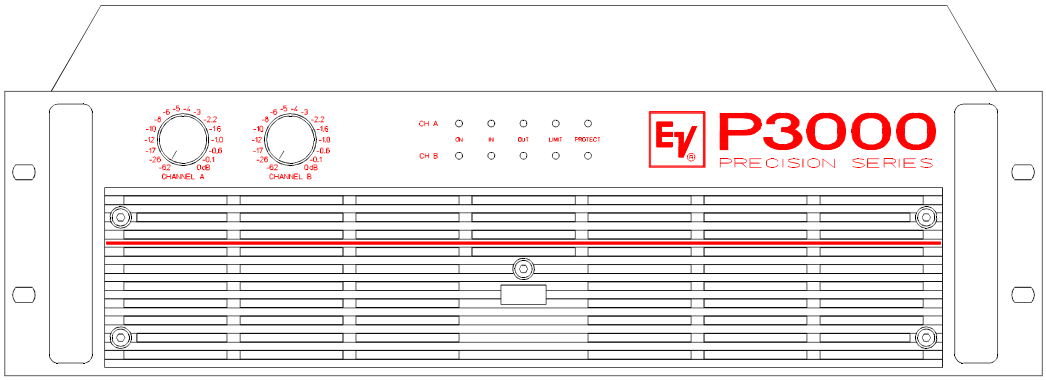
Electro-Voice®

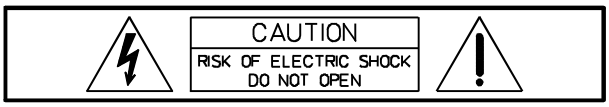
SERVICE MANUAL



P3000

PRECISION SERIES

IMPORTANT SAFETY INSTRUCTIONS



WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.
AVIS: RISQUÉ DE CHOC ELECTRIQUE. NE PAS OUVRIR.

The lightning flash with arrowhead symbol, within an equilateral triangle is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintance (servicing) instructions in the literature accompanying the appliance.

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a damp cloth.
7. Do not block any of the ventilation openings.
   Install in accordance with the manufactures instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus that produce heat.
9. Only use attachments/accessories specified by the manufacturer.
10. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

For US and CANADA only:

Do not defeat the safety purpose of the grounding-type plug. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. When the provided plug does not fit into your outlet, consult an electrican for replacement of the absolete outlet.

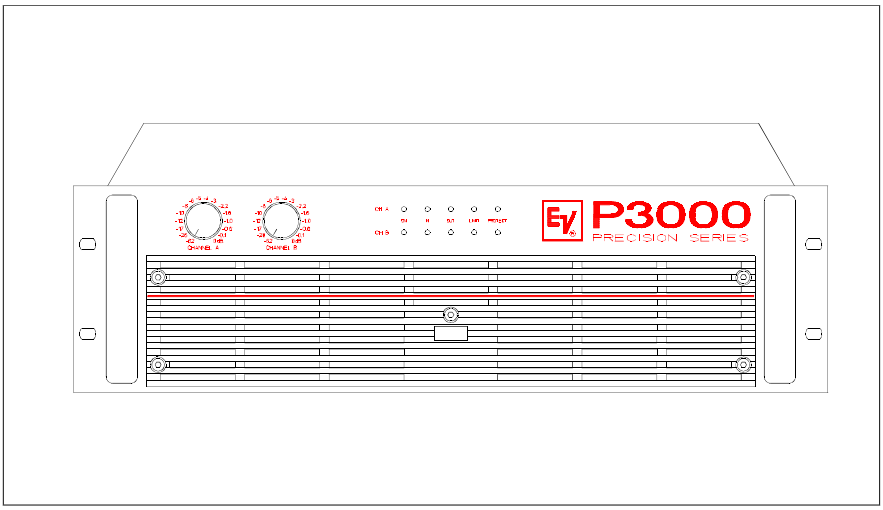
IMPORTANT SERVICE INSTRUCTIONS

CAUTION: These servicing instructions are for use by qualified personnel only. To reduce the risk of electric shock, do not perform any servicing other than that contained in the Operating Instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

1. Security regulations as stated in the EN 60065 (VDE 0860 / IEC 65) and the CSA E65 - 94 have to be obeyed when servicing the appliance.
2. Use of a mains separator transformer is mandatory during maintenance while the appliance is opened, needs to be operated and is connected to the mains
3. Switch off the power before retrofitting any extensions, changing the mains voltage or the output voltage.
4. The minimum distance between parts carrying mains voltage and any accessible metal piece (metal enclosure), respectively between the mains poles has to be **3 mm** and needs to be minded at all times.
   The minimum distance between parts carrying mains voltage and any switches or breakers that are not connected to the mains (secondary parts) has to be **6 mm** and needs to be minded at all times.
5. Replacing special components that are marked in the circuit diagram using the security symbol (Note) is only permissible when using original parts.
6. Altering the circuitry without prior consent or advice is not legitimate.
7. Any work security regulations that are applicable at the location where the appliance is being serviced have to be strictly obeyed. This applies also to any regulations about the work place itself.
8. All instructions concerning the handling of **MOS** - circuits have to be observed.

Note:  **SAFETY COMPONENT (HAS TO BE REPLACED WITH ORIGINAL PART ONLY)**

Electro-Voice®



Architects and engineers specifications

P 3000

STEREO POWER AMPLIFIER PRECISION SERIES

TECHNICAL SPECIFICATIONS

at rated output power 8ohms, one channel driven, unless otherwise specified

Output Power (20Hz - 20kHz /THD≤ 0,1%)

into8 Ohms	2 x 750 W
into 4 Ohms	2 x 1200 W
into 8 Ohms bridged	1 x 2400 W

Output Power (1kHz / THD = 1,0%)

into 8 Ohms	2 x 850 W
into 4 Ohms	2 x 1300 W
into 8 Ohms bridged	1 x 2800 W

Technical Specification

Frequency Response 10 Hz - 30 kHz / 1dB

Max. Output Level 91V / RMS
before Cliping, reference 1 KHz / THD = 1%

Voltage Gain 26 dB (constant gain option)
reference 1kHz

Input Sensitivity	0 dBu/0.775 V
at rated output power	6 dBu/1.55 V
reference 1 kHz	
Maximum Input Level	21 dBu / 9 V
Input Impedance	20 kOhm
active balanced	
THD	< 0.05%
at rated output power	
MBW = 80 kHz, f = 1kHz	
IMD - SMPTE	< 0.01%
60 Hz, 7 kHz, typical	
IMD - SMPTE	< 0.01%
60 Hz, 7 kHz, at rated output power	
Signal / Noise Ratio	> 105 dB
A-weighted, RMS to rated output level, Input sensitivity + 6dBu	
Crosstalk	< -70 dB
at rated output power reference 1 kHz	
Damping Factor	> 300
internal, 1kHz	
DIM 30	< 0.01%
DIM 100	< 0.01%
Slew Rate internal	> 40 V / ms
Power Consumption	1650 VA
1/8 rated output power 4 Ohm	
Dimensions (WxHxD)	483x132.5 x 426mm
19 x 5.2 x 16.77 (in)	
Weight	29 kg (63.9 lbs)
Optional Input Transformer	90176

DESCRIPTION

EV power amplifiers of the PRECISION SERIES meet the stringent requirements of tough touring applications. They are protected against over-temperature, overload, shorted outputs, radio frequency interference and DC faults. The power transistors are protected from damage from reverse feeding of electrical energy by means of an additional special protective circuit. For the so-called soft-start, the power outputs are switched on delayed via relays. An inrush current limiter circuit prevents the mains fuses from being blown.

Maximum precision is also guaranteed as regards mechanical construction and finish. The robust steel chassis features remarkable torsion resistance and is specially designed to cope with the tough wear and tear associated with going on tour. Thermal stability is guaranteed by several low noise 3-stage fans which also means that they can be used inside the studio.Comparator circuits constantly compare the power amplifiers' input and output signal and control the limiters under non-linear operating conditions. They protect the loudspeakers from overload due to power stage clipping. The PRECISION SERIES power amplifiers feature excellent transmission properties. The power amplifier topology also makes for extremely low distortion rates. Distortion factor (THD), intermodulation distortion (SMPTE-IM) and transient intermodulation distortion (DIM 30 and DIM 100) are so low that they are only detectable with the most sophisticated measuring equipment. Generously dimensioned power supplies with low-leakage toroidal-core transformers provide considerable headroom well above the nominal ratings. V/I foldback limiter circuits were deliberately not included in the PRECISION SERIES power amplifiers to facilitate operation at complex loads up to a phase angle of +/- 90°.The inputs are electronically balanced on XLR connectors. (Isolation transformers can be retrofitted). Direct Outs in the form of XLR connectors (male), to loop the signal through, are also standard features.

The modes DUAL/Stereo or PARALLEL/Mono can be selected via the Input Routing Switch. Furthermore, the PRECISION SERIES power amplifiers can also be operated in “Mono Bridged” mode. The front panel accommodates the dB-calibrated input Gain controls which are designed as especially precise and safe-to-operate detented potentiometers. The LED display provides information about the power amplifers' operating status. For the two channels, they demonstrate readiness to operate, whether there is a signal at the input or output, when the Limiters have been activated and whether one of the protective features has been triggered. The power outputs Channel A, Channel B and Bridged Out are available on Speakon connectors. The rear side of the unit accommodates the ON/OFF switches for the integrated Hi and Lo cut filters, a groundlift switch which separates the housing from the circuit ground thus helping to prevent hum loops and the operating modes selector to mono bridged operation. They also feature extremely quiet fans with front-to-rear airflow, facilitating operation in large and narrow amplifier racks.

SERVICE INFORMATION

WARNING: No user serviceable parts inside. Extremely hazardous voltages and currents may be encountered within the chassis. The servicing information contained within this document is only for use by Electro-Voice Authorized warranty repair stations and qualified service personnel. To avoid electric shock DO NOT perform any servicing other than that contained in the Operating instructions unless you are qualified to do so. Otherwise, refer all servicing to qualified service personnel.

NOTICE: Modification to Electro-Voice products is not recommended. Such modifications shall be at the sole expense of the person(s) or company responsible, and any damage resulting therefrom shall not be covered under warranty or otherwise.

#.1 ELECTRO-VOICE UNIFORM LIMITED WARRANTY STATEMENT

Electro-Voice products are guaranteed against malfunction due to defects in materials or workmanship for a specified period, as noted in the individual product-line statement(s) below, or in the individual product data sheet or owner's manual, beginning with the date of original purchase. If such malfunction occurs during the specified period, the product will be repaired or replaced (at our option) without charge. The product will be returned to the customer prepaid. Exclusions and Limitations: The Limited Warranty does not apply to: (a) exterior finish or appearance; (b) certain specific items described in the individual product-line statement(s) below, or in the individual product data sheet or owner's manual; (c) malfunction resulting from use or operation of the product other than as specified in the product data sheet or owner's manual; (d) malfunction resulting from misuse or abuse of the product; or (e) malfunction occurring at any time after repairs have been made to the product by anyone other than Electro-Voice or any of its authorized service representatives. Obtaining Warranty Service: To obtain warranty service, a customer must deliver the product, prepaid, to Electro-Voice or any of its authorized service representatives together with proof of purchase of the product in the form of a bill of sale or receipted invoice. A list of authorized service representatives is available from

MARK IV AUDIO Deutschland
Hirschberger Ring 45
D - 94315 Straubing
Postfach 0254 D- 94302 Straubing
Tel.: ++49 (0)9421/7060
Fax: ++94(0)9421/706265

MARK IV AUDIO (Europe) AG
Keltenstr. 5
CH-2563 Ipsach
Tel.: ++41 (0)32-516833
Fax: ++41 (0)32-511221.

Incidental and Consequential Damages Excluded: product repair or replacement and return to the customer are only remedies provided to the customer. Electro-Voice shall not be liable for any incidental or consequential damages including, without limitation, injury to persons or property or loss of use. Some states do not allow the exclusion or limitation of incidental or consequential damages so the above limitation or exclusion may not apply to you. Other Rights: This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Electro-Voice Electronics are guaranteed against malfunction due to defects in materials or workmanship for a period of three (3) years from the date of original purchase. Additional details are included in the Unifom Limited Warranty statement.

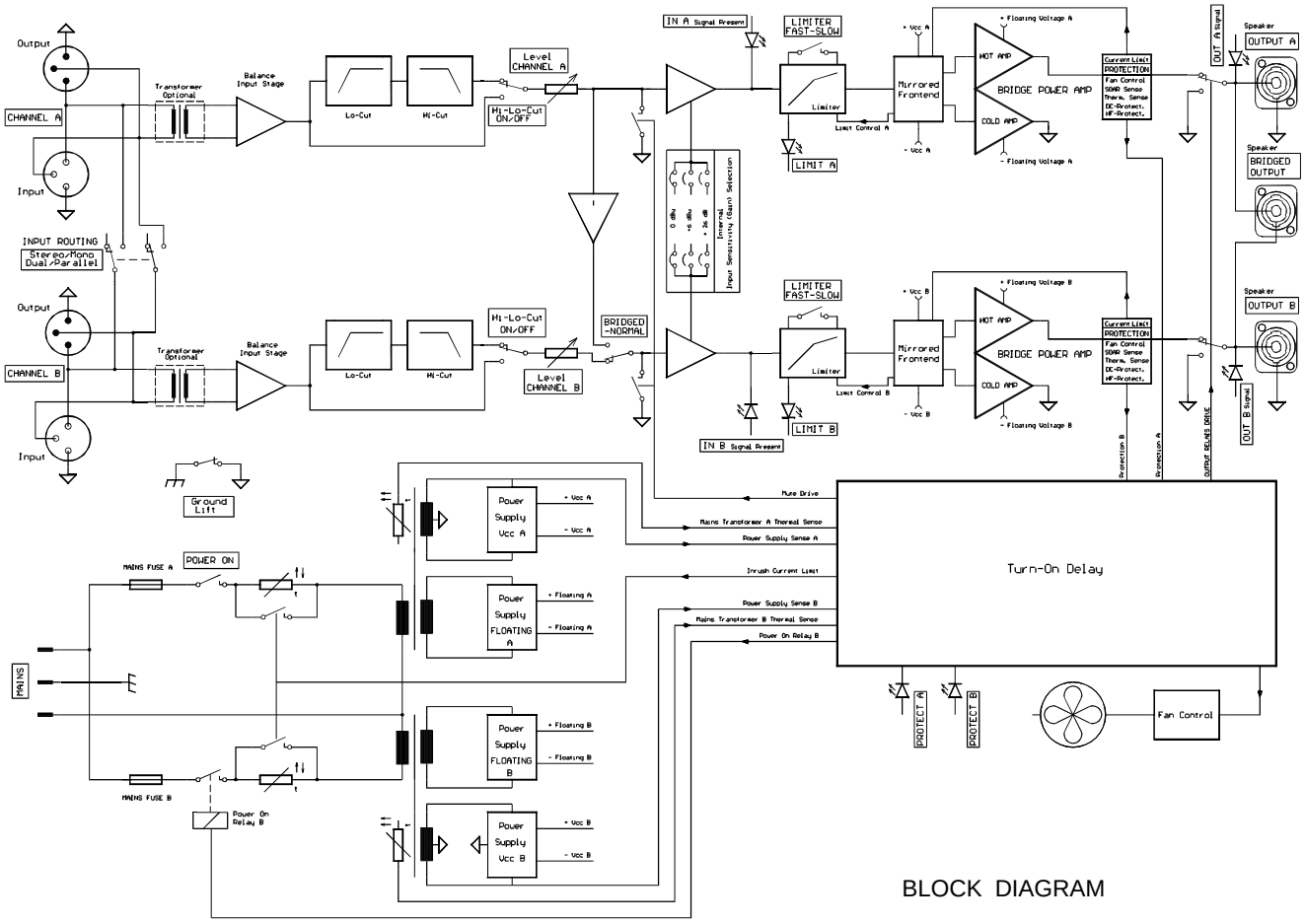
#. 2 TECHNICAL ASSISTANCE

For applications assistance or other technical information, contact the Applications Engineer. You can call or write:

