....3	59.34.4221	220pF		CER	
	C.....5	59.06.0102	1000pF		PE	
	C.....6	59.34.2220	22pF		CER	
	C....11	59.26.0470	47µF	6,3V	SAL	
	C....12	59.32.4102	1000p		CER	
	C....13					
	C....14	59.26.0470	47µF	6,3V	SAL	
	C....15	59.06.0102	1000pF		PE	
	C....16	59.26.0470	47µF	6,3V	SAL	
	C....17	59.26.2689	6,8µF	16V	SAL	
	C....18	59.26.2689	6,8µF	16V	SAL	
	C....19	59.06.0102	1000pF		PE	
	D.....1	50.04.0125	1N4448			
	D.....2	50.04.0125	1N4448			
①	D.....3	50.04.0125	1N4448			
	IC....1	50.05.0244	NE5534AN	LOW NOISE OP AMP		SIG
	IC....2	50.09.0106	NE5532AN	DUAL LOW NOISE OP AMP		SIG
	J.....5	54.01.0021		JUMPER		
	P	54.01.0273	13PIN	CIS		
	P (J5)	54.01.0020	PIN	JUMPER PLUG		
	Q.....1	50.03.0350	J112	N-FET		
	Q.....2	50.03.0350	J112	N-FET		
	R.....1	57.11.4562	5,6kΩ			
	R.....2	57.11.4103	10kΩ			
	R.....3	57.11.4104	100kΩ			
	R.....4	58.01.9202	2kΩ	POT		
	R.....5	57.11.4560	56Ω			
	R....11	57.11.4104	100kΩ			
	R....12	57.11.4332	3,3kΩ			
	R....13	57.11.4223	22kΩ			
	R....14	57.11.4333	33kΩ	OPTIONAL (20dB ATT)		
	R....15	57.11.4104	100kΩ			
	R....16	57.11.5106	10MΩ			
	R....17	57.11.5335	3,3MΩ	5%		
	R....18	57.11.5335	3,3MΩ	5%		
	R....19	57.11.4102	1kΩ			
	R....20	57.11.4223	22kΩ			
	R....21	58.01.9103	10kΩ	POT		
	R....22	57.11.4821	820Ω			
	R....23	57.11.4104	100kΩ			
	R....24	57.11.4330	33Ω			
	R....25	57.11.4332	3,3kΩ			
	R....26	57.99.0206	50Ω	PTC		PH
	R....27	57.99.0206	50Ω	PTC		PH
	R....28	57.11.4104	100kΩ			
①	W.....1	57.11.4000		0Ω LINK		
①	W.....2	57.11.4000		0Ω LINK		
①	W.....3	57.11.4000		0Ω LINK		
①	W.....4			WIRE		

CER=Ceramic, PE=Polystyrene, SAL=Solid Aluminium, TA=Tantalum

MANUFACTURER: SIG=Signetics, PH=Philips

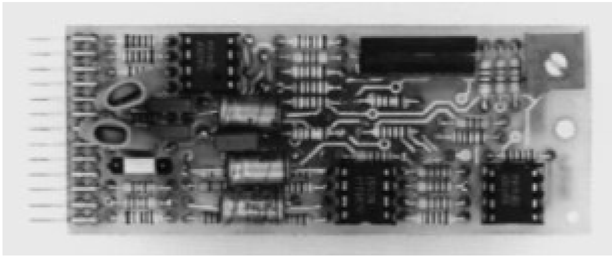
1.914.507.81 ELECTRET MIC AMP (Nr. 7) FRI 19/04/85

1.914.507.81 ELECTRET MIC AMP (Nr. 7) ① FRI 14/10/85

END
➔

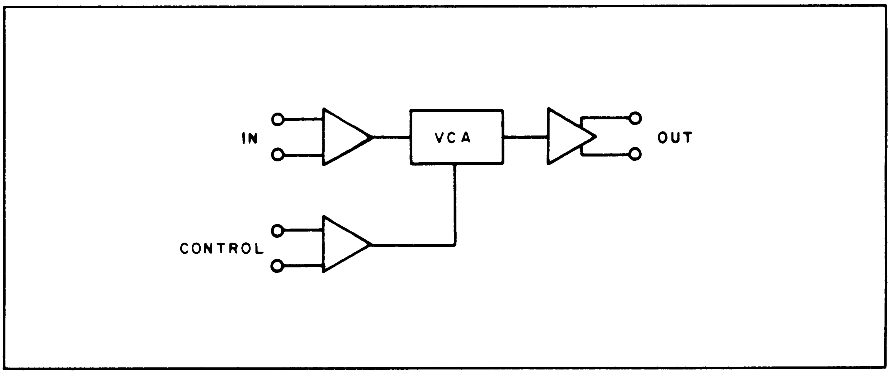
2.1.7 VCA with Electronically Balanced Connections 1.914.515

In contrast to the VCA 1.914.518/528 (chapter 2.1.8), this assembly features an electronically balanced input and output.



It is intended for use in balanced audio systems for a variety of applications, especially when gain is to be controlled from a remote point. It will be useful in audio-video post-production work where suitable DC ramps can control cross-fades, voice-overs, etc. Its high overload margin and its exceptionally low noise and distortion performance make it the perfect choice for high-quality audio applications.

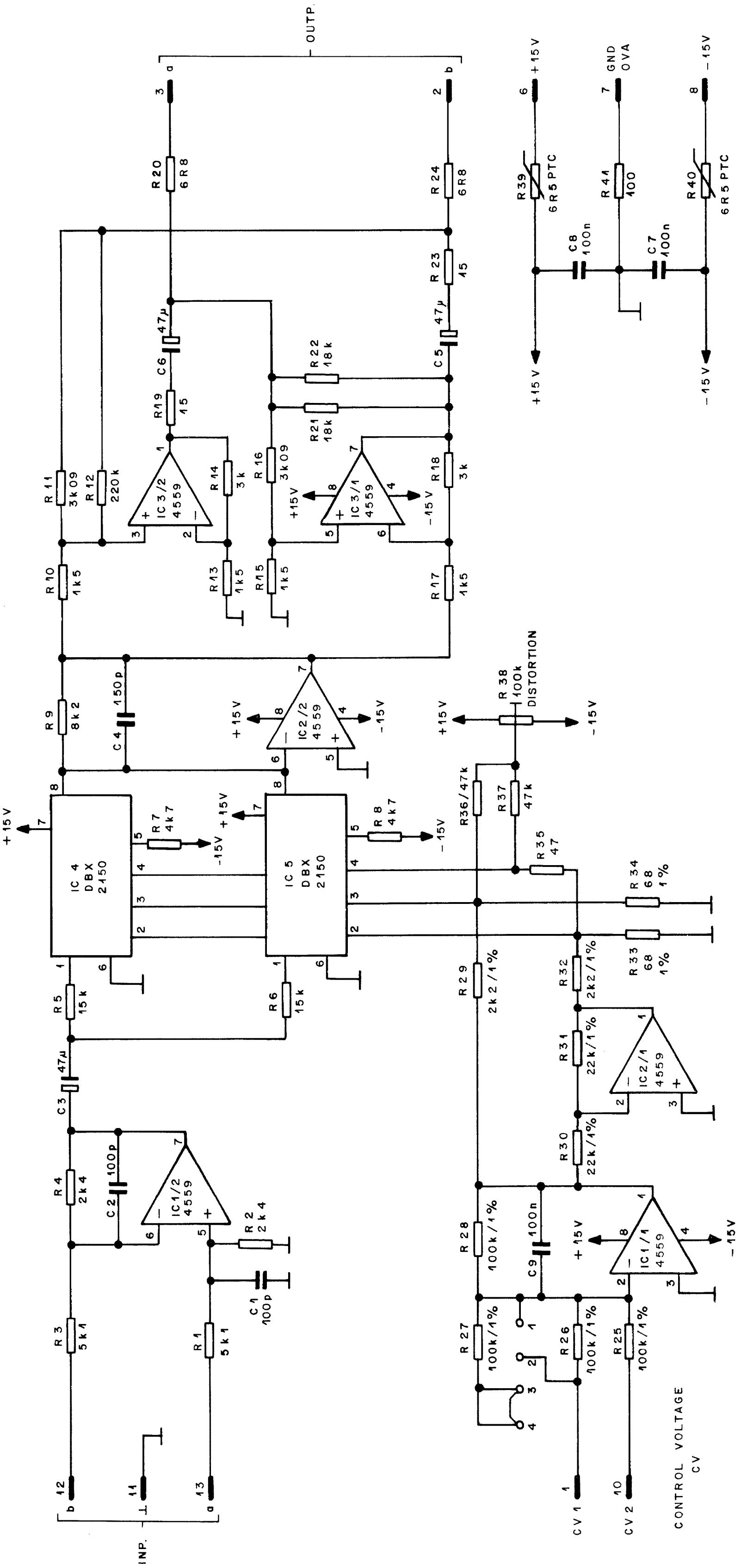
By connecting the gain control terminals of a number of VCAs to a common potentiometer or fader, several audio channels may thus be controlled simultaneously.

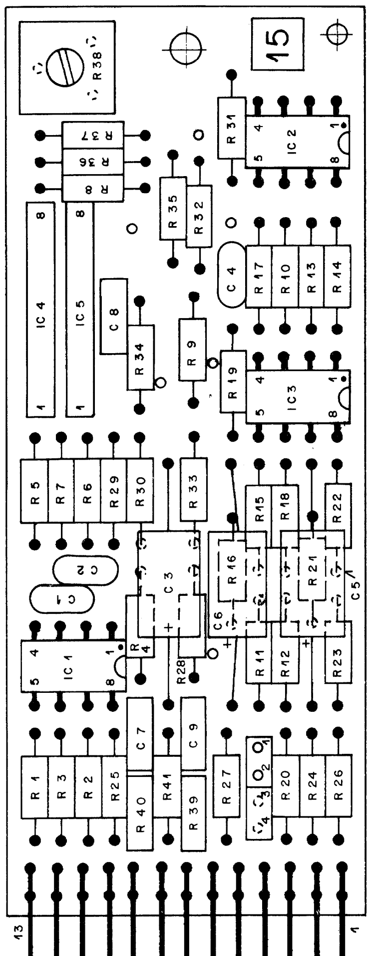


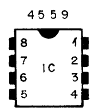
Two control inputs provide VCA gain control from two different remote points

Technical Specifications

Input:	Impedance	**³ 10 kW,** electronically balanced
	Clipping point	**+24 dBu**
Output:		Electronically balanced
	Recommended load	**³ 2 kW**
	Maximum level	**+24 dBu**
	Frequency response	**–0.5 dB,** 30 Hz...15 kHz
	Gain/attenuation range	**+40...–100 dB,** with ext. control
	Control input: pin1; gain tracking	**0 V = unity gain;**
		1 dB/µA; jumper 1-2
		20 dB/V; jumper 2-3
		10 dB/V; jumper 3-4
	Control input: pin10; gain tracking	**10 dB/V**
	THD	< **0.1%**
	Equivalent input noise	**–93 dBu** @ unity gain
Supply:		**±15 V** (25 mA)
Dimensions:		**MS-card,** 34 × 85 mm
Ordering Information:		VCA with electronically balanced input and output 1.914.515.xx







BOTTOM VIEW

CIS	PIN	EURO 32 PIN a	b	c	d
INP a	13	1	7	21	27
INP b	12	2	8	22	28
⊥	11	3	9	23	29
CV 2	10	17	17	18	18
	9				
– 15 V	8	14	—	—	—
OVA	7	15	—	—	—
+ 15 V	6	16	—	—	—
	5				
	4				
OUT a	3	4	10	24	30
OUT b	2	5	11	25	31
CV 1	1	6	13	26	32

0 17.9.91				
STUDER REGENSDORF ZÜRICH	BAL. AMP. WITH VCA		1.914.515.00	

MSC VCA

Ad	..POS..	...REF.No...	DESCRIPTION				MANUFACTURER
	C.....1	59.34.4101	100 pF			CER	
	C.....2	59.34.4101	100 pF			CER	
	C.....3	59.25.3470	47 uF			ALU	
	C.....4	59.34.4151	150 pF			CER	
	C.....5	59.25.3470	47 uF			ALU	
	C.....6	59.25.3470	47 uF			ALU	
	C.....7	59.06.5104	100 nF			PE	
	C.....8	59.06.5104	100 nF			PE	
	C.....9	59.06.5104	100 nF			PE	
	JS....1	54.01.0020		JUMPER PLUG 4-PIN			
	JP....1	54.01.0021		JUMPER JACK			
	IC....1	50.09.0107	RC4559	dual op. amp.			Ra,NE
	IC....2	50.09.0107	RC4559	dual op. amp.			Ra,NE
	IC....3	50.09.0107	RC4559	dual op. amp.			Ra,NE
	IC....4	50.11.0140	2150A	VCA			DBX
	IC....5	50.11.0140	2150A	VCA			DBX
	P.....1	54.01.0273	13 PIN			CIS	
	R.....1	57.11.3512	5.1 kOhm	1%	0.25W	MF	
	R.....2	57.11.3242	2.4 kOhm	1%	0.25W	MF	
	R.....3	57.11.3512	5.1 kOhm	1%	0.25W	MF	
	R.....4	57.11.3242	2.4 kOhm	1%	0.25W	MF	
	R.....5	57.11.3153	15 kOhm	1%	0.25W	MF	
	R.....6	57.11.3153	15 kOhm	1%	0.25W	MF	
	R.....7	57.11.4472	4.7 kOhm	5%	0.25W	MF	
	R.....8	57.11.4472	4.7 kOhm	5%	0.25W	MF	
	R.....9	57.11.3822	8.2 kOhm	1%	0.25W	MF	
	R....10	57.11.3152	1.5 kOhm	1%	0.25W	MF	
	R....11	57.39.3091	3.09kOhm	1%	0.25W	MF	
	R....12	57.11.4224	220 kOhm	2%	0.25W	MF	
	R....13	57.11.3152	1.5 kOhm	1%	0.25W	MF	
	R....14	57.11.3302	3.0 kOhm	1%	0.25W	MF	
	R....15	57.11.3152	1.5 kOhm	1%	0.25W	MF	
	R....16	57.39.3091	3.09kOhm	1%	0.25W	MF	
	R....17	57.11.3152	1.5 kOhm	1%	0.25W	MF	
	R....18	57.11.3302	3.0 kOhm	1%	0.25W	MF	
	R....19	57.11.3150	15 Ohm	1%	0.25W	MF	
	R....20	57.11.3689	6.8 Ohm	1%	0.25W	MF	
	R....21	57.11.3183	18 kOhm	1%	0.25W	MF	
	R....22	57.11.3183	18 kOhm	1%	0.25W	MF	
	R....23	57.11.3150	15 Ohm	1%	0.25W	MF	
	R....24	57.11.3689	6.8 Ohm	2%	0.25W	MF	
	R....25	57.11.3104	100 kOhm	1%	0.25W	MF	
	R....26	57.11.3104	100 kOhm	1%	0.25W	MF	
	R....27	57.11.3104	100 kOhm	1%	0.25W	MF	
	R....28	57.11.3104	100 kOhm	1%	0.25W	MF	
	R....29	57.11.3222	2.2 kOhm	1%	0.25W	MF	
	R....30	57.11.3223	22 kOhm	1%	0.25W	MF	
	R....31	57.11.3223	22 kOhm	1%	0.25W	MF	
	R....32	57.11.3222	2.2 kOhm	1%	0.25W	MF	
	R....33	57.11.3680	68 Ohm	1%	0.25W	MF	
	R....34	57.11.3680	68 Ohm	1%	0.25W	MF	
	R....35	57.11.4470	47 Ohm	2%	0.25W	MF	
	R....36	57.11.4473	47 kOhm	2%	0.25W	MF	
	R....37	57.11.4473	47 kOhm	2%	0.25W	MF	
	R....38	58.01.8104	100 kOhm	10%	0.5 W	PMG trimming resistor	
	R....39	57.92.1271	6.5 Ohm			PTC	Philips Nr.2322 662 12711
01	R....39	57.92.7013	0.75 Ohm	I-Hold 0.5A			R-PTC
	R....40	57.92.1271	6.5 Ohm			PTC	Philips Nr.2322 662 12711
01	R....40	57.92.7013	0.75 Ohm	I-Hold 0.5A			R-PTC
	R....41	57.11.4101	100 Ohm	2%	0.25W	MF	

(01) 89/11/02 - Improvement of distance PTC - R

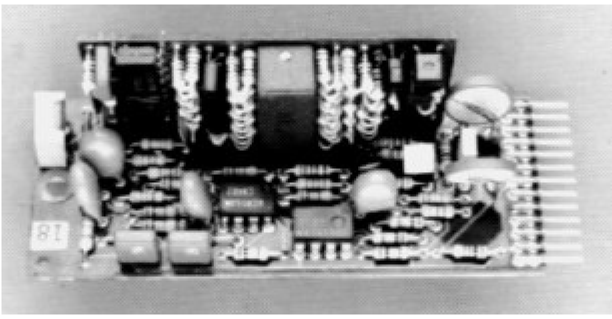
CER=Ceramic, PE=Polyester, SAL=Solid Aluminium
MF=Metal Film, PMG=Cermet

MANUFACTURER: Ex=Exar, NE=NEC, Ph=Philips, Ra=Raytheon,
Sig=Signetics, St=Studer,

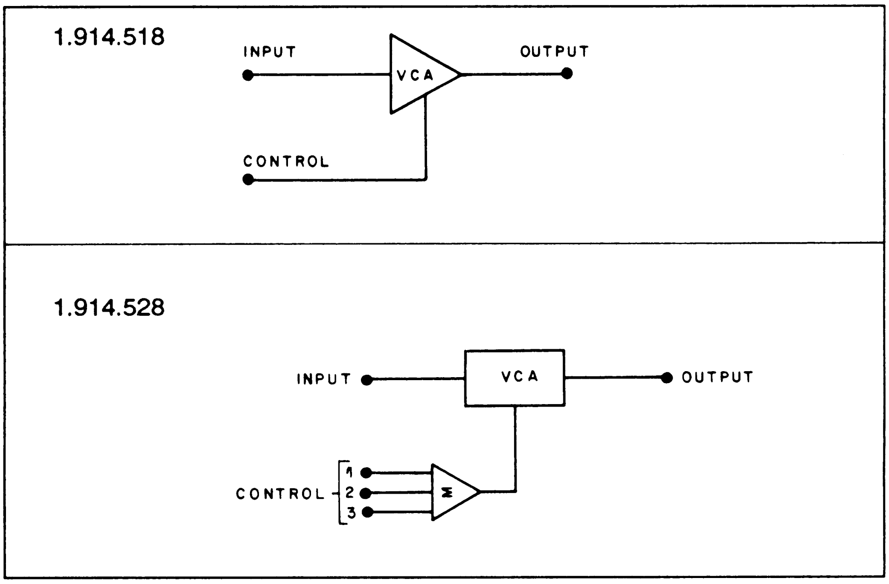
1.914.515.00 BAL AMP WITH VCA SE 87/07/0100
1.914.515.00 BAL AMP WITH VCA TA 89/11/0201

2.1.8 VCA with 1 or 3 Control Ports 1.914.518/528

Within the range of modular sub-cards, two more VCAs are available. Voltage controlled amplifiers are ideally suited for applications such as remote level control, level limiting (in combination with the voltage processor 1.914.519) or for automatic "voice-over" circuits, when driven by suitable ramp generators. These VCAs offer outstandingly low noise and harmonic distortion.



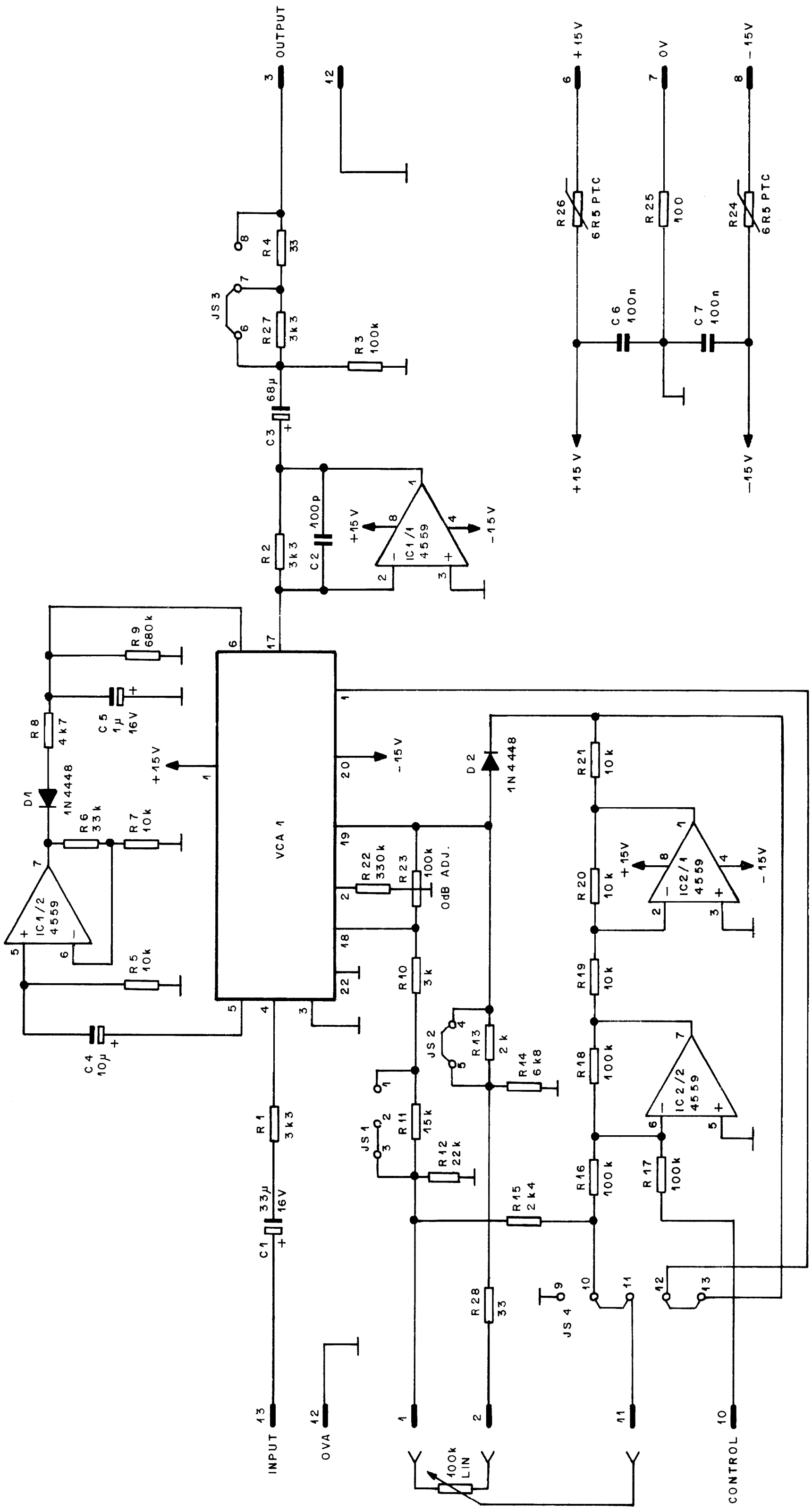
For best performance, they should be operated at a level of 0 dBu.
Gain pre-selection is possible on the 1.914.518 version, allowing gain/attenuation ranges either from +10 to –90 dB or from +40 to –70 dB, using an external potentiometer.
The 1.914.528 VCA card differs in that it is equipped with three external control inputs, providing gain control from three different locations.

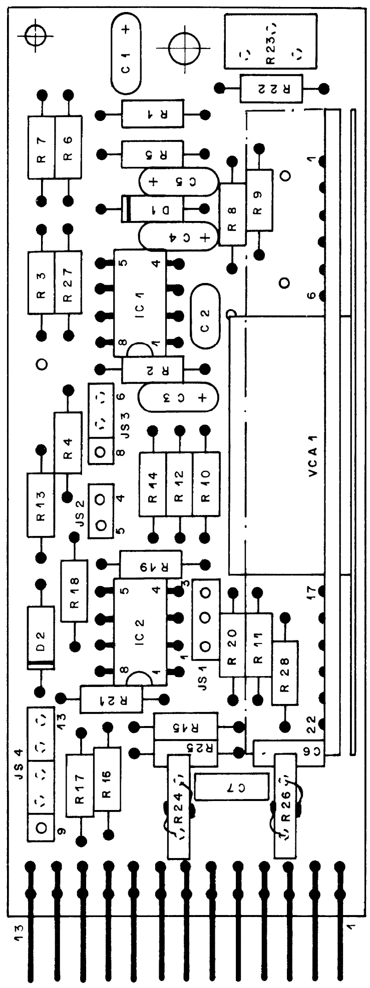


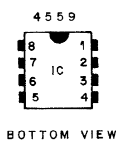
Technical Specifications

Input:	Impedance	**> 3 kW**
	Clipping point	**+20 dBu**
Output:	Impedance	**33 W or 3.3 kW,** selectable
	Max. level	**+20 dBu**
	Recommended load	**^{3} 2 kW**
	Frequency response	**–0.5 dB,** 30 Hz...16 kHz
	External gain control	**+40...–90 dB** (1.914.518.xx)
		+40...–100 dB (1.914.528.xx)
	Gain/attenuation range (pot. meter)	**+40...–60 dB / +10...–70 dB / +10...–90 dB** (1.914.518.xx only, jumper-selectable)
	Gain tracking	**10 dB/V**
	THD	**< 0.1%**
	Equivalent input noise	**–102 dBu**
Supply:		**±15 V** (40 mA)
Dimensions:		**MS-card,** 34 × 85 mm

Ordering Information:	Voltage controlled amplifier with 1 control port	1.914.518.xx
	Voltage controlled amplifier with 3 control ports	1.914.528.xx







CIS	PIN	EURO 32 PIN ⓐ	ⓑ	ⓒ	ⓓ
INPUT	13	1	7	21	27
⊥(INP./OUTP.)	12	2	8	22	28
LIN POT TAP	11	3	9	23	29
LEVEL CONTR.	10	17	17	18	18
	9				
−15V	8	14			
0V	7	15			
+15V	6	16			
	5				
	4				
OUTPUT	3	4	10	24	30
LIN POT 100k	2	5	11	25	31
LIN POT 100k	1	6	13	26	32

⓪ 17.9.91 Ge	○ ○	○ ○
STUDER REGENSDORF ZÜRICH	VCA UNIT	1.914.518.81

MSC VCA

Ad	..POS..	...REF.No...	DESCRIPTION				MANUFACTURER
	A.....1	1.010.110.50				Studer VCA	St
01	A.....1	1.911.290.00				VCA-BOARD	St
02	A.....1	1.911.290.81				VCA BOARD	St
	C.....1	59.26.1330	33 uF			SAL	
	C.....2	59.34.4101	100 pF			CER	
	C.....3	59.26.0680	68 uF			SAL	
	C.....4	59.26.2100	10 uF			SAL	
	C.....5	59.26.9109	1 uF			SAL	
	C.....6	59.06.5104	100 nF			PE	
	C.....7	59.06.5104	100 nF			PE	
	D.....1	50.04.0125	1N4448				any
	D.....2	50.04.0125	1N4448				any
	JS....1	54.01.0020				JUMPER PLUG 3-PIN	
	JS....2	54.01.0020				JUMPER PLUG 2-PIN	
	JS....3	54.01.0020				JUMPER PLUG 3-PIN	
	JS....4	54.01.0020				JUMPER PLUG 5-PIN	
	JP....1	54.01.0021				JUMPER JACK	
	JP....2	54.01.0021				JUMPER JACK	
	JP....3	54.01.0021				JUMPER JACK	
	JP....4	54.01.0021				JUMPER JACK	
	IC....1	50.09.0107	RC4559			dual op. amp.	Ra,NE
	IC....2	50.09.0107	RC4559			dual op. amp.	Ra,NE
	P.....1	54.01.0273	13 PIN			CIS	
	R.....1	57.11.4332	3.3 kOhm	5%	0.25W	MF	
	R.....2	57.11.4332	3.3 kOhm	5%	0.25W	MF	
	R.....3	57.11.4104	100 kOhm	5%	0.25W	MF	
	R.....4	57.11.4330	33 Ohm	5%	0.25W	MF	
	R.....5	57.11.4103	10 kOhm	5%	0.25W	MF	
	R.....6	57.11.4333	33 kOhm	5%	0.25W	MF	
	R.....7	57.11.4103	10 kOhm	5%	0.25W	MF	
	R.....8	57.11.4472	4.7 kOhm	5%	0.25W	MF	
	R.....9	57.11.4684	680 kOhm	5%	0.25W	MF	
	R....10	57.11.3302	3.0 kOhm	2%	0.25W	MF	
	R....11	57.11.4153	15 kOhm	2%	0.25W	MF	
	R....12	57.11.3242	2.4 kOhm	2%	0.25W	MF	
	R....13	57.11.3202	2 kOhm	2%	0.25W	MF	
	R....14	57.11.4682	6.8 kOhm	5%	0.25W	MF	
	R....15	57.11.4223	22 kOhm	5%	0.25W	MF	
	R....16	57.11.4104	100 kOhm	2%	0.25W	MF	
	R....17	57.11.4104	100 kOhm	2%	0.25W	MF	
	R....18	57.11.4104	100 kOhm	2%	0.25W	MF	
	R....19	57.11.4103	10 kOhm	2%	0.25W	MF	
	R....20	57.11.4103	10 kOhm	2%	0.25W	MF	
	R....21	57.11.4103	10 kOhm	5%	0.25W	MF	
	R....22	57.11.4334	330 kOhm	5%	0.25W	MF	
	R....23	58.01.9104	100 kOhm	10%	0.5 W	PMG trimming resistor	
	R....24	57.92.1271	6.5 Ohm			PTC	Philips Nr.2322 662 12711
	R....25	57.11.4101	100 Ohm	5%	0.25W	MF	
	R....26	57.92.1271	6.5 Ohm			PTC	Philips Nr.2322 662 12711
	R....27	57.11.4332	3.3 kOhm	5%	0.25W	MF	
	R....28	57.11.4330	33 Ohm	5%	0.25W	MF	

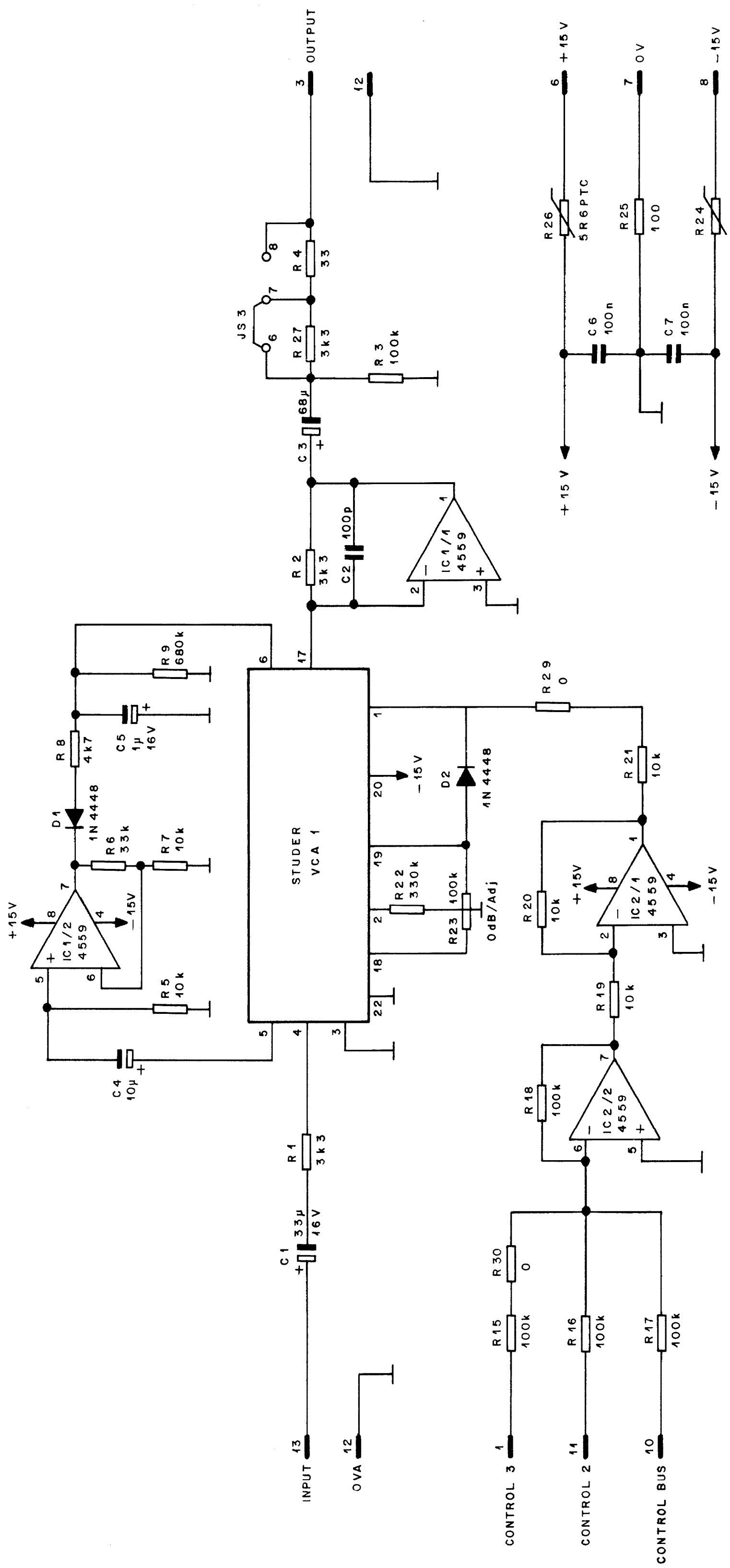
(1) 89/01/13 A1 VCA 1.010.110.50 replaced by 1.911.290.00

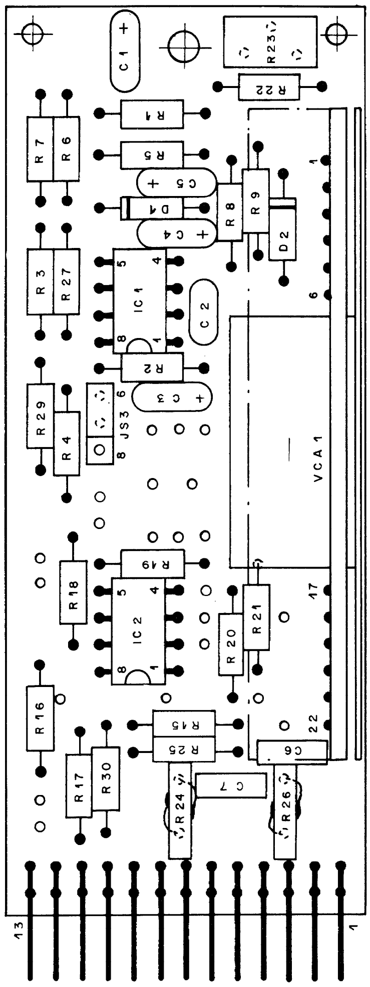
(2) 90/01/17 A1 VCA 1.911.290.00 replaced by 1.911.290.81

CER=Ceramic, PE=Polyester, SAL=Solid Aluminium Lacquard
MF=Metal Film, PMG=Cermet

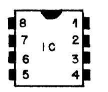
MANUFACTURER: Ex=Exar, NE=NEC, Ph=Philips, Ra=Raytheon,
Sig=Signetics, St=Studer,

1.914.518.81	VCA UNIT	SE 86/11/0500
1.914.518.81	VCA UNIT	SE 89/01/1301
1.914.518.81	VCA UNIT	WY 90/01/1702





RC 4559



BOTTOM VIEW

CIS	PIN	EURO 32 PIN (a)	(b)	(c)	(d)
INPUT	13	1	7	21	27
⊥ IN/OUT	12	2	8	22	28
CONTROL 2	11	3	9	23	29
CONTROL BUS	10	17	17	18	18
	9				
− 15 V	8	14			
0 V	7	15			
+ 15 V	6	16			
	5				
	4				
OUTPUT	3	4	10	24	30
	2	5	11	25	31
CONTROL 3	1	6	13	26	32

(0) 23.9.91 Ge	○	○	○	○
STUDER REGENSDORF ZÜRICH	VCA UNIT / 3 CONTROL		1.914.528.00	

VCA MSC

Ad	..POS..	...REF.No...	DESCRIPTION				MANUFACTURER
	A.....1	1.010.110.50		Studer VCA			St
01	A.....1	1.911.290.00		VCA-BOARD			St
02	A.....1	1.911.290.81		VCA-BOARD			St
	C.....1	59.26.1330	33 uF		SAL		
	C.....2	59.34.4101	100 pF		CER		
	C.....3	59.26.0680	68 uF		SAL		
	C.....4	59.26.2100	10 uF		SAL		
	C.....5	59.26.9109	1 uF		SAL		
	C.....6	59.06.5104	100 nF		PE		
	C.....7	59.06.5104	100 nF		PE		
	D.....1	50.04.0125	1N4448				any
	D.....2	50.04.0125	1N4448				any
	JS....3	54.01.0020		JUMPER PLUG 3-PIN			
	JP....1	54.01.0021		JUMPER JACK			
	IC....1	50.09.0107	RC4559	dual op. amp.			Ra,NE
	IC....2	50.09.0107	RC4559	dual op. amp.			Ra,NE
	P.....1	54.01.0273	13 PIN		CIS		
	R.....1	57.11.4332	3.3 kOhm	5% 0.25W	MF		
	R.....2	57.11.4332	3.3 kOhm	5% 0.25W	MF		
	R.....3	57.11.4104	100 kOhm	5% 0.25W	MF		
	R.....4	57.11.4330	33 Ohm	5% 0.25W	MF		
	R.....5	57.11.4103	10 kOhm	5% 0.25W	MF		
	R.....6	57.11.4333	33 kOhm	5% 0.25W	MF		
	R.....7	57.11.4103	10 kOhm	5% 0.25W	MF		
	R.....8	57.11.4472	4.7 kOhm	5% 0.25W	MF		
	R.....9	57.11.4684	680 kOhm	5% 0.25W	MF		
	R....15	57.11.4104	100 kOhm	2% 0.25W	MF		
	R....16	57.11.4104	100 kOhm	2% 0.25W	MF		
	R....17	57.11.4104	100 kOhm	2% 0.25W	MF		
	R....18	57.11.4104	100 kOhm	2% 0.25W	MF		
	R....19	57.11.4103	10 kOhm	2% 0.25W	MF		
	R....20	57.11.4103	10 kOhm	2% 0.25W	MF		
	R....21	57.11.4103	10 kOhm	5% 0.25W	MF		
	R....22	57.11.4334	330 kOhm	5% 0.25W	MF		
	R....23	58.01.9104	100 kOhm	10% 0.5 W	PMG	trimming resistor	
	R....24	57.92.1271	6.5 Ohm		PTC	Philips Nr.2322 662 12711	
	R....25	57.11.4101	100 Ohm	5% 0.25W	MF		
	R....26	57.92.1271	6.5 Ohm		PTC	Philips Nr.2322 662 12711	
	R....27	57.11.4332	3.3 kOhm	5% 0.25W	MF		
	R....29	57.11.4000	0 Ohm				
	R....30	57.11.4000	0 Ohm				

(1) 89/01/13 A1 VCA 1.010.110.50 replaced by 1.911.290.00
(2) 90/01/17 A1 VCA 1.911.290.00 replaced by 1.911.290.81

CER=Ceramic, PE=Polyester, SAL=Solid Aluminium
MF=Metal Film, PMG=Cermet

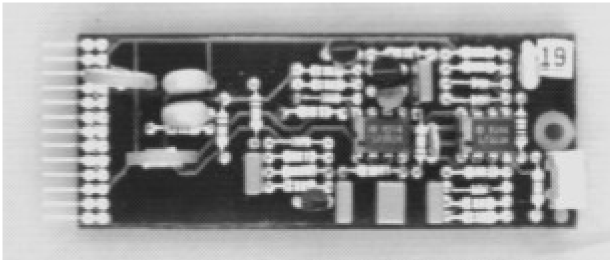
MANUFACTURER: Ex=Exar, NE=NEC, Ph=Philips, Ra=Raytheon,
Sig=Signetics, St=Studer,

1.914.528.00	VCA UNIT / 3 CONTROL	SE 86/10/2800
1.914.528.00	VCA UNIT / 3 CONTROL	SE 89/01/1301
1.914.528.00	VCA UNIT / 3 CONTROL	WY 90/01/1702

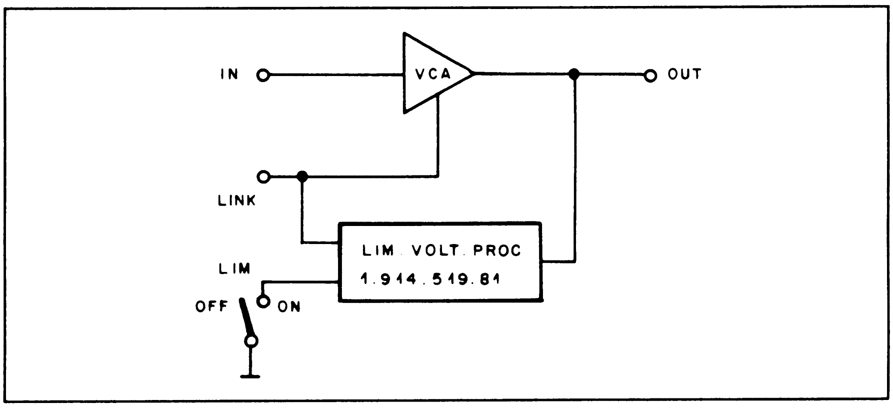
2.1.9 Limiter Voltage Processor

1.914.519

Together with this voltage processor, the VCAs 1.914.518/528 can perform as signal level limiters.



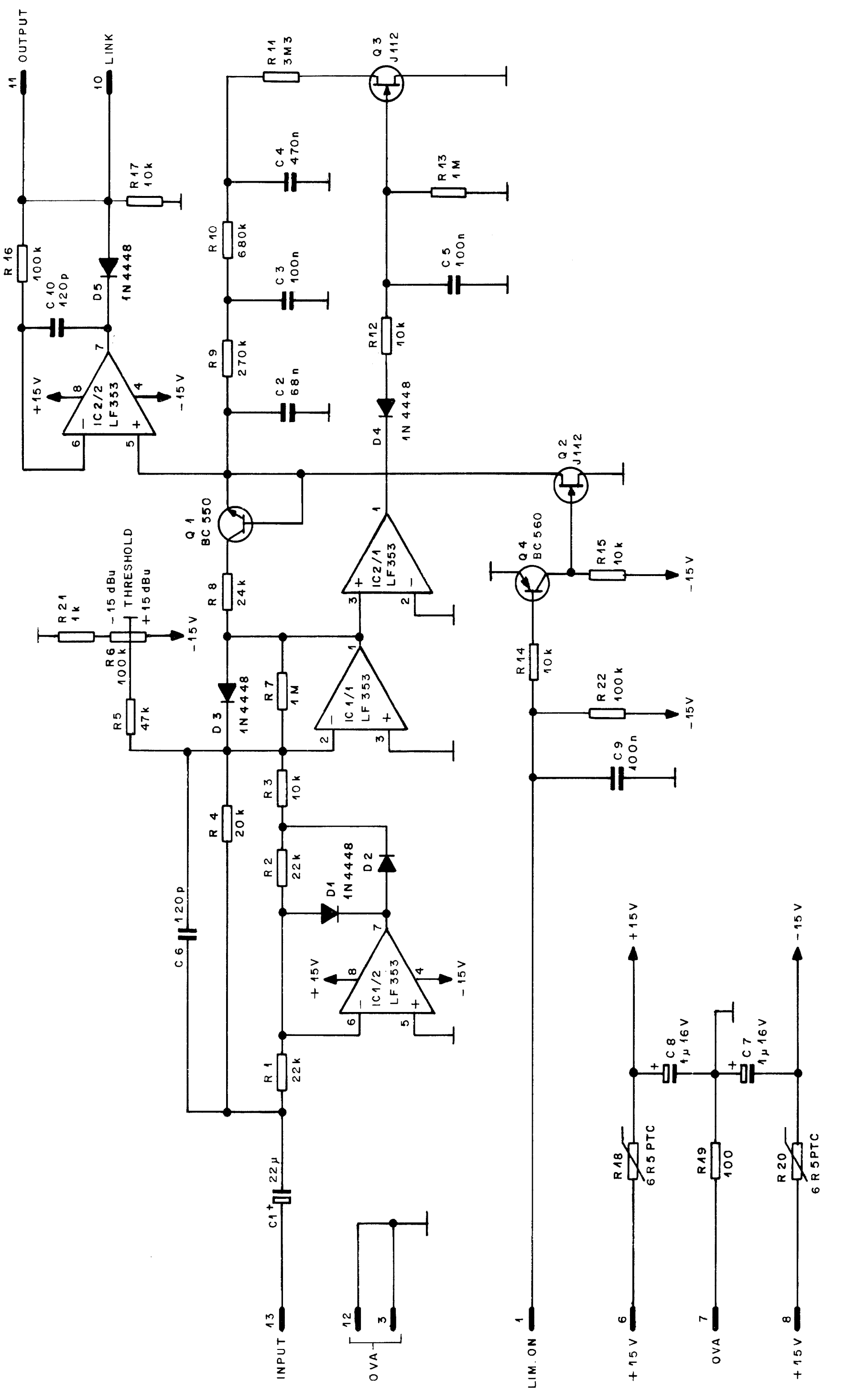
The processor's threshold can be set within a wide range of levels, so that limiting action becomes effective at a desired level within a range of –15 to +15 dBu. Limiting action attacks within 1 ms, whereas release can vary from 50 ms to 5 s, depending on the program's energy content. This means that no audible "pumping" action – which is often associated with such a device – will occur. After the cessation of loud passages, amplification will recover only slowly. For stereo applications, a two-channel set-up (VCAs and voltage processor) can be linked, so that identical amounts of gain reduction will take place simultaneously in both channels.

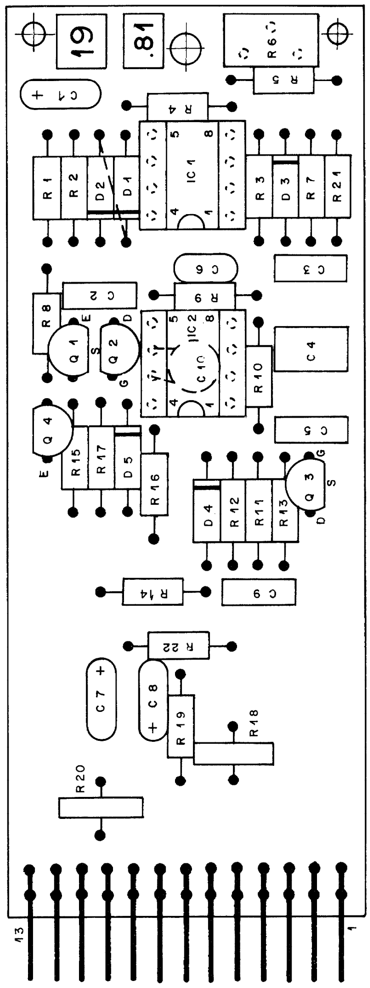


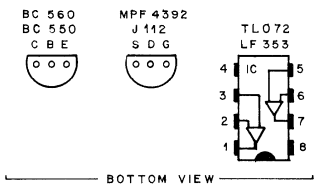
The input of the voltage processor has to be wired to the output of the VCA. The processor's output, when connected to the VCA's control terminal, will effect the necessary gain reduction so that a limiting characteristic is obtained. The limiting threshold is adjustable in a wide range. Remote on/off switching of the limiter function is possible.

Technical Specifications

Limiter:	Input impedance	**³ 10 kW**
	Max. input level	**+20 dBu**
	Frequency range	**30 Hz...16 kHz**
	Output voltage	**0...–13 V_{DC}**
	Threshold level	**–15 dBu...+15 dBu**
	Attack time	**1 ms**
	Release time	**50 ms...5 s,** program-depending
	Compression ratio	**20:1**, in conjunction with a VCA
Supply:		**±15 V** (10 mA)
Dimensions:		**MS-card,** 34 × 85 mm
Ordering Information:		Limiter voltage processor 1.914.519.xx







CIS	PIN	EURO 32 PIN ⓐ	ⓑ	ⓒ	ⓓ
INPUT	13	1	7	21	27
⊥ (INP./OUTP.)	12	2	8	22	28
OUTPUT	11	3	9	23	29
LINK	10	17	17	18	18
	9				
− 15 V	8				
0V	7				
+ 15 V	6				
	5				
	4				
⊥ (LIM ON)	3	4	10	24	30
	2	5	11	25	31
LIM ON	1	6	13	26	32

⓪ 16.9.91 Ge	○	○	○	○
STUDER REGENSDORF ZÜRICH	LIMITER VOLTAGE PROCESSOR		1.914.519.81	

MSC LIMITER

Ad	..POS..	...REF.No...	DESCRIPTION		MANUFACTURER
	C.....1	59.26.1220	22 uF	SAL	
	C.....2	59.06.0683	68 nF	PE	
	C.....3	59.06.5104	100 nF	PE	
	C.....4	59.06.5474	470 nF	PE	
	C.....5	59.06.5104	100 nF	PE	
	C.....6	59.34.4121	120 pF	CER	
	C.....7	59.26.9109	1 uF	SAL	
	C.....8	59.26.9109	1 uF	SAL	
	C.....9	59.06.5104	100 nF	PE	
	C....10	59.34.4121	120 pF	CER	
	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
	IC....1	50.09.0101	TL 072	dual op. amp. low noise	NS,TI
	IC....2	50.09.0101	TL 072	dual op. amp. low noise	NS,TI
	P.....1	54.01.0273	13 PIN	CIS	
	Q.....1	50.03.0497	BC 550	NPN IC>100mA, B>100	any
	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	50.03.0496	BC 560	PNP IC>100mA, B>100	any
	R.....1	57.11.4223	22 kOhm	2% 0.25W MF	
	R.....2	57.11.4223	22 kOhm	2% 0.25W MF	
	R.....3	57.11.4103	10 kOhm	2% 0.25W MF	
	R.....4	57.11.3203	20 kOhm	2% 0.25W MF	
	R.....5	57.11.4473	47 kOhm	5% 0.25W MF	
	R.....6	58.01.9104	100 kOhm	10% 0.50W PMG trimming resistor	
	R.....7	57.11.4106	1 MOhm	5% 0.25W MF	
	R.....8	57.11.3243	24 kOhm	5% 0.25W MF	
	R.....9	57.11.4274	270 kOhm	5% 0.25W MF	
	R....10	57.11.4684	680 kOhm	5% 0.25W MF	
	R....11	57.11.4335	3.3 MOhm	5% 0.25W MF	
	R....12	57.11.4103	10 kOhm	5% 0.25W MF	
	R....13	57.11.4105	1 MOhm	5% 0.25W MF	
	R....14	57.11.4103	10 kOhm	5% 0.25W MF	
	R....15	57.11.4103	10 kOhm	5% 0.25W MF	
	R....16	57.11.4104	100 kOhm	5% 0.25W MF	
	R....17	57.11.4103	10 kOhm	5% 0.25W MF	
	R....18	57.92.1271	6.5 Ohm	PTC	Philips Nr.2322 662 12711
	R....19	57.11.4101	100 Ohm	5% 0.25W MF	
	R....20	57.92.1271	6.5 Ohm	PTC	Philips Nr.2322 662 12711
	R....21	57.11.4102	1 kOhm	5% 0.25W MF	
	R....22	57.11.4104	100 kOhm	5% 0.25W MF	

CER=Ceramic, PE=Polyester, SAL=Solid Aluminium
MF=Metal Film, PMG=Cermet

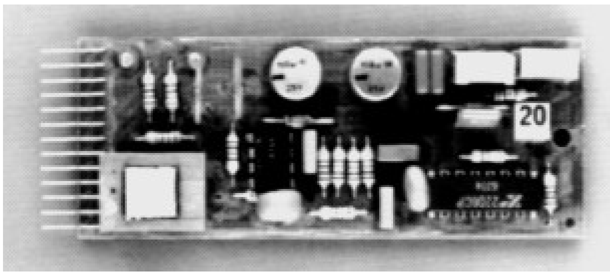
MANUFACTURER: Mot=Motorola, NS=National Semiconductors
Six=Siliconix, TI=Texas Instruments

1.914.519.81 LIM VOLTAGE PROCESSOR WM 86.21.1100

2.1.10 1900 Hz Signal Generator

1.914.520

This signal generator produces a stable frequency of 1900 Hz to establish communication on outside broadcast lines, as specified in the EBU/CCIR recommendations.



Technical Specifications

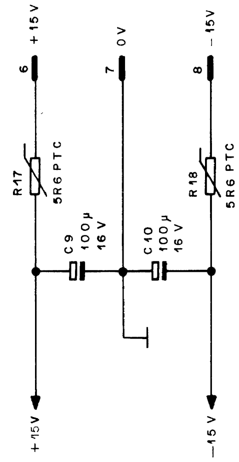
Frequency	**1900 Hz** (adjustable)
Distortion	**< 1%**
Output level	**–15...+6 dBu** (adjustable)
Output	**balanced and floating**
Output Impedance, out 1	**< 15 W**
out 2	**600 W**
Minimum load	**200 W**

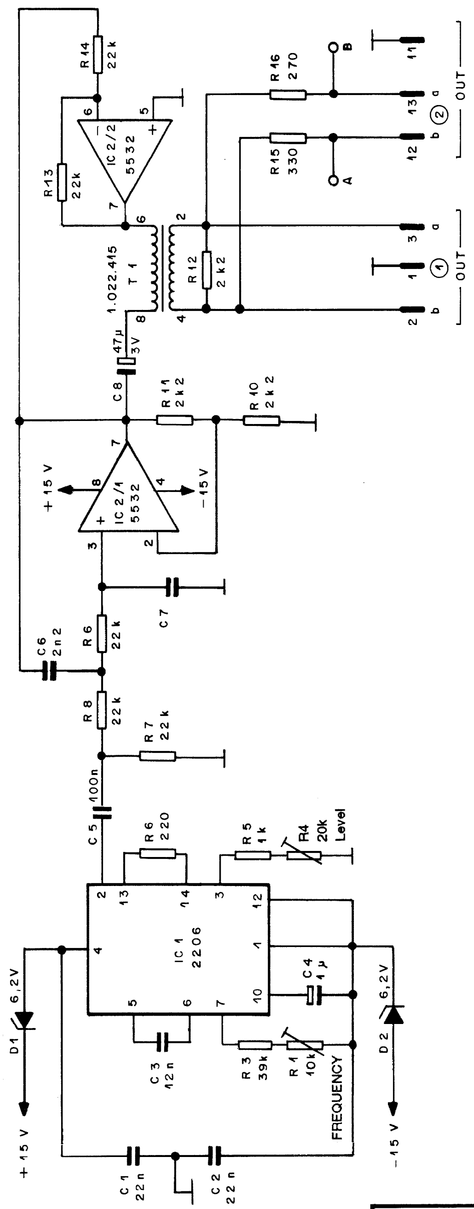
Supply: **±15 V** (20 mA)

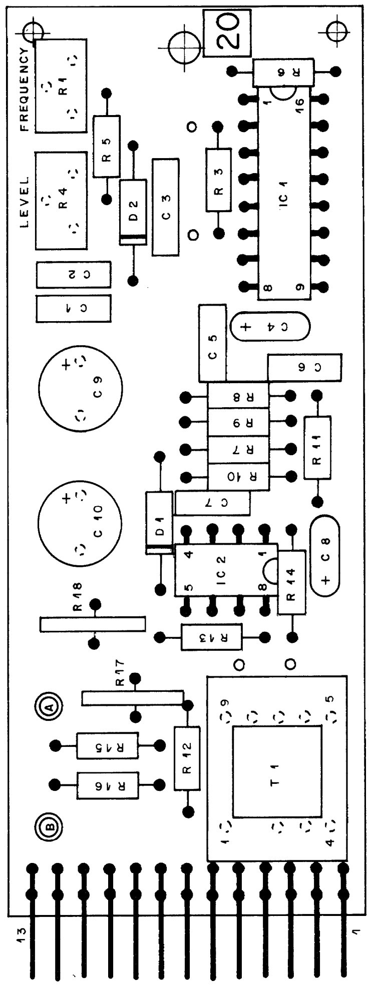
Dimensions: **MS-card,** 34 × 85 mm

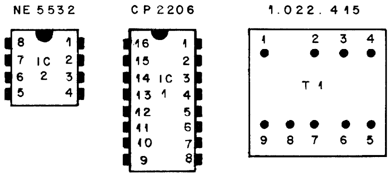
Ordering Information: 1900 Hz signal generator 1.914.520.xx

MSC 1900 HZ GENERATOR









CIS		PIN	EURO 32 PIN (a)	(b)	(c)	(d)
OUT a	2	13	1	7	21	27
OUT b	2	12	2	8	22	28
⊥		11	3	9	23	29
		10				
		9				
– 15 V		8	14			
0 V		7	15			
+ 15 V		6	16			
		5				
		4				
OUT a	1	3	4	10	24	30
OUT b	1	2	5	11	25	31
⊥		1	6	13	26	32

0 18.9.91 Ge	0	0	0	0

STUDER
REGENSDORF
ZÜRICH

SIGNAL
GENERATOR (NR. 20)

1.914.520.00

MSC 1900 HZ GENERATOR

Ad	POS.	REF.No.	DESCRIPTION			MANUFACTURER
	C.....1	59.06.0223	0,022µF		PE	
	C.....2	59.06.0223	0,022µF		PE	
	C.....3	59.99.0220	0,012µF		CN 40C 123J Centralab	
	C.....4	59.26.9109	1µF	40V	B37 983-J-5123-J Siemens SAL	
	C.....5	59.06.0104	0,1µF		C062 5123 J5 65 CA Kemet PE	
	C.....6	59.06.5222	2200pF		PE	
	C.....7	59.06.5222	2200pF		PE	
	C.....8	59.26.0470	47µF	6,3V	SAL	
	C.....9	59.22.4101	100µF	16V	EL	
	C....10	59.22.4101	100µF	16V	EL	
	D.....1	50.04.1511	6,2V	1,3W Zener		
	D.....2	50.04.1511	6,2V	1,3W Zener		
	IC....1	50.11.0108	2206CP	DIL 16		EX
	IC....2	50.09.0105	NE5532	DIP 8		SIG/EX
	P	54.01.0273	13P	CIS		AMP
	R.....1	58.01.9103	10kΩ	TRIM		
	R.....3	57.11.4393	39kΩ			
	R.....4	58.01.9203	20kΩ	TRIM		
	R.....5	57.11.4102	1kΩ			
①	R.....6	57.11.4221	220Ω			
	R.....7	57.11.4223	22kΩ			
	R.....8	57.11.4223	22kΩ			
	R.....9	57.11.4223	22kΩ			
	R....10	57.11.4222	2,2kΩ			
	R....11	57.11.4222	2,2kΩ			
	R....12	57.11.4222	2,2kΩ			
	R....13	57.11.4223	22kΩ			
	R....14	57.11.4223	22kΩ			
①	R....15	57.11.4331	330Ω			
①	R....16	57.11.4271	270Ω			
	R....17	57.99.0209	5,6Ω	2322 662 91005		PH
	R....18	57.99.0209	5,6Ω	2322 662 91005		PH
	T.....1	1.022.415.00	1:2			ST

PE=Polyester, SAL=Solid Aluminium, EL=Electrolytic

MANUFACTURER: EX=Exar, SIG=Signetics, ST=Studer, PH=Philips

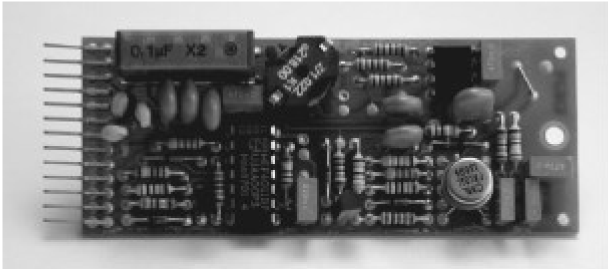
1.914.520.00 SIGNAL GENERATOR (Nr. 20) P. Casutt 14/07/83

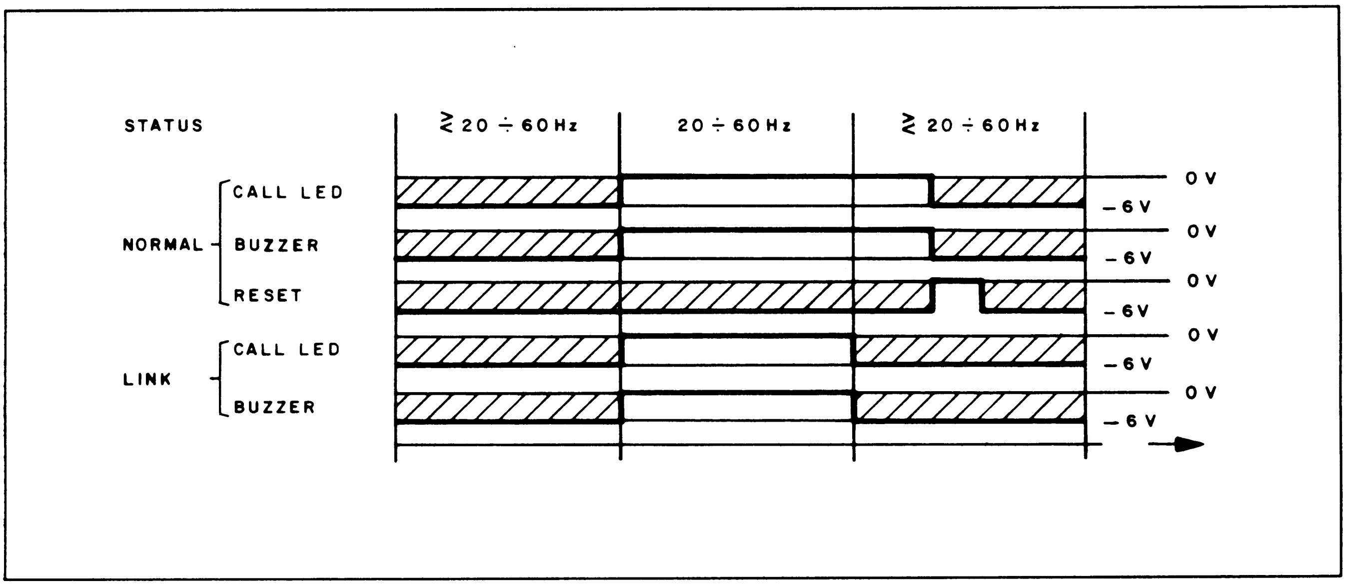
1.914.520.00 SIGNAL GENERATOR (Nr. 20) ① FRI 01/09/83

END
→

2.1.11 Call Decoder 20...60 Hz 1.914.521

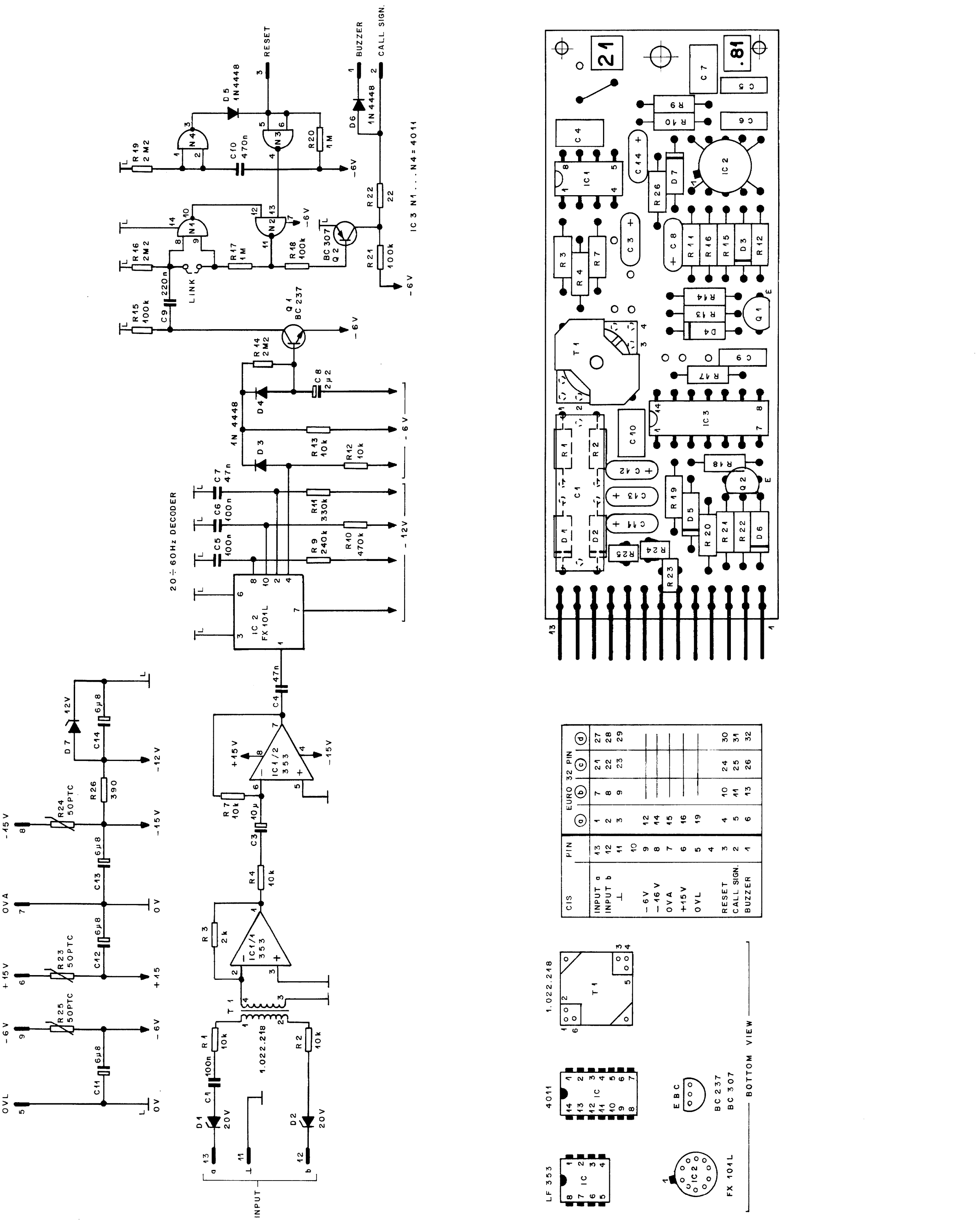
This assembly features a call receiver for the ringing frequency on telephone lines (20...60 Hz). The receiver can activate an optical and/or an acoustical signal generated by an external buzzer (not supplied). In normal mode the buzzer will be on until reset. In linked mode the signal lasts only as long as a call is detected.





Technical Specifications

Input:		**balanced, floating;** no DC
	Impedance	**> 20 kW**
	Frequency	**20...60 Hz**
	Min. level	**17** $\mathbf{V_{rms}}$
	Nominal level	**70** $\mathbf{V_{rms}}$
Supply:		**+15 V** (5 mA); **–15 V** (10 mA); **–6 V** (2 mA)
Dimensions:		**MS-card,** 34 × 85 mm
Ordering Information:		Call decoder 20...60 Hz 1.914.521.xx



⓪ 21.9.91 Ge	○	○	○	○
STUDER REGENSDORF ZÜRICH	20 ÷ 60 Hz DECODER (NR. 21)		1.914.521.00	

MSC CALL DECODER

Ad	POS.	REF.No.	DESCRIPTION			MANUFACTURER
	C.....1	59.99.0453	0,1µF	250V Rifa	MP	
	C.....3	59.26.2100	10µF	16V	SAL	
	C.....4	59.06.5474	0,47µF		PE	
	C.....5	59.06.5104	0,1µF		PE	
	C.....6	59.06.5104	0,1µF		PE	
	C.....7	59.06.5474	0,47µF		PE	
	C.....8	59.26.5229	2,2µF	25V	SAL	
	C.....9	59.06.0224	0,22µF		PE	
	C....10	59.06.5474	0,47µF		PE	
	C....11	59.26.2689	6,8µF	16V	SAL	
	C....12	59.26.2689	6,8µF	16V	SAL	
	C....13	59.26.2689	6,8µF	16V	SAL	
	C....14	59.26.2689	6,8µF	16V	SAL	
	D.....1	50.04.1109	20V	400mW Zener		
	D.....2	50.04.1109	20V	400mW Zener		
	D.....3	50.04.0125	1N4448			
	D.....4	50.04.0125	1N4448			
	D.....5	50.04.0125	1N4448			
	D.....6	50.04.0125	1N4448			
	D.....7	50.04.1117	12V	400mW Zener		
	IC....1	50.09.0101	LF353N	DIP 8		
	IC....2	50.07.0032	FX101L			CML
①	IC....3	50.07.1011	4011BPC	DIL 14		
	P	54.01.0273	13P	CIS		
	Q.....1	50.03.0436	BC237B	NPN		
	Q.....2	50.03.0515	BC307B	PNP		
	R.....1	57.11.4103	10kΩ			
	R.....2	57.11.4103	10kΩ			
①	R.....3	57.11.3202	2kΩ			
	R.....4	57.11.4103	10kΩ			
	R.....7	57.11.4103	10kΩ			
②	R.....9	57.11.3244	240kΩ			
	R....10	57.11.4474	470kΩ			
	R....11	57.11.4334	330kΩ			
	R....12	57.11.4103	10kΩ			
	R....13	57.11.4103	10kΩ			
①	R....14	57.11.5225	2,2MΩ			
	R....15	57.11.4104	100kΩ			
①	R....16	57.11.5225	2,2MΩ			
	R....17	57.11.4105	1MΩ			
	R....18	57.11.4104	100kΩ			
①	R....19	57.11.5225	2,2MΩ			
	R....20	57.11.4105	1MΩ			
	R....21	57.11.4104	100kΩ			
	R....22	57.11.4220	22Ω			
	R....23	57.99.0206	50Ω	PTC	2322 660 91008 Philips	
	R....24	57.99.0206	50Ω	PTC	Typ YS 822 ITT	
	R....25	57.99.0206	50Ω	PTC	PTH 60BD 470M 050 Murata	
	R....26	57.11.4391	390Ω			
	T.....1	1.022.218.00	1:1			ST

PE=Polyester, SAL=Solid Aluminium

MANUFACTURER: CML=Consumer Microcircuit LTD, ST=Studer

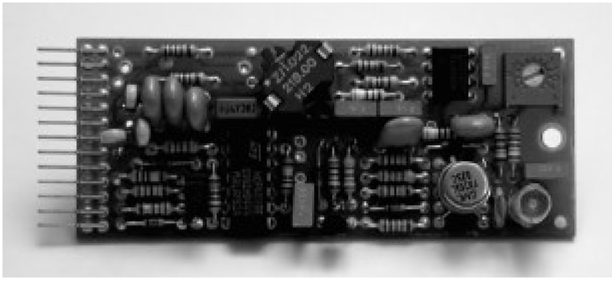
1.914.521.00	20÷60HZ DECODER (Nr. 21)	FRI 23/08/83
1.914.521.00	20÷60HZ DECODER (Nr. 21)	① FRI 01/09/83
1.914.521.00	20÷60HZ DECODER (Nr. 21)	② FRI 18/06/84

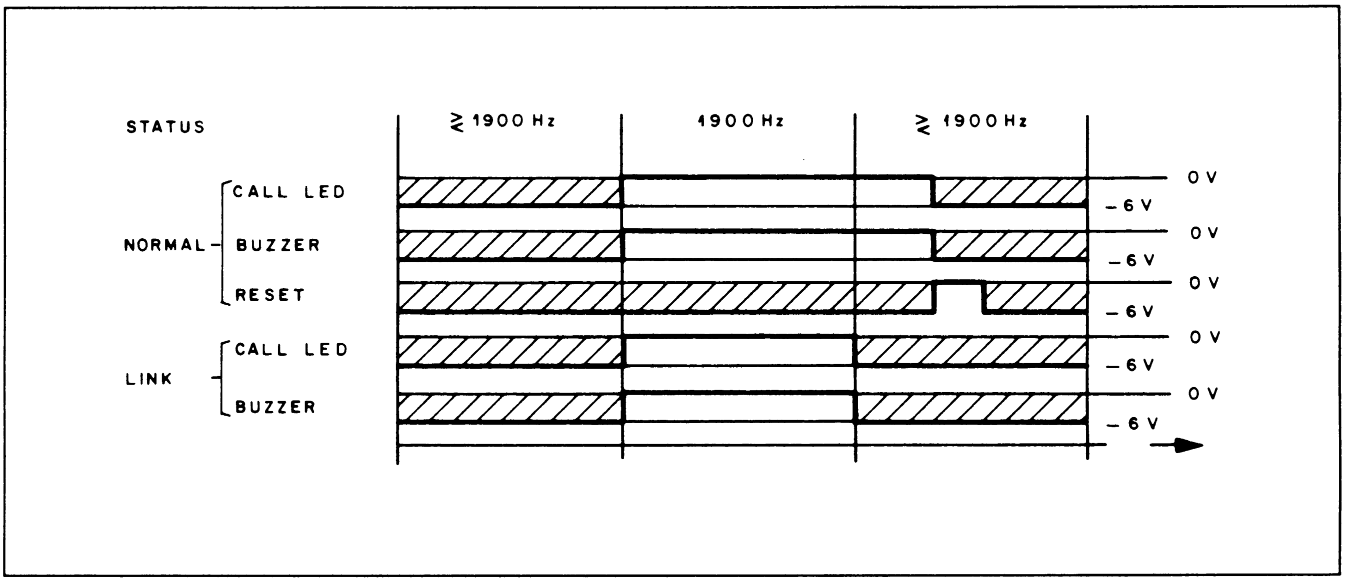
END

➔

2.1.12 Call Decoder 1900 Hz 1.914.522

This card contains a call receiver for the standardized 1900 Hz call frequency on OB lines. It is tuned to respond to 1900 Hz ±1 %. The receiver can be switched either to activate an optical or an acoustical signal for the duration of the 1900 Hz call (linked mode), or the acoustical signal can be selected to remain activated until reset (normal mode).
The acoustical signal can be generated by an external buzzer (not supplied).

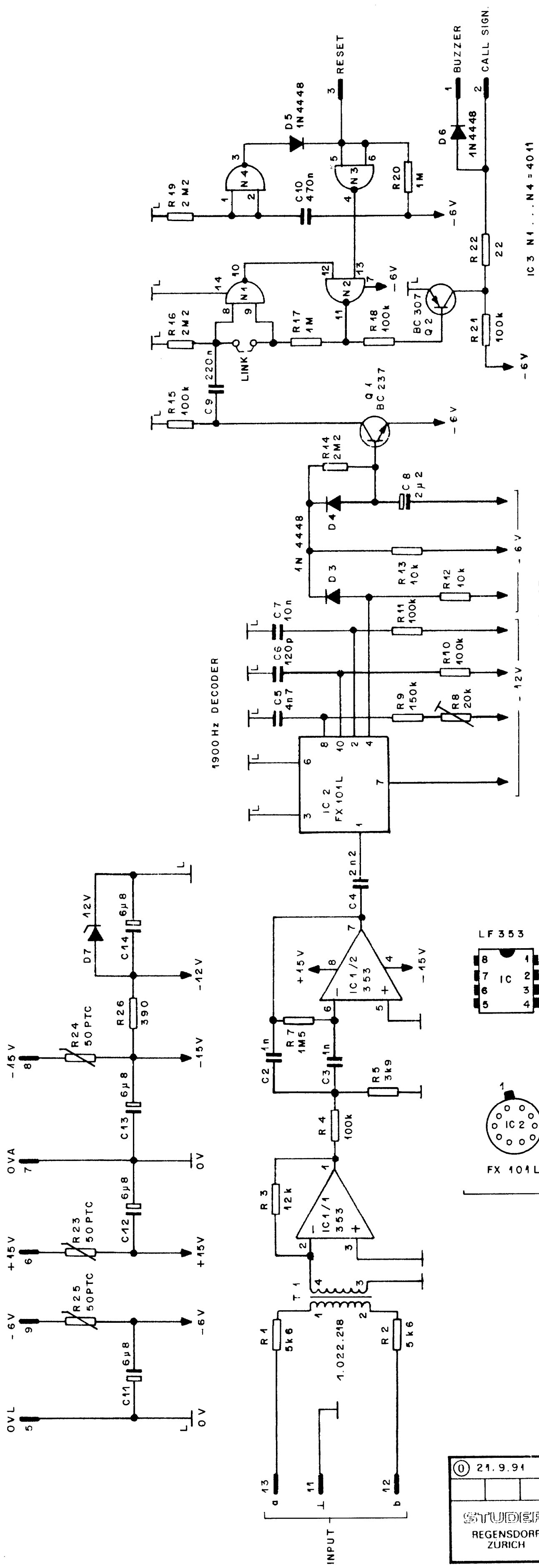


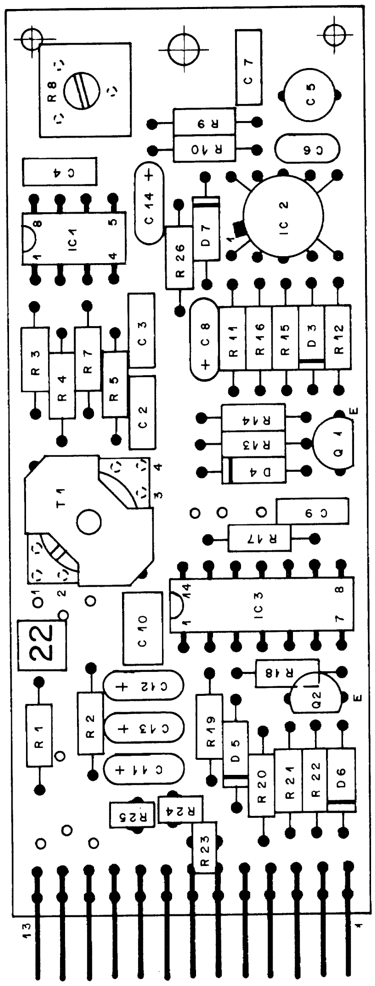


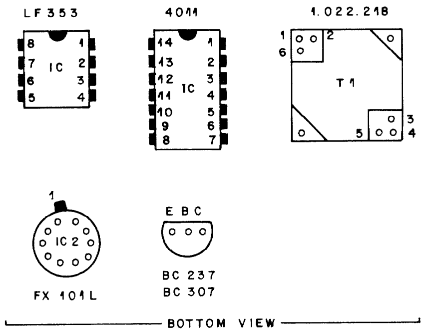
Technical Specifications

Input:	**balanced, floating;** no DC
Frequency	**1900 Hz,** ±1%
Impedance	> **10 kW**
Min. level	**–30 dBu**
Nominal level	**+24 dBu**
Supply:	**+15 V** (5 mA); **–15 V** (10 mA); **–6 V** (2 mA)
Insulation rating	**500 V_{DC}**
Dimensions:	**MS-card,** 34 × 85 mm
Ordering Information:	Call decoder 1900 Hz 1.914.522.xx

1900Hz CALL-DECODER MSC







CIS	PIN	EURO 32 PIN (a)	(b)	(c)	(d)
INPUT a	13	1	7	21	27
INPUT b	12	2	8	22	28
⊥	11	3	9	23	29
	10				
– 6 V	9	12	—	—	—
– 15 V	8	14	—	—	—
0 V A	7	15	—	—	—
+15 V	6	16	—	—	—
0 V L	5	19	—	—	—
	4				
RESET	3	4	10	24	30
CALL SIGN.	2	5	11	25	31
BUZZER	1	6	13	26	32

(0) 21.9.91

STUDER REGENSDORF ZURICH

1900 Hz DECODER (NR.22)

1.914.522.00

Call Decoder 1900 Hz 1.914.522.00 (1)

Idx.	Pos.	Part No.	Qty.	Type/Val.	Description
0	C 2	59.06.0102		1n0	PETP, 63V, 10%, RM5
0	C 3	59.06.0102		1n0	PETP, 63V, 10%, RM5
0	C 4	59.06.0222		2n2	PETP, 63V, 10%, RM5
0	C 5	59.05.2472		4n7	PP, 2.5%, 63V
0	C 6	59.34.4121		120p	CER 63V, 5%, N750
0	C 7	59.06.0103		10n	PETP, 63V, 10%, RM5
0	C 8	59.26.5229		2u2	SAL, 20%, 25V
0	C 9	59.06.0224		220n	PETP, 63V, 10%, RM5
0	C 10	59.06.5474		470n	PETP, 63V, 5%, RM5
0	C 11	59.26.2689		6u8	SAL 16V 20%
0	C 12	59.26.2689		6u8	SAL 16V 20%
0	C 13	59.26.2689		6u8	SAL 16V 20%
0	C 14	59.26.2689		6u8	SAL 16V 20%
0	D 3	50.04.0125		1N4448	75V, 150mA, 4ns, DO-35
0	D 4	50.04.0125		1N4448	75V, 150mA, 4ns, DO-35
0	D 5	50.04.0125		1N4448	75V, 150mA, 4ns, DO-35
0	D 6	50.04.0125		1N4448	75V, 150mA, 4ns, DO-35
0	D 7	50.04.1117		12V	Zener, 5%, 0.5W, DO-35
0	IC 1	50.09.0101		TL072	Dual op-amp biFET
0	IC 2	50.07.0032		FX101	IC FX-101 L, ,A
1	IC 3	50.07.1011		4011	Quad 2-inp NAND
0	P 1	54.01.0273		13p	Stecker CIS parallelsteck
0	Q 1	50.03.0515		BC307B	PNP 100mA 45V
0	Q 2	50.03.0436		BC237B	NPN 100mA 45V
0	R 1	57.11.3562		5k6	MF, 1%, 0207
0	R 2	57.11.3562		5k6	MF, 1%, 0207
0	R 3	57.11.3123		12k	MF, 1%, 0207
0	R 4	57.11.3104		100k	MF, 1%, 0207
0	R 5	57.11.3392		3k9	MF, 1%, 0207
0	R 7	57.11.5155		1M5	MF, 5%, 0207
0	R 8	58.01.8203		20k	Cermet, 10%, 0.5W, horizontal
0	R 9	57.11.3154		150k	MF, 1%, 0207
0	R 10	57.11.3104		100k	MF, 1%, 0207
0	R 11	57.11.3104		100k	MF, 1%, 0207
0	R 12	57.11.3103		10k	MF, 1%, 0207
0	R 13	57.11.3103		10k	MF, 1%, 0207
0	R 14	57.11.5225		2M2	MF, 5%, 0207
0	R 15	57.11.3104		100k	MF, 1%, 0207
1	R 16	57.11.5225		2M2	MF, 5%, 0207
0	R 17	57.11.3105		1M0	MF, 1%, 0207
0	R 18	57.11.3104		100k	MF, 1%, 0207
1	R 19	57.11.5225		2M2	MF, 5%, 0207
0	R 20	57.11.3105		1M0	MF, 1%, 0207
0	R 21	57.11.3104		100k	MF, 1%, 0207
0	R 22	57.11.3220		22R	MF, 1%, 0207
0	R 23	57.99.0206		50R	PTC, 25V, 0.5W
0	R 24	57.99.0206		50R	PTC, 25V, 0.5W
0	R 25	57.99.0206		50R	PTC, 25V, 0.5W
0	R 26	57.11.3391		390R	MF, 1%, 0207
0	T 1	1.022.218.00		1 : 1	EINGANGSTRAFO 1 : 1

Idx.	Pos.	Part No.	Qty.	Type/Val.	Description

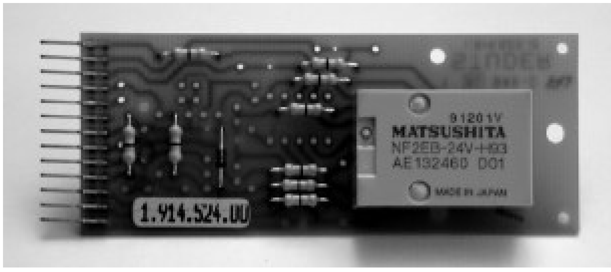
End of List

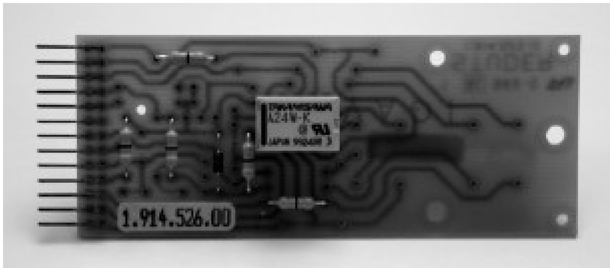
Comments:

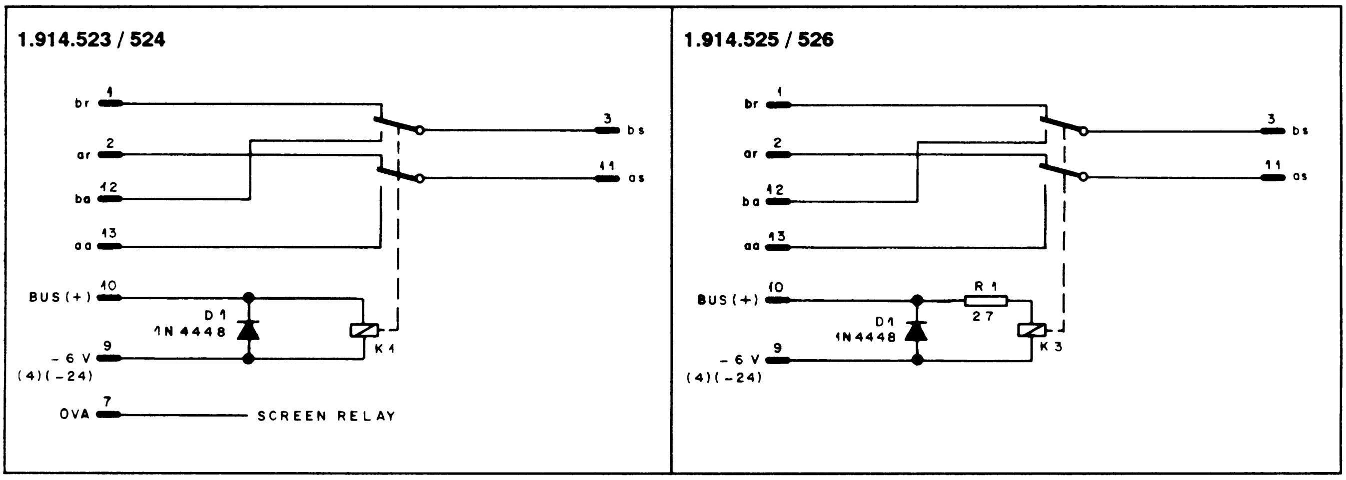
(01) IC3, R16, R19 changed

2.1.13 Relay Sub-Cards 1.914.523/524/525/526

Audio signal routing or enabling/disabling of certain circuit sections is often effected best using relays. The Modular Sub-Card System, therefore, offers a selection of four relays on individual circuit boards. Because only one relay can be accommodated on one MS-Card, several cards (or a card from the Euro-card range) will be required if more complex switching has to be realized.







The relays offer double pole/double throw switching with non-shorting contacts, and coils rated for either 6 V_{DC} or 24 V_{DC} operation. A diode is wired across the relay coil in all versions to suppress interfering back-EMF when de-energizing the relay.
For studio applications where the mechanical click produced by the relay's armature is objectionable, a low-noise type is available.

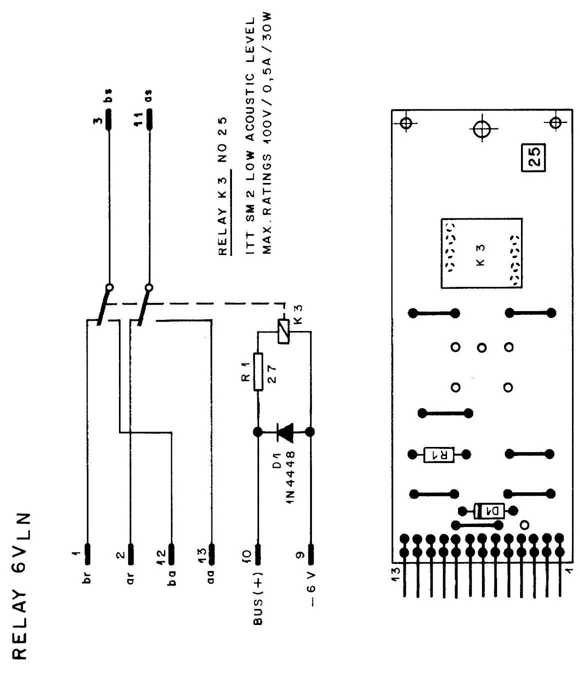
No.	Coil	Contact Rating	
1.914.523	6 V_{DC} / 137 Ω	220 V / 2 A / 60 W	
1.914.524	24 V_{DC} / 2.0 kΩ	220 V / 2 A / 60 W	
* 1.914.525	5 V_{DC} / 135 Ω	100 V / 0.5 A / 30 W	(R1 = 27 Ω for 6 V operation)
* 1.914.526	24 V_{DC} / 2.6 kΩ	100 V / 0.5 A / 30 W	(R1 = 0 Ω)
* Low-noise relays			

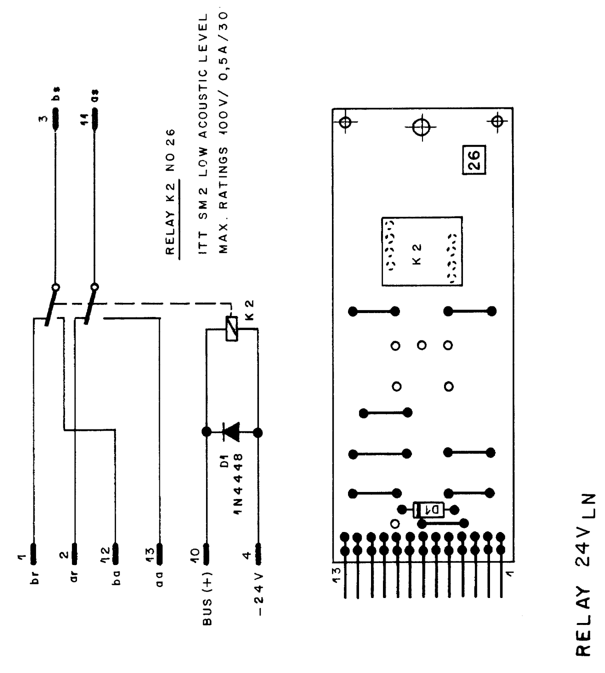
Dimensions: **MS-card,** 34 × 85 mm

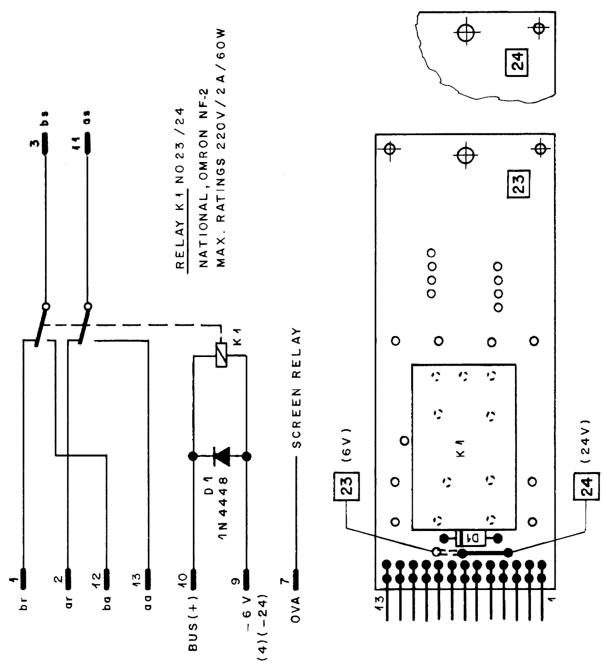
Ordering Information:

MSC relay 6 V_{DC}	1.914.523.xx
MSC relay 24 V_{DC}	1.914.524.xx
MSC relay 6 V_{DC}; low-noise	1.914.525.xx
MSC relay 24 V_{DC}; low-noise	1.914.526.xx

MSC RELAYS





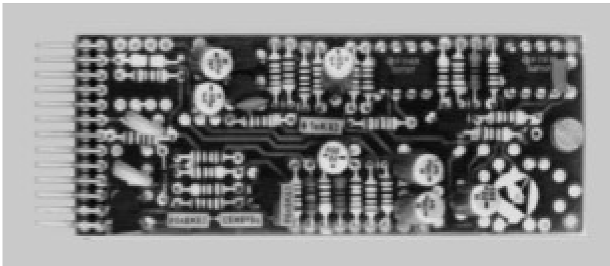


CIS	PIN	EURO 32 P (a)	(b)	(c)	(d)
aa	13	1	7	21	27
ba	12	2	8	22	28
as	11	3	9	23	29
BUS	10	17	17	18	18
-6V	9	12			
	8				
	7				
	6				
	5				
-24 V	4	20			
bs	3	4	10	24	30
ar	2	5	11	25	31
br	1	6	13	26	32

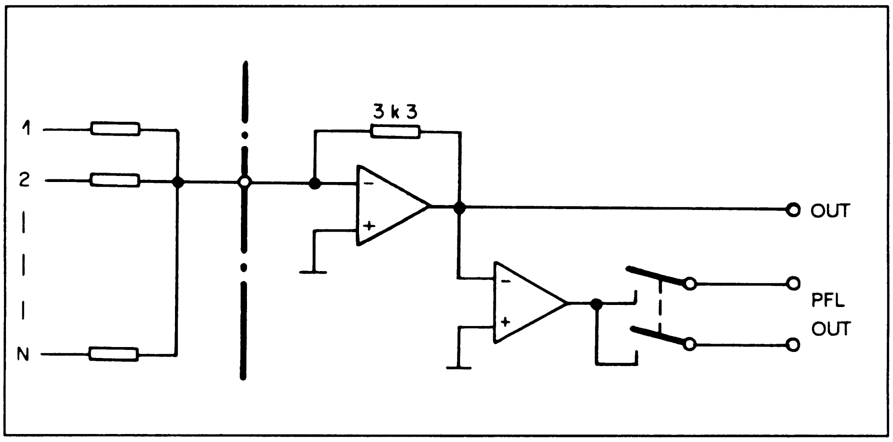
(0) 2.10.91		
STUDER REGENSDORF ZÜRICH	RELAY BOARD 2U	24V LN 1.914.526.00
		6 V LN 1.914.525.00
		24V 1.914.524.00
		6 V 1.914.523.00

2.1.14 0-Ω Input Amplifier with PFL Facility 1.914.530

This amplifier with its characteristic input impedance of less than 1 Ω finds its application as a summing amplifier. A multitude of unbalanced sources can thus be mixed with a high degree of effective isolation between the individual inputs.

