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Measuring Instruments  
and Systems Division

Service manual

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CMT**

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**VOLUME 1**

*The service manual consists of 2 volumes*

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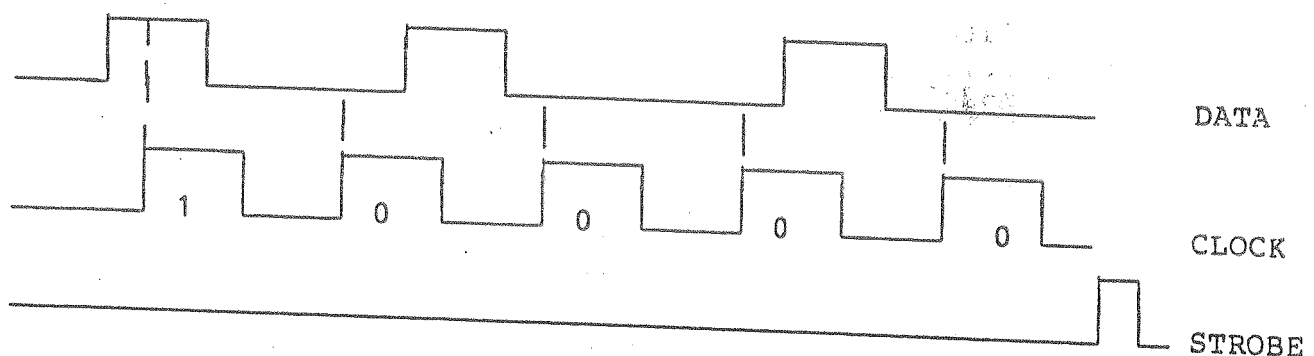
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## General

Serial data transmission to the individual plug-in modules takes place on three lines: CLOCK, DATA and STROBE. The data must be read in using an external controller, e.g. PUC, in order to adjust or test the modules independent of the basic instrument.

The timing diagram for data transmission is shown below.



The data on the DATA line are transferred to the parallel/serial converter with each rising edge of the CLOCK pulses; a subsequent STROBE pulse enables the data at the converter outputs. The following BASIC program shows how the user port of the PUC can address the module:

```

10 POKE 59259,255      Set user port
20 DIM A(20)           Number of individual data bits,
                       20 in this case
30 A(1)=0:A(2)=1...    Define individual data

40 FOR I=1 TO 20
50 POKE 59471,A(I)      Read in data;
60 POKE 59471,A(I)+2    Line with significance 20 = DATA,
                       significance 21 = CLOCK
70 NEXT I

80 POKE 59471,4         Output of STROBE pulse on line
90 POKE 59471,0:END     with significance 22

```

#### 4.1 Function Description

##### 4.1.1 RF Synthesizer

The RF synthesizer with frequency modulation generates RF frequencies in the range from 500 to 1000 MHz which is covered by three selectable oscillators. Three linked phase locked loops (PLL) produce the resolution required for the frequency setting. The main reference is a 10-MHz crystal oscillator (temperature-stabilized as option) to which a 100-MHz crystal oscillator is linked. The 100-MHz frequency is divided per program and produces the reference frequency for a crystal oscillator which can be adjusted by  $\pm 2$  kHz and whose frequency, divided by a factor of 100, is the reference frequency for the coarse PLL of the RF oscillators.

If the Duplex Modulation Meter option CM-B9 is not fitted, the RF synthesizer is operated as a generator in the receiver test and as a mixing oscillator in the transmitter test. Information on voltages and on the locking of the PLLs is passed to the controller via the analog unit for test purposes and for troubleshooting.

##### 4.1.2 Output Stage

The output stage divides the frequencies provided by the RF synthesizer such that a frequency range of 31.25 to 1000 MHz is covered. Appropriate filters are connected in series with the frequency dividers to ensure that the harmonics ratio required is attained. Frequencies  $< 31.25$  MHz are generated by mixing the 100-MHz crystal frequency with a corresponding oscillator frequency.

A controlled amplifier increases the RF signal to the max. level of 13 dBm. Fine variation of the level is achieved by modifying the reference input for the control via D/A converters. Amplitude modulation is also active and the modulation signal is superimposed on the reference value of the D/A converter.

##### 4.1.3 1st Modulation Generator

The AF synthesizer and the modulation controller are accommodated on the 1st modulation generator module. The AF synthesizer is basically a set of shift registers whose outputs are activated in succession by a clock generated by the controller.

The output levels are added by a resistor chain to give a sine curve. The stepped sinewave produced is freed from harmonics by suitable filters and output following an attenuation set consisting of D/A converters and selectable voltage attenuators.

The modulation controller divides the level provided by the modulation generator into AM and FM paths. D/A converters are used to achieve the setting accuracy required for modulation.  $\Phi$ M is enabled by a corresponding filter in the FM branch.

The signal applied to connector MOD. EXT. is routed to the analog unit module for calibration where its level is measured and the connected amplifier is adjusted to the modulation controller according to the result.

#### 4.1.4 Analog Unit

The analog unit consists of the following function units: RF amplifier, LO conditioning, demodulators, AF conditioning and DC amplifier.

The RF signals to be measured are regulated to a constant level in the RF amplifier according to the type of modulation and then routed to the RF frequency counter and the mixer.

The LO conditioning amplifies the signals from the output stage to the level required for the mixer. Frequencies below 31.25 MHz are divided to generate the IF of 455 kHz for signal frequencies up to approx. 1 MHz. A generator with amplitude modulation is integrated for self-testing.

The demodulators contain the IF amplifiers, the AM and FM/ $\Phi$ M demodulators and filters required to suppress the IF.

The AF conditioning weights the demodulated signal and the signal from the AF VOLTM input according to the measuring requirements; various filters (300-Hz HP, CCITT filter, 150-Hz HP) can be connected as required (rms or peak values). The signal to be measured is regulated to a constant rms value for distortion measurements and subsequently freed from the wanted signal in a notch filter.

The rectifiers (peak value and rms value rectifiers) are contained in the DC amplifier. A DC multiplexer connects the voltages supplied by the other modules to a selectable DC amplifier which passes the signal to the A/C converter incorporated in the digital unit.

#### 4.1.5 Digital Unit

The digital unit consists of the following function units: RF counter, AF counter, A/D converter and controller.

The RF counter counts the frequency of the applied RF signal in the range from 1 to 1000 MHz. The setting of the RF synthesizer to generate the LO frequency required for demodulation is obtained from the counter result.

The AF counter counts the frequency of the demodulated signal as well as signals in the range from 10 Hz to 500 kHz applied to input AF VOLTM.

The controller controls the complete instrument. All data to the individual modules are applied via serial data lines (CLOCK, DATA, STROBE). Power fail logic with an additional battery voltage ensures that the data are not lost upon power failure or when the instrument is switched off.

#### 4.1.6 Power Pack

The power pack supplies the instrument with the operating voltages of +5 V, +12 V, +15 V, -15 V and +24 V. The voltages are generated using a switched-mode power supply so that the instrument can also be operated using standard car batteries. When connected to the AC power supply, a transformer reduces the line voltage to the voltage required for the switched-mode power supply.

The instrument operates in STANDBY mode if the power pack is switched off from the front panel; all voltages are then switched off except the +12 V supply which is used for the 10-MHz crystal oven and the STANDBY logic.

Fuses are provided on the input side to protect the power pack. STANDBY mode is automatically switched on if one or more voltages on the secondary side are short-circuited with each other or to ground or if the power pack is operated without a secondary load.

#### 4.1.7 Front Panel

All keys required to operate the instrument as well as the loudspeaker potentiometer and the spin wheel for fast adjustment of the parameters are located on the front panel.

The set parameters and the results are output on LCDs connected to the front panel via conductive rubber contacts. The loudspeaker amplifier is also mounted on the front panel with the loudspeaker control. A ribbon cable connects the front panel units to the motherboard and the digital unit.

#### 4.1.8 Attenuation Set

The attenuation set contains the attenuator connected to relays for attenuating the RF synthesizer level as well as power attenuators in which the major part of the applied power is converted into heat. The connection between the power attenuators and the other attenuators is made via a 50- $\Omega$  star arrangement to which the power diode, the analog unit and the RF-30 dB output/input on the rear panel are connected.

Corresponding RF diodes are integrated to protect the attenuation set during mechanical switching and to detect power. A PCB screwed onto the attenuation set drives the attenuation set and evaluates the voltages from the diodes. The PCB is connected to the motherboard via a ribbon cable.

#### 4.1.9 Oscilloscope

The oscilloscope enables visual display of the demodulated signals, the beat signal and externally applied signals.

The voltages required for the oscilloscope tube, the blanking amplifier and the deflection amplifier are generated by a switched-mode power pack with an operating voltage of 24 V. The deflection coefficients and the operating mode are read from the digital unit into RAMs, read out by D/A converters and written as Lissajous figures on the screen in the form of numbers, letters and arrows. The oscilloscope is powered via ribbon cables which are routed to the front panel.

#### 4.1.10 Options

The function descriptions of the options are contained in the respective service manuals (Section 5).

## 4.2 Mechanical Design

Except for the front panel, power pack, attenuation set and oscilloscope, the CMT modules are designed as plug-in cards. Repairs can therefore be carried out rapidly or the faulty card can be completely replaced.

The electric connections are made via the common motherboard. Sensitive signals are routed via plug-in or screw-on coaxial connections. The connections from the power pack, front panel, attenuation set and oscilloscope to the other modules are made via plug-on ribbon cables.

A blower is provided at the rear to cool the modules. The air is sucked through the perforations at the side and blown out via the rear panel.

### 4.2.1 Opening the Instrument

Loosen the four Phillips screws at the rear used to secure the feet (marked A in Fig. 4-1); the captive screws remain in the feet. Remove the feet and slide out the top and bottom panels to the rear.

**Caution:** The power plug must be disconnected before removing the modules.

### 4.2.2 Removing Plug-in Modules

These modules are secured by two rails at the sides next to the motherboard. Loosen the Phillips screws marked A in Fig. 4-2 and press towards the rear using a suitable tool inserted into bracket B. Disconnect any coaxial and ribbon cables present and remove the modules from the instrument.

**Note:** If the IEC Bus/Control Interface option CM-B4 and the Autorun Control/Printer Interface option CM-B5 are present, these must be removed before removing the digital unit module (see Section 4.2.4).

### 4.2.3 Removing the Power Pack

Disconnect plugs X60, X61 and X70 from the motherboard. Loosen the five Phillips screws marked C and D in Fig. 4-1 and remove the power pack from the frame. Ensure that the cables leading from the power pack are not subjected to stress which could break the connected lead-through filters.



#### 4.2.4      Removing the IEC Bus/Control Interface Option CM-B4 and the Autorun Control/Printer Interface Option CM-B5

Loosen the Phillips screws on the rear of the instrument (marked D and E in Fig. 4-1) and remove the option(s) towards the rear from the multiple connectors of the digital unit.

#### 4.2.5      Removing the Attenuation Set

Unscrew the two SMA connectors from the cables with a solid jacket and pull off the two coaxial connectors.

The attenuation set with the heat sink is mounted to the chassis by four screws, two of which are fitted with nuts (marked C in Fig. 4-2). Loosen the screws and remove the attenuation set with the heat sink.

The drive board is fitted on the attenuation set using six screws. Before removing the board, desolder the two wires to the overtemperature sensor.

**Note:**      The attenuation set must not be opened; the internal components consist of thin-film substrates which can only be replaced in the factory.

#### 4.2.6      Removing the Oscilloscope

Loosen the hexagon socket screws of the rotary knobs on the front panel and remove the knobs. Loosen the six screws with which the inscription panel is secured (two screws in the centre between the displays). Loosen the screws marked A in Fig. 4-3. Disconnect the two ribbon cable plugs and the coaxial connector X605 from the analog unit module. The oscilloscope assembly can now be removed from the front.

#### 4.2.7      Removing the Front Panel

Remove the inscription panel as described in Section 4.2.6 and loosen the screws marked B in Fig. 4-3. Disconnect the three ribbon cable connectors and remove the front panel.

Figs. 4-1 to 4-3 show the screws to be loosened to remove the modules.

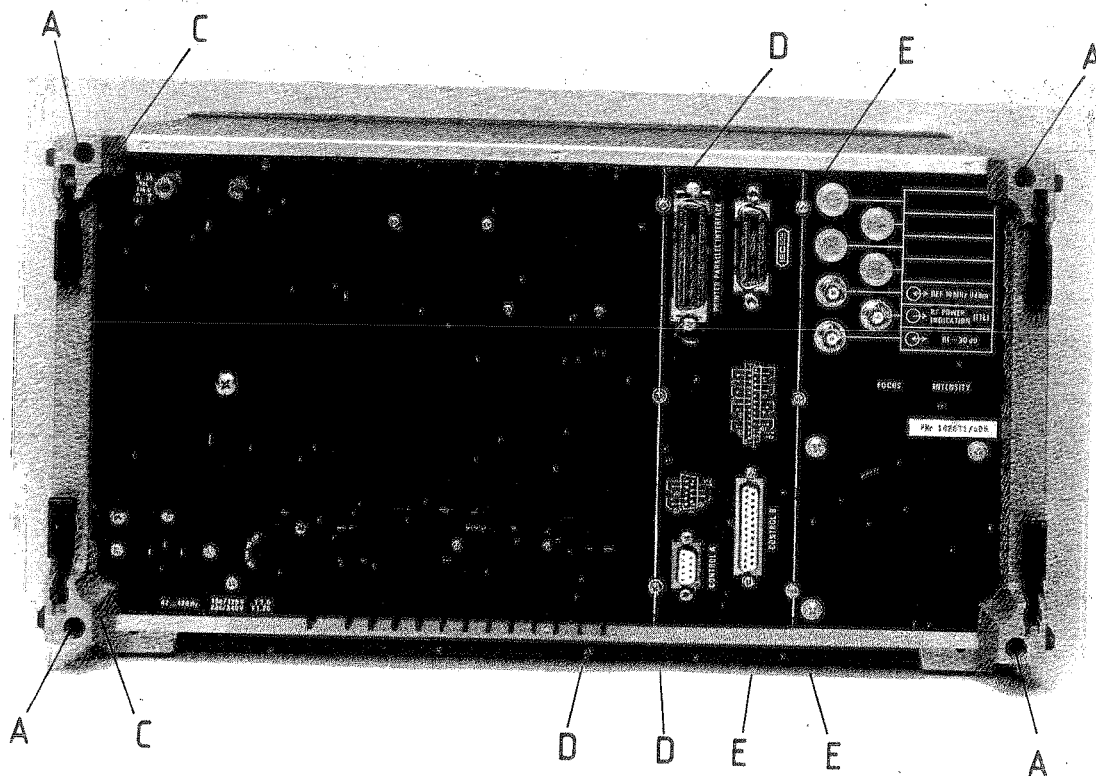


Fig. 4-1

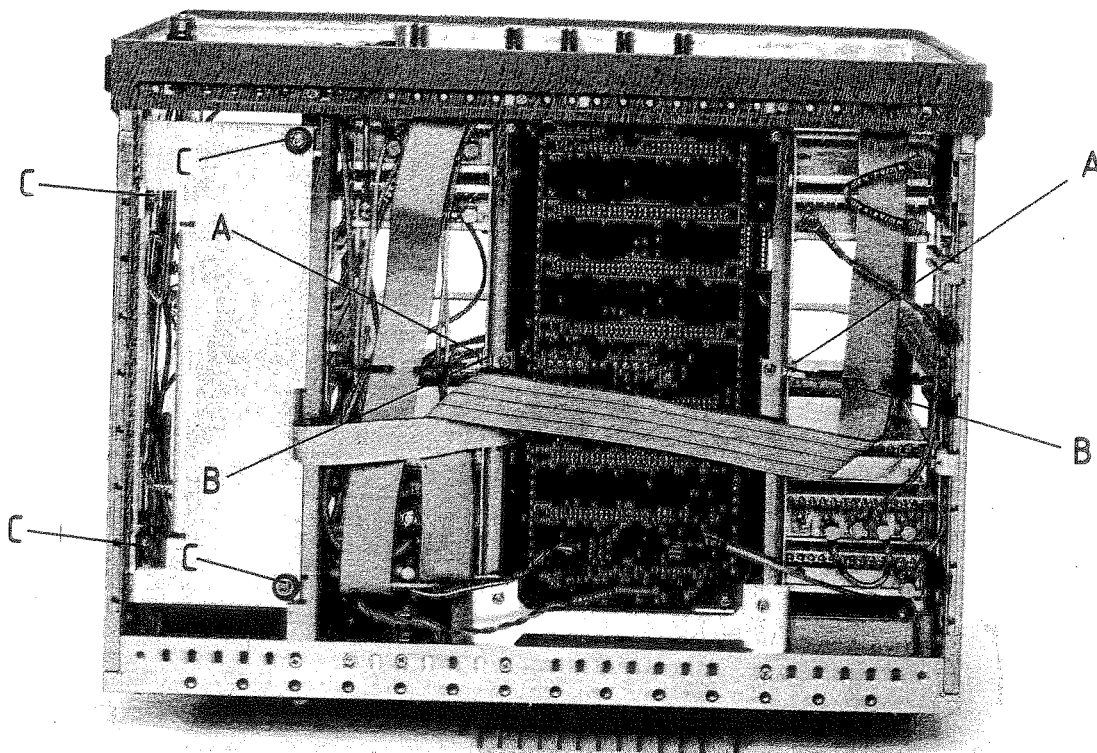


Fig. 4-2

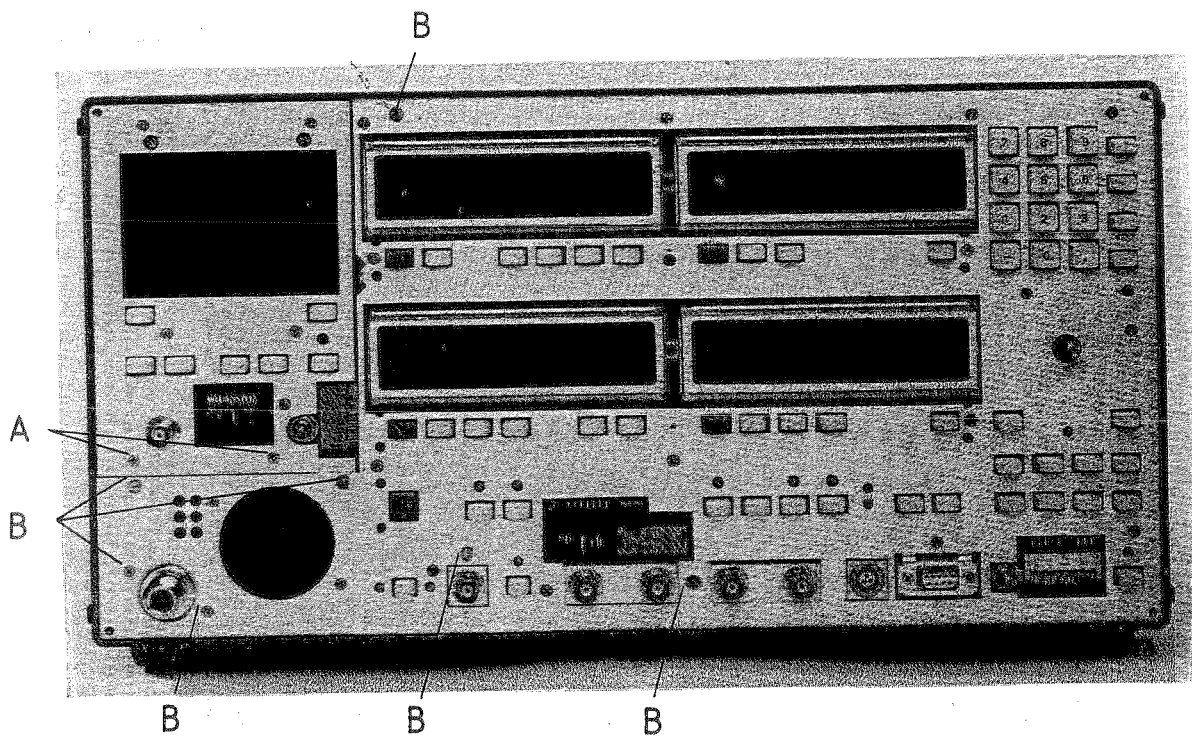


Fig. 4-3

### 4.3      Testing and Adjustment

Exact testing of the instrument specifications should be carried out according to Section 3.2 in the Operating Manual. Each test in the manual refers to a possible adjustment. Renewed testing is therefore necessary following adjustments.

Some adjustments on the CMT can be carried out without using the adapter cable; where required, this is clearly indicated.

Before carrying out any adjustments, ensure that the appropriate control element is about to be used; unintentional adjustment of set values can lead to large measurement errors.

All modules should be inserted or connected when an adjustment is carried out. If a module must be adjusted outside the instruments or if a fundamental unit is missing (e.g. digital unit), carry out the adjustment as described in Section 5.

The sequence of adjustments from module to module and also within modules ensures that the adjustments do not affect one another; if this is nevertheless possible, reference is made to the previously required setting.

#### 4.3.1      Adjusting the Power Pack

##### 4.3.1.1    +5 V Operating Voltage

Setting:                    + Switch on instrument

Adjustment point:    + X61 on motherboard

Adjustment value:    + Adjust to 5.3 V  $\pm$ 10 mV using R12

##### 4.3.1.2    +24 V Operating Voltage

Setting:                    + Switch on instrument

Adjustment point:    + X61 on motherboard

Adjustment value:    + Adjust to 24 V  $\pm$ 100 mV/ $\pm$ 0 mV using R56

#### 4.3.2 Adjusting the Digital Unit

Setting: → Switch on instrument  
Adjustment point: → X58/A21 on motherboard  
Adjustment value: → Adjust to 10 V  $\pm$ 1 mV using R109

#### 4.3.3 Adjusting the RF Oscillator

→ Pull out module and connect to the CMT using the adapter cable.  
→ Open module.

##### 4.3.3.1 Frequency Adjustment

Settings: → Receiver test  
→ Frequencies as in following table:

Frequency	Trimmer
500.001 MHz	C21
655.001 MHz	C51
825.001 MHz	C81

Adjustment point: → X9/2  
Adjustment value: → Adjust to 2.5 V DC  $\pm$ 100 mV using C21, C51, C81

##### 4.3.3.2 Level Adjustment

Settings: → Receiver test  
→ Frequencies as in following table:

Frequency	Trimmer
575 MHz	R49
730 MHz	R79
900 MHz	R109

Adjustment point: → X310  
Adjustment value: → Adjust to 0 dBm  $\pm$ 3 dB using R49, R79, R109

#### 4.3.4 Adjusting the Output Stage

**Note:** Check adjustment 4.3.3.2 before adjusting the output stage.

Remove the module from the CMT and connect using the adapter cable. The module need not be opened for the adjustment.

##### 4.3.4.1 Level Adjustments

**Settings:**

- + Receiver test
- + Frequencies as in following table
- + Set required level
- \* Set level via hand wheel

Fre- quency	Level	Trim- mer	Adjustment value
100 MHz	+13 dBm	R514	13 dBm $\pm 0.05$ dB
* 100 MHz	-16.9 dBm	R452	-6.9 dBm $\pm 0.05$ dB
7.9 MHz	+13 dBm	R641	13 dBm $\pm 0.05$ dB
* 7.9 MHz	-16.9 dBm	R663	-6.9 dBm $\pm 0.05$ dB

**Adjustment point:** + X401 or RF IN/OUT on the front panel

Compare level of 13 dBm at 1 GHz and 330 MHz and take the average using R514.

##### 4.3.4.2 Adjusting the Modulation Depth

**Settings:**

- + Receiver test
- + Frequency 100 MHz
- + Level 0.1 dBm
- + Modulation 80% AM
- + AF = 1 kHz

**Adjustment point:** + X401 or RF IN/OUT on the front panel

**Adjustment value:** + Adjust to 80% AM  $\pm 0.1\%$  AM using R503

#### 4.3.5 Adjusting the Analog Unit

- + Remove the module from the CMT and connect using the adapter cables.
- + Open module.

#### 4.3.5.1 Adjusting the LO Conditioning

Settings:                   + Transmitter test  
                          + Fixed frequency 15 MHz

Adjustment point:   + D100/3

Adjustment value:   + Adjust to TTL level using R102  
                          + Check at P30 whether TTL level is present at  
                                  half frequency

#### 4.3.5.2 Adjusting the RF Amplifier, FM

Settings:                   + Transmitter test  
                          + Apply 500 MHz, 20 mV to INPUT2  
                          + Demodulation: FM

Adjustment point:   + X610/50  $\Omega$

Adjustment value:   + Adjust to 150 mV  $\pm$  5 mV using R87

#### 4.3.5.3 Adjusting the RF Amplifier, AM

Note: The adjustment 4.3.5.2 must be checked before this adjustment.

Settings:                   + Transmitter test  
                          + Apply 500 MHz, 20 mV to INPUT2  
                          + Demodulation: AM

Adjustment point:   + X610/50  $\Omega$

Adjustment value:   + Adjust to 75 mV  $\pm$  5 mV using R88

#### 4.3.5.4 Adjusting the FM Demodulator

Settings:                   + Transmitter test  
                          + Apply 100 MHz, 20 mV, 10 kHz deviation to  
                                  INPUT2  
                          + Demodulation: FM,  $\pm \frac{PK}{2}$

Adjustment point:   + DEMODULATION display

Adjustment value:   + Adjust to 10 kHz  $\pm$  10 Hz using R304  
                          + Adjust to 0 V<sub>DC</sub>  $\pm$  5 mV at DEMOD connector  
                                  using R213

#### 4.3.5.5 Adjusting the AM Demodulator

Note: Check adjustment 4.3.5.4 before this adjustment. The following three adjustments mutually affect one another; adjust in the specified sequence and check again at the end.

Settings:

- + Transmitter test 100 MHz
- + Apply 100 MHz, 10 mV, 80% AM, AF 1 kHz to INPUT2
- + Demodulation: AM,  $\pm \frac{PK}{2}$

Adjustment point 1: + D680/1

Adjustment value 1: + Adjust to 250 mV  $\pm 2$  mV using R197 (take settling time into account)

Adjustment point 2: + DEMOD connector

Adjustment value 2: + Adjust to minimum limitation of lower sine half-wave using R254

Adjustment point 3: + DEMODULATION display

Adjustment value 3: + Adjust to 80%  $\pm 0.1\%$  using R275 (take settling time into account)

#### 4.3.5.6 Adjusting the CCITT Filter

Settings:

- + Receiver test
- + Apply 1 V<sub>rms</sub>, 800 Hz to AF VOLTM
- + Press CCITT

Adjustment point: + AF VOLTMETER display

Adjustment value: + Adjust to 1 V  $\pm 10$  mV using R388

Check: + When pressing CCITT again (off), the display must not change.

Note: + The rms meter should be calibrated prior to this adjustment.



#### 4.3.5.7 Adjusting the Distortion Control

**Note:** The following two adjustments mutually affect one another. Check the adjustments at the end and correct if necessary.

**Settings:** + Receiver test  
+ Apply 1 V<sub>rms</sub>, 1 kHz to AF VOLTM

**Adjustment point 1:** + X23/1

**Adjustment value 1:** + Adjust to 1 V<sub>rms</sub> ±1 mV using R543

**Adjustment point 2:** + N450/1

**Adjustment value 2:** + Adjust to pure sin<sup>2</sup> using R542

#### 4.3.5.8 Adjusting the 1-kHz Notch Filter

**Settings:** + Receiver test  
+ Apply 1 kHz, 1 V<sub>rms</sub> with low distortion (<0.01%) to AF VOLTM  
+ Press DIST

**Adjustment point:** + AF VOLTMETER display

**Adjustment value:** + Alternately adjust to minimum distortion (<0.3%) using R557 and R556

#### 4.3.5.9 Adjusting the 990-Hz Notch Filter

**Settings:** + Receiver test  
+ Apply 1 V<sub>rms</sub>, 990 Hz with low distortion (<0.01%) to AF VOLTM  
+ Press DIST

**Adjustment point:** + AF VOLTMETER display

**Adjustment value:** + Adjust to minimum distortion (<0.3%) using R566

#### 4.3.5.10 Adjusting the 1010-Hz Notch Filter

Settings:                   + Receiver test  
                          + Apply 1 V<sub>rms</sub>, 1010 Hz with low distortion (<0.01%) to AF VOLTM  
                          + Press DIST

Adjustment point:   + AF VOLTMETER display

Adjustment value:   + Adjust to minimum distortion (<0.3%) using R571

#### 4.3.5.11 Adjusting the Power Display

Settings:                   + Transmitter test  
                          + Apply a defined power = 10 W to RF IN/OUT

Adjustment point:   + RF POWER display

Adjustment value:   + Adjust to 10.2 W using R672

#### 4.3.6 Adjusting the Attenuation Set

Settings:                   + Receiver test  
                          + Frequency 100 MHz  
                          + Level 13 dBm

Adjustment point:   + RF LEVEL display

Adjustment value:   + Rotate R34 until the attenuation set is heard to switch and -47 dBm is output on the display; subsequently rotate R34 approx. 1/6 revolution backwards

Note: Check the switchover threshold from receiver test to transmitter test following adjustment. The switchover threshold is at 0.35 W, approx. If the threshold is too low, rotate resistor R34 back further.

#### 4.3.7 Adjusting the Oscilloscope

The oscilloscope must first be removed (see Section 4.2.6) and connected using the adapter cable; remove the mu-metal screening of the tube.

Note: When adjusting, ensure that no high-voltage parts are touched.

#### 4.3.7.1 Adjusting the Horizontal Beam Deflection

Setting: + Switch on instrument

Adjustment point: + Graticule

Adjustment value: + After loosening the mounting screws of the tube, align the horizontal beam with the graticule

Note: Magnetic fields can lead to errors during the adjustment and the adjustment should therefore be checked after replacing the tube screen. Refer to the Service Manual, Section 5, for further adjustments.

#### 4.3.8 Options

Adjustment of the options is described in Section 5.

#### 4.4 Troubleshooting

This section provides references to the modules possibly associated with faults.

**Note:** Modules must not be removed or inserted under power. It is absolutely essential to short X75 on the digital unit after removing the analog unit module and before switching on the power again, since the D/A converter N100 (AD 7520) on the digital unit would otherwise be destroyed.

**Fault:** The instrument immediately enters STANDBY following power-up.

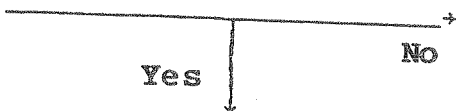
Plug-in jumper X75  
(on digital unit)  
inserted ?



Insert plug-in jumper X75

Remove modules,  
except digital  
unit, in sequence

Faulty module found ?



Power pack faulty,  
operating voltage on digital  
unit faulty

Short-circuit of  
operating voltage(s)

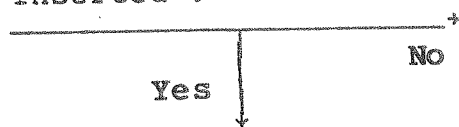
**Fault:** The instrument does not accept commands from the keyboard

Briefly isolate instrument from power supply and switch on again. Instrument OK ?



Reset logic,  
digital unit

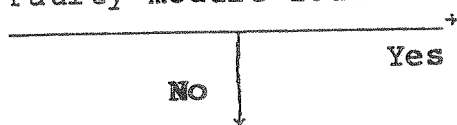
Plug-in jumper X75  
(on digital unit)  
inserted ?



Insert plug-in jumper

Remove modules, except  
digital unit and RF  
oscillator, in  
sequence.

Faulty module found ?



Data transmission  
blocked

10-MHz TTL level  
at X701 (digital  
unit) ?

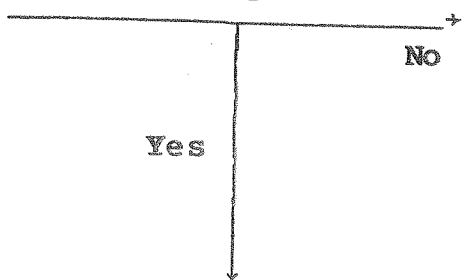


RF oscillator

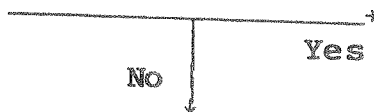
Digital unit, cable  
from front panel to  
digital unit,  
front panel

Fault: No demodulation display in transmitter test

Power display OK ?



Attenuation  
set OK ?



A

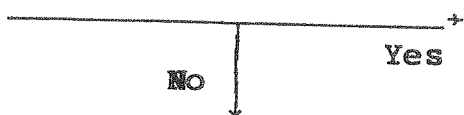
Replace atte-  
nuation set

Does RF counter indicate  
correct frequency ?



RF counter  
(digital unit)  
RF amplifier  
(analog unit)

Faults only with fre-  
quencies <31.25 MHz ?