MARK IV AUDIO Deutschland
Hirschberger Ring 45
D - 94315 Straubing
Postfach 0254 D- 94302 Straubing
Tel.: ++49 (0)9421-7060
Fax: ++49 (0)9421-706265

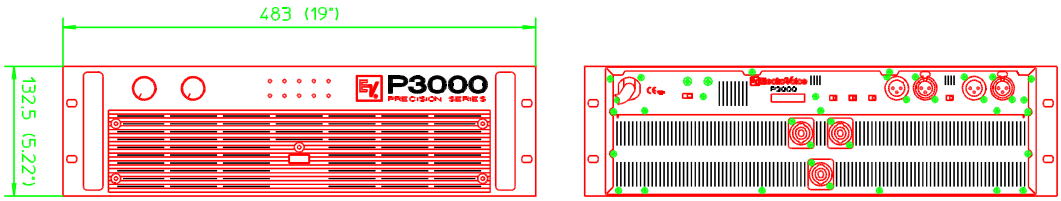
MARK IV AUDIO (Europe) AG
Keltenstr. 5
CH-2563 Ipsach
Switzerland
Tel.: ++41 (0)32-516833
Fax: ++41 (0)32-511221

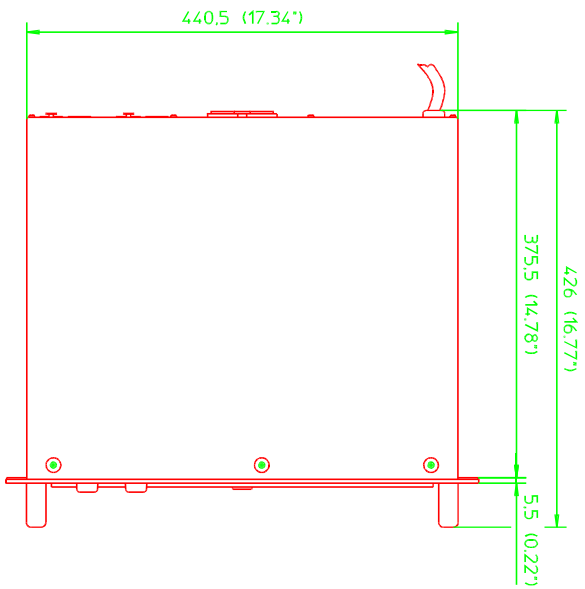
Specifications subject to change without notice



BLOCK DIAGRAM

DIMENSIONS





SPECIFICATIONS: P3000 entire unit

Measuring Standard IEC 268 part 3IHF-A
0 dBu = 775 mV (RMS)

A. POWER SUPPLY

1. voltage supply	AC
2. nominal supply voltage, depending on the model:	120V/230V/240V
3. nominal mains frequency:	50 - 60 Hz
4. nominal power consumption (2x1200W/4Ω):	4100 W
5. nominal power consumption (2x120W/4Ω):	1500 W
6. power consumption at 1/8 of the nominal power (150W/4Ω):	1650 W
7. deviation range of the power supply:	-10 % … +10 %

B. INPUT PROPERTIES

- level control fully open

Input	**Nominal input level (nominal source EMK) select jumper internally**			**Nominal output power**	**Nominal load impedance**
	0 dBu	**+6 dBu**	**+26 dB**		
Channel A/B	+1 dBu	+7 dBu	+14 dBu	750 W	8 Ω
Channel A/B	0 dBu	+6 dBu	+13 dBu	1200 W	4 Ω
Channel A/B	-2 dBu	+4 dBu	+11 dBu	1500 W	2 Ω
Channel BRIDGED	0 dBu	+6 dBu	+13 dBu	2400 W	8 Ω
Channel BRIDGED	-2 dBu	+4 dBu	+11 dBu	3000 W	4 Ω

Maximum input level: +21 dBu

C. OUTPUT PROPERTIES

- nominal output power with THD = 0.1 %, 20 Hz … 20 kHz, MBW = 80 kHz
- maximum output power at 1 kHz with THD = 1 %, MBW = 80 kHz

Output connector	**Nominal load impedance**	**Nominal output power Dual Mode**	**Maximum output power Dual Mode, THD=1 %**	**Single channel output power)[1]**	**Nominal output voltage**
SPEAKER A/B	8 Ω	750 W	850 W	950 W	77.5 V
SPEAKER A/B	4 Ω	1200 W	1300 W	1700 W	69.3 V
SPEAKER A/B	2 Ω	1500 W	1800 W	2000 W	54.8 V
SPEAKER BRIDGED	8 Ω	2400 W	2600 W	3400 W	138.6 V

)[1] measured with Dynamic Headroom Test-Signal according to IHF-A: 1 kHz Burst, 20ms ON, 480 ms OFF

D. Idling output voltage

Output connector	**SPEAKER A/B**	**SPEAKER BRIDGED**
Max. idling voltage	91 V (RMS)	182 V (RMS)

E. Stabilizing

with nominal load impedance, Dual Mode, standard output voltage

	8 Ω	**4 Ω**
Stabilizing	0.325 %	0.686 %
Stabilizing level	0.028 dB	0.059 dB

F. FREQUENCY RESPONSE

• -3 dB level drop, referenced to the level at the standard frequency of 1 kHz
• the power amplifier's border frequencies are at 13 Hz and 40 kHz respectively, referenced to -1 dB

Amplification frequency response

Input	Output	f (u)	f (o)	Remarks
INPUT A/B	SPEAKER A/B	<10 Hz	75 kHz	HI-LO-CUT Off
INPUT A/B	SPEAKER A/B	20 Hz	35 kHz	HI-LO-CUT On

Distortion-limited transmission range (performance bandwidth)

• THD = 0.1 %, 1/2 nominal power at 4 ohms, MBW = 500 kHz

Input	Output	f (u)	f (o)	Remarks
INPUT A/B	SPEAKER A/B	<10 Hz	48 kHz	HI-LO-CUT Off

G. PHASE RESPONSE ±30° (20 Hz - 20 kHz, HI/LO-CUT off)

H. INPUT IMPEDANCE 20 kΩ (20 Hz … 20 kHz)

I. AMPLITUDE NON-LINEARITY

	Amplitude non-linearity	Remarks
nominal overall distortion	<0.05 %	MBW = 80 kHz, f = 1 kHz
standard overall distortion	<0.02 %	MBW = 80 kHz, f = 1 kHz
IMD-SMPTE	<0.01 %	60 Hz, 7 kHz
DIM 30	<0.01 %	3.15 kHz, 15 kHz
DIM 100	<0.01 %	3.15 kHz, 15 kHz

J. CROSSTALK - at f = 1 kHz less than <-70 dB

K. DAMPING FACTOR - internal at f = 1 kHz >300
at f = 100 Hz >400

L. SLEW RATE - internal >40 V/µs

M. NOISE INTERFERENCE

- U(F) = external voltage un-weighted with B = 22 Hz … 22 kHz, effective value (IEC 268-1)
- U(G) = noise voltage, frequency-weighting filter according to CCIR-468-3, quasi peak weighted (IEC 268-1)
- U(A) = interference voltage A-weighted, dB(A), effective value (IEC 268-1)
- Signal-to-noise ratio referenced to a nominal output voltage of 69.3 V (1200W/4ohms)
- HI/LO-CUT ON, GND LIFT = GROUNDED

	Interference output voltage	S/N ratio	Equivalent input interference voltage	Equivalent input interference level	Residual interference output voltage
U(F)	< 615µV	> 101 dB	< 6.9µV	< -101 dBu	< 435µV
U(G)	< 3.65 mV	> 85.5 dB	< 41µV	< -85.5 dBu	< 1.55mV
U(A) i.s.=0dBu	< 490µV	> 103 dB	< 5.5µV	< -103 dBu	< 345µV
U(A) i.s.=6dBu	< 245µV	> 109 dB	< 5.5µV	< -103 dBu	< 170µV
U(A) Gain=26dB	< 110µV	> 116 dB	< 5.5µV	< -103 dBu	< 90µV

The S/N ratio (A-weighted) at max. output voltage at 4Ω is >103 dB.

N. DIMENSIONS

Height : 132.5 mm (3 HU)
Width : 483 mm
Depth : 426 mm

O. WEIGHT m = 29 kg

P. EXTENSIONS optionally available 2 x input transformer NRS 90176

MEASURED SPECIFICATIONS: P3000 entire unit

Measurement conditions, unless differently specified:

- tolerance of measured values: $\Delta X = \pm 1.5$ dB
- measuring frequency: f = 1 kHz
- stated levels refer to: U = 775 mV (0 dBu)
- level controls set to their clockwise limits
- pin assignment of the XLR-type connectors: PIN 1: GROUND
  PIN 2: + INPUT
  PIN 3: - INPUT
- source resistance for the induction via the XLR-type connector: R(Q) = 50 Ω
- MAIN-PCB numbers relate to the models as follows:

Type of unit	MAIN - PCB
P3000 / 120 V	86211
P3000 / 230 V	86207
P3000 / 240 V	86207

- MAIN-PCB and POWER-AMP-PCB are provided with service connectors.
  The Pin-assignment of these service connectors is as follows:

84157		**86207 86211**		**86207 86211**	
CNSERV	**Assignment**	**CNASERV**	**Assignment**	**CNBSERV**	**Assignment**
1	Kodierung	1	Limiter A&B OFF	1	n.c.
2	BIAS Hot - Side +	2	Service Limiter A	2	Service Limiter B
3	BIAS Hot - Side -	3	-15V	3	- 15 V
4	Hot - Out	4	GND	4	Fan voltage
5	BIAS Cold - Side +	5	+ 15 V	5	Service Fan Switch
6	BIAS Cold - Side -	6	heat sink temperature A&B	6	Service Fan Switch
7	GND	7	+ U1 front-end A	7	+ U1 front-end B
8	floating voltage +	8	- U1 front-end A	8	- U1 front-end B
9	floating voltage -	9	coding	9	coding

1. Operating voltage: U(B) = 120V/ 230V/ 240V
depending on the model: 50Hz ... 60Hz
2. Deviation limit of the operation voltage: ±10%
3. Power consumption (both channels driven):
3.1. at idling condition P(B) = 180 - 260 W
3.2. at standard operation (120W/4Ω) P(B) = 1500 W
3.3. at nominal condition (1200W/4Ω) P(B) = 4100 W
3.4. at 1/8 of the nominal power (150W/4Ω) P(B) = 1650 W

4. Settings / Adjustments
4.1. IDLING CURRENT ADJUSTMENT
Connect the DC-volt meter at the BIAS measuring points (refer to table) and adjust the idling current via the trim potentiometer (on the printed board assembly 84157). Adjust both channels of the power amplifier A&B.

Setting	Measuring point 1	Measuring point 2	U (DC)	BIAS trimmer
BIAS HOT A	CNSERV 2	CNSERV 3	15 mV	VR1
BIAS COLD A	CNSERV 5	CNSERV 6	15 mV	VR2
BIAS HOT B	CNSERV 2	CNSERV 3	15 mV	VR1
BIAS COLD B	CNSERV 5	CNSERV 6	15 mV	VR2

Adjusting the idling current has to be performed at normal room temperature. In case the power amplifier had previously been operated, it has to be given several hours to cool off.

4.2. FLOATING - SYMMETRY

Immediately after setting the idle current, a symmetry check of the floating voltage has to be performed. The power amplifier has to be operated in idling condition. DC-volt meters have to be connected between the measuring points 1 - 2, and 2 - 3. Using the FLOATING-trim potentiometers that are located on the printed board assembly 86207/86211, the floating voltage is set symmetric to the ground potential. Not the actual voltage value is relevant but the symmetry of the + floating voltage and the - floating voltage to the ground potential.

Setting	Measuring point 1	Measuring point 2	Measuring point 3	U(DC)	Trim potentiometer
FLOTING SYMMETRIE A	CNSERV 8 AMP-A	CNSERV 7 AMP-A	CNSERV 9 AMP-A	ca. ± 67V	VR102
FLOTING SYMMETRIE B	CNSERV 8 AMP-B	CNSERV 7 AMP-B	CNSERV 9 AMP-B	ca. ± 67V	VR202

4.3. VCA - OFFSET:

Rhythmically open and short-circuit the service switch S101 respectively S201 which are located on the printed board assembly 86207/86211. Use VR101 respectively VR201 to adjust the power amplifier outputs to their minimum offset (with oscilloscope to minimal peak value or to the audible minimal volume of the interfering pulse).

Instead of using the service switch, it is also possible to employ the service connector with short-circuited pins CNASERV 2 and CNASERV 3 for the power amplifier A, or short-circuited pins CNBSERV 2 and CNBSERV 3 for the power amplifier B.

4.4. ADJUSTING THE METER INSTRUMENTS

- level control set all the way to its clockwise position
- f = 1 kHz

Feed the signal to the inputs A or B so that the IN-LED just lights (U(E) approx. -34 dBu). Adjust the OUT-LED to approximately the same brightness, using the trim potentiometers VR600 respectively VR601 which are located on the printed board assembly 86207/86211.

4.5. ADJUSTING THE FANS

Close the service switch S001 on the printed board assembly 86207/86211 or insert a bridge between CNBSERV 5 and CNBSERV 6. Adjust the voltage at CNBSERV 4 to 27.5 V (DC), using the VR700. Switch the service switch back to normal or detach the bridge.

4.6. GAIN SELECTION:

The power amplifier's input sensitivity can be set using the jumpers J11 … J13 or J21 … J23 which are located on the printed board assembly 86207/86211. The stated values for the input sensitivity or gain are always referenced to the level control being set to its fully clockwise position.