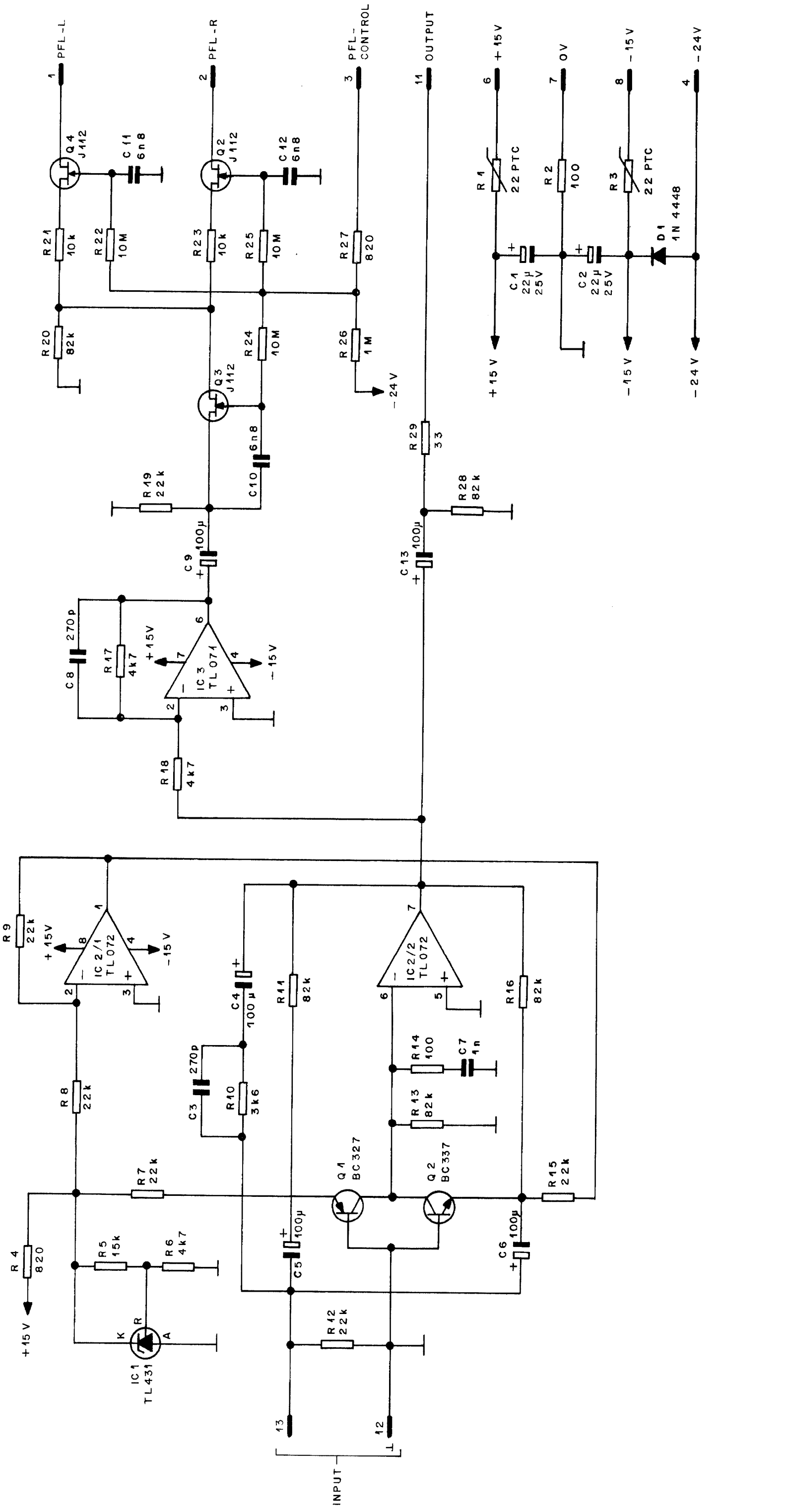


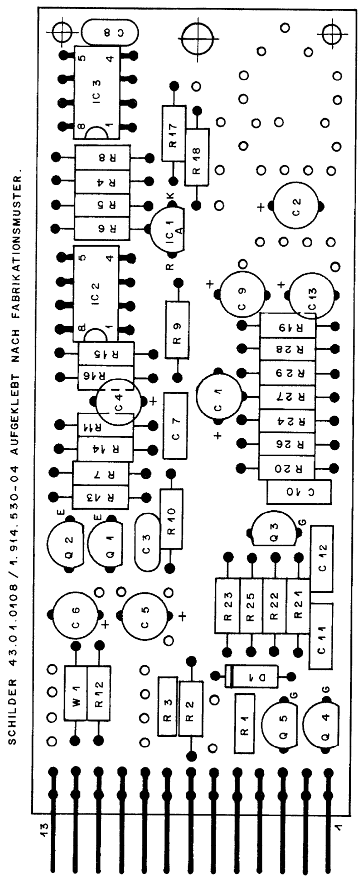
When using 3.3 kΩ resistors as combining (mixing) resistors in series with each source feeding the summing bus, gain will be unity (0 dB), i.e., the amplifier's output level will be equal to the level of the signal source ahead of the combining resistor. The amplifier's output is unbalanced, with low impedance. Additional outputs for monitoring (or pre-listening) can be activated via solid-state switches by remote control.



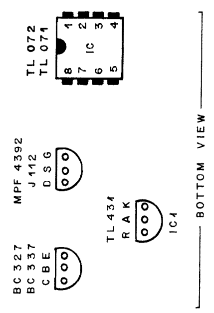
Technical Specifications

Input:	Max. current	**2.5 mA_{rms}** for max. output swing
	Current for 0 dBu	**234.2 µA;** 0 dBu output (≙ 3.3 kΩ at the input for unity gain)
Output:	Impedance	**33 W**
	Max. output swing	**+20 dBu**
	Load	**³ 600 W** @ max. output swing
	Frequency response	**±0.3 dBu,** 30 Hz...16 kHz
	THD	< –75 dB, 30 Hz...16 kHz
	Noise voltage at the output	**–110 dBu**, input terminated with 3.3 kΩ, bandwidth 23 kHz
	Noise figure, 12 inputs	**F < 2 dB** ≙ R_S = 275 Ω
Supply:		**+15 V** (11 mA idling); **–15 V** (7 mA idling)
Dimensions:		**MS-card,** 34 × 85 mm
Ordering Information:		Zero-Ω input amplifier (PFL facility) 1.914.530.xx





CIS	PIN	EURO 32 PIN (a)	(b)	(c)	(d)
INPUT	13	1	7	21	27
0 V (INPUT)	12	2	8	22	28
OUTPUT	11	3	9	23	29
	10				
	9				
− 15 V	8	14			
0 V	7	15			
+ 15 V	6	16			
	5				
− 24 V	4	20			
PFL CONTR.BUS	3	4	10	24	30
PFL RIGHT BUS	2	5	11	25	31
PFL LEFT BUS	1	6	13	26	32



⓪ 24.9.91 Ge	○	○	○	○
STUDER REGENSDORF ZÜRICH	0-Ω-INPUT WITH PFL	ESE	1.914.530.00	

MSC 0Ω-INPUT

Ad	..POS..	...REF.No...	DESCRIPTION			MANUFACTURER
	C.....1	59.22.5220	22 uF	25V	EL	
	C.....2	59.22.5220	22 uF	25V	EL	
	C.....3	59.34.4271	270 pF		CER	
	C.....4	59.22.3101	100 uF	10V	EL	
	C.....5	59.22.3101	100 uF	10V	EL	
	C.....6	59.22.3101	100 uF	10V	EL	
	C.....7	59.06.0102	1 nF		PE	
	C.....8	59.34.4271	270 pF		CER	
	C.....9	59.22.3101	100 uF	10V	EL	
	C....10	59.06.0682	6.8 nF		PE	
	C....11	59.06.0682	6.8 nF		PE	
	C....12	59.06.0682	6.8 nF		PE	
	C....13	59.22.3101	100 uF	10V	EL	
	D.....1	50.04.0125	1N4448			any
	IC....1	50.10.0106	TL431CLP	voltage regulator		TI, Mot
	IC....2	50.09.0101	TL072	dual op.amp.		TI
	IC....3	50.09.0103	TL071	dual op.amp.		TI
	P.....1	54.01.0273		CIS, 13 pin		
	Q.....1	50.03.0625	BC327	PNP, low noise		
	Q.....2	50.03.0516	BC337	NPN, low noise		
	Q.....3	50.03.0350	J112	N-J-FET		NS, Mot, Six
	Q.....4	50.03.0350	J112	N-J-FET		NS, Mot, Six
	Q.....5	50.03.0350	J112	N-J-FET		NS, Mot, Six
	R.....1	57.92.1121	22 Ohm	PTC		
	R.....2	57.11.4101	100 Ohm			
	R.....3	57.92.1121	22 Ohm	PTC		
	R.....4	57.11.4821	820 Ohm			
	R.....5	57.11.4153	15 kOhm			
	R.....6	57.11.4472	4.7 kOhm			
	R.....7	57.11.4223	22 kOhm			
	R.....8	57.11.4223	22 kOhm			
	R.....9	57.11.4223	22 kOhm			
	R....10	57.11.3362	3.6 kOhm			
	R....11	57.11.4823	82 kOhm			
	R....12	57.11.4223	22 kOhm			
	R....13	57.11.4823	82 kOhm			
	R....14	57.11.4101	100 Ohm			
	R....15	57.11.4223	22 kOhm			
	R....16	57.11.4823	82 kOhm			
	R....17	57.11.4472	4.7 kOhm			
	R....18	57.11.4472	4.7 kOhm			
	R....19	57.11.4223	22 kOhm			
	R....20	57.11.4823	82 kOhm			
	R....21	57.11.4103	10 kOhm			
	R....22	57.11.5106	10 MOhm			
	R....23	57.11.4103	10 kOhm			
	R....24	57.11.5106	10 MOhm			
	R....25	57.11.5106	10 MOhm			
	R....26	57.11.4105	1 MOhm			
	R....27	57.11.4821	820 Ohm			
	R....28	57.11.4823	82 kOhm			
	R....29	57.11.4330	33 Ohm			
	W.....1	57.11.4000	0 Ohm			

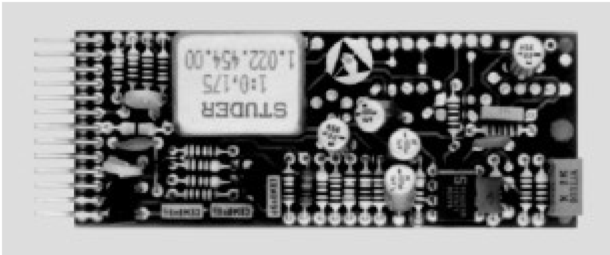
CER = ceramic, EL = electrolytic, PE = polyester

MANUFACTURER Mot=Motorola, NS=National Semiconductor, Six=Siliconics, TI=Texas Instruments

1.914.530.00 0-OHM INPUT WITH PFL WY 87/06/1800

2.1.15 High-Level Input with PFL Facility 1.914.531

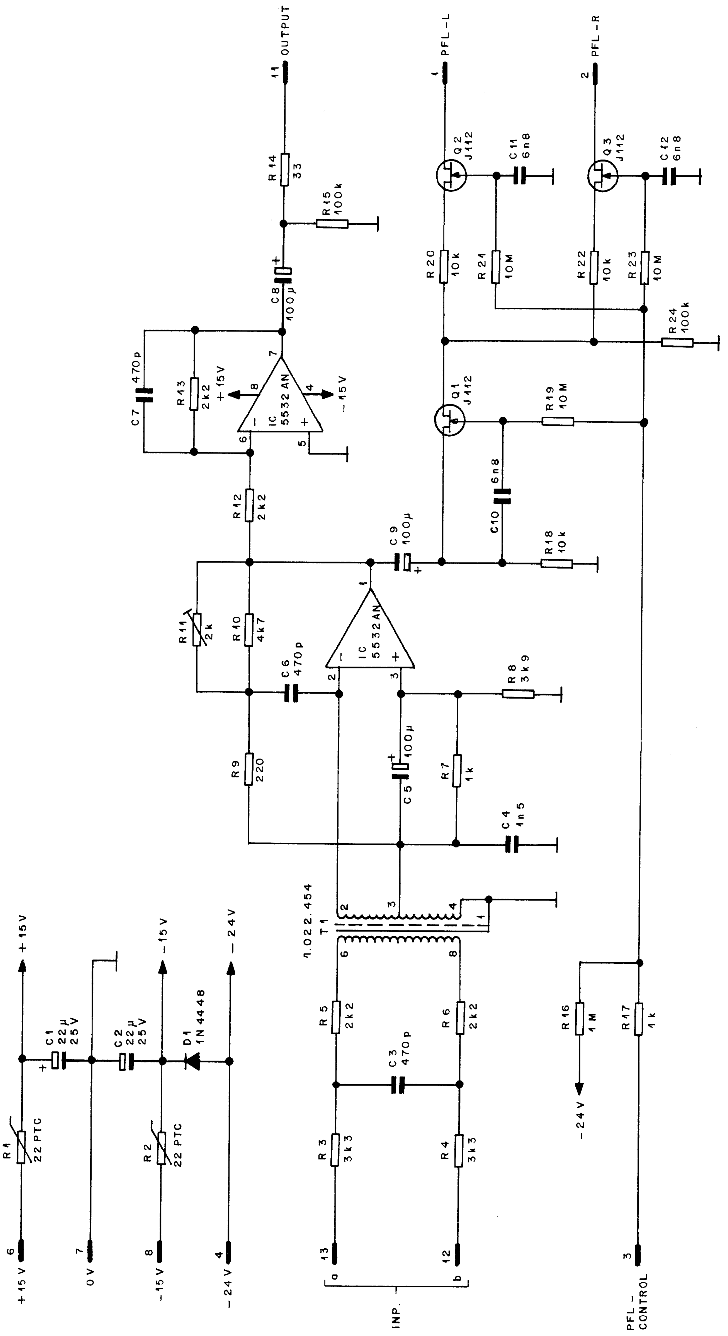
This compact high-level input amplifier features a balanced and floating input stage. The output is unbalanced, with low impedance and low distortion up to +24 dBu. An additional PFL monitoring facility is electronically switchable (FET).

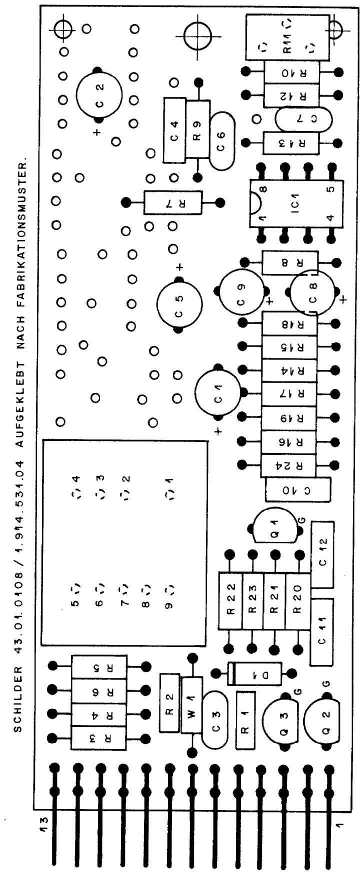


Technical Specifications

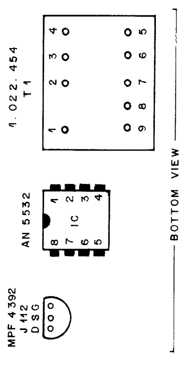
Input:		Balanced and floating
	Impedance	> **10 kW**
	Max. level	**+26 dBu**
	CMRR	> **110 dB** @ 50 Hz
		> **110 dB** @ 16 kHz
Output:		Unbalanced
	Impedance	**33 W**
	Load	**³ 600 W** @ max. output swing
	Max. output swing	**+20 dBu**
	Gain	**–1.4...–17.8 dB**
	Frequency response	**±0.3 dB**, 30 Hz...16 kHz
	THD	< **–85 dB,** 30 Hz...16 kHz
	Noise voltage	< **–107 dBu,** gain –6 dB, bandwidth 23 kHz
Supply:		**±15 V** (10 mA idling)
Dimensions:		**MS-card,** 34 × 85 mm
Ordering Information:		HL input with PFL 1.914.531.xx

MSC HL INPUT WITH PFL





CIS	PIN	EURO 32 PIN (a)	(b)	(c)	(d)
INPUT a	13	1	7	21	27
INPUT b	12	2	8	22	28
OUTPUT	11	3	9	23	29
	10				
	9				
−15 V	8	14			
0 V	7	15			
+15 V	6	16			
	5				
−24 V	4	20			
PFL SIGN. BUS	3	4	10	24	30
PFL RIGHT BUS	2	5	11	25	31
PFL LEFT BUS	1	6	13	26	32



0 25. 9. 91				
STUDER REGENSDORF ZÜRICH	HL INPUT WITH PFL	ESE	1.914.531.00	

MSC HL INPUT WITH PFL

Ad	..POS..	...REF.No...	DESCRIPTION			MANUFACTURER
	C.....1	59.22.5220	22 uF	25V	EL	
	C.....2	59.22.5220	22 uF	25V	EL	
	C.....3	59.34.5471	470 pF		CER	
	C.....4	59.06.5152	1.5 nF		PE	
	C.....5	59.22.3101	100 uF	10V	EL	
	C.....6	59.34.5471	470 pF		CER	
	C.....7	59.34.5471	470 pF		CER	
	C.....8	59.22.3101	100 uF	10V	EL	
	C.....9	59.22.3101	100 uF	10V	EL	
	C....10	59.06.0682	6.8 nF		PE	
	C....11	59.06.0682	6.8 nF		PE	
	C....12	59.06.0682	6.8 nF		PE	
	D.....1	50.04.0125	1N4448			any
	IC....1	50.09.0106	NE5532AN	dual op.amp. low noise		Sig
	P.....1	54.01.0273		CIS, 13 pin		
	Q.....1	50.03.0350	J112	N-J-FET		NS, Mot, Six
	Q.....2	50.03.0350	J112	N-J-FET		NS, Mot, Six
	Q.....3	50.03.0350	J112	N-J-FET		NS, Mot, Six
	R.....1	57.92.1121	22 Ohm	PTC		
	R.....2	57.92.1121	22 Ohm	PTC		
	R.....3	57.11.3332	3.3 kOhm	1%		
	R.....4	57.11.3332	3.3 kOhm	1%		
	R.....5	57.11.3222	2.2 kOhm	1%		
	R.....6	57.11.3222	2.2 kOhm	1%		
	R.....7	57.11.4102	1 kOhm			
	R.....8	57.11.4392	3.9 kOhm			
	R.....9	57.11.4221	220 Ohm			
	R....10	57.11.4472	4.7 kOhm			
	R....11	58.01.9202	2 kOhm	trim potm.		
	R....12	57.11.3222	2.2 kOhm			
	R....13	57.11.3222	2.2 kOhm			
	R....14	57.11.4330	33 Ohm			
	R....15	57.11.4104	100 kOhm			
	R....16	57.11.4105	1 MOhm			
	R....17	57.11.4102	1 kOhm			
	R....18	57.11.4103	10 kOhm			
	R....19	57.11.5106	10 MOhm			
	R....20	57.11.4103	10 kOhm			
	R....21	57.11.5106	10 MOhm			
	R....22	57.11.4103	10 kOhm			
	R....23	57.11.5106	10 MOhm			
	R....24	57.11.4104	10 kOhm			
	T.....1	1.022.454.00		input trafo		
	W.....1	57.11.4000	0 Ohm			

CER = ceramic, EL = electrolytic, PE = polyester

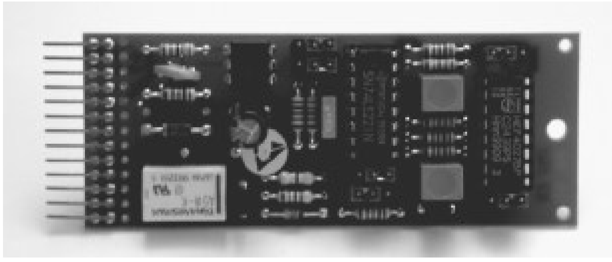
MANUFACTURER Mot=Motorola, NS=National Semiconductor, Six=Siliconics,
TI=Texas Instruments, Sig=Signetics

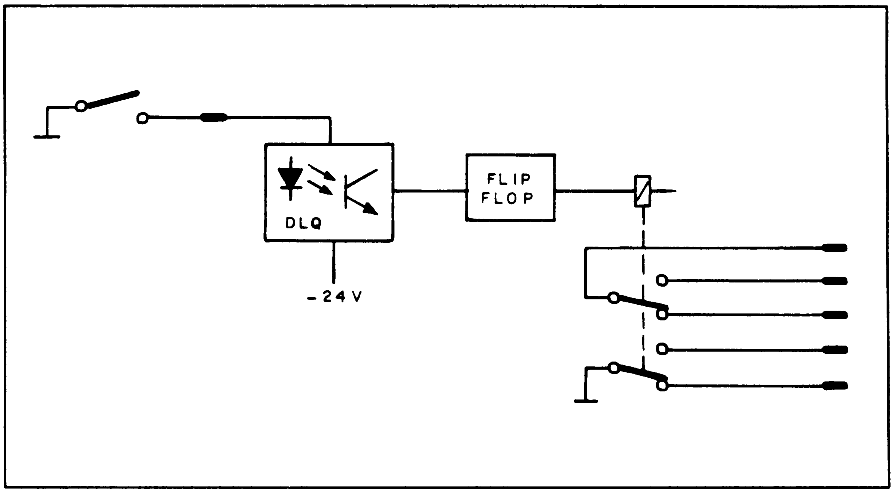
1.914.531.00 HL-INPUT WITH PFL WY 87/06/1800

2.1.16 Flip-flop Unit

1.914.532

The Flip-flop Unit consists of a relay with two DPDT contacts and a flip-flop circuit with a control input (opto-coupler). A ground pulse from a non-latching switch applied to the input activates the relay. A next ground pulse will deactivate it again.

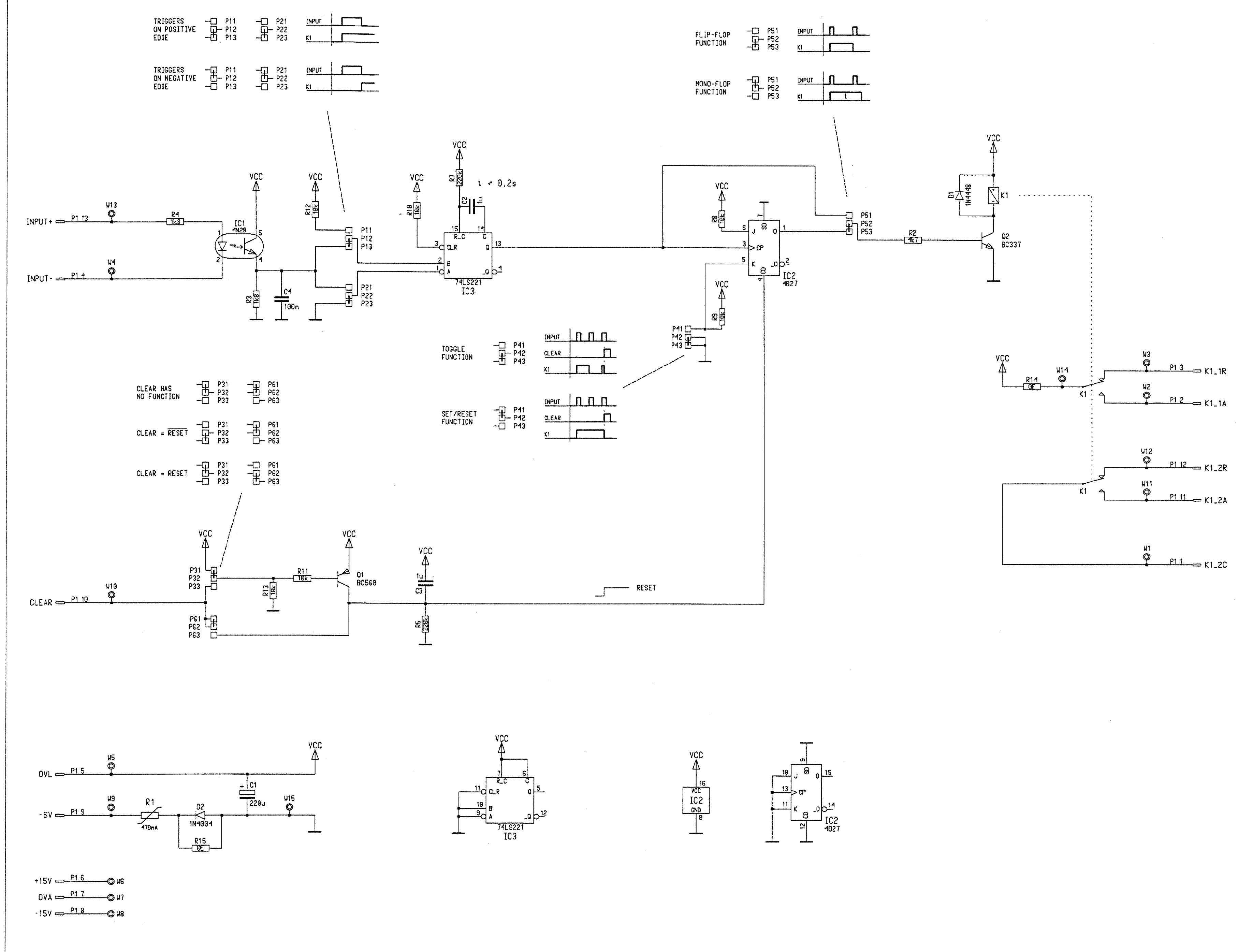


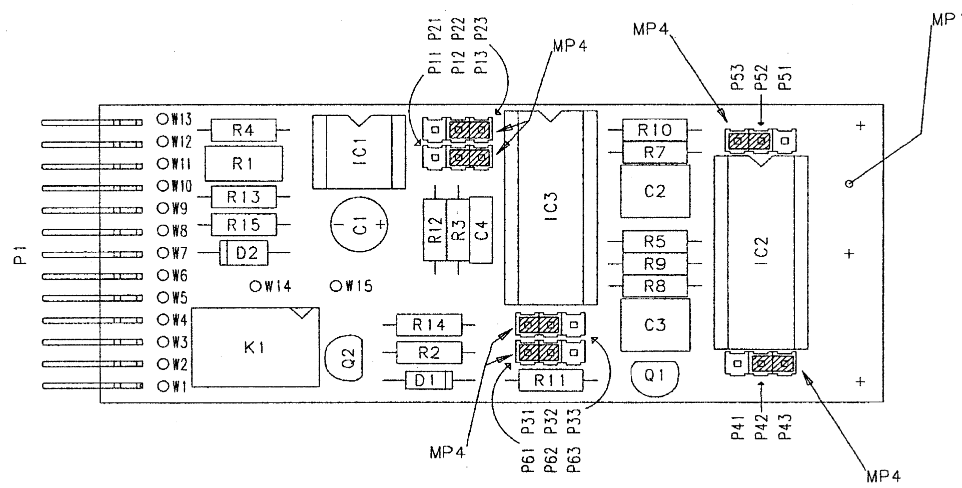


Technical Specifications

Input:		**floating,** with opto-coupler
Relay contacts:	Max. rating	**100 V/0.5 A/30 W**
Supply:		**–6 V** for logic **–24 V** for opto-coupler
Dimensions:		**MS-card,** 34 × 85 mm
Ordering Information:		Flip-flop unit 1.914.532.xx

MSC FLIP FLOP





Idx	Pos.	Part No.	Qty.	Type/Val.	Description
0	C 1	59.22.3003		220u	EL 10V, 20%, RM5
0	C 2	59.06.0105		1u0	PETP, 50V, 10%, RM5
0	C 3	59.06.0105		1u0	PETP, 50V, 10%, RM5
0	C 4	59.06.0104		100n	PETP, 63V, 10%, RM5
0	D 1	50.04.0125		1N4448	75V, 150mA, 4ns, DO-35
0	D 2	50.04.0105		1N4004	D 1 N 4004 ... 1 N 4007
0	IC 1	50.99.0126		4N26	Optocoupler
0	IC 2	50.07.0027		4027	IC .. 4027 .. ,A
0	IC 3	50.06.0221		74LS221	IC SN 74 LS 221 N
0	K 1	56.04.0198		2u	5V 125V 2A Ag/Au
0	MP 1	1.914.532.12	mp		FLIP-FLOP PCB
0	MP 2	1.914.532.04	mp		NR.-ETIKETTE 5 * 20
0	MP 3	43.01.0108	mp	Label	ESE-WARNSCHILD
0	MP 4	54.01.0021	6 pcs	Jumper	0.63 * 0.63mm
0	P 1	54.01.0273		13-P	P LEISTE 13 POL CIS WINKEL
0	P 11	54.01.0020		1p	Pin 0.63*0.63
0	P 12	54.01.0020		1p	Pin 0.63*0.63
0	P 13	54.01.0020		1p	Pin 0.63*0.63
0	P 21	54.01.0020		1p	Pin 0.63*0.63
0	P 22	54.01.0020		1p	Pin 0.63*0.63
0	P 23	54.01.0020		1p	Pin 0.63*0.63
0	P 31	54.01.0020		1p	Pin 0.63*0.63
0	P 32	54.01.0020		1p	Pin 0.63*0.63
0	P 33	54.01.0020		1p	Pin 0.63*0.63
0	P 41	54.01.0020		1p	Pin 0.63*0.63
0	P 42	54.01.0020		1p	Pin 0.63*0.63
0	P 43	54.01.0020		1p	Pin 0.63*0.63
0	P 51	54.01.0020		1p	Pin 0.63*0.63
0	P 52	54.01.0020		1p	Pin 0.63*0.63
0	P 53	54.01.0020		1p	Pin 0.63*0.63
0	P 61	54.01.0020		1p	Pin 0.63*0.63
0	P 62	54.01.0020		1p	Pin 0.63*0.63
0	P 63	54.01.0020		1p	Pin 0.63*0.63
0	Q 1	50.03.0601		BC560C	BC 560 C
0	Q 2	50.03.0340		BC337-25	800mA, 45V, NPN
0	R 1	57.92.1391		470mA	PTC, 30V, 2.5 Ohm
0	R 2	57.11.3472		4k7	MF, 1%, 0207
0	R 3	57.11.3182		1k8	MF, 1%, 0207
0	R 4	57.11.3182		1k8	MF, 1%, 0207
0	R 5	57.11.3224		220k	MF, 1%, 0207
0	R 7	57.11.3224		220k	MF, 1%, 0207
0	R 8	57.11.3103		10k	MF, 1%, 0207
0	R 9	57.11.3103		10k	MF, 1%, 0207
0	R 10	57.11.3103		10k	MF, 1%, 0207
0	R 11	57.11.3103		10k	MF, 1%, 0207
0	R 12	57.11.3103		10k	MF, 1%, 0207
0	R 13	57.11.3103		10k	MF, 1%, 0207
0	R 14	57.11.3000		0R0	MF, 0207
0	R 15	not used		0R0	MF, 0207
0	XIC 2	53.03.0168		16p	DIL 0.3", löt, gerade
0	XIC 3	53.03.0168		16p	DIL 0.3", löt, gerade

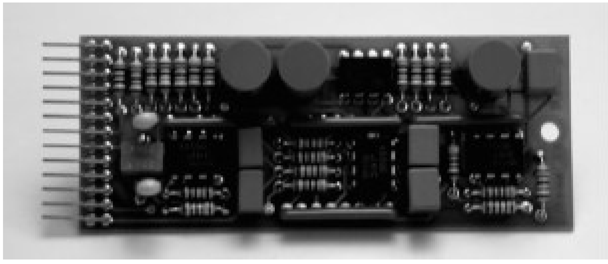
End of List

0 11.01.1999 LC				PAGE 1 OF 1
STUDER	FLIP FLOP UNIT		SC 1.914.532.81	

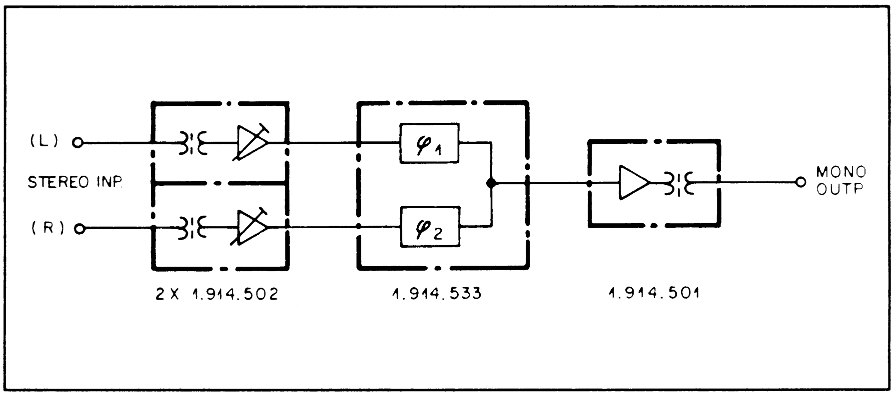
2.1.17 90° Filter

1.914.533

This active 90° filter is used to form a monophonic signal from the left and right channel of stereo signals. Simple mixing of the left and right channel will not produce a mono signal of satisfactory quality, but results in an emphasis of the center information. By summing the stereo signals in a 90° phase-shifted manner, this undesirable effect can be avoided.



The 90° filter consists of two all-pass filter chains, producing a uniform 90° phase difference across the whole audio range. The left and the right stereo signals are each passed through one of these filters and added at the filter's output. Doubling of equally-phased signal components as well as canceling of opposite-phased components is thus avoided.



The filter circuits are of unbalanced configuration. For this reason a summing circuit usually consists of two high-level amplifiers with balanced inputs (1.914.502), one 90° filter, and one high-level output amplifier (1.914.501), all accommodated on one MSC motherboard, as shown in the diagram above.

The gain of this combination can be adjusted. A correlated stereo input of equal level in both channels will provide a mono signal of identical level. With only one input channel (left or right), the mono output level will be lower by 3 dB.

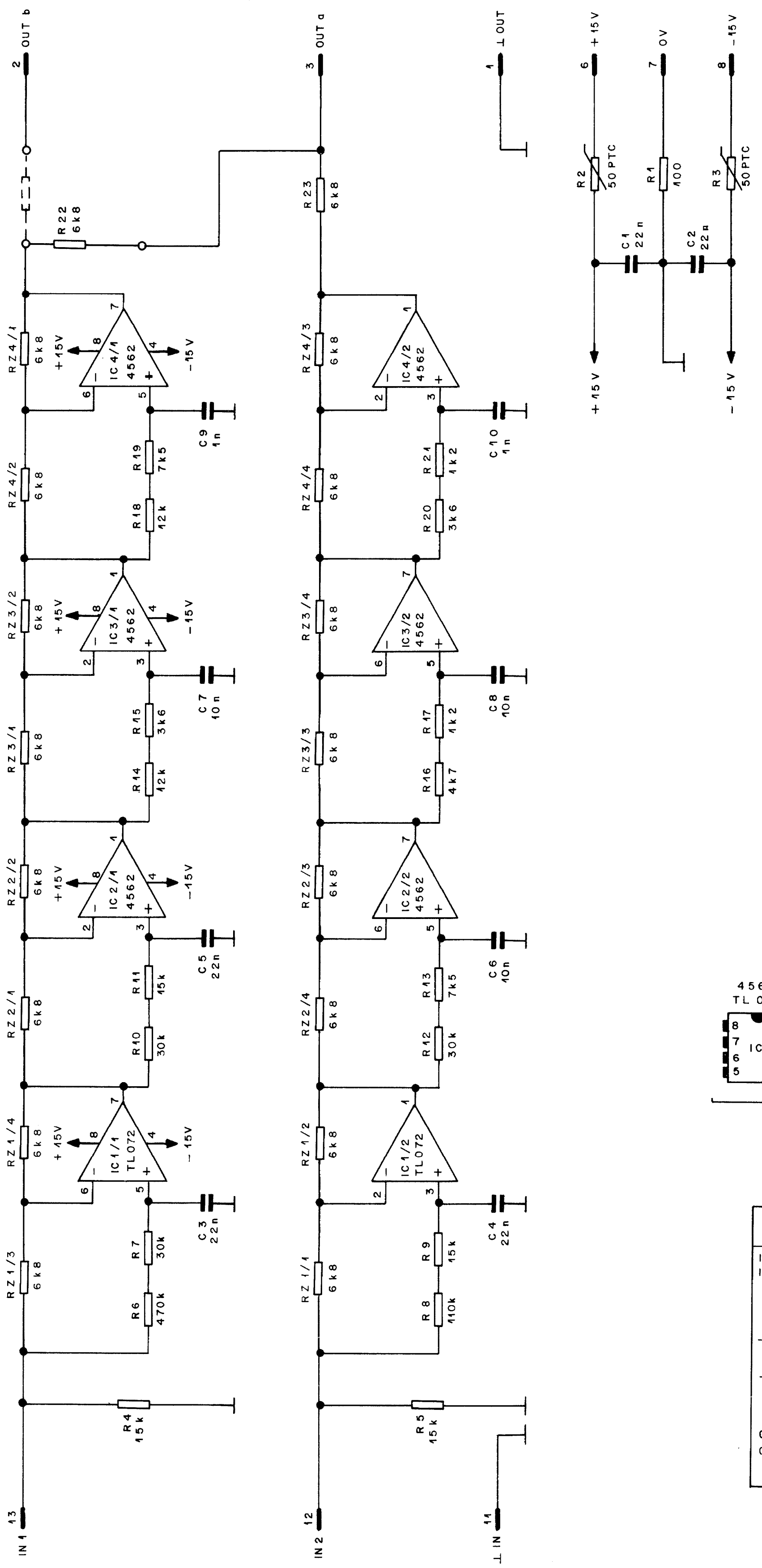
Since the 90° filter with its input and output cards can be realized on a single, Euro-card size MSC motherboard, it can possibly be combined with other Audio Components, such as limiters and isolation amplifiers. Such stereo-to-mono combinations are in use at various radio stations to feed the stereo programs to the monophonic AM-transmitter in a correctly summed manner.

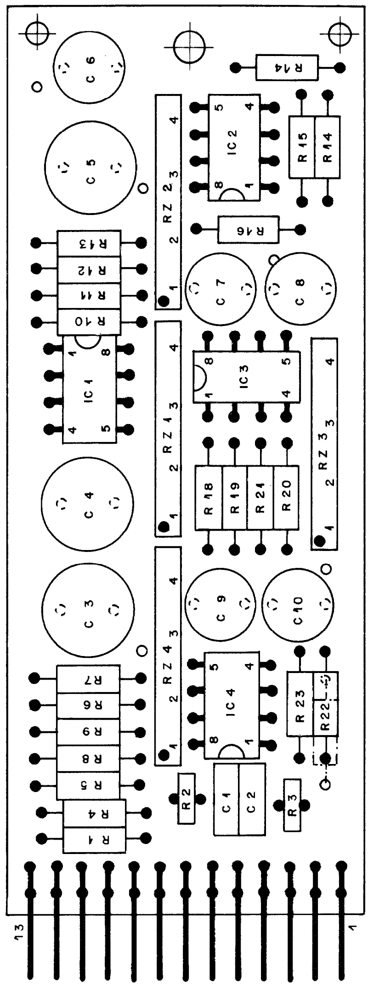
Technical Specifications

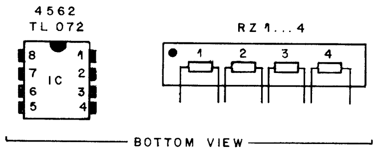
Input:	Max. level	**+20 dBu**
	Impedance	**4 kW**
Output:	Max. level	**+20 dBu**
	Impedance	**6.8 kW**
	Frequency response	**30 Hz...16 kHz**, ±0.3 dB
	Phase	**90°** ±3°; 30 Hz...16 kHz
	THD	**£ –80 dB**
	Noise	**< –95 dBu**
Supply:		**±15 V** (18 mA idling)
Dimensions:		**MS-card,** 34 × 85 mm

Ordering Information: 90° filter stereo/mono 1.914.533.xx

MSC 90° FILTER







CIS	PIN	EURO 32 PIN (a)	(b)	(c)	(d)
IN 1	13	1	7	21	27
IN 2	12	2	8	22	28
⊥	11	3	9	23	29
	10				
	9				
– 15 V	8	14	—	—	—
0 V	7	15	—	—	—
+ 15V	6	16	—	—	—
	5				
	4				
OUT a	3	4	10	24	30
OUT b	2	5	11	25	31
⊥	1	6	13	26	32

(0) 26.9.91	( )	( )	( )	( )
STUDER REGENSDORF ZÜRICH	90 DEGREE FILTER		1.914.533.00	

MSC 90° FILTER

Ad	..POS..	...REF.No...	DESCRIPTION			MANUFACTURER
	C.....1	59.06.0223	22 nF		PE	
	C.....2	59.06.0223	22 nF		PE	
	C.....3	59.05.1223	22 nF	1%	PP	
	C.....4	59.05.1223	22 nF	1%	PP	
	C.....5	59.05.1223	22 nF	1%	PP	
	C.....6	59.05.1103	10 nF	1%	PP	
	C.....7	59.05.1103	10 nF	1%	PP	
	C.....8	59.05.1103	10 nF	1%	PP	
	C.....9	59.05.1102	1 nF	1%	PP	
	C....10	59.05.1102	1 nF	1%	PP	
	IC....1	50.09.0101	TL072	dual op.amp.		TI
01	IC....2	50.09.0107	RC4559	dual op.amp.		Ra
01	IC....3	50.09.0107	RC4559	dual op.amp.		Ra
01	IC....4	50.09.0107	RC4559	dual op.amp.		Ra
	P.....1	54.01.0273		CIS, 13 pin		
	R.....1	57.11.3101	100 Ohm			
	R.....2	57.99.0206	50 Ohm	PTC		
	R.....3	57.99.0206	50 Ohm	PTC		
	R.....4	57.11.3153	15 kOhm			
	R.....5	57.11.3153	15 kOhm			
	R.....6	57.11.3474	470 kOhm	1%		
	R.....7	57.11.3303	30 kOhm	1%		
	R.....8	57.11.3114	110 kOhm	1%		
	R.....9	57.11.3153	15 kOhm	1%		
	R....10	57.11.3303	30 kOhm	1%		
	R....11	57.11.3153	15 kOhm	1%		
	R....12	57.11.3303	30 kOhm	1%		
	R....13	57.11.3752	7.5 kOhm	1%		
	R....14	57.11.3123	12 kOhm	1%		
	R....15	57.11.3362	3.6 kOhm	1%		
	R....16	57.11.3472	4.7 kOhm	1%		
	R....17	57.11.3122	1.2 kOhm	1%		
	R....18	57.11.3123	12 kOhm	1%		
	R....19	57.11.3752	7.5 kOhm	1%		
	R....20	57.11.3362	3.6 kOhm	1%		
	R....21	57.11.3122	1.2 kOhm	1%		
	R....22	57.11.3682	6.8 kOhm	1%		
	R....23	57.11.3682	6.8 kOhm	1%		
	RZ....1	57.88.2682	6.8 kOhm		Resistor-Network	
	RZ....2	57.88.2682	6.8 kOhm		Resistor-Network	
	RZ....3	57.88.2682	6.8 kOhm		Resistor-Network	
	RZ....4	57.88.2682	6.8 kOhm		Resistor-Network	

PE = polyester, PP = polypropylen

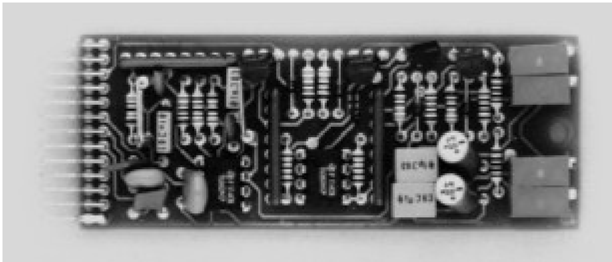
(01) 90/06/21 IC 2...4 RC 4562 replaced by RC 4559

MANUFACTURER TI=Texas Instruments, Ra=Raytheon

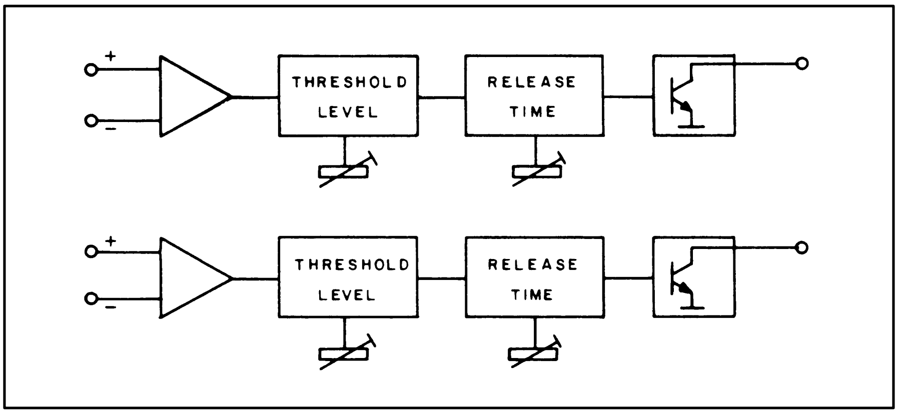
1.914.533.00 90 DEGREE FILTER HAM88/02/2400
1.914.533.00 90 DEGREE FILTER FRI90/06/2101

2.1.18 Dual Vox Detector 1.914.534

The Dual Vox Detector card contains two adjustable threshold level detector circuits. Threshold level (–22 dBu...+16 dBu) and release time (0.2 s...10 s) are separately adjustable for two audio channels. These adjustments are effected very precisely with multi-turn trimmer potentiometers.

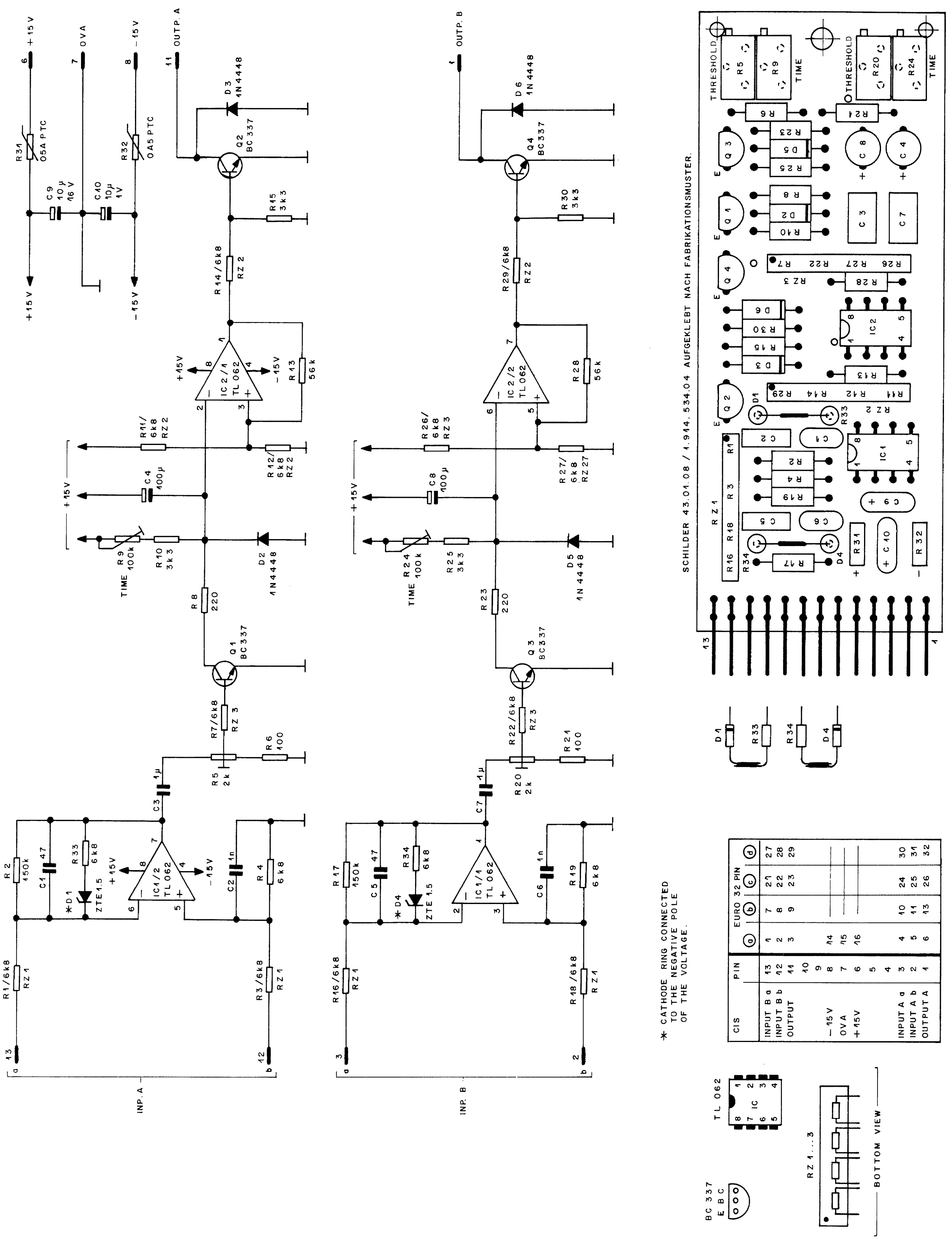


The high-impedance audio input is balanced. The open-collector output is prepared to activate a relay or an alarm device.
A possible application of this card would be to detect incoming modulation.



Technical Specifications

Inputs:	**Electronically balanced**
Impedance	**³ 10 kW**
Max. level	**+24 dBu** (0 dBu ≙ 0,775 V_{rms})
Frequency response	**75 Hz...12 kHz,** –3 dB
Threshold level	**–22 dBu...+16 dBu**
Attack time	**100 ms**
Release time	**200 ms...10 s**
Hysteresis	**£ 1 dB**
Outputs:	**Open-collector**; U_{CE} ≤ +45 V; Imax ≤ 100 mA
Supply:	**±15 V** (≤ 15 mA / 4 mA idling)
Dimensions:	**MS-card,** 34 × 85 mm
Ordering Information:	Dual vox detector 1.914.534.xx



0 27.9.91				
STUDER REGENSDORF ZÜRICH	THRESHOLD LEVEL DETECTOR	ESE	1.914.534.00	

MSC DUAL VOX DETECTOR

Ad	..POS..	...REF.No...	DESCRIPTION.............................			..MANUFACTURER
01	C.....1	59.34.2470	47 pF	63V	CER 5%	
01	C.....2	59.34.5102	1000 pF	63V	PE 5%	
	C.....3	59.06.5105	1 uF		PE 5%	
	C.....4	59.22.3101	100 uF	10V	EL	
01	C.....5	59.34.2470	47 pF	63V	CER 5%	
01	C.....6	59.06.5102	1000 pF	63V	PE 5%	
	C.....7	59.06.5105	1 uF		PE 5%	
	C.....8	59.22.3101	100 uF	10V	EL	
	C.....9	59.26.2100	10 uF	16V	EL	
	C....10	59.26.2100	10 uF	16V	EL	
01	D.....1	50.99.0183	ZTE1.5	1.5V	ZENER	ITT
	D.....2	50.04.0125	1N4448			any
	D.....3	50.04.0125	1N4448			any
01	D.....4	50.99.0183	ZTE1.5	1.5V	ZENER	ITT
	D.....5	50.04.0125	1N4448			any
	D.....6	50.04.0125	1N4448			any
	IC....2	50.09.0119	TL062	dual op.amp.		TI
	IC....3	50.09.0119	TL062	dual op.amp.		TI
	P.....1	54.01.0273		CIS, 13 pin		
	Q.....1	50.03.0516	BC337	NPN		any
	Q.....2	50.03.0516	BC337	NPN		any
	Q.....3	50.03.0516	BC337	NPN		any
	Q.....4	50.03.0516	BC337	NPN		any
	R.....1	. .	6.8 kOhm	RZ 1		
01	R.....2	57.11.3154	150 kOhm			
	R.....3	. .	6.8 kOhm	RZ 1		
01	R.....4	57.11.3682	6.8 kOhm			
	R.....5	58.05.0202	2 kOhm	Trim 10%		
	R.....6	57.11.3101	100 Ohm			
	R.....7	. .	6.8 kOhm	RZ 3		
	R.....8	57.11.3221	220 Ohm			
	R.....9	58.05.0104	100 kOhm	Trim 10%		
	R....10	57.11.3332	3.3 kOhm			
	R....11	. .	6.8 kOhm	RZ 2		
	R....12	. .	6.8 kOhm	RZ 2		
	R....13	57.11.3563	56 kOhm			
	R....14	. .	6.8 kOhm	RZ 2		
	R....15	57.11.3332	3.3 kOhm			
	R....16	. .	6.8 kOhm	RZ 1		
01	R....17	57.11.3154	150 kOhm	1%		
	R....18	. .	6.8 kOhm	RZ 1		
01	R....19	57.11.3682	6.8 kOhm			
	R....20	58.05.0202	2 kOhm	Trim 10%		
	R....21	57.11.3101	100 Ohm			
	R....22	. .	6.8 kOhm	RZ 3		
	R....23	57.11.3221	220 Ohm			
	R....24	58.05.0104	100 kOhm	Trim 10%		
	R....25	57.11.3332	3.3 kOhm			
	R....26	. .	6.8 kOhm	RZ 3		
	R....27	. .	6.8 kOhm	RZ 3		
	R....28	57.11.3563	56 kOhm			
	R....29	. .	6.8 kOhm	RZ 2		
	R....30	57.11.3332	3.3 kOhm			
	R....31	57.92.7001	0.3 Ohm	PTC .5A		
	R....32	57.92.7001	0.3 Ohm	PTC .5A		
01	R....33	57.11.3682	6.8 kOhm			
01	R....34	57.11.3682	6.8 kOhm			
	RZ....1	57.88.2682	6.8 kOhm	R. Network 4*6.8k		
	RZ....2	57.88.2682	6.8 kOhm	R. Network 4*6.8k		
	RZ....3	57.88.2682	6.8 kOhm	R. Network 4*6.8k		

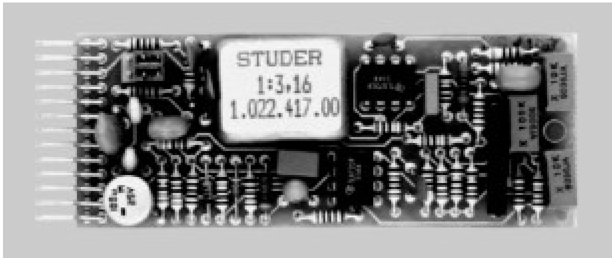
(01) update
(02) old name: THRESHOLD DETECTOR
CER = ceramic, EL = electrolytic, PE = polyester

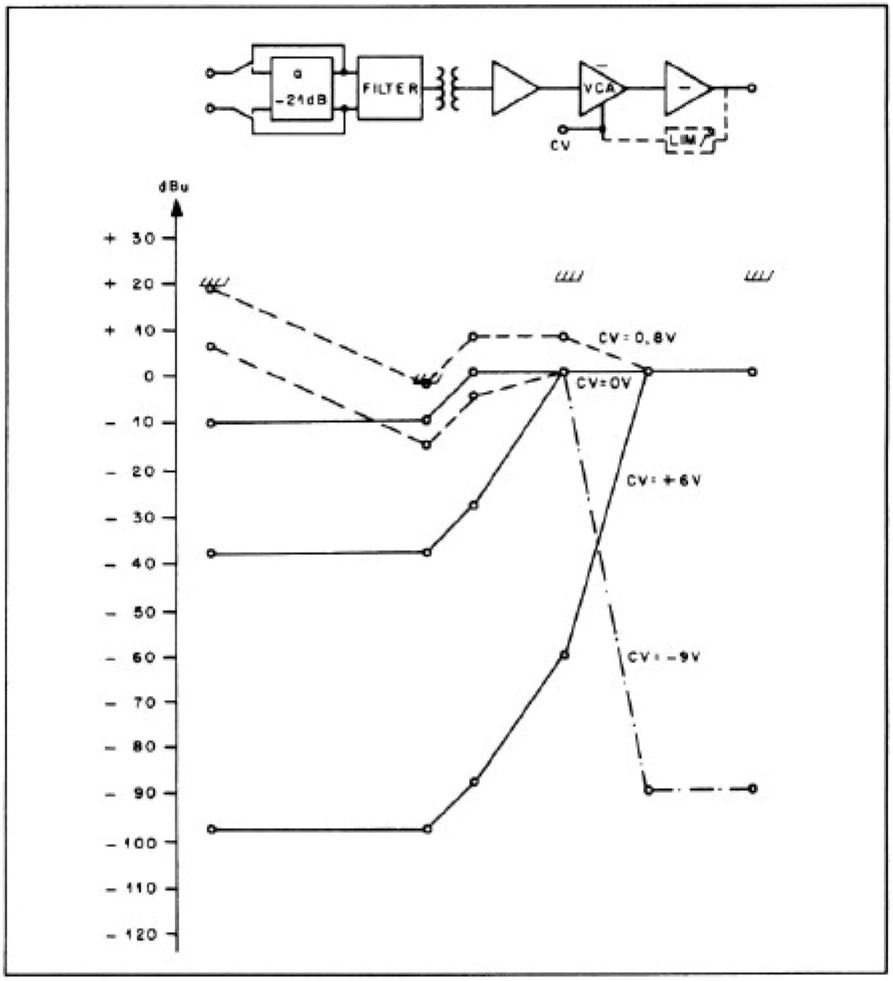
MANUFACTURER Mot=Motorola, NS=National Semiconductor, Six=Siliconics, TI=Texas Instruments

1.914.534.00 THRESHOLD LEVEL DETECTOR FRI88/06/1800
1.914.534.00 THRESHOLD LEVEL DETECTOR FRI88/09/0701
1.914.534.00 DUAL VOX DETECTOR (POS) FRI88/10/2702

2.1.19 Microphone Amplifier with Limiter 1.914.539

This assembly combines a microphone amplifier and a VCA limiter circuit with adjustable threshold level and program-depending release time. The input is balanced and floating, the output is unbalanced and with low impedance. Gain control is effected internally with a trimmer potentiometer, or externally with a gain-control DC voltage. A jumper-selectable pad reduces the input level by 21 dB.





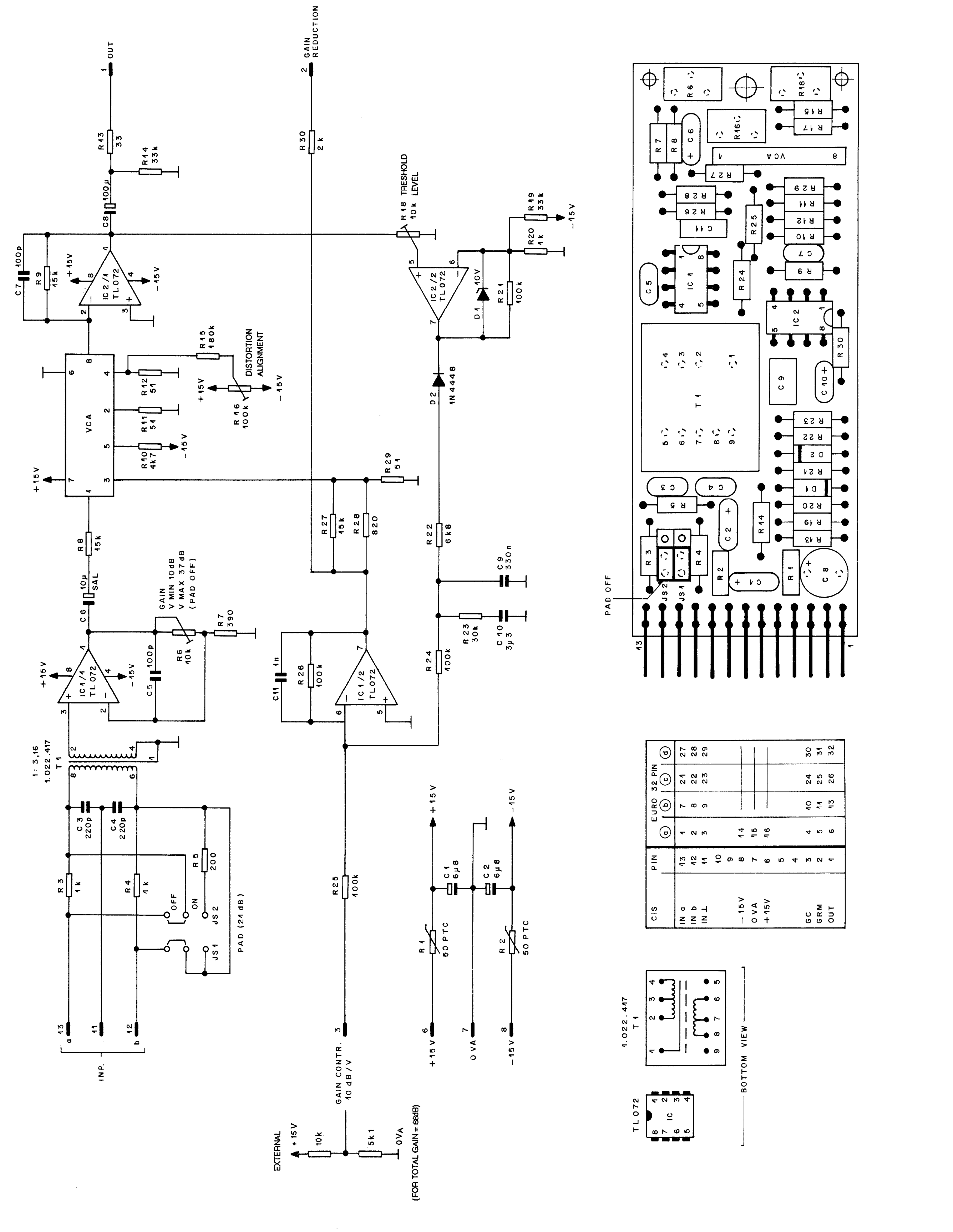
The operation of the limiter circuit can be monitored at the gain reduction output, if an appropriate instrument (GRM) is connected.

This card is ideally suited for talkback applications.

Technical Specifications

Input:	Impedance	**> 1 kW,** balanced, floating
	Max. level	**–2 dBu** (THD at 30 Hz ≤ 1%)
		+19 dBu, pad on
	Pad (attenuation)	**–21 dB**, jumper-selectable
	CMRR	> **60 dB** @ 16 kHz
	Source impedance	**£ 200 W**
Output:	Max. level	**+20 dBu**
	Impedance	**33 W**
	Load	**³ 2 kW**
	Gain adjust (v_1)	**min. +10 dB,** VCA = 0 dB; pad off
		max. +37 dB, VCA = 0 dB; pad off
		min. –11 dB, VCA = 0 dB; pad on
		max. +16 dB, VCA = 0 dB; pad on
	Gain control characteristics (v_2)	**10 dB/V**
	DC range	**–10...+6 V**, pin3: gain control input
	Total gain	$v_{tot} = v1 + v2$
	Max. attenuation	> **90 dB**
General:	Frequency response	**±0.5 dB**, 30 Hz...16 kHz
	THD	**£ –50 dB,** 20 dB gain; 30 Hz...16 kHz
	Noise voltage	**–95 dBu,** pad on; 0 dB gain
	Noise figure	**F ~ 10 dB,** bandwidth = 23 kHz; 60 dB gain; R_s = 200 Ω; pad off
Limiter:	Threshold level	**–7...+20 dBu**
	Attack time	**0.5 ms**
	Release time	**50 ms...1 s**, program-dependent
	Compression ratio	**10:1** @ 1 kHz
Supply:		**±15 V** (25 mA)

Ordering Information: Microphone amplifier with limiter 1.914.539.xx



⓪ 4.10.91	◯	◯	◯	◯
STUDER REGENSDORF ZÜRICH	MIC. AMPLIFIER WITH LIMITER	1.914.539.00		

MSC MIC AMP / LIMITER

Ad ..POS..	...REF.No...	DESCRIPTION					MANUFACTURER
C.....1	59.26.2689	6.8 uF	16V	SAL			
C.....2	59.26.2689	6.8 uF	16V	SAL			
C.....3	59.34.4221	220 pF	63V	CER	5%		
C.....4	59.34.4221	220 pF	63V	CER	5%		
C.....5	59.34.4101	100 pF	63V	CER	5%		
C.....6	59.26.5100	10 uF	25V	SAL			
C.....7	59.34.4101	100 pF	63V	CER	5%		
C.....8	59.22.4101	100 uF	16V	EL			
C.....9	59.06.0334	330 nF	63V	PETP	10%		
C....10	59.30.6339	3.3 uF	35V	TA	20%		
C....11	59.06.0102	1 nF	63V	PETP	10%		
D.....1	50.04.1114	BZX55-C10	Z 10V 0.4W				any
D.....2	50.04.0125	1N4448	diode				any
IC....1	50.09.0101	TL072 CP	dual op.amp. biFET				TI
IC....2	50.09.0101	TL072 CP	dual op.amp. biFET				TI
IC....3	50.11.0140	dbx2150 A	VCA				dBx
JS....1	54.01.0021	Jumper	Au				
JS....2	54.01.0021	Jumper	Au				
MP....1	43.01.0108	ESE	ESE warning				
P.....1	54.01.0273	13 PIN	CIS				
P.....2	54.11.0136	2*3 PIN	Stiftleiste				
PCB...1	1.914.539.11		empty PCB				St
R.....1	57.99.0206	50 Ohm	PTC				
R.....2	57.99.0206	50 Ohm	PTC				
R.....3	57.11.3102	1 kOhm					
R.....4	57.11.3102	1 kOhm					
R.....5	57.11.3201	200 Ohm					
R.....6	58.01.9103	10 kOhm	variable resistor 10%			PGM	
R.....7	57.11.3391	390 Ohm					
R.....8	57.11.3153	15 kOhm					
R.....9	57.11.3153	15 kOhm					
R....10	57.11.3472	4.7 kOhm					
R....11	57.11.3510	51 Ohm					
R....12	57.11.3510	51 Ohm					
R....13	57.11.3330	33 Ohm					
R....14	57.11.3333	33 kOhm					
R....15	57.11.3184	180 kOhm					
R....16	58.01.9104	100 kOhm	variable resistor 10%			PGM	
R....17	57.11.3102	1 kOhm					
R....18	58.01.9103	10 kOhm	variable resistor 10%			PGM	
R....19	57.11.3333	33 kOhm					
R....20	57.11.3102	1 kOhm					
R....21	57.11.3104	100 kOhm					
R....22	57.11.3682	6.8 kOhm					
R....23	57.11.3303	30 kOhm					
R....24	57.11.3104	100 kOhm					
R....25	57.11.3104	100 kOhm					
R....26	57.11.3104	100 kOhm					
R....27	57.11.3153	15 kOhm					
R....28	57.11.3821	820 Ohm					
R....29	57.11.3510	51 Ohm					
R....30	57.11.3202	2 kOhm					
T.....1	1.022.417.00	1:3.16	input-transformer				St

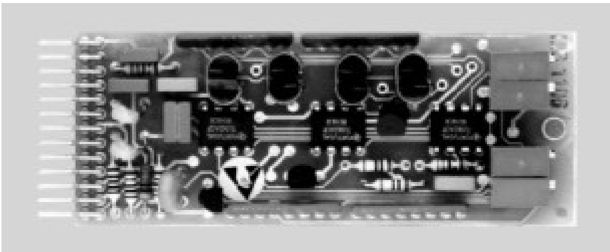
CER = ceramic, EL = electrolytic, PETP = polyester
SAL = solid aluminium, TA = tantal

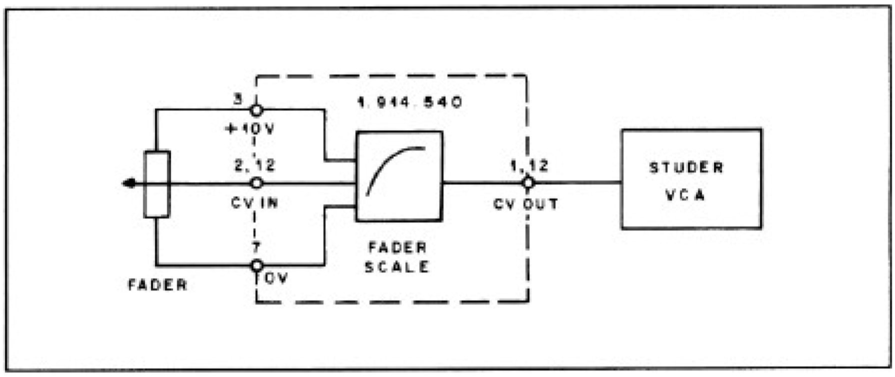
MANUFACTURER dBx= dBx-Incorp., St= Studer, TI= Texas Instruments

1.914.539.00 MIC.AMPLIFIER WITH LIMITER HOR20/11/9000

2.1.20 Dual Fader/VCA Control Voltage Interface 1.914.540 /541

These interfaces are used to convert the voltage of a linear fader to the non-linear dB scale of a Studer VCA. One card processes two channels. It is available in two versions: 540.xx (0...+10 V_{DC} control voltage), and 541.xx (+5...0 V_{DC} control voltage). A regulated +10 V_{DC} reference voltage is generated on-board. The DC from the fader's wiper is connected to the input. Offset and scale alignment is performed with on-board trimmer potentiometers for matching the VCA gain to the dB scale of the fader.





Technical Specifications

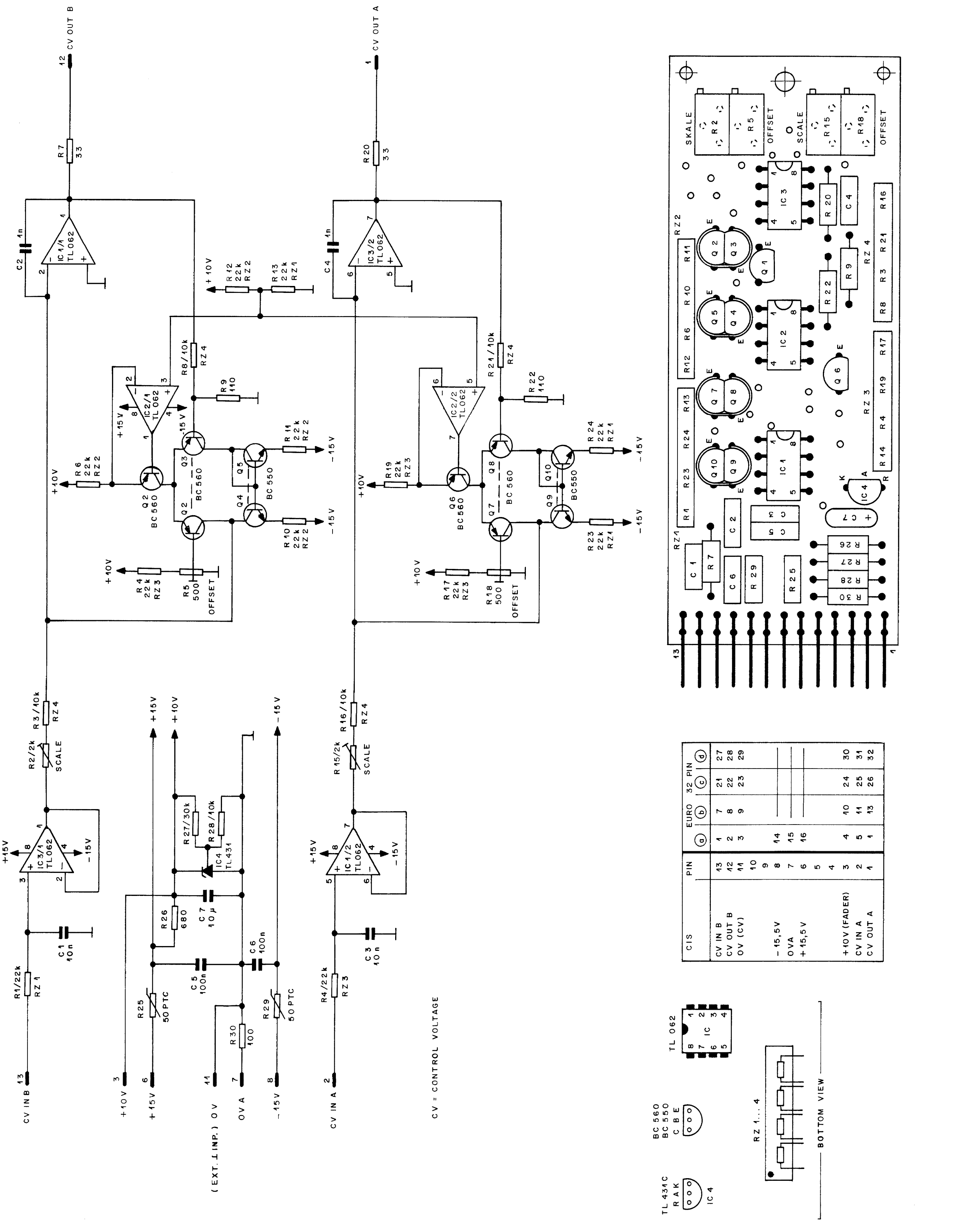
		1.914.540.xx	1.914.541.xx
Input:	Impedance	**> 1 MW,** unbalanced	**100 kW,** unbalanced
	Level range	**0...+10 V**	**+5...0 V**
Output:	Impedance	**33 W,** unbalanced	**33 W,** unbalanced
	Control range	**+1 V...–10 V**	**+1 V...–10 V**

Supply: **±15 V** (15 mA)

Dimensions: **MS-card,** 34 × 85 mm

Ordering Information:

Fader/VCA control interface	1.914.540.xx
Fader/VCA control interface	1.914.541.xx



0 7.10.91 Ge				
STUDER REGENSDORF ZURICH	FADER / VCA CV INTERFACE BOARD		1.914.540.00	

MSC FADER / VCA INTERFACE

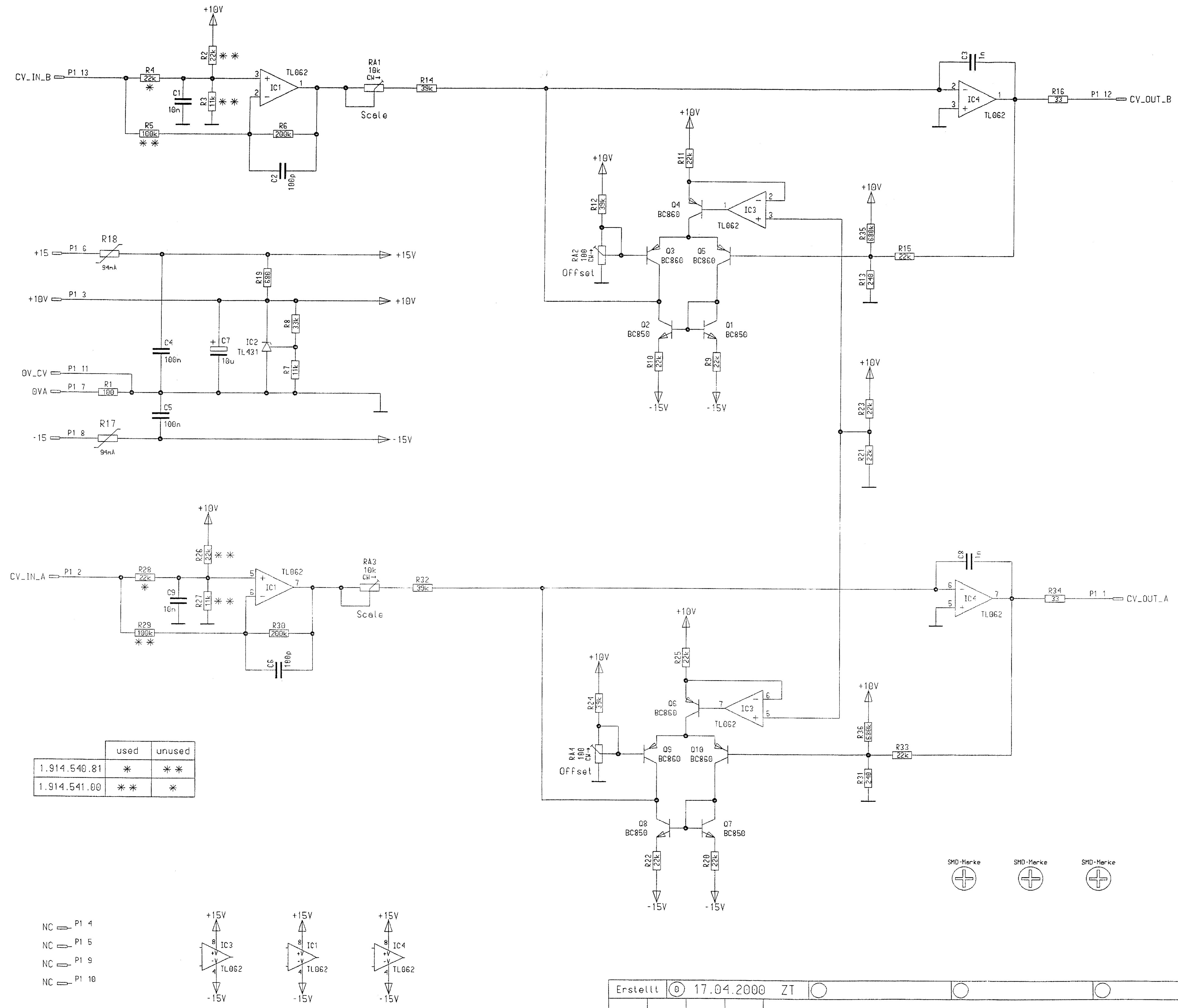
Ad ..POS..	...REF.No...	DESCRIPTION				MANUFACTURER
C.....1	59.06.0103	10 nF	63V	PE 10%		
C.....2	59.06.0102	1 nF	63V	PE 10%		
C.....3	59.06.0103	10 nF	63V	PE 10%		
C.....4	59.06.0102	1 nF	63V	PE 10%		
C.....5	59.06.0104	0.1 uF	63V	PE 10%		
C.....6	59.06.0104	0.1 uF	63V	PE 10%		
C.....7	59.26.2100	10 uF	16V	SAL		
IC....1	50.09.0119	TL062 ACP	dual op.amp.			TI
IC....2	50.09.0119	TL062 ACP	dual op.amp.			TI
IC....3	50.09.0119	TL062 ACP	dual op.amp.			TI
IC....4	50.10.0106	TL431 CLP	shunt regulator			TI
MP....1	50.20.2001	CLIP	2 * TO 92			
MP....2	50.20.2001	CLIP	2 * TO 92			
MP....3	50.20.2001	CLIP	2 * TO 92			
MP....4	50.20.2001	CLIP	2 * TO 92			
MP....5	43.01.0108	ESE	ESE warning			
P.....1	54.01.0273	13 PIN	CIS			
PCB...1	1.914.540.11		empty PCB			St
Q.....1	50.03.0496	BC560	PNP			Sie
Q.....2	50.03.0600	BC560	PNP	E6310	see note 1	Sie
Q.....3	50.03.0600	BC560	PNP	E6310	see note 1	Sie
Q.....4	50.03.0524	BC550	NPN	E6310	see note 1	Sie
Q.....5	50.03.0524	BC550	NPN	E6310	see note 1	Sie
Q.....6	50.03.0496	BC560	PNP			Sie
Q.....7	50.03.0600	BC560	PNP	E6310	see note 1	Sie
Q.....8	50.03.0600	BC560	PNP	E6310	see note 1	Sie
Q.....9	50.03.0524	BC550	NPN	E6310	see note 1	Sie
Q....10	50.03.0524	BC550	NPN	E6310	see note 1	Sie
R.....1	58.05.0104	100 kOhm	multi-turn 10%			
R.....2	58.05.0501	500 Ohm	multi-turn 10%			
R.....3	57.11.3330	33 Ohm				
R.....4	57.11.3241	240 Ohm				
R.....5	58.05.0104	100 kOhm	multi-turn 10%			
R.....6	58.05.0501	500 Ohm	multi-turn 10%			
R.....7	57.11.3330	33 Ohm				
R.....8	57.11.3241	240 Ohm				
R.....9	57.92.1820	42 Ohm	PTC			
R....10	57.11.3681	680 Ohm				
R....11	57.11.3303	30 kOhm				
R....12	57.11.3103	10 kOhm				
R....13	57.92.1820	42 Ohm	PTC			
R....14	57.11.3101	100 Ohm				
RZ....1	57.88.2223	22 kOhm	network 4 * 22k			
RZ....2	57.88.2223	22 kOhm	network 4 * 22k			
RZ....3	57.88.2223	22 kOhm	network 4 * 22k			
RZ....4	57.88.2223	22 kOhm	network 4 * 22k			

SAL = electrolytic, PE = polyester

MANUFACTURER TI=Texas Instruments, Sie=Siemens, St=Studer

Note 1: Q2,Q3,Q4,Q5,Q7,Q8,Q9,Q10 must fulfill BV 678 !

1.914.540.00 FADER/VCA CV INTERFACE BOARD HOR16/11/9000



	used	unused
1.914.540.81	*	**
1.914.541.00	**	*

Erstellt 0 17.04.2000 ZT

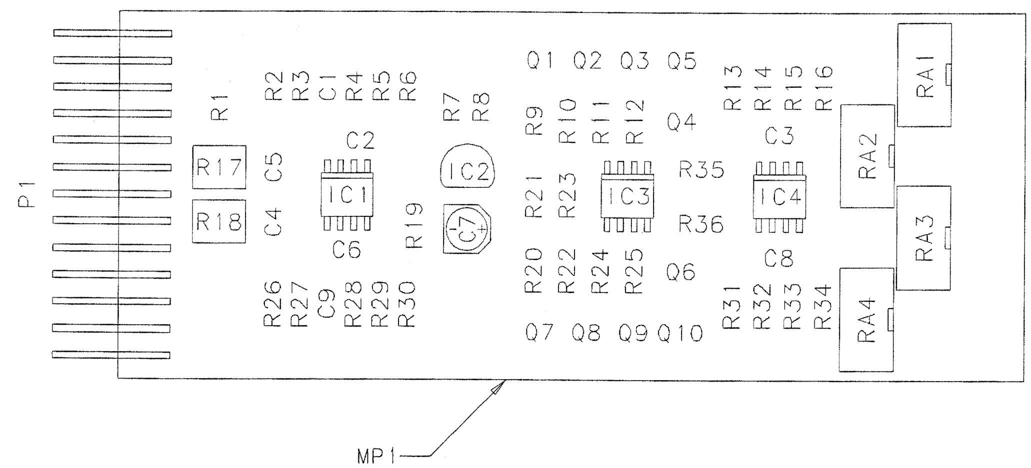
PAGE 1 OF 1

STUDER

FADER/VCA INTERFACE Type2
FADER/VCA CV INTERFACE

SC

1.914.541.00
1.914.540.81



Accompanying documents: Zugehoerige Unterlagen: PL	General tolerance: Freimasstoleranz:	Scale: Massstab: 1.5:1	Edition Ausgabe	17.04.2000 Date Datum	ZT Visa Gez.	ML Checked Gepr.	RL Seen Ges.	0 Index
Substitute for: Ersatz fuer:			Page: Seite:	1 / 1				
STUDER REGENSDORF	Description: Benennung:	FADER/VCA INTERFACE TYPE2 FADER/VCA CV INTERFACE	Z	Number: Nummer:	1.914.541.00 1.914.540.81			

Dual Fader/VCA Control Voltage IF 1.914.541.00 (0)

Idx.	Pos.	Part No.	Qty.	Type/Val.	Description
0	C 1	59.60.3325	1 pce	10n	CER 50V, 10%, X7R, 0805
0	C 2	59.60.2249	1 pce	100p	CER 50V, 5%, C0G, 0603
0	C 3	59.60.2373	1 pce	1n0	CER 50V, 5%, C0G, 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	59.60.2249	1 pce	100p	CER 50V, 5%, C0G, 0603
0	C 7	59.68.0065	1 pce	10u	EL 16V, 4.0*5.7
0	C 8	59.60.2373	1 pce	1n0	CER 50V, 5%, C0G, 0805
0	C 9	59.60.3325	1 pce	10n	CER 50V, 10%, X7R, 0805
0	IC 1	50.61.0201	1 pce	TL062	Dual FET Op-Amp
0	IC 2	50.10.0106	1 pce	TL431	Shunt regulator
0	IC 3	50.61.0201	1 pce	TL062	Dual FET Op-Amp
0	IC 4	50.61.0201	1 pce	TL062	Dual FET Op-Amp
0	MP 1	1.914.541.11	1 pce		FADER/VCA INTERFACE2 PCB
0	MP 2	1.914.541.04	1 pce		NR.-ETIKETTE 5 * 20
0	MP 3	43.01.0108	1 pce	Label	ESE-Warnschild
0	P 1	54.01.0273	1 pce	13p	Stecker CIS parallelsteck
0	Q 1	50.60.0002	1 pce	BC850C	NPN 45V 100mA SOT 23
0	Q 2	50.60.0002	1 pce	BC850C	NPN 45V 100mA SOT 23
0	Q 3	50.60.1002	1 pce	BC860C	PNP 45V 100mA SOT 23
0	Q 4	50.60.1002	1 pce	BC860C	PNP 45V 100mA 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	Q 7	50.60.0002	1 pce	BC850C	NPN 45V 100mA SOT 23
0	Q 8	50.60.0002	1 pce	BC850C	NPN 45V 100mA SOT 23
0	Q 9	50.60.1002	1 pce	BC860C	PNP 45V 100mA SOT 23
0	Q 10	50.60.1002	1 pce	BC860C	PNP 45V 100mA SOT 23
0	R 1	57.60.1101	1 pce	100R	MF, 1%, 0204, E24
0	R 2	57.60.1223	1 pce	22k	MF, 1%, 0204, E24
0	R 3	57.60.1113	1 pce	11k	MF, 1%, 0204, E24
0	R 4	not used	1 pce	22k	MF, 1%, 0204, E24
0	R 5	57.60.1104	1 pce	100k	MF, 1%, 0204, E24
0	R 6	57.60.1204	1 pce	200k	MF, 1%, 0204, E24
0	R 7	57.60.1113	1 pce	11k	MF, 1%, 0204, E24
0	R 8	57.60.1333	1 pce	33k	MF, 1%, 0204, E24
0	R 9	57.60.1223	1 pce	22k	MF, 1%, 0204, E24
0	R 10	57.60.1223	1 pce	22k	MF, 1%, 0204, E24
0	R 11	57.60.1223	1 pce	22k	MF, 1%, 0204, E24
0	R 12	57.60.1393	1 pce	39k	MF, 1%, 0204, E24
0	R 13	57.60.1241	1 pce	240R	MF, 1%, 0204, E24
0	R 14	57.60.1393	1 pce	39k	MF, 1%, 0204, E24
0	R 15	57.60.1223	1 pce	22k	MF, 1%, 0204, E24
0	R 16	57.60.1330	1 pce	33R	MF, 1%, 0204, E24
0	R 17	57.92.1820	1 pce	94mA	PTC 60V
0	R 18	57.92.1820	1 pce	94mA	PTC 60V
0	R 19	57.60.1681	1 pce	680R	MF, 1%, 0204, E24
0	R 20	57.60.1223	1 pce	22k	MF, 1%, 0204, E24
0	R 21	57.60.1223	1 pce	22k	MF, 1%, 0204, E24
0	R 22	57.60.1223	1 pce	22k	MF, 1%, 0204, E24
0	R 23	57.60.1223	1 pce	22k	MF, 1%, 0204, E24
0	R 24	57.60.1393	1 pce	39k	MF, 1%, 0204, E24
0	R 25	57.60.1223	1 pce	22k	MF, 1%, 0204, E24
0	R 26	57.60.1223	1 pce	22k	MF, 1%, 0204, E24
0	R 27	57.60.1113	1 pce	11k	MF, 1%, 0204, E24
0	R 28	not used	1 pce	22k	MF, 1%, 0204, E24
0	R 29	57.60.1104	1 pce	100k	MF, 1%, 0204, E24
0	R 30	57.60.1204	1 pce	200k	MF, 1%, 0204, E24
0	R 31	57.60.1241	1 pce	240R	MF, 1%, 0204, E24
0	R 32	57.60.1393	1 pce	39k	MF, 1%, 0204, E24
0	R 33	57.60.1223	1 pce	22k	MF, 1%, 0204, E24
0	R 34	57.60.1330	1 pce	33R	MF, 1%, 0204, E24
0	R 35	57.60.1684	1 pce	680k	MF, 1%, 0204, E24
0	R 36	57.60.1684	1 pce	680k	MF, 1%, 0204, E24
0	RA 1	58.01.9103	1 pce	10k	Cermet, 10%, 0.5W, vertical
0	RA 2	58.01.9101	1 pce	100R	Cermet, 10%, 0.5W, vertical
0	RA 3	58.01.9103	1 pce	10k	Cermet, 10%, 0.5W, vertical
0	RA 4	58.01.9101	1 pce	100R	Cermet, 10%, 0.5W, vertical

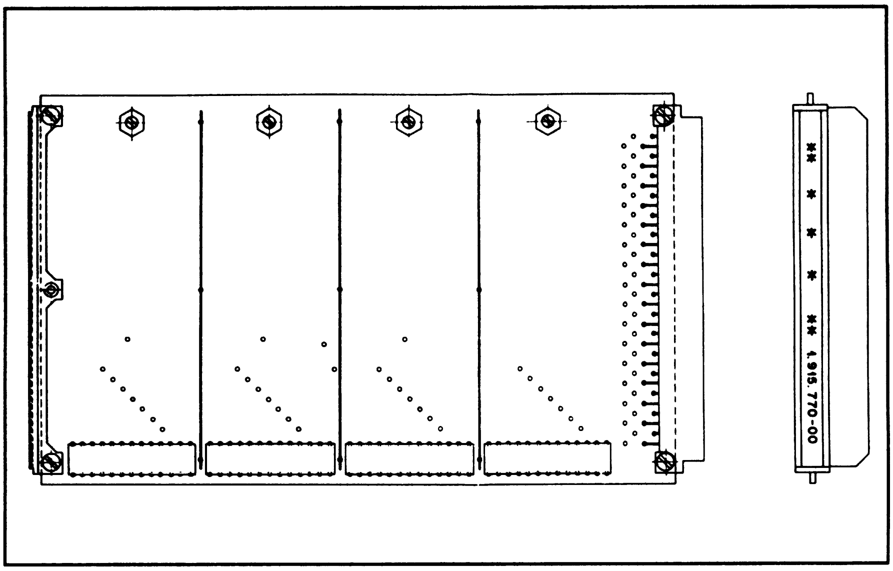
End of List

Comments:

2.2 Euro-Cards

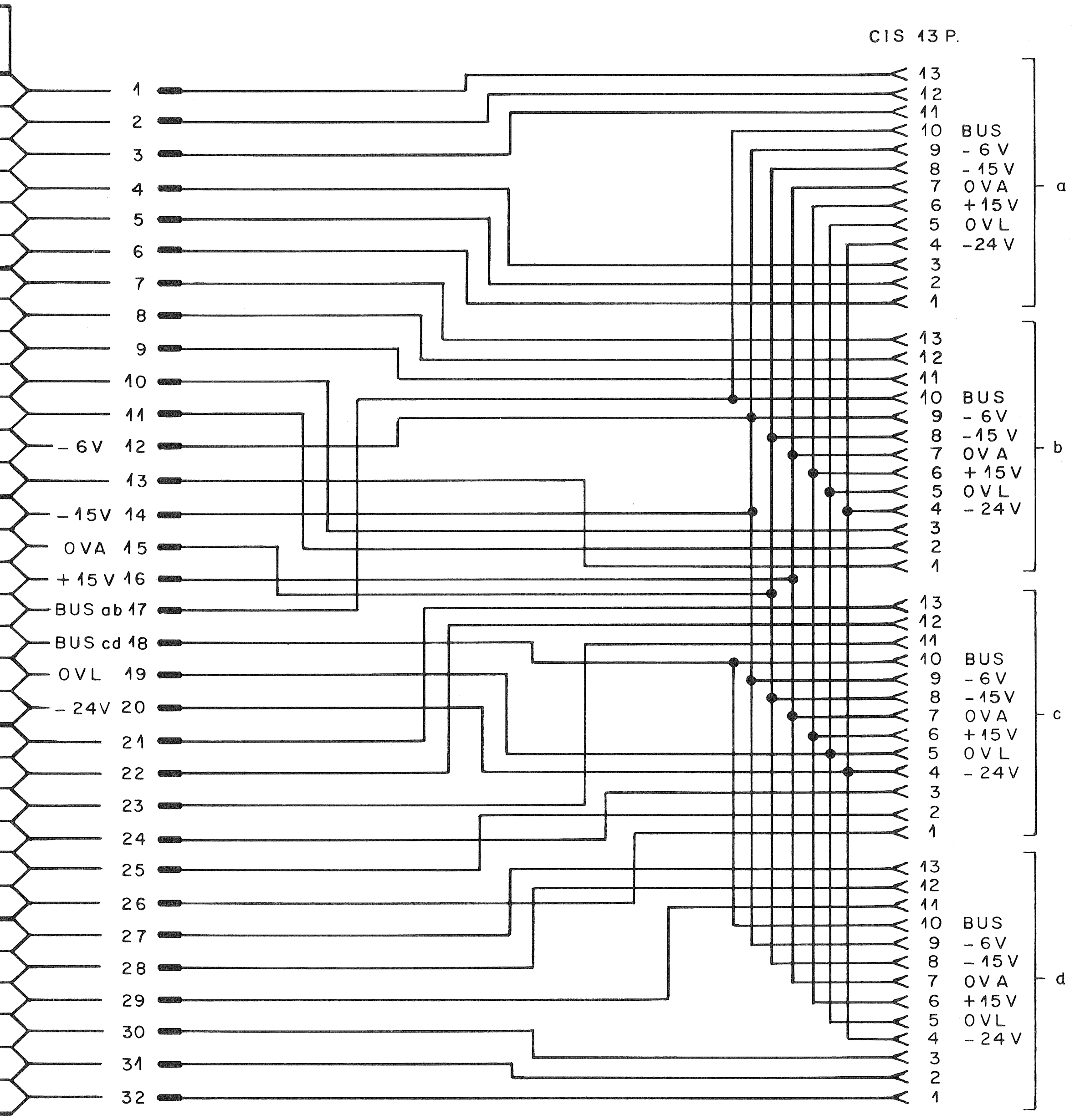
2.2.1 Motherboard for 4 MS-Cards 1.915.770

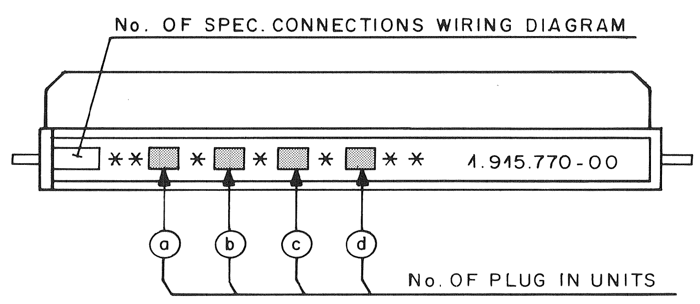
The Modular Sub-Cards require a mounting base for mechanical and electrical installation. This motherboard for four MS-cards in standard Euro-card size easily integrates into the Studer audio components system; it carries 32 printed tracks from its edge connector to four small plug-in sockets. Each socket has 13 contacts; six of them are common supply lines, while another six are individual to each socket. Then there is a separate bus line for circuits 1 and 2, and another bus line for circuits 3 and 4.
A motherboard for only one MS-card is available as well, refer to chapter 2.1.1.