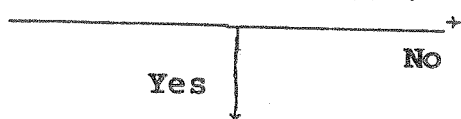
LO conditioning  
(analog unit)

Corresponding frequen-  
cy to generate IF of  
455 kHz ( $f > 32$  MHz)  
present at X608  
(analog unit) ?



RF oscillator,  
output stage,  
duplex modulation  
meter

Demodulated signal at  
BNC connector DEMOD ?



Demodulators  
(analog unit)

A

No display of measured  
values: AF voltmeter,  
RF voltmeter, demodu-  
lation, distortion ?



Fault in analog unit  
(DC amplifier,  
AF conditioning)

A/D converter (digital unit)  
DC amplifier (analog unit)



**ROHDE & SCHWARZ**

Liste mechanischer Teile

List of mechanical parts

Bilder zur Liste mechanischer Teile

Figures pertaining to list of mechanical parts

Liste zu den Bildern 4-10....4-13

List for Figs 4-10...4-13

Lfd. Nr.	Kenn- zeichen	Stück- zahl	Benennung/Beschreibung	Sachnummer
No.	Unit/ Comp.No	Qty	Designation	Stock No.
1		1	MZ Haube oben 5E 1/1 T350 Cover, top	802.2537
2		1	MZ Haube unten 5E 1/1 T350 Cover, bottom	396.3838
3		1	MF Führungsschiene, rechts Guide rail, right	396.4757
4		1	MF Führungsschiene, links Guide rail, left	396.4763
8		2	MF Gerätefuß, vorne Instrument foot, front	396.4534
9		2	MF Aufstellfuß, unten Foot, bottom	396.4540
11		2	ZM Gerätefuß, hinten Instrument foot, rear	396.4586
15		2	MF Seitenleiste T350 Side strip	396.3073
16		4	VS M3x6 DIN 965 A4	081.9378
17		1	ZM Rückwandfuß, links 5E Rear-panel foot, left	802.2337
18		1	ZM Rückwandfuß, rechts 5E Rear-panel foot, right	802.2320
19		4	VS Ansatzschr. M4 K.D7985 Screw	396.4492
21		2	ZM Tragegriff T350 Carrying handle	396.3215
22		4	MR Griffbuchse Washer	396.3321



Lfd. Nr.	Kennzeichen	Stückzahl	Benennung/Beschreibung	Sachnummer
No.	Unit/ Comp.No	Qty	Designation	Stock No.
23		4	VS M4x10 DIN 965 A4	081.9478
24		4	MF Abdeckung, Griffseite Cover, handle side	396.3338
30		1	ZM Frontrahmen 5E 1/1 Front frame	396.2154
31		4	MF Seitenfuß Side foot	396.4692
32		2	MF Stapelnutabdeckung Cover for groove	396.4728
33		5,3 M	WG HF-Dicht. O-Prot. 1,6 Si RF seal	396.1035
36	V1	1	Oszilloskop-Röhre (V1) Cathode ray tube	803.0873
37		1	DZ Schelle RD 37,3 B12,7 Clamp	015.8854
38		1	VS M3x25 DIN 7985 A4	081.9132
39		1	VS 3,2 DIN 125 A4	082.4670
40		1	VS 3 DIN 137 A2	005.0296
41		1	MH Abst. Rohr RD 4,5xRD8x10 Spacer	033.1706
42		1	MH Abst. Rohr RD 4,5xRD8x4 Spacer	033.1641
43		1	ZM Röhrenhalterung CRT support	803.1757
44		3	VS M3x5 DIN 7985 A4	084.1384
45		3	VS 3,2 DIN 125 A4	082.4670
46		3	VS 3 DIN 137 A2	005.0296

Lfd. Nr.	Kenn- zeichen	Stück- zahl	Benennung/Beschreibung	Sachnummer
No.	Unit/ Comp.No	Qty	Designation	Stock No.
47		1	VS 3,2 DIN 9021 A4	031.5185
48		1	VS 3 DIN 137 A2	005.0296
49		1	ZM Röhrenschirmkasten CRT screening case	803.1786
50		1	VS M3x6 DIN 7985 A4	081.9061
51		2	VS M2,5x4 DIN 7985 A4	088.0024
52		2	VS 2,7 DIN 125 A4	082.4663
53		2	VS 2,6 DIN 137 A2	005.0280
54		1	MZ Befestigungsring Retaining ring	803.1863
55		1	OS Scheibe (PMMA) DV Scope screen	803.1805
56		2	VS M2,5x5 Zyl. Schraube Screw	088.7693
57	W52	1	Kabel (W52) Cable	803.2053
58		1	ZM Montageplatte Mounting plate	803.1711
59	A25	1	ED Scope	803.1211
60	A26	1	ED X/Y-Zeichenerzeugung X/Y character generation	803.1257
61		1	Deckel für Scope Cover for scope	803.1740
62		4	VS M3x40 DIN 7985 A4	081.9155
63	A24	1	ED Scope Tastatur Scope keyboard	803.1170

Lfd. Nr.	Kennzeichen	Stückzahl	Benennung/Beschreibung	Sachnummer
No.	Unit/Comp.No	Qty	Designation	Stock No.
64		4	VS 3 DIN 137 A2	005.0296
65		2	VS M3x30 DIN 7985 A4	081.9149
66		2	VS 3 DIN 137 A2	005.0296
70		1	MZ Frontplatte Front panel	803.1792
71		4	VS M2,5x5 DIN 965 A4	088.4394
72		1	VS M2,5x16DIN 965 A4	088.0147
74	W55	1	DX Coax-Kabel (W55) Coaxial cable	803.2076
80		1	MH Dämpfungsring Damping ring	802.3504
81	B1	1	EL Lautsprecher 0,5 W RD 50 Loudspeaker	803.0509
82		1	MZ Dämpfungsgummi Damping rubber	802.3491
83		1	MZ Halteblech Supporting sheet	802.3485
84	C1	1	CE 470 $\mu$ F $\pm 20\%$ 25 V 12,5x12,5	803.0715
85		2	MB Abstandsrohr Spacer	336.3731
86		1	DZ Kabelbi. RD 1-25 B2 Cable tie	015.9038
90		1	MZ Buchsenhalterung Female contact strip	802.2372
91		2	MZ Verdrehenschutz Twisting protection	802.2489
92		1	MZ Verdrehenschutz Twisting protection	802.2395

Lfd. Nr.	Kenn- zeichen	Stück- zahl	Benennung/Beschreibung	Sachnummer
No.	Unit/ Comp.No	Qty	Designation	Stock No.
93		1	MZ Verschlußstopfen Stopper	332.7426
94	W7	1	DX HF-Kabel (W7) RF cable	803.0050
95	W5	1	DX HF-Kabel (W5) RF cable	803.0050
96	W4	1	DX HF-Kabel (W4) RF cable	803.0044
97	W6	1	DX HF-Kabel (W6) RF cable	803.0044
98	W8	1	DX HF-Kabel (W8) RF cable	803.0080
100	A10	1	ED Anzeige/Tastatur Display/keyboard	802.3662
101		1	MZ Buchsenhalterung Female contact support	802.3510
102		4	VS Zyl. Schr. M2,5x5 A2 Screw	088.7693
103		16	VS M2,5x16 DIN 965 A4	088.0147
104		2	VS M2,5x6 DIN 965 A4	088.0101
105	W1	1	DX HF-Kabel (W1) RF cable	803.0015
106		1	MB Mutter f. Frontrahmen Nut for front frame	396.3150
107		1	VS M3x10 DIN 965 A4	081.9390
108		2	VS M3x10 DIN 7985	081.9084
110		1	MZ Stützblech Supporting sheet	802.3840
111		2	Abstandhülse Spacer	802.3527

Lfd. Nr.	Kenn- zeichen	Stück- zahl	Benennung/Beschreibung	Sachnummer
No.	Unit/ Comp.No	Qty	Designation	Stock No.
112		2	VS M2,5x16 DIN 965 A4	088.0147
113		2	MF Glaskörper Glass plate	802.3685
114		2	VS M2,5x6 DIN 965 A4	088.0101
120		1	Beschriftungsplatte Inscription panel	802.3456
121		1	OK Dreh. M.MULDE RD37 RD6 Knob	078.1192
122		2	OK Dreh. RD10,5 ACHS-RD4 Knob	078.2676
123		4	VS M3x6 DIN 7985 A4	081.9061
124		4	VS Scheibe RD3,1/7,2 H1,8 CR Washer	396.5518
125		2	VS Zyl. Schr. M2,5x5 A2 Screw	088.7693
130	A100	1	ED Motherboard	802.2714
131		1	MZ Schiene, rechts Rail, right	802.2495
132		1	MZ Schiene, links Rail, left	802.2345
133		6	VS 3 DIN 137 A2	005.0296
134		4	VS M3x6 DIN 7985 A4	081.9061
135		2	VS M3x8 DIN 7985 A4	081.9078
136		1	MZ Zwischenplatte Intermediate plate	802.2350
137		2	VS M3x10 DIN 965 A4	081.9084

Lfd. Nr.	Kenn- zeichen	Stück- zahl	Benennung/Beschreibung	Sachnummer
No.	Unit/ Comp.No	Qty	Designation	Stock No.
138		2	MZ Zahnstange Rack	802.2366
139		4	VS M2,5x3 DIN 923	088.0976
140		2	VS 3 DIN 137 A2	005.0296
141		2	VS M3x8 DIN 7985 A4	081.9078
145		1	MZ Zwischenwand Intermediate panel	802.2308
146		4	MZ Feder Spring	802.2414
147		8	VN 2,5x4 DIN 7340 Cu Sn	088.7306
148		3	VS 3 DIN 137 A2	005.0296
149		3	VS M3x8 DIN 7985 A4	081.9078
150		1	WG Kantenschutz Edge protection	002.1356
151		1	MZ Querwand Transverse panel	802.2450
152		1	MZ Streifen, links Strip, left	802.2566
154		2	VS M3x12 DIN 7985 A4	081.9090
155		1	MZ Streifen, rechts Strip, right	802.2572
160	A7	1	ED Digitalteil Digital unit	802.4517
161	CM-B5	1	Ablaufsteuerung/DRU Autorun control	803.3314
162	CM-B4	1	IEC-625 Bus-Interface IEC-625 bus interface	803.3914

Lfd. Nr.	Kenn- zeichen	Stück- zahl	Benennung/Beschreibung	Sachnummer
No.	Unit/ Comp.No	Qty	Designation	Stock No.
163	A6	1	ED Analogteil Analog unit	802.8435
164	A5	1	ED 1. Modulationsgenerator 1st modulation generator	802.5713
165	CMT-B7	1	2. NF-Synthesizer 2nd AF synthesizer	803.2618
166	CM-B8	1	HF-Millivoltmeter RF millivoltmeter	803.6813
167	CM-B11	1	DTMF-Auswerter DTMF decoder	803.4610
168	CMT-B6	1	NKL-Messer ACP meter	803.7810
169	A94	1	ED CR-Simulator CR simulator	804.0119
170	CM-B9	1	Duplex Modulat. Met. Duplex modulation meter	803.5317
171	A4	1	ED Ausgangsstufe Output stage	802.7616
172	A3	1	ED HF-Oszillator RF oscillator	802.8835
180	W43	1	DX HF-Kabel (W43) RF cable	803.0344
181	W9	1	DX HF-Kabel (W9) RF cable	803.0096
182	W10	1	DX HF-Kabel (W10) RF cable	803.0109
183	W11	1	DX HF-Kabel (W11) RF cable	803.0115
184	W12	1	DX HF-Kabel (W12) RF cable	803.0121
185	W2	1	DX HF-Kabel (W2) RF cable	803.0021
186	W3	1	DX HF-Kabel (W3) RF cable	803.0038

Lfd. Nr.	Kenn- zeichen	Stück- zahl	Benennung/Beschreibung	Sachnummer
No.	Unit/ Comp.No	Qty	Designation	Stock No.
187	W20	1	DX HF-Kabel (W20) RF cable	803.8045
188	W23	1	DX HF-Kabel (W23) RF cable	803.8068
189	W4	1	DX HF-Kabel (W4) RF cable	803.0044
190	W5	1	DX HF-Kabel (W5) RF cable	803.0050
191	W8	1	DX HF-Kabel (W8) RF cable	803.0080
192	W6	1	DX HF-Kabel (W6) RF cable	803.0044
193	W7	1	DX HF-Kabel (W7) RF cable	803.0050
194	W13	1	DX HF-Kabel (W13) RF cable	803.0138
195	W56	1	DX HF-Kabel (W56) RF cable	803.2082
196	W16	1	DX HF-Kabel (W16) RF cable	803.0167
197	W15	1	DX HF-Kabel (W15) RF cable	803.0150
198	W24	1	DX HF-Kabel (W24) RF cable	803.8074
199	W21	1	DX HF-Kabel (W21) RF cable	803.8051
200		1	ZM Rückrahmen 5E 1/1 Rear frame	396.2290
201		4	MG Rahmenschiene T350 Frame rail	396.2360
202		16	VS M3x8 DIN 965 A4	081.9384
203		1	WT Führungsschiene 5E (gn) Guide rail (green)	396.7527



Lfd. Nr.	Kenn- zeichen	Stück- zahl	Benennung/Beschreibung	Sachnummer
No.	Unit/ Comp.No	Qty	Designation	Stock No.
204		1	WT Führungsschiene 5E (bl) Guide rail (blue)	396.7540
205		1	WT Führungsschiene 5E (gr) Guide rail (gray)	396.7491
206		1	WT Führungsschiene 5E (sw) Guide rail (black)	396.7533
207		1	WT Führungsschiene 5E (rt) Guide rail (red)	396.7510
208		1	WT Führungsschiene 5E (ge) Guide rail (yellow)	396.7504
209		1	MZ Führungsplatte, oben (sw) Guide plate, top (black)	396.7179
210		1	MZ Führungsplatte, unten (bl) Guide plate, bottom (blue)	396.7185
211		1	MZ Stützplatte 5E Supporting plate	396.7756
212		2	MZ Massefeder, links 5E Earth clip, left	396.7662
213		1	MZ Seitenblech Lateral sheet	803.1886
214		2	VS M3x8 DIN 7985 A4	081.9078
215	A17	1	ZE Eichleitung für CMT Attenuation set CMT	802.4223
216		4	VN 5x4,5 DIN 7340	031.2857
217		4	DZ Durchführungstülle Feedthrough	118.6630
218		2	VS B3,2 DIN 9021 A4	031.5185
219		2	VS M3 DIN 934 A4	016.4398
220		4	VS M3x16 DIN 7985 A4	081.9103

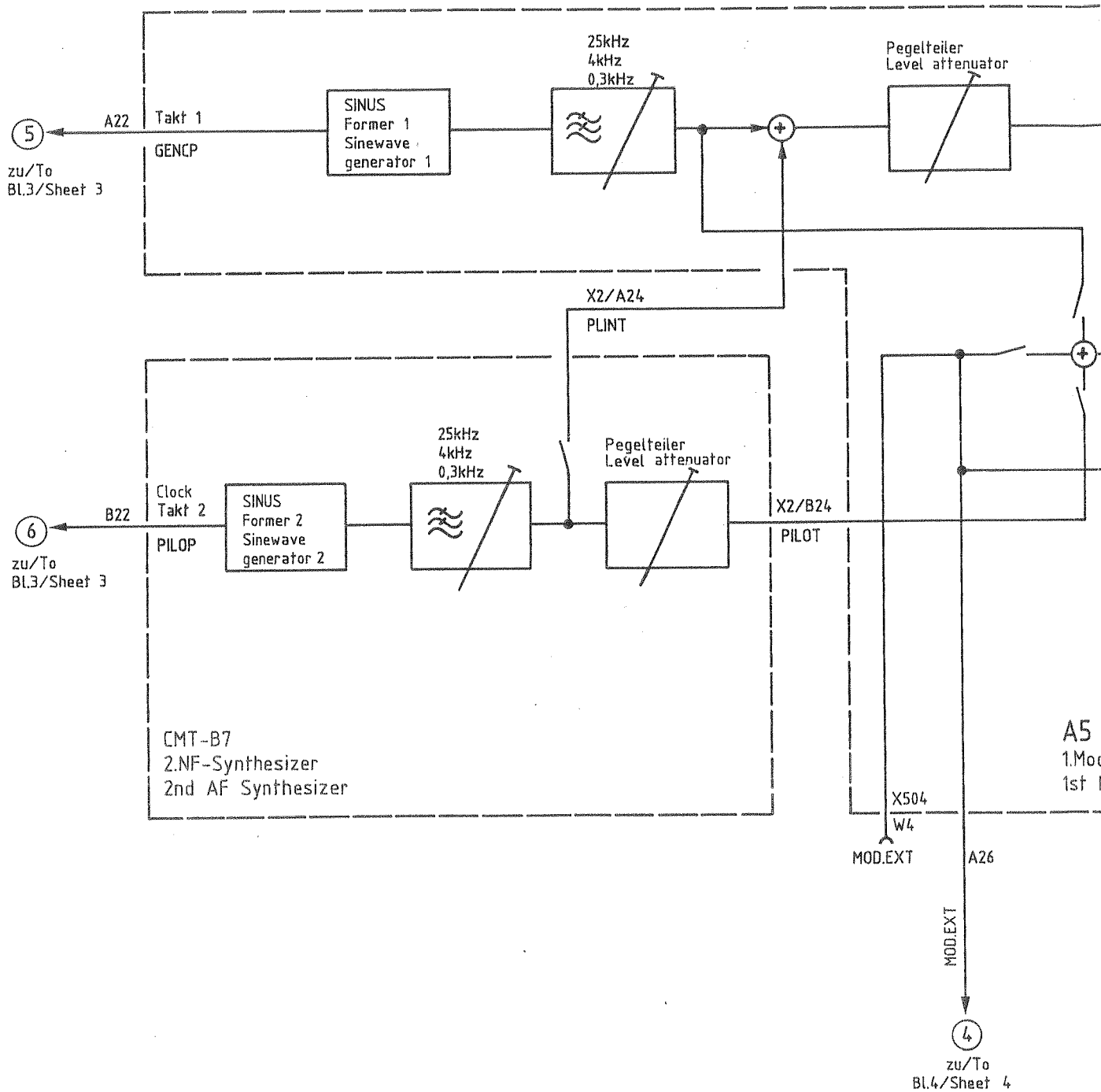
Lfd. Nr.	Kenn- zeichen	Stück- zahl	Benennung/Beschreibung	Sachnummer
No.	Unit/ Comp.No	Qty	Designation	Stock No.
223		2	VS B3,2 DIN 9021 A4	031.5185
230	W2	1	DX HF-Kabel (W2) RF cable	803.0021
231	W13	1	DX HF-Kabel (W13) RF cable	803.0138
232	W14	1	DX HF-Kabel (W14) RF cable	803.0144
233	W1	1	DX HF-Kabel (W1) RF cable	803.0015
238		1	Gußwanne lack. Cast-iron panel, painted	802.2837
239		1	Trafoeinheit Transformer	802.5091
240		1	VS 4,3 DIN 6797 A2	016.2837
241		1	VS M4x55	081.9626
242	Z1	1	FN Netzst. m. Filter 3A Power plug with filter	803.0938
243		2	VS 3 DIN 137 A2	005.0296
244		2	VS M3x10 DIN 7985 A4	081.9084
245		1	MZ Massefeder Earth clip	802.2843
246	S1	1	FR Spannungswähler m. Si. Voltage selector with fuse	803.0896
247		2	VS 2,6 DIN 137 A2	005.0280
248		2	VS M2,5 DIN 934 A4	088.0230
249		2	VS M2,5x12 DIN 7985 A4	088.0060

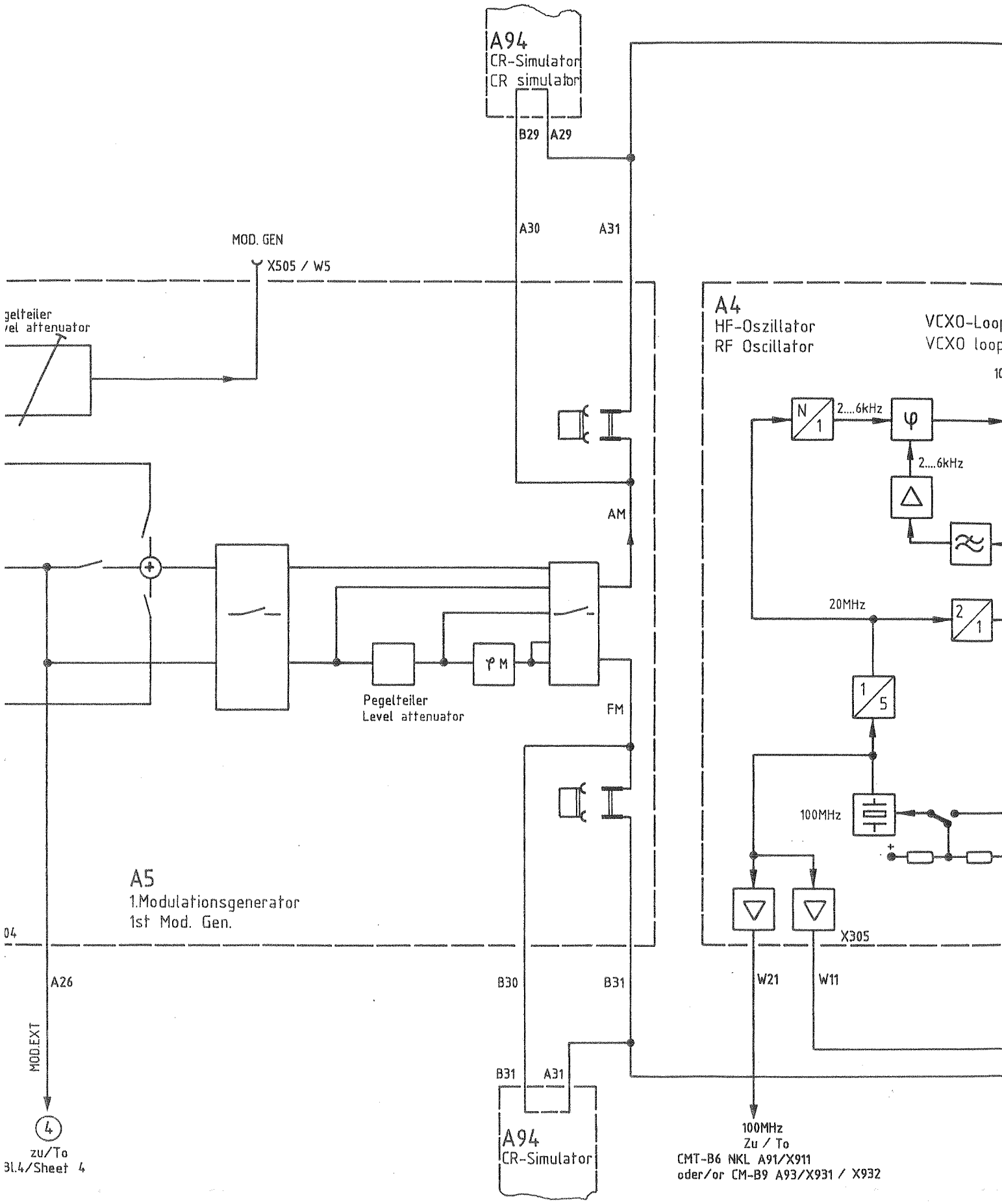
Lfd. Nr.	Kenn- zeichen	Stück- zahl	Benennung/Beschreibung	Sachnummer
No.	Unit/ Comp.No	Qty	Designation	Stock No.
250	F1	1	SS Schmelzs. T2 DIN 41662 Fuse	020.7546
			SS Schmelzs. T4 DIN 41571 Fuse	020.7600
254	X100	1	VK Rändelkl. Isol. (rot) Knurled clamp, insul. (red)	219.5300
255	X101	1	VK Rändelkl. Isol. (blau) Knurled clamp, insul. (blue)	219.5339
256		1	FR Sicherungshalter GR Fuse holder	087.5022
257	F2	1	SS Schmelzs. T16 5x20 Fuse	332.3789
260	A80	1	ED Netzteil Power supply	802.3110
261		1	MZ Kühlwinkel Heat sink	802.2908
262		1	ME HF-Deckel RF screen	802.3040
263		10	VS M3x6 DIN 7985 A4	081.9061
265		1	Rückwand Lüfter Rear-panel blower	802.2466
266	W25	1	DX HF-Kabel (W25) RF cable	803.0250
267	W14	1	DX HF-Kabel (W14) RF cable	803.0144
268	W9	1	DX HF-Kabel (W9) RF cable	803.0096
269		4	MP Verschlußstopfen Stopper	528.8500

Lfd. Nr.	Kenn- zeichen	Stück- zahl	Benennung/Beschreibung	Sachnummer
No.	Unit/ Comp.No	Qty	Designation	Stock No.
270	E1	1	ZM Lüfter Blower	802.2595
271		4	VN 5x5 DIN 7340	031.2863
272		4	DZ Durchführungstülle 5x7x11 Feedthrough	099.3565
273		4	VS 4,3 DIN 125 A4	082.4686
274		4	VS M4x10 DIN 7985 A4	081.9184
275		2	VS 3,2 DIN 125 A4	082.4670
276		2	VS 3 DIN 137 A2	005.0296
277		2	VS M3x6 DIN 7985 A4	082.4670
280		1	MZ Blindplatte Dummy panel	802.2443
281		6	VS 2,7 DIN 125 A4	082.4663
282		6	VS 2,6 DIN 137 A2	005.0280
283		6	VS M2,5x6 DIN 7985 A4	088.0030
285		1	MZ Haltebügel Bracket	802.2420
286		4	VS M3x8 DIN 965 A4	081.9384

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Zeichn.-Nr. \_\_\_\_\_





04

A26

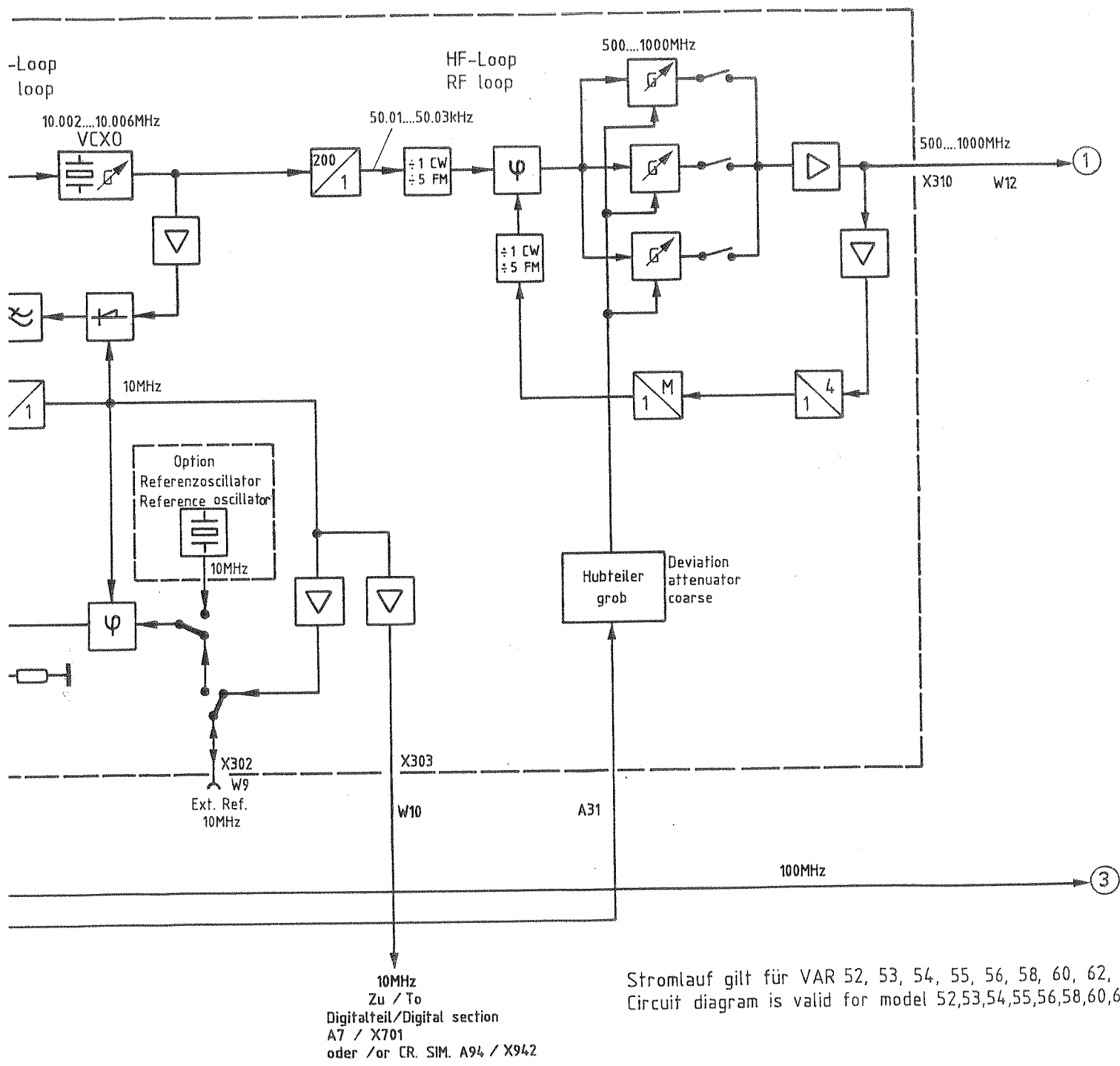
MOD.EXT

4

zu/To

31.4/Sheet 4

	A	38951	11.87	IB					1KSA	Tag
									Bearb.	7.86
									Gepr.	
	And. Zust.	Anderungs-Mitteilung	Datum	Name	And. Zust.	Anderungs-Mitteilung	Datum	Name	Norm	



Stromlauf gilt für VAR 52, 53, 54, 55, 56, 58, 60, 62, 64,  
Circuit diagram is valid for model 52,53,54,55,56,58,60,62,64

Name	Benennung	Zeichn.-Nr.
CO	Radiocommunication Tester	Z 802.2020 FS
	zu Gerät: CMT	reg. i. V. 802.2020 V erste Z. 802.2020

