

Audio System Components

Service Instructions

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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:

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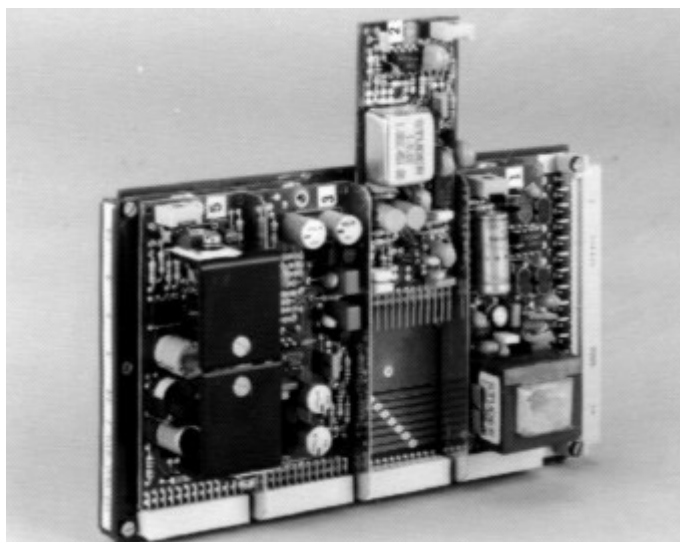
We reserve the right to change the design and the performance specifications of the products listed here as technical progress may warrant.

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
- $0-\Omega$ 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.

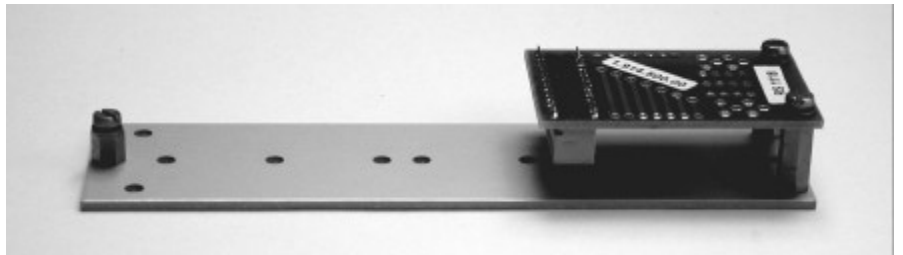
2.1 Modular Sub-Cards (MSCs)

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**

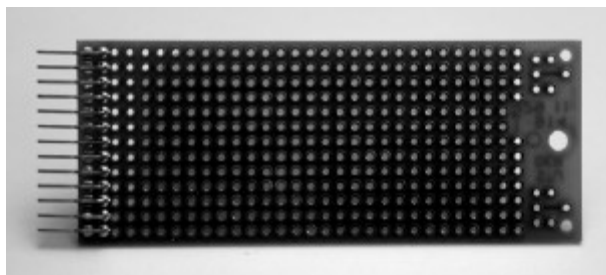
Motherboard for 1 MS-card

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:**

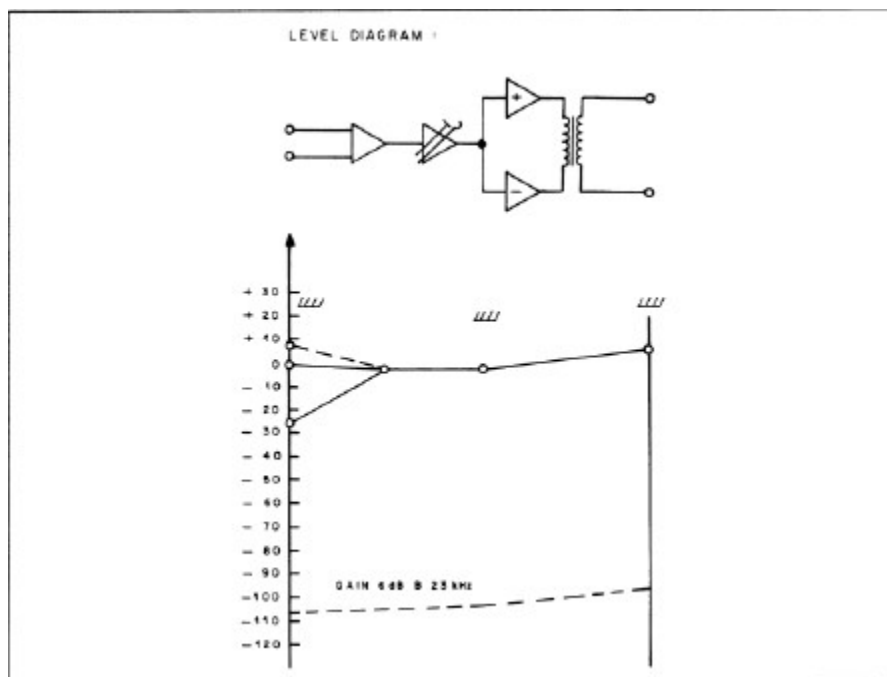
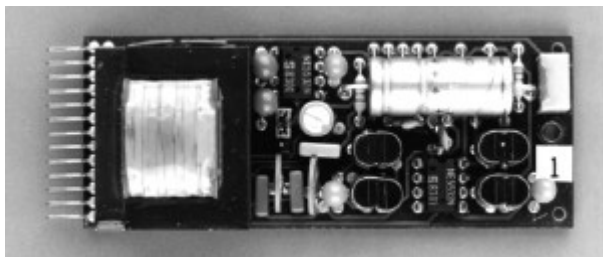
Breadboarding card

1.914.529.xx

2.1.3 Line Output Amplifier

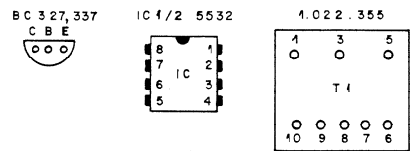
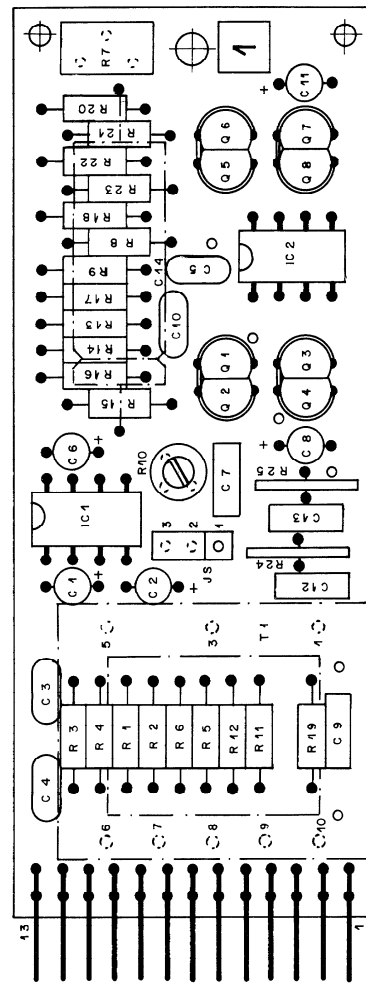
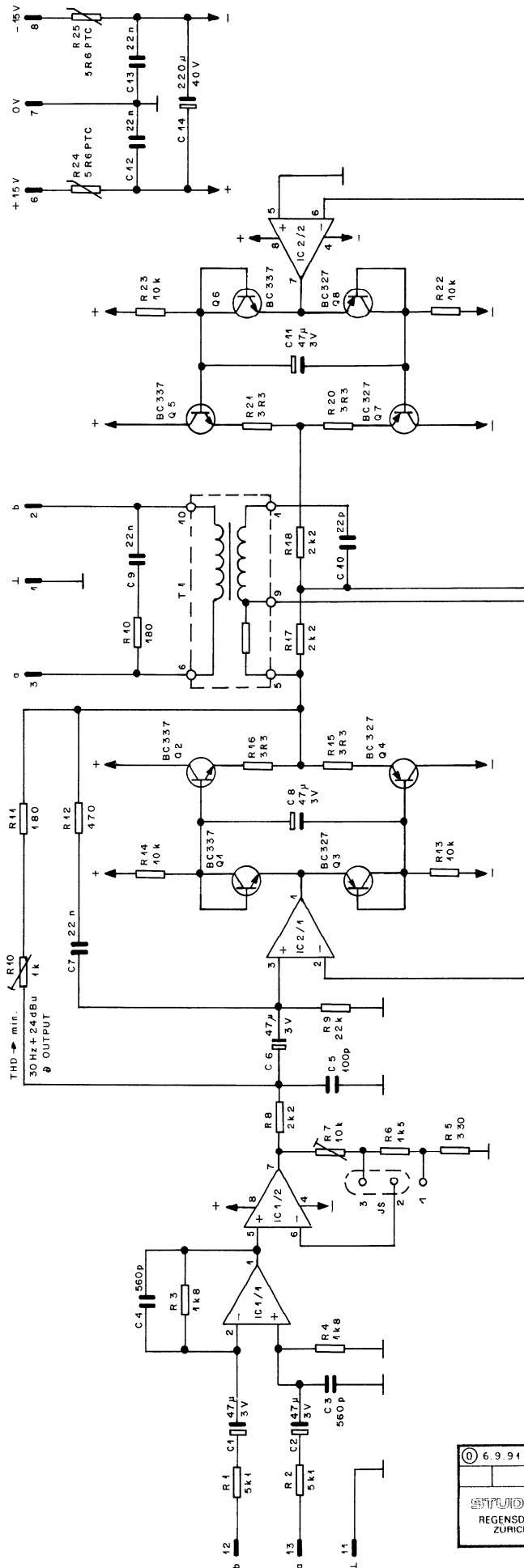
1.914.501

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



BOTTOM VIEW

PIN	(A)	(B)	(C)	(D)
INP a	13	1	7	24
INP b	12	2	8	22
⊥	11	3	9	23
OUT a	3	4	10	24
OUT b	2	5	11	25
⊥	4	6	13	26
+ 15V	6	16		
0V	7	15		
-15V	8	14		

<p>STUDER REGENSDORF ZÜRICH</p>	<p>LINE AMPLIFIER (NR 1)</p>	<p>SC 1.914.501.00</p>
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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
	J5J	54.01.0021	JUMPER JACK			
	J5P	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

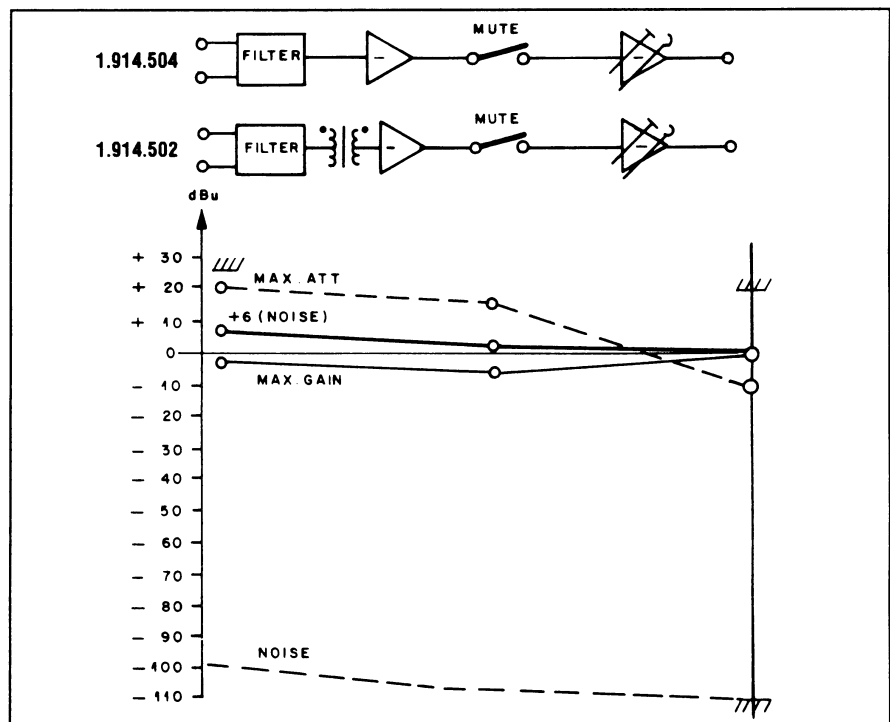
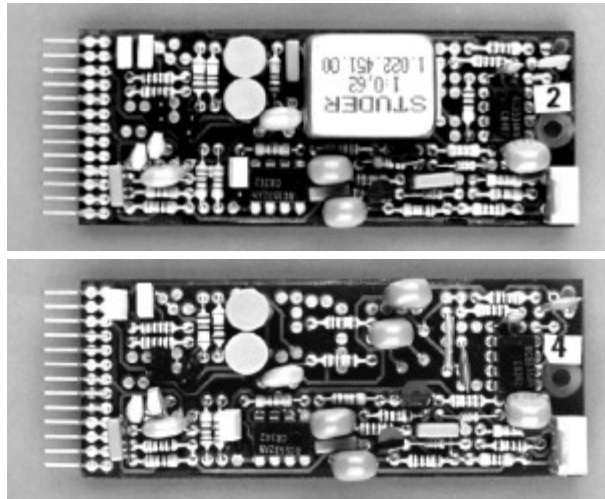
END



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. 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.



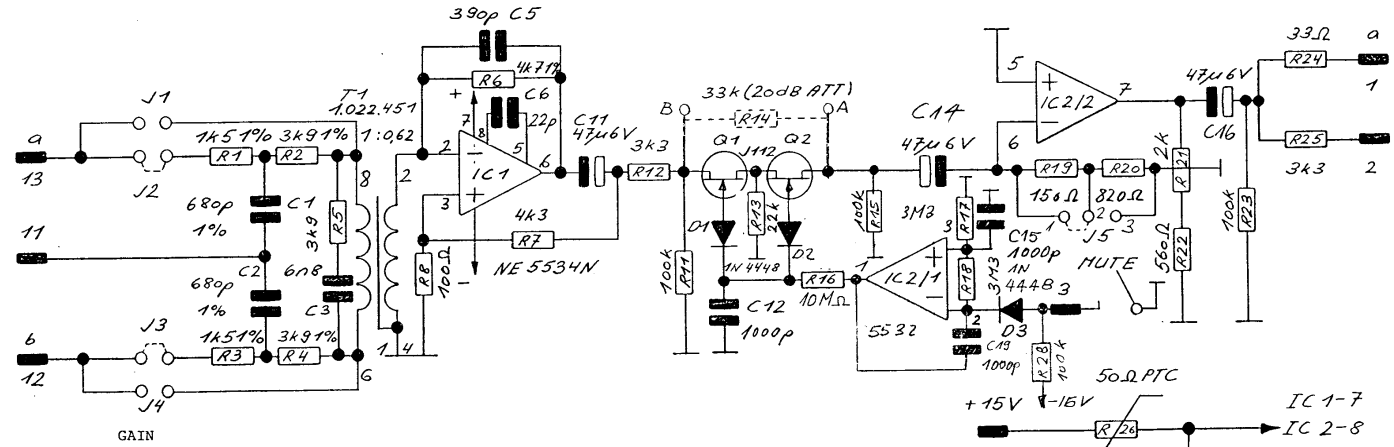
The amplifier may be used, for example, to work into a 600 Ω load, or into the input of a 0- Ω input amplifier of another summing circuit.

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 k Ω across muting circuit)	
Supply:		± 15 V (11 mA idling)	
Dimensions:		MS-card , 34 \times 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

CIS		EURO 32 P			
	PIN	(a)	(b)	(c)	(d)
IN a	13	1	7	21	27
IN b	12	2	8	22	28
IN L	11	3	9	23	29
	10				
-15V	8	14			
0 V	7	15			
+15V	6	16			
	5				
MUTE I	3	4	10	24	30
OUT (3K3)	2	5	11	25	31
OUT	1	6	13	26	32

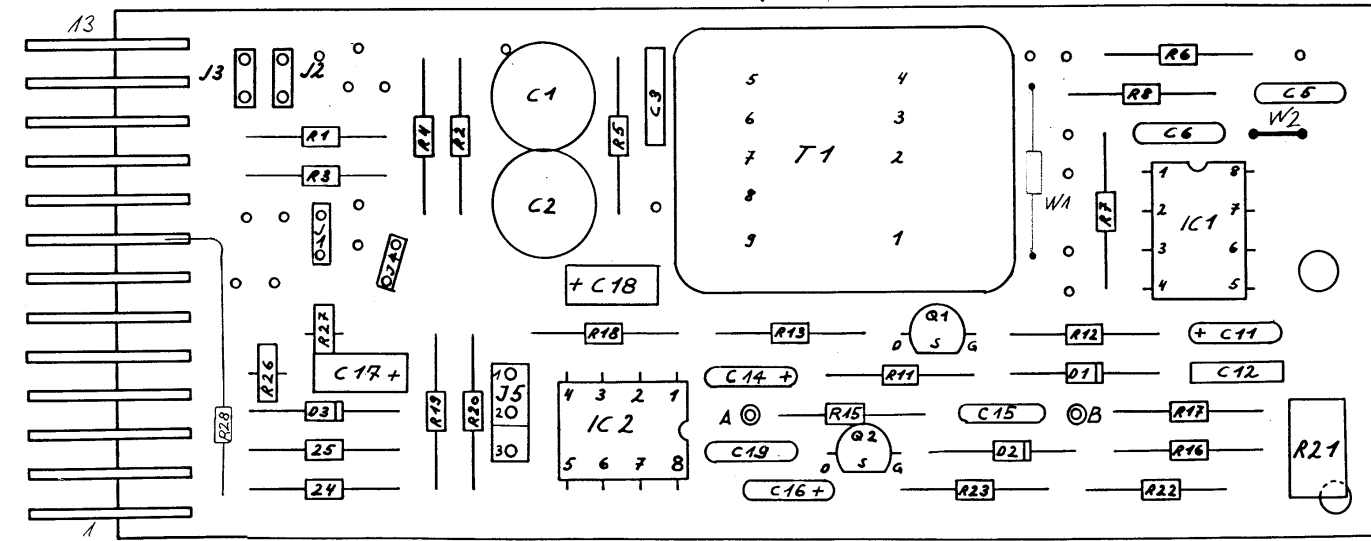
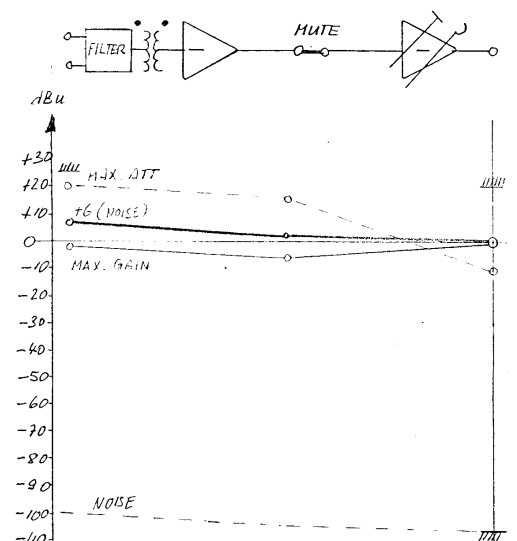
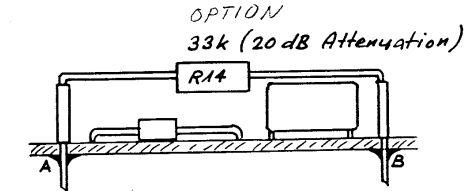
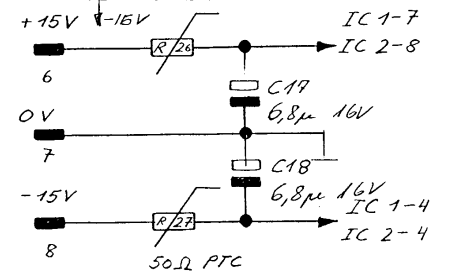


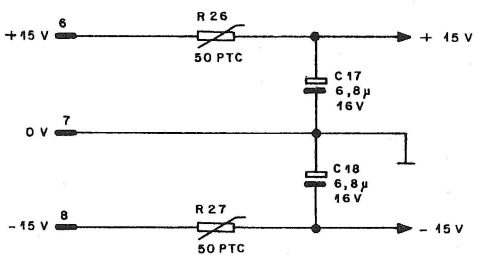
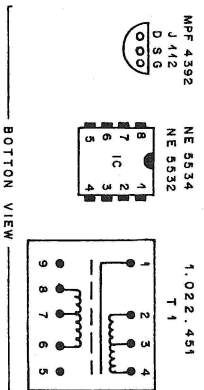
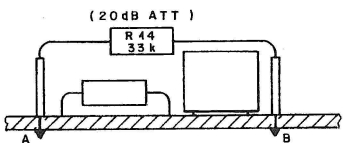
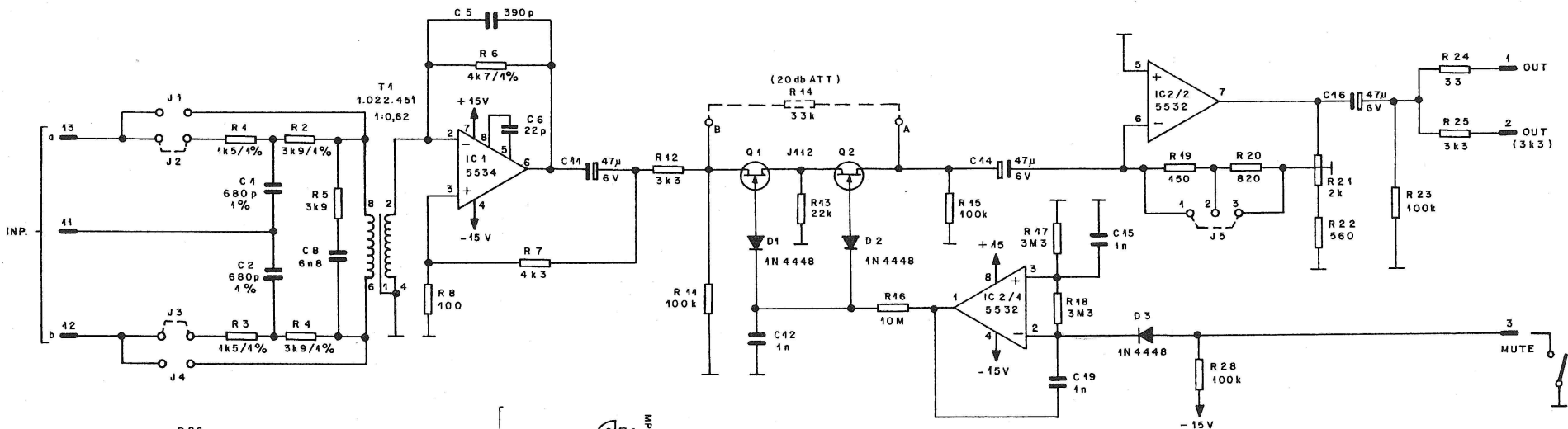
GAIN
Adjustable (see level diagram)
Max. gain $V_{max} = +1 \text{ dB}$
Max. attenuation $V_{min} = -30 \text{ dB}$

GENERAL
Frequency response 30Hz ... 16kHz $\pm 0,3 \text{ dB}$
THD amplifier 30Hz ... 16kHz $\text{THD} < -70 \text{ dB}$
Noise (B 23kHz), gain -6 dB $U_{NOISE} = -106 \text{ dBu}$

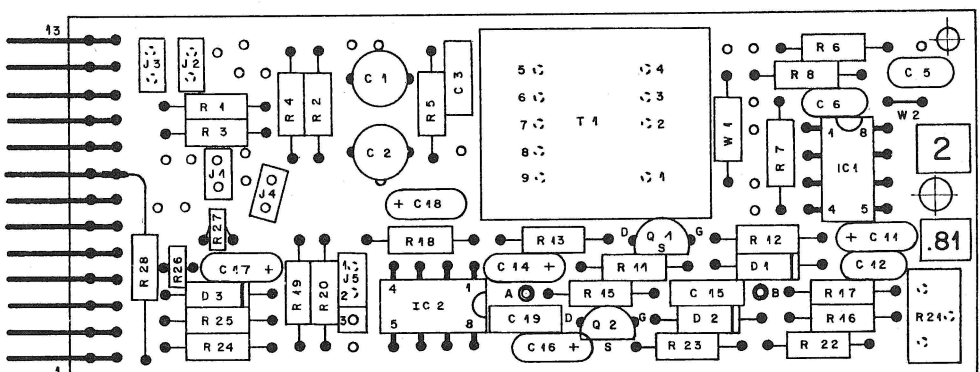
ATTENUATOR
Mute switch, with resistor programmable to an attenuator of 20 dB

SUPPLY
Supply voltage $U = \pm 15 \text{ V}$
Idle current $I = 11 \text{ mA}$





CIS	PIN	EURO 32 PIN
IN a	13	1
IN b	12	2
IN L	11	3
	10	4
	9	5
	8	6
	7	7
	6	8
	5	9
	4	10
	3	11
	2	12
MUTE	1	13
OUT(3k3)	2	14
OUT	3	15
	4	16
	5	17
	6	18
	7	19
	8	20
	9	21
	10	22
	11	23
	12	24
	13	25
	14	26
	15	27
	16	28
	17	29
	18	30
	19	31
	20	32



10931
 HL INPUT AMP.
 FLOATING (NR.2)
 1.914.502.81

HL Input Amp, transformer-balanced 1.914.502.81 (1)

Idx. Pos.	Part No.	Qty.	Type/Val.	Description	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, 1reihiig, 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					
				<i>optional (20 dB attenuation)</i>					
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 (NR4)

300

1.914.504.81

PAGE 1 OF 1

①	19.4.8545
②	8.2.9398
③	14.10.8545

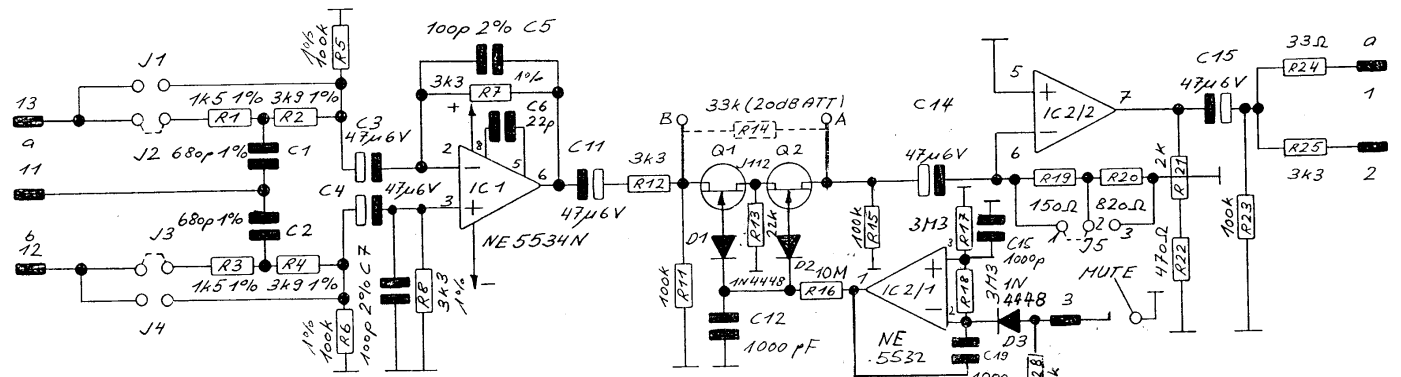
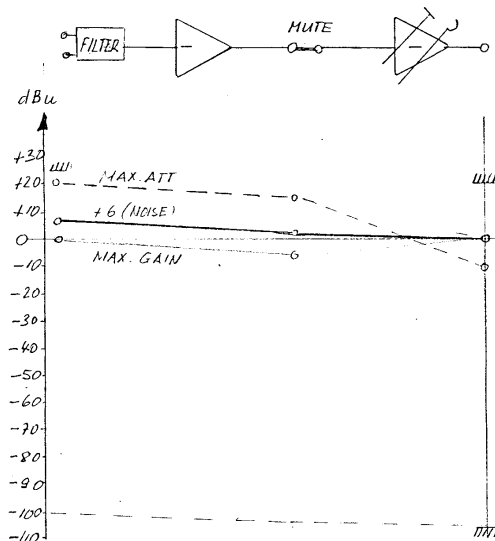
CIS		EURO 32 P			
PIN		(a)	(b)	(c)	(d)
INa	13	1	7	21	27
INb	12	2	8	22	28
IN L	11	3	9	23	29
	10				
-15V	8	14			
0 V	7	15			
+15V	6	16			
	5				
MUTE	3	4	10	24	30
OUT(3k3)	2	5	11	25	31
OUT	1	6	13	26	32

INPUT

Balanced, RF-filter
 Input impedance $R_i > 10 \text{ k}\Omega$
 0 Ω input with jumper
 Max. input level $U_{in} = +24 \text{ dBu}$
 Source impedance $R_s \leq 200 \Omega$

OUTPUT

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



GAIN

Adjustable (see level diagram)

Max. gain

Max. attenuation

$V_{max} = +1 \text{ dB}$

$V_{min} = -30 \text{ dB}$

GENERAL

Frequency response 30Hz ... 16kHz

THD amplifier 30Hz ... 16kHz

Noise (B 23kHz), gain -6 dB

$\pm 0,3 \text{ dB}$

THD $\leq 80 \text{ dB}$

$U_{NOISE} = -107 \text{ dBu}$

ATTENUATOR

Mute switch, with resistor programmable to an attenuator of 20 dB

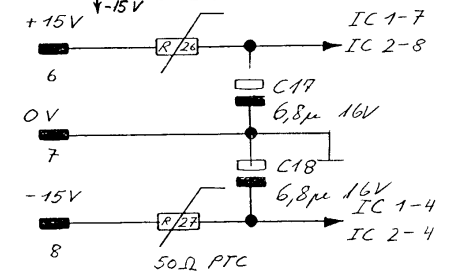
SUPPLY

Supply voltage

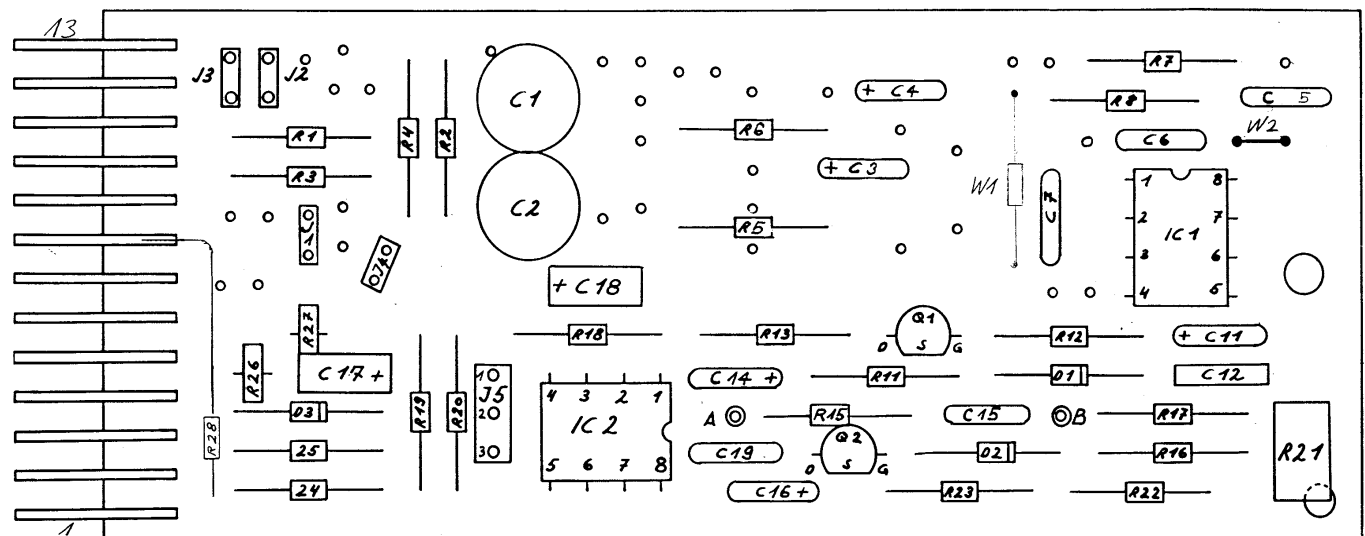
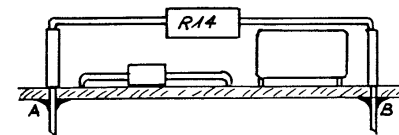
Idle current

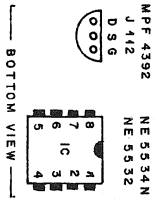
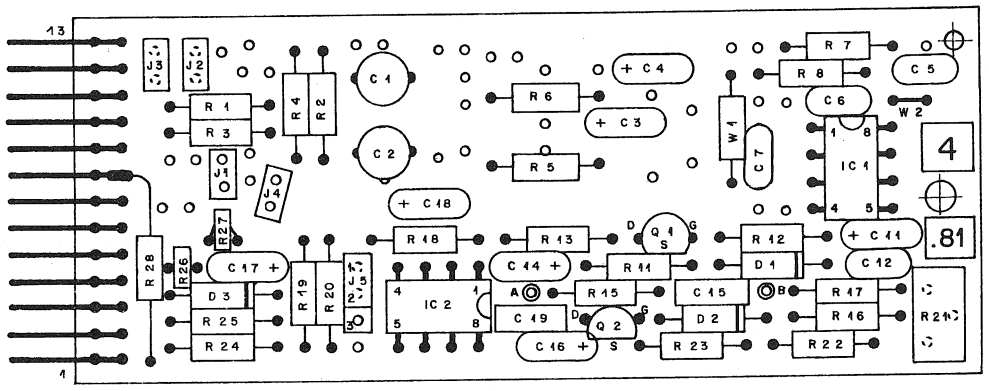
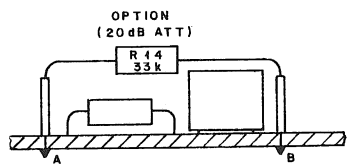
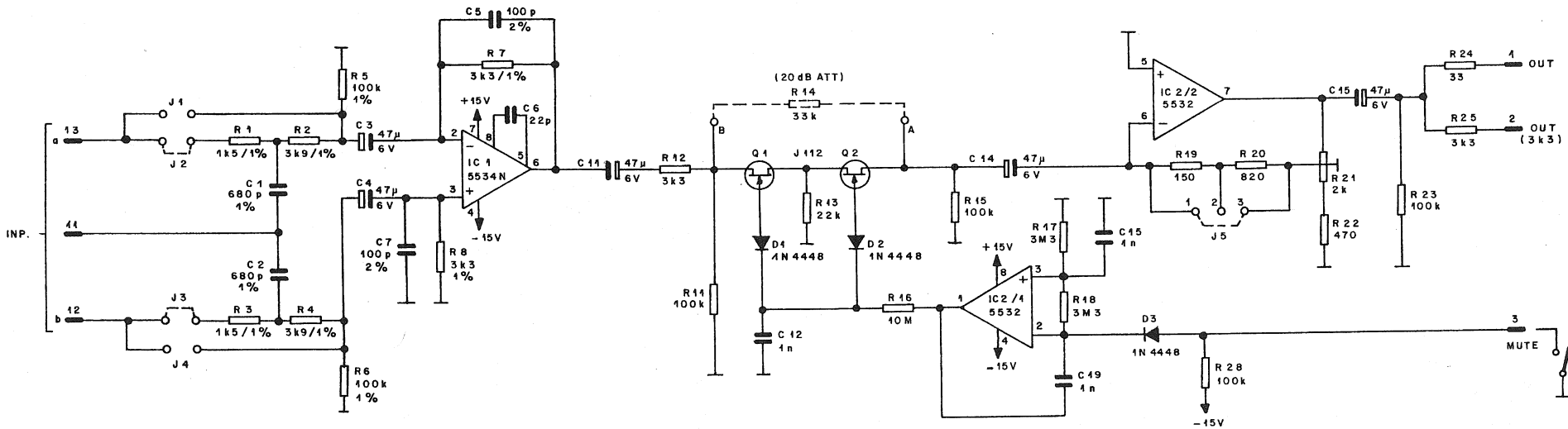
$U = \pm 15 \text{ V}$

$I = 11 \text{ mA}$



OPTION
33k (20 dB Attenuation)





MPF 4332
J 112
D 516
NE 5534N
NE 5532

CIS	PIN	EURO 32 PIN
IN a	13	1
IN b	12	2
IN L	41	3
	40	9
-15V	8	14
0V	7	15
+15V	6	16
MUTE	3	4
OUT(3)	2	5
OUT	1	6
		10
		21
		24
		25
		26
		27
		28
		29
		30
		31
		32

1.914.504

STUDER AUDIO COMPONENTS
"The Zürich"

HL INPUT AMP
BALANCED (NR. 4)

1.914.504.81

HL Input Amp, electronically balanced 1.914.504.81 (1)

Idx. Pos.	Part No.	Qty.	Type/Val.	Description	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 CJS parallelsteck					
0	P 2	54.01.0020	9 pcs	1p					
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	MF, 1%, 0207					
				<i>optional (20 dB attenuation)</i>					
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

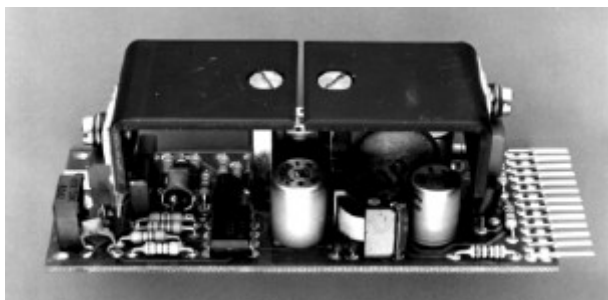
Comments:

(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.

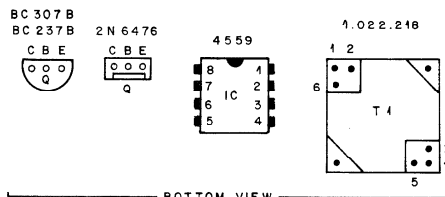
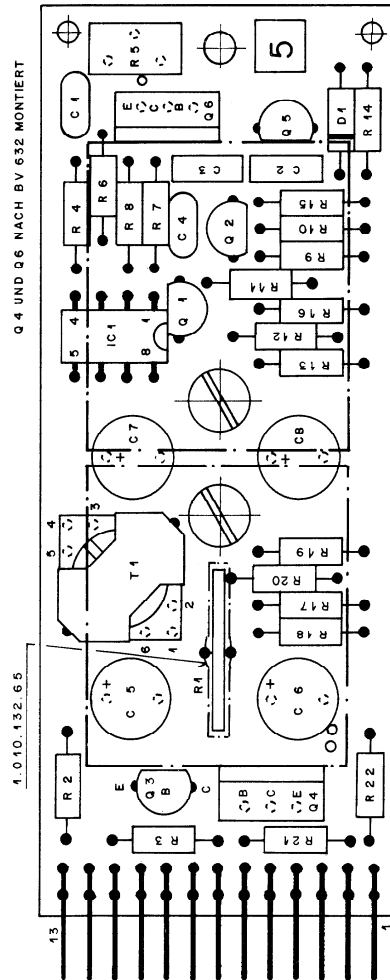
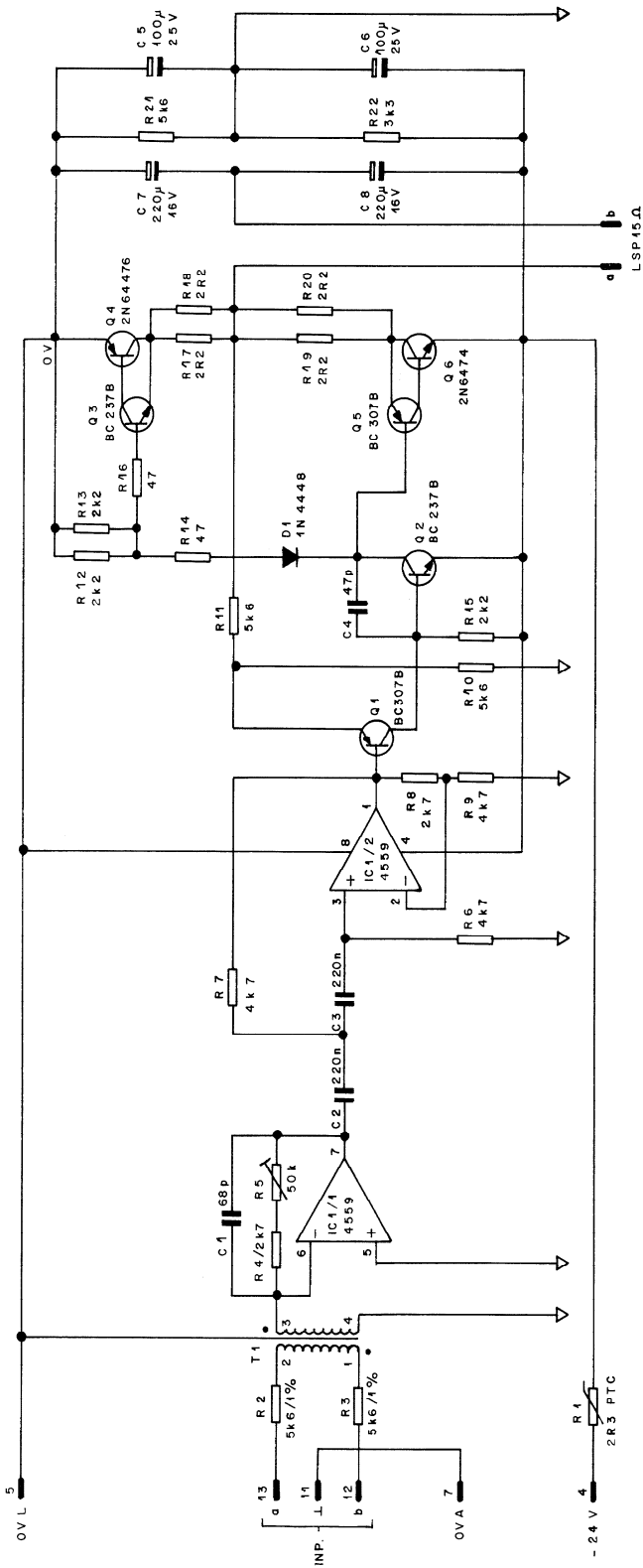
Supply: -24 V (40 mA idling, max. 220 mA fully driven)

Dimensions: **MS-card**, 34 × 85 mm

Ordering Information: Loudspeaker amplifier

1.914.505.xx

MSC SPEAKER AMPLIFIER



CIS	PIN	EURO 32 PIN			
		(a)	(b)	(c)	(d)
INP a	13	1	7	21	27
INP b	12	2	8	22	28
(L)	11	3	9	23	29
40	9				
8	8				
(L)	7				
6	6				
0V	5	19			
-24V	4	20			
OUT a	3	4	10	24	30
OUT b	2	5	11	25	31
1	1				

13. 9. 91			
STUDER REGENSDORF ZÜRICH	LSP AMPLIFIER 3 W (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
Ⓞ	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	2,3kΩ	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)

Ⓞ A. Ho 30/11/83

END

→

2.1.6 Microphone Pre-Amplifiers

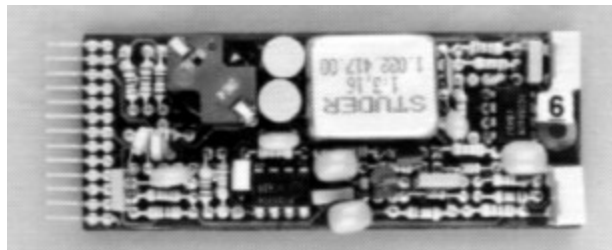
1.914.506/507

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.

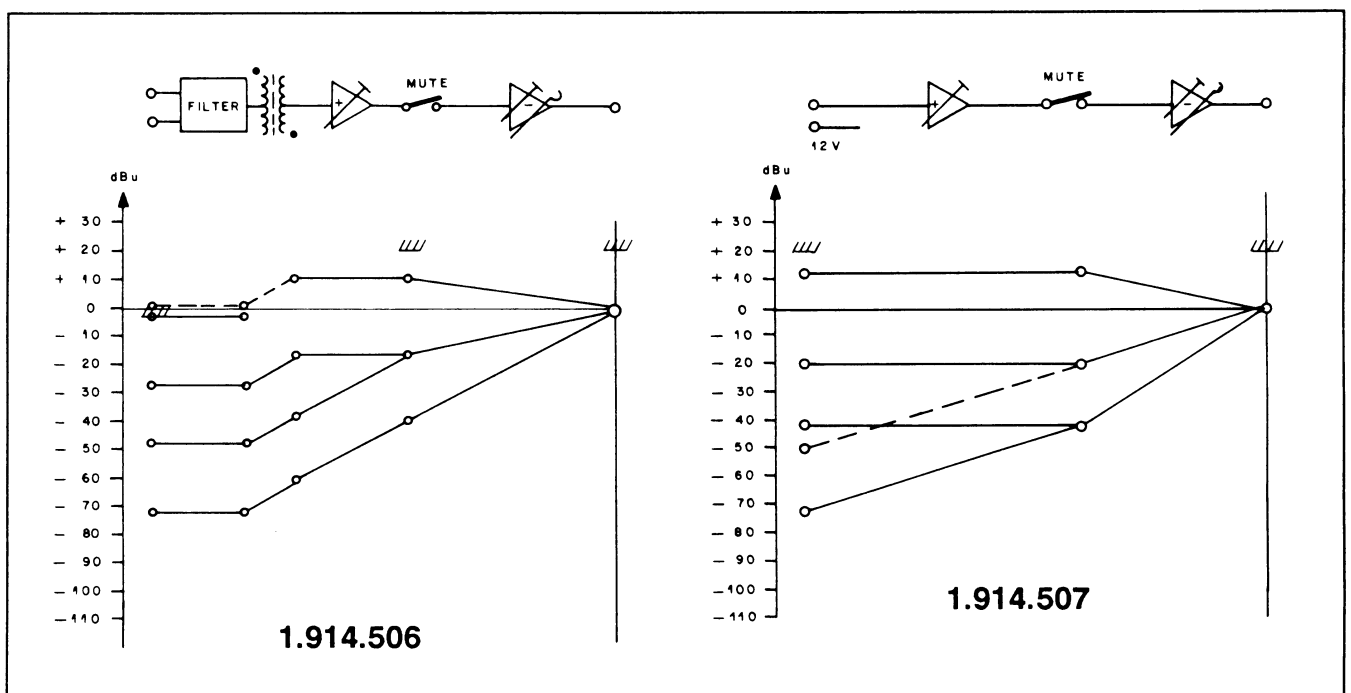
1.914.507 is designed for unbalanced electret microphones requiring a 12 V supply.

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.

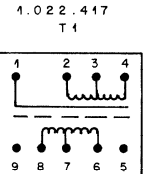
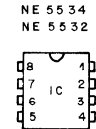
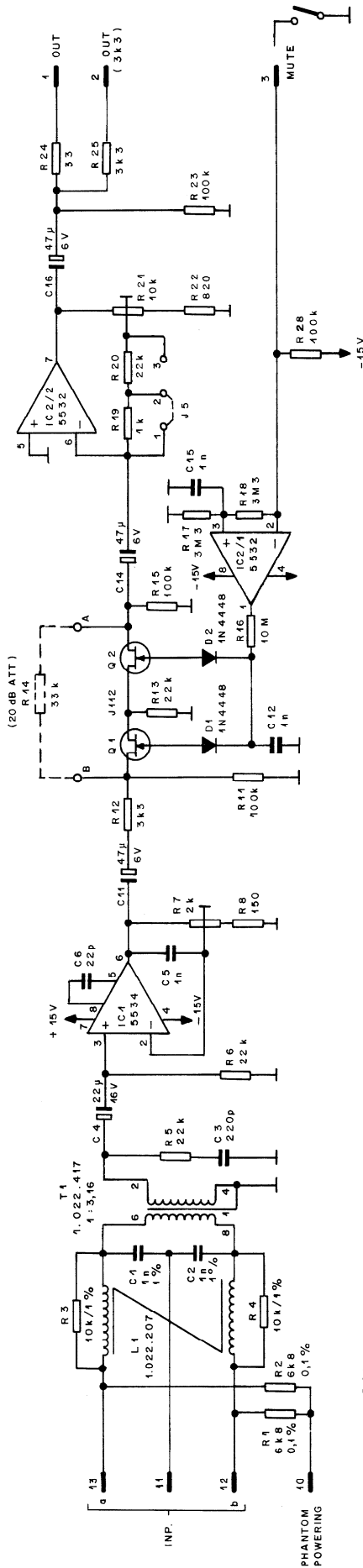
The amplifier's two outputs are unbalanced, with impedances of 3.3 kΩ or 33 Ω, respectively.



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	\pm 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:	\pm 15 V (11 mA idling)	
	+48 V (1.914.506, only if phantom powering required)	
Dimensions:	MS-card , 34 \times 85 mm	
Ordering Information:	<ul style="list-style-type: none">• Microphone pre-amplifier for dynamic microphones• Microphone pre-amplifier for electret microphones	1.914.506.xx 1.914.507.xx

MSC MICROPHONE PRE-AMP.

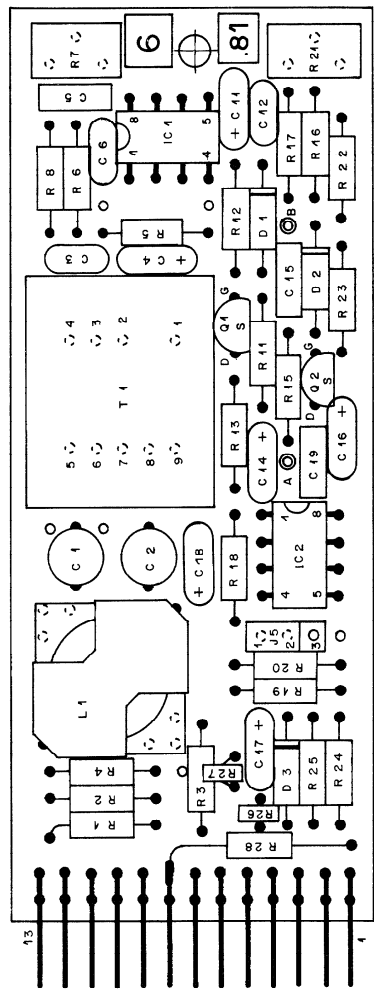
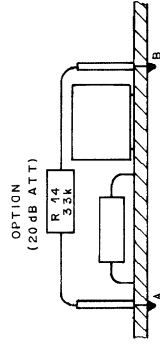
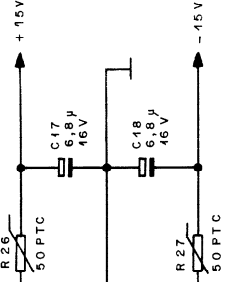


MPF 4392
J 112
D 5 G

NE 5534
NE 5532

1.022.417
T 1

BOTTOM VIEW



CIS	PIN	EURO 32 PIN			
		(A)	(B)	(C)	(D)
IN a	13	4	7	24	27
IN b	12	2	8	22	28
IN L	11	3	9	23	29
PHANTOM	10	47	17	18	18
	9				
-15V	8	14			
0V	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

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	22pF 16V	TA
C....5		59.06.0102	1000pF	PE
C....6		59.34.2220	22pF	CER
C....11		59.26.0470	47pF 6,3V	SAL
C....12		59.32.4102	1000pF	CER
C....13				
C....14		59.26.0470	47pF 6,3V	SAL
C....15		59.06.0102	1000pF	PE
C....16		59.26.0470	47pF 6,3V	SAL
C....17		59.26.2689	6,8pF 16V	SAL
C....18		59.26.2689	6,8pF 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	NES534AN LOW NOISE OP AMP	SIG
IC....2		50.09.0106	NES532AN 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 TRAF0	ST

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

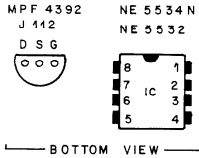
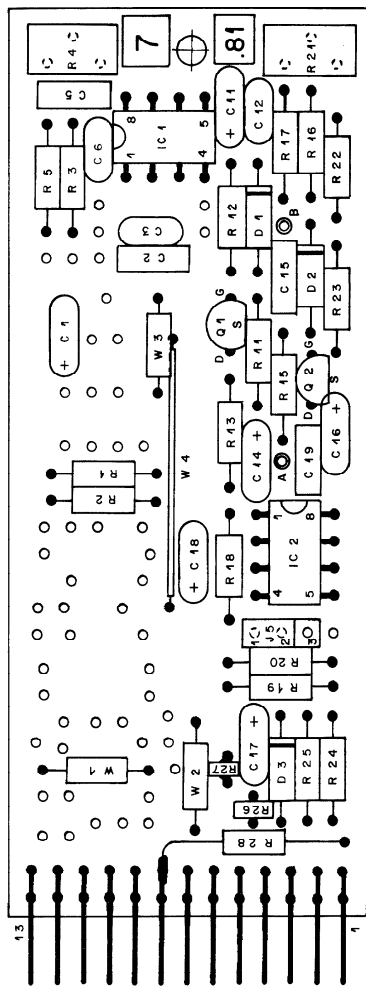
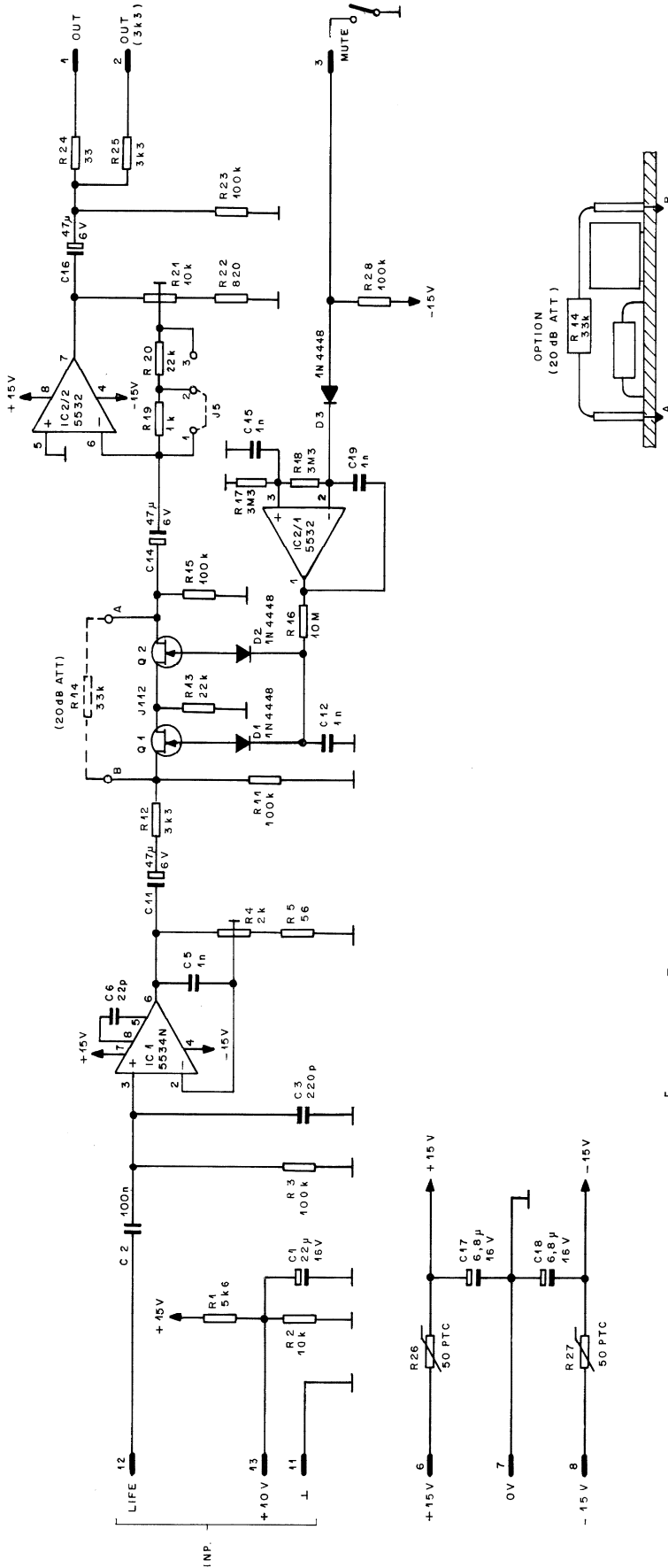
MANUFACTURER: ST=Studer, SIG=Signetics, PH=Philips

1.914.506.81 MIC. AMPLIFIER, FLOATING (Nr. 6)

FRI 19/04/85

END

→



C15	PIN	EURO 32 PIN			
		(a)	(b)	(c)	(d)
+ 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			
+ 45 V	6	16			
	5				
	4				
MUTE	3	4	10	24	30
OUT(3k3)	2	5	11	25	31
OUT	1	6	13	26	32

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
IC....2		50.09.0106	NE5532AN	DUAL LOW NOISE OP AMP
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
R....27		57.99.0206	50Ω	PTC
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

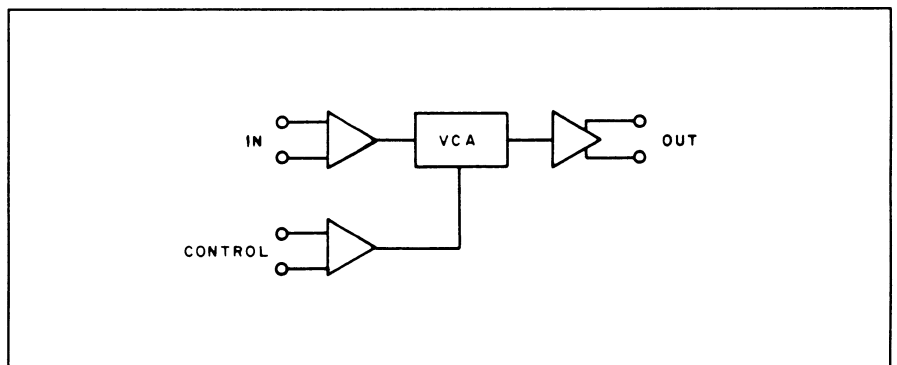
1.914.515

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.

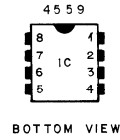
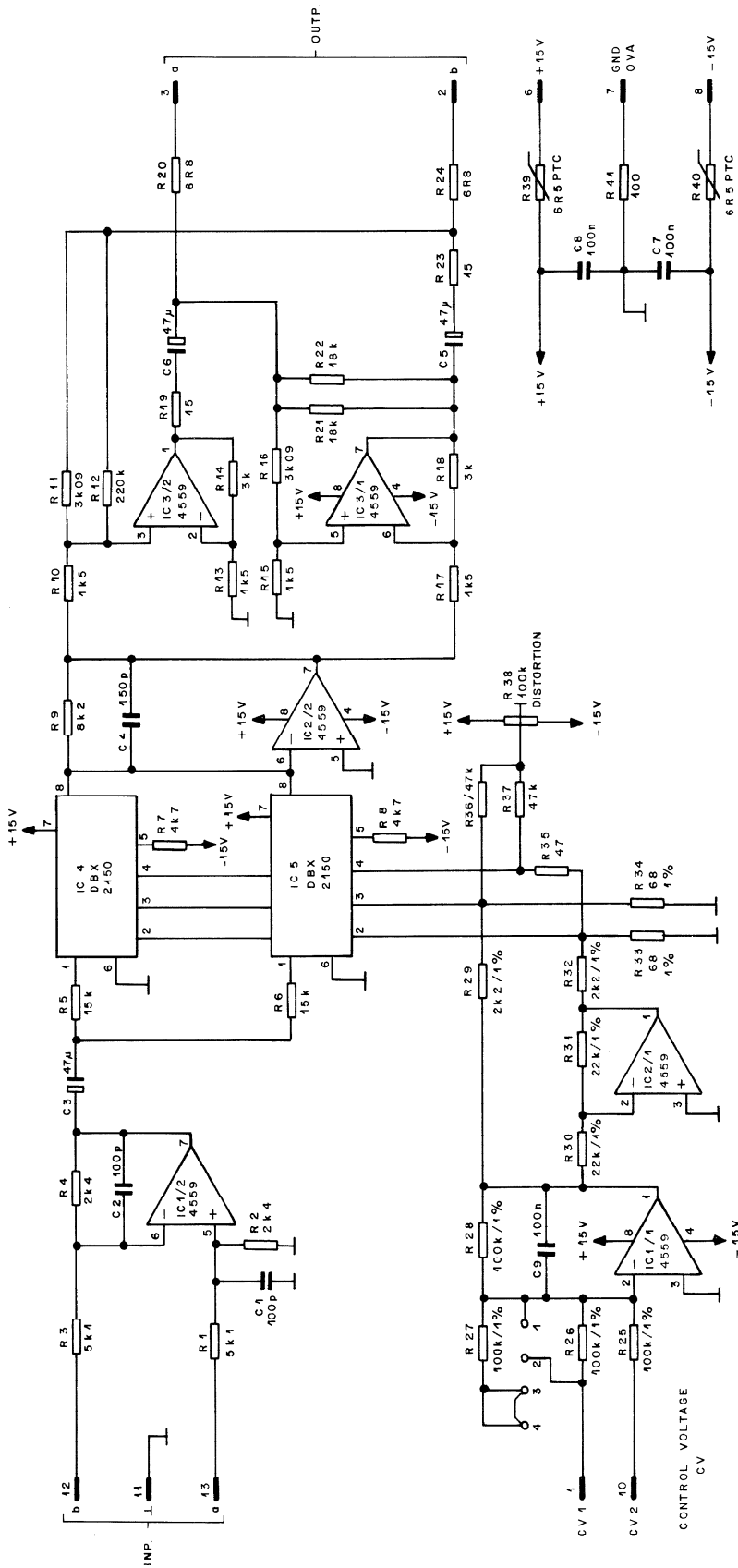
By connecting the gain control terminals of a number of VCAs to a common potentiometer or fader, several audio channels may thus be controlled simultaneously.



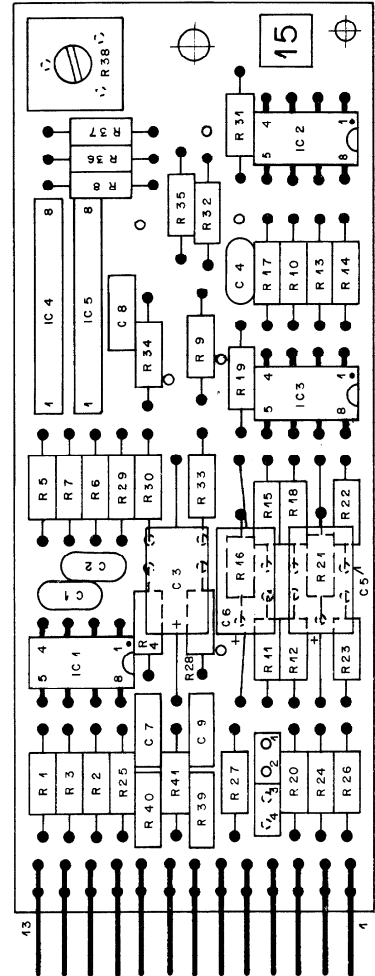
Two control inputs provide VCA gain control from two different remote points

Technical Specifications

Input:	Impedance	≈ 10 kW , electronically balanced
	Clipping point	+24 dBu
Output:		Electronically balanced
	Recommended load	≈ 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



CIS	PIN	EURO 32 PIN			
		(a)	(b)	(c)	(d)
INP a	13	1	7	24	27
INP b	12	2	8	22	28
+	11	3	9	23	29
CV 2	10	17	17	18	18
-15V	7	14			
OVA	7	45			
+15V	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



17.9.94			
STUDER REGENSDORF ZURICH	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 pF		ALU	
C.....4	59.34.4151	150 pF		CER	
C.....5	59.25.3470	47 pF		ALU	
C.....6	59.25.3470	47 pF		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

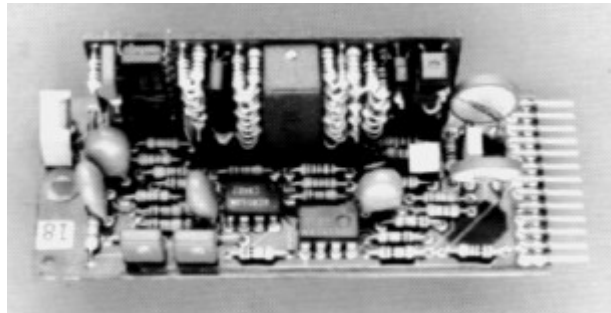
MANUFACTURER: Ex=Exar, NE=NEC, Ph=Philips, Ra=Raytheon,
Sig=Signetics, St=Studer,

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

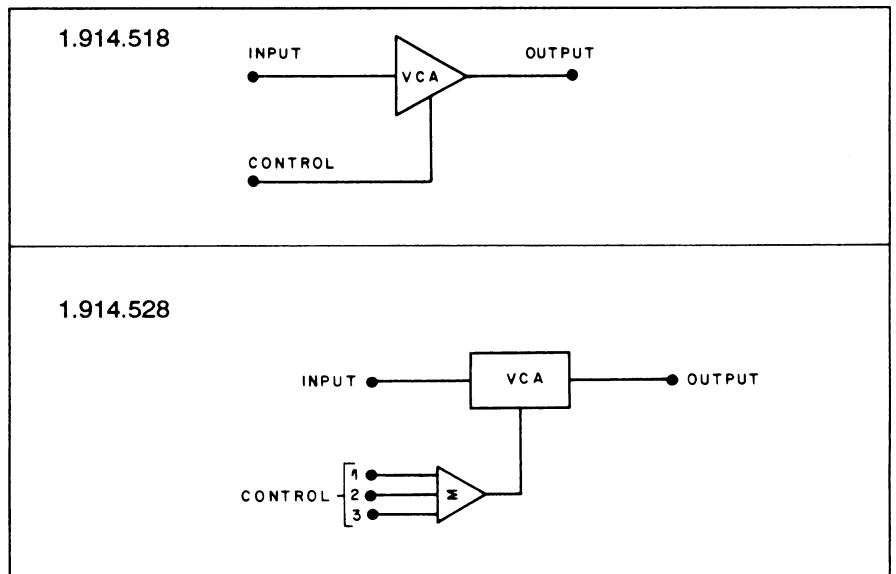
1.914.518/528

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.