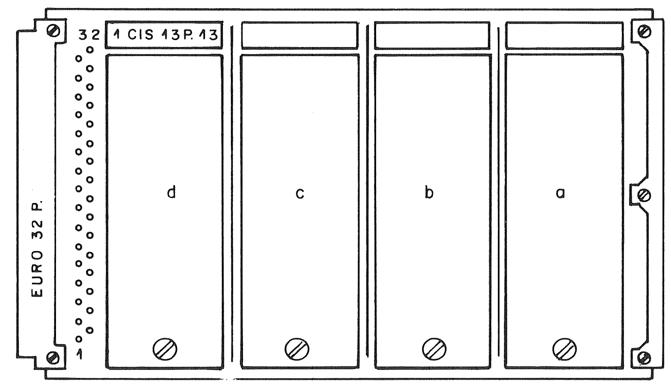


Dimensions:	Euro-card	**100 × 160 mm**	
Connectors:	1 × Euro connector	**32-pin,** DIN 41612	
	4 × CIS connector	**13-pin,** plug-in socket for MSC	
Ordering Information:		MSC motherboard	1.915.770.xx

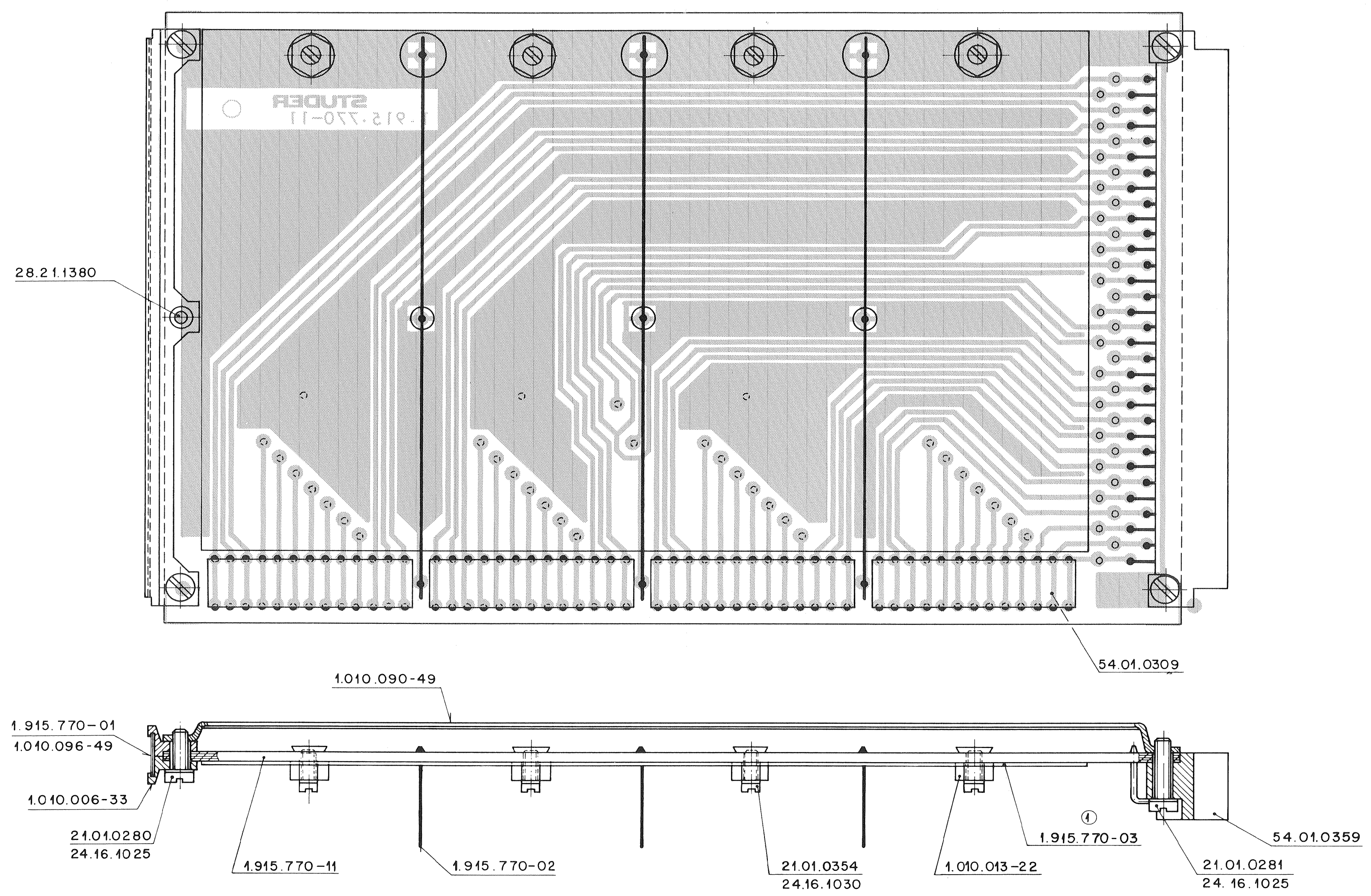
PIN No. EURO	CIS	SIGNAL	SECTION	CONNECTION REMARKS
1	a 13		1.914.5..	
2	a 12			
3	a 11		a NAME	
4	a 3			
5	a 2		– – – – – – –	
6	a 1			
7	b 13		1.914.5..	
8	b 12			
9	b 11			
10	b 3		b NAME	
11	b 2		– – – – – – –	
12		– 6 V		
13	b 1			
14		– 15 V		
15		OVA		
16		+ 15 V		
17	a, b 10			
18	c, d 10			
19		OVL		
20		– 24 V		
21	c 13		1.914.5..	
22	c 12			
23	c 11			
24	c 3		c NAME	
25	c 2		– – – – – – –	
26	c 1			
27	d 13		1.914.5..	
28	d 12			
29	d 11			
30	d 3		d NAME	
31	d 2		– – – – – – –	
32	d 1			







MSC MOTHER BOARD



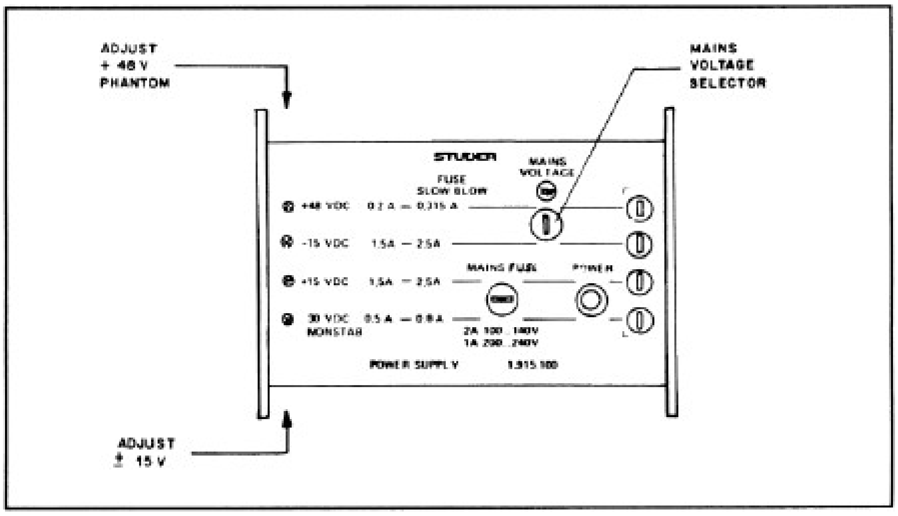
Änderung					Index
					3
					2
	8.2.85	A.Ho			1
Ausgabe	04.04.84	STJ			0
	Datum	Gez	Gepr	Ges	Index
Kopie für					

STUDER REGENSDORF ZÜRICH	Benennung BASIS BOARD	Nummer 1.915.770-00

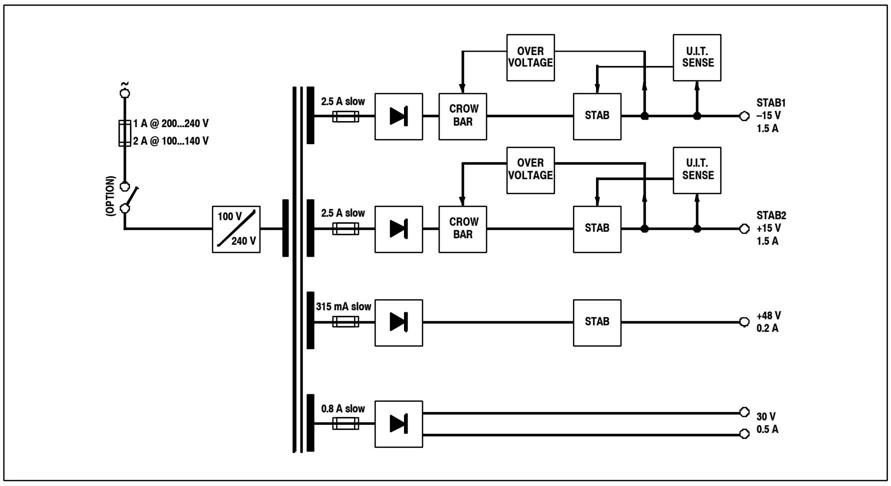
2.2.2 Power Supply

1.915.100

This power supply provides a regulated output of ±15 V_{DC} at a maximum load of 1.5 A for audio circuits, plus a regulated 48 V_{DC} output for the phantom powering of microphones. In addition, 30 V of unregulated DC are available as well.
If a regulated 24 V_{DC} supply is required, the stabilizer card 1.915.105.xx can be connected to the 30 V_{DC} output.
Each of the output voltages is derived from a separate secondary winding of the mains transformer and can be fine-adjusted.



The ±15 V_{DC} supply is fully short-circuit proof and is protected against overvoltage and excess temperature. Short-circuit-protection is also effective in the 48 V_{DC} section.
The power supply has no on/off switch in the primary circuit. Such a switch, if needed, will have to be fitted separately.



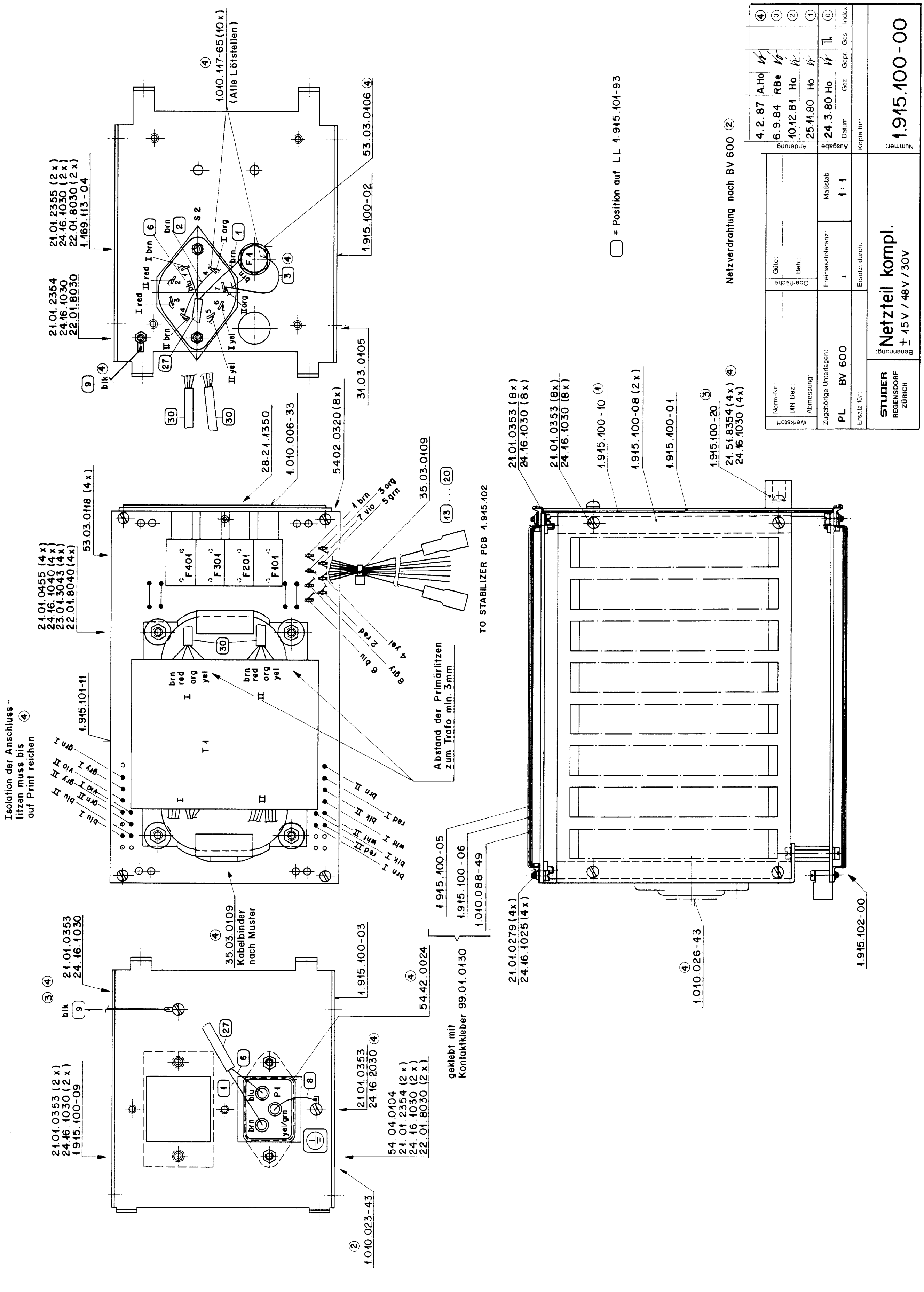
Mains transformer and regulator electronics are housed in one rectangular unit fitting into the 19” Euro-card frame (1.918.318/319), occupying the space of 28M widths. For this purpose, a mounting kit 1.918.316 is recommended (see chapter 2.3.4).

Technical Specifications

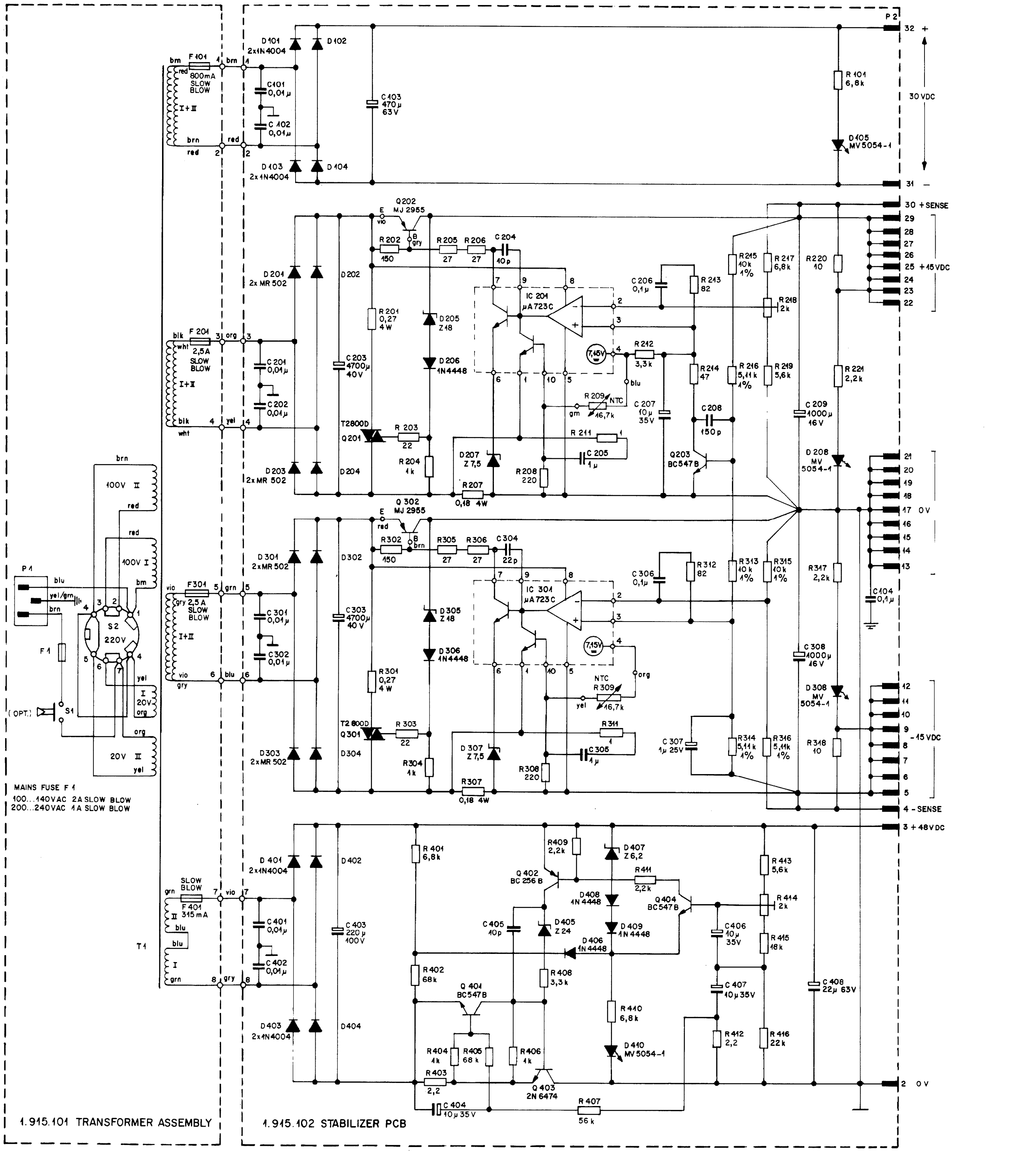
Primary:	Voltage selector	**100/120/140/200/220/240 V_{AC} ±10%**
	Fuse	**T 2 A (slow),** 100...140 V
		T 1 A (slow), 200...240 V
	Power consumption	< **120 W** (190 VA)
Secondary:	**Audio supply:**	**±15 V/1.5 A max.,** regulated voltage
	Ripple	**100 µV**
	Fuses	**2 × T 2.5 A (slow)**
	Phantom supply:	**48 V/200 mA max.,** regulated voltage, according to DIN 45596
	Ripple	**100 µV**
	Fuse	**T 315 mA (slow)**
	Unregulated DC:	**30 V/0.5 A max.**
	Fuse	**T 0.8 A (slow)**
Dimensions:	W × H × D	**140 × 100 × 160 mm**, Euro-card/28M units
	Weight	**2.75 kg**

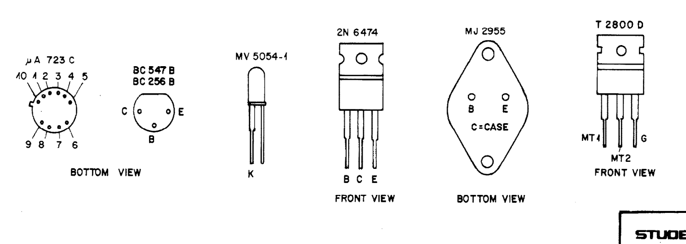
Ordering Information:	Power supply	1.915.100.xx
	Mounting kit for installation in ELMA frame (1.918.318)	1.918.316.xx

POWER SUPPLY



POWER SUPPLY





Änderung					Index
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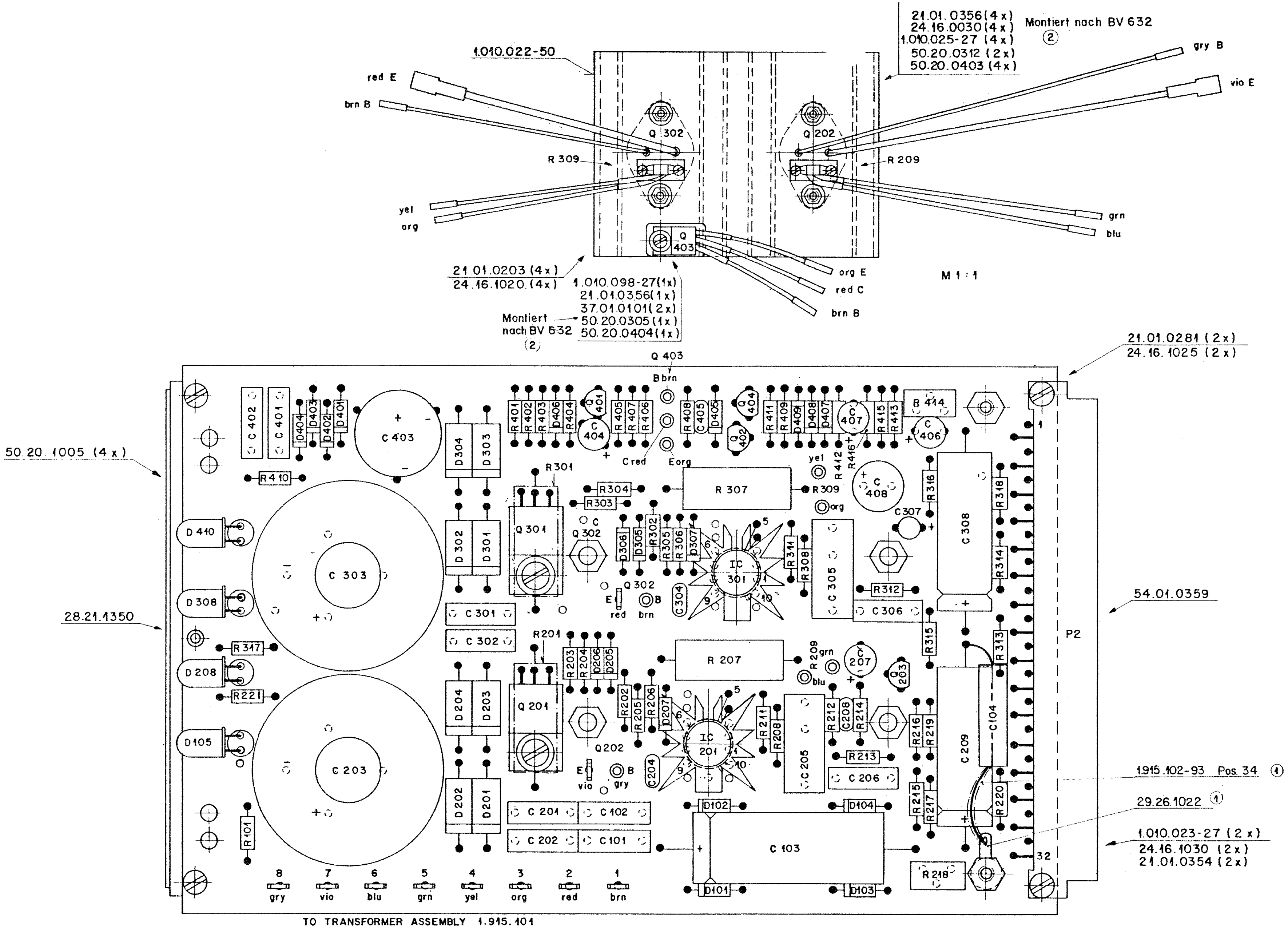
Ausgabe	1.12.78	Si			0
	Datum	Gez.	Gepr.	Ges.	Index

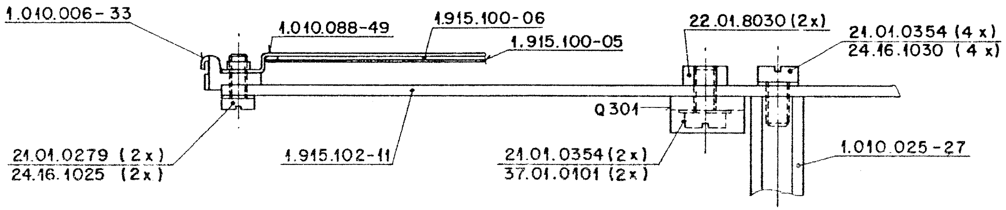
Kopie für:

STUDER REGENSDORF ZÜRICH

Benennung: EU POWER SUPPLY ± 15 V 1,5 A / + 48 V 0,2 A / 30 V DC 0,5 A

Nummer: SC 1.915.100





	Oberfläche: Gute: / Beh.:	Änderung				③
		17.1.86	A.Ho			②
		6.9.84	RBe			①
Zugehörige Unterlagen: BV 632 ② PL 1.915.100 AL 1.915.100-95	Freimasstoleranz: ± / Maßstab: 2:1 (1:1)	Ausgabe 19.11.79	Ho			⓪
		Datum	Gez.	Gepr.	Ges.	Index
Ersatz für:	Ersetzt durch:	Kopie für:				
STUDER REGENSDORF ZÜRICH	Benennung: Stabilisator-Print	Nummer: 1.915.102-00				

POWER SUPPLY

Ad	POS.	REF.No.	DESCRIPTION			MANUFACTURER
	C...101	59.31.2103	0,01µ	250V	PE	
	C...102	59.31.2103	0,01µ	250V	PE	
	C...103	59.25.6471	470µ	63V	EL	
②	C...104	59.99.0453	0,1µ	250V	MP	
	C...201	59.31.2103	0,01µ	250V	PE	
	C...202	59.31.2103	0,01µ	250V	PE	
	C...203	59.35.4472	4700µ	40V	EL	
	C...204	59.34.1100	10p		CER	
	C...205	59.34.6105	1µ	100V	PE	
	C...206	59.31.6104	0,1µ		PE	
	C...207	59.36.5100	10µ	35V	TA	
	C...208	59.34.4151	150p		CER	
	C...209	59.25.3102	1000µ	16V	EL	
	C...301	59.31.2103	0,01µ	250V	PE	
	C...302	59.31.2103	0,01µ	250V	PE	
	C...303	59.35.4472	4700µ	40V	EL	
	C...304	59.34.2220	22p		CER	
	C...305	59.31.6105	1µ	100V	PE	
	C...306	59.31.6104	0,1µ		PE	
	C...307	59.36.4109	1µ	25V	TA	
	C...308	59.25.3102	1000µ	16V	EL	
	C...401	59.31.2103	0,01µ	250V	PE	
	C...402	59.31.2103	0,01µ	250V	PE	
	C...403	59.22.9221	220µ	100V	EL	
	C...404	59.36.5100	10µ	35V	TA	
	C...405	59.34.1100	10p		CER	
	C...406	59.36.5100	10µ	35V	TA	
	C...407	59.36.5100	10µ	35V	TA	
	C...408	59.22.8220	22µ	63V	EL	
	D...101	50.04.0105	1N4004	1A	200V	ANY
	D...102	50.04.0105	1N4004	1A	200V	ANY
	D...103	50.04.0105	1N4004	1A	200V	ANY
	D...104	50.04.0105	1N4004	1A	200V	ANY
	D...105	50.04.2109	MV5054-1	LED		
	D...201	50.04.0507	MR502	3A	200V	MOT
	D...202	50.04.0507	MR502	3A	200V	MOT
	D...203	50.04.0507	MR502	3A	200V	MOT
	D...204	50.04.0507	MR502	3A	200V	MOT
	D...205	50.04.1122	ZPD18	Z-DIODE 18V	400mW	
	D...206	50.04.0125	1N4448			
	D...207	50.04.1503	ZPY7,5	Z-DIODE 7,5V	1,3W	
	D...208	50.04.2109	MV5054-1	LED		
	D...301	50.04.0507	MR502	3A	200V	MOT
	D...302	50.04.0507	MR502	3A	200V	MOT
	D...303	50.04.0507	MR502	3A	200V	MOT
	D...304	50.04.0507	MR502	3A	200V	MOT
	D...305	50.04.1122	ZPD18	Z-DIODE 18V	400mW	
	D...306	50.04.0125	1N4448			
	D...307	50.04.1503	ZPY7,5	Z-DIODE 7,5V	1,3W	
	D...308	50.04.2109	MV5054-1	LED		
	D...401	50.04.0105	1N4004	1A	200V	
	D...402	50.04.0105	1N4004	1A	200V	
	D...403	50.04.0105	1N4004	1A	200V	
	D...404	50.04.0105	1N4004	1A	200V	
	D...405	50.04.1121	ZPD24	Z-DIODE 24V	400mW	
	D...406	50.04.0125	1N4448			
	D...407	50.04.1118	ZPD6,2	Z-DIODE 6,2V	400mW	
	D...408	50.04.0125	1N4448			
	D...409	50.04.0125	1N4448			
	D...410	50.04.2109	MV5054	LED		
	F.....1	51.01.0120	2A	SLOW BLOW @ 100...140 VAC		
		51.01.0117	1A	SLOW BLOW @ 200...240 VAC		
	F...101	51.01.0116	800mA	SLOW BLOW		
	F...201	51.01.0121	2,5A	SLOW BLOW		
	F...301	51.01.0121	2,5A	SLOW BLOW		
	F...401	51.01.0112	315mA			
	IC..201	50.05.0119	µA723C			
	IC..301	50.05.0119	µA723C			
	P.....1	54.04.0104	3p	MAINS-PLUG		
	P.....2	54.01.0359	32p	EDGE CONNECTOR		
	Q...201	50.99.0106	T2800D	TRIAC		RCA
	Q...202	50.03.0481	MJ2955			MOT
	Q...203	50.03.0436	BC237B	NPN GEN. PURP.	BC547B	
	Q...301	50.99.0106	T2800D	TRIAC		RCA
	Q...302	50.03.0481	MJ2955			MOT
	Q...401	50.03.0436	BC237B	NPN 50V	BC547B	
	Q...402	50.03.0492	BC256B			
	Q...403	50.03.0344	2N6474			RCA
	Q...404	50.03.0436	BC237B	NPN 50V	BC547B	
	R...101	57.11.4682	6,8k			

Ad	POS.	REF.No.	DESCRIPTION			MANUFACTURER
	R...201	57.56.5278	0,27		4W	
	R...202	57.11.4151	150			
	R...203	57.11.4220	22			
	R...204	57.11.4102	1k			
	R...205	57.11.4270	27			
	R...206	57.11.4270	27			
	R...207	57.56.5188	0,18		2W	
	R...208	57.11.4221	220			
	R...209	57.99.0208	16,7k	NTC R@ 100°C		PH
	R...210					
	R...211	57.11.4109	1			
	R...212	57.11.4332	3,3k			
	R...213	57.11.4820	82			
	R...214	57.11.4470	47			
	R...215	57.39.1002	10k	1%	MF	
	R...216	57.39.5111	5,11k	1%	MF	
	R...217	57.11.4682	6,8k			
	R...218	58.01.7202	2k	TRIM	PMG	
	R...219	57.11.4562	5,6k			
	R...220	57.11.4100	10			
	R...221	57.11.4222	2,2k			
	R...301	57.56.5278	0,27		4W	
	R...302	57.11.4151	150			
	R...303	57.11.4220	22			
	R...304	57.11.4102	1k			
	R...305	57.11.4270	27			
	R...306	57.11.4270	27			
	R...307	57.56.5188	0,18		2W	
	R...308	57.11.4221	220			
	R...309	57.99.0208	16,7k	NTC R@ 100°C		PH
	R...310					
	R...311	57.11.4109	1			
	R...312	57.11.4820	82			
	R...313	57.39.1002	10k	1%	MF	
	R...314	57.39.5111	5,11k	1%	MF	
	R...315	57.39.1002	10k	1%	MF	
	R...316	57.39.5111	5,11k	1%	MF	
	R...317	57.11.4222	2,2k			
	R...318	57.11.4100	10			
	R...401	57.11.4682	6,8k			
	R...402	57.11.4683	68k			
	R...403	57.11.4229	2,2			
	R...404	57.11.4102	1k			
	R...405	57.11.4683	68k			
	R...406	57.11.4102	1k			
	R...407	57.11.4563	56k			
	R...408	57.11.4332	3,3k			
	R...409	57.11.4222	2,2k			
	R...410	57.11.4682	6,8k			
	R...411	57.11.4222	2,2k			
	R...412	57.11.4229	2,2			
	R...413	57.11.4562	5,6k			
	R...414	58.01.7202	2k	TRIM	PMG	
	R...415	57.11.4183	18k			
	R...416	57.11.4223	22k			
	S.....2	53.03.0128		VOLTAGE SELECTOR		
		1.169.113.04		INSULATION-VOLT. SEL.		
	T.....1	1.915.103.00		MAINS-TRANSFORMER		
		53.03.0106		FUSE HOLDER MAINS		
		53.03.0118		FUSE HOLDER PCB		
		1.010.088.49		PCB SCREEN		
		1.915.100.05		INSULATION		
		1.915.100.06		PERMALLOY		
		1.010.001.50		HEATSINK STAR		
		1.915.101.00		TRANSFORMER ASSEMBLY		
		1.915.102.00		STABILIZER PCB		

PE=Polyester, EL=Electrolytic, CER=Ceramic, TA=Tantalum, PMG=Cermet, MF=Metal Film

MANUFACTURER: MOT=Motorola, PH=Philips

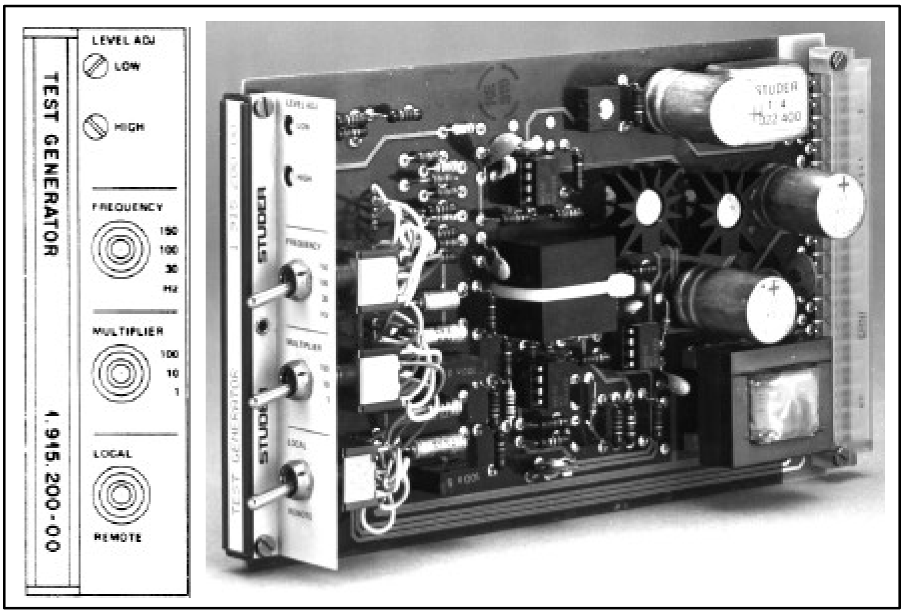
1.915.100 POWER SUPPLY		TH 28/08/79
1.915.100 POWER SUPPLY	①	HO 08/02/80
1.915.100 POWER SUPPLY	②	VO 06/09/84

END
➔

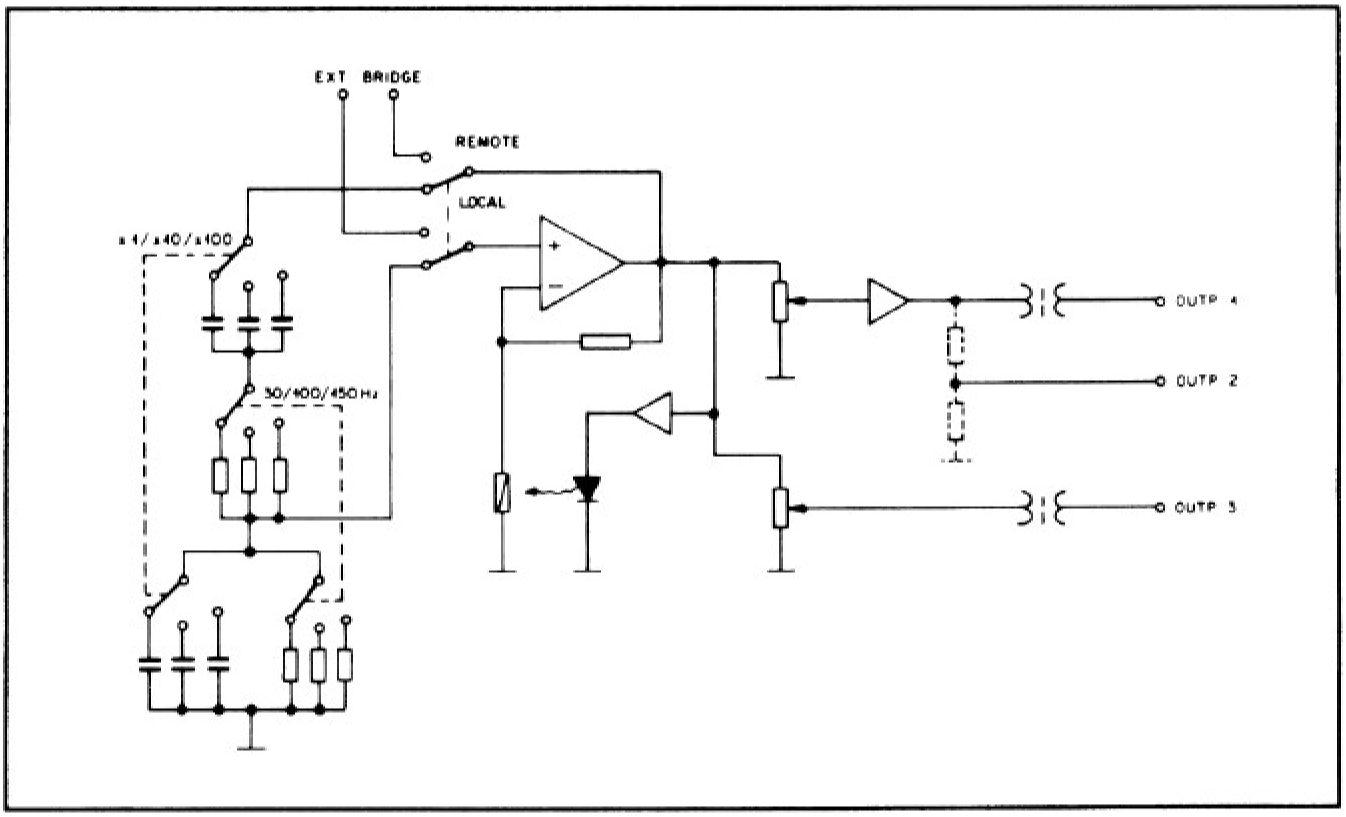
2.2.3 Audio Generator

1.915.200

This oscillator circuit provides a convenient source of 9 fixed audio frequencies with stable signal level, accommodated on one Euro-card. It is well suited for quick frequency-response measurements or for other calibration work in an audio system.



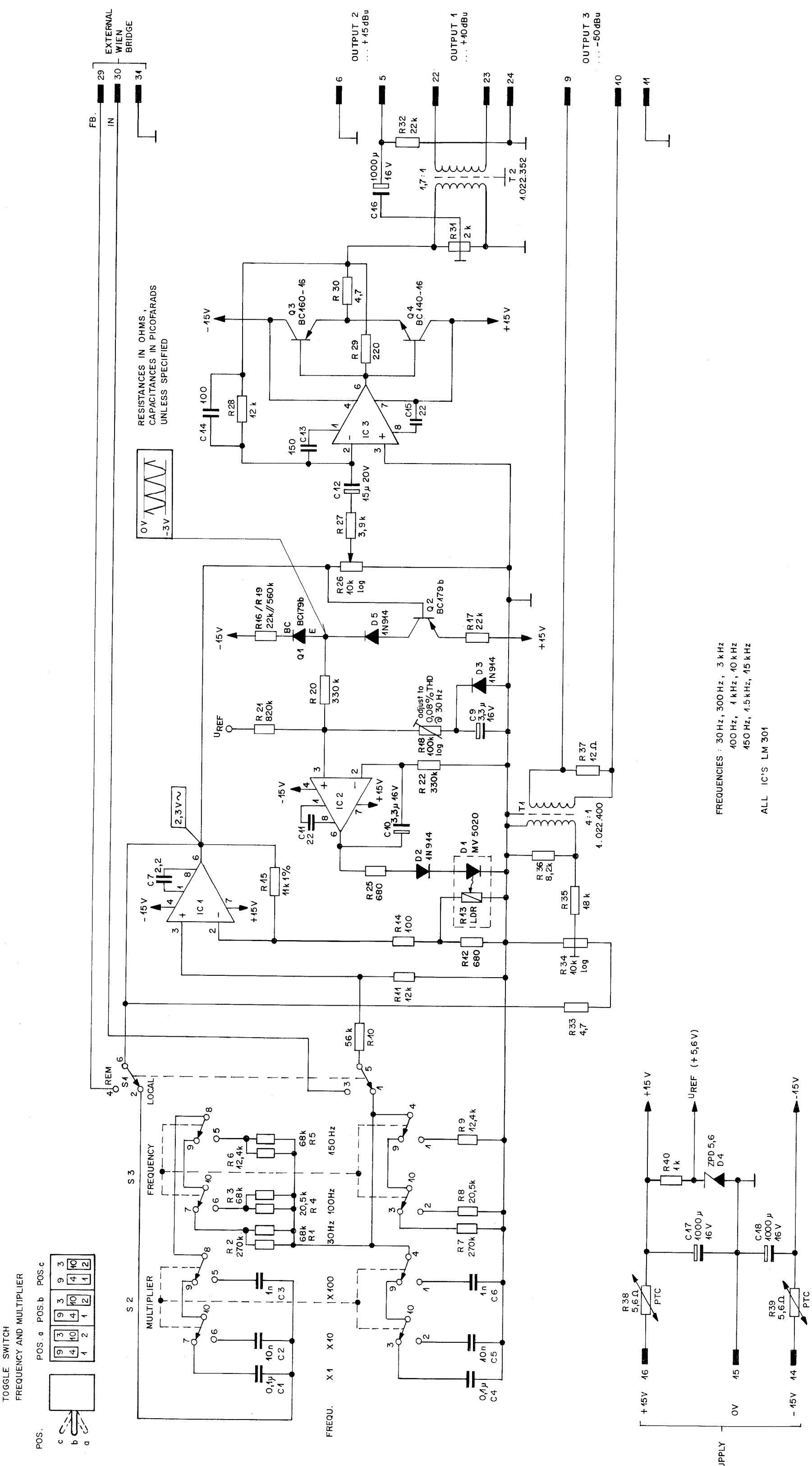
Two three-position rocker switches allow the selection of the 9 frequencies, a third switch permits changeover to an external Wien-bridge, if external frequency control should be desired.
An output amplifier with level control on its input is also implemented, providing three different outputs, as far as levels and balanced/unbalanced configurations are concerned.



Technical Specifications

General:	Frequencies	**30 / 100 / 150 / 300 Hz / 1 / 1.5 / 3 / 10 / 15 kHz,** fixed (accuracy ±5%)
	Settling time	< **5 s** (30 Hz)
		< 1 s (1 kHz)
	Level accuracy	**+0.1/–0.2 dB** (0...50° C)
	Operating temperature	**–10...+55° C**
	Supply	**±15 V**, regulated within ±0.2 V (< 25 mA)
Output 1:	balanced and floating	**separately adjustable**
	Output level range	**–¥...+10 dBu** (0...2.45 V_{rms})
	Level uniformity vs. frequency	**±0.1 dB** (20° C)
	THD	< **0.25%**, 30 Hz...15 kHz
		< **0.1%**, 100 Hz...10 kHz
	Output impedance	**< 30 W**
	Minimum load	**200 W**
Output 2:	unbalanced	**separately adjustable**
	Output level range	**–¥...+15 dBu** (0...4.4 V_{rms})
	Level uniformity vs. frequency	**±0.2 dB** (20° C)
	THD	< **0.15%,** 30 Hz...15 kHz
		< **0.1%**, 100 Hz...10 kHz
	Minimum load	**200 W**
Output 3:	balanced and floating	**separately adjustable**
	Output level range	**–¥...–50 dBu** (0...2.5 mV_{rms})
	Level uniformity vs. frequency	**±0.2 dB** (20° C)
	THD	< **0.2%**, 30 Hz...15 kHz
	Output impedance	**12 W**
	Minimum load	**200 W**
Dimensions:	Euro-card	**100 × 160 mm, 7M units wide**
	Weight	**approx. 350 g**

Ordering Information: Audio generator 30 Hz...15 kHz 1.915.200.xx

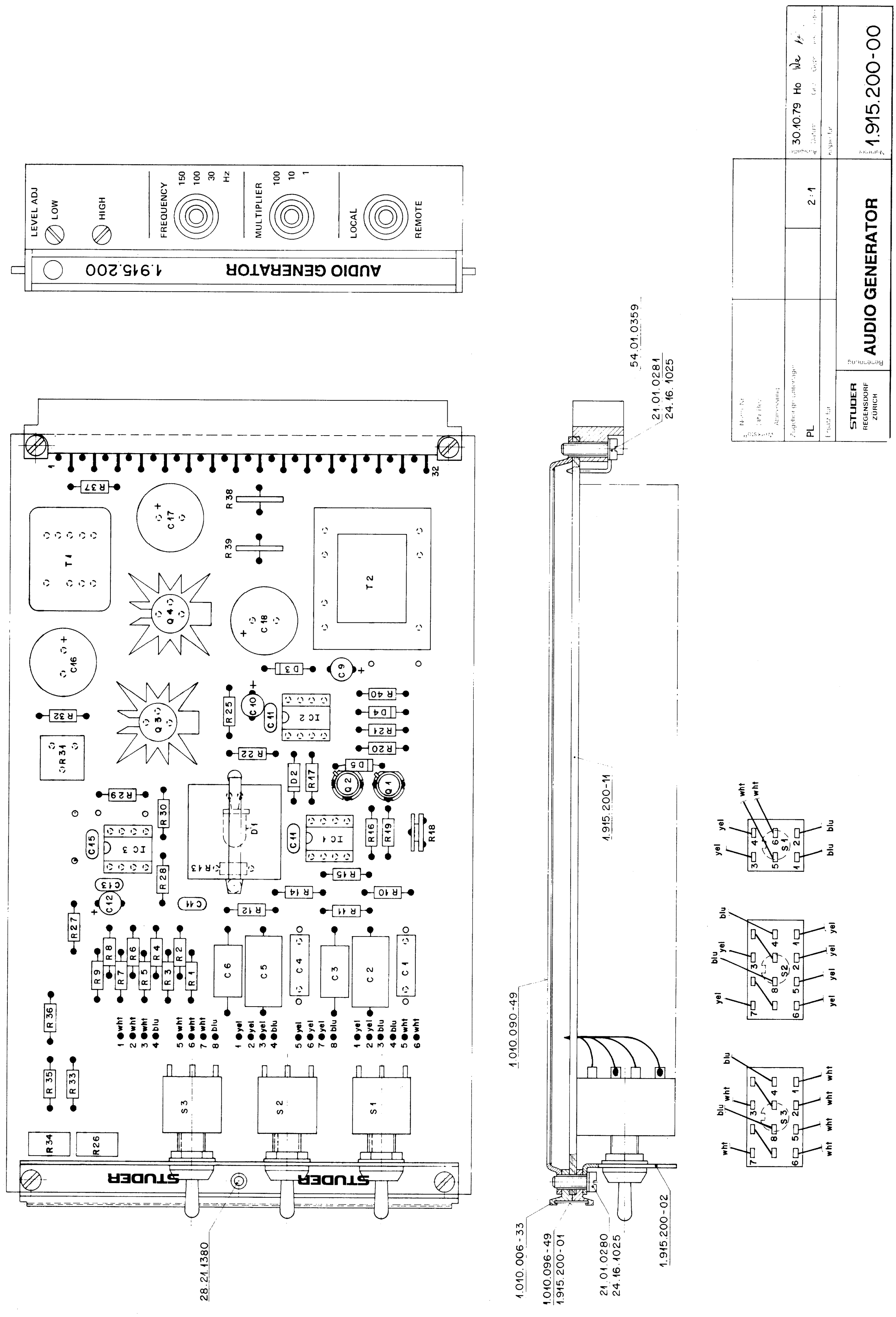


Änderung				③
1. 3. 83	Si	We		②
29.10.79	Si	We		①
Ausgabe 16.10.78	Si	Sk		⓪
Datum	Gez.	Gepr.	Ges.	Index

Ersatz für: | Ersetzt durch: | Kopie für:

STUDER REGENSDORF ZÜRICH | Benennung: **AUDIO GENERATOR** | Nummer: 1.915.200

AUDIO GENERATOR



AUDIO GENERATOR

Ad	POS.	REF.No.	DESCRIPTION				MANUFACTURER
	C.....1	59.99.0254	0,1µ	2%	100V	PE	
	C.....2	59.12.7103	0,01µ	1%	63V	PS	
	C.....3	59.12.9102	1000p	1%	500V	PS	
	C.....4	59.99.0254	0,1µ	2%	100V	PE	
	C.....5	59.12.7103	0,01µ	1%	63V	PS	
	C.....6	59.12.9102	1000p	1%	500V	PS	
	C.....7	59.34.0229	2,2p			CER	
	C.....8						
	C.....9	59.36.3339	3,3µ	20%	16V	TA	
	C....10	59.36.3339	3,3µ	20%	16V	TA	
	C....11	59.32.0220	22p	20%	400V	CER	
	C....12	59.36.4150	15µ	20%	25V	TA	
	C....13	59.32.1151	150p	10%	400V	CER	
	C....14	59.32.0101	100p	20%	400V	CER	
	C....15	59.32.0220	22p	20%	400V	CER	
	C....16	59.22.4102	1000µ	-10%	16V	EL	
	C....17	59.22.4102	1000µ	-10%	16V	EL	
	C....18	59.22.4102	1000µ	-10%	16V	EL	
	D.....1	50.04.2104	MV5020	LED			
	D.....2	50.04.0125	1N4448	SI	1N914		
	D.....3	50.04.0125	1N4448	SI	1N914		
	D.....4	50.04.1104	Z5,6	5%	0,4W		
	D.....5	50.04.0125	1N4448	SI	1N914		
	IC....1	50.05.0144	LM301AN	OP AMP			
	IC....2	50.05.0144	LM301AN	OP AMP			
	IC....3	50.05.0144	LM301AN	OP AMP			
	Q.....1	50.03.0305	BC179B	PNP			
	Q.....2	50.03.0305	BC179B	PNP			
	Q.....3	50.03.0315	BC160-16	PNP			
	Q.....4	50.03.0316	BC140-16	NPN			
	R.....1	57.41.4683	68k	5%	¼W	CSCH	
	R.....2	57.39.2673	267k	1%	¼W	MF	
	R.....3	57.41.4683	68k	5%	¼W	CSCH	
	R.....4	57.39.2052	20,5k	1%	¼W	MF	
	R.....5	57.41.4683	68k	5%	¼W	CSCH	
	R.....6	57.39.1242	12,4k	1%	¼W	MF	
	R.....7	57.39.2673	267k	1%	¼W	MF	
	R.....8	57.39.2052	20,5k	1%	¼W	MF	
	R.....9	57.39.1242	12,4k	1%	¼W	MF	
	R....10	57.41.4563	56k	5%	¼W	CSCH	
	R....11	57.41.4123	12k	5%	¼W	CSCH	
	R....12	57.41.4681	680	5%	¼W	CSCH	
	R....13	57.99.0135	1k	LDR	100UIX		
	R....14	57.41.4101	100	5%	¼W	CSCH	
	R....15	57.39.1102	11k	1%	¼W	MF	
	R....16	57.41.4223	22k	5%	¼W	CSCH	
	R....17	57.41.4223	22k	5%	¼W	CSCH	
	R....18	58.02.8104	100k LOG	20%	0,1W	PSCH	
	R....19	57.41.4564	560k	5%	¼W	CSCH	
	R....20	57.41.4334	330k	5%	¼W	CSCH	
	R....21	57.41.4824	820k	5%	¼W	CSCH	
	R....22	57.41.4334	330k	5%	¼W	CSCH	
	R....23						
	R....24						
	R....25	57.41.4681	680	5%	¼W	CSCH	
	R....26	58.01.7103	10k	10%	½W	PMG	
	R....27	57.39.3921	3,92k	1%	¼W	MF	
	R....28	57.41.4123	12k	5%	¼W	CSCH	
	R....29	57.41.4221	220	5%	¼W	CSCH	
	R....30	57.41.4479	4,7	5%	¼W	CSCH	
	R....31	58.01.8202	2k	10%	½W	PMG	
	R....32	57.41.4223	22k	5%	¼W	CSCH	
	R....33	57.41.4479	4,7	5%	¼W	CSCH	
	R....34	58.01.7103	10k	10%	½W	PMG	
	R....35	57.41.4183	18k	5%	¼W	CSCH	
	R....36	57.41.4822	8,2k	5%	¼W	CSCH	
	R....37	57.41.4120	12	5%	¼W	CSCH	
	R....38	57.99.0209	5,6	PTC			
	R....39	57.99.0209	5,6	PTC			
	R....40	57.41.4102	1k	5%	¼W	CSCH	
	S.....1	55.01.0112	2xON-ON	SWITCH AU KIPP			
	S.....2	55.01.0114	4xON-ON-ON	SWITCH AU KIPP			
	S.....3	55.01.0114	4xON-ON-ON	SWITCH AU KIPP			
	T.....1	1.022.400.00	4:1	TRAFO			ST
	T.....2	1.022.352.00					ST

CER=Ceramic, PE=Polyester, PS=Polystyrol, PMG=Trimmer, MF=Metal Film, CSCH=Carbon Film
PSCH=Poti, EL=Electrolytic, TA=Tantalum

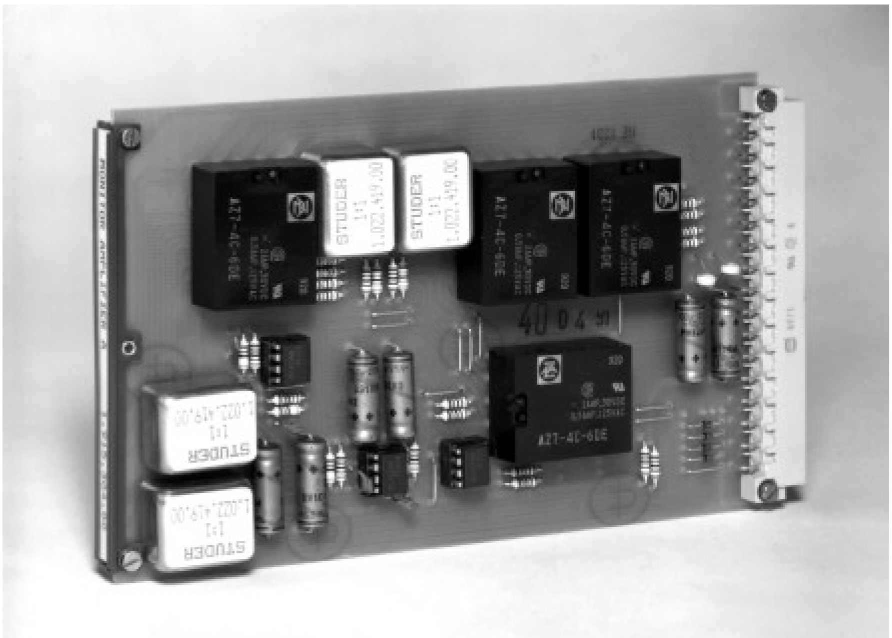
MANUFACTURER: ST=Studer

1.915.200 AUDIO GENERATOR WE 24/03/80

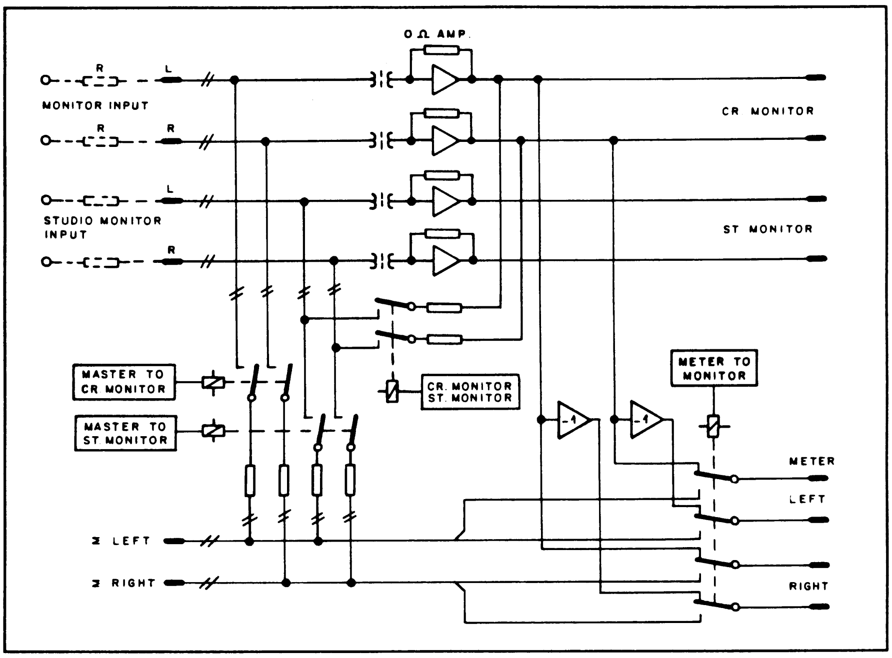
END
→

2.2.4 Monitor Amplifier and Switching Relays (Studio/CR) 1.915.304

The circuit on this Euro-card is designed to form part of an audio monitoring system. The card is narrower than most others, i.e., 4 M units only. It contains four amplifiers, each presenting a 0-Ω input impedance, two metering amplifiers, and four relays for audio switching.

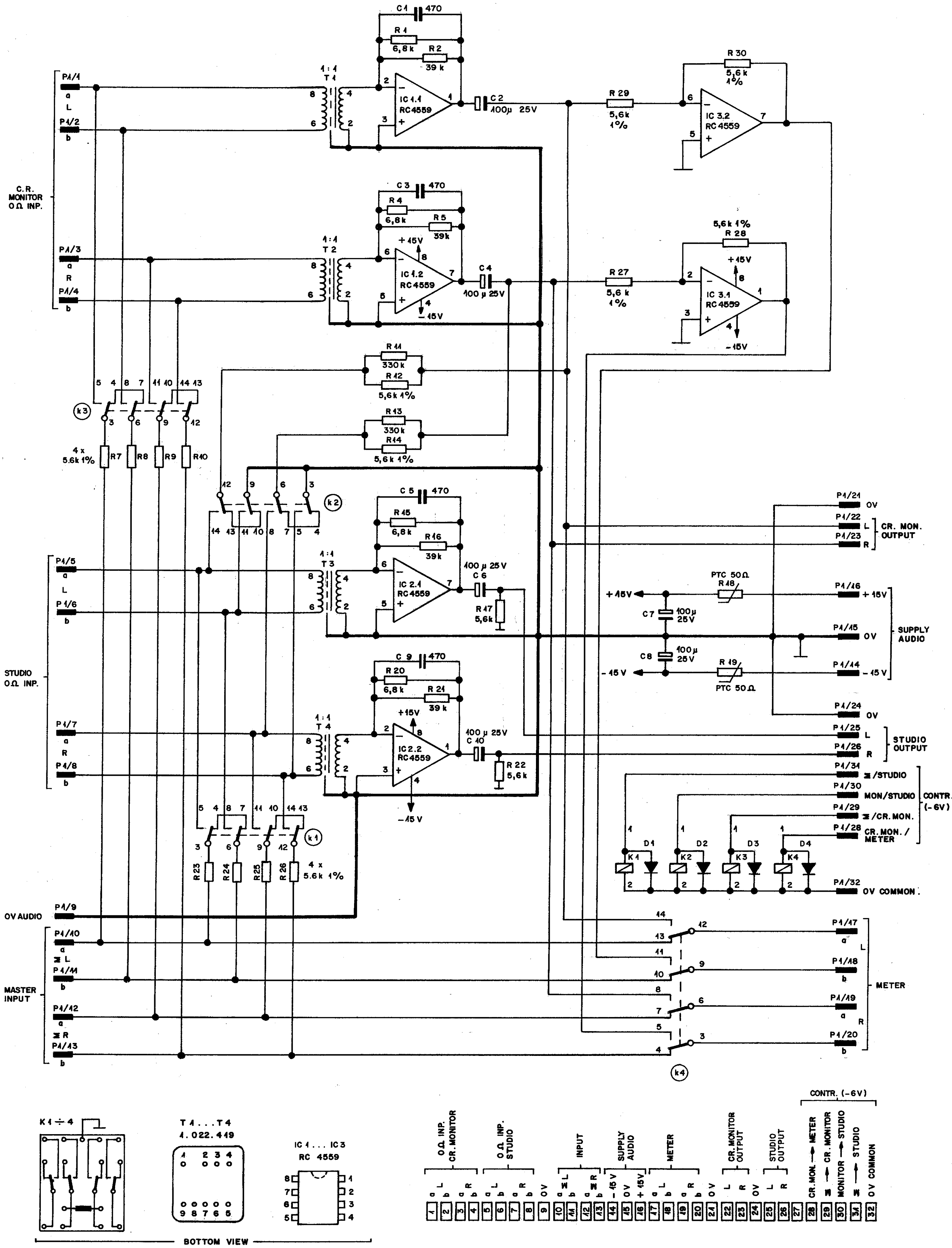


Two stereo signal inputs from a combination of sources (with suitable isolation resistors at the output of each source) can thus be summed for Control Room (CR) and Studio Monitoring, for example. In addition, the signal from the stereo master can be assigned to either monitor line and, if needed, CR monitoring and studio monitoring can be paralleled. A further circuit permits switchover of level meters from the master bus to the CR monitor line. The relays are designed for 6 V_{DC} operation.

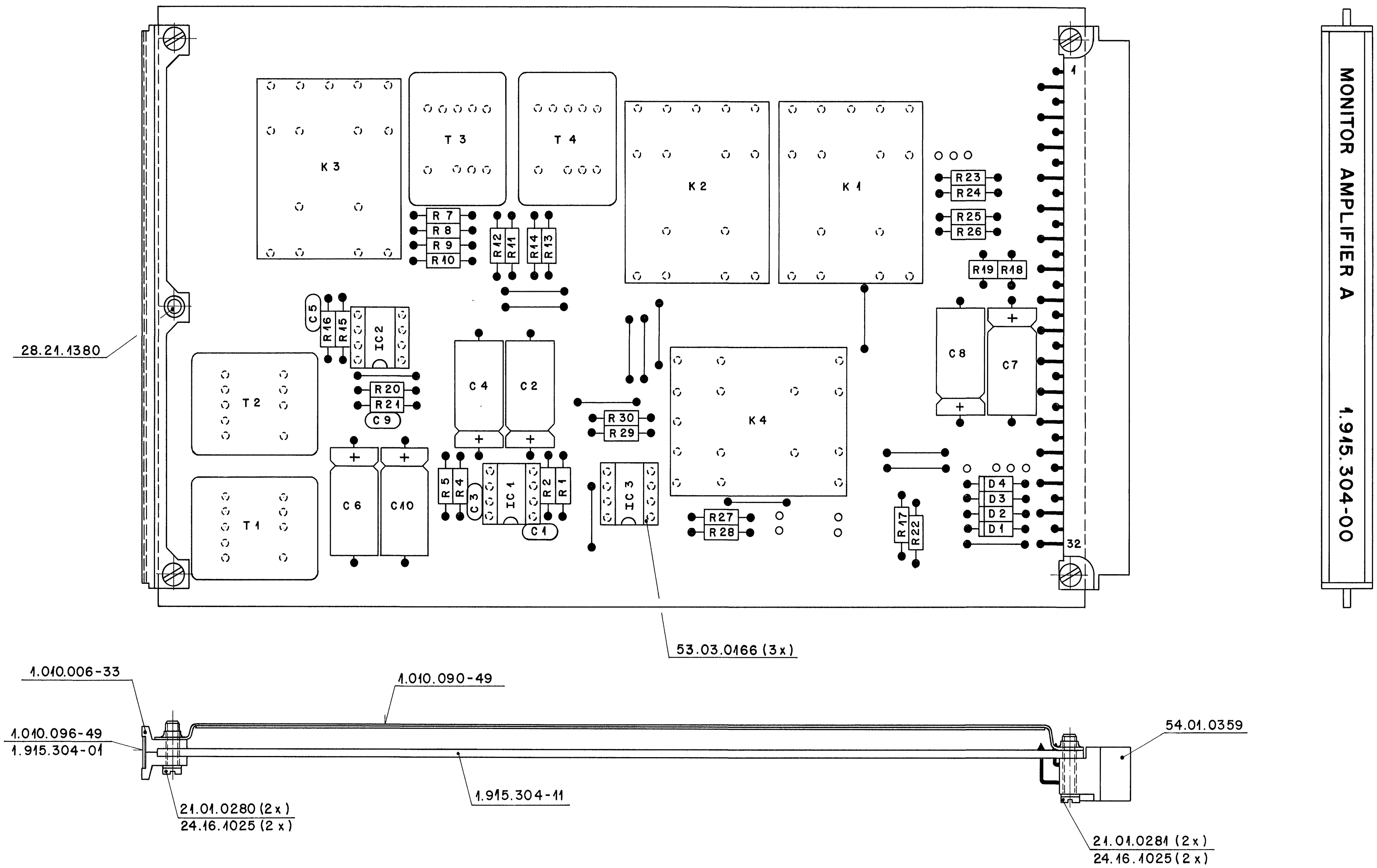


Technical Specifications

Inputs:		**balanced and floating** (for CR monitor and studio monitor)	
	Impedance	**> 10 kW**	
	Maximum level	**+24 dBu**	
Outputs:		**unbalanced** (for CR monitor and studio monitor)	
	Impedance	**< 3 W**	
	Maximum level	**+20 dBu** into 1 kΩ	
	Maximum load	**1 kW**	
Meter outputs:		**push-pull**	
	Maximum level	**+24 dBu**	
	Frequency response	**±0.5 dB,** 30 Hz...16 kHz	
	THD	**< 0.1%,** @ +6 dBu input, 30 Hz...16 kHz	
	S/N	**105 dB,** 20 Hz...23 kHz	
Supply:		**±15 V** (20 mA)	
Dimensions:	Euro-card	**100 × 160 mm**, **4M units wide (19 mm)**	
	Connector system	**DIN 41612, type B**	
	Weight	**approx. 270 g**	
Ordering Information:		Monitor amplifier and switching relay	1.915.304.xx



DATE:	20.11.81					
SIGN:						
STUDER REGENSDORF ZÜRICH	MONITOR AMPLIFIER A					SC. 1.915.304



Änderung					③
					②
	4.4.84	A.Ho	Vr	Vr	①
Ausgabe	8.10.81	Ho	Vr	Vr	⓪
	Datum	Gez.	Gepr.	Ges.	Index

Kopie für:

STUDER REGENSDORF ZÜRICH	Benennung: Monitor Amplifier A	Nummer: 1.915.304-00

Monitor Amp 1.915.304.00 (0)

Idx.	Pos.	Part No.	Qty.	Type/Val.	Description
0	C 1	59.32.4471	1 pce	470p	CER , 20%, 50V
0	C 2	59.25.4101	1 pce	100u	EL 25V 20% axial
0	C 3	59.32.4471	1 pce	470p	CER , 20%, 50V
0	C 4	59.25.4101	1 pce	100u	EL 25V 20% axial
0	C 5	59.32.4471	1 pce	470p	CER , 20%, 50V
0	C 6	59.25.4101	1 pce	100u	EL 25V 20% axial
0	C 7	59.25.4101	1 pce	100u	EL 25V 20% axial
0	C 8	59.25.4101	1 pce	100u	EL 25V 20% axial
0	C 9	59.32.4471	1 pce	470p	CER , 20%, 50V
0	C 10	59.25.4101	1 pce	100u	EL 25V 20% axial
0	D 1	50.04.0125	1 pce	1N4448	75V, 150mA, 4ns, DO-35
0	D 2	50.04.0125	1 pce	1N4448	75V, 150mA, 4ns, DO-35
0	D 3	50.04.0125	1 pce	1N4448	75V, 150mA, 4ns, DO-35
0	D 4	50.04.0125	1 pce	1N4448	75V, 150mA, 4ns, DO-35
0	IC 1	50.09.0107	1 pce	4559	Dual Op-Amp
0	IC 2	50.09.0107	1 pce	4559	Dual Op-Amp
0	IC 3	50.09.0107	1 pce	4559	Dual Op-Amp
0	K 1	56.04.0146	1 pce	4*u	6V, 220V/2A, PCB
0	K 2	56.04.0146	1 pce	4*u	6V, 220V/2A, PCB
0	K 3	56.04.0146	1 pce	4*u	6V, 220V/2A, PCB
0	K 4	56.04.0146	1 pce	4*u	6V, 220V/2A, PCB
0	R 1	57.11.3682	1 pce	6k8	MF, 1%, 0207
0	R 2	57.11.3393	1 pce	39k	MF, 1%, 0207
0	R 4	57.11.3682	1 pce	6k8	MF, 1%, 0207
0	R 5	57.11.3393	1 pce	39k	MF, 1%, 0207
0	R 7	57.11.3562	1 pce	5k6	MF, 1%, 0207
0	R 8	57.11.3562	1 pce	5k6	MF, 1%, 0207
0	R 9	57.11.3562	1 pce	5k6	MF, 1%, 0207
0	R 10	57.11.3562	1 pce	5k6	MF, 1%, 0207
0	R 11	57.11.3334	1 pce	330k	MF, 1%, 0207
0	R 12	57.11.3562	1 pce	5k6	MF, 1%, 0207
0	R 13	57.11.3334	1 pce	330k	MF, 1%, 0207
0	R 14	57.11.3562	1 pce	5k6	MF, 1%, 0207
0	R 15	57.11.3682	1 pce	6k8	MF, 1%, 0207
0	R 16	57.11.3393	1 pce	39k	MF, 1%, 0207
0	R 17	57.11.3562	1 pce	5k6	MF, 1%, 0207
0	R 18	57.99.0206	1 pce	50R	PTC, 25V, 0.5W
0	R 19	57.99.0206	1 pce	50R	PTC, 25V, 0.5W
0	R 20	57.11.3682	1 pce	6k8	MF, 1%, 0207
0	R 21	57.11.3393	1 pce	39k	MF, 1%, 0207
0	R 22	57.11.3562	1 pce	5k6	MF, 1%, 0207
0	R 23	57.11.3562	1 pce	5k6	MF, 1%, 0207
0	R 24	57.11.3562	1 pce	5k6	MF, 1%, 0207
0	R 25	57.11.3562	1 pce	5k6	MF, 1%, 0207
0	R 26	57.11.3562	1 pce	5k6	MF, 1%, 0207
0	R 27	57.11.3562	1 pce	5k6	MF, 1%, 0207
0	R 28	57.11.3562	1 pce	5k6	MF, 1%, 0207
0	R 29	57.11.3562	1 pce	5k6	MF, 1%, 0207
0	R 30	57.11.3562	1 pce	5k6	MF, 1%, 0207
0	T 1	1.022.419.00	1 pce		EINGANGSTRAFO 1:1
0	T 2	1.022.419.00	1 pce		EINGANGSTRAFO 1:1
0	T 3	1.022.419.00	1 pce		EINGANGSTRAFO 1:1
0	T 4	1.022.419.00	1 pce		EINGANGSTRAFO 1:1

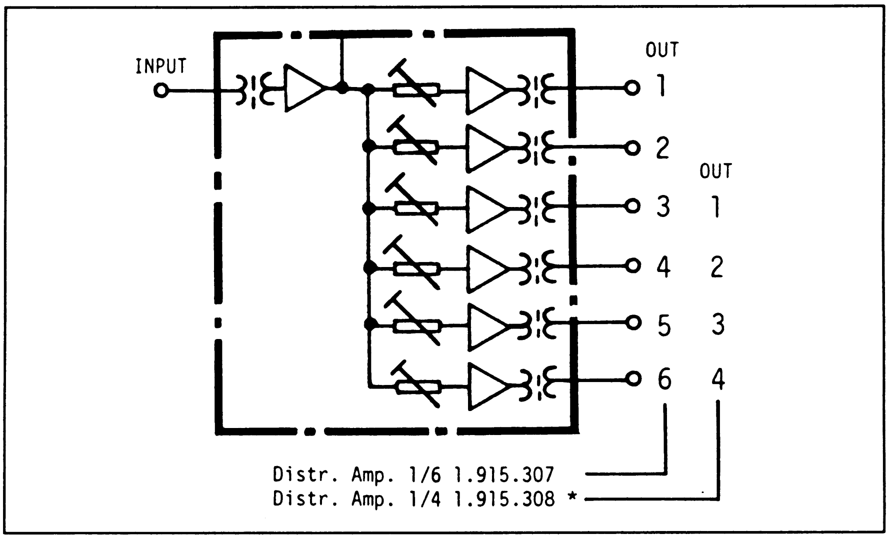
End of List

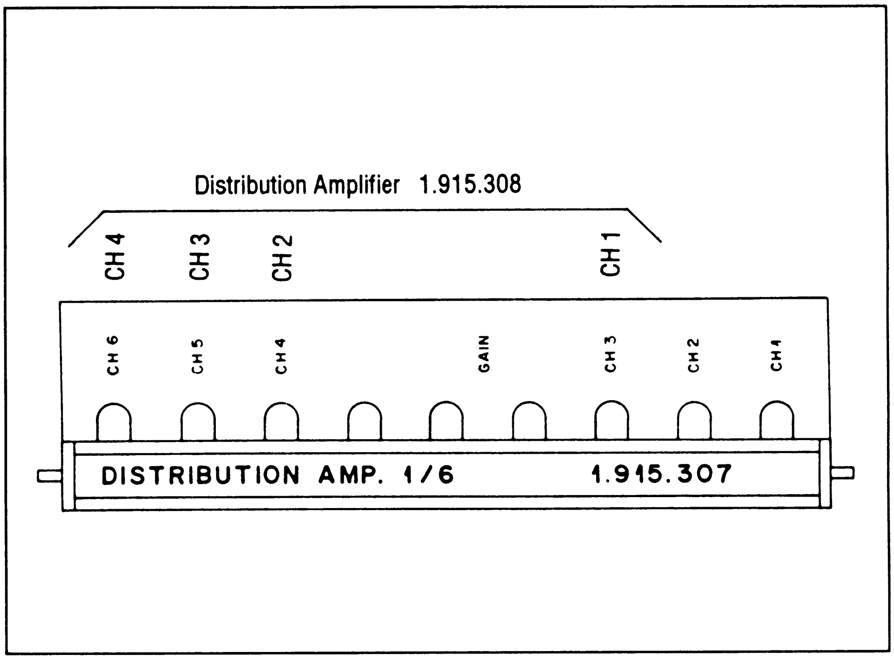
Comments:

2.2.5 Distribution Amplifier

1.915.307/308

The distribution amplifier cards offer splitting of one input to four or six individually adjustable outputs (versions 1.915.308 or 1.915.307, respectively). The input and all outputs are transformer-balanced and floating. These cards satisfy any complex requirement of signal routing and distribution.



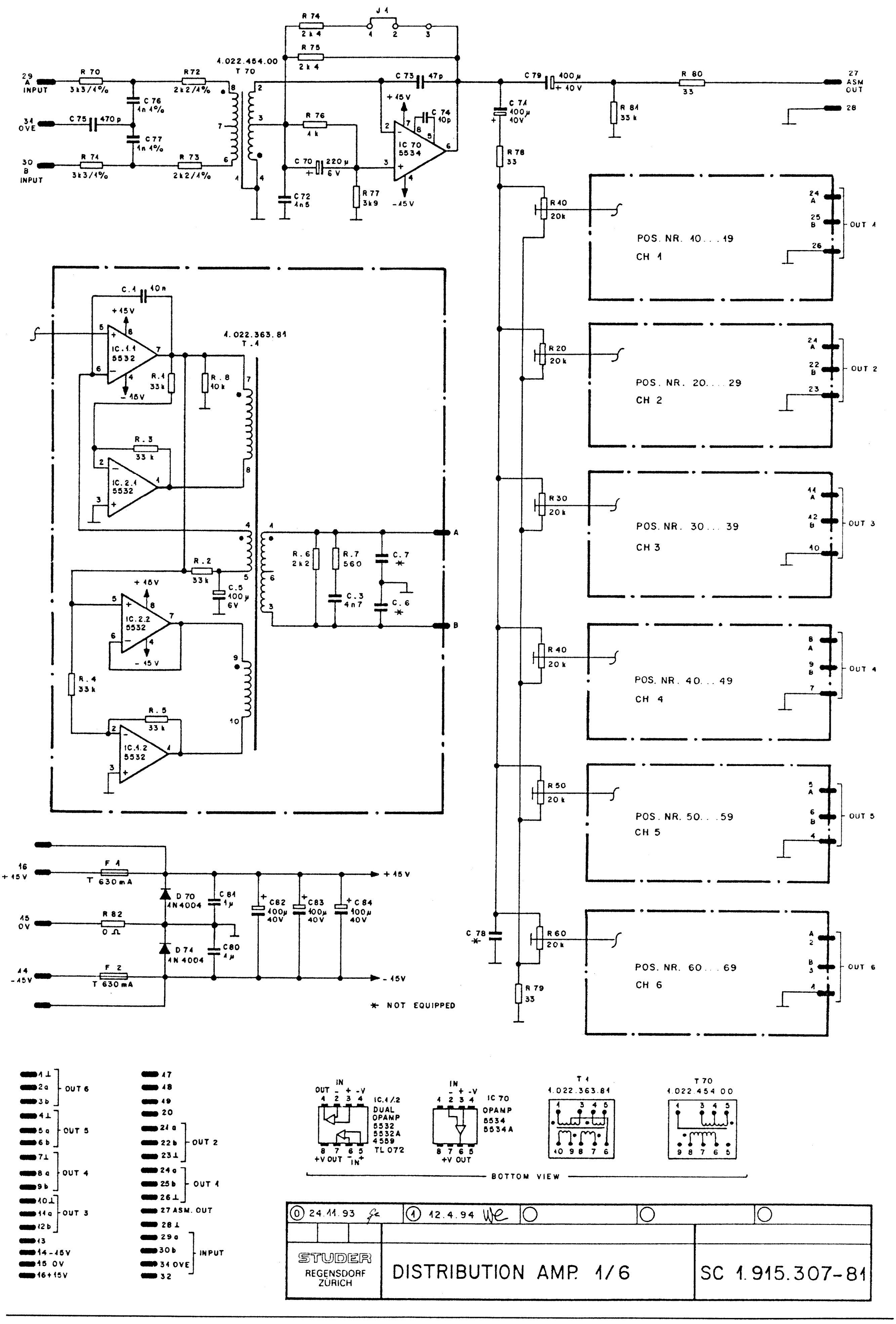


Technical Specifications

General:	Frequency range	**31.5 Hz...16 kHz**
	Frequency response	**+0.2/–0.5 dB,** R_L = 300 Ω
Input:		**balanced and floating**
	Impedance	**³ 10 kW**
	Symmetry	**³ 60 dB**
	Gain, adjustable	**–20...+10 dB** (Jumper 2-3: +6 dB Gain)
Outputs:		**balanced and floating**
	Impedance	**£ 40 W**
	Maximum level	**+24 dBu,** R_L = 600 Ω/THD < 1%
		+21 dBu, R_L = 200 Ω/THD < 1%
	THD	**£ 0.02%,** +6 dBu/300 Ω
	Output noise voltage	**–100 dBu,** 0 dB gain
Supply:		**±15 V_{DC}** (90 mA, all outputs +6 dBu, without load; 180 mA, all outputs +24 dBu into 300 Ω)
Dimensions:	Euro-card	**100 × 160 mm, 7 M units wide**
	Weight	**500 g** (1.915.308)
		600 g (1.915.307)

Ordering Information:

Euro-cards:	• Distribution amplifier 1 to 6	1.915.307.xx
	• Distribution amplifier 1 to 4	1.915.308.xx
19”/1U standard products:	• Distribution unit 2 × 1 in/4 out on XLR	75.700.89301
	• Distribution unit 3 × 1 in/4 out on XLR	75.700.89302
	• Distribution unit 2 × 1 in/6 out on XLR	75.700.89303


29 A INPUT
34 OVE
30 B INPUT
R 70 3k3/1%
R 71 3k3/1%
R 72 2k2/1%
R 73 2k2/1%
C 75 470 p
C 76 1n 1%
C 77 1n 1%
4.022.464.00 T 70
R 74 2k4
J 1
R 75 2k4
R 76 1k
C 70 220 µ 6 V
C 72 1n5
R 77 3k9
C 73 47p
C 74 10p
IC 70 5534
+15V
-15V
C 79 400 µ 40 V
R 80 33
R 81 33 k
27 ASM OUT
28
C 71 400 µ 40V
R 78 33
C.1 10n
IC.1.1 5532
IC.2.1 5532
IC.2.2 5532
IC.1.2 5532
R.1 33k
R.8 10k
R.3 33k
R.2 33k
R.4 33k
R.5 33k
C.5 400 µ 6V
4.022.363.81 T.1
R.6 2k2
R.7 560
C.3 4n7
C.7 *
C.6 *
A
B
R 40 20k
POS. NR. 10 ... 19 CH 1
OUT 1
R 20 20k
POS. NR. 20 ... 29 CH 2
OUT 2
R 30 20k
POS. NR. 30 ... 39 CH 3
OUT 3
R 40 20k
POS. NR. 40 ... 49 CH 4
OUT 4
R 50 20k
POS. NR. 50 ... 59 CH 5
OUT 5
R 60 20k
POS. NR. 60 ... 69 CH 6
OUT 6
C 78 *
R 79 33
16 +15V
15 0V
14 -15V
F 1 T 630 mA
F 2 T 630 mA
R 82 0 Ω
D 70 1N4004
D 71 1N 4004
C 81 1µ
C 80 1µ
C 82 400µ 40V
C 83 400µ 40V
C 84 400µ 40V
+15V
-15V
* NOT EQUIPPED
1 ⊥
2a
3b
OUT 6
4 ⊥
5a
6b
OUT 5
7 ⊥
8a
9b
OUT 4
10 ⊥
11a
12b
OUT 3
13
14 -15V
15 0V
16 +15V
17
18
19
20
21 a
22 b
23 ⊥
OUT 2
24 a
25 b
26 ⊥
OUT 1
27 ASM. OUT
28 ⊥
29 a
30 b
34 OVE
INPUT
32
IC.1/2 DUAL OPAMP 5532 5532A 4559 TL 072
IC 70 OPAMP 5534 5534A
T 1 4.022.363.81
T 70 4.022.454.00
OUT - + -V IN
+V OUT - + IN
BOTTOM VIEW
0 24.11.93
1 12.4.94
STUDER REGENSDORF ZÜRICH
DISTRIBUTION AMP. 1/6
SC 1.915.307-81

DISTRIBUTION AMPLIFIER

Ad	..POS..	...REF.No...	DESCRIPTION		MANUFACTURER
	C....11	. .		not used	
01	C....11	59.06.0222	2.2 nF	PE	
	C....12	59.34.2470	47 pF	CER	
	C....13	59.06.0472	4.7 nF	PE	
	C....14	59.34.2470	47 pF	CER	
	C....15	59.22.3101	100 uF	ALU 10V	
	C....16	59.32.1680	68 pF	CER 400V	
	C....17	. .		not used	
	C....21	. .		not used	
01	C....21	59.06.0222	2.2 nF	PE	
	C....22	59.34.2470	47 pF	CER	
	C....23	59.06.0472	4.7 nF	PE	
	C....24	59.34.2470	47 pF	CER	
	C....25	59.22.3101	100 uF	ALU 10V	
	C....26	59.32.1680	68 pF	CER 400V	
	C....27	. .		not used	
	C....31	. .		not used	
01	C....31	59.06.0222	2.2 nF	PE	
	C....32	59.34.2470	47 pF	CER	
	C....33	59.06.0472	4.7 nF	PE	
	C....34	59.34.2470	47 pF	CER	
	C....35	59.22.3101	100 uF	ALU 10V	
	C....36	59.32.1680	68 pF	CER 400V	
	C....37	. .		not used	
	C....41	. .		not used	
01	C....41	59.06.0222	2.2 nF	PE	
	C....42	59.34.2470	47 pF	CER	
	C....43	59.06.0472	4.7 nF	PE	
	C....44	59.34.2470	47 pF	CER	
	C....45	59.22.3101	100 uF	ALU 10V	
	C....46	59.32.1680	68 pF	CER 400V	
	C....47	. .		not used	
	C....51	. .		not used	
01	C....51	59.06.0222	2.2 nF	PE	
	C....52	59.34.2470	47 pF	CER	
	C....53	59.06.0472	4.7 nF	PE	
	C....54	59.34.2470	47 pF	CER	
	C....55	59.22.3101	100 uF	ALU 10V	
	C....56	59.32.1680	68 pF	CER 400V	
	C....57	. .		not used	
	C....61	. .		not used	
01	C....61	59.06.0222	2.2 nF	PE	
	C....62	59.34.2470	47 pF	CER	
	C....63	59.06.0472	4.7 nF	PE	
	C....64	59.34.2470	47 pF	CER	
	C....65	59.22.3101	100 uF	ALU 10V	
	C....66	59.32.1680	68 pF	CER 400V	
	C....67	. .		not used	
	C....70	59.22.4221	220 uF	ALU 6V	
	C....71	59.22.4101	100 uF	ALU 10V	
	C....72	59.06.0152	1.5 nF	CER	
	C....73	59.34.2470	47 pF	CER	
	C....74	59.34.4100	10 pF	CER	
	C....75	59.34.5471	470 pF	CER	
	C....76	59.05.1102	1 nF	1%	
	C....77	59.05.1102	1 nF	1%	
	C....79	59.22.4101	100 uF	ALU 10V	
	C....80	59.06.5105	1 uF	PE	
	C....81	59.06.5105	1 uF	PE	
	C....82	59.25.5101	100 uF	40V	
	C....83	59.25.5101	100 uF	40V	
	C....84	59.25.5101	100 uF	40V	
	D....70	50.04.0105	1N4004		
	D....71	50.04.0105	1N4004		
	F.....1	51.01.0115		T 630mA /250V 5*20	
	F.....2	51.01.0115		T 630mA /250V 5*20	
	IC...11	50.09.0106	NE5532AN	dual op. amp.	Ra,NE
	IC...12	50.09.0106	NE5532AN	dual op. amp.	Ra,NE
	IC...21	50.09.0106	NE5532AN	dual op. amp.	Ra,NE
	IC...22	50.09.0106	NE5532AN	dual op. amp.	Ra,NE
	IC...31	50.09.0106	NE5532AN	dual op. amp.	Ra,NE
	IC...32	50.09.0106	NE5532AN	dual op. amp.	Ra,NE
	IC...41	50.09.0106	NE5532AN	dual op. amp.	Ra,NE
	IC...42	50.09.0106	NE5532AN	dual op. amp.	Ra,NE
	IC...51	50.09.0106	NE5532AN	dual op. amp.	Ra,NE
	IC...52	50.09.0106	NE5532AN	dual op. amp.	Ra,NE
	IC...61	50.09.0106	NE5532AN	dual op. amp.	Ra,NE
	IC...62	50.09.0106	NE5532AN	dual op. amp.	Ra,NE
	IC...70	50.05.0244	NE5534AN	single op.amp.	Ra,NE
	JP....1	54.01.0021		JUMPER JACK	
	JS....1	54.01.0020		JUMPER PLUG 3-PIN	
	MP....1	53.03.0142	4 pcs	Fuse holder	
	MP....2	1.915.307.02	1 pcs	Abdeckwinkel	
	MP....3	1.915.307.05	1 pcs	Kuelblech	
	MP....4	1.022.400.03	1 pcs	Isolation T 70	
	R....10	58.01.9203	20 kOhm	10% 0.5 W PMG trimming resistor	

Ad	..POS..	...REF.No...	DESCRIPTION		MANUFACTURER
	R....11	57.11.4333	33 kOhm	5% 0.25W MF	
	R....12	57.11.4333	33 kOhm	5% 0.25W MF	
	R....13	57.11.4333	33 kOhm	5% 0.25W MF	
	R....14	57.11.4333	33 kOhm	5% 0.25W MF	
	R....15	57.11.4333	33 kOhm	5% 0.25W MF	
	R....16	57.11.4222	2.2 kOhm	5% 0.25W MF	
	R....17	57.11.4102	1 kOhm	5% 0.25W MF	
	R....18	57.11.4103	10 kOhm	5% 0.25W MF	
	R....20	58.01.9203	20 kOhm	10% 0.5 W PMG trimming resistor	
	R....21	57.11.4333	33 kOhm	5% 0.25W MF	
	R....22	57.11.4333	33 kOhm	5% 0.25W MF	
	R....23	57.11.4333	33 kOhm	5% 0.25W MF	
	R....24	57.11.4333	33 kOhm	5% 0.25W MF	
	R....25	57.11.4333	33 kOhm	5% 0.25W MF	
	R....26	57.11.4222	2.2 kOhm	5% 0.25W MF	
	R....27	57.11.4102	1 kOhm	5% 0.25W MF	
	R....28	57.11.4103	10 kOhm	5% 0.25W MF	
	R....30	58.01.9203	20 kOhm	10% 0.5 W PMG trimming resistor	
	R....31	57.11.4333	33 kOhm	5% 0.25W MF	
	R....32	57.11.4333	33 kOhm	5% 0.25W MF	
	R....33	57.11.4333	33 kOhm	5% 0.25W MF	
	R....34	57.11.4333	33 kOhm	5% 0.25W MF	
	R....35	57.11.4333	33 kOhm	5% 0.25W MF	
	R....36	57.11.4222	2.2 kOhm	5% 0.25W MF	
	R....37	57.11.4102	1 kOhm	5% 0.25W MF	
	R....38	57.11.4103	10 kOhm	5% 0.25W MF	
	R....40	58.01.9203	20 kOhm	10% 0.5 W PMG trimming resistor	
	R....41	57.11.4333	33 kOhm	5% 0.25W MF	
	R....42	57.11.4333	33 kOhm	5% 0.25W MF	
	R....43	57.11.4333	33 kOhm	5% 0.25W MF	
	R....44	57.11.4333	33 kOhm	5% 0.25W MF	
	R....45	57.11.4333	33 kOhm	5% 0.25W MF	
	R....46	57.11.4222	2.2 kOhm	5% 0.25W MF	
	R....47	57.11.4102	1 kOhm	5% 0.25W MF	
	R....48	57.11.4103	10 kOhm	5% 0.25W MF	
	R....50	58.01.9203	20 kOhm	10% 0.5 W PMG trimming resistor	
	R....51	57.11.4333	33 kOhm	5% 0.25W MF	
	R....52	57.11.4333	33 kOhm	5% 0.25W MF	
	R....53	57.11.4333	33 kOhm	5% 0.25W MF	
	R....54	57.11.4333	33 kOhm	5% 0.25W MF	
	R....55	57.11.4333	33 kOhm	5% 0.25W MF	
	R....56	57.11.4222	2.2 kOhm	5% 0.25W MF	
	R....57	57.11.4102	1 kOhm	5% 0.25W MF	
	R....58	57.11.4103	10 kOhm	5% 0.25W MF	
	R....60	58.01.9203	20 kOhm	10% 0.5 W PMG trimming resistor	
	R....61	57.11.4333	33 kOhm	5% 0.25W MF	
	R....62	57.11.4333	33 kOhm	5% 0.25W MF	
	R....63	57.11.4333	33 kOhm	5% 0.25W MF	
	R....64	57.11.4333	33 kOhm	5% 0.25W MF	
	R....65	57.11.4333	33 kOhm	5% 0.25W MF	
	R....66	57.11.4222	2.2 kOhm	5% 0.25W MF	
	R....67	57.11.4102	1 kOhm	5% 0.25W MF	
	R....68	57.11.4103	10 kOhm	5% 0.25W MF	
	R....70	57.11.3332	3.3 kOhm	1% 0.25W MF	
	R....71	57.11.3332	3.3 kOhm	1% 0.25W MF	
	R....72	57.11.3222	2.2 kOhm	1% 0.25W MF	
	R....73	57.11.3222	2.2 kOhm	1% 0.25W MF	
	R....74	57.11.3242	2.4 kOhm	1% 0.25W MF	
	R....75	57.11.3242	2.4 kOhm	1% 0.25W MF	
	R....76	57.11.4102	1 kOhm	5% 0.25W MF	
	R....77	57.11.4392	3.9 kOhm	5% 0.25W MF	
	R....78	57.11.4330	33 Ohm	5% 0.25W MF	
	R....79	57.11.4330	33 Ohm	5% 0.25W MF	
	R....80	57.11.4330	33 Ohm	5% 0.25W MF	
	R....81	57.11.4333	33 kOhm	5% 0.25W MF	
	R....82	57.11.4000	0 Ohm	5% 0.25W MF	
	T....10	1.022.363.00		output trafo	
	T....20	1.022.363.00		output trafo	
	T....30	1.022.363.00		output trafo	
	T....40	1.022.363.00		output trafo	
	T....50	1.022.363.00		output trafo	
	T....60	1.022.363.00		output trafo	
	T....70	1.022.454.00		input trafo	

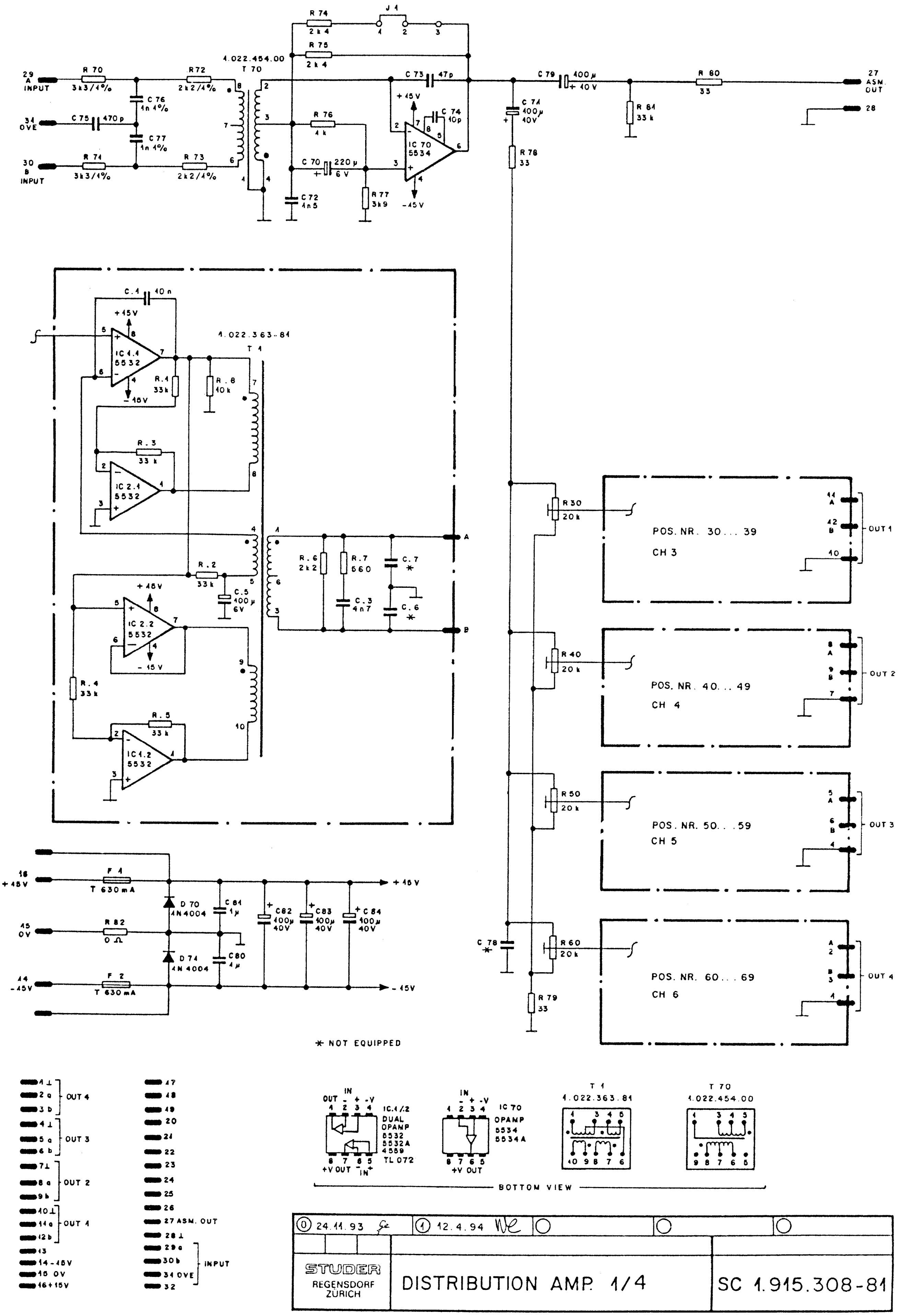
CER=Ceramic, PE=Polyester
MF=Metal Film, PMG=Cermet

MANUFACTURER: Ex=Exar, NEC=Nippon Electric Corp., Ph=Philips, Ra=Rayth
Sig=Signetics, St=Studer.