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Zeichn.-Nr. \_\_\_\_\_

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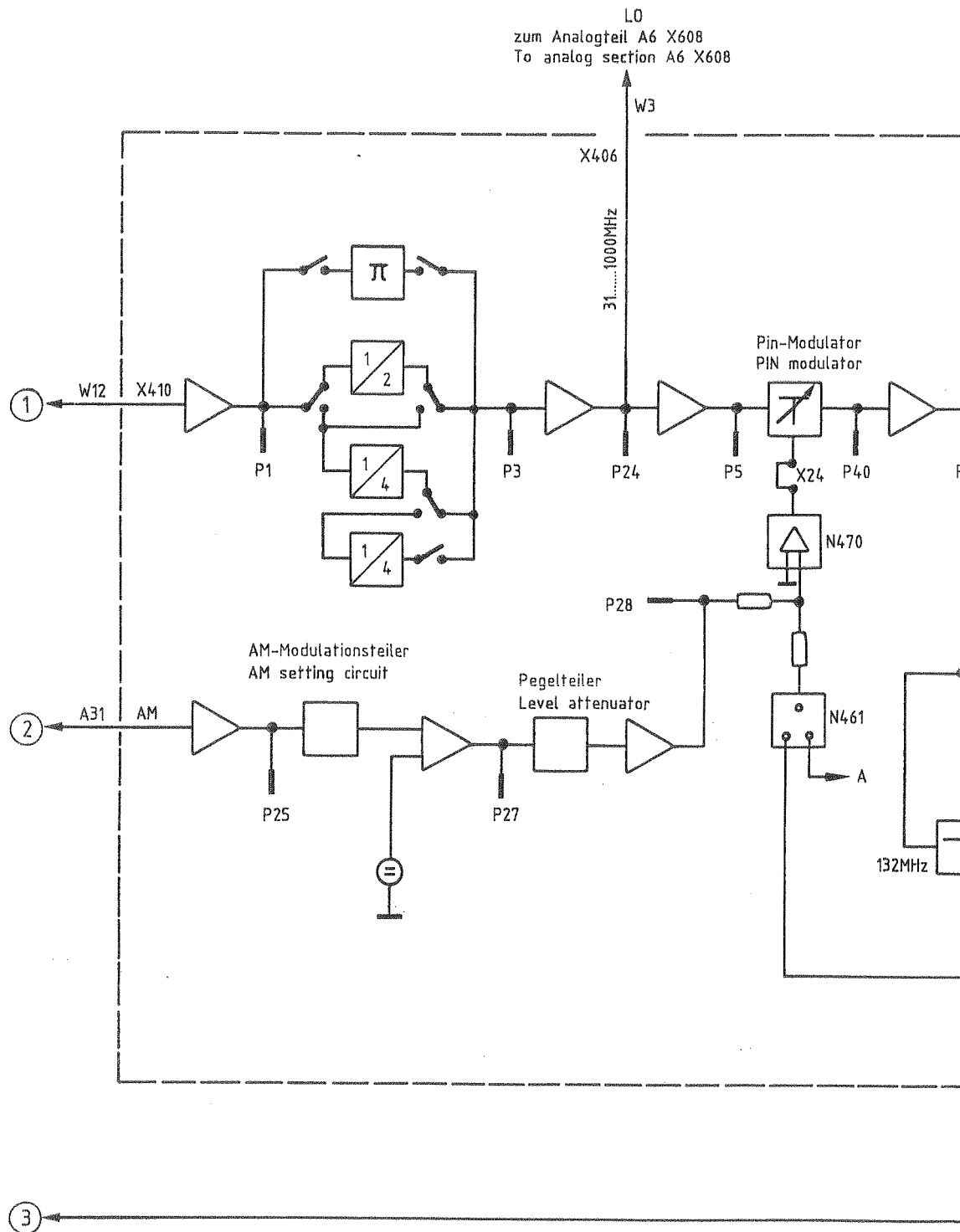
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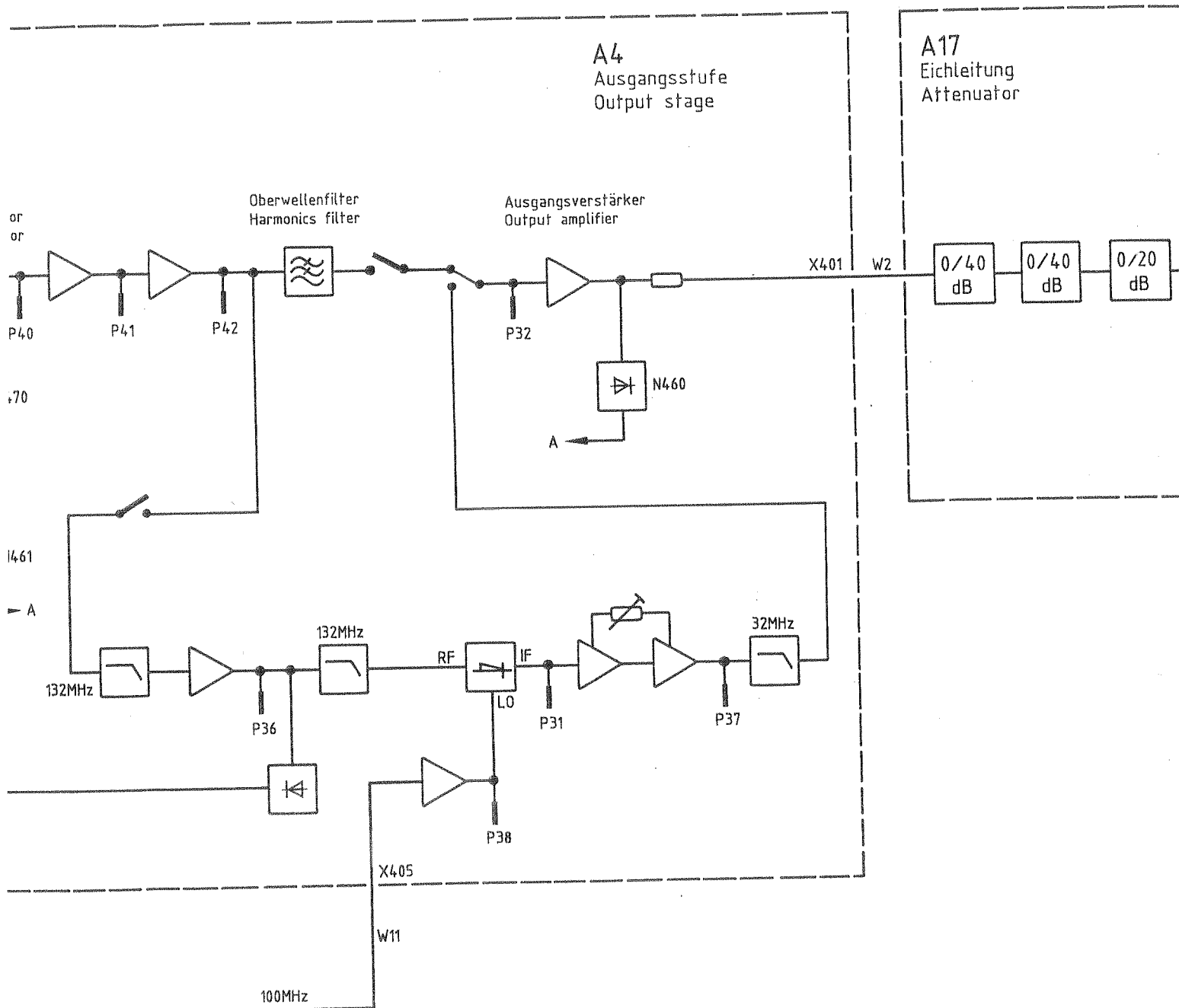
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E

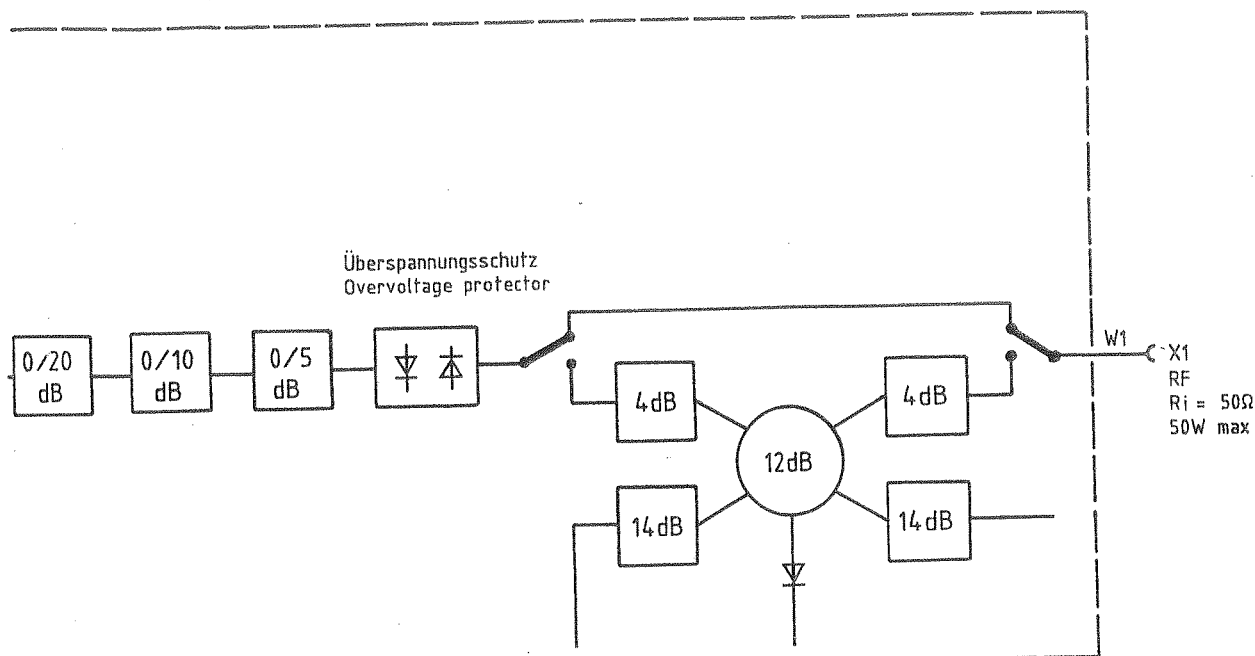
F







	A	38951	11.87	IB					1KSA	Tag
									Bearb.	7.86
									Gepr.	
	And. Zust.	Anderungs-Mitteilung	Datum	Name	And. Zust.	Anderungs-Mitteilung	Datum	Name	Norm	



Stromlauf gilt für VAR 52, 54, 56, 58, 60, 62, 64, 66  
Circuit diagramm is valid for model 52, 54, 56, 58, 60, 62, 64, 66

3	Name	Benennung	Z	Zeichn.-Nr. 802.2020 FS
6	CO	Radiocommunication Tester		
		zu Gerät: CMT		reg. i. V. 802.2020 V erste Z 802.2020



**ROHDE & SCHWARZ**

SERVICE INSTRUCTIONS

Power Pack

802.2814.02

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Component lists  
Circuit diagrams  
Component layout diagrams

## 5.1 Function Description

### 5.1.1 Total Concept

The power pack automatically enters the STANDBY mode when the AC supply or battery voltage is applied.

The transformed AC supply voltage is rectified by a bridge rectifier into a high-end voltage of 28 to 35 V DC which is independent of the input voltage. The high-end voltage with battery operation is the same as the battery voltage reduced by the voltage drop of approx. 0.5 V across the protection diode V100. In this mode the power pack delivers a voltage of 8 to 12 V at the 12-V output (dependent on the high-end voltage). This powers the switching regulator IC, the monitoring and power-up logic and the OCXO of the synthesizer. Pressing the STANDBY key resets the feedback D flip-flop D70 and the switching regulator is started. The power pack then enters the POWER ON mode.

When loaded, the high-end voltage with AC supply operation drops to 20 to 30 V with a superimposed 100-Hz ripple ( $V_{pp}$ ) of approx. 1 V; in battery mode it remains approximately the same.

A DC/DC converter operating according to the forward converter principle chops the high-end voltage, transforms the squarewave pulses and rectifies them again. Four output voltages are produced. Two storage elements are used for subsequent filtering: the toroidal core inductor L21 for the 5 V adjustable on the switching regulator N1 and a toroidal core with 3 windings L20 for the output voltages controlled to  $\pm 15$  V and 24 V by low drop-out-voltage PNP series regulators.

The integrated fixed-voltage controllers N30, N40 and N60 stabilize the  $\pm 15$  V and the 12 V; the 24 V are adjustable using IC N50 with series transistor V54. To ensure that the 12 V still remain controllable with battery voltages less than 15 V, the fixed-voltage controller N60 obtains its input voltage in POWER ON mode from the  $\pm 15$ -V output. The switchover is handled by relay K30. Furthermore, this minimizes the losses at the 12-V output with high high-end voltages.

By resetting the D flip-flop D1, the window comparator N71 switches off the switching regulator and switches to the STANDBY mode in the event of faults such as overvoltages, undervoltages, overcurrents or short-circuits of the  $\pm 15$  V or 24 V supplies. Comparator N70.1 also operates in a similar manner if it detects an overvoltage at the 5-V output. The current of the 5 V and high-end supplies is monitored by various comparators in the switching regulator IC N1. In the event of drastic faults such as a short-circuit of a power MOS FET, the power pack is isolated from the AC supply or the battery by a blown fuse.

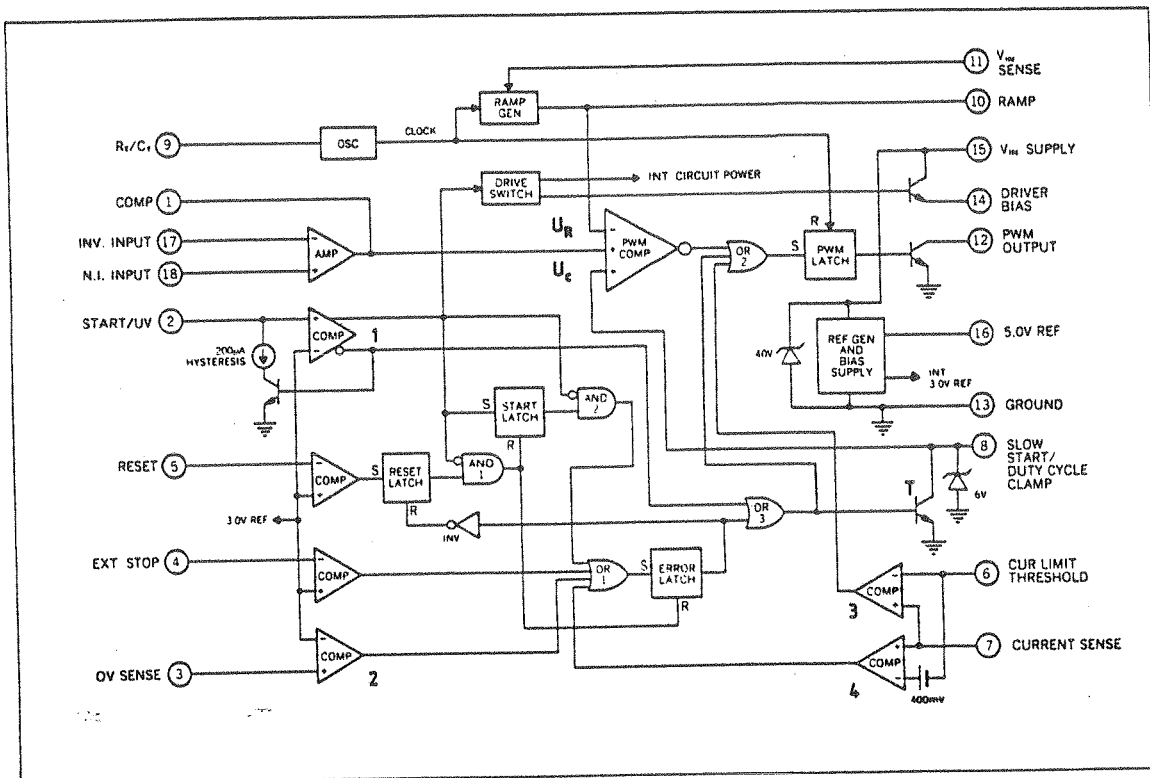


Fig. 5-1 Block diagram of the switching regulator IC

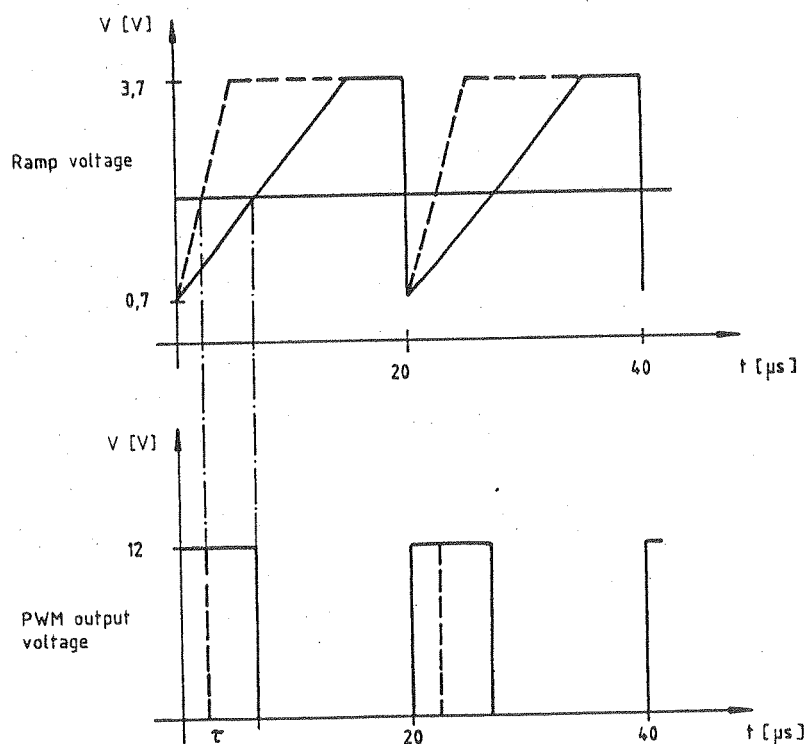


Fig. 5-2 Principle of control and generation of the duty factor

### 5.1.2 Stabilization of the Output Voltages

The output voltages are obtained by rectifying and LC filtering of transformed squarewave pulses with a fixed frequency  $f$  and a variable duty factor:

$$\frac{\tau}{T} : V_{out} = V_{in} \times v \times \frac{\tau}{T}$$

Where:

$V_{out}$  Output voltage

$V_{in}$  High-end voltage

$v$  Ratio of the secondary/primary windings of transformer  $T_2$

$\tau$  Control phase period of the circuit-breaker

$T = 1/f$  The period

The squarewave pulses are obtained by switching the high-end voltage on and off. This is achieved via the primary winding of transformer  $T_2$  using 5 MOS FET power switches connected in parallel. A push-pull driver shortens the switching periods in order to reduce the switching losses. Decoupling of the gates using ferrite beads and a resistor prevents the production of high-frequency oscillations.

$R_6$  and  $C_7$  determine the frequency of the RC oscillator (OSC) in the switching regulator IC  $N_1$  (Fig. 5-1) at 50 kHz.

The duty factor is generated by the pulse width modulation comparator (PWM-COMP in Fig. 5-1) by comparing a ramp voltage  $V_R$  with the smallest applied control voltage  $V_C$  (Fig. 5-2). The high-end voltage controls the slope of the ramp via  $R_{100}$  and thus sets approximately 5 V at the 5-V output. The remaining control deviation as a result of load-dependent voltage losses then shifts the control voltage  $V_C$  via the fault amplifier (AMP) until the deviation is a minimum and the output voltage is exactly 5.3 V. The control principle relieves the regulator since the influence of the high-end voltage on the output voltage is a minimum and  $V_C$  remains approximately 2.2 V.

Compensation of the 180° phase rotation of the LC filter  $L_{21}$ - $C_{22}$ - $C_{23}$  with a resonance frequency of 420 Hz by means of different pole and zero positions ( $C_{26}$ ,  $R_{114}$ ,  $R_{113}$ ,  $R_9$ ,  $C_{18}$ ) in the transmission function of the regulator guarantee high control amplification as well as stability of the control loop. The result is a highly constant 5-V output, high suppression of the 100-Hz ripple with AC supply operation and thus fast compensation of load variations. The voltage at the other outputs (cross-control) varies by approx. 1-V, however, depending on the load. Additional regulation of the other outputs using series-connected stabilizers is therefore necessary.

### 5.1.3 Protective Measures

#### 5.1.3.1 Protection Against Incorrect Polarity

The Schottky diode V100 protects the power pack at the battery input from incorrect polarity.

#### 5.1.3.2 Monitoring the High-end Voltage

The comparators COMP 1 and COMP 2 (Fig. 5-1) on the primary side ensure that the power pack only starts up with high-end voltages greater than 10 V and switches off with voltages greater than 35 V or smaller than 9 V. The comparators receive the corresponding reference voltages from the voltage dividers R<sub>1</sub> to R<sub>4</sub>, set the error latch (Fig. 5-1) which then sets the voltage V<sub>C</sub> to zero and therefore suppresses further generation of control pulses.

#### 5.1.3.3 Limitation of the Duty Factor

Duty factors greater than 0.45 may lead to saturation of the transformer as a result of incomplete demagnetization. It is particularly dangerous if the high-end voltage is between 9 V and 10 V and the regulation stops. The voltage divider R101, R102 then reduces the control voltage V<sub>C</sub> at PWM-COMP and thus prevents the duty factor from rising because of the small ramp gradient.

#### 5.1.3.4 Soft Start

R101 and C14 determine the rate at which the output voltages are turned on. If transistor T (see Fig. 5-1) is blocked, C14 is charged via R101 and V<sub>C</sub> increases continuously, thus leading to a successive increase in the duty factor and thus in the output voltage.

The turn-on time is dependent on the high-end voltage and is 30 to 200 ms:

$$t \approx 0.41 \text{ s} \times \log_e \frac{V_{in}}{V_{in} - 3 \text{ V}}$$



#### 5.1.3.5 Protection of the 5-V Output

Two comparators (COMP 3 and 4 in Fig. 5-1) integrated in N1 monitor the voltage drop caused by the output current through R22 and weighted by the voltage dividers R104 to R107.

If

$$V_{76} = (V_{out} + I \times 0.047 \Omega) \cdot \frac{R_{105}}{R_{104} + R_{105}} - \frac{V_{out}}{2}$$

becomes greater than 0 V, COMP 3 reduces the control voltage  $V_C$  until  $V_{76}$  remains  $\approx 0$  V. This results in a reverse current limiting characteristic (foldback):  $I \approx 0.8 \frac{1}{\Omega} \times V_{out}$ . If  $V_{76}$  becomes  $>0.4$  V nevertheless, comparator COMP 4 sets the error latch and switches off the pulse generation. This corresponds to a short-circuit current of 18 A.

With a voltage greater than  $5.6 \text{ V} \pm 2\%$  at this output, the comparator N70.1 sets the power pack to the STANDBY mode by resetting the D flip-flop D70. This protection is also triggered with no load at the 5-V output.

#### 5.1.3.6 Protection of the $\pm 15$ -V and 24-V Outputs

These three voltages are added via R76 to R78 to approx. 5 V. The power pack is switched to the STANDBY mode by N71 via D70 if this voltage is outside the window of 4.7 to 5.4 V because of an overvoltage or undervoltage at one of the outputs.

N30 and N40 have an integrated foldback current limitation which is triggered between 2.5 and 5 A. This current limitation reduces the  $\pm 15$ -V or  $\pm 15$ -V output voltage which then leads to detection of the fault via the window comparator.

The current limitation of the 24-V series stabilization functions in a similar manner. The base current of V54 is measured in this case via R54. The output voltage drops with  $V_{BE} > 0.7 \text{ V}$  at V55 which shuts down the power pack. The inaccuracy of the limiting current  $I_F$  is a result of the spread of the current amplification of V54:

$$I_F \approx (70 \text{ to } 130) \times \frac{0.7 \text{ V}}{R_{54}} \approx 0.9 \text{ to } 1.6 \text{ A}$$

The undefined current limitation endangers the power pack as a result of a continuous overcurrent since the power of the switching transistors is not monitored on the primary side.

To ensure safe start-up of the power pack, the window comparator is switched on with a delay via V84.

V55 limits the voltage prior to the 24-V series stabilization to approx. 36 V. The coupled inductor guarantees that the voltage before N30 and N40 is less than 30 V. These three outputs can therefore be driven without a load.

#### 5.1.3.7 Protection of the 12-V Output

The N60 protects itself from overheating by means of an integrated thermal shutdown. R60 and V61 limit the input voltage to 33 V with high-end voltages greater than 33 V.

## 5.2        Testing and Adjustment

### 5.2.1      Interfaces

The power pack generates five stabilized output voltages with the following current drain values from AC supplies of 100, 120, 220 or 240 V, in each case  $\pm 10\%$  and 47 to 400 Hz, or from a battery voltage of 11 to 30 V:

- + 5 V (4.6 A) divided into 5 V analog and 5 V digital,
- +15 V (2.3 A),
- 15 V (2.0 A),
- +24 V (0.8 A),
- +12 V (0.2 A).

With this regulated power of approx. 115 W, the active power drawn from the AC supply is approx. 190 W and that from the battery approx. 175 W, corresponding to an efficiency of approx. 60% and approx. 65%, respectively.

The unit also generates a power failure signal which indicates with a "Low" level if the 5-V supply falls below  $5.1 \text{ V} \pm 2\%$  and a "High" level for the STANDBY LED. The associated key changes the operating mode of the power pack with a rising edge.

### **5.2.2 Testing the Switch-on and Monitoring Logic**

- Remove jumper from P80 and apply a voltage of +5 V to P80.2: the switching regulator is switched off.
- Apply a variable +5 V to P73.
- Apply 20 V with a 2.0-A current limitation at the battery input.
- Measure a voltage > 4.7 V at P80.3 and 11.5 to 12.5 V at the 12-V output.

### **Testing D70**

- A rising edge at X71 (STANDBY) resets D70: the voltage measured at P80.3 should be < 0.7 V.

### **Testing the ±15-V and 24-V monitoring**

- Increasing the voltage above 5.4 V at P73 sets the D flip-flop.
- Set 5 V at P73 and reset the flip-flop again with a rising edge at X71.
- Reducing the voltage below 4.7 V at P73 sets the D flip-flop.
- Set 5 V at P73 and reset the flip-flop again with a rising edge at X71.

### **Testing the 5-V overvoltage detection**

- Apply a voltage greater than 5.6 V ±2% at P71.1: the flip-flop is set again.

### **Testing the power failure**

- The voltage at X70 is less than 0.7 V with a voltage of less than 5.1 V ±2% at P71.2; the voltage at X70 is greater than 4.7 V if the voltage at P71.2 is greater than 5.1 V ±2%.

### 5.2.3 Starting-up the Switching Regulator

- Disconnect the voltage at the battery input.
- Connect P80.1 and P80.2.
- Connect a minimum load to the output voltages:
  - + 5 V : 5.1  $\Omega$ /5 W
  - $\pm$ 15 V : 68  $\Omega$ /5 W
  - +24 V : 470  $\Omega$ /3 W
- Apply 20 V with 2-A current limitation: the power pack starts up.

#### Setting and testing the output voltages

- Set 5.3 V at the 5-V output using R12.
- Set 24.0 V at the 24-V output using R56.
- Measure the voltage at the  $\pm$ 15-V outputs: 14.8 to 15.2 V.
- Measure the voltage at P73: approx. 5 V.

#### Testing the voltage characteristics on the switching regulator

- Test the frequency at P1: 47 kHz  $< f < 53$  kHz

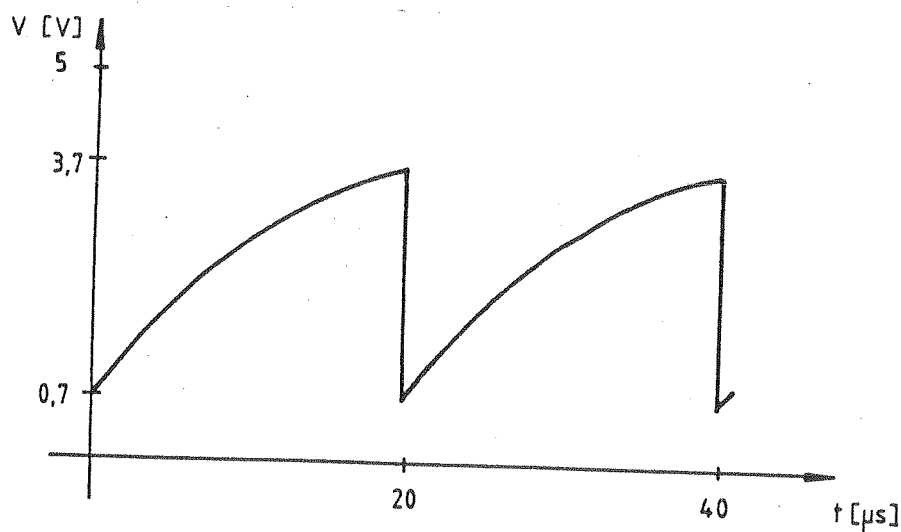


Fig. 5-3 Frequency at P1

→ Testing the ramp gradient at P2

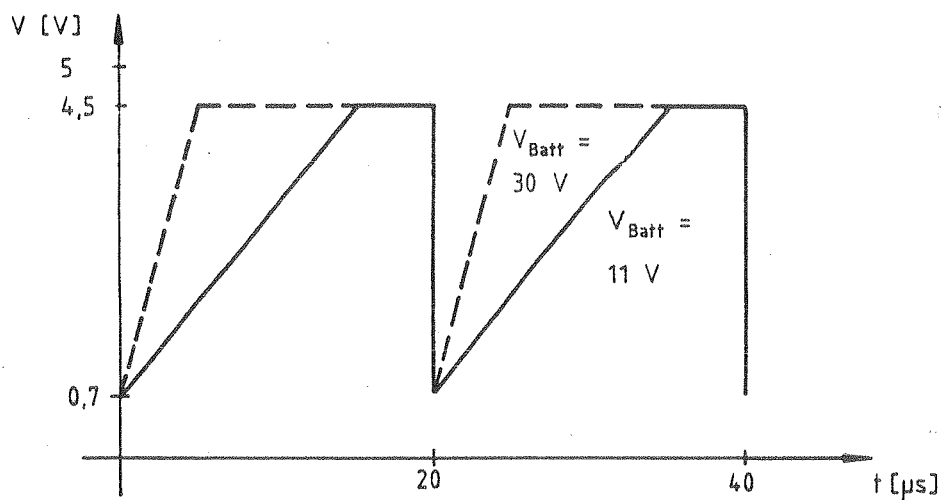


Fig. 5-4 Ramp gradient at P2

For  $V_{\text{battery}} 11 \text{ V}$  :  $\frac{dV}{dt}$  approx.  $0.25 \frac{\text{V}}{\mu\text{s}}$

$30 \text{ V}$  :  $\frac{dV}{dt}$  approx.  $0.75 \frac{\text{V}}{\mu\text{s}}$

→ Testing the controller voltage at P3: 2.0 to 2.5 V DC

**Testing the overvoltage and undervoltage switch-off**

- $V_{\text{batt}} < 9.5 \text{ V}$  : the power pack switches off.
- $V_{\text{batt}} 35 \text{ to } 36 \text{ V}$ : the power pack switches off.

#### 5.2.4 Testing the Power Pack under Load

- Disconnect the voltage at the battery input.
- Connect P80.2 and P80.3.
- Connect the standard load to the output voltages:
  - 5 V : 2.2  $\Omega$ /12 W approx. 2.5 A
  - $\pm 15$  V : 8.1  $\Omega$ /30 W approx. 1.8 A
  - 24 V : 47  $\Omega$ /13 W approx. 0.5 A
- Apply 11 V with 20-A current limitation.
- Rising edge at X71 switches on the power pack.

#### Testing the high-end voltages before the series regulators

- Pin 3 of N30 and N40 : V >16.2 V
- Emitter of V54 : V >25.2 V
- No-load on the  $\pm 15$  V and the 24 V; 4.5 A on the 5 V
- Pin 3 of N30 and N40 : V <30 V
- Emitter of V54 : V <40 V

#### Testing the current limitation

- Set  $V_{batt} \approx 20$  V with 20-A current limitation

	Full load	Overload
5 V	4.6 A	Max. 5.5 A
+15 V	2.5 A	Max. 5 A
-15 V	2.0 A	Max. 5 A
24 V	0.8 A	Max. 1.6 A

- By decreasing the load resistance of each supply line, increase the current of the 4 output voltages until overloading occurs and test that the power pack switches off in each case.

### 5.2.5 Start-up with AC Supply Operation

- Disconnect the voltage at the battery input.
- Set the voltage selector to 240 V.
- Connect full load to the output voltages.
- Connect 240 V power supply.
- Check the DC voltage at P : with 264 V AC <34.5 V.
- Switch on with rising edge at X71.
- Test the DC voltage at the + and - terminals of C4

With 264 V AC : 27 to 30 V

With 240 V AC : 24 to 27 V

With 218 V AC : 20 to 24 V

### 5.2.6 Testing the Specification with the Power Pack Closed

Voltage variations with input voltage of 11 to 30 V

+5.3 V  $\pm 0.08$  V (2 to 4.6 A)

+15 V  $\pm 0.3$  V (0 to 2.3 A)

-15 V  $\pm 0.3$  V (0 to 2.0 A)

+24 V  $\pm 0.1$  V (0 to 0.8 A)

+12 V  $\pm 0.5$  V (0 to 0.2 A)

Measure the noise voltages on the output voltages using volt-meter URE with 100-kHz lowpass: <2 mV<sub>rms</sub>.



### 5.3 Troubleshooting

Fault: The power pack does not start or switches off again immediately.

Cause: Incorrect polarity of voltage at battery terminals, voltage less than 9.5 V or greater than 35.5 V.

Fuse blown.

Short-circuit of output voltages.

The soft start timing (R101, C14) - switch-on of window comparator (R84, C72) - is incorrect.

Fault:  $\pm 15$  V or 24 V not present.

Cause: Series regulator faulty.  
Each series regulator can be tested separately by applying the high-end voltage of 17 V to C33 or C43 or 26 V to C52.

Fault: 5.3 V cannot be adjusted using R12.

Cause: 5-V current limitation active.  
The limitation can be switched off by removing the jumpers P4 and P6 (only for test purposes).

Fault: The switch-on and monitoring logic is not operating.

Cause: D70, N70, N80 faulty.

Test as with start-up after removing jumper at P80 and applying +5 V to P80.2.