CHANNEL A	CHANNEL B	SELECTION
J11	J21	Input Sensitivity 0 dBu
J12	J22	Input Sensitivity +6 dBu
J13	J23	Gain +26 dB

When shipped, the input sensitivity is set to a value of 0 dBu.

5. Function test

5.1. OUTPUT - offset voltage

DC-voltage measuring at the loudspeaker outputs CHANNEL A/B with U(DC) ≤ ±10 mV.

5.2 LIMITER

5.2.1. Attenuation test

Both channels separately driven with a 1 kHz signal up to U(A) = 89 V (without load). Increase the input voltage by 10 dB. The LIMITER LED lights and the output voltage ascents by approx. 0.5 dB to 91 volts, with slight

clipping. The distortion rate of the limited signal is at THD = 1 % … 2 %. Increasing the input signal up to a value of +21 dBu should not result in remarkably higher clipping.

5.2.2. LIMITER FAST/SLOW-Test

- tests have to be performed for both channels of the power amplifier individually: testing has to be performed without load resistors connected.

1.) Drive the power amplifier with a burst signal (f = 1 kHz, 1-10 cycles, rate: ≈ 0.5 sec.) and U(E) = +10 dB above the nominal input voltage.

2.) When monitoring the output signal via oscilloscope, continuously press the FAST/SLOW-switch.

- SLOW: after 2-3 signal periods, the limiter controlled the major distortion down to a minor residual distortion (THD = 1 % … 2 %).
- FAST: already after 1-2 signal periods, the limiter controlled the major distortion down to a minor residual distortion (THD = 1 % … 2 %).

When shipped, the appliance is set to SLOW!

5.3. POWER-ON DELAY:

Approximately 2 seconds after switching the power on, the relays E1 and E3 which are located on the printed board assembly 86207/86211 and the relay E1 on the printed board assembly 84157 (channel A/B) pull simultaneously.

5.4. FAN CONTROL:

Upon powering-on the power amplifier, the fans will run for approximately 2 seconds and stop when the power amplifier has re-gained its "normal" temperature. In idling condition (power-on, no signal present) the fans are switched between the SLOW and OFF mode, depending on the heat sink's temperature. When the switch S001 on the printed board assembly 86207/86211 is closed, the fans will run with FAST speed. When shipped, the S001 switch is set to "OPEN"!

Connecting a variable resistor (approx. 50 kΩ) between CNBSERV 5 and CNBSERV 6 allows for testing the functioning of the fans. During operation, CNASERV 6 can be utilized to monitor the temperature of the heat sink.

FAN SPEED	**U(DC) CNASERV 6**	**U(DC) CNBSERV 4**	**Remarks**
Stufe 0	< 6.5 V	0 V	Fans are not running
Stufe 1	6.5 V ... 7.5 V	12.5 V	
Stufe 2	7.5 V ... 9 V	19.5 V	
Stufe 3	9 V ... 12.5 V	27.5 V	
Protect	> 12.5 V	27.5 V	Power amplifier is switched off

5.5. SOAR-PROTECTION TEST:

Channels separately driven up to 69.3 V on 4 Ω. Parallel connect a 0.1 Ω resistor. The protection circuit reacts and tries continuously to re-start! The protect-LED blinks in the same rhythm.

5.6. SHORT-CIRCUIT CURRENT-LIMITING TEST

testing has to be performed for both channels of the power amplifier individually:

- drive the channel with a burst signal (f = 1 kHz, 1-10 cycles, rate ≈ 1 sec.) without load, with U(A) = 89 V
- connect a load resistor of 1 Ω.
- the short-circuit current-limiter limits the output voltage at the load resistor symmetrically (monitor via oscilloscope!) to a peak voltage value of 45 V (approx. 45 A).

5.7. DC-VOLTAGE-PROTECTION TEST

- HI/LO-Cut off, Limiter set to SLOW
  testing has to be performed for both channels of the power amplifier individually:
- drive the power amplifier with a test signal (f = 7 Hz) and without load resistor connected.
- at an input voltage of approx. 3 Vpeak the protection circuit reacts and tries continuously to re-start! The protect-LED blinks with the same frequency.
- Repeat the test with f = 14 Hz; the power amplifier should not switch off.

5.8. HF-PROTECTION TEST

Caution: it is mandatory to drive the power amplifier without load resistors connected. Set the fan service switch to ON and the HI/LO-Cut to OFF. Switch off the limiter via S102 or by disconnecting the bridge between CNASERV 1 and CNASERV 3. Drive the power amplifier with a with 7 Vrms and a sine burst of **f = 60 kHz**

(100 ms ON, 900 ms OFF), applied to each channel at a time. The protection circuit has to react. The power amplifier tries to re-start continuously while the PROTECT LED blinks with the same frequency.
Repeat the test with **f = 30 kHz** and the limiter set to ON; the power amplifier should not switch off.

6. Level CHANNEL A&B:

- set the level control to its fully clockwise position.
- set the INPUT ROUTING switch to: DUAL / STEREO.
- HI-LOW-CUT switch is ON (as factory pre-set!).
- BRIDGED MODE: NORMAL
- LIMITER: SLOW (as factory pre-set!)
- THD < 0.1 %

6.1. NOMINAL LEVEL

Input	U(E)	Measuring point	U(A)	Load resistor	Jumper on 86207/86211
CH. A/B	0 dBu	SPEAKER A/B	69.3 V	4 Ohm	select J11,J21
CH. A/B	+ 6 dBu	SPEAKER A/B	69.3 V	4 Ohm	select J12,J22
CH. A/B	+ 13 dBu	SPEAKER A/B	69.3 V	4 Ohm	select J13,J23
CH. A/B	+1 dBu	SPEAKER A/B	77.5 V	8 Ohm	select J11,J21
CH. A/B	-2 dBu	SPEAKER A/B	54.8 V	2 Ohm	select J11,J21

6.2. MAXIMUM INPUT LEVEL: U(E) = +21 dBu (9 Vrms)

7. INPUT-ROUTING switch

DUAL / STEREO (as factory pre-set!)

- channel A and B have to be driven separately.

PARALLEL / MONO

- channel A and B are paralleled at the input. Both channels can be driven using a common signal source.

8. Level BRIDGED MODE

- set the level control all the way to its fully clockwise position.
- HI-LOW-CUT switch is ON (as factory pre-set!).
- BRIDGED MODE: BRIDGED
- LIMITER: SLOW (as factory pre-set!)
- THD < 0.1 %

BRIDGED: Double the output voltage is presented at the BRIDGED OUT connector. It is mandatory to use the CHANNEL A input connector. The CHANNEL B input connector is without function.

Input	U(E)	Measuring point	U(A)	Load resistor	Remarks
CH. A	0 dBu	BRIDGED OUT	109.5 V	4 ohms	select J11,J21
CH. A	0 dBu	BRIDGED OUT	138.5 V	8 ohms	select J11,J21

9. GROUND LIFT switch

Test the functioning of the switch using an ohm-meter:
The circuit ground (at the input or the output connector) is measured versus the common ground of the enclosure (contact at the ground terminal, located on the rear panel - or common ground of the mains cord).

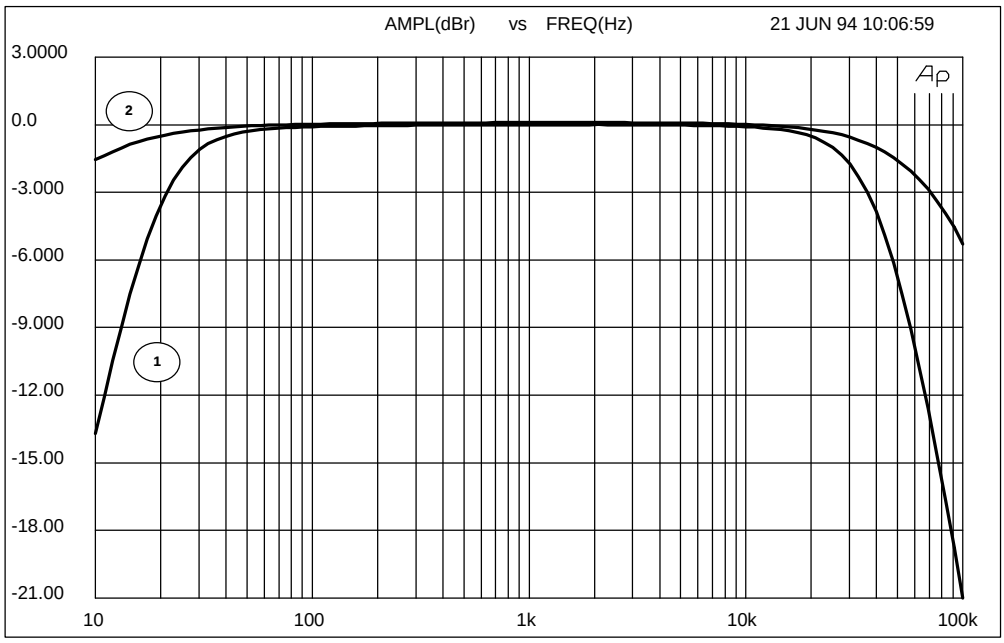
10. Amplitude - Non-Linearity

- testing with load resistor 8 ohms, dual mode
- MDW = 80 kHz
- input sensitivity = 0 dBu
- power amplifier's condition as shipped from the factory

Measurement	at nominal voltage U(A) = 63.2 V	at nominal voltage U(A) = 20 V	Remarks
THD+N (f = 1 kHz)	< 0.005 %	< 0.005 %	
THD+N (f = 10 kHz)	< 0.02 %	< 0.01 %	
IMD-SMPTE	< 0.01 %	< 0.01 %	60 Hz, 7 kHz
DIM 30	< 0.007 %	< 0.005 %	3.15 kHz, 15 kHz

DIM 100	< 0.009 %	< 0.005 %	3.15 kHz, 15 kHz

11. Frequency Response



Plot 1: HI/LO-Cut on Plot 2: HI/LO-Cut off

12. Noise Interference

- U(F) = external voltage un-weighted with B = 22 Hz … 22 kHz, effective value (IEC 268-1)
- U(G) = noise voltage, frequency-weighting filter according to CCIR-468-3, quasi peak weighted (IEC 268-1)
- U(A) = interference voltage A-weighted, dB(A), effective value (IEC 268-1)
- Signal-to-noise ratio referenced to a nominal output voltage of 69.3 V (1200W/4ohms)
- HI/LO-CUT ON, GND LIFT = GROUNDED, input sensitivity = 0 dBu

	Interference output voltage	**S/N ratio**	**Equivalent input interference voltage**	**Equivalent input interference level**	**Residual interference output voltage**
U(F)	< 615µV	> 101 dB	< 6.9µV	< -101 dBu	< 435µV
U(G)	< 3.65mV	> 85.5 dB	< 41µV	< -85.5 dBu	< 1.55mV
U(A)	< 490µV	> 103 dB	< 5.5µV	< -103 dBu	< 345µV

13. Crosstalk

- at f = 1 kHz < -70 dB

14. DAMPING FACTOR - internal >300

- internal with f = 1 kHz

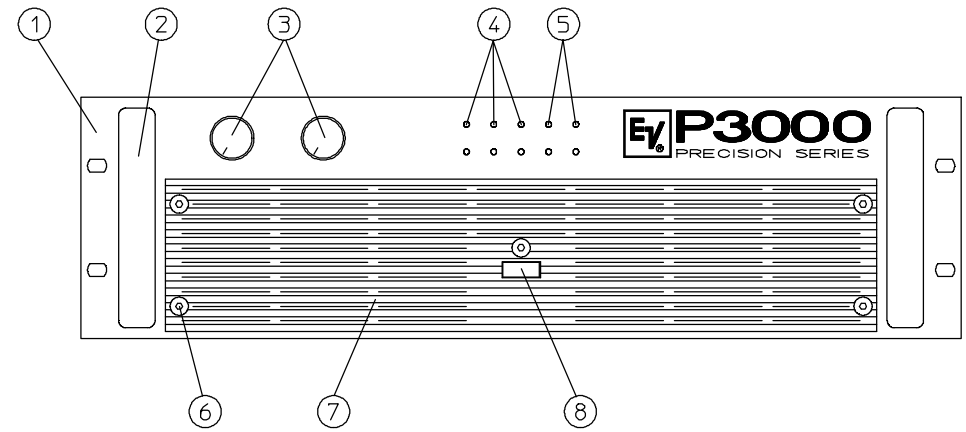
15. SLEW RATE >40 V/µs

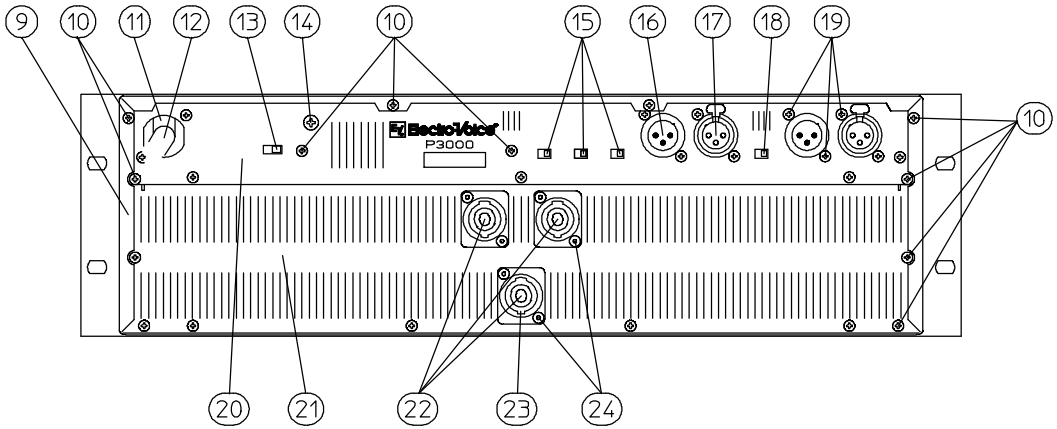
- internal

16. Factory Defaults

- ***Caution:*** make sure to ckeck these settings:

Function	**Location**	**Control**	**State**	**Setting**
Input Sensitivity L & P	86207/86211	Jumper J11/J21	plugged in	0 dBu
Limiter Off Switch	86207/86211	S102	open	Limiter on
Limiter Service	86207/86211	S101 / S201	open	
Fan Service	86207/86211	S001	open	
Input Routing	rear panel	slide switch	Dual/Stereo	Dual Mode
HI/LO-Cut Filter	rear panel	slide switch	on	Filter on
Bridged Mode	rear panel	slide switch	Normal	Dual Mode
Limiter	rear panel	slide switch	Slow	Limiter slow
CIR.GND to Chassis	rear panel	slide switch	Grounded	