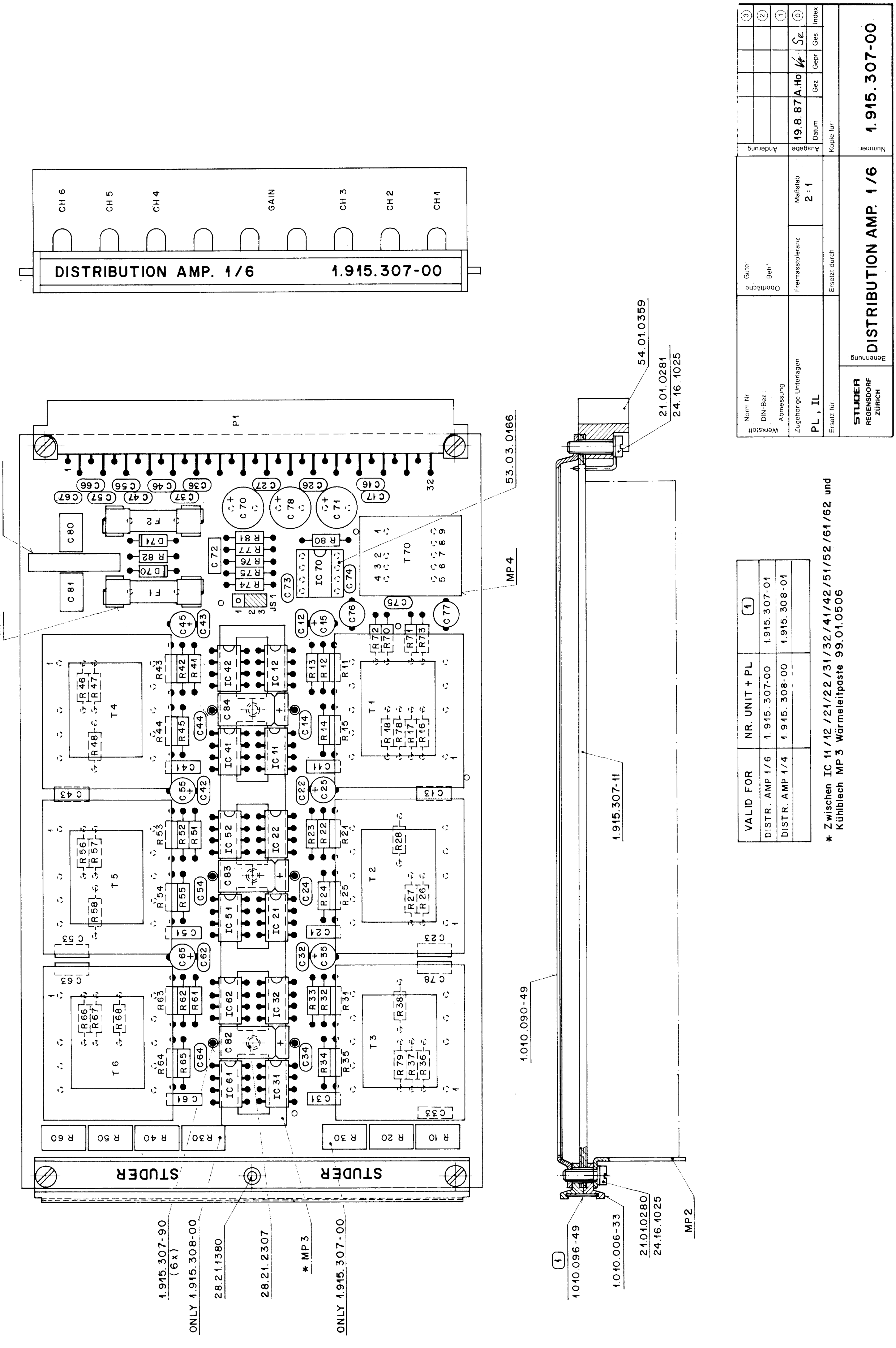
1.915.307.00 DISTRIBUTION AMP. 1/6 SE 87/09/0400

1.915.307.00 DISTRIBUTION AMP. 1/6 SE 92/07/0201

END


* NOT EQUIPPED
BOTTOM VIEW
24.11.93
12.4.94
STUDER
REGENSDORF ZÜRICH
DISTRIBUTION AMP. 1/4
SC 1.915.308-81

DISTRIBUTION AMPLIFIER



DISTRIBUTION AMPLIFIER

Ad	..POS..	...REF.No...	DESCRIPTION			MANUFACTURER
	C....31	. .		not used		
01	C....31	59.06.0222	2.2 nF		PE	
	C....32	59.34.2470	47 pF		CER	
	C....33	59.06.0472	4.7 nF		PE	
	C....34	59.34.2470	47 pF		CER	
	C....35	59.22.3101	100 uF		ALU 10V	
	C....36	59.32.1680	68 pF		CER 400V	
	C....37	. .		not used		
	C....41	. .		not used		
01	C....41	59.06.0222	2.2 nF		PE	
	C....42	59.34.2470	47 pF		CER	
	C....43	59.06.0472	4.7 nF		PE	
	C....44	59.34.2470	47 pF		CER	
	C....45	59.22.3101	100 uF		ALU 10V	
	C....46	59.32.1680	68 pF		CER 400V	
	C....47	. .		not used		
	C....51	. .		not used		
01	C....51	59.06.0222	2.2 nF		PE	
	C....52	59.34.2470	47 pF		CER	
	C....53	59.06.0472	4.7 nF		PE	
	C....54	59.34.2470	47 pF		CER	
	C....55	59.22.3101	100 uF		ALU 10V	
	C....56	59.32.1680	68 pF		CER 400V	
	C....57	. .		not used		
	C....61	. .		not used		
01	C....61	59.06.0222	2.2 nF		PE	
	C....62	59.34.2470	47 pF		CER	
	C....63	59.06.0472	4.7 nF		PE	
	C....64	59.34.2470	47 pF		CER	
	C....65	59.22.3101	100 uF		ALU 10V	
	C....66	59.32.1680	68 pF		CER 400V	
	C....67	. .		not used		
	C....70	59.22.4221	220 uF		ALU 6V	
	C....71	59.22.4101	100 uF		ALU 10V	
	C....72	59.06.0152	1.5 nF		CER	
	C....73	59.34.2470	47 pF		CER	
	C....74	59.34.4100	10 pF		CER	
	C....75	59.34.5471	470 pF		CER	
	C....76	59.05.1102	1 nF	1%		
	C....77	59.05.1102	1 nF	1%		
	C....79	59.22.4101	100 uF		ALU 10V	
	C....80	59.06.5105	1 uF		PE	
	C....81	59.06.5105	1 uF		PE	
	C....82	59.25.5101	100 uF		40V	
	C....83	59.25.5101	100 uF		40V	
	C....84	59.25.5101	100 uF		40V	
	D....70	50.04.0105	1N4004			
	D....71	50.04.0105	1N4004			
	F.....1	51.01.0115		T 630mA /250V 5*20		
	F.....2	51.01.0115		T 630mA /250V 5*20		
	IC...31	50.09.0106	NE5532AN	dual op. amp.		Ra,NE
	IC...32	50.09.0106	NE5532AN	dual op. amp.		Ra,NE
	IC...41	50.09.0106	NE5532AN	dual op. amp.		Ra,NE
	IC...42	50.09.0106	NE5532AN	dual op. amp.		Ra,NE
	IC...51	50.09.0106	NE5532AN	dual op. amp.		Ra,NE
	IC...52	50.09.0106	NE5532AN	dual op. amp.		Ra,NE
	IC...61	50.09.0106	NE5532AN	dual op. amp.		Ra,NE
	IC...62	50.09.0106	NE5532AN	dual op. amp.		Ra,NE
	IC...70	50.05.0244	NE5534AN	single op.amp.		Ra,NE
	JP....1	54.01.0021		JUMPER JACK		
	JS....1	54.01.0020		JUMPER PLUG 3-PIN		
	MP....1	53.03.0142	4 pcs	Fuse holder		
	MP....2	1.915.307.02	1 pcs	Abdeckwinkel		
	MP....3	1.915.307.05	1 pcs	Kuelblech		
	MP....4	1.022.400.03	1 pcs	Isolation T 70		
	R....30	58.01.9203	20 kOhm	10% 0.5 W	PMG trimming resistor	
	R....31	57.11.4333	33 kOhm	5% 0.25W	MF	
	R....32	57.11.4333	33 kOhm	5% 0.25W	MF	
	R....33	57.11.4333	33 kOhm	5% 0.25W	MF	
	R....34	57.11.4333	33 kOhm	5% 0.25W	MF	
	R....35	57.11.4333	33 kOhm	5% 0.25W	MF	
	R....36	57.11.4222	2.2 kOhm	5% 0.25W	MF	
	R....37	57.11.4102	1 kOhm	5% 0.25W	MF	
	R....38	57.11.4103	10 kOhm	5% 0.25W	MF	
	R....40	58.01.9203	20 kOhm	10% 0.5 W	PMG trimming resistor	
	R....41	57.11.4333	33 kOhm	5% 0.25W	MF	
	R....42	57.11.4333	33 kOhm	5% 0.25W	MF	
	R....43	57.11.4333	33 kOhm	5% 0.25W	MF	
	R....44	57.11.4333	33 kOhm	5% 0.25W	MF	
	R....45	57.11.4333	33 kOhm	5% 0.25W	MF	
	R....46	57.11.4222	2.2 kOhm	5% 0.25W	MF	
	R....47	57.11.4102	1 kOhm	5% 0.25W	MF	
	R....48	57.11.4103	10 kOhm	5% 0.25W	MF	
	R....50	58.01.9203	20 kOhm	10% 0.5 W	PMG trimming resistor	
	R....51	57.11.4333	33 kOhm	5% 0.25W	MF	
	R....52	57.11.4333	33 kOhm	5% 0.25W	MF	
	R....53	57.11.4333	33 kOhm	5% 0.25W	MF	
	R....54	57.11.4333	33 kOhm	5% 0.25W	MF	
	R....55	57.11.4333	33 kOhm	5% 0.25W	MF	
	R....56	57.11.4222	2.2 kOhm	5% 0.25W	MF	
	R....57	57.11.4102	1 kOhm	5% 0.25W	MF	
	R....58	57.11.4103	10 kOhm	5% 0.25W	MF	
	R....60	58.01.9203	20 kOhm	10% 0.5 W	PMG trimming resistor	
	R....61	57.11.4333	33 kOhm	5% 0.25W	MF	
	R....62	57.11.4333	33 kOhm	5% 0.25W	MF	
	R....63	57.11.4333	33 kOhm	5% 0.25W	MF	
	R....64	57.11.4333	33 kOhm	5% 0.25W	MF	
	R....65	57.11.4333	33 kOhm	5% 0.25W	MF	
	R....66	57.11.4222	2.2 kOhm	5% 0.25W	MF	
	R....67	57.11.4102	1 kOhm	5% 0.25W	MF	
	R....68	57.11.4103	10 kOhm	5% 0.25W	MF	
	R....70	57.11.3332	3.3 kOhm	1% 0.25W	MF	
	R....71	57.11.3332	3.3 kOhm	1% 0.25W	MF	
	R....72	57.11.3222	2.2 kOhm	1% 0.25W	MF	
	R....73	57.11.3222	2.2 kOhm	1% 0.25W	MF	
	R....74	57.11.3242	2.4 kOhm	1% 0.25W	MF	
	R....75	57.11.3242	2.4 kOhm	1% 0.25W	MF	
	R....76	57.11.4102	1 kOhm	5% 0.25W	MF	
	R....77	57.11.4392	3.9 kOhm	5% 0.25W	MF	
	R....78	57.11.4330	33 Ohm	5% 0.25W	MF	
	R....79	57.11.4330	33 Ohm	5% 0.25W	MF	
	R....80	57.11.4330	33 Ohm	5% 0.25W	MF	
	R....81	57.11.4333	33 kOhm	5% 0.25W	MF	
	R....82	57.11.4000	0 Ohm	5% 0.25W	MF	
	T....30	1.022.363.00		output trafo		
	T....40	1.022.363.00		output trafo		
	T....50	1.022.363.00		output trafo		
	T....60	1.022.363.00		output trafo		
	T....70	1.022.454.00		input trafo		

CER=Ceramic, PE=Polyester, SAL=Solid Aluminium
MF=Metal Film, PMG=Cermet

MANUFACTURER: Ex=Exar, NE=NEC, Ph=Philips, Ra=Raytheon,
Sig=Signetics, St=Studer,

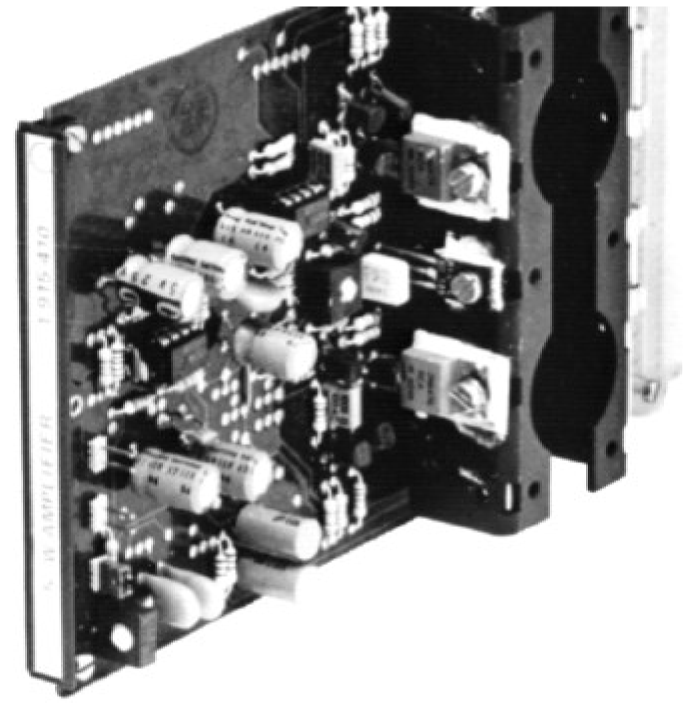
1.915.308.00 DISTRIBUTION AMP.1/4 SE 87/09/0400

1.915.308.00 DISTRIBUTION AMP.1/4 SE 92/07/0201

END

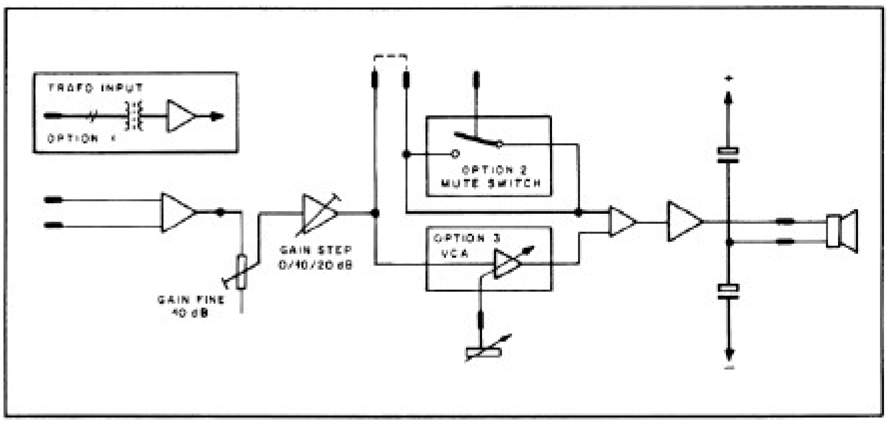
2.2.6 5 W Power Amplifier 1.915.410/415

This amplifier on one Euro-card is designed for operation on a ±15 V supply. It is capable of providing a power output of 5 W into a load of 8 Ω.
With its low-to-medium power level, this amplifier is ideally suited for applications such as pre-listening or talkback speaker operation. Its output stage is protected by instantaneous output power limiting.



The standard version has an electronically balanced (transformerless) input. It is also available with the following options:

- Input balancing transformer
- Remote muting
- Remote gain control (VCA)
- Input balancing transformer plus remote muting
- Input balancing transformer plus remote gain control (VCA).



Technical Specifications

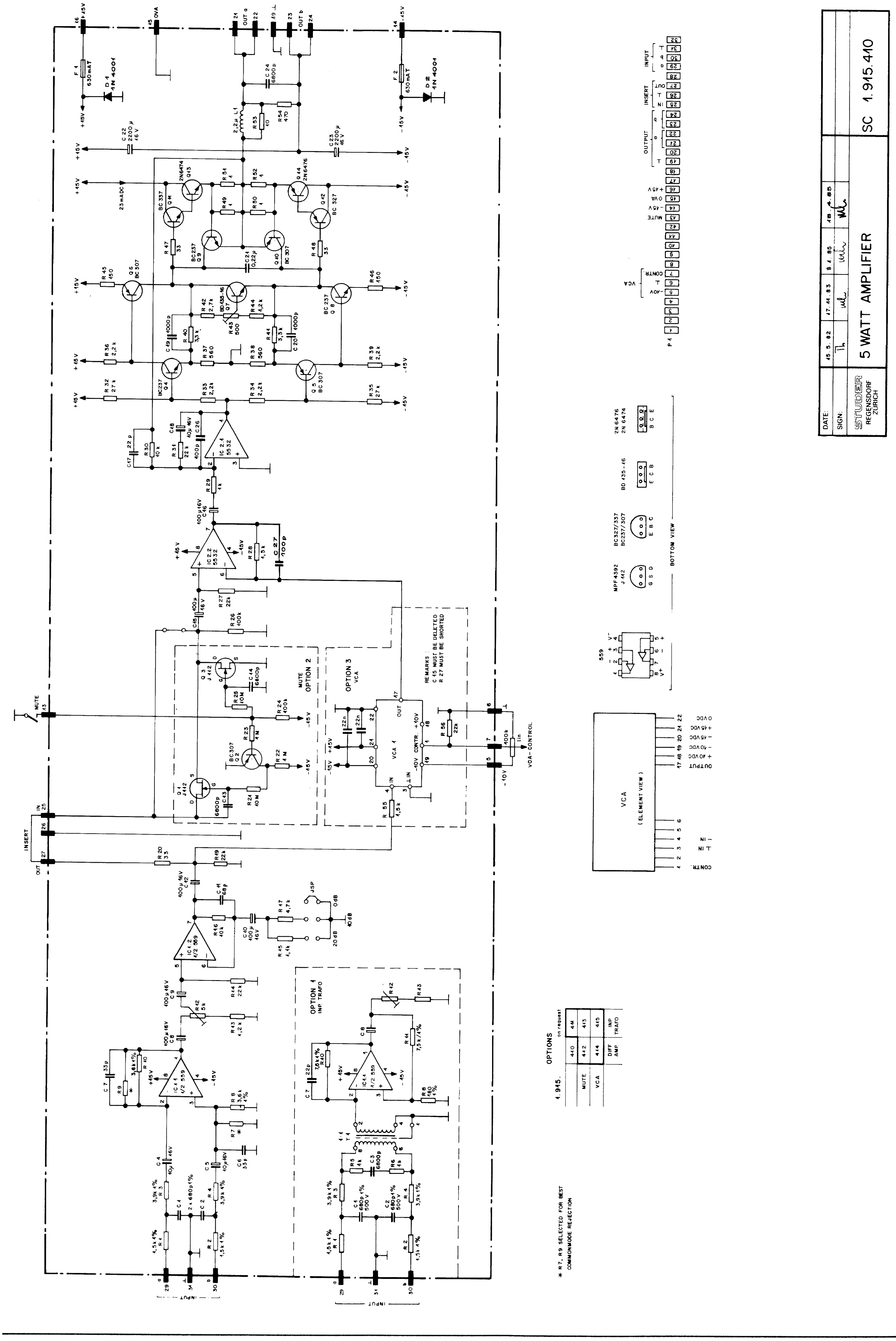
Audio:	Power output	**4 W/15 W**
		5 W/8 W
		2.5 W/4 W, continuous, sine wave
	THD	**< 0.1%** @ rated output, 30 Hz...16 kHz
	Frequency response	**±0.5 dB,** 30 Hz...16 kHz
	Input impedance	**10 kW,** balanced
	Sensitivity	**–17...+16 dBu** (0.11...4.9 V_{rms}) for rated output
	Maximum input level	**+24 dBu** (12.3 V_{rms}) clipping point
	S/N	**100 dB,** linear to 23 kHz at normal operating gain (input +6 dBu)
		85 dB, at maximum gain
Supply:		**±15 V DC** (40 mA idling; 400 mA @ 5 W/8 Ω)
	Output stage quiescent current	**23 mA**
Dimensions:	Euro-card	**100 × 160 mm, 7M units wide**
	Weight	**approx. 210 g**

Ordering Information:

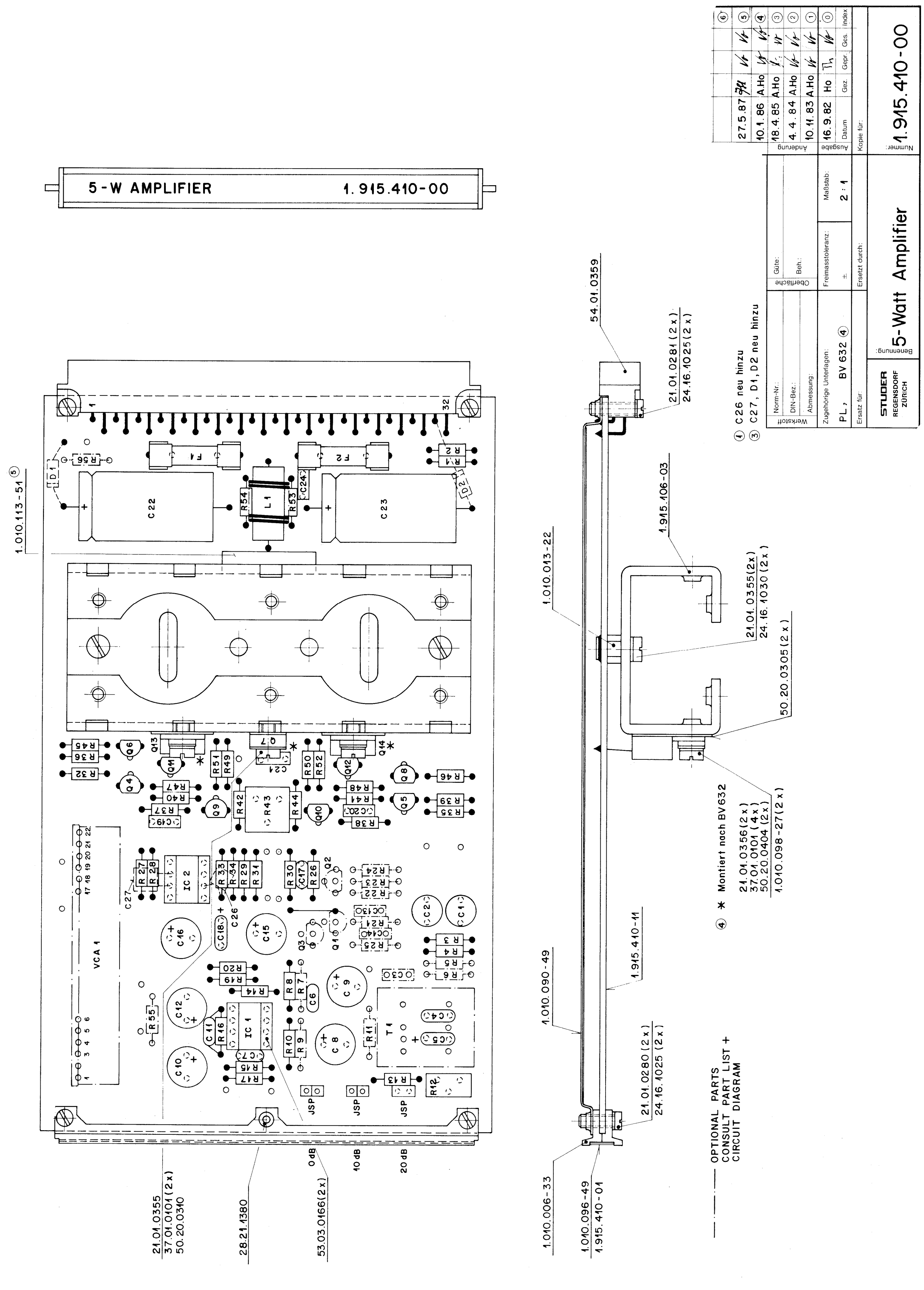
5 W amplifier with

• transformerless input	1.915.410.xx
• input transformer	1.915.411.xx
• transformerless input and remote muting facility	1.915.412.xx
• input transformer and remote muting facility	1.915.413.xx
• transformerless input and remote gain control (VCA)	1.915.414.xx
• input transformer and remote gain control (VCA)	1.915.415.xx

5W AUDIO AMPLIFIER



5W AUDIO AMPLIFIER



5W AUDIO AMPLIFIER

Ad	POS.	REF.No.	DESCRIPTION				MANUFACTURER
	C.....1	59.05.1681	680p	1%	500V	PP	
	C.....2	59.05.1681	680p	1%	500V	PP	
	C.....3		OPT 1				
	C.....4	59.26.2100	10µ		16V	SAL	
	C.....5	59.26.2100	10µ		16V	SAL	
	C.....6	59.34.2330	33p			CER	
	C.....7	59.34.2330	33p			CER	
	C.....8	59.22.5101	100µ		16V	EL	
	C.....9	59.22.5101	100µ		16V	EL	
	C....10	59.22.5101	100µ		16V	EL	
	C....11	59.34.4680	68p			CER	
	C....12	59.22.5101	100µ		16V	EL	
	C....13		OPT 2				
	C....14		OPT 2				
	C....15	59.22.5101	100µ		16V	EL	
	C....16	59.22.5101	100µ		16V	EL	
	C....17	59.34.2220	22p			CER	
	C....18	59.26.2100	10µ		16V	SAL	
	C....19	59.06.0102	1000p			PE	
	C....20	59.06.0102	1000p			PE	
	C....21	59.06.0224	0,22µ			PE	
	C....22	59.25.3222	2200µ		16V	EL	
	C....23	59.25.3222	2200µ		16V	EL	
	C....24	59.06.0682	6800p			PE	
	C....25		OPT 3				
①	C....26	59.34.4101	100p			CER	
②	C....27	59.34.4101	100p			CER	
	F.....1	51.01.0115	630mA	SLOW BLOW 5•20			
	F.....2	51.01.0115	630mA	SLOW BLOW 5•20			
	IC....1	50.09.0107	4559	DUAL OP AMP			RA
①	IC....2	50.09.0106	5532	DUAL OP AMP			SIG
	JSP	54.01.0020	PIN	(2•)			
		54.01.0021	JUMPER				
	L.....1	1.068.614.00	2,2µH				
	P.....1	54.01.0359	32p	EDGE CONN. TYBE B			
	Q.....1		OPT 2				
	Q.....2		OPT 2				
	Q.....3		OPT 2				
	Q.....4	50.03.0436	BC237B	NPN	GEN. PURPOSE		
	Q.....5	50.03.0515	BC307B	PNP	GEN. PURPOSE		
	Q.....6	50.03.0515	BC307B	PNP	GEN. PURPOSE		
	Q.....7	50.03.0495	BD135-16	NPN			
	Q.....8	50.03.0436	BC237B	NPN	GEN. PURPOSE		
	Q.....9	50.03.0436	BC237B	NPN	GEN. PURPOSE		
	Q....10	50.03.0515	BC307B	PNP	GEN. PURPOSE		
	Q....11	50.03.0340	BC337	NPN	800mA		
	Q....12	50.03.0351	BC327	PNP	800mA		
	Q....13	50.03.0344	2N6474	NPN			RCA
	Q....14	50.03.0345	2N6476	PNP			RCA
	R.....1	57.11.3152	1,5k	1%			
	R.....2	57.11.3152	1,5k	1%			
	R.....3	57.11.3392	3,9k	1%			
	R.....4	57.11.3392	3,9k	1%			
	R.....5		OPT 1				
	R.....6		OPT 1				
	R.....7		SELECTED				
	R.....8	57.11.3362	3,6k	1%			
	R.....9		SELECTED				
	R....10	57.11.3362	3,6k	1%			
	R....11		OPT 1				
	R....12	58.01.7502	5k		TRIM		
	R....13	57.11.4122	1,2k				
	R....14	57.11.4223	22k				
	R....15	57.11.3112	1,1k	1%			
	R....16	57.11.4103	10k				
	R....17	57.11.4472	4,7k				
	R....18		NOT USED				
	R....19	57.11.4223	22k				
	R....20	57.11.4330	33				
	R....21		OPT 2				
	R....22		OPT 2				
	R....23		OPT 2				
	R....24		OPT 2				
	R....25		OPT 2				
	R....26	57.11.4104	100k				
	R....27	57.11.4223	22k				
	R....28	57.11.4152	1,5k				
	R....29	57.11.4102	1k				
	R....30	57.11.4103	10k				
	R....31	57.11.4223	22k				
	R....32	57.11.4273	27k				

Ad	POS.	REF.No.	DESCRIPTION				MANUFACTURER
	R....33	57.11.4222	2,2k				
	R....34	57.11.4222	2,2k				
	R....35	57.11.4273	27k				
	R....36	57.11.4222	2,2k				
	R....37	57.11.4561	560				
	R....38	57.11.4561	560				
	R....39	57.11.4222	2,2k				
	R....40	57.11.4332	3,3k				
	R....41	57.11.4332	3,3k				
	R....42	57.11.4272	2,7k				
	R....43	58.01.8501	500	TRIM			
	R....44	57.11.4122	1,2k				
	R....45	57.11.4151	150				
	R....46	57.11.4151	150				
	R....47	57.11.4330	33				
	R....48	57.11.4330	33				
	R....49	57.11.4109	1				
	R....50	57.11.4109	1				
	R....51	57.11.4109	1				
	R....52	57.11.4109	1				
	R....53	57.11.4100	10				
	R....54	57.11.4471	470				
	R....55		OPT 3				
	R....56		OPT 3				
	XF	53.03.0142		FUSE HOLDER			
	XIC	53.03.0166	8pDIL				

OPTIONS

OPTION 1

Ad	POS.	REF.No.	DESCRIPTION				MANUFACTURER
	C.....3	59.06.0682	6800p		PE		
	C.....7	59.34.2220	22p		CER		
	R.....5	57.11.4102	1k				
	R.....6	57.11.4102	1k				
	R.....8	57.11.3181	180	1%			
	R....10	57.11.3752	7,5k	1%			
	R....11	57.11.3752	7,5k	1%			
	T.....1	1.022.419.00	1:1				ST
		1.022.400.03		INSULATION			

OPTION 2

Ad	POS.	REF.No.	DESCRIPTION				MANUFACTURER
	C....13	59.06.0682	6800p				
	C....14	59.06.0682	6800p				
	Q.....1	50.03.0350	J112	ND FET		MPF4392	SIX, MOT
	Q.....2	50.03.0515	BC307	PNP GEN. PURPOSE			
	Q.....3	50.03.0350	J112	ND FET		MPF4392	SIX, MOT
	R....21	57.11.6106	10M				
	R....22	57.11.4105	1M				
	R....23	57.11.4105	1M				
	R....24	57.11.4104	100k				
	R....25	57.11.6106	10M				

OPTION 3

Ad	POS.	REF.No.	DESCRIPTION				MANUFACTURER
②	D.....1	50.04.0122	1N4001				MOT
②	D.....2	50.04.0122	1N4001				MOT
	R....55	57.11.4152	1,5k				
	R....56	57.11.4223	22k				
	VCA...1	1.010.110.50		VOLTAGE CONTROLLED AMPL.			ST

Additional Diodes see Page 6

PP=Polypropylene, SAL= Solid Aluminium, CER=Ceramic, EL=Electrolytic, PE=Polyester

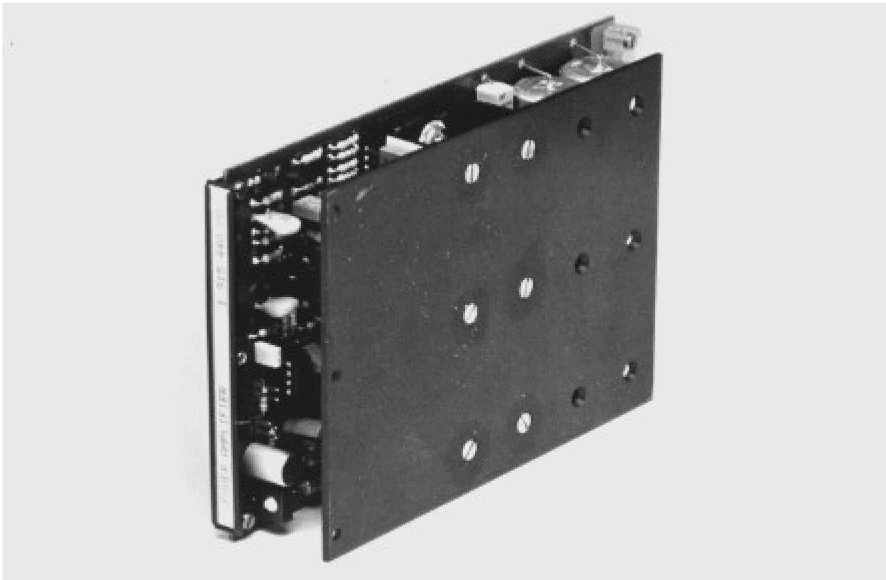
MANUFACTURER: ST=Studer, MOT=Motorola, SIX=Siliconix, RA=Raytheon, SIG=Signetics

1.915.410.00	5 WATT AMPLIFIER	TH 14/04/82
1.915.410.00	5 WATT AMPLIFIER	① HO 04/11/83
1.915.410.00	5 WATT AMPLIFIER	② PA 18/04/85

END
➔

2.2.7 40 W Power Amplifier 1.915.440/441

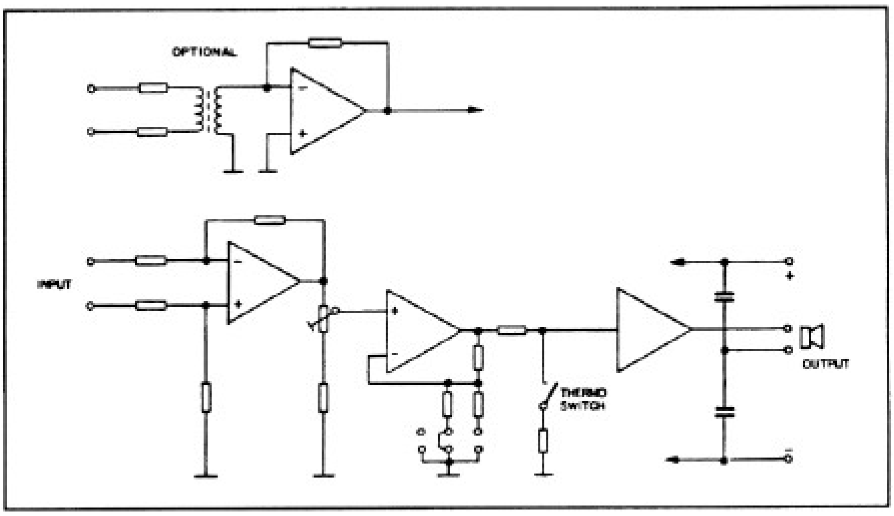
For applications where higher power level is needed, a 40 W amplifier has been realized on a Euro-card. Its width is 32 mm, which equals 7M widths approximately.



Power is supplied from a separate 45 V_{DC} source, as is contained in the 19” mounting frame 1.918.120.xx. Two amplifier cards will fit into that frame, making it suitable for applications where stereophonic monitoring is required.

Special Features

- Transformerless version with electronically balanced inputs standard
- Version with balanced and floating inputs available
- Output stage protected from overload by momentary power limiting
- Temperature sensing avoids thermal overload
- High-end frequency response limited to prevent transient intermodulation distortion
- Low distortion performance, even at low power output
- Operation with output transformer possible

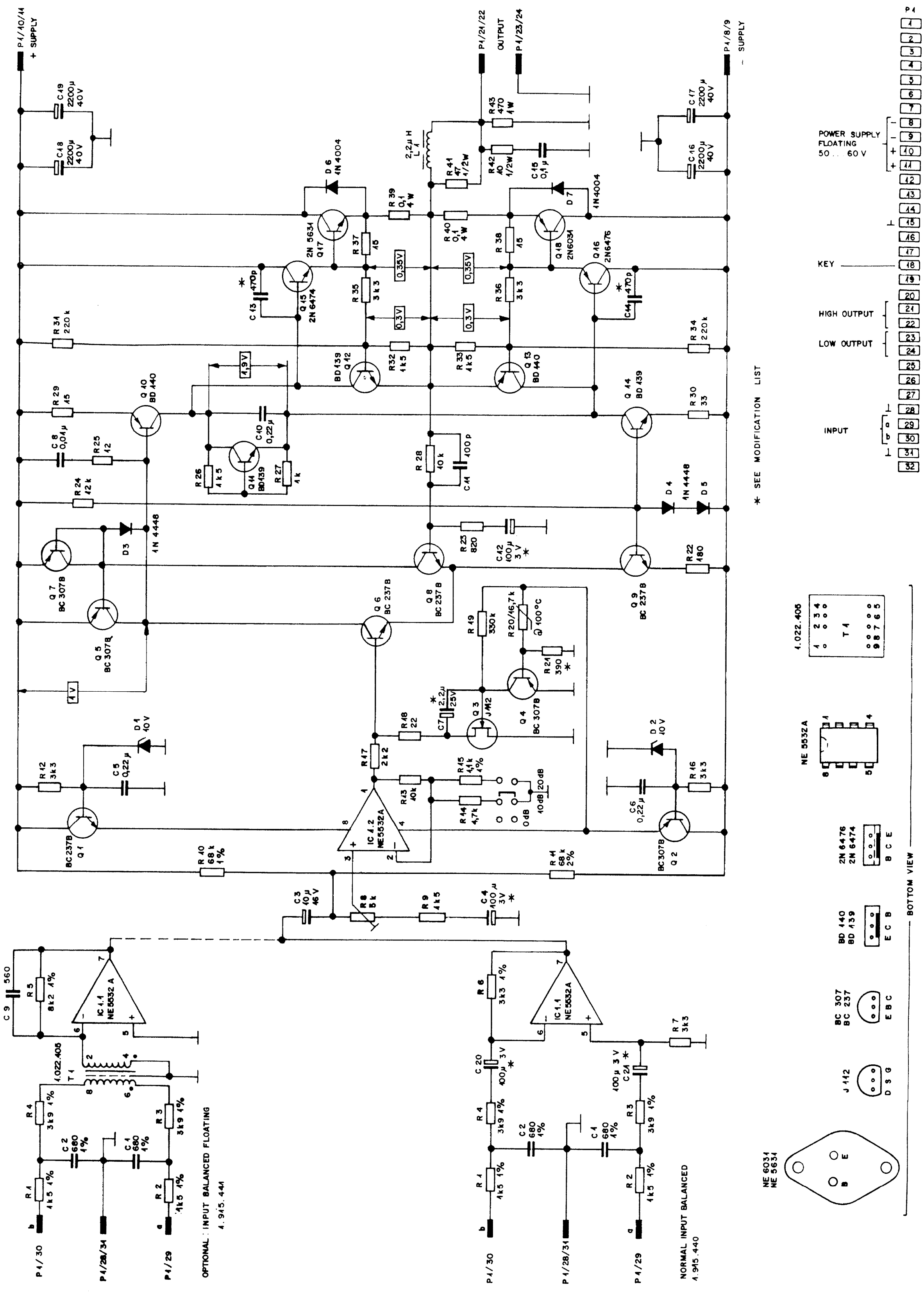


Technical Specifications

Audio:	Power output	**40 W/4 W**, continuous, sine-wave,
	THD	< **0.1 %**, 30 Hz...15 kHz (up to rated output)
	Output impedance	**0.1 W**
	Input impedance	**10 kW**
	Common mode rejection	> **50 dB**, 30 Hz...16 kHz (with input transformer)
	Input sensitivity	**–12...+18 dBu** (0.195...6.2 V_{rms}) for rated output (adjustable with jumper in three 10 dB-increments, plus fine-trim range of 12 dB)
	Frequency response	**+0.5/–1 dB,** 30 Hz...15 kHz
	S/N	**105 dB** @ maximum gain **90 dB** @ minimum gain
Supply:		**45 V_{DC}** (70 mA idling, 1.5 A @ 40 W/4 Ω)
Dimensions:	Euro-card	**100 × 160 mm, 7M units wide**

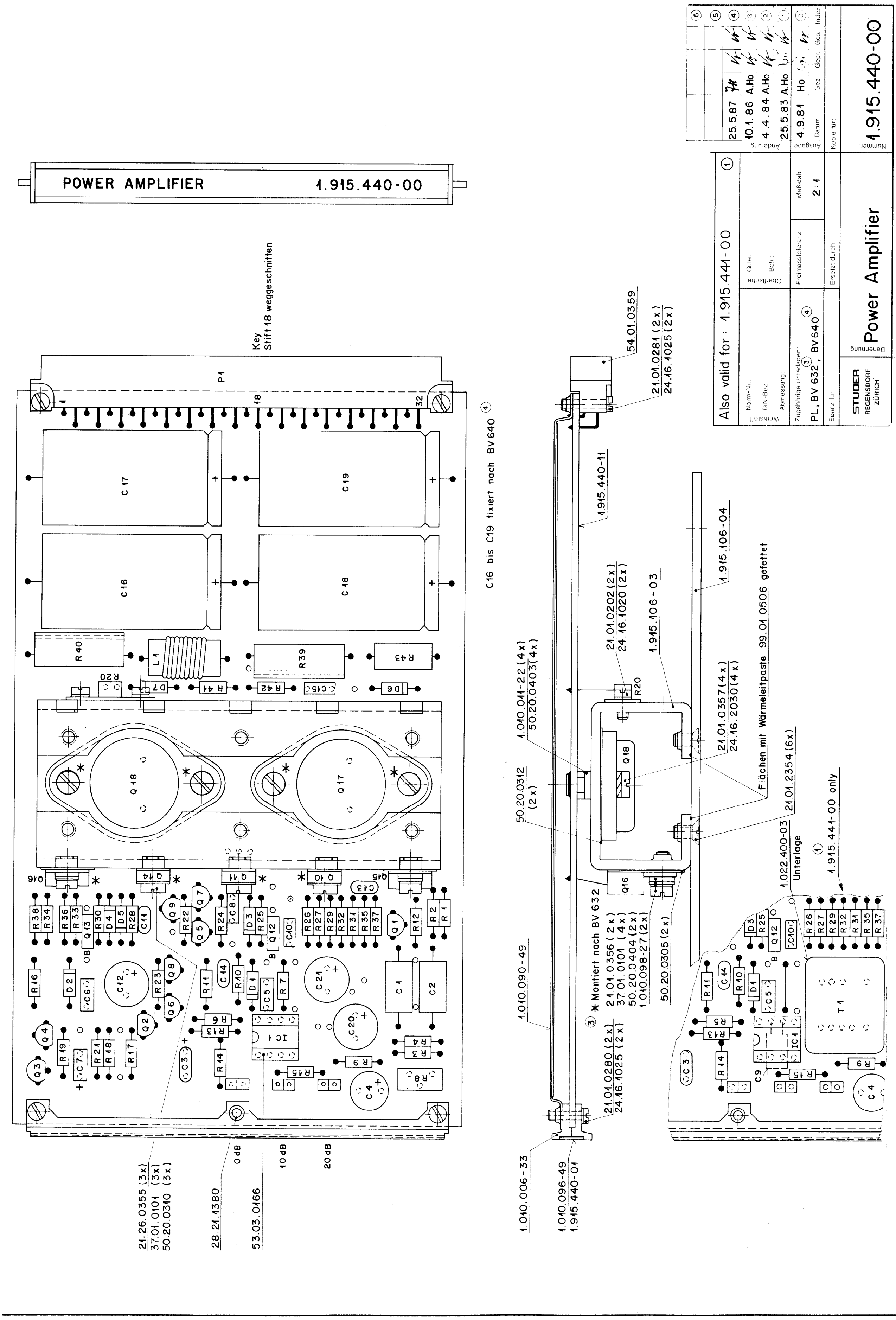
Ordering Information:

Euro-cards	• 40 W power amplifier with transformerless input	1.915.440.xx
	• 40 W power amplifier with input transformer	1.915.441.xx
19”/1U standard products		
40 W power amplifier	• Mono version, 19”/1U	75.700.80311
	• Stereo version, 19”/1U	75.700.80322
	• 19”/1U mounting frame (without amplifier cards)	1.918.120.xx



DATE:	12.1. 82	24.5. 83	24.6. 83	23.11. 83		
SIGN:						
STUDER REGENSDORF ZÜRICH	POWER AMPLIFIER OPTIONAL : INP. BALANCED FLOATING					SC 1.915.440 1.915.441

40W POWER AMPLIFIER



40W POWER AMPLIFIER

Ad	POS.	REF.No.	DESCRIPTION				MANUFACTURER
	C.....1	59.12.9681	680pF	500V 1%	PS		
	C.....2	59.12.9681	680pF	500V 1%	PS		
	C.....3	59.26.2100	10µF	16V	SAL		
②	C.....4	59.30.1101	100µF	3V	TA		
	C.....5	59.06.0224	0,22µF		PE		
	C.....6	59.06.0224	0,22µF		PE		
①	C.....7	59.26.5229	2,2µF	25V	SAL		
	C.....8	59.06.0103	0,01µF		PE		
	C.....9	59.34.5561	560pF		CER (1.915.441)		
	C....10	59.06.0224	0,22µF		PE		
②	C....11	59.34.4101	100pF		CER		
②	C....12	59.30.1101	100µF	3V	TA		
②	C....13	59.32.1471	470pF		CER		
②	C....14	59.32.1471	470pF		CER		
	C....15	59.06.0104	0,1µF		PE		
	C....16	59.25.5222	2200µF	40V	EL		
	C....17	59.25.5222	2200µF	40V	EL		
	C....18	59.25.5222	2200µF	40V	EL		
	C....19	59.25.5222	2200µF	40V	EL		
②	C....20	59.30.1101	100µF	3V	TA (1.915.440)		
②	C....21	59.30.1101	100µF	3V	TA (1.915.440)		
	D.....1	50.04.1114	ZPD10V	10V @ 5mA			
	D.....2	50.04.1114	ZPD10V	10V @ 5mA			
	D.....3	50.04.0125	1N4448		SI		
	D.....4	50.04.0125	1N4448		SI		
	D.....5	50.04.0125	1N4448		SI		
	D.....6	50.04.0105	1N4004	1,1V @ 1A	SI		
	D.....7	50.04.0105	1N4004	1,1V @ 1A	SI		
	IC....1	50.09.0105	NE5532A	DUAL OPA			SIG
	L.....1	1.068.614.00	2,2µH				ST
	Q.....1	50.03.0436	BC237B	NPN			PH, TI
	Q.....2	50.03.0515	BC307B	PNP			PH, TI
	Q.....3	50.03.0350	J112	FET			SIX, N
	Q.....4	50.03.0515	BC307B	PNP			PH, TI
	Q.....5	50.03.0515	BC307B	PNP			PH, TI
	Q.....6	50.03.0436	BC237B	NPN			PH, TI
	Q.....7	50.03.0515	BC307B	PNP			PH, TI
	Q.....8	50.03.0436	BC237B	NPN			PH, TI
	Q.....9	50.03.0436	BC237B	NPN			PH, TI
	Q....10	50.03.0452	BD140	PNP			PH, SIE
	Q....11	50.03.0451	BD139	NPN			PH, SIE
	Q....12	50.03.0451	BD139	NPN			PH, SIE
	Q....13	50.03.0452	BD140	PNP			PH, SIE
	Q....14	50.03.0451	BD139	NPN			PH, SIE
	Q....15	50.03.0344	2N6474	NPN			R
	Q....16	50.03.0345	2N6476	PNP			R
	Q....17	50.03.0342	2N5631	NPN			MOT
	Q....18	50.03.0343	2N6031	PNP			MOT
	R.....1	57.11.3152	1,5k	1%			
	R.....2	57.11.3152	1,5k	1%			
	R.....3	57.11.3392	3,9k	1%			
	R.....4	57.11.3392	3,9k	1%			
	R.....5	57.11.3822	8,2k	1% (1.915.441)			
	R.....6	57.11.3332	3,3k	1% (1.915.440)			
	R.....7	57.11.3332	3,3k	1% (1.915.440)			
	R.....8	58.01.7502	5k	10%	LIN		
	R.....9	57.11.4152	1,5k				
	R....10	57.11.4683	68k				
	R....11	57.11.4683	68k				
	R....12	57.11.4332	3,3k				
	R....13	57.11.4103	10k	2%			
	R....14	57.11.4472	4,7k	2%			
	R....15	57.11.3112	1,1k	2%			
	R....16	57.11.4332	3,3k				
	R....17	57.11.4222	2,2k	2%			
	R....18	57.11.4220	22				
	R....19	57.11.4334	330k				
④	R....20	57.99.0803	16,7k		NTC		PH
②	R....21	57.11.4391	390				
	R....22	57.11.4181	180				
	R....23	57.11.4821	820				
	R....24	57.11.4123	12k				
	R....25	57.11.4120	12				
	R....26	57.11.4152	1,5k				
	R....27	57.11.4102	1k				
	R....28	57.11.4103	10k				
	R....29	57.11.4150	15				
	R....30	57.11.4330	33				
③	R....31	57.11.4224	220k				
	R....32	57.11.4152	1,5k				
	R....33	57.11.4152	1,5k				
③	R....34	57.11.4224	220k				
	R....35	57.11.4332	3,3k				
	R....36	57.11.4332	3,3k				
	R....37	57.11.4150	15				
	R....38	57.11.4150	15				
	R....39	57.56.5108	0,1	10%	4W	WW	
	R....40	57.56.5108	0,1	10%	4W	WW	
	R....41	57.11.4470	47		0,4W		
	R....42	57.11.4100	10		0,4W		
	R....43	57.13.4471	470		1W		
	T.....1	1.022.405.00	1:1	INPUT TRANSFORMER			ST

MODIFICATION LIST

②	C.....4	220µFEL➔100µTA	QUALITY IMPROVEMENT
①	C.....7	0,22µF➔2,2µF	BETTER INRUSH
②	C....12	100µFEL➔100µTA	QUALITY IMPROVEMENT
②	C....13	560pF➔470pF	PRODUCTIONS REASONS
②	C....20	100µFEL➔100µTA	QUALITY IMPROVEMENT
②	C....21	100µFEL➔100µTA	QUALITY IMPROVEMENT
②	R....21	1kΩ➔390Ω	SWITCH OFF @ 100°C
③	R....31	100k➔220k	CURRENT LIMIT @ HIGHER IDLE VOLTAGES
③	R....34	100k➔220k	CURRENT LIMIT @ HIGHER IDLE VOLTAGES

PS=Polystyrene, EL=Electrolytic, SAL=Solid Aluminium, PE=Polyester, CER=Ceramic, SI=Silicium, T=Tantalum WW=Wire Wound

MANUFACTURER: PH=Philips, SIG=Signetics, SIX=Siliconix, SIE=Siemens, TI=Texas Instruments, R=RCA MOT=Motorola, N=National, ST=Studer

Also Valid for: 1.915.441 ①

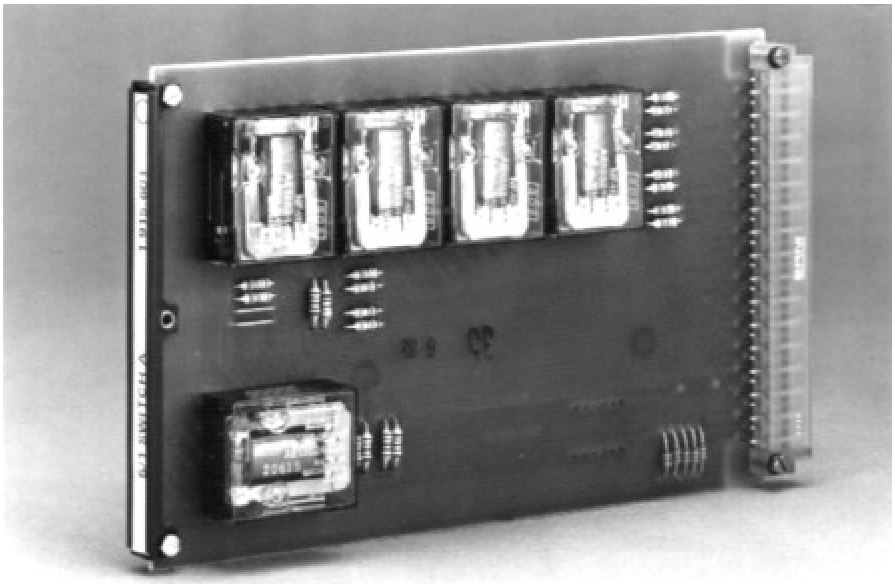
1.915.440 POWER AMPLIFIER	PA 09/06/81
1.915.440 POWER AMPLIFIER	① VO 25/05/83
1.915.440 POWER AMPLIFIER	② FRI 06/07/83
1.915.440 POWER AMPLIFIER	③ VO 23/11/83
1.915.440 POWER AMPLIFIER	④ VO 23/09/91

END
➔

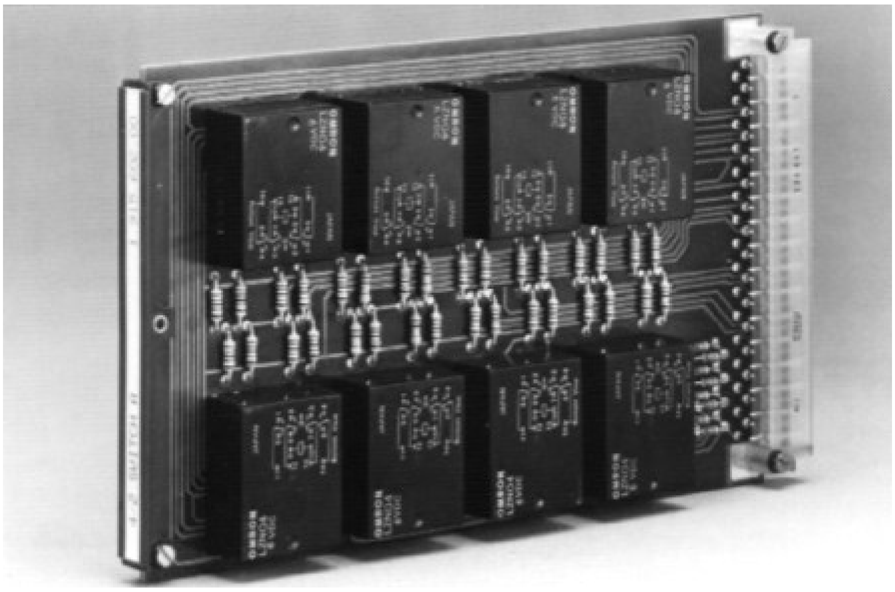
2.2.8 Monitor Switching Relays

1.915.601/602

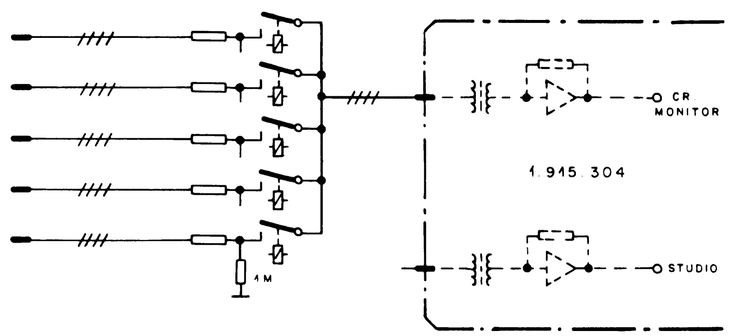
Two different monitor circuit switching cards are available. They are equipped with either five or eight relays for switching of a corresponding number of stereo sources to one or two stereo outputs in monitor circuits.



The relays are available with coil ratings of 6 V_{DC} or 24 V_{DC}, depending on the user's requirement. Click-suppressing diodes are wired across each relay coil. The relays are equipped with four double throw (change-over) contacts each.

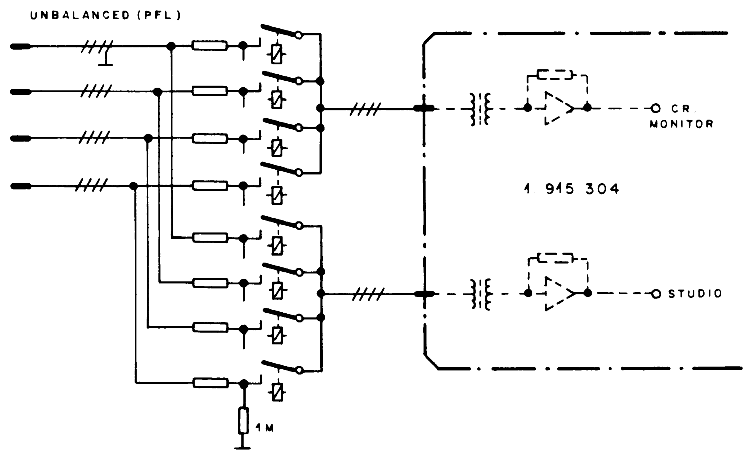


Isolation of the monitor lines from external circuitry is achieved by 5.6 kΩ resistors in the "a" and "b" legs of each stereo line, thus a high impedance (bridging) load is presented to the outside source, even in de-energized (non-selected) status, when the respective pair of relay contacts shorts the lines after the respective isolation resistors. With a relay energized, the corresponding stereo pair is routed to a stereo bus available on four pins of the 32-contact edge connector (in case of the 5-input card 1.915.601.xx).



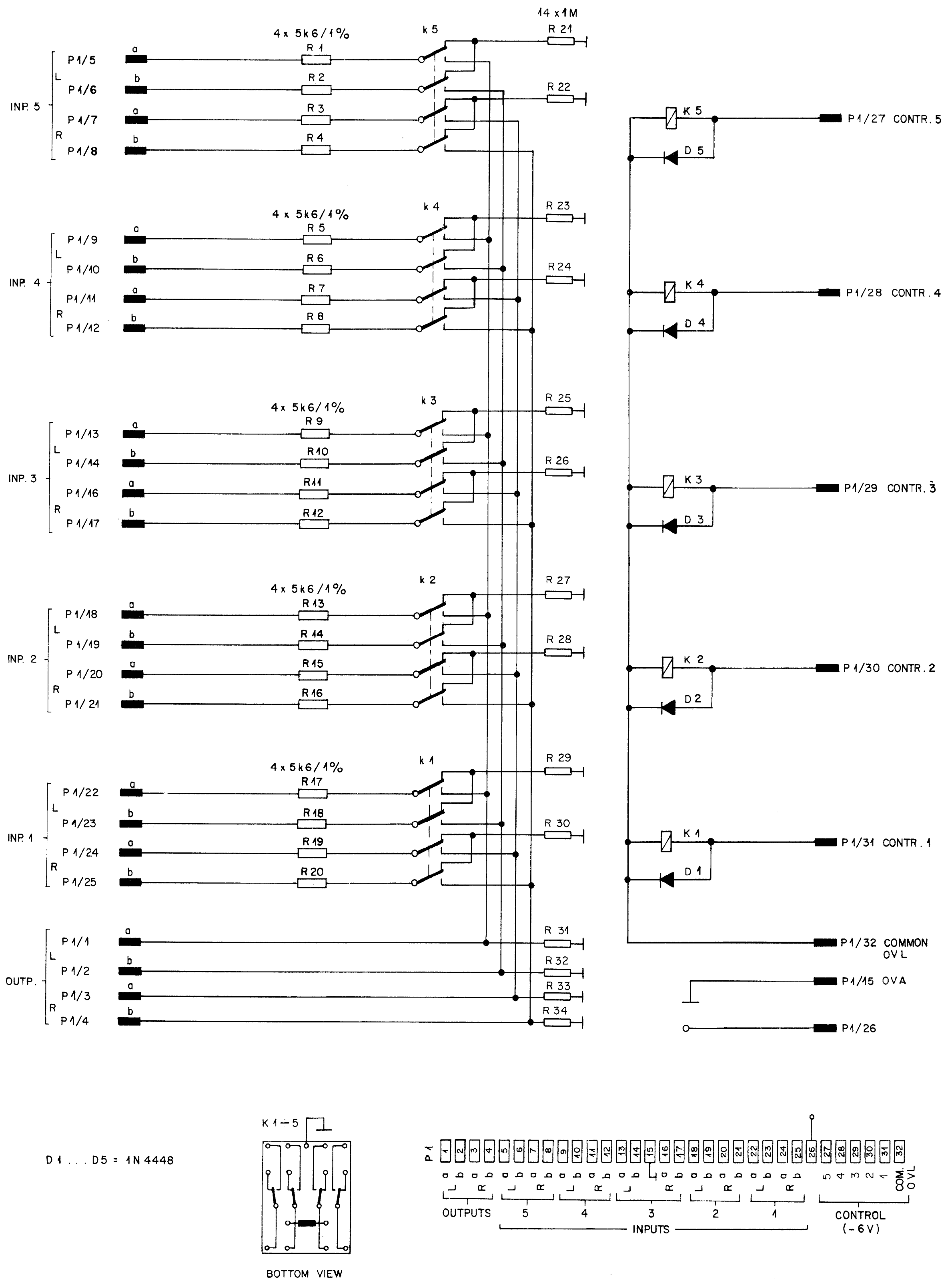
Monitor switching relay card 1.915.601

Card 1.915.602.xx features a similar circuit configuration with eight relays, to switch one unbalanced and three balanced stereo inputs. Two stereo buses appear on eight pins of the edge-connector; in this way, the four inputs can be switched to either one or to both outputs, such as may be the case with separate monitor circuits in the control room and in the studio.



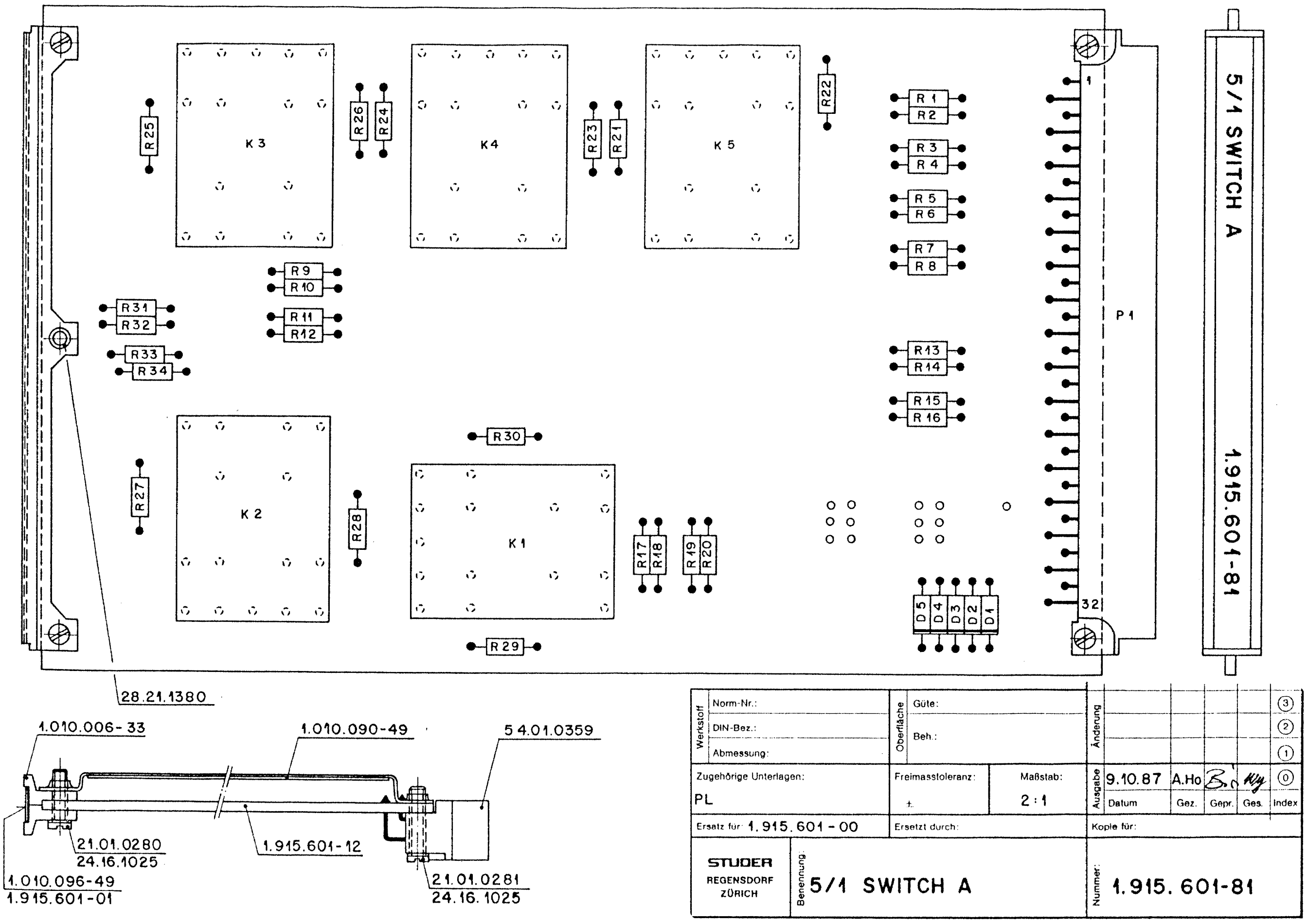
Monitor switching relay card 1.915.602

Dimensions:	Euro-card	**100 × 160 mm, 4 M units wide**	
	Weight	**approx. 250 g**	
Ordering Information:	•	Relay card, 5 IN/1 OUT	1.915.601.xx
	•	Relay card, 4 IN/2 OUT	1.915.602.xx



DATE:	26.10.87					
SIGN:						
STUDER REGENSDORF ZÜRICH	5/1 SWITCH A MONITOR RELAYS					SC 1.915.601.81

RELAYS

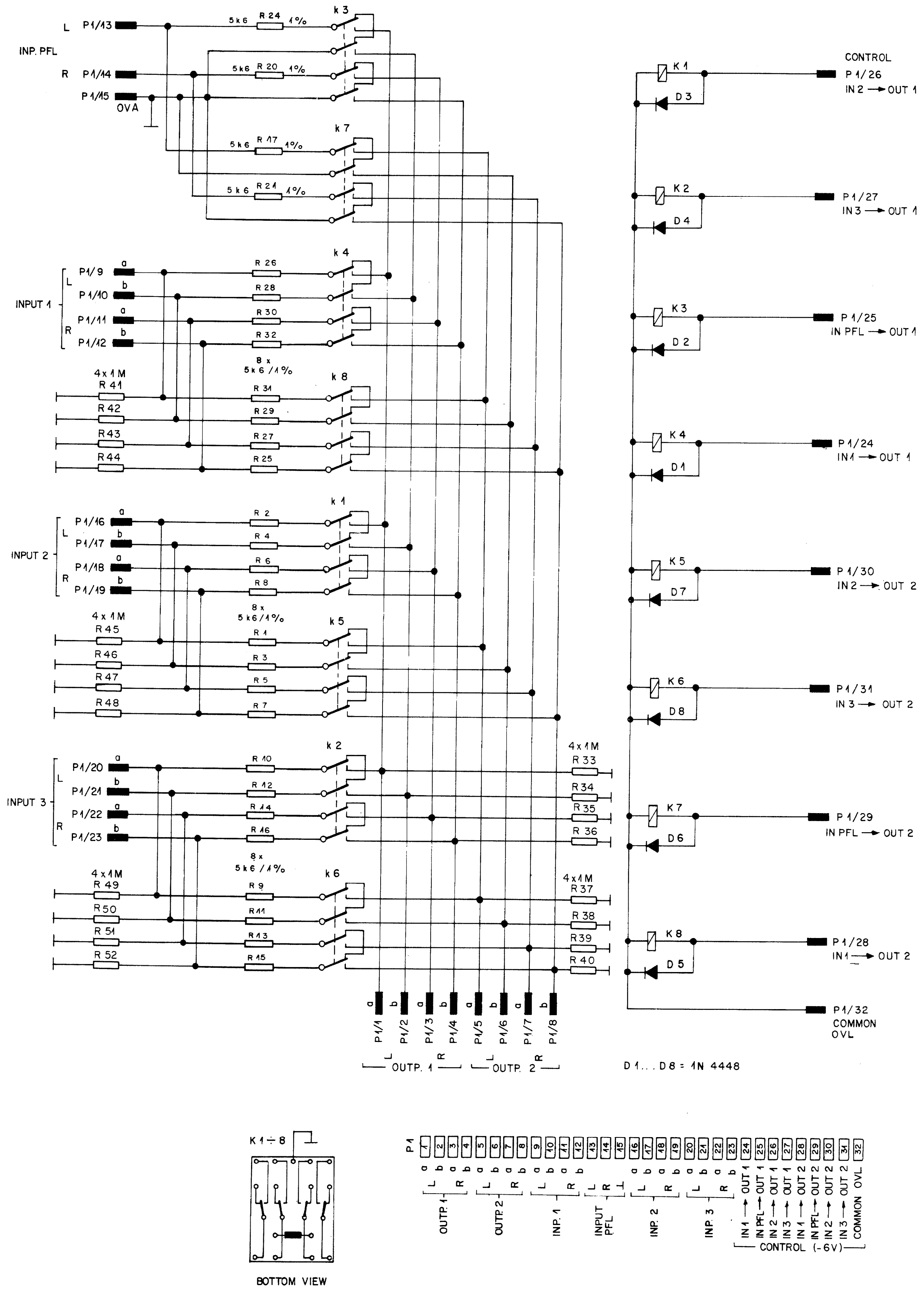


Ad	POS.	REF.No.	DESCRIPTION		MANUFACTURER
	D.....1	50.04.0125	1N4448		ANY
	D.....2	50.04.0125	1N4448		ANY
	D.....3	50.04.0125	1N4448		ANY
	D.....4	50.04.0125	1N4448		ANY
	D.....5	50.04.0125	1N4448		ANY
	K.....1	56.04.0146	4U/6V		N/0
	K.....2	56.04.0146	4U/6V		N/0
	K.....3	56.04.0146	4U/6V		N/0
	K.....4	56.04.0146	4U/6V		N/0
	K.....5	56.04.0146	4U/6V		N/0
	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	57.11.3562	5,6k	1%	
	R.....6	57.11.3562	5,6k	1%	
	R.....7	57.11.3562	5,6k	1%	
	R.....8	57.11.3562	5,6k	1%	
	R.....9	57.11.3562	5,6k	1%	
	R....10	57.11.3562	5,6k	1%	
	R....11	57.11.3562	5,6k	1%	
	R....12	57.11.3562	5,6k	1%	
	R....13	57.11.3562	5,6k	1%	
	R....14	57.11.3562	5,6k	1%	
	R....15	57.11.3562	5,6k	1%	
	R....16	57.11.3562	5,6k	1%	
	R....17	57.11.3562	5,6k	1%	
	R....18	57.11.3562	5,6k	1%	
	R....19	57.11.3562	5,6k	1%	
	R....20	57.11.3562	5,6k	1%	
	R....21	57.11.4105	1M		
	R....22	57.11.4105	1M		
	R....23	57.11.4105	1M		
	R....24	57.11.4105	1M		
	R....25	57.11.4105	1M		
	R....26	57.11.4105	1M		
	R....27	57.11.4105	1M		
	R....28	57.11.4105	1M		
	R....29	57.11.4105	1M		
	R....30	57.11.4105	1M		
	R....31	57.11.4105	1M		
	R....32	57.11.4105	1M		
	R....33	57.11.4105	1M		
	R....34	57.11.4105	1M		

MANUFACTURER: N=National, O=Omron

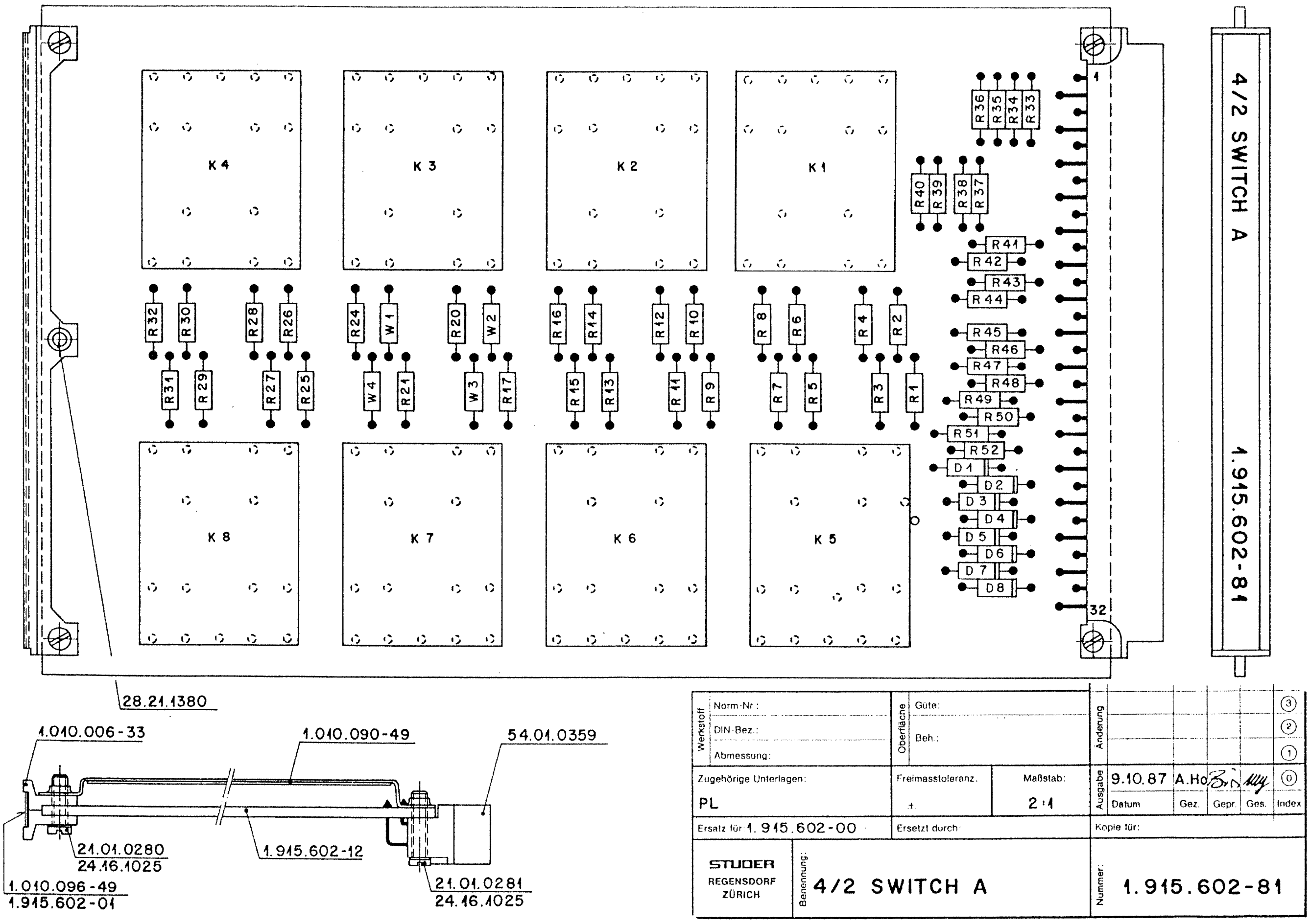
1.915.601.81 5/1 SWITCH A WY 14/10/87

END
→



DATE:	26.10.87					
SIGN:						
STUDER REGENSDORF ZÜRICH	4/2 SWITCH A MONITOR RELAYS					SC 1.915.602.81

RELAYS



Ad	POS.	REF.No.	DESCRIPTION			MANUFACTURER
	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.....6	50.04.0125	1N4448			ANY
	D.....7	50.04.0125	1N4448			ANY
	D.....8	50.04.0125	1N4448			ANY
	K.....1	56.04.0146	4U/6V			N/0
	K.....2	56.04.0146	4U/6V			N/0
	K.....3	56.04.0146	4U/6V			N/0
	K.....4	56.04.0146	4U/6V			N/0
	K.....5	56.04.0146	4U/6V			N/0
	K.....6	56.04.0146	4U/6V			N/0
	K.....7	56.04.0146	4U/6V			N/0
	K.....8	56.04.0146	4U/6V			N/0
	R.....1	57.11.3562	5,6k	1%	28Stk.	
	R.....2	57.11.3562	5,6k	1%	28Stk.	
	R.....3	57.11.3562	5,6k	1%	28Stk.	
	R.....4	57.11.3562	5,6k	1%	28Stk.	
	R.....5	57.11.3562	5,6k	1%	28Stk.	
	R.....6	57.11.3562	5,6k	1%	28Stk.	
	R.....7	57.11.3562	5,6k	1%	28Stk.	
	R.....8	57.11.3562	5,6k	1%	28Stk.	
	R.....9	57.11.3562	5,6k	1%	28Stk.	
	R....10	57.11.3562	5,6k	1%	28Stk.	
	R....11	57.11.3562	5,6k	1%	28Stk.	
	R....12	57.11.3562	5,6k	1%	28Stk.	
	R....13	57.11.3562	5,6k	1%	28Stk.	
	R....14	57.11.3562	5,6k	1%	28Stk.	
	R....15	57.11.3562	5,6k	1%	28Stk.	
	R....16	57.11.3562	5,6k	1%	28Stk.	
	R....17	57.11.3562	5,6k	1%	28Stk.	
	R....25	57.11.3562	5,6k	1%	28Stk.	
	R....26	57.11.3562	5,6k	1%	28Stk.	
	R....27	57.11.3562	5,6k	1%	28Stk.	
	R....28	57.11.3562	5,6k	1%	28Stk.	
	R....29	57.11.3562	5,6k	1%	28Stk.	
	R....30	57.11.3562	5,6k	1%	28Stk.	
	R....31	57.11.3562	5,6k	1%	28Stk.	
	R....32	57.11.3562	5,6k	1%	28Stk.	
	R....33	57.11.3105	1M			
	R....34	57.11.3105	1M			
	R....35	57.11.3105	1M			
	R....36	57.11.3105	1M			
	R....37	57.11.3105	1M			
	R....38	57.11.3105	1M			
	R....39	57.11.3105	1M			
	R....40	57.11.3105	1M			
	R....41	57.11.3105	1M			
	R....42	57.11.3105	1M			
	R....43	57.11.3105	1M			
	R....44	57.11.3105	1M			
	R....45	57.11.3105	1M			
	R....46	57.11.3105	1M			
	R....47	57.11.3105	1M			
	R....48	57.11.3105	1M			
	R....49	57.11.3105	1M			
	R....50	57.11.3105	1M			
	R....51	57.11.3105	1M			
	R....52	57.11.3105	1M			
	W.....1	57.11.3000	0-Ω			
	W.....2	57.11.3000	0-Ω			
	W.....3	57.11.3000	0-Ω			
	W.....4	57.11.3000	0-Ω			

MANUFACTURER: N=National, O=Omron

1.915.602.81 4/2 SWITCH A WY 14/10/87

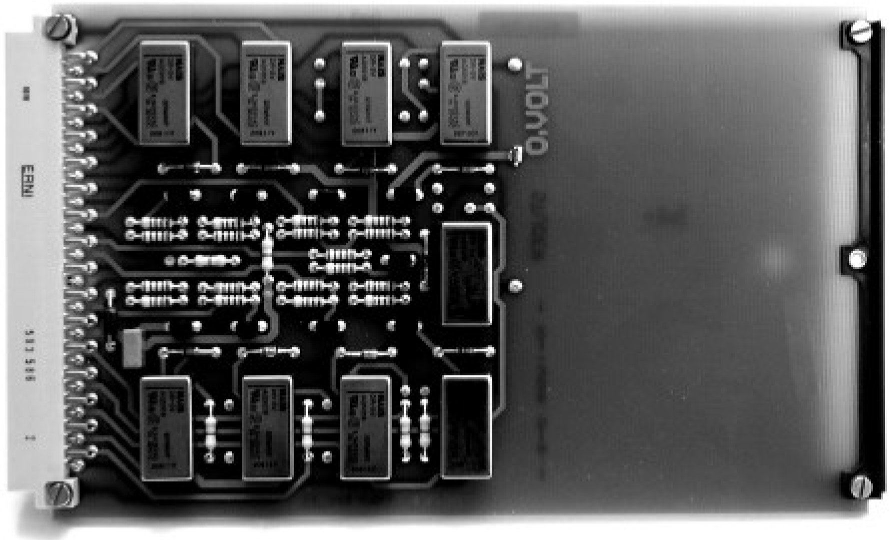
1.915.602.81 4/2 SWITCH A ① WY 22/05/89

END
➔

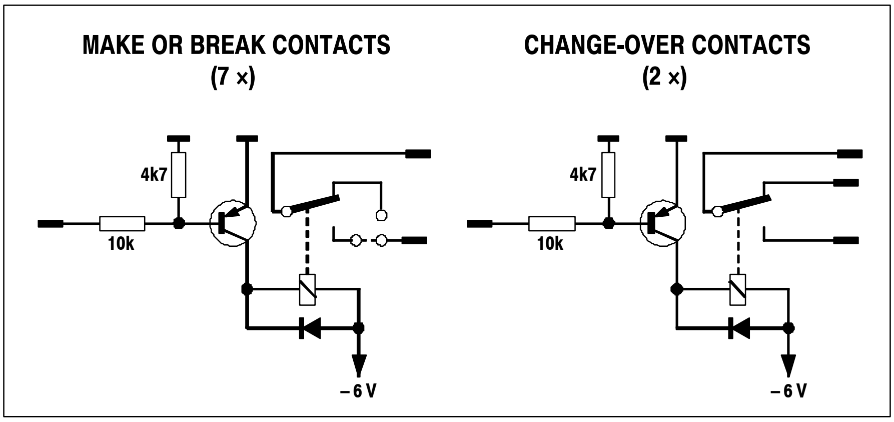
2.2.9 Transistor-Driven Relays (7+2)

1.915.603

This Euro-card is supplied with nine transistor-driven relays with single-pole, double-throw (SPDT) contacts. For two of the relays, both normally-open and normally-closed contacts are routed to the edge connector; for the remaining seven it is jumper-selectable whether the normally-open or the normally-closed contact is used.