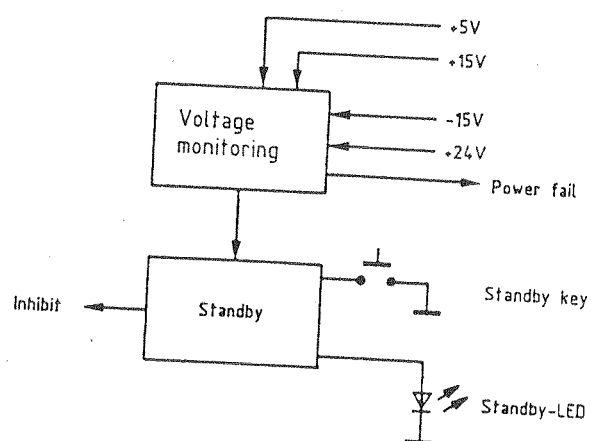
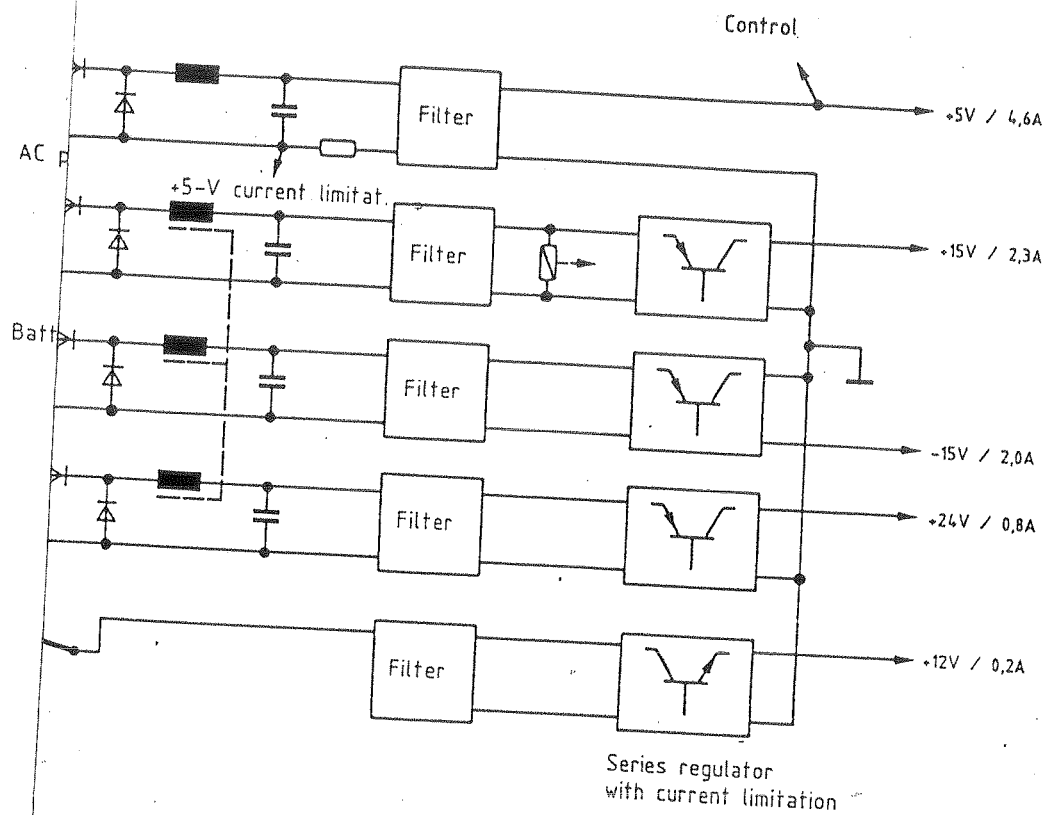
Fault: STANDBY voltage at C3, C4 too high.

Cause: T1 does not correspond to the specifications (secondary voltage too high).

Fault: High-end voltage at C52 too small.

Cause: L20 does not correspond to the specifications (number of  $\pm 15$  V windings too high).





gram of power pack



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Schaltteillisten  
Stromläufe  
Bestückungspläne  
Parts lists  
Circuit diagrams  
Components plans

ROHDE&SCHWARZ		AZ	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
		30	0587	ZE NETZTEIL POWER SUPPLY	802.2814.01 SA	1
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
A80	ED NETZTEIL	802.3110.02				
A81	NUR VAR : 02 32 POWER SUPPLY FILTERPLATTE FILTER BOARD	802.3004	802.3110.01			
C1	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	802.3110.01			
C2	VALVO 2222 63051 64051103 CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	802.3110.01			
C3	VALVO 2222 63051 64051103 CE 10MF-10+30%35V RD41X40 ELECTROLYTIC CAPACITOR	803.0596	802.3110.01			
C4	NATIONAL ECE-T35R103L CE 10MF-10+30%35V RD41X40 ELECTROLYTIC CAPACITOR	803.0596	802.3110.01			
C5	NATIONAL ECE-T35R103L CC 10NF+-10%100V5K1200VIE CERAMIC CAPACITOR	CC 068.4060	802.3110.01			
C6	UNION CARB CK05BX103K CC 100NF+-10%50V5K1200VIE CAPACITOR	CC 084.5350	802.3110.01			
C7	UNION CARB CK05BX104K CC 2,2NF+- 5%100V NPO VIE CAPACITOR	CC 060.0936	802.3110.01			
C8	ERIE 8133-100-COG-2,2NF-J CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	802.3110.01			
C9	VALVO 2222 63051 64051103 CE 100UF+-20%25V RD8X9,5 ELECTROLYTIC CAPACITOR	803.0580	802.3110.01			
C11	MATSUSHITA ECE-ALESS-101 CC 390PF+- 5%100V NPO VIE CERAMIC CAPACITOR	CC 060.0842	802.3110.01			
C12	UNIONCARB C052C391J2G1CA CC 1,5NF+-10%4X5R2000 CAPACITOR	CC 087.7048	802.3110.01			
C13	VALVO 2222 63051 152 CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	802.3110.01			
C14	VALVO 2222 63051 64051103 CE 4,7UF+-20%25V SAL ELECTR.CAPACITOR	CE 007.3928	802.3110.01			
C15	VALVO 2222 122 36478 CE 100UF+-20%25V RD8X9,5 ELECTROLYTIC CAPACITOR	803.0580	802.3110.01			
C16	MATSUSHITA ECE-ALESS-101 CE 100UF+-20%25V RD8X9,5 ELECTROLYTIC CAPACITOR	803.0580	802.3110.01			
C17	MATSUSHITA ECE-ALESS-101 CE 100UF+-20%25V RD8X9,5 ELECTROLYTIC CAPACITOR MATSUSHITA ECE-ALESS-101	803.0580	802.3110.01			

ROHDE&SCHWARZ		AZ	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
		30	0587	ZE NETZTEIL POWER SUPPLY	802.2814.01 SA	2
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
C18	CC 4,7NF+- 5%100V NPO VIE CERAMIC CAPACITOR	CC 060.0971	802.3110.01			
C19	ERIE 8737-100-COG-4,7NF-J CC 470PF+-10%3X4R2000 CAPACITOR	CC 087.6993	802.3110.01			
C20	VALVO 2222 63051 471 CC 10NF+-10%100V5K1200VIE CERAMIC CAPACITOR	CC 068.4060	802.3110.01			
C21	UNION CARB CK05BX103K CE 470UF-10+50%16V12,5X20 ALUMINIUM CAPACITOR	565.8400	802.3110.01			
C22	ROEDERST EKR 00 FE 347 D CE 1000UF-10+50%25V 17X25 ALUMINIUM CAPACITOR	565.9513	802.3110.01			
C23	ROEDERST. EKR00JG410E CE 470UF-10+50% 40V 15X30 ELECTROLYTIC CAPACITOR	CE 087.0572	802.3110.01			
C24	ROEDERST ELKO EK470/40 TRIMMWERT / SELECTED		802.3110.01			
C25	CC 4,7NF+-10%6X9R2000 CAPACITOR	CC 087.7102	802.3110.01			
C26	VALVO 2222 63051 472 CC 82NF+-10%50V5K1200VIEL CERAMIC CAPACITOR	CC 084.5344	802.3110.01			
C27	UNION CARB CK05BX823K CE 470UF-10+50%40V15RDX25 ELECTROLYT CAPACITOR	629.9776	802.3110.01			
C28	ROEDERSTEI EKR00HG347G TRIMMWERT / SELECTED		802.3110.01			
C29	TRIMMWERT / SELECTED		802.3110.01			
C31	CE 470UF-10+50% 40V 15X30 ELECTROLYTIC CAPACITOR	CE 087.0572	802.3110.01			
C32	ROEDERST ELKO EK470/40 CE 470UF-10+50% 40V 15X30 ELECTROLYTIC CAPACITOR	CE 087.0572	802.3110.01			
C33	ROEDERST ELKO EK470/40 CE 470UF-10+50% 40V 15X30 ELECTROLYTIC CAPACITOR	CE 087.0572	802.3110.01			
C34	ROEDERST ELKO EK470/40 CC 1UF+-10%50V7K1200VIEL CAPACITOR	CC 084.5538	802.3110.01			
C35	UNION CARB CK06BX105K CC 100NF+-10%50V5K1200VIE CAPACITOR	CC 084.5350	802.3110.01			
C36	UNION CARB CK05BX104K CE 470UF+-20%25V12,5X12,5 ELECTROLYTIC CAPACITOR	803.0715	802.3110.01			
C41	MATSUSHITA ECE-ALESS-471U CE 470UF-10+50% 40V 15X30 ELECTROLYTIC CAPACITOR	CE 087.0572	802.3110.01			
C42	ROEDERST ELKO EK470/40 CE 470UF-10+50% 40V 15X30 ELECTROLYTIC CAPACITOR	CE 087.0572	802.3110.01			
C43	ROEDERST ELKO EK470/40 CE 470UF-10+50% 40V 15X30 ELECTROLYTIC CAPACITOR	CE 087.0572	802.3110.01			
	ROEDERST ELKO EK470/40					

ROHDE&SCHWARZ		AZ	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
		30	0587	ZE NETZTEIL POWER SUPPLY	802.2814.01 SA	3
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
C44	CC 1UF+-10%50V7K1200VIEL CAPACITOR	CC 084.5538	802.3110.01			
C45	UNION CARB CK06BX105K CC 100NF+-10%50V5K1200VIE CAPACITOR	CC 084.5350	802.3110.01			
C46	UNION CARB CK05BX104K CE 470UF+-20%25V12,5X12,5 ELECTROLYTIC CAPACITOR	803.0715	802.3110.01			
C50	MATSUSHITA ECE-A1ESS-471U CC 2,2NF+50-20%9HDK4000 CERAMIC CAPACITOR	006.0502	802.3110.01			
C51	VALVO 2222 655 53222 CE 470UF-10+50% 40V 15X30 ELECTROLYTIC CAPACITOR	CE 087.0572	802.3110.01			
C52	ROEDERST ELKO EK470/40 CE 470UF-10+50% 40V 15X30 ELECTROLYTIC CAPACITOR	CE 087.0572	802.3110.01			
C54	ROEDERST ELKO EK470/40 CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	802.3110.01			
C55	VALVO 2222 63051 64051103 CE 47UF-10+50% 40V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7142	802.3110.01			
C60	ROEDERST EK 00 CB 247 G CE 100UF-10+50% 40V 13X17 ELECTROLYTIC CAPACITOR	CE 022.7595	802.3110.01			
C61	SIEMENS B41316-B7107-Z CK 330NF+-5%63V5RM MKT CAPACITOR	CK 099.2969	802.3110.01			
C62	WIMA MKS2/63/0,33UF/5% CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	802.3110.01			
C70	WIMA MKS/2/63/0,1UF/5% CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	802.3110.01			
C71	VALVO 2222 63051 64051103 CE 22UF+-20%16V5RDX5RAD.A ELECTROLYTIC CAPACITOR	358.6062	802.3110.01			
C72	NCC SRE 22UF/16V+-20% CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7165	802.3110.01			
C73	ROEDERST EK 00CB 310 D CE 100UF+-20%25V RD8X9,5 ELECTROLYTIC CAPACITOR	803.0580	802.3110.01			
C74	MATSUSHITA ECE-A1ESS-101 CE 22UF+-20%16V5RDX5RAD.A ELECTROLYTIC CAPACITOR	358.6062	802.3110.01			
C75	NCC SRE 22UF/16V+-20% CE 10UF+-20%35V RD5X5 ELECTROLYTIC CAPACITOR	803.0667	802.3110.01			
C76	NATION PAN ECE-A1VKS-100 CE 10UF+-20%35V RD5X5 ELECTROLYTIC CAPACITOR	803.0667	802.3110.01			
C77	NATION PAN ECE-A1VKS-100 CC 100PF+-2%4X5N750 CAPACITOR	CC 087.6906	802.3110.01			
	VALVO 2222 678 58101					

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		30	0587	ZE NETZTEIL POWER SUPPLY	802.2814.01 SA	4
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
C100	CC 150NF+-10%100V K1200VI CAPACITOR	CC 060.1161				
C101	UNION CARB CK06BX154K CC 10NF+-10%100V5K1200VIE CERAMIC CAPACITOR	CC 068.4060				
C102	UNION CARB CK05BX103K CE 220UF-10+50%40V12,5X20 ALUMINIUM CAPACITOR	565.9494				
C103	ROEDERST EKR00FE322G CC 10NF+-10%100V5K1200VIE CERAMIC CAPACITOR	CC 068.4060				
C104	UNION CARB CK05BX103K CE 220UF-10+50%40V12,5X20 ALUMINIUM CAPACITOR	565.9494				
C104	ROEDERST EKR00FE322G CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	802.3110.01			
C105	VALVO 2222 63051 64051103 CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	802.3110.01			
C106	VALVO 2222 63051 64051103 CE 47UF-10+50% 40V 13X17 ELECTROLYTIC CAPACITOR	CE 247.4991				
C107	ROEDERST ELKOEKU47/40 CE 47UF-10+50% 40V 13X17 ELECTROLYTIC CAPACITOR	CE 247.4991				
C108	ROEDERST ELKOEKU47/40 CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	802.3110.01			
	VALVO 2222 63051 64051103					
D70	BL CD4013BE 2XD- FLIPFL FLIPFLOP RCA CD4013BE	BL 086.7021	802.3110.01			
F1	SS SCHMELZS.T2 D DIN41571 NUR VAR : 02 FUSE	SS 020.7546				
F1	WICKMANN T2D DIN 41571 TROP SS SCHMELZS.T4 D DIN41571 NUR VAR : 32 FUSE	SS 020.7600				
F2	WICKMANN T4D DIN 41571 TROP SS SCHMELZS.T16 5X20 FUSE SCHURTER 001.2516	332.3789				
K30	SN 12V 1XUM AG/AU 1A 30W RELAY 12V SIEMENS V23101-A6-A101	803.0673	802.3110.01			
L10	LD STROMKOMP.-DROSSEL CHOKE	802.2795	802.3110.01			
L20	LU DREIFACHDROSSEL TOROIDAL CORE CHOKE VAC ZKB610-145-51-M2	803.0609	802.3110.01			



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		30	0587	ZE NETZTEIL POWER SUPPLY	802.2814.01 SA	5
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
L21	LD SPEICHERDR.100UH 5A CHOKE	803.0444	802.3110.01			
L22	VAC ZKB419/205-51-HZ LD 9UH BEI 6 A 0,012 OHM CHOKE	LD 026.4826	802.3110.01			
L30	SIEMENS B8211-B-C22 LD 25UH BEI 3 A 0,046 OHM CHOKE	LD 026.4849	802.3110.01			
L32	SIEMENS B82111-B-C24 LD UKW-DR.Z=750 OHM 50MHZ CHOKE	LD 026.4578	802.3110.01			
L40	VALVO 431202036641 LD 25UH BEI 3 A 0,046 OHM CHOKE	LD 026.4849	802.3110.01			
L42	SIEMENS B82111-B-C24 LD UKW-DR.Z=750 OHM 50MHZ CHOKE	LD 026.4578	802.3110.01			
L50	VALVO 431202036641 LD 25UH BEI 3 A 0,046 OHM CHOKE	LD 026.4849	802.3110.01			
L52	SIEMENS B82111-B-C24 LD UKW-DR.Z=750 OHM 50MHZ CHOKE	LD 026.4578	802.3110.01			
L60	VALVO 431202036641 LD UKW-DR.Z=750 OHM 50MHZ CHOKE	LD 026.4578	802.3110.01			
	VALVO 431202036641					
N1	BO UC2840J 0A2 SCH.REGL REG.PULSE.WIDTH MODULATOR	374.9904	802.3110.01			
N30	UNITRODE UC2840J BO SI3152V +15V2A0 VREGL VOLTAGE REGULATOR	803.0615	802.3110.01			
N40	SANKEN SI-3152V BO SI3152V +15V2A0 VREGL VOLTAGE REGULATOR	803.0615	802.3110.01			
N50	SANKEN SI-3152V BO UA723C ADJ0A1 VREGL VOLTAGE REGULATOR	BO 009.0190	802.3110.01			
N60	NSC LM723CN BO LM7812CT +12V1A0 VREGL VOLTAGE REGULATOR	BO 344.9641	802.3110.01			
N70	NSC LM7812CT BO CA3240AE 2XMOS OPAMP OPERATIONAL AMPLIFIER	302.7040	802.3110.01			
N71	RCA CA3240AE BO CA3240AE 2XMOS OPAMP OPERATIONAL AMPLIFIER	302.7040	802.3110.01			
	RCA CA3240AE					
1	VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	802.3110.01			
2	BERG NR. 75 403-001 VL WIRE-WRAP PIN WIRE-WRAP PIN	VL 088.4507	802.3110.01			
	BERG NR. 75 403-001					

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		30	0587	ZE NETZTEIL POWER SUPPLY	802.2814.01 SA	6
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
P3	VL WIRE-WRAP PIN	VL 088.4507	802.3110.01			
P4	WIRE-WRAP PIN BERG NR. 75 403-001	FP 242.3600	802.3110.01			
P5	FP INDIREKT.STECKERL.36P. PIN CONNECTOR BERG 75160-102-36	FP 242.3600	802.3110.01			
P6	FP INDIREKT.STECKERL.36P. PIN CONNECTOR BERG 75160-102-36	FP 242.3600	802.3110.01			
P7	2X3POL/PINS VL WIRE-WRAP PIN	VL 088.4507	802.3110.01			
P71	WIRE-WRAP PIN BERG NR. 75 403-001	VL 088.4507	802.3110.01			
P73	VL WIRE-WRAP PIN WIRE-WRAP PIN BERG NR. 75 403-001	VL 088.4507	802.3110.01			
P80	VL WIRE-WRAP PIN WIRE-WRAP PIN BERG NR. 75 403-001	VL 088.4507	802.3110.01			
R1	RL 0,35W 1,50KOHM+-1%TK50 RESISTOR	RL 083.0732	802.3110.01			
R2	DRALORIC SMA0207/1,50K-F-D RL 0,35W 3,24KOHM+-1%TK50 RESISTOR	RL 082.6843	802.3110.01			
R3	DRALORIC SMA0207/3,24K-F-D RL 0,35W 1,74KOHM+-1%TK50 RESISTOR	RL 083.0784	802.3110.01			
R4	DRALORIC SMA0207/1,74K-F-D RL 0,35W 604 OHM+-1%TK50 RESISTOR	RL 082.2425	802.3110.01			
R5	DRALORIC SMA/207/604OHM-F-C RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	802.3110.01			
R6	DRALORIC SMA0207/10K-F-D TRIMMWERT / SELECTED	RL 083.1097	802.3110.01			
R7	RL 0,35W 4,75KOHM+-1%TK50 RESISTOR	RL 083.1097	802.3110.01			
R8	DRALORIC SMA0207/4,75K-F-D RL 0,35W 4,75KOHM+-1%TK50 RESISTOR	RL 083.1097	802.3110.01			
R9	DRALORIC SMA0207/4,75K-F-D RL 0,35W 169 KOHM+-1%TK50 RESISTOR	RL 083.2164	802.3110.01			
R10	DRALORIC SMA/207/169K-F-C TRIMMWERT / SELECTED	RL 083.1197	802.3110.01			
R11	RL 0,35W 7,50KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/7,5K-F-D	RL 083.1197	802.3110.01			

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		30	0587	ZE NETZTEIL POWER SUPPLY	802.2814.01 SA	7
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
R12	RS 0,5W10KOHM+-10%10X10X5 CERMET POTENTIOMETER T	RS 247.7526	802.3110.01			
R13	BOURNS 3386X1-103 RL 0,35W 10,0 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/10OHM-F-D	RL 082.8852	802.3110.01			
BIS/TO R17 R18	RL 0,35W 4,75KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/4,75K-F-D	RL 083.1097	802.3110.01			
R19	RJ 2W 5,6 OHM+-5% METALOXID RESISTOR	803.0480	802.3110.01			
R20	RESISTA WK5 5,6 OHM 5% RJ 1W 18 OHM+-5%TK200 RESISTOR	451.5055	802.3110.01			
R22	RESISTA 18OHM+-5% TK200 RD 0,8W 47 MIOHM+-3% WIRE-WOUND RESISTOR	RD 069.1458	802.3110.01			
R50	SAGE 1000S/0,04OHM/3% RD 2.4W 100 OHM +-3% WIRE-WOUND RESISTOR	RD 080.0377	802.3110.01			
R51	SAGE 1200S/100OHM/3% RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	802.3110.01			
R52	DRALORIC SMA0207/1K-F-C RL 0,35W 3,92KOHM+-1%TK50 RESISTOR	RL 083.1039	802.3110.01			
R53	RESISTA MK2 RL 0,35W 2,21KOHM+-1%TK50 RESISTOR	RL 082.2477	802.3110.01			
R54	DRALORIC SMA 0207/2,21K-F-C RL 0,35W 56,2 OHM+-1%TK50 RESISTOR	RL 082.9571	802.3110.01			
R55	DRALORIC SMA0207/56,2OHM-F-D RL 0,35W 3,32KOHM+-1%TK50 RESISTOR	RL 083.0990	802.3110.01			
R56	DRALORIC SMA0207/3,32K-F-D RS 0,5W1KOHM+-10%10X10X5 CERMET POTENTIOMETER	RS 247.5917	802.3110.01			
R57	BOURNS 3386X-1-102 RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	802.3110.01			
R70	DRALORIC SMA0207/1K-F-C RL 0,35W 1,27KOHM+-1%TK50 RESISTOR	RL 082.2490	802.3110.01			
R71	DRALORIC SMA 0207/1,27K-F-C RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	802.3110.01			
R73	DRALORIC SMA0207/1K-F-C RL 0,35W 1,37KOHM+-1%TK50 RESISTOR	RL 083.0690	802.3110.01			
R74	DRALORIC SMA0207/1,37K-F-D RL 0,35W 1,21KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1,21K-F-D	RL 083.0655	802.3110.01			

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		30	0587	ZE NETZTEIL POWER SUPPLY	802.2814.01 SA	8
Kennzeichen Component No.	Benennung/Beschreibung Designation			Sachnummer Stock No.	enthalten in contained in	
R76	RL 0,35W 20,0KOHM+-1%TK50 RESISTOR DRALORIC SMA/207/20K-F-C			RL 083.1522	802.3110.01	
R77	RL 0,35W 29,4KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/29,4K-F-C			RL 083.1622	802.3110.01	
R78	RL 0,35W 28,7KOHM+-1%TK50 RESISTOR DRALORIC SMA/207/28,7K--FC			RL 083.1616	802.3110.01	
R79	RL 0,35W 1,33KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1,33K-F-D			RL 083.0684	802.3110.01	
R82	RL 0,35W 806 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/806OHM-F-D			RL 083.0555	802.3110.01	
R83	RL 0,35W 1KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1K-F-C			RL 082.2160	802.3110.01	
R84	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D			RL 083.1297	802.3110.01	
R86	RL 0,35W 511 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/511OHM-F-D			RL 083.0426	802.3110.01	
R87	RL 0,35W 1KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1K-F-C			RL 082.2160	802.3110.01	
R88	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D			RL 083.1297	802.3110.01	
R89	RL 0,35W 100KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/100K-F-C			RL 082.1764	802.3110.01	
R90	RL 0,35W 2,05KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/2,05K-F-D			RL 083.0832	802.3110.01	
R91	RL 0,35W 3,16KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/3,16K-F-D			RL 083.0984	802.3110.01	
R92	RL 0,35W 3,16KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/3,16K-F-D			RL 083.0984	802.3110.01	
R100	RL 0,35W 105 KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/105K-F-C			RL 083.2029	802.3110.01	
R101	RL 0,35W 41,2KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/41,2K-F-C			RL 082.2319	802.3110.01	
R102	TRIMMWERT / SELECTED				802.3110.01	
R103	RL 0,35W 475 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/475OHM-F-D			RL 083.0390	802.3110.01	
R104	RL 0,35W5,11KOHM+-0,1%T25 RESISTOR DRALORIC SMA0207			RL 084.2500	802.3110.01	

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		30	0587	ZE NETZTEIL POWER SUPPLY	802.2814.01 SA	9
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
R105	RL 0,35W4,75KOHM+-0,1%T25 RESISTOR	RL 084.2445	802.3110.01			
R106	DRALORIC SMA/207/4,75K-B-E RL 0,35W4,75KOHM+-0,1%T25 RESISTOR	RL 084.2445	802.3110.01			
R107	DRALORIC SMA/207/4,75K-B-E RL 0,35W4,87KOHM+-0,1%T25 RESISTOR	RL 084.2468	802.3110.01			
R113	DRALORIC SMA0207 RL 0,35W 931 OHM+-1%TK50 RESISTOR	RL 083.0590	802.3110.01			
R114	DRALORIC SMA0207/931OHM-F-D RL 0,35W 9,76KOHM+-1%TK50 RESISTOR	RL 083.1280	802.3110.01			
R116	DRALORIC SMA0207/9,76K-F-D RL 0,35W 226 KOHM+-1%TK50 RESISTOR	RL 083.2287	802.3110.01			
	DRALORIC SMA0207/226K-F-C					
S1	FR SPANNUNGSWAehler M.SI VOLTAGE SELECTOR SCHURTER R&S-ZCHNG.803.0896	803.0896				
T1	ZM TRAFOEINHEIT TRANSFORMER UNIT	802.3091				
T2	LU SCHALTTRAFO TRANSFORMER	802.2808	802.3110.01			
V1	AK BCY59IX NPN 45V 200MA TRANSISTOR	AK 010.5163	802.3110.01			
V2	SIEMENS BCY59IX AM BUZ21 N 100V PMOSF POWER MOSFET	AM 645.7300	802.3110.01			
	SIEMENS BUZ21					
BIS/TO V6 V7	AE 1N5655AJAN 70V1 SUPPR SUPPRESSOR DIODE	580.9091	802.3110.01			
V8	SIEMENS 1N5655A JAN AG BYW29/150 GL 150V 7A0 RECTIFIER	AG 300.6799	802.3110.01			
V9	VALVO BYW29/150 AK BCY79IX PNP 45V 200MA TRANSISTOR	AK 010.3777	802.3110.01			
V10	SIEMENS BCY79IX AK 2N2222A NPN 40V 800MA TRANSISTOR	AK 010.5405	802.3110.01			
V11	VALVO 2N2222A AG BYV21/45 SGL 45V 25A0 RECTIFIER	803.0473				
	VALVO BYV21/45					
BIS/TO V14 V19	AG BYW29/150 GL 150V 7A0 RECTIFIER	AG 300.6799	802.3110.01			
	VALVO BYW29/150					

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	30	0587	ZE NETZTEIL POWER SUPPLY	802.2814.01 SA	10
Kennzeichen Component No.	Benennung/Beschreibung Designation		Sachnummer Stock No.	enthalten in contained in	
V20	AG BYS28-90 2GL 90V 12A5 RECTIFIER SIEMENS BYS28-90		803.0638	802.3110.01	
V30	AG BYV29/500 GL 500V 7A4 RECTIFIER VALVO BYV 29/500		803.0996	802.3110.01	
V31	AG BYV29/500 GL 500V 7A4 RECTIFIER VALVO BYV 29/500		803.0996	802.3110.01	
V32	AD 1N4448 75V 0,15A UDI DIODE TEXAS INST 1N4448 GEGURTET		AD 012.0700	802.3110.01	
V40	AG BYV29/500 GL 500V 7A4 RECTIFIER VALVO BYV 29/500		803.0996	802.3110.01	
V41	AG BYV29/500 GL 500V 7A4 RECTIFIER VALVO BYV 29/500		803.0996	802.3110.01	
V50	AG BYV29/500 GL 500V 7A4 RECTIFIER VALVO BYV 29/500		803.0996	802.3110.01	
V51	AG BYV29/500 GL 500V 7A4 RECTIFIER VALVO BYV 29/500		803.0996	802.3110.01	
V52	AD 1N4448 75V 0,15A UDI DIODE TEXAS INST 1N4448 GEGURTET		AD 012.0700	802.3110.01	
V53	AE BZX79/C6V8 0,5W Z-DI ZENER DIODE VALVO BZX79/C6V8		AE 012.2478	802.3110.01	
V54	AL BDT92 PNP 60V 10A0 TRANSISTOR VALVO BDT 92		803.0650	802.3110.01	
V55	AK BCY59IX NPN 45V 200MA TRANSISTOR SIEMENS BCY59IX		AK 010.5163	802.3110.01	
V56	AE UZ4736 36V 5.0W Z-DI ZENER DIODE UNITRODE UZ4736		803.0467	802.3110.01	
V60	AG 1N4007 GL1000V 1A0 RECTIFIER AEG-TELEF 1N4007		AG 013.0310	802.3110.01	
V70	AE BZX79/B5V6 0,5W Z-DI ZENER DIODE VALVO BZX79/B5V6		AE 012.5254	802.3110.01	
V71	AD 1N4448 75V 0,15A UDI DIODE TEXAS INST 1N4448 GEGURTET		AD 012.0700	802.3110.01	
V72	AE BZX79/C4V7 0,5W Z-DI ZENER DIODE VALVO BZX79/C4V7		AE 012.2432	802.3110.01	
V73	AE BZX55/B5V1 0,5W Z-DI ZENER DIODE VALVO BZX55/B5V1		AE 262.5837	802.3110.01	
V80	AD 1N4448 75V 0,15A UDI DIODE TEXAS INST 1N4448 GEGURTET		AD 012.0700	802.3110.01	

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		30	0587	ZE NETZTEIL POWER SUPPLY	802.2814.01 SA	11
Kennzeichen Component No.	Benennung/Beschreibung Designation			Sachnummer Stock No.	enthalten in contained in	
V81	AD 1N4448 75V 0,15A UDI DIODE			AD 012.0700	802.3110.01	
V82	TEXAS INST 1N4448 GEGURTET AD 1N4448 75V 0,15A UDI DIODE			AD 012.0700	802.3110.01	
V83	TEXAS INST 1N4448 GEGURTET AE BZX79/C4V7 0,5W Z-DI ZENER DIODE			AE 012.2432	802.3110.01	
V84	VALVO BZX79/C4V7 AK BCY59IX NPN 45V 200MA TRANSISTOR			AK 010.5163	802.3110.01	
V86	SIEMENS BCY59IX AE BZX79/C5V1 0,5W Z-DI ZENER DIODE			AE 012.2449	802.3110.01	
V87	VALVO BZX79/C5V1 AD 1N4448 75V 0,15A UDI DIODE			AD 012.0700	802.3110.01	
V88	TEXAS INST 1N4448 GEGURTET AE BZX55/B4V7 0,5W Z-DI ZENER DIODE			AE 080.4014	802.3110.01	
V100	INTERMETAL ZPD4,7+-2,5% AG MBR2540 SGL 40V 25A0 RECTIFIER			AG 086.9930		
	MOTOROLA MBR2540 M.ZUBEHOER					
W49	DX KABEL (W49)			803.0409	802.3004	
W50	CABLE (W49)					
	DX KABEL (W50)			803.0415	802.3004	
W51	CABLE (W50)					
	DX KABEL (W51)			803.0421	802.3004	
	CABLE (W51)					
X3	FP KURZSCHL.BUCHSE OFFEN SHORTING PLUG			FP 342.1895	802.3110.01	
	BERG 76264-101					
BIS/TO						
X6						
X20	FV FLACHSTECKER GR4,8X0,8 PLUG			FV 545.4000	802.3110.01	
	VOGT&CO 3826 MS/0,8 VERZINNT					
X30	FV FLACHSTECKER 2,8X0,8 FLAT PLUG 2,8X0,8			FV 279.1998	802.3110.01	
	VOGT 3775A/0,8/MS-S18					
X40	FV FLACHSTECKER 2,8X0,8 FLAT PLUG 2,8X0,8			FV 279.1998	802.3110.01	
	VOGT 3775A/0,8/MS-S18					
X50	FV FLACHSTECKER 2,8X0,8 FLAT PLUG 2,8X0,8			FV 279.1998	802.3110.01	
	VOGT 3775A/0,8/MS-S18					
X60	FV FLACHSTECKER 2,8X0,8 FLAT PLUG 2,8X0,8			FV 279.1998	802.3110.01	
	VOGT 3775A/0,8/MS-S18					
X70	FV FLACHSTECKER 2,8X0,8 FLAT PLUG 2,8X0,8			FV 279.1998	802.3110.01	
	VOGT 3775A/0,8/MS-S18					