POS.	DESCRIPTION	PART.NO.
1	FRONT PANEL	351 141
2	HANDLE 109MM	351 214
	SCREW M5x12	349 615
3	KNOB ø22	347 348
	POTENTIOMETER	348 430
	NUT M7x0.75	347 249
4	LED GREEN ø3mm	336 398
5	LED RED ø3mm	336 399
6	SCREW M5x12	349 532
7	GRILLE	351 328
8	KNOB	341 382
	MAINS SWITCH	346 720
	SCREW M3x6	334 989
9	COVER	351 359
10	SCREW M3x6	334 989
11	STRAIN RELIEF	349 768
12	POWER CORD	353 914
13	SLIDE SWITCH	338 886
14	TAPPING SCREW 3.9x9.5	348 583
15	SWITCH	348 583
16	XLR CONNECTOR (MALE)	346 792
17	XLR CONNECTOR (FEMALE)	346 791
18	SWITCH	348 572
19	SCREW PT-KB 30x8	344 229
20	REAR PANEL (TOP)	351 142
21	REAR PANEL (BOTTOM)	351 143
22	SPEAKON CONNECTOR	341 343
23	HOLE, PLUG ø18.5MM	341 343
24	RIVET	335 632

Ausgabe	Änderung	Tag	Name

	2000	Tag	Name
Bearb.		03.11.	O. Kaiser
Gepr.		03.11.	Flexeder
Stand		03.11.	O. Kaiser

EVI AUDIO
DYNACORD

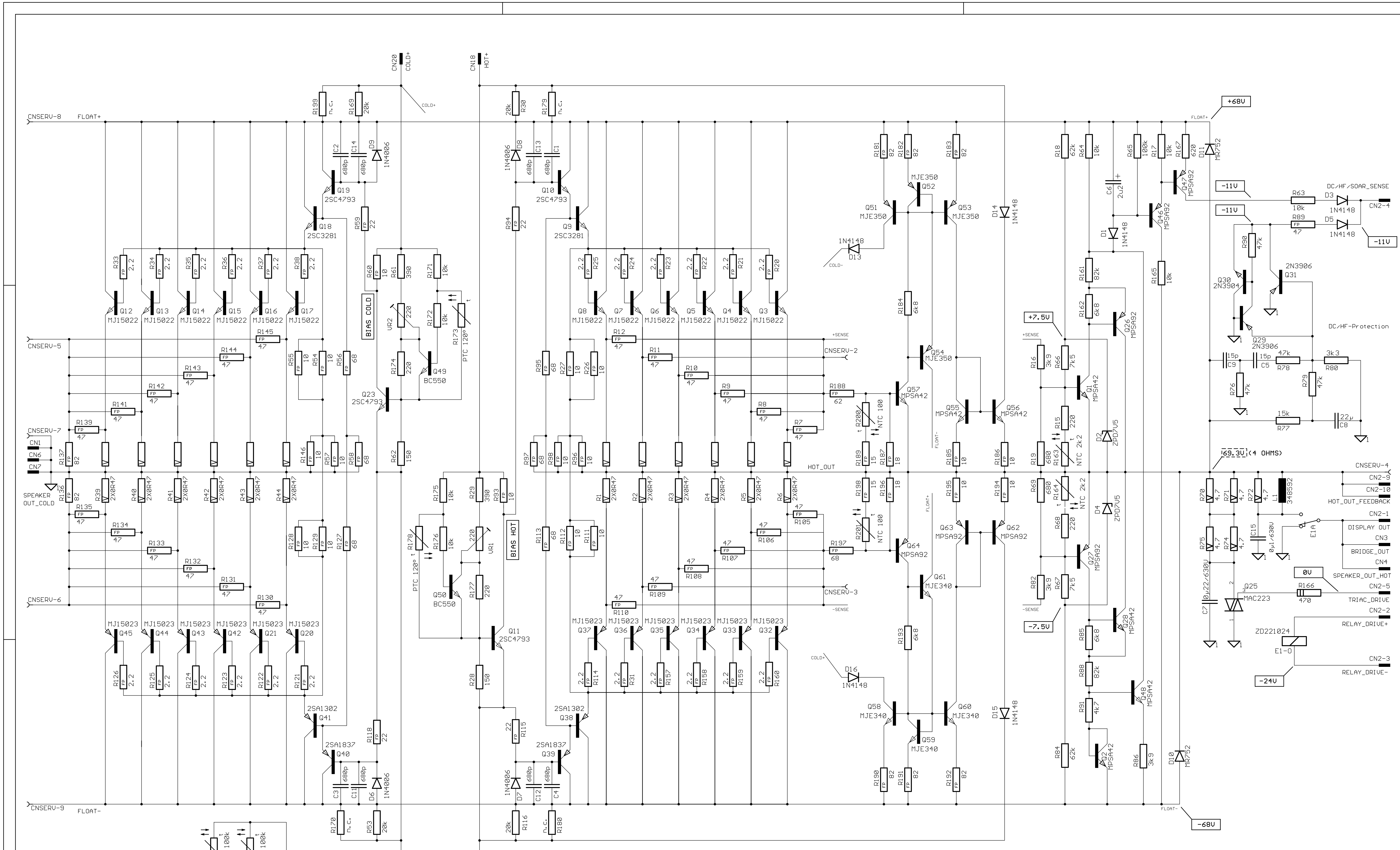
SERVICE-INFORMATION

359 780

P 3000 US

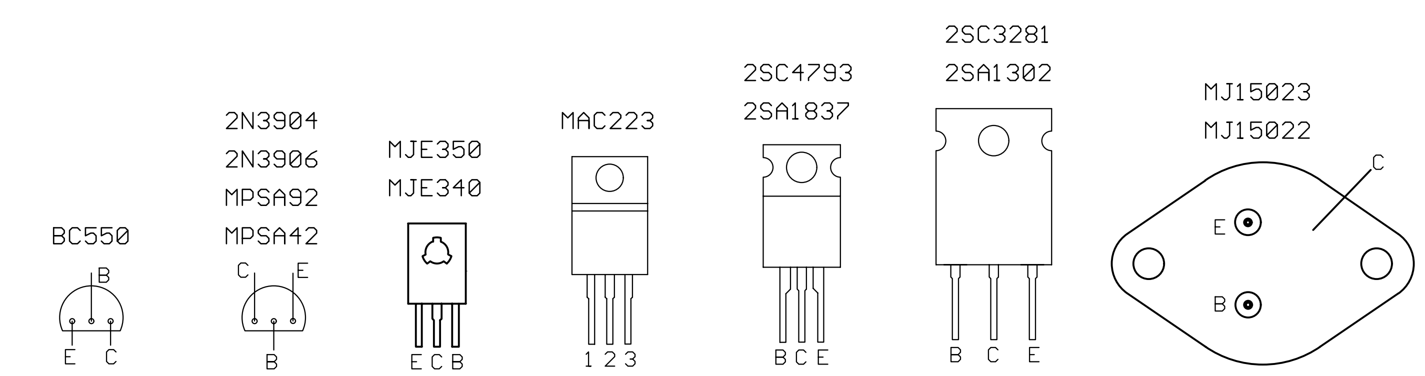
Maßstab 1:2,5

3-



▭	DC VOLTAGE MEASURED WITH VOLTMETER 100kOHM/V
⬚	AC VOLTAGE 1000 HZ, MEASURED WITH VTVM

FP — FLAME-PROOF RESISTOR
SAFTEY COMPONENT - MUST BE
REPLACED BY ORIGINAL PART ONLY !



ALTERATIONS RESERVED!

SYMB.	REVISION	DATE	NAME
C	137/96	20.11.96	Stangl
B	52/95	19.6.95	Brandl
A	26/95	3.3.95	Brandl

Last modified: 21.09.2000 11:57:10
Last plotted: 21.09.2000 11:57:12

	DATE	NAME
DSG'D		J.Taffner
CHK'D	3.3.95	Brandl M.
APP'D		

DYNACORD

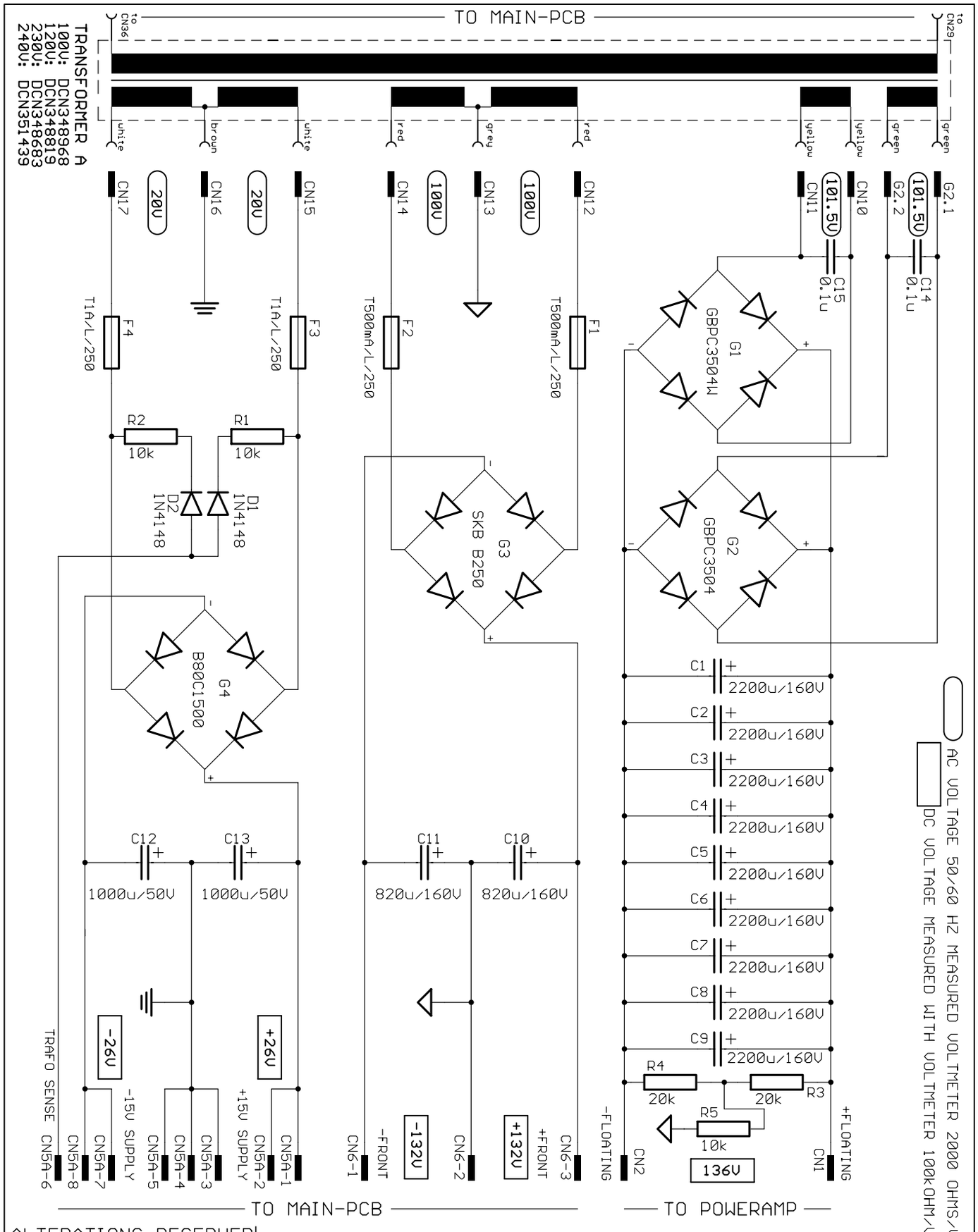
84157C POWERAMP

CIRCUIT DIAGRAM 1/1

348680

CPS4

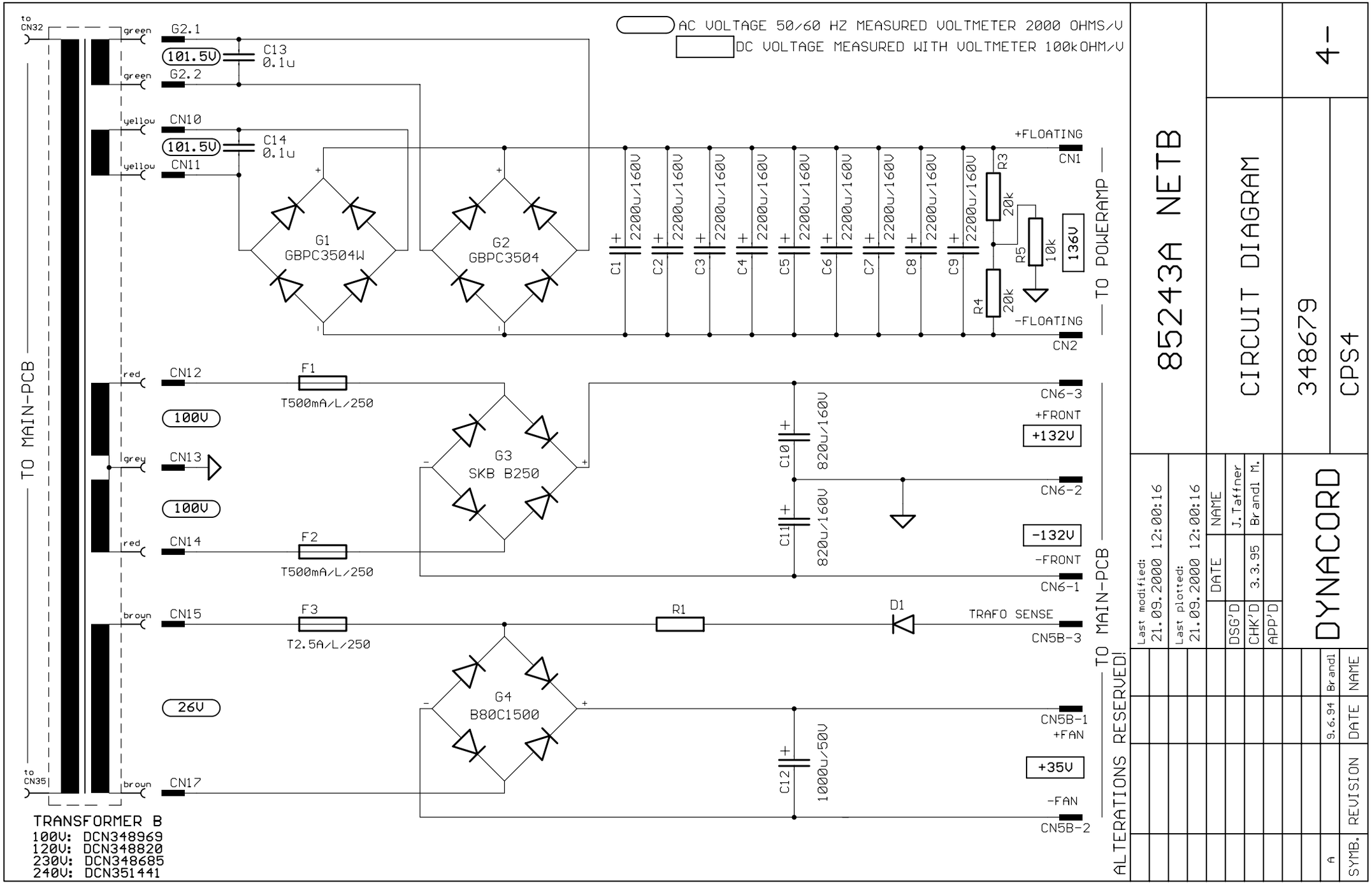
2-



ALTERATIONS RESERVED!