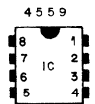
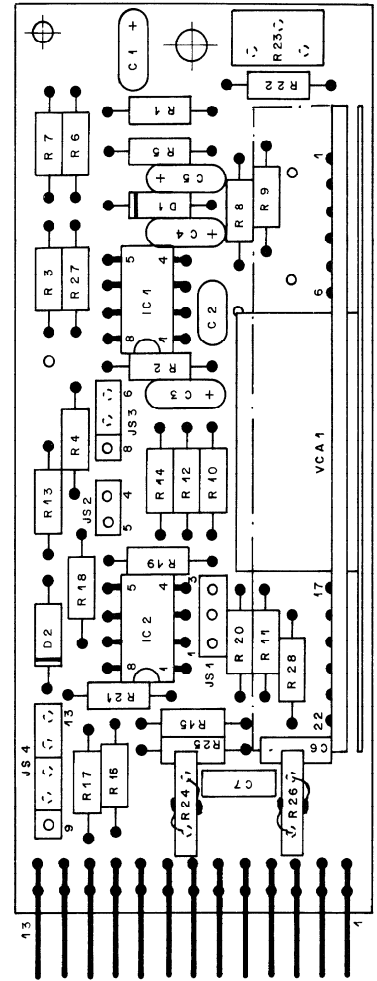
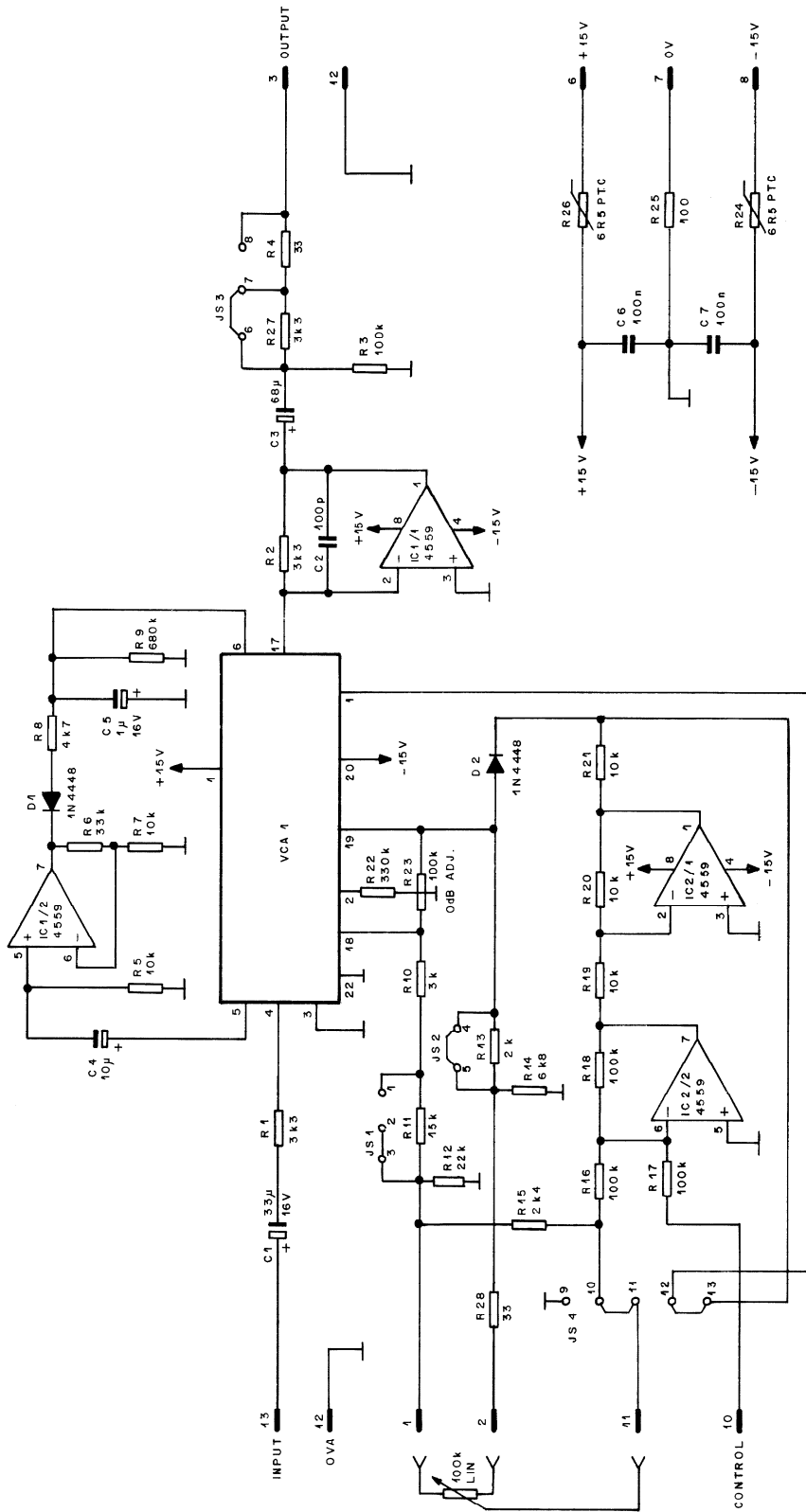
For best performance, they should be operated at a level of 0 dBu. Gain pre-selection is possible on the 1.914.518 version, allowing gain/attenuation ranges either from +10 to -90 dB or from +40 to -70 dB, using an external potentiometer.

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	≈ 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



BOTTOM VIEW

CIS	PIN			
	①	②	③	④
INPUT	13	1	7	21
L(INP./OUTP.)	12	2	8	22
LIN POT TAP	11	3	9	23
LEVEL CONTR.	10	17	17	48
	9			
-15V	8	14		
0V	7	15		
+15V	6	16		
	5			
	4			
OUTPUT	3	4	10	24
LIN POT 100k	2	5	11	25
LIN POT 100k	1	6	13	26

① 17.9.91	fe		
STUDER REGENSDORF ZÜRICH	VCA UNIT		1.914.518.81

MSC VCA

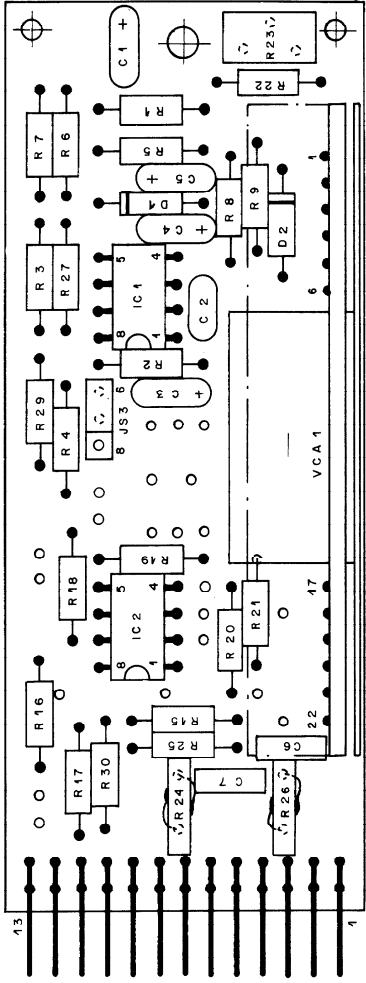
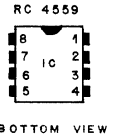
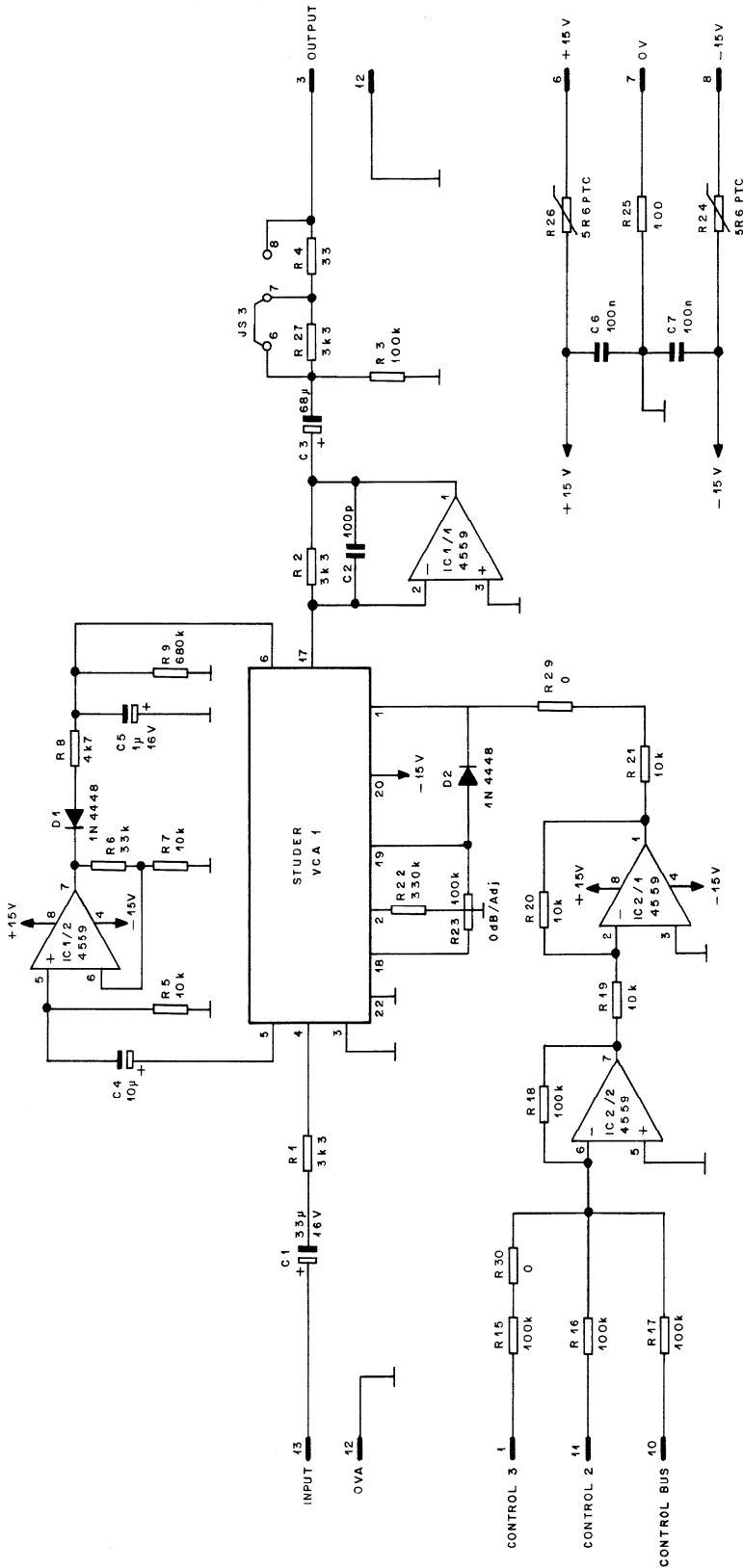
Ad	POS	REF.No	DESCRIPTION	MANUFACTURER
	A....1	1.010.110.50	Studer VCA	St
01	A....1	1.911.290.00	VCA-BOARD	St
02	A....1	1.911.290.81	VCA BOARD	St
	C....1	59.26.1330	33 uF	SAL
	C....2	59.34.4101	100 pF	CER
	C....3	59.26.0680	68 uF	SAL
	C....4	59.26.2100	10 uF	SAL
	C....5	59.26.9109	1 uF	SAL
	C....6	59.06.5104	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.
	IC....2	50.09.0107	RC4559	dual op. amp.
	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



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	40	17	17	18	18
-15V	9				
0V	8	14			
+15V	7	15			
	6	16			
	5				
	4				
OUTPUT	3	4	10	24	30
	2	5	11	25	31
CONTROL 3	1	6	13	26	32

<p>STUDER REGENSDORF ZÜRICH</p>	VCA UNIT / 3 CONTROL	1.914.528.00
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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

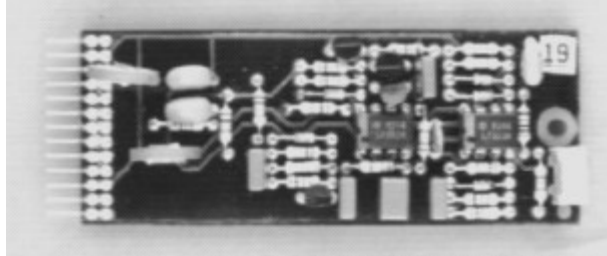
MANUFACTURER: Ex=Exar, NE=NEC, Ph=Philips, Ra=Raytheon,
Sig=Signetics, St=Studer.

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

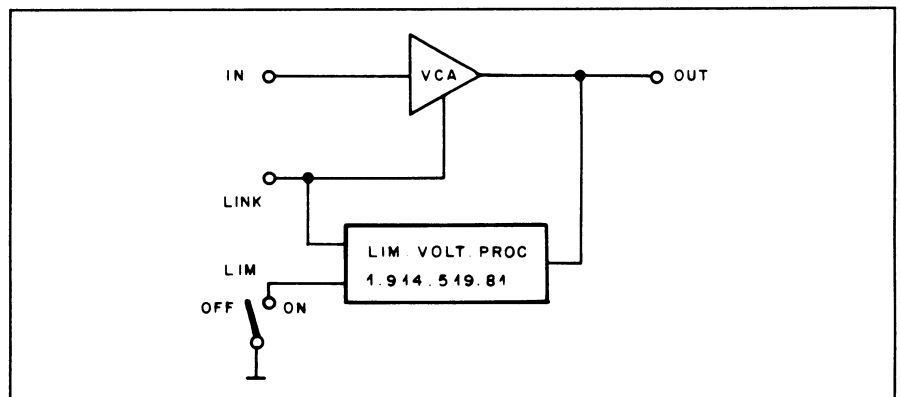
2.1.9 Limiter Voltage Processor

1.914.519

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



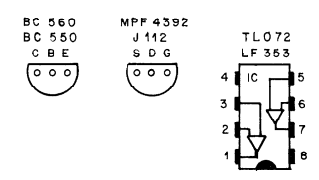
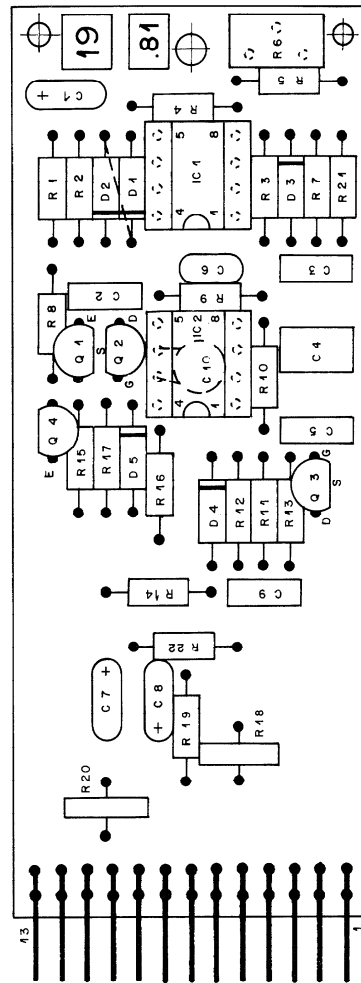
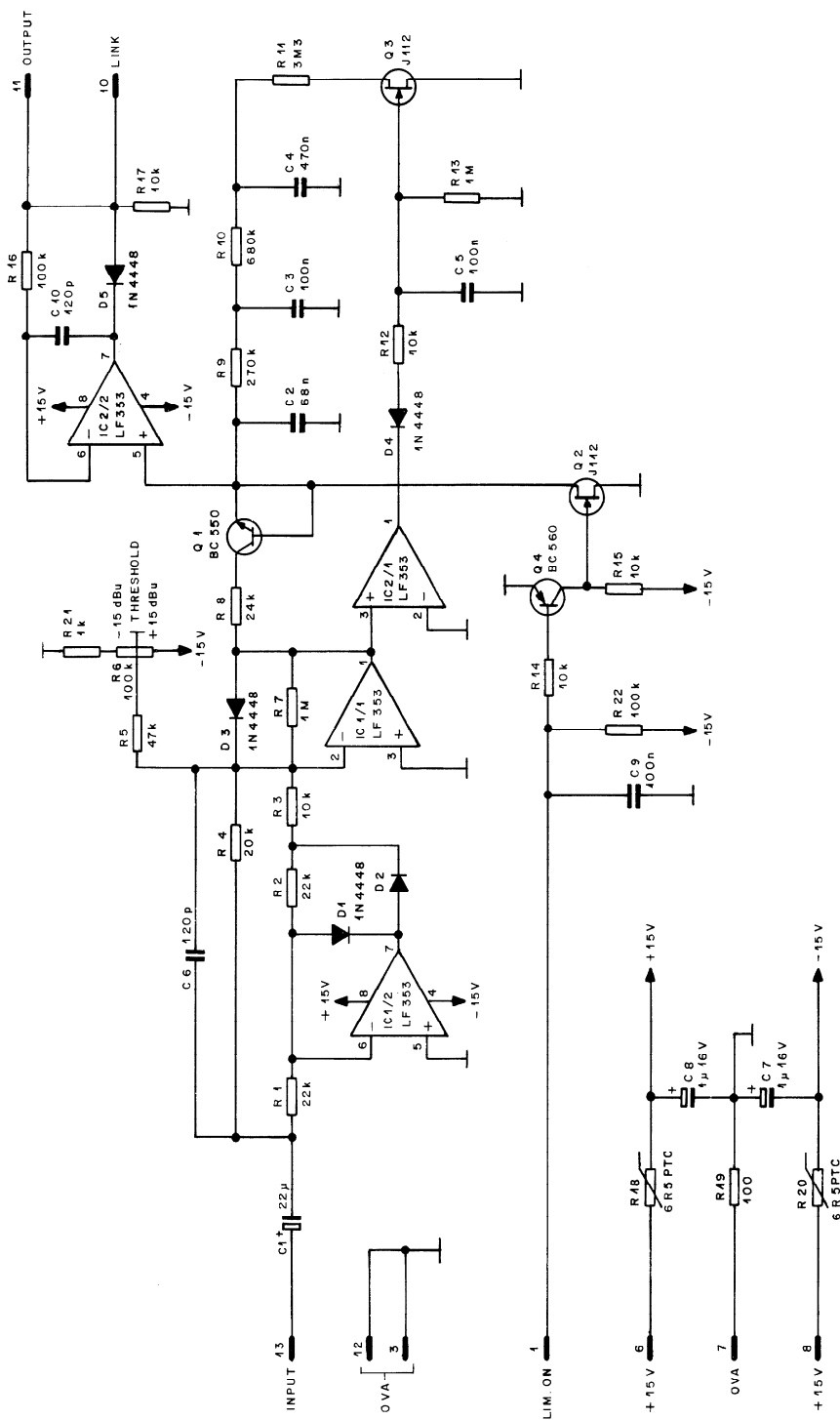
The processor's threshold can be set within a wide range of levels, so that limiting action becomes effective at a desired level within a range of -15 to $+15$ dBu. Limiting action attacks within 1 ms, whereas release can vary from 50 ms to 5 s, depending on the program's energy content. This means that 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	≥ 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-dependent	
	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



BOTTOM VIEW

CIS	PIN	EURO 32 PIN			
		(A)	(B)	(C)	(D)
INPUT	13	1	7	21	27
I (INP./OUTP.)	12	2	8	22	28
OUTPUT	11	3	9	23	29
LINK	10	17	17	18	18
	9				
-15V	8				
0V	7				
+15V	6				
	5				
	4				
L (LIM ON)	3	4	10	24	30
	2	5	11	25	31
LIM ON	1	6	13	26	32

© 16.9.94				
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

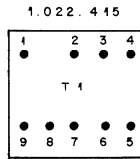
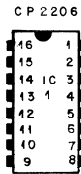
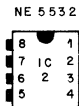
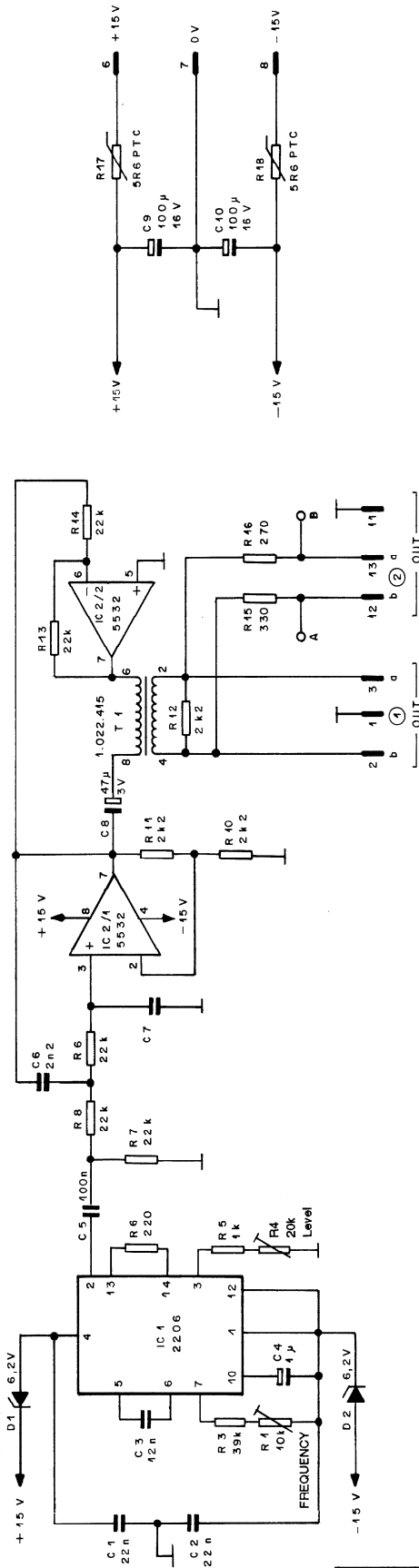
Supply: **±15 V** (20 mA)

Dimensions: **MS-card**, 34 × 85 mm

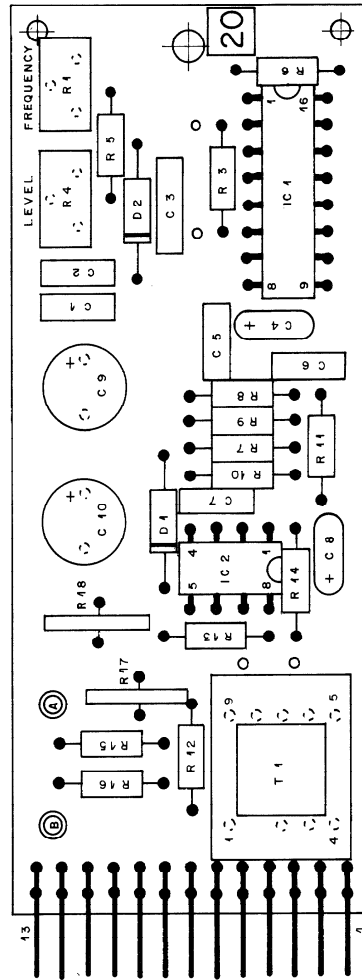
Ordering Information: 1900 Hz signal generator

1.914.520.xx

MSC 1900 HZ GENERATOR



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



18.9.91			
STUDER REGENSDORF ZÜRICH	SIGNAL GENERATOR (NR. 20)	1.914.520.00	

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	40V { CN 40C 123J Centralab B37 983-J-5123-J Siemens SAL C062 5123 J5 65 CA Kemet PE	
C	...	4	59.26.9109	1µF		
C	...	5	59.06.0104	0,1µF		
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		
Ⓢ R	...	6	57.11.4221	220kΩ		
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		
Ⓢ R	...	15	57.11.4331	330kΩ		
Ⓢ R	...	16	57.11.4271	270kΩ		
R	...	17	57.99.0209	5,6kΩ	2322 662 91005	PH
R	...	18	57.99.0209	5,6kΩ	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)

Ⓢ FRI 01/09/83

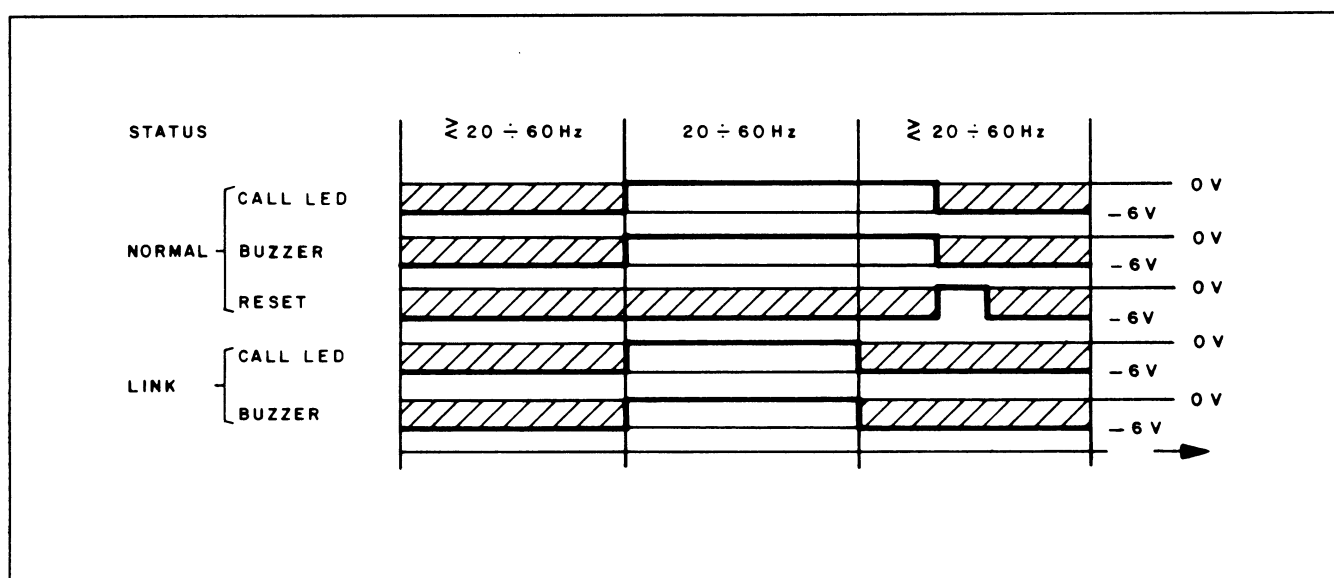
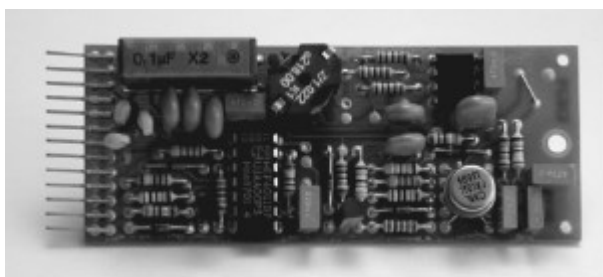
END

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2.1.11 Call Decoder 20...60 Hz

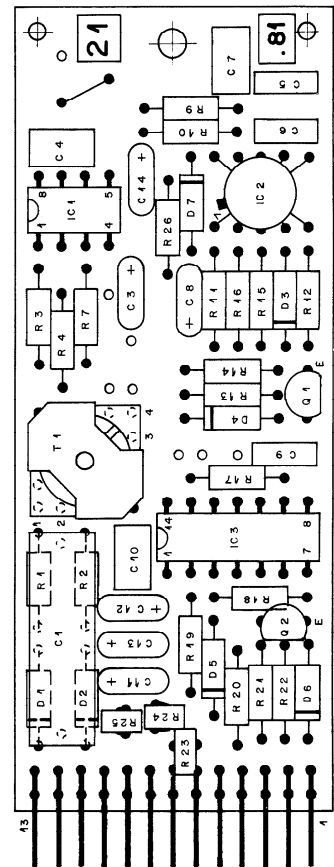
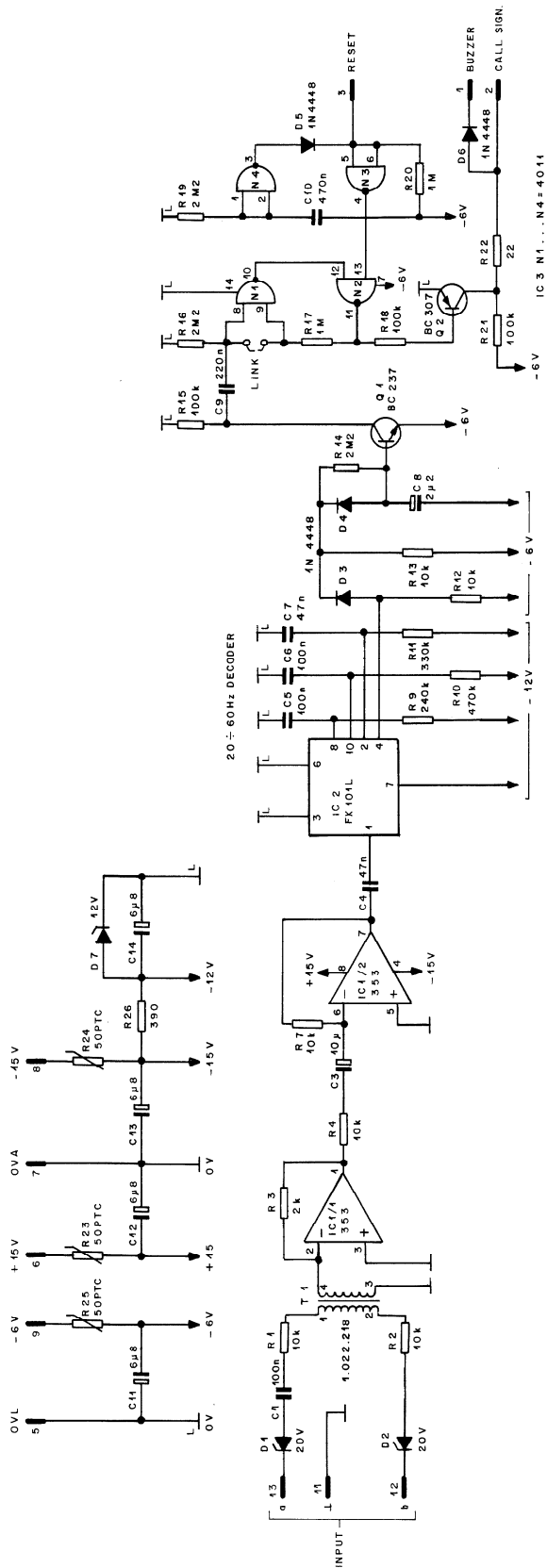
1.914.521

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.

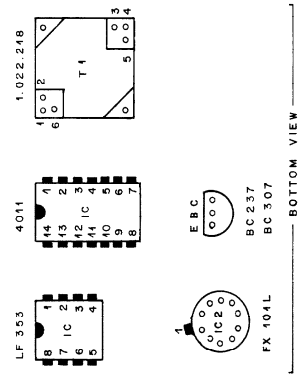
**Technical Specifications**

Input:	balanced, floating; no DC
Impedance	> 20 kW
Frequency	20...60 Hz
Min. level	17 V_{rms}
Nominal level	70 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



CIS	PIN	EURO 32-PIN
INPUT a	13	1
INPUT b	12	2
L	11	3
-6V	10	4
+15V	8	5
0V	7	6
+15V	6	7
0V	5	8
RESET	4	9
CALL SIGN	3	10
BUZZER	2	11
	1	12
		13
		14
		15
		16
		17
		18
		19
		20
		21
		22
		23
		24
		25
		26
		27
		28
		29
		30
		31
		32



21.9.91	STUDER REGENSDORF ZÜRICH	20 ÷ 60 Hz DECODER (NR. 21)	1.914.521.00
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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
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	
R	...	3	57.11.3202 2kΩ	
R	...	4	57.11.4103 10kΩ	
R	...	7	57.11.4103 10kΩ	
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	
R	...	14	57.11.5225 2,2MΩ	
R	...	15	57.11.4104 100kΩ	
R	...	16	57.11.5225 2,2MΩ	
R	...	17	57.11.4105 1MΩ	
R	...	18	57.11.4104 100kΩ	
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 Typ YS 822 ITT PTH 608D 470M 050 Murata
R	...	24	57.99.0206 50Ω PTC	
R	...	25	57.99.0206 50Ω PTC	
R	...	26	57.11.4391 390kΩ	
T	...	1	1.022.218.00 1:1	ST

PE=Polyester, SAL=Solid Aluminium

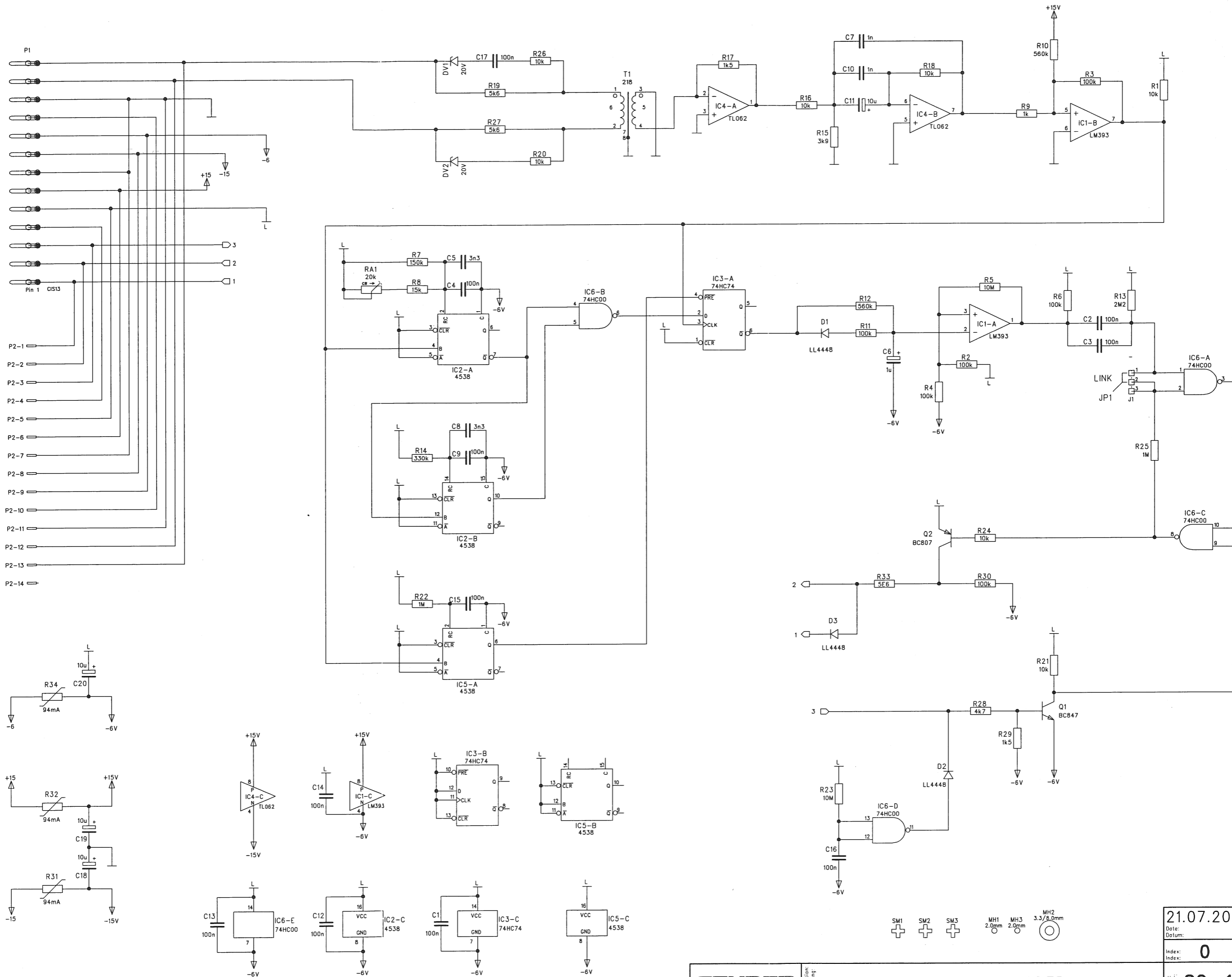
MANUFACTURER: CML=Consumer Microcircuit LTD, ST=Studer

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
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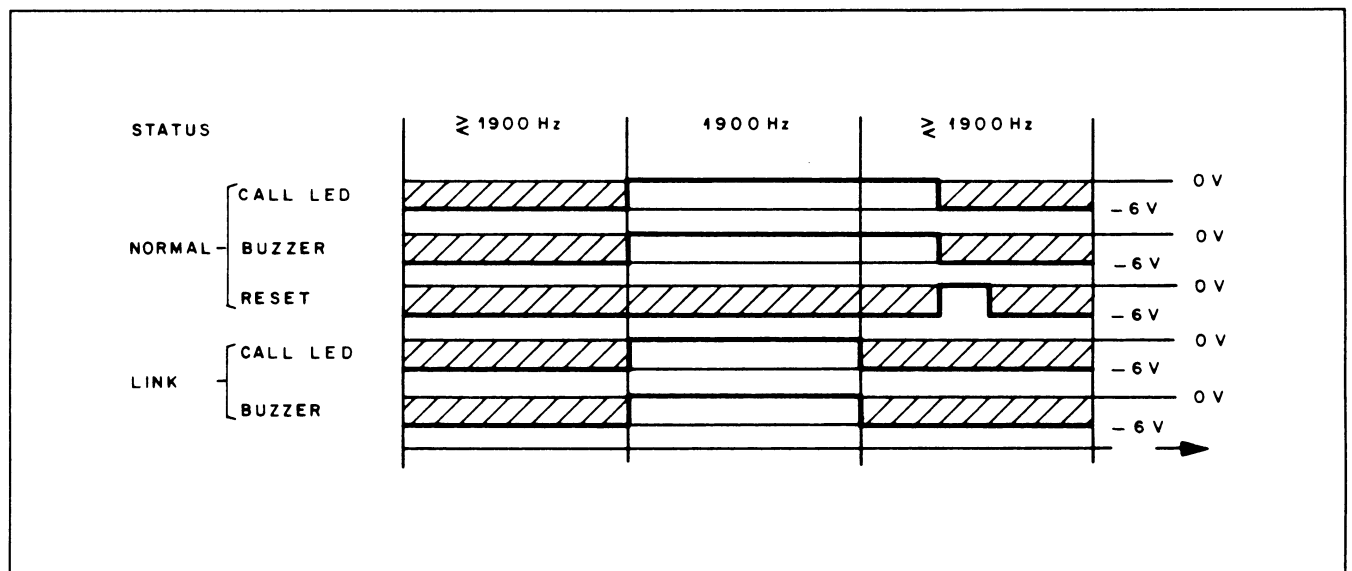
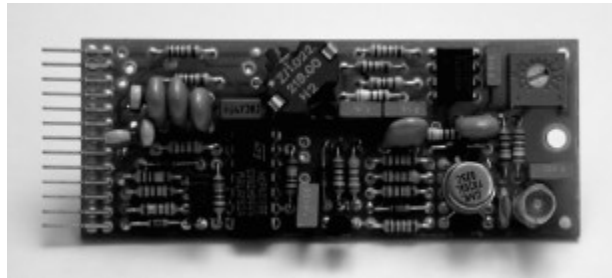


2.1.12 Call Decoder 1900 Hz

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 \pm 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).

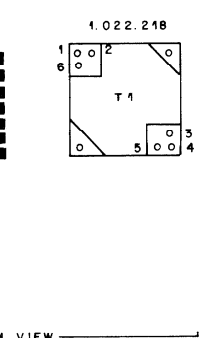
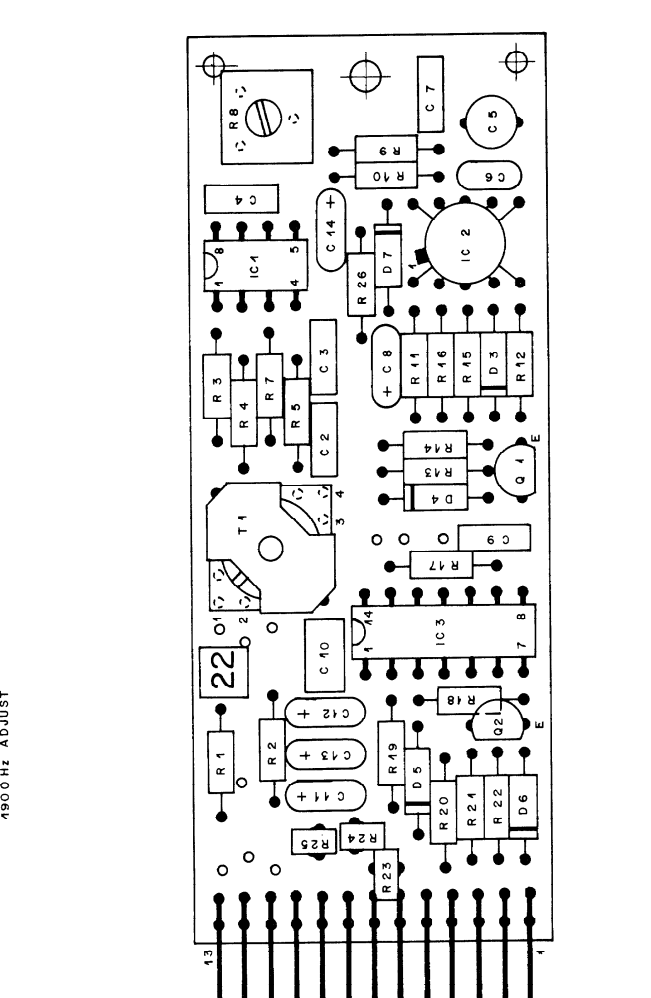
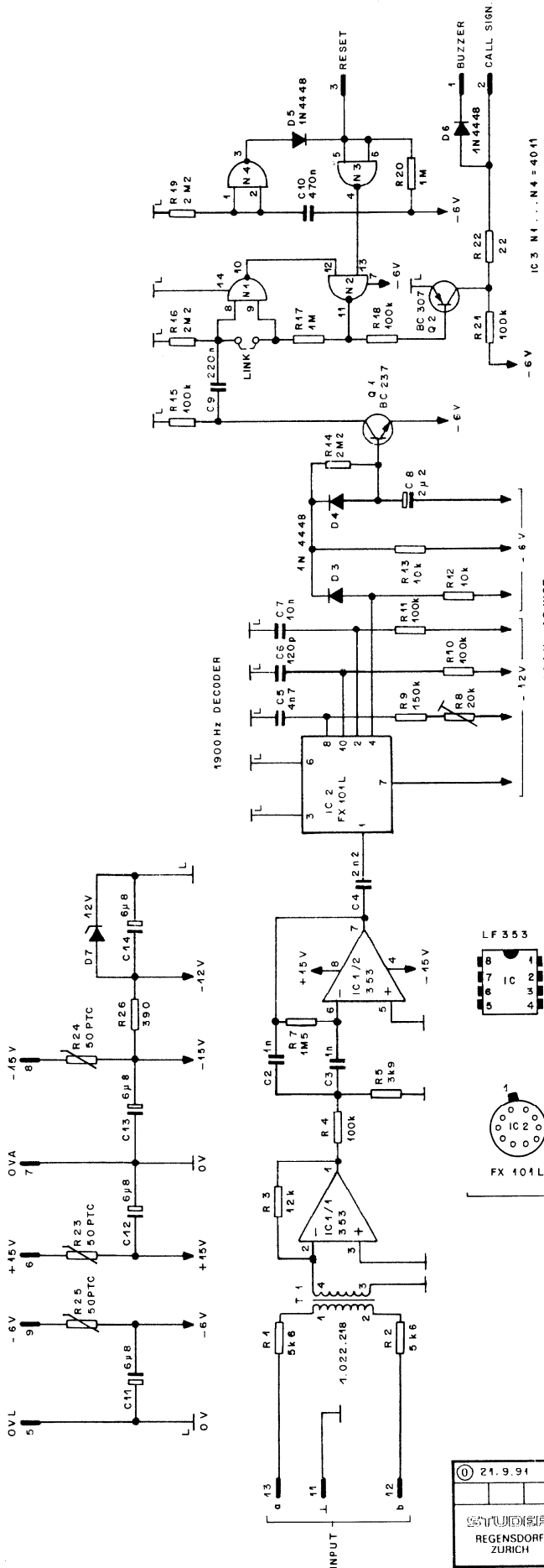
**Technical Specifications**

Input:		balanced, floating; no DC
	Frequency	1900 Hz, \pm1%
	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)	EURO 32 PIN (b)	EURO 32 PIN (c)	EURO 32 PIN (d)
INPUT a	13	1	7	21	27
INPUT b	12	2	8	22	28
L	11	3	9	23	29
-6V	10				
-15V	9	12			
OVA	8	14			
+15V	7	15			
+15V	6	16			
OVL	5	19			
	4				
RESET	3	4	10	24	30
CALL SIGN	2	5	11	25	31
BUZZER	1	6	13	26	32

21.9.91	STUDER REGENSDORF ZURICH	1900 Hz DECODER (NR.22)	1.914.522.00
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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

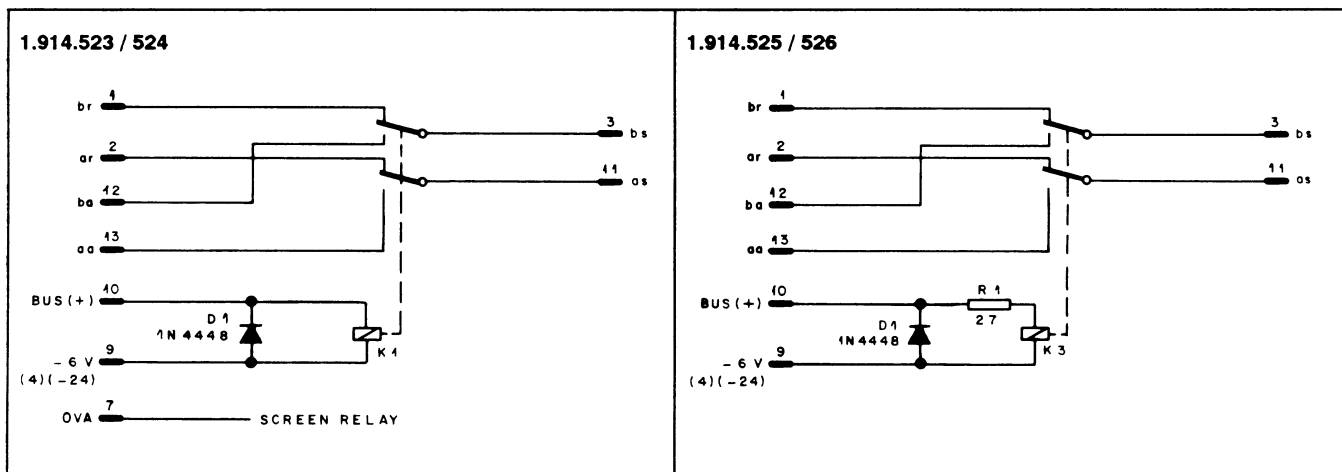
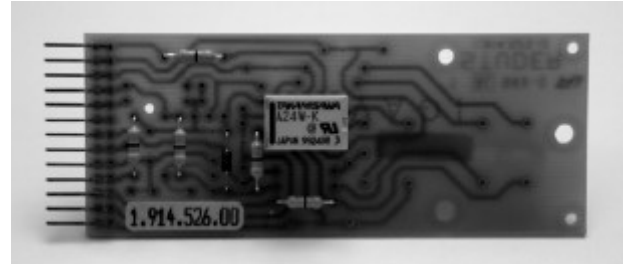
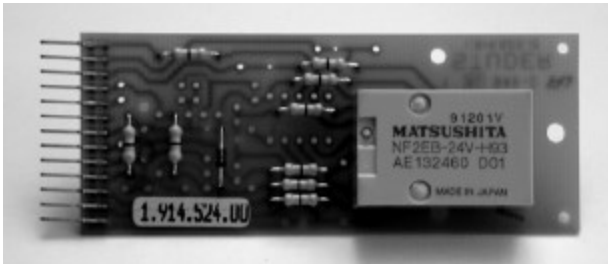
Comments:

(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:

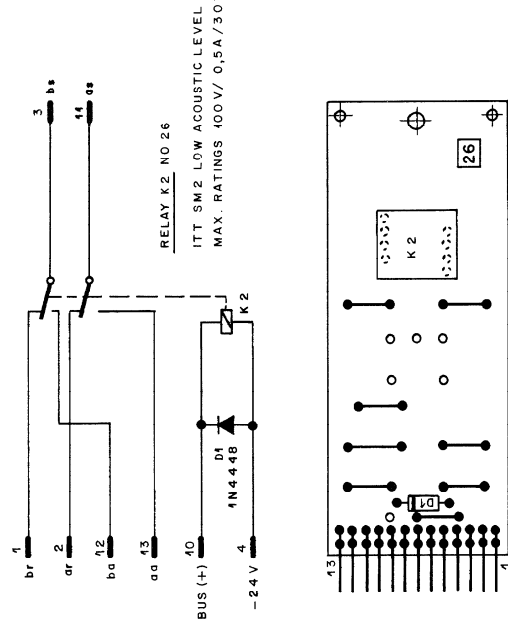
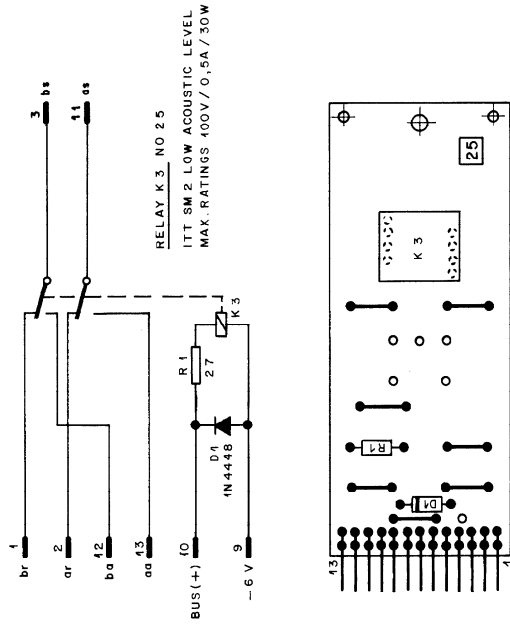
MS-card, 34 × 85 mm

Ordering Information:

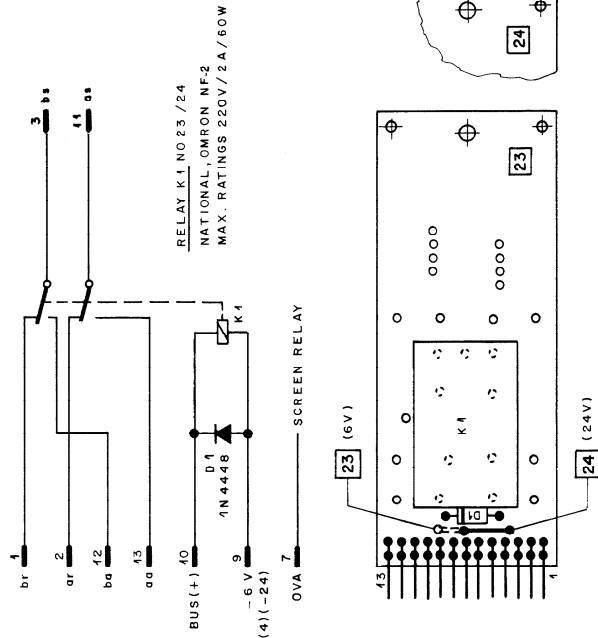
MSC relay 6 V _{DC}	1.914.523.xx
MSC relay 24 V _{DC}	1.914.524.xx
MSC relay 6 V _{DC} ; low-noise	1.914.525.xx
MSC relay 24 V _{DC} ; low-noise	1.914.526.xx

MSC RELAYS

RELAY 6V LN

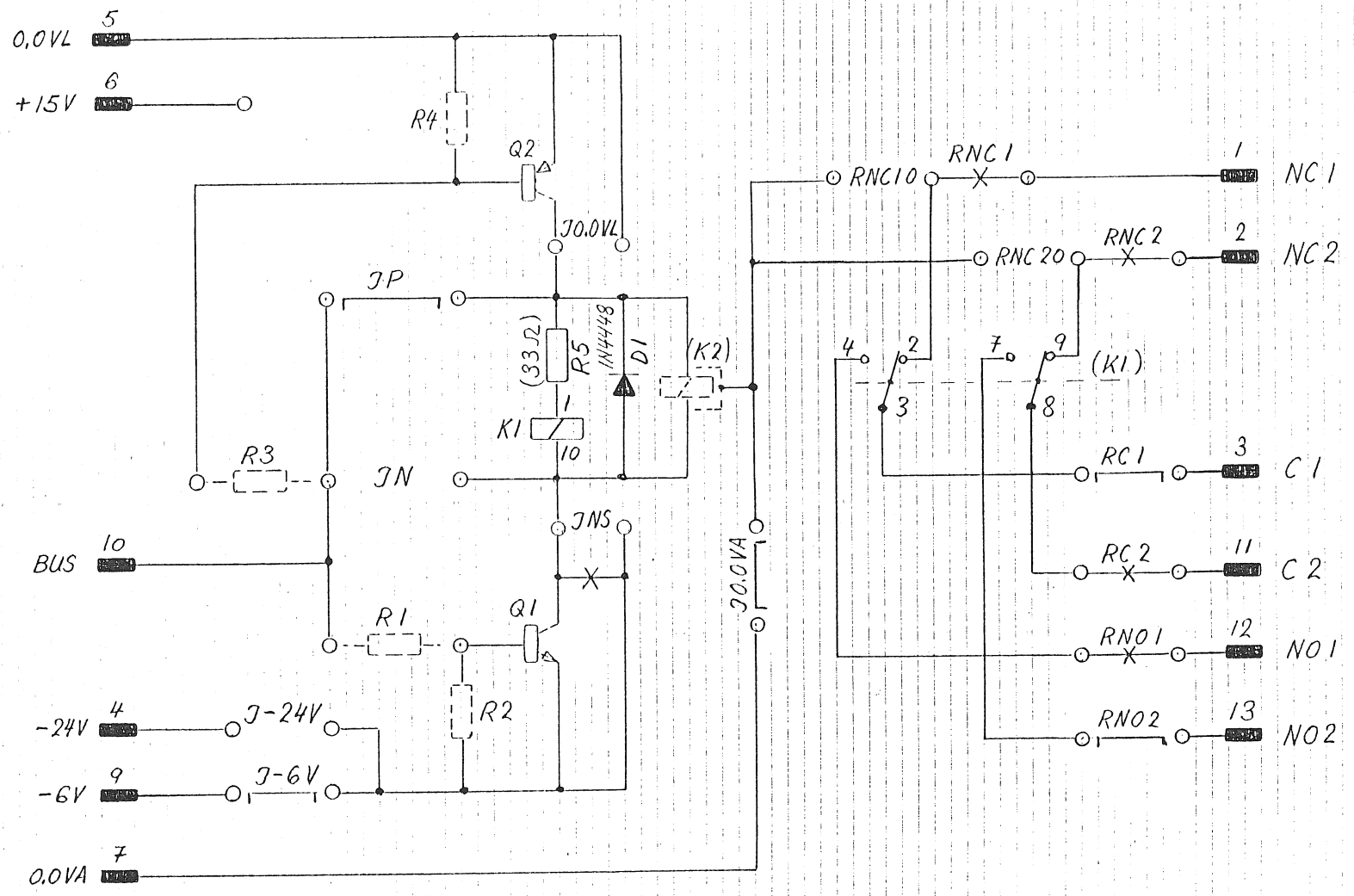


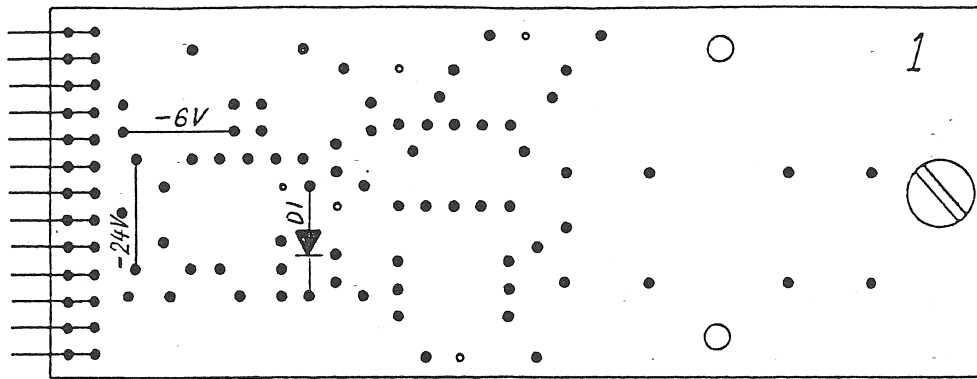
RELAY 24V LN



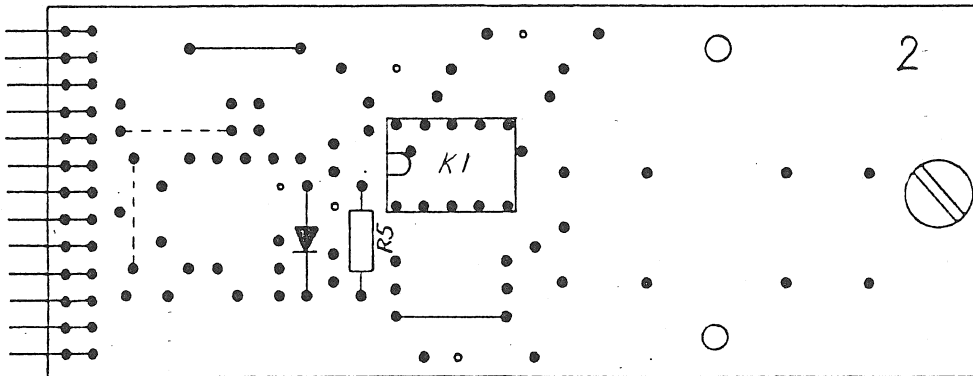
CIS	PIN	EURO 32 P			
		(a)	(b)	(c)	(d)
aa	43	1	7	21	27
ba	42	2	8	22	28
as	41	3	9	23	29
BUS	40	17	47	18	18
-6V	9	42			
	8	7			
	6				
	5	20			
-24V	4	4	10	24	30
bs	3	5	11	25	31
ar	2	6	13	26	32
br	1				

2.10.94 STUDER REGENSDORF ZÜRICH	RELAY BOARD 2 U		24V LN	1.914.526.00
			6V LN	1.914.525.00
			24V	1.914.524.00
			6V	1.914.523.00

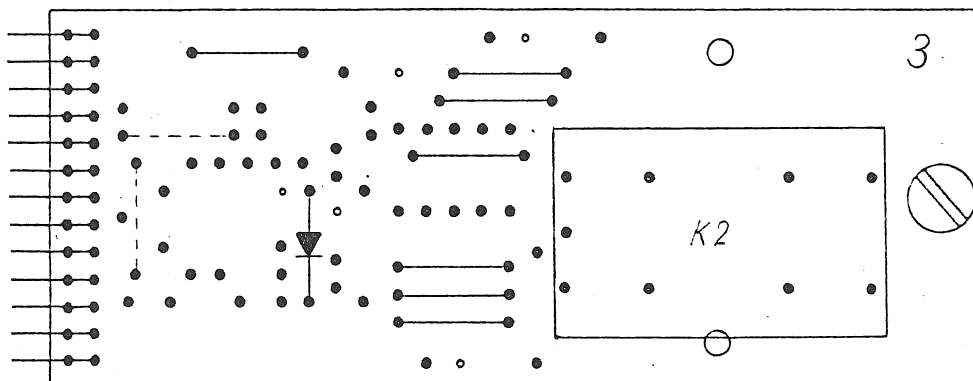




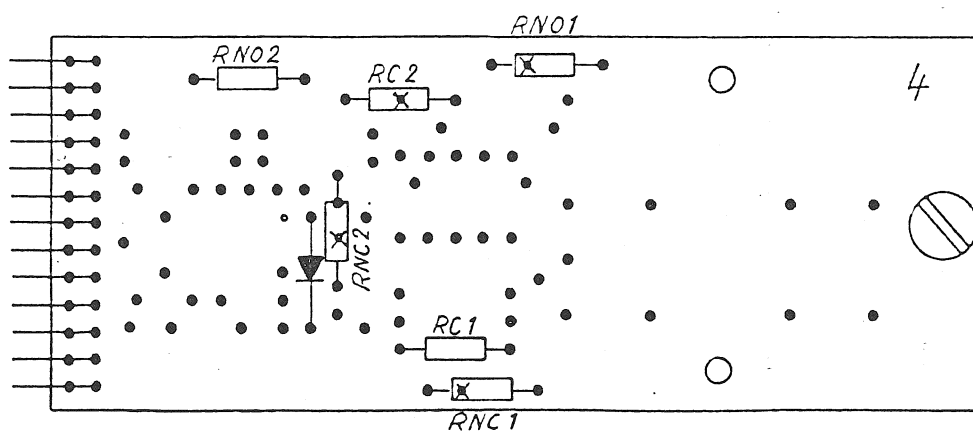
POWER SUPPLY
-6V or -24V



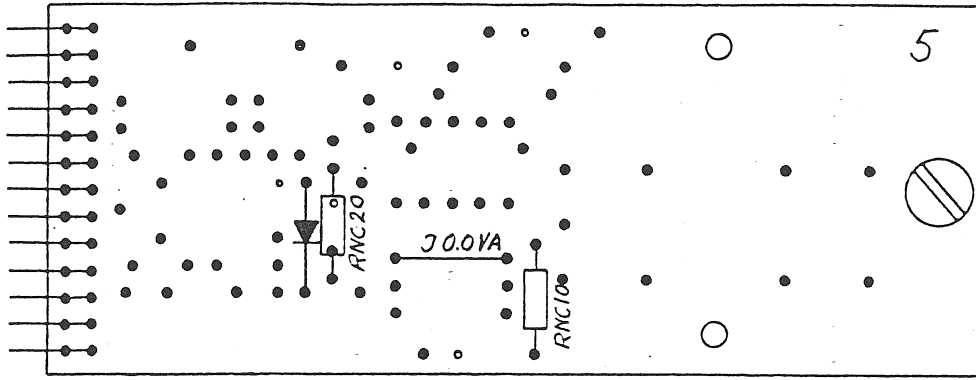
DIL RELAY



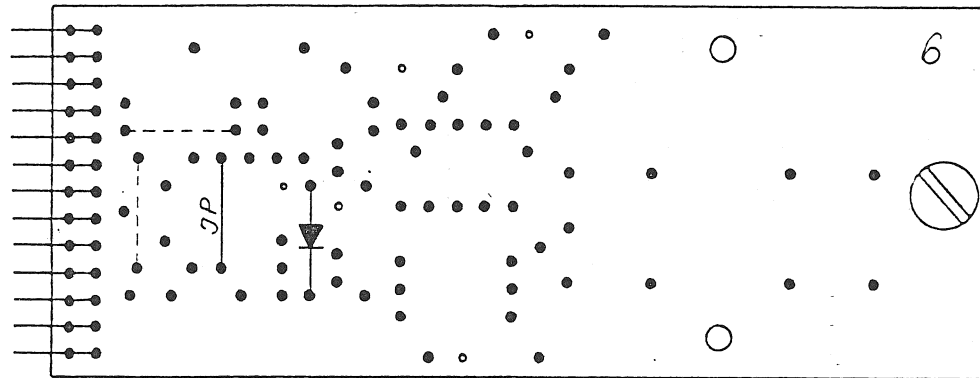
LARGE RELAY



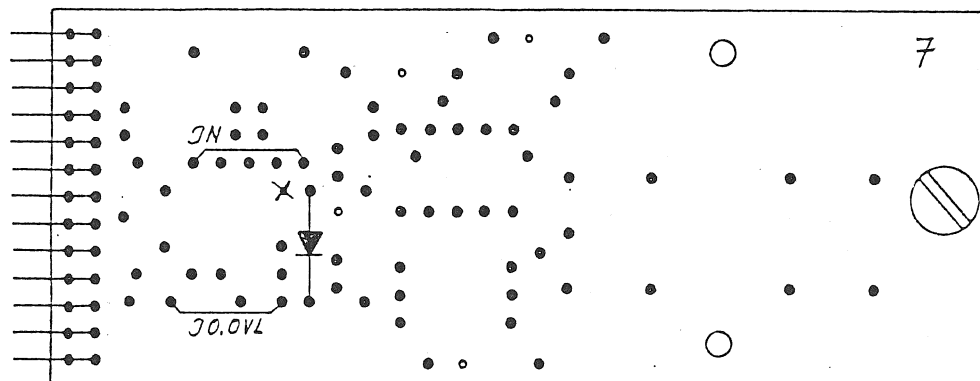
LINE IN/OUT
SERIES RESISORS



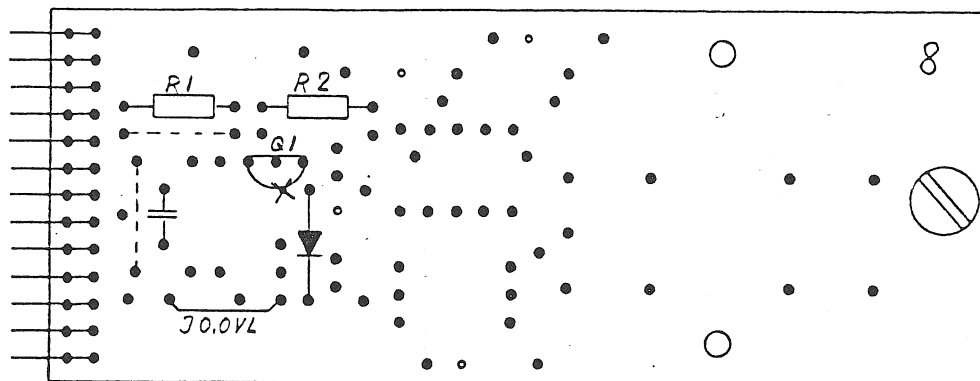
NC CONTACTS
TERMINATION
TO 0.0VA



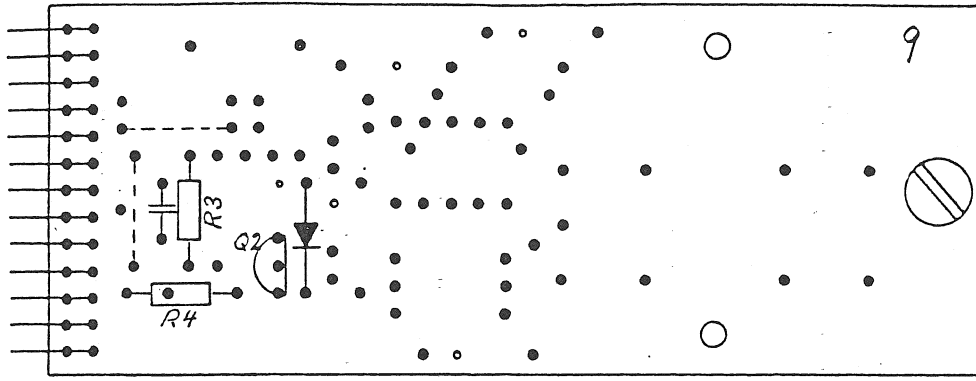
POSITIVE GOING
ENABLE SIGNAL
DRIVING RELAY
DIRECT