ROHDE&SCHWARZ		AZ	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
		30	0587	ZE NETZTEIL POWER SUPPLY	802.2814.01 SA	12
Kennzeichen Component No.	Benennung/Beschreibung Designation			Sachnummer Stock No.	enthalten in contained in	
X71	FV FLACHSTECKER 2,8X0,8 FLAT PLUG 2,8X0,8 VOGT 3775A/0,8/MS-S18			FV 279.1998	802.3110.01	
X72	FV FLACHSTECKER 2,8X0,8 FLAT PLUG 2,8X0,8 VOGT 3775A/0,8/MS-S18			FV 279.1998	802.3110.01	
X80	FP KURZSCHL.BUCHSE OFFEN SHORTING PLUG BERG 76264-101			FP 342.1895	802.3110.01	
X100	VK RAENDELKL.ISOL.ROT KNURLED CLAMP ELMA BV 42267			VK 219.5300		
X101	VK RAENDELKL.ISOL.BLAU KNURLED CLAMP ELMA BV 42270			VK 219.5339		
Z1	FN NETZST.M.FILTER 3A MAINS SUPPLY-FILTER CORCOM 3EF2			803.0938		
Z2	LD FILTER 3NF 25A 10MHZ FILTER ERIE 1204-050			LD 453.7110		
Z3	LD FILTER 3NF 25A 10MHZ FILTER ERIE 1204-050			LD 453.7110		
Z6	LD 5MHZ/20DB 10A CHOKE ERIE R&S-ZCHNG.453.4404			LD 453.4404	802.3004	
BIS/TO Z14					- ENDE -	



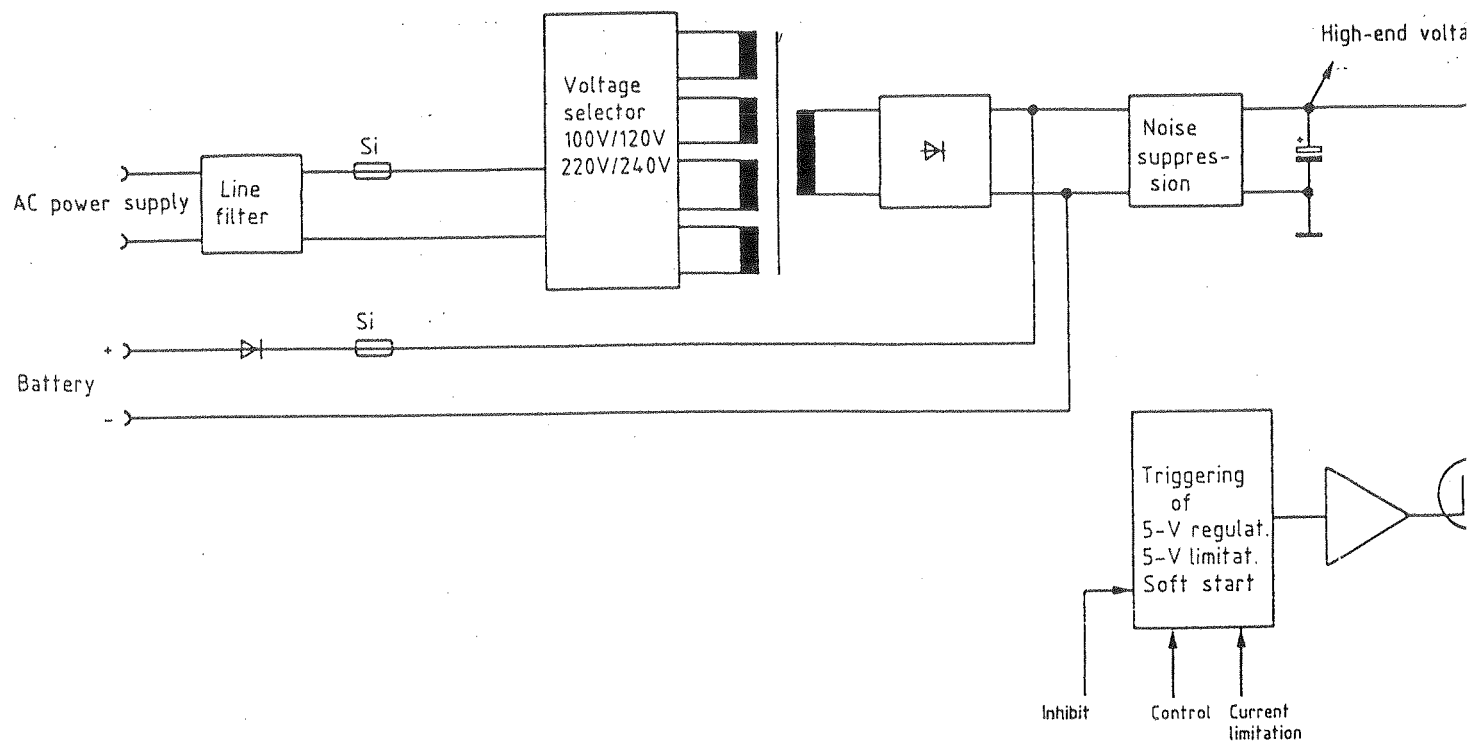


Fig.

end voltage

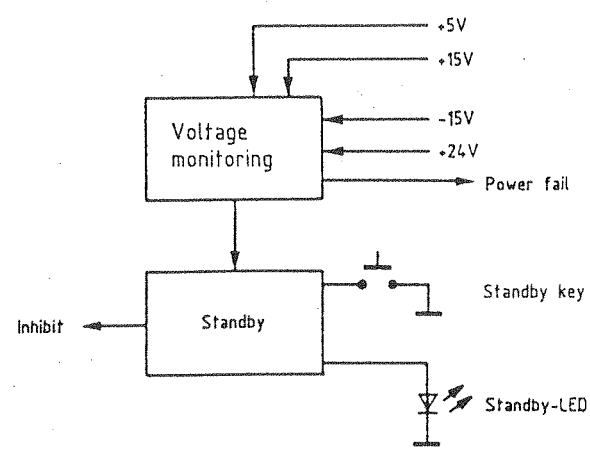
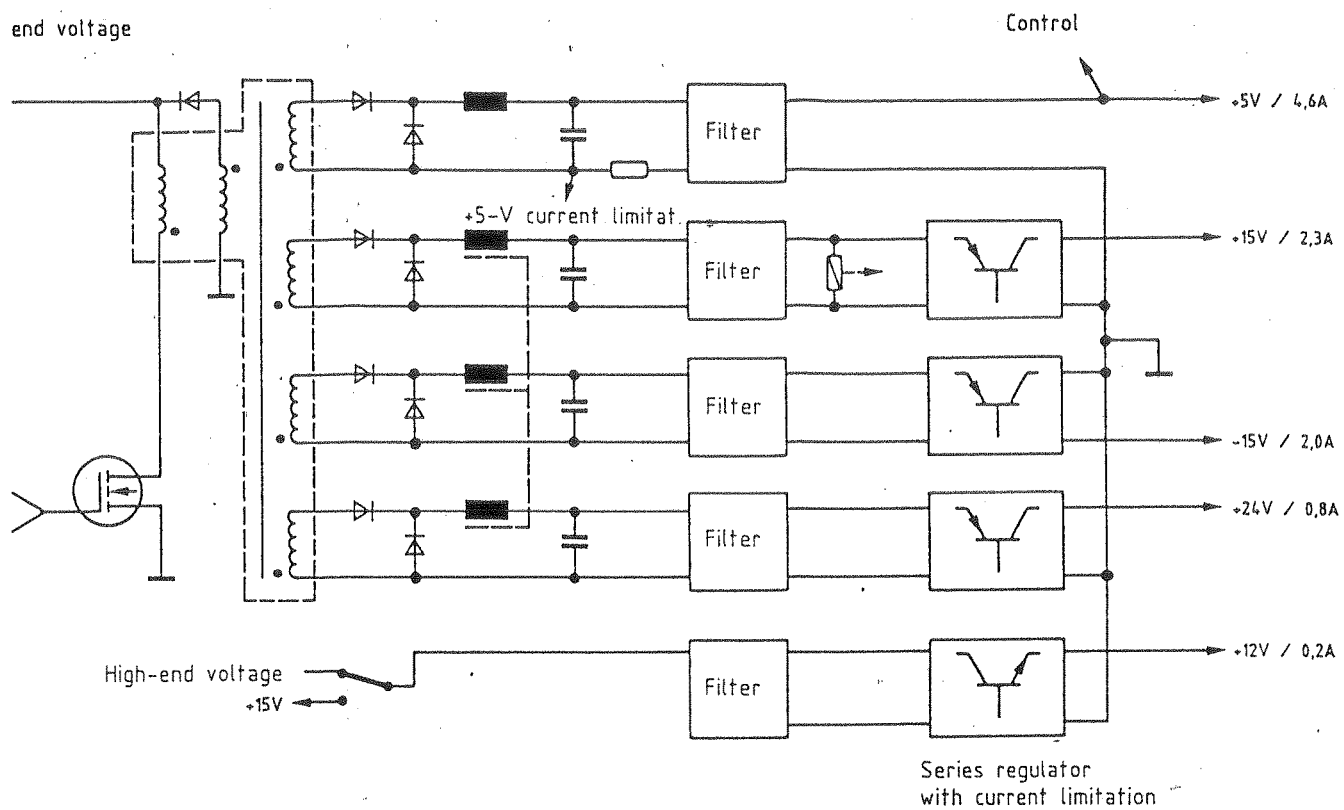
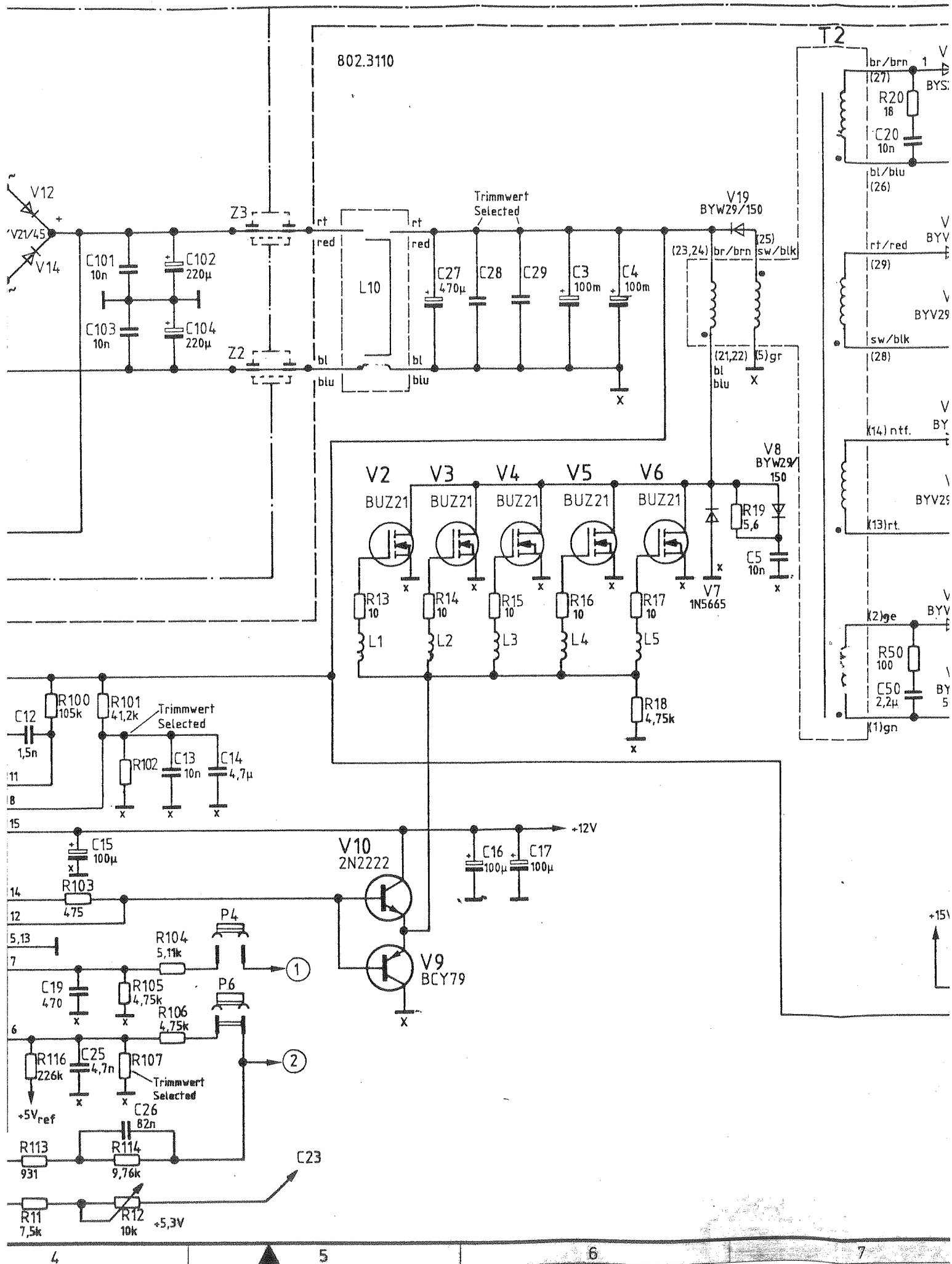
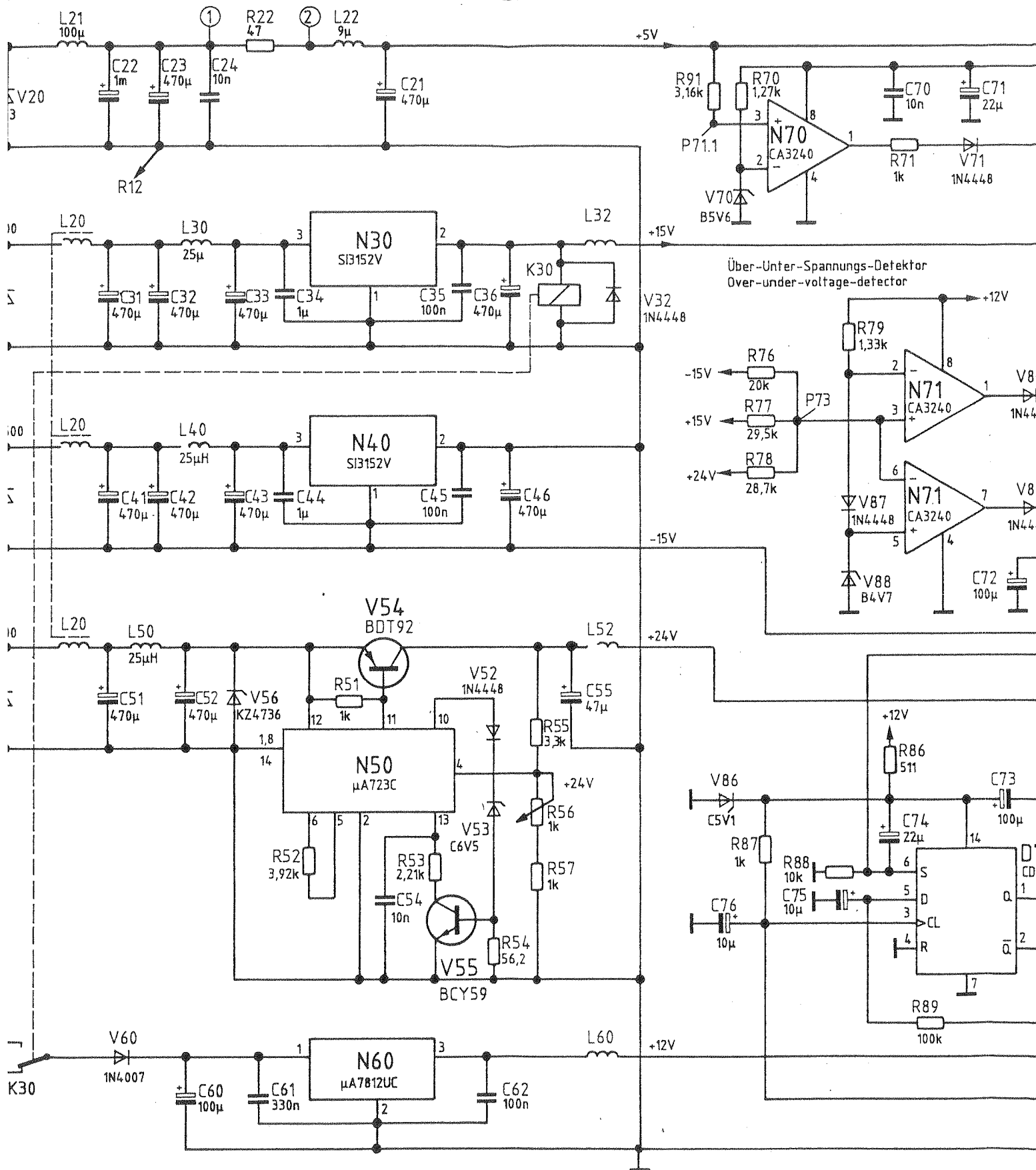


Fig. 5-5 Block diagram of power pack







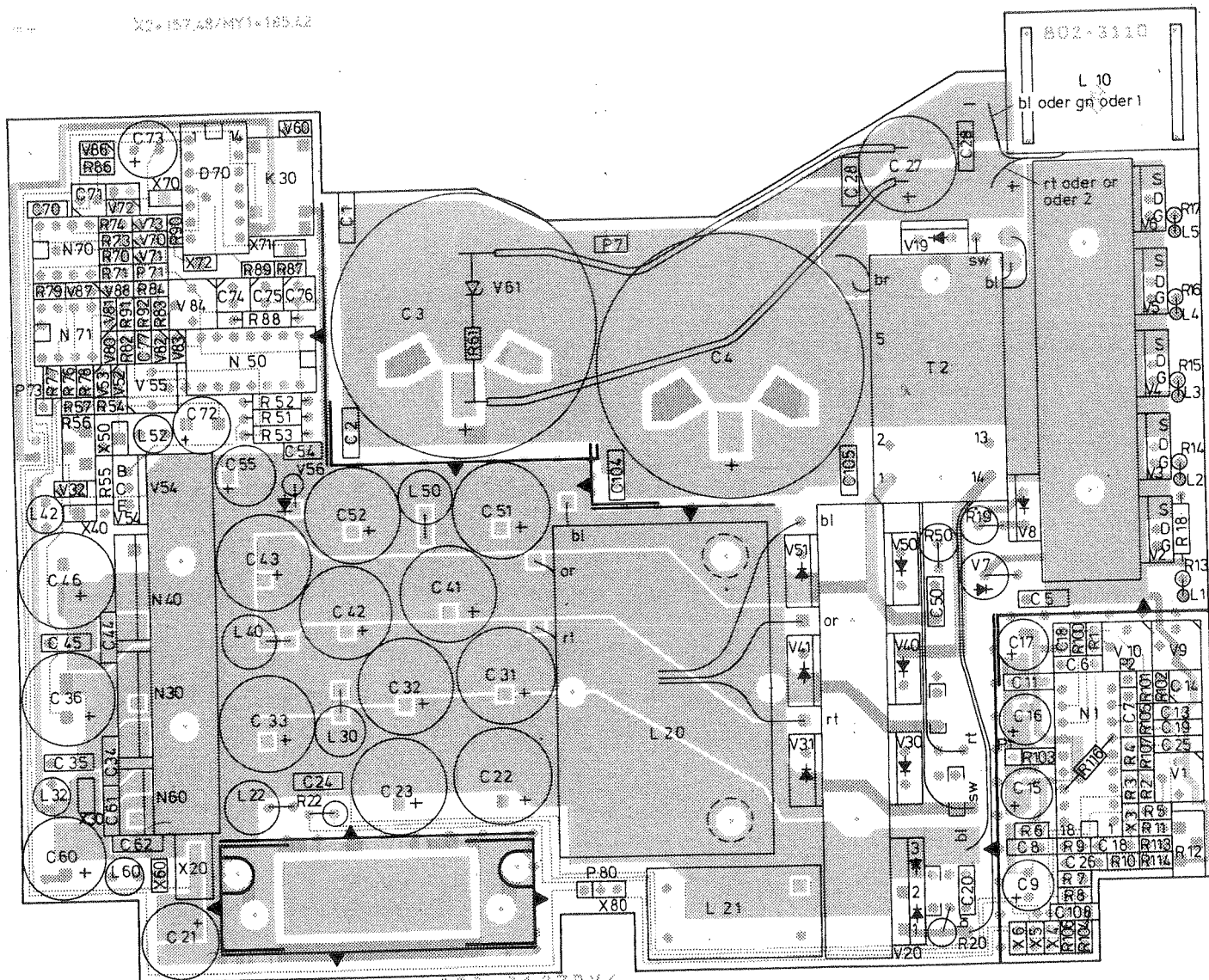
ROHDE &amp; SCHWARZ

				D	35533	8.86	CO	1KGA	Tag
B	32954	11.85	LS	E	35547	5.87	IB	Bearb.	6.85
C	32954	4.86	CO	F	38951	11.87	IB	Gepr	
And. Zust.	Änderungs-Mitteilung	Datum	Name	And. Zust.	Änderungs-Mitteilung	Datum	Name	Norm	

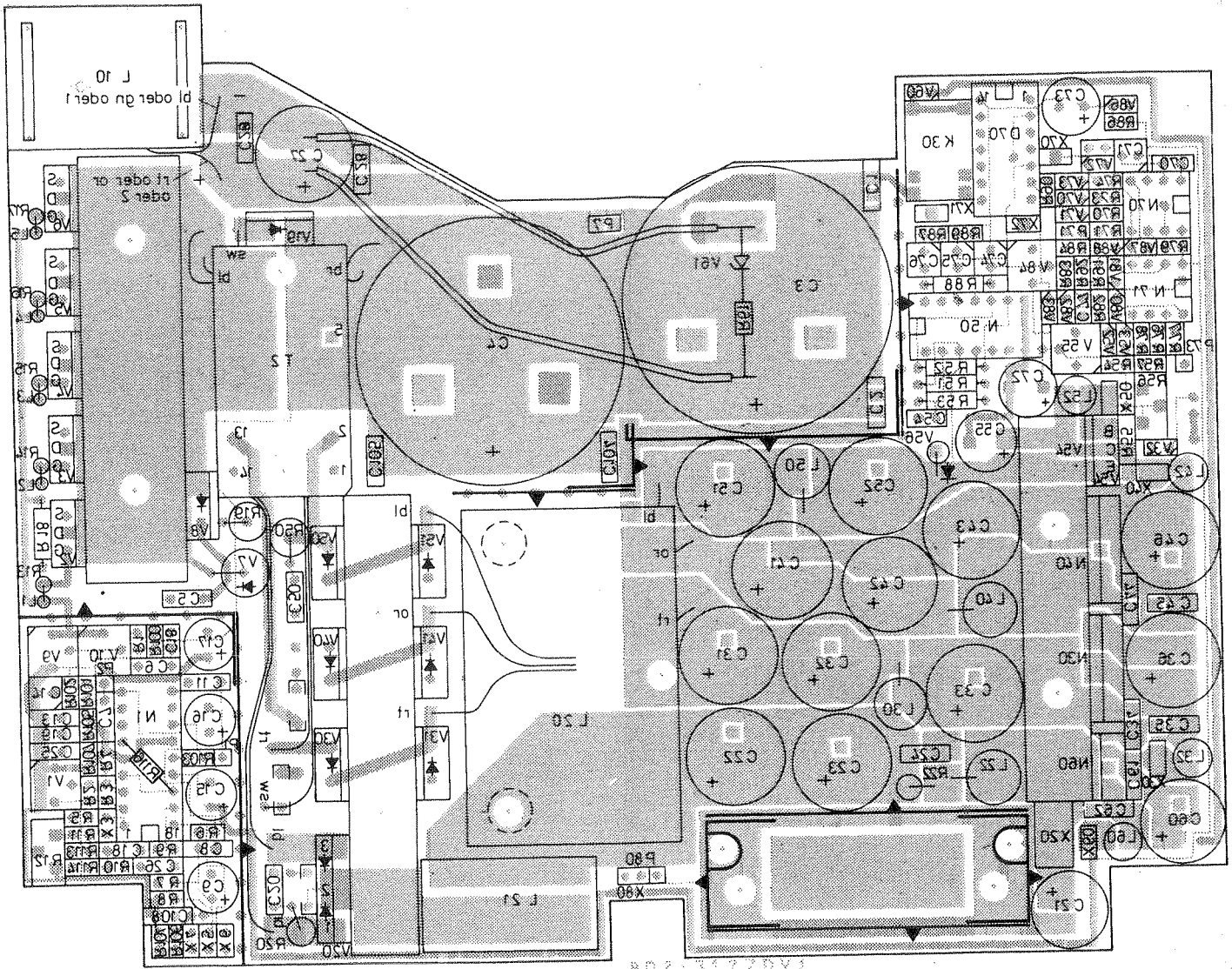



## ktic

802 - 31270V4



# Ansicht und Leitungsführung Lötseite View of tracks on solder side



Maße ohne Toleranzangabe				Maßstab 1 : 1		Benennung	Z
				Halbzeug, Werkstoff			
1 KGA Tag Name				Benennung		Netzteil Power supply	Z
Bearb. 02.85 LS							
Gepr.							
Norm							
 <b>ROHDE &amp; SCHWARZ</b>				Zeichn.-Nr.		802.3110	Blatt-Nr. 2
				reg. i. V. 802.2020 V			
Änd. Zust.	Änderungs-Mitteilung	Tag	Name	erste Z. 802.2814		v. Bl.	





**ROHDE & SCHWARZ**

SERVICE INSTRUCTIONS

Digital Unit

802.4517.02

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### 5.1            Function Description

The module comprises a complete processor with several special digital function groups. The processor is the central control and arithmetic unit of the instrument. It controls the complete hardware, can respond to certain peripheral events, controls simple and complex test sequences and carries out various calculations.

The digital unit contains its own 16-bit data bus and its own 20-bit address bus.

Fig. 5-1 shows the block diagram of the digital unit with the most important data and control lines where a link may consist of several signal lines.

Further units are also present on the module (RF counter, AF counter, A/D converter) whose functions are closely associated with the digital unit.

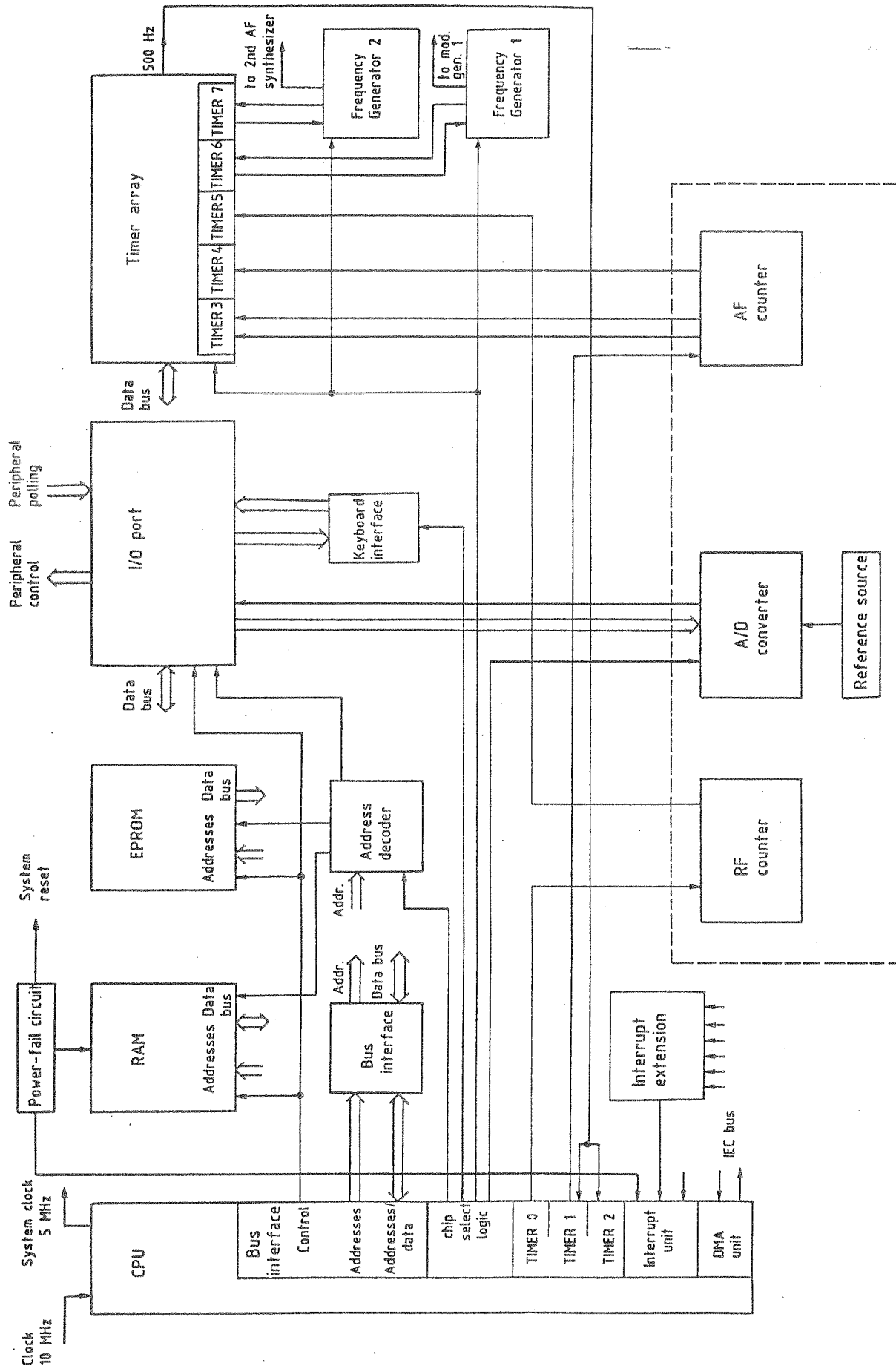


Fig. 5-1 Block diagram of the digital unit

### 5.1.1 CPU

A CPU of type 80186 is used. This 16-bit CPU uses an external clock of 10 MHz; the system clock is then 5 MHz.

The CPU has certain special features which are described below:

#### a) Bus interface

In addition to a number of control and status lines leading to and from the bus interface, this unit generates the most significant 4 address bits on special lines. The least significant 16 address bits are available on a common bus in multiplex mode with the 16 data bits. It is therefore necessary to temporarily store the least significant 16 address bits in an external bus interface (see Section 5.1.2).

#### b) Chip select logic

The CPU contains a chip select unit which provides various chip select outputs. This unit can be programmed such that the outputs only become active with certain address areas of the address bus.

A differentiation must be made between the memory and peripheral selection outputs. Seven selection outputs are available for driving peripheral modules. The CPU can be programmed for memory mapped or separate I/O area organization. The I/O area organization is used in this instrument. The peripheral selection outputs drive the I/O modules, the timer array, the A/D converter and the divider.

There are 6 memory selection outputs present which are not sufficient for the complete memory space of the instrument. They therefore first control, together with address lines, an external address decoder which may also be simply omitted as a result of the preselection in the CPU-internal chip select unit (see Section 5.1.3).

### c) Timer unit

This unit contains 3 programmable timer/counter functions which may operate separately or as a group.

Timers 0 and 1 have external inputs and outputs. Timer 0 provides the gate time for the RF counter and timer 1 the gate time for the AF counter. These gate times can only be generated using an external reference clock of 500 MHz provided by the timer array.

Timer 2 is only used internally as the real-time clock of the system. It causes an internal interrupt every 10 ms which increments the clock.

### d) Interrupt unit

The interrupt unit contains an interrupt controller with a non-maskable input (NMI) and four maskable inputs (INT0 to INT3). The NMI input is connected to the power-fail circuit. An interrupt is generated as soon as the operating voltage drops below a defined value and measures for data protection are initiated (see Section 5.1.11).

The priority of inputs INT0 to INT3 can be selected. Since their number would be insufficient for the instrument, input INT0 is expanded into six interrupt inputs using an external interrupt extension (see Section 5.1.7).

Examples of interrupt generators:  
rotary pulse generator (spinwheel), keyboard, IEC bus, Centronics interface.

### e) DMA unit

The DMA unit enables the fastest possible data transfer with peripheral units. This transmission mode is used together with the IEC bus.

## 5.1.2 Bus Interface

Since the microprocessor activates data and addresses in multiplex mode, it is necessary to store the addresses temporarily. Addresses A0 to A18 are loaded into intermediate memories. The control pulse required (ALE) is provided directly by the microprocessor.

The data bus D0 to D15 is controlled via line drivers. The CPU also provides the control signals for the data direction and activation in this case.

The address and data buses are local buses of the digital unit.

### 5.1.3 Address Decoder

The address decoder is responsible for selection of the various address areas of the complete memory. The input is provided by the CPU with certain address lines and lines from the chip select logic. A further signal (BHE) can be used by the CPU to trigger individual bytes from the memory with 16-bit word organization. The decoder provides single signals at the output with which the individual memory areas can be directly selected.

### 5.1.4 RAM

The RAM of the digital unit has a capacity of 16 Kbyte and is divided into 16x8 Kbit. Static CMOS-RAMs are used. These low power types enable battery back-up when the power supply is switched off or if it fails. For this reason, the RAM has its own power supply which is automatically switched over in the power failure circuit (see Section 5.1.11).

### 5.1.5 EPROM

The read-only memory has six IC sockets which can be occupied by type 27256 chips. The total memory capacity is then 192 Kbyte.