				Last modified: 21.09.2000 11:59:12	85242A NETA	
				Last plotted: 21.09.2000 11:59:13		
					DATE	NAME
				DSG'D		J.Taffner
				CHK'D	3.3.95	Brandl M.
				APP'D		
				DYNACORD	348676	4-
A		9.6.94	Brandl		CPS4	
SYMB.	REVISION	DATE	NAME			

CIRCUIT DIAGRAM


AC VOLTAGE 50/60 HZ MEASURED VOLTMETER 2000 OHMS/V
DC VOLTAGE MEASURED WITH VOLTMETER 100kOHM/V
TO MAIN-PCB
to CN32
to CN35
green
G2.1
101.5V
C13
0.1u
G2.2
yellow
CN10
C14
CN11
G1
GBPC3504W
G2
GBPC3504
C1 2200u/160V
C2 2200u/160V
C3 2200u/160V
C4 2200u/160V
C5 2200u/160V
C6 2200u/160V
C7 2200u/160V
C8 2200u/160V
C9 2200u/160V
R3 20k
R5 10k
R4 20k
136V
+FLOATING
CN1
-FLOATING
CN2
TO POWERAMP
red
CN12
F1
T500mA/L/250
100V
grey
CN13
CN14
F2
G3
SKB B250
C10 820u/160V
C11 820u/160V
CN6-3
+FRONT
+132V
CN6-2
-132V
-FRONT
CN6-1
brown
CN15
F3
T2.5A/L/250
R1
D1
TRAFO SENSE
CN5B-3
26V
G4
B80C1500
C12 1000u/50V
CN5B-1
+FAN
+35V
-FAN
CN5B-2
CN17
TO MAIN-PCB
ALTERATIONS RESERVED!
TRANSFORMER B
100V: DCN348969
120V: DCN348820
230V: DCN348685
240V: DCN351441
85243A NETB
CIRCUIT DIAGRAM
348679
CPS4
4-
DYNACORD
Last modified: 21.09.2000 12:00:16
Last plotted: 21.09.2000 12:00:16
DSG'D NAME J.Taffner
CHK'D DATE 3.3.95
APP'D Brandl M.
A 9.6.94 Brandl
SYMB. REVISION DATE NAME

XLR-PINOUT
PIN1 = SHIELD
PIN2 = a, +
PIN3 = b, -

✳ = INPUT TRANSFORMER OPTIONAL

INPUT A
INPUT B
OUTPUT A
OUTPUT B
B1 B2 B3 B4
0dBu
T1 T2 DCN308840
JR1 JR2 JR3 JR4 0
H1A H1B H1C H1D H3A H3B H3C H3D 10k
C315 C317 33p
C316 C318 33p
I300B I301B I300A I301A NE5532
R300 R316 R322 R306 10
R301 R317 10
C300 C306 1µ0
C301 C307 1µ0
R302 R319 5k6
R303 R318 11k
R304 R320 620
R305 R321 510
C302 C308 10n
C303 C309 4n7
HI/LO CUT
SL1-B SL1-A
R307 6k8
I101B I201B
LEVEL CONTROL A
LEVEL CONTROL B
Part of 87128A
VR1 VR2 10kB
CN4X-5 CN4X-6 CN4X-7
CN4X-3 CN4X-4 CN4X-1 CN4X-2
CN4-5 CN4-6 CN4-7
CN4-3 CN4-4 CN4-1 CN4-2
R310 R326 3R9
R312 R328 33
C304 C310 220p
R311 R327 22k
R313 10k
R314 10k
I302A I302B
S2-A
MONO BRIDGED
C319 C320 22µ/16V
FRNT_INA FRNT_INB
TO SHEET 2
DUAL PARALLEL
S4-A S4-B S4-C S4-D
I600-P I300-P I301-P I302-P
C311 C312 C313 C314 0µ1
+UB -UB +15V -15V
GND LIFT
CN38 CN33
C305 4µ7
S3-B

TL072
NE5532
BC327 BC337
2N3906 2N3904

AC VOLTAGE 1000 HZ, MEASURED WITH VTVM
DC VOLTAGE MEASURED WITH VOLTMETER 100kOHM/V

R620 470k
MUTD
FROM SHEET 3
R621 22k
R622 100k
Q621 BC337
Q620 BC337
-15.6V
D602 1N4148
R623 2k4

87128A
CN7X-3 CN7X-10 CN7X-8 CN7X-5 CN7X-9 CN7X-7 CN7X-1 CN7X-6 CN7X-4 CN7X-2
CN7-3 CN7-10 CN7-8 CN7-5 CN7-9 CN7-7 CN7-1 CN7-6 CN7-4 CN7-2
PROTECT
LIMIT_B FROM SHEET 2
LIMIT_A FROM SHEET 2
IN-B OUT-B OUT-A IN-A
D23 D21 D19 D20 D27 D26 D22 D24
POWER ON
R630 4k7
R631 4k7
D29 D28

R601 R611 6k8
D234 D233 1N4148
Q600 Q610 2N3906
Q601 Q611 BC327
Q602 Q612 BC337
Q603 Q613 2N3904
R602 R612 5k6
R603 R613 2k4
R604 R614 5k6
R605 R615 220k
D600 D601 1N4148
R606 R616 4k7
C603 C613 10µ
R607 R617 30k
I600A I600B TL072
R608 R618 5k6
DISPLAY B
DISPLAY A
FROM SHEET 2
DISPLAY ADJUST B
DISPLAY ADJUST A
VR600 VR601 4k7
CN2B-1 SP_B_OUT
CN2A-1 SP_A_OUT
R600 R610 20k
C600 C610 10µ

ALTERATIONS RESERVED!

SYMB.	REVISION	DATE	NAME
H	100/98	10.98	Lang
G	78/98	09.98	Lang
F	88/97	12.97	Lang
E	115/96	10.96	Lang
D	26/95	3.3.95	Brandl
C	156/94	8.12.94	Taffner
B	103/94	13.9.94	Brandl
A	Pilot	9.6.94	Brandl

Last modified: 10.10.2000 14:51:32
Last plotted: 10.10.2000 14:58:38

	DATE	NAME
DSG'D		J.Taffner
CHK'D	3.3.95	Brandl M.
APP'D		

DYNACORD

86207h MAIN_PCB
CIRCUIT DIAGRAM 1/3
348681 2-
L2400

SELECT.	INP.SENS. A
J11	0 dBu
J12	+6 dBu
	GAIN
J13	26 dB

SELECT.	INP.SENS. B
J21	0 dBu
J22	+6 dBu
	GAIN
J23	26 dB

MPSA92
MPSA42
MJE350
MJE340
CA3080
LM308A
TL072
NE5532
2N3906
2N3904
J111
TL074

ALTERATIONS RESERVED!

SYMB.	REVISION	DATE	NAME
H	100/98	10.98	Lang
G	78/98	09.98	Lang
F	88/97	12.97	Lang
E	115/96	10.96	Lang
D	26/95	3.3.95	Brandl
C	156/94	8.12.94	Taffner
B	103/94	13.9.94	Brandl
A	Pilot	9.6.94	Brandl

Last modified: 10.10.2000 14:51:32
Last plotted: 10.10.2000 14:58:57

	DATE	NAME
DSG'D		J.Taffner
CHK'D	3.3.95	Brandl M.
APP'D		

DYNACORD

86207h MAIN PCB

CIRCUIT DIAGRAM 2/3

348682 2-

L2400

SPEED 1: 12.5V
SPEED 2: 19.5V
SPEED 3: 27.5V

SPEED 1: 3.5V
SPEED 2: 5.8V
SPEED 3: 8.5V

FAN SPEED ADJUST

TIME_IN

MUTD
TO SHEET 1 AND 2

*1: used only with PCB 86207
*2: used only with PCB 86211

AC VOLTAGE 1000 HZ, MEASURED WITH VTVM
DC VOLTAGE MEASURED WITH VOLTMETER 100kOHM/V

ALTERATIONS RESERVED!

				Last modified: 10.10.2000 14:51:32			86207h MAIN PCB
				Last plotted: 10.10.2000 14:59:12			
H	100/98	10.98	Lang		DATE	NAME	
G	78/98	09.98	Lang	DSG'D		J.Taffner	CIRCUIT DIAGRAM 3/3
F	88/97	12.97	Lang	CHK'D	3.3.95	Brandl M.	
E	115/96	10.96	Lang	APP'D			
D	26/95	3.3.95	Brandl				
C	156/94	8.12.94	Taffner	DYNACORD			348777 2-
B	103/94	13.9.94	Brandl				L2400
A	Pilot	9.6.94	Brandl				
SYMB.	REVISION	DATE	NAME				

Ersatzteilliste - Bill of Materials

	170018	**P 3000 US 120V POWER-AMP**	
Pos. Nr.	**Best. Nr.**		
Ref. No.	**Part No.**	**Bezeichnung**	**Description**
		Zubehör	**Accessories & packing material**
	341341	STECKER-SPEAKON 4POL	speakon-connector 4-pole
	351212	OWNER'S MANUAL P 3000	owner's manual P3000
	349832	R-HAL.LI.L24/1600 RACKHALTE	rack ear left
	349833	R-HAL.RE.L24/1600 RACKHALTE	rack ear right
	335589	FUSS-GUMMI SJ 5009 SW	rubber foot
	332652	KRT. L 2400 612X570X270	carton outer
	347526	KRT. IN L 2400 502X465X155	carton inner
	303715	STYROPOR-ECK 150X150X150X50	styrofoam #2
	348018	SCHUTZFOLIE 1200X800X0,05	poly bag
	327495	STYROPOR-ECK 150X150X100X50	styrofoam #1
	345438	SCHUTZHÜLLE 165X345X0,05	plastic bag
	349988	FALTEINLAGE 750X280	carton filler
	349989	FALTEINLAGE 1864X150	carton filler
		Mechanische Teile	**Cabinet material**
B0010	341343	BUCHSE-SPEAKON-VIERECK 4POL	speaker socket 4-pole
S0010	346720	SCHALTER-NETZ ESB-99888V	power switch
	347348	DK 22 SW/GA C 6FL	rotary knob black
	341382	KNOPF-TASTE 20X8 SW 3.3	push button black
	349528	HUTSTOPFEN H7 18,5MM	plug, hole
	353914	KABEL-NETZ BEARB.AUS 348951	mains cable USA
	352268	STECKER-NETZ 30A UL/CSA	mains connector 30amp US
	349846	KABEL-KONFEKT 8POL 0.680M	ribbon cable assy 8way
	349847	KABEL-KONFEKT 10POL 0.800M	ribbon cable assy 10way
	351153	KABEL-KONFEKT 10POL 0.400M	ribbon cable assy 10way
	351214	GRIFF 109 MM GRAU 3HE	handle 109 mm
	348415	LÜFTER TYP FBAO8A24H DC	fan dc 24V
	351141	FB.P3000 BED	front panel p3000
	351142	RW.OT.P3000 US 120V BED	rear panel top P3000
	351143	RW.UT.P3000 BED	rear panel bottom P3000
	351359	DEC.3HE-EV-LACK/P2-3000 LAC	top cover
	348819	NT-RG.A.P3000 US 120V K.A	transformer power 120V (A)
	348805	WI-SO PTC K155 100GRAD	safety component PTC
	348341	FEDERLEISTE 3POL CE100-	connector female 3-pole
	348820	NT-RG.B.P3000 US 120V K.B	transformer power 120V (B)
	348805	WI-SO PTC K155 100GRAD	safety component PTC
	348341	FEDERLEISTE 3POL CE100-	connector female 3-pole
	348341	FEDERLEISTE 3POL CE100-	connector female 3-pole
	344861	FEDERLEISTE 3POL CE156-	connector female 3-pole
	841578	**PCB+A#L2400/P3000**	**PCB assy 84157 power amp**
CNSER	306446	FEDERLEISTE 2,5MM O 9POL	connector female 9-pole
CN001	330269	FL.STECKER 6.3/0.8	connector 6.3mm faston
CN002	344975	MESSERLST. 10POL	connector male 10-pin
CN003	330269	FL.STECKER 6.3/0.8	connector 6.3mm faston

	170018	P 3000 US 120V POWER-AMP	
Pos. Nr.	Best. Nr.		
Ref. No.	Part No.	Bezeichnung	Description
CN004	330269	FL.STECKER 6.3/0.8	connector 6.3mm faston
CN006	330269	FL.STECKER 6.3/0.8	connector 6.3mm faston
CN007	330269	FL.STECKER 6.3/0.8	connector 6.3mm faston
CN018	343516	FL.STECKER 4.8/0.5	connector 4.8mm faston
CN019	343516	FL.STECKER 4.8/0.5	connector 4.8mm faston
CN020	343516	FL.STECKER 4.8/0.5	connector 4.8mm faston
CN021	343516	FL.STECKER 4.8/0.5	connector 4.8mm faston
C0001	348846	KO-KER 680.0PF 500V 5%	cap ceramic 680pF
C0002	348846	KO-KER 680.0PF 500V 5%	cap ceramic 680pF
C0003	348846	KO-KER 680.0PF 500V 5%	cap ceramic 680pF
C0004	348846	KO-KER 680.0PF 500V 5%	cap ceramic 680pF
C0005	335787	KO-KER 15.0PF 100V 2%	cap ceramic 15pF
C0006	301458	KO-EL 2.200MF 63V	cap electrolytic 2.2uF/63V
C0007	344934	KO-SO 0.22MF 275V 20% K	safety component 220nF/275V
C0008	301474	KO-EL 22.000MF 16V BIP	cap bip electr. 22uF/16V
C0009	335787	KO-KER 15.0PF 100V 2%	cap ceramic 15pF
C0011	348846	KO-KER 680.0PF 500V 5%	cap ceramic 680pF
C0012	348846	KO-KER 680.0PF 500V 5%	cap ceramic 680pF
C0013	348846	KO-KER 680.0PF 500V 5%	cap ceramic 680pF
C0014	348846	KO-KER 680.0PF 500V 5%	cap ceramic 680pF
C0015	341714	KO-SO 0.10MF 275V 20% K	safety cap 100nF/275V
D0001	301254	DIODE 1N 4148 AXIAL	diode 1N 4148
D0002	307916	DIODZ BZX 55C 7V5 0.50W	diode zener 7V5
D0003	301254	DIODE 1N 4148 AXIAL	diode 1N 4148
D0004	307916	DIODZ BZX 55C 7V5 0.50W	diode zener 7V5
D0005	301254	DIODE 1N 4148 AXIAL	diode 1N 4148
D0006	304360	DIODE 1N 4007 GEGURTET	diode 1N 4002
D0007	304360	DIODE 1N 4007 GEGURTET	diode 1N 4002
D0008	304360	DIODE 1N 4007 GEGURTET	diode 1N 4002
D0009	304360	DIODE 1N 4007 GEGURTET	diode 1N 4002
D0010	328769	DIODE MR 752	diode MR 752
D0011	328769	DIODE MR 752	diode MR 752
D0013	301254	DIODE 1N 4148 AXIAL	diode 1N 4148
D0014	301254	DIODE 1N 4148 AXIAL	diode 1N 4148
D0015	301254	DIODE 1N 4148 AXIAL	diode 1N 4148
D0016	301254	DIODE 1N 4148 AXIAL	diode 1N 4148
E0001	348634	RELAIS 832A-1C-F-C-B 24V DC	relay 24v
L0001	348592	FILTERSP. 2.50UH/0.004OHM	coil 2.5uH
Q0001	348422	TRANS MPSA 42	transistor MPSA 42
Q0002	348422	TRANS MPSA 42	transistor MPSA 42
Q0003	331657	TRANS MJ 15022	transistor MJ 15022
Q0004	331657	TRANS MJ 15022	transistor MJ 15022
Q0005	331657	TRANS MJ 15022	transistor MJ 15022
Q0006	331657	TRANS MJ 15022	transistor MJ 15022
Q0007	331657	TRANS MJ 15022	transistor MJ 15022
Q0008	331657	TRANS MJ 15022	transistor MJ 15022
Q0009	351981	TRANS MJL 3281 A	transistor MJL 3281 A
Q0010	348409	TRANS 2SC 4793	transistor 2SC 4793
Q0011	348409	TRANS 2SC 4793	transistor 2SC 4793
Q0012	331657	TRANS MJ 15022	transistor MJ 15022
Q0013	331657	TRANS MJ 15022	transistor MJ 15022
Q0014	331657	TRANS MJ 15022	transistor MJ 15022