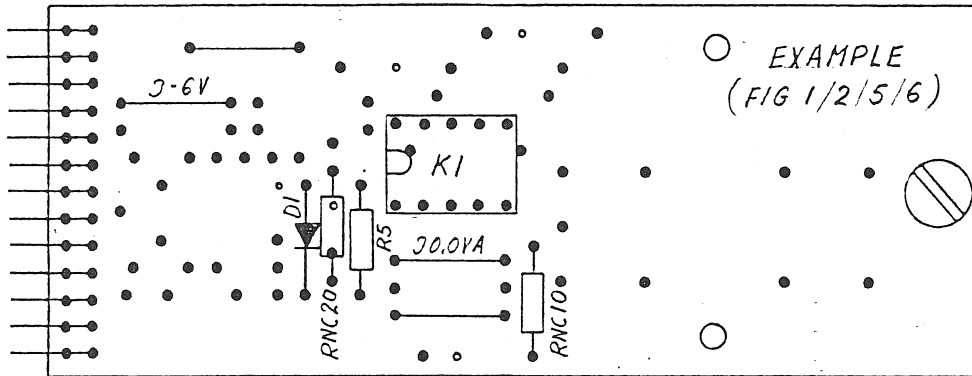
NEGATIVE GOING
ENABLE SIGNAL
DRIVING RELAY
DIRECT



POSITIVE GOING
ENABLE SIGNAL
POWERING RELAY
VIA DRIVER

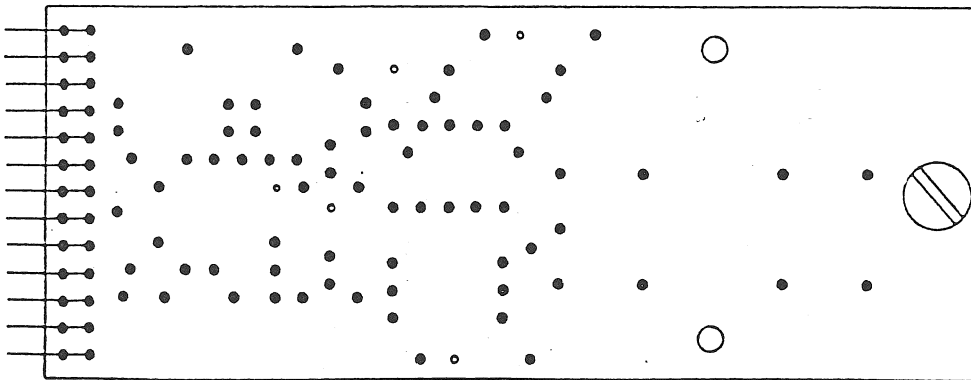
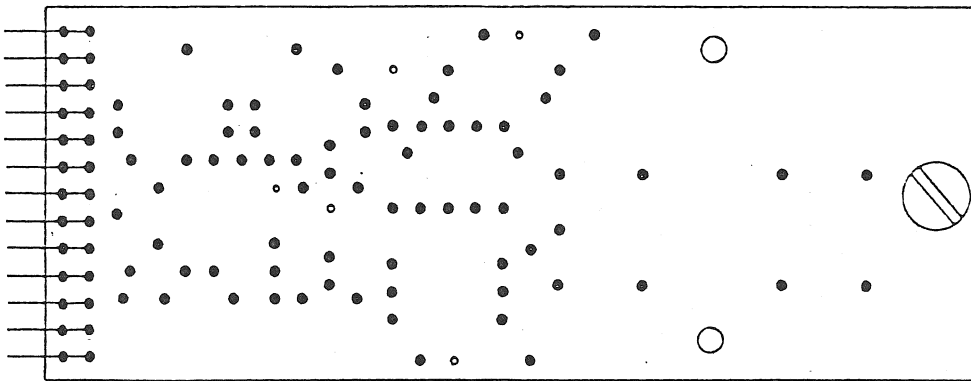


NEGATIVE GOING
ENABLE SIGNAL
POWERING RELAY
VIA DRIVER

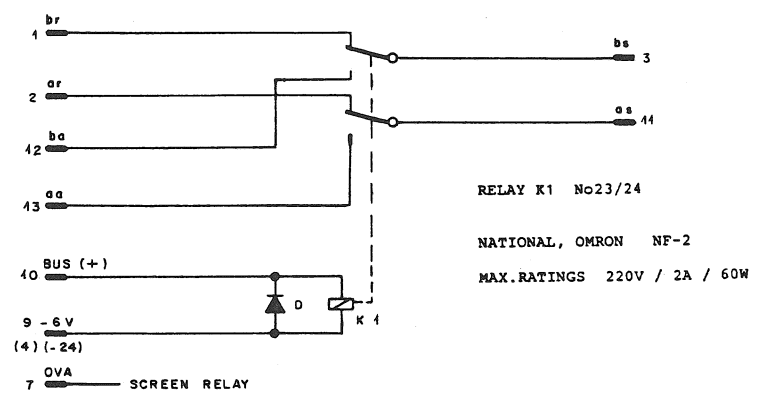


EXAMPLE
(FIG 1/2/5/6)

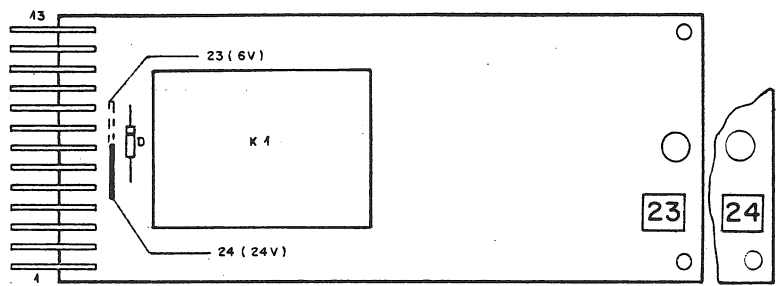
- POSITIV GOING
ENABLE SIGNAL
- POWER SUPPLY -6V
- DIL RELAY
- DIRECT RELAY
POWERING
- NC CONTACTS
TERMINATED TO 0.0VA



STUDER	①	21.41.84	③	
	②	2.9.83	④	
RELAY 1 (No. 23)		4.9.90		
		MIXING CONSOLE 900		
SC	1.914.525.00	SC	1.914.526.00	
	1.914.523.00		1.914.524.00	
	PAGE 1 OF 1			

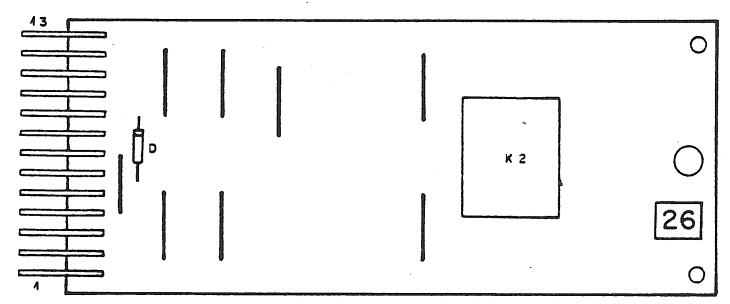
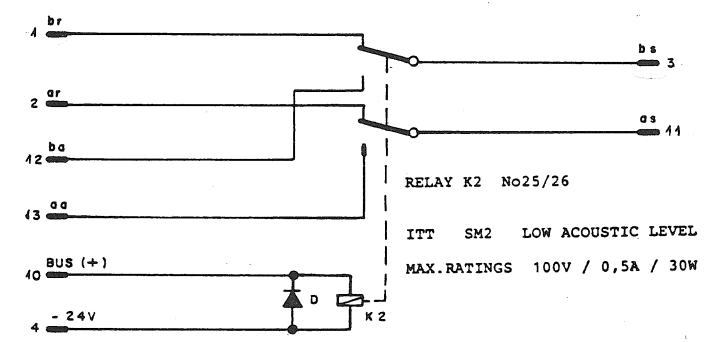
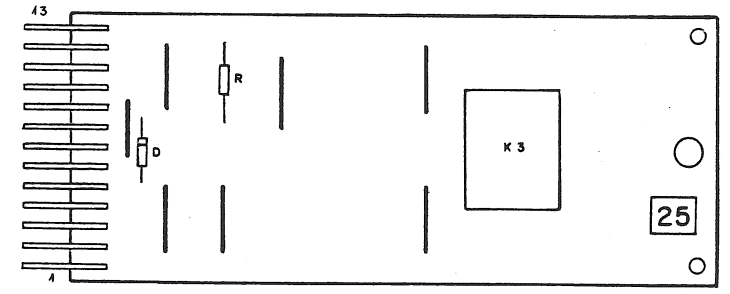
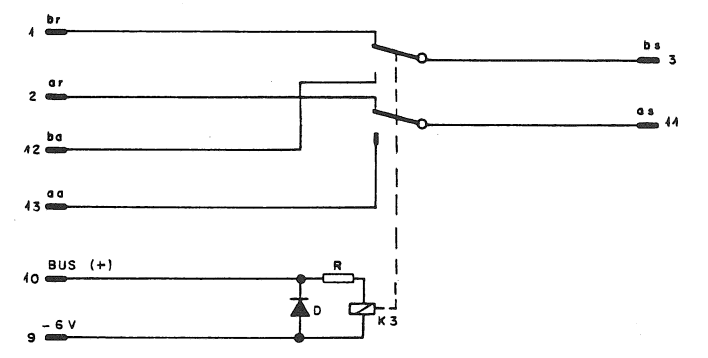


PIN		EURO 32 p			
		Ⓐ	Ⓑ	Ⓒ	Ⓓ
aa	43	1	7	21	27
ba	12	2	8	22	28
as	41	3	9	23	29
BUS	10	47	47	48	48
-6V	9	12	-	-	-
	8				
	7				
	6				
	5				
-24V	4	20	-	-	-
bs	3	4	40	24	30
ar	2	5	41	25	34
br	1	6	43	26	32

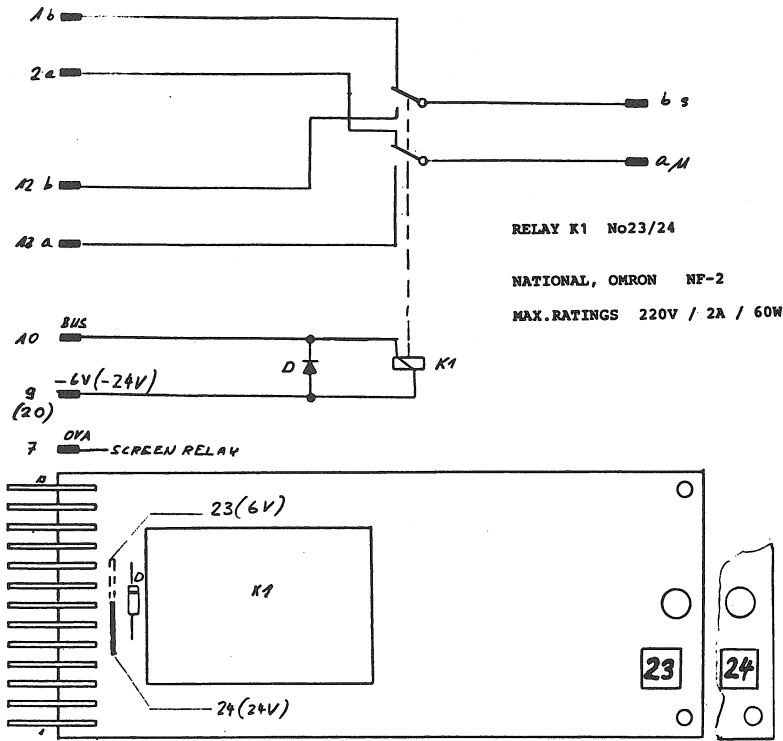


1.914.523	RELAY 1	6V	No23
1.914.524	RELAY 1	24V	No24
1.914.525	RELAY 1	6V LL	No25
1.914.526	RELAY 1	24V LL	No26

STUDER PART No:		
D	1N4448	50.04.0125
R	27Ω	57.11.4220
CIS	13P	54.01.0273
K1	24V 2kΩ	56.04.0143
K1	6V 137Ω	56.04.0148
K2	24V 2600Ω	56.04.0472
K3	5V 135Ω	56.04.0170



STUDER
RELAY 1
MIXING CONSOLE 900
PAGE 1 OF 1



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				
-24V	4	20			
bs	3	4	10	24	30
ar	2	5	11	25	31
br	1	6	13	26	32

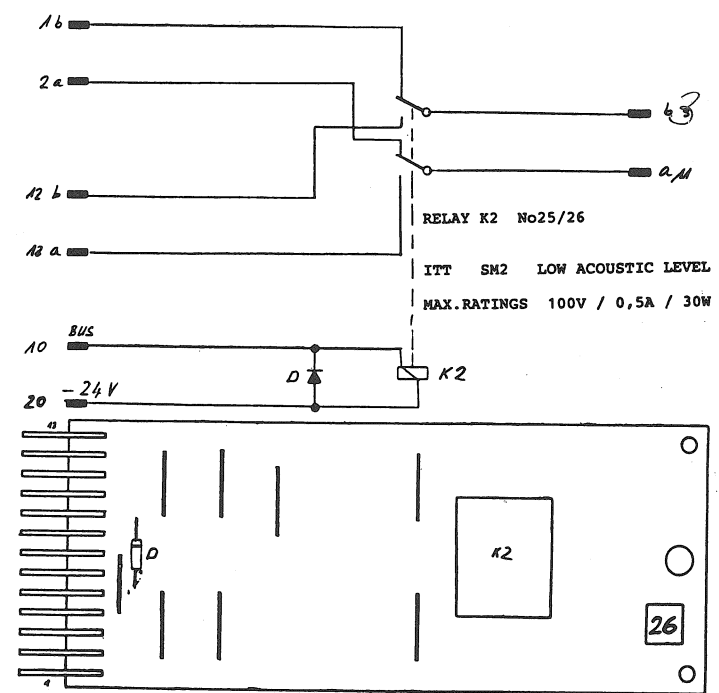
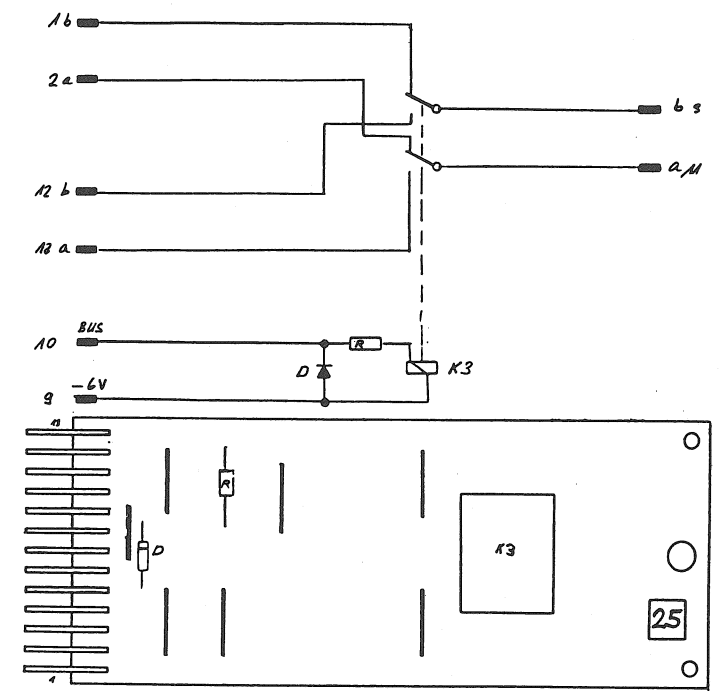
1.914.523	RELAY 1	6V	No23
1.914.524	RELAY 1	24V	No24
1.914.525	RELAY 1	6V LL	No25
1.914.526	RELAY 1	24V LL	No26

STUDER PART No:

D	1N4448	50.04.0125
R	27Ω	57.11.4220
CIS	13P	54.01.0273
K1	24V 2kΩ	56.04.0143
K1	6V 137Ω	56.04.0148
K2	24V 2600Ω	
K3	V 135Ω	56.04.0170

1.914.523,70 → Print + Stecker montiert!

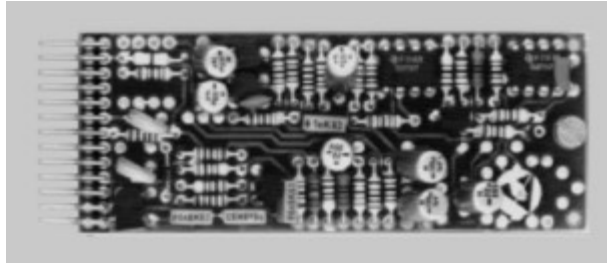
1.914.526.00
1.914.525.00
1.914.524.00



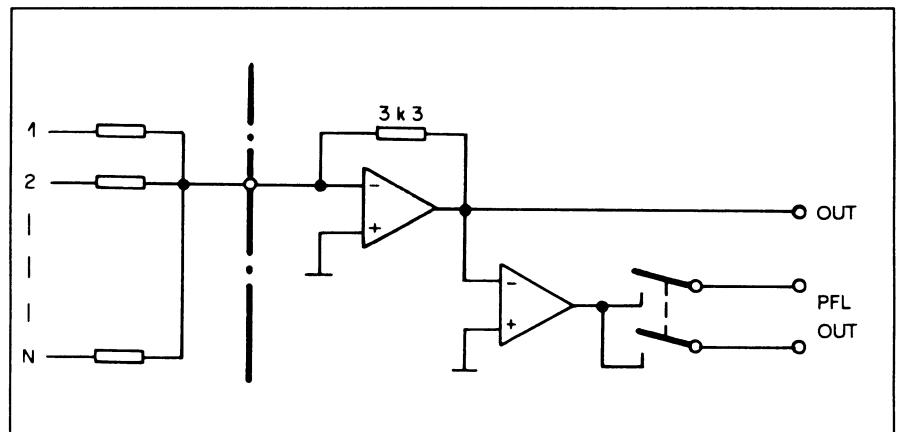
2.1.14 0-Ω Input Amplifier with PFL Facility

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.



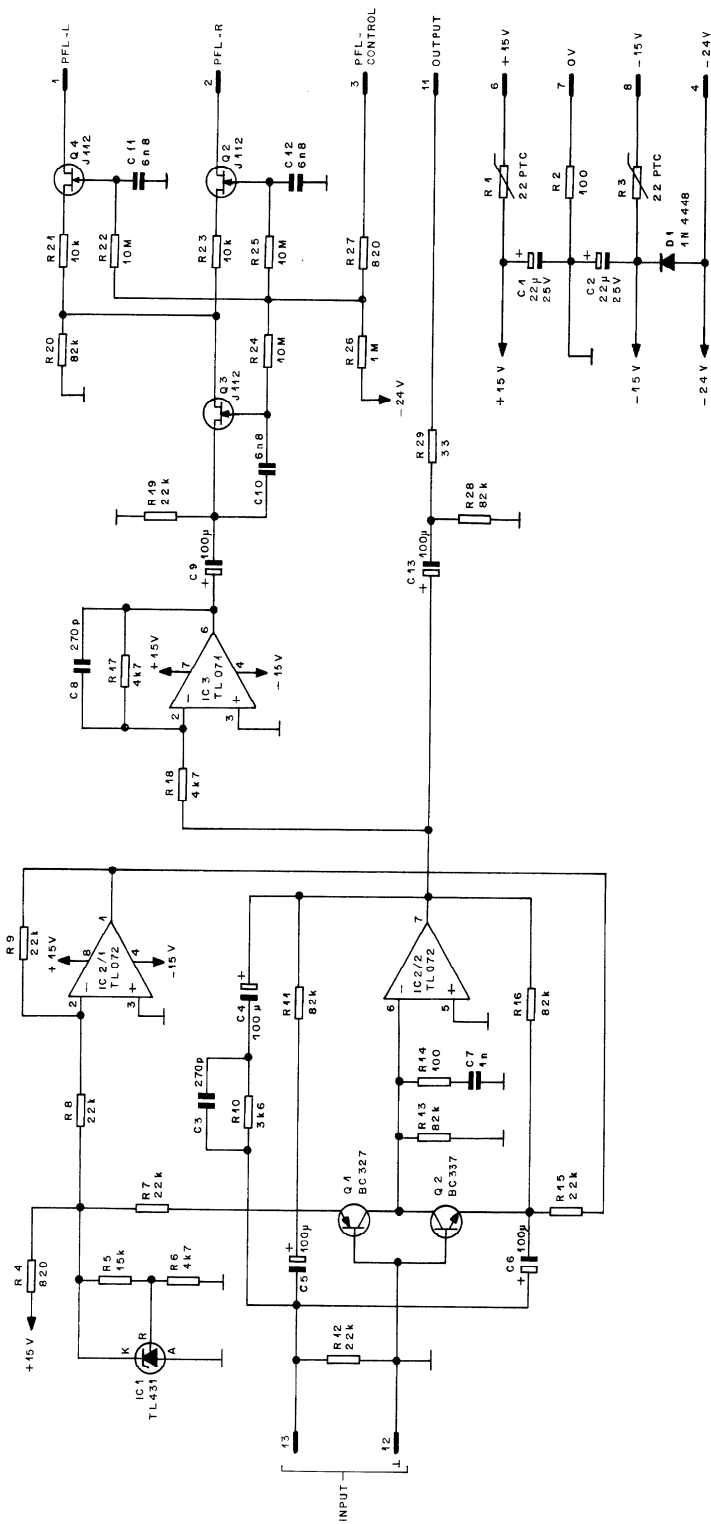
When using 3.3 kΩ resistors as combining (mixing) resistors in series with each source feeding the summing bus, gain will be unity (0 dB), i.e., the amplifier's output level will be equal to the level of the signal source ahead of the combining resistor. The amplifier's output is unbalanced, with low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

**Technical Specifications**

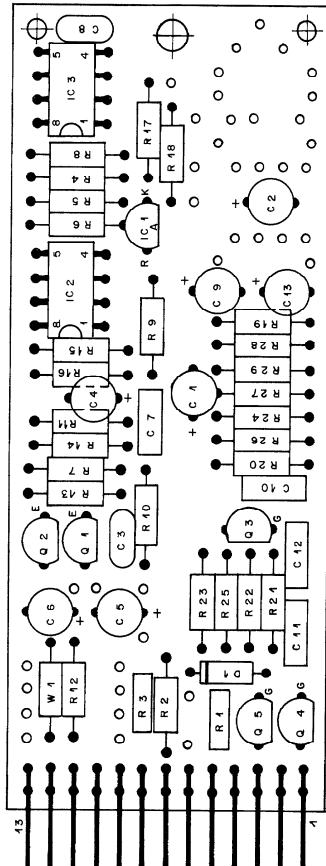
Input:	Max. current	2.5 mA_{rms} for max. output swing
	Current for 0 dBu	234.2 μA ; 0 dBu output ($\approx 3.3 \text{ k}\Omega$ at the input for unity gain)
Output:	Impedance	33 W
	Max. output swing	+20 dBu
	Load	$\approx 600 \text{ W}$ @ max. output swing
	Frequency response	$\pm 0.3 \text{ dBu}$, 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 $\approx R_S = 275 \Omega$
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)

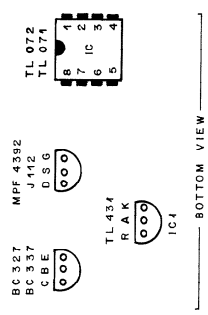
1.914.530.xx



SCHILDER 43.01.0108 / 1.914.530-04 AUFGEKLEBT NACH FABRIKATIONSMUSTER.



CIS	PIN	EURO 32 PIN
1	43	(D) 1
2	42	(D) 2
3	41	(D) 3
4	40	(D) 4
5	15	(D) 5
6	14	(D) 6
7	13	(D) 7
8	12	(D) 8
9	11	(D) 9
10	10	(D) 10
11	9	(D) 11
12	8	(D) 12
13	7	(D) 13
14	6	(D) 14
15	5	(D) 15
16	4	(D) 16
17	3	(D) 17
18	2	(D) 18
19	1	(D) 19
20	30	(D) 20
21	29	(D) 21
22	28	(D) 22
23	27	(D) 23
24	26	(D) 24
25	25	(D) 25
26	24	(D) 26
27	23	(D) 27
28	22	(D) 28
29	21	(D) 29
30	20	(D) 30
31	19	(D) 31
32	18	(D) 32



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

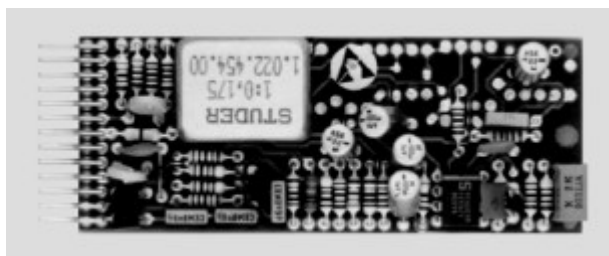
MANUFACTURER Mot=Motorola, NS=National Semiconductor, Six=Siliconics, TI=Texas Instruments

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

2.1.15 High-Level Input with PFL Facility

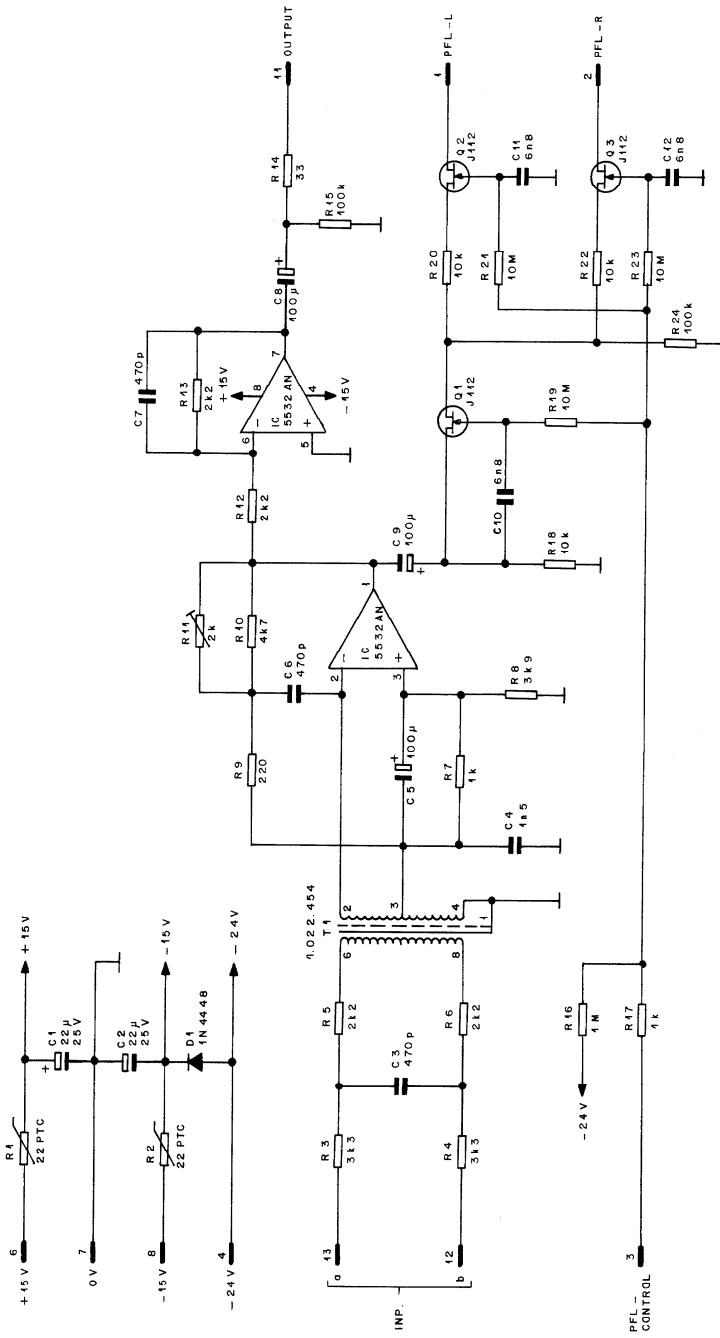
1.914.531

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).

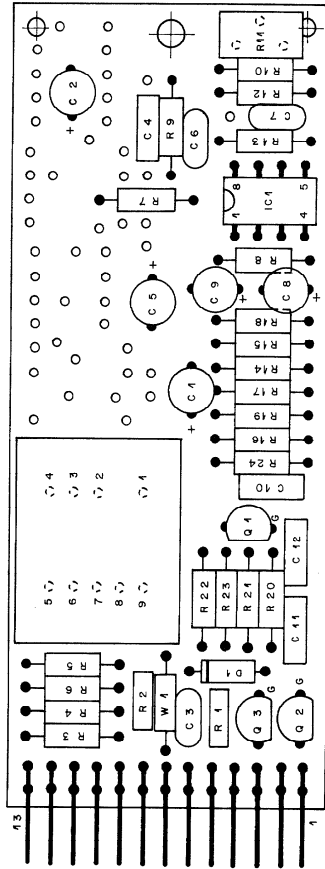
**Technical Specifications**

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	≈ 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

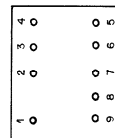


SCHILDER 43.01.0108 / 1.914.531.04 AUFGEKLEBT NACH FABRIKATIONSMUSTER.



CIS	PIN	EURO 32 PIN
INPUT a	13	1
INPUT b	12	2
OUTPUT	11	3
-45V	10	4
0V	9	5
+15V	8	6
-24V	7	7
PFL SIGN. BUS	6	8
PFL RIGHT BUS	5	9
PFL LEFT BUS	4	10
	3	11
	2	12
	1	13

1.022.454 T1



AN 5532



MPF 4392 030



BOTTOM VIEW

25.9.94	STUDER REGENSDORF ZURICH	HL INPUT WITH PFL	ESE	1.914.531.00
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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

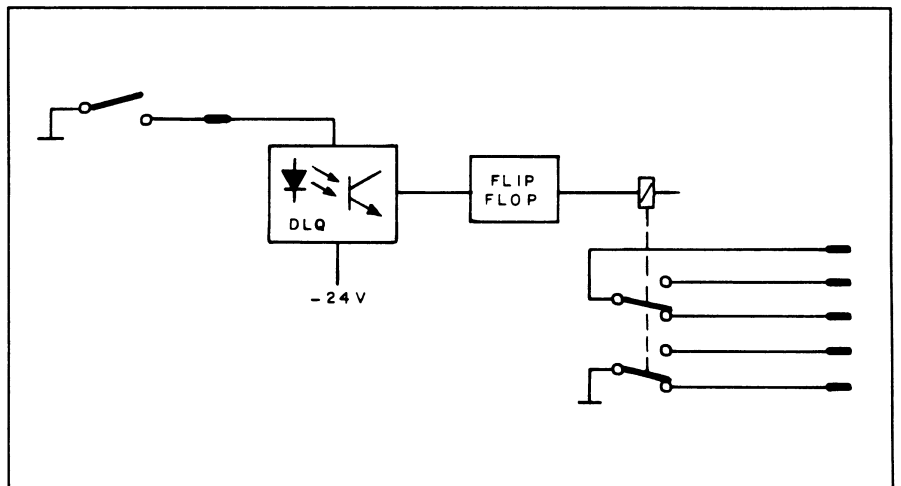
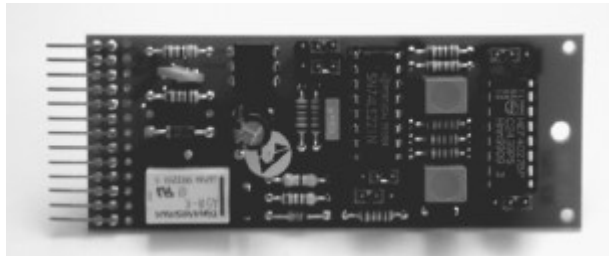
MANUFACTURER Mot=Motorola, NS=National Semiconductor, Six=Siliconics, TI=Texas Instruments, Sig=Signetics

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

2.1.16 Flip-flop Unit

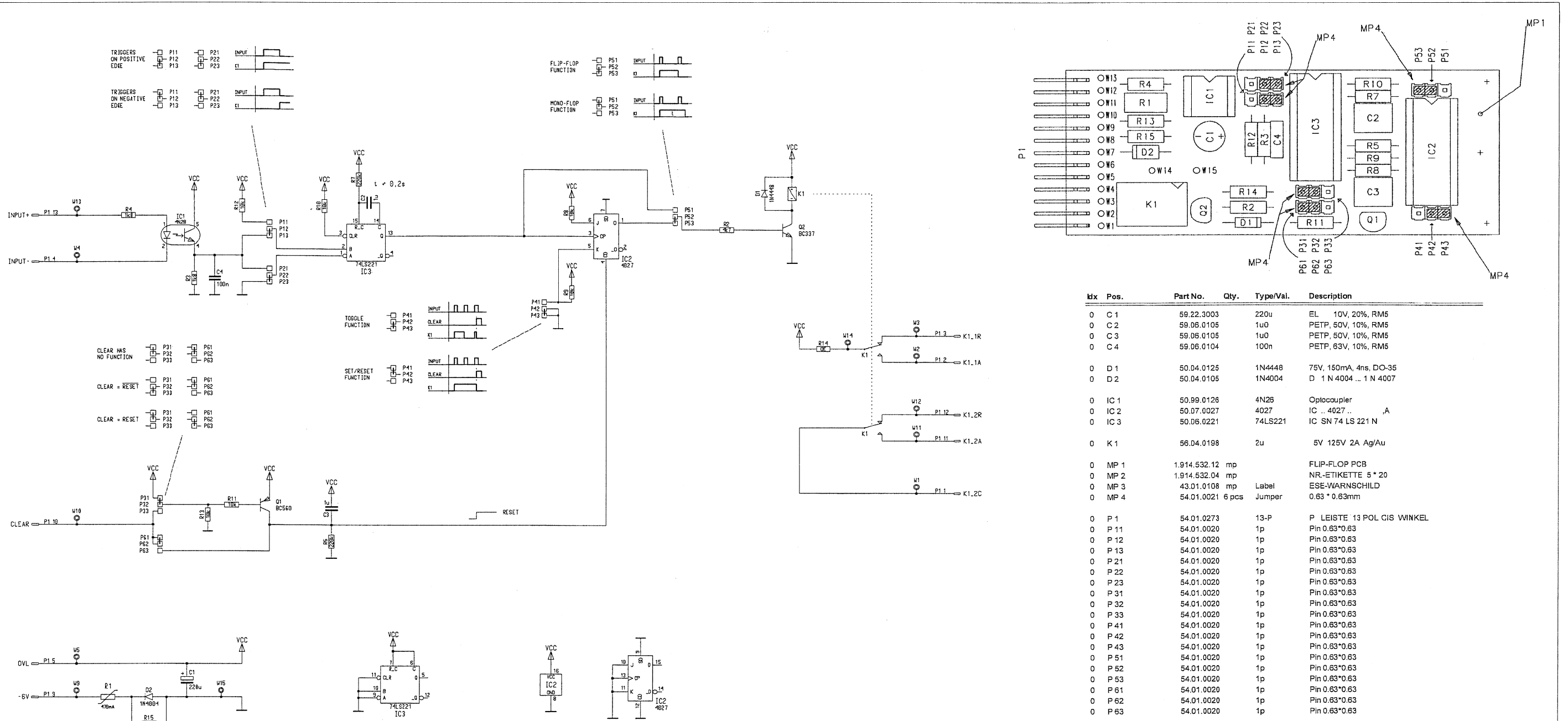
1.914.532

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



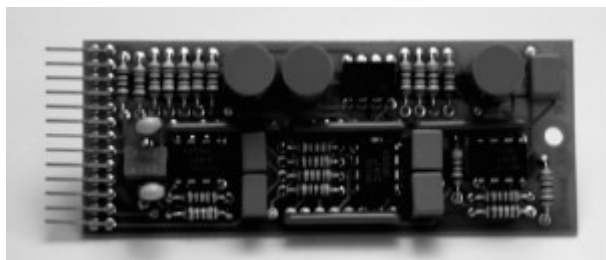
Idx	Pos.	Part No.	Qty.	Type/Val.	Description
0	C 1	59.22.3003		220u	EL 10V, 20%, RM5
0	C 2	59.06.0105		1u0	PETP, 50V, 10%, RM5
0	C 3	59.06.0105		1u0	PETP, 50V, 10%, RM5
0	C 4	59.06.0104		100n	PETP, 63V, 10%, RM5
0	D 1	50.04.0125		1N4448	75V, 150mA, 4ns, DO-35
0	D 2	50.04.0105		1N4004	D 1 N 4004 ... 1 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	54.01.0023		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", lot, gerade
0	XIC 3	53.03.0168		16p	DIL 0.3", lot, gerade

End of List

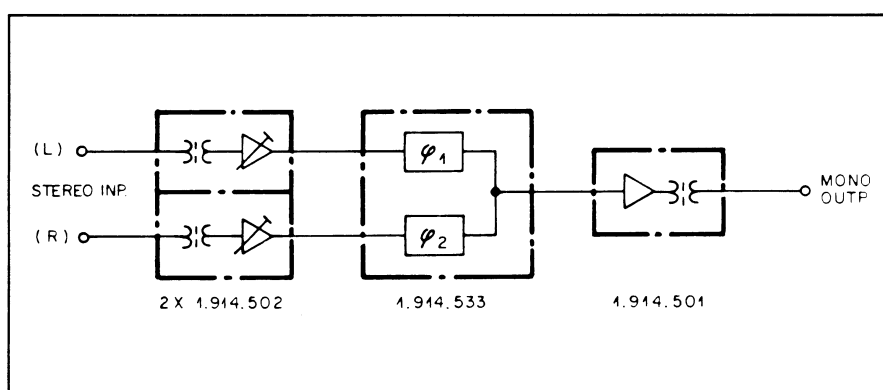
2.1.17 90° Filter

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

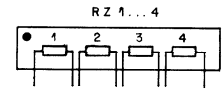
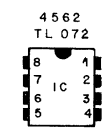
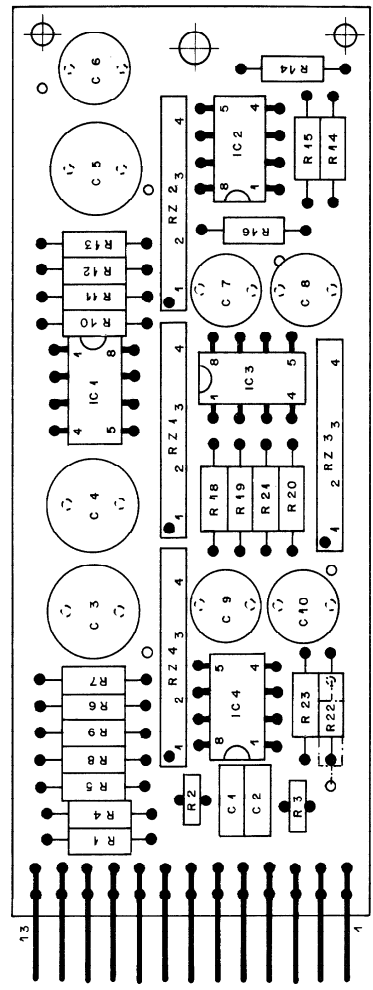
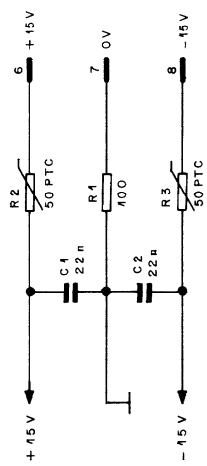
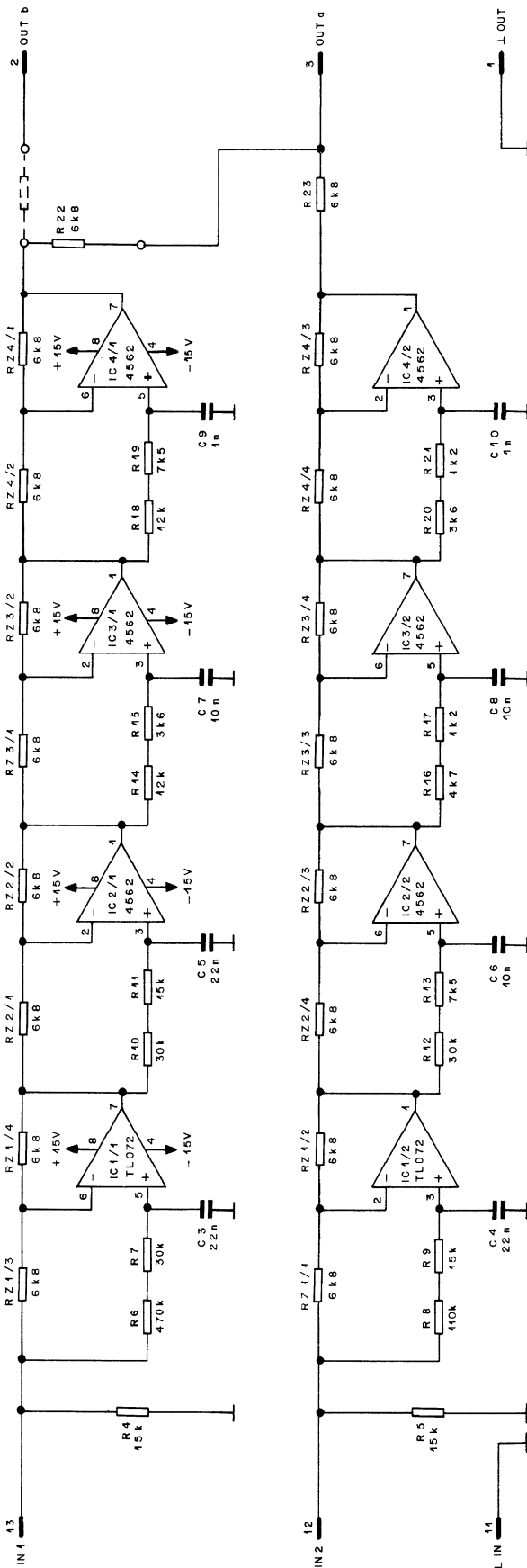
Input:	Max. level	+20 dBu
	Impedance	4 kW
Output:	Max. level	+20 dBu
	Impedance	6.8 kW
	Frequency response	30 Hz...16 kHz, ±0.3 dB
	Phase	90° ±3°; 30 Hz...16 kHz
	THD	£ -80 dB
	Noise	< -95 dBu

Supply: ±15 V (18 mA idling)

Dimensions: MS-card, 34 × 85 mm

Ordering Information: 90° filter stereo/mono

1.914.533.xx



BOTTOM VIEW

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			
+15 V	6	16			
	5				
	4				
OUT a	3	4	10	24	30
OUT b	2	5	11	25	31
⊥	1	6	13	26	32

© 26.9.94 STUDER REGENSDORF ZÜRICH	90 DEGREE FILTER	1.914.533.00
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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	dua1 op.amp.		TI
01 IC....2	50.09.0107	RC4559	dua1 op.amp.		Ra
01 IC....3	50.09.0107	RC4559	dua1 op.amp.		Ra
01 IC....4	50.09.0107	RC4559	dua1 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

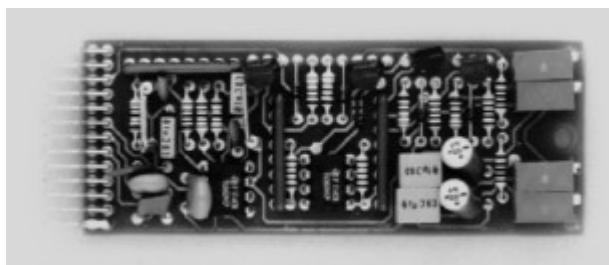
MANUFACTURER TI=Texas Instruments, Ra=Raytheon

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

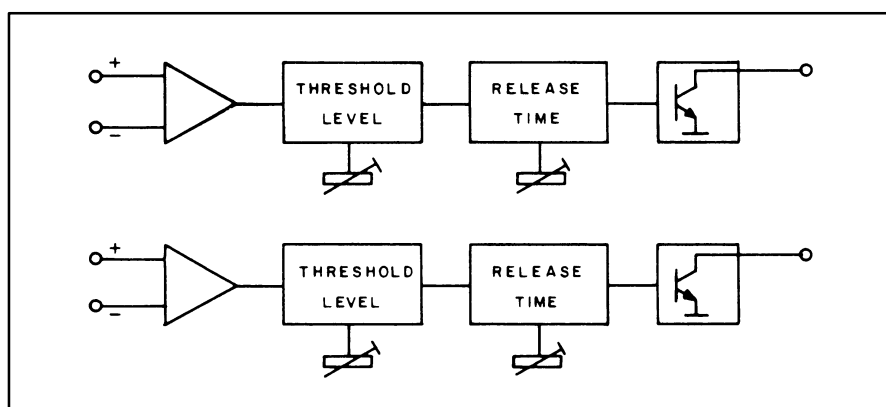
2.1.18 Dual Vox Detector

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.

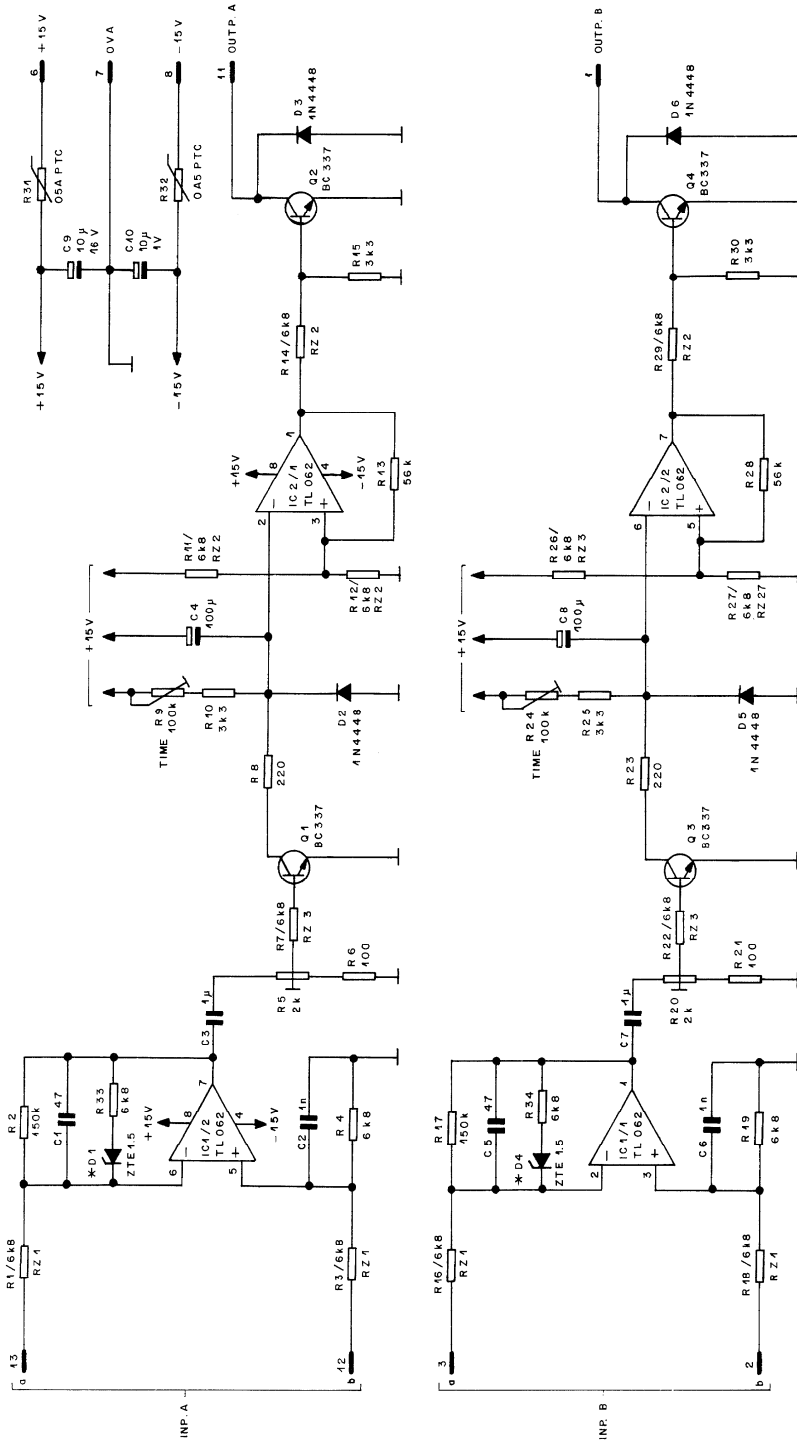
**Technical Specifications****Inputs:**

Impedance	Electronically balanced
Max. level	± 10 kW
Frequency response	+24 dBu ($0 \text{ dBu} \hat{=} 0,775 \text{ V}_{\text{rms}}$)
Threshold level	75 Hz...12 kHz, -3 dB
Attack time	-22 dBu...+16 dBu
Release time	100 ms
Hysteresis	200 ms...10 s
	± 1 dB

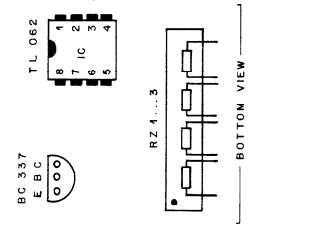
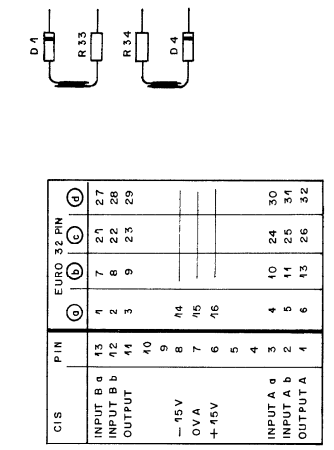
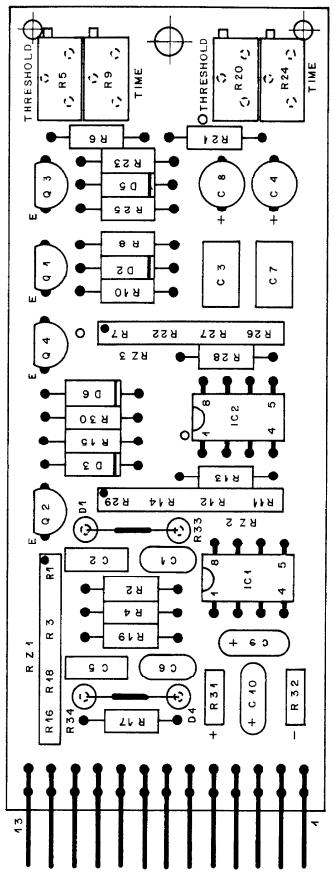
Outputs:**Open-collector;** $U_{\text{CE}} \leq +45 \text{ V}$; $I_{\text{max}} \leq 100 \text{ mA}$ **Supply:****±15 V** ($\leq 15 \text{ mA}$ / 4 mA idling)**Dimensions:****MS-card**, $34 \times 85 \text{ mm}$ **Ordering Information:**

Dual vox detector

1.914.534.xx



* CATHODE RING CONNECTED TO THE POSITIVE VOLTAGE OF THE VOLTAGE.



27.9.94			
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

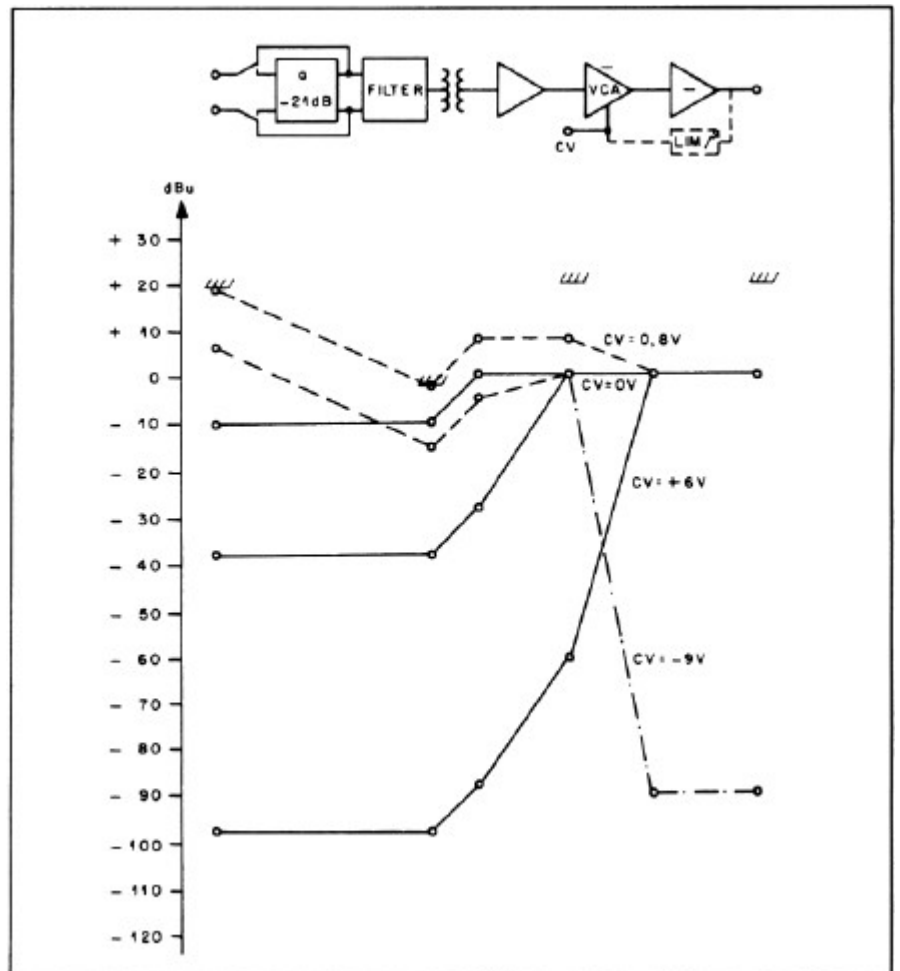
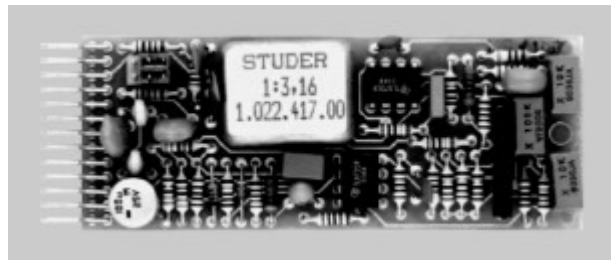
MANUFACTURER Mot=Motorola, NS=National Semiconductor, Six=Siliconics, TI=Texas Instruments

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.

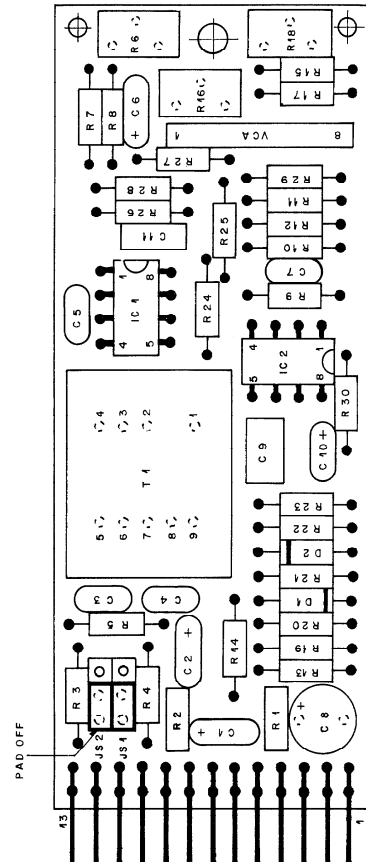
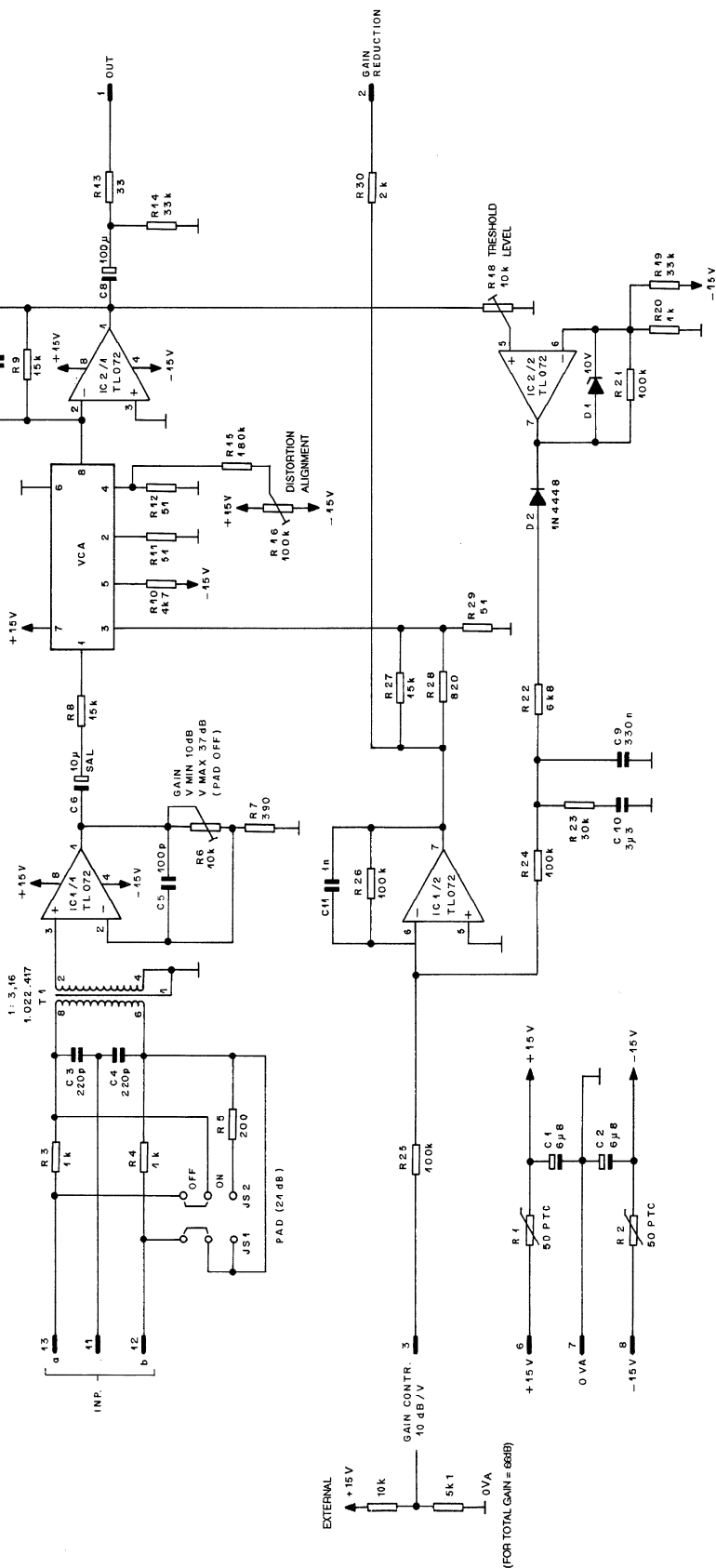


The operation of the limiter circuit can be monitored at the gain reduction output, if an appropriate instrument (GRM) is connected.

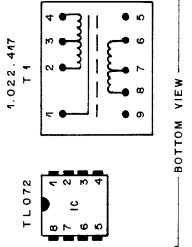
This card is ideally suited for talkback applications.