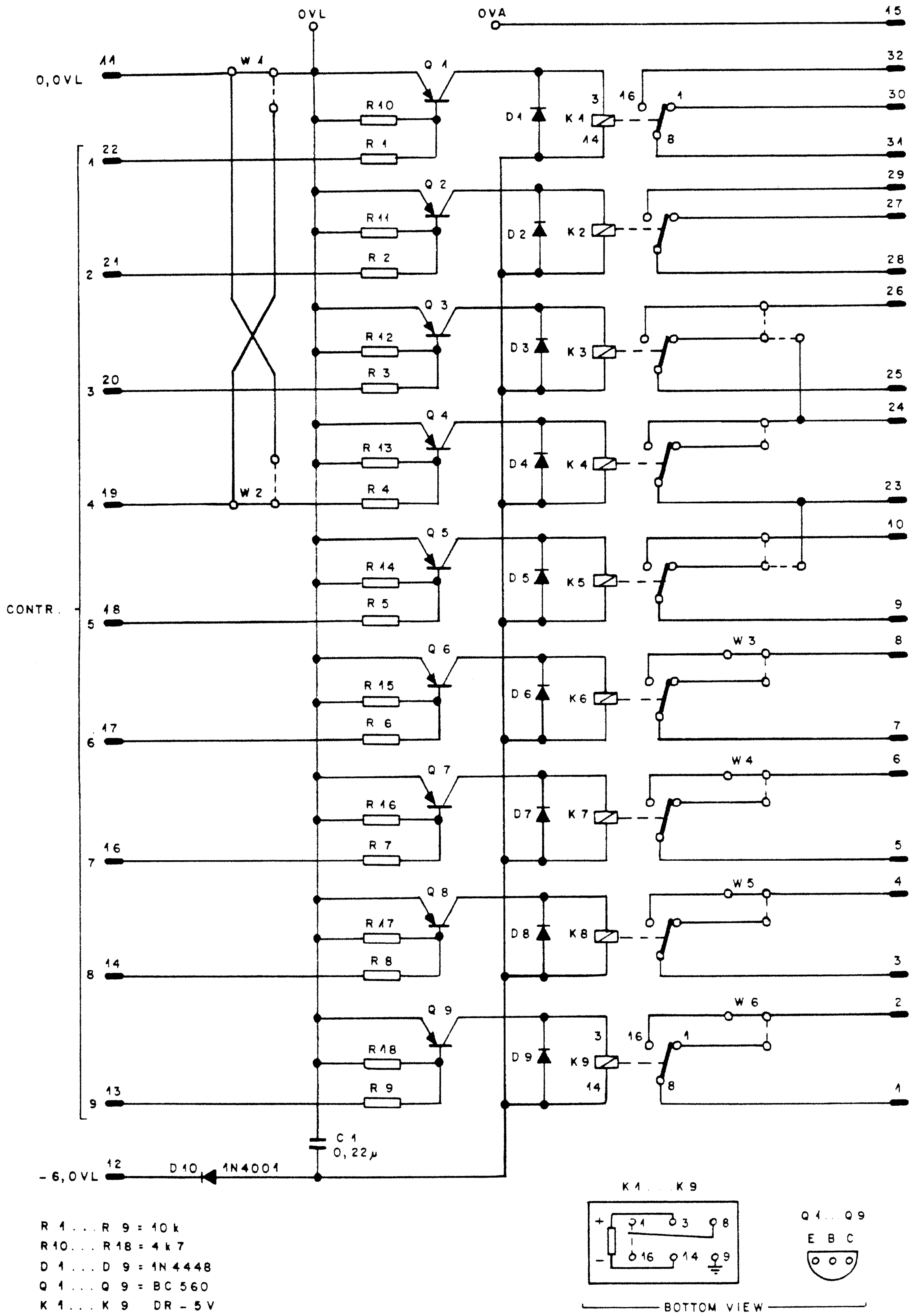
The relays are designed for operation on 6 V_{DC}, and each relay coil is bridged with a click-suppressing diode. PNP transistors in series with the coils are blocking the current flow, because each transistor is normally biased off. By applying the output from the gate of an external control logic to the base of a transistor, it is switched into saturation, thereby energizing the respective relay. This arrangement of nine relays was designed for use in signaling systems within a studio installation; however, it may find its use for other applications as well.



Polarity of the relay’s supply voltage must be observed when utilizing this circuit.

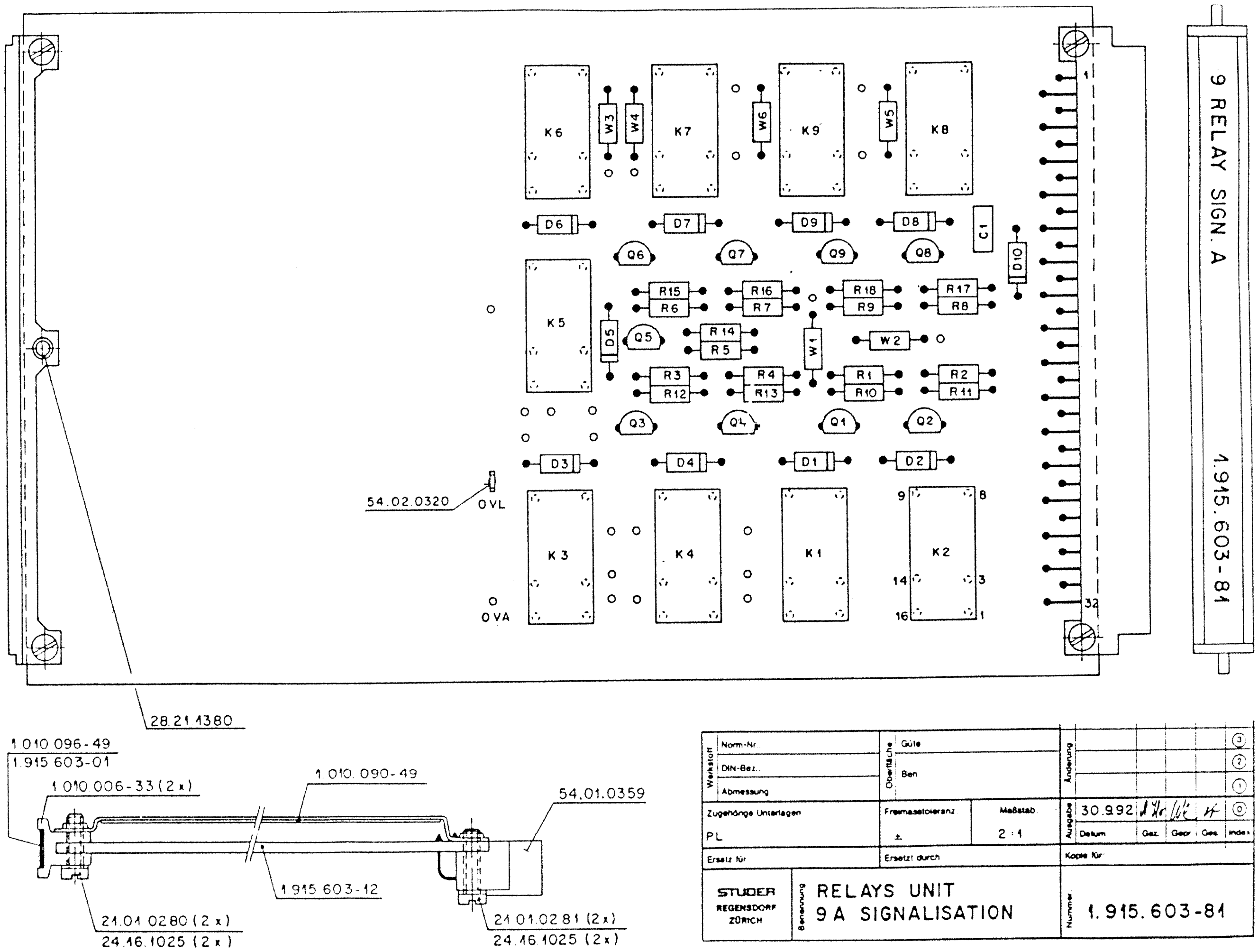
Technical Specifications

Contact Ratings:		**max. 1 A/30 V_{DC} or 0.3 A/125 V_{AC}**	
	Note:	*In this application **48 V** must not be exceeded to avoid shock hazard.*	
	Switching power	**60 VA** (AC)	
		100 W (DC)	
Dimensions:	Euro-card	**100 × 160 mm, 4 M units wide**	
Ordering Information:		Transistor-driven relays	1.915.603.xx



0 24 11 92				
STUDER REGENSDORF ZÜRICH	9 RELAYS SIGN. A		SC 1.915.603-81	

RELAYS



Ad	..POS..	...REF.No...	DESCRIPTION	...MANUFACTURER
	C 1	59.06.0224	KONDENSATOR 0,22µ	
	D.....1	50.04.0125	DIODE 1N 4448	
	D.....2	50.04.0125	DIODE 1N 4448	
	D.....3	50.04.0125	DIODE 1N 4448	
	D.....4	50.04.0125	DIODE 1N 4448	
	D.....5	50.04.0125	DIODE 1N 4448	
	D.....6	50.04.0125	DIODE 1N 4448	
	D.....7	50.04.0125	DIODE 1N 4448	
	D.....8	50.04.0125	DIODE 1N 4448	
	D.....9	50.04.0125	DIODE 1N 4448	
	D....10	50.04.0122	DIODE 1N 4001	
	K.....1	56.04.0190	RELAYS DR-5V	
	K.....2	56.04.0190	RELAYS DR-5V	
	K.....3	56.04.0190	RELAYS DR-5V	
	K.....4	56.04.0190	RELAYS DR-5V	
	K.....5	56.04.0190	RELAYS DR-5V	
	K.....6	56.04.0190	RELAYS DR-5V	
	K.....7	56.04.0190	RELAYS DR-5V	
	K.....8	56.04.0190	RELAYS DR-5V	
	K.....9	56.04.0190	RELAYS DR-5V	
	Q.....1	50.03.0601	TRANSISTOR BC 560	
	Q.....2	50.03.0601	TRANSISTOR BC 560	
	Q.....3	50.03.0601	TRANSISTOR BC 560	
	Q.....4	50.03.0601	TRANSISTOR BC 560	
	Q.....5	50.03.0601	TRANSISTOR BC 560	
	Q.....6	50.03.0601	TRANSISTOR BC 560	
	Q.....7	50.03.0601	TRANSISTOR BC 560	
	Q.....8	50.03.0601	TRANSISTOR BC 560	
	Q.....9	50.03.0601	TRANSISTOR BC 560	

Ad	..POS..	...REF.No...	DESCRIPTION	...MANUFACTURER
	R.....1	57.11.3103	WIDERSTAND 10K	
	R.....2	57.11.3103	WIDERSTAND 10K	
	R.....3	57.11.3103	WIDERSTAND 10K	
	R.....4	57.11.3103	WIDERSTAND 10K	
	R.....5	57.11.3103	WIDERSTAND 10K	
	R.....6	57.11.3103	WIDERSTAND 10K	
	R.....7	57.11.3103	WIDERSTAND 10K	
	R.....8	57.11.3103	WIDERSTAND 10K	
	R.....9	57.11.3103	WIDERSTAND 10K	
	R....10	57.11.3472	WIDERSTAND 4,7K	
	R....11	57.11.3472	WIDERSTAND 4,7K	
	R....12	57.11.3472	WIDERSTAND 4,7K	
	R....13	57.11.3472	WIDERSTAND 4,7K	
	R....14	57.11.3472	WIDERSTAND 4,7K	
	R....15	57.11.3472	WIDERSTAND 4,7K	
	R....16	57.11.3472	WIDERSTAND 4,7K	
	R....17	57.11.3472	WIDERSTAND 4,7K	
	R....18	57.11.3472	WIDERSTAND 4,7K	
	W.....1	57.11.3000	0 OHM WIDERSTAND	
	W.....2	57.11.3000	0 OHM WIDERSTAND	
	W.....3	57.11.3000	0 OHM WIDERSTAND	
	W.....4	57.11.3000	0 OHM WIDERSTAND	
	W.....5	57.11.3000	0 OHM WIDERSTAND	
	W.....6	57.11.3000	0 OHM WIDERSTAND	

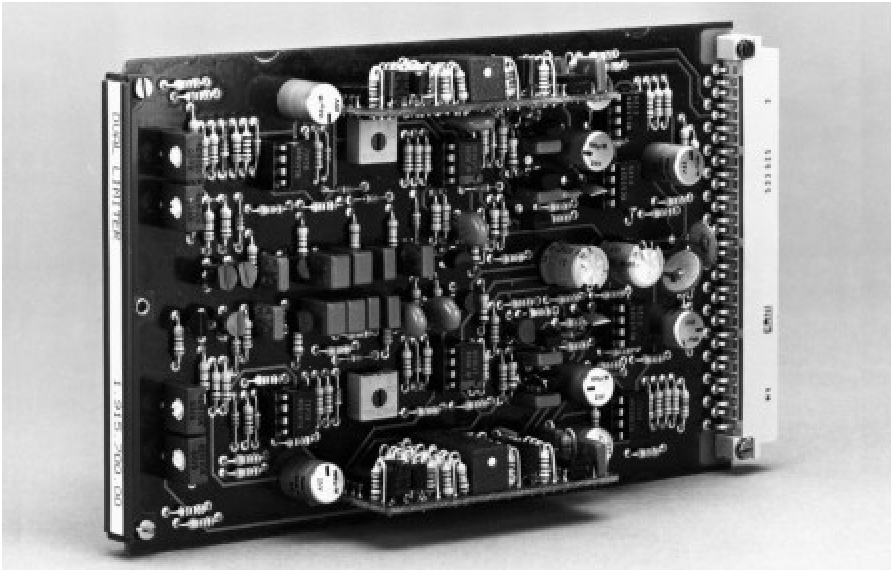
1.915.603.81 RELAY UNIT 9A 21/10/92

END

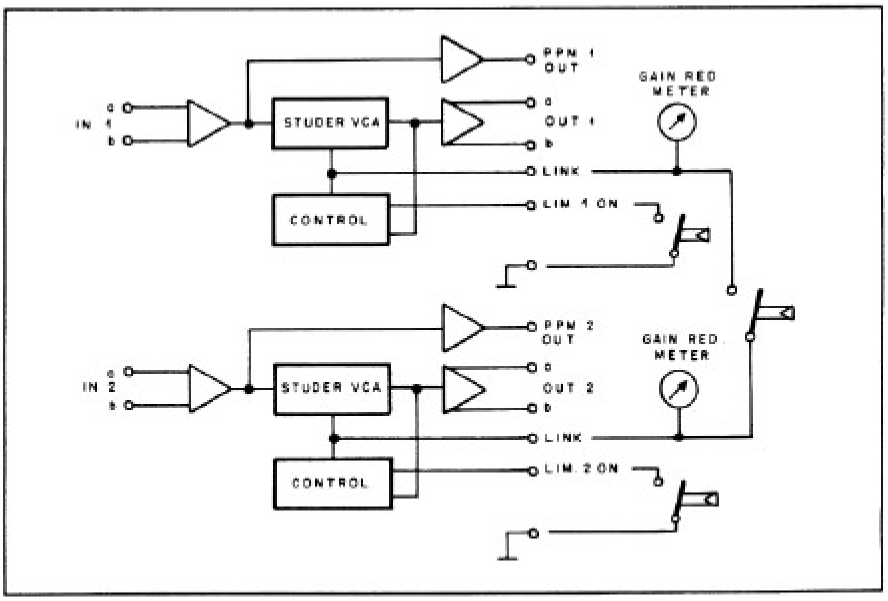
2.2.10 Dual Limiter

1.915.700

In sound work there are numerous situations where the signal amplitude has to be limited to a pre-determined level in order to prevent overloading of succeeding equipment, such as light modulators in film work, or radio transmitters. With this limiter, excessive levels are automatically reduced to a preset level, and, since regulation is controlled by the program's energy content, the performance of this limiter is free of any "pumping" effects. Gain reduction is achieved with a Studer Voltage Controlled Amplifier (VCA) which ensures low noise performance and negligible distortion.



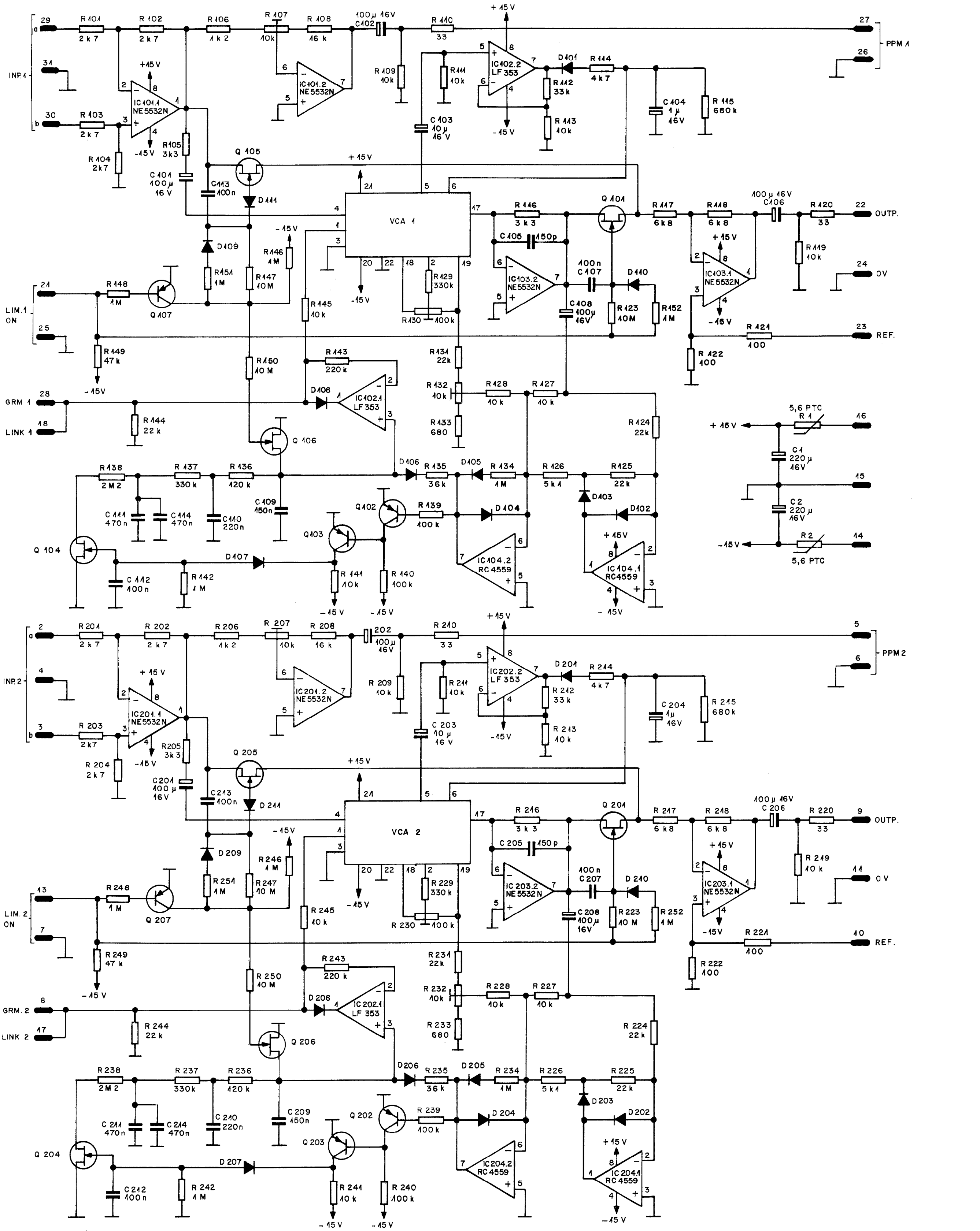
Two identical, independent limiter circuits are contained on one Eurocard, plus additional, separate gain stages to drive peak program meters.
The perfect tracking of the two VCAs makes this Dual Limiter suitable for stereo work as well, in which case a simple electrical connection is needed to link the units.



Note: Gain reduction meters *(not supplied)* can be connected to the LINK outputs as well, if required.

Technical Specifications

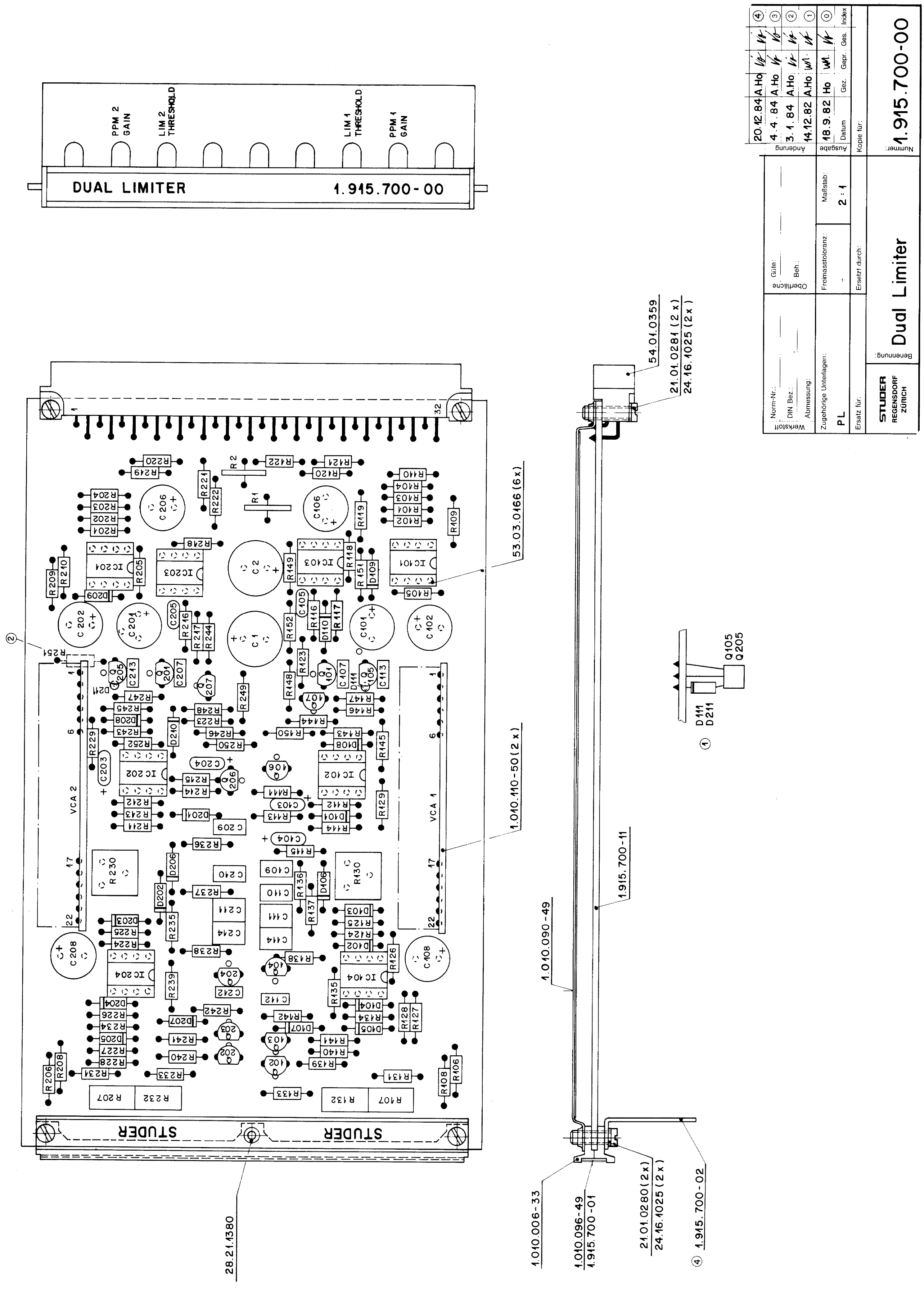
Input:	Impedance	**5.4 kW**, balanced configuration
		2.7 kW, unbalanced configuration
	Overload point	**+20 dBu** (7.75 V_{rms})
Output:	Impedance	**< 50 W,** unbalanced
	Frequency response	**+0/–0.5 dB**, 30 Hz...15 kHz
		+0/–3 dB, 2 Hz...200 kHz
	Gain	**0 dB,** limiter off
	Output noise level	**–102 dBu,** Limiter on
		–106 dBu, Limiter off
	Limiting ratio	**20:1**
	Threshold	**–15 dBu...+3 dBu,** adjustable
	Limited output level	**–14 dBu...+4 dBu,** depending on threshold setting
	Attack time	**1 ms**
	Release time	**50 ms...5 s,** program-dependent
PPM Section:	Output impedance	**< 50 W,** unbalanced
	Maximum output level	**+20 dBu**
	Gain	**2.5 dB...27 dB,** adjustable
	Frequency response	**+0/–3 dB,** 2 Hz...200 kHz
Supply:		**±15 V** (100 mA)
Dimensions:	Euro-card	**100 × 160 mm, 7 M units wide**
Ordering Information:		Dual limiter — 1.915.700.xx



ALL DIODES 1N4448
ALL PNP BC 560
ALL FET J 112

DATE:	3.3.83	16.7.84				
SIGN:	ml	ml				
STUDER REGENSDORF ZÜRICH	DUAL LIMITER					SC 1.915.700

DUAL LIMITER



DUAL LIMITER

Ad	POS.	REF.No.	DESCRIPTION				MANUFACTURER
	C.....1	59.22.4221	220µ	16V	EL		
	C.....2	59.22.4221	220µ	16V	EL		
	C.....1	59.22.4101	100µ	16V	EL		
	C.....2	59.22.4101	100µ	16V	EL		
	C.....3	59.26.2100	10µ	16V	EL, SAL		
	C.....4	59.26.5109	1µ	16V	EL, SAL		
	C.....5	59.34.4151	150p		CER		
	C.....6	59.22.4101	100µ	16V	EL		
	C.....7	59.06.5104	100n		PETP		
	C.....8	59.22.4101	100µ	16V	EL		
	C.....9	59.06.5154	150n	5%	PETP		
	C....10	59.06.5224	220n	5%	PETP		
	C....11	59.06.5474	470n	5%	PETP		
	C....12	59.06.5104	100n		PETP		
	C....13	59.06.5104	100n		PETP		
	C....14	59.06.5474	470n	5%	PETP		
	D.....1	50.04.0125	1N4448		SI		
	D.....2	50.04.0125	1N4448		SI		
	D.....3	50.04.0125	1N4448		SI		
	D.....4	50.04.0125	1N4448		SI		
	D.....5	50.04.0125	1N4448		SI		
	D.....6	50.04.0125	1N4448		SI		
	D.....7	50.04.0125	1N4448		SI		
	D.....8	50.04.0125	1N4448		SI		
	D.....9	50.04.0125	1N4448		SI		
	D....10	50.04.0125	1N4448		SI		
①	D....11	50.04.0125	1N4448		SI		
	IC....1	50.09.0106	NE5532N	DUAL OP		XR5532N	SIG, EX
	IC....2	50.09.0101	LF353N	DUAL OP		TL072	N, TI
	IC....3	50.09.0106	NE5532N	DUAL OP		XR5532N	SIG, EX
	IC....4	50.09.0107	RC4559NB	DUAL OP			RA, TI
	Q.....1	50.03.0350	J112	J-FET			SIX, N
	Q.....2	50.03.0496	BC560	PNP			SIE
	Q.....3	50.03.0496	BC560	PNP			SIE
	Q.....4	50.03.0350	J112	J-FET			SIX, N
	Q.....5	50.03.0350	J112	J-FET			SIX, N
	Q.....6	50.03.0350	J112	J-FET			SIX, N
	Q.....7	50.03.0496	BC560	PNP			SIE
	R.....1	57.99.0209	5,6		PTC		PH
	R.....2	57.99.0209	5,6		PTC		PH
	R.....1	57.11.4272	2,7k	2%			
	R.....2	57.11.4272	2,7k	2%			
	R.....3	57.11.4272	2,7k	2%			
	R.....4	57.11.4272	2,7k	2%			
	R.....5	57.11.4332	3,3k	2%			
	R.....6	57.11.4122	1,2k				
	R.....7	58.01.7103	10k	10% LIN	PMG		
	R.....8	57.11.3163	16k				
	R.....9	57.11.4103	10k				
	R....10	57.11.4330	33				
	R....11	57.11.4103	10k				
	R....12	57.11.4333	33k				
	R....13	57.11.4103	10k				
	R....14	57.11.4472	4,7k				
	R....15	57.11.4684	680k				
	R....16	57.11.4332	3,3k	2%			
	R....17	57.11.4682	6,8k	2%			
	R....18	57.11.4682	6,8k	2%			
	R....19	57.11.4103	10k				
	R....20	57.11.4330	33				
	R....21	57.11.4101	100	2%			
	R....22	57.11.4101	100	2%			
	R....23	57.11.6106	10M				
	R....24	57.11.4223	22k	2%			
	R....25	57.11.4223	22k	2%			
	R....26	57.11.3512	5,1k	2%			
	R....27	57.11.4103	10k	2%			
	R....28	57.11.4103	10k	2%			
	R....29	57.11.4334	330k				
	R....30	58.01.8104	100k	10% LIN	PMG		
	R....31	57.11.4223	22k				
	R....32	58.01.7103	10k	10% LIN	PMG		
	R....33	57.11.4681	680				
②	R....34	57.11.4105	1M				
③	R....35	57.11.3363	36k				
	R....36	57.11.4124	120k				
	R....37	57.11.4334	330k				
	R....38	57.11.5225	2,2M				
	R....39	57.11.4104	100k				
	R....40	57.11.4104	100k				
	R....41	57.11.4103	10k				
	R....42	57.11.4105	1M				

Ad	POS.	REF.No.	DESCRIPTION		MANUFACTURER
	R....43	57.11.4224	220k		
	R....44	57.11.4223	22k		
	R....45	57.11.4103	10k		
	R....46	57.11.4105	1M		
	R....47	57.11.6106	10M		
	R....48	57.11.4105	1M		
	R....49	57.11.4473	47k		
	R....50	57.11.6106	10M		
	R....51	57.11.4105	1M		
	R....52	57.11.4105	1M		
④⑤	VCA...1	1.911.290.81		STUDER VCA-BOARD	ST
④⑤	VCA...2	1.911.290.81		STUDER VCA-BOARD	ST
	XIC	53.03.0166	DIP8POL		

EL=Electrolytic, SAL=Solid Aluminium, CER=Ceramic, PETP=Polyester, SI=Silicium, PTC=Pos. Temp. Coif. PMG=Cermet

MANUFACTURER: SIG=Signetics, EX=Exar, N=National, TI=Texas Instruments, RA=Raytheon, SIX=Siliconix SIE=Siemens, PH=Philips, ST=Studer

1.915.700.00	DUAL LIMITER	W. Markl 14/06/82
1.915.700.00	DUAL LIMITER	① W. Markl 14/12/82
1.915.700.00	DUAL LIMITER	② A. Ho 01/04/84
1.915.700.00	DUAL LIMITER	③ VO 16/07/84
1.915.700.00	DUAL LIMITER	④ PA 13/01/89
1.915.700.00	DUAL LIMITER	⑤ WY 17/01/90

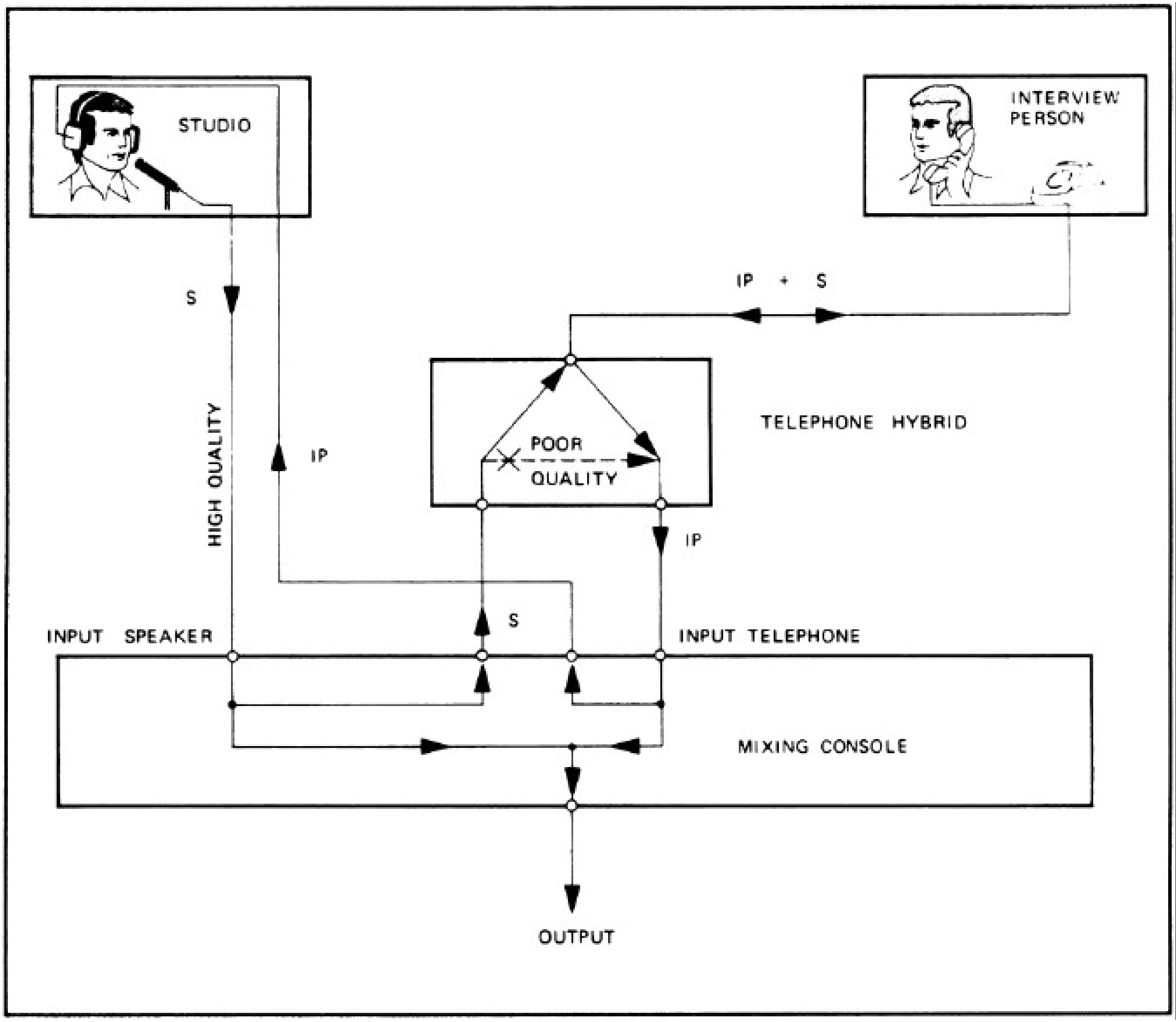
END
➔

2.2.11 Telephone Hybrid

1.915.760/764

In order to record or transmit a conversation between the announcer in the studio and a person outside the studio being interviewed by telephone, the telephone line must be connected to the mixing console.

In such a case, the full conversation is transmitted, since both voice signals are carried on normal 2-wire telephone lines. However, also the voice of the announcer in the studio is then transmitted in telephone quality (300... 3400 Hz). By mixing the microphone signal of the announcer (in studio quality) to the conversation, the addition of the “good” and “poor” signals results in a distorted and untrue signal.

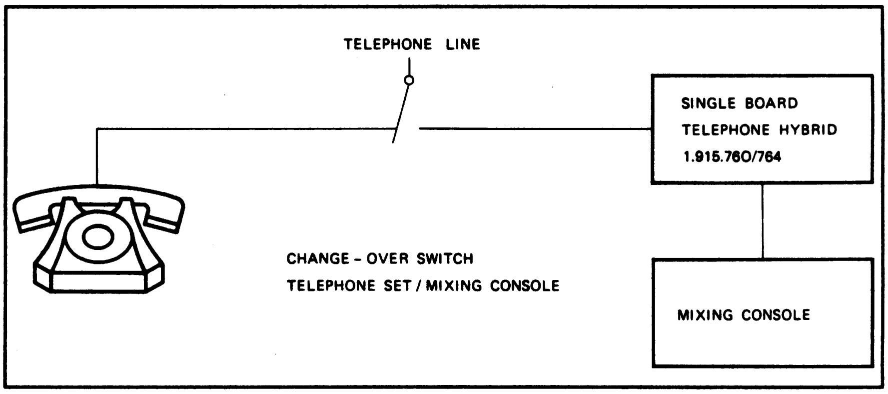


Principle of a telephone transmission via a mixing console

The telephone hybrid allows to greatly improve the quality of a telephone transmission by selectively suppressing the undesired “poor” announcer signal (side-tone attenuation). This side-tone attenuation is done in principle by a hybrid circuit which is a familiar feature in telephony.

The Studer telephone hybrid permits high-quality transmission of telephone conversations with the announcer in the studio. Apart from connecting it to the telephone line, the hybrid works automatically.

Maximum side-tone attenuation of the studio voice signal in the receiver line is achieved by automatically constituting a dummy load for the telephone line. This adjustment is performed electronically, the real (resistive) and imaginary (capacitive) components of the telephone line impedance being matched as near as possible. This automatical matching process begins as soon as an announcer signal is present.



Operation with a single Telephone Hybrid Board

The telephone set is used to establish a telephone connection (call). After switching over to the mixing console, the holding current for the subscriber's relay is maintained by a resistor on the hybrid board.

Versions:

A variety of 19" Telephone Hybrid units with one or two channels is available, consisting of the following versions:

- Standard version (ST) – 19"/1U Telephone Hybrid unit for direct connection to the telephone line and a relay to switch the telephone line from the telephone set to the hybrid.
- Noise gate version (NG) – same as standard version, equipped with a noise gate
- Current-adjustable version (CA) – same as standard version, but additionally featuring adjustable holding current for the telephone line.

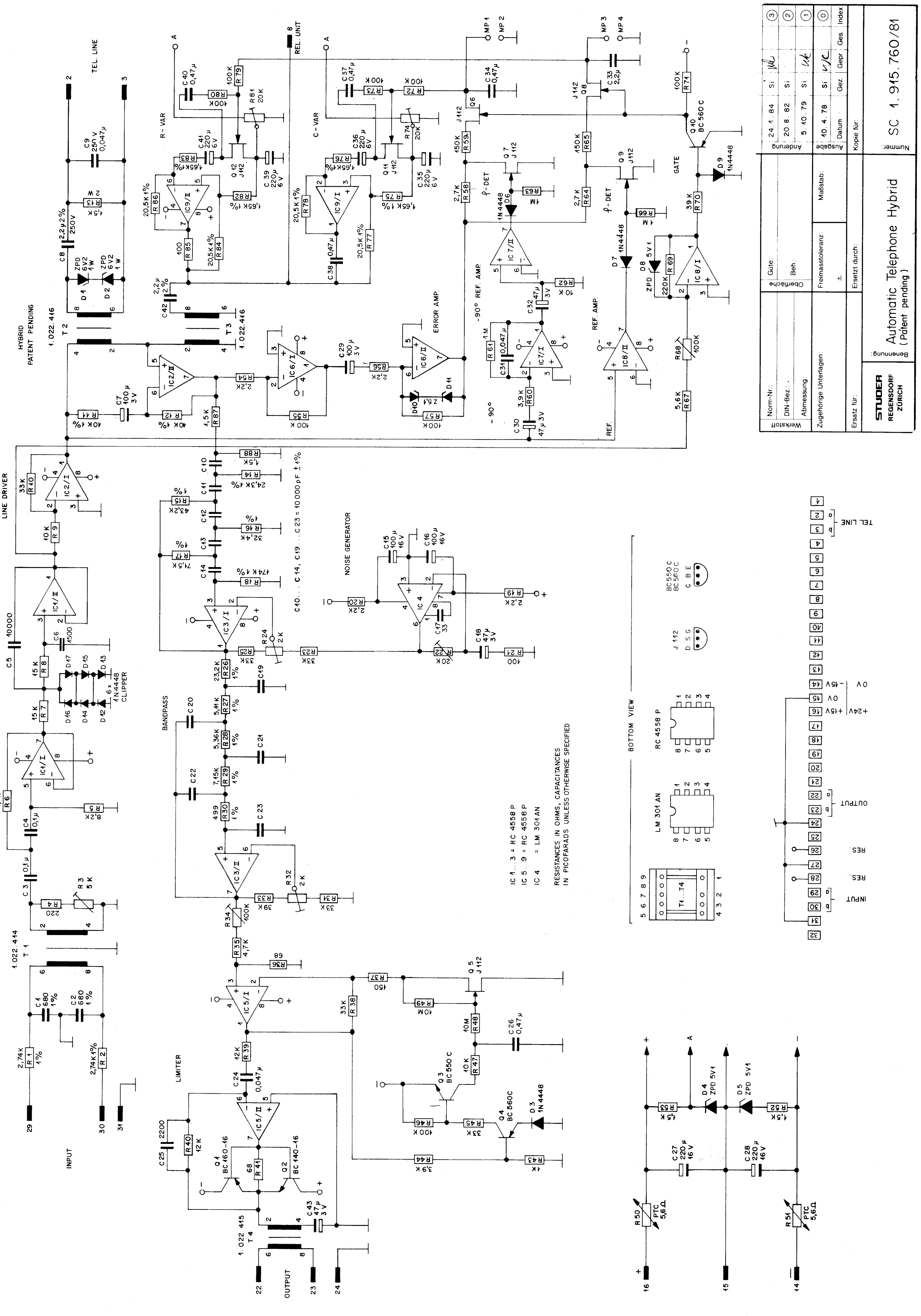
Ordering Information:

Euro-cards:

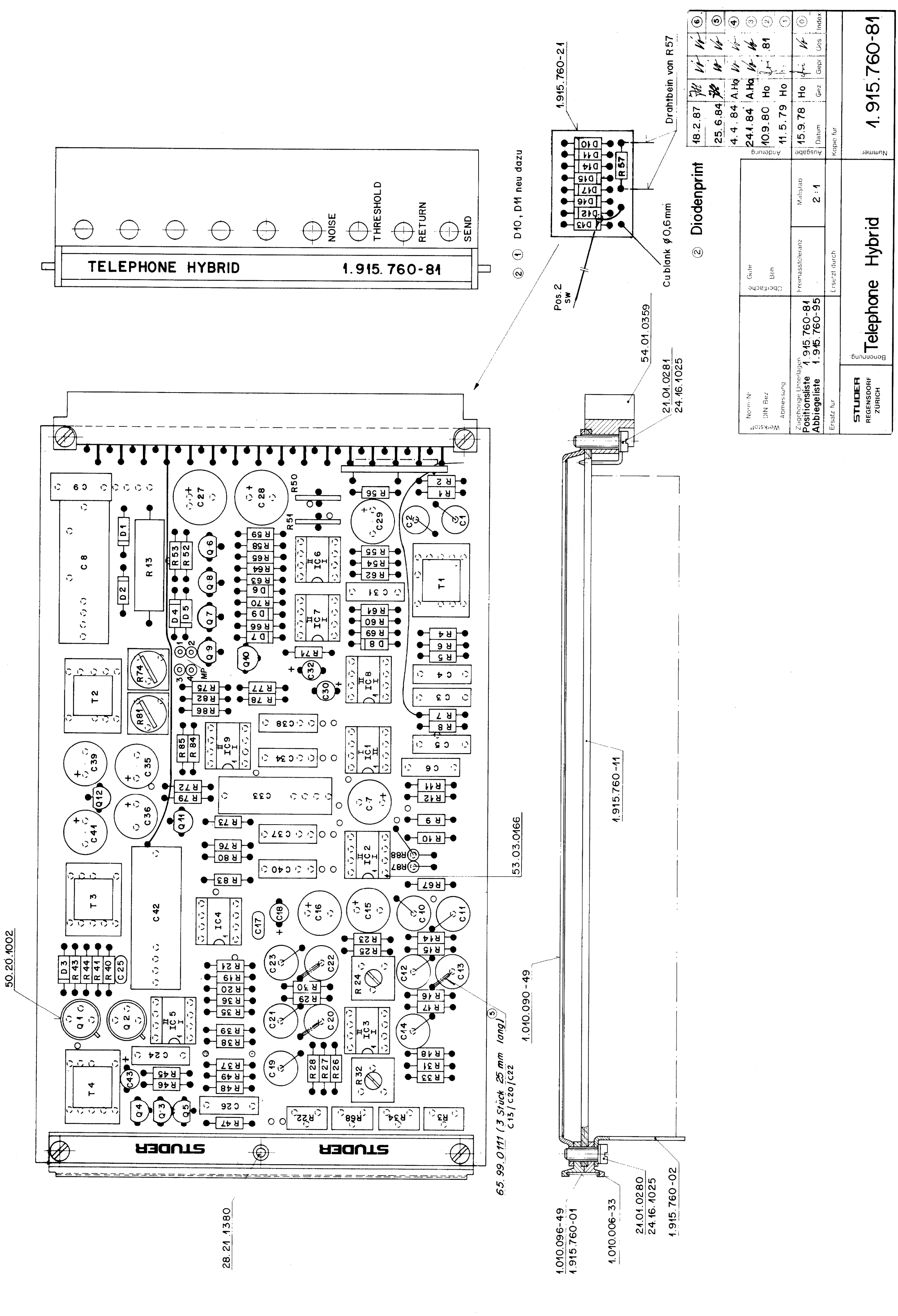
- Telephone hybrid card 1.915.760.xx
- Telephone hybrid card with noise gate 1.915.764.xx

19" standard products:

- Telephone hybrid 1CH-ST 75.700.89118
- Telephone hybrid 2CH-ST 75.700.89228
- Telephone hybrid 1CH-NG 75.700.89114
- Telephone hybrid 2CH-NG 75.700.89224
- Telephone hybrid 1CH-CA 75.700.89116
- Telephone hybrid 2CH-CA 75.700.89226
- Telephone hybrid 1CH-CA/NG 75.700.89117
- Telephone hybrid 2CH-CA/NG 75.700.89227


Automatic Telephone Hybrid
(Patent pending)
SC 1.915.760/81
STUDER REGENSDORF ZÜRICH
IC 1...3 = RC 4558 P
IC 5...9 = RC 4558 P
IC 4 = LM 301 AN
RESISTANCES IN OHMS, CAPACITANCES IN PICOFARADS UNLESS OTHERWISE SPECIFIED
BOTTOM VIEW
HYBRID PATENT PENDING
LINE DRIVER
BANDPASS
LIMITER
NOISE GENERATOR
ERROR AMP.
REF. AMP.
INPUT
OUTPUT
TEL. LINE

TEL. HYBRID


TELEPHONE HYBRID 1.915.760-81
NOISE
THRESHOLD
RETURN
SEND
Diodenprint
Drahtbein von R57
D10, D11 neu dazu
Cu blank ø 0,6 mm
Telephone Hybrid
1.915.760-81
Positionsliste 1.915.760-81
Abbiegeliste 1.915.760-95
STUDER REGENSDORF ZURICH
STUDER

Ad	POS.	REF.No.	DESCRIPTION				MANUFACTURER
	C.....1	59.12.9681	680pF	1%	500V-	PS	
	C.....2	59.12.9681	680pF	1%		PS	
	C.....3	59.31.6104	0,1µF	10%		PE	
	C.....4	59.31.6104	0,1µF	10%		PE	
	C.....5	59.12.4103	0,01µF	5%		PE	
	C.....6	59.11.6152	1500pF	5%		PC	
	C.....7	59.22.4101	100µF	3V		EL	
①	C.....8	1.915.760.03	2,2µF	1%	250V-	PE	ST
①⑤	C.....9	59.31.8473	0,047µF	400V-		PE	
	C....10	59.12.7103	0,01µF	1%		PS	
	C....11	59.12.7103	0,01µF	1%		PS	
	C....12	59.12.7103	0,01µF	1%		PS	
	C....13	59.12.7103	0,01µF	1%		PS	
	C....14	59.12.7103	0,01µF	1%		PS	
	C....15	59.22.4101	100µF	16V		EL	
	C....16	59.22.4101	100µF	16V		EL	
	C....17	59.34.2330	33pF			CER	
	C....18	59.36.0470	47µF	3V		TA	
	C....19	59.12.7103	0,01µF	1%		PS	
	C....20	59.12.7103	0,01µF	1%		PS	
	C....21	59.12.7103	0,01µF	1%		PS	
	C....22	59.12.7103	0,01µF	1%		PS	
	C....23	59.12.7103	0,01µF	1%		PS	
	C....24	59.12.4473	0,047µF			PE	
	C....25	59.32.2222	2200pF			CER	
	C....26	59.02.0474	0,47µF	5%		PC	
	C....27	59.22.4221	220µF	16V		EL	
	C....28	59.22.4221	220µF	16V		EL	
	C....29	59.22.4101	100µF	3V		EL	
	C....30	59.36.0470	47µF	3V		TA	
	C....31	59.12.4473	0,047µF			PE	
	C....32	59.36.0470	47µF	3V		TA	
	C....33	59.02.2225	2,2µF			PC	
①	C....34	59.02.0474	0,47µF			PE	
	C....35	59.22.2221	220µF	6V		EL	
	C....36	59.22.2221	220µF	6V		EL	
	C....37	59.02.0474	0,47µF			PC	
	C....38	59.02.0474	0,47µF			PC	
	C....39	59.22.2221	220µF			EL	
	C....40	59.02.0474	0,47µF			PC	
	C....41	59.22.2221	220µF	6V		EL	
①	C....42	1.915.760.03	2,2µF	1%	250V-	PE	ST
	C....43	59.36.0470	47µF	3V		TA	
	D.....1	50.04.1511	U_z 6,2V	ZPD 6V2 1W			
	D.....2	50.04.1511	U_z 6,2V	ZPD 6V2 1W			
	D.....3	50.04.0125	1N4448			SI	
	D.....4	50.04.1112	U_z 5,1V	ZPD 5V1 0,4W			
	D.....5	50.04.1112	U_z 5,1V	ZPD 5V1 0,4W			
	D.....6	50.04.0125	1N4448			SI	
	D.....7	50.04.0125	1N4448			SI	
	D.....8	50.04.1112	U_z 5,1V	ZPD 5V1 0,4W			
	D.....9	50.04.0125	1N4448			SI	
②	D....10	50.04.1112	U_z 5,1V	ZPD 5V1 0,4W			
②	D....11	50.04.1112	U_z 5,1V	ZPD 5V1 0,4W			
③	D....12	50.04.0125	1N4448			SI	
③	D....13	50.04.0125	1N4448			SI	
③	D....14	50.04.0125	1N4448			SI	
③	D....15	50.04.0125	1N4448			SI	
③	D....16	50.04.0125	1N4448			SI	
③	D....17	50.04.0125	1N4448			SI	
④	IC....1	50.09.0107	RC4559NB	DUAL OP AMP			TI, RA
④	IC....2	50.09.0107	RC4559NB				
④	IC....3	50.09.0107	RC4559NB				
	IC....4	50.05.0144	LM301AN	OP AMP			NS
④	IC....5	50.09.0107	RC4559NB				
④	IC....6	50.09.0107	RC4559NB				
④	IC....7	50.09.0107	RC4559NB				
④	IC....8	50.09.0107	RC4559NB				
④	IC....9	50.09.0107	RC4559NB				
	Q.....1	50.03.0315	BC160-16				SIE, F
	Q.....2	50.03.0316	BC140-16				SIE, F
	Q.....3	50.03.0497	BC550-C				T, ITT
	Q.....4	50.03.0496	BC560-C				T, ITT
	Q.....5	50.03.0350	J112				SIX, NS
	Q.....6	50.03.0350	J112				SIX, NS
	Q.....7	50.03.0350	J112				SIX, NS
	Q.....8	50.03.0350	J112				SIX, NS
	Q.....9	50.03.0350	J112				SIX, NS
	Q....10	50.03.0496	BC560-C				T, ITT
	Q....11	50.03.0350	J112				SIX, NS
	Q....12	50.03.0350	J112				SIX, NS
	R.....1	57.39.2741	2,74k	1%			
	R.....2	57.39.2741	2,74K	1%			
①	R.....3	58.01.7502	5k	LIN			TR, SP

Ad	POS.	REF.No.	DESCRIPTION			MANUFACTURER
	R.....4	57.11.4221	220			
	R.....5	57.11.4822	8,2k	2%		
	R.....6	57.11.4272	2,7k	2%		
	R.....7	57.11.4153	15k	2%		
	R.....8	57.11.4153	15k			
	R.....9	57.11.4103	10k			
	R....10	57.11.4333	33k			
	R....11	57.39.1002	10k	1%		
	R....12	57.39.1002	10k	1%		
	R....13	57.56.5152	1,5k	2W		
	R....14	57.39.2432	24,3k	1%		
	R....15	57.39.4322	43,2k	1%		
	R....16	57.39.3242	32,4k	1%		
	R....17	57.39.7152	71,5k	1%		
	R....18	57.39.1743	174k	1%		
	R....19	57.11.4222	2,2k			
	R....20	57.11.4222	2,2k			
	R....21	57.11.4101	100			
	R....22	58.01.7203	20k	LIN	10%	TR, SP
	R....23	57.11.4333	33k	2%		
	R....24	58.01.8202	2k	LIN	10%	TR, SP
	R....25	57.11.4333	33k	2%		
	R....26	57.39.2322	23,2k	1%		
	R....27	57.39.5111	5,11k	1%		
	R....28	57.39.5361	5,36k	1%		
	R....29	57.39.7151	7,15k	1%		
	R....30	57.39.4990	499	1%		
	R....31	57.11.4333	33k	2%		
	R....32	58.01.8202	2k	LIN	10%	TR, SP
	R....33	57.11.4393	39k	2%		
	R....34	58.01.7104	100k	LIN	10%	TR, SP
	R....35	57.11.4472	4,7k			
	R....36	57.11.4680	68			
	R....37	57.11.4151	150			
	R....38	57.11.4333	33k			
	R....39	57.11.4123	12k			
	R....40	57.11.4123	12k			
	R....41	57.11.4680	68			
	R....42					
	R....43	57.11.4102	1k			
	R....44	57.11.4392	3,9k			
	R....45	57.11.4333	33k			
	R....46	57.11.4104	100k			
	R....47	57.11.4103	10k			
	R....48	57.02.5106	10M			
	R....49	57.02.5106	10M			
	R....50	57.99.0209	5,6Ω	PTC 2322 662 91005		PH
	R....51	57.99.0209	5,6Ω	PTC		PH
	R....52	57.11.4152	1,5k			
	R....53	57.11.4152	1,5k			
	R....54	57.11.4222	2,2k			
	R....55	57.11.4104	100k			
	R....56	57.11.4222	2,2k			
	R....57	57.11.4104	100k			
	R....58	57.11.4272	2,7k			
	R....59	57.11.4154	150k			
	R....60	57.11.4392	3,9k			
	R....61	57.11.4105	1M			
	R....62	57.11.4103	10k			
	R....63	57.11.4105	1M			
	R....64	57.11.4272	2,7k			
	R....65	57.11.4154	150k			
	R....66	57.11.4105	1M			
	R....67	57.11.4562	5,6k			
	R....68	58.01.7104	100k	LIN	10%	TR, SP
	R....69	57.11.4224	220k			
	R....70	57.11.4393	39k			
	R....71	57.11.4104	10k			
	R....72	57.11.4104	100k			
	R....73	57.11.4104	100k			
	R....74	58.01.8203	20k	LIN	10%	TR, SP
	R....75	57.39.1651	1,65k	1%		
	R....76	57.39.1651	1,65k	1%		
	R....77	57.39.2052	20,5k	1%		
	R....78	57.39.2052	20,5k	1%		
	R....79	57.11.4104	100k			
	R....80	57.11.4104	100k			
	R....81	58.01.8203	20k	LIN	10%	TR, SP
	R....82	57.39.1651	1,65k	1%		
	R....83	57.39.1651	1,65k	1%		
	R....84	57.39.2052	20,5k	1%		
	R....85	57.11.4101	100	2%		
	R....86	57.39.2052	20,5k	1%		
①	R....87	57.02.5152	1,5k			
①	R....88	57.02.5152	1,5k			

TEL. HYBRID

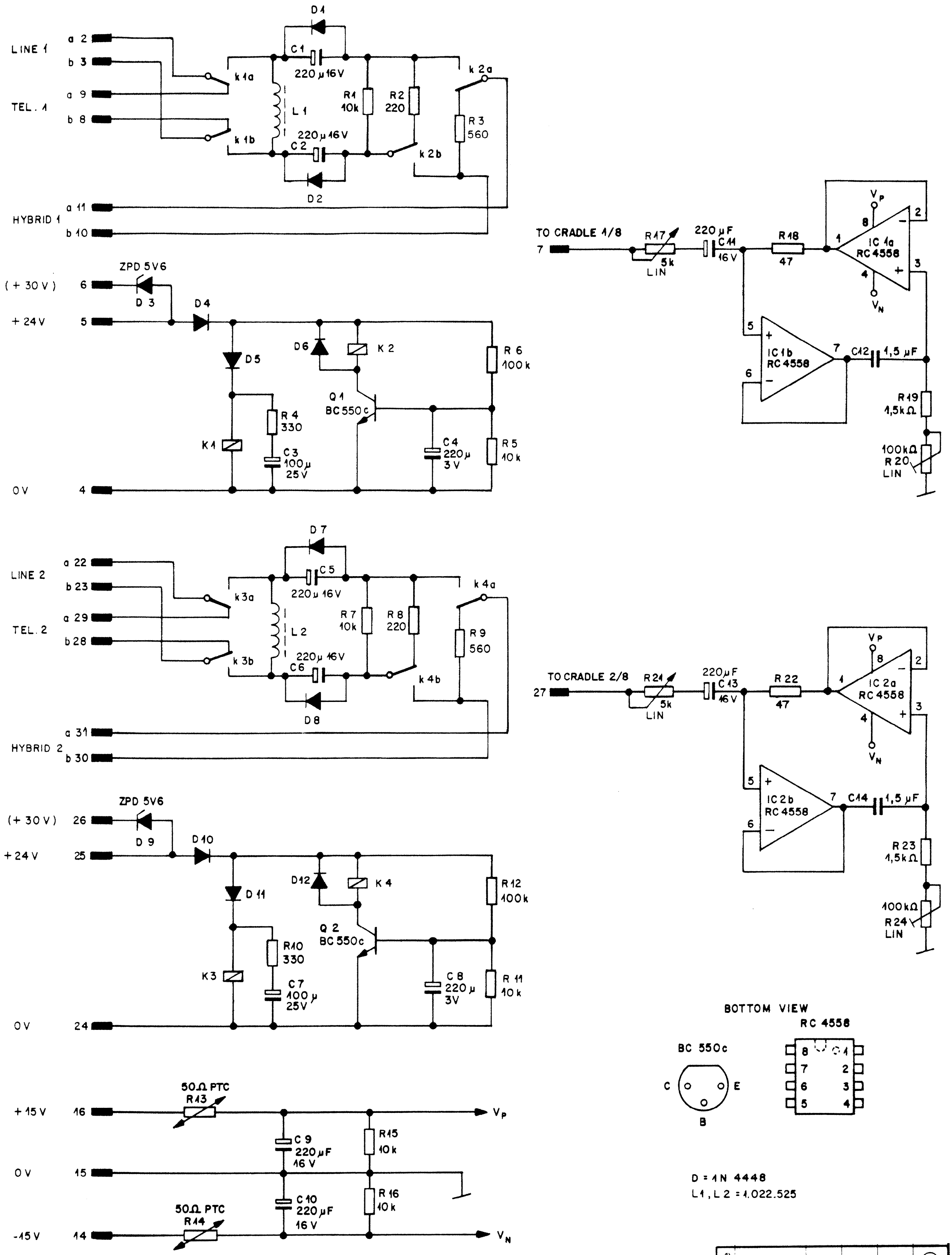
T.....1	1.022.414	1:1	ST
T.....2	1.022.416	1:1	ST
T.....3	1.022.416	1:1	ST
T.....4	1.022.415	1:2	ST

CER=Ceramic, EL=Electrolytic, TA=Tantalum, PE=Polyester, PS=Polystyrene, PC=Polycarbonate

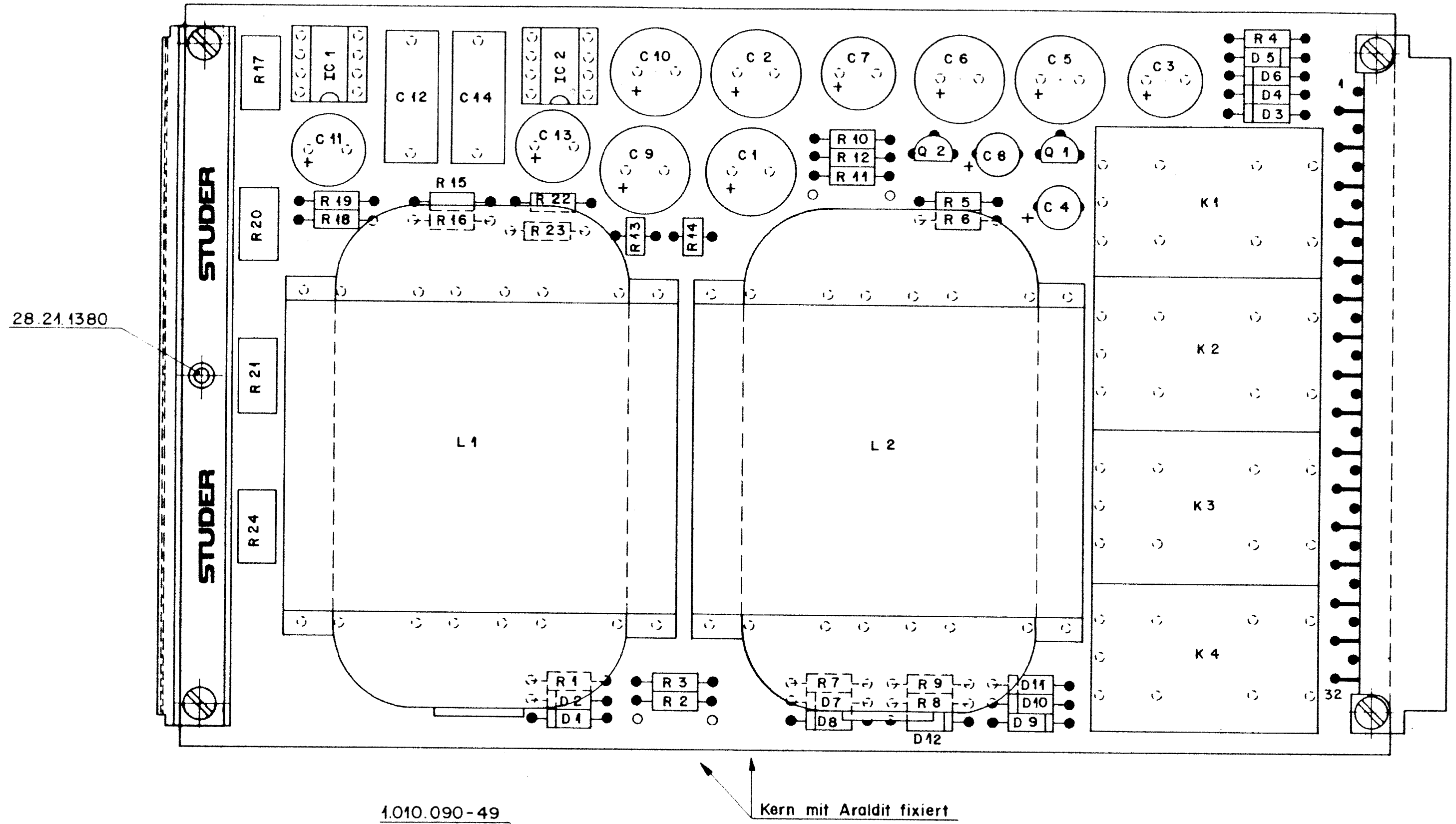
MANUFACTURER: ST=Studer, PH=Philips, TR=TRW, SP=Spectrol, TI=Texas Instruments, RA=Raytheon
NS=National Sem., SIX=Siliconix, T=Telefunken, SIE=Siemens, F=Fairchild

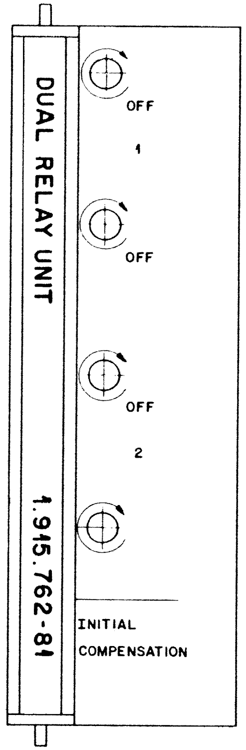
1.915.760.81	TELEPHONE HYBRID	FRI 14/03/78
1.915.760.81	TELEPHONE HYBRID	① FRI 06/11/78
1.915.760.81	TELEPHONE HYBRID	② HO 11/05/79
1.915.760.81	TELEPHONE HYBRID	③ HO 10/09/80
1.915.760.81	TELEPHONE HYBRID	④ VO 11/03/81
1.915.760.81	TELEPHONE HYBRID	⑤ VO 20/08/82

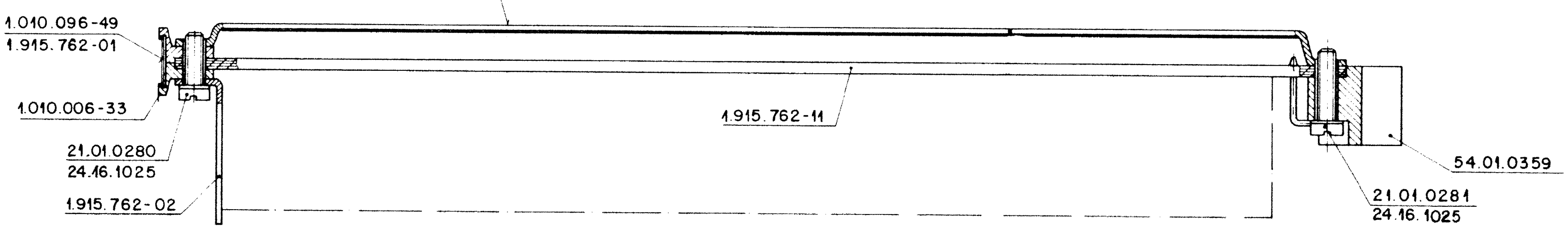
END
→



		Ausgabe	16. 2. 79	Si		0
			Datum	Gez.	Gepr.	Ges. / Index
Ersatz für:	Ersetzt durch:	Kopie für:				
STUDER REGENSDORF ZÜRICH	Benennung: DUAL RELAY UNIT	Nummer: SC 1. 915. 762-81				







Werkstoff: Norm Nr / DIN-Bez / Abmessung

Oberfläche: Güte / Beh

Änderung: 4.4.84 A.Ho Vr Vr

Zugehörige Unterlagen: PL, AL

Freimasstoleranz

Maßstab: 2 : 1

Ausgabe: 18.7.79 Ho

Datum / Gez / Gepr / Ges / Index

Ersatz für

Ersetzt durch

Kopie für

STUDER REGENSDORF ZURICH

Benennung: Dual Relay Unit

Nummer: 1.915.762-81

IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
C	1	59.22.4221	220 µF	16 V EL	
C	2	59.22.4221	220 µF	16 V EL	
C	3	59.22.5101	100 µF	25 V EL	
C	4	59.30.1221	220 µF	3 V TA	
C	5	59.22.4221	220 µF	16 V EL	
C	6	59.22.4221	220 µF	16 V EL	
C	7	59.22.5101	100 µF	25 V EL	
C	8	59.30.1221	220 µF	3 V TA	
C	9	59.22.4221	220 µF	16 V EL	
C	10	59.22.4221	220 µF	16 V EL	
C	11	59.22.2221	220 µF	6 V EL	
C	12	59.05.1155	1,5 µF	63 V MPC	
C	13	59.22.2221	220 µF	6 V EL	
C	14	59.05.1155	1,5 µF	63 V MPC	
D	1...12	50.04.0125	1N4448	or equivalent	ANY
	except				
D	3, 9	50.04.1108	ZPD5V6	BZX83 5V6	ITT, S
① IC	1, 2	50.09.0107	RC 4559 NB	Dual Op. Amp.	TI, RA
② K	1...4	56.04.0143	2u, AgAu	Relay	NA
L	1, 2	1.022.525		Inductivity	ST
P		54.01.0359		Edge Connector	
Q	1, 2	50.03.0497	BC550C		T, P, ITT

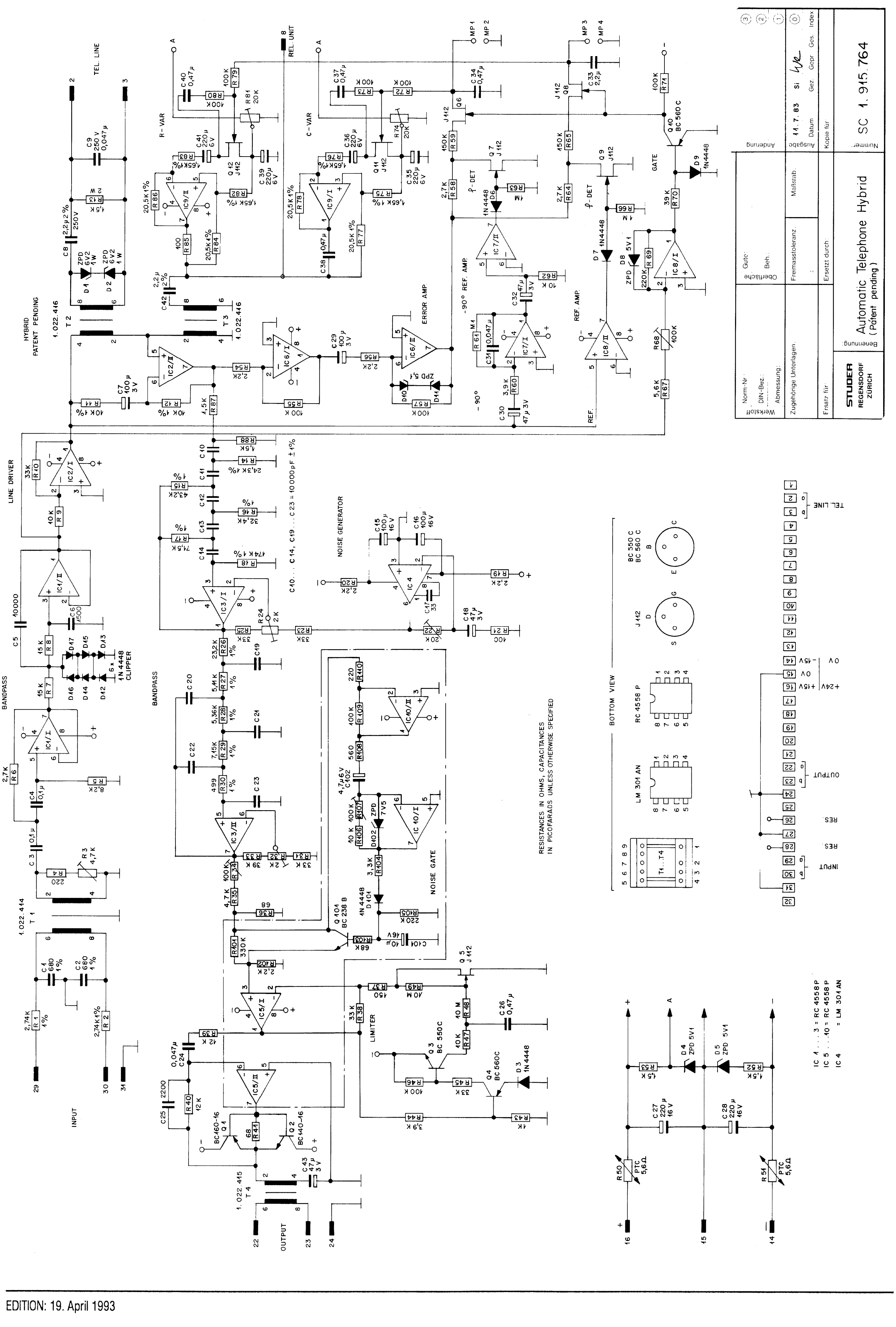
IND	DATE	NAME	
④			ITT INTERMETALL — ST STUDER
③			NA NATIONAL — TI TEXAS INSTRUMENTS
②	15.9.82	Fhe	P PHILIPS — EL ELECTROLYTIC
①	11.3.81	Vo	RA RAYTHEON — TA TANTALUM
○	18.7.79	WY	S SIEMENS — MPC POLYCARBONATE

STUDER | DUAL RELAY UNIT | 1.915.762-81 | PAGE 1 OF 2

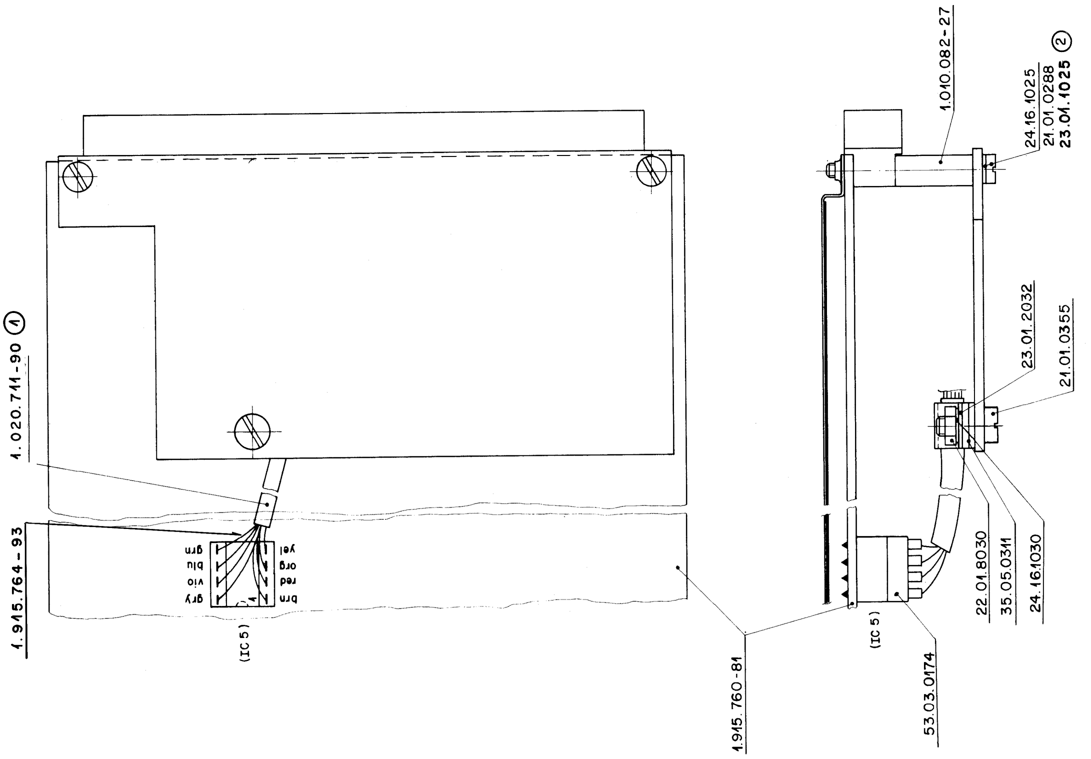
IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
R	1	57.11.4103	10 k		
R	2	57.11.4221	220		
R	3	57.11.4561	560		
R	4	57.11.4331	330		
R	5	57.11.4103	10 k		
R	6	57.11.4104	100k		
R	7	57.11.4103	10 k		
R	8	57.11.4221	220		
R	9	57.11.4561	560		
R	10	57.11.4331	330		
R	11	57.11.4103	10 k		
R	12	57.11.4104	100k		
R	13	57.99.0206	50	PTC	
R	14	57.99.0206	50	PTC	
R	15	57.11.4103	10 k		
R	16	57.11.4103	10 k		
R	17	58.01.7502	5 k	Potm.	
R	18	57.11.4470	47		
R	19	57.11.4152	1,5k		
R	20	58.01.7104	100k	Potm.	
R	21	58.01.7502	5 k	Potm.	
R	22	57.11.4470	47		
R	23	57.11.4152	1,5k		
R	24	58.01.7104	100k	Potm.	
XIC		53.03.0166		IC-Socket DIL 8 pins	

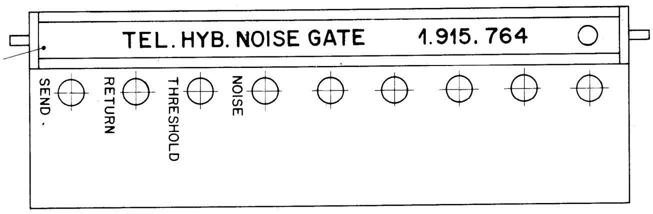
IND	DATE	NAME
④		
③		
②	15.9.82	Fhe
①	11.3.81	Vo
○	18.7.79	WY

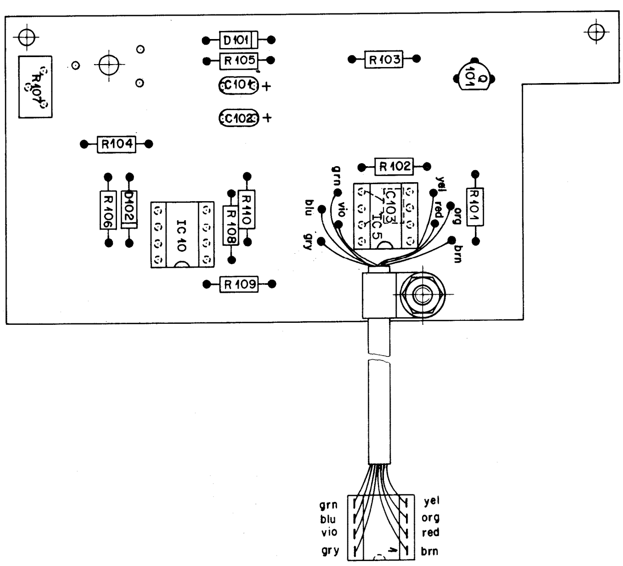
STUDER | DUAL RELAY UNIT | 1.915.762-81 | PAGE 2 OF 2


Automatic Telephone Hybrid
(Patent pending)
SC 1.915.764
STUDER
REGENSDORF
ZURICH
RESISTANCES IN OHMS, CAPACITANCES
IN PICOFARADS UNLESS OTHERWISE SPECIFIED
BOTTOM VIEW
TEL. LINE
INPUT
OUTPUT
LINE DRIVER
BANDPASS
NOISE GENERATOR
NOISE GATE
LIMITER
ERROR AMP.
REF. AMP.
GATE
HYBRID
PATENT PENDING

TEL. HYBRID







Ad	POS.	REF.No.	DESCRIPTION			MANUFACTURER
	C...101	59.26.2100	10µF	16V	EL	
	C...102	59.26.1479	4,7µF	10V	EL	
①	C...103	59.32.1101	110pF		CR	
	D...101	50.04.0125	1N4448			
	D...102	50.04.1103	ZPD7V5			
	IC....5	50.09.0107	RC4559	DUAL OP AMP		TI, RA
	IC...10	50.09.0107	RC4559	DUAL OP AMP		TI, RA
	Q.....1	50.03.0436	BC237B	NPN		PH, SIE, MOT
		53.03.0174		ADAPTER PLUG		
		1.915.760.81		TEL. HYBRID KOMPL		ST
		21.01.0355	M3x8	SCREW		
		23.01.2032	7/3,2	WASHER		
		22.01.8030	M3	NUT		
		35.05.0311	4,8	BINDER		
		21.01.0288	M2,5x25			
		1.010.082.27	3,2/5x13	SPACER		
		1.915.764.01		LABEL		ST
	R...101	57.11.4334	330k			
	R...102	57.11.4222	2,2k			
	R...103	57.11.4683	68k			
	R...104	57.11.4332	3,3k			
	R...105	57.11.4224	220k			
	R...106	57.11.4103	10k			
	R...107	58.01.7104	100k	LIN		
	R...108	57.11.4561	560			
	R...109	57.11.4104	100k			
	R...110	57.11.4221	220			

EL=Electrolytic

MANUFACTURER: ST=Studer, TI=Texas Instruments, RA=Raytheon, PH=Philips, SIE=Siemens, MOT=Motorola

1.915.764.00 TEL. HYBRID WITH NOISE GATE FRI 30/11/81

1.915.764.00 TEL. HYBRID WITH NOISE GATE ① VO 19/10/87

END
→

Werkstoff	Oberfläche	Änderung				
Norm Nr	Güte	19.10.87	Si	Ge		③
DIN-Bez	Beh	27.5.87	Si	Ge		②
Abmessung		3.6.86	Ho	Ge		①
Zugehörige Unterlagen: PL, LL	Freimasstoleranz / Maßstab 2:1	Ausgabe 3.6.81	Ho			0
		Datum	Gez	Gepr	Ges	Index
Ersatz für	Ersetzt durch	Kopie für				
STUDER REGENSDORF ZÜRICH	Benennung: Telephone Hybrid with Noise Gate	Nummer: 1.915.764-00				

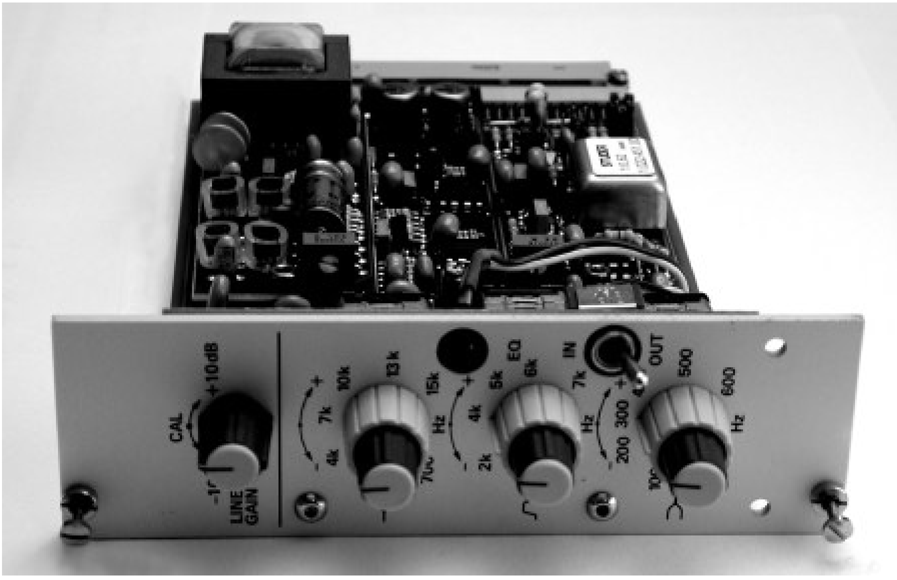
2.2.12 Line Equalizer

1.915.776/777/779

The Line Equalizer Euro-card is the ideal component to cope with situations as inadequate frequency response or excessive level loss on long-haul audio lines. Special effects equalization may be another application.

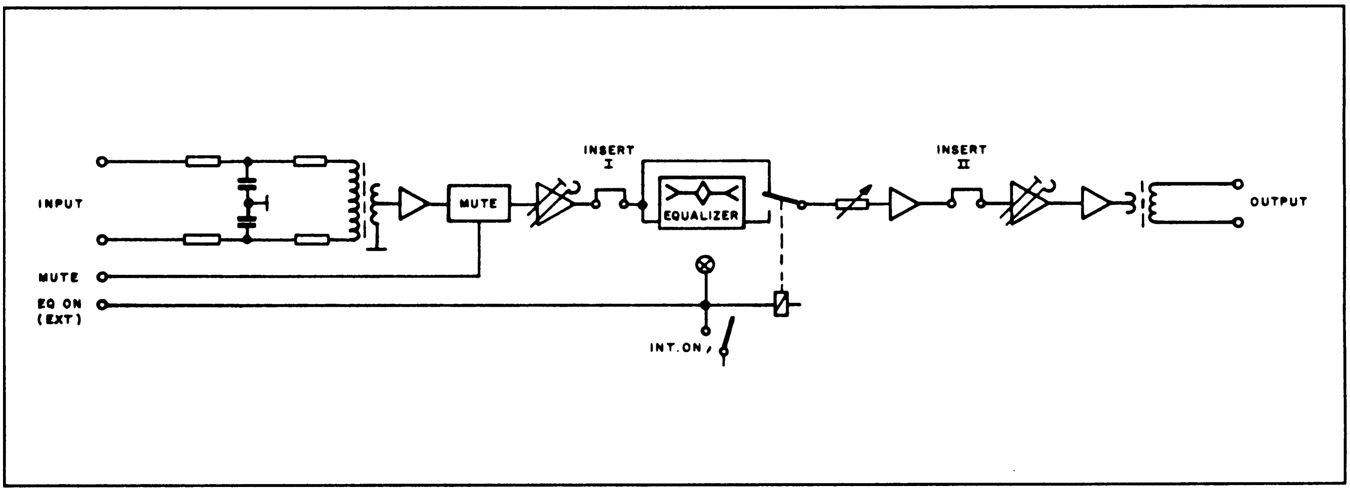
The frequency response can be varied in three bands over a ±15 dB range, as shown by the respective graphs below. Gain is normally set to unity, with 10 dB of continuously variable gain or attenuation available. Remote controlled muting or bypassing is possible.

The equalizer cards are supplied with a choice of different front panels for either horizontal recessed, vertical recessed, or vertical flush installation into suitable mounting frames.



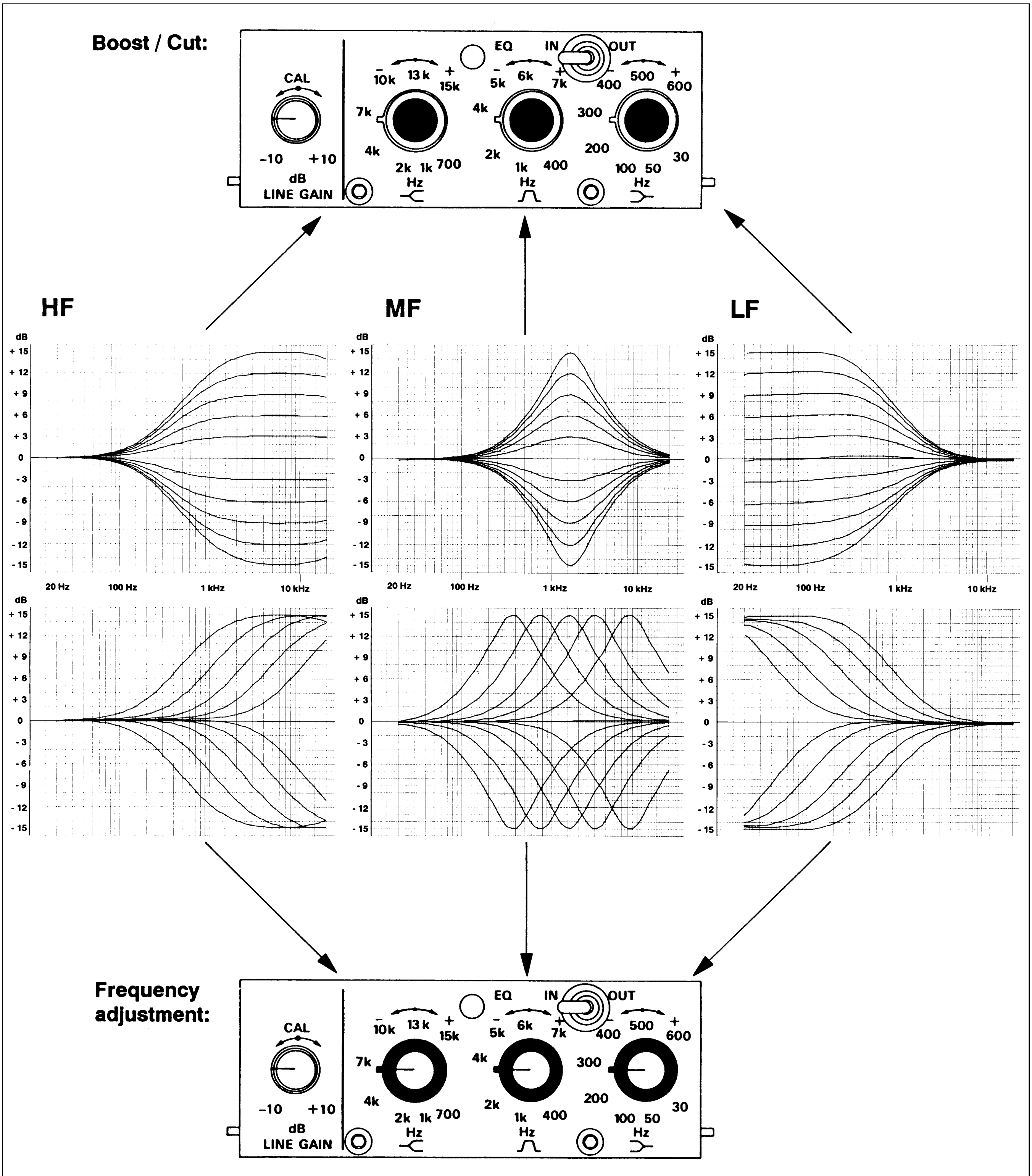
When installed vertically, each equalizer occupies 8 M units.

A 19” mounting frame for three equalizer cards plus the required power supply is described below.