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Pos. Nr.	Best. Nr.		
Ref. No.	Part No.	Bezeichnung	Description
Q0015	331657	TRANS MJ 15022	transistor MJ 15022
Q0016	331657	TRANS MJ 15022	transistor MJ 15022
Q0017	331657	TRANS MJ 15022	transistor MJ 15022
Q0018	351981	TRANS MJL 3281 A	transistor MJL 3281 A
Q0019	348409	TRANS 2SC 4793	transistor 2SC 4793
Q0020	331658	TRANS MJ 15023	transistor MJ 15023
Q0021	331658	TRANS MJ 15023	transistor MJ 15023
Q0023	348409	TRANS 2SC 4793	transistor 2SC 4793
00010	338876	TRIAC MAC 223 A6	triac MAC 223 A6
Q0026	348423	TRANS MPSA 92	transistor MPSA 92
Q0027	348423	TRANS MPSA 92	transistor MPSA 92
Q0028	348422	TRANS MPSA 42	transistor MPSA 42
Q0029	348421	TRANS 2N 3906	transistor 2N 3906
Q0030	335763	TRANS 2N 3904	transistor 2N 3904
Q0031	348421	TRANS 2N 3906	transistor 2N 3906
Q0032	331658	TRANS MJ 15023	transistor MJ 15023
Q0033	331658	TRANS MJ 15023	transistor MJ 15023
Q0034	331658	TRANS MJ 15023	transistor MJ 15023
Q0035	331658	TRANS MJ 15023	transistor MJ 15023
Q0036	331658	TRANS MJ 15023	transistor MJ 15023
Q0037	331658	TRANS MJ 15023	transistor MJ 15023
Q0038	351982	TRANS MJL 1302 A	transistor MJL 1302 A
Q0039	348408	TRANS 2SA 1837	transistor 2SA 1837
Q0040	348408	TRANS 2SA 1837	transistor 2SA 1837
Q0041	351982	TRANS MJL 1302 A	transistor MJL 1302 A
Q0042	331658	TRANS MJ 15023	transistor MJ 15023
Q0043	331658	TRANS MJ 15023	transistor MJ 15023
Q0044	331658	TRANS MJ 15023	transistor MJ 15023
Q0045	331658	TRANS MJ 15023	transistor MJ 15023
Q0046	348423	TRANS MPSA 92	transistor MPSA 92
Q0047	348423	TRANS MPSA 92	transistor MPSA 92
Q0048	348422	TRANS MPSA 42	transistor MPSA 42
Q0049	301184	TRANS BC 550 C	transistor BC 550 B
Q0050	301184	TRANS BC 550 C	transistor BC 550 B
00010	338869	TRANS MJE 350	transistor MJE 350
00010	338869	TRANS MJE 350	transistor MJE 350
00010	338869	TRANS MJE 350	transistor MJE 350
00010	338869	TRANS MJE 350	transistor MJE 350
Q0055	348422	TRANS MPSA 42	transistor MPSA 42
Q0056	348422	TRANS MPSA 42	transistor MPSA 42
Q0057	348422	TRANS MPSA 42	transistor MPSA 42
00010	338868	TRANS MJE 340	transistor MJE 340
00010	338868	TRANS MJE 340	transistor MJE 340
00010	338868	TRANS MJE 340	transistor MJE 340
00010	338868	TRANS MJE 340	transistor MJE 340
Q0062	348423	TRANS MPSA 92	transistor MPSA 92
Q0063	348423	TRANS MPSA 92	transistor MPSA 92
Q0064	348423	TRANS MPSA 92	transistor MPSA 92
R0001	348632	WI-DR 2X 0.47 OHM 5.00W 5%	resistor 2x 0.47 Ohm 5watt
R0002	348632	WI-DR 2X 0.47 OHM 5.00W 5%	resistor 2x 0.47 Ohm 5watt
R0003	348632	WI-DR 2X 0.47 OHM 5.00W 5%	resistor 2x 0.47 Ohm 5watt
R0004	348632	WI-DR 2X 0.47 OHM 5.00W 5%	resistor 2x 0.47 Ohm 5watt

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Ref. No.	**Part No.**	**Bezeichnung**	**Description**
R0005	348632	WI-DR 2X 0.47 OHM 5.00W 5%	resistor 2x 0.47 Ohm 5watt
R0006	348632	WI-DR 2X 0.47 OHM 5.00W 5%	resistor 2x 0.47 Ohm 5watt
R0039	348632	WI-DR 2X 0.47 OHM 5.00W 5%	resistor 2x 0.47 Ohm 5watt
R0040	348632	WI-DR 2X 0.47 OHM 5.00W 5%	resistor 2x 0.47 Ohm 5watt
R0041	348632	WI-DR 2X 0.47 OHM 5.00W 5%	resistor 2x 0.47 Ohm 5watt
R0042	348632	WI-DR 2X 0.47 OHM 5.00W 5%	resistor 2x 0.47 Ohm 5watt
R0043	348632	WI-DR 2X 0.47 OHM 5.00W 5%	resistor 2x 0.47 Ohm 5watt
R0044	348632	WI-DR 2X 0.47 OHM 5.00W 5%	resistor 2x 0.47 Ohm 5watt
R0070	341713	WI-DR 4.70 OHM 4.00W 5%	resistor 4.70 Ohm 4watt
R0071	341713	WI-DR 4.70 OHM 4.00W 5%	resistor 4.70 Ohm 4watt
R0072	341713	WI-DR 4.70 OHM 4.00W 5%	resistor 4.70 Ohm 4watt
R0074	341713	WI-DR 4.70 OHM 4.00W 5%	resistor 4.70 Ohm 4watt
R0075	341713	WI-DR 4.70 OHM 4.00W 5%	resistor 4.70 Ohm 4watt
R0119	348490	WI-SO NTC K 164/100K/J	safety component NTC
R0120	348490	WI-SO NTC K 164/100K/J	safety component NTC
R0163	348593	WI-SO NTC K 164/2.2K	safety component NTC
R0164	348593	WI-SO NTC K 164/2.2K	safety component NTC
R0166	302032	WI-SCH 470.00 OHM 2.00W 5%	resistor 470 Ohm 2watt
R0173	348847	WI-SO PTC C 1011 120 C 5%	safety component PTC
R0178	348847	WI-SO PTC C 1011 120 C 5%	safety component PTC
R0200	348966	WI-SO NTC B57164-K101-J 52	safety component NTC
R0201	348966	WI-SO NTC B57164-K101-J 52	safety component NTC
VR001	348674	WI-TRI 250.00 OHM LIN	pot trim 250 Ohm lin
VR002	348674	WI-TRI 250.00 OHM LIN	pot trim 250 Ohm lin
00035	306397	KODIERSTIFT	code plug

	871288	PCB-B"L1600/2400/P3000/2000	PCB assy 87128 display
CN004	306395	FEDERLEISTE 2,5MM O 7POL	connector female 7-pole
CN07X	344975	MESSERLST. 10POL	connector male 10-pin
D0019	336399	LED RT 3MM TLUR 4401	LED red 3mm
D0020	336399	LED RT 3MM TLUR 4401	LED red 3mm
D0021	336399	LED RT 3MM TLUR 4401	LED red 3mm
D0022	336398	LED GN 3MM TLHG 4400/01	LED green 3mm
D0023	336399	LED RT 3MM TLUR 4401	LED red 3mm
D0024	336398	LED GN 3MM TLHG 4400/01	LED green 3mm
D0026	336398	LED GN 3MM TLHG 4400/01	LED green 3mm
D0027	336398	LED GN 3MM TLHG 4400/01	LED green 3mm
D0028	336398	LED GN 3MM TLHG 4400/01	LED green 3mm
D0029	336398	LED GN 3MM TLHG 4400/01	LED green 3mm
VR001	348430	P-DREH 10KOHM LIN B	potentiometer 10k Ohm lin
VR002	348430	P-DREH 10KOHM LIN B	potentiometer 10k Ohm lin
00005	306397	KODIERSTIFT	code plug

	862118	PCBAR#P3000US	PCB assy 86211
B0001	346791	BUCHSE-FL. XLR 3POL SW	socket XLR 3pole
B0002	346792	STECKER-FL. XLR 3POL SW	connector XLR 3pin
B0003	346791	BUCHSE-FL. XLR 3POL SW	socket XLR 3pole
B0004	346792	STECKER-FL. XLR 3POL SW	connector XLR 3pin
CNASE	306446	FEDERLEISTE 2,5MM O 9POL	connector female 9-pole
CNBSE	306446	FEDERLEISTE 2,5MM O 9POL	connector female 9-pole

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Ref. No.	**Part No.**	**Bezeichnung**	**Description**
CN001	330269	FL.STECKER 6.3/0.8	connector 6.3mm faston
CN004	306395	FEDERLEISTE 2,5MM O 7POL	connector female 7-pole
CN007	344975	MESSERLST. 10POL	connector male 10-pin
CN02A	344975	MESSERLST. 10POL	connector male 10-pin
CN02B	344975	MESSERLST. 10POL	connector male 10-pin
CN023	348334	STIFTLEISTE 3POL MLSS	connector male 3-pin
CN024	348334	STIFTLEISTE 3POL MLSS	connector male 3-pin
CN025	348334	STIFTLEISTE 3POL MLSS	connector male 3-pin
CN026	348334	STIFTLEISTE 3POL MLSS	connector male 3-pin
CN029	330269	FL.STECKER 6.3/0.8	connector 6.3mm faston
CN030	330269	FL.STECKER 6.3/0.8	connector 6.3mm faston
CN031	330269	FL.STECKER 6.3/0.8	connector 6.3mm faston
CN032	330269	FL.STECKER 6.3/0.8	connector 6.3mm faston
CN034	330269	FL.STECKER 6.3/0.8	connector 6.3mm faston
CN035	330269	FL.STECKER 6.3/0.8	connector 6.3mm faston
CN036	330269	FL.STECKER 6.3/0.8	connector 6.3mm faston
CN037	330269	FL.STECKER 6.3/0.8	connector 6.3mm faston
CN05A	344862	MESSERLST. 8POL	connector male 8-pin
CN05B	348676	STIFTLEISTE 3POL MLSS	connector male 3-pin
CN06A	348676	STIFTLEISTE 3POL MLSS	connector male 3-pin
CN06B	348676	STIFTLEISTE 3POL MLSS	connector male 3-pin
CN08A	348334	STIFTLEISTE 3POL MLSS	connector male 3-pin
CN08B	348334	STIFTLEISTE 3POL MLSS	connector male 3-pin
CN18A	343516	FL.STECKER 4.8/0.5	connector 4.8mm faston
CN18B	343516	FL.STECKER 4.8/0.5	connector 4.8mm faston
CN19A	343516	FL.STECKER 4.8/0.5	connector 4.8mm faston
CN19B	343516	FL.STECKER 4.8/0.5	connector 4.8mm faston
CN20A	343516	FL.STECKER 4.8/0.5	connector 4.8mm faston
CN20B	343516	FL.STECKER 4.8/0.5	connector 4.8mm faston
CN21A	343516	FL.STECKER 4.8/0.5	connector 4.8mm faston
CN21B	343516	FL.STECKER 4.8/0.5	connector 4.8mm faston
C0001	342923	KO-FOL 0.220MF 63V 5%	cap mylar 220nF
C0002	342967	KO-FOL 3.300MF 50V 10%	cap mylar 3.3uF
C0003	340988	KO-FOL 0.470MF 63V 5%	cap mylar 470nF
C0004	341714	KO-SO 0.10MF 275V 20% K	safety cap 100nF/275V
C0005	341714	KO-SO 0.10MF 275V 20% K	safety cap 100nF/275V
C0040	301472	KO-EL 10.000MF 63V	cap electrolytic 10uF/63V
C0041	301472	KO-EL 10.000MF 63V	cap electrolytic 10uF/63V
C0042	301524	KO-KER 47.0PF 500V 10%	cap ceramic 47pF
C0043	301524	KO-KER 47.0PF 500V 10%	cap ceramic 47pF
C0044	301472	KO-EL 10.000MF 63V	cap electrolytic 10uF/63V
C0045	301472	KO-EL 10.000MF 63V	cap electrolytic 10uF/63V
C0046	329021	KO-KER 0.10MF 100V 20%	cap ceramic 100nF
C0047	329021	KO-KER 0.10MF 100V 20%	cap ceramic 100nF
C0101	343532	KO-EL 100.000MF 25V	cap electrolytic 100uF/25V
C0102	300046	KO-FOL 100.000PF 100V 5%	cap mylar 100pF
C0103	340988	KO-FOL 0.470MF 63V 5%	cap mylar 470nF
C0105	342923	KO-FOL 0.220MF 63V 5%	cap mylar 220nF
C0106	326675	KO-EL 100.000MF 10V BIP	cap bip electr. 100uF/10V
C0107	326675	KO-EL 100.000MF 10V BIP	cap bip electr. 100uF/10V
C0108	327391	KO-FOL 1500.000PF 100V 5%	cap mylar 1500pF
C0109	343532	KO-EL 100.000MF 25V	cap electrolytic 100uF/25V