Technical Specifications

Input:	Impedance	> 1 kW , balanced, floating	
	Max. level	-2 dBu (THD at 30 Hz \leq 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	≈ 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	$v_{tot} = v_1 + v_2$
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; $R_s = 200 \Omega$; pad off	
Limiters:	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	



CIS	PIN	EURO 32 PIN
IN a	13	1
IN b	42	2
IN L	41	3
	40	4
-15V	9	14
0VA	7	15
+15V	6	16
	5	
GC	3	4
GRM	2	5
OUT	1	6
		13
		24
		30
		31
		26
		32



4.10.91	STUDER REGENSDORF ZÜRICH	MIC. AMPLIFIER WITH LIMITER	1.914.539.00
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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

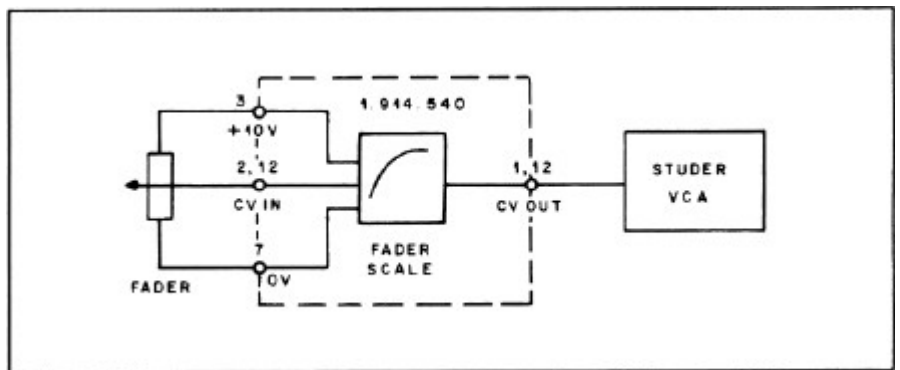
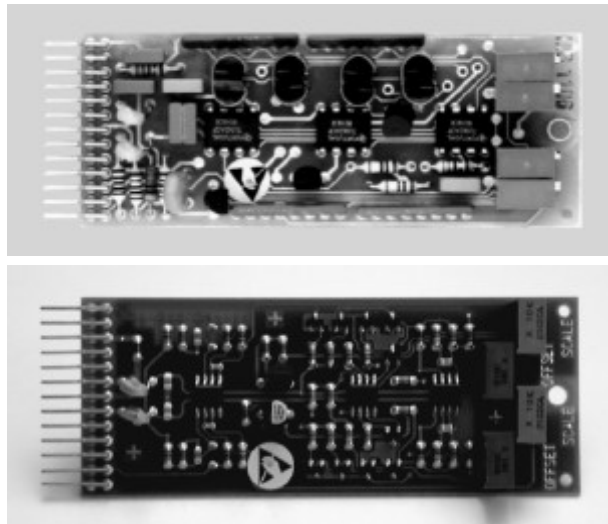
MANUFACTURER dBx= dBx-Incorp., St= Studer, TI= Texas Instruments

1.914.539.00 MIC.AMPLIFIER WITH LIMITER HOR20/11/9000

2.1.20 Dual Fader/VCA Control Voltage Interface

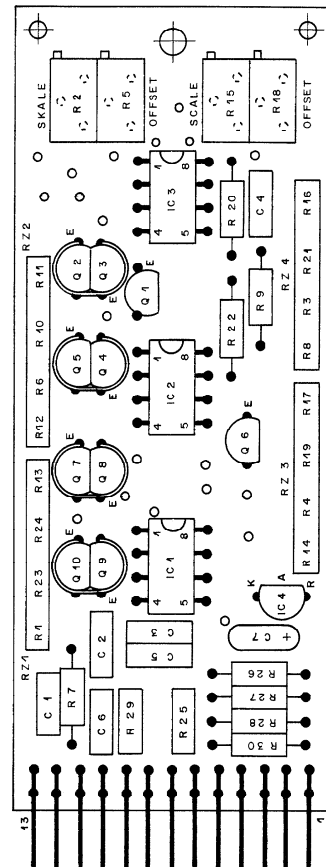
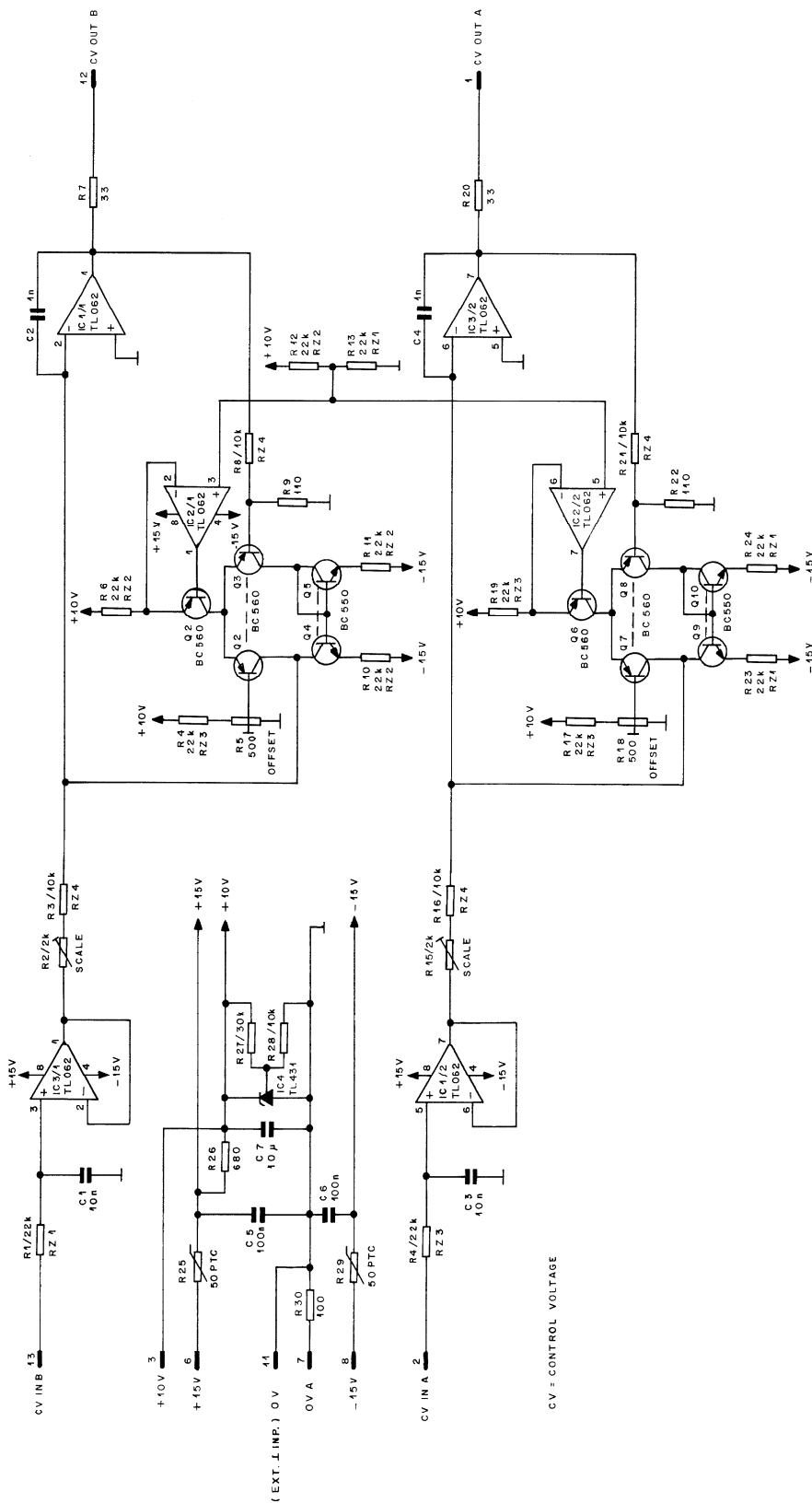
1.914.540 /541

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.

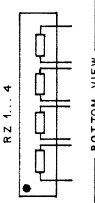
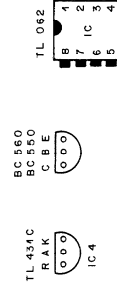


Technical Specifications

		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



CIS	PIN	EURO 52 PIN	
		(A)	(B)
CV IN B	13	1	7
CV OUT B	42	2	8
CV (CV)	11	3	9
	10		
-15.5V	8	14	
0VA	7	15	
+15.5V	6	16	
	5		
	4		
+10V (FADER)	3	4	10
CV IN A	2	5	11
CV OUT A	1	1	13
			24
			25
			26
			30
			31
			32



7 10 91			
STUDER REGENSDORF ZÜRICH	FADER / VCA CV INTERFACE BOARD	1.914.540.00	

MSC FADER / VCA INTERFACE

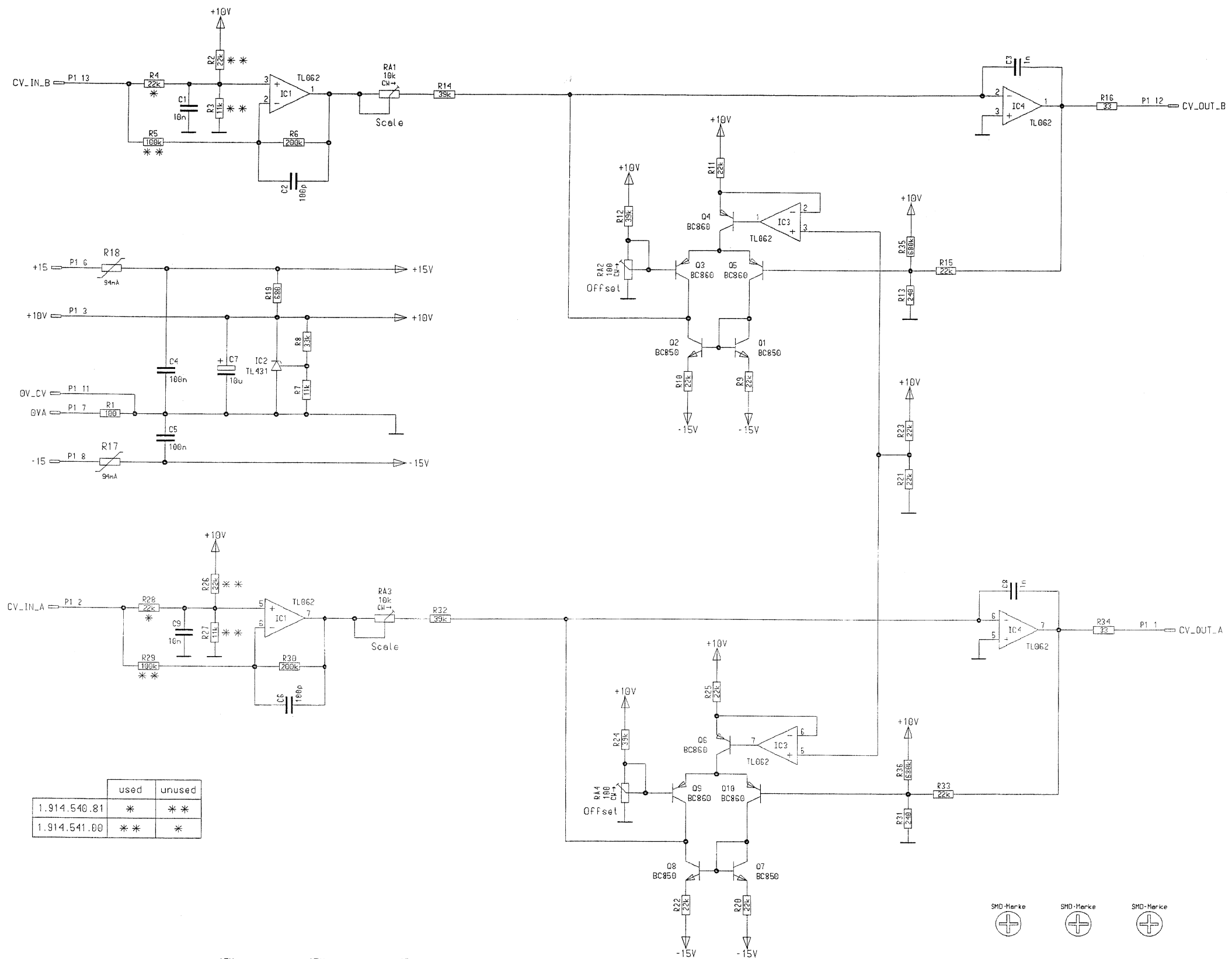
Ad	..POS..	..REF.No..	DESCRIPTION.....	MANUFACTURER
C....1	59.06.0103	10 nF	63V PE 10%	
C....2	59.06.0102	1 nF	63V PE 10%	
C....3	59.06.0103	10 nF	63V PE 10%	
C....4	59.06.0102	1 nF	63V PE 10%	
C....5	59.06.0104	0.1 uF	63V PE 10%	
C....6	59.06.0104	0.1 uF	63V PE 10%	
C....7	59.26.2100	10 uF	16V SAL	
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	Sie see note 1
Q....3	50.03.0600	BC560	PNP E6310	Sie see note 1
Q....4	50.03.0524	BC550	NPN E6310	Sie see note 1
Q....5	50.03.0524	BC550	NPN E6310	Sie see note 1
Q....6	50.03.0496	BC560	PNP	Sie
Q....7	50.03.0600	BC560	PNP E6310	Sie see note 1
Q....8	50.03.0600	BC560	PNP E6310	Sie see note 1
Q....9	50.03.0524	BC550	NPN E6310	Sie see note 1
Q....10	50.03.0524	BC550	NPN E6310	Sie see note 1
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

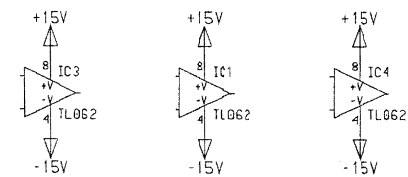
Note 1: Q2,Q3,Q4,Q5,Q7,Q8,Q9,Q10 must fulfill BV 678 I

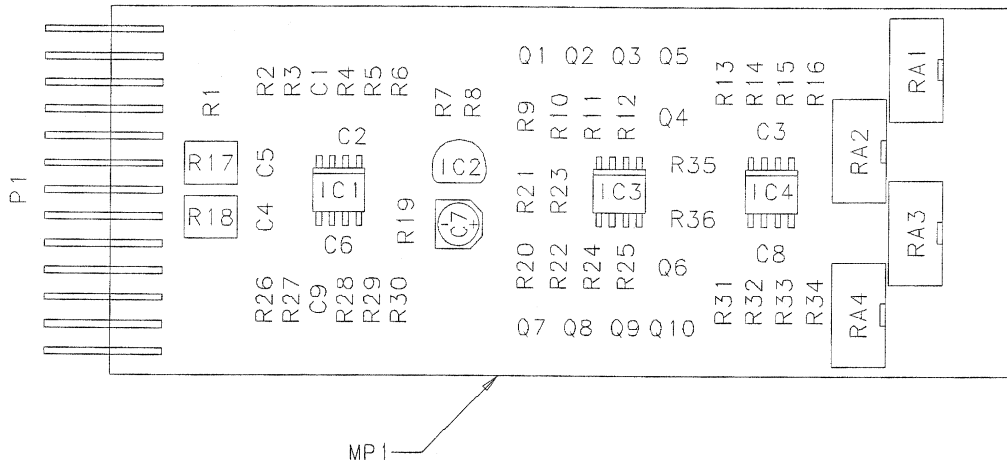
1.914.540.00 FADER/VCA CV INTERFACE BOARD HOR16/11/9000



	used	unused
1.914.540.81	*	**
1.914.541.00	**	*

NC P1 4
 NC P1 5
 NC P1 9
 NC P1 10





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

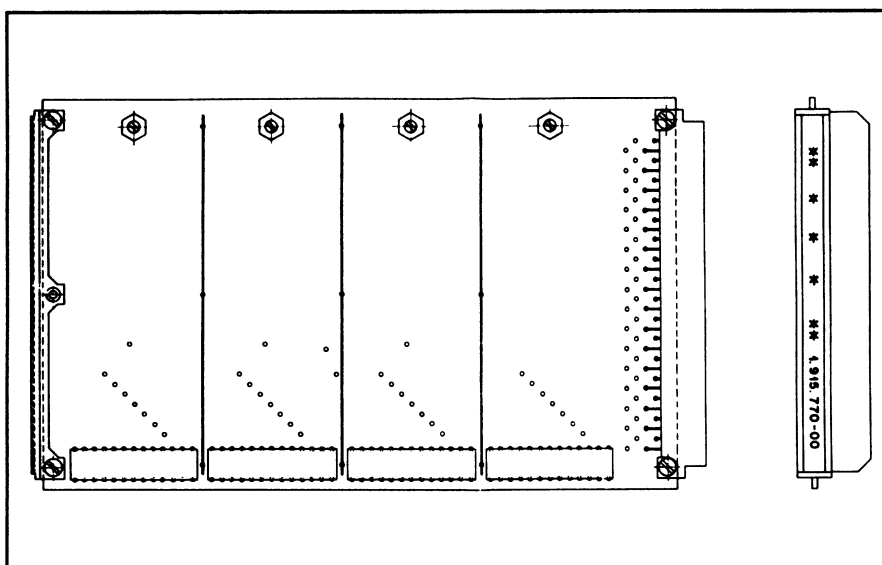
Comments:

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.

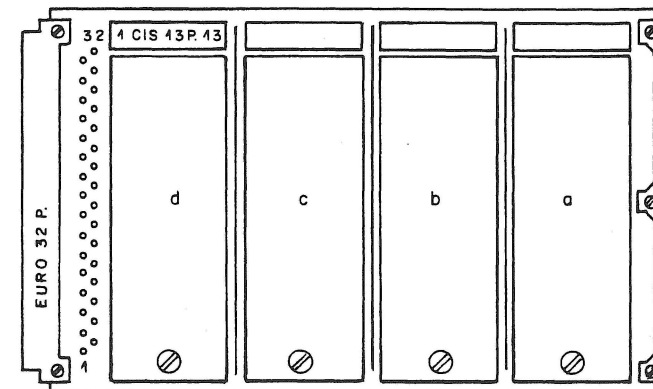
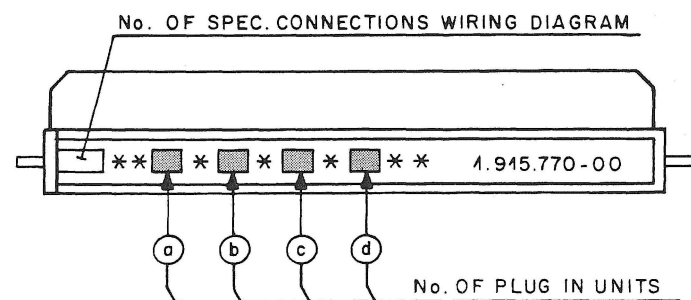
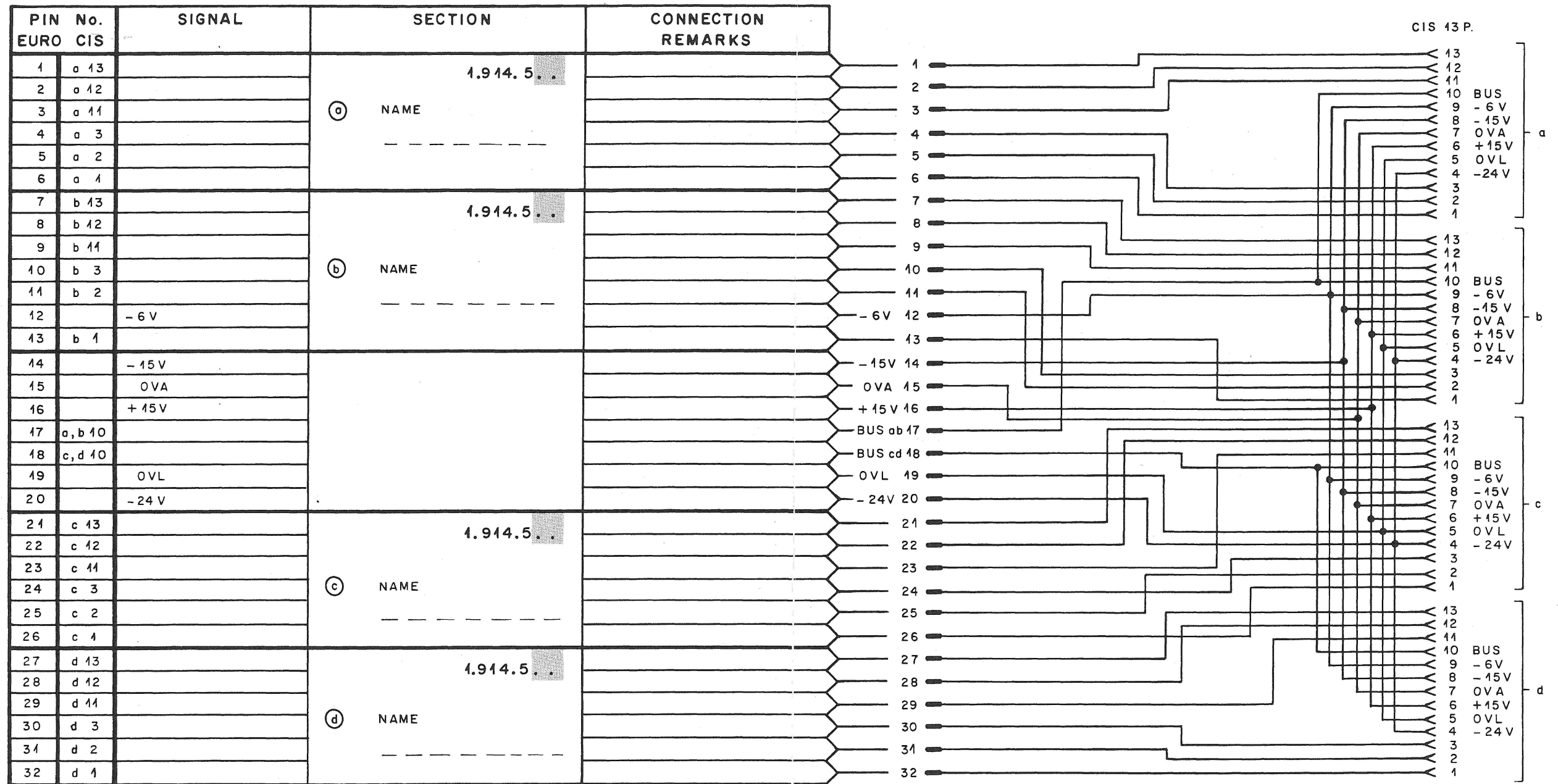


Dimensions: Euro-card **100 × 160 mm**

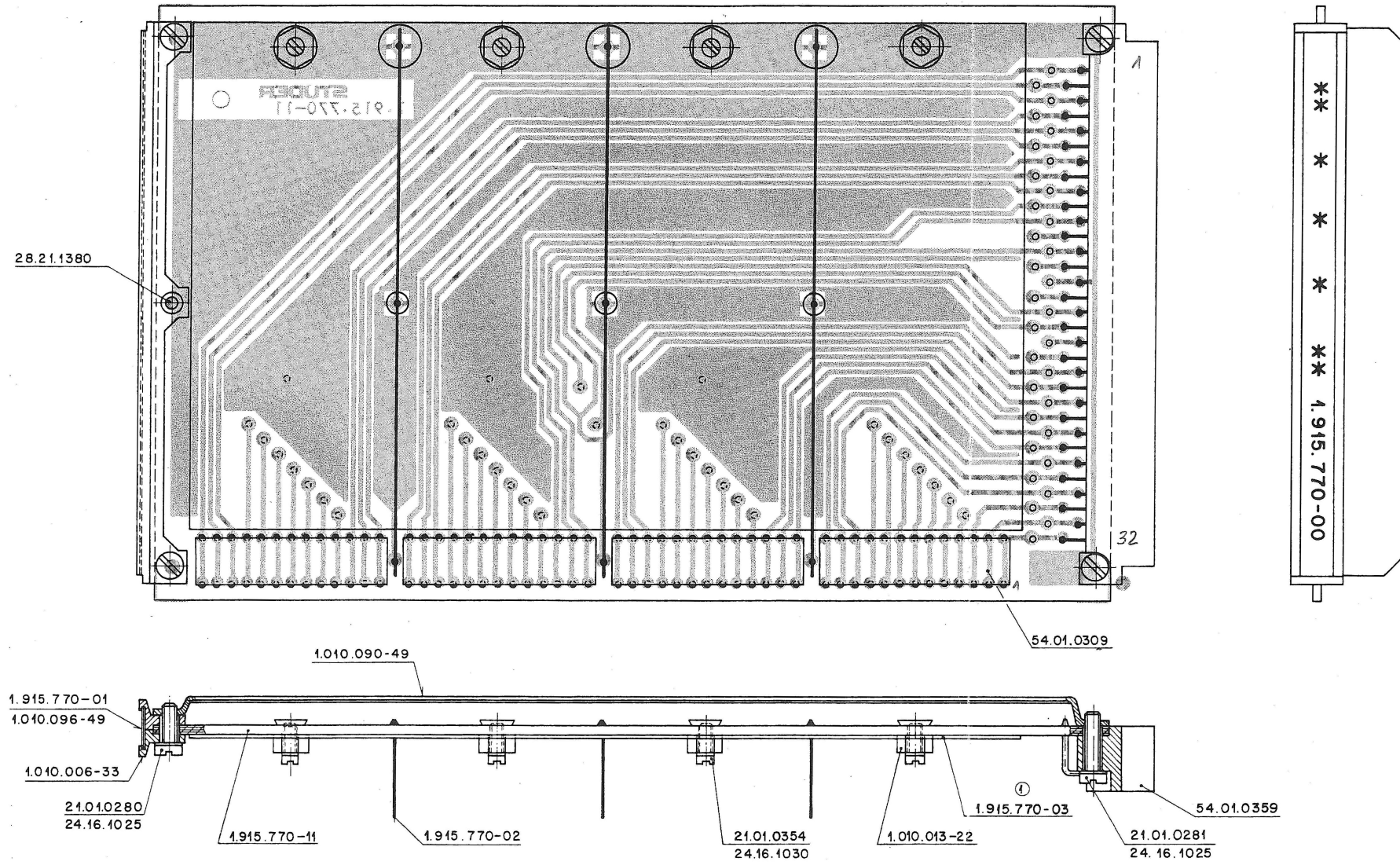
Connectors: 1 × Euro connector **32-pin, DIN 41612**
4 × CIS connector **13-pin, plug-in socket for MSC**

Ordering Information: MSC motherboard

1.915.770.xx



MSC MOTHER BOARD



Änderung					③
					②
	B. 2. 85	A. Ho	W	W	①
Ausgabe	04.04.84	STJ	W	W	①
Datum	Gez.	Gepr.	Ges.	Index	
Kopie für:					

STUDER REGENSDORF ZÜRICH	Benennung	BASIS BOARD	Nummer:	1.915.770-00

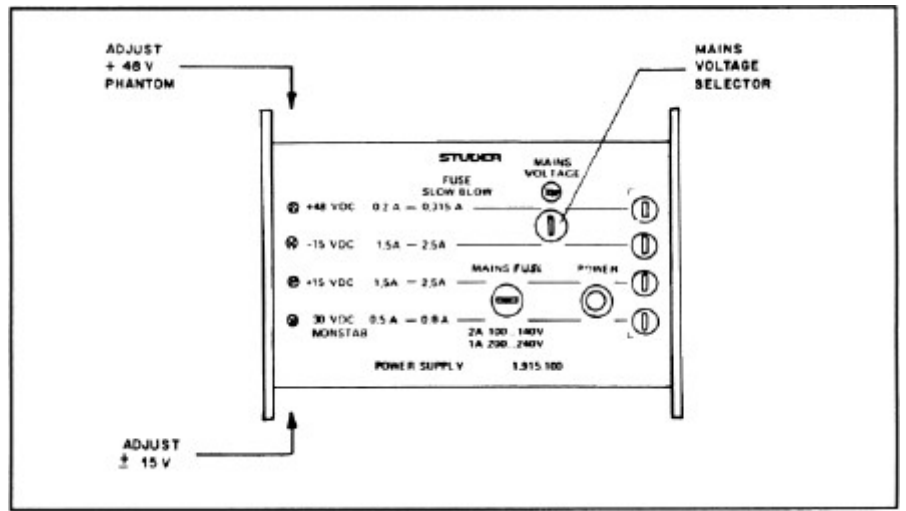
2.2.2 Power Supply

1.915.100

This power supply provides a regulated output of $\pm 15\text{ V}_{\text{DC}}$ 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.

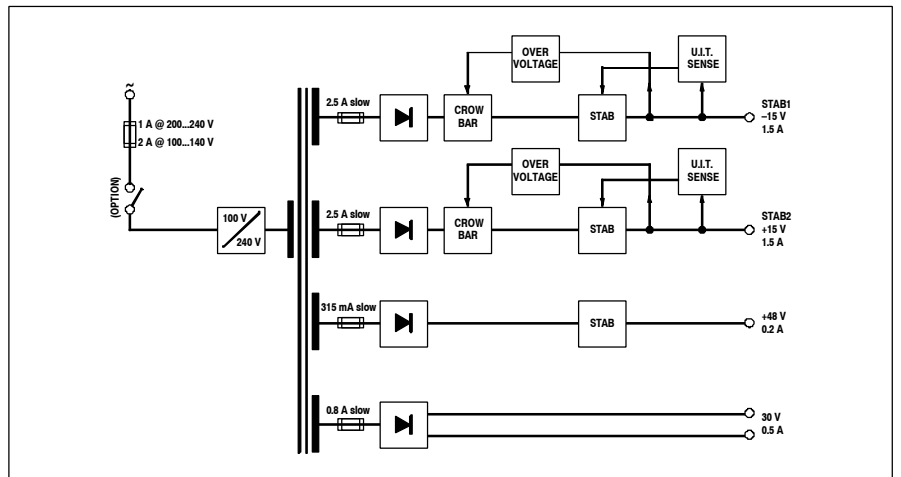
If a regulated 24 V_{DC} supply is required, the stabilizer card 1.915.105.xx can be connected to the 30 V_{DC} output.

Each of the output voltages is derived from a separate secondary winding of the mains transformer and can be fine-adjusted.



The $\pm 15\text{ V}_{\text{DC}}$ 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.

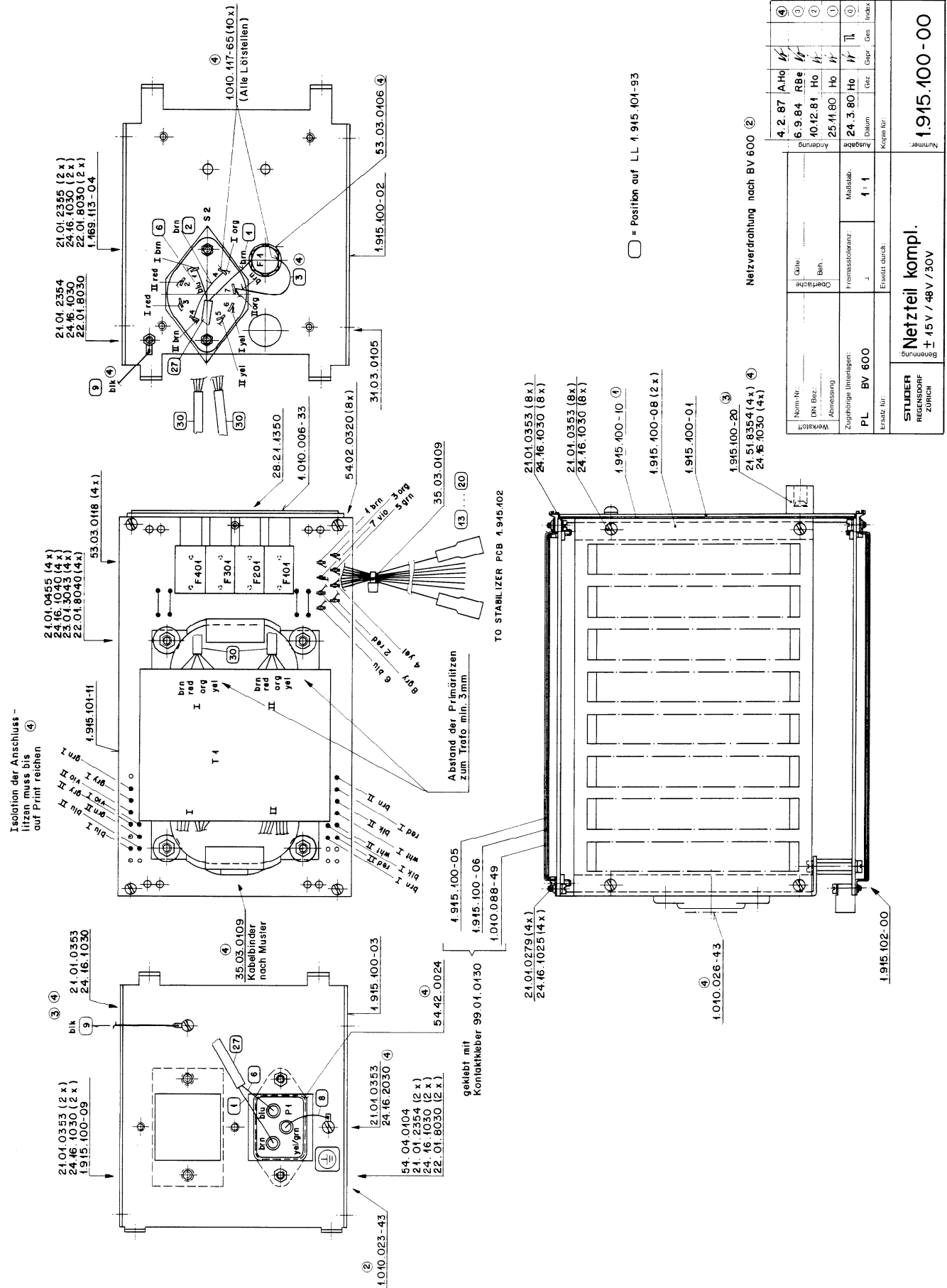


Mains transformer and regulator electronics are housed in one rectangular unit fitting into the 19" Euro-card frame (1.918.318/319), occupying the space of 28M widths. For this purpose, a mounting kit 1.918.316 is recommended (see chapter 2.3.4).

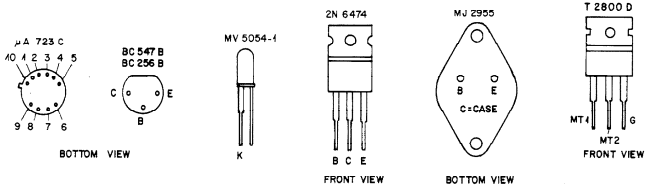
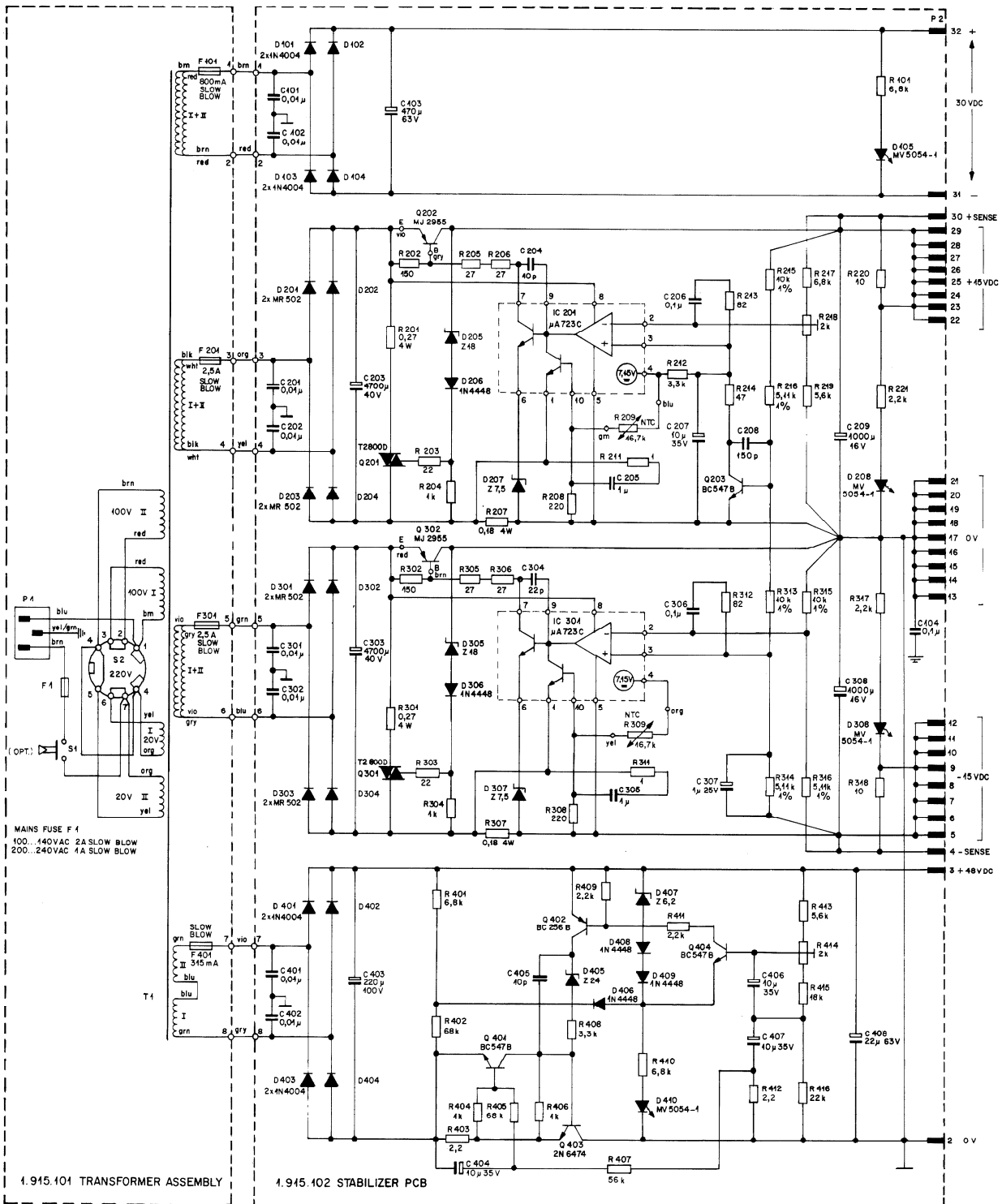
Technical Specifications

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



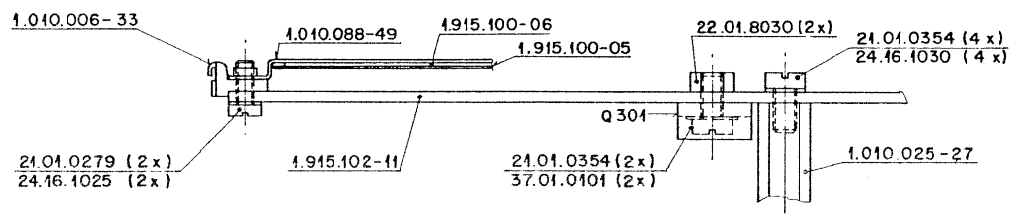
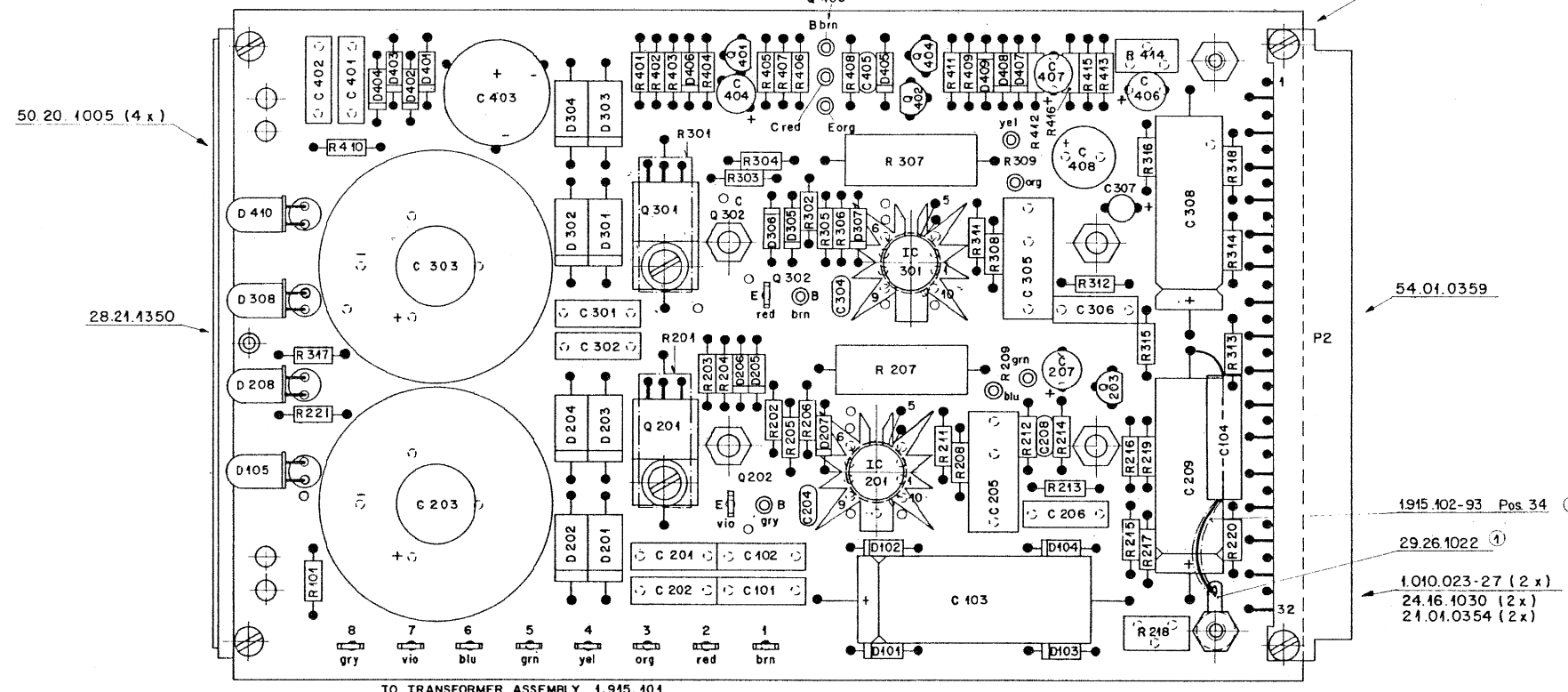
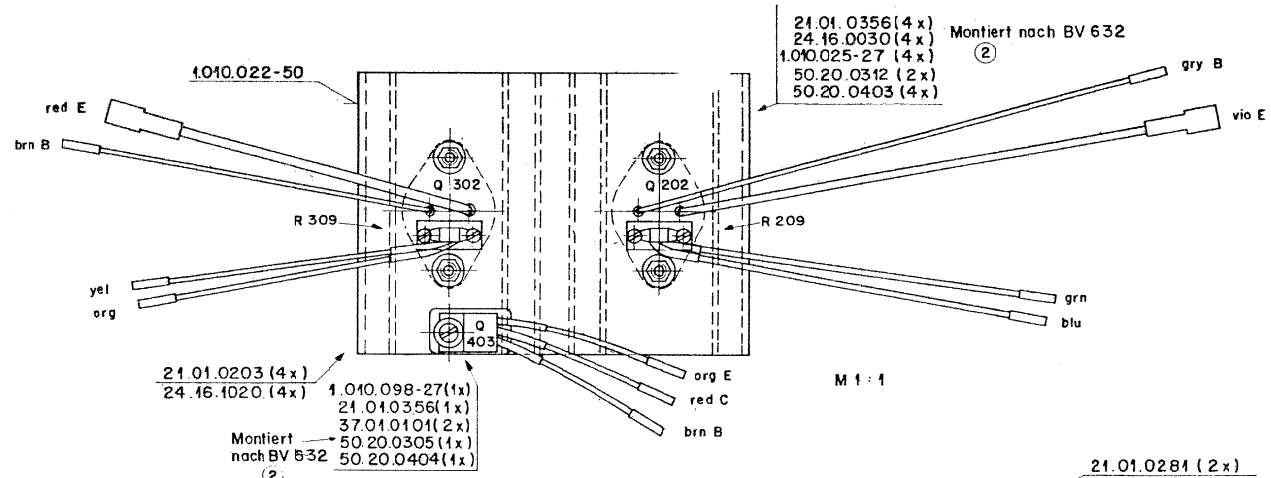
Norm-Nr.:	4.2.87	A:Ho	4
DIN Bez.:	6.9.84	RB:	3
Abmessung:	10.12.81	Ho	2
Zugehörige Unterlagen:	25.11.80	Ho	1
Prozesskosten:	24.3.80	Ho	1
Material:	1	1	1
Erstellt durch:		Datum	Grz
Geprüft durch:		Datum	Grz
Freigegeben durch:		Datum	Grz
Netzverdrahtung nach BV 600			
PL BV 600			
STUDER RECHENUNGS- ZENTRUM ZÜRICH	Netzteile kompl. Benennung		
	1.915.100-00 Nummer		



Änderung									
2. 4. 86	S:								
Ausgabe	1. 12. 78	Sr:							
Datum		Gez.		Gepr.		Ges.		Index	
Kopie für:									
Nummer: SC 1.915.100									

STUDER
 REGENSDORF
 ZÜRICH

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



21.01.0356 (4 x) 24.16.0030 (4 x) 1.010.025-27 (4 x) 50.20.0312 (2 x) 50.20.0403 (4 x)		Montiert nach BV 632	(2)	gry B	vio E
21.01.0203 (4 x) 24.16.1020 (4 x)		1.010.098-27 (1 x) 21.01.0356 (1 x) 37.01.0101 (2 x) 50.20.0305 (1 x) 50.20.0404 (1 x)		Q 302 R 309 Q 202 R 209 Q 403 org E red C brn B	
50.20.1005 (4 x)		C 402 C 401 D 404 D 403 D 402 D 401 C 403 D 304 D 303 R 401 R 402 R 403 R 404 R 405 R 406 R 407 R 408 R 409 R 410 R 411 R 412 R 413 R 414 R 415 R 416 C 404 C 405 C 406 C 407 C 408 C 409 C 410 C 411 C 412 C 413 C 414 C 415 C 416 R 301 R 302 R 303 R 304 R 305 R 306 R 307 R 308 R 309 R 310 R 311 R 312 R 313 R 314 R 315 R 316 R 317 R 318 R 319 R 320 R 321 R 322 R 323 R 324 R 325 R 326 R 327 R 328 R 329 R 330 R 331 R 332 R 333 R 334 R 335 R 336 R 337 R 338 R 339 R 340 R 341 R 342 R 343 R 344 R 345 R 346 R 347 R 348 R 349 R 350 R 351 R 352 R 353 R 354 R 355 R 356 R 357 R 358 R 359 R 360 R 361 R 362 R 363 R 364 R 365 R 366 R 367 R 368 R 369 R 370 R 371 R 372 R 373 R 374 R 375 R 376 R 377 R 378 R 379 R 380 R 381 R 382 R 383 R 384 R 385 R 386 R 387 R 388 R 389 R 390 R 391 R 392 R 393 R 394 R 395 R 396 R 397 R 398 R 399 R 400 R 401 R 402 R 403 R 404 R 405 R 406 R 407 R 408 R 409 R 410 R 411 R 412 R 413 R 414 R 415 R 416 C 301 C 302 C 303 C 304 C 305 C 306 C 307 C 308 C 309 C 310 C 311 C 312 C 313 C 314 C 315 C 316 C 317 C 318 C 319 C 320 C 321 C 322 C 323 C 324 C 325 C 326 C 327 C 328 C 329 C 330 C 331 C 332 C 333 C 334 C 335 C 336 C 337 C 338 C 339 C 340 C 341 C 342 C 343 C 344 C 345 C 346 C 347 C 348 C 349 C 350 C 351 C 352 C 353 C 354 C 355 C 356 C 357 C 358 C 359 C 360 C 361 C 362 C 363 C 364 C 365 C 366 C 367 C 368 C 369 C 370 C 371 C 372 C 373 C 374 C 375 C 376 C 377 C 378 C 379 C 380 C 381 C 382 C 383 C 384 C 385 C 386 C 387 C 388 C 389 C 390 C 391 C 392 C 393 C 394 C 395 C 396 C 397 C 398 C 399 C 400 C 401 C 402 C 403 C 404 C 405 C 406 D 201 D 202 D 203 D 204 D 205 D 206 D 207 D 208 D 209 D 210 D 211 D 212 D 213 D 214 D 215 D 216 D 217 D 218 D 219 D 220 D 221 D 222 D 223 D 224 D 225 D 226 D 227 D 228 D 229 D 230 D 231 D 232 D 233 D 234 D 235 D 236 D 237 D 238 D 239 D 240 D 241 D 242 D 243 D 244 D 245 D 246 D 247 D 248 D 249 D 250 D 251 D 252 D 253 D 254 D 255 D 256 D 257 D 258 D 259 D 260 D 261 D 262 D 263 D 264 D 265 D 266 D 267 D 268 D 269 D 270 D 271 D 272 D 273 D 274 D 275 D 276 D 277 D 278 D 279 D 280 D 281 D 282 D 283 D 284 D 285 D 286 D 287 D 288 D 289 D 290 D 291 D 292 D 293 D 294 D 295 D 296 D 297 D 298 D 299 D 300 D 301 D 302 D 303 D 304 D 305 D 306 D 307 D 308 D 309 D 310 D 311 D 312 D 313 D 314 D 315 D 316 D 317 D 318 D 319 D 320 D 321 D 322 D 323 D 324 D 325 D 326 D 327 D 328 D 329 D 330 D 331 D 332 D 333 D 334 D 335 D 336 D 337 D 338 D 339 D 340 D 341 D 342 D 343 D 344 D 345 D 346 D 347 D 348 D 349 D 350 D 351 D 352 D 353 D 354 D 355 D 356 D 357 D 358 D 359 D 360 D 361 D 362 D 363 D 364 D 365 D 366 D 367 D 368 D 369 D 370 D 371 D 372 D 373 D 374 D 375 D 376 D 377 D 378 D 379 D 380 D 381 D 382 D 383 D 384 D 385 D 386 D 387 D 388 D 389 D 390 D 391 D 392 D 393 D 394 D 395 D 396 D 397 D 398 D 399 D 400 D 401 D 402 D 403 D 404 D 405 D 406 D 407 D 408 D 409 D 410 D 411 D 412 D 413 D 414 D 415 D 416 D 417 D 418 D 419 D 420 D 421 D 422 D 423 D 424 D 425 D 426 D 427 D 428 D 429 D 430 D 431 D 432 D 433 D 434 D 435 D 436 D 437 D 438 D 439 D 440 D 441 D 442 D 443 D 444 D 445 D 446 D 447 D 448 D 449 D 450 D 451 D 452 D 453 D 454 D 455 D 456 D 457 D 458 D 459 D 460 D 461 D 462 D 463 D 464 D 465 D 466 D 467 D 468 D 469 D 470 D 471 D 472 D 473 D 474 D 475 D 476 D 477 D 478 D 479 D 480 D 481 D 482 D 483 D 484 D 485 D 486 D 487 D 488 D 489 D 490 D 491 D 492 D 493 D 494 D 495 D 496 D 497 D 498 D 499 D 500 D 501 D 502 D 503 D 504 D 505 D 506 D 507 D 508 D 509 D 510 D 511 D 512 D 513 D 514 D 515 D 516 D 517 D 518 D 519 D 520 D 521 D 522 D 523 D 524 D 525 D 526 D 527 D 528 D 529 D 530 D 531 D 532 D 533 D 534 D 535 D 536 D 537 D 538 D 539 D 540 D 541 D 542 D 543 D 544 D 545 D 546 D 547 D 548 D 549 D 550 D 551 D 552 D 553 D 554 D 555 D 556 D 557 D 558 D 559 D 560 D 561 D 562 D 563 D 564 D 565 D 566 D 567 D 568 D 569 D 570 D 571 D 572 D 573 D 574 D 575 D 576 D 577 D 578 D 579 D 580 D 581 D 582 D 583 D 584 D 585 D 586 D 587 D 588 D 589 D 590 D 591 D 592 D 593 D 594 D 595 D 596 D 597 D 598 D 599 D 600 D 601 D 602 D 603 D 604 D 605 D 606 D 607 D 608 D 609 D 610 D 611 D 612 D 613 D 614 D 615 D 616 D 617 D 618 D 619 D 620 D 621 D 622 D 623 D 624 D 625 D 626 D 627 D 628 D 629 D 630 D 631 D 632 D 633 D 634 D 635 D 636 D 637 D 638 D 639 D 640 D 641 D 642 D 643 D 644 D 645 D 646 D 647 D 648 D 649 D 650 D 651 D 652 D 653 D 654 D 655 D 656 D 657 D 658 D 659 D 660 D 661 D 662 D 663 D 664 D 665 D 666 D 667 D 668 D 669 D 670 D 671 D 672 D 673 D 674 D 675 D 676 D 677 D 678 D 679 D 680 D 681 D 682 D 683 D 684 D 685 D 686 D 687 D 688 D 689 D 690 D 691 D 692 D 693 D 694 D 695 D 696 D 697 D 698 D 699 D 700 D 701 D 702 D 703 D 704 D 705 D 706 D 707 D 708 D 709 D 710 D 711 D 712 D 713 D 714 D 715 D 716 D 717 D 718 D 719 D 720 D 721 D 722 D 723 D 724 D 725 D 726 D 727 D 728 D 729 D 730 D 731 D 732 D 733 D 734 D 735 D 736 D 737 D 738 D 739 D 740 D 741 D 742 D 743 D 744 D 745 D 746 D 747 D 748 D 749 D 750 D 751 D 752 D 753 D 754 D 755 D 756 D 757 D 758 D 759 D 760 D 761 D 762 D 763 D 764 D 765 D 766 D 767 D 768 D 769 D 770 D 771 D 772 D 773 D 774 D 775 D 776 D 777 D 778 D 779 D 780 D 781 D 782 D 783 D 784 D 785 D 786 D 787 D 788 D 789 D 790 D 791 D 792 D 793 D 794 D 795 D 796 D 797 D 798 D 799 D 800 D 801 D 802 D 803 D 804 D 805 D 806 D 807 D 808 D 809 D 810 D 811 D 812 D 813 D 814 D 815 D 816 D 817 D 818 D 819 D 820 D 821 D 822 D 823 D 824 D 825 D 826 D 827 D 828 D 829 D 830 D 831 D 832 D 833 D 834 D 835 D 836 D 837 D 838 D 839 D 840 D 841 D 842 D 843 D 844 D 845 D 846 D 847 D 848 D 849 D 850 D 851 D 852 D 853 D 854 D 855 D 856 D 857 D 858 D 859 D 860 D 861 D 862 D 863 D 864 D 865 D 866 D 867 D 868 D 869 D 870 D 871 D 872 D 873 D 874 D 875 D 876 D 877 D 878 D 879 D 880 D 881 D 882 D 883 D 884 D 885 D 886 D 887 D 888 D 889 D 890 D 891 D 892 D 893 D 894 D 895 D 896 D 897 D 898 D 899 D 900 D 901 D 902 D 903 D 904 D 905 D 906 D 907 D 908 D 909 D 910 D 911 D 912 D 913 D 914 D 915 D 916 D 917 D 918 D 919 D 920 D 921 D 922 D 923 D 924 D 925 D 926 D 927 D 928 D 929 D 930 D 931 D 932 D 933 D 934 D 935 D 936 D 937 D 938 D 939 D 940 D 941 D 942 D 943 D 944 D 945 D 946 D 947 D 948 D 949 D 950 D 951 D 952 D 953 D 954 D 955 D 956 D 957 D 958 D 959 D 960 D 961 D 962 D 963 D 964 D 965 D 966 D 967 D 968 D 969 D 970 D 971 D 972 D 973 D 974 D 975 D 976 D 977 D 978 D 979 D 980 D 981 D 982 D 983 D 984 D 985 D 986 D 987 D 988 D 989 D 990 D 991 D 992 D 993 D 994 D 995 D 996 D 997 D 998 D 999 D 1000 D 1001 D 1002 D 1003 D 1004 D 1005 D 1006 D 1007 D 1008 D 1009 D 1010 D 1011 D 1012 D 1013 D 1014 D 1015 D 1016 D 1017 D 1018 D 1019 D 1020 D 1021 D 1022 D 1023 D 1024 D 1025 D 1026 D 1027 D 1028 D 1029 D 1030 D 1031 D 1032 D 1033 D 1034 D 1035 D 1036 D 1037 D 1038 D 1039 D 1040 D 1041 D 1042 D 1043 D 1044 D 1045 D 1046 D 1047 D 1048 D 1049 D 1050 D 1051 D 1052 D 1053 D 1054 D 1055 D 1056 D 1057 D 1058 D 1059 D 1060 D 1061 D 1062 D 1063 D 1064 D 1065 D 1066 D 1067 D 1068 D 1069 D 1070 D 1071 D 1072 D 1073 D 1074 D 1075 D 1076 D 1077 D 1078 D 1079 D 1080 D 1081 D 1082 D 1083 D 1084 D 1085 D 1086 D 1087 D 1088 D 1089 D 1090 D 1091 D 1092 D 1093 D 1094 D 1095 D 1096 D 1097 D 1098 D 1099 D 1100 D 1101 D 1102 D 1103 D 1104 D 1105 D 1106 D 1107 D 1108 D 1109 D 1110 D 1111 D 1112 D 1113 D 1114 D 1115 D 1116 D 1117 D 1118 D 1119 D 1120 D 1121 D 1122 D 1123 D 1124 D 1125 D 1126 D 1127 D 1128 D 1129 D 1130 D 1131 D 1132 D 1133 D 1134 D 1135 D 1136 D 1137 D 1138 D 1139 D 1140 D 1141 D 1142 D 1143 D 1144 D 1145 D 1146 D 1147 D 1148 D 1149 D 1150 D 1151 D 1152 D 1153 D 1154 D 1155 D 1156 D 1157 D 1158 D 1159 D 1160 D 1161 D 1162 D 1163 D 1164 D 1165 D 1166 D 1167 D 1168 D 1169 D 1170 D 1171 D 1172 D 1173 D 1174 D 1175			

POWER SUPPLY

Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER	Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER
C..	101	59.31.2103	0,01µ 250V	PE	R..	201	57.56.5278	0,27	4W
C..	102	59.31.2103	0,01µ 250V	PE	R..	202	57.11.4151	150	
C..	103	59.25.6471	470µ 63V	EL	R..	203	57.11.4220	22	
Ⓢ C..	104	59.99.0453	0,1µ 250V	MP	R..	204	57.11.4102	1k	
C..	201	59.31.2103	0,01µ 250V	PE	R..	205	57.11.4270	27	
C..	202	59.31.2103	0,01µ 250V	PE	R..	206	57.11.4270	27	
C..	203	59.35.4472	4700µ 40V	EL	R..	207	57.56.5188	0,18	2W
C..	204	59.34.1100	10p	CER	R..	208	57.11.4221	220	
C..	205	59.34.6105	1µ 100V	PE	R..	209	57.99.0208	16,7k	NTC R@ 100°C
C..	206	59.31.6104	0,1µ	PE	R..	210			PH
C..	207	59.36.5100	10µ 35V	TA	R..	211	57.11.4109	1	
C..	208	59.34.4151	150p	CER	R..	212	57.11.4332	3,3k	
C..	209	59.25.3102	1000µ 16V	EL	R..	213	57.11.4820	82	
C..	301	59.31.2103	0,01µ 250V	PE	R..	214	57.11.4470	47	
C..	302	59.31.2103	0,01µ 250V	PE	R..	215	57.39.1002	10k	1% MF
C..	303	59.35.4472	4700µ 40V	EL	R..	216	57.39.5111	5,11k	1% MF
C..	304	59.34.2220	22p	CER	R..	217	57.11.4682	6,8k	
C..	305	59.31.6105	1µ 100V	PE	R..	218	58.01.7202	2k	TRIM PMG
C..	306	59.31.6104	0,1µ	PE	R..	219	57.11.4562	5,6k	
C..	307	59.36.4109	1µ 25V	TA	R..	220	57.11.4100	10	
C..	308	59.25.3102	1000µ 16V	EL	R..	221	57.11.4222	2,2k	
C..	401	59.31.2103	0,01µ 250V	PE	R..	301	57.56.5278	0,27	4W
C..	402	59.31.2103	0,01µ 250V	PE	R..	302	57.11.4151	150	
C..	403	59.22.9221	220µ 100V	EL	R..	303	57.11.4220	22	
C..	404	59.36.5100	10µ 35V	TA	R..	304	57.11.4102	1k	
C..	405	59.34.1100	10p	CER	R..	305	57.11.4270	27	
C..	406	59.36.5100	10µ 35V	TA	R..	306	57.11.4270	27	
C..	407	59.36.5100	10µ 35V	TA	R..	307	57.56.5188	0,18	2W
C..	408	59.22.8220	22µ 63V	EL	R..	308	57.11.4221	220	
D..	101	50.04.0105	IN4004 1A 200V	ANY	R..	309	57.99.0208	16,7k	NTC R@ 100°C
D..	102	50.04.0105	IN4004 1A 200V	ANY	R..	310			PH
D..	103	50.04.0105	IN4004 1A 200V	ANY	R..	311	57.11.4109	1	
D..	104	50.04.0105	IN4004 1A 200V	ANY	R..	312	57.11.4820	82	
D..	105	50.04.2109	MV5054-1 LED	ANY	R..	313	57.39.1002	10k	1% MF
D..	201	50.04.0507	MR502 3A 200V	MOT	R..	314	57.39.5111	5,11k	1% MF
D..	202	50.04.0507	MR502 3A 200V	MOT	R..	315	57.39.1002	10k	1% MF
D..	203	50.04.0507	MR502 3A 200V	MOT	R..	316	57.39.5111	5,11k	1% MF
D..	204	50.04.0507	MR502 3A 200V	MOT	R..	317	57.11.4222	2,2k	
D..	205	50.04.1122	ZPD18 Z-DIODE 18V 400mW		R..	318	57.11.4100	10	
D..	206	50.04.0125	IN4448		R..	401	57.11.4682	6,8k	
D..	207	50.04.1503	ZPY7,5 Z-DIODE 7,5V 1,3W		R..	402	57.11.4683	68k	
D..	208	50.04.2109	MV5054-1 LED		R..	403	57.11.4229	2,2	
D..	301	50.04.0507	MR502 3A 200V	MOT	R..	404	57.11.4102	1k	
D..	302	50.04.0507	MR502 3A 200V	MOT	R..	405	57.11.4683	68k	
D..	303	50.04.0507	MR502 3A 200V	MOT	R..	406	57.11.4102	1k	
D..	304	50.04.0507	MR502 3A 200V	MOT	R..	407	57.11.4563	56k	
D..	305	50.04.1122	ZPD18 Z-DIODE 18V 400mW		R..	408	57.11.4332	3,3k	
D..	306	50.04.0125	IN4448		R..	409	57.11.4222	2,2k	
D..	307	50.04.1503	ZPY7,5 Z-DIODE 7,5V 1,3W		R..	410	57.11.4682	6,8k	
D..	308	50.04.2109	MV5054-1 LED		R..	411	57.11.4222	2,2k	
D..	401	50.04.0105	IN4004 1A 200V		R..	412	57.11.4229	2,2	
D..	402	50.04.0105	IN4004 1A 200V		R..	413	57.11.4562	5,6k	
D..	403	50.04.0105	IN4004 1A 200V		R..	414	58.01.7202	2k	TRIM PMG
D..	404	50.04.0105	IN4004 1A 200V		R..	415	57.11.4183	18k	
D..	405	50.04.1121	ZPD24 Z-DIODE 24V 400mW		R..	416	57.11.4223	22k	
D..	406	50.04.0125	IN4448		S..	2	53.03.0128		VOLTAGE SELECTOR
D..	407	50.04.1118	ZPD6,2 Z-DIODE 6,2V 400mW				1.169.113.04		INSULATION-VOLT. SEL.
D..	408	50.04.0125	IN4448		T..	1	1.915.103.00		MAINS-TRANSFORMER
D..	409	50.04.0125	IN4448						
D..	410	50.04.2109	MV5054 LED						
F..	1	51.01.0120	2A SLOW BLOW @ 100...140 VAC				53.03.0106		FUSE HOLDER MAINS
F..	101	51.01.0117	1A SLOW BLOW @ 200...240 VAC				53.03.0118		FUSE HOLDER PCB
F..	201	51.01.0116	800mA SLOW BLOW				1.010.088.49		PCB SCREEN
F..	301	51.01.0121	2,5A SLOW BLOW				1.915.100.05		INSULATION
F..	401	51.01.0112	315mA SLOW BLOW				1.915.100.06		PERMALLOY
IC..	201	50.05.0119	µA723C				1.010.001.50		HEATSINK STAR
IC..	301	50.05.0119	µA723C				1.915.101.00		TRANSFORMER ASSEMBLY
P..	1	54.04.0104	3p MAINS-PLUG				1.915.102.00		STABILIZER PCB
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			1.915.100 POWER SUPPLY		TH 28/08/79
Q..	302	50.03.0481	MJ2955	MOT			1.915.100 POWER SUPPLY		Ⓢ HO 08/02/80
Q..	401	50.03.0436	BC237B NPN 50V BC547B				1.915.100 POWER SUPPLY		Ⓢ YO 06/09/84
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						

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 Ⓢ HO 08/02/80

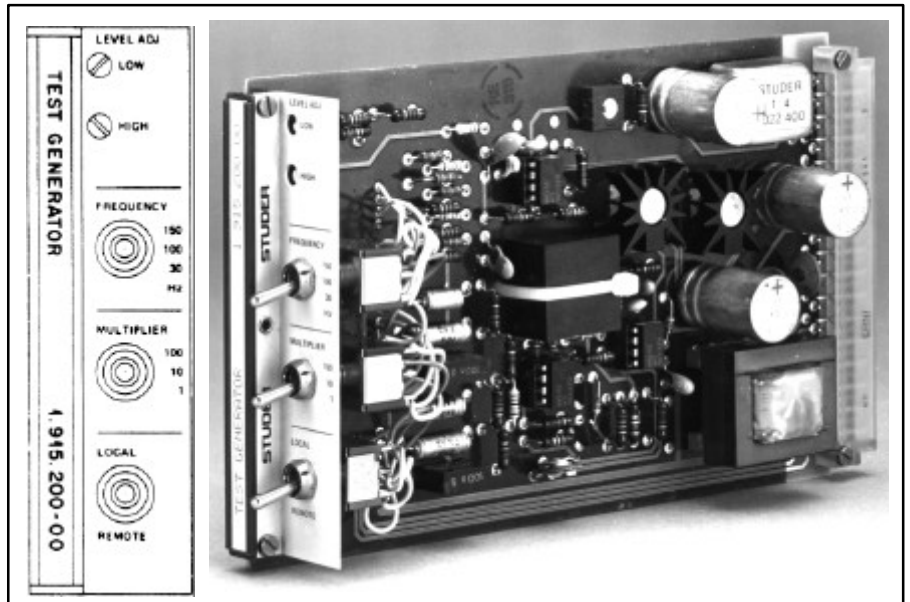
1.915.100 POWER SUPPLY Ⓢ YO 06/09/84

END
→

2.2.3 Audio Generator

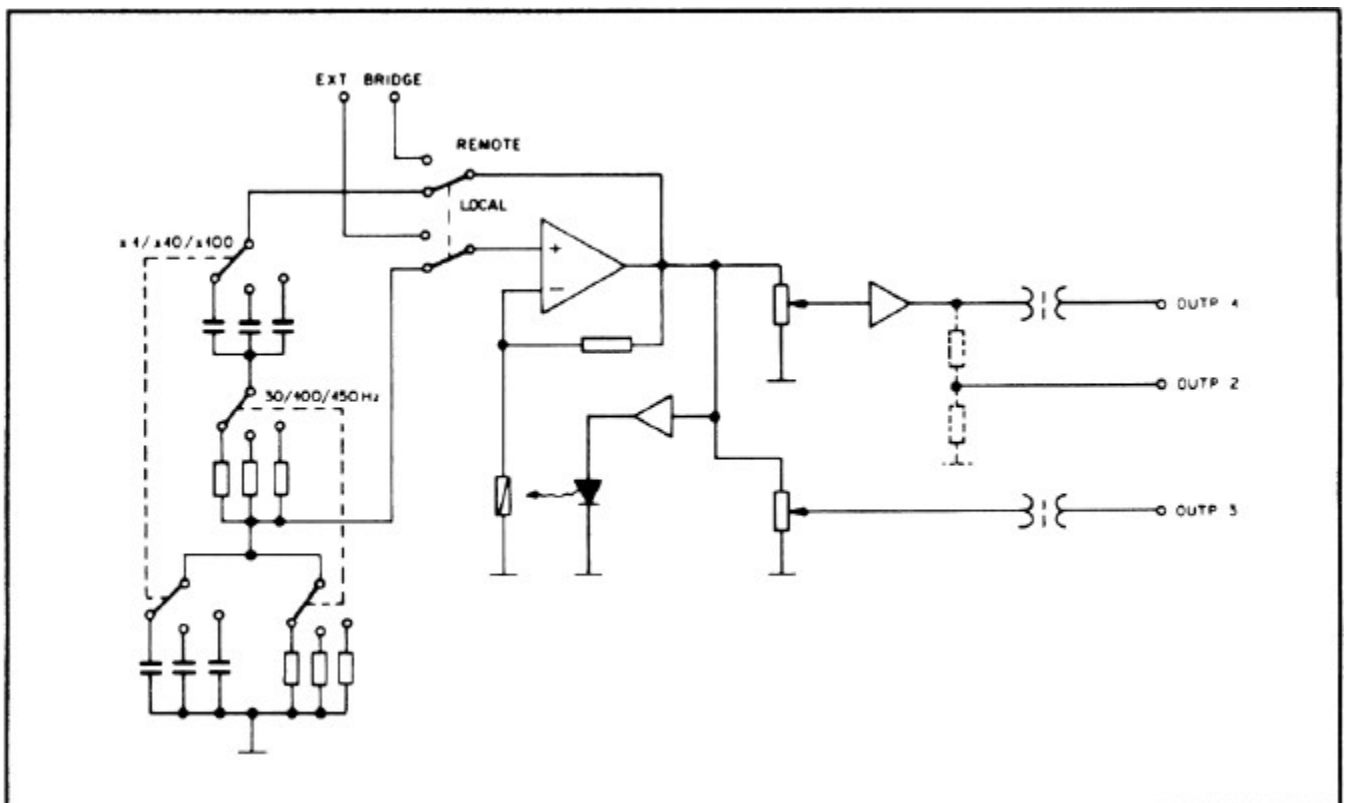
1.915.200

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.