Parametric filter diagrams:

HF shelving equalizer:	Treble filter **700 Hz...15 kHz, ±15 dB**
MF bell-shaped equalizer:	Center frequency **400 Hz...7 kHz, ±15 dB**; Q approx. 1
LF shelving equalizer:	Bass filter **30 Hz...600 Hz, ±15 dB**

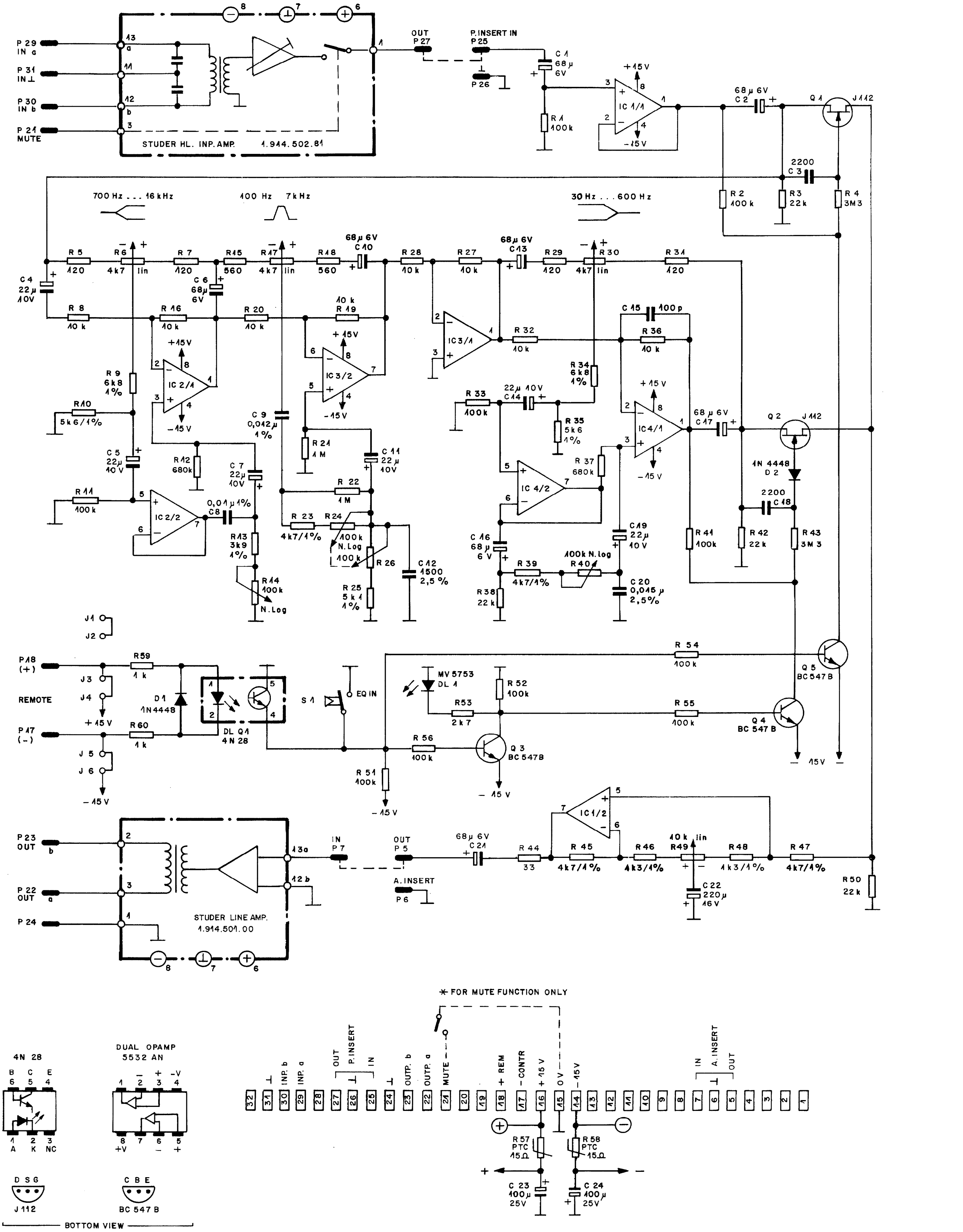


Technical Specifications

Input:		**balanced and floating,** with RF filter
	Impedance	**> 10 kW**
	Clipping point	**+24 dBu** (12.3 V)
	Common mode rejection	**> 50 dB**, unbalanced to ground
Output:		**balanced and floating**
	Minimum permissible load	**200 W**
	Maximum output level	**+24 dBu** (12.3 V)
	Frequency response	**±0.2 dB**, 30 Hz...60 kHz, equalization off
	THD	**< 0.01%,** at nominal level
Equalization:	Characteristics	**see diagram,** referred to +6 dBu in/out
	S/N	**> 96 dB,** equalizer off
		> 93 dB, equalizer on (linear)
Supply:		**±15 V** (80 mA idling, 170 mA @ +24 dBu into 200 Ω)
Dimensions:	Euro-card	**100 × 160 mm, 8 M units wide**

Ordering Information:

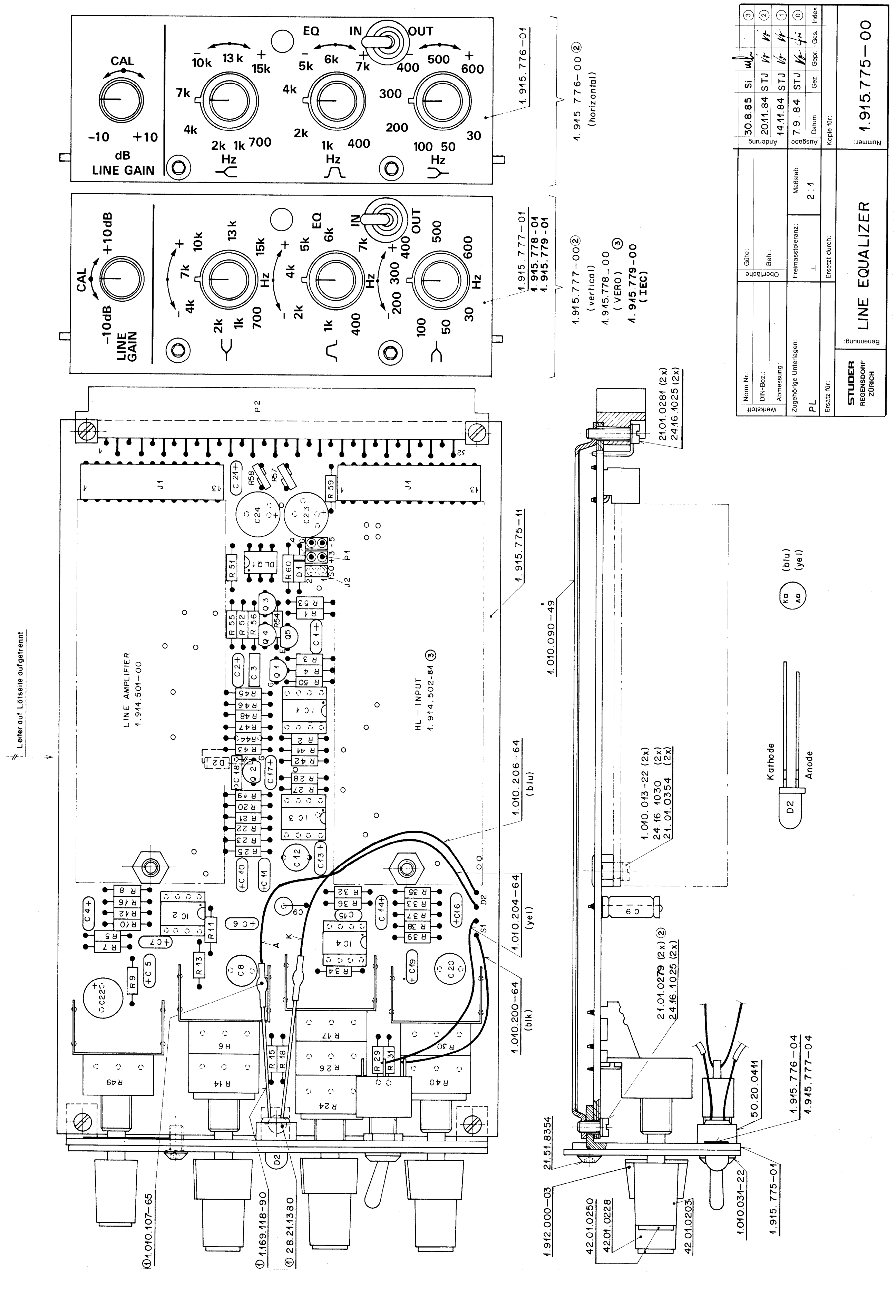
Euro-cards:	• Line equalizer, horizontal, for recessed mounting	1.915.776.xx
	• Line equalizer, vertical, for recessed mounting	1.915.777.xx
	• Line equalizer, vertical, for flush mounting (ELMA)	1.915.779.xx
19” standard product	• Mounting frame (19”/1U) with power supply and front panel, wired for three equalizer cards 1.915.776 (not incl.)	1.918.117.xx



IC 1 --- IC 4 = 5532 AN

DATE:	10.9.84	20.11.84	10.4.85	30.8.85		VERTICAL 1.915.777
SIGN:	We	We	[illegible]	[illegible]		HORIZONTAL 1.915.776
STUDER REGENSDORF ZÜRICH	LINE EQUALIZER BOARD					SC 1.915.775

LINE EQUALIZER



Ad	..POS..	...REF.No...	DESCRIPTION					MANUFACTURER
	C.....1	59.26.0680	68 uF	20%	6.3V	SAL		
	C.....2	59.26.0680	68 uF	20%	6.3V	SAL		
	C.....3	59.06.0222	2.2nF	10%	63V	PETP		
	C.....4	59.26.1220	22 uF	20%	10V	SAL		
	C.....5	59.26.1220	22 uF	20%	10V	SAL		
	C.....6	59.26.0680	68 uF	20%	6.3V	SAL		
	C.....7	59.26.1220	22 uF	20%	10V	SAL		
	C.....8	59.05.1103	10nF	1%	63V	PP		
	C.....9	59.12.7123	12nF	1%	63V	PS		
	C....10	59.26.0680	68 uF	20%	6.3V	SAL		
	C....11	59.26.1220	22 uF	20%	10V	SAL		
	C....12	59.05.2152	1.5nF	2.5%	160V	PP		
	C....13	59.26.0680	68 uF	20%	6.3V	SAL		
	C....14	59.26.1220	22 uF	20%	10V	SAL		
	C....15	59.32.1101	100pF	10%	400V	CE		
	C....16	59.26.0680	68 uF	20%	6.3V	SAL		
	C....17	59.26.0680	68 uF	20%	6.3V	SAL		
	C....18	59.06.0222	2.2nF	10%	63V	PETP		
	C....19	59.26.1220	22 uF	20%	10V	SAL		
	C....20	59.05.2153	15nF	2.5%	63V	PP		
	C....21	59.26.0680	68 uF	20%	6.3V	SAL		
	C....22	59.22.3221	220uF	20%	10V	EL		
	C....23	59.22.5101	100 uF	20%	25V	EL		
	C....24	59.22.5101	100 uF	20%	25V	EL		
	D.....1	50.04.0125	1N4448					any
	D.....2	50.04.0125	1N4448					any
	DL....1	50.04.2111	MV5753	red				GI,HP
	DLQ...1	50.99.0126	4N28					
	IC....1	50.09.0106	NE5532AN	dual op. amp.				RA,SIG
	IC....2	50.09.0106	NE5532AN	dual op. amp.				RA,SIG
	IC....3	50.09.0106	NE5532AN	dual op. amp.				RA,SIG
	IC....4	50.09.0106	NE5532AN	dual op. amp.				RA,SIG
	J.....1	54.01.0309	13 PIN-	CIS 2X				
	J.....2	54.01.0021	JUMPER					
	P.....1	54.01.0020	J-PLUG	6X				
	P.....2	54.01.0359	2*16	EURO - PLUG				
	MP....1	42.01.0203	GRY	UPPER KNOB	3X,4/10			
	MP....2	42.01.0228	GRY	KNOB	1X,4/10			
	MP....3	42.01.0250	L-GRY	COVER	4X,			
	MP....4	1.912.000.03	L-GRY	LOWER KNOB	3X,6/13			
	MP....5	1.010.090.49		SCREEN PLATE				
	MP....6	1.915.776.01		FRONT PANEL VERTICAL				
01	MP....6	1.915.776.01		FRONT PANEL HORIZONTAL				
	MP....7	1.915.777.01		FRONT PANEL HORIZONTAL				
01	MP....7	1.915.777.01		FRONT PANEL VERTICAL				
	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	50.03.0436	BC 547	NPN	IC>100mA, B>100			any
	Q.....4	50.03.0436	BC 547	NPN	IC>100mA, B>100			any
	Q.....5	50.03.0436	BC 547	NPN	IC>100mA, B>100			any
	R.....1	57.11.4104	100 kOhm	2%	0.25W	MF		
	R.....2	57.11.4104	100 kOhm	2%	0.25W	MF		
	R.....3	57.11.4223	22 kOhm	2%	0.25W	MF		
	R.....4	57.11.4335	3.3 MOhm	2%	0.25W	MF		
	R.....5	57.11.4121	120 Ohm	2%	0.25W	MF		
	R.....6	1.010.003.58	4.7 kOhm	20%	lin.		variable resistor	
	R.....7	57.11.4121	120 Ohm	2%	0.25W	MF		
	R.....8	57.11.4103	10 kOhm	2%	0.25W	MF		
	R.....9	57.11.3682	6.8 kOhm	1%	0.25W	MF		
	R....10	57.11.3562	5.6 kOhm	1%	0.25W	MF		
	R....11	57.11.4104	100 kOhm	2%	0.25W	MF		
	R....12	57.11.4684	680 kOhm	2%	0.25W	MF		
	R....13	57.11.3392	3.9 kOhm	1%	0.25W	MF		
	R....14	. .	100 kOhm	10%	neg.log.		variable resistor,see R 6	
	R....15	57.11.4561	560 Ohm	2%	0.25W	MF		
	R....16	57.11.4103	10 kOhm	2%	0.25W	MF		
	R....17	1.010.005.58	4.7 kOhm	20%	lin.		variable resistor	
	R....18	57.11.4561	560 Ohm	2%	0.25W	MF		
	R....19	57.11.4103	10 kOhm	2%	0.25W	MF		
	R....20	57.11.4103	10 kOhm	2%	0.25W	MF		
	R....21	57.11.4105	1 MOhm	2%	0.25W	MF		
	R....22	57.11.4105	1 MOhm	2%	0.25W	MF		
	R....23	57.11.3472	4.7 kOhm	1%	0.25W	MF		
	R....24	. .	100 kOhm	10%	neg.log.		variable resistor,see R17	
	R....25	57.11.3512	5.1 kOhm	1%	0.25W	MF		
	R....26	. .	100 kOhm	10%	neg.log.		variable resistor,see R17	
	R....27	57.11.4103	10 kOhm	2%	0.25W	MF		
	R....28	57.11.4103	10 kOhm	2%	0.25W	MF		
	R....29	57.11.4121	120 Ohm	2%	0.25W	MF		
	R....30	1.010.003.58	4.7 kOhm	20%	lin.		variable resistor	
	R....31	57.11.4121	120 Ohm	2%	0.25W	MF		
	R....32	57.11.4103	10 kOhm	2%	0.25W	MF		
	R....33	57.11.4104	100 kOhm	2%	0.25W	MF		
	R....34	57.11.3682	6.8 kOhm	1%	0.25W	MF		
	R....35	57.11.3562	5.6 kOhm	1%	0.25W	MF		
	R....36	57.11.4103	10 kOhm	2%	0.25W	MF		
	R....37	57.11.4684	680 kOhm	2%	0.25W	MF		
	R....38	57.11.4223	22 kOhm	2%	0.25W	MF		
	R....39	57.11.3472	4.7 kOhm	1%	0.25W	MF		
	R....40	. .	100 kOhm	10%	neg.log.		variable resistor,see R30	
	R....41	57.11.4104	100 kOhm	2%	0.25W	MF		
	R....42	57.11.4223	22 kOhm	2%	0.25W	MF		

Ad	..POS..	...REF.No...	DESCRIPTION					MANUFACTURER
	R....43	57.11.5335	3.3 MOhm	5%	0.25W	MF		
	R....44	57.11.4330	33 Ohm	2%	0.25W	MF		
	R....45	57.11.3472	4.7 kOhm	1%	0.25W	MF		
	R....46	57.11.3132	1.3 kOhm	1%	0.25W	MF		
	R....47	57.11.3472	4.7 kOhm	1%	0.25W	MF		
	R....48	57.11.3132	1.3 kOhm	1%	0.25W	MF		
	R....49	1.010.001.58	10 kOhm	20%	lin.		variable resistor	
	R....50	57.11.4223	22 kOhm	2%	0.25W	MF		
	R....51	57.11.4104	100 kOhm	2%	0.25W	MF		
	R....52	57.11.4104	100 kOhm	2%	0.25W	MF		
	R....53	57.11.4272	2.7 kOhm	2%	0.25W	MF		
	R....54	57.11.4104	100 kOhm	2%	0.25W	MF		
	R....55	57.11.4104	100 kOhm	2%	0.25W	MF		
	R....56	57.11.4104	100 kOhm	2%	0.25W	MF		
	R....57	57.92.1121	120 mA		R-PTC 56V		15 ohm	Philips
	R....58	57.92.1121	120 mA		R-PTC 56V		15 ohm	Philips
	R....59	57.11.4102	1 kOhm	2%	0.25W	MF		
	R....60	57.11.4102	1 kOhm	2%	0.25W	MF		
	S.....1	55.01.0111	ON-ON	SWITCH				C & K
	V.....1	1.914.501.00		LINE AMPLIFIER				St
	V.....2	1.914.502.00		HL. INPUT AMP. (FLOATING)				St
	XIC...1	53.03.0166	DIL	8-PIN	4X			

==

1.915.775.00 LINE EQUALIZER - BOARD
1.915.776.00 LINE EQUALIZER - HORIZONTAL
1.915.777.00 LINE EQUALIZER - VERTICAL

==

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=National
(Matsushita), NS=National Semiconductors, Ph=Philips,
Ra=Raytheon, Sig=Signetics, Six=Siliconix, St=Studer,
TI=Texas Instrument

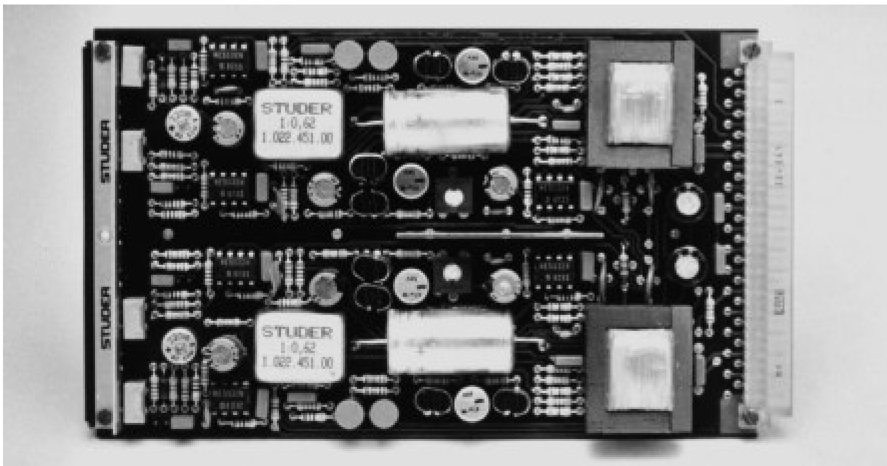
1.915.775.00 LINE-EQUALIZER BOARD FRI 84/09/0600

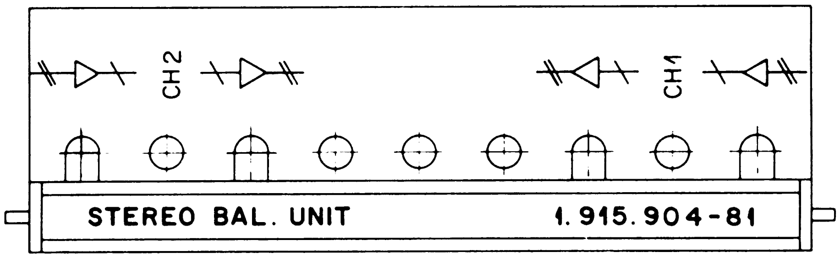
1.915.775.00 LINE-EQUALIZER BOARD FRI 84/11/2001

END

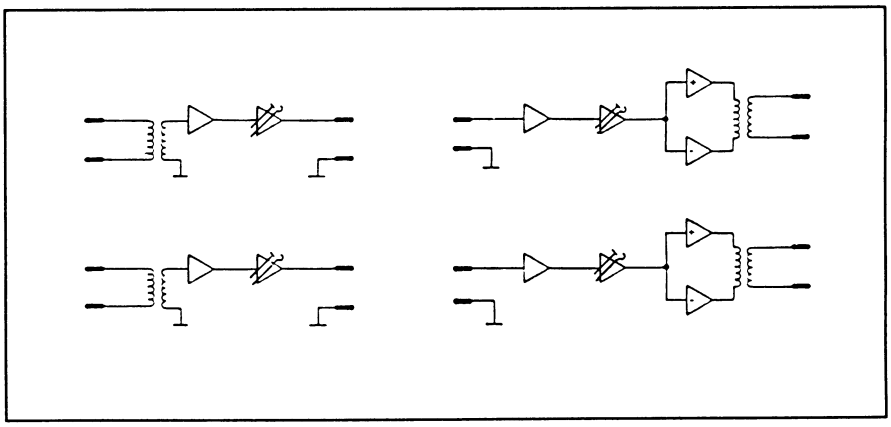
2.2.13 Dual Balancing Unit/Dual Line Amplifier 1.915.904

In professional audio work it is not uncommon that equipment with unbalanced input or output configuration must be connected to a system that is based on a strictly balanced design. The Dual Balancing Unit is the ideal component if the requirement of matching unbalanced to balanced equipment or vice versa has to be satisfied.

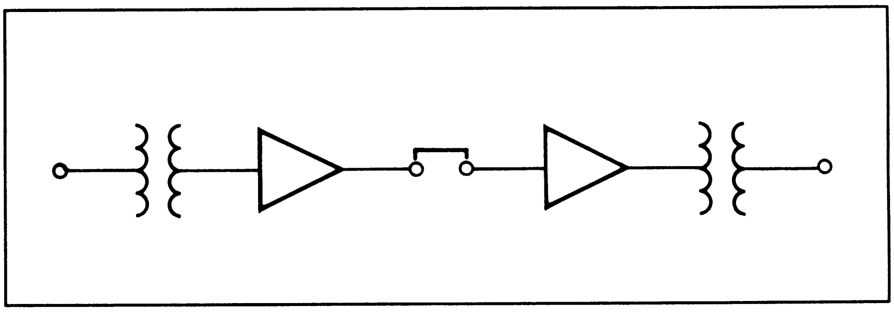




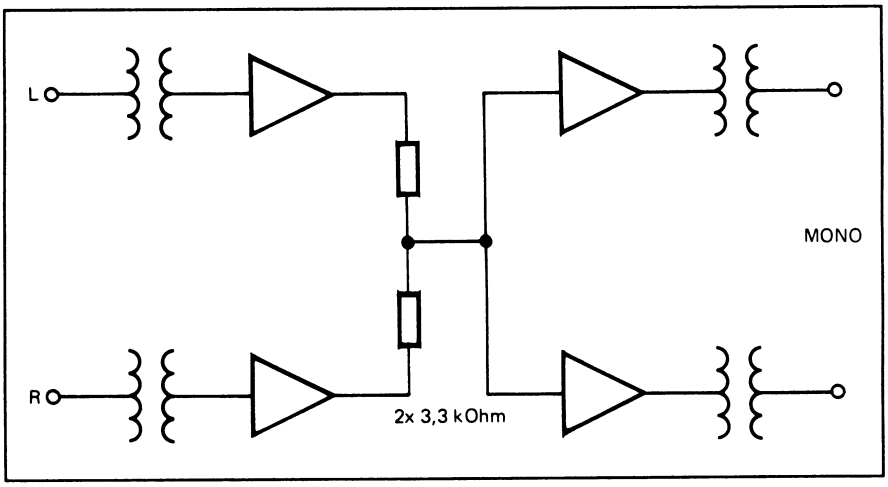
The Dual Balancing Unit consists of one Euro-card which contains four separate circuits to accommodate unbalanced-to-balanced or balanced-to-unbalanced matching in a stereo system. It is the ideal choice for applications in which consumer-type stereo equipment has to be integrated into a professional audio system, where balanced audio lines are a must. The Dual Balancing Unit will also be used in situations where balanced auxiliary units must be connected to unbalanced insert points on a mixing desk.



The use of the balancing unit is not restricted to matching of balanced and unbalanced audio system components, because it can also be utilized as a (line) booster amplifier or as a stereo-to-mono mixer. By simply connecting the unbalanced outputs and inputs together and by adjusting again within the available ranges, two booster amplifiers with a maximum gain of 30 dB and a maximum output capability of +24 dBu*) can be realized.



For stereo-to-mono mixing, the unbalanced sides of the amplifier sections simply are connected by means of combining (mixing) resistors, as shown in the diagram below.



*) To avoid signal clipping, a system should always be designed in such a way that signal peaks stay well below an amplifier's maximum output capacity. Alignment procedures and level settings depend to a large degree on the type of metering used in an audio system. When making measurements with a steady-state signal, a margin of 6 dB below a system's clipping point and the PPM deflected to "zero volume", or a margin of 15 dB (for programs with extreme crest factors, even 20 dB) when utilizing a VU-meter, is considered good engineering practice.

Technical Specifications

Balanced to unbalanced (Section 1):

Input impedance	**³ 10 kW,** balanced/floating
Maximum input level	**+24 dBu**
Output impedance	< **100 W,** unbalanced
Maximum output level	**+20 dBu**
Minimum load	**600 W**
Frequency response	**±0.2 dB**, 30 Hz...16 kHz
Attenuation	**0/15 dB;** two fixed steps
	0...15 dB; variable
S/N	> **100 dB;** attenuation set to 6 dB, line level +6 dBu

Unbalanced to balanced (Section 2):

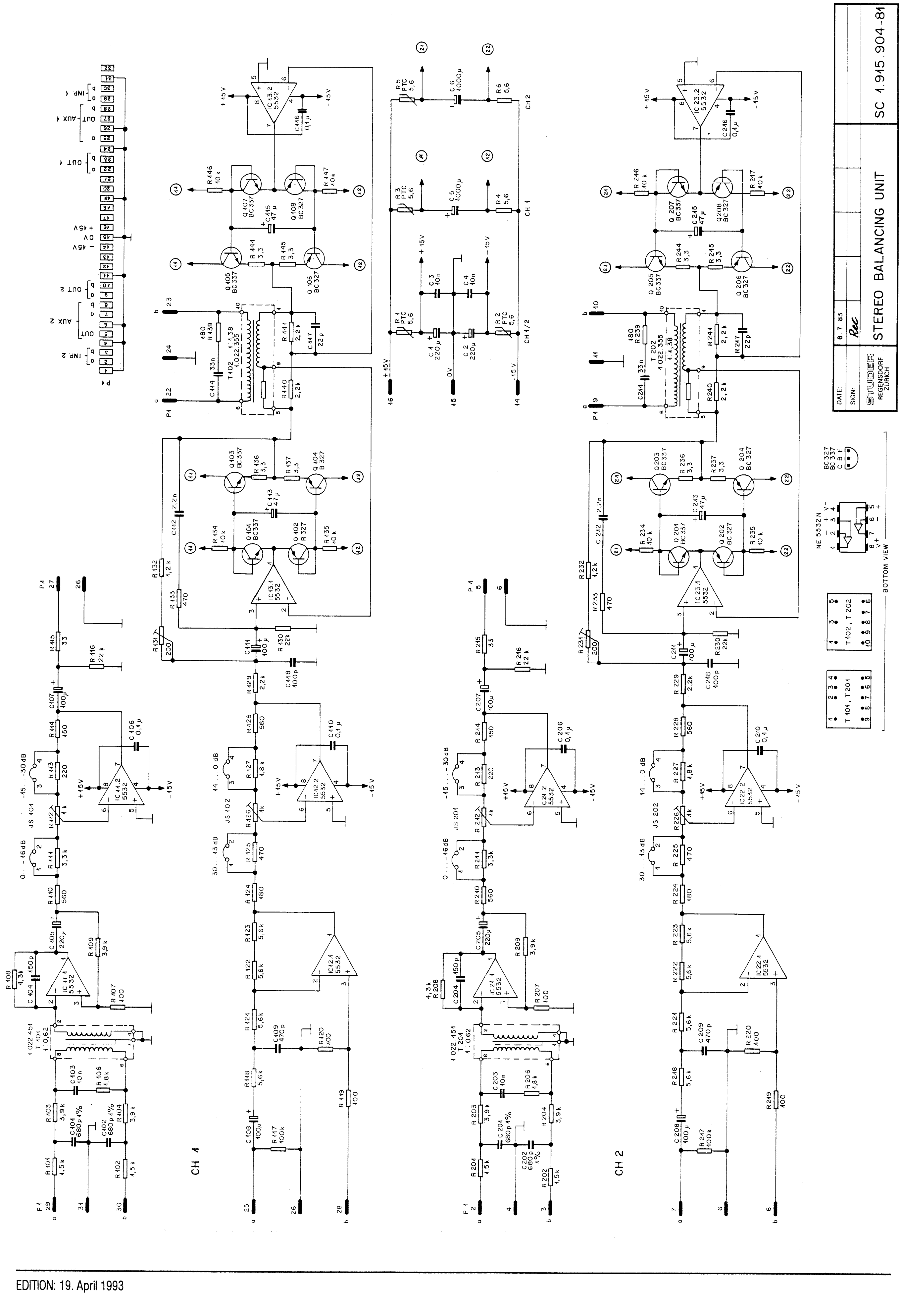
Input impedance	**5 kW,** unbalanced
Maximum input level	**+20 dBu**
Output impedance	**£ 50 W,** balanced/floating
Minimum load	**200 W**
Maximum output level	**+24 dBu**
Frequency response	**±0.2 dB,** 30 Hz...16 kHz
Gain	**14/30 dB;** two fixed steps
	0...17 dB; variable
S/N	> **100 dB;** gain set to 6 dB, line level +6 dBu

Supply: **±15 V** (70 mA, idling; 170 mA, each channel +24 dBu into 200 Ω)

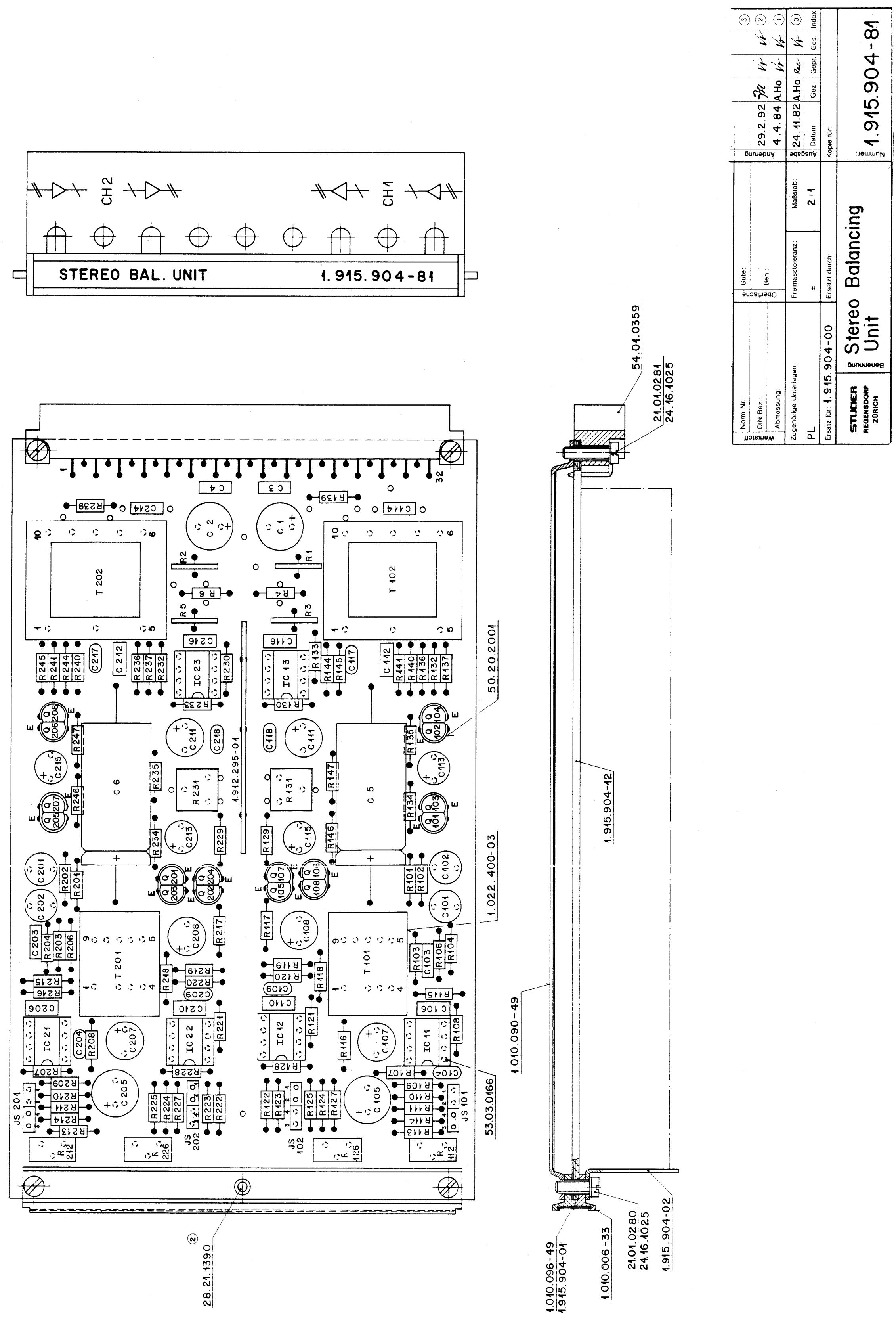
Dimensions: Euro-card **100 × 160 mm, 7 M units wide**

Ordering Information:

Euro-card:	• Dual balancing unit	1.915.904.xx
19”/1U standard products:	• 2CH balancing unit (1 × 1.915.904)	75.700.89212
	• 4CH balancing unit (2 × 1.915.904)	75.700.89422
	• 6CH balancing unit (3 × 1.915.904)	75.700.89632


STEREO BALANCING UNIT
SC 1.915.904-81
STUDER REGENSDORF ZÜRICH
DATE: 8.7.83
SIGN:
CH 1
CH 2
BOTTOM VIEW

DUAL BALANCING UNIT



DUAL BALANCING UNIT

Ad	POS.	REF.No.	DESCRIPTION					MANUFACTURER
	C.....1	59.22.4221	220µ		16V	EL		
	C.....2	59.22.4221	220µ		16V	EL		
	C.....3	59.06.0103	10n		63V	PE		
	C.....4	59.06.0103	10n		63V	PE		
	C.....5	59.25.5102	1000µ		40V	EL		
	C.....6	59.25.5102	1000µ		40V	EL		
	C.....1	59.05.1681	680p	1%	630V	PP		
	C.....2	59.05.1681	680p	1%	630V	PP		
	C.....3	59.06.0103	10n		63V	PE		
	C.....4	59.34.4151	150p		63V	CER		
	C.....5	59.22.2221	220µ		6V	EL		
	C.....6	59.06.0104	0,1µ		63V	PE		
	C.....7	59.22.5101	100µ		25V	EL		
	C.....8	59.22.5101	100µ		25V	EL		
	C.....9	59.34.5471	470p		63V	CER		
	C....10	59.06.0104	0,1µ		63V	PE		
	C....11	59.22.5101	100µ		25V	EL		
	C....12	59.06.0222	2,2n		63V	PE		
	C....13	59.22.5470	47µ		25V	EL		
	C....14	59.06.0333	33n		63V	PE		
	C....15	59.22.5470	47µ		25V	EL		
	C....16	59.06.0104	0,1µ		63V	PE		
	C....17	59.34.2220	22p		63V	CER		
①	C....18	59.34.4101	100p		63V	CER		
	IC....1	50.09.0105	NE5532	DUAL OP AMP			XR5532	SIG, EX
	IC....2	50.09.0105	NE5532	DUAL OP AMP			XR5532	SIG, EX
	IC....3	50.09.0105	NE5532	DUAL OP AMP			XR5532	SIG, EX
	JS....1	54.01.0020	4PIN					
		54.01.0021	JUMPER					
	JS....2	54.01.0021	4PIN					
		54.01.0021	JUMPER					
	P.....1	54.01.0359	2•16P					
	Q.....1	1.010.037.50	BC337	NPN				
	Q.....2	1.010.036.50	BC327	PNP				
	Q.....3	1.010.037.50	BC337	NPN	MATCHED			
	Q.....4	1.010.036.50	BC327	PNP				
	Q.....5	1.010.037.50	BC337	NPN				
	Q.....6	1.010.036.50	BC327	PNP				
	Q.....7	1.010.037.50	BC337	NPN				
	Q.....8	1.010.036.50	BC327	PNP				
	R.....1	57.99.0209	5,6	PTC				PH
	R.....2	57.99.0209	5,6	PTC				PH
	R.....3	57.99.0209	5,6	PTC				PH
	R.....4	57.11.4569	5,6					
	R.....5	57.99.0209	5,6	PTC				PH
	R.....6	57.11.4569	5,6					
	R.....1	57.11.3152	1,5k	1%				
	R.....2	57.11.3152	1,5k	1%				
	R.....3	57.11.3392	3,9k	1%				
	R.....4	57.11.3392	3,9k	1%				
	R.....5							
	R.....6	57.11.4182	1,8k					
	R.....7	57.11.3101	100					
	R.....8	57.11.3432	4,3k					
	R.....9	57.11.3392	3,9k	2%				
	R....10	57.11.4561	560					
	R....11	57.11.4332	3,3k					
	R....12	58.01.9102	1k	10%	TRIM			
	R....13	57.11.4221	220	2%				
	R....14	57.11.4151	150	2%				
	R....15	57.11.4330	33					
	R....16	57.11.4223	22k					
	R....17	57.11.4104	100k					
	R....18	57.11.3562	5,6k					
	R....19	57.11.3101	100					
	R....20	57.11.3101	100	1%				
	R....21	57.11.3562	5,6k					
	R....22	57.11.3562	5,6k					
	R....23	57.11.3562	5,6k					
	R....24	57.11.4181	180	2%				
	R....25	57.11.4471	470	2%				
	R....26	58.01.9102	1k	10%	TRIM			
	R....27	57.11.4182	1,8k	2%				
	R....28	57.11.4561	560	2%				
	R....29	57.11.4222	2,2k					
	R....30	57.11.4223	22k					
	R....31	58.01.8201	200	TRIM				
	R....32	57.11.4122	1,2k					
	R....33	57.11.4471	470					
	R....34	57.11.4103	10k					
	R....35	57.11.4103	10k					
	R....36	57.11.4339	3,3					
	R....37	57.11.4339	3,3					
	R....38							
	R....39	57.11.4181	180					
	R....40	57.11.4222	2,2k	2%				

Ad	POS.	REF.No.	DESCRIPTION		MANUFACTURER
	R....41	57.11.4222	2,2k	2%	
	R....42				
	R....43				
	R....44	57.11.4339	3,3		
	R....45	57.11.4339	3,3		
	R....46	57.11.4103	10k		
	R....47	57.11.4103	10k		
	T.....1	1.022.451.00	1:0,62	INPUT TRAFO	ST
	T.....2	1.022.355.00	1:1,38	LINE OUTPUT TRAFO	ST
	XIC	53.03.0166	8P	IC SOCKET	

EL=Electrolytic, PE=Polyester, PP=Polypropylen, CER=Ceramic

MANUFACTURER: SIG=Signetics, PH=Philips, EX=Exar, ST=Studer

1.915.904.81 STEREO BAL. UNIT BR 24/11/82

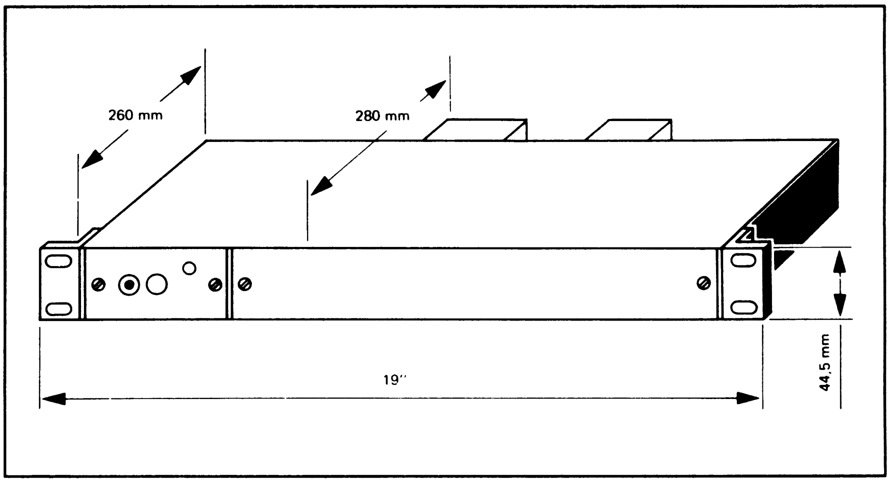
END
➔

2.3 Racks and Frames

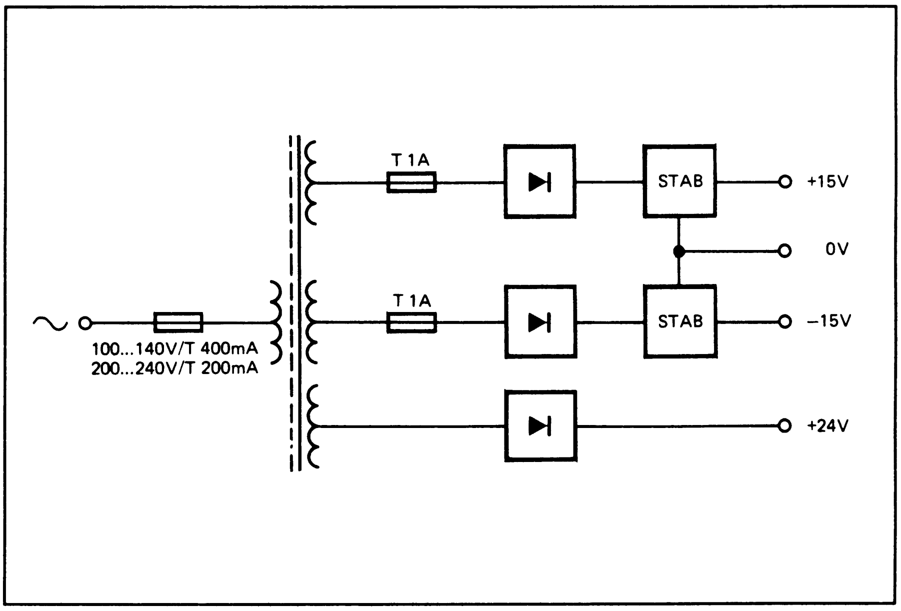
2.3.1 19” Mounting Frame for 3 Euro-Cards

1.918.100

This 19” mounting frame (height: 44.5 mm/1U) offers space for three Euro-cards next to the power supply. The power supply provides ±15 V_{DC} (regulated) and 24 V_{DC} (unregulated).



The frame comes equipped with three edge connectors to accommodate three Euro-cards horizontally, side by side. A blank back panel of anodized aluminium is provided and permits the installation of input and output connectors as required, depending on the application.



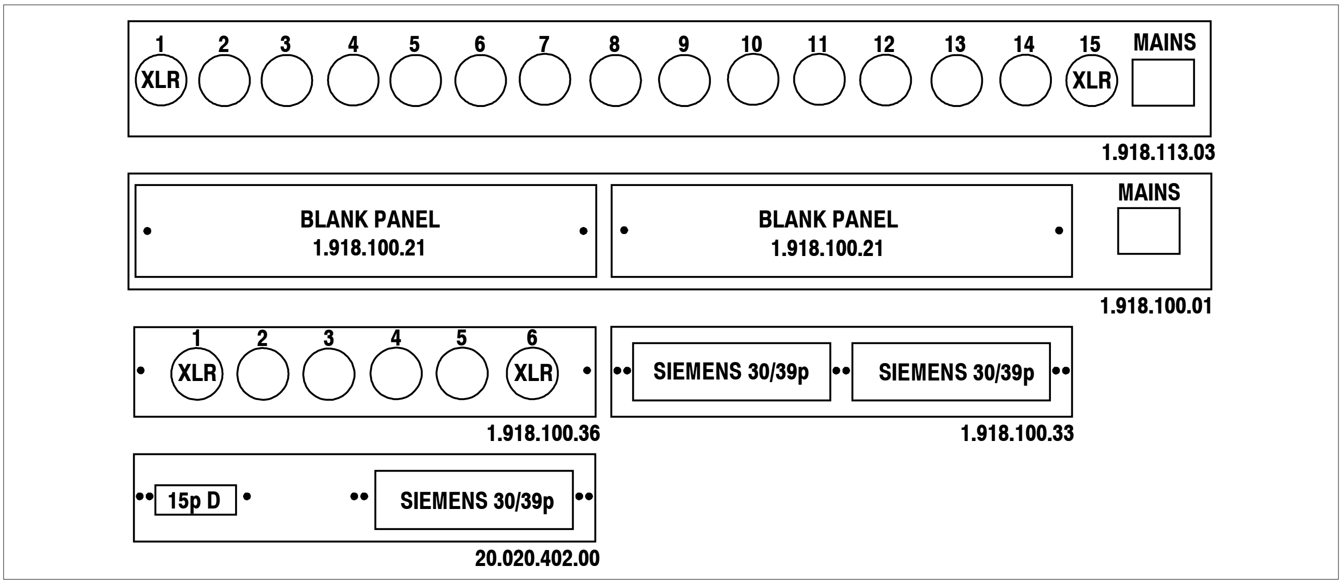
Technical Specifications

Primary:	Voltage selector for	**100, 120, 140, 200, 220, 240 V_{AC}**
	Fuse (slow-blow)	**400 mA** (for 100...140 V_{AC})
		200 mA (for 200...240 V_{AC})
Secondary:	Regulated voltage	**±15 V_{DC}**, 0.5 A max.
	Unregulated voltage	**24 V_{DC}**, 0.2 A max. (for signaling)
	Fuses (slow-blow)	**2 × 1 A**

Ordering Information:
19"/1U standard product

- Mounting frame for three Euro-cards with power supply and stabilizer PCB, with two blank aluminium back panels (1.918.100.21) — 1.918.100.xx

Alternative Back Panels: The mounting frame 1.918.100.xx can be equipped with the following back panels:

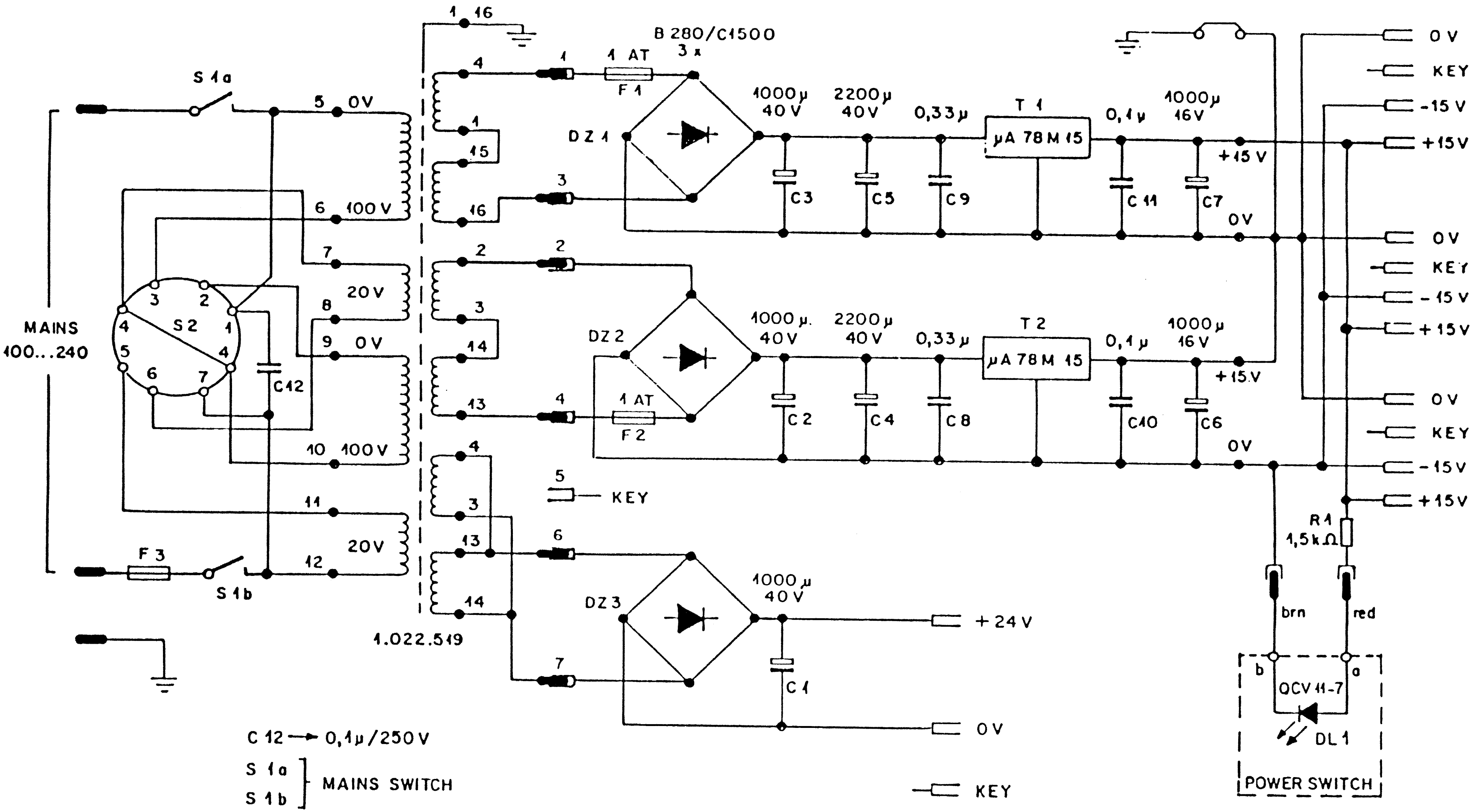


Ordering Information:
Alternative Back Panels for Mounting Frame 1.918.100

- Steel back panel for 15 × XLR sockets (Neutrik) — 1.918.113.03

Alternative Back Panels for Blank Panels 1.918.100.21

- Aluminium back panel for 6 × XLR sockets (Neutrik) — 1.918.100.36
- Aluminium back panel for 1 × Siemens 30/39 pin and 1 × 15pin D-type sockets — 20.020.402.00
- Aluminium back panel for 2 × Siemens 30/39 pin sockets — 1.918.100.33
- *Mechanical interface Siemens panel → D-type connector: see chapter 2.3.4.*



C 12 → 0,1µ/250V

S 1a, S 1b → MAINS SWITCH

S 2 → VOLTAGE SEL.

F3 → 400mA/110V

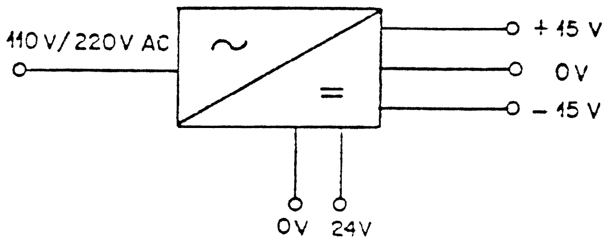
F3 → 200mA/220V

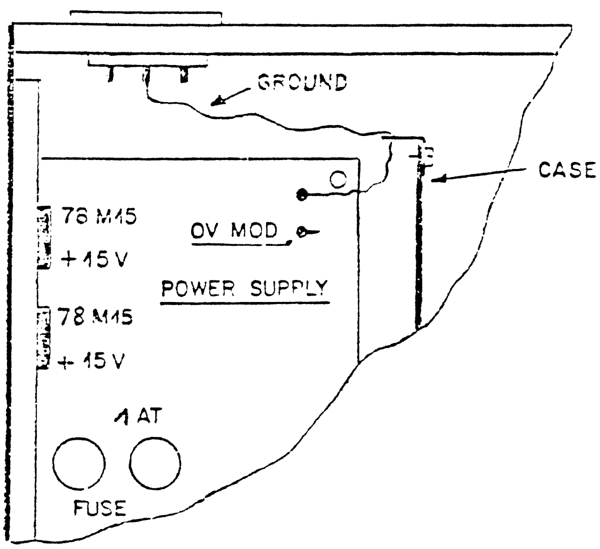
DATE:	9.4.85					REPLACES 1.918.099-81
SIGN:	We					
STUDER REGENSDORF ZURICH	POWER SUPPLY ±15V/24V					1.918.098-00

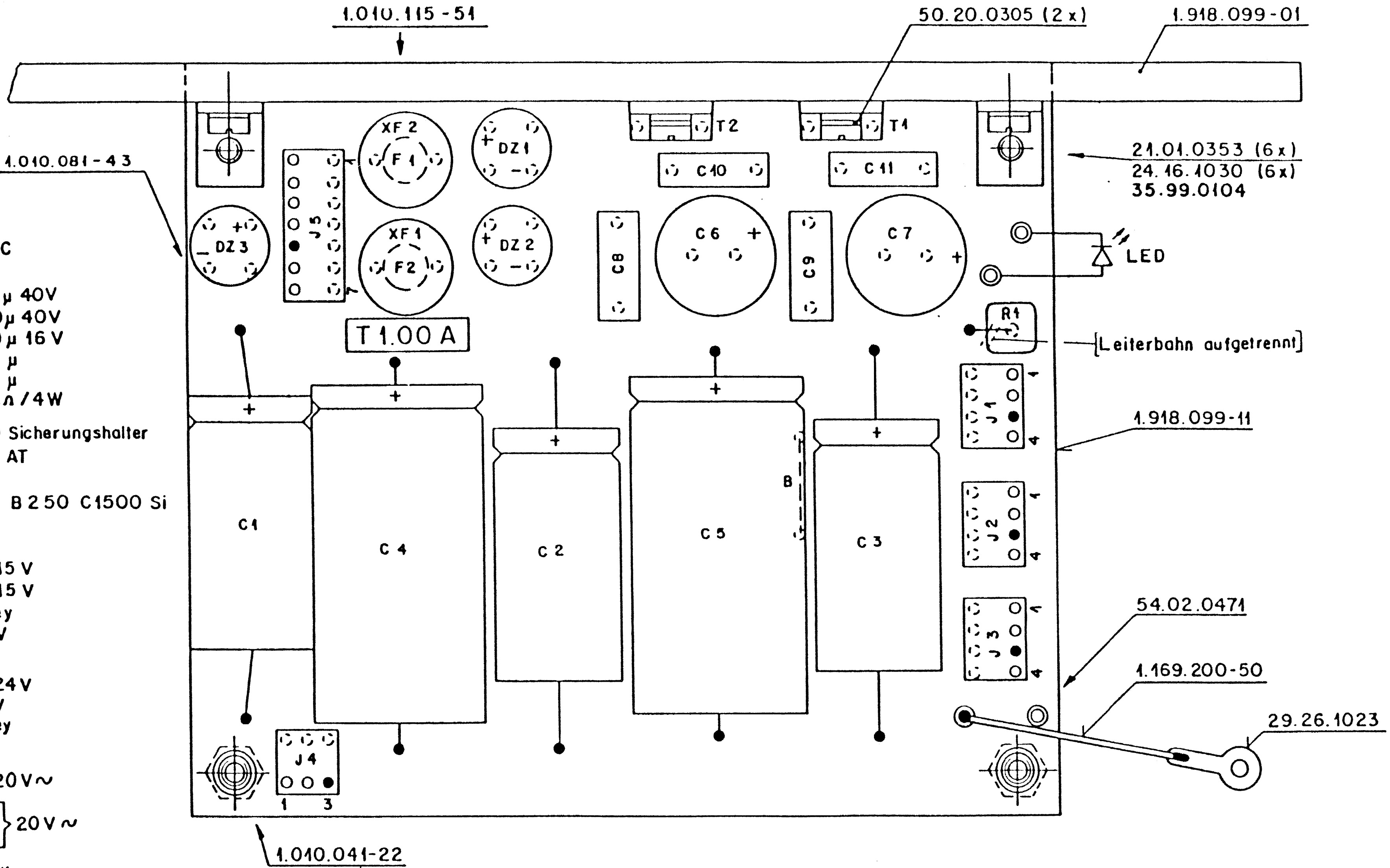
P O W E R   S U P P L Y   1.918.098

Technical data:

Input	100 ... 240 V AC
Output	±15 V, 0.5A (audio)
	24 V, 0.2A (signalling)
Prim.fuse	400 mAT (100 ... 140 V AC)
	200 mAT (200 ... 240 V AC)
Sec. fuse	1 AT (± 15 V DC)







B Drahtbrücke

T1, T2 78M15C

C1...C3 1000µ 40V
C4, C5 2200µ 40V
C6, C7 1000µ 16V
C8, C9 0,33 µ
C10, C11 0,1 µ
R1 1,5 kΩ / 4W

XF1, XF2 5x20 Sicherungshalter
F1, F2 1 AT

DZ1, DZ2, DZ3 B250 C1500 Si

J1...J3
- 1 +15V
- 2 −15V
- 3 Key
- 4 0V

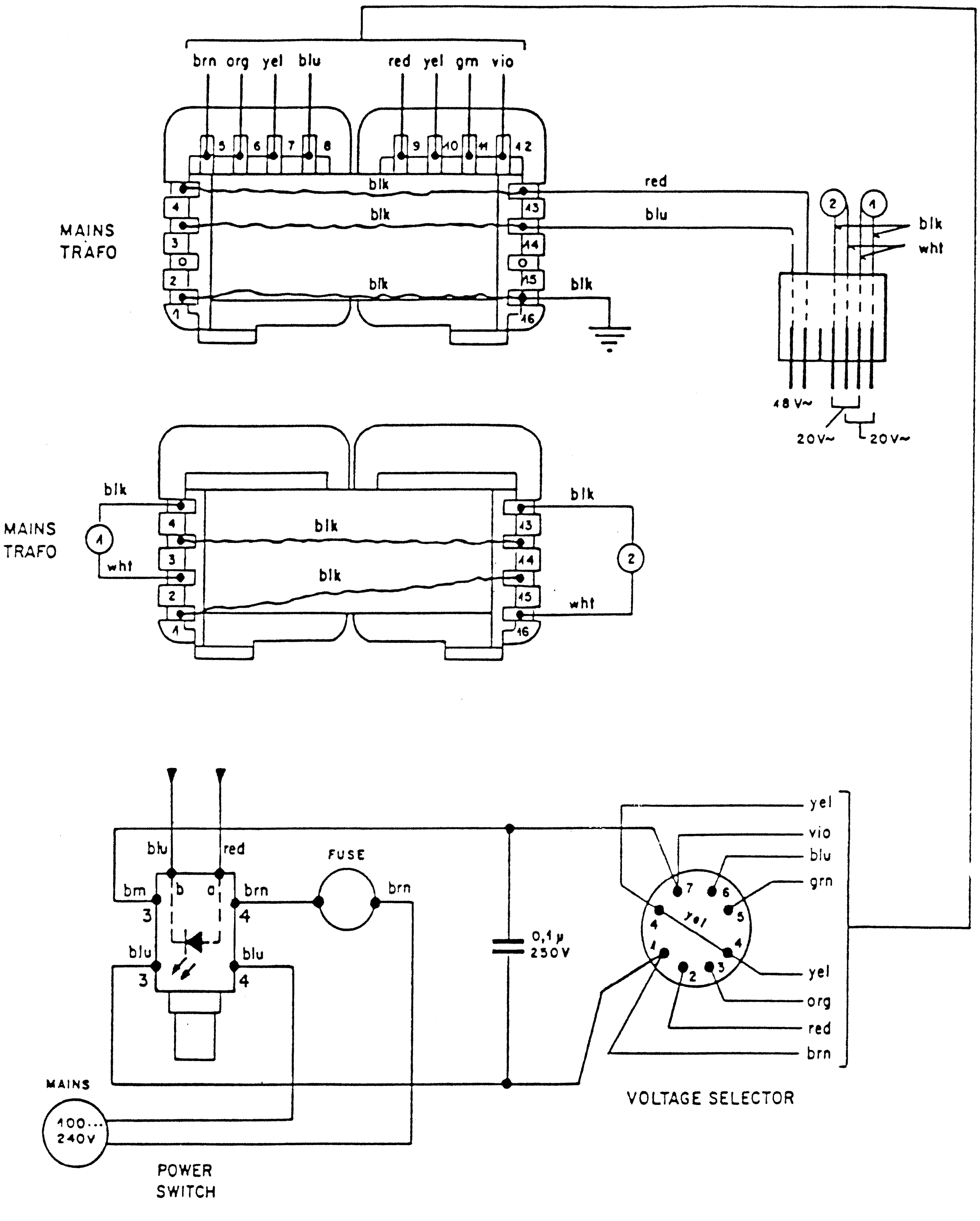
J4
- 1 +24V
- 2 0V
- 3 Key

J7
- 1 } 20V~ (1–2)
- 2
- 3 } 20V~ (2–4)
- 4
- 5 Key
- 6 20V~ (6–7)
- 7

Codierung: Schaltdraht 64.01.0108 ø0,8x8mm
(muss 1mm vorstehen)

In	Buchsenleiste	J1	in	Kontakt	3
"	"	J2	"	"	3
"	"	J3	"	"	3
"	"	J4	"	"	3
"	"	J5	"	"	5

DATE:	9.4.85					REPLACES 1.918.099-81
SIGN:	We					
STUDER REGENSDORF ZURICH	POWER SUPPLY ±15V / 24V					1.918.098

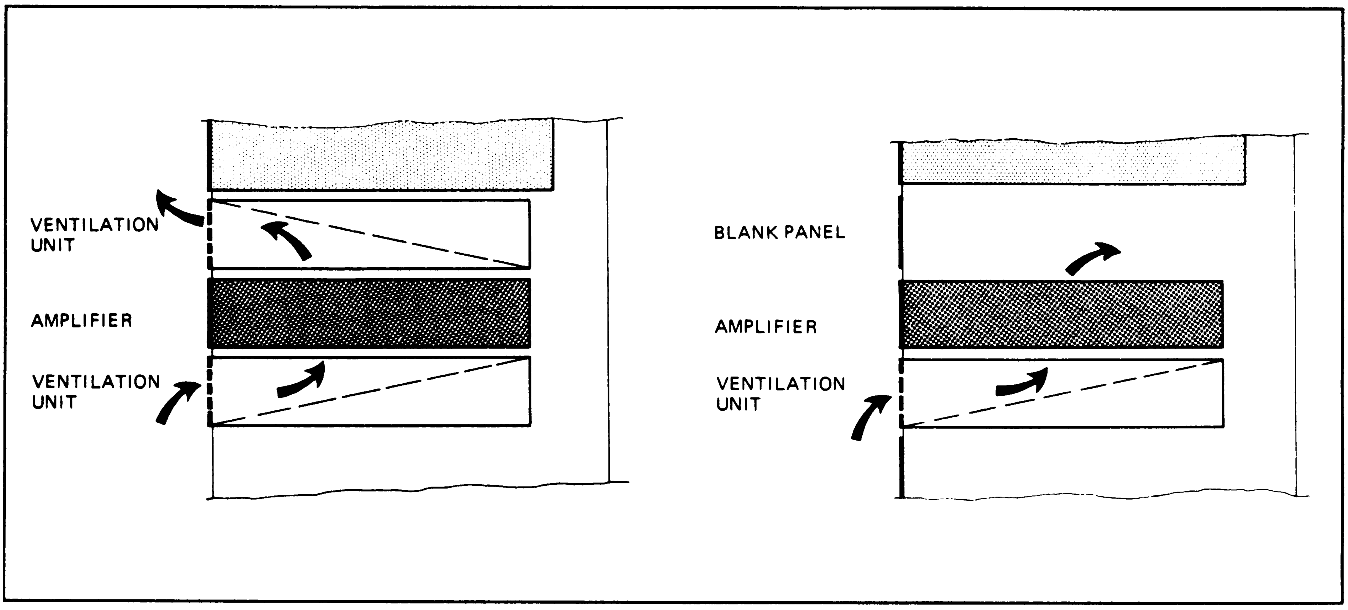


DATE:	6.11.79	25.3.85			
SIGN:	We	We			

STUDER REGENSDORF ZÜRICH	WIRING	1.918.100 1.918.101 1.918.102

2.3.2 19" Ventilation Unit/19" Blank Panels 1.918.119/0XX

When filling a cabinet rack with various electronic equipment, considerable heat may be generated, which could be harmful to other nearby components. To provide for sufficient convection cooling, the use of ventilation units above and below the heat-generating equipment is strongly recommended.



A ventilation unit consists of a 19" wide and 1U high sheet metal structure, which extends about 340 mm into the rack. The unit's front section is perforated, with a slanting metal panel mounted inside. By installing the ventilation unit with that panel either slanting upwards or downwards, the air flow can be directed as desired.

If only moderate heat problems have to be coped with, it may be sufficient to use one ventilation unit above or below the heat source, and to provide sufficient spacing from adjacent equipment by installing a 1U blank panel on the opposite side.

Ordering Information:

19" Ventilation Units

- Ventilation unit 19"/1U 1.918.119.xx
- Ventilation unit without air guide panel 1.918.119.09

19" Blank Panels

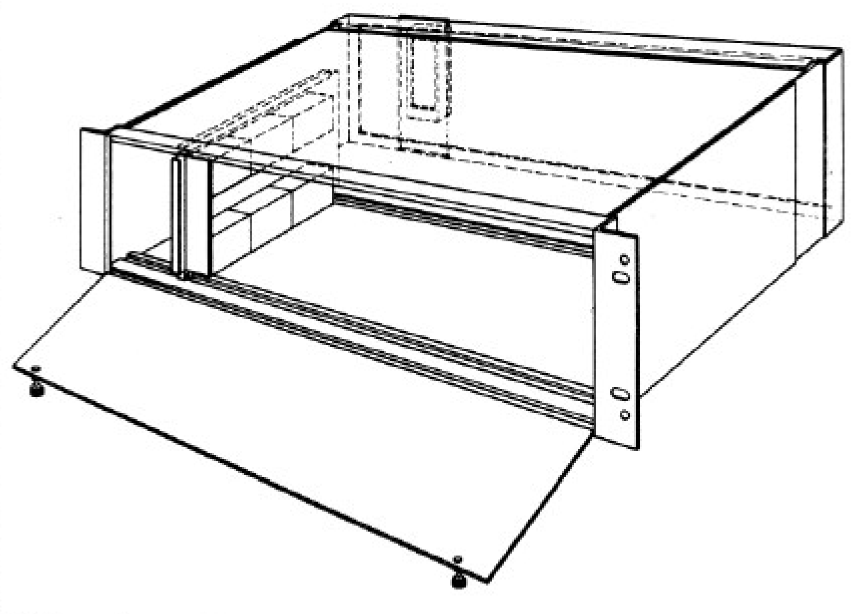
- Blank panel 19"/1U high, anodized finish 1.918.001.xx
- Blank panel 19"/2U high, anodized finish 1.918.002.xx
- Blank panel 19"/3U high, anodized finish 1.918.003.xx
- Blank panel 19"/1U high, plastic coated, grey 1.918.001.09
- Blank panel 19"/2U high, plastic coated, grey 1.918.002.09
- Blank panel 19"/3U high, plastic coated, grey 1.918.003.09
- Blank panel 19"/1U high, paint finish, grey 1.918.011.xx
- Blank panel 19"/2U high, paint finish, grey 1.918.012.xx
- Blank panel 19"/3U high, paint finish, grey 1.918.013.xx

2.3.3 19" Euro-Card Mounting Frames 1.918.318/319

The Euro-card mounting frame (sometimes also referred to as 19" Sub Rack) is an empty structure which fits into any standard 19" rack. It is intended to accommodate PCBs of the Euro format vertically, side by side. The available space within the sub rack is divided into 84 Modular Widths, each measuring 5.08 mm (0.2 inches). One Euro-card usually occupies 7 M (Module) widths, thus up to 12 Euro-cards may be installed.

The Euro-card frame is supplied as a kit for assembly by the user. Assembly instructions are included with each kit.

Supplied with the kit is a hinged front panel of anodized aluminium, providing quick access to the plug-in PCBs if required. This front panel and its hinges are available separately in case a damaged panel or hinge needs to be replaced.



EURO-card frame 1.918.319

Separate edge connectors and slide rails are required for each Euro-card and power supply unit installed into the Euro-card frame. Mounting kits containing the slide rails, edge connectors, and other accessories are described below (1.918.315/316).

To provide for convection cooling within an equipment rack, the Ventilation Unit 1.918.119.xx is recommended.

Euro-Card Racks, Ordering Information:

- Euro-card frame (19"/3U, ELMA), direct access to 32pin connectors on back panel 1.918.318.xx
- Euro-card frame (19"/3U, ELMA) with additional rear panel, for max. 10 freely assignable connector panels 1.918.319.xx

2.3.4 19” Euro-Card Mounting Accessories

Euro-Card Mounting Kit

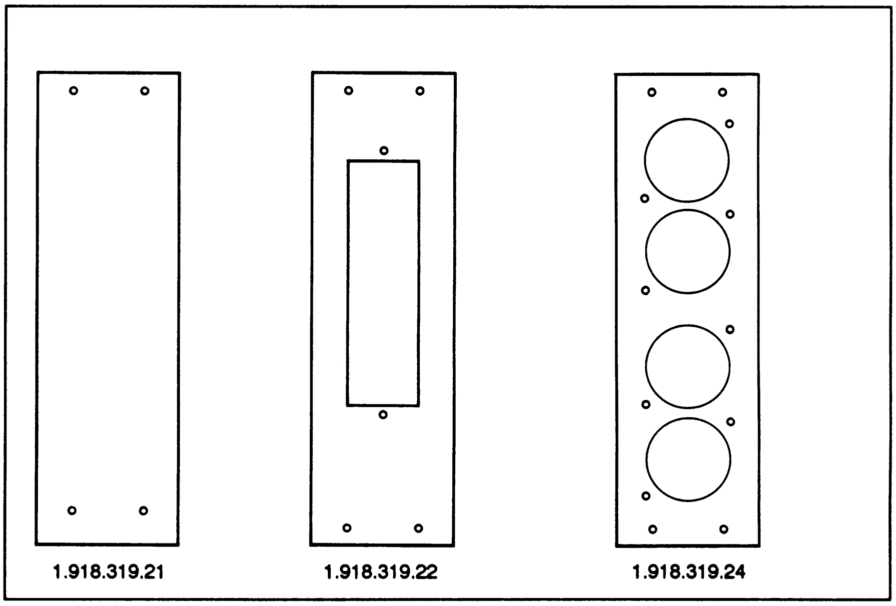
For installing Euro-cards and/or a power supply unit into a Euro-card frame 1.918.318/319, suitable edge connectors and guide rails are required.

Euro-Card Mounting Kit, Ordering Information:

- Mounting kit for 1 Euro-card (ELMA rack); see photograph 1.918.315.xx
- Mounting kit for power supply 1.915.100 1.918.316.xx

Connector Panels:

The connector panels fit into the Euro-card frame with back panel (1.918.319). Please order the suitable panels separately.



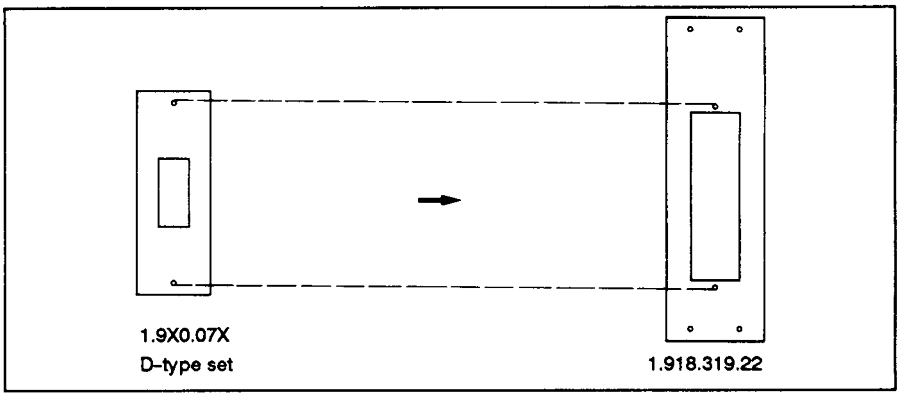
Connector Panel (3U high) Ordering Information:

• Blank panel	1.918.319.21
• Panel for Siemens connector (cut out 18 × 67 mm) *	1.918.319.22
• Panel for mains inlet and 2 banana sockets	1.918.319.23
• Panel for 4 XLR sockets	1.918.319.24

*** Siemens Connector Sets:** Including male and female connector:

– Siemens 30pin, without connector panel	1.900.080.xx
– Siemens 39pin, without connector panel	1.900.081.xx

*** D-Type Adapter Panels:** The Siemens connector panel can be used as a base for mounting a D-type connector adapter panel. The adapter sets listed below include male and female connectors, connector cover, bolting spring, clamp, and adapter panel:



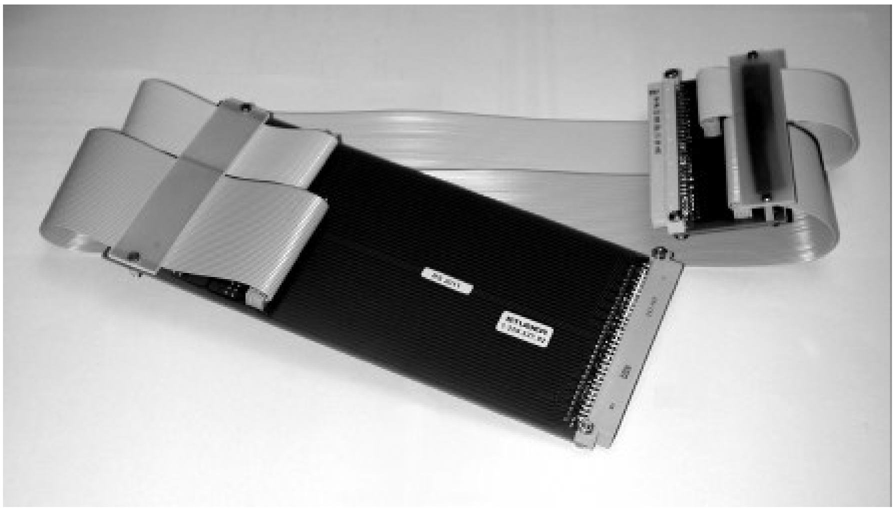
Adapter Panel Ordering Information:

The adapter kits consist of male and female D-type connector, metal or plastic connector cover, adapter panel, and mounting hardware, to fit on the Siemens connector panels 1.918.319.22 (for 3U frames) or 1.918.100.33 (for 1U frames):

– D-type set, 9pin, metal connector cover	1.900.075.xx
– D-type set, 15pin, metal connector cover	1.900.076.xx
– D-type set, 25pin, metal connector cover	1.900.077.xx
– D-type set, 37pin, metal connector cover	1.900.078.xx
– D-type set, 50pin, metal connector cover	1.900.079.xx
– D-type set, 9pin, plastic connector cover	1.970.075.xx
– D-type set, 15pin, plastic connector cover	1.970.076.xx
– D-type set, 25pin, plastic connector cover	1.970.077.xx
– D-type set, 37pin, plastic connector cover	1.970.078.xx
– D-type set, 50pin, plastic connector cover	1.970.079.xx

Extension Board:

For alignment and repair, a Euro-card may have to be operated outside the mounting frame. To facilitate any service work that has to be performed on individual cards, extending the card's 32 electrical connections is possible by means of a flexible extension board.

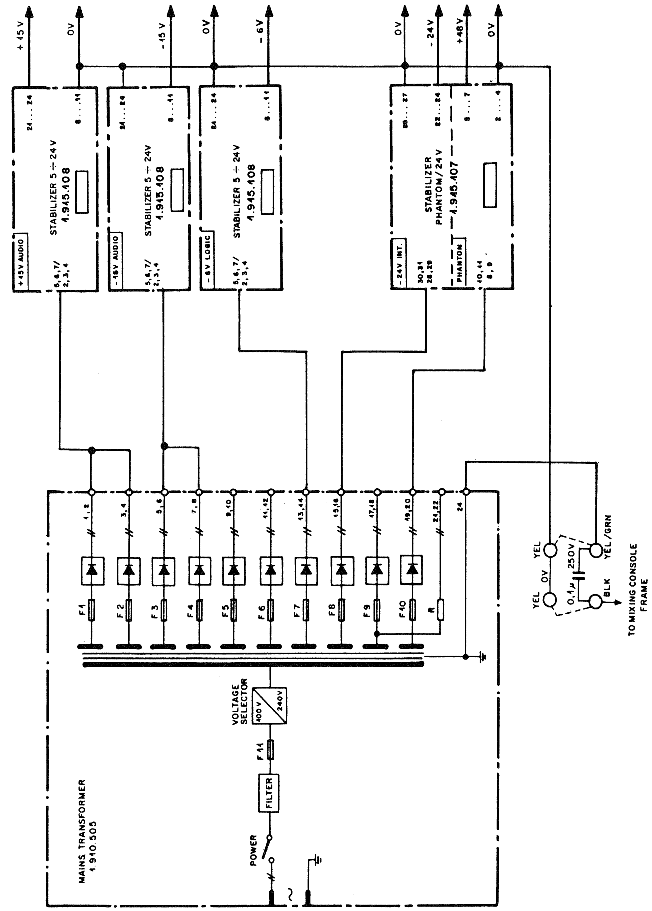


Ordering Information:

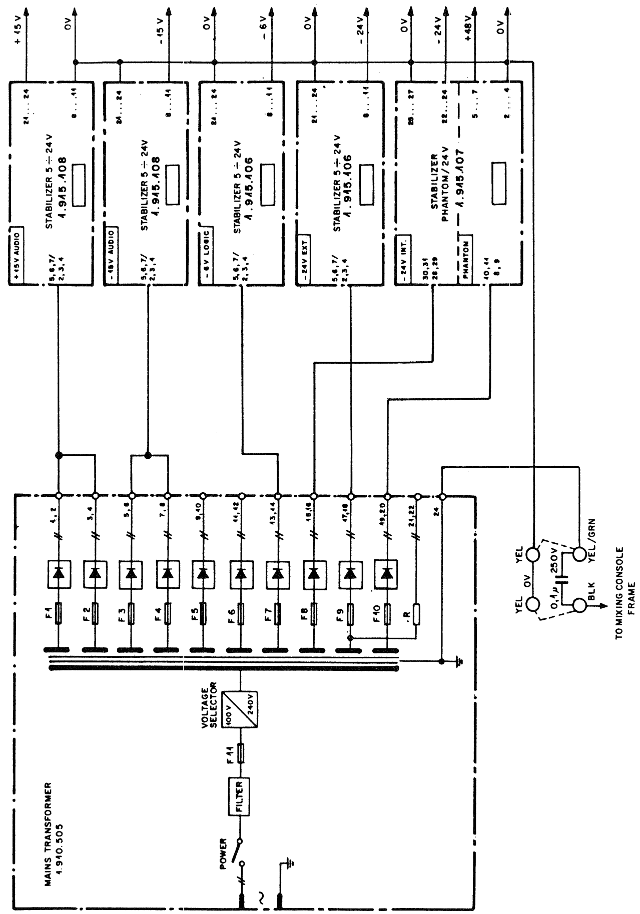
Extension PCB for Euro-cards, 2 × 32pin, flexible		1.228.327.82

7 Europe PCB + Power supply 1.970.101/102

Power Supply 1.970.101

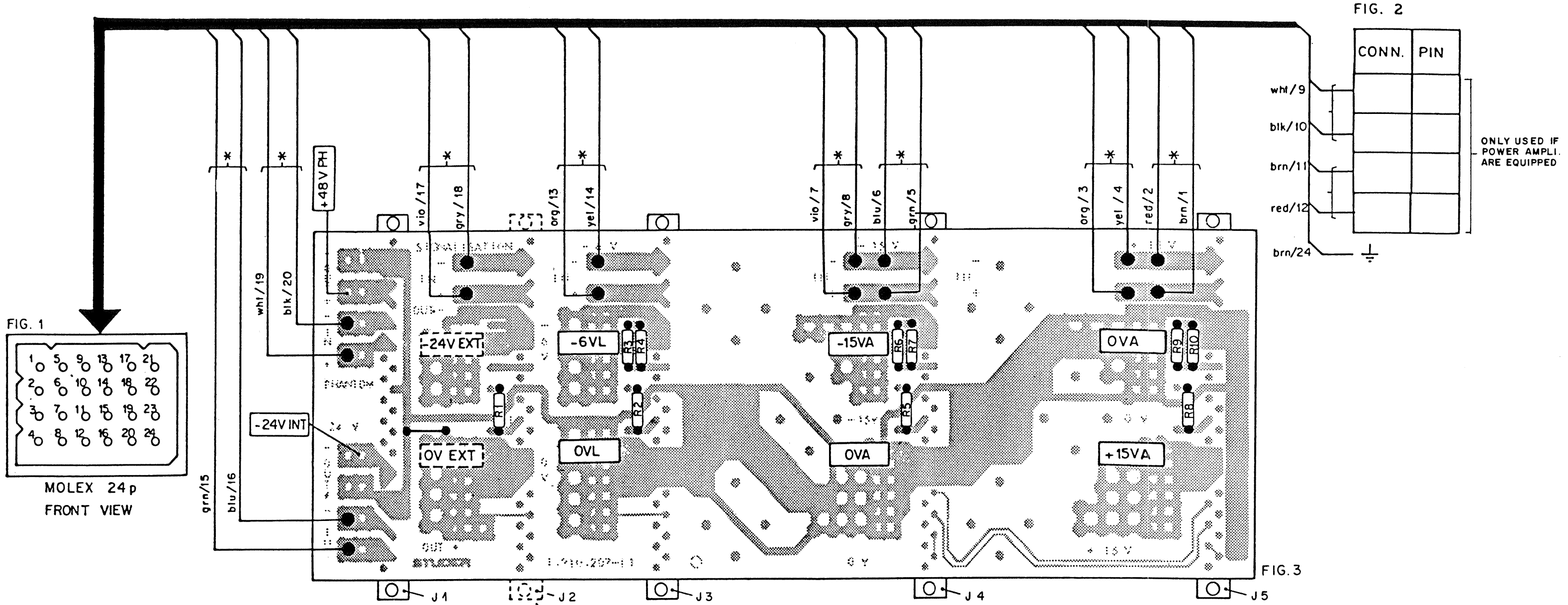


0 3. 7. 87 We				
STUDER REGENSDORF ZÜRICH	POWER SUPPLY 970 AUDIO CONSOLE		SC 1.970.101	



0 3. 7. 87 We				
STUDER REGENSDORF ZÜRICH	POWER SUPPLY 970 AUDIO CONSOLE		SC 1.970.102	

Power Supply 1.970.101/102



ONLY USED IF GROUP-CH ARE EQUIPPED WITH BAR-GRAPH-METERS (POWER SUPPLY 1.963.102)

MOLEX PIN	COLOR	WIRED TO	* = TWISTED	NAME
1	brn	J5/5,6,7	*	INP + 15V STAB.
2	red	J5/2,3,4		INP + 15V STAB.
3	org	J5/5,6,7	*	INP + 15V STAB.
4	yel	J5/2,3,4		INP + 15V STAB.
5	grn	J4/5,6,7	*	INP. -15 V STAB.
6	blu	J4/2,3,4		INP. -15 V STAB.
7	vio	J4/5,6,7	*	INP. -15 V STAB.
8	gry	J4/2,3,4		INP. -15 V STAB.
9	wht	SEE FIG. 2	*	INP. PWR. AMP 1+
10	blk	SEE FIG. 2		INP. PWR. AMP. 1-
11	brn	SEE FIG. 2	*	INP. PWR. AMP. 2+
12	red	SEE FIG. 2		INP. PWR. AMP. 2-
13	org	J3/5,6,7	*	INP. -6V STAB.
14	yel	J3/2,3,4		INP. -6V STAB.
15	grn	J1/30,31	*	INP. -24V STAB.
16	blu	J1/28,29		INP. -24V STAB.
17	vio	J2/5,6,7	*	INP -24V STAB.
18	gry	J2/2,3,4		INP -24 V STAB.
19	wht	J1/10/11	*	INP +48V STAB.
20	blk	J1/8,9		INP +48V STAB.
21	brn	(TRAFO 2/23)	*	PWR. ON REL. T2
22	red	(TRAFO 2/24)		PWR. ON REL. T2
23				
24	brn	CASE		CASE

TAB. 1

POS.	PART NO.	VALUE	SPECIFIC.
R1	57.11.4122	1k2	2%
R2	57.11.3332	3k3	1%
R3	57.11.4471	470	2%
R4	57.11.3332	3k3	1%
R5	57.11.3472	4k7	1%
R6	57.11.3472	4k7	1%
R7	57.11.3104	100k	1%
R8	57.11.3472	4k7	1%
R9	57.11.3472	4k7	1%
R10	57.11.3104	100k	1%

TAB. 2

POWER SUPPLY 1.963.101

J1 EQUIPPED WITH STABILIZER 1.945.107
J2 NOT USED
J3, J4, J5 EQUIPPED WITH STABILIZER 1.945.108

POWER SUPPLY 1.963.102

J1 EQUIPPED WITH STABILIZER 1.945.107
J2, J3 EQUIPPED WITH STABILIZER 1.945.106
J4, J5 EQUIPPED WITH STABILIZER 1.945.108

EDITION: 23. Oktober 1990

Trafoblock mit Gleichrichter 1.910.50X

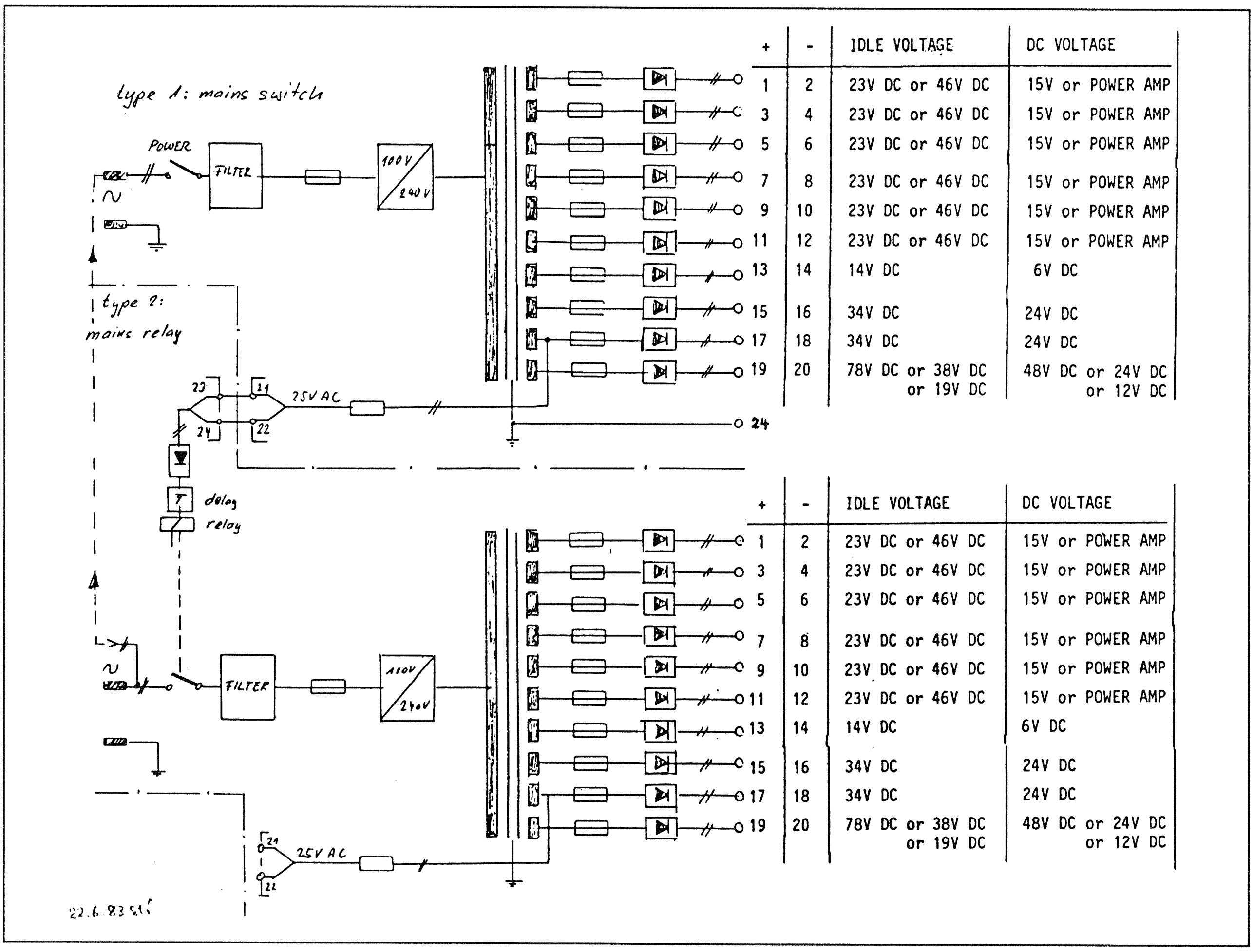
Trafoblock mit Gleichrichter. Es bestehen zwei Grundausführungen:

- ~~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.

Blockschaltbild

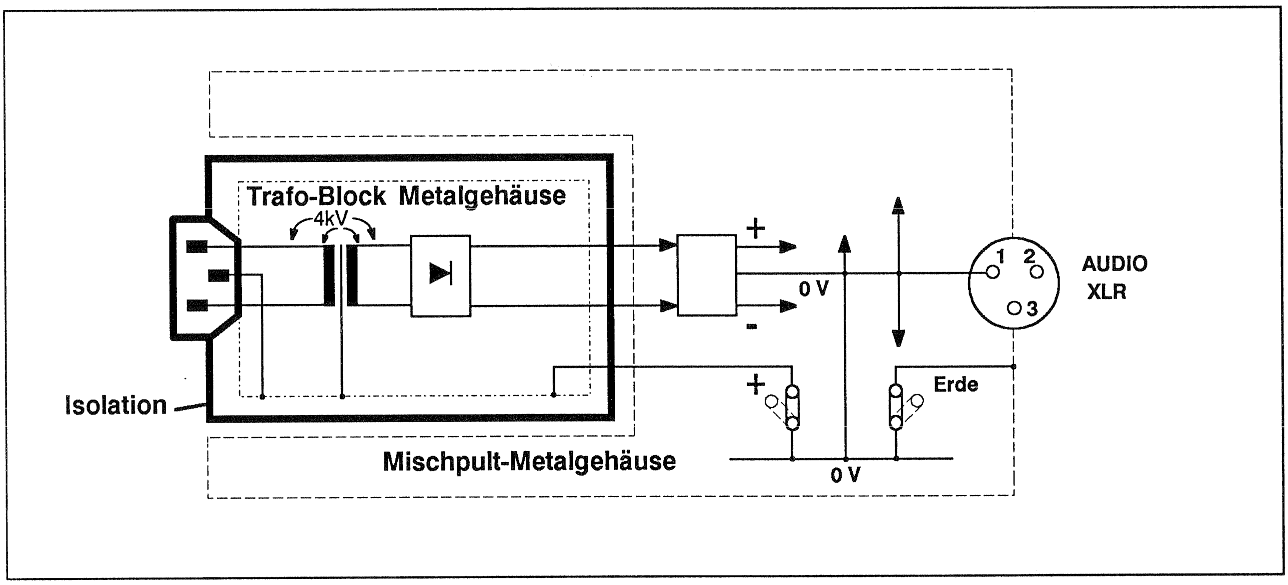


+	-	IDLE VOLTAGE	DC VOLTAGE
1	2	23V DC or 46V DC	15V or POWER AMP
3	4	23V DC or 46V DC	15V or POWER AMP
5	6	23V DC or 46V DC	15V or POWER AMP
7	8	23V DC or 46V DC	15V or POWER AMP
9	10	23V DC or 46V DC	15V or POWER AMP
11	12	23V DC or 46V DC	15V or POWER AMP
13	14	14V DC	6V DC
15	16	34V DC	24V DC
17	18	34V DC	24V DC
19	20	78V DC or 38V DC or 19V DC	48V DC or 24V DC or 12V DC

+	-	IDLE VOLTAGE	DC VOLTAGE
1	2	23V DC or 46V DC	15V or POWER AMP
3	4	23V DC or 46V DC	15V or POWER AMP
5	6	23V DC or 46V DC	15V or POWER AMP
7	8	23V DC or 46V DC	15V or POWER AMP
9	10	23V DC or 46V DC	15V or POWER AMP
11	12	23V DC or 46V DC	15V or POWER AMP
13	14	14V DC	6V DC
15	16	34V DC	24V DC
17	18	34V DC	24V DC
19	20	78V DC or 38V DC or 19V DC	48V DC or 24V DC or 12V DC

2. Sicherheit

Der Trafoblock ist aufgebaut wie ein schutzisoliertes Gerät nach IEC 65, Klasse II. Als zusätzliche Sicherheit wird der Endleiter eingeführt. Der Trafoblock 1.910.50X ist im Mischpult isoliert eingebaut, so dass die Verbindung zwischen Schutzleiter und Mischpultgehäuse gefahrlos aufgetrennt werden kann.