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C0110	326675	KO-EL 100.000MF 10V BIP	cap bip electr. 100uF/10V
C0111	326675	KO-EL 100.000MF 10V BIP	cap bip electr. 100uF/10V
C0112	342923	KO-FOL 0.220MF 63V 5%	cap mylar 220nF
C0113	335787	KO-KER 15.0PF 100V 2%	cap ceramic 15pF
C0114	329021	KO-KER 0.10MF 100V 20%	cap ceramic 100nF
C0115	329021	KO-KER 0.10MF 100V 20%	cap ceramic 100nF
C0116	304349	KO-EL 2.200MF 50V BIP	cap bip electr. 2.2uF/50V
C0117	335787	KO-KER 15.0PF 100V 2%	cap ceramic 15pF
C0118	335787	KO-KER 15.0PF 100V 2%	cap ceramic 15pF
C0119	301558	KO-KER 33.0PF 100V 2%	cap ceramic 33pF
C0120	329021	KO-KER 0.10MF 100V 20%	cap ceramic 100nF
C0121	329021	KO-KER 0.10MF 100V 20%	cap ceramic 100nF
C0201	343532	KO-EL 100.000MF 25V	cap electrolytic 100uF/25V
C0202	300046	KO-FOL 100.000PF 100V 5%	cap mylar 100pF
C0203	340988	KO-FOL 0.470MF 63V 5%	cap mylar 470nF
C0205	342923	KO-FOL 0.220MF 63V 5%	cap mylar 220nF
C0206	326675	KO-EL 100.000MF 10V BIP	cap bip electr. 100uF/10V
C0207	326675	KO-EL 100.000MF 10V BIP	cap bip electr. 100uF/10V
C0208	327391	KO-FOL 1500.000PF 100V 5%	cap mylar 1500pF
C0209	343532	KO-EL 100.000MF 25V	cap electrolytic 100uF/25V
C0210	326675	KO-EL 100.000MF 10V BIP	cap bip electr. 100uF/10V
C0211	326675	KO-EL 100.000MF 10V BIP	cap bip electr. 100uF/10V
C0212	342923	KO-FOL 0.220MF 63V 5%	cap mylar 220nF
C0213	335787	KO-KER 15.0PF 100V 2%	cap ceramic 15pF
C0214	329021	KO-KER 0.10MF 100V 20%	cap ceramic 100nF
C0215	329021	KO-KER 0.10MF 100V 20%	cap ceramic 100nF
C0216	304349	KO-EL 2.200MF 50V BIP	cap bip electr. 2.2uF/50V
C0217	335787	KO-KER 15.0PF 100V 2%	cap ceramic 15pF
C0218	335787	KO-KER 15.0PF 100V 2%	cap ceramic 15pF
C0219	301558	KO-KER 33.0PF 100V 2%	cap ceramic 33pF
C0220	329021	KO-KER 0.10MF 100V 20%	cap ceramic 100nF
C0221	329021	KO-KER 0.10MF 100V 20%	cap ceramic 100nF
C0300	342937	KO-FOL 1.000MF 63V 5%	cap mylar 1uF
C0301	342937	KO-FOL 1.000MF 63V 5%	cap mylar 1uF
C0302	337181	KO-FOL 0.010MF 100V 5%	cap mylar 10nF
C0303	327393	KO-FOL 4700.000PF 63V 5%	cap mylar 4700pF
C0304	342361	KO-KER 47.0PF K 100V 2%	cap ceramic 47pF
C0305	327366	KO-EL 4.700MF 50V BIP	cap bip electr. 4.7uF/50V
C0306	342937	KO-FOL 1.000MF 63V 5%	cap mylar 1uF
C0307	342937	KO-FOL 1.000MF 63V 5%	cap mylar 1uF
C0308	337181	KO-FOL 0.010MF 100V 5%	cap mylar 10nF
C0309	327393	KO-FOL 4700.000PF 63V 5%	cap mylar 4700pF
C0310	342361	KO-KER 47.0PF K 100V 2%	cap ceramic 47pF
C0311	329021	KO-KER 0.10MF 100V 20%	cap ceramic 100nF
C0312	329021	KO-KER 0.10MF 100V 20%	cap ceramic 100nF
C0313	329021	KO-KER 0.10MF 100V 20%	cap ceramic 100nF
C0314	329021	KO-KER 0.10MF 100V 20%	cap ceramic 100nF
C0315	301558	KO-KER 33.0PF 100V 2%	cap ceramic 33pF
C0316	301558	KO-KER 33.0PF 100V 2%	cap ceramic 33pF
C0317	301558	KO-KER 33.0PF 100V 2%	cap ceramic 33pF
C0318	301558	KO-KER 33.0PF 100V 2%	cap ceramic 33pF
C0319	301474	KO-EL 22.000MF 16V BIP	cap bip electr. 22uF/16V

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C0320	301474	KO-EL 22.000MF 16V BIP	cap bip electr. 22uF/16V
C0600	301472	KO-EL 10.000MF 63V	cap electrolytic 10uF/63V
C0603	301472	KO-EL 10.000MF 63V	cap electrolytic 10uF/63V
C0610	301472	KO-EL 10.000MF 63V	cap electrolytic 10uF/63V
C0613	301472	KO-EL 10.000MF 63V	cap electrolytic 10uF/63V
C0700	329021	KO-KER 0.10MF 100V 20%	cap ceramic 100nF
C0701	301524	KO-KER 47.0PF 500V 10%	cap ceramic 47pF
C0702	343530	KO-EL 47.000MF 50V	cap electrolytic 47uF/50V
C0703	329021	KO-KER 0.10MF 100V 20%	cap ceramic 100nF
C0704	329021	KO-KER 0.10MF 100V 20%	cap ceramic 100nF
C0705	329021	KO-KER 0.10MF 100V 20%	cap ceramic 100nF
C0706	329021	KO-KER 0.10MF 100V 20%	cap ceramic 100nF
C0707	340244	KO-FOL 0.330MF 63V 5%	cap mylar 330nF
D0001	301254	DIODE 1N 4148 AXIAL	diode 1N 4148
D0002	301254	DIODE 1N 4148 AXIAL	diode 1N 4148
D0003	301254	DIODE 1N 4148 AXIAL	diode 1N 4148
D0004	301254	DIODE 1N 4148 AXIAL	diode 1N 4148
D0005	301254	DIODE 1N 4148 AXIAL	diode 1N 4148
D0006	304360	DIODE 1N 4007 GEGURTET	diode 1N 4002
D0007	304360	DIODE 1N 4007 GEGURTET	diode 1N 4002
D0008	301254	DIODE 1N 4148 AXIAL	diode 1N 4148
D0040	351577	DIODZ BZX 79-B 6V8 0.50W	diode zener BZX 79 6V8
D0041	351577	DIODZ BZX 79-B 6V8 0.50W	diode zener BZX 79 6V8
D0101	334321	DIODZ BZX 85C 15V 1.30W	diode zener BZX 85C 15V
D0102	301254	DIODE 1N 4148 AXIAL	diode 1N 4148
D0103	301254	DIODE 1N 4148 AXIAL	diode 1N 4148
D0104	301254	DIODE 1N 4148 AXIAL	diode 1N 4148
D0105	334321	DIODZ BZX 85C 15V 1.30W	diode zener BZX 85C 15V
D0106	301254	DIODE 1N 4148 AXIAL	diode 1N 4148
D0107	301254	DIODE 1N 4148 AXIAL	diode 1N 4148
D0108	301254	DIODE 1N 4148 AXIAL	diode 1N 4148
D0109	329511	DIODZ BZX 55C 2V4 0.50W	diode zener 2V4
D0201	334321	DIODZ BZX 85C 15V 1.30W	diode zener BZX 85C 15V
D0202	301254	DIODE 1N 4148 AXIAL	diode 1N 4148
D0203	301254	DIODE 1N 4148 AXIAL	diode 1N 4148
D0204	301254	DIODE 1N 4148 AXIAL	diode 1N 4148
D0205	334321	DIODZ BZX 85C 15V 1.30W	diode zener BZX 85C 15V
D0206	301254	DIODE 1N 4148 AXIAL	diode 1N 4148
D0207	301254	DIODE 1N 4148 AXIAL	diode 1N 4148
D0208	301254	DIODE 1N 4148 AXIAL	diode 1N 4148
D0209	329511	DIODZ BZX 55C 2V4 0.50W	diode zener 2V4
D0233	301254	DIODE 1N 4148 AXIAL	diode 1N 4148
D0234	301254	DIODE 1N 4148 AXIAL	diode 1N 4148
D0600	301254	DIODE 1N 4148 AXIAL	diode 1N 4148
D0601	301254	DIODE 1N 4148 AXIAL	diode 1N 4148
D0602	301254	DIODE 1N 4148 AXIAL	diode 1N 4148
D0701	301254	DIODE 1N 4148 AXIAL	diode 1N 4148
D0702	301254	DIODE 1N 4148 AXIAL	diode 1N 4148
D0703	301254	DIODE 1N 4148 AXIAL	diode 1N 4148
D0704	301254	DIODE 1N 4148 AXIAL	diode 1N 4148
D0705	301254	DIODE 1N 4148 AXIAL	diode 1N 4148
D0706	301254	DIODE 1N 4148 AXIAL	diode 1N 4148

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D0707	301254	DIODE 1N 4148 AXIAL	diode 1N 4148
D0708	301254	DIODE 1N 4148 AXIAL	diode 1N 4148
D0710	301254	DIODE 1N 4148 AXIAL	diode 1N 4148
D0711	304360	DIODE 1N 4007 GEGURTET	diode 1N 4002
E0001	348634	RELAIS 832A-1C-F-C-B 24V DC	relay 24v
E0002	348634	RELAIS 832A-1C-F-C-B 24V DC	relay 24v
E0003	348634	RELAIS 832A-1C-F-C-B 24V DC	relay 24v
F0001	348866	SICHER T 25 A 125V	fuse 25A slow blow
F0002	348866	SICHER T 25 A 125V	fuse 25A slow blow
H0001	343457	DICKS-NETZW. 8PIN 2%	res.network 8x10k
H0003	343457	DICKS-NETZW. 8PIN 2%	res.network 8x10k
H0004	343457	DICKS-NETZW. 8PIN 2%	res.network 8x10k
H0005	343457	DICKS-NETZW. 8PIN 2%	res.network 8x10k
I0101	327197	IC NE 5532 P 2FACH OP	IC NE 5532 N
I0102	307421	IC CA 3080 E OTA	IC CA 3080 E
I0104	331340	IC TL 072 CP 2FACH OP	IC TL 072 CP
I0105	327197	IC NE 5532 P 2FACH OP	IC NE 5532 N
I0106	338359	IC LM 308 AN	IC LM 308 A
I0201	327197	IC NE 5532 P 2FACH OP	IC NE 5532 N
I0202	307421	IC CA 3080 E OTA	IC CA 3080 E
I0204	331340	IC TL 072 CP 2FACH OP	IC TL 072 CP
I0205	327197	IC NE 5532 P 2FACH OP	IC NE 5532 N
I0206	338359	IC LM 308 AN	IC LM 308 A
I0300	327197	IC NE 5532 P 2FACH OP	IC NE 5532 N
I0301	327197	IC NE 5532 P 2FACH OP	IC NE 5532 N
I0302	327197	IC NE 5532 P 2FACH OP	IC NE 5532 N
I0600	331340	IC TL 072 CP 2FACH OP	IC TL 072 CP
I0700	331340	IC TL 072 CP 2FACH OP	IC TL 072 CP
I0701	332985	IC TL 074 CN	IC TL 074 CN
J0001	340681	STIFTLEISTE 2X 3POL	connector male 2x3-pin
J0003	340681	STIFTLEISTE 2X 3POL	connector male 2x3-pin
Q0001	306928	TRANS BC 560 C	transistor BC 560 C
Q0002	306928	TRANS BC 560 C	transistor BC 560 C
Q0003	306928	TRANS BC 560 C	transistor BC 560 C
Q0004	306928	TRANS BC 560 C	transistor BC 560 C
Q0005	306928	TRANS BC 560 C	transistor BC 560 C
Q0006	306928	TRANS BC 560 C	transistor BC 560 C
Q0007	307150	TRANS BC 337-25 TO 92	transistor BC 337-25
Q0008	307150	TRANS BC 337-25 TO 92	transistor BC 337-25
Q0009	301184	TRANS BC 550 C	transistor BC 550 B
Q0010	306928	TRANS BC 560 C	transistor BC 560 C
Q0011	306928	TRANS BC 560 C	transistor BC 560 C
00010	301235	TRANS BD 242 B	transistor BD 242 B
Q0041	307430	TRANS BC 327-25 TO 92	transistor BC 327-25
Q0042	307430	TRANS BC 327-25 TO 92	transistor BC 327-25
Q0043	307150	TRANS BC 337-25 TO 92	transistor BC 337-25
Q0044	307150	TRANS BC 337-25 TO 92	transistor BC 337-25
00010	301236	TRANS BD 241 B	transistor BD 241 B
Q0101	330264	TRANS J 111	transistor J 111 A
Q0102	335763	TRANS 2N 3904	transistor 2N 3904
Q0103	335763	TRANS 2N 3904	transistor 2N 3904
00010	338869	TRANS MJE 350	transistor MJE 350