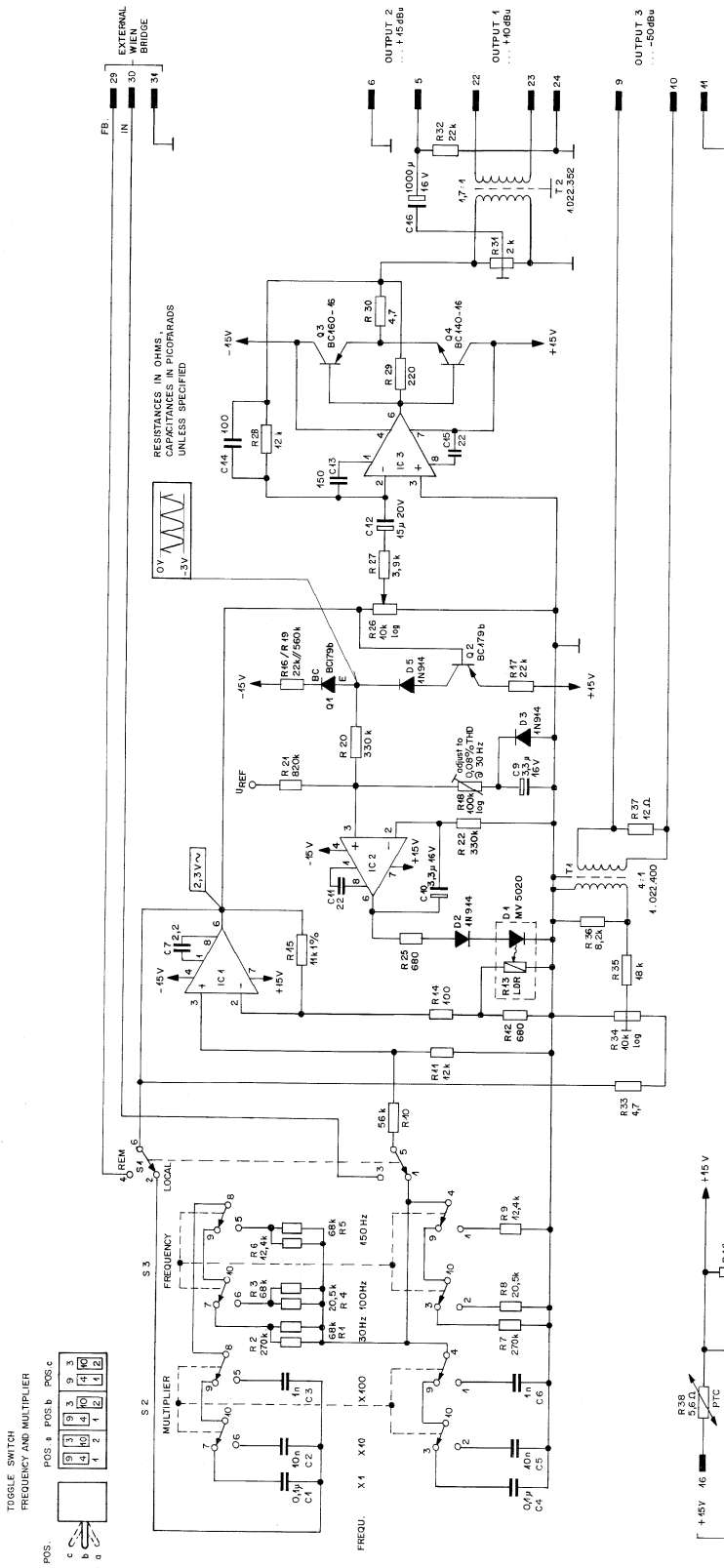
Two three-position rocker switches allow the selection of the 9 frequencies, a third switch permits changeover to an external Wien-bridge, if external frequency control should be desired.

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.

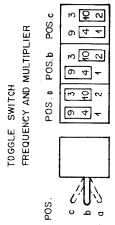
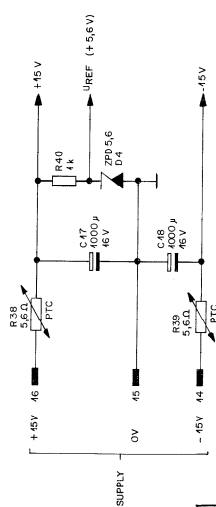


Technical Specifications

General:	Frequencies	30 / 100 / 150 / 300 Hz / 1 / 1.5 / 3 / 10 / 15 kHz , fixed (accuracy $\pm 5\%$)
	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



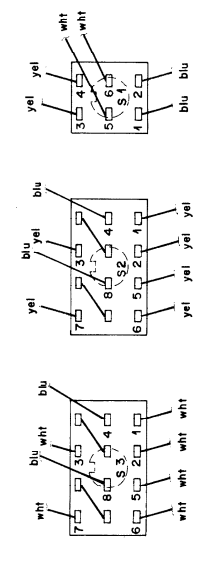
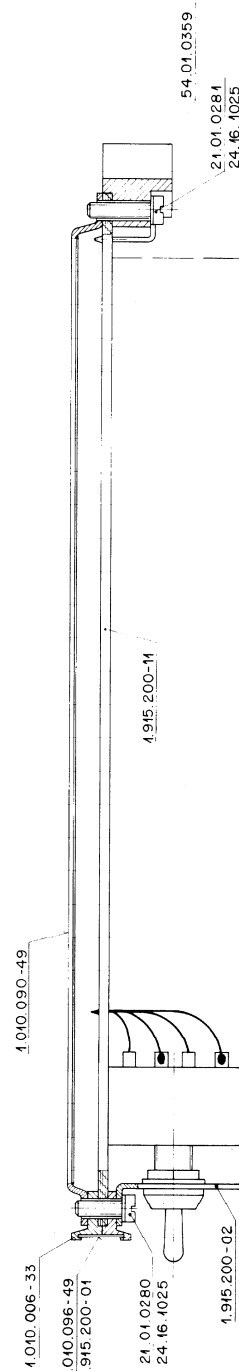
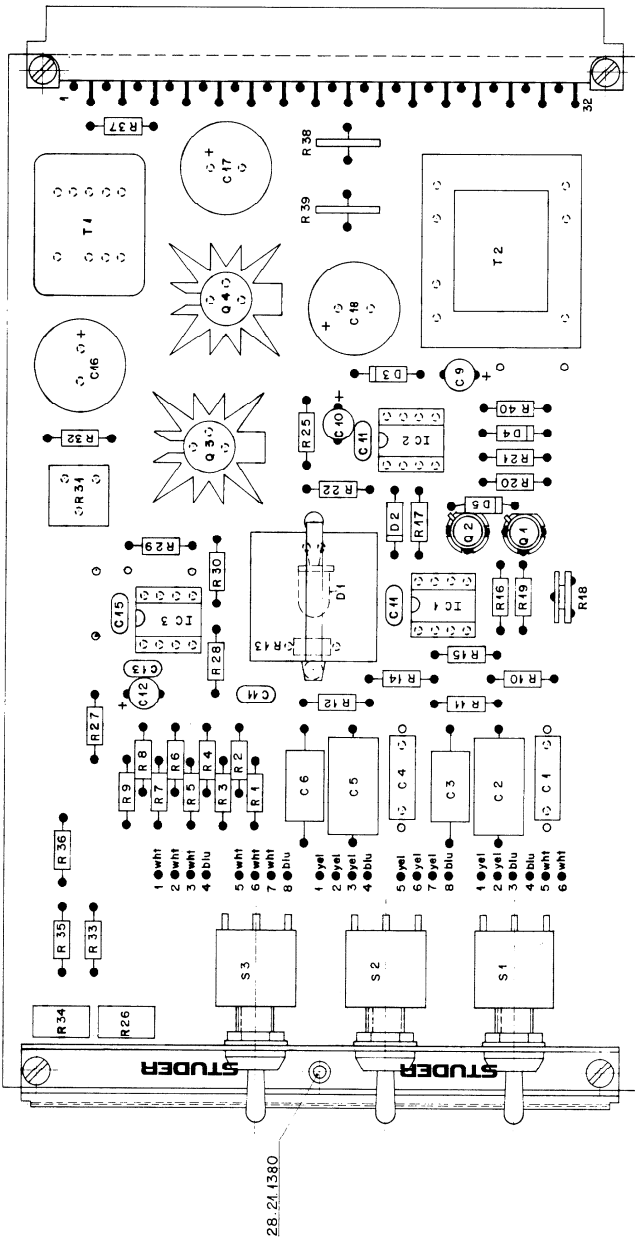
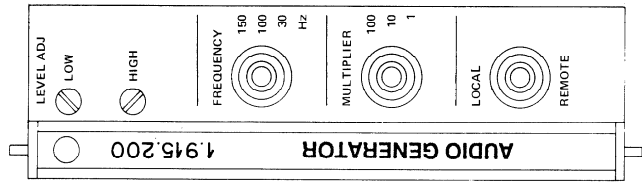
FREQUENCIES: 30Hz, 300Hz, 3kHz, 400Hz, 4kHz, 40kHz, 450Hz, 4.5kHz, 45kHz
 ALL IC'S LM 301



Ersatz für:	Ersetzt durch:	Kopie für:
STUDER REGENSDORF ZÜRICH	AUDIO GENERATOR	1.915.200

Änderung	Datum	Gez.	Gepr.	Gez.	Index
1. 3. 83		Si	Wc		③
29.10.79		Si	Wc		①
16.10.78		Si	SK		②

AUDIO GENERATOR



Part No.	1.915.200	Rev.	01
Designation	Zugabe für den Empfänger		
PL	2-1	Ho	30.10.79
Hersteller		Studer AG	
STUDER		1.915.200-00	
REGENSIONSFABRIK		ZÜRICH	

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	25.6 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% 1/4W CSCH
R	...	2	57.39.2673	267k 1% 1/4W MF
R	...	3	57.41.4683	68k 5% 1/4W CSCH
R	...	4	57.39.2052	20,5k 1% 1/4W MF
R	...	5	57.41.4683	68k 5% 1/4W CSCH
R	...	6	57.39.1242	12,4k 1% 1/4W MF
R	...	7	57.39.2673	267k 1% 1/4W MF
R	...	8	57.39.2052	20,5k 1% 1/4W MF
R	...	9	57.39.1242	12,4k 1% 1/4W MF
R	...	10	57.41.4563	56k 5% 1/4W CSCH
R	...	11	57.41.4123	12k 5% 1/4W CSCH
R	...	12	57.41.4681	680 5% 1/4W CSCH
R	...	13	57.99.0135	1k LDR 100UIX
R	...	14	57.41.4101	100 5% 1/4W CSCH
R	...	15	57.39.1102	11k 1% 1/4W MF
R	...	16	57.41.4223	22k 5% 1/4W CSCH
R	...	17	57.41.4223	22k 5% 1/4W CSCH
R	...	18	58.02.8104	100k LOG 20% 0,1W PSCH
R	...	19	57.41.4564	560k 5% 1/4W CSCH
R	...	20	57.41.4334	330k 5% 1/4W CSCH
R	...	21	57.41.4824	820k 5% 1/4W CSCH
R	...	22	57.41.4334	330k 5% 1/4W CSCH
R	...	23		
R	...	24		
R	...	25	57.41.4681	680 5% 1/4W CSCH
R	...	26	58.01.7103	10k 10% 1/4W PMG
R	...	27	57.39.3921	3,92k 1% 1/4W MF
R	...	28	57.41.4123	12k 5% 1/4W CSCH
R	...	29	57.41.4221	220 5% 1/4W CSCH
R	...	30	57.41.4479	4,7 5% 1/4W CSCH
R	...	31	58.01.8202	2k 10% 1/4W PMG
R	...	32	57.41.4223	22k 5% 1/4W CSCH
R	...	33	57.41.4479	4,7 5% 1/4W CSCH
R	...	34	58.01.7103	10k 10% 1/4W PMG
R	...	35	57.41.4183	18k 5% 1/4W CSCH
R	...	36	57.41.4822	8,2k 5% 1/4W CSCH
R	...	37	57.41.4120	12 5% 1/4W CSCH
R	...	38	57.99.0209	5,6 PTC
R	...	39	57.99.0209	5,6 PTC
R	...	40	57.41.4102	1k 5% 1/4W 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 TRAF0 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

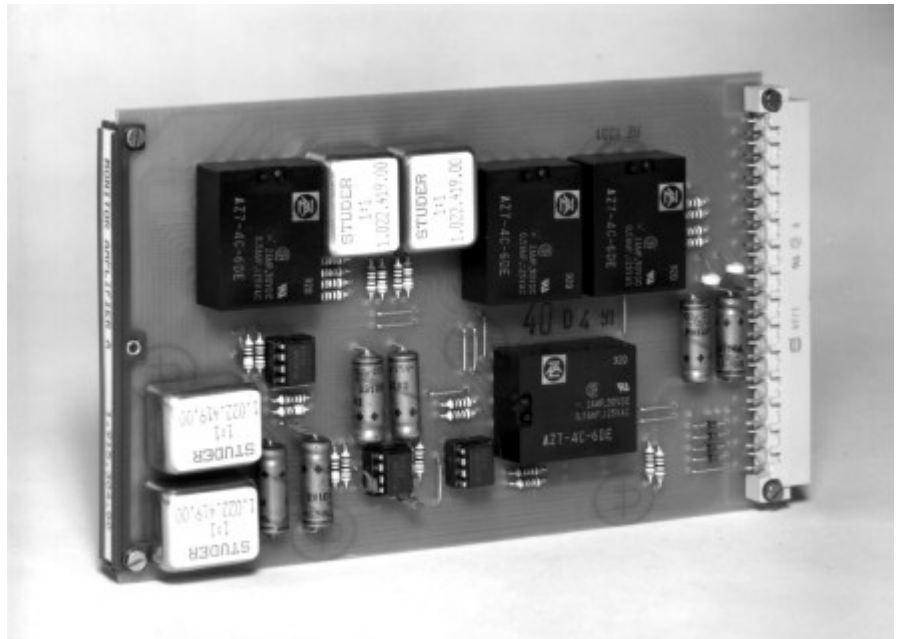
END

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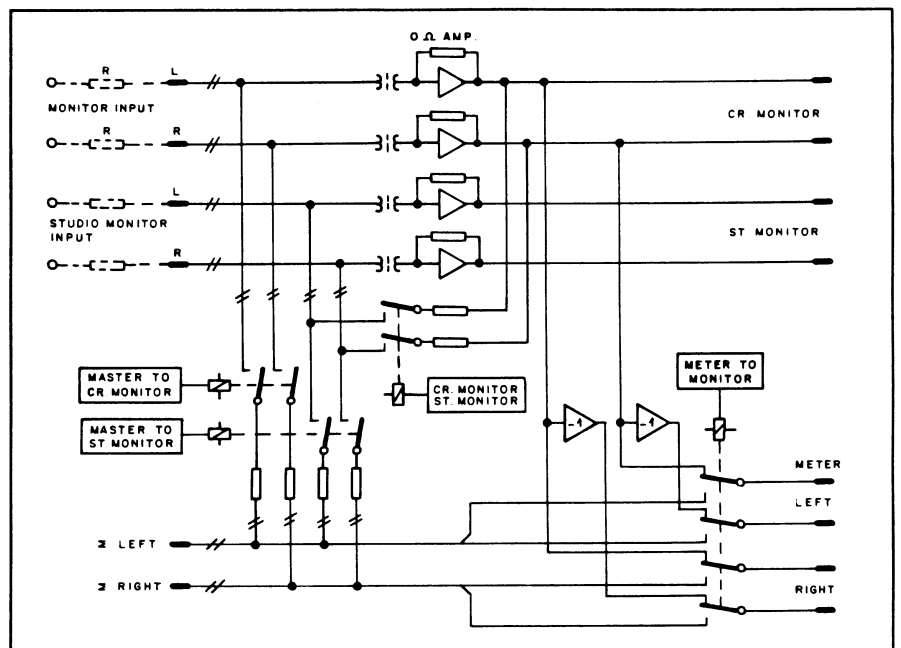
2.2.4 Monitor Amplifier and Switching Relays (Studio/CR)

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.

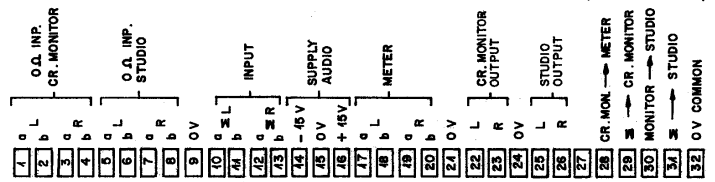
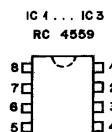
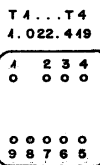
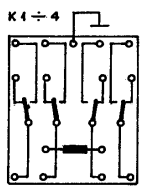
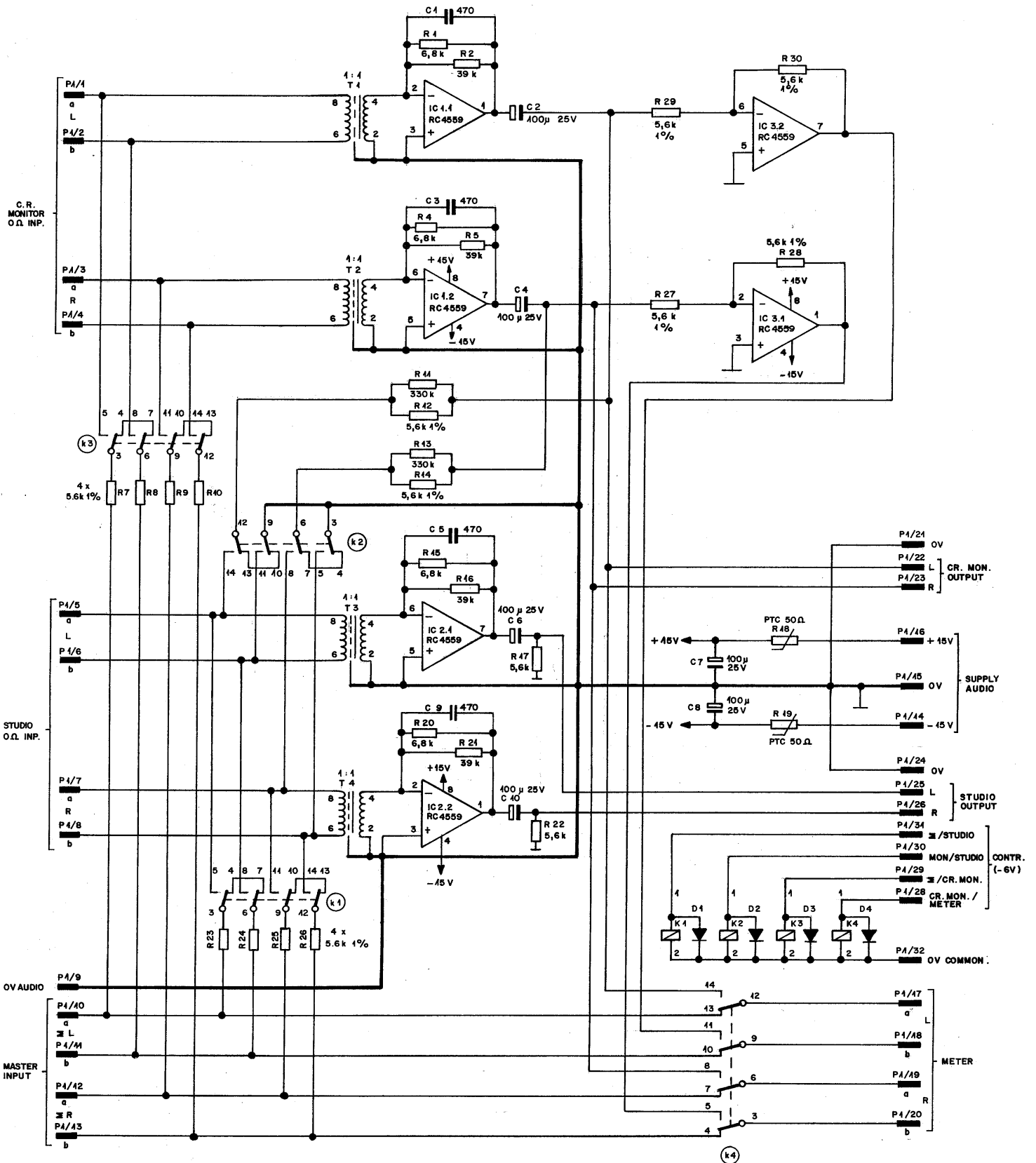


Two stereo signal inputs from a combination of sources (with suitable isolation resistors at the output of each source) can thus be summed for Control Room (CR) and Studio Monitoring, for example. In addition, the signal from the stereo master can be assigned to either monitor line and, if needed, CR 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

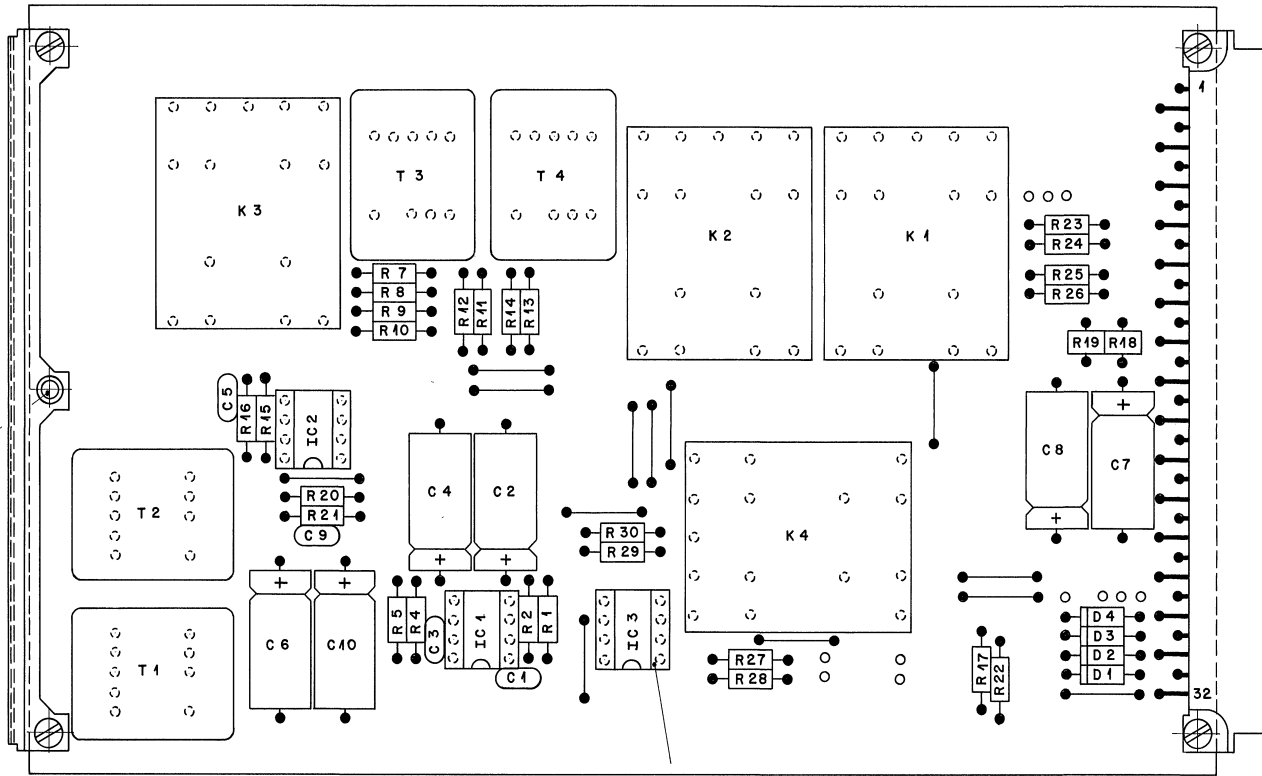
Inputs:		balanced and floating (for CR monitor and studio monitor)
	Impedance	> 10 kW
	Maximum level	+24 dBu
Outputs:		unbalanced (for CR monitor and studio monitor)
	Impedance	< 3 W
	Maximum level	+20 dBu into 1 k Ω
	Maximum load	1 kW
Meter outputs:		push-pull
	Maximum level	+24 dBu
	Frequency response	± 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 \times 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



BOTTOM VIEW

DATE:	20.11.81		
SIGN:	<i>[Signature]</i>		
STUDER REGENS DORF ZÜRICH	MONITOR AMPLIFIER A		SC. 1.915.304

28.24.4380



53.03.0166 (3x)

4.010.006-33

4.010.090-49

4.010.096-49
1.915.304-01

54.01.0359

21.01.0280 (2x)
24.16.4025 (2x)

1.915.304-11

21.01.0281 (2x)
24.16.4025 (2x)

MONITOR AMPLIFIER A
1.915.304-00

					③
					②
Änderung	4.4.84	A.Ho	✓	✓	①
Ausgabe	8.10.81	Ho	✓	✓	①
Datum	Gez.	Gepr.	Ges.	Index	
Kopie für:					
STUDEF 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

Idx. Pos.	Part No.	Qty.	Type/Val.	Description
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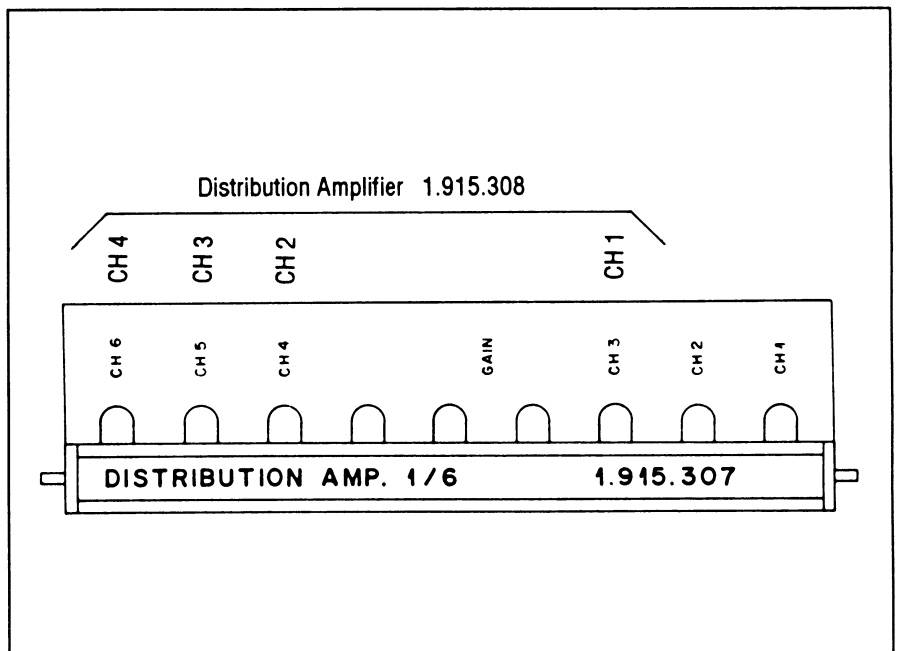
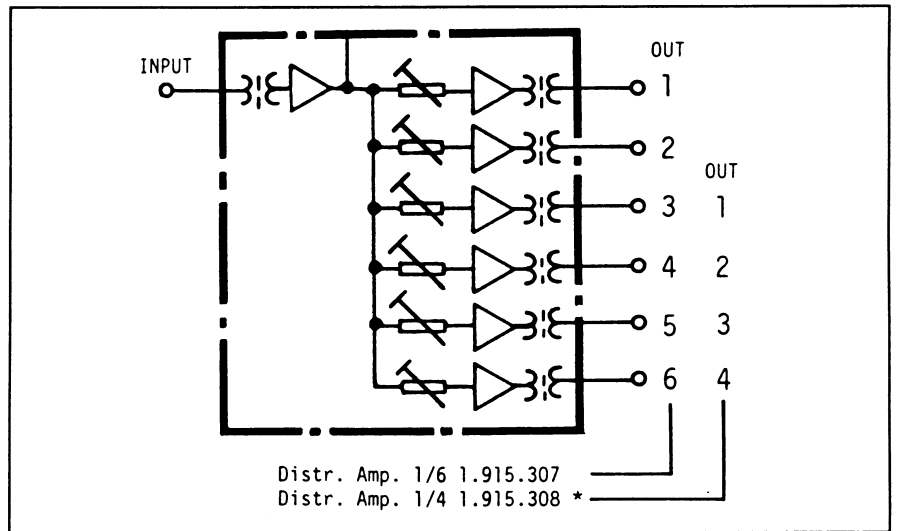
End of List

Comments:

2.2.5 Distribution Amplifier

1.915.307/308

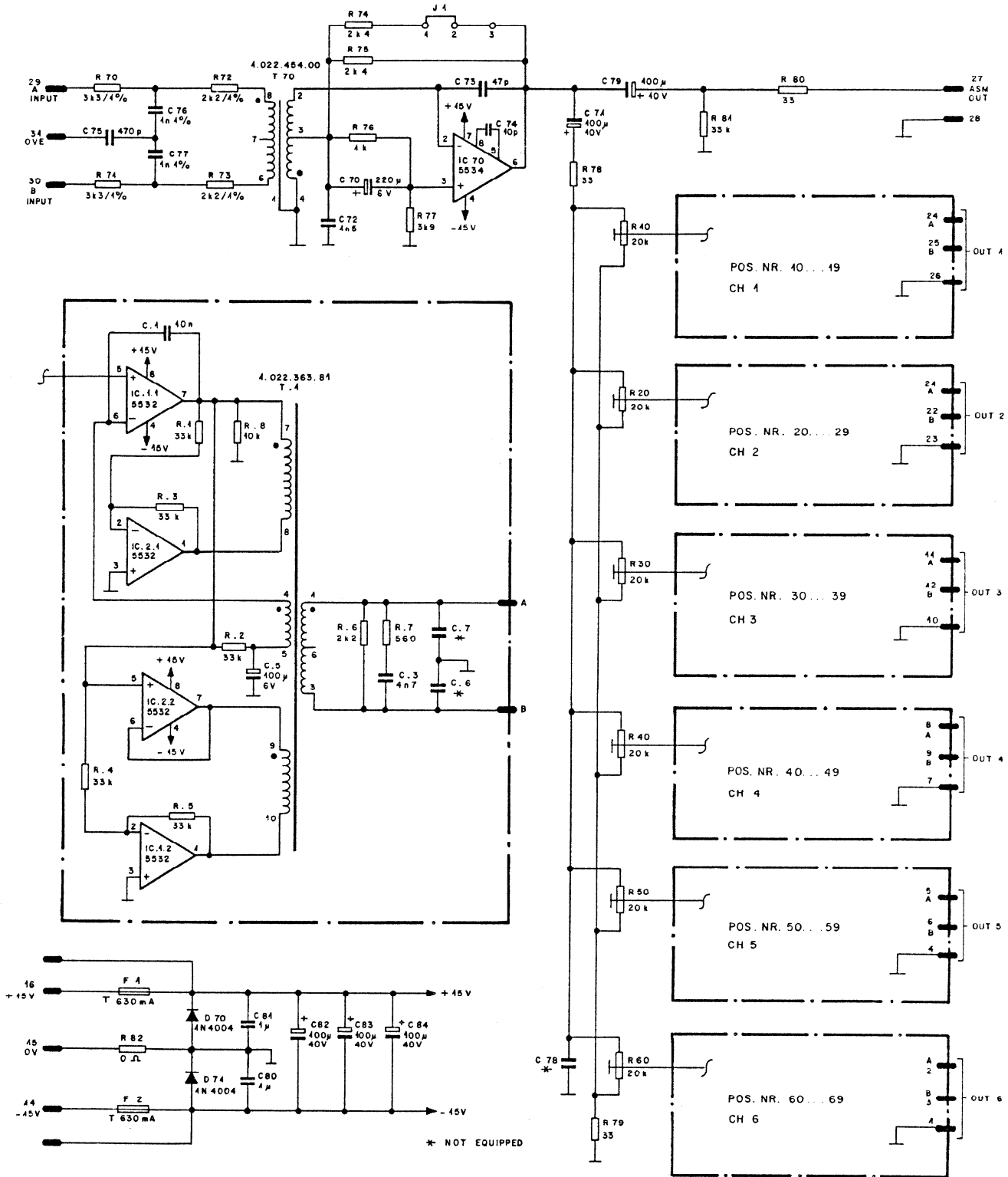
The distribution amplifier cards offer splitting of one input to four or six individually adjustable outputs (versions 1.915.308 or 1.915.307, respectively). The input and all outputs are transformer-balanced and floating. These cards satisfy any complex requirement of signal routing and distribution.



Technical Specifications

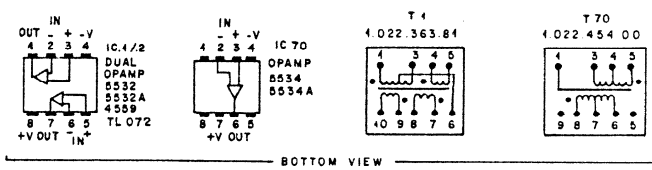
General:	Frequency range	31.5 Hz...16 kHz	
	Frequency response	+0.2/-0.5 dB, $R_L = 300 \Omega$	
Input:		balanced and floating	
	Impedance	$\approx 10 \text{ kW}$	
	Symmetry	$\approx 60 \text{ dB}$	
	Gain, adjustable	-20...+10 dB (Jumper 2-3: +6 dB Gain)	
Outputs:		balanced and floating	
	Impedance	$\approx 40 \text{ W}$	
	Maximum level	+24 dBu, $R_L = 600 \Omega$/THD < 1%	
		+21 dBu, $R_L = 200 \Omega$/THD < 1%	
	THD	$\approx 0.02\%$, +6 dBu/300 Ω	
	Output noise voltage	-100 dBu, 0 dB gain	
Supply:		$\pm 15 \text{ V}_{\text{DC}}$	(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

DISTRIBUTION AMPLIFIER



* NOT EQUIPPED

- 11 OUT 6
- 12
- 13
- 14
- 15
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- 32



BOTTOM VIEW

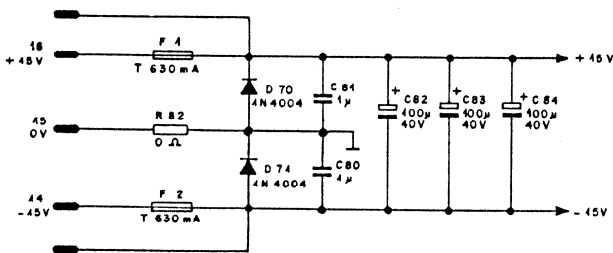
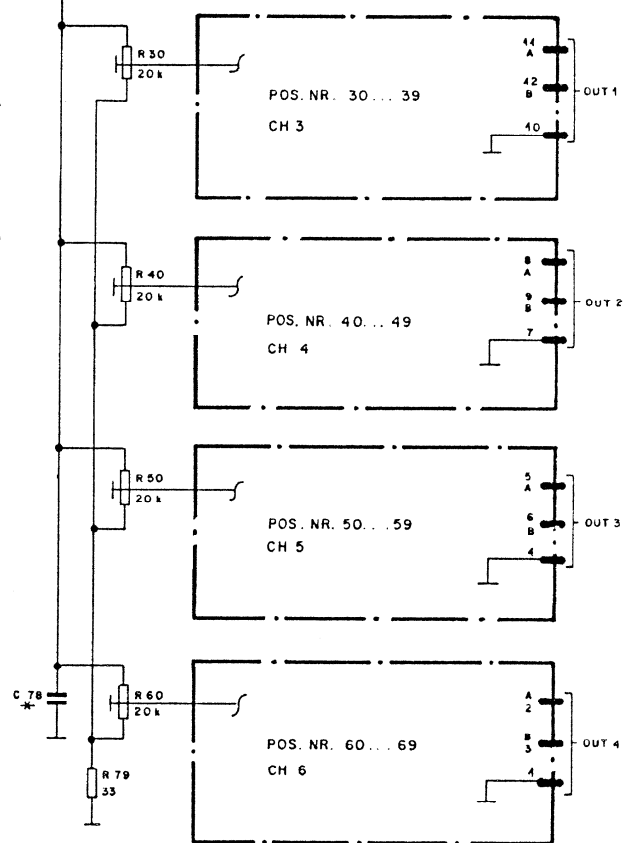
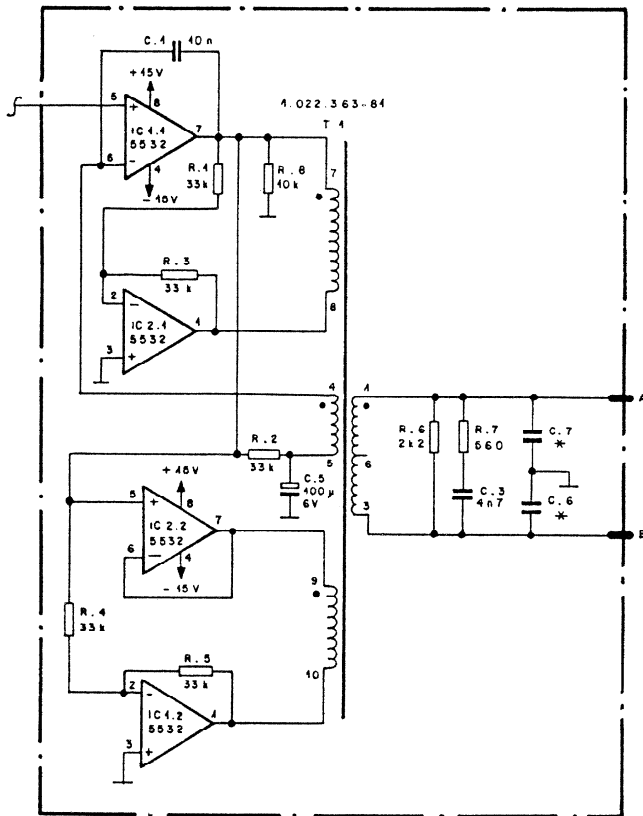
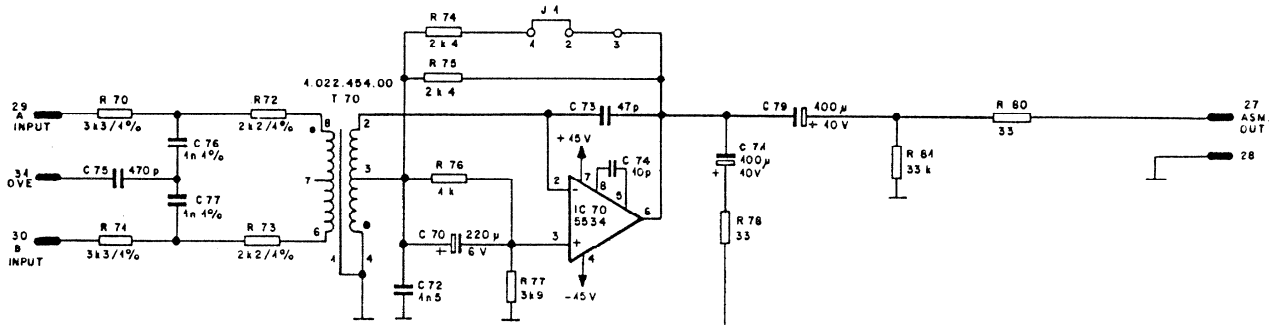
24.11.93 <i>fe</i>	12.4.94 <i>we</i>		
STUDER REGENSDORF ZÜRICH	DISTRIBUTION AMP. 1/6	SC 1.915.307-81	

DISTRIBUTION AMPLIFIER

Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER	Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER
01	C....11		not used						
	C....11	59.06.0222	2.2 nF	PE	R....11	57.11.4333	33 kOhm	5% 0.25W	MF
	C....12	59.34.2470	47 pF	CER	R....12	57.11.4333	33 kOhm	5% 0.25W	MF
	C....13	59.06.0472	4.7 nF	PE	R....13	57.11.4333	33 kOhm	5% 0.25W	MF
	C....14	59.34.2470	47 pF	CER	R....14	57.11.4333	33 kOhm	5% 0.25W	MF
	C....15	59.22.3101	100 uF	ALU 10V	R....15	57.11.4333	33 kOhm	5% 0.25W	MF
	C....16	59.32.1680	68 pF	CER 400V	R....16	57.11.4222	2.2 kOhm	5% 0.25W	MF
	C....17		not used		R....17	57.11.4102	1 kOhm	5% 0.25W	MF
	C....21		not used		R....18	57.11.4103	10 kOhm	5% 0.25W	MF
01	C....21	59.06.0222	2.2 nF	PE	R....20	58.01.9203	20 kOhm	10% 0.5 W	PMG trimming resistor
	C....22	59.34.2470	47 pF	CER	R....21	57.11.4333	33 kOhm	5% 0.25W	MF
	C....23	59.06.0472	4.7 nF	PE	R....22	57.11.4333	33 kOhm	5% 0.25W	MF
	C....24	59.34.2470	47 pF	CER	R....23	57.11.4333	33 kOhm	5% 0.25W	MF
	C....25	59.22.3101	100 uF	ALU 10V	R....24	57.11.4333	33 kOhm	5% 0.25W	MF
	C....26	59.32.1680	68 pF	CER 400V	R....25	57.11.4333	33 kOhm	5% 0.25W	MF
	C....27		not used		R....26	57.11.4222	2.2 kOhm	5% 0.25W	MF
	C....31		not used		R....27	57.11.4102	1 kOhm	5% 0.25W	MF
01	C....31	59.06.0222	2.2 nF	PE	R....28	57.11.4103	10 kOhm	5% 0.25W	MF
	C....32	59.34.2470	47 pF	CER	R....30	58.01.9203	20 kOhm	10% 0.5 W	PMG trimming resistor
	C....33	59.06.0472	4.7 nF	PE	R....31	57.11.4333	33 kOhm	5% 0.25W	MF
	C....34	59.34.2470	47 pF	CER	R....32	57.11.4333	33 kOhm	5% 0.25W	MF
	C....35	59.22.3101	100 uF	ALU 10V	R....33	57.11.4333	33 kOhm	5% 0.25W	MF
	C....36	59.32.1680	68 pF	CER 400V	R....34	57.11.4333	33 kOhm	5% 0.25W	MF
	C....37		not used		R....35	57.11.4333	33 kOhm	5% 0.25W	MF
	C....41		not used		R....36	57.11.4222	2.2 kOhm	5% 0.25W	MF
01	C....41	59.06.0222	2.2 nF	PE	R....37	57.11.4102	1 kOhm	5% 0.25W	MF
	C....42	59.34.2470	47 pF	CER	R....38	57.11.4103	10 kOhm	5% 0.25W	MF
	C....43	59.06.0472	4.7 nF	PE	R....40	58.01.9203	20 kOhm	10% 0.5 W	PMG trimming resistor
	C....44	59.34.2470	47 pF	CER	R....41	57.11.4333	33 kOhm	5% 0.25W	MF
	C....45	59.22.3101	100 uF	ALU 10V	R....42	57.11.4333	33 kOhm	5% 0.25W	MF
	C....46	59.32.1680	68 pF	CER 400V	R....43	57.11.4333	33 kOhm	5% 0.25W	MF
	C....47		not used		R....44	57.11.4333	33 kOhm	5% 0.25W	MF
	C....51		not used		R....45	57.11.4333	33 kOhm	5% 0.25W	MF
01	C....51	59.06.0222	2.2 nF	PE	R....46	57.11.4222	2.2 kOhm	5% 0.25W	MF
	C....52	59.34.2470	47 pF	CER	R....47	57.11.4102	1 kOhm	5% 0.25W	MF
	C....53	59.06.0472	4.7 nF	PE	R....48	57.11.4103	10 kOhm	5% 0.25W	MF
	C....54	59.34.2470	47 pF	CER	R....50	58.01.9203	20 kOhm	10% 0.5 W	PMG trimming resistor
	C....55	59.22.3101	100 uF	ALU 10V	R....51	57.11.4333	33 kOhm	5% 0.25W	MF
	C....56	59.32.1680	68 pF	CER 400V	R....52	57.11.4333	33 kOhm	5% 0.25W	MF
	C....57		not used		R....53	57.11.4333	33 kOhm	5% 0.25W	MF
	C....61		not used		R....54	57.11.4333	33 kOhm	5% 0.25W	MF
01	C....61	59.06.0222	2.2 nF	PE	R....55	57.11.4333	33 kOhm	5% 0.25W	MF
	C....62	59.34.2470	47 pF	CER	R....56	57.11.4222	2.2 kOhm	5% 0.25W	MF
	C....63	59.06.0472	4.7 nF	PE	R....57	57.11.4102	1 kOhm	5% 0.25W	MF
	C....64	59.34.2470	47 pF	CER	R....58	57.11.4103	10 kOhm	5% 0.25W	MF
	C....65	59.22.3101	100 uF	ALU 10V	R....60	58.01.9203	20 kOhm	10% 0.5 W	PMG trimming resistor
	C....66	59.32.1680	68 pF	CER 400V	R....61	57.11.4333	33 kOhm	5% 0.25W	MF
	C....67		not used		R....62	57.11.4333	33 kOhm	5% 0.25W	MF
	C....70	59.22.4221	220 uF	ALU 6V	R....63	57.11.4333	33 kOhm	5% 0.25W	MF
	C....71	59.22.4101	100 uF	ALU 10V	R....64	57.11.4333	33 kOhm	5% 0.25W	MF
	C....72	59.06.0152	1.5 nF	CER	R....65	57.11.4333	33 kOhm	5% 0.25W	MF
	C....73	59.34.2470	47 pF	CER	R....66	57.11.4222	2.2 kOhm	5% 0.25W	MF
	C....74	59.34.4100	10 pF	CER	R....67	57.11.4102	1 kOhm	5% 0.25W	MF
	C....75	59.34.5471	470 pF	CER	R....68	57.11.4103	10 kOhm	5% 0.25W	MF
	C....76	59.05.1102	1 nF	1%	R....70	57.11.3332	3.3 kOhm	1% 0.25W	MF
	C....77	59.05.1102	1 nF	1%	R....71	57.11.3332	3.3 kOhm	1% 0.25W	MF
	C....79	59.22.4101	100 uF	ALU 10V	R....72	57.11.3222	2.2 kOhm	1% 0.25W	MF
	C....80	59.06.5105	1 uF	PE	R....73	57.11.3222	2.2 kOhm	1% 0.25W	MF
	C....81	59.06.5105	1 uF	PE	R....74	57.11.3242	2.4 kOhm	1% 0.25W	MF
	C....82	59.25.5101	100 uF	40V	R....75	57.11.3242	2.4 kOhm	1% 0.25W	MF
	C....83	59.25.5101	100 uF	40V	R....76	57.11.4102	1 kOhm	5% 0.25W	MF
	C....84	59.25.5101	100 uF	40V	R....77	57.11.4392	3.9 kOhm	5% 0.25W	MF
	D....70	50.04.0105	1N4004		R....78	57.11.4330	33 Ohm	5% 0.25W	MF
	D....71	50.04.0105	1N4004		R....79	57.11.4330	33 Ohm	5% 0.25W	MF
	F....1	51.01.0115	T 630mA /250V 5*20		R....80	57.11.4330	33 Ohm	5% 0.25W	MF
	F....2	51.01.0115	T 630mA /250V 5*20		R....81	57.11.4333	33 kOhm	5% 0.25W	MF
	IC....11	50.09.0106	NE5532AN	dual op. amp.	R....82	57.11.4000	0 Ohm	5% 0.25W	MF
	IC....12	50.09.0106	NE5532AN	dual op. amp.	T....10	1.022.363.00			output trafo
	IC....21	50.09.0106	NE5532AN	dual op. amp.	T....20	1.022.363.00			output trafo
	IC....22	50.09.0106	NE5532AN	dual op. amp.	T....30	1.022.363.00			output trafo
	IC....31	50.09.0106	NE5532AN	dual op. amp.	T....40	1.022.363.00			output trafo
	IC....32	50.09.0106	NE5532AN	dual op. amp.	T....50	1.022.363.00			output trafo
	IC....41	50.09.0106	NE5532AN	dual op. amp.	T....60	1.022.363.00			output trafo
	IC....42	50.09.0106	NE5532AN	dual op. amp.	T....70	1.022.454.00			input trafo
	IC....51	50.09.0106	NE5532AN	dual op. amp.					
	IC....52	50.09.0106	NE5532AN	dual op. amp.					
	IC....61	50.09.0106	NE5532AN	dual op. amp.					
	IC....62	50.09.0106	NE5532AN	dual op. amp.					
	IC....70	50.05.0244	NE5534AN	single op. amp.					
	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

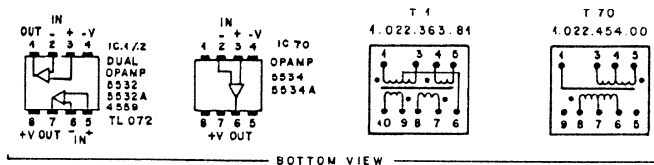
END
→

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

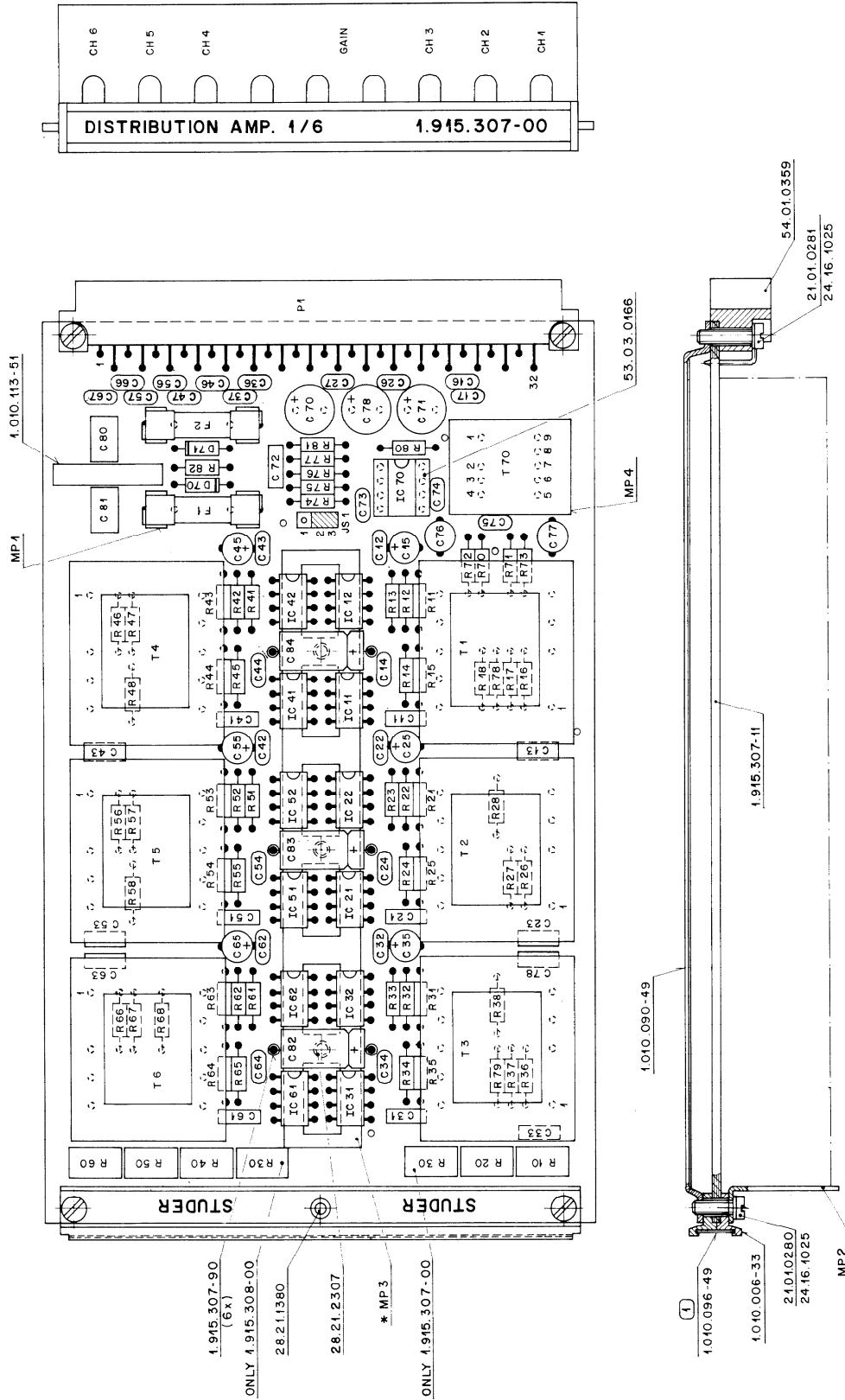


* NOT EQUIPPED

- 1 a
- 2 a
- 3 b
- 4 l
- 5 a
- 6 b
- 7 l
- 8 a
- 9 b
- 10 l
- 11 a
- 12 b
- 13
- 14 -45V
- 15 0V
- 16 +15V
- 17
- 18
- 19
- 20
- 21
- 22
- 23
- 24
- 25
- 26
- 27 ASM. OUT
- 28 l
- 29 a
- 30 b
- 31 0V
- 32



① 24.11.93	① 12.4.94	○	○	○
STUDER REGENSDORF ZÜRICH		DISTRIBUTION AMP 1/4		SC 1.915.308-81



Norm-Nr		③
DIN-Bez.		②
Abmessung		①
Zugehörige Unterlagen		
Werkstoff		
Überfläche		
Beh.		
Freiheitsstufen		
Maßstab	19.8.67 A Ho 1/4	Se
Änderung	2.1	
Erstellt durch		
Künte für		
Nummer		
Benennung	DISTRIBUTION AMP. 1/6	
		1.915.307-00

VALID FOR	NR.	UNIT + PL	(1)
DISTR. AMP 1/6	1.915.307-00		1.915.307-01
DISTR. AMP 1/4	1.915.308-00		1.915.308-01

* Zwischen IC 11/12 / 21/22/31/32 / 41/42/51/52/61/62 und Kühlblech MP3 Wärmeleitpaste 99.01.0506

DISTRIBUTION AMPLIFIER

Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER	Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER
	C....31		not used		R....56	57.11.4222	2.2 kOhm	5% 0.25W MF	
01	C....31	59.06.0222	2.2 nF	PE	R....57	57.11.4102	1 kOhm	5% 0.25W MF	
	C....32	59.34.2470	47 pF	CER	R....58	57.11.4103	10 kOhm	5% 0.25W MF	
	C....33	59.06.0472	4.7 nF	PE	R....60	58.01.9203	20 kOhm	10% 0.5 W PMG trimming resistor	
	C....34	59.34.2470	47 pF	CER					
	C....35	59.22.3101	100 uF	ALU 10V	R....61	57.11.4333	33 kOhm	5% 0.25W MF	
	C....36	59.32.1680	68 pF	CER 400V	R....62	57.11.4333	33 kOhm	5% 0.25W MF	
	C....37		not used		R....63	57.11.4333	33 kOhm	5% 0.25W MF	
	C....41		not used		R....64	57.11.4333	33 kOhm	5% 0.25W MF	
01	C....41	59.06.0222	2.2 nF	PE	R....65	57.11.4333	33 kOhm	5% 0.25W MF	
	C....42	59.34.2470	47 pF	CER	R....66	57.11.4222	2.2 kOhm	5% 0.25W MF	
	C....43	59.06.0472	4.7 nF	PE	R....67	57.11.4102	1 kOhm	5% 0.25W MF	
	C....44	59.34.2470	47 pF	CER	R....68	57.11.4103	10 kOhm	5% 0.25W MF	
	C....45	59.22.3101	100 uF	ALU 10V	R....70	57.11.3332	3.3 kOhm	1% 0.25W MF	
	C....46	59.32.1680	68 pF	CER 400V					
	C....47		not used		R....71	57.11.3332	3.3 kOhm	1% 0.25W MF	
	C....51		not used		R....72	57.11.3222	2.2 kOhm	1% 0.25W MF	
01	C....51	59.06.0222	2.2 nF	PE	R....73	57.11.3222	2.2 kOhm	1% 0.25W MF	
	C....52	59.34.2470	47 pF	CER	R....74	57.11.3242	2.4 kOhm	1% 0.25W MF	
	C....53	59.06.0472	4.7 nF	PE	R....75	57.11.3242	2.4 kOhm	1% 0.25W MF	
	C....54	59.34.2470	47 pF	CER	R....76	57.11.4102	1 kOhm	5% 0.25W MF	
	C....55	59.22.3101	100 uF	ALU 10V	R....77	57.11.4392	3.9 kOhm	5% 0.25W MF	
	C....56	59.32.1680	68 pF	CER 400V	R....78	57.11.4330	33 Ohm	5% 0.25W MF	
	C....57		not used		R....79	57.11.4330	33 Ohm	5% 0.25W MF	
	C....61		not used		R....81	57.11.4333	33 kOhm	5% 0.25W MF	
01	C....61	59.06.0222	2.2 nF	PE	R....82	57.11.4000	0 Ohm	5% 0.25W MF	
	C....62	59.34.2470	47 pF	CER	T....30	1.022.363.00		output trafo	
	C....63	59.06.0472	4.7 nF	PE	T....40	1.022.363.00		output trafo	
	C....64	59.34.2470	47 pF	CER	T....50	1.022.363.00		output trafo	
	C....65	59.22.3101	100 uF	ALU 10V	T....60	1.022.363.00		output trafo	
	C....66	59.32.1680	68 pF	CER 400V	T....70	1.022.454.00		input trafo	
	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

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

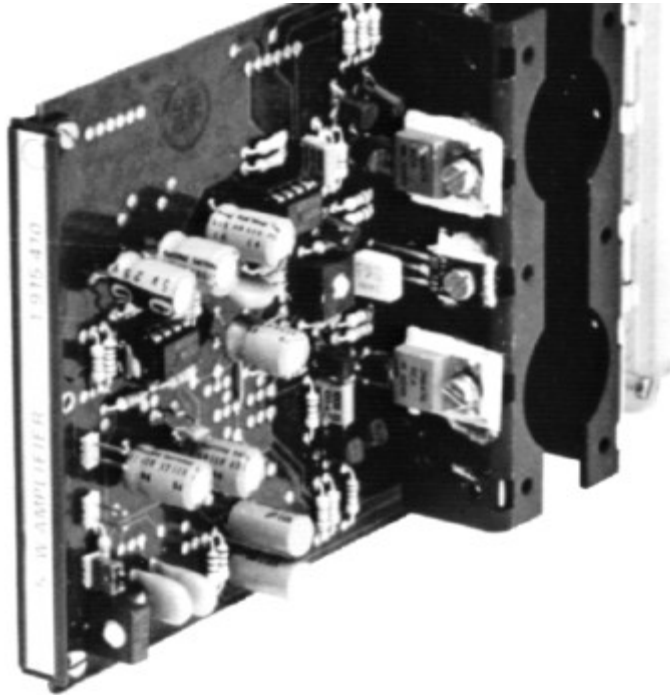
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2.2.6 5 W Power Amplifier

1.915.410/415

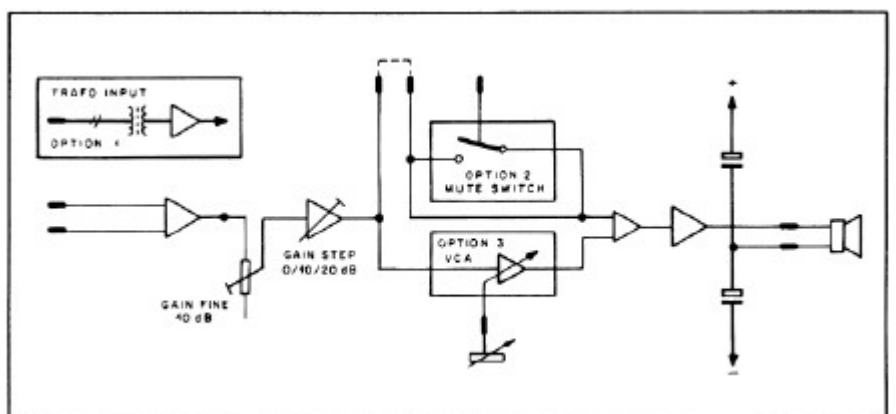
This amplifier on one Euro-card is designed for operation on a ± 15 V supply. It is capable of providing a power output of 5 W into a load of 8Ω .