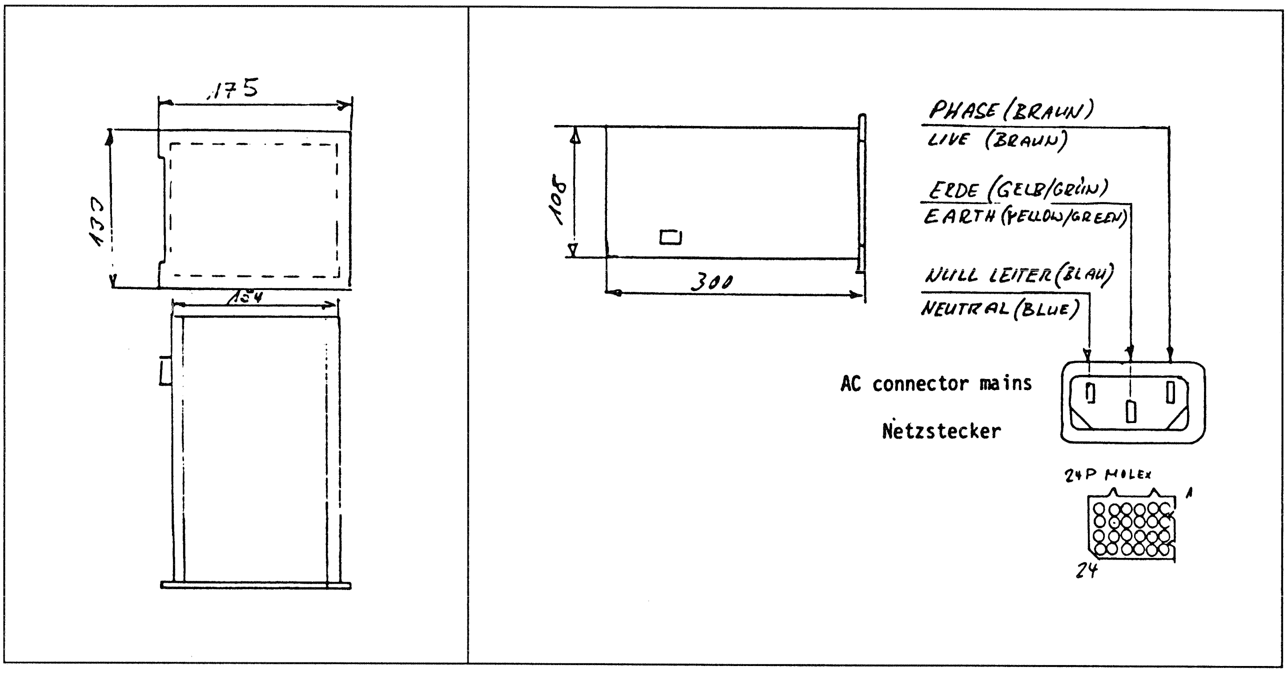
3. Spezielle Daten

Siehe unter spezielle Datenblätter	1.910.500 1.910.505

4. Mechanische Daten

Sekundär Buchse: 24P Molex

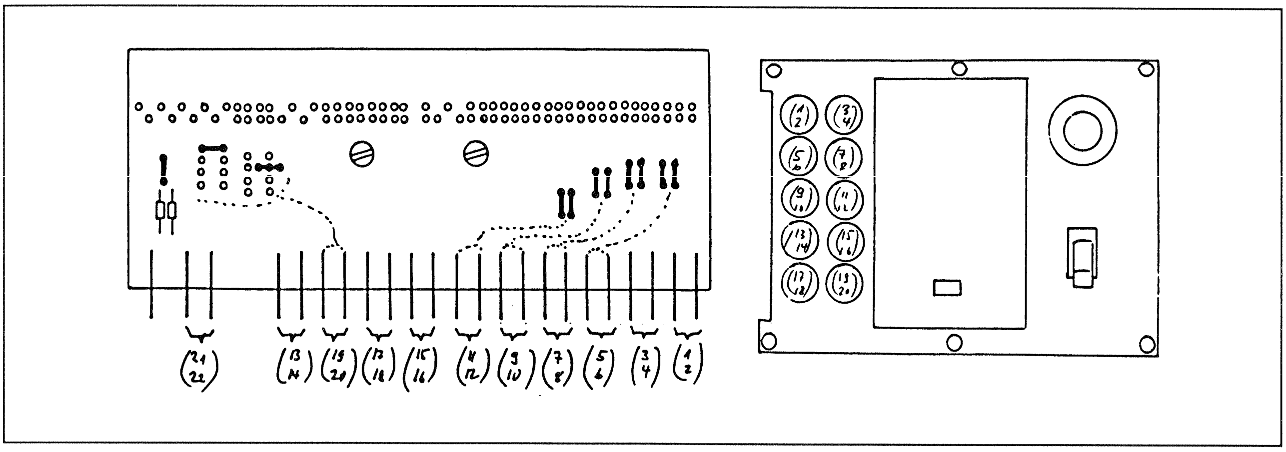
Gewicht: 9400 gr



175
132
154
108
300
PHASE (BRAUN)
LIVE (BRAUN)
ERDE (GELB/GRÜN)
EARTH (YELLOW/GREEN)
NULL LEITER (BLAU)
NEUTRAL (BLUE)
AC connector mains
Netzstecker
24P MOLEX
24

Trafoblock

1.910.50X



Trafoblock

TRAFO BLOCK

Grenzwerte:	Anschluss	Einzel Stabikarte max. Strom	Einzel Stabikarte Sicherung
6V Wicklung	(13) (14)	4A	T 5A
12V Wicklung	(19) (20)	2,4A	T 5A
24V Wicklung	(19) (20)	1,2A	T 5A
48V Wicklung	(19) (20)	0,6A	T 2A
15V Wicklung		2,1A	T 5A
24V Wicklung		1,2A	T 5A
40V Wicklung		1,2A	T 2A

TRAFO BLOCK

Limiting values	Terminal	SINGLE STABI PC max. current	SINGLE STABI PC FUSE
6V winding	(13) (14)	4A	T 5A
12V winding	(19) (20)	2,4A	T 5A
24V winding	(19) (20)	1,2A	T 5A
48V winding	(19) (20)	0,6A	T 2A
15V winding		2,1A	T 5A
24V winding		1,2A	T 5A
40V winding		1,2A	T 2A

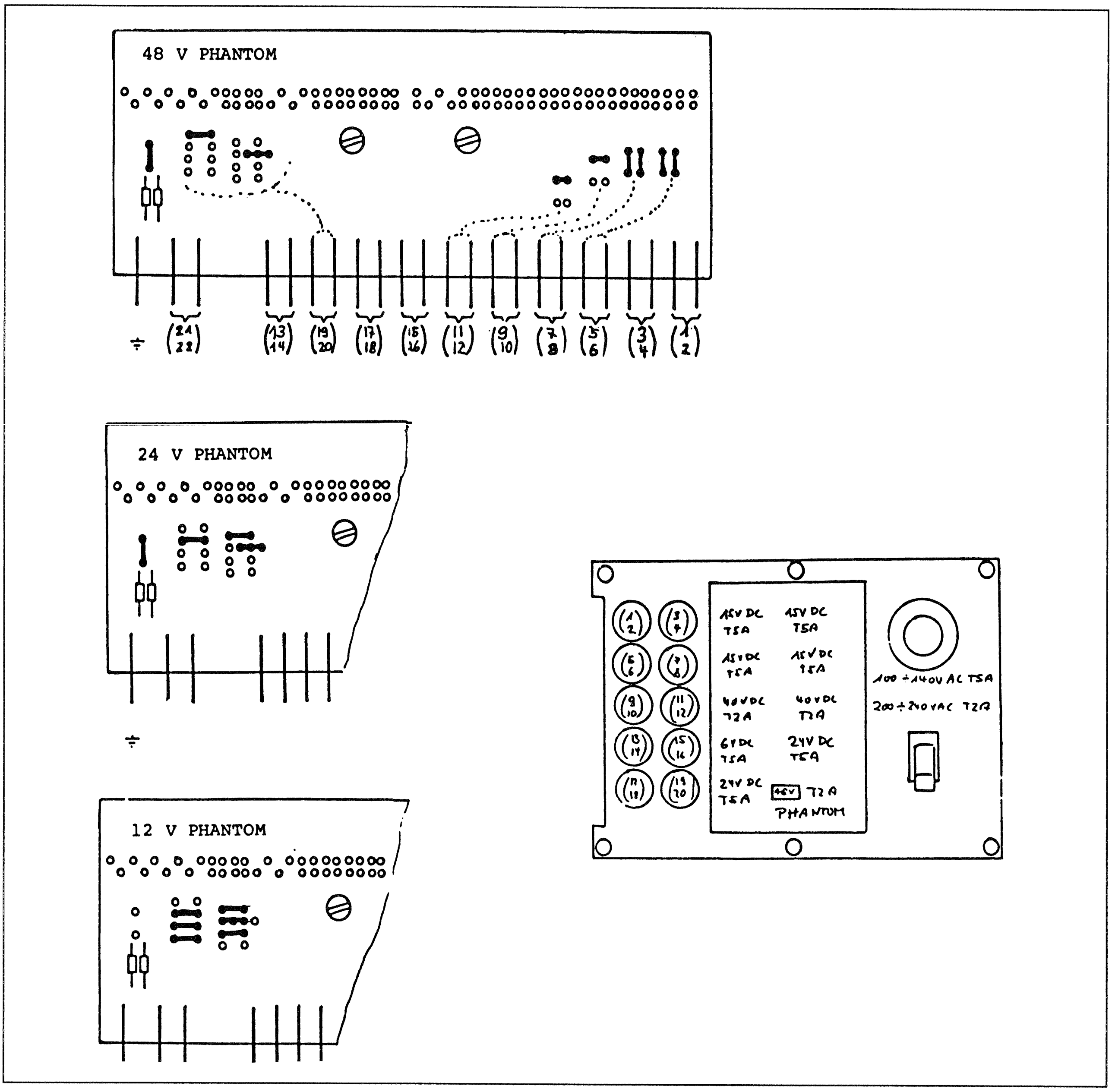
Grenzwerte:	Anschluss	Doppel Stabikarte max. Strom	Doppel Stabikarte Sicherung
6V Wicklung	(13) (14)	8A	2 x T 5A
12V Wicklung	(19) (20)	5A	2 x T 4A
24V Wicklung	(19) (20)		
48V Wicklung	(19) (20)		
15V Wicklung		4-5 A	2 x T 4A
24V Wicklung		2,5 A	
40V Wicklung		-	-

Limiting values	Terminal	DUAL STABI PC max. current	DUAL STABI PC FUSE	parallel schalten / parallel connection
6V winding	(13) (14)	8A	2 x T 5A	
12V winding	(19) (20)	5A	2 x T 4A	
24V winding	(19) (20)			
48V winding	(19) (20)			
15V winding		4-5A	2 x T 4A	$(\frac{1}{2})(\frac{3}{4})/(\frac{5}{6})(\frac{7}{8})/(\frac{9}{10})(\frac{11}{12})$
24V winding		2,5A		
40V winding		-	-	

- Die maximale Belastung darf auf der gleichgerichteten Seite 350W nicht überschreiten.

Trafoblock **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

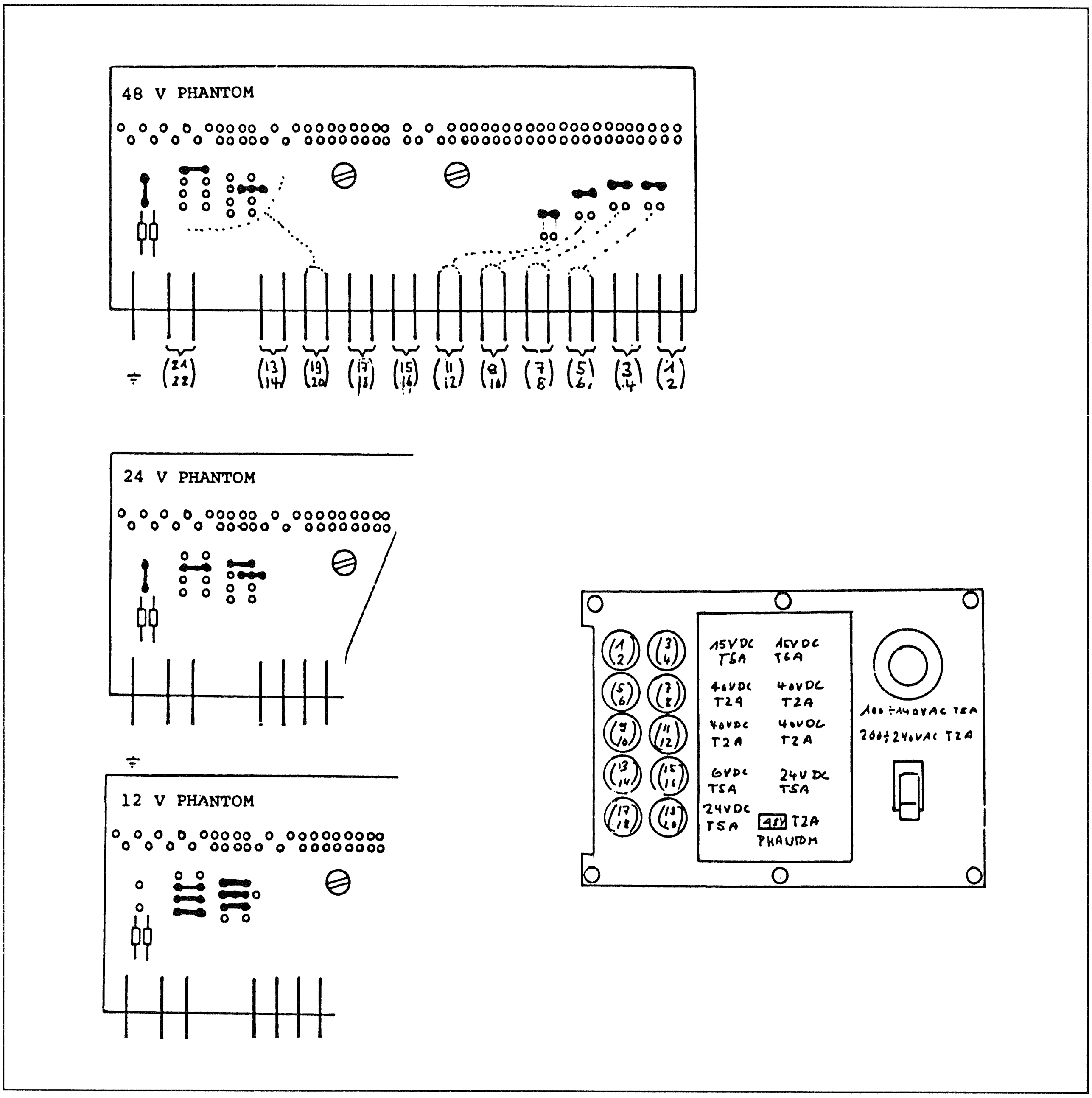


Umbau auf andere Phantomspannungen

- 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

Trafoblock **1.910.505.81**

1.910.505.81	1 x 6 V DC 4 x 15 V DC 2 x 40 V DC	2 x 24 V DC 1 x 48 V DC PHANTOM



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**

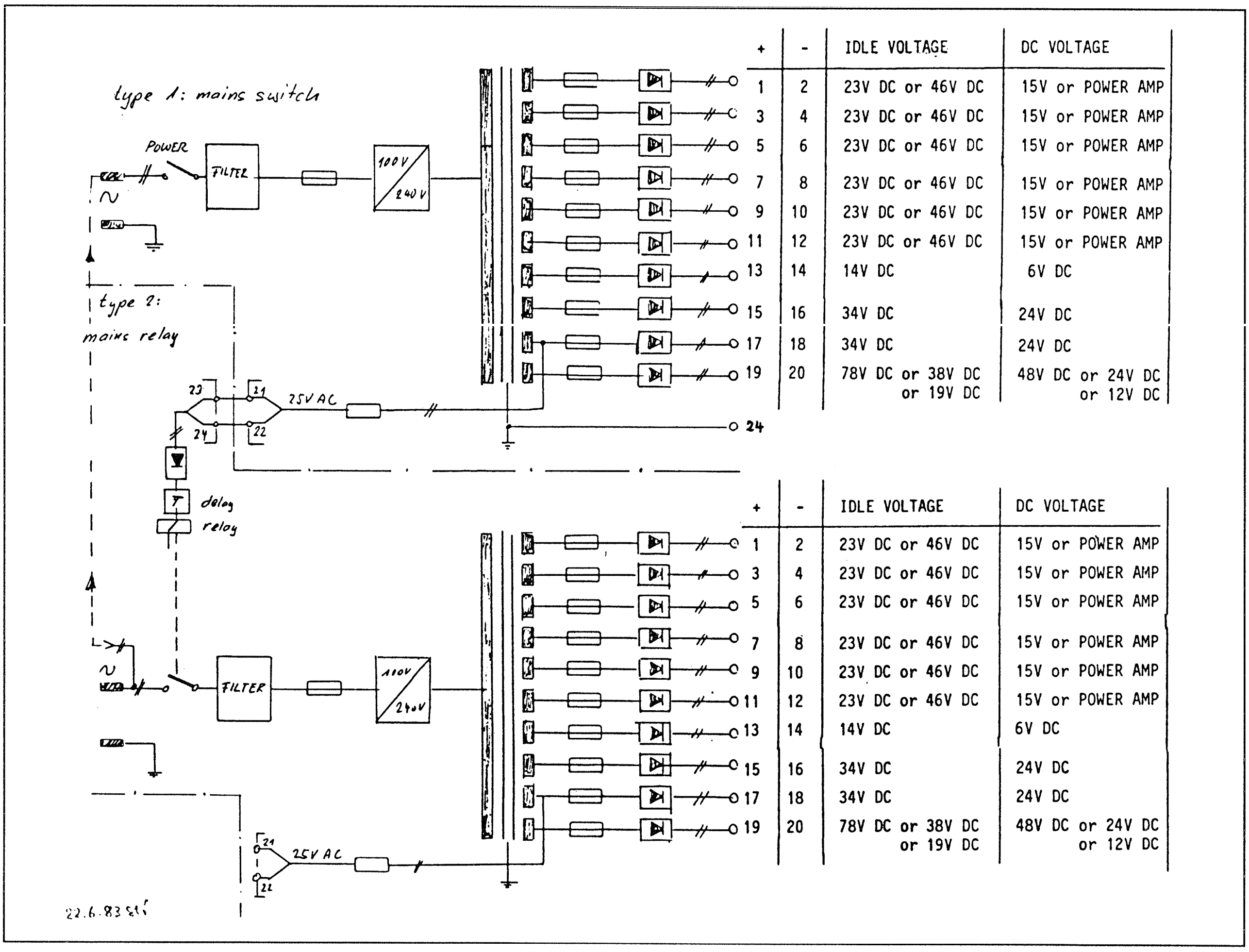
Trafo with rectifier. Two basic types are available:

- with mains switch
- with mains relay

1. Features

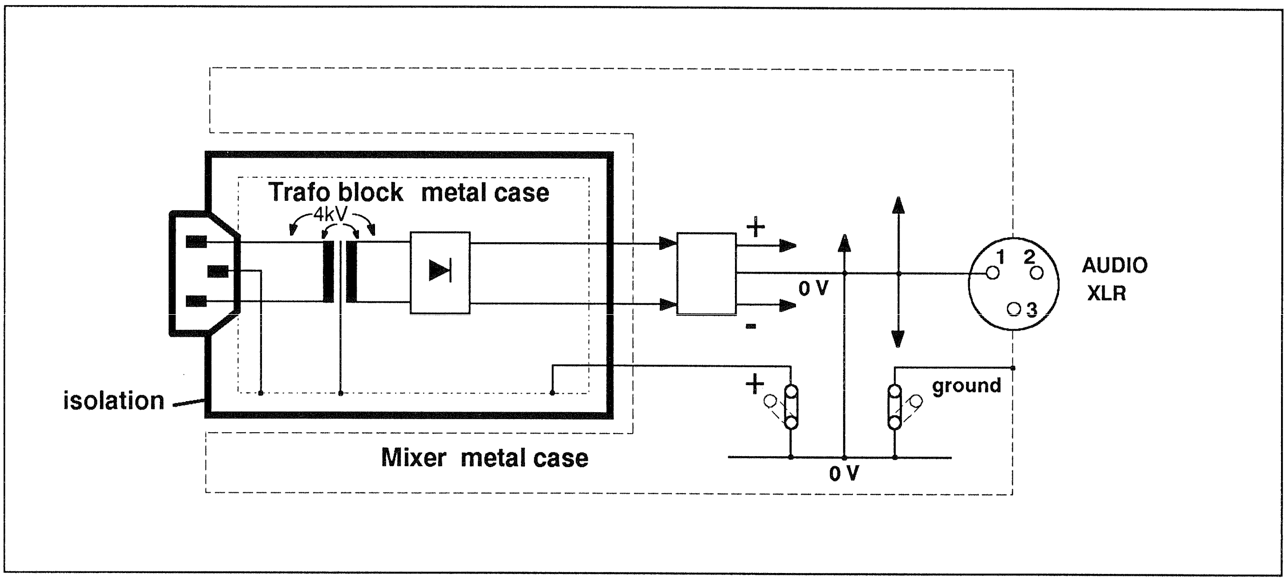
- Output voltages are programmable.
- Rectifiers are heavely oversized.
- Secondary wirings are isolated by 4 kV against the primary side.
- The trafo-block is separately boxed and fixture by means of isulators.
- All voltages are protected by fuses individually.

Block Diagram



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.



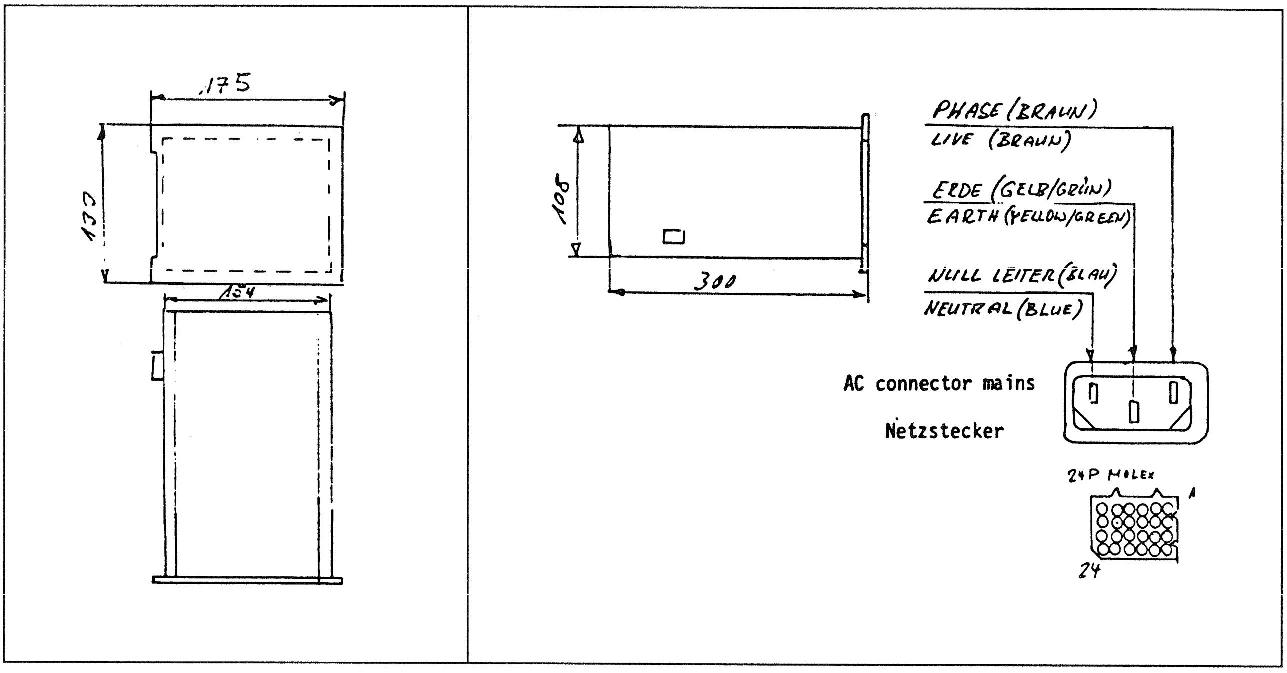
3. Specifications

See special data sheet 1.910.500
1.910.505

4. Dimensions

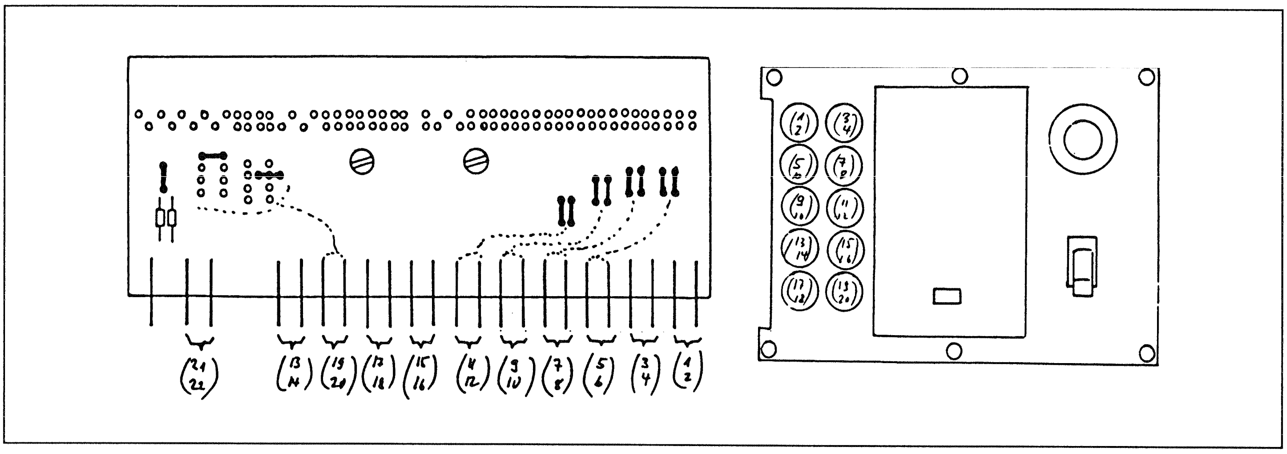
Secondary connector: 24P Molex

Weight: 9400 gr


175
133
154
108
300
PHASE (BRAUN)
LIVE (BRAUN)
ERDE (GELB/GRÜN)
EARTH (YELLOW/GREEN)
NULL LEITER (BLAU)
NEUTRAL (BLUE)
AC connector mains
Netzstecker
24P MOLEX
1
24

Trafo Block

1.910.50X



Trafo Block

TRAFO BLOCK

Grenzwerte:	Einzel Stabikarte max. Strom	Sicherung
6V Wicklung (13)(14)	4A	T 5A
12V Wicklung (19)(20)	2,4A	T 5A
24V Wicklung (19)(20)	1,2A	T 5A
48V Wicklung (19)(20)	0,6A	T 2A
15V Wicklung	2,1A	T 5A
24V Wicklung	1,2A	T 5A
40V Wicklung	1,2A	T 2A

TRAFO BLOCK

Limiting values	SINGLE STABI PC max. current	FUSE
6V winding (13)(14)	4A	T 5A
12V winding (19)(20)	2,4A	T 5A
24V winding (19)(20)	1,2A	T 5A
48V winding (19)(20)	0,6A	T 2A
15V winding	2,1A	T 5A
24V winding	1,2A	T 5A
40V winding	1,2A	T 2A

Grenzwerte:	Doppel Stabikarte max. Strom	Sicherung
6V Wicklung (13)(14)	8A	2 x T 5A
12V Wicklung (19)(20)	5A	2 x T 4A
24V Wicklung (19)(20)		
48V Wicklung (19)(20)		
15V Wicklung	4-5 A	2 x T 4A
24V Wicklung	2,5 A	
40V Wicklung	-	-

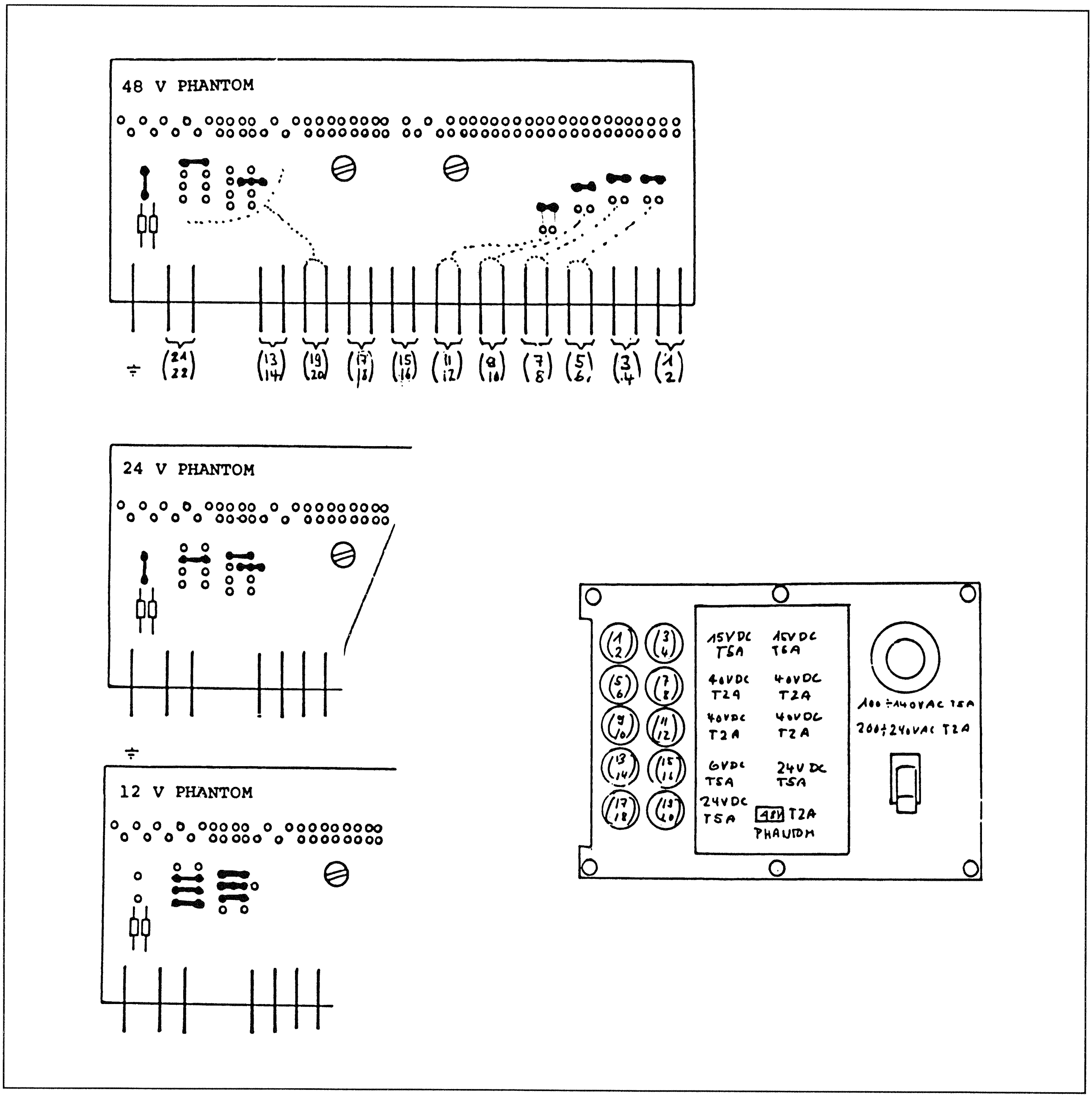
Limiting values	DUAL STABI PC max. current	FUSE	parallel schalten parallel connection
6V winding (13)(14)	8A	2 x T 5A	
12V winding (19)(20)	5A	2 x T 4A	
24V winding (19)(20)			
48V winding (19)(20)			
15V winding	4-5A	2 x T 4A	$(\frac{1}{2})(\frac{3}{4})/(\frac{5}{6})(\frac{7}{8})/(\frac{9}{10})(\frac{11}{12})$
24V winding	2,5A		
40V winding	-	-	

- 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

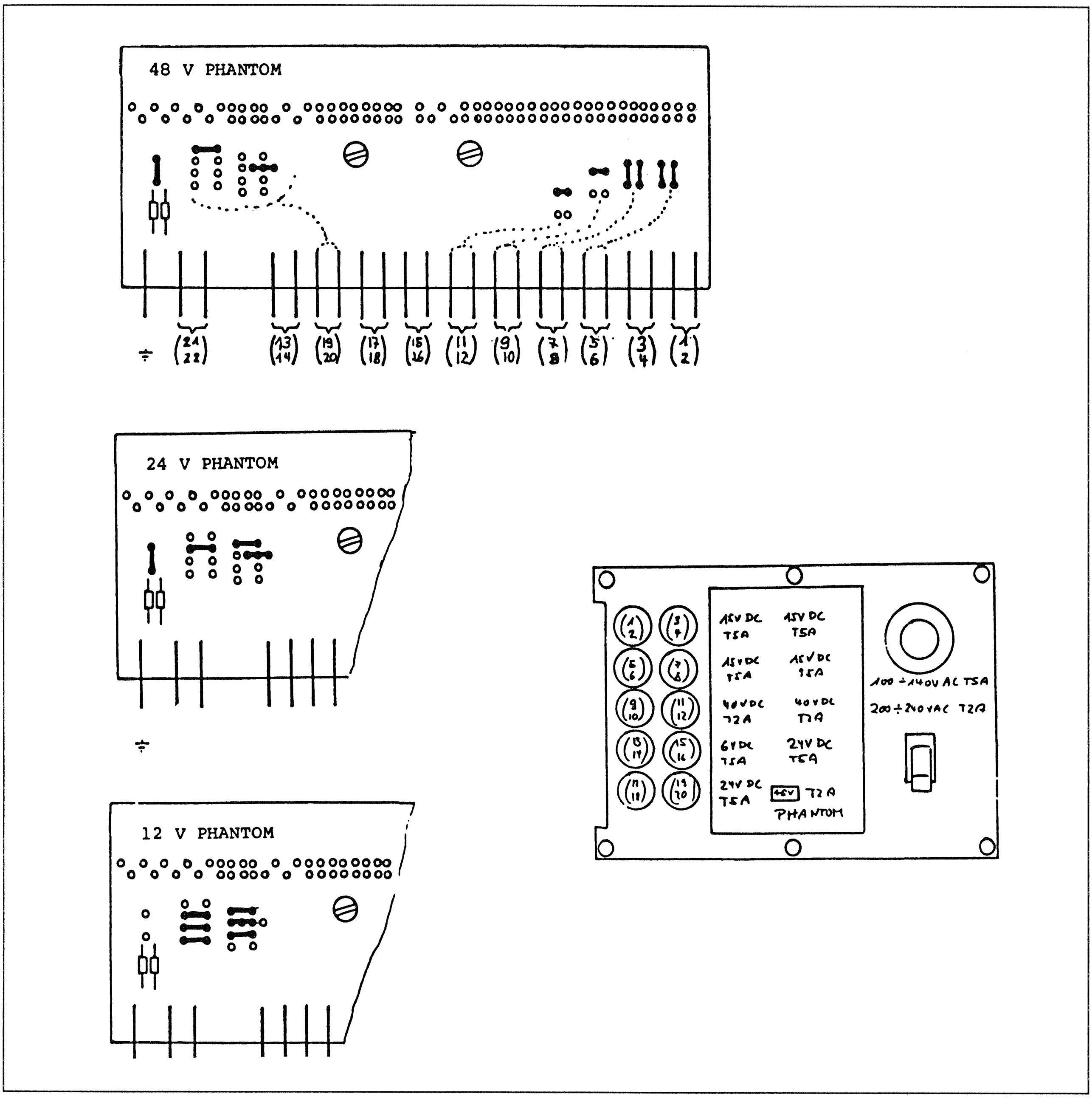


Conversion of phantom powering

- 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

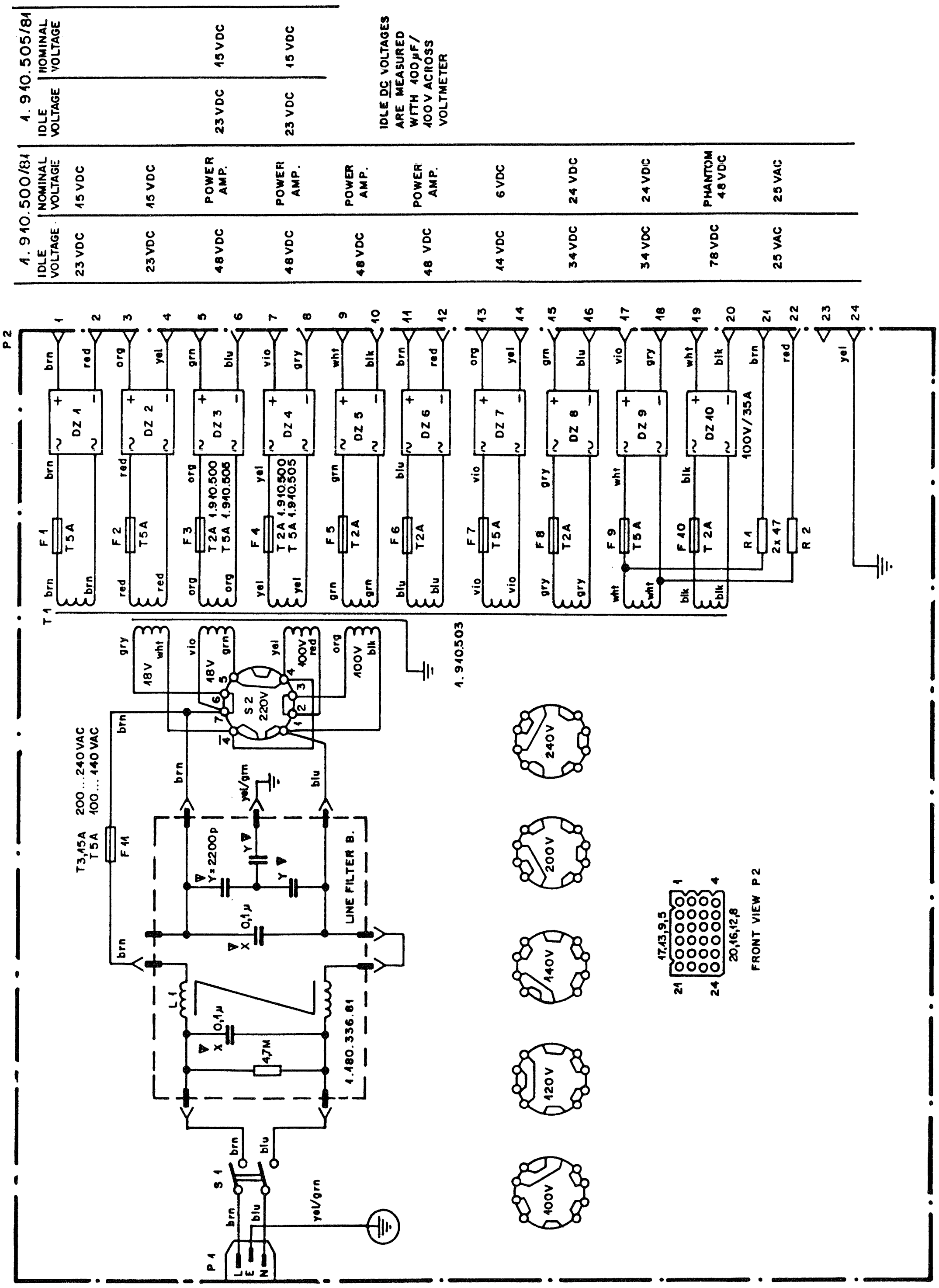
1.910.505.81	1 x 6 V DC	2 x 24 V DC
	4 x 15 V DC	
	2 x 40 V DC	1 x 48 V DC PHANTOM



Conversion of phantom powering

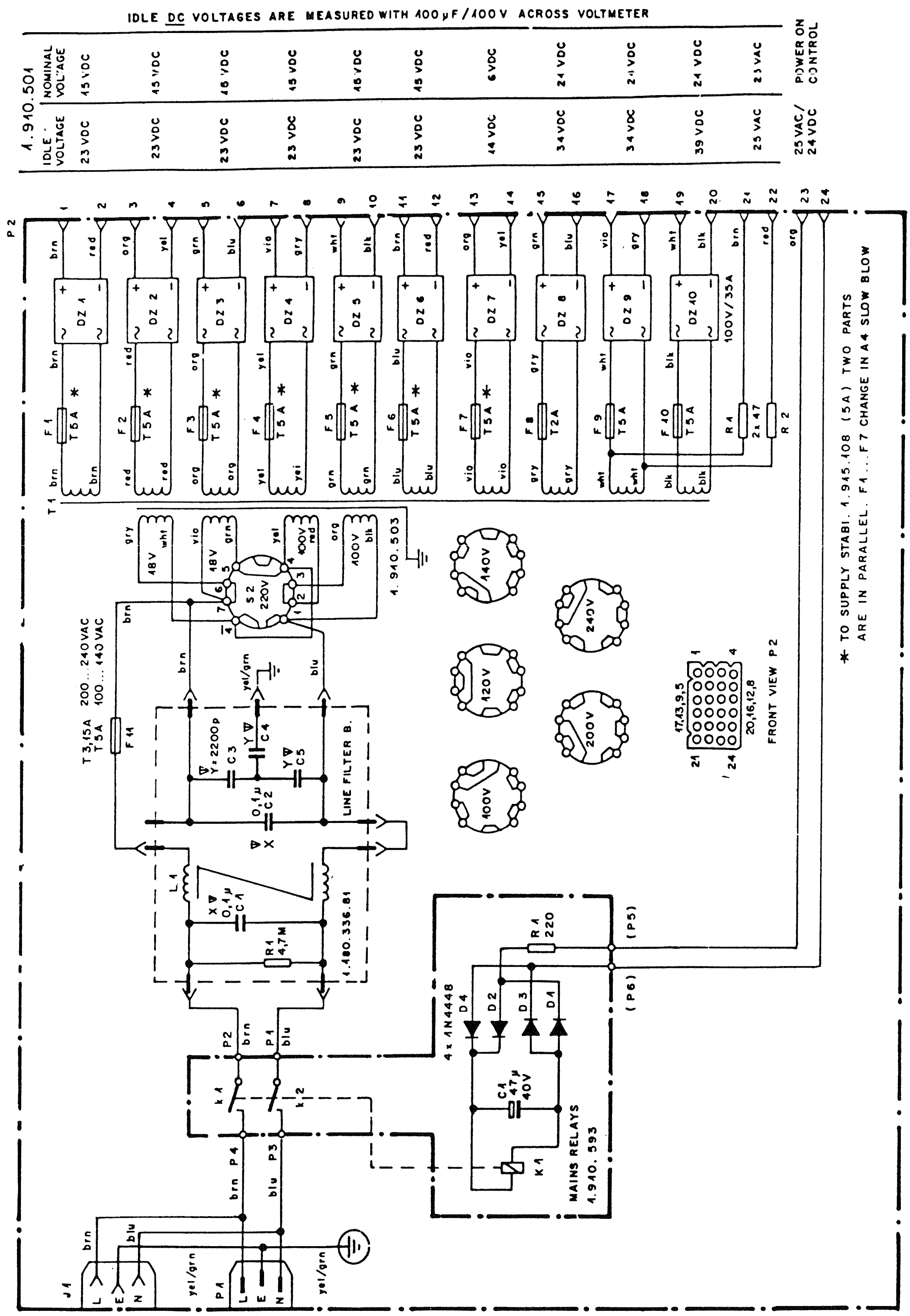
- Convert trafo-block
- Change resistor on the connection PCB of the input unit
  48V 6,8 kOhm/0,4 % 1.169.200.21
  24V 4,3 kOhm/0,4 % Draft IEC 268-15A
  12V 580 Ohm/0,4 % 1.169.200.20
- Reconnect the stranded wire on the stabilizer PCB 1.915.107

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:	fri	Me	wh	ml		
STUDER REGENSDORF ZÜRICH	MAINS – TRANSFORMER – BLOCK					SC 1.910.500/81 SC 1.910.505/81

Mains–Transformer–Block Remote **1.910.501**



DATE:	30. 5. 83	19.8.83	2.3.84	6.8.84	3.6.85	
SIGN:	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
STUDER REGENSDORF ZURICH	MAINS - TRANSFORMER - BLOCK REMOTE					SC 1.910.501

Stabilisator 5 ... 24 V 1.915.106/108

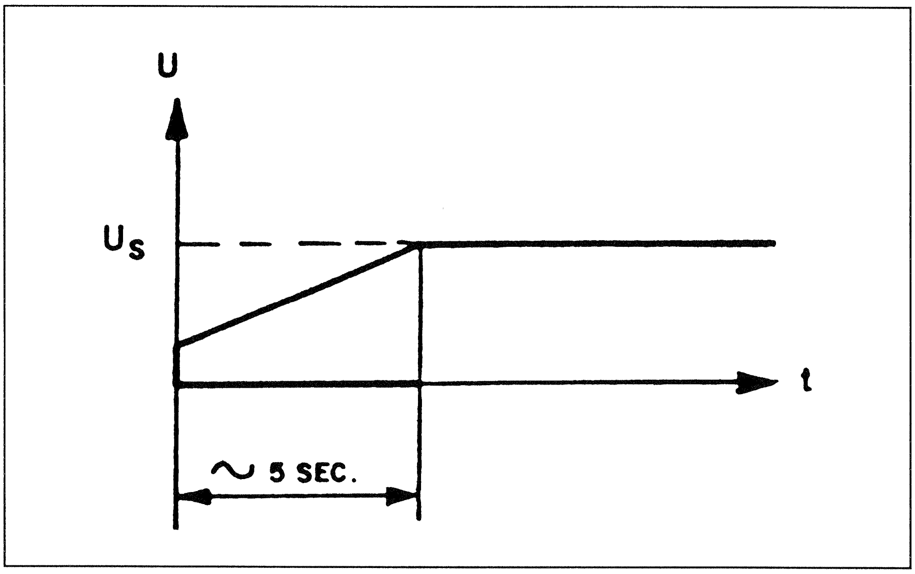
Spannungsstabilisator dessen Ausgangsspannung und Kurzschlusstrom mit Widerständen extern einstellbar ist. Mit Ausnahme der Phantom Stromversorgung werden alle in den Mischpulten der Serie 900 benötigten Betriebsspannungen mit den beiden Kartentypen 1.915.106 und 1.915.108 stabilisiert.

Leuchtdiode zur Anzeige des Betriebszustandes.

Drei von vorne zugängliche Messpunkte zur Kontrolle der Referenz- und Ausgangsspannung.

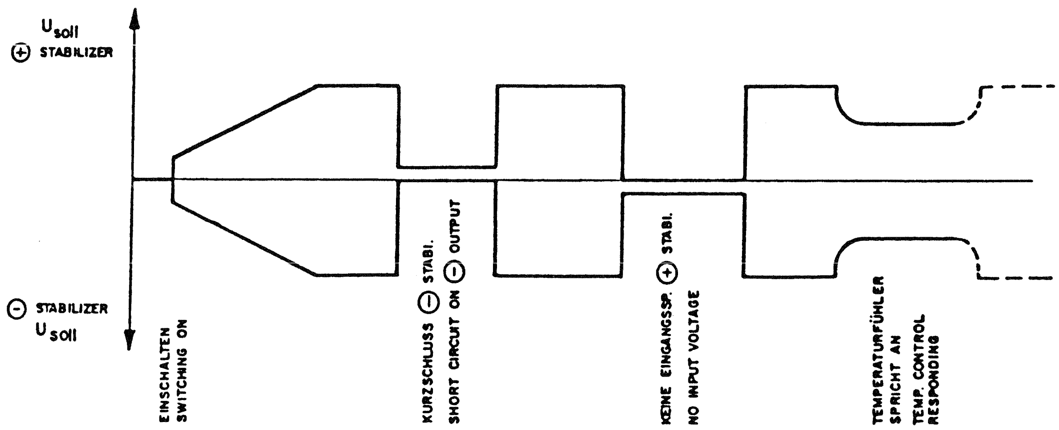
1. Schutzeinrichtungen

- "Crow Bar" schaltet ab bei zu hoher Ausgangsspannung
- Temperaturüberwachung am Regeltransistor
- Verpolungsschutz am Ausgang
- Langsames Hochfahren der Spannung beim Einschalten

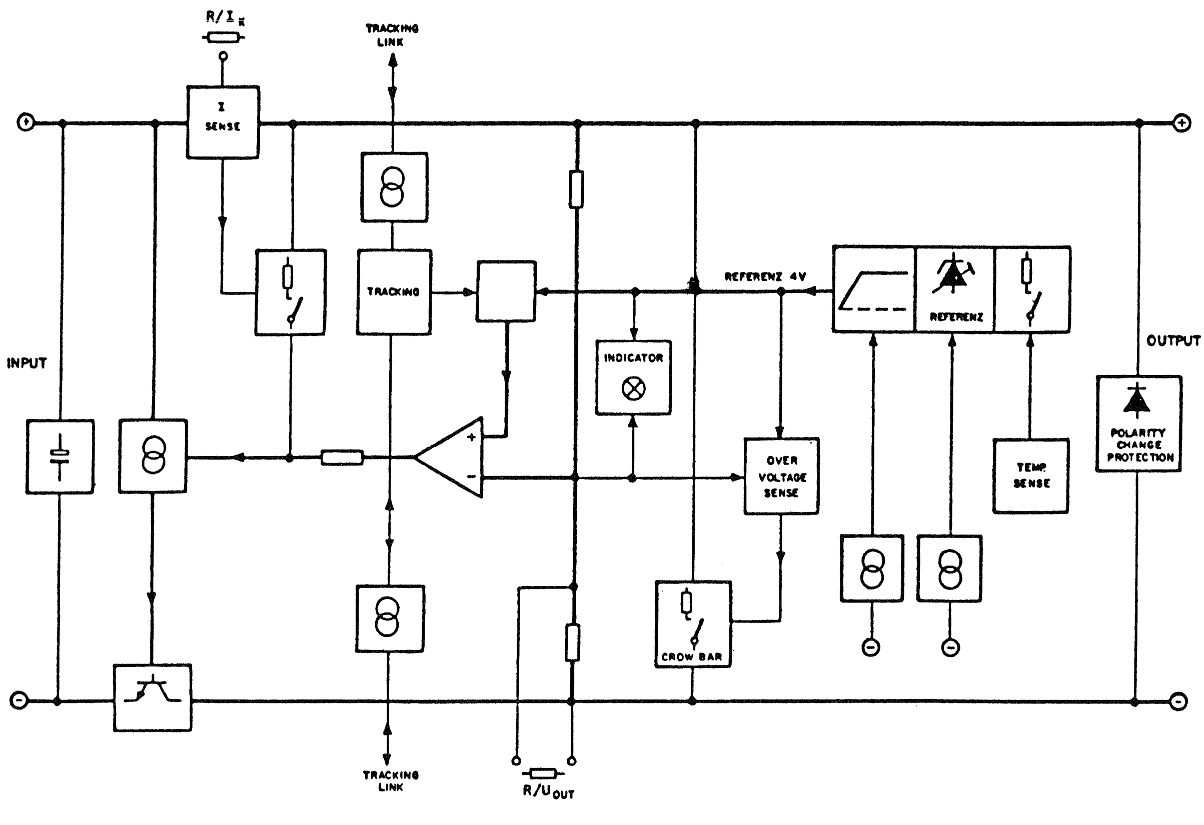


Beim Betrieb als Doppelstabilisator für die Stromversorgung von Verstärkern mit positiver und negativer Speisespannung werden zwei Stabilisatorkarten gekoppelt.

Die Ausgangsspannung des einen Stabilisators steuert die Ausgangsspannung des anderen (Tracking). Damit werden die Koppelkondensatoren der angeschlossenen Audioverstärker nicht unnötig belastet.



Blockschaltbild

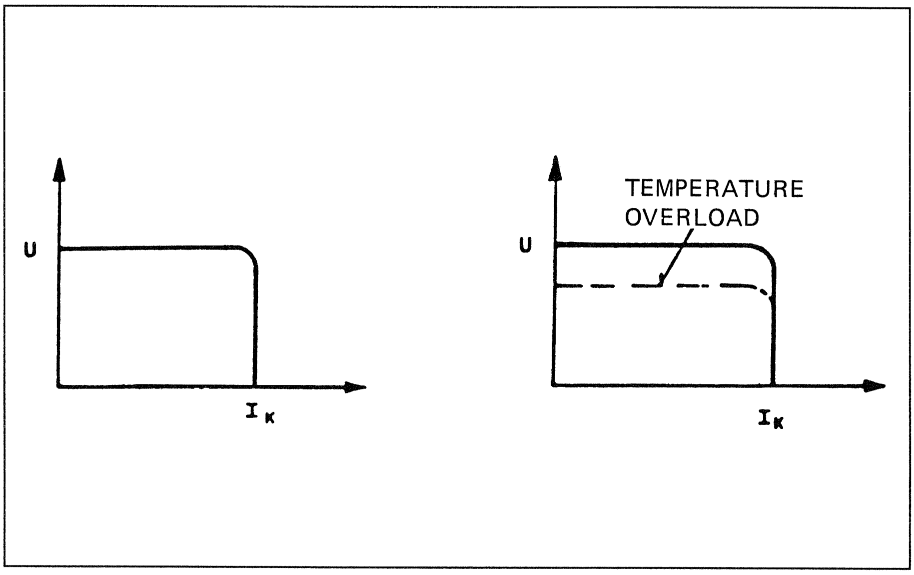


2. Technische Daten

	1.915.106	1.915.108
Ausgangsspannung extern programmierbar	U = 5÷24V	U = 5÷24V
Minimale Eingangs-spannung (ohne Rippel)	U_{min}=U+1,5V	U_{min}=U+1,5V
Maximale Eingangs-spannung	U_{max}=36V	U_{max}=36V
Kurzschlusstrom extern programmierbar	I_k≈ 0,5...4,5A	I_k≈ 0,5...8,0A
Max. Verlustleistung am Kühlblech	P ≈ 18 W	P ≈ 30 W

Kurzschlussverhalten

Bei Überlast regelt der Temperatursensor die Ausgangsspannung zurück.



Überspannungsschutz spricht an bei ca. 15% Überspannung am Ausgang

Max. Ausgangsstrom	@U_{15V}:5A @U_{6V}:8A	@U_{15V}:5A @U_{6V}:8A
Überlagerte Brumm-spannung	U_{Br} ≤ 100μV	U_{Br} ≤ 100μV
Leerlaufstrom	I_o(@U_{in}30V)=30mA	I_o(@U_{in}30V)=30mA

3. Mechanische Daten 1.915.106 1.915.108

	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 1.915.106/108

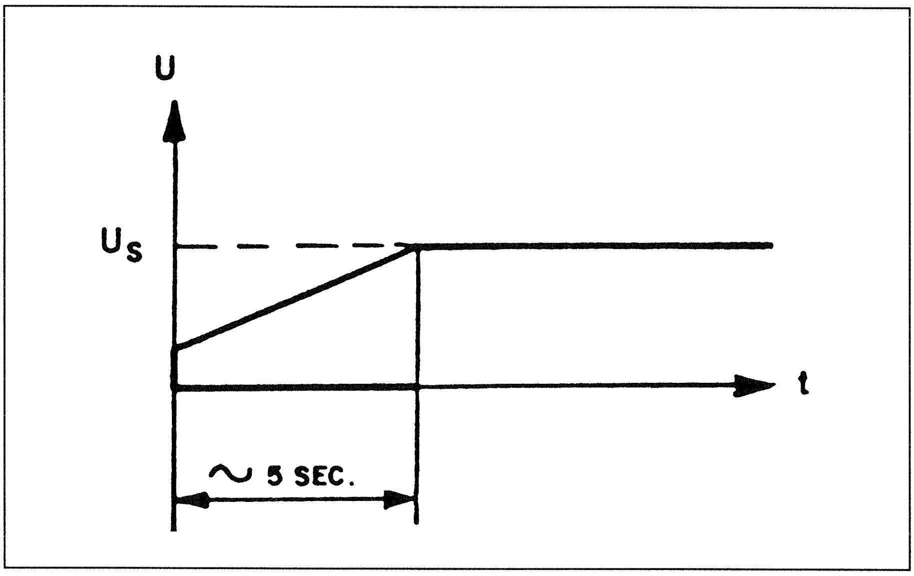
The output voltage and the short-circuit current of this voltage stabilizer are externally adjustable with resistors. Except for the phantom supply, all operating voltages of the Series 900 mixers are stabilized with the two types of circuit board numbered as 1.915.106 and 1.915.108.

Pilot LED for indicating the operating status.

Three test points for checking the reference voltage and the output voltage are accessible from the front.

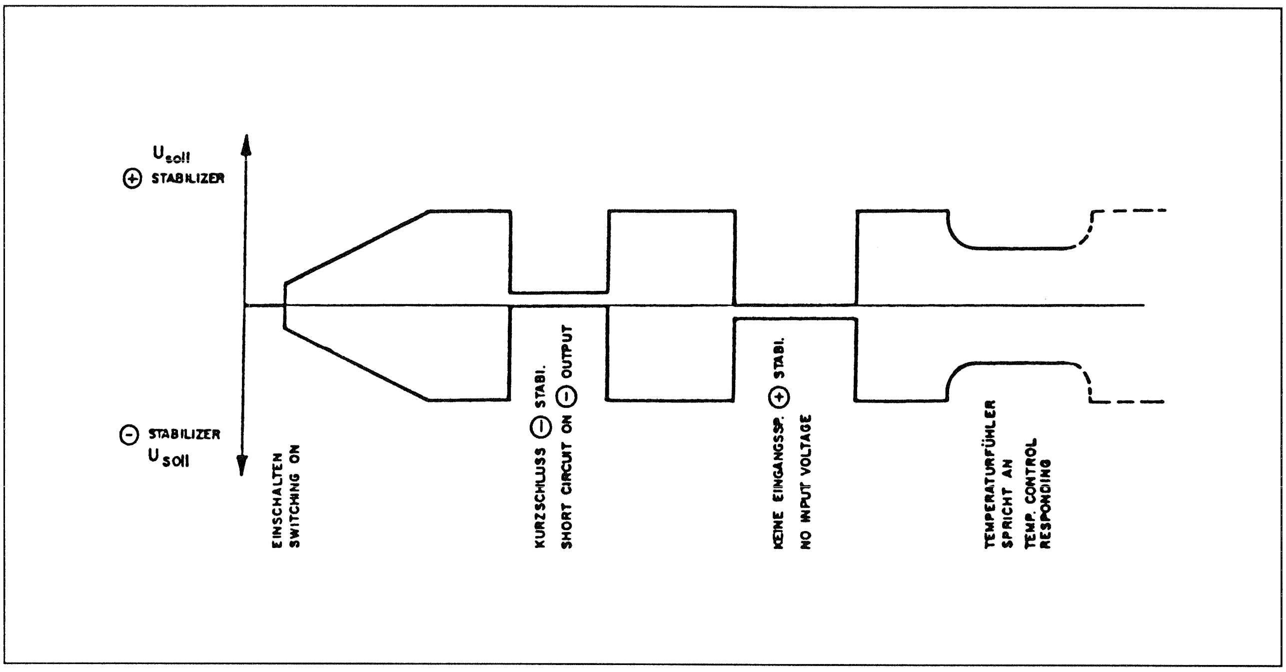
1. Protective features

- "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

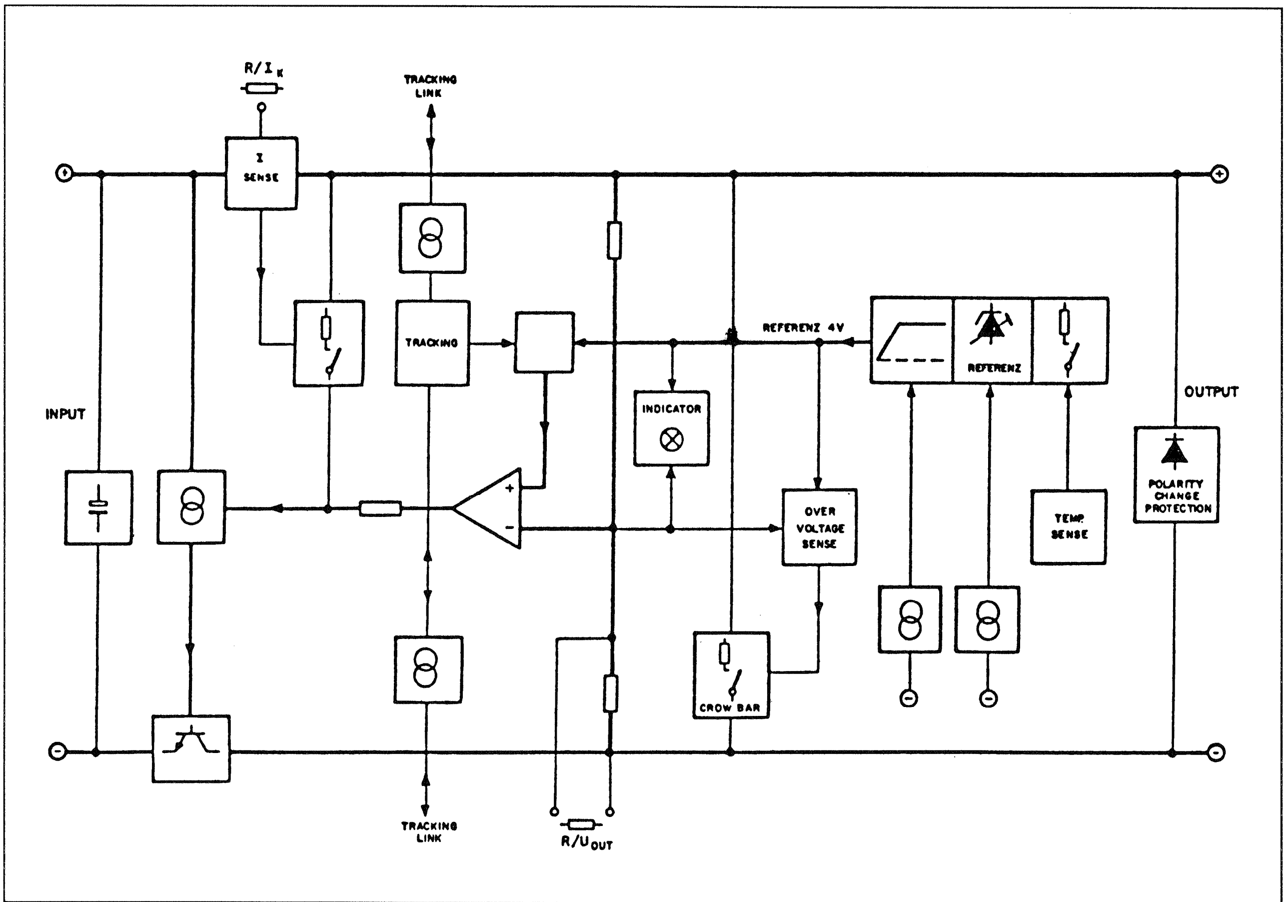


Dual stabilizer operation for supplying amplifiers with negative and positive supply voltages is possible by coupling two stabilizer boards.

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.



Block Diagram

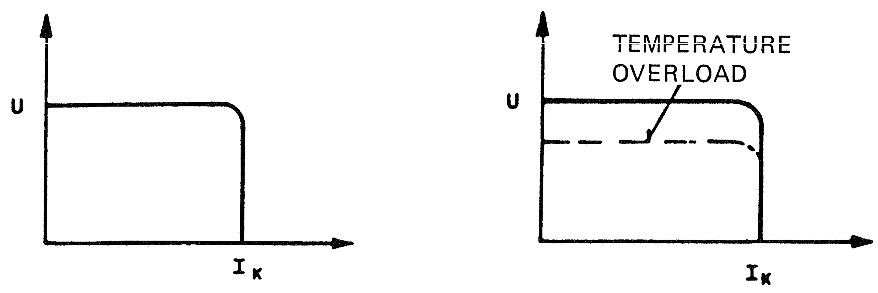


2. Specifications

	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≈0,5...4,5A	I_k≈0,5...8,0A
Max. power dissipation at heat sink	P ≈ 18W	P ≈ 30W

Short circuit response:

In the event of an overload the output voltage is regulated down by the temperature sensor.



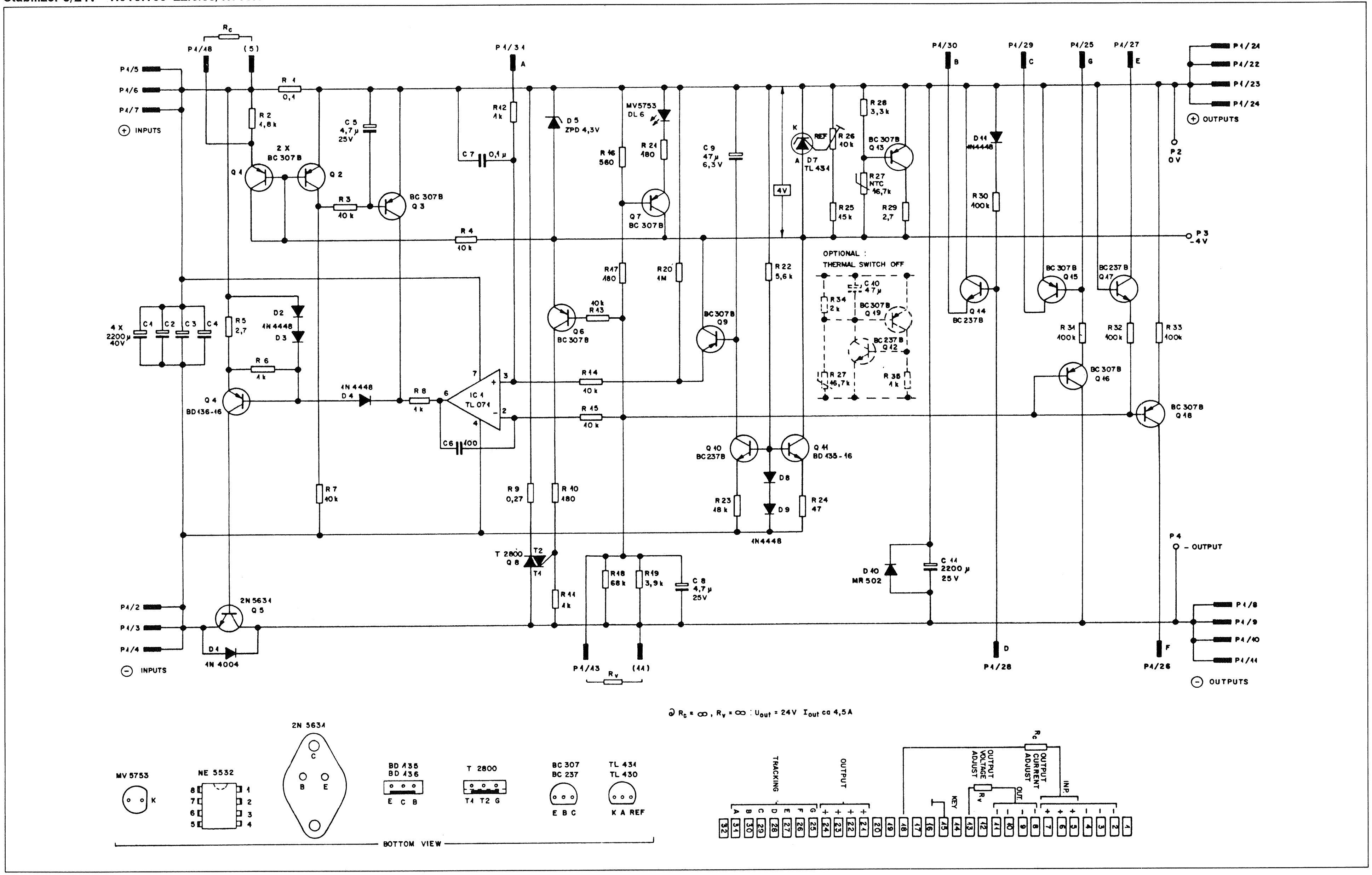
Over-voltage sense responds at approx. 15% excess output voltage

Maximum output current	@U_{15V}: 5A @U_{6V}: 8A	@U_{15V}: 5A @U_{6V}: 8A
Superimposed ripple voltage	U_{Br} ≤ 100μV	U_{Br} ≤ 100μV
Idle current	I_o(@U_{in}30V)=30mA	I_o(@U_{in}30V)=30mA

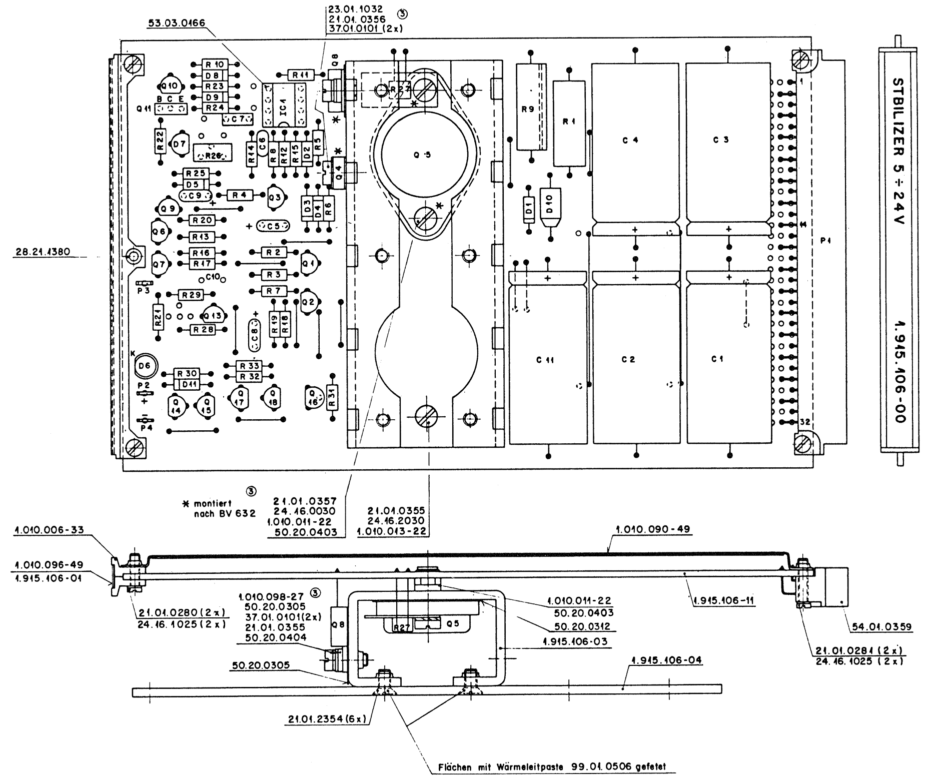
3. Mechanical Data

	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	ca. 360 gr	ca. 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	59.25.5222	2200 µF	40V EL	
	C 2	59.25.5222	2200 µF	40V EL	
	C 3	59.25.5222	2200 µF	40V EL	
	C 4	59.25.6222	2200 µF	40V EL	
	C 5	59.26.5479	4,7 µF	25 V SAL	
①	C 6	59.34.4101	100 pF	CER	
	C 7	59.06.0104	0,1 µF	PE	
	C 8	59.26.5479	4,7 µF	25V SAL	
	C 9	59.26.0470	47 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	50.04.1120	ZPD 4,3V	5%	
	DL 6	50.04.2111	MV 5753	LED CM4-284 B	MS/CM
	D 7	50.10.0106	TL 430	µA 430 CLP IC	TI/F
	D 8	50.04.0125	1N4448		
	D 9	50.04.0125	1N4448		
	D 10	50.04.0507	MR502	3A/30V	
	D 11	50.04.0125	1N4448		
	IC 1	50.09.0103	TL 071	LF351 SINGLE FET OPA	TI/N

IND	DATE	NAME		
④			EL - Electrolytic	MS - Mousanto
③			SAL - Solid Aluminium	CM - Chicago Miniatur
②			PE - Polyester	TI - Texas Instruments
①	22.6.83	Vr	CER - CERAMIC	N - National
○	22.7.81	Frigo		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	PNP General purpose 0,1A/Uceo ≥ 40V	any
	Q 2	50.03.0515	BC307B	PNP	
	Q 3	50.03.0515	BC307B	PNP	
	Q 4	50.03.0510	BD 136-16	PNP min 1A/40V	M,R,S,T
	Q 5	50.03.0342	2N5631	NPN min 10A/min 60V 200W	M
	Q 6	50.03.0515	BC307B	PNP	
	Q 7	50.03.0515	BC307B	PNP	
	Q 8	50.99.0106	T 2800	TRIAC 8A SC146 D	R/GE
	Q 9	50.03.0515	BC307B	PNP	
	Q 10	50.03.0436	BC 237 B	NPN General purpose 0,1A/Uceo ≥ 40V	any
	Q 11	50.03.0495	BD135-16	NPN P min 2W	M,R,S,T
	Q 12				
	Q 13	50.03.0515	BC 307B	PNP	
	Q 14	50.03.0436	BC 237B	NPN	
	Q 15	50.03.0515	BC 307B	PNP	
	Q 16	50.03.0515	BC 307 B	PNP	
	Q 17	50.03.0436	BC 237B	NPN	
	Q 18	50.03.0515	BC 307B	PNP	
	R 1	57.56.5108	0,1 Ω	4W	
	R 2	57.11.4182	1,8 k	2%	
	R 3	57.11.4103	10 k		
	R 4	57.11.4103	10 k		
	R 5	57.11.4279	2,7 Ω		
	R 6	57.11.4102	1 k		
	R 7	57.11.4103	10 k		
	R 8	57.11.4102	1 k		
	R 9	57.56.5278	0,27 Ω	4W	

IND	DATE	NAME	
④			M - Motorola
③			R - RCA
②			S - Siemens
①	22.6.83	Vr	T - Telefunken
○	22.7.81	Frigo	GE - General Electric
STUDER	Stabilizer 5 ÷ 24V	1.915.106.00	PAGE 2 OF 3

IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	R 10	57.11.4181	180 Ω		
	R 11	57.11.4102	1 k		
	R 12	57.11.4102	1 k		
	R 13	57.11.4103	10 k		
	R 14	57.11.4103	10 k		
	R 15	57.11.4103	10 k		
	R 16	57.11.4561	560 Ω	2%	
	R 17	57.11.4181	180 Ω	2%	
	R 18	57.11.4683	68 k	2%	
	R 19	57.11.4392	3,9k	2%	
	R 20	57.11.4105	1M		
	R 21	57.11.4181	180 Ω		
	R 22	57.11.4562	5,6k		
	R 23	57.11.4183	18 k		
	R 24	57.11.4470	47 Ω		
	R 25	57.11.4153	15 k		
	R 26	58.01.7103	10 k	LIN 10% CERMET	
	R 27	57.99.0208	16,7k	∂100°C NTC 2322 640 98005	PH
	R 28	57.11.4332	3,3 k		
	R 29	57.11.4279	2,7 Ω		
	R 30	57.11.4104	100 k		
	R 31	57.11.4104	100 k		
	R 32	57.11.4104	100k		
	R 33	57.11.4104	100k		
	Modification List				
①	C 6	330 pF → 100 pF		HF - Problems	

IND	DATE	NAME	
④			PH - Philips
③			
②			
①	22.6.83	Vr	
○	22.7.81	Frigo	
STUDER	Stabilizer 5 ÷ 24V	1.915.106.00	PAGE 3 OF 3

EDITION: 23. Oktober 1990

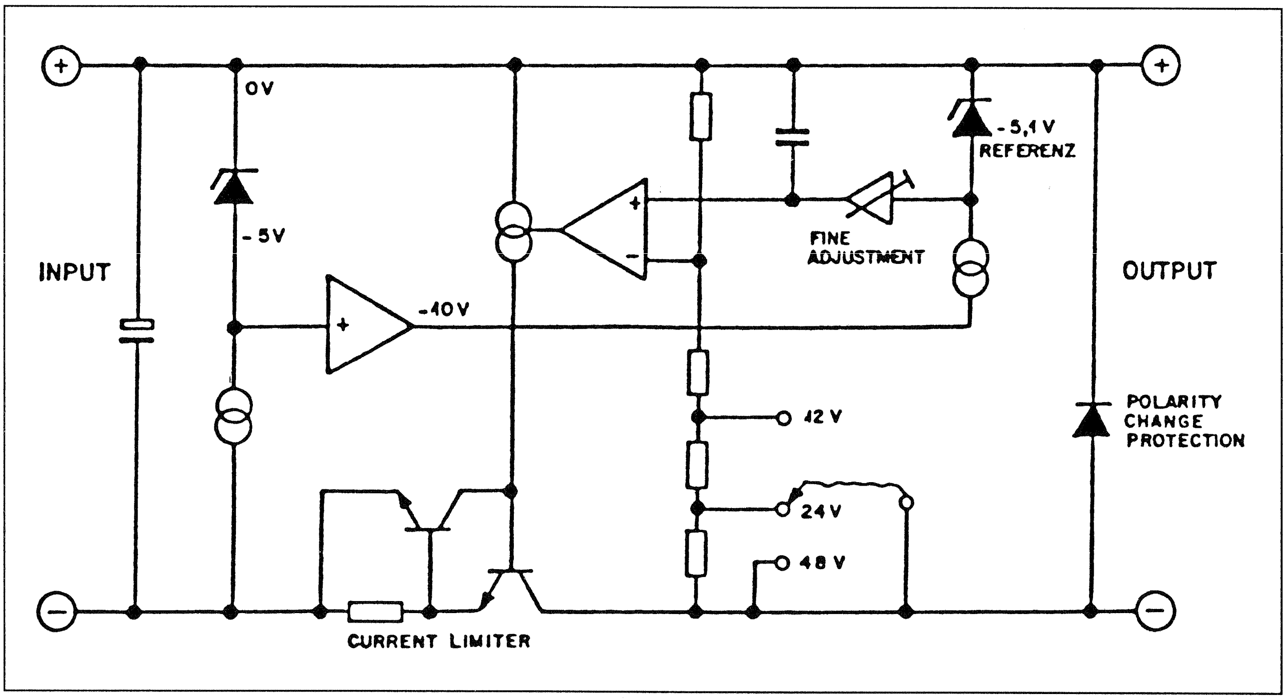
Phantom / 24 V Stabilisator 1.915.107

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).

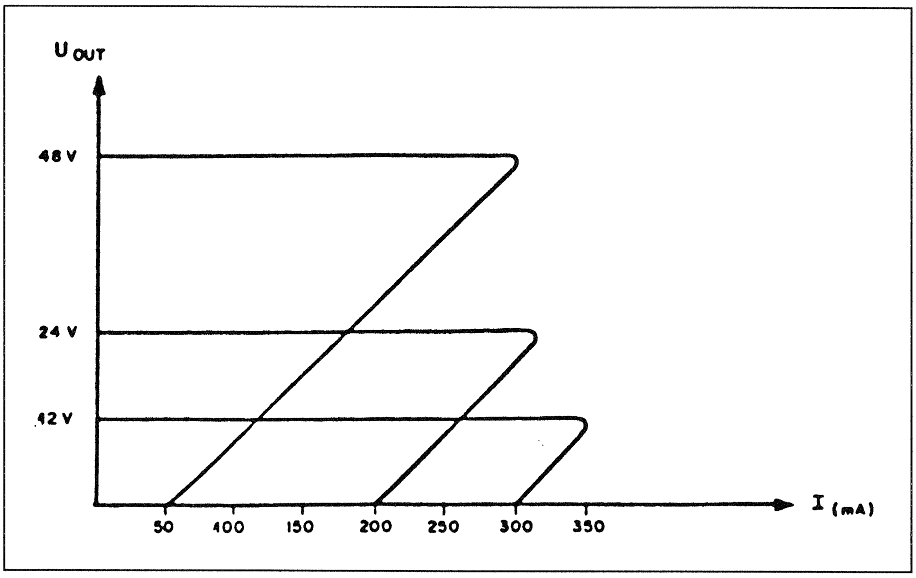
Blockschaltbild



2. Technische Daten

Ausgangsspannung einstellbar	U=12V, 24V, 48V
Minimale Eingangs-spannung für 12V	Umin=13V
Max. Eingangsspannung	Umax=100V
Kurzschlusstrom	Ik=350mA
Laststrom	Imax=300mA

Kurzschlussverhalten mit automatisch, spannungsabhängigem "Fold Back"

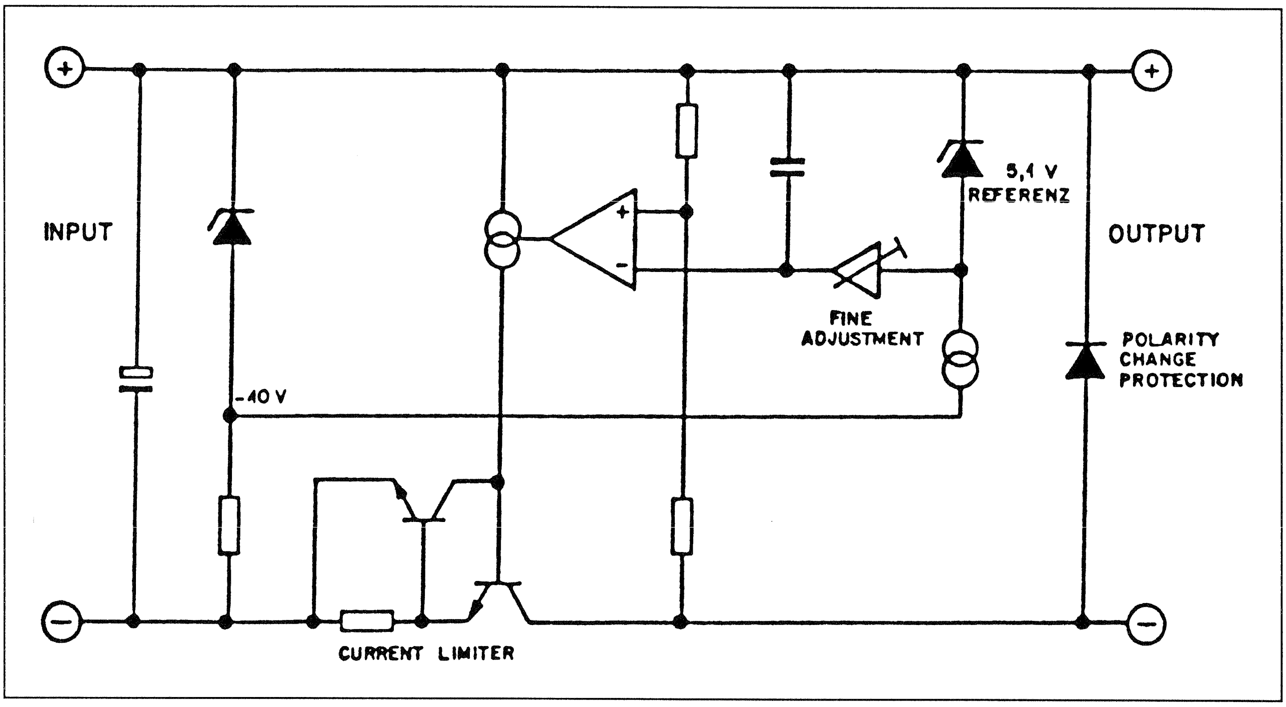


Überlagerte Brumm-spannung	$U_{Br} \leq 100\mu V$
Leerlaufstrom	$I_{o@}80V\ U_{in}=25mA$

3. 24V Stabilisator

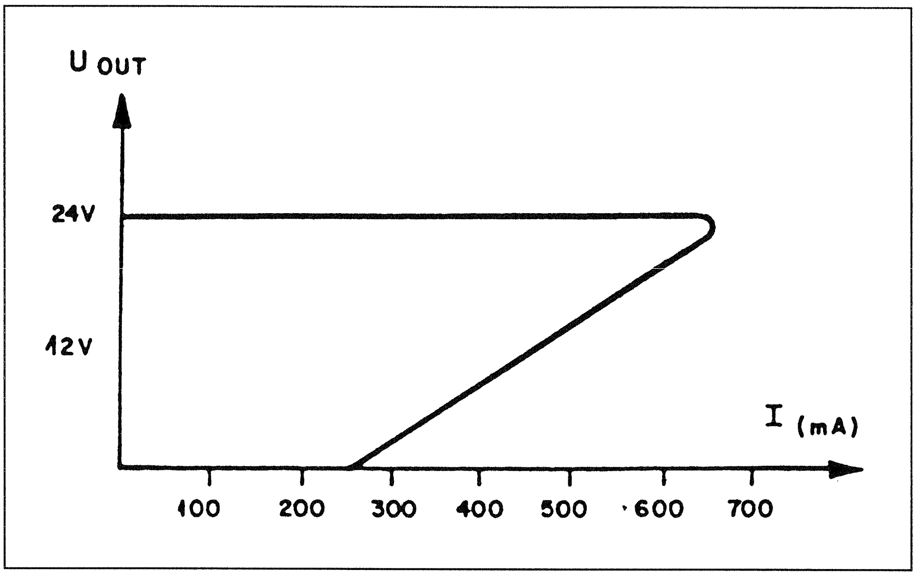
Die Ausgangsspannung ist fest eingestellt auf 24V DC.

Blockschaltbild



4. Technische Daten

Ausgangsspannung	U=24V
Minimale Eingangs-spannung (ohne Rippel)	U min=25V
Maximale Eingangs-spannung	U max=36V
Kurzschlusstrom	I_k~660mA
Laststrom	Imax=600mA
	Kurzschlussverhalten mit automatischem "Fold Back"



Überlagerte 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

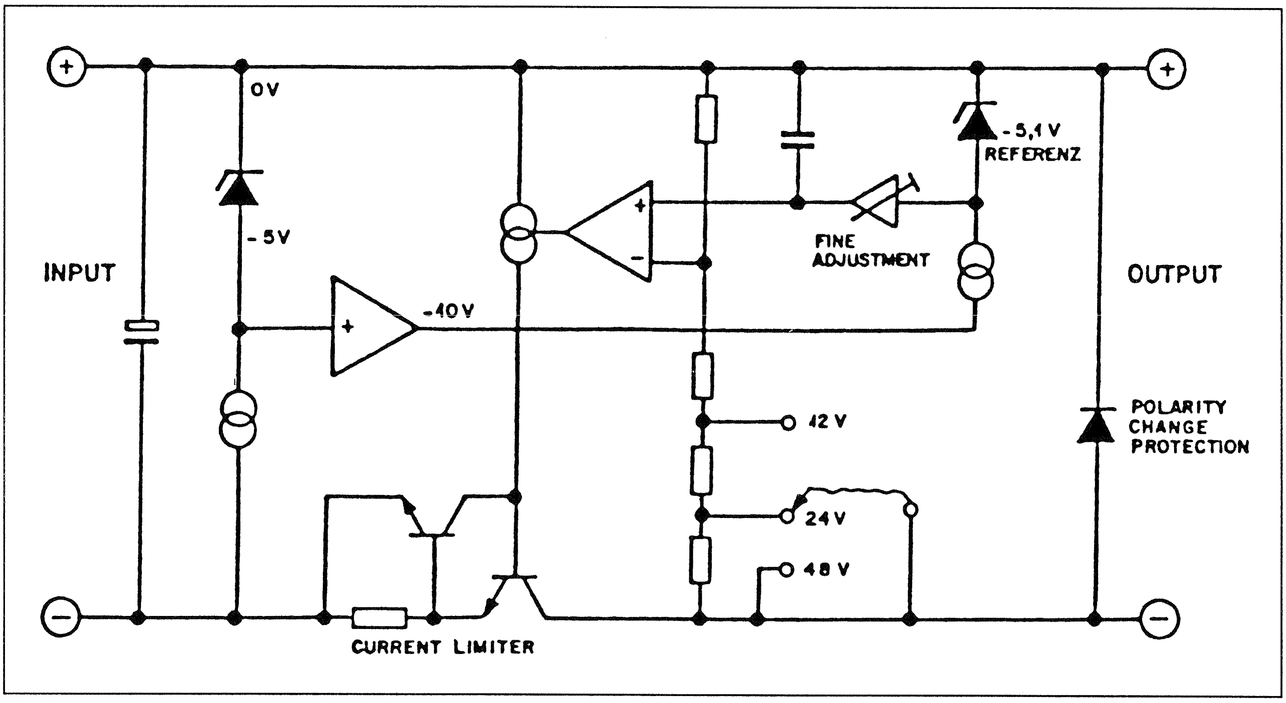
Gewicht ca. 320 gr

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

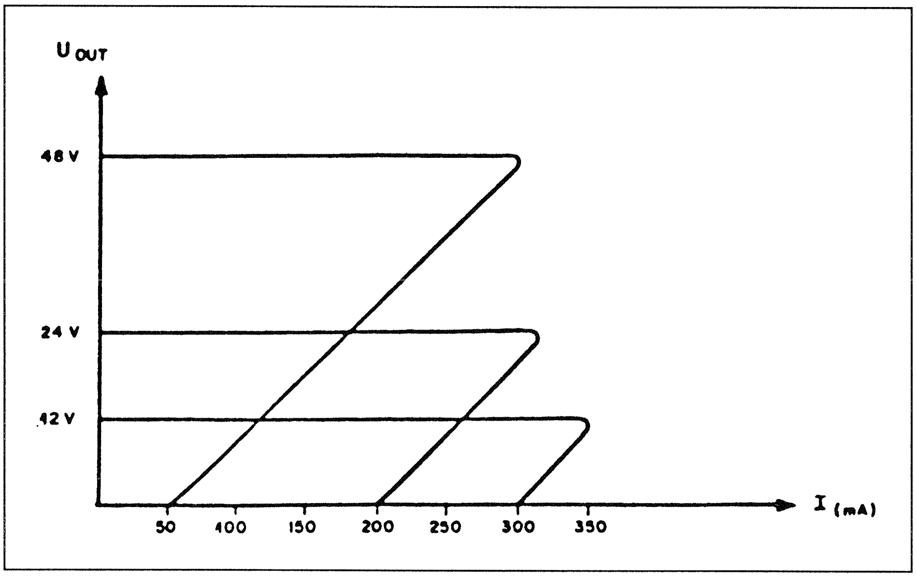
The 12V, 24V or 48V output voltage can be adjusted with a bridge. (Please note that any change of the phantom voltage requires a corresponding adjustment of the input voltage and the replacement of the phantom supply resistors is the microphone channel).



2. Specifications

Output voltage, variable	U=12V, 24V, 48V
Minimum input voltage for 12V	Umin=13V
Max. input voltage	Umax=100V
Short-circuit current	Ik=350mA
Load current	Imax=300mA

Short-circuit response with automatic, voltage-dependent fold-back

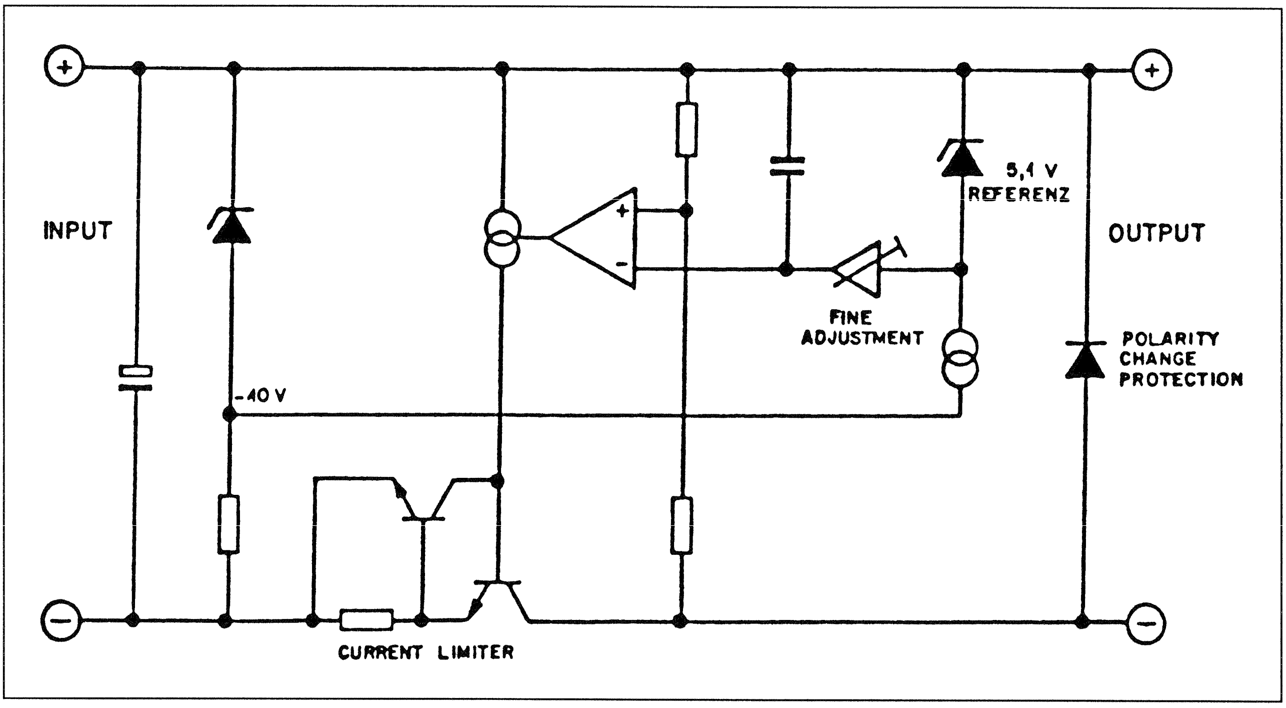


Superimposed ripple voltage	$U_{Br} \leq 100\mu V$
No-load current	$I_{o@}80V\ U_{in}$=25mA

3. 24V Stabilizer

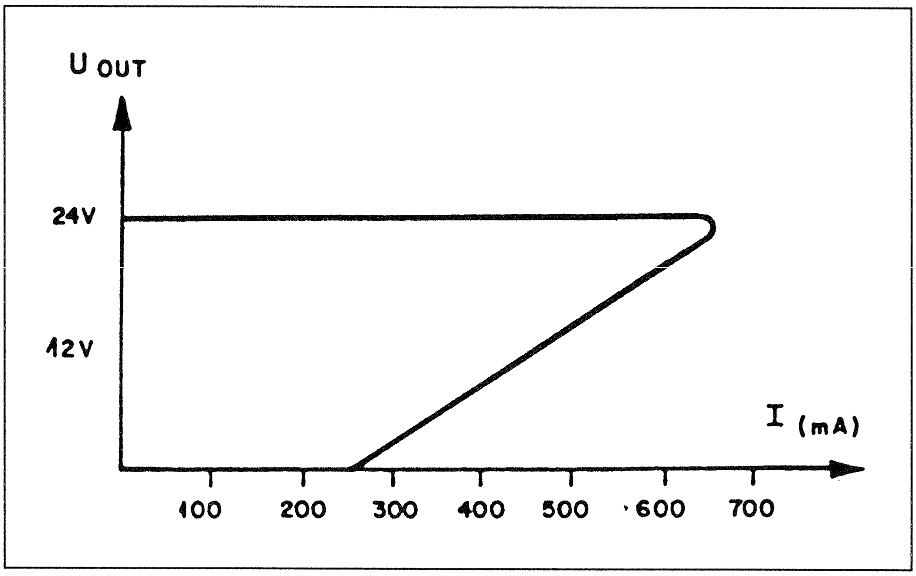
The output voltage is permanently set to 24 VDC.