### 5.1.6 I/O Port

This function unit is used to trigger and scan peripheral units. The link to the microprocessor consists of the common data bus, control signals from the CPU and triggering via the address decoder. The I/O data transmission is implemented in different ways. Most of I/O lines are provided by the programmable port chips D17 and D18.

D17 is programmed as a pure output port with 25 output signals which are mainly used as strobe signals for controlling a series of peripheral shift registers. This port also provides the serial data line DO-L and the associated clock line CPS-L.

D18 is programmed to service 12 outputs and 12 inputs. The outputs also include a number of strobe lines, the serial data line DO-S and the associated clock line CPS-S. Data from peripheral modules can be read in via the inputs.

The port chips D45 and D46 represent a pure output port which provides further strobe and control lines and controls the A/D converter.

### 5.1.7 Interrupt Extension

It is necessary to extend the CPU-internal interrupt controller since the number of peripheral modules which require an interrupt is larger than the number of CPU interrupt inputs.

An interrupt expander with six inputs is therefore connected prior to the CPU interrupt line INT0.

Fig. 5-2 shows the block diagram of the circuit.



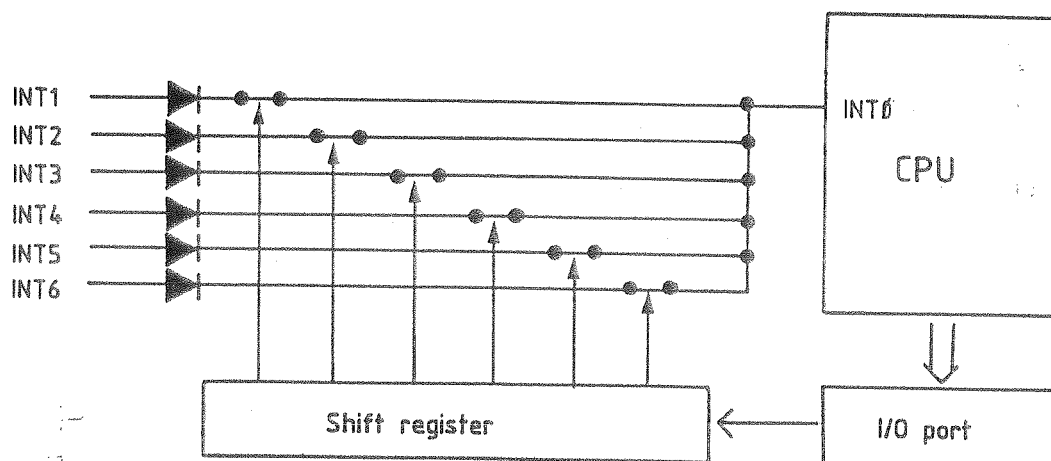


Fig. 5-2 Interrupt extension

The additional interrupt lines INT1 to INT6 are connected to a common point via a wired-OR link with serial, intermediate switches; the lines are taken to the interrupt line INT0. The switches are normally closed. If an interrupt is requested via one of the lines INT1 to INT6, the CPU starts the interrupt program and a polling sequence. A serial shift register is accessed via the I/O port which in turn accesses the interrupt switches. The interrupt program first causes all switches to open. Signal INT0 becomes inactive. The switches are then closed in sequence. The source of interrupt is identified as soon as signal INT0 at the CPU interrupt input becomes active again and the program can service the actual interrupt request.

The shift register (D33) is controlled by the I/O ports with the following signals:

CPS-S	Clock line
DO-S	Data line
HFC	Strobe line

The switches (D36, D38) are analog switches.

### 5.1.8 Timer Array

The timer array consists of a single chip. It contains 5 independent timers which can be programmed as clocks, counters or pulse generators. Data exchange with the CPU takes place via the common data bus, additional control lines control the chip. The timer array also provides a 500-Hz reference clock to generate the gate times in the CPU-internal timers.

Summary of assignment, use and operating modes of the timers:

Timer	Operating mode	Use
3	Counter	Evaluation of AF counter
4	Counter	Evaluation of AF counter
5	Counter	Evaluation of RF counter
6	Divider	Control of frequency generator 1
7	Divider	Control of frequency generator 2

### 5.1.9 Frequency Generators

Two identical frequency generator circuits are present in the digital unit whose output signal is required to generate programmable sinewave frequencies. The output signal is first extended in a monostable flip-flop and then passed on at a lower level to suppress interferences.

Each frequency generator consists of an intermediate memory, an adder, an input memory and a programmable decrementer.

Timer 6 assumes the function of the decrementer for generator 1.

Timer 7 assumes the function of the decrementer for generator 2.

The generator numbers are as follows:

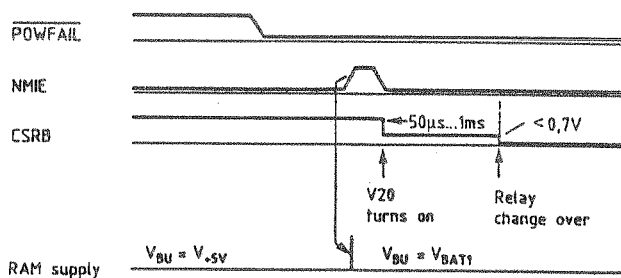
- + Generator 1 (D20 to D23)
- + Generator 2 (D25 to D28)

### 5.1.10 Keyboard Interface

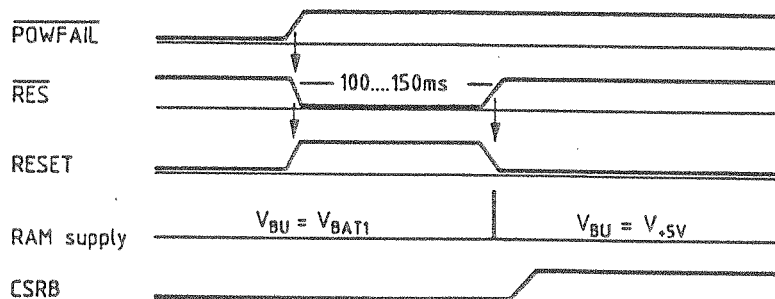
The interface comprises a 10x8 matrix with the keys located at the points of intersection. The 10 columns of the matrix are linked to an output port (D29, D30), the 8 rows to an input port (D31). Both ports are linked to the CPU via the data bus. In addition, selection lines and read or write lines lead to the two ports. A pressed key triggers an interrupt and the associated interrupt program then applies a test bit to all 10 rows in succession and polls the input port. In this manner, the point of intersection in the matrix at which a key was pressed can be determined.

### 5.1.11 Power-Fail Circuit

The power-fail circuit receives an active power-fail signal as soon as the monitored supply voltage drops below a critical value and then triggers an interrupt. The CPU then carries out a save routine and transmits a signal to the power-fail circuit following the last access to the RAM. The RAM supply is then switched over to the battery and the RAMs are transferred to low power mode. The power-fail signal enters the inactive status when the instrument is switched on and the critical value of the supply voltage has been exceeded. The circuit then triggers a system reset and subsequently switches over the RAM supply from the battery to the power pack. The control signal CSRB for low power mode of the RAMs is cancelled at the same time.



Sequence following transition of signal POWFAIL from High to Low.



Sequence following transition of signal POWFAIL from Low to High.

### 5.1.12 A/D Converter Unit

The A/D converter unit consists of the A/D converter and a reference voltage source used as the system reference (see Fig. 5-3).

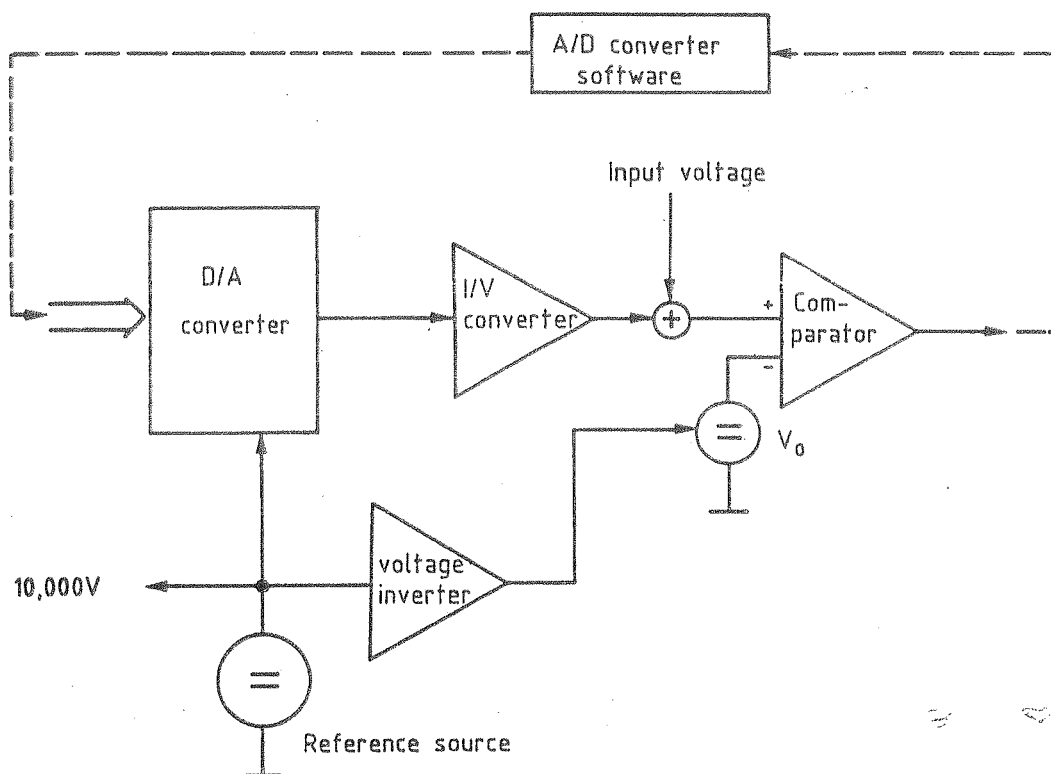


Fig. 5-3 Block diagram of the A/D converter unit

#### 5.1.12.1 Reference Source

The reference source is designed using a temperature-compensated reference diode buffered via an operational amplifier. The voltage should be  $10.000\text{ V} \pm 1\text{ mV}$  and can be set exactly using a trimmer.

#### 5.1.12.2 A/D Converter

The A/D converter is used for digital acquisition of several analog variables and operates according to the principle of successive approximation.

Apart from the hardware, the A/D converter also contains a software program which drives the D/A converter with a 10-bit binary value during conversion of the applied input voltage. The D/A converter outputs a proportional current which is then converted into a proportional negative voltage by an inverting I/V converter. This voltage and the positive input voltage are applied to a comparator via a summation point.

If the load-independent voltage  $V_O=0$  and the comparator output is High, the input voltage is higher than the voltage at the I/V converter output. This means that the D/A converter has been driven by the software with a binary value which is too small.

The program can supply the D/A converter with a more accurate binary value, however, since the software polls the comparator and has thus access to the result of the comparison. The final result is obtained after 10 such steps.

The load-independent voltage  $V_O$  at the comparator is obtained from the reference voltage and has a value of -100 mV. This enables negative voltages down to -200 mV to be detected. The upper input voltage limit of 10.2 V is above the reference voltage and is achieved by increasing the gain of the I/V converter.

#### 5.1.13 RF Counter

(See Fig. 5-4)

The RF counter indicates the frequency of the applied RF signal in the range from 1 to 1000 MHz; the signal is first amplified, limited and then applied to a frequency divider and a transistor stage which improves the slew rate for low frequencies. The signals thus conditioned are applied via a diode switch to the divider chain consisting of a 3-bit ECL divider, an ECL/TTL converter and a 12-bit TTL divider. All dividers in the chain have binary outputs which are connected to parallel/serial shift registers which are read by the processor. The output of the divider chain is connected to a special timer chip which evaluates the divided frequency further.

A test is made whether the undivided signal or the signal divided by 4 is to be applied to the divider chain; the signal divided by 4 is first measured with a resolution of 10 kHz; the signal is measured without the predivider if the frequency is below 400 MHz, otherwise the divider remains connected.

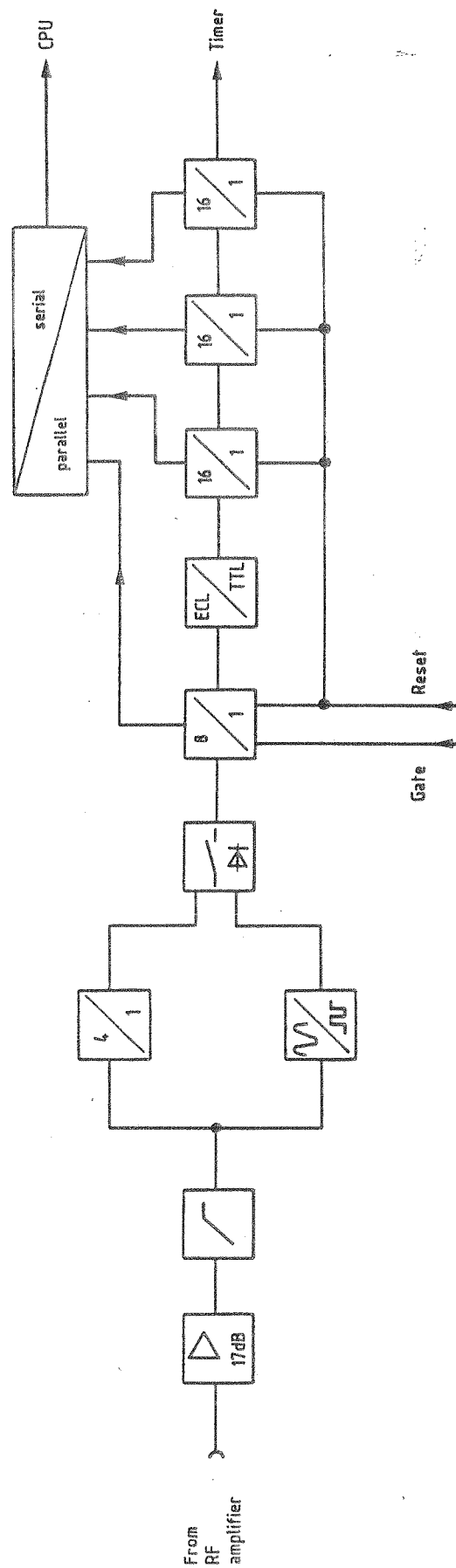


Fig. 5-4 Block diagram of the RF counter

#### 5.1.14 AF Counter

The AF counter counts frequencies in the range from 10 Hz to 500 kHz. The signal to be counted is first amplified and then applied to two comparators. The reference signal of the comparators is then obtained from the positive and negative peak values of the counted signal. The output signals are applied to a clock-edge-controlled flip-flop with reset and then processed further in a special timer chip.

The advantage of this comparator control by a reference signal which depends on the amplitude of the input signal is the excellent processing even of noisy signals, as shown in Figs. 5-5 to 5-7.

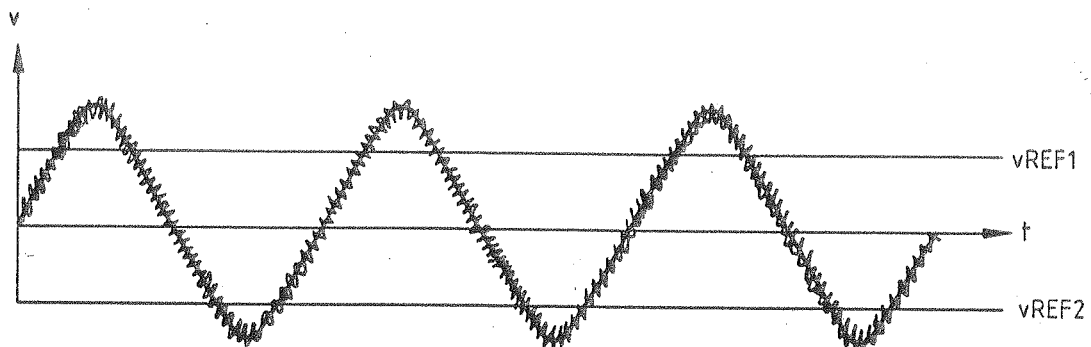


Fig. 5-5 Noisy input signal of comparators with reference voltage indicated

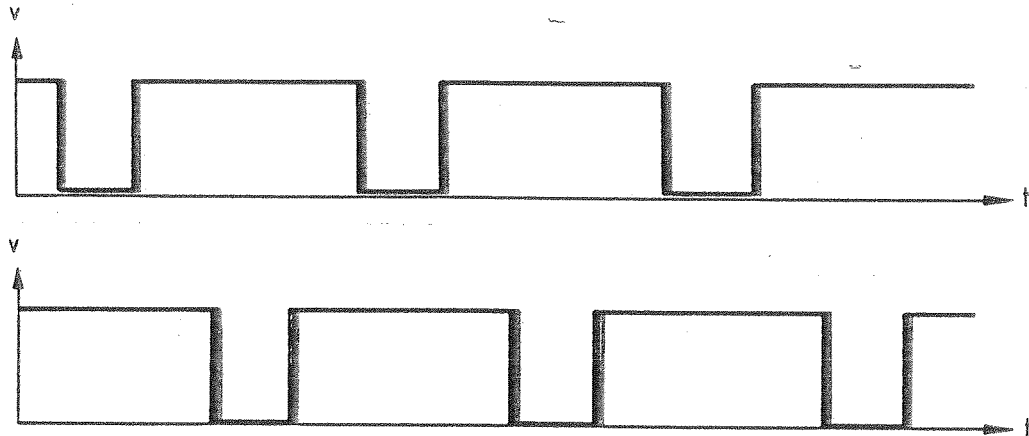


Fig. 5-6 Output signal of comparators with phase jitter

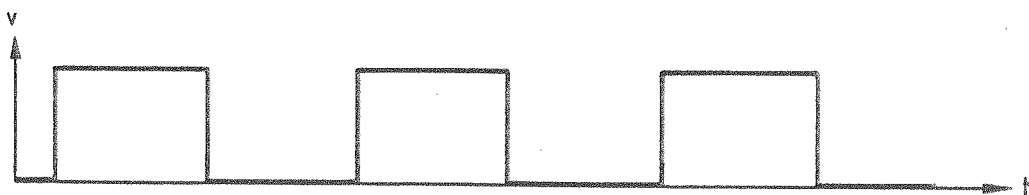


Fig. 5-7 Output signal of the flip-flop without phase jitter

## 5.2 Testing and Adjustment

### 5.2.1 Testing the A/D Converter Unit

The signal ground (SIGGND) must be connected to the main ground (GND). The plug-in jumper X75 must be inserted when operating the digital unit.

#### 5.2.1.1 Reference Source

Measure the reference voltage against the signal ground (X1.A,B31) at test point P12 using a voltmeter. The voltage should be  $+10.000\text{ V} \pm 1\text{ mV}$  and can be adjusted if necessary using R109.

#### 5.2.1.2 A/D Converter

Measure the DC voltage at test point P11 after testing and adjusting the reference source. It should be  $-100\text{ mV} \pm 5\text{ mV}$  compared to the signal ground. Apply a binary data word (X value) to the input of the D/A converter N100.

Apply a test voltage  $V_t$  to the signal input (MESSDC) (plug X1.A31 and test point P10) referred to the signal ground SIGGND (plug X1.A,B30). Vary the test voltage  $V_t$  such that the voltage range (see following table) associated with the X value is passed through.

The TTL level at pin 7 of comparator N102 must change from High to Low if  $V_t$  is changed to higher values. The comparator voltage  $V_t$  associated with the changeover point must be within the tolerance associated with the X value.

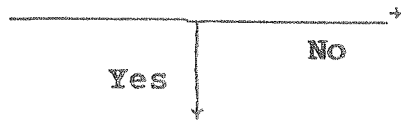
The following table lists examples for three different X values:

X value	Tolerance within which the comparator changes from High to Low	
	Lower limit	$V_t$ Upper limit
0	-240 mV	-160 mV
512	+4.990 V	+5.290 V
1023	+10.190 V	+10.750 V



### 5.3 Troubleshooting

Are the supply voltages  
+5 V and  $V_{BU}$   
present ?



Test power pack and  
leads.

Is the 5-MHz system  
clock present ?  
(CPU, D1 pin 56)

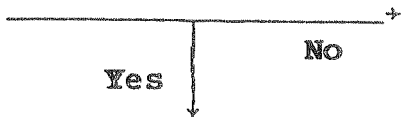


Is external 10-MHz  
clock applied ?  
(connector X7)



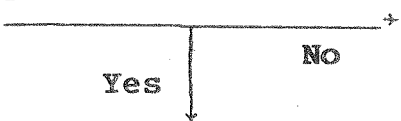
Check clock  
source and  
leads..

Check plug-in jumpers.  
X20,X21,X27 present ?



Insert plug-in jumpers.

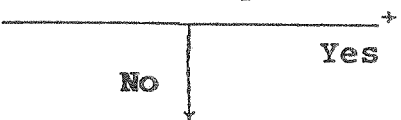
Check power-fail  
circuit. Signals  
 $V_{BU}$ ,  $CSRB$ , RESET  
present ?



Check CPU (D1)  
and replace if  
necessary.

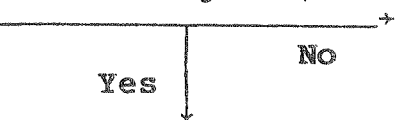
A

Are blocking CPU  
signals at active  
level ? (e.g.  
DMA, interrupt)



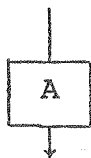
Eliminate level error  
or check interrupt ex-  
tension logic.

Are RAMs and EPROMs  
correctly addressed ?  
(addresses, data,  
control signals)



Check bus driver and  
address decoder.

Continue trouble-  
shooting with logic  
analyzer, emulator,  
oscilloscope.



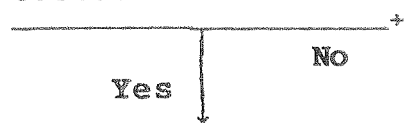
Power-fail circuit  
faulty.

Is the signal  
POWFAIL correct ?



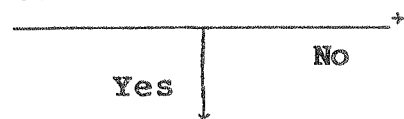
POWFAIL signal  
line and power  
pack.

Is the signal RES  
correct ?



Check D47, D48 and  
their circuitry.

Is the signal RESET  
correct ?



Check RES and RESET  
lines. Are both lines  
OK ?

Change changeover  
of RAM supply.  
Check timing of  
signal CSRB.



Eliminate  
fault.

Check CPU (D1) and  
replace if necessary.



ROHDE & SCHWARZ  
MÜNCHEN

Schaltteillisten  
Stromläufe  
Bestückungspläne  
Parts lists  
Circuit diagrams  
Components plans

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
C4 ..9	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C10	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C17	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C20 ..26	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C27	CE 10UF -10+50% 63V 9X13 ELECTROLYTIC CAPACITOR	CE 022.7650	ROEDERST	ELKOEK10/63	
C28	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C29	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C30	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C31	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C32	CE 2,2UF-10+50% 63V 9X13 ELECTROLYTIC CAPACITOR	CE 022.7637	ROEDERST	ELKO EK 2/63	
C33	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C34	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C36	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C37	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C40	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C41	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C42	CC 100PF+-2%4X5N750 CAPACITOR	CC 087.6906	VALVO	2222 678 58101	
C43	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C44	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C45	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C46	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C47	CC 100PF+-2%4X5N750 CAPACITOR	CC 087.6906	VALVO	2222 678 58101	
C48	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C49 ..52	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C60	CE 2200UF-10+50%6,3V12X30 ELECTROLYTIC CAPAITOR	CE 534.1133	SIEMENS	B41010-B2228-T	
C61	CE 2200UF-10+50%6,3V12X30 ELECTROLYTIC CAPAITOR	CE 534.1133	SIEMENS	B41010-B2228-T	
C62	CE 22UF-10+50% 63V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7120	ROEDERST	EK 00 CB 222 J	
C63	CE 22UF-10+50% 63V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7120	ROEDERST	EK 00 CB 222 J	
C64	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C65	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C66	CE 2200UF-10+50%6,3V12X30 ELECTROLYTIC CAPAITOR	CE 534.1133	SIEMENS	B41010-B2228-T	
C67	CE 2200UF-10+50%6,3V12X30 ELECTROLYTIC CAPAITOR	CE 534.1133	SIEMENS	B41010-B2228-T	
C68	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C69	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C72	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C73	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C74	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C75	CE 22UF-10+50% 63V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7120	ROEDERST	EK 00 CB 222 J	
C76	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	

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C77	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C78	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C79	CE 22UF+-10+50% 63V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7120	ROEDERST	EK 00 CB 222 J	
C80	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784	VALVO	2222 63051 102	
C81	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C101	CC 82PF+-2%6X7NPO CAPACITOR	CC 087.6535	VALVO	2222 678 10829	
C105	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C106	CE 10UF+-20%35V RD5X5 ELECTROLYTIC CAPACITOR	803.0667	NATION PAN	ECE-A1VKS-100	
C107	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C109	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C110	CE 10UF+-20%35V RD5X5 ELECTROLYTIC CAPACITOR	803.0667	NATION PAN	ECE-A1VKS-100	
C111	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C112	CC 100PF+-2%4X5N750 CAPACITOR	CC 087.6906	VALVO	2222 678 58101	
C113	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C200	CE 100UF+-20%25V RD8X9,5 ELECTROLYTIC CAPACITOR	803.0580	MATSUSHITA	ECE-A1ESS-101	
C201	CE 100UF+-20%25V RD8X9,5 ELECTROLYTIC CAPACITOR	803.0580	MATSUSHITA	ECE-A1ESS-101	
C202	CE 100UF+-20%25V RD8X9,5 ELECTROLYTIC CAPACITOR	803.0580	MATSUSHITA	ECE-A1ESS-101	
C207	CE 10UF+-20%35V RD5X5 ELECTROLYTIC CAPACITOR	803.0667	NATION PAN	ECE-A1VKS-100	
C208	CE 10UF+-20%35V RD5X5 ELECTROLYTIC CAPACITOR	803.0667	NATION PAN	ECE-A1VKS-100	
C210	CE 10UF+-20%35V RD5X5 ELECTROLYTIC CAPACITOR	803.0667	NATION PAN	ECE-A1VKS-100	
C211	CE 2,2UF+-20%20V 5X 4X 7 ELECTROLYTIC CAPACITOR	CE 022.8104	ROEDERSTEI	ETR 1 2,2/20 20%	
C212	CE 2,2UF+-20%20V 5X 4X 7 ELECTROLYTIC CAPACITOR	CE 022.8104	ROEDERSTEI	ETR 1 2,2/20 20%	
C213	CE 100UF+-20%25V RD8X9,5 ELECTROLYTIC CAPACITOR	803.0580	MATSUSHITA	ECE-A1ESS-101	
C214	CE 100UF+-20%25V RD8X9,5 ELECTROLYTIC CAPACITOR	803.0580	MATSUSHITA	ECE-A1ESS-101	
C300	CC 100NF+-10% 50V5K1200LR CAPACITOR	CC 092.0777	AEROVOX	CKR05BX104KLEVELR	
C301	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C302	CC 4,7PF+-0,25PF3X4NPO CAPACITOR	CC 087.6387	VALVO	2222 678 09478	
C303	CC 100NF+-10% 50V5K1200LR CAPACITOR	CC 092.0777	AEROVOX	CKR05BX104KLEVELR	
C320	CC 100NF+-10% 50V5K1200LR CAPACITOR	CC 092.0777	AEROVOX	CKR05BX104KLEVELR	
C321	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C322	CC 100NF+-10% 50V5K1200LR CAPACITOR	CC 092.0777	AEROVOX	CKR05BX104KLEVELR	
C323	CC 100NF+-10% 50V5K1200LR CAPACITOR	CC 092.0777	AEROVOX	CKR05BX104KLEVELR	
C324	CC 4,7PF+-0,25PF3X4NPO CAPACITOR	CC 087.6387	VALVO	2222 678 09478	
C326	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	WIMA	MKS/2/63/O, 1UF/5%	
C330	CC 100NF+-10% 50V5K1200LR CAPACITOR	CC 092.0777	AEROVOX	CKR05BX104KLEVELR	
C331	CE 470UF+-20%25V12,5X12,5 ELECTROLYTIC CAPACITOR	803.0715	MATSUSHITA	ECE-A1ESS-471U	
C332	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C333	CC 2,2NF+-10%5X6R2000 CAPACITOR	CC 087.7060	VALVO	2222 63051 222	
C334	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	