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

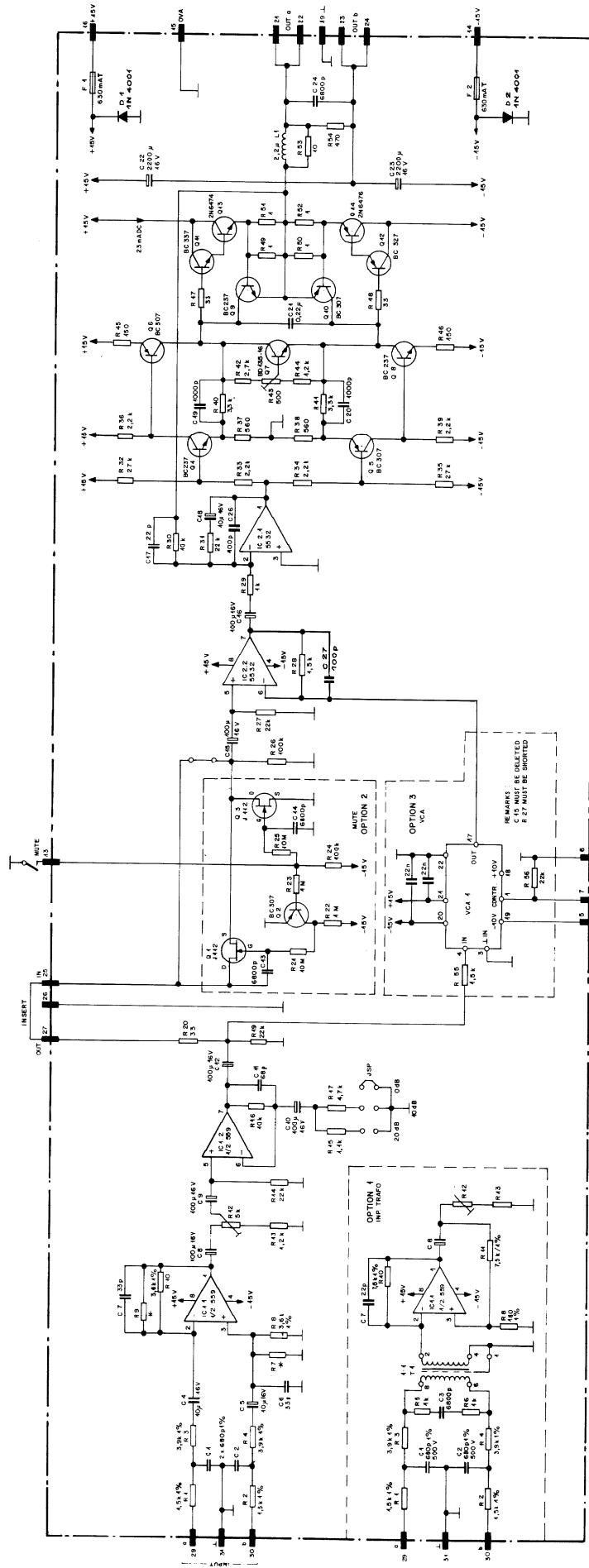
Audio:	Power output	4 W/15 W 5 W/8 W 2.5 W/4 W , continuous, sine wave
	THD	< 0.1% @ rated output, 30 Hz...16 kHz
	Frequency response	±0.5 dB , 30 Hz...16 kHz
	Input impedance	10 kW , balanced
	Sensitivity	-17...+16 dBu (0.11...4.9 V _{rms}) for rated output
	Maximum input level	+24 dBu (12.3 V _{rms}) 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:

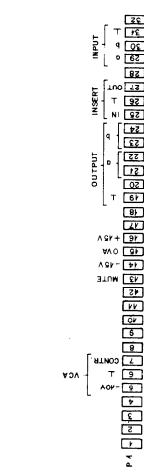
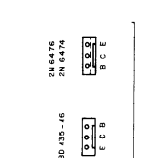
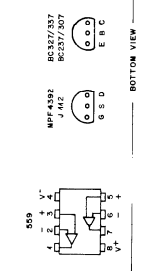
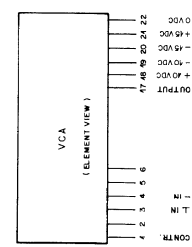
5 W amplifier with	• transformerless input	1.915.410.xx
	• input transformer	1.915.411.xx
	• transformerless input and remote muting facility	1.915.412.xx
	• input transformer and remote muting facility	1.915.413.xx
	• transformerless input and remote gain control (VCA)	1.915.414.xx
	• input transformer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



4 R.T. 615 SELECTED FOR BEST COMMONMODE REJECTION

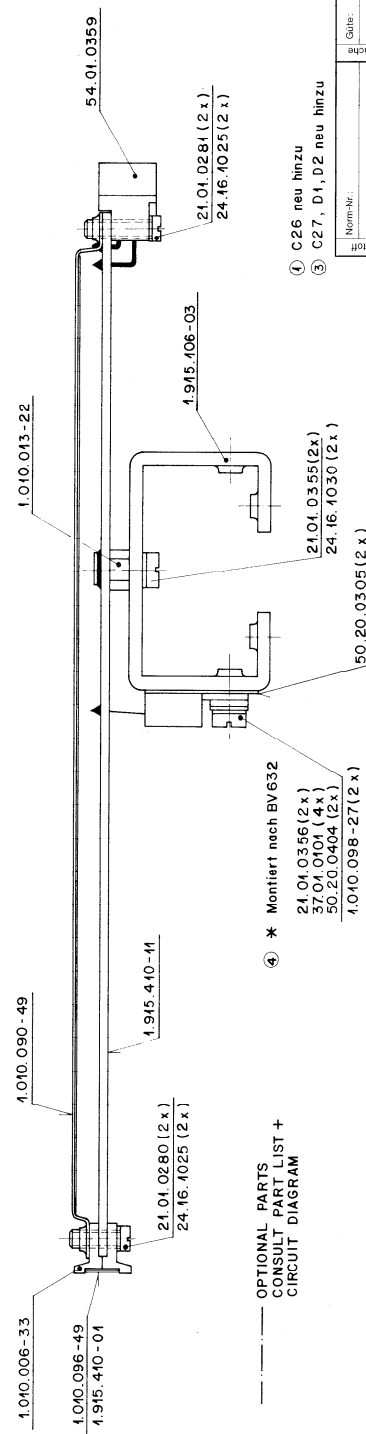
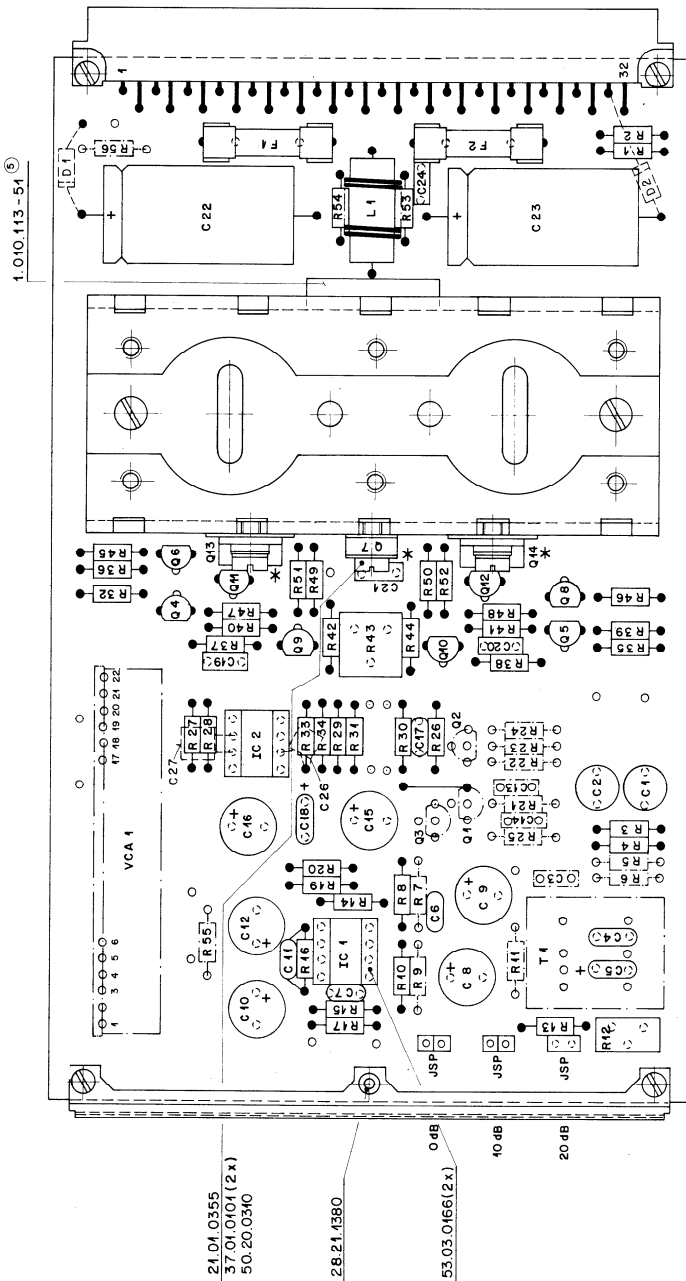
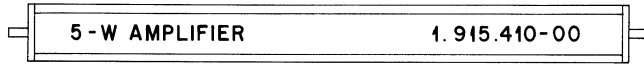
4 915

OPTION	IC	RESISTOR	CAPACITOR
MUTE	412	415	
VCA	414	415	
DIFF AMP			TR401



DATE:	15.5.82	17.4.83	8.1.85	10.8.85	10.8.85
SIGN:					
STUDER	5 WATT AMPLIFIER				
RECEIVED	SC 1.915.410				
ZÜRICH					

5W AUDIO AMPLIFIER



OPTIONAL PARTS
CONSULT PART LIST +
CIRCUIT DIAGRAM

- ④ * Montiert nach BV632
21.01.0356 (2x)
37.01.0101 (4x)
50.20.0404 (2x)
1.010.098-27 (2x)

- ① C25 neu hinzu
- ② C27, D1, D2 neu hinzu

⑥					
⑤	27.5.87	79	✓	✓	✓
④	10.1.86	A Ho	✓	✓	✓
③	18.4.85	A Ho	✓	✓	✓
②	4.4.84	A Ho	✓	✓	✓
①	10.11.83	A Ho	✓	✓	✓
⑦	16.9.82	Ho	✓	✓	✓
⑧		Ho	✓	✓	✓
⑨		Ho	✓	✓	✓
⑩		Ho	✓	✓	✓
⑪		Ho	✓	✓	✓
⑫		Ho	✓	✓	✓
⑬		Ho	✓	✓	✓
⑭		Ho	✓	✓	✓
⑮		Ho	✓	✓	✓
⑯		Ho	✓	✓	✓
⑰		Ho	✓	✓	✓
⑱		Ho	✓	✓	✓
⑲		Ho	✓	✓	✓
⑳		Ho	✓	✓	✓
㉑		Ho	✓	✓	✓
㉒		Ho	✓	✓	✓
㉓		Ho	✓	✓	✓
㉔		Ho	✓	✓	✓
㉕		Ho	✓	✓	✓
㉖		Ho	✓	✓	✓
㉗		Ho	✓	✓	✓
㉘		Ho	✓	✓	✓
㉙		Ho	✓	✓	✓
㉚		Ho	✓	✓	✓
㉛		Ho	✓	✓	✓
㉜		Ho	✓	✓	✓
㉝		Ho	✓	✓	✓
㉞		Ho	✓	✓	✓
㉟		Ho	✓	✓	✓
㊱		Ho	✓	✓	✓
㊲		Ho	✓	✓	✓
㊳		Ho	✓	✓	✓
㊴		Ho	✓	✓	✓
㊵		Ho	✓	✓	✓
㊶		Ho	✓	✓	✓
㊷		Ho	✓	✓	✓
㊸		Ho	✓	✓	✓
㊹		Ho	✓	✓	✓
㊺		Ho	✓	✓	✓
㊻		Ho	✓	✓	✓
㊼		Ho	✓	✓	✓
㊽		Ho	✓	✓	✓
㊾		Ho	✓	✓	✓
㊿		Ho	✓	✓	✓

Norm-Nr.		Gele:	
DIN-Bez.		Boh:	
Abmessung:		Oberrfläche	
Zugehörige Unterlagen:		Fremstapelanz:	
PL:	BV 632 ④	Malsab:	
Ersetzt für:		z. Datum	2.1.1
Ersetzt durch:		z. Datum	
Kopiert für:			
Benennung: 5-Watt Amplifier			
Nummer: 1.915.410-00			

5W AUDIO AMPLIFIER

Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER	Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER
C	...	1	59.05.1681	680p 1% 500V PP	R	...	33	57.11.4222	2,2k
C	...	2	59.05.1681	680p 1% 500V PP	R	...	34	57.11.4222	2,2k
C	...	3		OPT 1	R	...	35	57.11.4273	27k
C	...	4	59.26.2100	10µ 16V SAL	R	...	36	57.11.4222	2,2k
C	...	5	59.26.2100	10µ 16V SAL	R	...	37	57.11.4561	560
C	...	6	59.34.2330	33p CER	R	...	38	57.11.4561	560
C	...	7	59.34.2330	33p CER	R	...	39	57.11.4222	2,2k
C	...	8	59.22.5101	100µ 16V EL	R	...	40	57.11.4332	3,3k
C	...	9	59.22.5101	100µ 16V EL	R	...	41	57.11.4332	3,3k
C	...	10	59.22.5101	100µ 16V EL	R	...	42	57.11.4272	2,7k
C	...	11	59.34.4680	68p CER	R	...	43	58.01.8501	500 TRIM
C	...	12	59.22.5101	100µ 16V EL	R	...	44	57.11.4122	1,2k
C	...	13		OPT 2	R	...	45	57.11.4151	150
C	...	14		OPT 2	R	...	46	57.11.4151	150
C	...	15	59.22.5101	100µ 16V EL	R	...	47	57.11.4330	33
C	...	16	59.22.5101	100µ 16V EL	R	...	48	57.11.4330	33
C	...	17	59.34.2220	22p CER	R	...	49	57.11.4109	1
C	...	18	59.26.2100	10µ 16V SAL	R	...	50	57.11.4109	1
C	...	19	59.06.0102	1000p PE	R	...	51	57.11.4109	1
C	...	20	59.06.0102	1000p PE	R	...	52	57.11.4109	1
C	...	21	59.06.0224	0,22µ PE	R	...	53	57.11.4100	10
C	...	22	59.25.3222	2200µ 16V EL	R	...	54	57.11.4471	470
C	...	23	59.25.3222	2200µ 16V EL	R	...	55		OPT 3
C	...	24	59.06.0682	6800p PE	R	...	56		OPT 3
C	...	25		OPT 3					
① C	...	26	59.34.4101	100p CER	XF		53.03.0142		FUSE HOLDER
② C	...	27	59.34.4101	100p CER	XIC		53.03.0166		8pDIL
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				OPTION 1
① IC	...	2	50.09.0106	5532 DUAL OP AMP	SIG	C	...	3	59.06.0682 6800p PE
JSP			54.01.0020	PIN (2*)		C	...	7	59.34.2220 22p CER
L	...	1	1.068.614.00	2,2µH		R	...	5	57.11.4102 1k
P	...	1	54.01.0359	32p EDGE CONN. TYBE B		R	...	6	57.11.4102 1k
Q	...	1		OPT 2		R	...	8	57.11.3181 180 1%
Q	...	2		OPT 2		R	...	10	57.11.3752 7,5k 1%
Q	...	3		OPT 2		R	...	11	57.11.3752 7,5k 1%
Q	...	4	50.03.0436	BC237B NPN GEN. PURPOSE		T	...	1	1.022.419.00 1:1
Q	...	5	50.03.0515	BC307B PNP GEN. PURPOSE				1.022.400.03	INSULATION
Q	...	6	50.03.0515	BC307B PNP GEN. PURPOSE		C	...	13	59.06.0682 6800p
Q	...	7	50.03.0495	BD135-16 NPN		C	...	14	59.06.0682 6800p
Q	...	8	50.03.0436	BC237B NPN GEN. PURPOSE		Q	...	1	50.03.0350 J112 ND FET
Q	...	9	50.03.0436	BC237B NPN GEN. PURPOSE		Q	...	2	50.03.0515 BC307 PNP GEN. PURPOSE
Q	...	10	50.03.0515	BC307B PNP GEN. PURPOSE		Q	...	3	50.03.0350 J112 ND FET
Q	...	11	50.03.0340	BC337 NPN 800mA		R	...	21	57.11.6106 10M
Q	...	12	50.03.0351	BC327 PNP 800mA		R	...	22	57.11.4105 1M
Q	...	13	50.03.0344	2N6474 NPN	RCA	R	...	23	57.11.4105 1M
Q	...	14	50.03.0345	2N6476 PNP	RCA	R	...	24	57.11.4104 100k
R	...	1	57.11.3152	1,5k 1%		R	...	25	57.11.6106 10M
R	...	2	57.11.3152	1,5k 1%					
R	...	3	57.11.3392	3,9k 1%		② D	...	1	50.04.0122 1N4001
R	...	4	57.11.3392	3,9k 1%		② D	...	2	50.04.0122 1N4001
R	...	5		OPT 1		R	...	55	57.11.4152 1,5k
R	...	6		OPT 1		R	...	56	57.11.4223 22k
R	...	7		SELECTED		VCA	...	1	1.010.110.50 VOLTAGE CONTROLLED AMPL.
R	...	8	57.11.3362	3,6k 1%					ST
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					

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

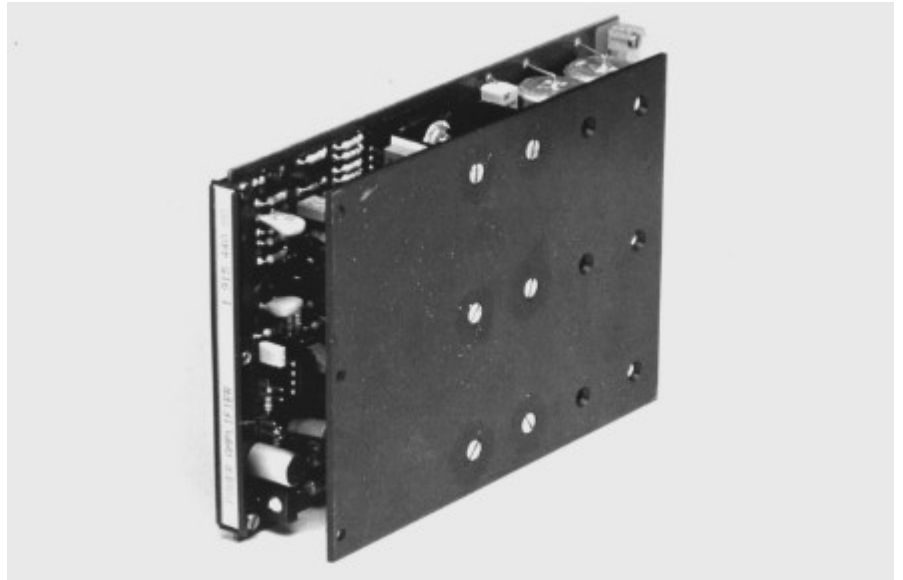
1.915.410.00 5 WATT AMPLIFIER TH 14/04/82
 1.915.410.00 5 WATT AMPLIFIER ① HO 04/11/83
 1.915.410.00 5 WATT AMPLIFIER ② PA 18/04/85

END
 →

2.2.7 40 W Power Amplifier

1.915.440/441

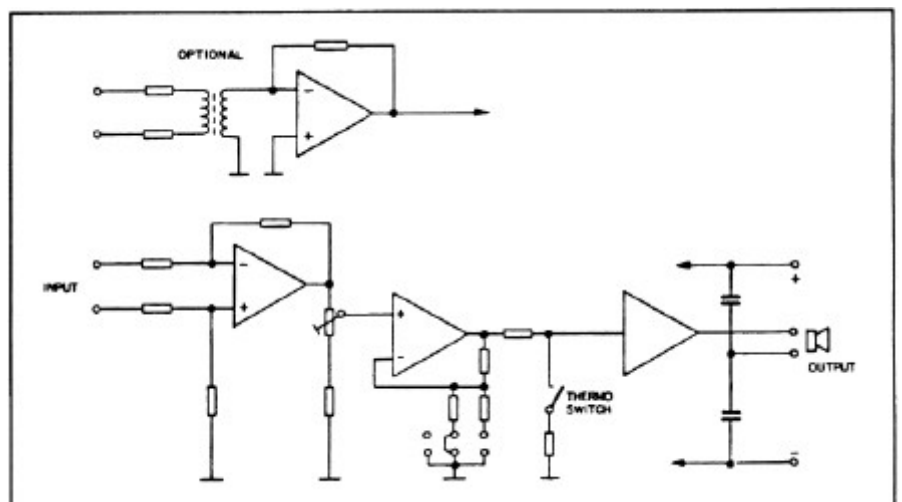
For applications where higher power level is needed, a 40 W amplifier has been realized on a Euro-card. Its width is 32 mm, which equals 7M widths approximately.



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

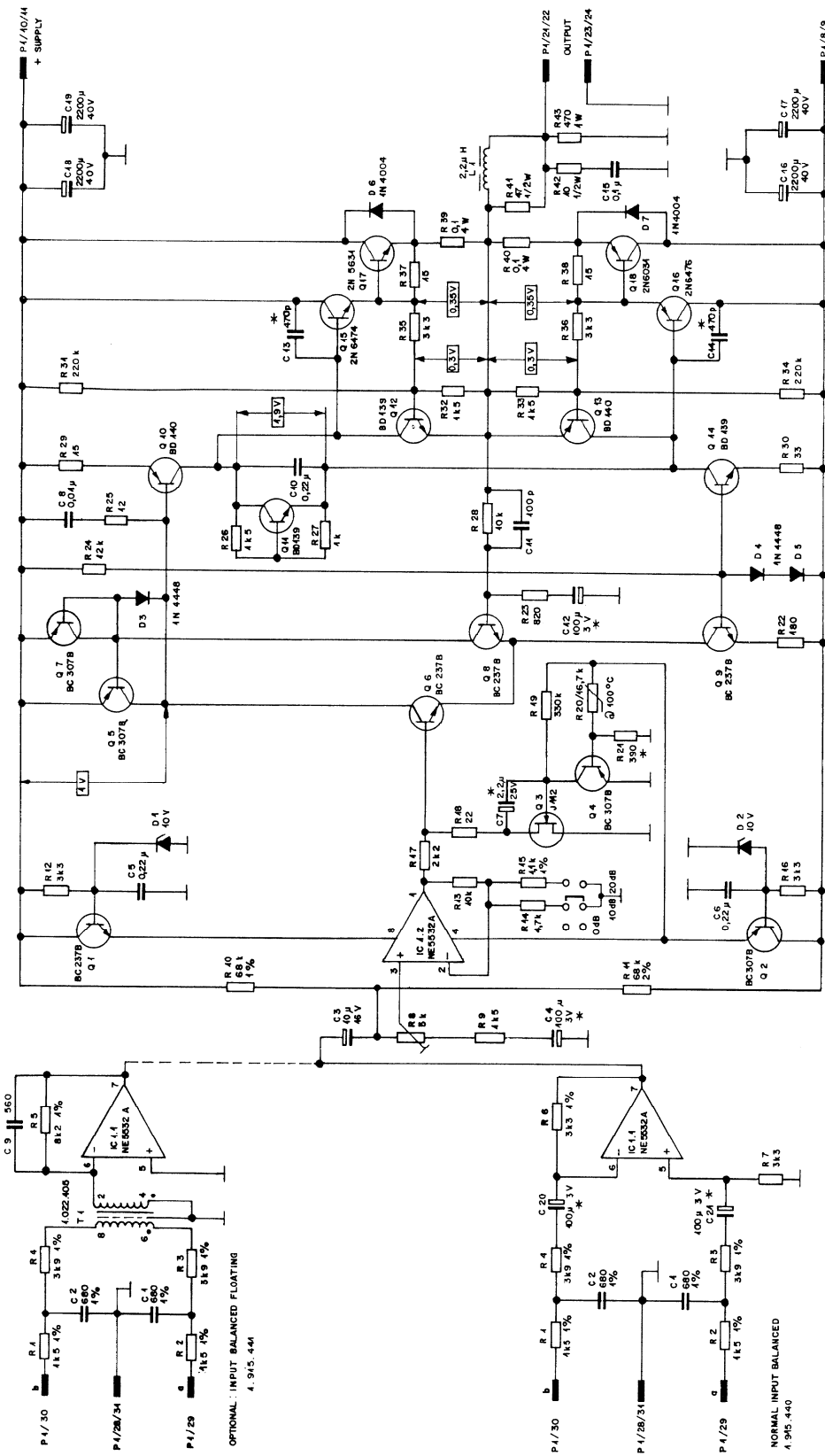
Supply: **45 V_{DC}** (70 mA idling, 1.5 A @ 40 W/4 Ω)

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

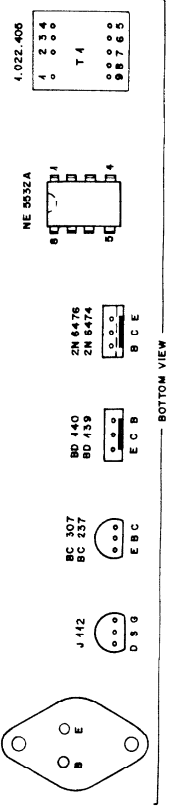
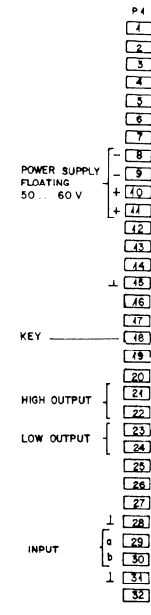
Ordering Information:

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

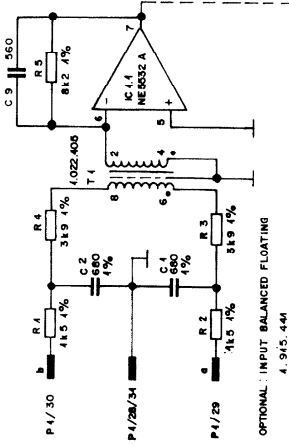
40W POWER AMPLIFIER



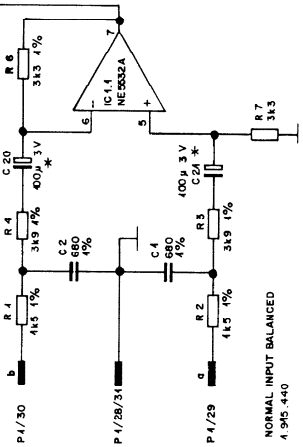
* SEE MODIFICATION LIST



BOTTOM VIEW



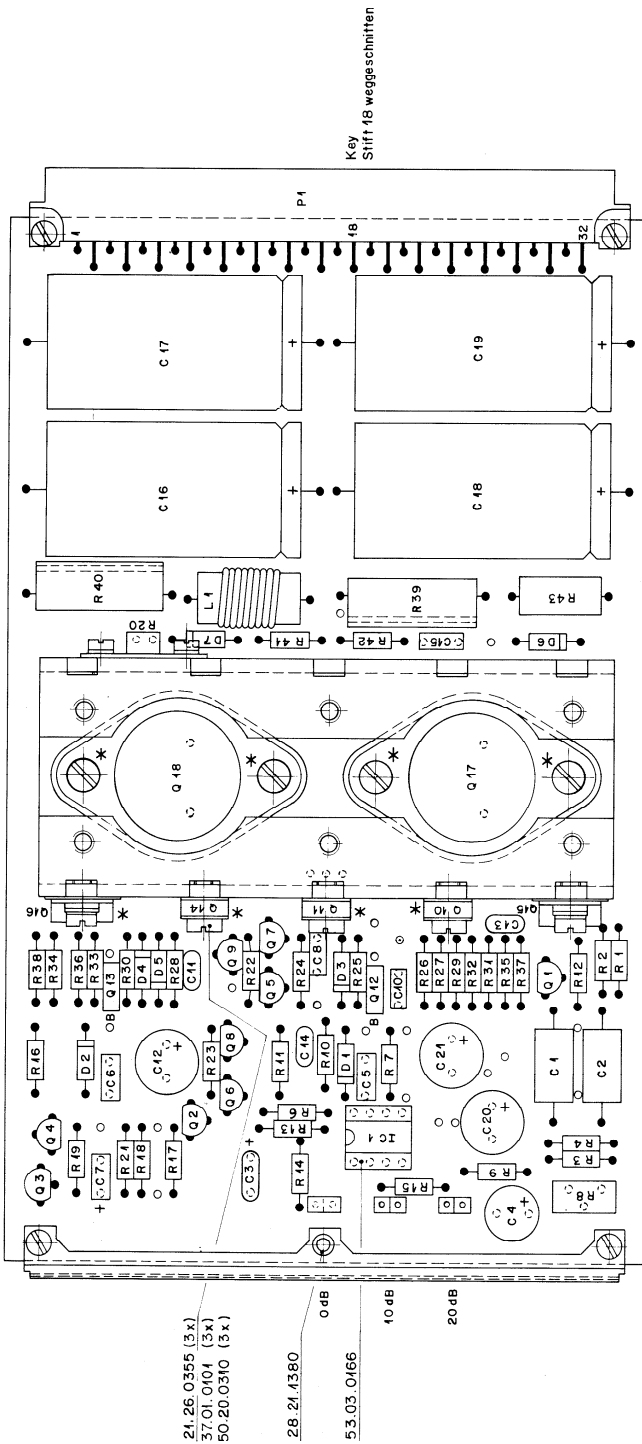
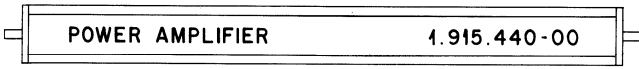
OPTIONAL INPUT BALANCED FLOATING
4.945.444



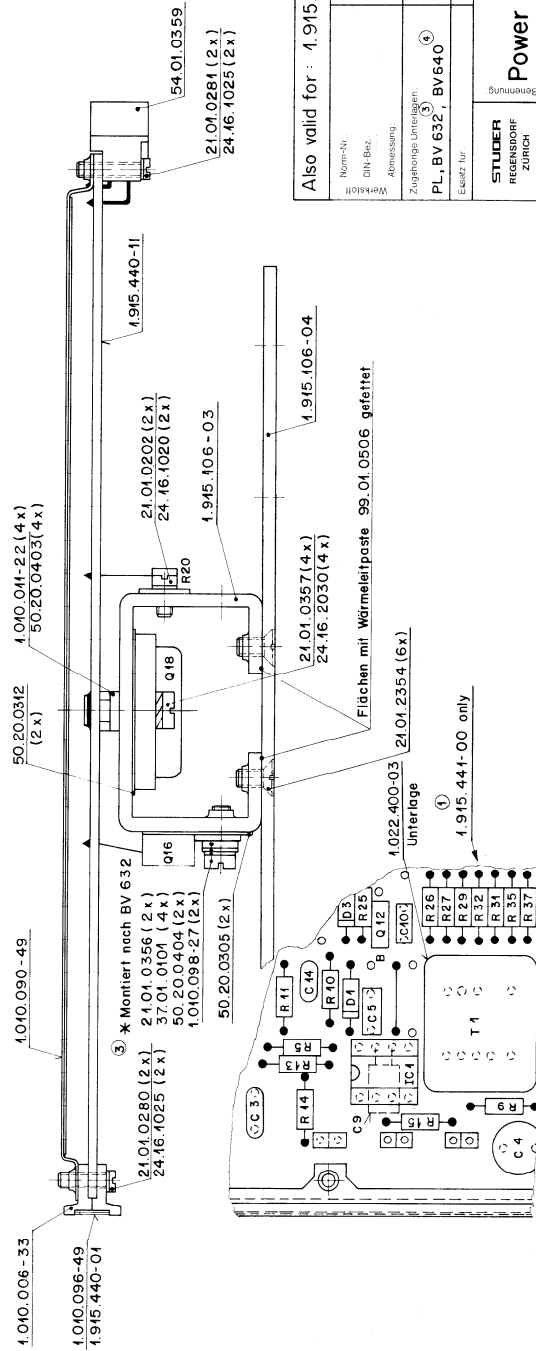
NORMAL INPUT BALANCED
4.945.440

DATE:	12.1.82	24.5.83	24.6.83	23.11.83	
SIGN:	<i>Jr</i>	<i>Me</i>	<i>We</i>	<i>We</i>	
STUDER REGENSCHORF ZURICH	POWER AMPLIFIER OPTIONAL: INP. BALANCED FLOATING				SC 1.915.440 4.945.444

40W POWER AMPLIFIER



C16 bis C19 fixiert nach BV640



25.5.87	10.1.86	4.4.	25.5.83	4.9.81
Änderung	A Ho	A Ho	A Ho	Ho
1/4	1/4	1/4	1/4	1/4
1	2	3	4	5

Also valid for : 1.915.441-00	
Norm-Nr. : 1.915.441-00	Werkstoff : 1.915.441-00
Urs. Bes. : 1.915.441-00	Ort/Fabrik : 1.915.441-00
Abmessung : 1.915.441-00	Material : 1.915.441-00
Zughefts-Unterteil : 1.915.441-00	Fremdmaterial : 1.915.441-00
PL, BV 632, BV 640	2 : 1
Erstellt durch : 1.915.441-00	Gepr. Org. : 1.915.441-00
STUDER REGENSDORF ZÜRICH	Power Amplifier
Bestimmung : 1.915.441-00	Nummer : 1.915.440-00

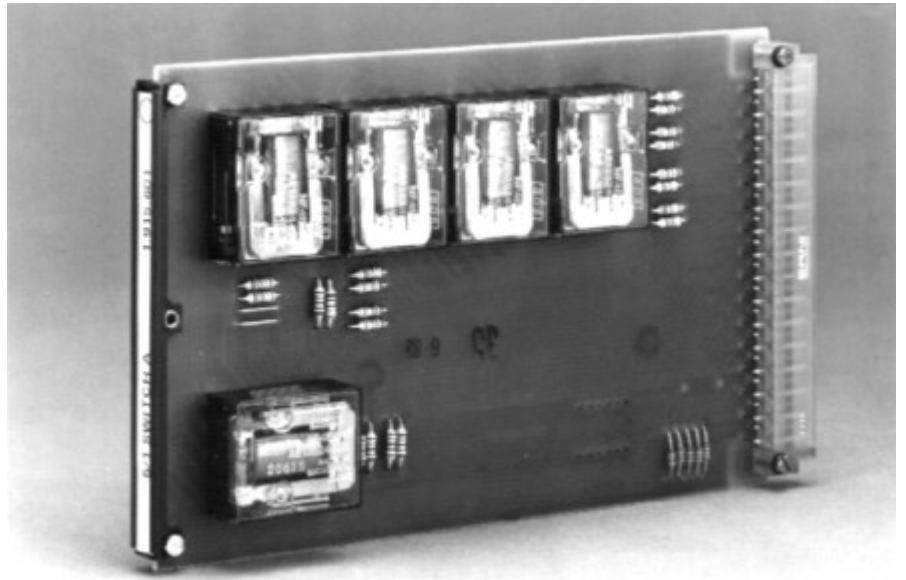
40W POWER AMPLIFIER

Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER	Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER
	C 1	59.12.9681	680pF 500V 1%	PS		R 36	57.11.4332	3,3k	
	C 2	59.12.9681	680pF 500V 1%	PS		R 37	57.11.4150	15	
	C 3	59.26.2100	10pF 16V	SAL		R 38	57.11.4150	15	
Ⓢ	C 4	59.30.1101	100pF 3V	TA		R 39	57.56.5108	0,1	10% 4W WW
	C 5	59.06.0224	0,22pF	PE		R 40	57.56.5108	0,1	10% 4W WW
	C 6	59.06.0224	0,22pF	PE					
Ⓢ	C 7	59.26.5229	2,2pF 25V	SAL		R 41	57.11.4470	47	0,4W
	C 8	59.06.0103	0,01pF	PE		R 42	57.11.4100	10	0,4W
	C 9	59.34.5561	560pF	CER (1.915.441)		R 43	57.13.4471	470	1W
	C 10	59.06.0224	0,22pF	PE		T 1	1.022.405.00	1:1	INPUT TRANSFORMER ST
Ⓢ	C 11	59.34.4101	100pF	CER		MODIFICATION LIST			
Ⓢ	C 12	59.30.1101	100pF 3V	TA		Ⓢ C 4	220pF → 100pF		QUALITY IMPROVEMENT
Ⓢ	C 13	59.32.1471	470pF	CER		Ⓢ C 7	0,22pF → 2,2pF		BETTER INRUSH
Ⓢ	C 14	59.32.1471	470pF	CER		Ⓢ C 12	100pF → 100pF		QUALITY IMPROVEMENT
	C 15	59.06.0104	0,1pF	PE		Ⓢ C 13	560pF → 470pF		PRODUCTIONS REASONS
	C 16	59.25.5222	2200pF 40V	EL		Ⓢ C 20	100pF → 100pF		QUALITY IMPROVEMENT
	C 17	59.25.5222	2200pF 40V	EL		Ⓢ C 21	100pF → 100pF		QUALITY IMPROVEMENT
	C 18	59.25.5222	2200pF 40V	EL		Ⓢ R 21	1kΩ → 390Ω		SWITCH OFF @ 100° C
	C 19	59.25.5222	2200pF 40V	EL		Ⓢ R 31	100k → 220k		CURRENT LIMIT @ HIGHER IDLE VOLTAGES
Ⓢ	C 20	59.30.1101	100pF 3V	TA (1.915.440)		Ⓢ R 34	100k → 220k		CURRENT LIMIT @ HIGHER IDLE VOLTAGES
Ⓢ	C 21	59.30.1101	100pF 3V	TA (1.915.440)		PS=Polystyrene, EL=Electrolytic, SAL=Solid Aluminium, PE=Polyester, CER=Ceramic, SI=Silicium, T=Tantalum WW=Wire Wound			
	D 1	50.04.1114	ZPD10V 10V @ 5mA			MANUFACTURER: PH=Philips, SIG=Signetics, SIX=Siiconix, SIE=Siemens, TI=Texas Instruments, R=RCA MOT=Motorola, N=National, ST=Studer			
	D 2	50.04.1114	ZPD10V 10V @ 5mA			Also Valid for: 1.915.441 Ⓢ			
	D 3	50.04.0125	1N4448	SI		1.915.440 POWER AMPLIFIER PA 09/06/81			
	D 4	50.04.0125	1N4448	SI		1.915.440 POWER AMPLIFIER Ⓢ VO 25/05/83			
	D 5	50.04.0125	1N4448	SI		1.915.440 POWER AMPLIFIER Ⓢ FRI 06/07/83			
	D 6	50.04.0105	1N4004 1,1V @ 1A	SI		1.915.440 POWER AMPLIFIER Ⓢ VO 23/11/83			
	D 7	50.04.0105	1N4004 1,1V @ 1A	SI		1.915.440 POWER AMPLIFIER Ⓢ VO 23/09/91			
	IC 1	50.09.0105	NE5532A DUAL OPA	SIG		END			
	L 1	1.068.614.00	2,2pH	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						
Ⓢ	R 20	57.99.0803	16,7k NTC	PH					
Ⓢ	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						
Ⓢ	R 31	57.11.4224	220k						
	R 32	57.11.4152	1,5k						
	R 33	57.11.4152	1,5k						
Ⓢ	R 34	57.11.4224	220k						
	R 35	57.11.4332	3,3k						

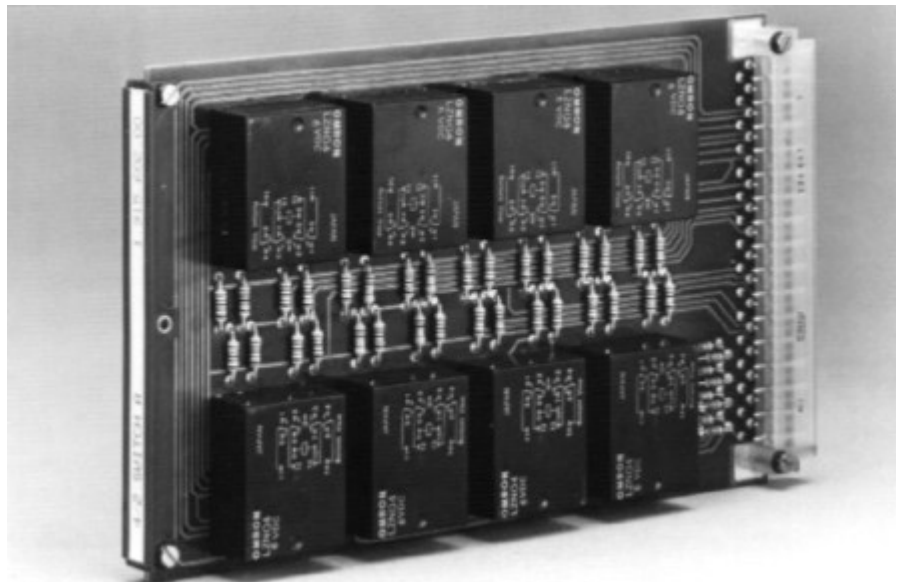
2.2.8 Monitor Switching Relays

1.915.601/602

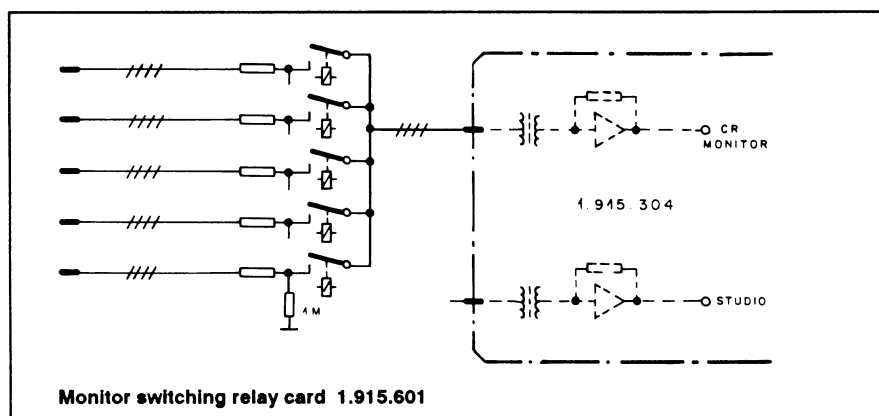
Two different monitor circuit switching cards are available. They are equipped with either five or eight relays for switching of a corresponding number of stereo sources to one or two stereo outputs in monitor circuits.



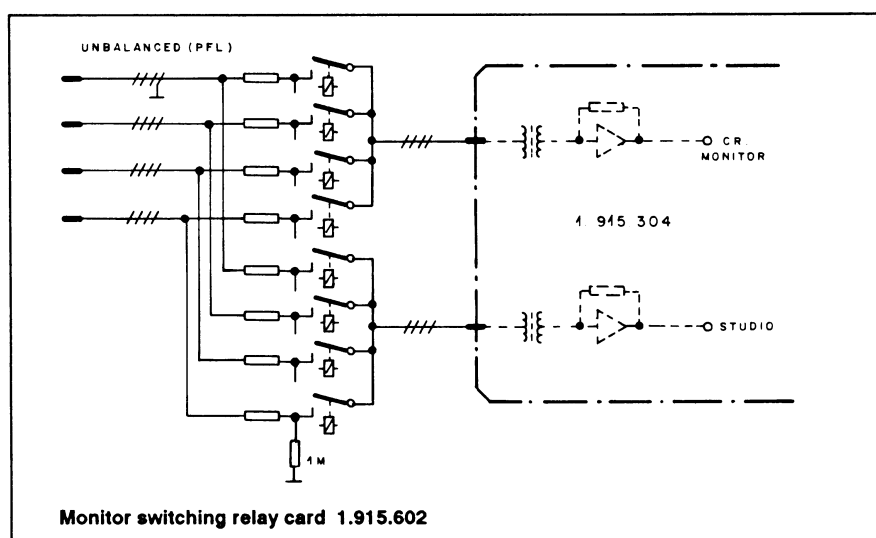
The relays are available with coil ratings of $6V_{DC}$ or $24V_{DC}$, depending on the user's requirement. Click-suppressing diodes are wired across each relay coil. The relays are equipped with four double throw (change-over) contacts each.



Isolation of the monitor lines from external circuitry is achieved by $5.6k\Omega$ 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).



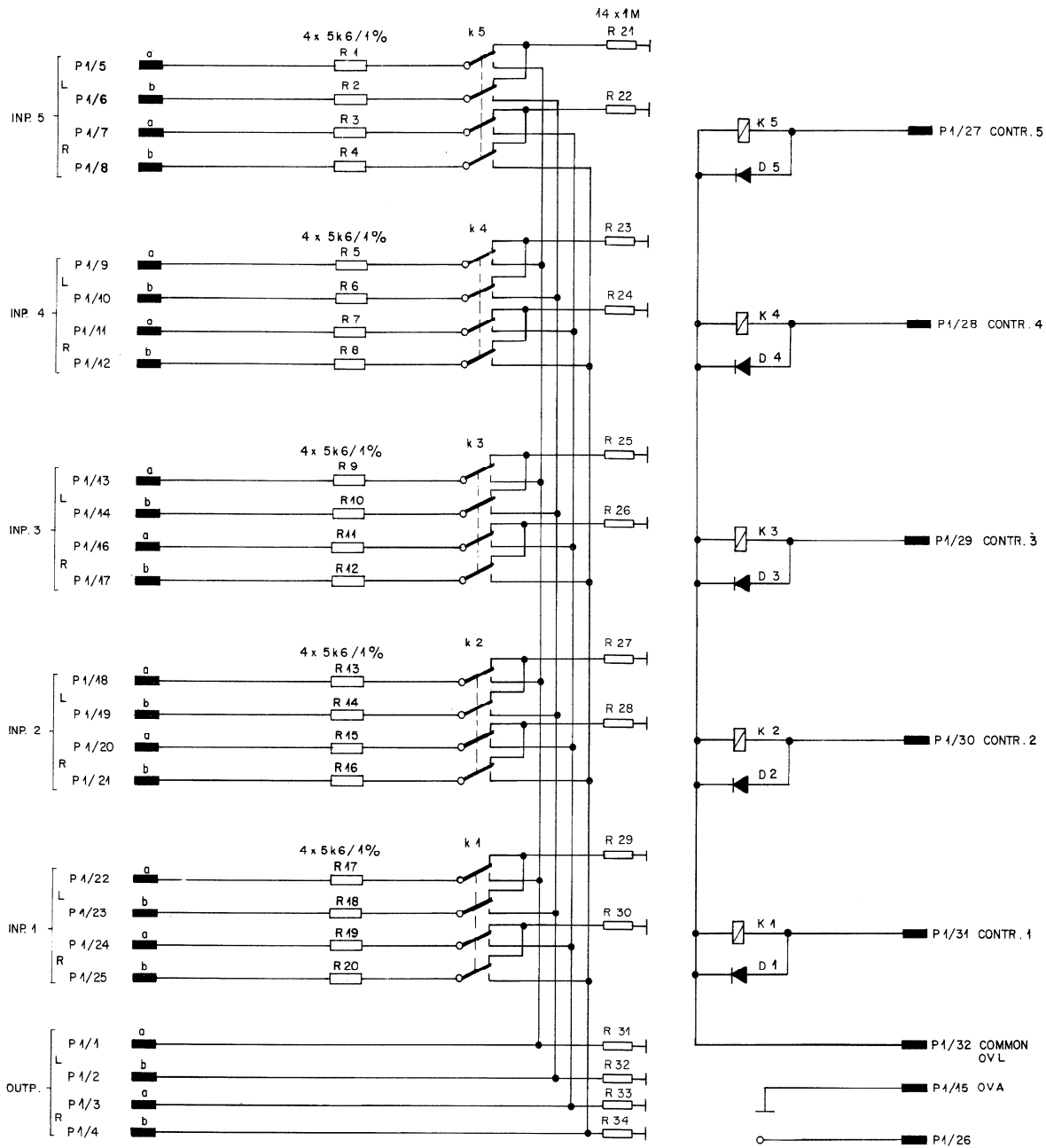
Card 1.915.602.xx features a similar circuit configuration with eight relays, to switch one unbalanced and three balanced stereo inputs. Two stereo buses appear on eight pins of the edge-connector; in this way, the four inputs can be switched to either one or to both outputs, such as may be the case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



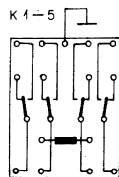
Dimensions: Euro-card **100 × 160 mm, 4 M units wide**
Weight **approx. 250 g**

Ordering Information:

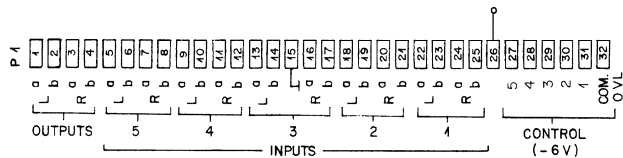
- Relay card, 5 IN/1 OUT 1.915.601.xx
- Relay card, 4 IN/2 OUT 1.915.602.xx



D 1 ... D 5 = 1N 4448

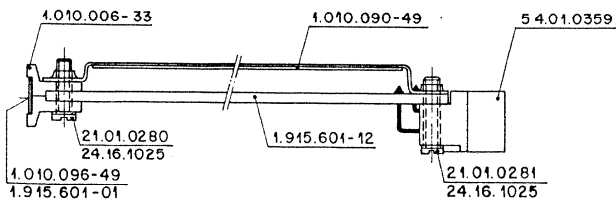
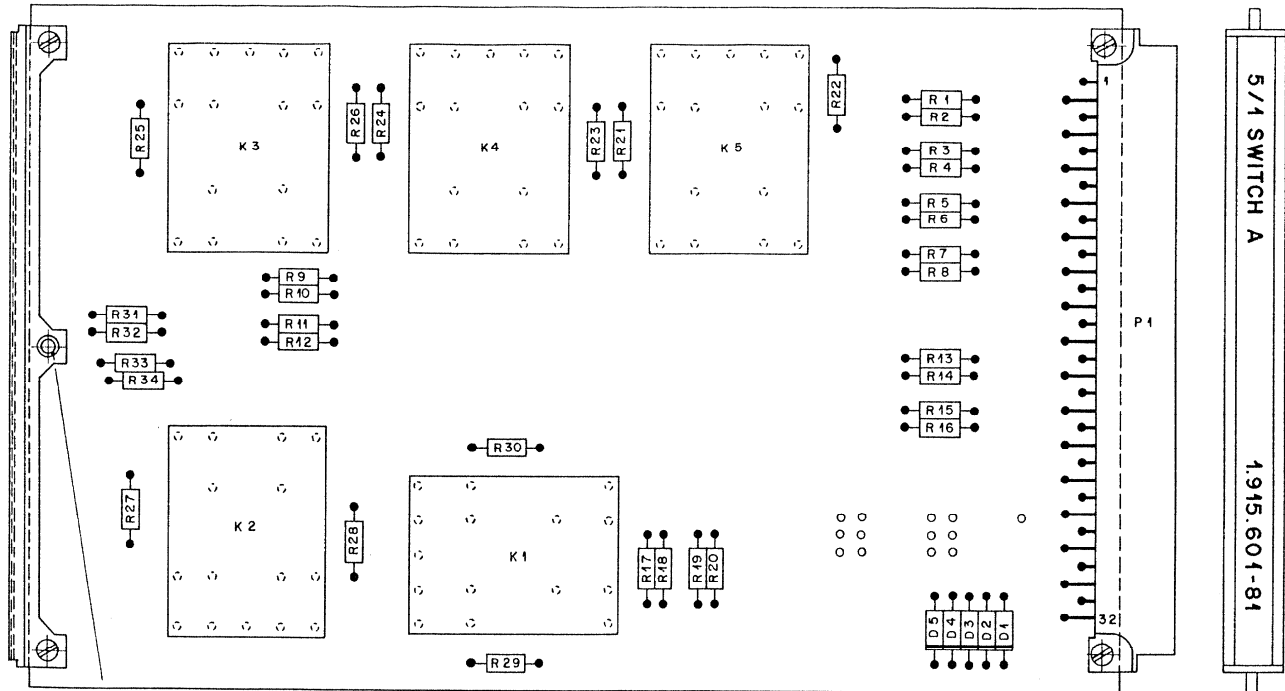


BOTTOM VIEW



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

RELAYS



Werkstoff: DIN-Bez.:	Norm-Nr.:	Oberfläche:	Güte:	Ausgabe:	Angebr.	③
	Abmessung:		Beh.:				①
Zugehörige Unterlagen:	Freimassoleranz:	Maßstab:	9.10.87	A.Ho	Sc	②
PL	±	2:1	Datum	Gez.	Grnr.	④
Ersatz für: 1.915.601-00	Ersetzt durch:	Kopie für:				
STUDER REGENSDORF ZÜRICH	Benennung: 5/1 SWITCH A		Nummer: 1.915.601-81			

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/O
K...	2	56.04.0146	4U/6V	N/O
K...	3	56.04.0146	4U/6V	N/O
K...	4	56.04.0146	4U/6V	N/O
K...	5	56.04.0146	4U/6V	N/O
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	

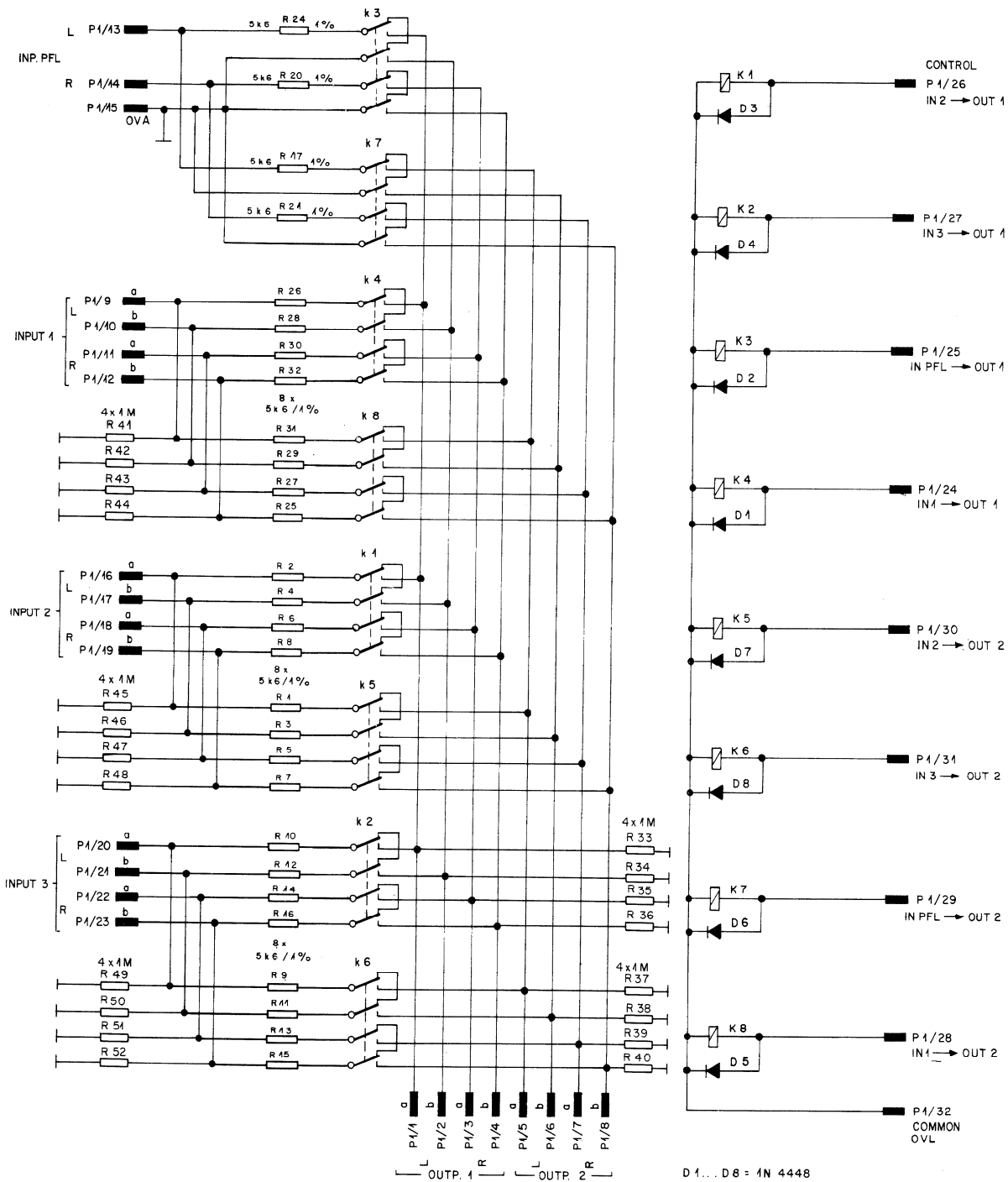
Ad.	POS.	REF.No.	DESCRIPTION	MANUFACTURER
R...	28	57.11.4105	1M	
R...	29	57.11.4105	1M	
R...	30	57.11.4105	1M	
R...	31	57.11.4105	1M	
R...	32	57.11.4105	1M	
R...	33	57.11.4105	1M	
R...	34	57.11.4105	1M	

MANUFACTURER: N=National, O=Omron

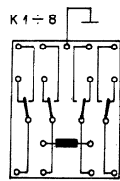
1.915.601.81 5/1 SWITCH A

WY 14/10/87

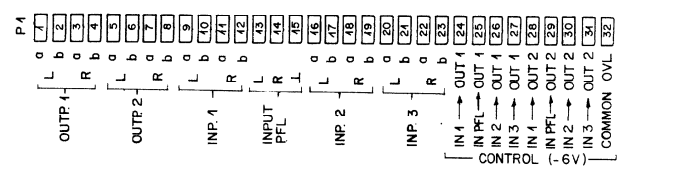
END
→



D 1... D 8 = 1N 4448

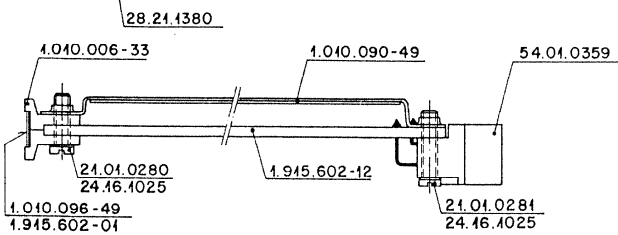
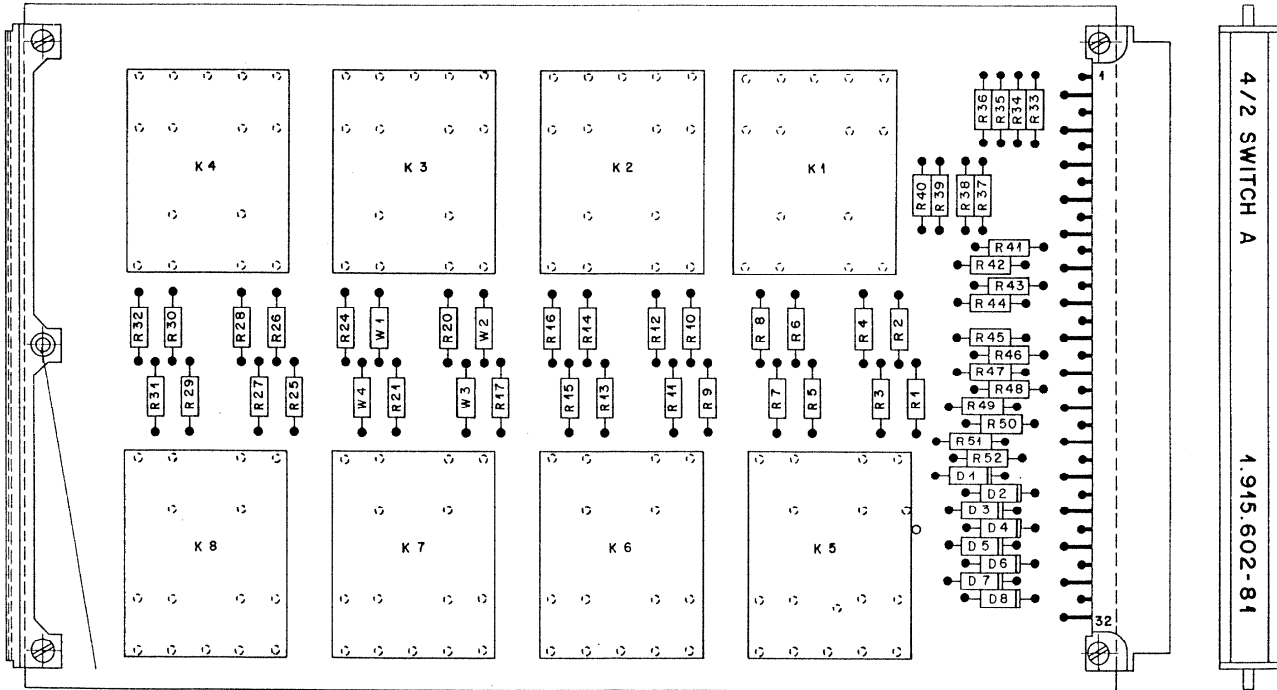


BOTTOM VIEW



DATE:	26.10.87			
SIGN:	<i>[Signature]</i>			
STUDER REGENSDORF ZÜRICH	4/2 SWITCH A MONITOR RELAYS			SC 1.915.602.81

RELAYS



Norm-Nr.:	Güte:	Änderung:	③
DIN-Bez.:	Oberrufen:	Beh.:	②
Abmessung:			①
Zugehörige Unterlagen:	Freimasstoleranz:	Maßstab:	9.10.87 A.Ho. <i>S. My</i> ④
PL	±	2:1	Datum Gez. Gepr. Ges. Index
Ersatz für 1.945.602-00	Ersetzt durch:	Kopie für:	
STUDER REGENSDORF ZÜRICH	Benennung: 4/2 SWITCH A	Nummer: 1.915.602-81	

Ad.	POS.	REF.No.	DESCRIPTION	MANUFACTURER
D.1		50.04.0125	1N4448	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 / O
K.2		56.04.0146	4U/6V	N / O
K.3		56.04.0146	4U/6V	N / O
K.4		56.04.0146	4U/6V	N / O
K.5		56.04.0146	4U/6V	N / O
K.6		56.04.0146	4U/6V	N / O
K.7		56.04.0146	4U/6V	N / O
K.8		56.04.0146	4U/6V	N / O
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.	

Ad.	POS.	REF.No.	DESCRIPTION	MANUFACTURER
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

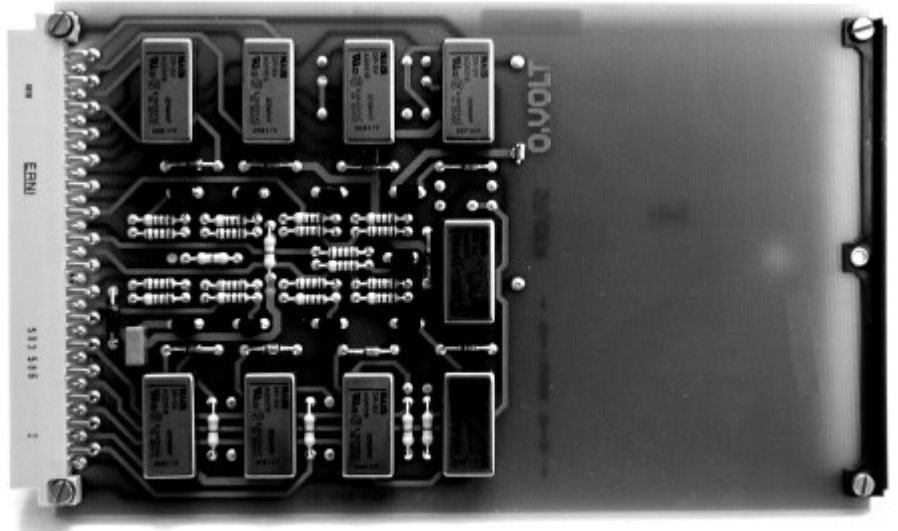
⊙ WY 22/05/89

END
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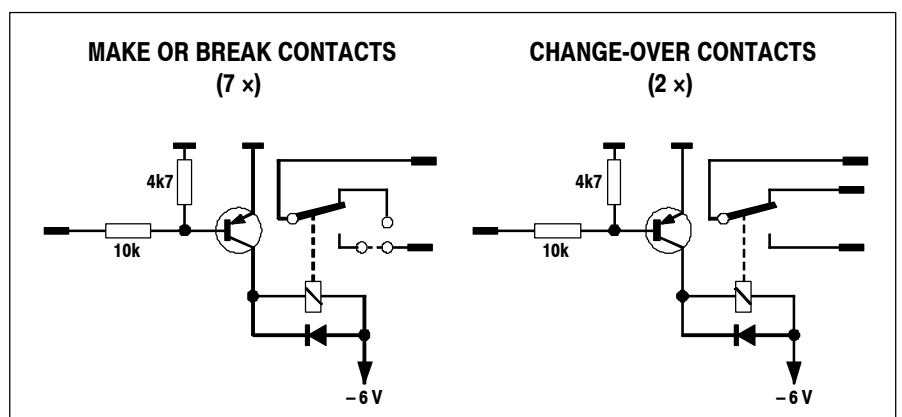
2.2.9 Transistor-Driven Relays (7+2)

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.



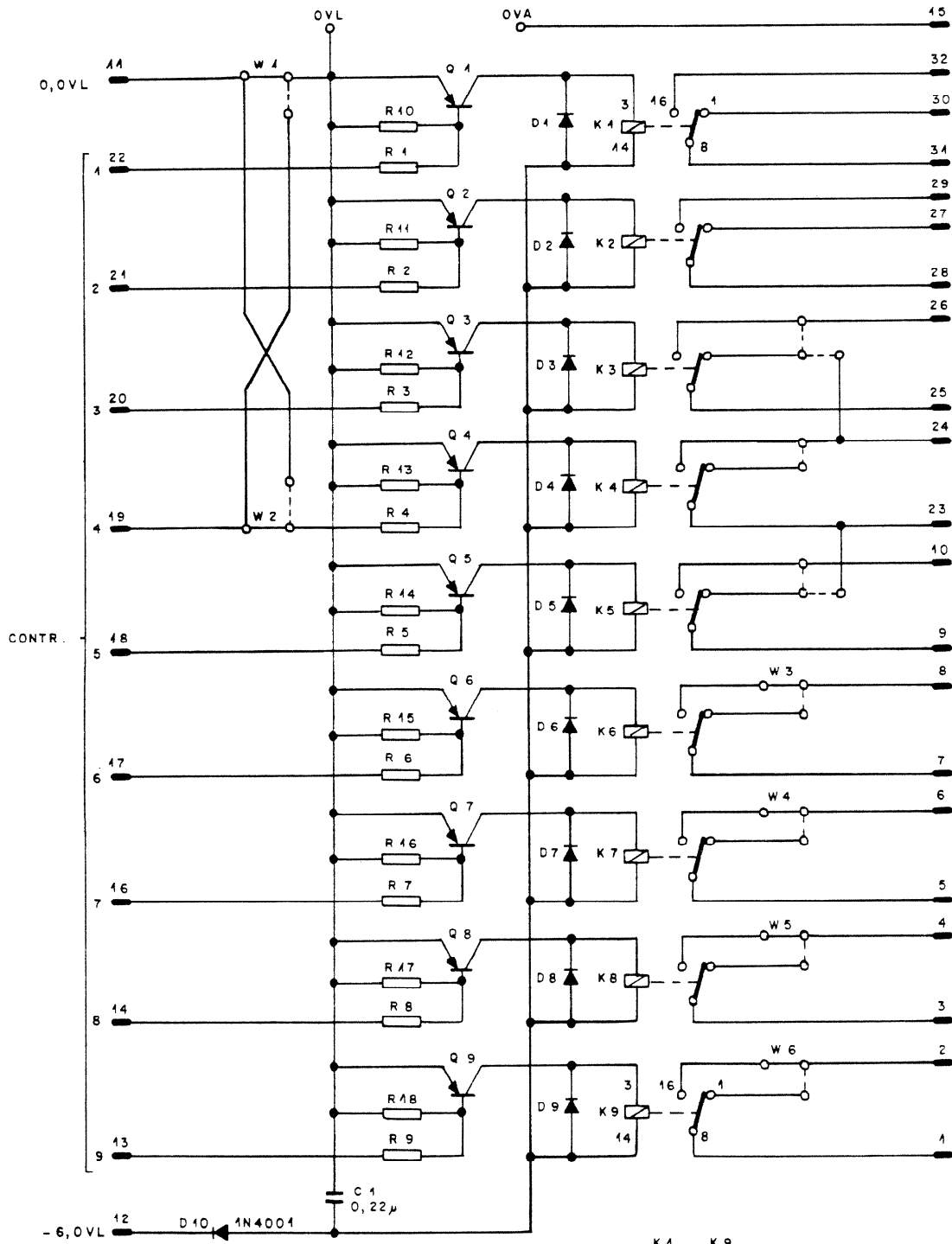
The relays are designed for operation on 6 V_{DC}, and each relay coil is bridged with a click-suppressing diode. PNP transistors in series with the coils are blocking the current flow, because each transistor is normally bi-ased off. By applying the output from the gate of an external control logic 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.