Block Diagram



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~660mA
Load current	Imax=600mA
	Short-circuit response with automatic fold-back

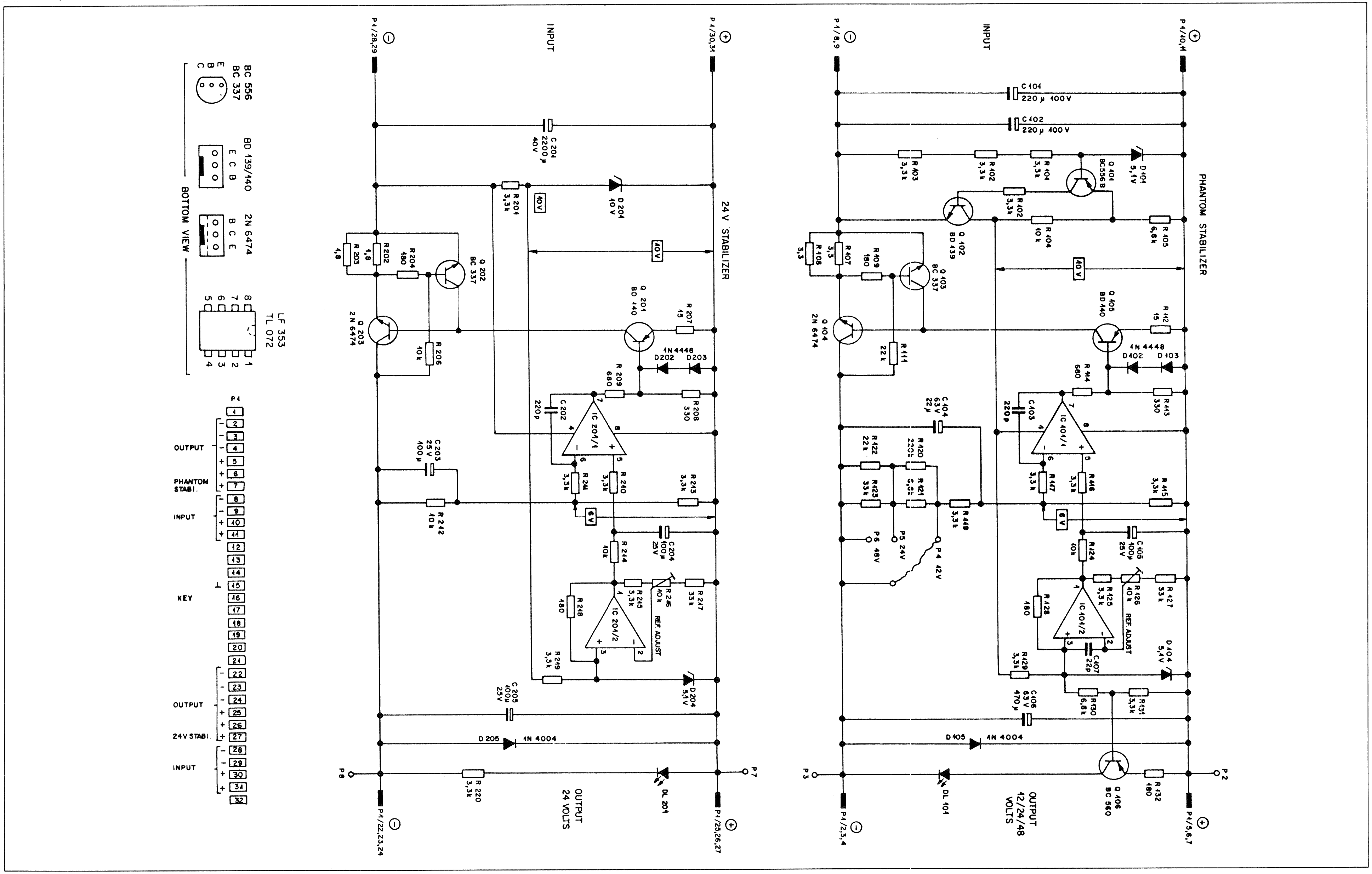


Superimposed ripple voltage	$U_{Br} \leq 100\mu V$
No-load current	$I_{o@}$Uin30V=20mA

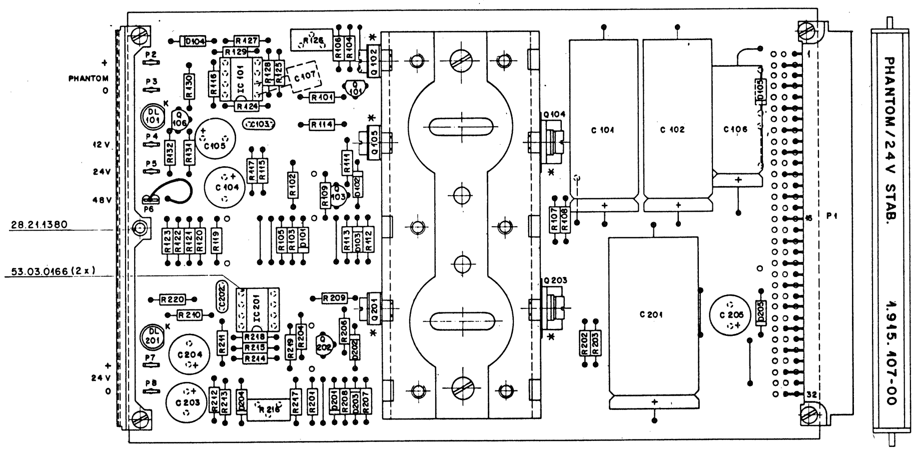
5. Mechanical Data

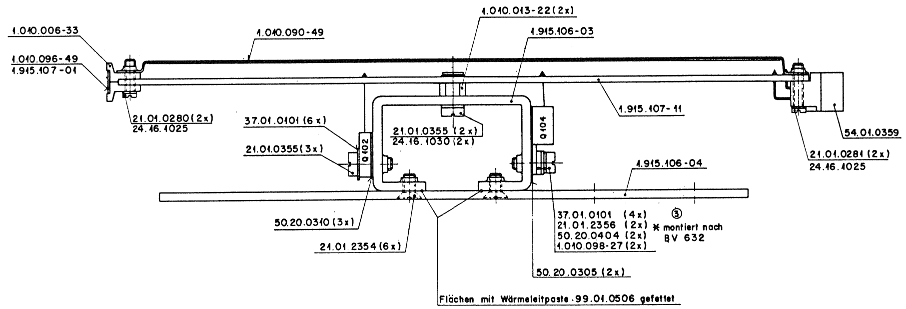
Dimensions	"EUROPE" PCB 100mm x 160mm
Connector system	DIN 416 12 type B
Width	33mm 7m
Weight	ca. 320 gr

Phantom / 24 V Stabilizer 1.915.107



Phantom / 24 V Stabilizer 1.915.107





IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	C 101	59.25.7221	220 µF	100 V EL	
	C 102	59.25.7221	220 µF	100 V EL	
	C 103	59.34.4221	220 pF	CER	
	C 104	59.22.8220	22 µF	63 V EL	
	C 105	59.22.5101	100 µF	25V EL	
1	C 106	59.25.6471	470 µF	63 V EL	
	C 201	59.25.5222	2200 µF	40 V EL	
	C 202	59.34.4221	220 pF	CER	
	C 203	59.22.5101	100 µF	25V EL	
	C 204	59.22.5101	100 µF	25V EL	
	C 205	59.22.5101	100 µF	25V EL	
1	C 107	59.34.2220	22 pF	CER	
	D 101	50.04.1112	Z 5,1V	5,1V @ 5mA 5%	
	D 102	50.04.0125	1N4448		
	D 103	50.04.0125	1N4448		
	D 104	50.04.1112	Z 5,1V	5,1V @ 5mA 5%	
	D 105	50.04.0105	1N4004	1,1V @ 1A	
	D 201	50.04.1114	Z 10V	10V @ 5mA 5%	
	D 202	50.04.0125	1N4448		
	D 203	50.04.0125	1N4448		
	D 204	50.04.1112	Z 5,1V	5,1V @ 5mA 5%	
	D 205	50.04.0105	1N4004	1,1V @ 1A	
	DL 101	50.04.2111	MV5753	CM4-284B	Ms/Cm
	DL 201	50.04.2111	MV5753	CM4-284B	Ms/Cm

IND	DATE	NAME	
④			EL ELECTROLYTIC Ms MONSANTO
③			CER CERAMIC Cm CHICAGO MINIATUR
②			
①	13.1.83	Vr	
O	9.6.81	Ga	

STUDER | PHANTOM / 24 V STAB | 1.915.107.00 | PAGE 1 OF 4

IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	IC 101	50.09.0101	TL 072	DUAL OPA LF 353	N, TI
	IC 201	50.09.0101	TL 072	DUAL OPA LF 353	N, TI
	Q 101	50.03.0492	BC 556	PNP 0,1A U_{CES} 80V	S, I
	Q 102	50.03.0451	BD 139	NPN	P, S
	Q 103	50.03.0340	BC 337	NPN 0,8A	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 0,1A	S
	Q 201	50.03.0452	BD 140	PNP	P, S
	Q 202	50.03.0340	BC 337	NPN 0,8A	P, TI
	Q 203	50.03.0344	2N 6474	NPN	R
	R 101	57.11.4332	3,3k		
	R 102	57.11.4332	3,3k		
	R 103	57.11.4332	3,3k		
	R 104	57.11.4103	10k		
	R 105	57.11.4682	6,8k		
	R 106	57.11.4103	10k		
	R 107	57.11.4339	3,3		
	R 108	57.11.4339	3,3		
	R 109	57.11.4181	180		
	R 110				
	R 111	57.11.4223	22k		
	R 112	57.11.4150	15		
	R 113	57.11.4331	330		
	R 114	57.11.4681	68,0		
	R 115	57.11.4332	3,3k	2%	

IND	DATE	NAME	
④			S SIEMENS I ITT
③			RA RAYTHEON N NATIONAL
②			TI TEXAS INSTR.
①	13.1.83	Vr	P PHILIPS
O	9.6.81	Ga	R RCA

STUDER | PHANTOM / 24V STAB. | 1.915.107.00 | PAGE 2 OF 4

IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	R116	57.11.4332	3,3k		
	R117	57.11.4332	3,3k		
	R118				
	R119	57.11.4332	3,3k	2%	
	R120	57.11.4224	220k	2%	
	R121	57.11.4682	6,8k	2%	
	R122	57.11.4223	22k	2%	
	R123	57.11.4333	33k	2%	
	R124	57.11.4103	10k		
	R125	57.11.4332	3,3k		
	R126	58.01.7103	10k	LIN. 10%	
	R127	57.11.4333	33k		
	R128	57.11.4181	180		
	R129	57.11.4332	3,3k		
	R130	57.11.4682	6,8k		
	R131	57.11.4332	3,3k		
	R132	57.11.4181	180		
	R201	57.11.4332	3,3k		
	R202	57.11.4189	1,8		
	R203	57.11.4189	1,8		
	R204	57.11.4181	180		
	R205				
	R206	57.11.4103	10k		
	R207	57.11.4150	15		
	R208	57.11.4331	330		
	R209	57.11.4681	680		
	R210	57.11.4332	3,3k		
	R211	57.11.4332	3,3k		
	R212	57.11.4103	10k	2%	
	R213	57.11.4332	3,3k	2%	

IND	DATE	NAME
④		
③		
②		
①	13.1.83	Vr
O	9.6.81	Ga

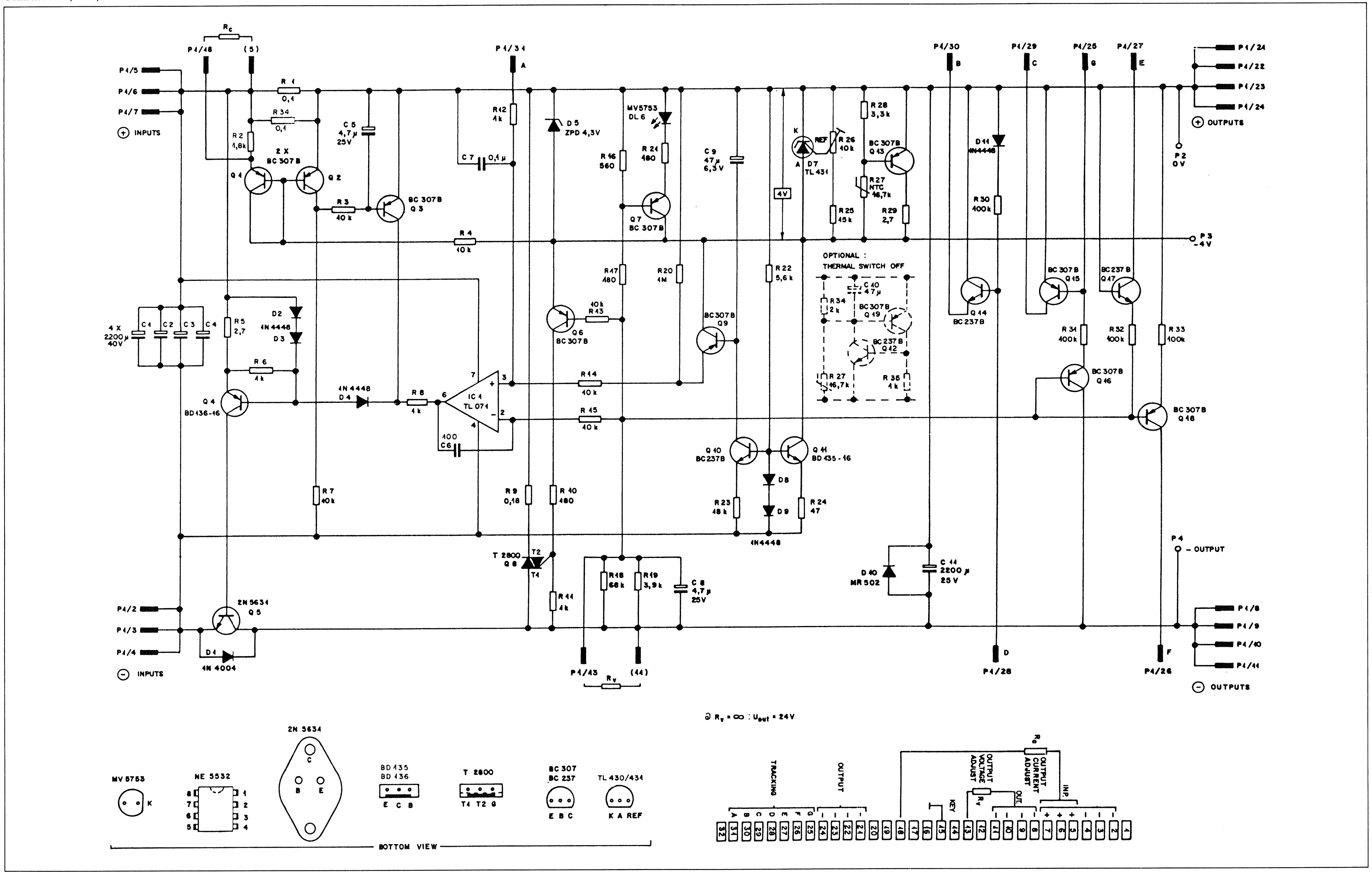
STUDER | PHANTOM / 24V STAB. | 1.915.107.00 | PAGE 3 OF 4

IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	R 214	57.11.4103	10k		
	R 215	57.11.4332	3,3k		
	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	3,3k		
	R 220	57.11.4332	3,3k		
		Modification	List		
	Dat.			HF Problems	
1	13.1.83				
	C 106	22 µF →	470 pF		
	C 107	22 pF →	new		

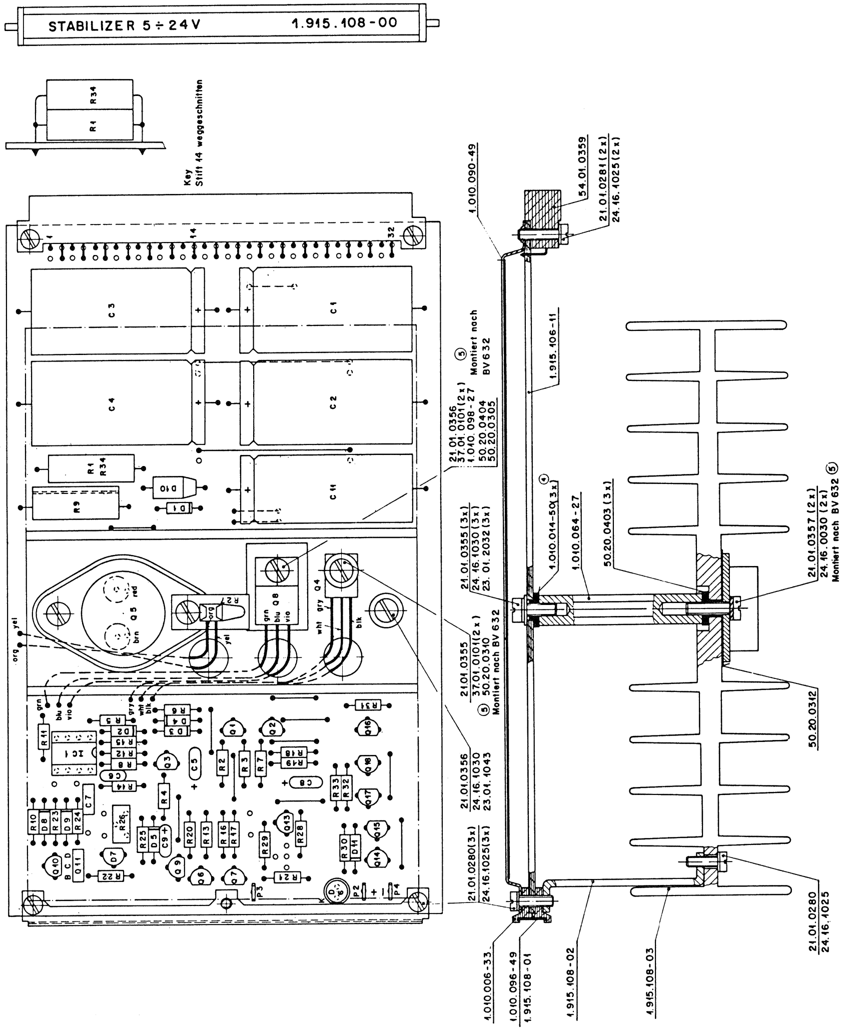
IND	DATE	NAME
④		
③		
②		
①	13.1.83	Vr
O	9.6.81	Ga

STUDER | PHANTOM / 24V STAB. | 1.915.107.00 | PAGE 4 OF 4

Stabilizer 5/24V/5A 1.915.108.00



Stabilizer 5/24V/5A 1.915.108



IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	C 1	59.25.5222	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	59.26.5479	4,7 µF	25 V SAL	
①	C 6	59.34.4101	100 pF	CER	
	C 7	59.06.0104	0,1 µF	PE	
	C 8	59.26.5479	4,7 µF	25V SAL	
	C 9	59.26.0470	47 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	50.04.1120	ZPD 4,3V	5%	
	DL 6	50.04.2111	MV 5753	LED CM4-284 B	MS/CM
	D 7	50.10.0106	TL 430	µA 430 CLP IC	TI/F
	D 8	50.04.0125	1N4448		
	D 9	50.04.0125	1N4448		
	D 10	50.04.0507	MR502	3A/30V	
	D 11	50.04.0125	1N4448		
	IC 1	50.09.0103	TL 071	LF351 SINGLE FET OPA	TI/N

IND	DATE	NAME	
④			EL - Electrolytic; MS - Mousanto
③			SAL - Solid Aluminium; CM - Chicago Miniatur
②			PE - Polyester; TI - Texas Instruments
①	22.6.83		CER - CERAMIC; N - National
○	22.11.82		F - Fairchild

STUDER | STABILIZER 5÷24 V/5A | 1.915.108.00 | PAGE 1 OF 3

IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	Q 1	50.03.0515	BC 307B	PNP General purpose 0,1A/Uceo ≥ 40V	any
	Q 2	50.03.0515	BC 307B	PNP	
	Q 3	50.03.0515	BC 307B	PNP	
	Q 4	50.03.0510	BD 136-16	PNP min 1A/40V	M,R,S,T
	Q 5	50.03.0342	2N5631	NPN min 10A/min 60V 200W	M
	Q 6	50.03.0515	BC 307B	PNP	
	Q 7	50.03.0515	BC 307B	PNP	
	Q 8	50.99.0106	T 2800	TRIAC 8A SC146 D	R/GE
	Q 9	50.03.0515	BC 307B	PNP	
	Q 10	50.03.0436	BC 237 B	NPN General purpose 0,1A/Uceo ≥ 40V	any
	Q 11	50.03.0495	BD135-16	NPN P min 2W	M,R,S,T
	Q 12				
	Q 13	50.03.0515	BC 307B	PNP	
	Q 14	50.03.0436	BC 237B	NPN	
	Q 15	50.03.0515	BC 307B	PNP	
	Q 16	50.03.0515	BC 307 B	PNP	
	Q 17	50.03.0436	BC 237B	NPN	
	Q 18	50.03.0515	BC 307B	PNP	
	R 1	57.56.5108	0,1 Ω	4W	
	R 2	57.11.4182	1,8 k	2%	
	R 3	57.11.4103	10 k		
	R 4	57.11.4103	10 k		
	R 5	57.11.4279	2,7 Ω		
	R 6	57.11.4102	1 k		
	R 7	57.11.4103	10 k		
	R 8	57.11.4102	1 k		
	R 9	57.56.5188	0,18 Ω	4W	

IND	DATE	NAME	
④			M - Motorola
③			R - RCA
②			S - Siemens
①	22.6.83		T - Telefunken
○	22.11.82		GE - General Electric

STUDER | Stabilizer 5÷24V/5A | 1.915.108.00 | PAGE 2 OF 3

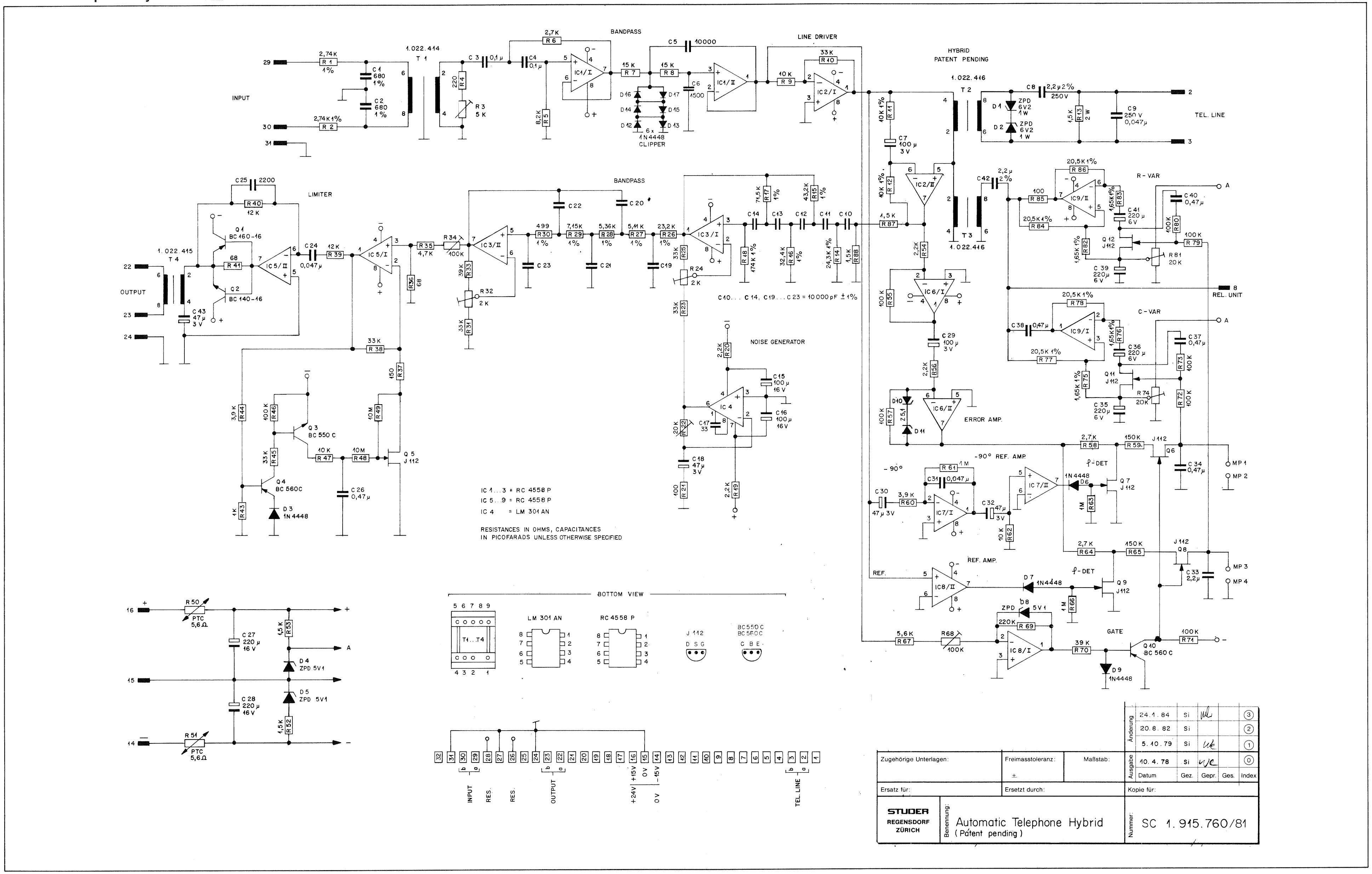
IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	R 10	57.11.4181	180 Ω		
	R 11	57.11.4102	1 k		
	R 12	57.11.4102	1 k		
	R 13	57.11.4103	10 k		
	R 14	57.11.4103	10 k		
	R 15	57.11.4103	10 k		
	R 16	57.11.4561	560 Ω	2%	
	R 17	57.11.4181	180 Ω	2%	
	R 18	57.11.4683	68 k	2%	
	R 19	57.11.4392	3,9k	2%	
	R 20	57.11.4105	1M		
	R 21	57.11.4181	180 Ω		
	R 22	57.11.4562	5,6k		
	R 23	57.11.4183	18 k		
	R 24	57.11.4470	47 Ω		
	R 25	57.11.4153	15 k		
	R 26	58.01.7103	10 k	LIN 10% CERMET	
	R 27	57.99.0208	16,7k	@100°C NTC 2322 640 98005	PH
	R 28	57.11.4332	3,3 k		
	R 29	57.11.4279	2,7 Ω		
	R 30	57.11.4104	100 k		
	R 31	57.11.4104	100 k		
	R 32	57.11.4104	100 k		
	R 33	57.11.4104	100 k		
	R 34	57.56.5108	0,1 Ω	4W	
	Modification List				
①	C 6	330 pF → 100 pF		HF-Problems	

IND	DATE	NAME	
④			PH - Philips
③			
②			
①	22.6.83		
○	22.11.82		

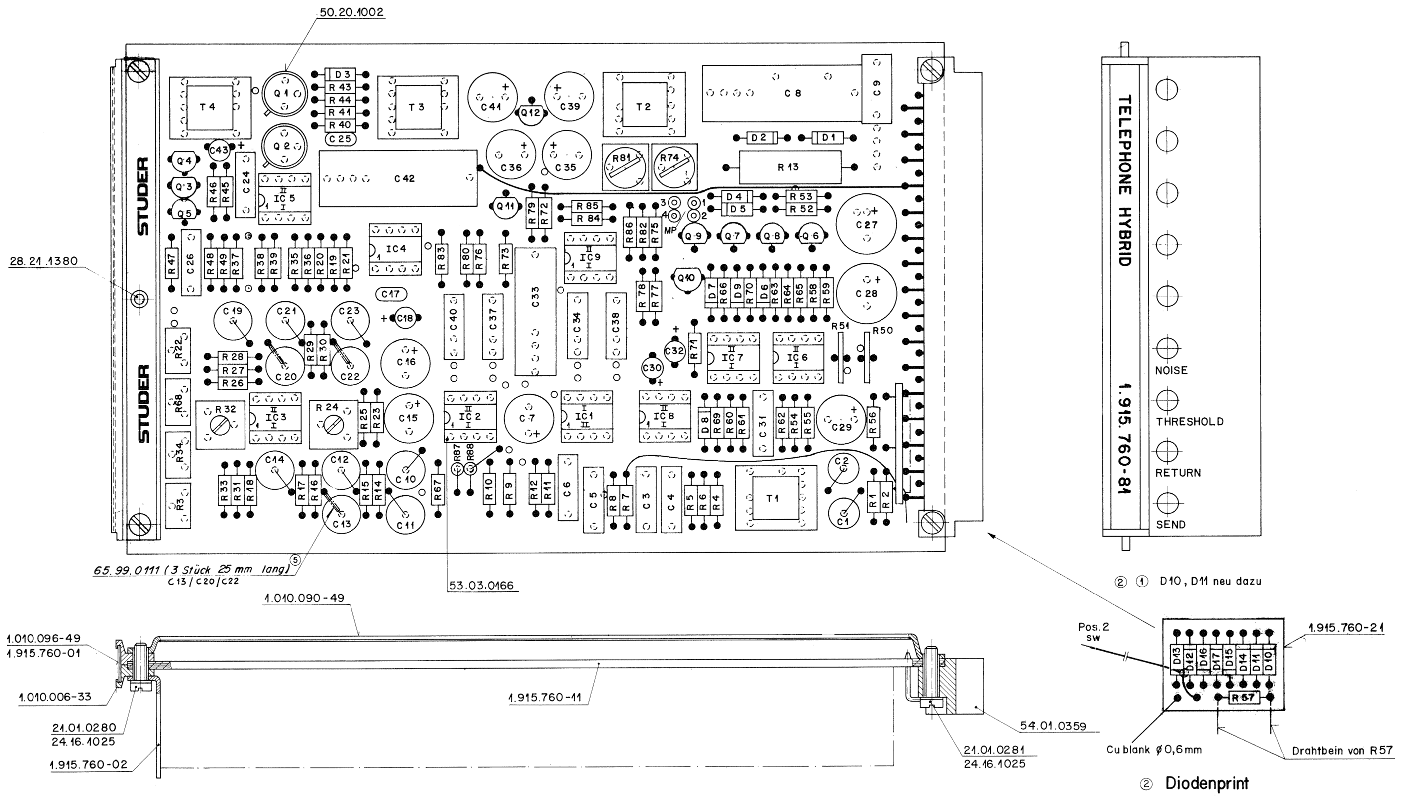
STUDER | Stabilizer 5÷24V/5A | 1.915.108.00 | PAGE 3 OF 3

EDITION: 23. Oktober 1990

Automatic Telephone Hybrid 1.915.760.81



Automatic Telephone Hybrid 1.915.760.81



EDITION: 23. Oktober 1990

Automatic Telephone Hybrid 1.915.760.81

IND	POS NO	PART NO	VALUE	SPECIFICATIONS	EQUIVALENT	MFR
	C 1	59.12.9681	680 pF	1% 500V- PS		
	C 2	59.12.9681	680 pF	1% PS		
	C 3	59.31.6104	0,1 µF	10% PE		
	C 4	59.31.6104	0,1 µF	10% PE		
	C 5	59.12.4103	0,01 µF	5% PE		
	C 6	59.11.6152	1500 pF	5% PC		
	C 7	59.22.4101	100 µF	3V EL		
①	C 8	1.915.760-03	2,2 µF	1% 250V- PE		ST
⑤①	C 9	59.31.8473	0,047 µF	400V- PE		
	C 10	59.12.7103	0,01 µF	1% PS		
	C 11	59.12.7103	0,01 µF	1% PS		
	C 12	59.12.7103	0,01 µF	1% PS		
	C 13	59.12.7103	0,01 µF	1% PS		
	C 14	59.12.7103	0,01 µF	1% PS		
	C 15	59.22.4101	100 µF	16V EL		
	C 16	59.22.4101	100 µF	16V EL		
	C 17	59.34.2330	33 pF	CER		
	C 18	59.36.0470	47 µF	3V TA		
	C 19	59.12.7103	0,01 µF	1% PS		
	C 20	59.12.7103	0,01 µF	1% PS		
	C 21	59.12.7103	0,01 µF	1% PS		
	C 22	59.12.7103	0,01 µF	1% PS		
	C 23	59.12.7103	0,01 µF	1% PS		
	C 24	59.12.4473	0,047 µF	PE		
	C 25	59.32.2222	2200 pF	CER		
	C 26	59.02.0474	0,47 µF	5% PC		
	C 27	59.22.4221	220 µF	16V EL		
	C 28	59.22.4221	220 µF	16V EL		
	C 29	59.22.4101	100 µF	3V EL		
	C 30	59.36.0470	47 µF	3V TA		
	C 31	59.12.4473	0,047 µF	PE		
	C 32	59.36.0470	47 µF	3V TA		
	C 33	59.02.2225	2,2 µF	PC		
①	C 34	59.02.0474	0,47 µF	PE		
	C 35	59.22.2221	220 µF	6V EL		
	C 36	59.22.2221	220 µF	6V EL		
	C 37	59.02.0474	0,47 µF	PC		
	C 38	59.02.0474	0,47 µF	PC		
	C 39	59.22.2221	220 µF	EL		
	C 40	59.02.0474	0,47 µF	PC		
	C 41	59.22.2221	220 µF	6V EL		
①	C 42	1.915.760-03	2,2 µF	1% 250V- PE		ST
	C 43	59.36.0470	47 µF	3V TA		

CER CERAMIC ST STUDER
EL ELECTROLYTIC
TA TANTALUM
PE POLYESTER
PS POLYSTYRENE
PC POLYCARBONATE

IND	DATE	NAME
⑤	20.8.82	Vo
④	11.3.81	Vo
③	10.9.80	Ho
②	11.5.79	Ho
①	6.11.78	
○	14.3.78	

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STUDER TELEPHONE HYBRID 1.915.760-81 PAGE 1 of 4

IND	POS NO	PART NO	VALUE	SPECIFICATIONS	EQUIVALENT	MFR
	D 1	50.04.1511	U_z 6,2V	ZPD 6V2 1W		
	D 2	50.04.1511	U_z 6,2V	ZPD 6V2 1W		
	D 3	50.04.0125	1N 4448	SI		
	D 4	50.04.1112	U_z 5,1V	ZPD 5V1 0.4W		
	D 5	50.04.1112	U_z 5,1V	ZPD 5V1 0.4W		
	D 6	50.04.0125	1N 4448	SI		
	D 7	50.04.0125	1N 4448	SI		
	D 8	50.04.1112	U_z 5,1V	ZPD 5V1 0.4W		
	D 9	50.04.0125	1N 4448	SI		
②	D 10	50.04.1112	U_z 5,1V	ZPD 5V1 0.4W		
②	D 11	50.04.1112	U_z 5,1V	ZPD 5V1 0.4W		
③	D12...17	50.04.0125	1N 4448	SI		
④	IC 1	50.09.0107	RC 4559 NB	DUAL OP AMP		TI, RA
④	IC 2	50.09.0107	RC4559 NB			
④	IC 3	50.09.0107	RC4559 NB			
	IC 4	50.05.0144	LM 301 AN	OP-AMP		NS
④	IC 5	50.09.0107	RC 4559 NB			
④	IC 6	50.09.0107	RC 4559 NB			
④	IC 7	50.09.0107	RC 4559 NB			
④	IC 8	50.09.0107	RC 4559 NB			
④	IC 9	50.09.0107	RC 4559 NB			
	Q 1	50.03.0315	BC160-16			S, F
	Q 2	50.03.0316	BC140-16			S, F
	Q 3	50.03.0497	BC550-C			T, ITT
	Q 4	50.03.0496	BC560-C			T, ITT
	Q 5	50.03.0350	J 112			SIL/NS
	Q 6	50.03.0350	J 112			"
	Q 7	50.03.0350	J 112			"
	Q 8	50.03.0350	J 112			"
	Q 9	50.03.0350	J 112			"
	Q 10	50.03.0496	BC560-C			T, ITT
	Q 11	50.03.0350	J 112			SIL/NS
	Q 12	50.03.0350	J 112			"
	R 1	57.39.2741	2,74 k	1%		
	R 2	57.39.2741	2,74 k	1%		
①	R 3	58.01.7502	5k	LIN		TR, SP
	R 4	57.11.4221	220			
	R 5	57.11.4822	8,2k	2%		
	R 6	57.11.4272	2,7k	2%		
	R 7	57.11.4153	15k	2%		

TI - TEXAS INSTR F - FAIRCHILD
RA - RAYTHEON TR - TRW
NS - NATIONAL-SEM. SP - SPECTROL
SIL - SILICONIX
T - TELEFUNKEN
S - SIEMENS

IND	DATE	NAME
⑤	20.8.82	Vo
④	11.3.81	Vo
③	10.9.80	Ho
②	11.5.79	Ho
①	6.11.78	
○	14.3.78	

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STUDER TELEPHONE HYBRID 1.915.760-81 PAGE 2 of 4

IND	POS NO	PART NO	VALUE	SPECIFICATIONS	EQUIVALENT	MFR
	R 8	57.11.4153	15k			
	R 9	57.11.4103	10k			
	R 10	57.11.4333	33k			
	R 11	57.39.1002	10k	1%		
	R 12	57.39.1002	10k	1%		
	R 13	57.56.5152	1,5k	2W		
	R 14	57.39.2432	24,3k	1%		
	R 15	57.39.4322	43,2k	1%		
	R 16	57.39.3242	32,4k	1%		
	R 17	57.39.7152	71,5k	1%		
	R 18	57.39.1743	174 k	1%		
	R 19	57.11.4222	2,2k			
	R 20	57.11.4222	2,2 k			
	R 21	57.11.4101	100			
	R 22	58.01.7203	20k	LIN 10%		TR, SP
	R 23	57.11.4333	33k	2%		
	R 24	58.01.8202	2 k	LIN 10%		TR, SP
	R 25	57.11.4333	33k	2%		
	R 26	57.39.2322	23,2k	1%		
	R 27	57.39.5111	5,11k	1%		
	R 28	57.39.5361	5,36k	1%		
	R 29	57.39.7151	7,15k	1%		
	R 30	57.39.4990	499	1%		
	R 31	57.11.4333	33k	2%		
	R 32	58.01.8202	2k	LIN 10%		TR, SP
	R 33	57.11.4393	39k	2%		
	R 34	58.01.7104	100k	LIN 10%		TR, SP
	R 35	57.11.4472	4,7k			
	R 36	57.11.4680	68			
	R 37	57.11.4151	150			
	R 38	57.11.4333	33k			
	R 39	57.11.4123	12k			
	R 40	57.11.4123	12k			
	R 41	57.11.4680	68			
	R 42					
	R 43	57.11.4102	1k			
	R 44	57.11.4392	3,9k			
	R 45	57.11.4333	33k			
	R 46	57.11.4104	100k			
	R 47	57.11.4103	10k			
	R 48	57.02.5106	10M			
	R 49	57.02.5106	10M			
	R 50	57.99.0209	5,6Ω	PTC 2322 662 91005		PH
	R 51	57.99.0209	5,6Ω	PTC		PH
	R 52	57.11.4152	1,5k			
	R 53	57.11.4152	1,5k			

PH PHILIPS
TR TRW
SP SPECTROL

IND	DATE	NAME
⑤	20.8.82	Vo
④	11.3.81	Vo
③	10.9.80	Ho
②	11.5.79	Ho
①	6.11.78	
○	14.3.78	

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STUDER TELEPHONE HYBRID 1.915.760-81 PAGE 3 of 4

IND	POS NO	PART NO	VALUE	SPECIFICATIONS	EQUIVALENT	MFR
	R 54	57.11.4222	2,2k			
	R 55	57.11.4104	100k			
	R 56	57.11.4222	2,2k			
	R 57	57.11.4104	100k			
	R 58	57.11.4272	2,7k			
	R 59	57.11.4154	150k			
	R 60	57.11.4392	3,9k			
	R 61	57.11.4105	1M			
	R 62	57.11.4103	10k			
	R 63	57.11.4105	1M			
	R 64	57.11.4272	2,7k			
	R 65	57.11.4154	150k			
	R 66	57.11.4105	1M			
	R 67	57.11.4562	5,6k			
	R 68	58.01.7104	100k	LIN 10%		TR, SP
	R 69	57.11.4224	220k			
	R 70	57.11.4393	39k			
	R 71	57.11.4104	100k			
	R 72	57.11.4104	100k			
	R 73	57.11.4104	100k			
	R 74	58.01.8203	20k	LIN 10%		TR, SP
	R 75	57.39.1651	1,65k	1%		
	R 76	57.39.1651	1,65k	1%		
	R 77	57.39.2052	20,5k	1%		
	R 78	57.39.2052	20,5k	1%		
	R 79	57.11.4104	100k			
	R 80	57.11.4104	100k			
	R 81	58.01.8203	20k	LIN 10%		TR, SP
	R 82	57.39.1651	1,65k	1%		
	R 83	57.39.1651	1,65k	1%		
	R 84	57.39.2052	20,5k	1%		
	R 85	57.11.4101	100	2%		
	R 86	57.39.2052	20,5k	1%		
①	R 87	57.02.5152	1,5k			
①	R 88	57.02.5152	1,5k			
	T 1	1.022.414	1 : 1			ST
	T 2	1.022.416	1 : 1			ST
	T 3	1.022.416	1 : 1			ST
	T 4	1.022.415	1 : 2			ST

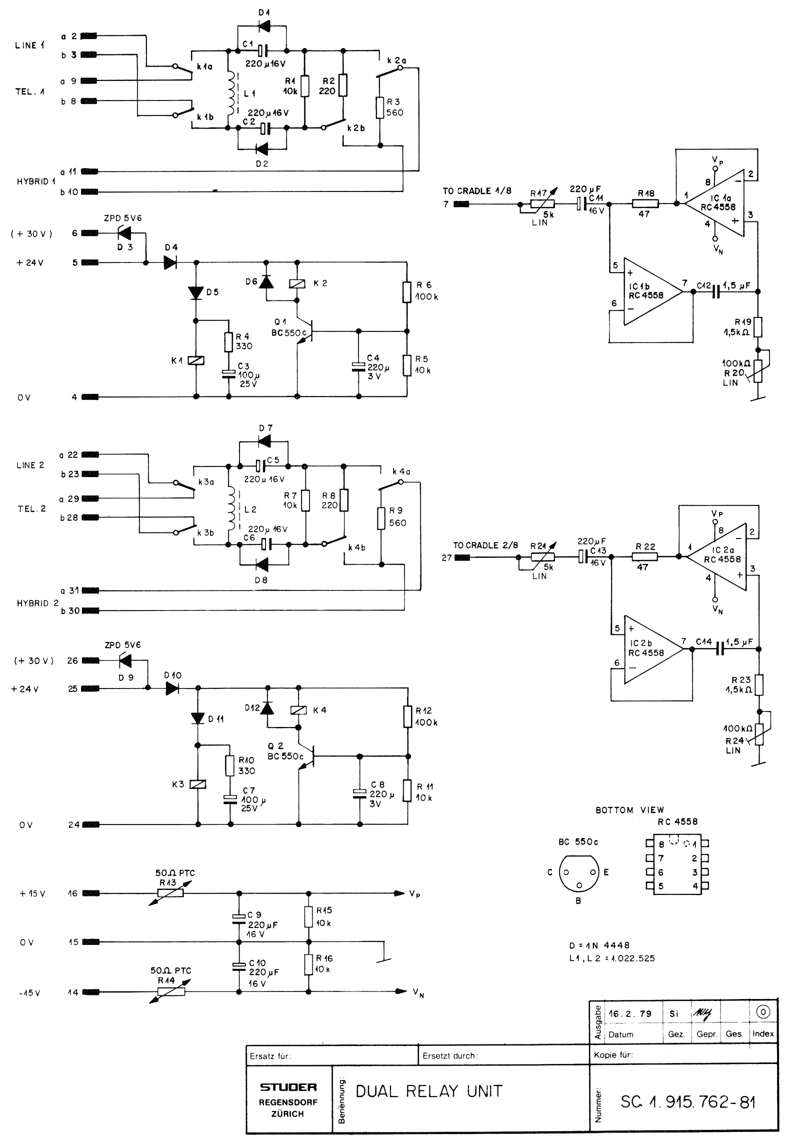
TR TRW
SP SPECTROL
ST STUDER

IND	DATE	NAME
⑤	20.8.82	Vo
④	11.3.81	Vo
③	10.9.80	Ho
②	11.5.79	Ho
①	6.11.78	
○	14.3.78	

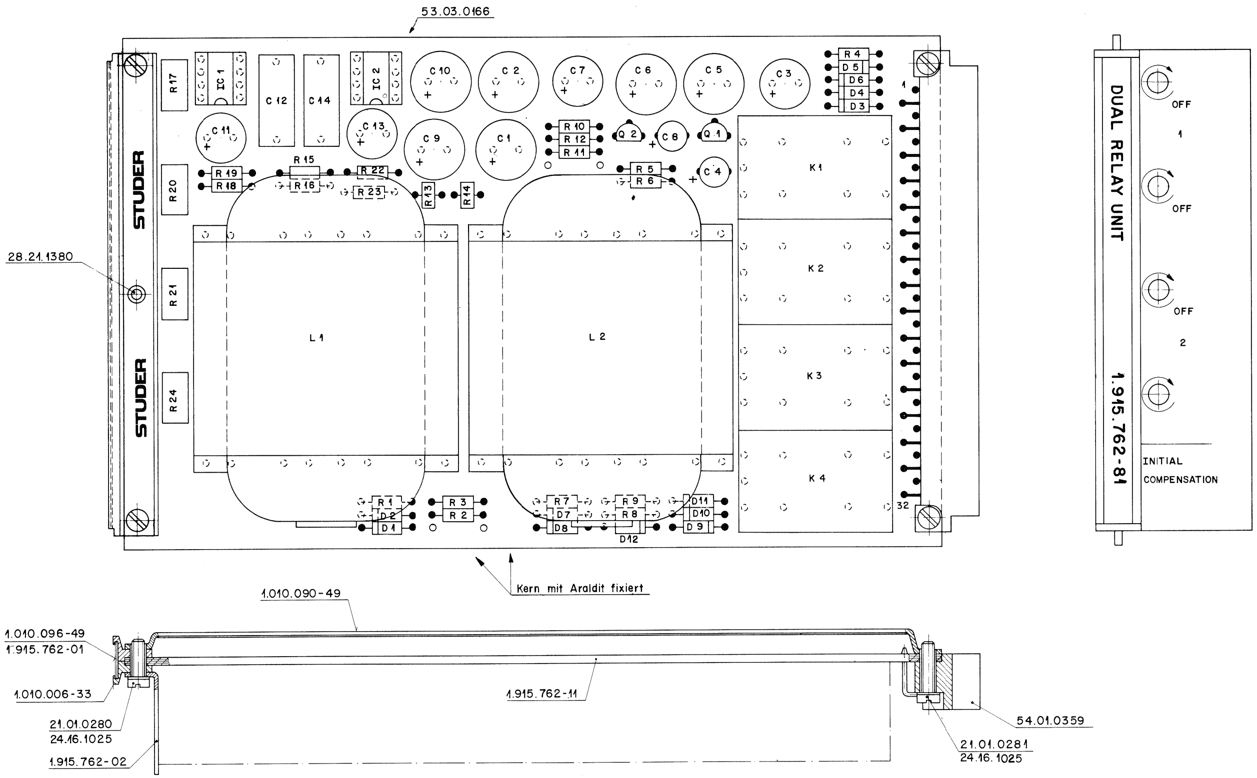
(81)

STUDER TELEPHONE HYBRID 1.915.760-81 PAGE 4 of 4

Dual Relay Unit 1.915.762.81



Dual Relay Unit 1.915.762.81



IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
C	1	59.22.4221	220 µF	16 V EL	
C	2	59.22.4221	220 µF	16 V EL	
C	3	59.22.5101	100 µF	25 V EL	
C	4	59.30.1221	220 µF	3 V TA	
C	5	59.22.4221	220 µF	16 V EL	
C	6	59.22.4221	220 µF	16 V EL	
C	7	59.22.5101	100 µF	25 V EL	
C	8	59.30.1221	220 µF	3 V TA	
C	9	59.22.4221	220 µF	16 V EL	
C	10	59.22.4221	220 µF	16 V EL	
C	11	59.22.2221	220 µF	6 V EL	
C	12	59.05.1155	1,5 µF	63 V MPC	
C	13	59.22.2221	220 µF	6 V EL	
C	14	59.05.1155	1,5 µF	63 V MPC	
D	1...12	50.04.0125	1N4448	or equivalent	ANY
	except				
D	3, 9	50.04.1108	ZPD5V6	BZX83 5V6	ITT, S
① IC	1, 2	50.09.0107	RC4559NB	Dual Op. Amp.	TI, RA
③② K	1...4	56.99.0117	2u, AgAu	Relay SDS (Sauer)	NA
L	1, 2	1.022.525		Inductivity	ST
P		54.01.0359		Edge Connector	
Q	1, 2	50.03.0497	BC550C		T, P, TT

IND	DATE	NAME		
④			ITT INTERMETALL	ST STUDER
③	9.1.86	A.Ho	NA NATIONAL	TI TEXAS INSTRUMENTS
②	15.9.82	[illegible]	P PHILIPS	EL ELECTROLYTIC
①	11.3.81	Vo	RA RAYTHEON	TA TANTALLUM
○	18.7.79	WY	S SIEMENS	MPC POLYCARBONATE

STUDER	DUAL RELAY UNIT	1.915.762-81	PAGE 1 OF 2

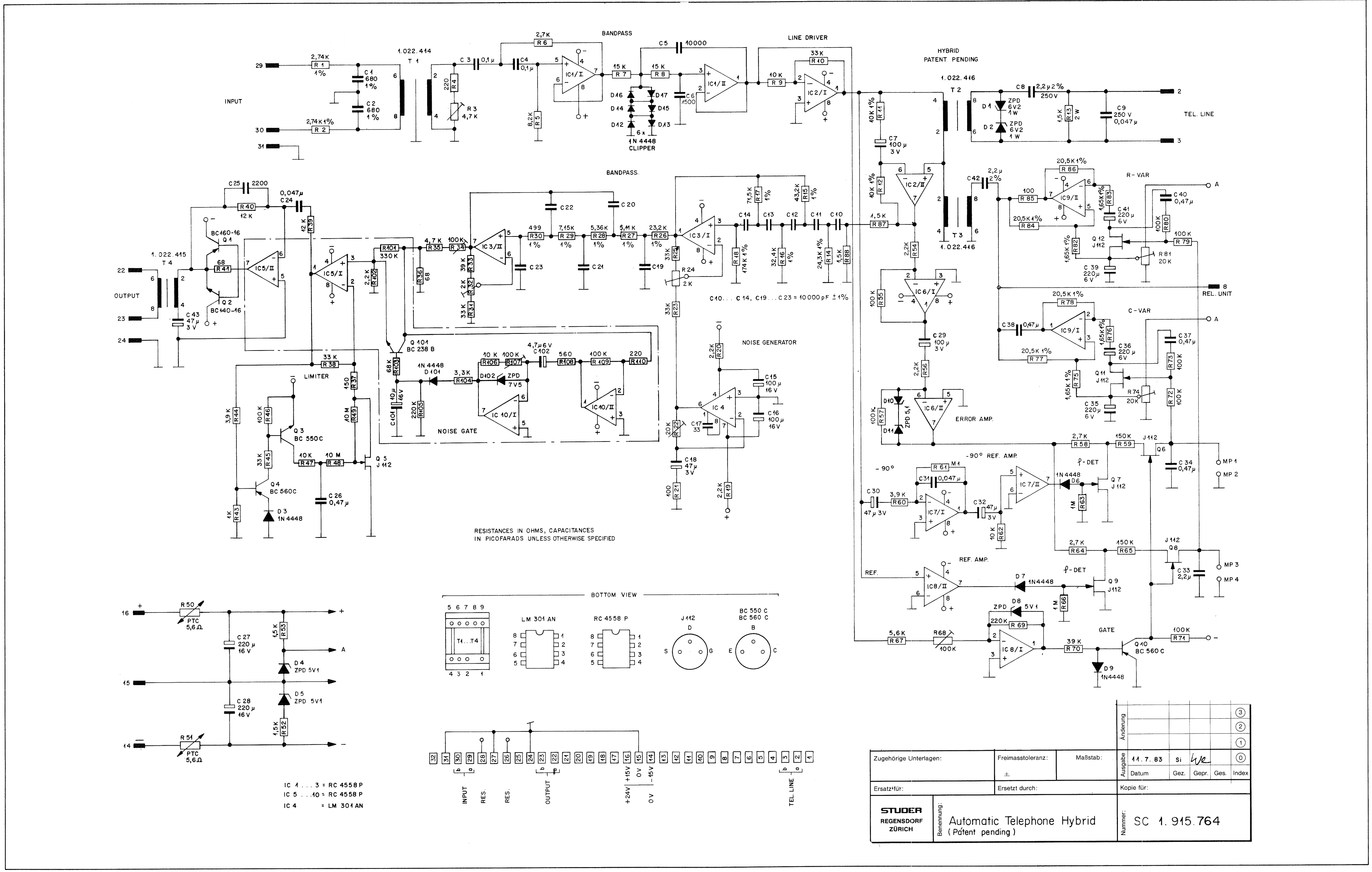
IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
R	1	57.11.4103	10 k		
R	2	57.11.4221	220		
R	3	57.11.4561	560		
R	4	57.11.4331	330		
R	5	57.11.4103	10 k		
R	6	57.11.4104	100k		
R	7	57.11.4103	10 k		
R	8	57.11.4221	220		
R	9	57.11.4561	560		
R	10	57.11.4331	330		
R	11	57.11.4103	10 k		
R	12	57.11.4104	100k		
R	13	57.99.0206	50	PTC	
R	14	57.99.0206	50	PTC	
R	15	57.11.4103	10 k		
R	16	57.11.4103	10 k		
R	17	58.01.7502	5 k	Potm.	
R	18	57.11.4470	47		
R	19	57.11.4152	1,5k		
R	20	58.01.7104	100k	Potm.	
R	21	58.01.7502	5 k	Potm.	
R	22	57.11.4470	47		
R	23	57.11.4152	1,5k		
R	24	58.01.7104	100k	Potm.	
XIC		53.03.0166		IC-Socket DIL 8 pins	

IND	DATE	NAME
④		
③	9.1.86	A.Ho
②	15.9.82	[illegible]
①	11.3.81	Vo
○	18.7.79	WY

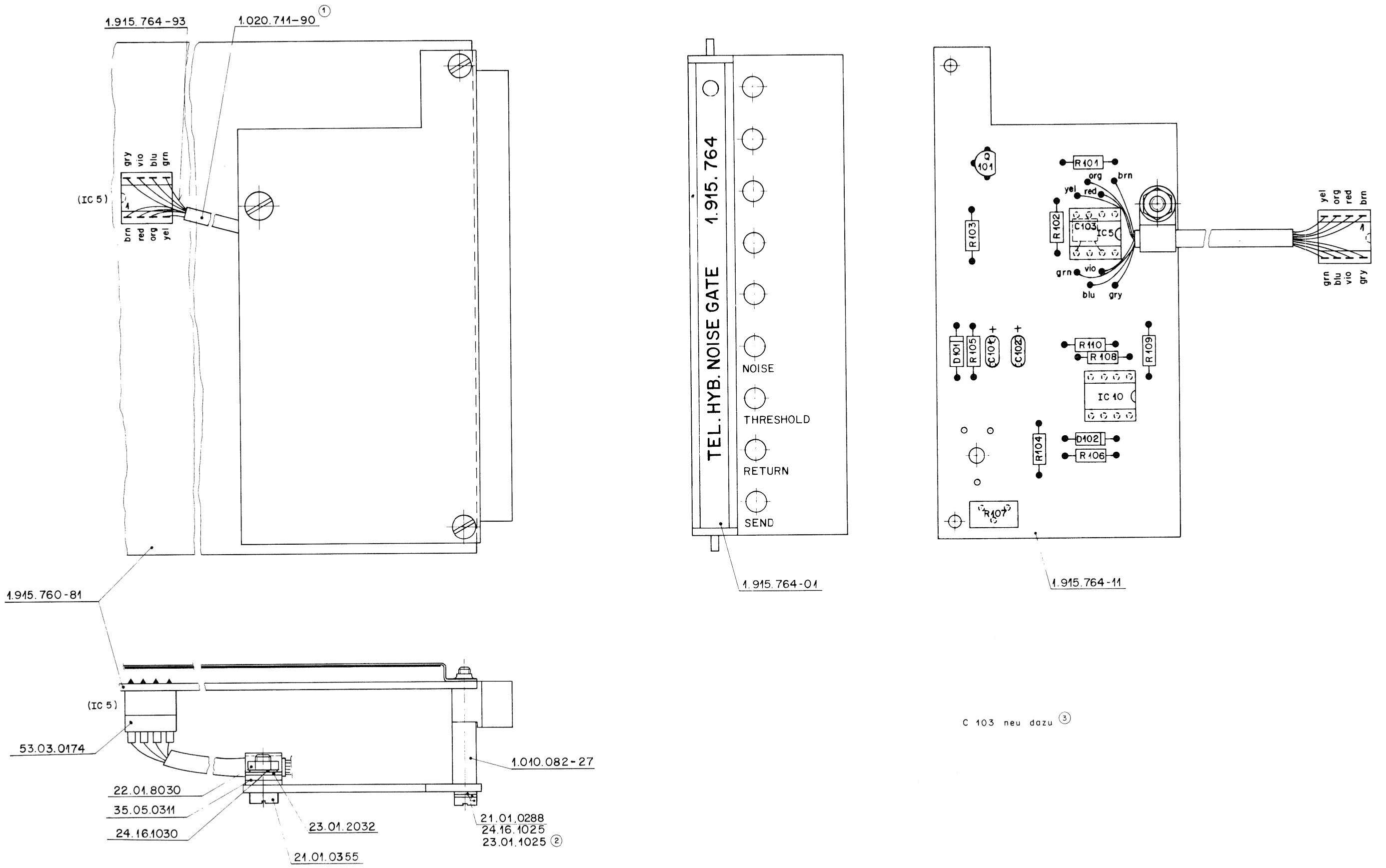
STUDER	DUAL RELAY UNIT	1.915.762-81	PAGE 2 OF 2

EDITION: 23. Oktober 1990

Automatic Telephone Hybrid 1.915.764.00



Automatic Telephone Hybrid 1.915.764.00

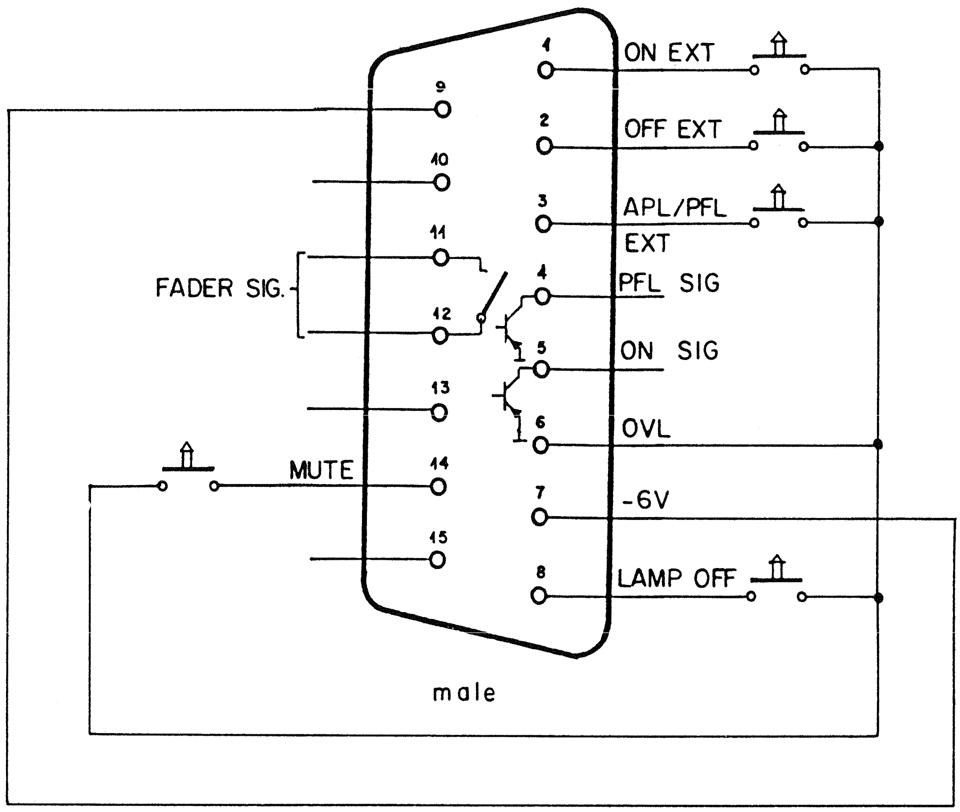


IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT		MFR
	C101	59.26.2100	10 µF	16V	EL	
	C102	59.26.1479	4.7 µF	10V	EL	
①	C103	59.32.1101	110 pF		CR	
	D101	50.04.0125	1N4448			
	D102	50.04.1103	ZPD7V5			
	R101	57.11.4334	330 k			
	R102	57.11.4222	2.2 k			
	R103	57.11.4683	68 k			
	R104	57.11.4332	3.3 k			
	R105	57.11.4224	220 k			
	R106	57.11.4103	10k			
	R107	58.01.7104	100k	LIN		
	R108	57.11.4561	560			
	R109	57.11.4104	100 k			
	R110	57.11.4221	220			
	IC 5	50.09.0107	RC4559	DUAL OPAMP		TI, RA
	IC10	50.09.0107	RC4559	DUAL OPAMP		TI, RA
	Q 1	50.03.0436	BC237B	NPN		P, S, M
		53.03.0174		ADAPTER PLUG		
		1.915.760.81		TEL. HYBRID KOMPL		ST
		21.01.0355	M3x8	SCREW		
		23.01.2032	7/3.2	WASHER		
		22.01.8030	M3	NUT		
		35.05.0311	4.8	BINDER		
		21.01.0288	M2.5x25			
		1.010.082.27	3,2/5x13	SPACER		
		1.915.764.01		LABEL		ST

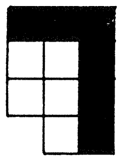
IND	DATE	NAME		
④			TI = TEXAS INST.	ST = STUDER
③			RA = RAYTHEON	
②			P = PHILIPS	
①	19.10.87	Nr	S = SIEMENS	
○	30.11.81	[illegible]	M = MOTOROLA	
STUDER	TEL HYBRID WITH NOISE GATE		1.915.764.00	PAGE 1 OF 1

EDITION: 23. Oktober 1990

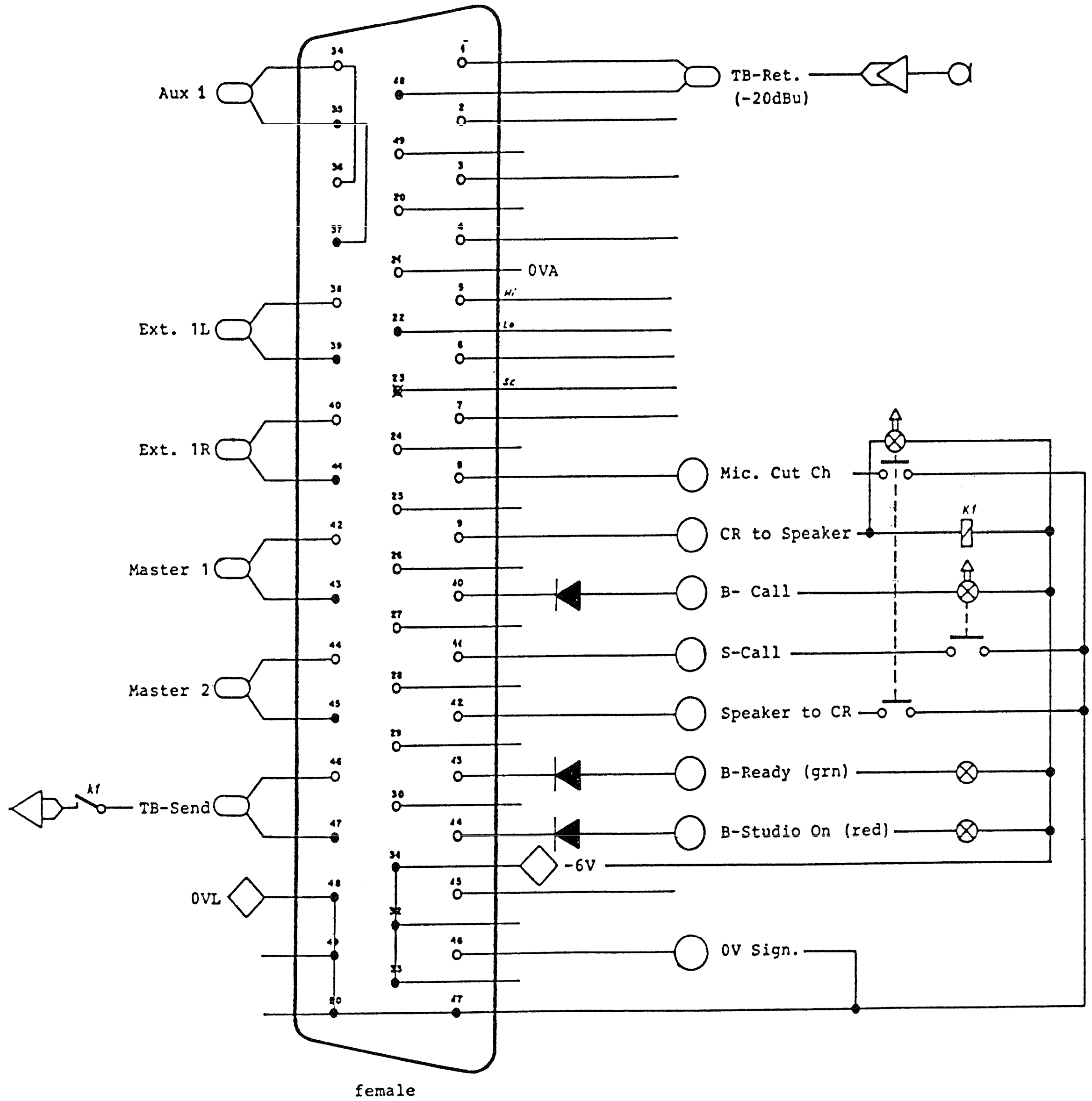
8 Connectors



JUMPERS 511,512,513 (STANDARD)



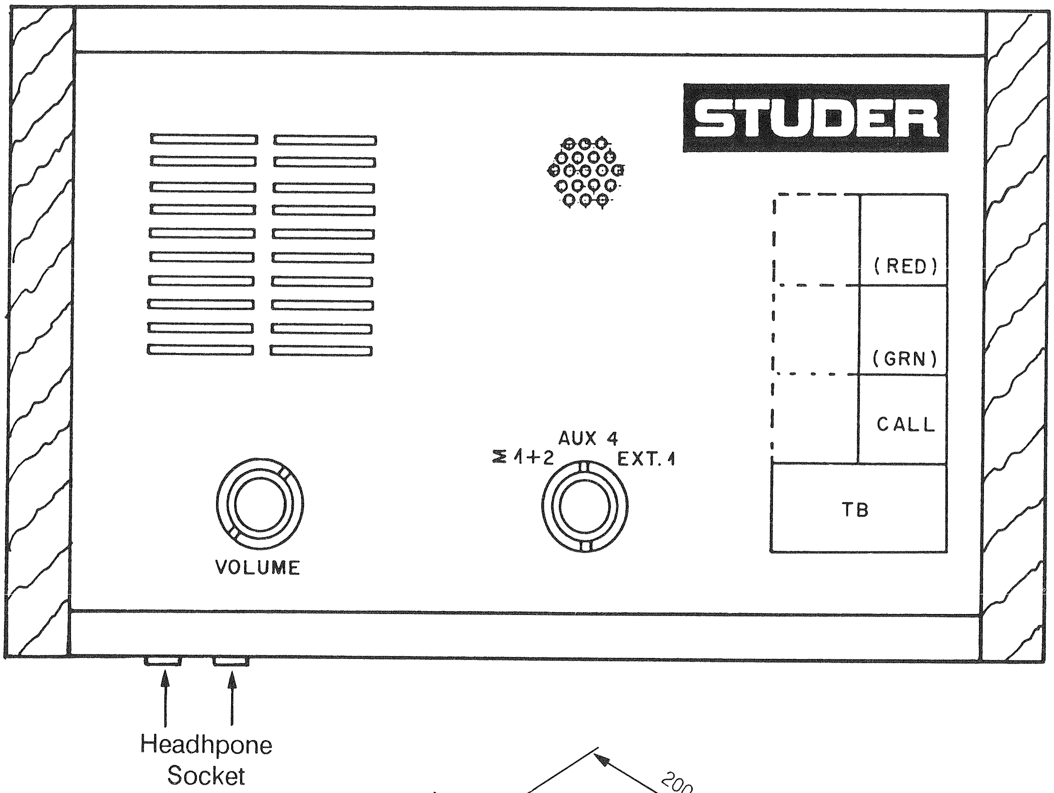
2.3.87 WB	D-TYP-CONNECTOR 15 PIN.	
STUDER	MIXING CONSOLE 970 15pin D-TYPE INPUT UNIT	1.970.

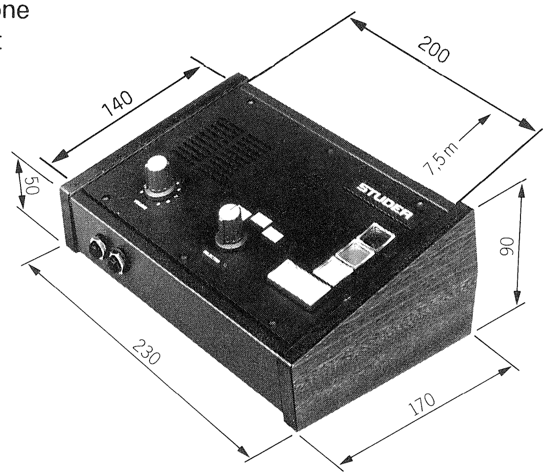


	D-TYP-CONNECTOR 50 PIN.
STUDER	TB-Box

10 Accessories

1. Talk Back Box 1.924.560

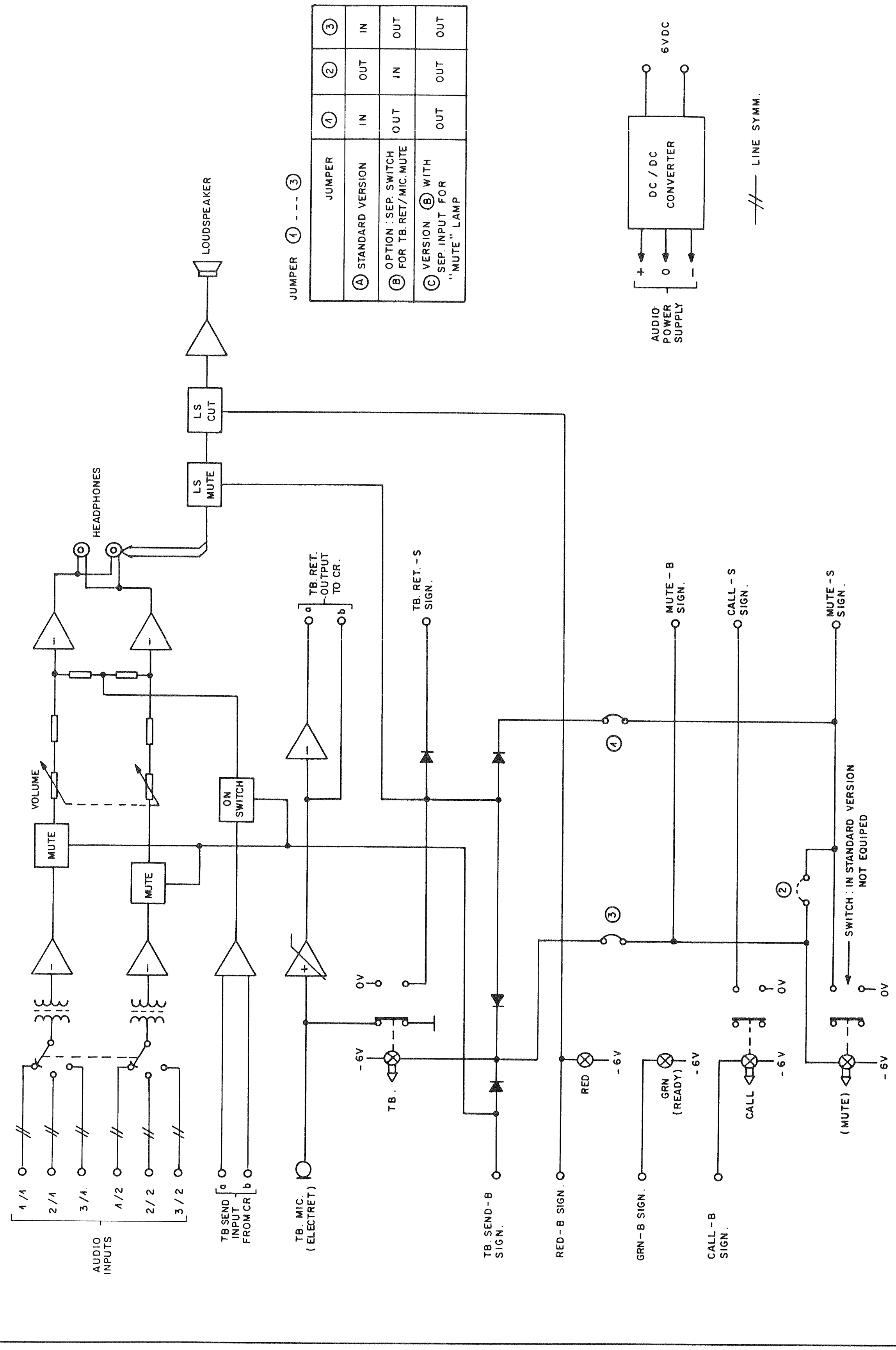




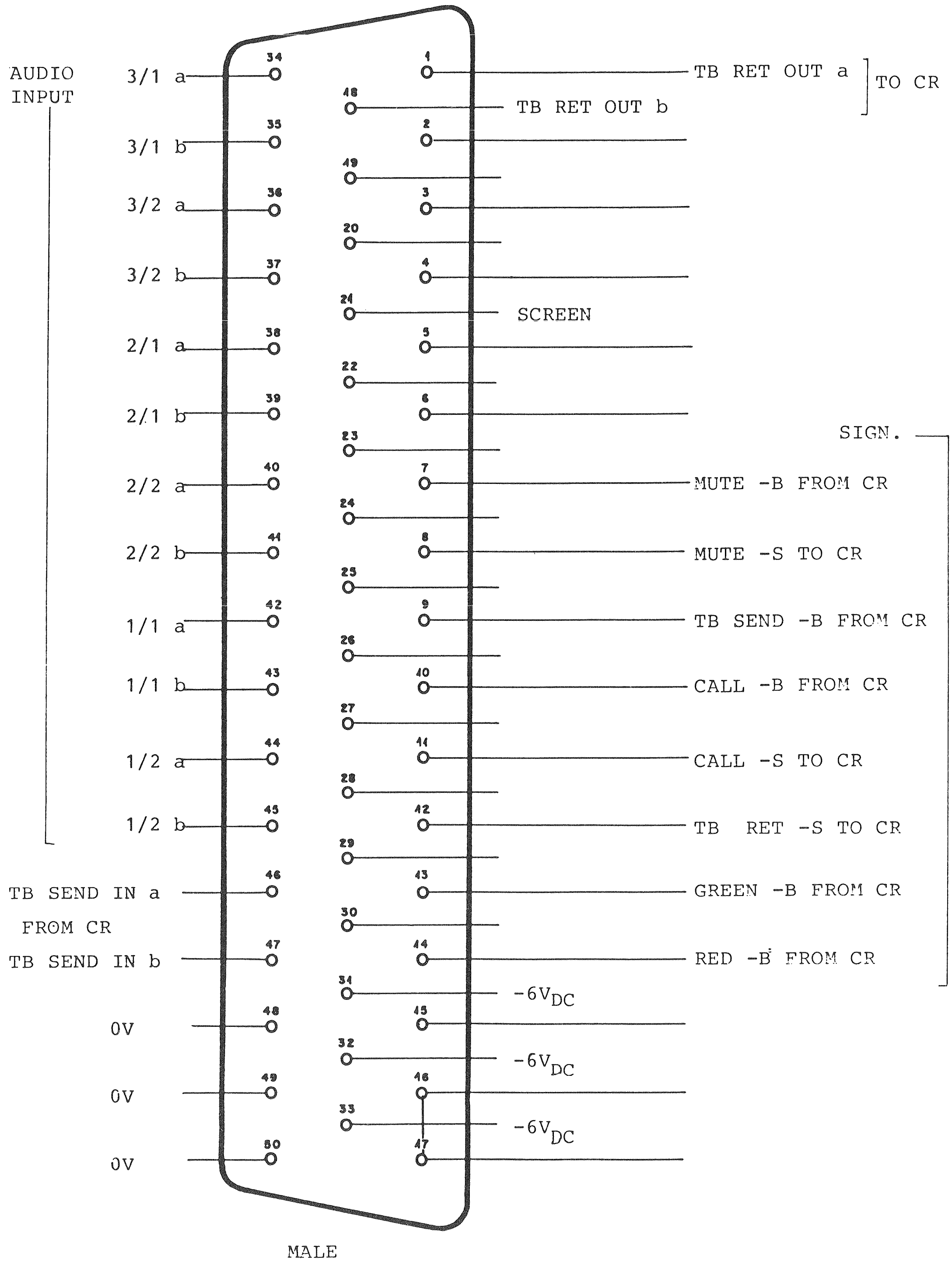
0 14.11.85	0	0	0	0
STUDER REGENSDORF ZURICH	TALK BACK BOX		1.924.560	

Block Diagram Talk Back Box

1.924.560/1

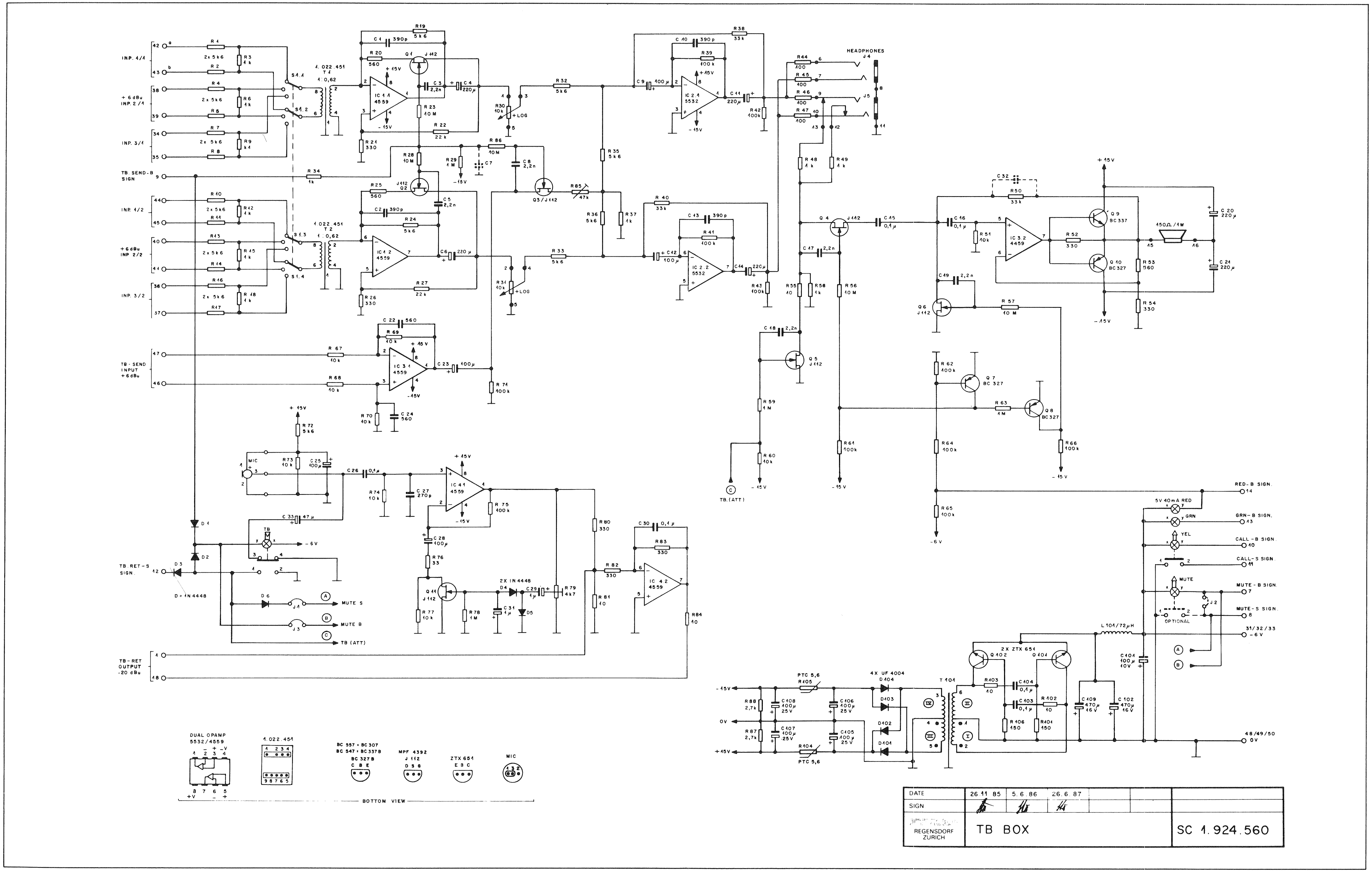


Talk Back Box **1.924.560**
D-Typ-Connector 50 PIN.

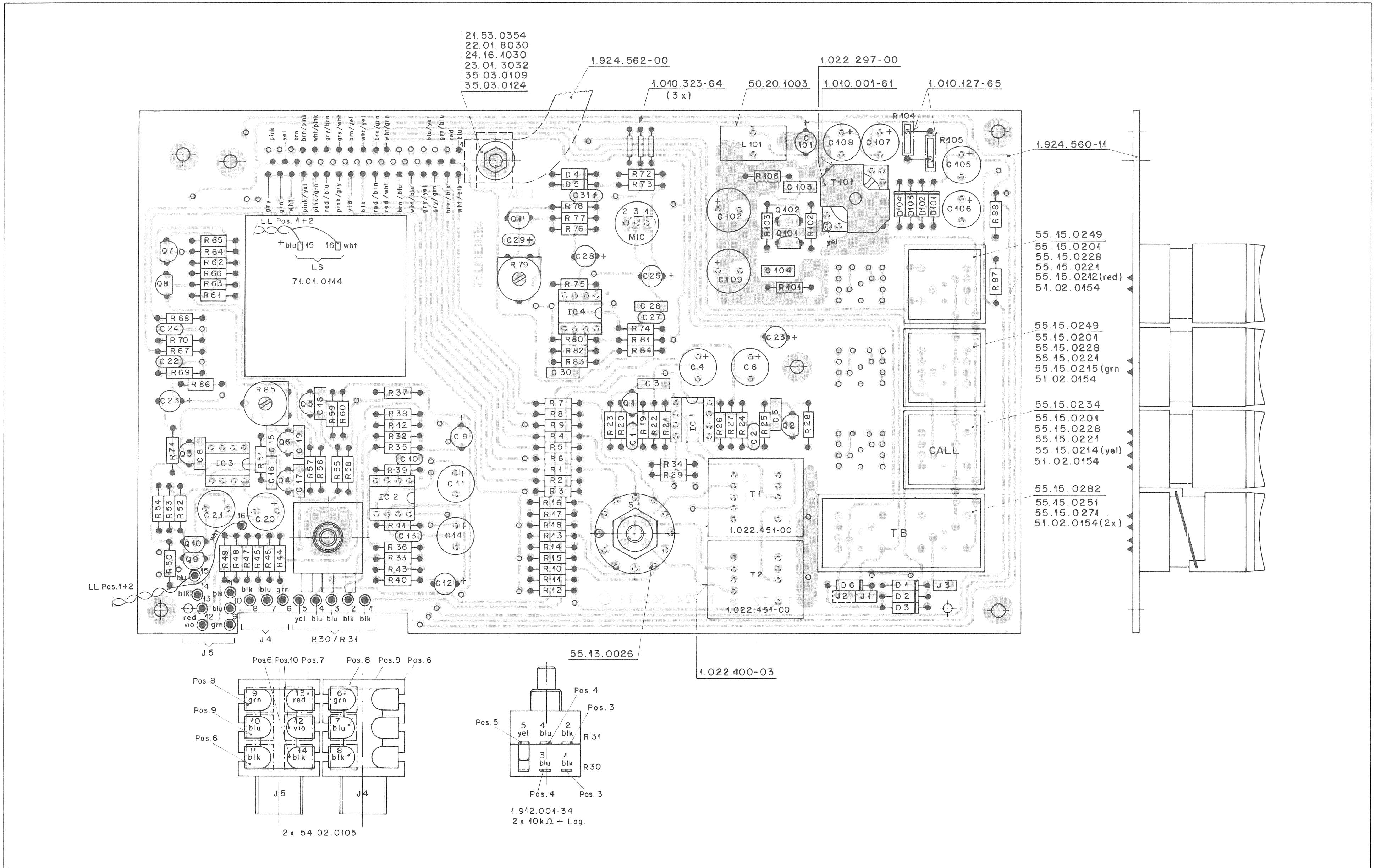


15.11.85	D-TYP-CONNECTOR 50 PIN.	
STUDER	TALK BACK BOX	1.924.560

Talk Back Box 1.924.560



Talk Back Box 1.924.560



TALK BACK BOX 1.924.560

IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	C1	59.34.5391	390p	CER	
	C2	59.34.5391	390p	CER.	
	C3	59.06.0222	2,2n	PE	
	C4	59.22.3221	220µ	10V EL	
	C5	59.06.0222	2,2n	PE	
	C6	59.22.3221	220µ	10V EL	
	C7				
	C8	59.06.0222	2,2n		
	C9	59.22.3101	100µ	10V EL	
	C10	59.34.5391	390p	CER	
	C11	59.22.3221	220µ	10V EL	
	C12	59.22.3101	100µ	10V EL	
	C13	59.34.5391	390p	CER	
	C14	59.22.3221	220µ	10V EL	
	C15	59.06.0104	0,1µ	PE	
	C16	59.06.0104	0,1µ	PE	
	C17	59.06.0222	2,2n	PE	
	C18	59.06.0222	2,2n	PE	
	C19	59.06.0222	2,2n	PE	
	C20	59.22.4221	220µ	16V EL	
	C21	59.22.4221	220µ	16V EL	
	C22	59.34.5561	560p	CER	
	C23	59.22.3101	100µ	10V EL	
	C24	59.34.5561	560p	CER	
	C25	59.22.3101	100µ	10V EL	
	C26	59.06.0104	0,1µ	PE	
	C27	59.34.4271	270p	CER	
	C28	59.22.3101	100µ	10V EL	
	C29	59.26.9106	1µ	40V SAL.	
	C30	59.06.0104	0,1µ	PE	

IND	DATE	NAME
4		
3		
2		
1	12.1.87	[signature]
O	13.11.85	[signature]

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IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	C31	59.26.9106	1µ	40V SAL	
	C32				
	C33	59.22.3470	47µ	10V EL	
	C34				
	C101	59.22.3101	100µ	10V EL	
4	C102	59.22.4471	470µ	16V EL	
	C103	59.06.0104	0,1µ		
	C104	59.06.0104	0,1µ		
	C105	59.22.5101	100µ	25V EL	
	C106	59.22.5101	100µ	25V EL	
	C107	59.22.5101	100µ	25V EL	
	C108	59.22.5101	100µ	25V EL	
4	C109	59.22.4471	470µ	16V EL	
	D1...6	50.04.0125	1N4448	Si	Ph
	D101...104	50.04.0138	UF 4004	Si 400V 1A 1A @ 1V 50ns	GI
	IC1	50.09.0107	RC 4559	Op. Amp Dual	Ra
	IC2	50.09.0105	NE 5532	Op. Amp. Dual	Sig.
	IC3	50.09.0107	RC 4559	Op. Amp Dual	Ra
	IC4	50.09.0107	RC 4559	Op. Amp Dual	Ra
	L101	62.03.0015	72µH	2A	

IND	DATE	NAME
4		
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1	12.1.87	[signature]
O	13.11.85	[signature]

Ph = Philips
GI = General Instruments
Ra = Raytheon
Sig = Signetics

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IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	Q1	50.03.0350	J112	N FET MPF 4392	Mot
	Q2	50.03.0350	J112	N FET MPF 4392	Mot
	Q3	50.03.0350	J112	N FET MPF 4392	Mot
	Q4	50.03.0350	J112	N FET MPF 4392	Mot
	Q5	50.03.0350	J112	N FET MPF 4392	Mot
	Q6	50.03.0350	J112	N FET MPF 4392	Mot
	Q7	50.43.0351	BC 327	PNP	Mot
	Q8	50.43.0351	BC 327	PNP	Mot
	Q9	50.43.0340	BC 337	NPN	Mot
	Q10	50.43.0351	BC 327	PNP	Mot
	Q11	50.03.0350	J112	N FET MPF 4392	Mot
	Q101	50.43.0523	ZTX 651	NPN	Fe
	Q102	50.43.0523	ZTX 651	NPN	Fe

IND	DATE	NAME
4		
3		
2		
1	12.1.87	[signature]
O	13.11.85	[signature]

Mot : Motorola
Fe : Ferranti

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IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	R1	57.11.4562	5,6k		
	R2	57.11.4562	5,6k		
	R3	57.11.4102	1k		
	R4	57.11.4562	5,6k		
	R5	57.11.4562	5,6k		
	R6	57.11.4102	1k		
	R7	57.11.4562	5,6k		
	R8	57.11.4562	5,6k		
	R9	57.11.4102	1k		
	R10	57.11.4562	5,6k		
	R11	57.11.4562	5,6k		
	R12	57.11.4102	1k		
	R13	57.11.4562	5,6k		
	R14	57.11.4562	5,6k		
	R15	57.11.4102	1k		
	R16	57.11.4562	5,6k		
	R17	57.11.4562	5,6k		
	R18	57.11.4102	1k		
	R19	57.11.4562	5,6k		
	R20	57.11.4561	560		
	R21	57.11.4331	330		
	R22	57.11.4223	22k		
	R23	57.11.5106	10M		
	R24	57.11.4562	5,6k		
	R25	57.11.4561	560		
	R26	57.11.4331	330		
	R27	57.11.4223	22k		
	R28	57.11.5106	10M		
	R29	57.11.4105	1M		

IND	DATE	NAME
4		
3		
2		
1	12.1.87	[signature]
O	13.11.85	[signature]

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TALK BACK BOX 1.924.560

IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	R30	1.912.001.34	10k	log Potmeter	St
	R31	"	10k	log	
	R32	57.11.4562	5,6k		
	R33	57.11.4562	5,6k		
	R34	57.11.4102	1k		
	R35	57.11.4562	5,6k		
	R36	57.11.4562	5,6k		
	R37	57.11.4102	1k		
	R38	57.11.4333	33k		
	R39	57.11.4104	100k		
	R40	57.11.4333	33k		
	R41	57.11.4104	100k		
	R42	57.11.4104	100k		
	R43	57.11.4104	100k		
	R44	57.11.4101	100		
	R45	57.11.4101	100		
	R46	57.11.4101	100		
	R47	57.11.4101	100		
	R48	57.11.4102	1k		
	R49	57.11.4102	1k		
	R50	57.11.4333	33k		
	R51	57.11.4103	10k		
	R52	57.11.4331	330		
	R53	57.11.4561	560		
	R54	57.11.4331	330		
	R55	57.11.4100	10		
	R56	57.11.5106	10M		
	R57	57.11.5106	10M		
	R58	57.11.4102	1k		
	R59	57.11.4105	1M		

IND	DATE	NAME	
④			St: Studer
③			
②			
①	12.1.87	[signature]	
○	13.11.85	[signature]	

STUDER | TB BOX | 1.924.560 | PAGE 5 OF 8

IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	R60	57.11.4103	10k		
	R61	57.11.4104	100k		
	R62	57.11.4104	100k		
	R63	57.11.4105	1M		
	R64	57.11.4104	100k		
	R65	57.11.4104	100k		
	R66	57.11.4104	100k		
	R67	57.11.4103	10k		
	R68	57.11.4103	10k		
	R69	57.11.4103	10k		
	R70	57.11.4103	10k		
	R71	57.11.4104	100k		
	R72	57.11.4562	5,6k		
	R73	57.11.4103	10k		
	R74	57.11.4103	10k		
	R75	57.11.4104	100k		
	R76	57.11.4330	33		
	R77	57.11.4103	10k		
	R78	57.11.4105	1M		
	R79	58.02.5472	4,7k	Pot.	
	R80	57.11.4331	330		
	R81	57.11.4100	10		
	R82	57.11.4331	330		
	R83	57.11.4331	330		
	R84	57.11.4100	10		
	R85	58.02.5473	47k	Pot.	
	R86	57.11.4106	10M		
	R87	57.11.4272	2,7k		
	R88	57.11.4272	2,7k		

IND	DATE	NAME	
④			
③			
②			
①	12.1.87	[signature]	
○	13.11.85	[signature]	

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IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	R101	57.11.4151	150		
	R102	57.11.4100	10		
	R103	57.11.4100	10		
	R104	57.99.0209	5,6	PTC	Ph
	R105	57.99.0209	5,6	PTC	Ph
	R106	57.11.4151	150		
	S1	55.13.0026	4x3U	Rotary switch	ELHA
①	S2/XB2	55.15.0282			EAO
	S3	55.15.0234		Optional	EAO
	S4	55.15.0234			EAO
	XB	55.15.0249			EAO
	BL5	51.02.0154	5V/40mA	T1 Bi-Pin	
	T1	1.022.451.00	1:0,62		St
	T2	1.022.451.00	1:0,62		St
	T101	1.022.297.00		Converter Trafo	St

IND	DATE	NAME	
④			Ph: Philips
③			St: Studer
②			EAO
①	12.1.87	[signature]	ELHA
○	13.11.85	[signature]	

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IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	MIC	89.01.0343		Electret	
	LS	71.01.0114		150Ω ⌀.80mm	
	J(S)1.2	54.01.0020	4 Pin		
	J(S)3	54.01.0020	2 Pin		
	J4	54.02.0105		Stereo Jack Socket	
	J5	54.02.0105		Stereo Jack Socket	

IND	DATE	NAME	
④			
③			
②			
①	12.1.87	[signature]	
○	13.11.85	[signature]	

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