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Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
C335	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C336	CC 100NF+-10% 50V5K1200LR CAPACITOR	CC 092.0777	AEROVOX	CKR05BX104KLEVELR	
C340	CC 100NF+-10% 50V5K1200LR CAPACITOR	CC 092.0777	AEROVOX	CKR05BX104KLEVELR	
C342	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C343	CC 100NF+-10% 50V5K1200LR CAPACITOR	CC 092.0777	AEROVOX	CKR05BX104KLEVELR	
C344	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
C345	CC 560PF+-10%3X4R2000 CAPACITOR	CC 087.7002	VALVO	2222 63051 561	
C346	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525	VALVO	2222 63051 64051103	
D1	BC R80186 16B.CPU CPU	BC 393.1211	AMD	R80186	
D2	BL SN74LS245N 8XBUS-TRSCV IC 8XBUS TRSCV SN74LS245N	300.8833	TEXAS	SN74LS245N	
D3	BL SN74LS245N 8XBUS-TRSCV IC 8XBUS TRSCV SN74LS245N	300.8833	TEXAS	SN74LS245N	
D4	BL SN74LS373N 8BIT-D-REG. BL SN74LS373N 8BIT-D-REG.	336.7543	TEXAS	SN74LS373N	
D5	BL SN74LS373N 8BIT-D-REG. BL SN74LS373N 8BIT-D-REG.	336.7543	TEXAS	SN74LS373N	
D6	BL SN74LS375N 2X2BIT-D-RG DUAL 2BIT-D-LATCH	328.2281	TEXAS	SN74LS375N	
D7	BL SN74LS155AN 2X1:4-DEMU SN74LS155N 2X1:4-DEMUX	328.2246	TEXAS	SN74LS155AN	
D8	HS SOFTWARE CMT V PROM	802.5336			802.5213.01
D9	HS SOFTWARE CMT VI PROM	802.5342			802.5213.01
D10	HS SOFTWARE CMT I PROM	802.5288			802.5213.01
D11	HS SOFTWARE CMT II PROM	802.5307			802.5213.01
D12	HS SOFTWARE CMT III PROM	802.5313			802.5213.01
D13	HS SOFTWARE CMT IV PROM	802.5320			802.5213.01
D14	BL SN74LS155AN 2X1:4-DEMU SN74LS155N 2X1:4-DEMUX	328.2246	TEXAS	SN74LS155AN	
D15	BC HM6264LP15 8KX8B.SRAM SRAM	344.7410	HITACHI	HM6264LP15	
D16	BC HM6264LP15 8KX8B.SRAM SRAM	344.7410	HITACHI	HM6264LP15	
D17	BC D8255A PROGR.I/O-IF I/O-PORT	086.9830	INTEL	P8255A (PLASTIK)(-5)	
D18	BC D8255A PROGR.I/O-IF I/O-PORT	086.9830	INTEL	P8255A (PLASTIK)(-5)	
D19	BC AM9513DC TIMING CONTR TIMING CONTROLLER	BC 339.4039	AMD	AM9513DC	
D20	BL SN74LS373N 8BIT-D-REG. BL SN74LS373N 8BIT-D-REG.	336.7543	TEXAS	SN74LS373N	
D21	BL SN74LS283N 4-BIT-ADD. IC SN74LS283N 4-BIT-ADD.	283.1760	TEXAS	SN74LS283N	
D22	BL SN74LS283N 4-BIT-ADD. IC SN74LS283N 4-BIT-ADD.	283.1760	TEXAS	SN74LS283N	
D23	BL SN74LS273N 8BIT-D-REG. 8BIT-D-REGISTER	214.8998	TEXAS	SN74LS273N	
D24	BL SN74LS123N 2/MONOFLOP IC MONOFLOP SN74LS85N	235.8468	TEXAS	SN74LS123N	
D25	BL SN74LS373N 8BIT-D-REG. BL SN74LS373N 8BIT-D-REG.	336.7543	TEXAS	SN74LS373N	
D26	BL SN74LS283N 4-BIT-ADD. IC SN74LS283N 4-BIT-ADD.	283.1760	TEXAS	SN74LS283N	
D27	BL SN74LS283N 4-BIT-ADD. IC SN74LS283N 4-BIT-ADD.	283.1760	TEXAS	SN74LS283N	
D28	BL SN74LS273N 8BIT-D-REG. 8BIT-D-REGISTER	214.8998	TEXAS	SN74LS273N	
D29	BL SN74LS373N 8BIT-D-REG. BL SN74LS373N 8BIT-D-REG.	336.7543	TEXAS	SN74LS373N	
D30	BL SN74LS375N 2X2BIT-D-RG DUAL 2BIT-D-LATCH	328.2281	TEXAS	SN74LS375N	
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Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
D31	BL SN74LS245N 8XBUS-TRSCV	300.8833	TEXAS	SN74LS245N	
D32	IC 8XBUS TRSCV SN74LS245N BL CD4021BE 8BIT SH.REG SHIFT REGISTER	BL 086.7096	RCA	CD4021BE	
D33	BL CD4094BE 8BIT SH.REG SHIFT REGISTER	BL 586.7726	RCA	CD4094BE	
D36	BL MC14066BAL 4X ANALOGSW ANALOG SWITCH	BL 418.0135	MOTOROLA	MC14066BAL	
D38	BL MC14066BAL 4X ANALOGSW ANALOG SWITCH	BL 418.0135	MOTOROLA	MC14066BAL	
D39	BL 74F04PC 6XINVERTER HEX-INVERTER	BL 344.6588	FAIRCHILD	74F04PC	
D41	BL SN74LS32N 4/2INP.OR IC OR GATE SN74LS32N	266.4687	TEXAS	SN74LS32N	
D42	BL MM74HC02N 4X2IN.NORG QUAD 2-INPUT NOR GATE	BL 571.3142	MOTOROLA	MC74HC02N	
D43	BL MM74HC74N 2XD-FLIPFL DUAL D FLIP-FLOP	BL 571.3171	NSC	MM74HC74N	
D44	BL SN74LS122N MONOFLOP IC MONOFLOP SN74LS122N	303.8957	TEXAS	SN74LS122N	
D45	BL SN74LS373N 8BIT-D-REG. BL SN74LS373N 8BIT-D-REG.	336.7543	TEXAS	SN74LS373N	
D46	BL SN74LS373N 8BIT-D-REG. BL SN74LS373N 8BIT-D-REG.	336.7543	TEXAS	SN74LS373N	
D47	BL MM74C914N 6XSCHM.TRIG HEX SCHMITT TRIGGER	BL 282.3423	NSC	MM74C914N	
D48	BL CD4011BE 4X2IN.NANDG NAND GATE	BL 252.7337	RCA	CD4011BE	
D51	BL CD4094BE 8BIT SH.REG SHIFT REGISTER	BL 586.7726	RCA	CD4094BE	
D52	BL CD4052BE 2X4CHAN.MUX MULTIPLEXER/DEMULTIPLEXER	BL 243.1200	MOTOROLA	MC14052BCP	
D200	BL SN74LS74AN 2/D-FLIPFL. IC FLIP-FLOP SN74LS74N	266.7934	TEXAS	SN74LS74N	
D300	BL CA3199E 4:1 DIVID DIVIDER	372.1106	RCA	CA3199E	
D301	BL SP8735BDC 8:1DIVID UHF DIVIDER	BL 300.6176	PLESSEY	SP8735BDC	
D302	BL SN74LS26N 4/2INP.NAND IC SN74LS26N 4/2INP.NAND	280.7567	TEXAS	SN74LS26N	
D303	BL CD4021BE 8BIT SH.REG SHIFT REGISTER	BL 086.7096	RCA	CD4021BE	
D304	BL CD4021BE 8BIT SH.REG SHIFT REGISTER	BL 086.7096	RCA	CD4021BE	
D305	BL SN74S197N 4B.-COUNTER 4BIT-COUNTER	334.3570	TEXAS	SN74S197N	
D306	BL SN74LS393N 2XBIN.ZAEHL IC 2XBIN.COUNT.SN74LS393N	300.6982	TEXAS	SN74LS393N	
G1	EB 3,4V LITHIUM-BATTERIE LI BATTERY	565.1687	SAFT	LS 3 CNA	
K1	SR 5 V 1XU DIL RELAY	SR 340.4551	ELECTROL	RA 30421051	
L1	LD 25UH BEI 3 A 0,046 OHM CHOKE	LD 026.4849	SIEMENS	B82111-B-C24	
L2	LD 50UH BEI 0,3A 2,9 OHM CHOKE	LD 026.4649	SIEMENS	B82111-A-C17	
L3	LD 50UH BEI 0,3A 2,9 OHM CHOKE	LD 026.4649	SIEMENS	B82111-A-C17	
L100	LD 100 UH10%8,00OHMO,084A CHOKE	LD 067.3101	DELEVAN	DROSSEL1025-68	
L101	LD 100 UH10%8,00OHMO,084A CHOKE	LD 067.3101	DELEVAN	DROSSEL1025-68	
L300	LD 1000UH10%72,00OHMO,028A CHOKE	LD 037.8005	DELEVAN	DROSSEL1025-92	
L302	LD 1000UH10%72,00OHMO,028A CHOKE	LD 037.8005	DELEVAN	DROSSEL1025-92	
L326	LD 1000UH10%72,00OHMO,028A CHOKE	LD 037.8005	DELEVAN	DROSSEL1025-92	
N100	BJ AD7520KN 9B.D/A-CONV D/A-CONVERTER	BJ 300.6499	ANALOG DEV	AD7520KN	
N101	BO LF411CN JFET OPAMP OPERATIONAL AMPLIFIER	349.3058	NSC	LF411CN	
N102	BO LM311H COMPAR COMPARATOR	234.4469	RAYTHEON	LM311H	

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N103	BO LF412CN 2XFET OPAMP OPERATIONAL AMPLIFIER	356.0521	NSC	LF412CN	
N201	BO LF157J BIFET OPAMP OPERATIONAL AMPLIFIER	BO 343.1530	MOTOROLA	LF157J	
N202	BO LF412CN 2XFET OPAMP OPERATIONAL AMPLIFIER	356.0521	NSC	LF412CN	
N203	BO TL820CN 2X COMPAR COMPARATOR	230.2278	TEXAS	TL820CN	
N300	BM OM350R ANTENNEN-VERST BROADBAND AMPLIFIER	803.0838	VALVO	OM350R SPEZ.	
N302	BO LF156J BIFET OPAMP OPERATIONAL AMPLIFIER	BO 645.7251	MOTOROLA	LF156J	
P1	VL WIRE-WRAP PIN	VL 088.4542	BERG	NR. 75 403-003	
..14	WIRE-WRAP PIN				
P21	VL WIRE-WRAP PIN	VL 088.4542	BERG	NR. 75 403-003	
..24	WIRE-WRAP PIN				
P26	VL WIRE-WRAP PIN	VL 088.4542	BERG	NR. 75 403-003	
..28	WIRE-WRAP PIN				
R4	RL 0,35W 301 OHM+-1%TK50 RESISTOR	RL 083.0210	DRALORIC	SMA0207/3010HM-F-D	
R6	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C	
R7	RN 9X4,7KOHM+-2% SIL10 H5 NETWORK	RN 327.0804	BOURNS	4310R-101-472	
..12					
R13	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C	
R14	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C	
R15	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D	
R16	RN 5X3,9KOHM+-2% SIL 6 H5 RESISTOR NETWORK	RN 317.9273	BOURNS	4306R-101-392	
R17	RL 0,35W 332 OHM+-1%TK50 RESISTOR	RL 083.0255	DRALORIC	SMA0207/3320HM-F-D	
R18	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D	
R19	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D	
R20	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D	
R21	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D	
R23	RL 0,35W 3,32KOHM+-1%TK50 RESISTOR	RL 083.0990	DRALORIC	SMA0207/3,32K-F-D	
R24	RL 0,35W 3,32KOHM+-1%TK50 RESISTOR	RL 083.0990	DRALORIC	SMA0207/3,32K-F-D	
R25	RL 0,35W 3,32KOHM+-1%TK50 RESISTOR	RL 083.0990	DRALORIC	SMA0207/3,32K-F-D	
R26	RL 0,35W 2,21KOHM+-1%TK50 RESISTOR	RL 082.2477	DRALORIC	SMA 0207/2,21K-F-C	
R27	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R28	RL 0,35W 22,1KOHM+-1%TK50 RESISTOR	RL 083.1545	DRALORIC	SMA/207/22,1K-F-C	
R29	RL 0,35W 3,01KOHM+-1%TK50 RESISTOR	RL 083.0961	DRALORIC	SMA0207/3,01K-F-D	
R30	RL 0,35W 35,7KOHM+-1%TK50 RESISTOR	RL 083.1700	DRALORIC	SMA0207/35,7K-F-C	
R31	RL 0,35W 4,75KOHM+-1%TK50 RESISTOR	RL 083.1097	DRALORIC	SMA0207/4,75K-F-D	
R32	RL 0,35W 12,1KOHM+-1%TK50 RESISTOR	RL 083.1351	DRALORIC	SMA0207/12,1K-F-D	
R33	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D	
R34	RL 0,35W 5,11KOHM+-1%TK50 RESISTOR	RL 082.2348	DRALORIC	SMA0207/5,11K-F-C	
R35	RL 0,35W 4,75KOHM+-1%TK50 RESISTOR	RL 083.1097	DRALORIC	SMA0207/4,75K-F-D	
R36	RL 0,35W 12,1KOHM+-1%TK50 RESISTOR	RL 083.1351	DRALORIC	SMA0207/12,1K-F-D	
R37	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	DRALORIC	SMA0207/100/HM-F-D	
R38	RL 0,35W 5,11KOHM+-1%TK50 RESISTOR	RL 082.2348	DRALORIC	SMA0207/5,11K-F-C	
R39	RN 7X4,7KOHM+-2% SIL 8 RESISTOR NETWORK	RN 572.1550	BOURNS	4308R-101-472	
ROHDE & SCHWARZ		Äl Datum	Schaltteilleiste für Parts list for		Blatt
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Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
R40	RL 0,35W 3,32KOHM+-1%TK50 RESISTOR	RL 083.0990	DRALORIC	SMA0207/3,32K-F-D	
R41	RL 0,35W 1MOHM+-1%TK50 RESISTOR	RL 082.7862	DRALORIC	SMA0207/1M-F-D	
R42	RL 0,35W 4,75KOHM+-1%TK50 RESISTOR	RL 083.1097	DRALORIC	SMA0207/4,75K-F-D	
R43	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R50	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R52	RL 0,35W 4,75KOHM+-1%TK50 RESISTOR	RL 083.1097	DRALORIC	SMA0207/4,75K-F-D	
R60	RN 9X3,3KOHM+-2%SIL10 H5 RESISTOR NETWORK	RN 340.2765	BOURNS	4310R-101-332	
R61	RN 9X3,3KOHM+-2%SIL10 H5 RESISTOR NETWORK	RN 340.2765	BOURNS	4310R-101-332	
R100	RL 0,35W 6,81KOHM+-1%TK50 RESISTOR	RL 082.2560	DRALORIC	SMA 0207/6,81K-F-C	
R101	RL 0,35W 6,81KOHM+-1%TK50 RESISTOR	RL 082.2560	DRALORIC	SMA 0207/6,81K-F-C	
R102	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C	
R103	RL 0,35W30,1KOHM+-0,1%T25 RESISTOR	RL 084.3987	DRALORIC	SMA/207/30,1K-B-E	
R104	RL 0,35W 301 OHM+-1%TK50 RESISTOR	RL 083.0210	DRALORIC	SMA0207/301OHM-F-D	
R105	RL 0,35W 1,0 OHM+-1%TK50 METALFILMRESISTOR	RL 099.7860	RESISTA	MK2 1,00 OHM 1% TK50	
R106	RL 0,21W 820 OHM2% UNGEW. RESISTOR	RL 092.6069	RESISTA	MK1 820OHM 2% UNG.	
R107	RL 0,35W20,0KOHM+-0,1%T25 RESISTOR	RL 084.3641	DRALORIC	SMA0207/20,0K-B-E	
R108	RL 0,35W 453 OHM+-1%TK50 RESISTOR	RL 083.0378	DRALORIC	SMA0207/453OHM-F-D	
R109	RS 0,75W 1KOHM+-10% CERMET DEPOS.-CARBON POTENTIOMET	RS 037.7367	BOURNS	3006P-1-1 KOHM+-10%	
R110	RL 0,35W 7,68KOHM+-1%TK50 RESISTOR	RL 083.1200	DRALORIC	SMA0207/7,68K-F-D	
R111	RL 0,35W 681 OHM+-1%TK50 RESISTOR	RL 083.0490	DRALORIC	SMA0207/681OHM-F-D	
R112	RL 0,35W 3,32KOHM+-1%TK50 RESISTOR	RL 083.0990	DRALORIC	SMA0207/3,32K-F-D	
R113	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R114	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297	DRALORIC	SMA0207/10K-F-D	
R202	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C	
R203	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C	
R204	RL 0,35W 15,0KOHM+-1%TK50 RESISTOR	RL 083.1400	DRALORIC	SMA0207/15K-F-D	
R205	RL 0,35W 162KOHM+-1%TK50 RESISTOR	RL 082.2154	DRALORIC	SMA0207/162K-F-C	
R206	RL 0,35W 162KOHM+-1%TK50 RESISTOR	RL 082.2154	DRALORIC	SMA0207/162K-F-C	
R207	RL 0,35W 221 OHM+-1%TK50 RESISTOR	RL 083.0084	DRALORIC	SMA0207/221OHM-F-D	
R208	RL 0,35W 221 OHM+-1%TK50 RESISTOR	RL 083.0084	DRALORIC	SMA0207/221OHM-F-D	
R300	RL 0,35W 121 OHM+-1%TK50 RESISTOR	RL 082.9859	DRALORIC	SMA0207/121OHM-F-D	
R301	RL 0,21W 33 OHM2% UNGEW. RESISTOR	RL 092.5891	RESISTA	MK1 33OHM 2% UNGEW.	
R302	RL 0,21W 22 OHM2% UNGEW. RESISTOR	RL 092.5879	RESISTA	MK1 22OHM 2% UNGEW.	
R305	RL 0,35W 1,82KOHM+-1%TK50 RESISTOR	RL 082.2277	DRALORIC	SMA0207/1,82K-F-C	
R306	RL 0,21W 1,0KOHM2% UNGEW. RESISTOR	RL 092.6075	RESISTA	MK1 1K 2% UNGEW.	
R307	RL 0,21W 10 OHM2% UNGEW. RESISTOR	RL 092.5833	RESISTA	MK1 10OHM 2% UNGEW.	
R308	RL 0,21W 390 OHM2% UNGEW. RESISTOR	RL 092.6023	RESISTA	MK1 390OHM 2% UNGEW.	
R309	RL 0,21W 56 OHM2% UNGEW. RESISTOR	RL 092.5927	RESISTA	MK1 56OHM 2% UNGEW.	
R310	RL 0,21W 100 OHM2% UNGEW. RESISTOR	RL 092.5956	RESISTA	MK1 100OHM 2% UNGEW.	

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Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
R320	RL 0,21W 390 OHM2% UNGEW. RESISTOR	RL 092.6023	RESISTA	MK1 390OHM 2% UNGEW.	
R321	RL 0,21W 390 OHM2% UNGEW. RESISTOR	RL 092.6023	RESISTA	MK1 390OHM 2% UNGEW.	
R322	RL 0,35W 4,75KOHM+-1%TK50 RESISTOR	RL 083.1097	DRALORIC	SMA0207/4,75K-F-D	
R323	RL 0,35W 3,57KOHM+-1%TK50 RESISTOR	RL 083.1022	DRALORIC	SMA0207/3,57K-F-D	
R325	RL 0,35W 4,75KOHM+-1%TK50 RESISTOR	RL 083.1097	DRALORIC	SMA0207/4,75K-F-D	
R326	RL 0,35W 332 OHM+-1%TK50 RESISTOR	RL 083.0255	DRALORIC	SMA0207/332OHM-F-D	
R327	RL 0,35W 4,75KOHM+-1%TK50 RESISTOR	RL 083.1097	DRALORIC	SMA0207/4,75K-F-D	
R328	RL 0,21W 68 OHM2% UNGEW. RESISTOR	RL 092.5933	RESISTA	MK1 68OHM 2% UNGEW.	
R331	RL 0,35W 8,25KOHM+-1%TK50 RESISTOR	RL 083.1239	DRALORIC	SMA0207/8,25K-F-D	
R332	RL 0,35W 1,62KOHM+-0,1%T25 RESISTOR	RL 083.9546	DRALORIC	O207 1,62KOHM 0,1%	
R333	RL 0,35W 68,1KOHM+-1%TK50 RESISTOR	RL 082.2602	DRALORIC	SMA 0207/68,1K-F-C	
R340	RL 0,35W 9,09KOHM+-0,1%T25 RESISTOR	RL 084.2980	DRALORIC	SMA0207/9,09K-B-E	
R341	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C	
R342	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C	
R343	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C	
R344	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C	
R350	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	DRALORIC	SMA0207/1K-F-C	
R351	RL 0,35W 681 OHM+-1%TK50 RESISTOR	RL 083.0490	DRALORIC	SMA0207/681OHM-F-D	
R352	RL 0,21W 100 OHM2% UNGEW. RESISTOR	RL 092.5956	RESISTA	MK1 100OHM 2% UNGEW.	
R360	RN 4X 10KOHM+-2%SIL 8 H5 RESISTOR NETWORK	RN 291.5154	BOURNS	4308R-102-103	
R370	RN 4X 10KOHM+-2%SIL 8 H5 RESISTOR NETWORK	RN 291.5154	BOURNS	4308R-102-103	
R380	RN 4X 10KOHM+-2%SIL 8 H5 RESISTOR NETWORK	RN 291.5154	BOURNS	4308R-102-103	
V2	AD 1N4448 75V 0,15A UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V3	AE 5082-2800 SCHOTTKYDI DIODE	AE 012.9066	HEWLETT-P.	5082-2800	
V4	AD 1N4448 75V 0,15A UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V5	AD 1N4448 75V 0,15A UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V6	AD 1N4448 75V 0,15A UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V10	AE 1N938 9,0V REF.DI REFERENCE DIODE	AE 012.4806	THOMSON	1N938	
V11	AD 1N4448 75V 0,15A UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V12	AD 1N4448 75V 0,15A UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V13	AD 1N4448 75V 0,15A UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V14	AD 1N4448 75V 0,15A UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V15	AK 2N4029 PNP 80V100OMA TRANSISTOR	083.7150	VALVO	2N4029	
V16	AK BC517 NPN 30V DARL. TRANSISTOR	AK 282.2133	SIEMENS	BC517	
V17	AD 1N4448 75V 0,15A UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V18	AD 1N4448 75V 0,15A UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V19	AD 1N4448 75V 0,15A UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V20	AK BC253C PNP 25V 100MA TRANSISTOR	010.2829	INTERMETAL	BC253C	
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Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
V21	AD 1N4448 75V 0,15A UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V30	AD 1N4448 75V 0,15A UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V31	AD 1N4448 75V 0,15A UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V100	AE 5082-2800 SCHOTTKYDI DIODE	AE 012.9066	HEWLETT-P.	5082-2800	
V202	AE 5082-2800 SCHOTTKYDI DIODE	AE 012.9066	HEWLETT-P.	5082-2800	
V203	AE 5082-2800 SCHOTTKYDI DIODE	AE 012.9066	HEWLETT-P.	5082-2800	
V205	AE BZX79/C8V2 0,5W Z-DI ZENER DIODE	AE 012.2490	VALVO	BZX79/C8V2	
V206	AE BZX79/C3V3 0,5W Z-DI ZENER DIODE	AE 012.2390	ITT	ZPD3,3	
V207	AE BZX79/C4V3 0,5W Z-DI ZENER DIODE	AE 012.2426	VALVO	BZX79/C4V3	
V208	AE BZX79/C4V3 0,5W Z-DI ZENER DIODE	AE 012.2426	VALVO	BZX79/C4V3	
V210	AE BZX79/C10 0,5W Z-DI ZENER DIODE	AE 012.2510	VALVO	BZX79/C10	
V211	AE BZX79/C10 0,5W Z-DI ZENER DIODE	AE 012.2510	VALVO	BZX79/C10	
V300 ..305	AE BA483 BER.SCH.DIOD.UHF DIODE	AE 568.2290	VALVO	BA483	
V306	AE BA483 BER.SCH.DIOD.UHF DIODE	AE 568.2290	VALVO	BA483	
V307	AE BZX79/B5V6 0,5W Z-DI ZENER DIODE	AE 012.5254	VALVO	BZX79/B5V6	
V308	AK BC173C NPN 25V 100MA TRANSISTOR	010.4444	INTERMETAL	BC173C	
V309	AK BFX48 PNP 30V 100MA TRANSISTOR	AK 010.3202	SGS	BFX48	
V314	AE 5082-2800 SCHOTTKYDI DIODE	AE 012.9066	HEWLETT-P.	5082-2800	
V315	AK BFR15A NPN 12V 30MA TRANSISTOR	AK 451.4320	SIEMENS	BFR15A	
V325	AE BA483 BER.SCH.DIOD.UHF DIODE	AE 568.2290	VALVO	BA483	
V326	AE BA483 BER.SCH.DIOD.UHF DIODE	AE 568.2290	VALVO	BA483	
V327	AE BA483 BER.SCH.DIOD.UHF DIODE	AE 568.2290	VALVO	BA483	
V360	AD 1N4448 75V 0,15A UDI DIODE	AD 012.0700	TEXAS INST	1N4448 GEGURTET	
V361	AK BC253C PNP 25V 100MA TRANSISTOR	010.2829	INTERMETAL	BC253C	
V362	AE BZX79/C4V7 0,5W Z-DI ZENER DIODE	AE 012.2432	VALVO	BZX79/C4V7	
V371	AK BC253C PNP 25V 100MA TRANSISTOR	010.2829	INTERMETAL	BC253C	
V372	AE BZX79/C4V7 0,5W Z-DI ZENER DIODE	AE 012.2432	VALVO	BZX79/C4V7	
V381	AK BC253C PNP 25V 100MA TRANSISTOR	010.2829	INTERMETAL	BC253C	
V382	AE BZX79/C4V7 0,5W Z-DI ZENER DIODE	AE 012.2432	VALVO	BZX79/C4V7	
W1	DX KABEL CABLE	802.5113			
X1	FP STECKERL.INDIR.64POLIG 64-PIN INSERT	FP 084.6470	PANDUIT	100-064-033/999	
X20	VL WIRE-WRAP PIN 3-POLIG/3 PINS	VL 088.4542	BERG	NR. 75 403-003	
X21	WIRE-WRAP PIN 3-POLIG/3 PINS	VL 088.4542	BERG	NR. 75 403-003	
X24	FP INDIREKT.STECKERL.36P. 5-POLIG/5 PINS	FP 242.3600	BERG	75160-102-36	
X25	PIN CONNECTOR VL WIRE-WRAP PIN	VL 088.4542	BERG	NR. 75 403-003	
X26	2-POLIG/2 PINS WIRE-WRAP PIN	VL 088.4542	BERG	NR. 75 403-003	

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Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
X27	2-POLIG/2 PINS WIRE-WRAP PIN VL WIRE-WRAP PIN	VL 088.4542	BERG	NR. 75 403-003	
X28	3-POLIG/3 PINS WIRE-WRAP PIN VL WIRE-WRAP PIN	VL 088.4542	BERG	NR. 75 403-003	
X29	2-POLIG/2 PINS WIRE-WRAP PIN VL WIRE-WRAP PIN	VL 088.4542	BERG	NR. 75 403-003	
X30	2-POLIG/2 PINS WIRE-WRAP PIN VL WIRE-WRAP PIN	VL 088.4542	BERG	NR. 75 403-003	
X71	WIRE-WRAP PIN FP IND.BUCHSENLEISTE 64P. FEMALE MULTIPOINT CONNECT	FP 278.1913	PANDUIT	100-064-433/999	
X72	FP IND.BUCHSENLEISTE 64P. FEMALE MULTIPOINT CONNECT	FP 278.1913	PANDUIT	100-064-433/999	
X73	FR IC-FASSUNG 20POL.DIL SOCKET	FR 092.7142	PRECICONT	US020T	
X74	FR IC-FASSUNG 20POL.DIL SOCKET	FR 092.7142	PRECICONT	US020T	
X75	VL WIRE-WRAP PIN 2-POLIG/2 PINS WIRE-WRAP PIN	VL 088.4542	BERG	NR. 75 403-003	
X701	FJ EINBAUSTECKER SYST.SMB ANGLE CONNECTOR	FJ 602.8804	ROSENBERG	R&S-ZCHNG.602.8804	
X710	FJ EINBAUSTECKER SYST.SMB ANGLE CONNECTOR	FJ 602.8804	ROSENBERG	R&S-ZCHNG.602.8804	
- ENDE -					

ROHDE & SCHWARZ	AI	Datum Date	Schaltteilleiste für Parts list for	Sachnummer Stock Nr.	Blatt Page
	30	1187	ED DIGITALTEIL DIGITAL SECTION	802.4517.01 SA	9-

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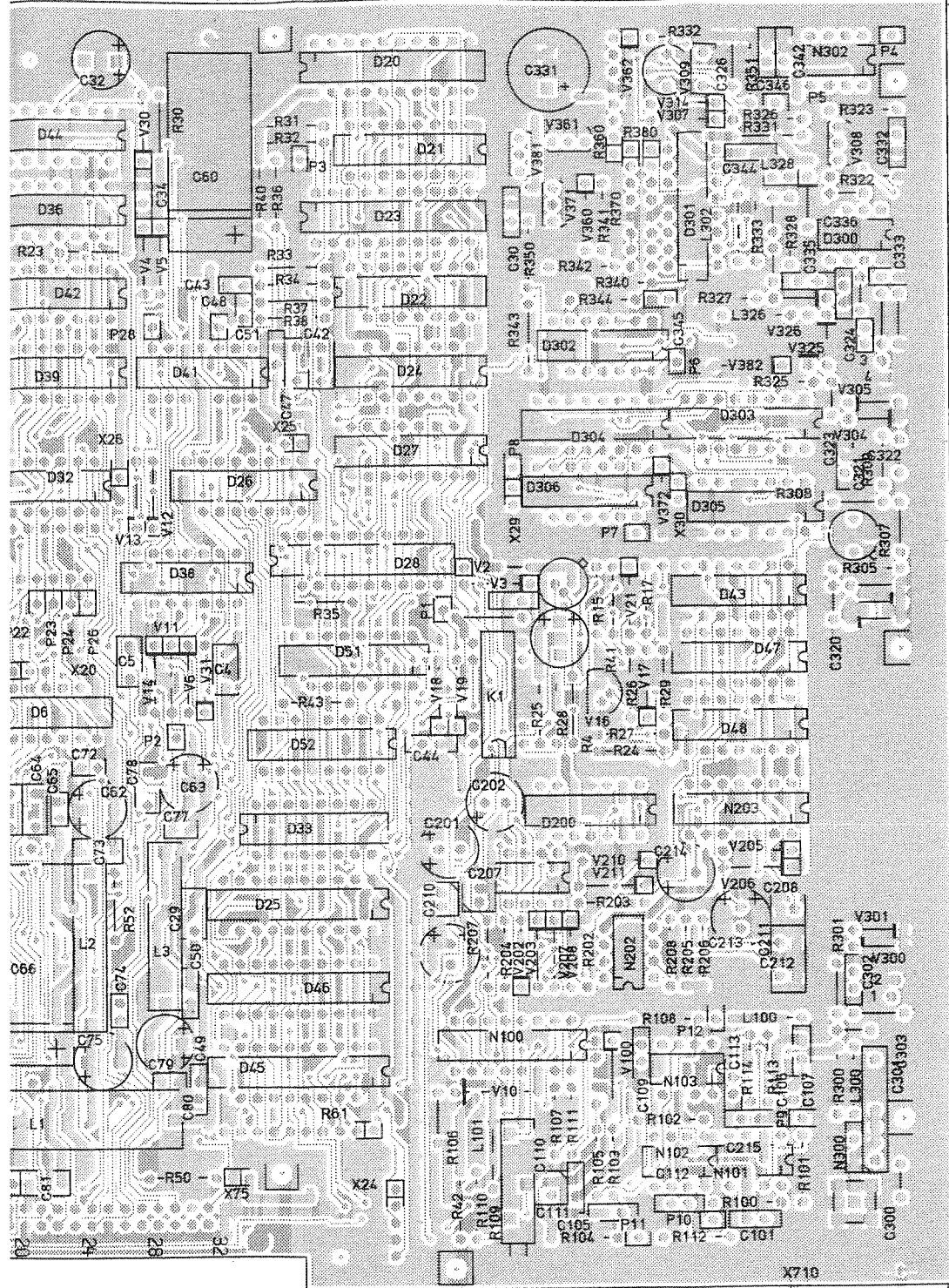
Ansicht und Leitungsführung Lötseite  
View of tracks on solder side

(hierzu HVC 250)




ACHTUNG: EGB!  
Elektrostatisch gefährliche  
Bauelemente erfordern  
besondere Handhabung.  
ATTENTION ESD!  
Electrostatic sensitive  
devices require a special  
handling.





VARIANTENERKLÄRUNG / VERSION  
VAR 02 - GRUNDAUSFÜHRUNG / BASIC MODEL

H	35533	09.86	HO	Maße ohne Toleranzangabe		Maßstab 1 : 1				
						Halbzeug, Werkstoff				
				1KSA	Tag	Name	Benennung  DIGITALTEIL  DIGITALSECTION			Z
				Bearb.	09.86	HO				
				Gepr.						
				Norm						
				 <b>ROHDE &amp; SCHWARZ</b>			Zeichn.-Nr.		Blatt-Nr.	
							802.4517.01			EE
Änd. Zust.	Änderungs- Mitteilung	Tag	Name	zu Gerät CMT			reg. i. V. 802.2014 V		erste Z.	v. Bl.