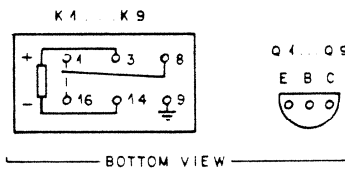
Polarity of the relay's supply voltage must be observed when utilizing this circuit.

Technical Specifications

Contact Ratings:		max. 1 A/30 V_{DC} or 0.3 A/125 V_{AC}	
	Note:	<i>In this application 48 V must not be exceeded to avoid shock hazard.</i>	
	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

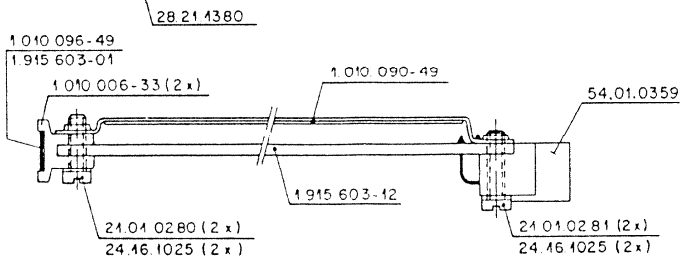
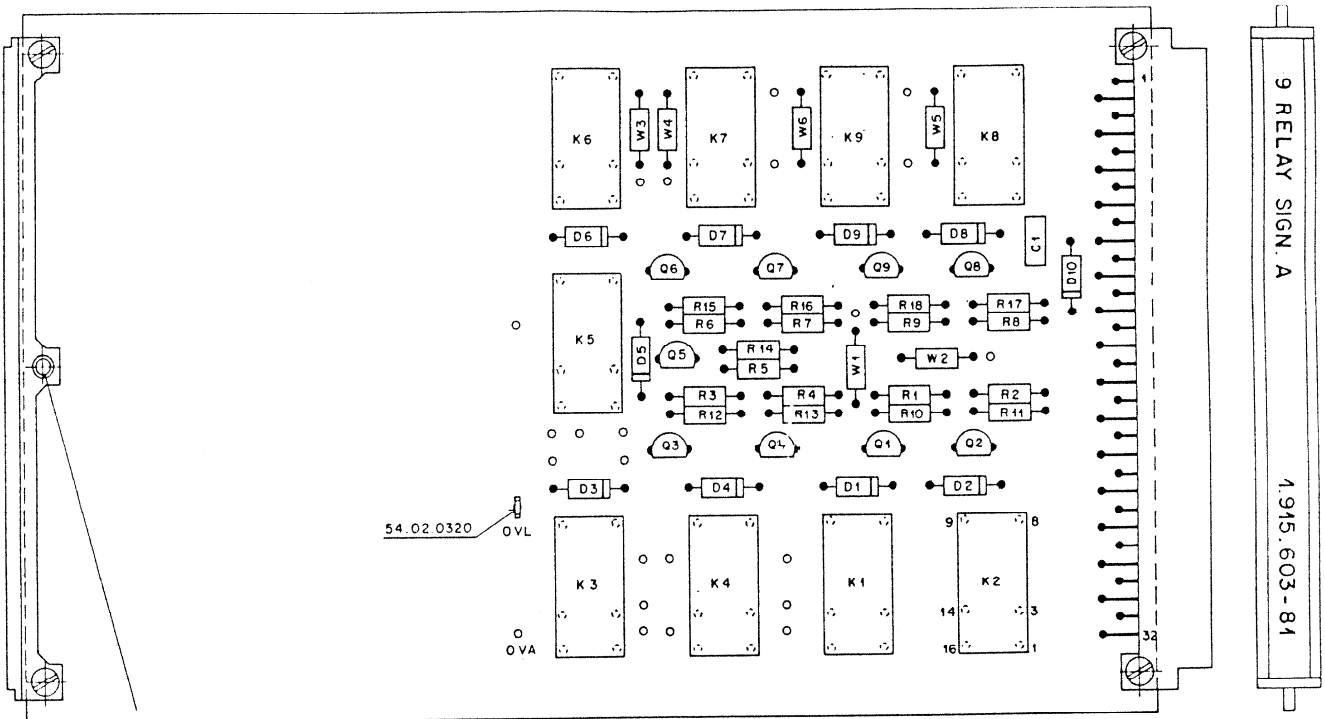


- R 1... R 9 = 10 k
- R 10... R 18 = 4 k 7
- D 1... D 9 = 1N 444 B
- Q 1... Q 9 = BC 560
- K 1... K 9 = DR - 5 V



① 24 11 92 <i>We</i> ○ ○ ○ ○	STUDER REGENSDORF ZÜRICH	9 RELAYS SIGN. A	SC 1.915.603-81
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RELAYS



Version	Norm-Nr.	Überf. Güte	Eigenschaften	
DIN-Bez.		Ben.		
Abmessung				
Zugehörige Unterlagen	Freiwilligkeitsanz.	Maßstab	Nummer	30.992
PL	±	2 : 1	Datum	
Erstellt für	Erstellt durch	Kopie für		
STUDER REGENSDORF ZÜRICH		Bezeichnung RELAYS UNIT 9 A SIGNALISATION		Nummer 1.915.603-81

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	

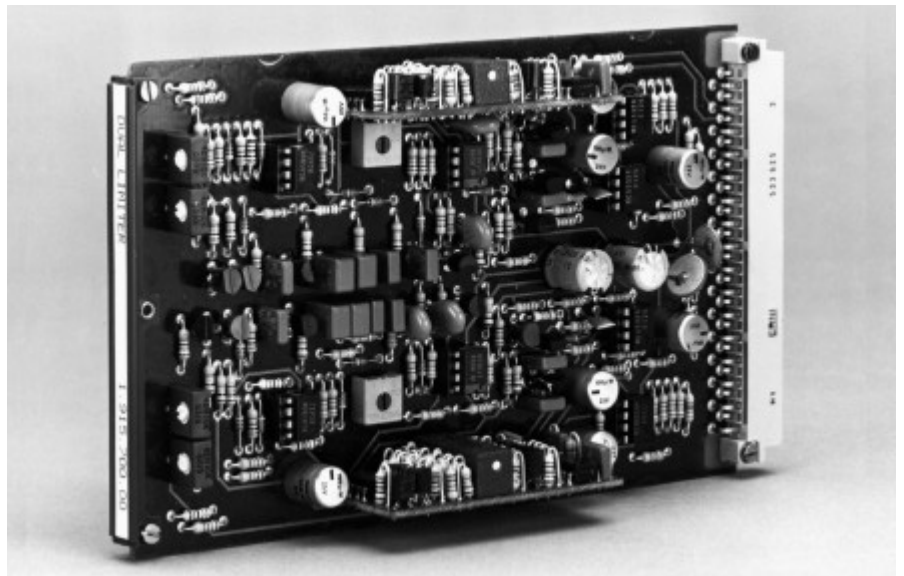
1.915.603.81 RELAY UNIT 9A 21/10/92

END

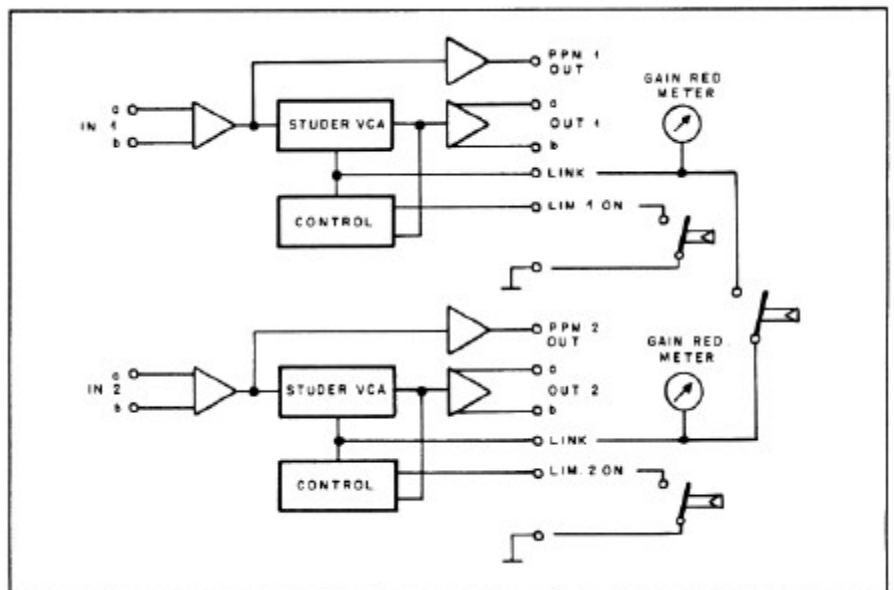
2.2.10 Dual Limiter

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.



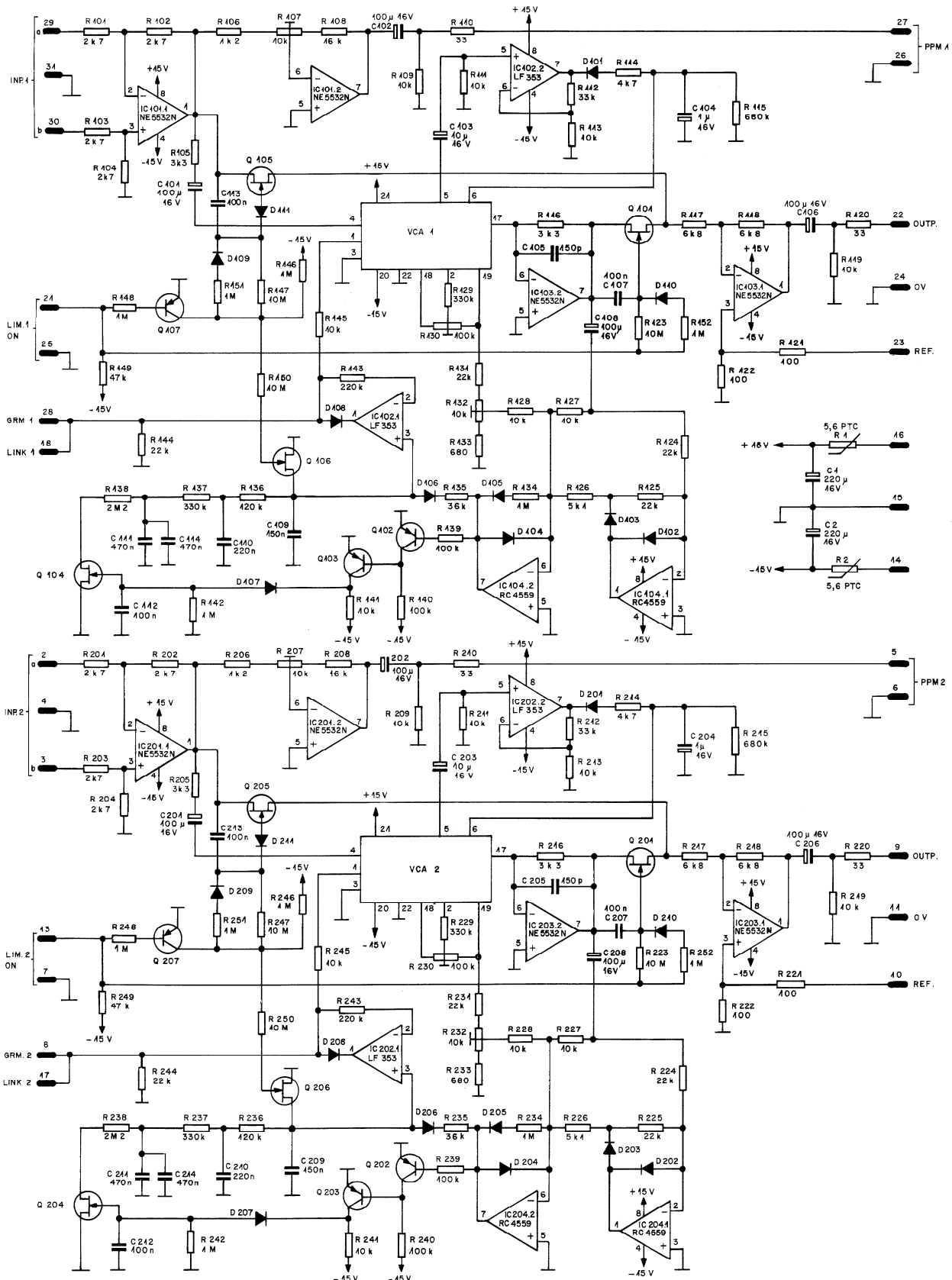
Two identical, independent limiter circuits are contained on one Euro-card, plus additional, separate gain stages to drive peak program meters. The perfect tracking of the two VCAs makes this Dual Limiter suitable for stereo work as well, in which case a simple electrical connection is needed to link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



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

Technical Specifications

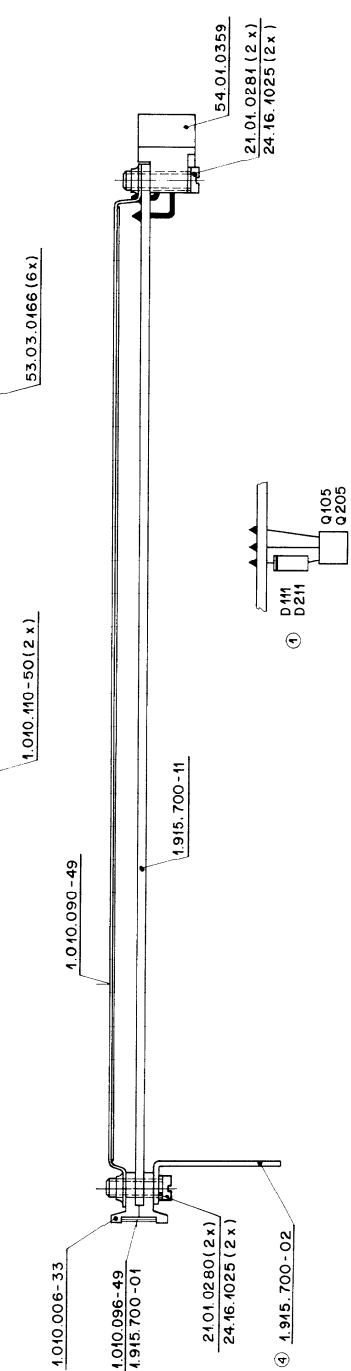
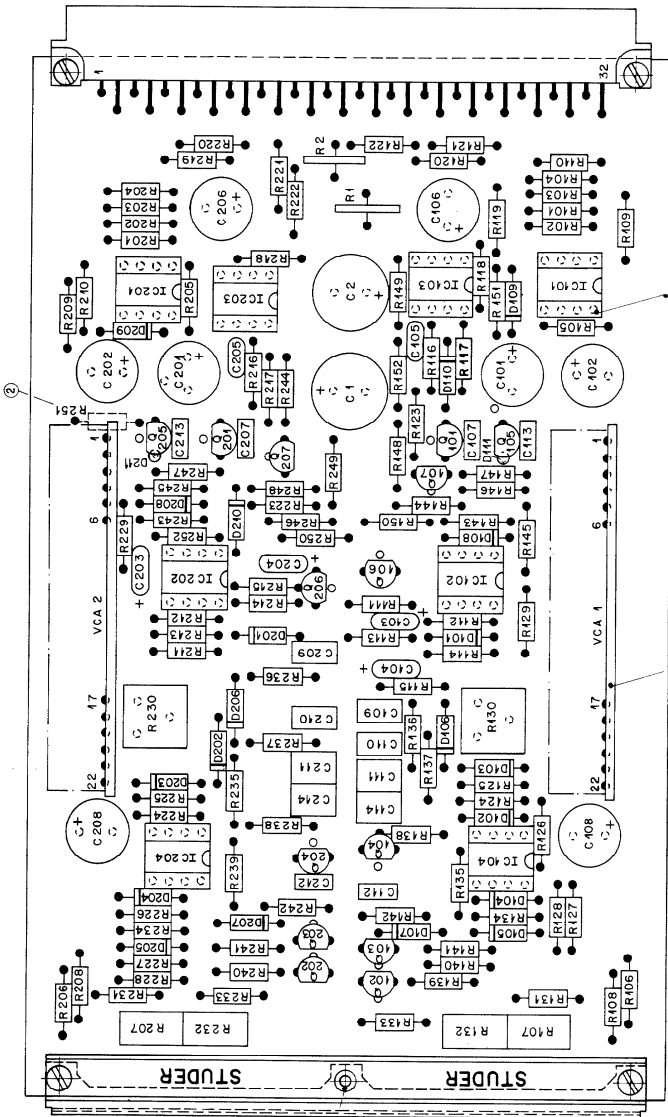
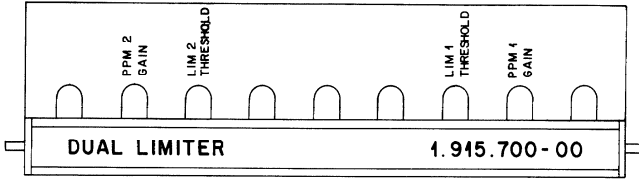
Input:	Impedance	5.4 kW , balanced configuration 2.7 kW , unbalanced configuration
	Overload point	+20 dBu (7.75 V _{rms})
Output:	Impedance	< 50 W , unbalanced
	Frequency response	+0/-0.5 dB , 30 Hz...15 kHz +0/-3 dB , 2 Hz...200 kHz
	Gain	0 dB , limiter off
	Output noise level	-102 dBu , Limiter on -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 412

DATE:	3.3.83	46.7.84			
SIGN:	<i>ml</i>	<i>ml</i>			
STUDER REGENSDORF ZÜRICH	DUAL LIMITER				SC 1.915.700

DUAL LIMITER



Norm.Nr.:	Werkstoff	20.12.84 A Ho	④
DN Bz.:	Güte:	4.4.84 A Ho	③
Abmessung:	Beh.:	3.1.84 A Ho	③
Zugehörige Unterlagen:	Formasozonanz:	14.12.82 A Ho	①
PL	Material:	18.9.82 Ho	①
Erstellt für:	Datum:	Gez.:	Inbzw.
Erreicht durch:	2.1	Gepr.:	Gez.
Benennung:		1.915.700-00	
STUDER REGENSCHOPF ZÜRICH		Dual Limiter	

DUAL LIMITER

Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER	Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER
C....1		59.22.4221	220µ 16V	EL	R...43		57.11.4224	220k	
C....2		59.22.4221	220µ 16V	EL	R...44		57.11.4223	22k	
C....1		59.22.4101	100µ 16V	EL	R...45		57.11.4103	10k	
C....2		59.22.4101	100µ 16V	EL	R...46		57.11.4105	1M	
C....3		59.26.2100	10µ 16V	EL, SAL	R...47		57.11.6106	10M	
C....4		59.26.5109	1µ 16V	EL, SAL	R...48		57.11.4105	1M	
C....5		59.34.4151	150p	CER	R...49		57.11.4473	47k	
C....6		59.22.4101	100µ 16V	EL	R...50		57.11.6106	10M	
C....7		59.06.5104	100n	PETP	R...51		57.11.4105	1M	
C....8		59.22.4101	100µ 16V	EL	R...52		57.11.4105	1M	
C....9		59.06.5154	150n	PETP	Ⓞ VCA...1		1.911.290.81	STUDER VCA-BOARD	ST
C....10		59.06.5224	220n	PETP	Ⓞ VCA...2		1.911.290.81	STUDER VCA-BOARD	ST
C....11		59.06.5474	470n	PETP	XIC		53.03.0166	DIP8POL	
C....12		59.06.5104	100n	PETP					
C....13		59.06.5104	100n	PETP					
C....14		59.06.5474	470n	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					
Ⓞ 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						
R....34		57.11.4105	1M						
Ⓞ 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						

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 Ⓞ W. Markl 14/12/82

1.915.700.00 DUAL LIMITER Ⓞ A. Ho 01/04/84

1.915.700.00 DUAL LIMITER Ⓞ VO 16/07/84

1.915.700.00 DUAL LIMITER Ⓞ PA 13/01/89

1.915.700.00 DUAL LIMITER Ⓞ WY 17/01/90

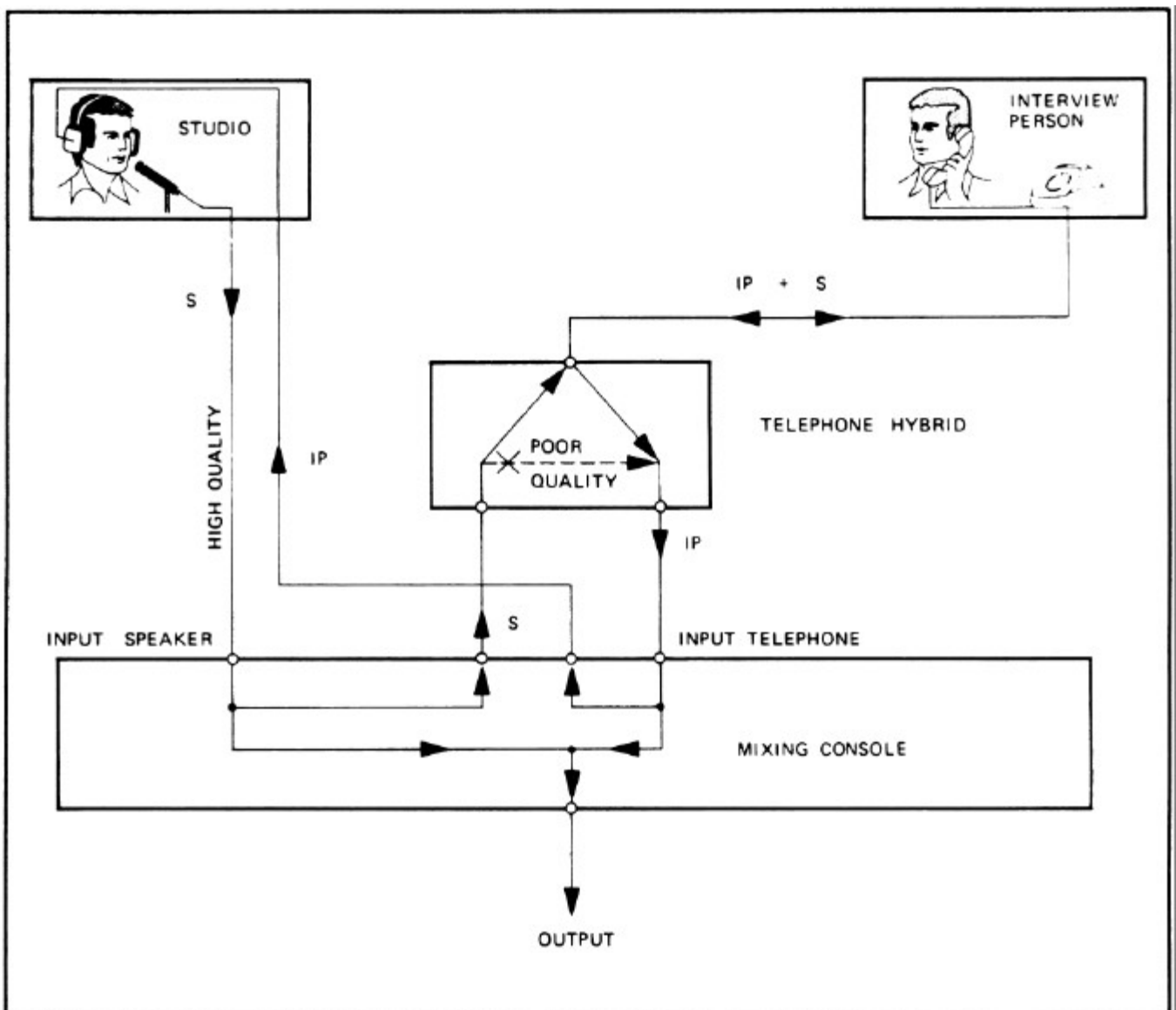
END
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2.2.11 Telephone Hybrid

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.

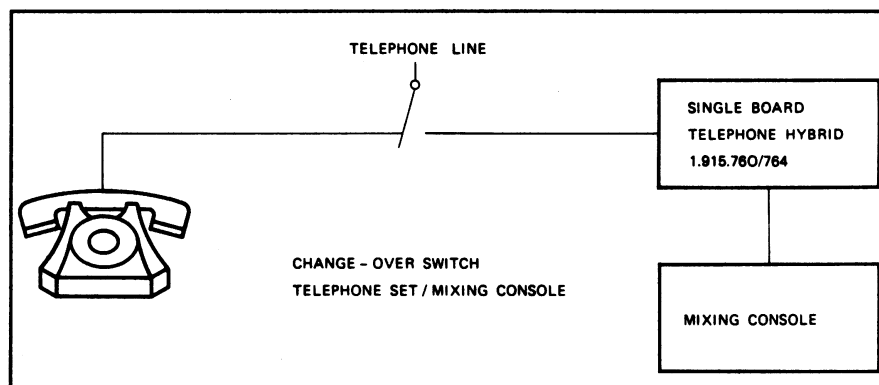


Principle of a telephone transmission via a mixing console

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 automatic 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.

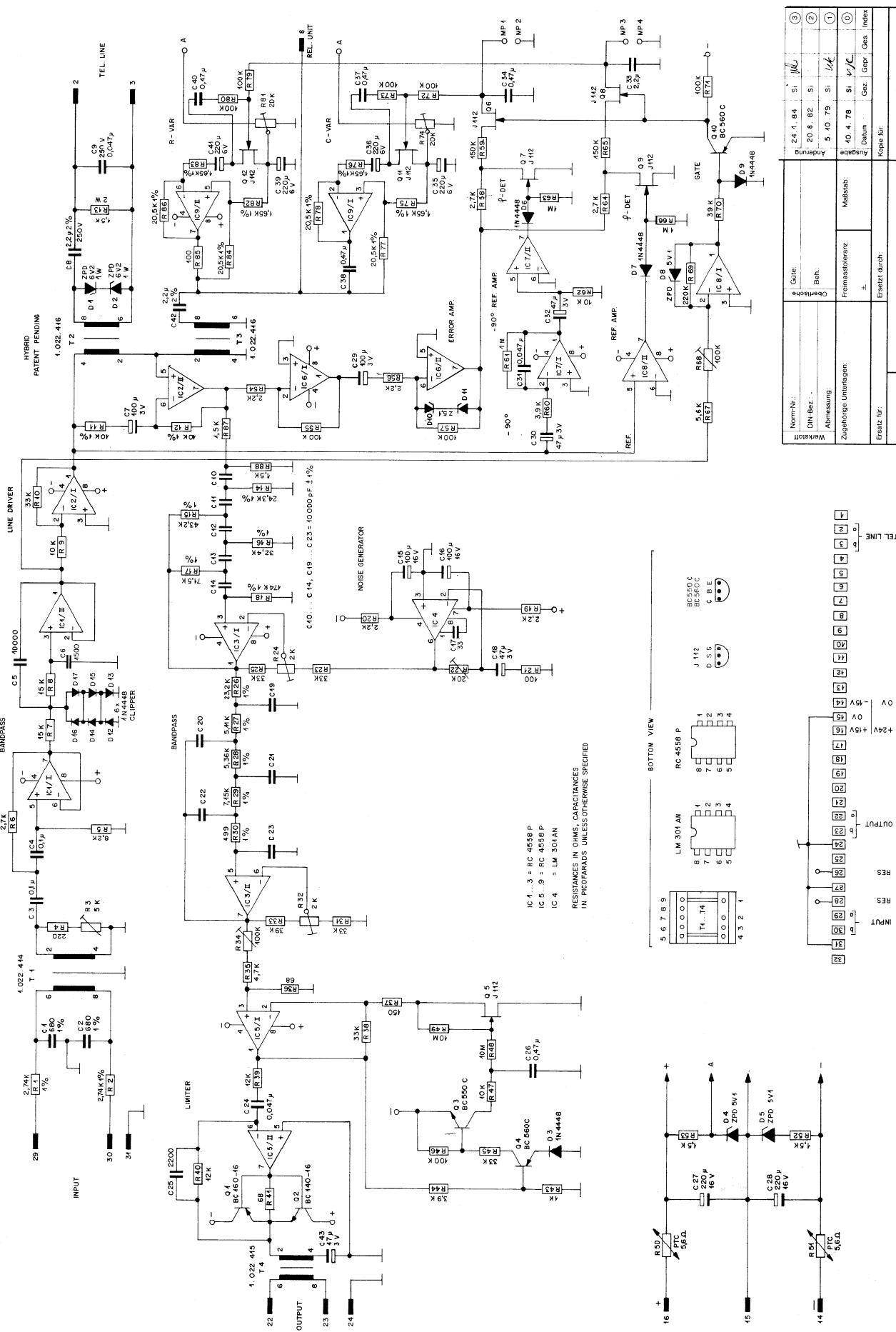
Ordering Information:

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



Norm-Nr.:	Güte:	2.4. 84	Si	1
DIN-Bez.:	Beh.:	20.6. 82	Si	2
Abmessung:	Freiassensweise:	5.10.79	Si	1
Zugehörige Unterlagen:	Maßstab:	10.4.78	Si	1
Erstellt für:	Erstellt durch:			
Automatic Telephone Hybrid (Patent pending)				
STUDER REGENDORF ZÜRICH		Nummer: SC 1.915.760/81		

Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER	Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER
	C....1	59.12.9681	680pF 1% 500V-	PS		R....4	57.11.4221	220	
	C....2	59.12.9681	680pF 1%	PS		R....5	57.11.4822	8,2k 2%	
	C....3	59.31.6104	0,1uF 10%	PE		R....6	57.11.4272	2,7k 2%	
	C....4	59.31.6104	0,1uF 10%	PE		R....7	57.11.4153	15k 2%	
	C....5	59.12.4103	0,01uF 5%	PE		R....8	57.11.4153	15k	
	C....6	59.11.6152	1500pF 5%	PC		R....9	57.11.4103	10k	
	C....7	59.22.4101	100uF 3V	EL		R....10	57.11.4333	33k	
①	C....8	1.915.760.03	2,2uF 1%	250V-	ST				
①③	C....9	59.31.8473	0,047uF 400V-	PE		R....11	57.39.1002	10k 1%	
	C....10	59.12.7103	0,01uF 1%	PS		R....12	57.39.1002	10k 1%	
	C....11	59.12.7103	0,01uF 1%	PS		R....13	57.56.5152	1,5k 2W	
	C....12	59.12.7103	0,01uF 1%	PS		R....14	57.39.2432	24,3k 1%	
	C....13	59.12.7103	0,01uF 1%	PS		R....15	57.39.4322	43,2k 1%	
	C....14	59.12.7103	0,01uF 1%	PS		R....16	57.39.3242	32,4k 1%	
	C....15	59.22.4101	100uF 16V	EL		R....17	57.39.7152	71,5k 1%	
	C....16	59.22.4101	100uF 16V	EL		R....18	57.39.1743	174k 1%	
	C....17	59.34.2330	33pF	CER		R....19	57.11.4222	2,2k	
	C....18	59.36.0470	47uF 3V	TA		R....20	57.11.4222	2,2k	
	C....19	59.12.7103	0,01uF 1%	PS		R....21	57.11.4101	100	
	C....20	59.12.7103	0,01uF 1%	PS		R....22	58.01.7203	20k LIN 10%	TR, SP
	C....21	59.12.7103	0,01uF 1%	PS		R....23	57.11.4333	33k 2%	
	C....22	59.12.7103	0,01uF 1%	PS		R....24	58.01.8202	2k LIN 10%	TR, SP
	C....23	59.12.7103	0,01uF 1%	PS		R....25	57.11.4333	33k 2%	
	C....24	59.12.4473	0,047uF	PE		R....26	57.39.2322	23,2k 1%	
	C....25	59.32.2222	2200pF	CER		R....27	57.39.5111	5,11k 1%	
	C....26	59.02.0474	0,47uF 5%	PC		R....28	57.39.5361	5,36k 1%	
	C....27	59.22.4221	220uF 16V	EL		R....29	57.39.7151	7,15k 1%	
	C....28	59.22.4221	220uF 16V	EL		R....30	57.39.4990	499 1%	
	C....29	59.22.4101	100uF 3V	EL		R....31	57.11.4333	33k 2%	
	C....30	59.36.0470	47uF 3V	TA		R....32	58.01.8202	2k LIN 10%	TR, SP
	C....31	59.12.4473	0,047uF	PE		R....33	57.11.4393	39k 2%	
	C....32	59.36.0470	47uF 3V	TA		R....34	58.01.7104	100k LIN 10%	TR, SP
	C....33	59.02.2225	2,2uF	PC		R....35	57.11.4472	4,7k	
①	C....34	59.02.0474	0,47uF	PE		R....36	57.11.4680	68	
	C....35	59.22.2221	220uF 6V	EL		R....37	57.11.4151	150	
	C....36	59.22.2221	220uF 6V	EL		R....38	57.11.4333	33k	
	C....37	59.02.0474	0,47uF	PC		R....39	57.11.4123	12k	
	C....38	59.02.0474	0,47uF	PC		R....40	57.11.4123	12k	
	C....39	59.22.2221	220uF	EL		R....41	57.11.4680	68	
	C....40	59.02.0474	0,47uF	PC		R....42			
	C....41	59.22.2221	220uF 6V	EL		R....43	57.11.4102	1k	
①	C....42	1.915.760.03	2,2uF 1%	250V-	ST	R....44	57.11.4392	3,9k	
	C....43	59.36.0470	47uF 3V	TA		R....45	57.11.4333	33k	
	D....1	50.04.1511	U ₂ 6,2V	ZPD 6V2 1W		R....46	57.11.4104	100k	
	D....2	50.04.1511	U ₂ 6,2V	ZPD 6V2 1W		R....47	57.11.4103	10k	
	D....3	50.04.0125	1N4448		SI	R....48	57.02.5106	10M	
	D....4	50.04.1112	U ₂ 5,1V	ZPD 5V1 0,4W		R....49	57.02.5106	10M	
	D....5	50.04.1112	U ₂ 5,1V	ZPD 5V1 0,4W		R....50	57.99.0209	5,6kΩ PTC 2322 662 91005	PH
	D....6	50.04.0125	1N4448		SI	R....51	57.99.0209	5,6kΩ PTC	PH
	D....7	50.04.0125	1N4448		SI	R....52	57.11.4152	1,5k	
	D....8	50.04.1112	U ₂ 5,1V	ZPD 5V1 0,4W		R....53	57.11.4152	1,5k	
	D....9	50.04.0125	1N4448		SI	R....54	57.11.4222	2,2k	
②	D....10	50.04.1112	U ₂ 5,1V	ZPD 5V1 0,4W		R....55	57.11.4104	100k	
	D....11	50.04.1112	U ₂ 5,1V	ZPD 5V1 0,4W		R....56	57.11.4222	2,2k	
	D....12	50.04.0125	1N4448		SI	R....57	57.11.4104	100k	
	D....13	50.04.0125	1N4448		SI	R....58	57.11.4272	2,7k	
	D....14	50.04.0125	1N4448		SI	R....59	57.11.4154	150k	
	D....15	50.04.0125	1N4448		SI	R....60	57.11.4392	3,9k	
	D....16	50.04.0125	1N4448		SI	R....61	57.11.4105	1M	
	D....17	50.04.0125	1N4448		SI	R....62	57.11.4103	10k	
	IC....1	50.09.0107	RC4559NB	DUAL OP AMP	TI, RA	R....63	57.11.4105	1M	
	IC....2	50.09.0107	RC4559NB			R....64	57.11.4272	2,7k	
	IC....3	50.09.0107	RC4559NB			R....65	57.11.4154	150k	
	IC....4	50.05.0144	LM301AN	OP AMP	NS	R....66	57.11.4105	1M	
	IC....5	50.09.0107	RC4559NB			R....67	57.11.4562	5,6k	
	IC....6	50.09.0107	RC4559NB			R....68	58.01.7104	100k LIN 10%	TR, SP
	IC....7	50.09.0107	RC4559NB			R....69	57.11.4224	220k	
	IC....8	50.09.0107	RC4559NB			R....70	57.11.4393	39k	
	IC....9	50.09.0107	RC4559NB			R....71	57.11.4104	10k	
	Q....1	50.03.0315	BC160-16		SIE, F	R....72	57.11.4104	100k	
	Q....2	50.03.0316	BC140-16		SIE, F	R....73	57.11.4104	100k	
	Q....3	50.03.0497	BC550-C		T, ITT	R....74	58.01.8203	20k LIN 10%	TR, SP
	Q....4	50.03.0496	BC560-C		T, ITT	R....75	57.39.1651	1,65k 1%	
	Q....5	50.03.0350	J112		SIX, NS	R....76	57.39.1651	1,65k 1%	
	Q....6	50.03.0350	J112		SIX, NS	R....77	57.39.2052	20,5k 1%	
	Q....7	50.03.0350	J112		SIX, NS	R....78	57.39.2052	20,5k 1%	
	Q....8	50.03.0350	J112		SIX, NS	R....79	57.11.4104	100k	
	Q....9	50.03.0350	J112		SIX, NS	R....80	57.11.4104	100k	
	Q....10	50.03.0496	BC560-C		T, ITT	R....81	58.01.8203	20k LIN 10%	TR, SP
	Q....11	50.03.0350	J112		SIX, NS	R....82	57.39.1651	1,65k 1%	
	Q....12	50.03.0350	J112		SIX, NS	R....83	57.39.1651	1,65k 1%	
	R....1	57.39.2741	2,7k 1%			R....84	57.39.2052	20,5k 1%	
	R....2	57.39.2741	2,7k 1%			R....85	57.11.4101	100 2%	
①	R....3	58.01.7502	5k LIN	TR, SP		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

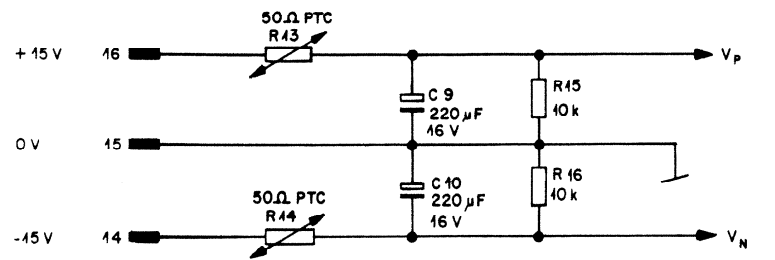
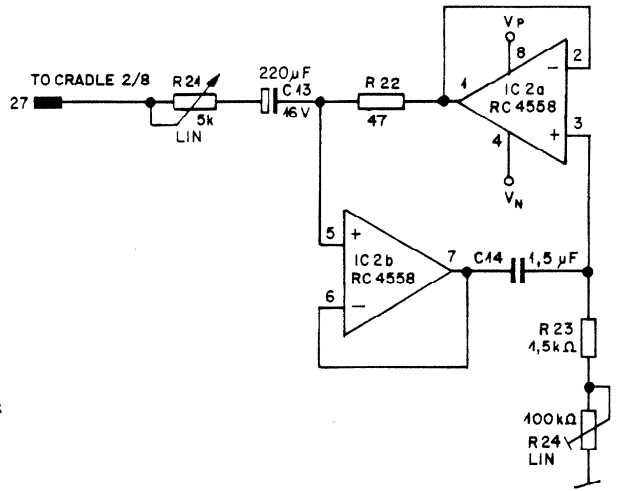
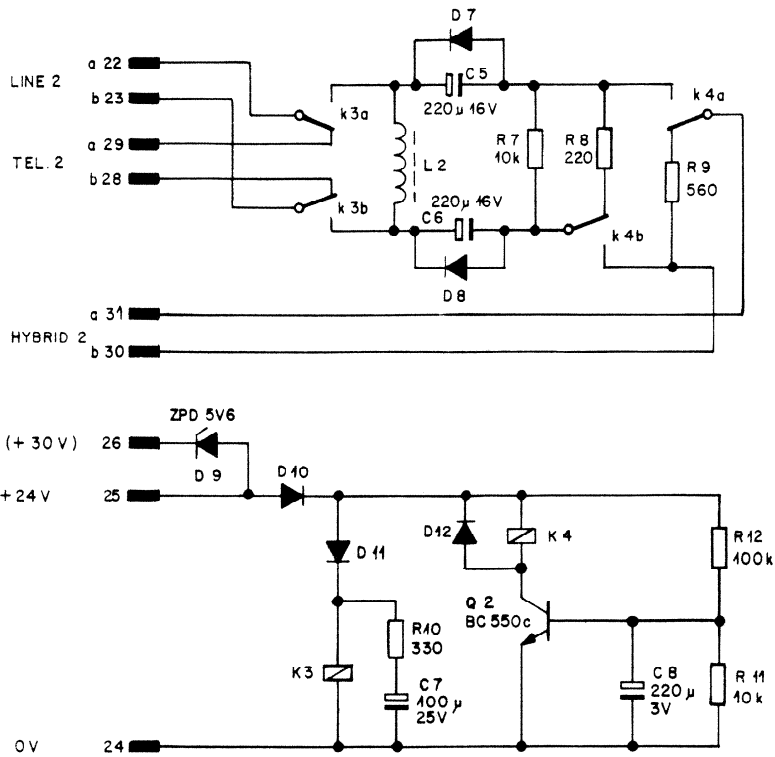
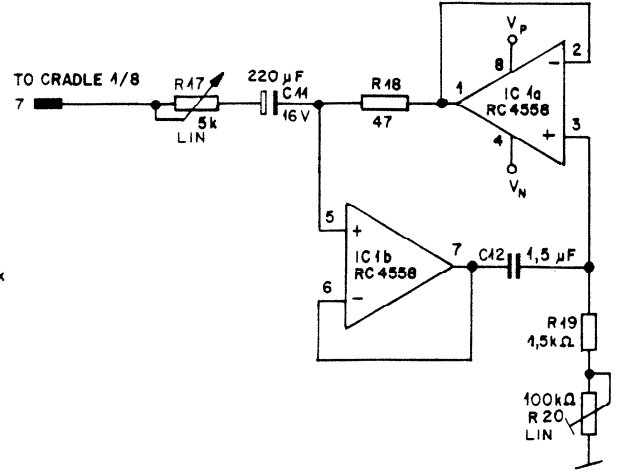
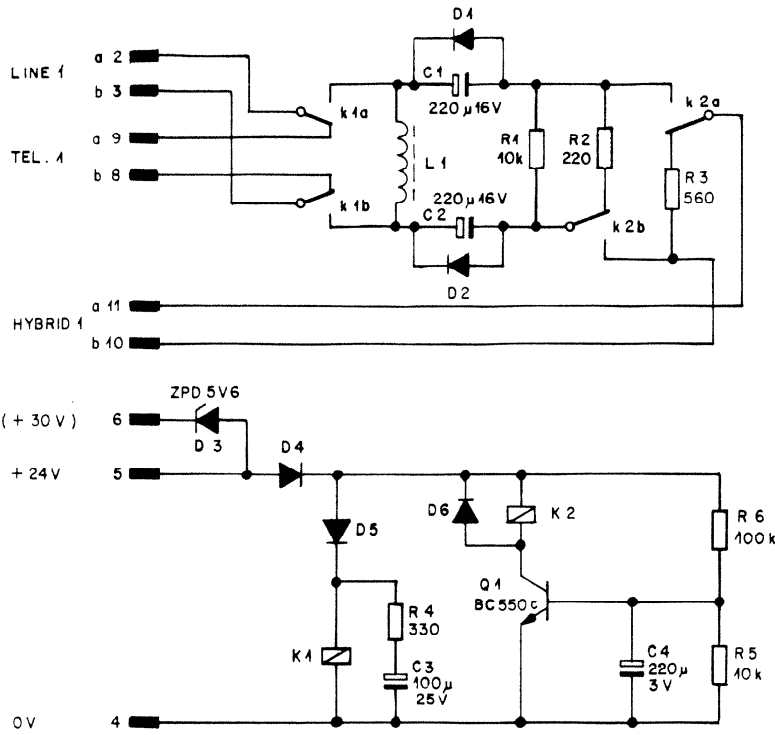
CER=Ceramic, EL=Electrolytic, TA=Tantalum, PE=Polyester, PS=Polystyrene, PC=Polycarbonate

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

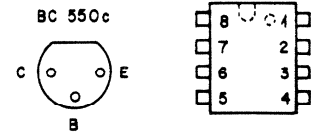
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1.915.760.81 TELEPHONE HYBRID	② HO 11/05/79
1.915.760.81 TELEPHONE HYBRID	③ HO 10/09/80
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1.915.760.81 TELEPHONE HYBRID	⑤ VO 20/06/82

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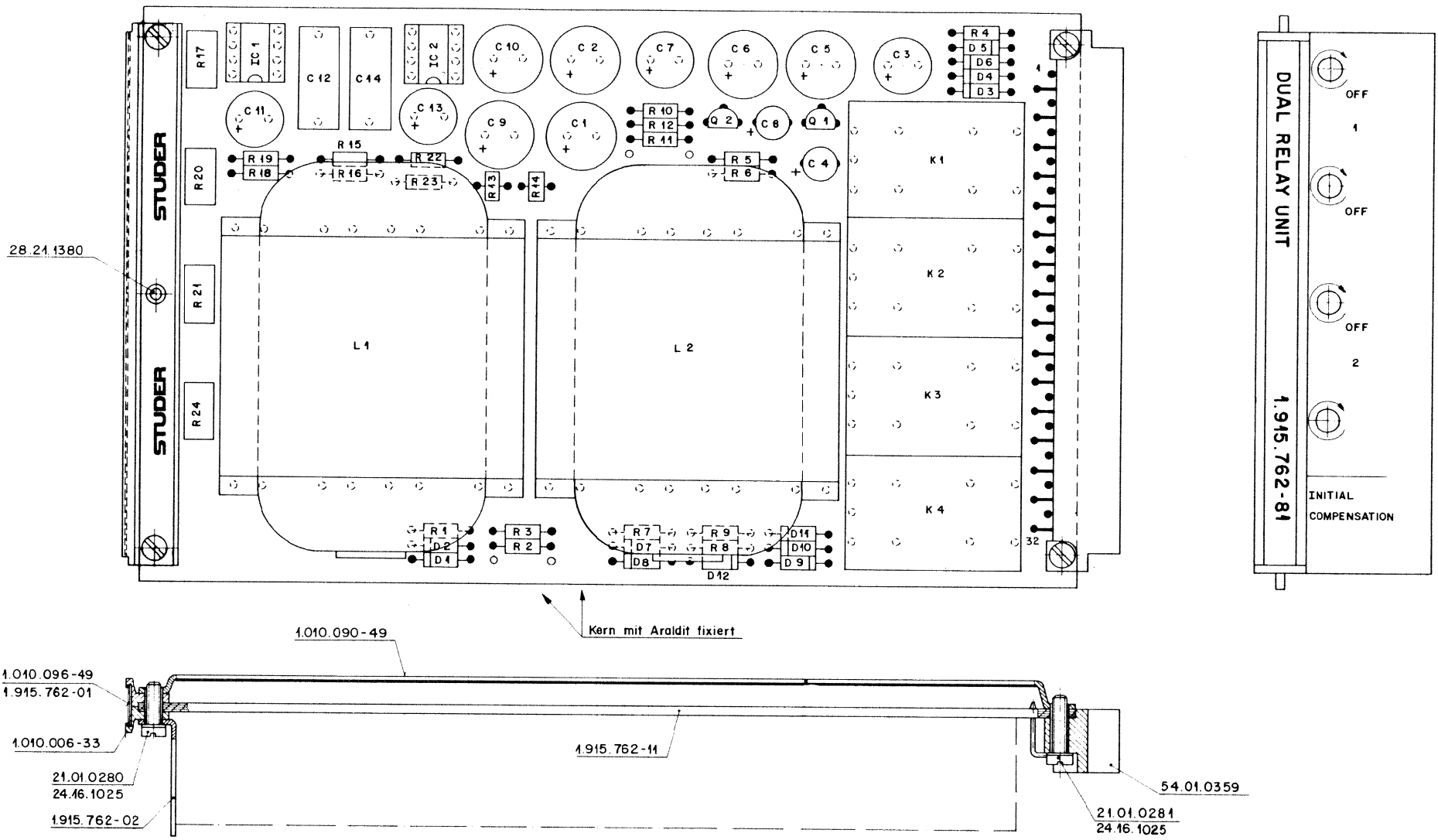


BOTTOM VIEW
RC 4558



D = 1N 4448
L1, L2 = 1.022.525

Ersatz für:	Ersetzt durch:	Kopie für:
STUDER REGENSDORF ZÜRICH	Benennung: DUAL RELAY UNIT	Nummer: SC 1.915.762-81
Ausgabe	16. 2. 79	Si
Datum	Gez.	Gepr. Ges. Index



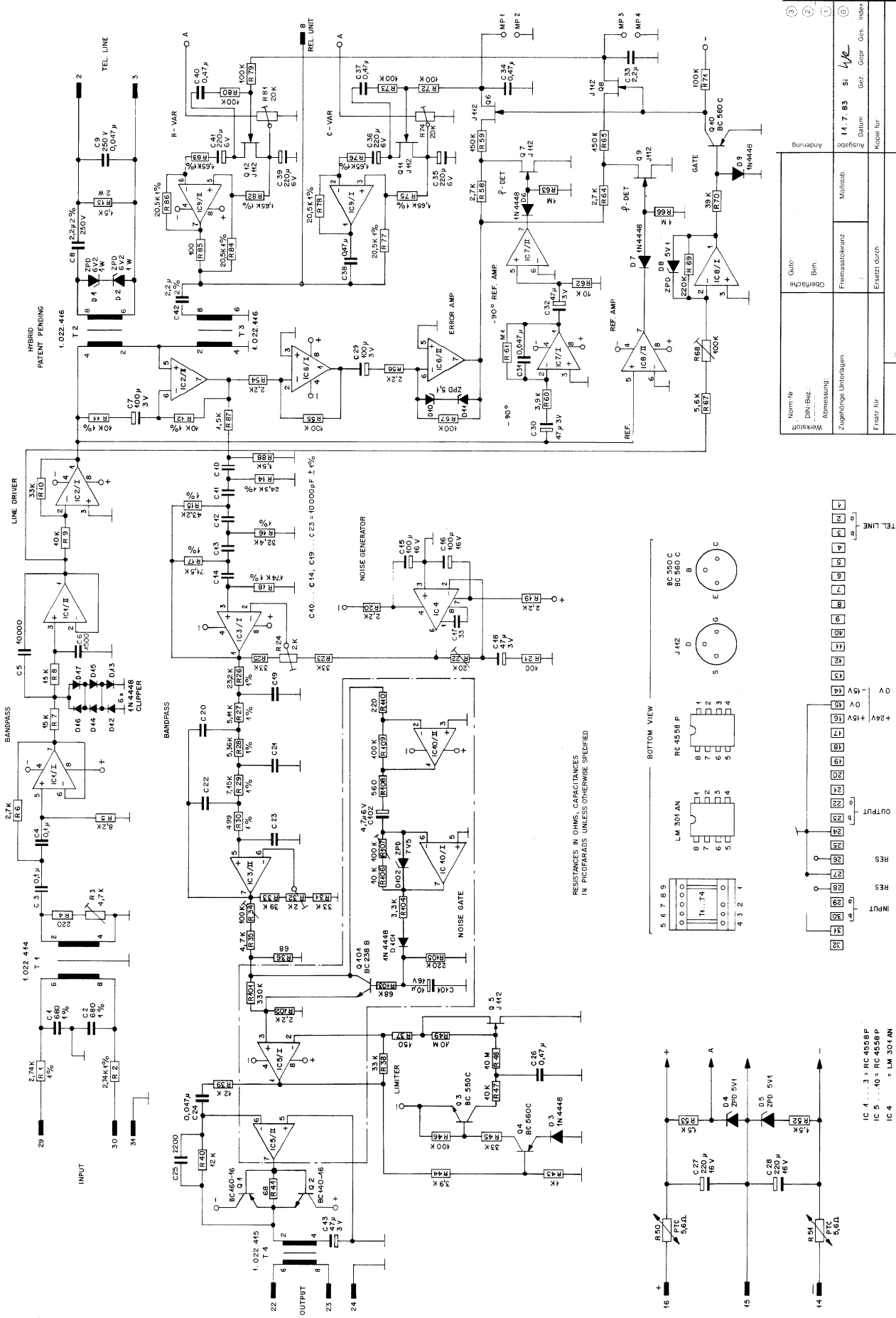
Werkstoff Norm Nr DIN-Bez Abmessung	Güte- Oberfläche Ben	Änderung 4.4.84 A.Ho <i>Vr Vr</i>	
Zugehörige Untertagen PL, AL	Freimasstoleranz	Maßstab 2:1	Ausgabe 18.7.79 Ho <i>Muy Vr</i> 0.
Ersatz für	Ersetzt durch	Datum Gez Gepr Ges Index	
STUDER REGENSDORF ZÜRICH		Benennung Dual Relay Unit	
		Nummer 1.915.762-81	

INDI	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
C	1	59.22.4221	220 μ F	16 V EL	
C	2	59.22.4221	220 μ F	16 V EL	
C	3	59.22.5101	100 μ F	25V EL	
C	4	59.30.1221	220 μ F	3V TA	
C	5	59.22.4221	220 μ F	16 V EL	
C	6	59.22.4221	220 μ F	16 V EL	
C	7	59.22.5101	100 μ F	25V EL	
C	8	59.30.1221	220 μ F	3V TA	
C	9	59.22.4221	220 μ F	16 V EL	
C	10	59.22.4221	220 μ F	16 V EL	
C	11	59.22.2221	220 μ F	6V EL	
C	12	59.05.1155	1,5 μ F	63V MPC	
C	13	59.22.2221	220 μ F	6V EL	
C	14	59.05.1155	1,5 μ F	63V 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

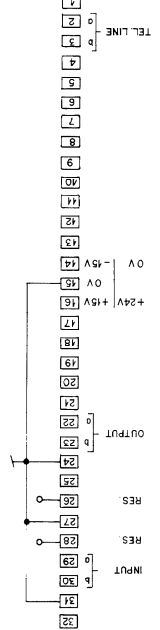
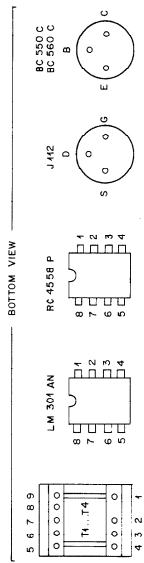
INDI	DATE	NAME		
④			ITT INTERMETALL	ST STUDER
③			NA NATIONAL	TI TEXAS INSTRUMENTS
②	15.9.82	7ff	P PHILIPS	EL ELECTROLYTIC
①	11.3.81	16	RA RAYTHEON	TA TANTALLUM
○	18.7.79	WY	S SIEMENS	MPC POLYCARBONATE

INDI	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	10k		
R	6	57.11.4104	100k		
R	7	57.11.4103	10k		
R	8	57.11.4221	220		
R	9	57.11.4561	560		
R	10	57.11.4331	330		
R	11	57.11.4103	10k		
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 8pins	

INDI	DATE	NAME		
④				
③				
②	15.9.82	7ff		
①	11.3.81	16		
○	18.7.79	WY		



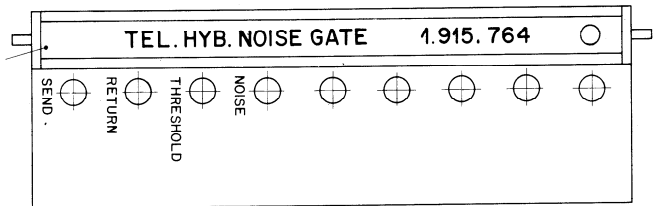
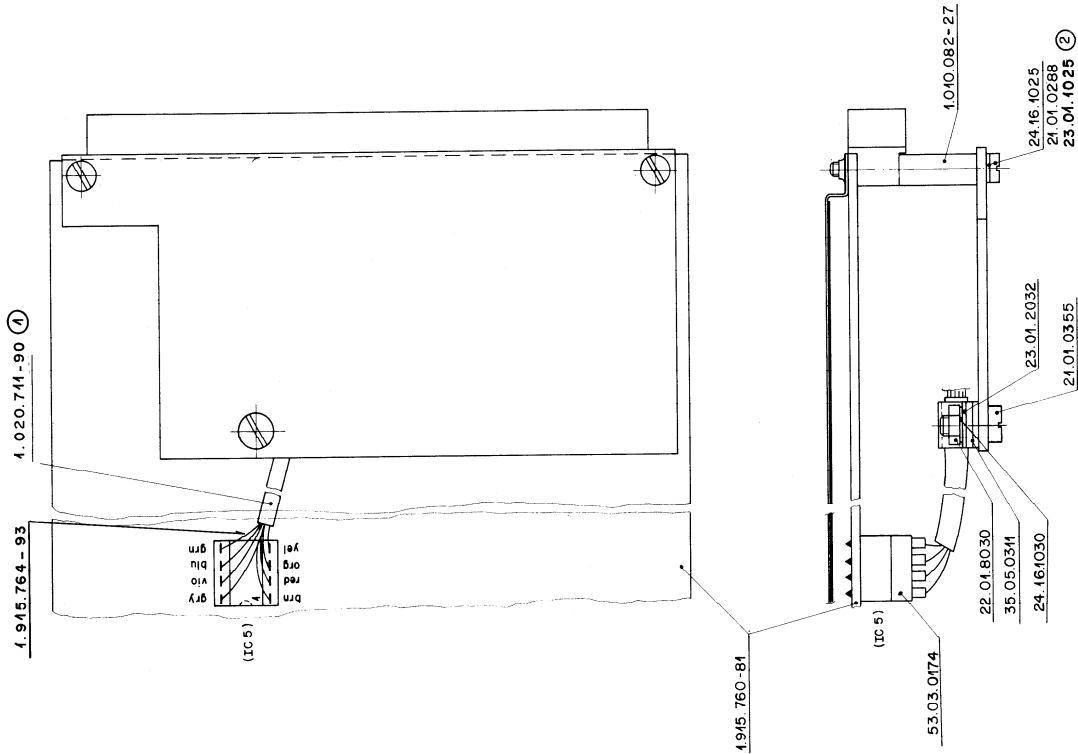
RESISTANCES IN OHMS, CAPACITANCES IN PICOFARADS UNLESS OTHERWISE SPECIFIED



IC 1 ... 3 = RC 4558 P
 IC 5 ... 10 = RC 4558 P
 IC 4 = LM 301 AN

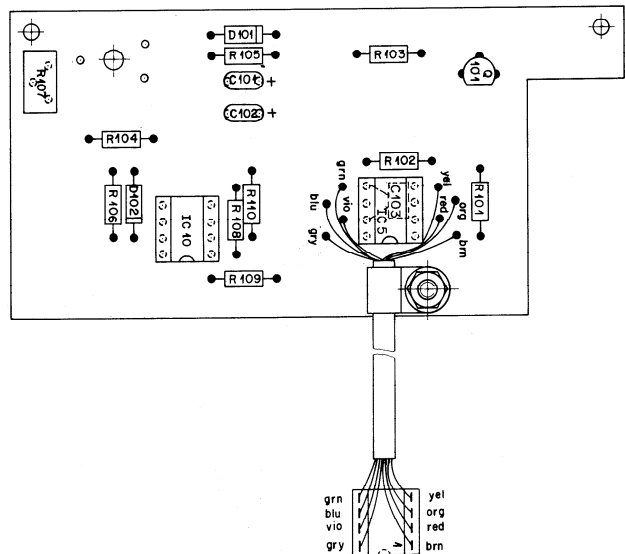
Norm-Nr.	Guelt.	Maßstab	1:1, 7:83	Si	4/8
DIN-Bez.	Oberfläche	Fremdsprachen.	Datum	Sez	Corr
Abmessung:	Ersatz durch	Kopie für			
Zugehörige Unterlagen					
Automatic Telephone Hybrid					
(Patent pending)					
STUDER REGENSDORF ZÜRICH					
Nummer SC 1.915.764					

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
⊙ 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
IC...	10	50.09.0107	RC4559	DUAL OP AMP
Q...	1	50.03.0436	BC237B	NPN
		53.03.0174		ADAPTER PLUG
		1.915.760.81		TEL. HYBRID KOMPL
		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	SPACER
		1.010.082.27	3,2/5x13	SPACER
		1.915.764.01		LABEL
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	

TI, RA
TI, RA
PH, SIE, MOT
ST
ST



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 ⊙ VO 19/10/87

END
→

Nijm Nr	Guite	49.40.87	Si	Ge	31
Werkstoff	Übersicht	27.5.87	Si	Ge	27
WZ-Nr	Beh	3.6.86	Ho	Ge	1
Abmessung					
Zugehörige Unterlagen	Freiassoziation	Mafsstab			
PL, LL		2-4			
Ersetzt für	Ersetzt durch	Kopie für			
STUDER REGENSDORF ZÜRICH	Telephon Hybrid with Noise Gate	Nr.	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.

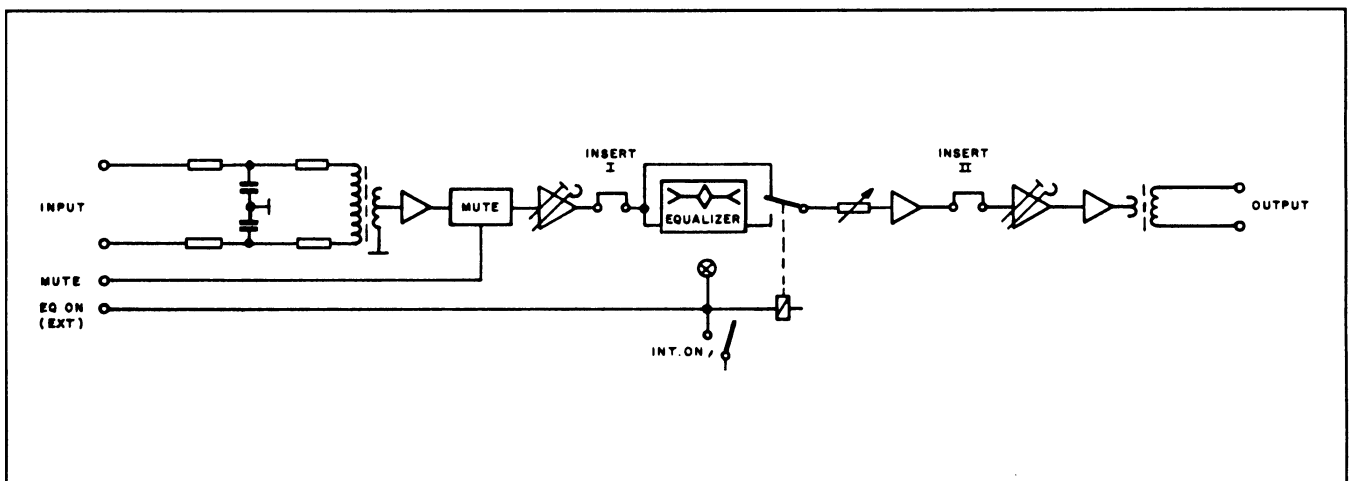
The frequency response can be varied in three bands over a ± 15 dB range, as shown by the respective graphs below. Gain is normally set to unity, with 10 dB of continuously variable gain or attenuation available. Remote controlled muting or bypassing is possible.

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.