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00010	338869	TRANS MJE 350	transistor MJE 350
00010	338869	TRANS MJE 350	transistor MJE 350
Q0107	348422	TRANS MPSA 42	transistor MPSA 42
Q0108	348422	TRANS MPSA 42	transistor MPSA 42
00010	338869	TRANS MJE 350	transistor MJE 350
00010	338869	TRANS MJE 350	transistor MJE 350
00010	338869	TRANS MJE 350	transistor MJE 350
Q0112	335763	TRANS 2N 3904	transistor 2N 3904
Q0113	335763	TRANS 2N 3904	transistor 2N 3904
Q0114	335763	TRANS 2N 3904	transistor 2N 3904
Q0115	335763	TRANS 2N 3904	transistor 2N 3904
Q0116	348421	TRANS 2N 3906	transistor 2N 3906
Q0117	348421	TRANS 2N 3906	transistor 2N 3906
Q0118	348421	TRANS 2N 3906	transistor 2N 3906
Q0119	348421	TRANS 2N 3906	transistor 2N 3906
Q0120	348423	TRANS MPSA 92	transistor MPSA 92
Q0121	348423	TRANS MPSA 92	transistor MPSA 92
00010	338868	TRANS MJE 340	transistor MJE 340
00010	338868	TRANS MJE 340	transistor MJE 340
00010	338868	TRANS MJE 340	transistor MJE 340
00010	338868	TRANS MJE 340	transistor MJE 340
00010	338868	TRANS MJE 340	transistor MJE 340
00010	338868	TRANS MJE 340	transistor MJE 340
Q0128	348421	TRANS 2N 3906	transistor 2N 3906
Q0129	335763	TRANS 2N 3904	transistor 2N 3904
Q0141	348421	TRANS 2N 3906	transistor 2N 3906
Q0142	348421	TRANS 2N 3906	transistor 2N 3906
Q0201	330264	TRANS J 111	transistor J 111 A
Q0202	335763	TRANS 2N 3904	transistor 2N 3904
Q0203	335763	TRANS 2N 3904	transistor 2N 3904
00010	338869	TRANS MJE 350	transistor MJE 350
00010	338869	TRANS MJE 350	transistor MJE 350
00010	338869	TRANS MJE 350	transistor MJE 350
Q0207	348422	TRANS MPSA 42	transistor MPSA 42
Q0208	348422	TRANS MPSA 42	transistor MPSA 42
00010	338869	TRANS MJE 350	transistor MJE 350
00010	338869	TRANS MJE 350	transistor MJE 350
00010	338869	TRANS MJE 350	transistor MJE 350
Q0212	335763	TRANS 2N 3904	transistor 2N 3904
Q0213	335763	TRANS 2N 3904	transistor 2N 3904
Q0214	335763	TRANS 2N 3904	transistor 2N 3904
Q0215	335763	TRANS 2N 3904	transistor 2N 3904
Q0216	348421	TRANS 2N 3906	transistor 2N 3906
Q0217	348421	TRANS 2N 3906	transistor 2N 3906
Q0218	348421	TRANS 2N 3906	transistor 2N 3906
Q0219	348421	TRANS 2N 3906	transistor 2N 3906
Q0220	348423	TRANS MPSA 92	transistor MPSA 92
Q0221	348423	TRANS MPSA 92	transistor MPSA 92
00010	338868	TRANS MJE 340	transistor MJE 340
00010	338868	TRANS MJE 340	transistor MJE 340
00010	338868	TRANS MJE 340	transistor MJE 340
00010	338868	TRANS MJE 340	transistor MJE 340

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00010	338868	TRANS MJE 340		transistor MJE 340
00010	338868	TRANS MJE 340		transistor MJE 340
Q0228	348421	TRANS 2N 3906		transistor 2N 3906
Q0229	335763	TRANS 2N 3904		transistor 2N 3904
Q0241	348421	TRANS 2N 3906		transistor 2N 3906
Q0242	348421	TRANS 2N 3906		transistor 2N 3906
Q0600	348421	TRANS 2N 3906		transistor 2N 3906
Q0601	307430	TRANS BC 327-25	TO 92	transistor BC 327-25
Q0602	307150	TRANS BC 337-25	TO 92	transistor BC 337-25
Q0603	335763	TRANS 2N 3904		transistor 2N 3904
Q0610	348421	TRANS 2N 3906		transistor 2N 3906
Q0611	307430	TRANS BC 327-25	TO 92	transistor BC 327-25
Q0612	307150	TRANS BC 337-25	TO 92	transistor BC 337-25
Q0613	335763	TRANS 2N 3904		transistor 2N 3904
Q0620	307150	TRANS BC 337-25	TO 92	transistor BC 337-25
Q0621	307150	TRANS BC 337-25	TO 92	transistor BC 337-25
Q0700	339860	TRANS BD 243 C		transistor BD 243 C
Q0701	307150	TRANS BC 337-25	TO 92	transistor BC 337-25
Q0702	307150	TRANS BC 337-25	TO 92	transistor BC 337-25
Q0703	301184	TRANS BC 550 C		transistor BC 550 B
Q0704	301184	TRANS BC 550 C		transistor BC 550 B
Q0705	301184	TRANS BC 550 C		transistor BC 550 B
Q0706	301184	TRANS BC 550 C		transistor BC 550 B
Q0707	301184	TRANS BC 550 C		transistor BC 550 B
R0029	348550	WI-SO NTC 10 OHM	K	safety resistor 10 Ohm
R0030	348550	WI-SO NTC 10 OHM	K	safety resistor 10 Ohm
R0040	301674	WI-SCH 10.00 OHM 2.00W 5%		resistor 10 Ohm 2watt
R0043	301674	WI-SCH 10.00 OHM 2.00W 5%		resistor 10 Ohm 2watt
R0144	332306	WI-SCH 3.30 KOHM 2.00W 5%		resistor 3.3k Ohm 2watt
R0145	332306	WI-SCH 3.30 KOHM 2.00W 5%		resistor 3.3k Ohm 2watt
R0146	329215	WI-SI 10.00 OHM 0.30W 5%		safety resistor 10 Ohm
R0148	329215	WI-SI 10.00 OHM 0.30W 5%		safety resistor 10 Ohm
R0155	329215	WI-SI 10.00 OHM 0.30W 5%		safety resistor 10 Ohm
R0179	329215	WI-SI 10.00 OHM 0.30W 5%		safety resistor 10 Ohm
R0198	332306	WI-SCH 3.30 KOHM 2.00W 5%		resistor 3.3k Ohm 2watt
R0199	332306	WI-SCH 3.30 KOHM 2.00W 5%		resistor 3.3k Ohm 2watt
R0244	332306	WI-SCH 3.30 KOHM 2.00W 5%		resistor 3.3k Ohm 2watt
R0245	332306	WI-SCH 3.30 KOHM 2.00W 5%		resistor 3.3k Ohm 2watt
R0246	329215	WI-SI 10.00 OHM 0.30W 5%		safety resistor 10 Ohm
R0248	329215	WI-SI 10.00 OHM 0.30W 5%		safety resistor 10 Ohm
R0255	329215	WI-SI 10.00 OHM 0.30W 5%		safety resistor 10 Ohm
R0279	329215	WI-SI 10.00 OHM 0.30W 5%		safety resistor 10 Ohm
R0298	332306	WI-SCH 3.30 KOHM 2.00W 5%		resistor 3.3k Ohm 2watt
R0299	332306	WI-SCH 3.30 KOHM 2.00W 5%		resistor 3.3k Ohm 2watt
SL001	348583	SCHALTER-SCHIEBE 2XUM		slide switch dpdt
SL002	348583	SCHALTER-SCHIEBE 2XUM		slide switch dpdt
S0001	327947	SCHALTELEMENT C42315-A1347-		switch element on/off
S0002	348583	SCHALTER-SCHIEBE 2XUM		slide switch dpdt
S0003	338886	SCHALTER-SCHIEBE L202-02-1-		switch slide
S0004	348572	SCHALTER-SCHIEBE 4XUM		slide switch 4pdt
S0101	327947	SCHALTELEMENT C42315-A1347-		switch element on/off
S0102	327947	SCHALTELEMENT C42315-A1347-		switch element on/off

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S0201	327947	SCHALTELEMENT C42315-A1347-	switch element on/off
VR101	348486	WI-TRI 47.00 KOHM LIN	pot trim 47k Ohm lin
VR102	348675	WI-TRI 2.50 KOHM LIN	pot trim 2.5k Ohm lin
VR201	348486	WI-TRI 47.00 KOHM LIN	pot trim 47k Ohm lin
VR202	348675	WI-TRI 2.50 KOHM LIN	pot trim 2.5k Ohm lin
VR600	348487	WI-TRI 4.70 KOHM LIN	pot trim 4.7k Ohm lin
VR601	348487	WI-TRI 4.70 KOHM LIN	pot trim 4.7k Ohm lin
VR700	348675	WI-TRI 2.50 KOHM LIN	pot trim 2.5k Ohm lin
00015	348855	SICHER-HALTE-FEDER 122090.	fuse clip
00025	306397	KODIERSTIFT	code plug
00030	332452	KODIERBRÜCKE 330.0101 SW	shorting plug
	852428	**PCB+B"L2400/P3000**	**PCB assy 85242 supply A**
CN001	330269	FL.STECKER 6.3/0.8	connector 6.3mm faston
CN002	330269	FL.STECKER 6.3/0.8	connector 6.3mm faston
CN006	348676	STIFTLEISTE 3POL MLSS	connector male 3-pin
CN010	330269	FL.STECKER 6.3/0.8	connector 6.3mm faston
CN011	330269	FL.STECKER 6.3/0.8	connector 6.3mm faston
CN012	343516	FL.STECKER 4.8/0.5	connector 4.8mm faston
CN013	343516	FL.STECKER 4.8/0.5	connector 4.8mm faston
CN014	343516	FL.STECKER 4.8/0.5	connector 4.8mm faston
CN015	343516	FL.STECKER 4.8/0.5	connector 4.8mm faston
CN016	343516	FL.STECKER 4.8/0.5	connector 4.8mm faston
CN017	343516	FL.STECKER 4.8/0.5	connector 4.8mm faston
CN05A	344862	MESSERLST. 8POL	connector male 8-pin
C0001	348458	KO-EL 2200.000MF 160V 20%	cap electrolytic 2200uF/160
C0002	348458	KO-EL 2200.000MF 160V 20%	cap electrolytic 2200uF/160
C0003	348458	KO-EL 2200.000MF 160V 20%	cap electrolytic 2200uF/160
C0004	348458	KO-EL 2200.000MF 160V 20%	cap electrolytic 2200uF/160
C0005	348458	KO-EL 2200.000MF 160V 20%	cap electrolytic 2200uF/160
C0006	348458	KO-EL 2200.000MF 160V 20%	cap electrolytic 2200uF/160
C0007	348458	KO-EL 2200.000MF 160V 20%	cap electrolytic 2200uF/160
C0008	348458	KO-EL 2200.000MF 160V 20%	cap electrolytic 2200uF/160
C0009	348458	KO-EL 2200.000MF 160V 20%	cap electrolytic 2200uF/160
C0010	348459	KO-EL 820.000MF 160V 20%	cap electrolytic 820uF/160V
C0011	348459	KO-EL 820.000MF 160V 20%	cap electrolytic 820uF/160V
C0012	337597	KO-EL 1000.000MF 50V	cap electrolytic 1000uF/50V
C0013	337597	KO-EL 1000.000MF 50V	cap electrolytic 1000uF/50V
C0014	341714	KO-SO 0.10MF 275V 20% K	safety cap 100nF/275V
C0015	341714	KO-SO 0.10MF 275V 20% K	safety cap 100nF/275V
D0001	301254	DIODE 1N 4148 AXIAL	diode 1N 4148
D0002	301254	DIODE 1N 4148 AXIAL	diode 1N 4148
F0001	302579	SICHER T 500 MA 250V	fuse 500mA slow blow
F0002	302579	SICHER T 500 MA 250V	fuse 500mA slow blow
F0003	302582	SICHER T 1 A 250V	fuse 1A slow blow
F0004	302582	SICHER T 1 A 250V	fuse 1A slow blow
G0001	348714	GLRI GBPC 3504 W WIRE LEADS	rectifier GBPC-W 3504
G0002	343270	GLRI GBPC 3504	rectifier GBPC-P 3504
G0003	333719	GLRI SKB 250 C1000 L5B	rectifier B250 C1000
G0004	331965	GLRI B 80 C1500 G	rectifier B80 C1500
G02.2	330269	FL.STECKER 6.3/0.8	connector 6.3mm faston

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G02,1	330269	FL.STECKER 6.3/0.8		connector 6.3mm faston
00010	306838	SICHER-HALTER	FAP	fuse holder
00015	306838	SICHER-HALTER	FAP	fuse holder
00020	306838	SICHER-HALTER	FAP	fuse holder
00025	306838	SICHER-HALTER	FAP	fuse holder

	852438	PCB+B"L2400/3000		PCB assy 85243 supply B
CN006	348676	STIFTLEISTE 3POL	MLSS	connector male 3-pin
CN01A	330269	FL.STECKER 6.3/0.8		connector 6.3mm faston
CN010	330269	FL.STECKER 6.3/0.8		connector 6.3mm faston
CN011	330269	FL.STECKER 6.3/0.8		connector 6.3mm faston
CN012	343516	FL.STECKER 4.8/0.5		connector 4.8mm faston
CN013	343516	FL.STECKER 4.8/0.5		connector 4.8mm faston
CN014	343516	FL.STECKER 4.8/0.5		connector 4.8mm faston
CN015	343516	FL.STECKER 4.8/0.5		connector 4.8mm faston
CN017	343516	FL.STECKER 4.8/0.5		connector 4.8mm faston
CN02A	330269	FL.STECKER 6.3/0.8		connector 6.3mm faston
CN05B	348676	STIFTLEISTE 3POL	MLSS	connector male 3-pin
C0001	348458	KO-EL 2200.000MF 160V 20%		cap electrolytic 2200uF/160
C0002	348458	KO-EL 2200.000MF 160V 20%		cap electrolytic 2200uF/160
C0003	348458	KO-EL 2200.000MF 160V 20%		cap electrolytic 2200uF/160
C0004	348458	KO-EL 2200.000MF 160V 20%		cap electrolytic 2200uF/160
C0005	348458	KO-EL 2200.000MF 160V 20%		cap electrolytic 2200uF/160
C0006	348458	KO-EL 2200.000MF 160V 20%		cap electrolytic 2200uF/160
C0007	348458	KO-EL 2200.000MF 160V 20%		cap electrolytic 2200uF/160
C0008	348458	KO-EL 2200.000MF 160V 20%		cap electrolytic 2200uF/160
C0009	348458	KO-EL 2200.000MF 160V 20%		cap electrolytic 2200uF/160
C0010	348459	KO-EL 820.000MF 160V 20%		cap electrolytic 820uF/160V
C0011	348459	KO-EL 820.000MF 160V 20%		cap electrolytic 820uF/160V
C0012	337597	KO-EL 1000.000MF 50V		cap electrolytic 1000uF/50V
C0013	341714	KO-SO 0.10MF 275V 20%	K	safety cap 100nF/275V
C0014	341714	KO-SO 0.10MF 275V 20%	K	safety cap 100nF/275V
F0001	302579	SICHER T 500 MA 250V		fuse 500mA slow blow
F0002	302579	SICHER T 500 MA 250V		fuse 500mA slow blow
F0003	305205	SICHER T 2.5 A 250V		fuse 2.5A slow blow
G0001	348714	GLRI GBPC 3504 W WIRE LEADS		rectifier GBPC-W 3504
G0002	343270	GLRI GBPC 3504		rectifier GBPC-P 3504
G0003	333719	GLRI SKB 250 C1000 L5B		rectifier B250 C1000
G0004	331965	GLRI B 80 C1500 G		rectifier B80 C1500
G02.1	330269	FL.STECKER 6.3/0.8		connector 6.3mm faston
G02.2	330269	FL.STECKER 6.3/0.8		connector 6.3mm faston
00010	306838	SICHER-HALTER	FAP	fuse holder
00015	306838	SICHER-HALTER	FAP	fuse holder
00020	306838	SICHER-HALTER	FAP	fuse holder

MEMO