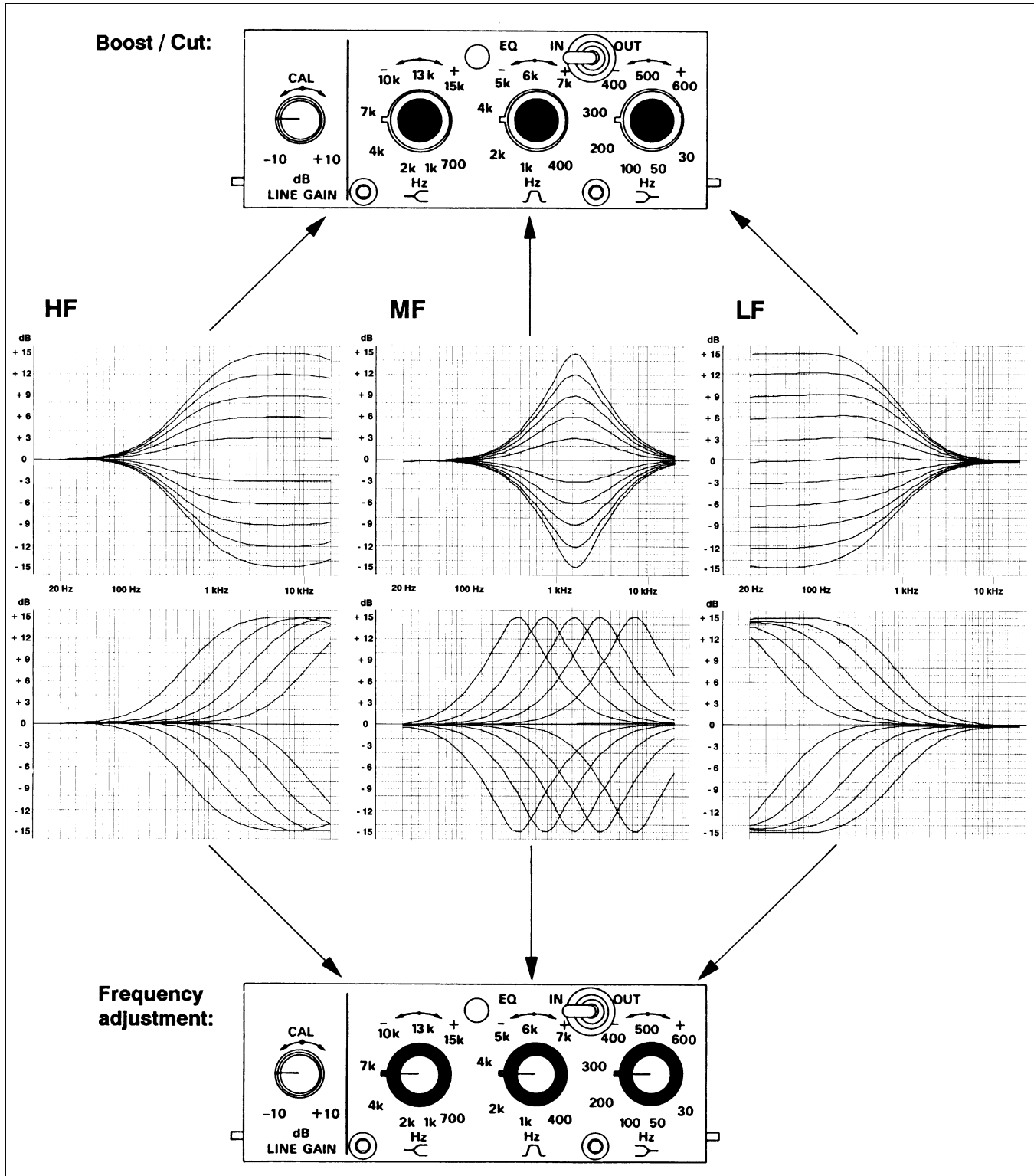
When installed vertically, each equalizer occupies 8 M units.

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



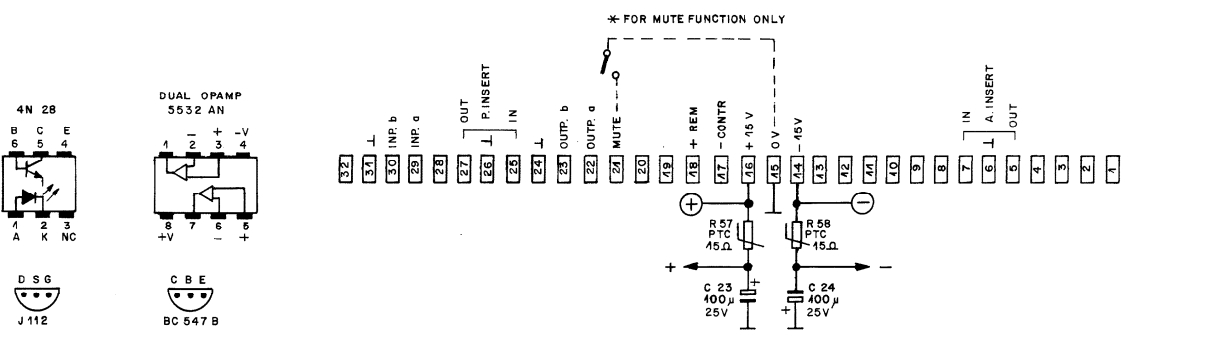
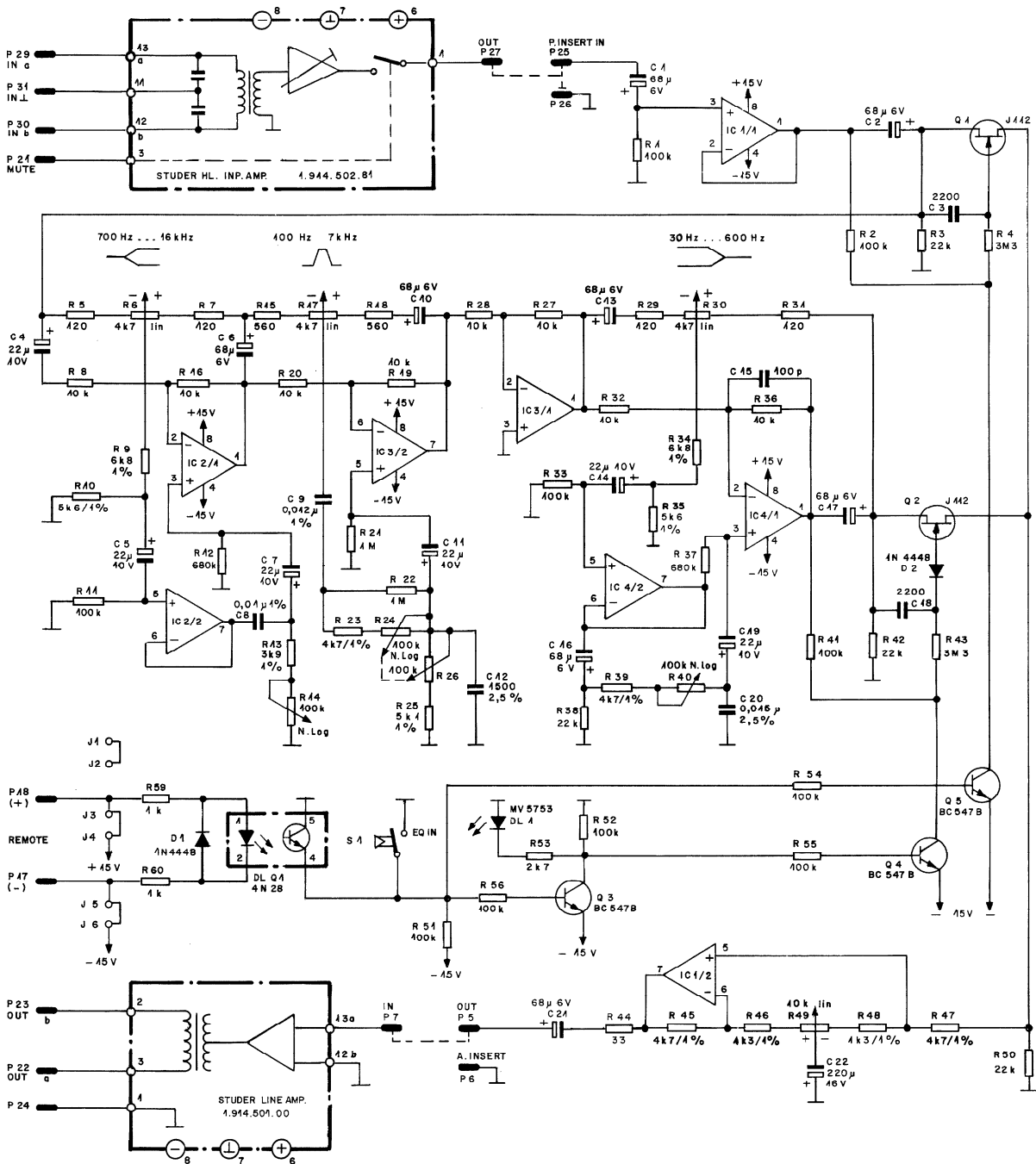
Parametric filter diagrams:

- 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

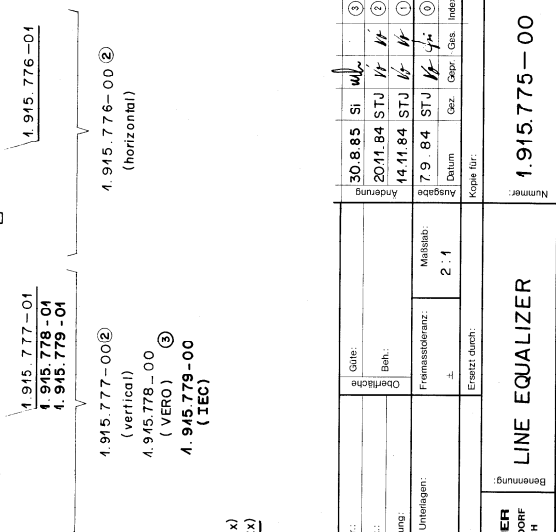
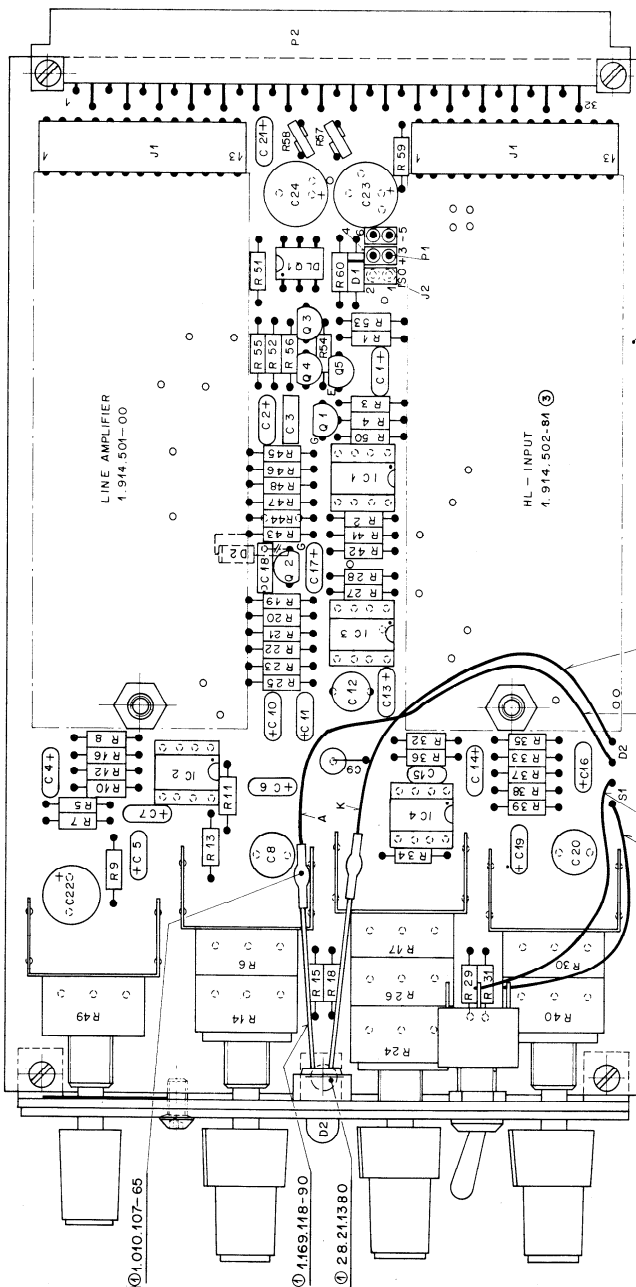
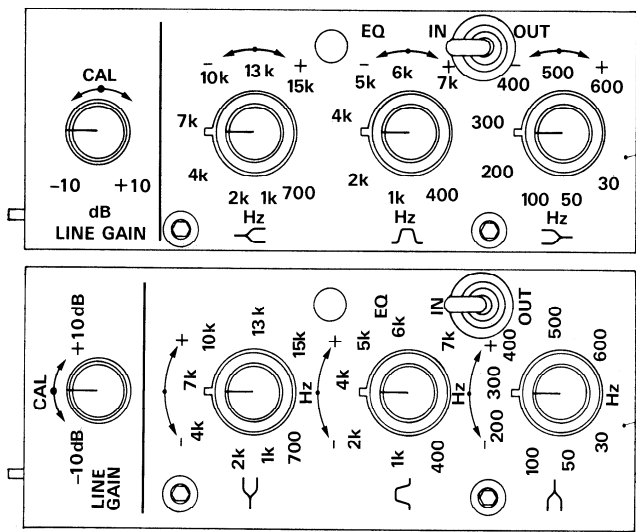
Input:		balanced and floating , with RF filter
	Impedance	> 10 kW
	Clipping point	+24 dBu (12.3 V)
	Common mode rejection	> 50 dB , unbalanced to ground
Output:		balanced and floating
	Minimum permissible load	200 W
	Maximum output level	+24 dBu (12.3 V)
	Frequency response	±0.2 dB , 30 Hz...60 kHz, 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:	<i>We</i>	<i>We</i>	<i>fr</i>	<i>ur</i>	HORIZONTAL	1.945.776
STUDER REGENSDORF ZÜRICH					LINE EQUALIZER BOARD	
					SC 1.915.775	

LINE EQUALIZER



Norm-Nr.:	30.885	Si	14	1	3
DIN-Bz.:	20/1.84	STU	1/1	1/1	1/1
Abmessung:	14/1.84	STU	1/1	1/1	1/1
Zugehörige Unterlagen:	7.9.84	STU	1/1	1/1	1/1
Maßstab:	Datum	Gez.	Gez.	Gez.	Index
PL	2.1				
Erstellt durch:	Kopie für:				
STUDER REGENDORF ZÜRICH					1.915.775-00

Leiter auf Lötseite aufgetrennt



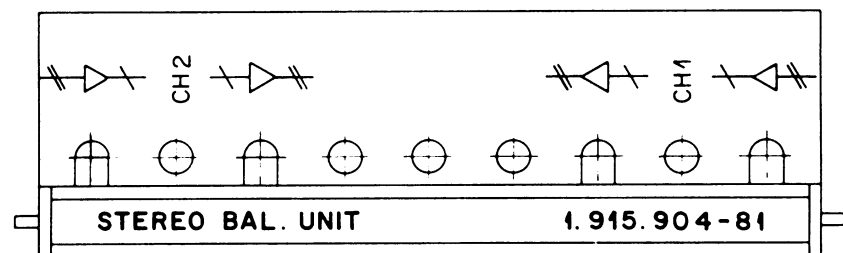
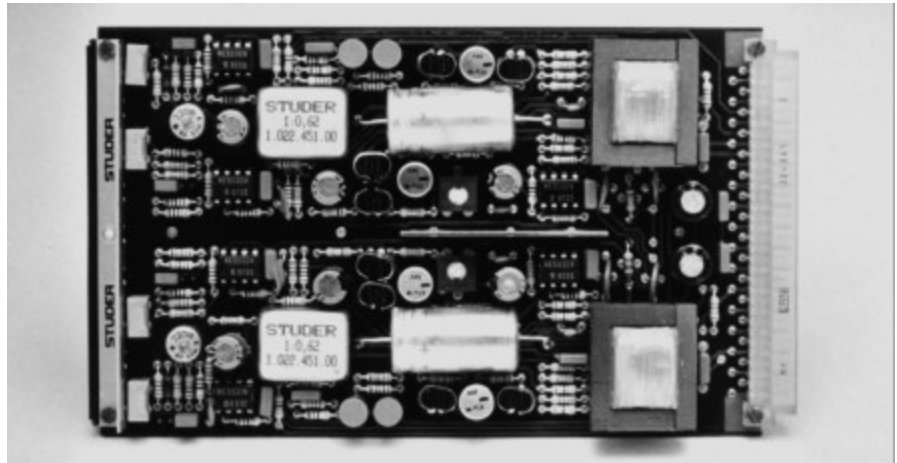
LINE EQUALIZER

Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER	Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER
C.....1	59.26.0680	68 uF	20%	6.3V SAL	R....43	57.11.5335	3.3 MOhm	5%	0.25W MF
C.....2	59.26.0680	68 uF	20%	6.3V SAL	R....44	57.11.4330	33 Ohm	2%	0.25W MF
C.....3	59.06.0222	2.2nF	10%	63V PETP	R....45	57.11.3472	4.7 kOhm	1%	0.25W MF
C.....4	59.26.1220	22 uF	20%	10V SAL	R....46	57.11.3132	1.3 kOhm	1%	0.25W MF
C.....5	59.26.1220	22 uF	20%	10V SAL	R....47	57.11.3472	4.7 kOhm	1%	0.25W MF
C.....6	59.26.0680	68 uF	20%	6.3V SAL	R....48	57.11.3132	1.3 kOhm	1%	0.25W MF
C.....7	59.26.1220	22 uF	20%	10V SAL	R....49	1.010.001.58	10 kOhm	20%	lin. variable resistor
C.....8	59.05.1103	10nF	1%	63V PS	R....50	57.11.4223	22 kOhm	2%	0.25W MF
C.....9	59.12.7123	12nF	1%	63V PS	R....51	57.11.4104	100 kOhm	2%	0.25W MF
C.....10	59.26.0680	68 uF	20%	6.3V SAL	R....52	57.11.4104	100 kOhm	2%	0.25W MF
C.....11	59.26.1220	22 uF	20%	10V SAL	R....53	57.11.4272	2.7 kOhm	2%	0.25W MF
C.....12	59.05.2152	1.5nF	2.5%	160V PP	R....54	57.11.4104	100 kOhm	2%	0.25W MF
C.....13	59.26.0680	68 uF	20%	6.3V SAL	R....55	57.11.4104	100 kOhm	2%	0.25W MF
C.....14	59.26.1220	22 uF	20%	10V SAL	R....56	57.11.4104	100 kOhm	2%	0.25W MF
C.....15	59.32.1101	100pF	10%	400V CE	R....57	57.92.1121	120 mA		R-PTC 56V 15 ohm Philips
C.....16	59.26.0680	68 uF	20%	6.3V SAL	R....58	57.92.1121	120 mA		R-PTC 56V 15 ohm Philips
C.....17	59.26.0680	68 uF	20%	6.3V SAL	R....59	57.11.4102	1 kOhm	2%	0.25W MF
C.....18	59.06.0222	2.2nF	10%	63V PETP	R....60	57.11.4102	1 kOhm	2%	0.25W MF
C.....19	59.26.1220	22 uF	20%	10V SAL	S....1	55.01.0111	ON-ON		SWITCH C & K
C.....20	59.05.2153	15nF	2.5%	63V PP	V....1	1.914.501.00			LINE AMPLIFIER St
C.....21	59.26.0680	68 uF	20%	6.3V SAL	V....2	1.914.502.00			HL. INPUT AMP. (FLOATING) St
C.....22	59.22.3221	220uF	20%	10V EL	XIC...1	53.03.0166	OIL	8-PIN	4X
C.....23	59.22.5101	220uF	20%	25V EL	=====				
C.....24	59.22.5101	100 uF	20%	25V EL	1.915.775.00	LINE EQUALIZER - BOARD			
D....1	50.04.0125	1N4448		any	1.915.776.00	LINE EQUALIZER - HORIZONTAL			
D....2	50.04.0125	1N4448		any	1.915.777.00	LINE EQUALIZER - VERTICAL			
DL...1	50.04.2111	MV5753	red	GI,HP	=====				
DLQ...1	50.99.0126	4N28			CE=Ceramic, CF=Carbon Film, EL=Electrolytic, MF=Metal Film, PE=Polyester, PP=Polypropylen, PS=Polystyrol				
IC....1	50.09.0106	NE5532AN	dual op. amp.	RA,SIG	MANUFACTURER: Bu=Burndy, Ex=Exar, Fc=Fairchild, GI=General Instrument				
IC....2	50.09.0106	NE5532AN	dual op. amp.	RA,SIG	HP=Hewlett Packard, ITT=Intermetall, Mot=Motorola, Nat=National				
IC....3	50.09.0106	NE5532AN	dual op. amp.	RA,SIG	{Matsushita}, NS=National Semiconductors, Ph=Philips,				
IC....4	50.09.0106	NE5532AN	dual op. amp.	RA,SIG	Ra=Raytheon, Sig=Signetics, Six=Siliconix, St=Studer,				
J....1	54.01.0309	13 PIN-JUMPER	CIS 2X		TI=Texas Instrument				
J....2	54.01.0021				1.915.775.00	LINE-EQUALIZER BOARD			FRI 84/09/0600
P....1	54.01.0020	J-PLUG	6X		1.915.775.00	LINE-EQUALIZER BOARD			FRI 84/11/2001
P....2	54.01.0359	2*16	EURO - PLUG		=====				
MP...1	42.01.0203	GRY	UPPER KNOB	3X,4/10	END				
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						
MP...7	1.915.776.01		FRONT PANEL HORIZONTAL						
MP...8	1.915.777.01		FRONT PANEL HORIZONTAL						
MP...9	1.915.777.01		FRONT PANEL VERTICAL						
MP...10	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					

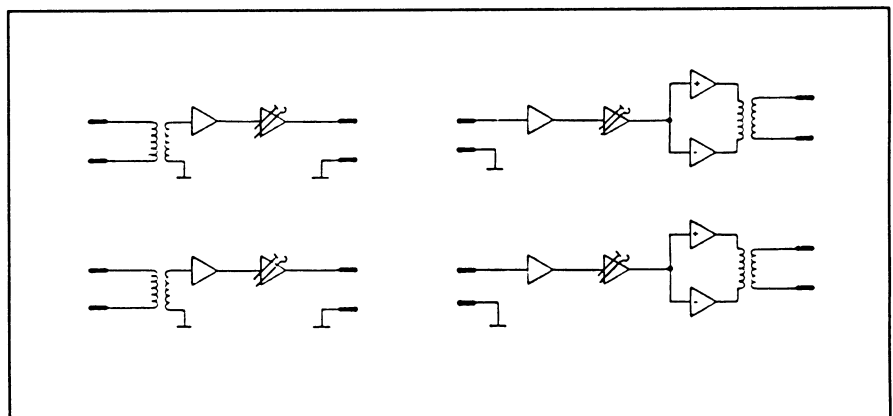
2.2.13 Dual Balancing Unit/Dual Line Amplifier

1.915.904

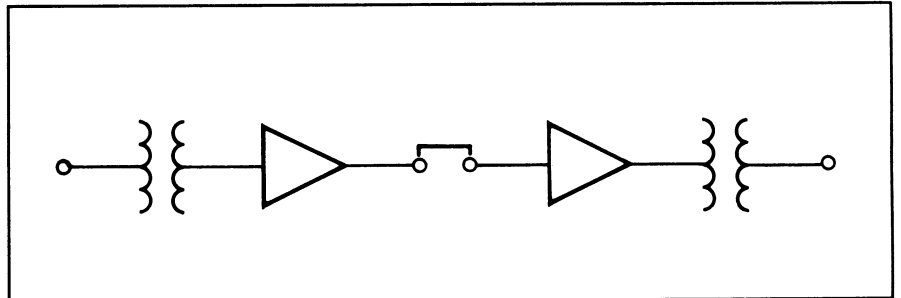
In professional audio work it is not uncommon that equipment with unbalanced input or output configuration must be connected to a system that is based on a strictly balanced design. The Dual Balancing Unit is the ideal component if the requirement of matching unbalanced to balanced equipment or vice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



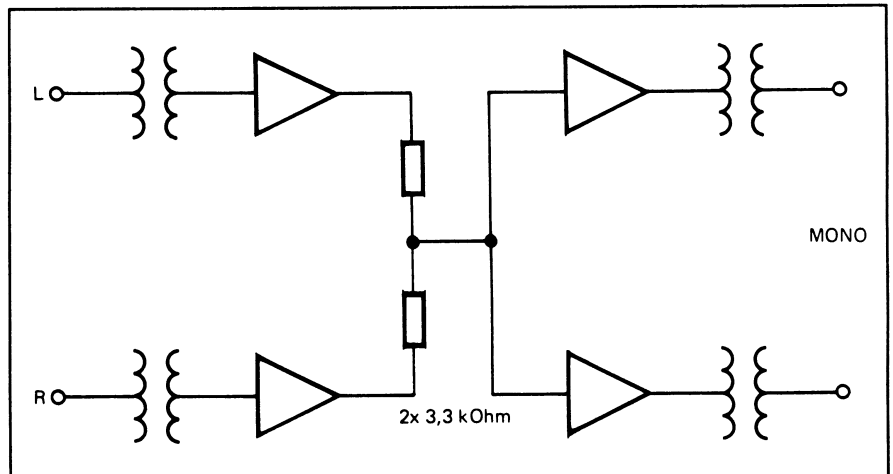
The Dual Balancing Unit consists of one Euro-card which contains four separate circuits to accommodate unbalanced-to-balanced or balanced-to-unbalanced matching in a stereo system. It is the ideal choice for applications in which consumer-type stereo equipment has to be integrated into a professional 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	≥ 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

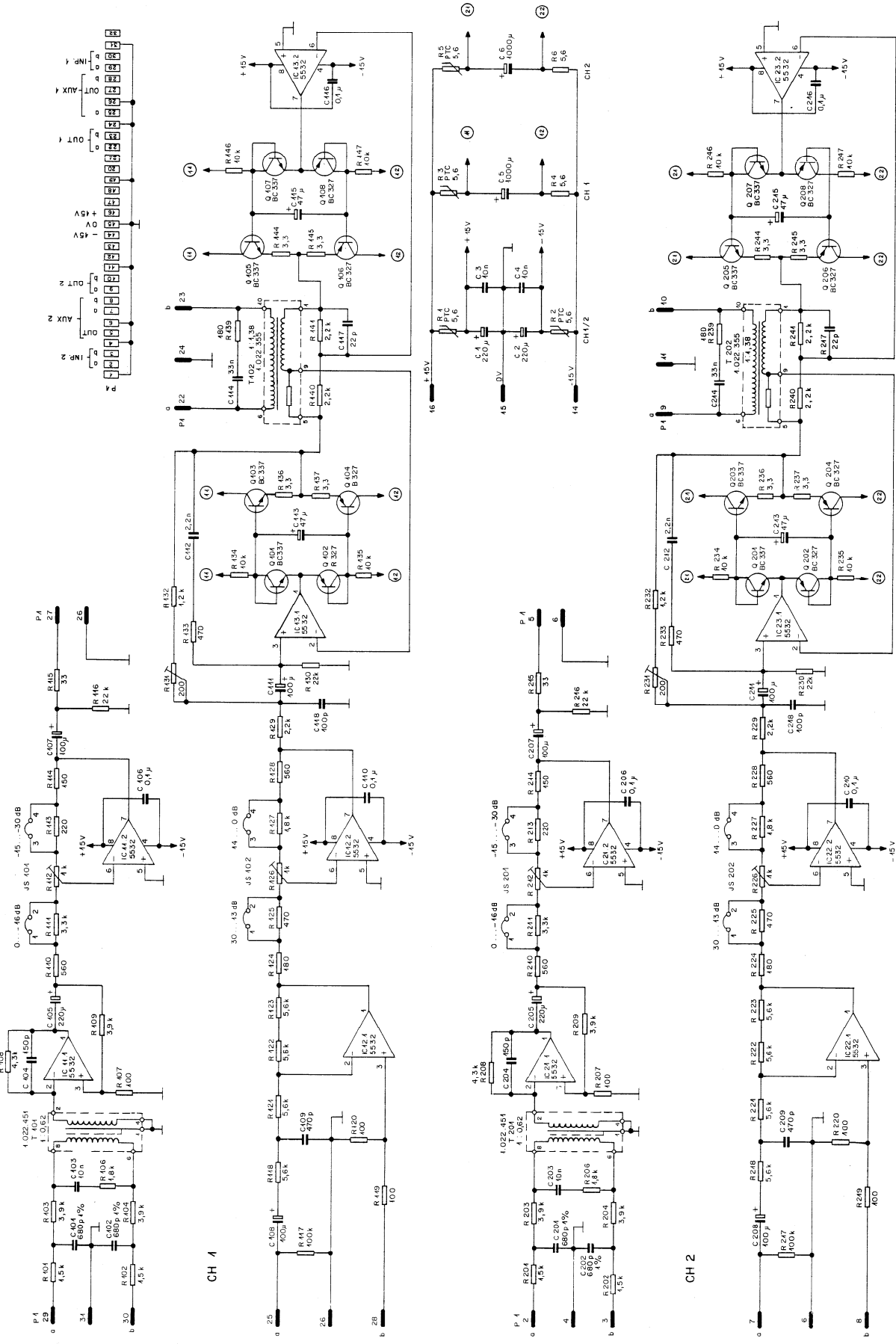
Supply: ±15 V (70 mA, idling; 170 mA, each channel +24 dBu into 200 Ω)

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

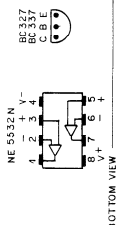
Ordering Information:

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

DUAL BALANCING UNIT

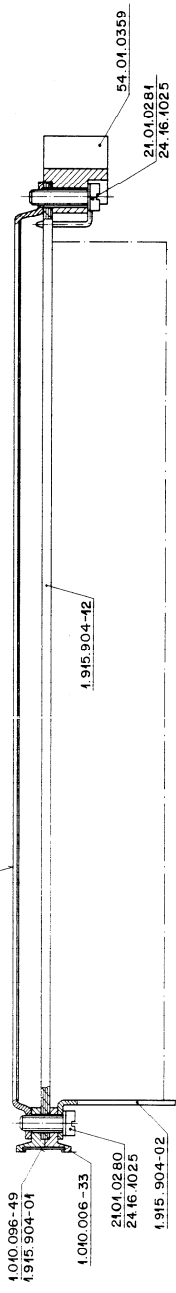
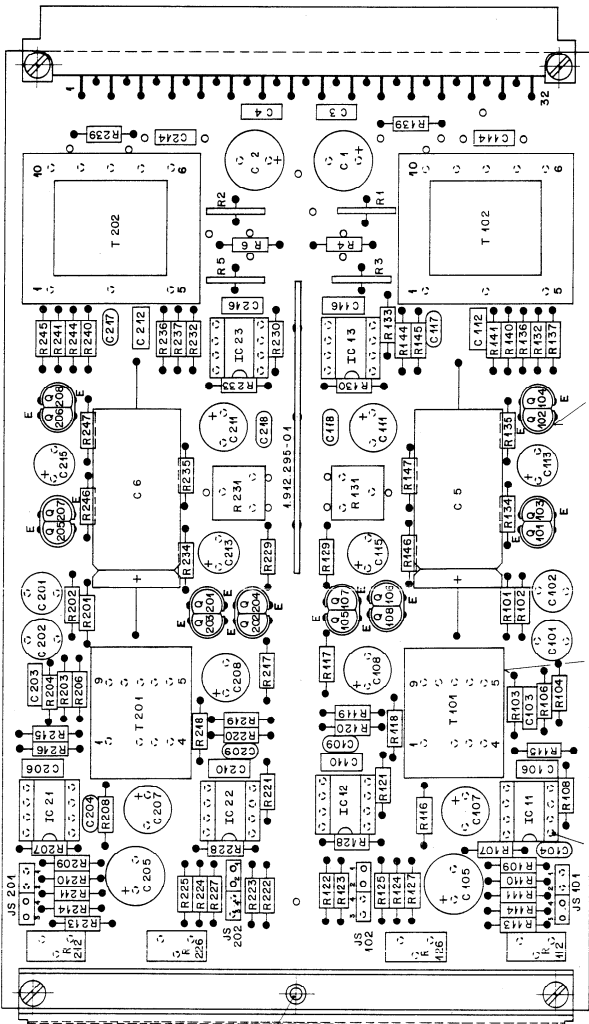
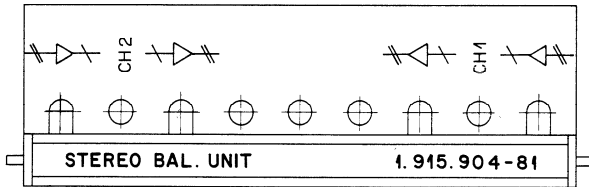


DATE:	8.7.83
SIGN:	<i>Rec</i>
STEREO BALANCING UNIT	
SC 1.915.904-81	



- 1 2 3 4
- 5 6 7 8
- 9 10 11 12
- 13 14 15 16

DUAL BALANCING UNIT



Norm-Nr.:	1.915.904-00	Erweitert durch:	
Werkstoff:	PL		
Abmessung:			
Zugehörige Unterlagen:			
Umfeld:			
Obfläche:			
Formelzeichen:			
Verhältnis:	2:1		
Ansätze:	24.76.4025	Datum:	24.76.4025
Änderung:	29.2.92	Gezeichnet:	24.76.4025
	4.4.84	Geprüft:	24.76.4025
		Gezeichnet:	24.76.4025
		Geprüft:	24.76.4025
Nummer:	1.915.904-81		

STÜBLER
REGIMONT
ZÜRICH

DUAL BALANCING UNIT

Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER	Ad	POS.	REF.No.	DESCRIPTION	MANUFACTURER
C....1		59.22.4221	220p	16V EL	R....41		57.11.4222	2,2k 2%	
C....2		59.22.4221	220p	16V EL	R....42				
C....3		59.06.0103	10n	63V PE	R....43				
C....4		59.06.0103	10n	63V PE	R....44		57.11.4339	3,3	
C....5		59.25.5102	1000p	40V EL	R....45		57.11.4339	3,3	
C....6		59.25.5102	1000p	40V EL	R....46		57.11.4103	10k	
					R....47		57.11.4103	10k	
C....1		59.05.1681	680p	1% 630V PP	T....1		1.022.451.00	1:0,62	INPUT TRAF0
C....2		59.05.1681	680p	1% 630V PP	T....2		1.022.355.00	1:1,38	LINE OUTPUT TRAF0
C....3		59.06.0103	10n	63V PE					
C....4		59.34.4151	150p	63V CER	XIC		53.03.0166	8P	IC SOCKET
C....5		59.22.2221	220p	6V EL					
C....6		59.06.0104	0,1p	63V PE					
C....7		59.22.5101	100p	25V EL					
C....8		59.22.5101	100p	25V EL					
C....9		59.34.5471	470p	63V CER					
C....10		59.06.0104	0,1p	63V PE					
C....11		59.22.5101	100p	25V EL					
C....12		59.06.0222	2,2n	63V PE					
C....13		59.22.5470	47p	25V EL					
C....14		59.06.0333	33n	63V PE					
C....15		59.22.5470	47p	25V EL					
C....16		59.06.0104	0,1p	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					
IC....2		50.09.0105	NE5532	DUAL OP AMP					
IC....3		50.09.0105	NE5532	DUAL OP AMP					
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					
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					
									MATCHED
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%					

END
→

EL=Electrolytic, PE=Polyester, PP=Polypropylen, CER=Ceramic
MANUFACTURER: SIG=Signetics, PH=Philips, EX=Exar, ST=Studer

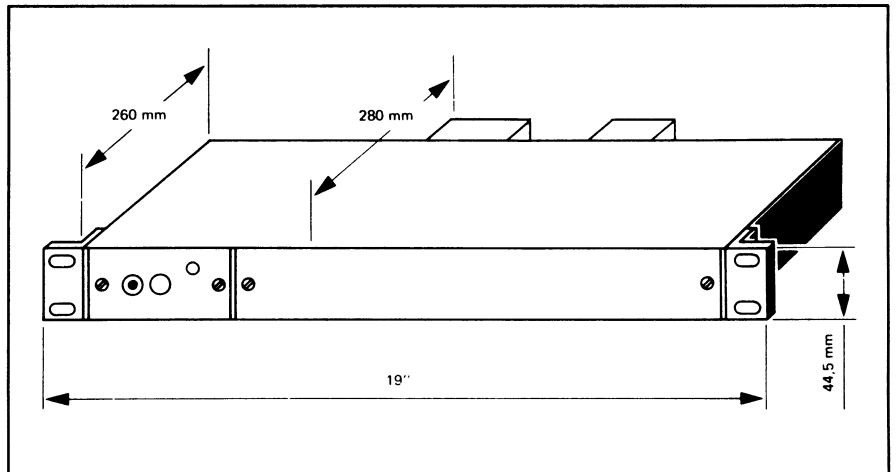
1.915.904.81 STEREO BAL. UNIT BR 24/11/82

2.3 Racks and Frames

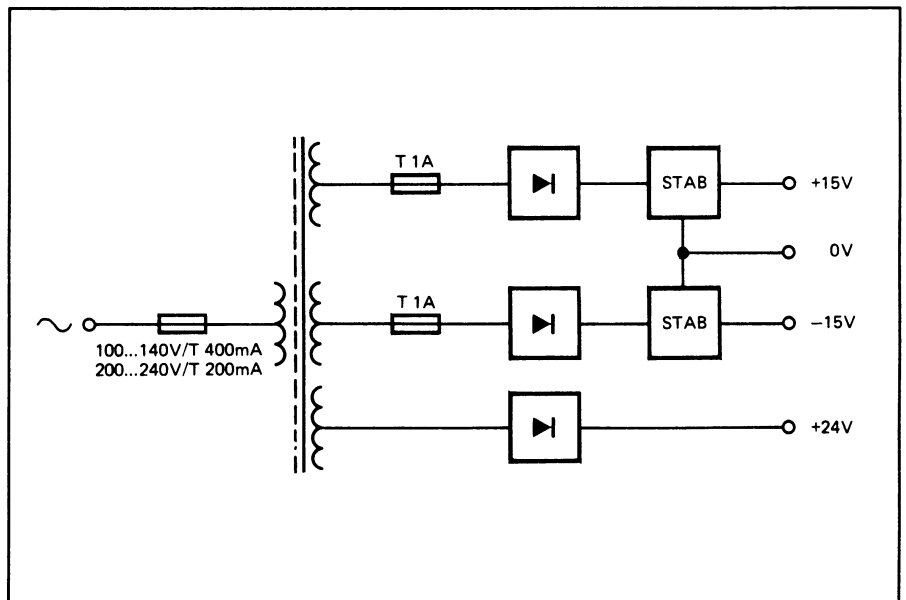
2.3.1 19" Mounting Frame for 3 Euro-Cards

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 $\pm 15\text{ V}_{\text{DC}}$ (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:

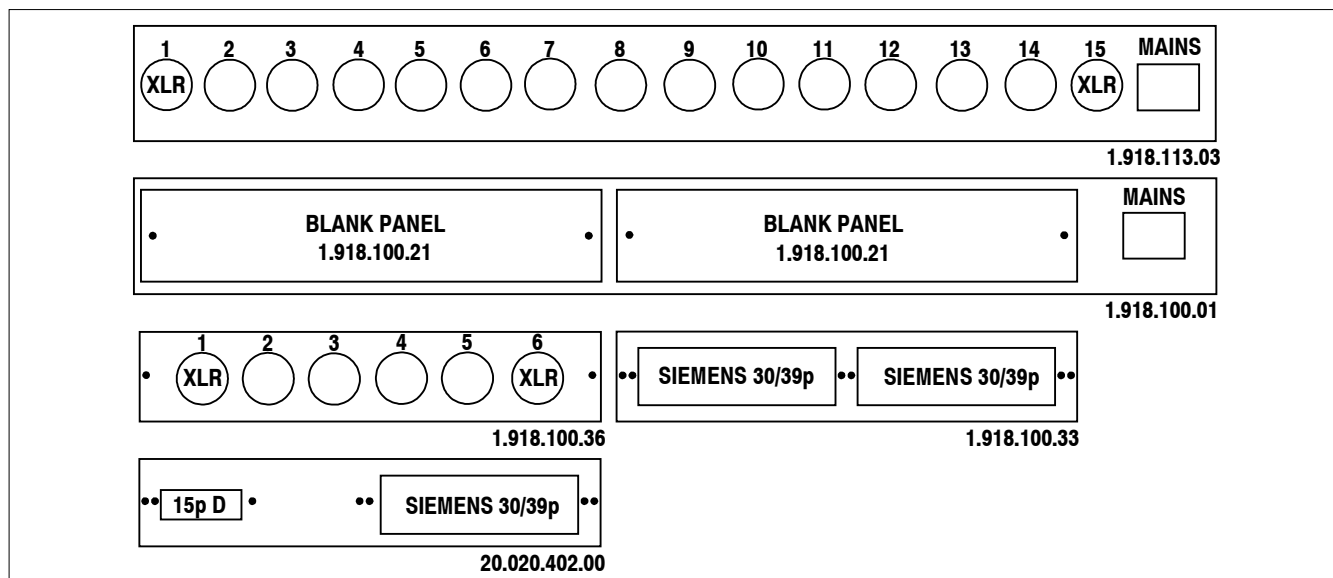
19"/1U standard product

- 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:



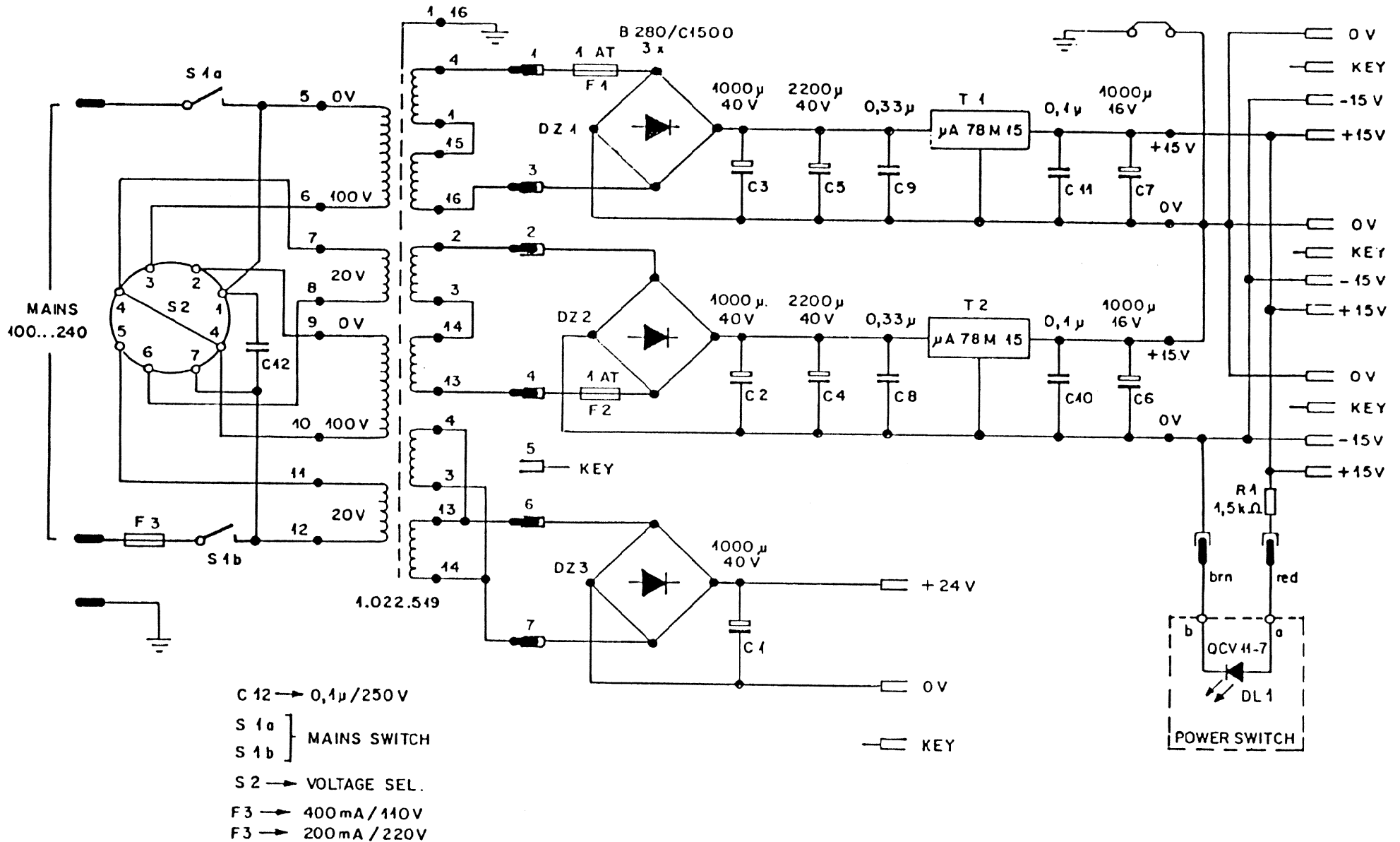
Ordering Information:

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.*



DATE:	9.4.85				REPLACES 4.918.099-84
SIGN:	<i>We</i>				
STUDER REGENSDORF ZURICH	POWER SUPPLY ±15V/24V				1.918.098-00

B Drahtbrücke

T1, T2 78M15C

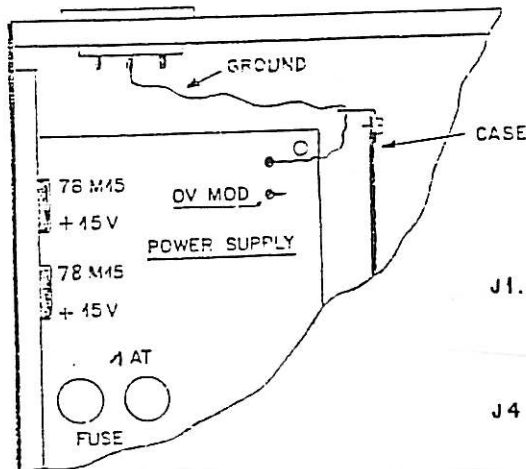
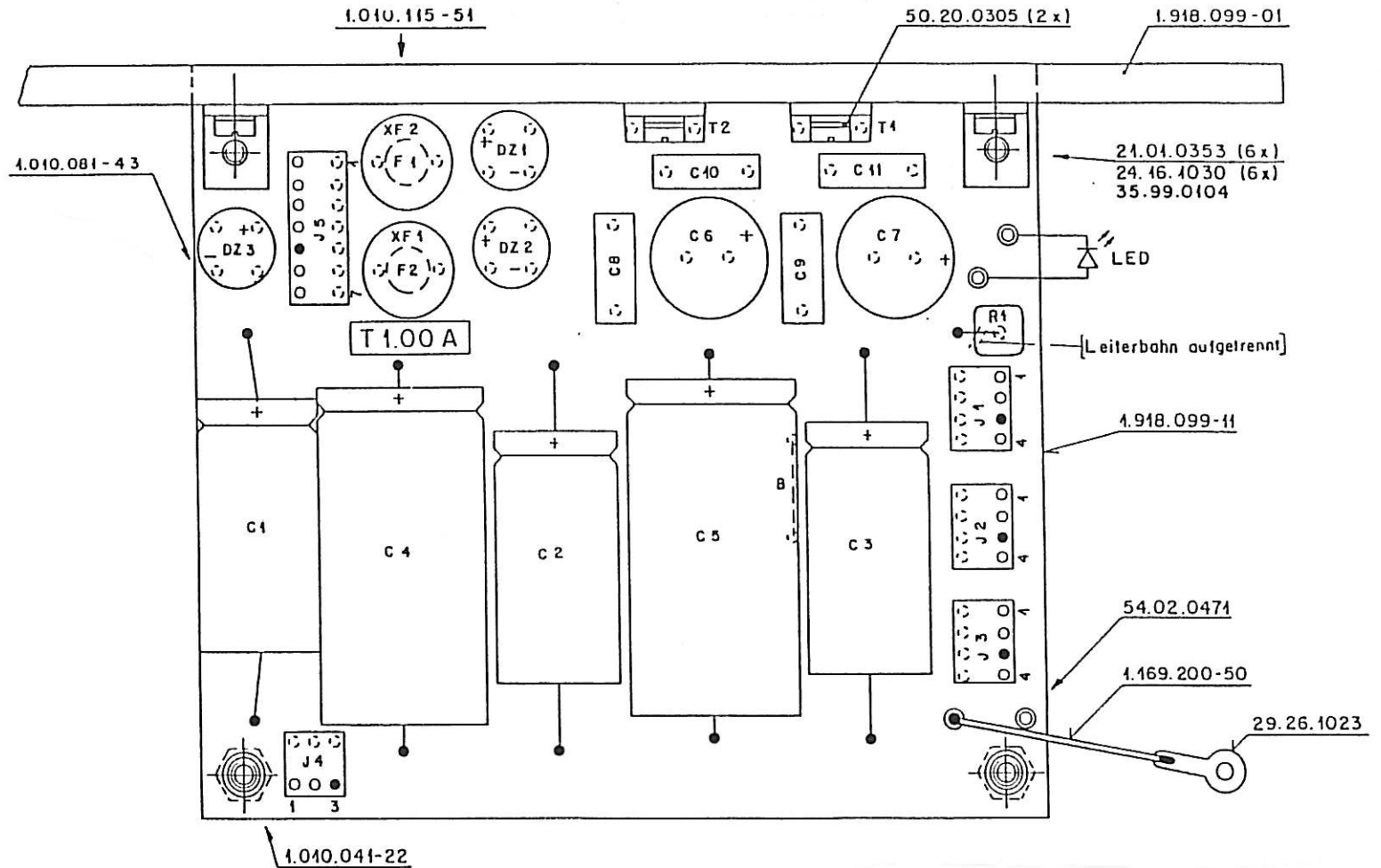
- C1...C3 1000µ 40V
- C4, C5 2200µ 40V
- C6, C7 1000µ 16V
- C8, C9 0,33 µ
- C10, C11 0,1 µ
- R1 1,5 kΩ / 4W

XF1, XF2 5x20 Sicherungshalter
 F1, F2 1 AT

DZ1, DZ2, DZ3 B250 C1500 Si

Codierung: Schalldraht 64.01.0108 \varnothing 0,8x8mm
 (muss 4mm vorstehen)

In Buchsenleiste	J1 in Kontakt	3
"	J2	3
"	J3	3
"	J4	3
"	J5	5



J1...J3

1	+15V
2	-15V
3	Key
4	0V

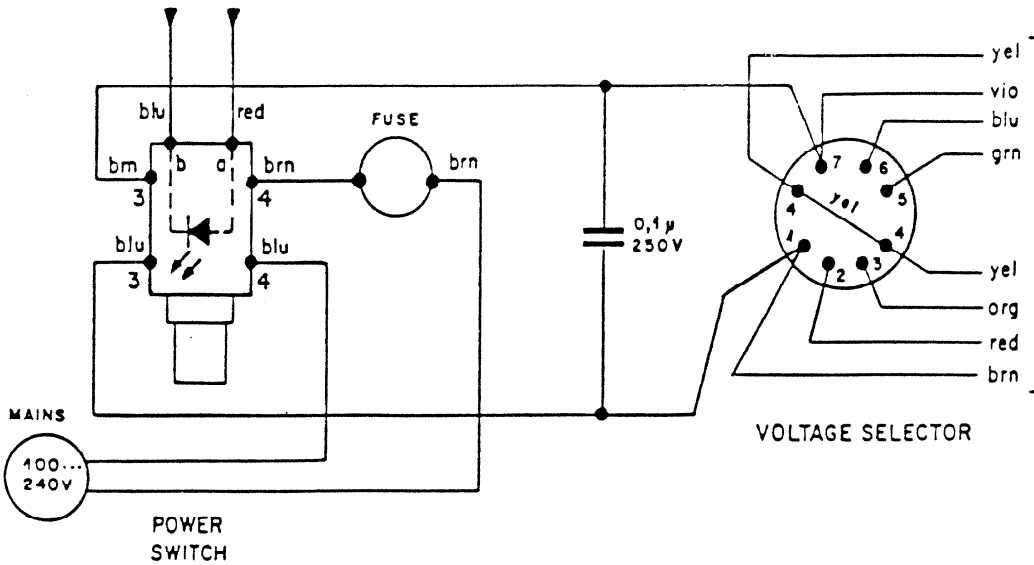
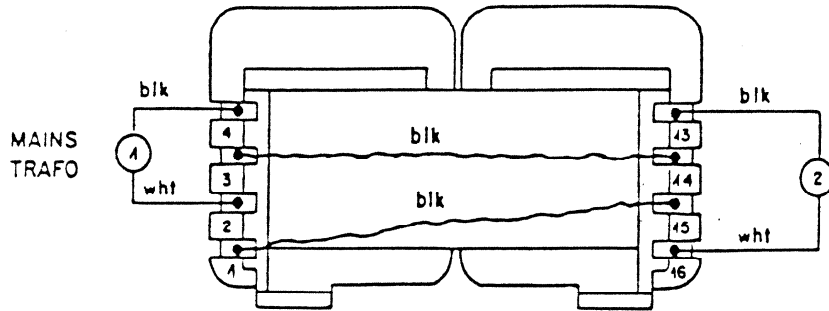
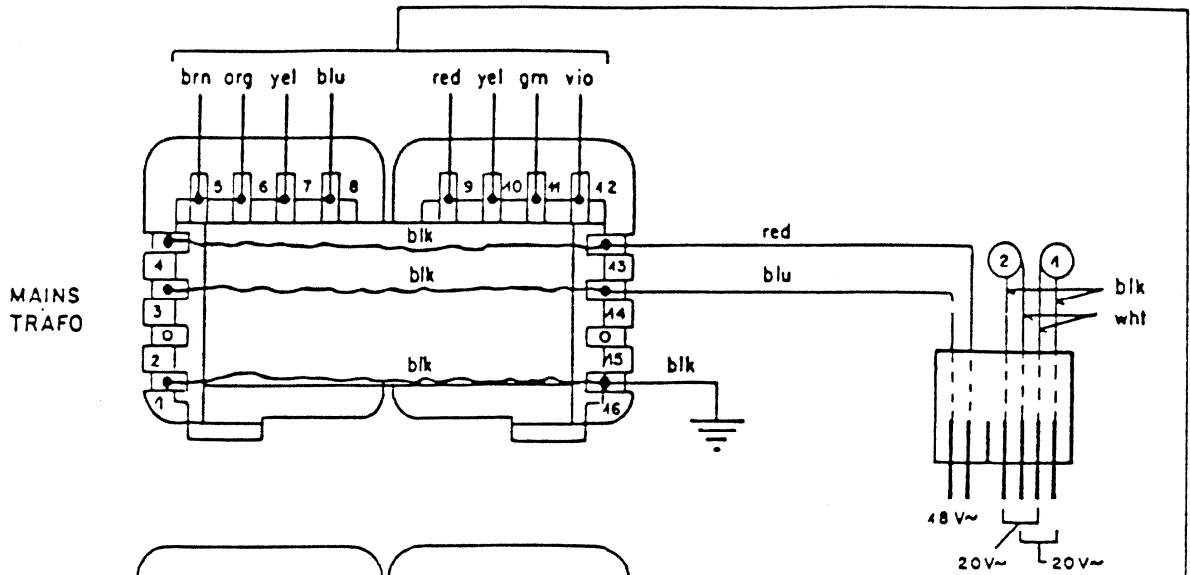
J4

1	+24V
2	0V
3	Key

J7

1	20V~
2	20V~
3	
4	
5	Key
6	20V~
7	

DATE:	9.1.85					REPLACES 4.918.099-81
SIGN:	We					
STUDER REGENSDORF ZURICH	POWER SUPPLY ±15V / 24V					1.918.098

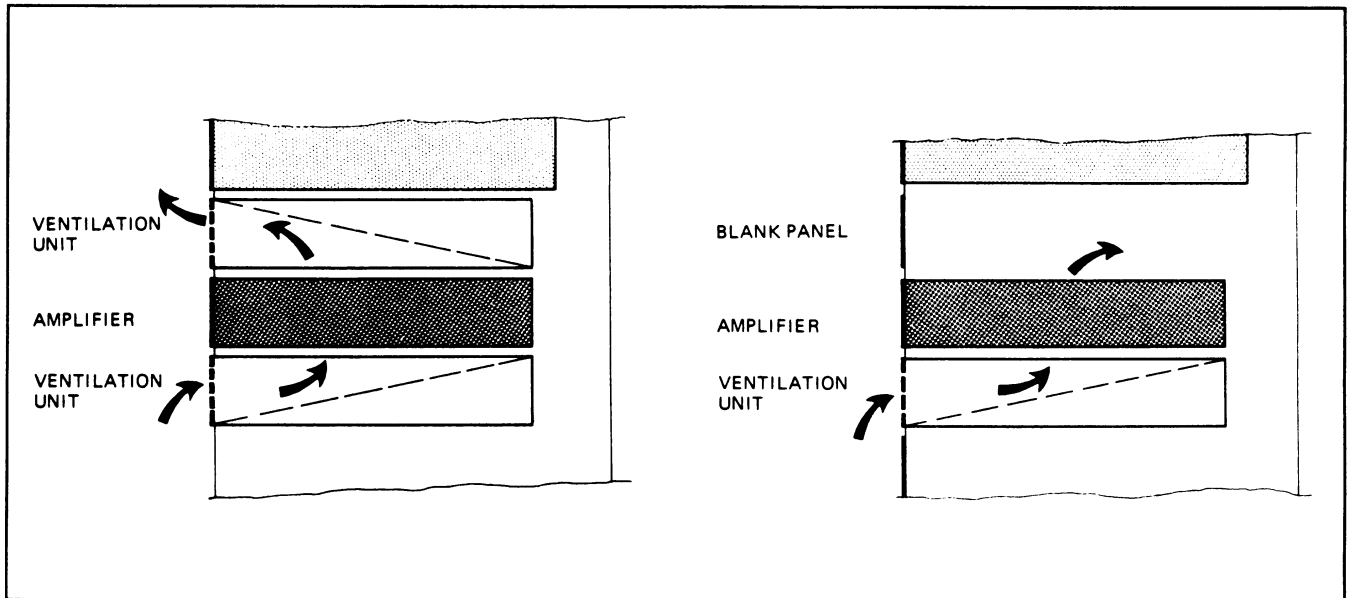


DATE:	6.11.79	25.3.85			
SIGN:	<i>We</i>	<i>We</i>			
STUDER REGENSDORF ZÜRICH	WIRING				1.918.100 1.918.101 1.918.102

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

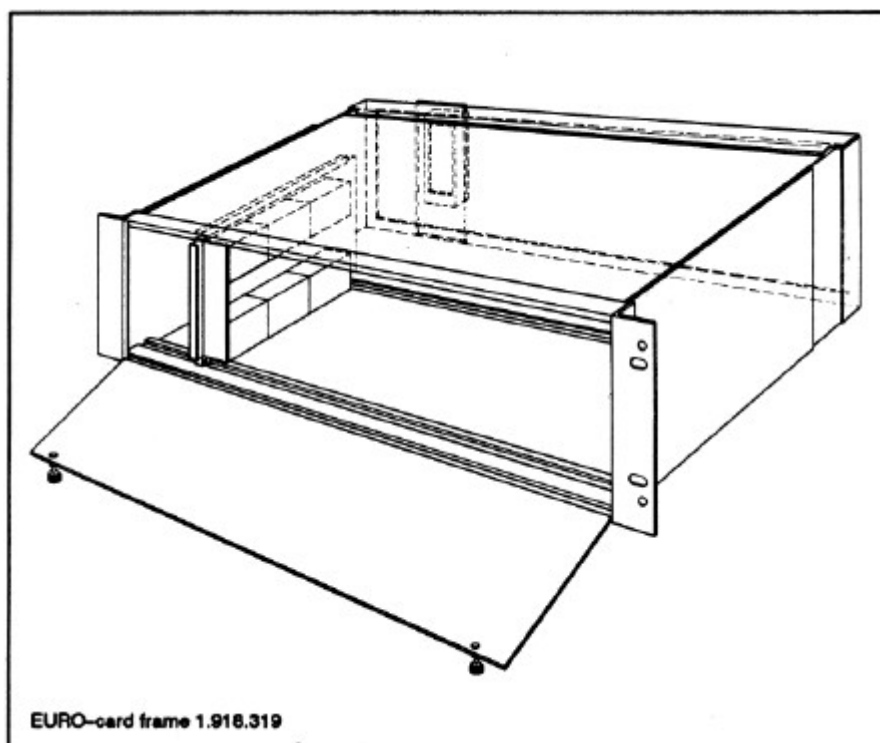
2.3.3 19" Euro-Card Mounting Frames

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.



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.

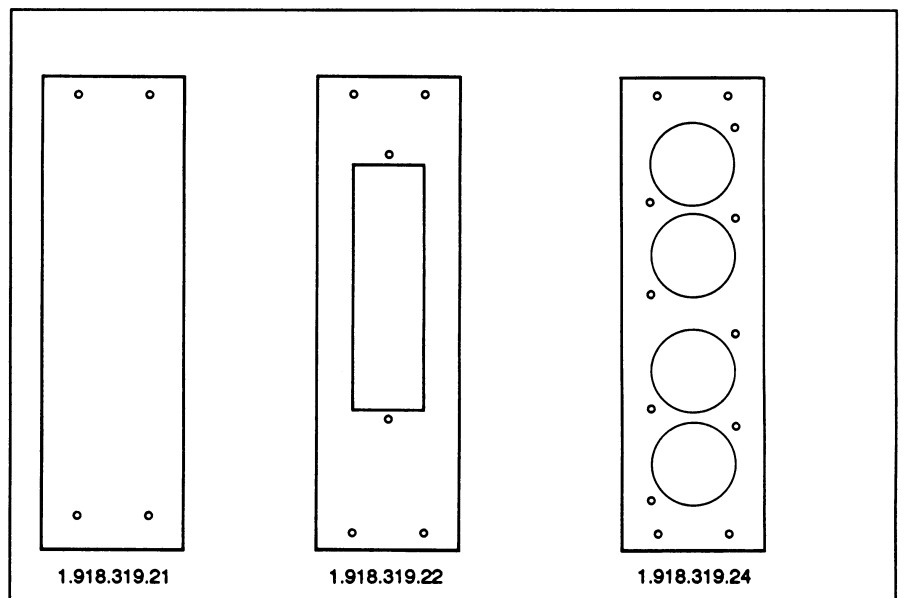


Euro-Card Mounting Kit, Ordering Information:

- 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.

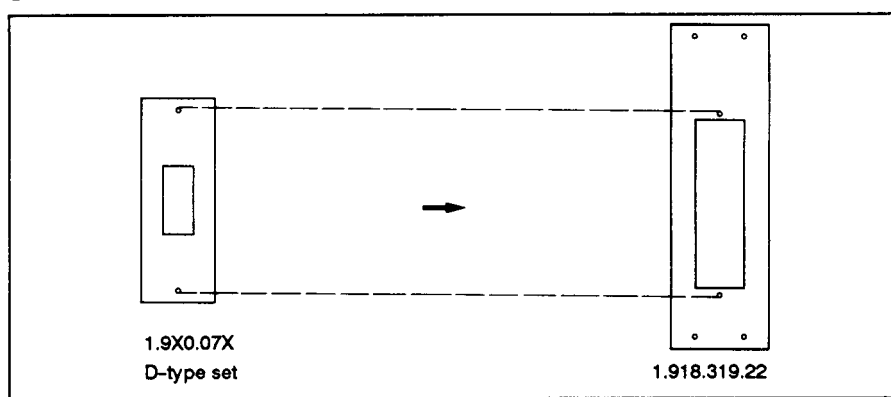


Connector Panel (3U high) Ordering Information:

- | | |
|--|--------------|
| • 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:

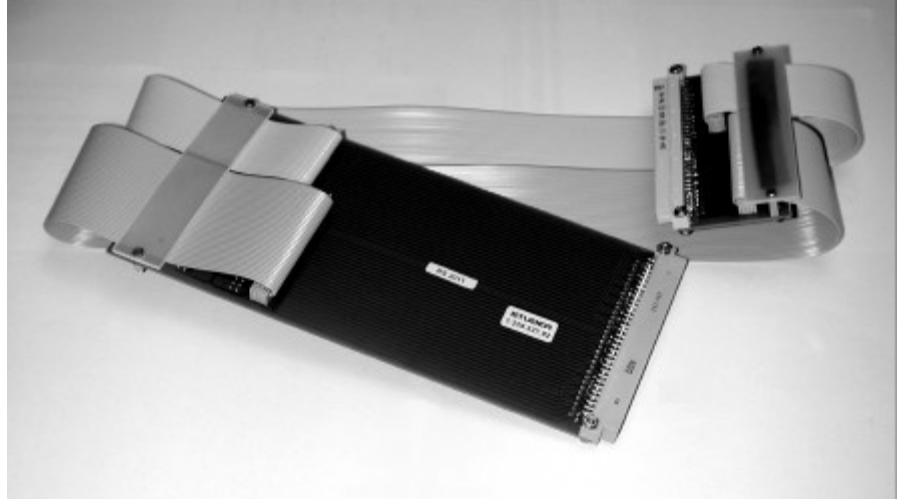
**Adapter Panel Ordering Information:**

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