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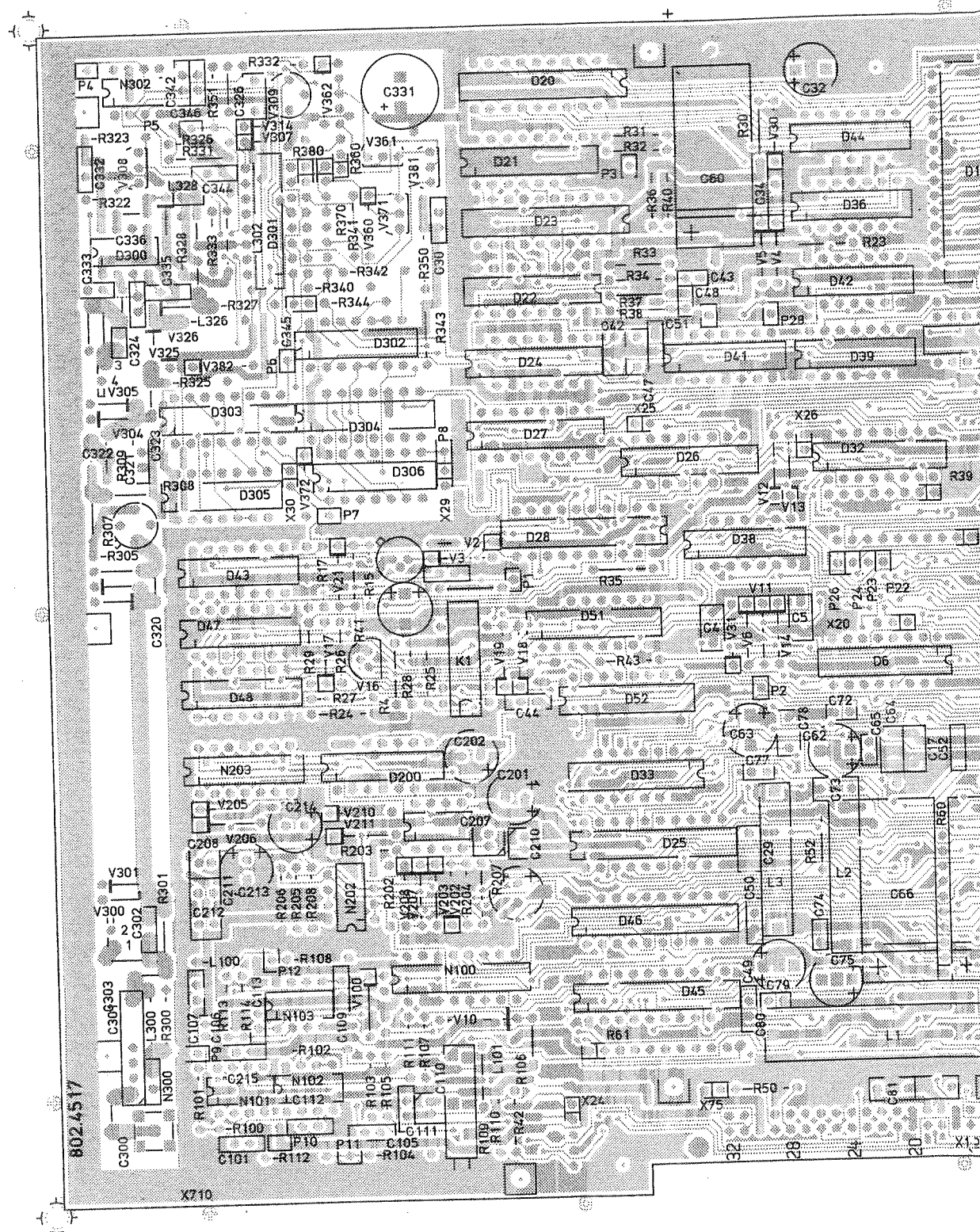
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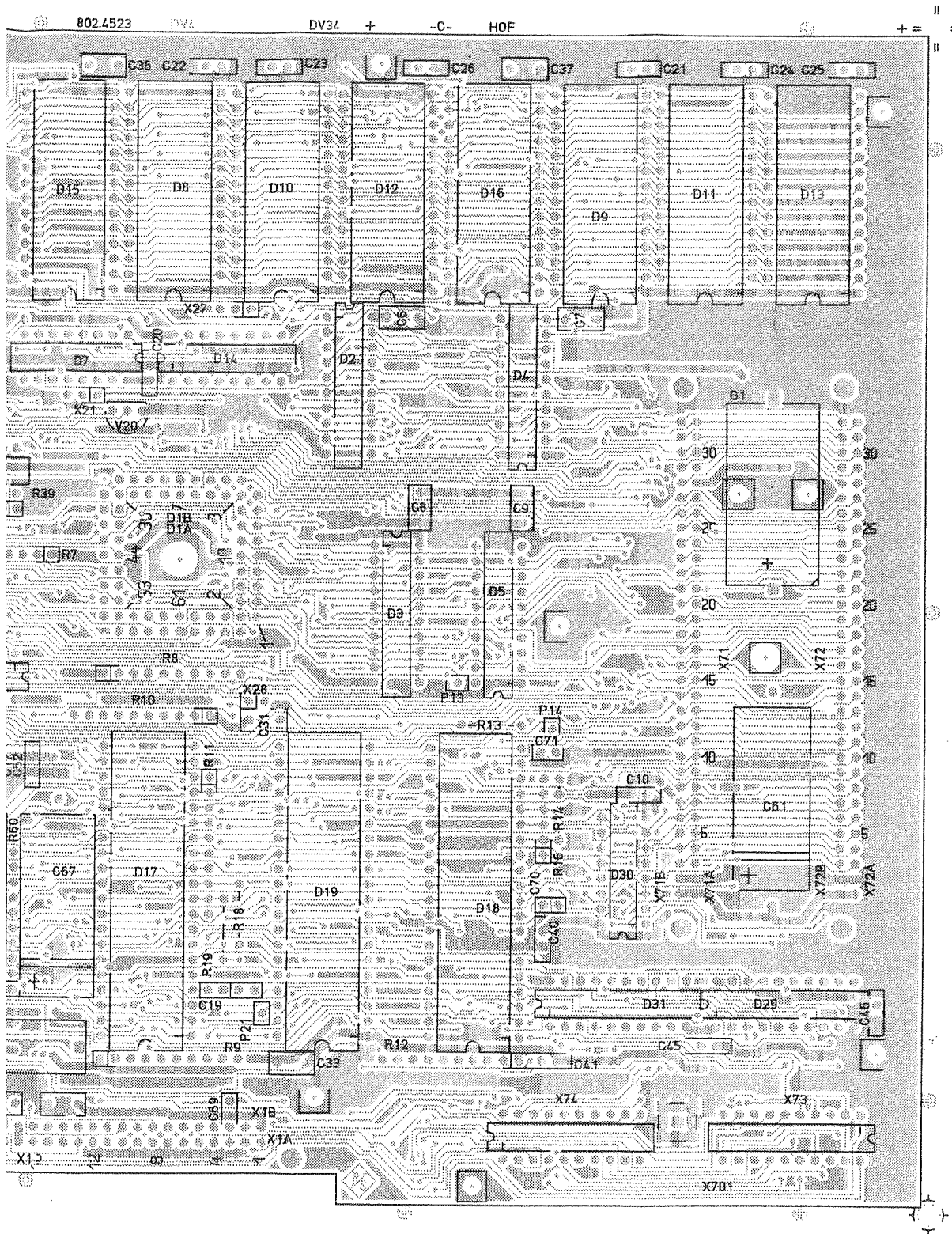


Ansicht und Leitungsführung. Bauteilseite  
View of tracks on component side


(therzu HVC 2501



ACHTUNG: EGB!  
Elektrostatisch gefährliche  
Bauelemente erfordern  
besondere Handhabung.  
ATTENTION ESD!  
Electrostatic sensitive  
devices require a special  
handling.

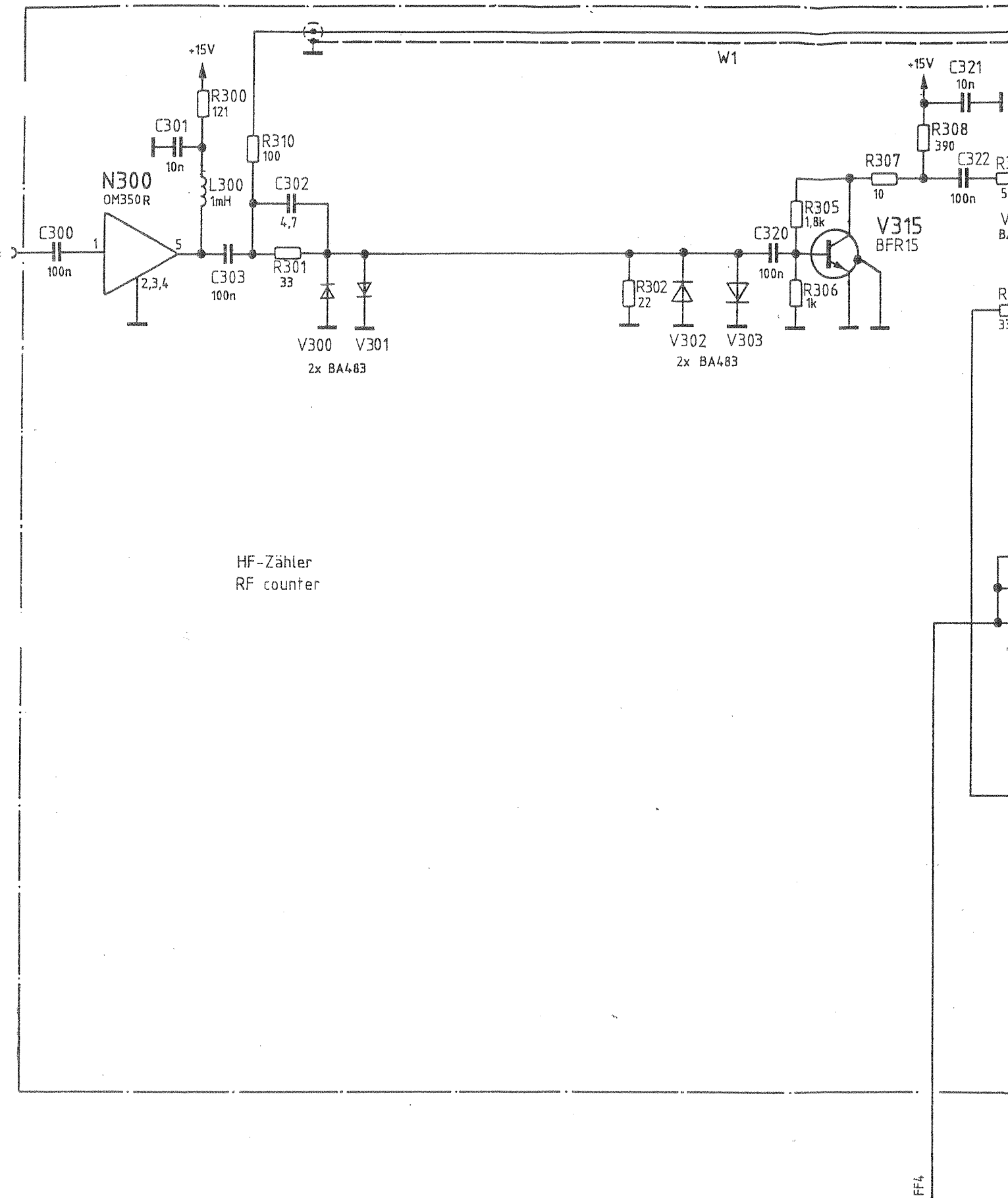


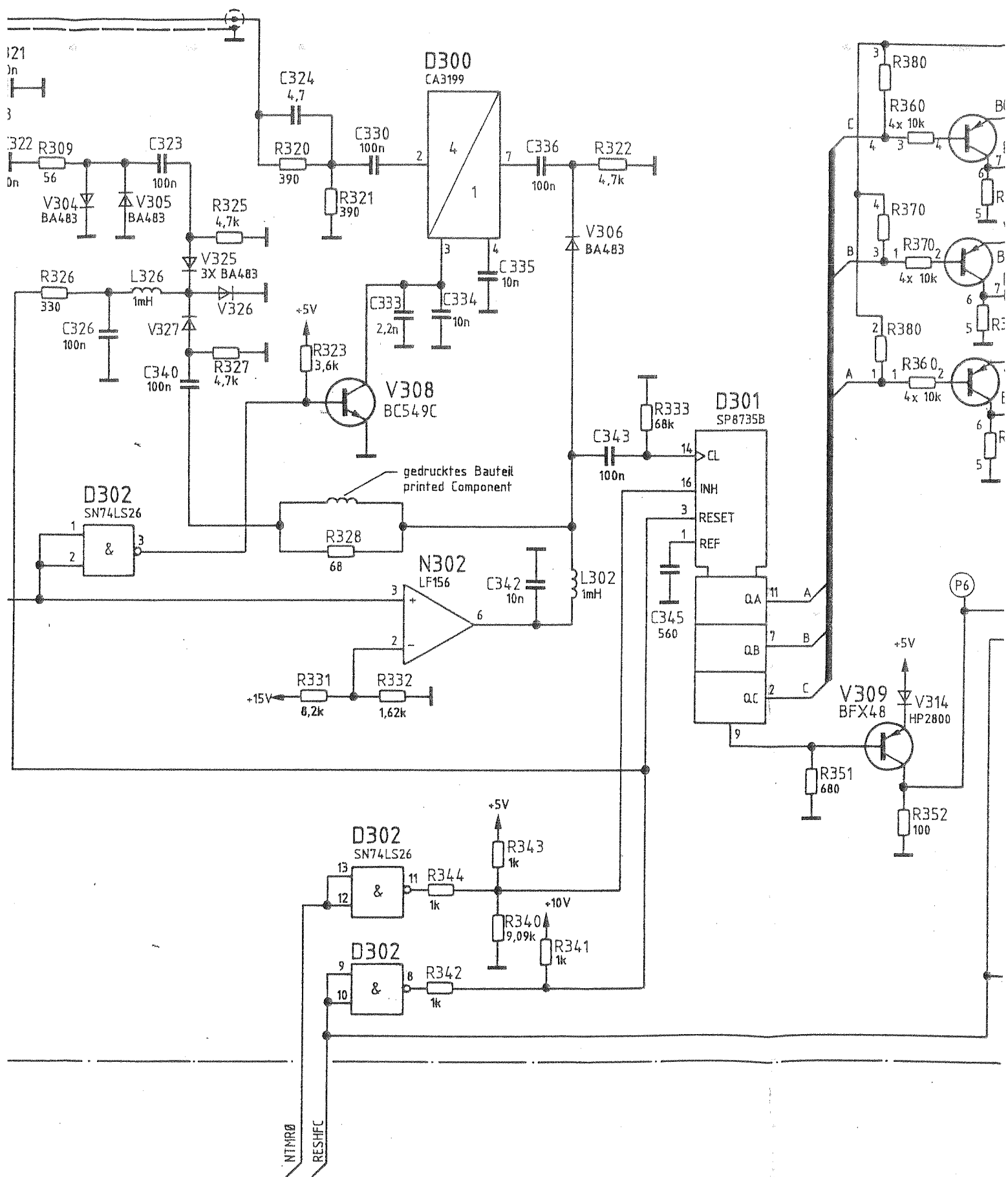
VARIANTENERKLÄRUNG / VERSION  
VAR 02 - GRUNDAUSFÜHRUNG / BASIC MODEL

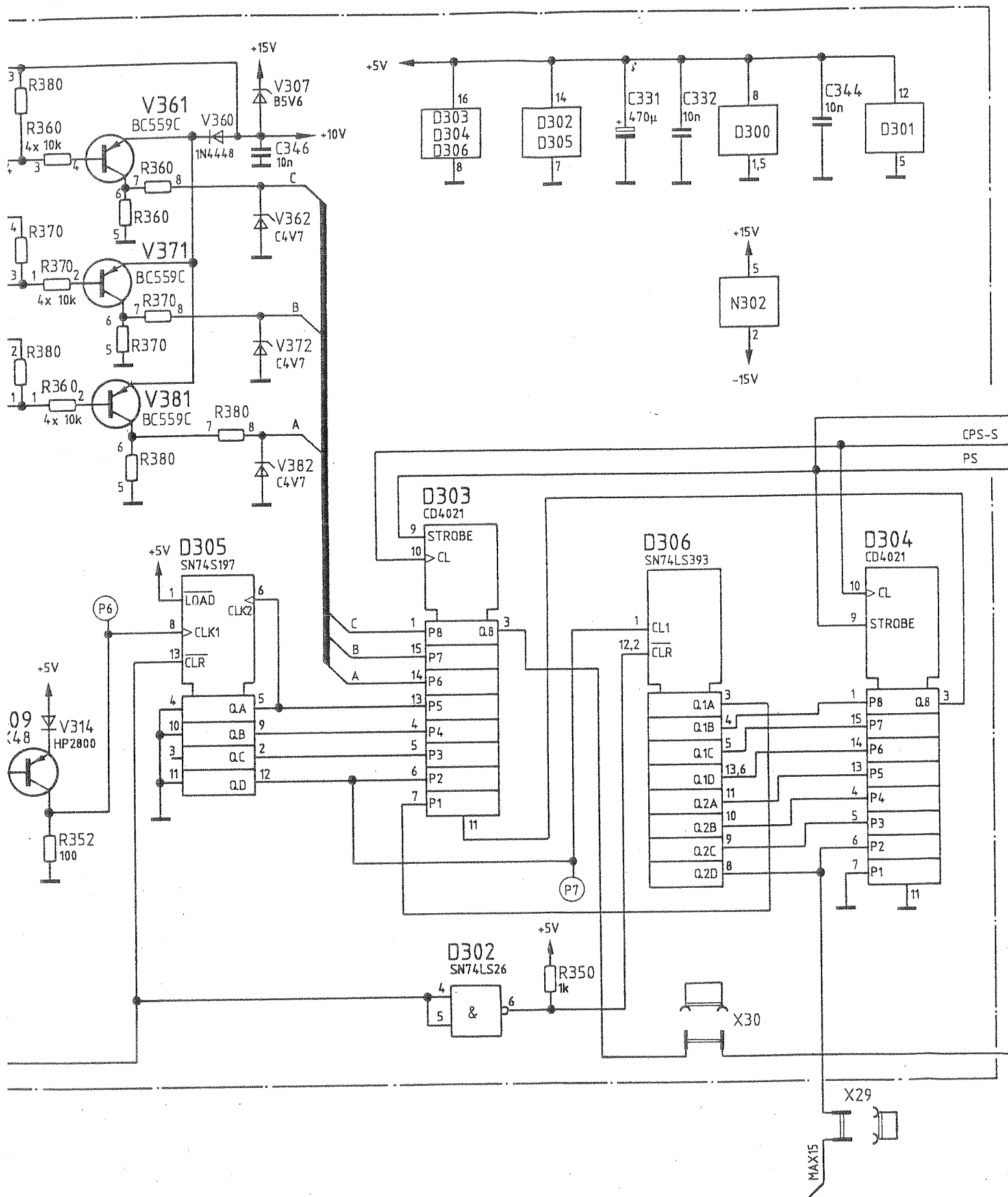
H	35533	09.86	HO	Maße ohne Toleranzangabe		Maßstab 1 : 1			
						Halbzeug, Werkstoff			
				1KSA	Tag	Name	Benennung  DIGITALTEIL DIGITALSECTION		Z
				Bearb.	09.86	HO			
				Gepr.					
				Norm					
				 <b>ROHDE &amp; SCHWARZ</b>		Zeichn.-Nr.		Blatt-Nr.	
						802.4517.01		EE	
Änd. Zust.	Änderungs- Mitteilung	Tag	Name	zu Gerät CMT		reg. i. V. 802.2014 V		erste Z.	
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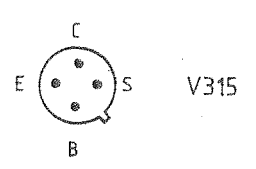
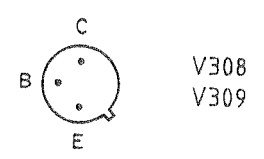
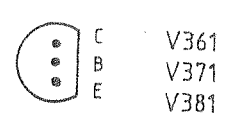
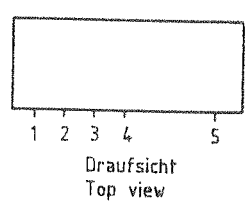
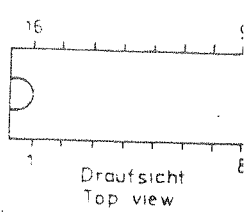
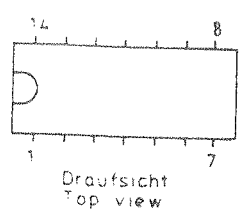
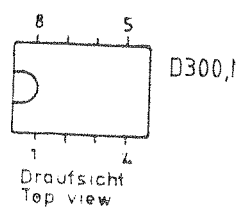
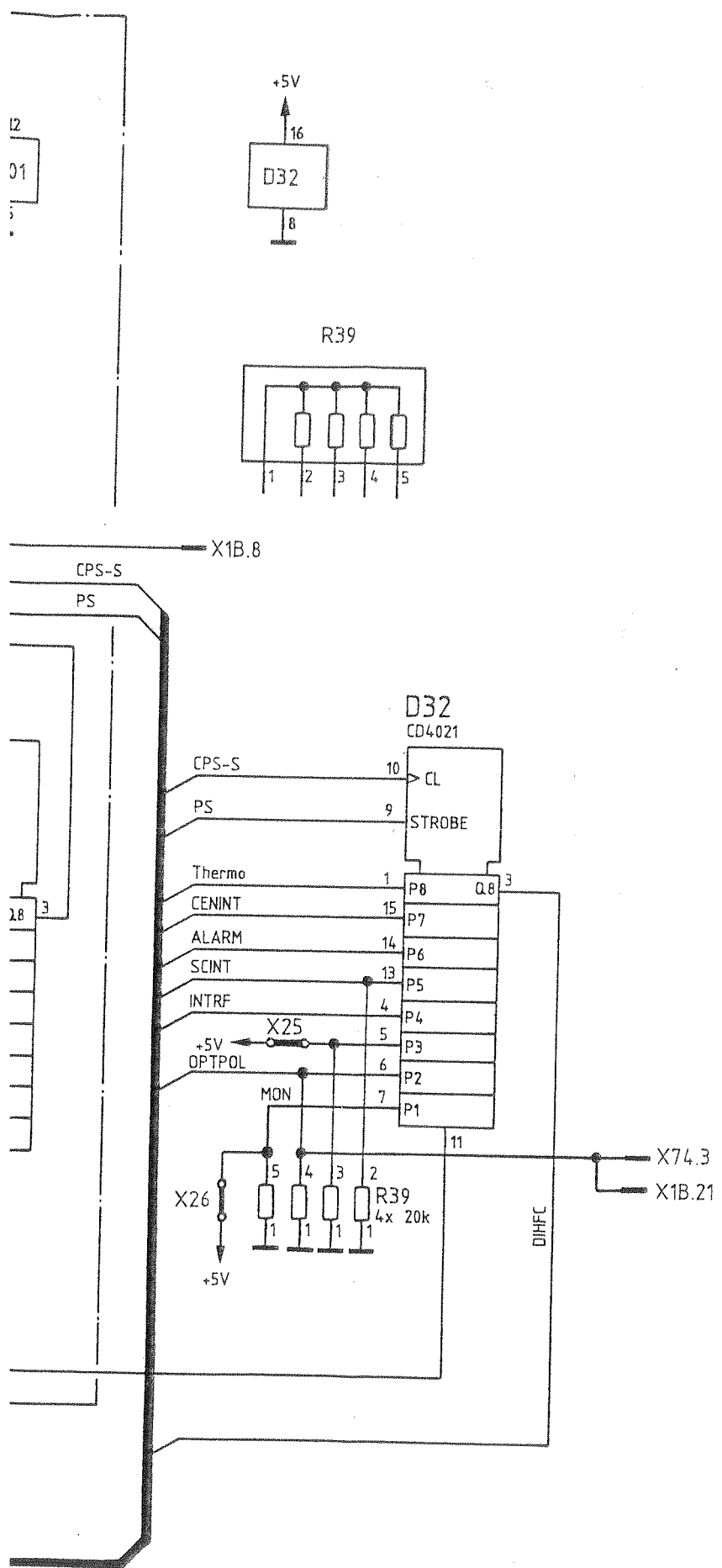
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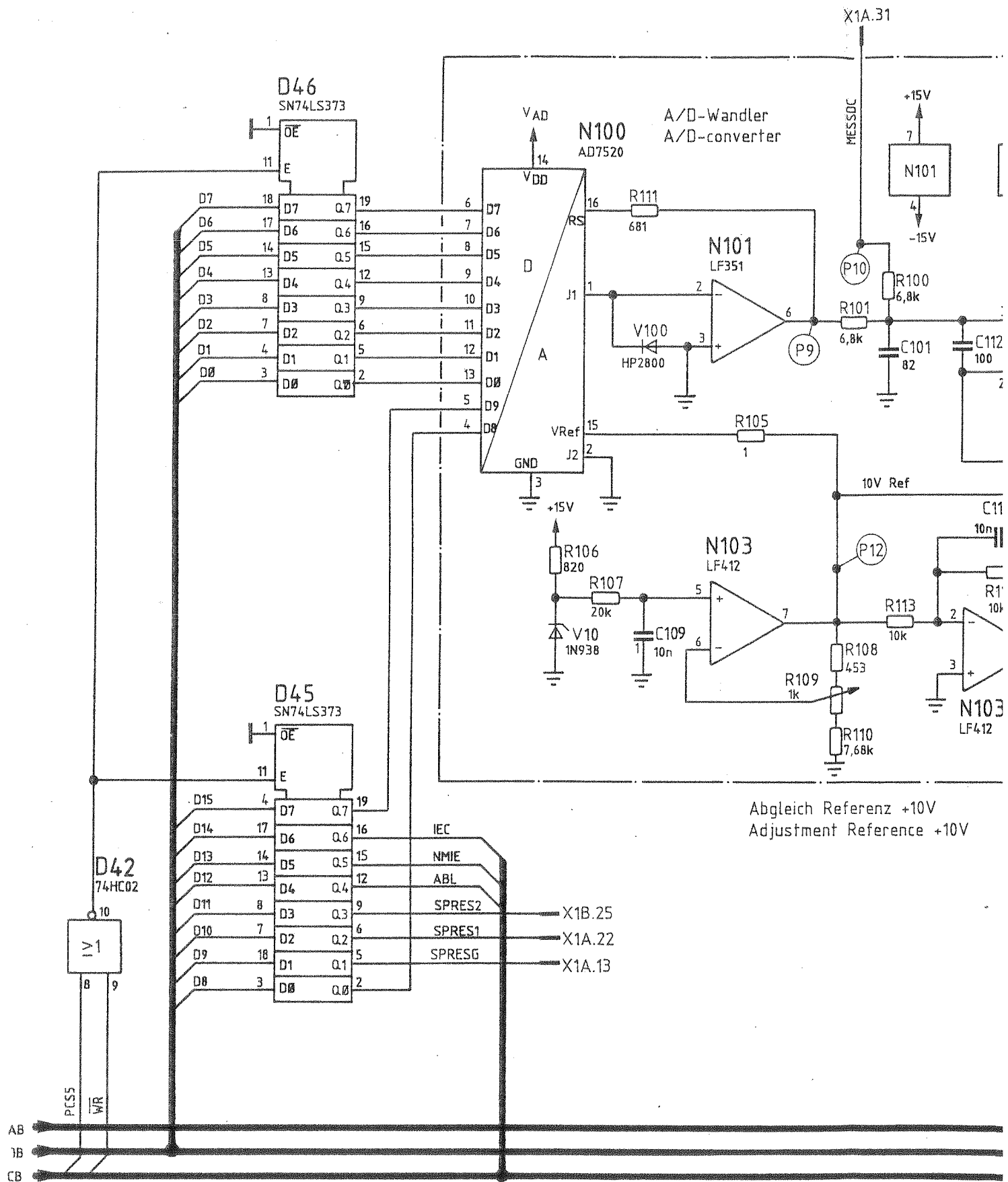


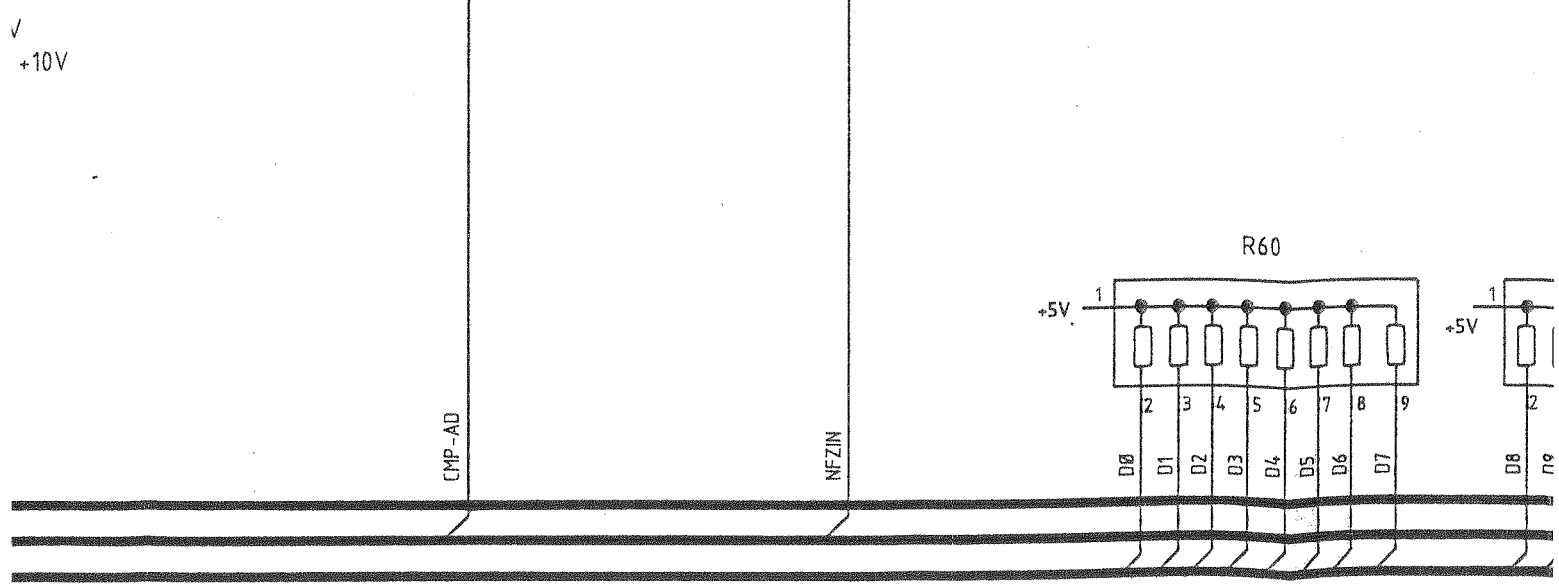
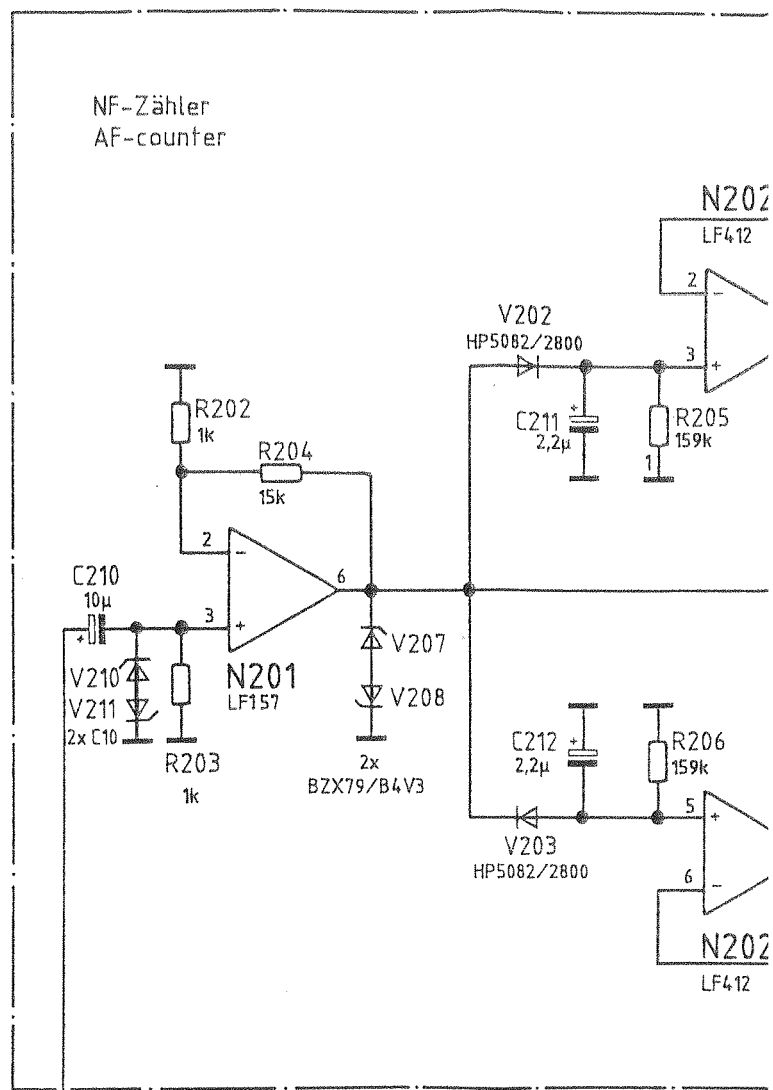
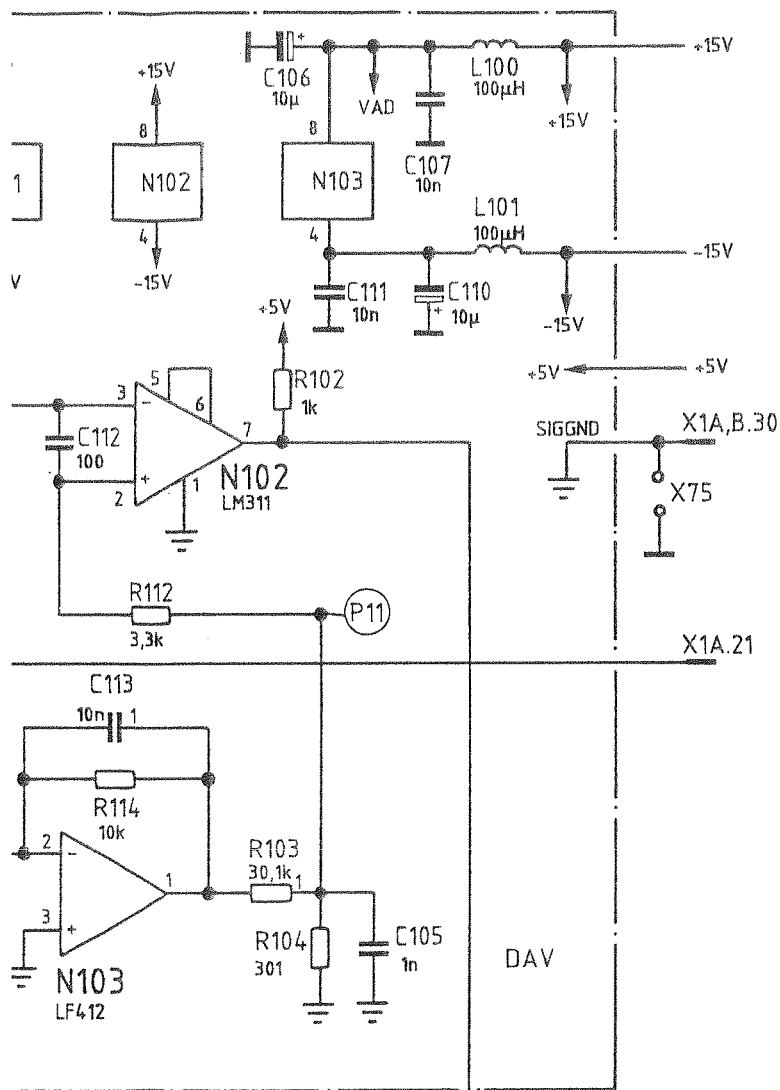




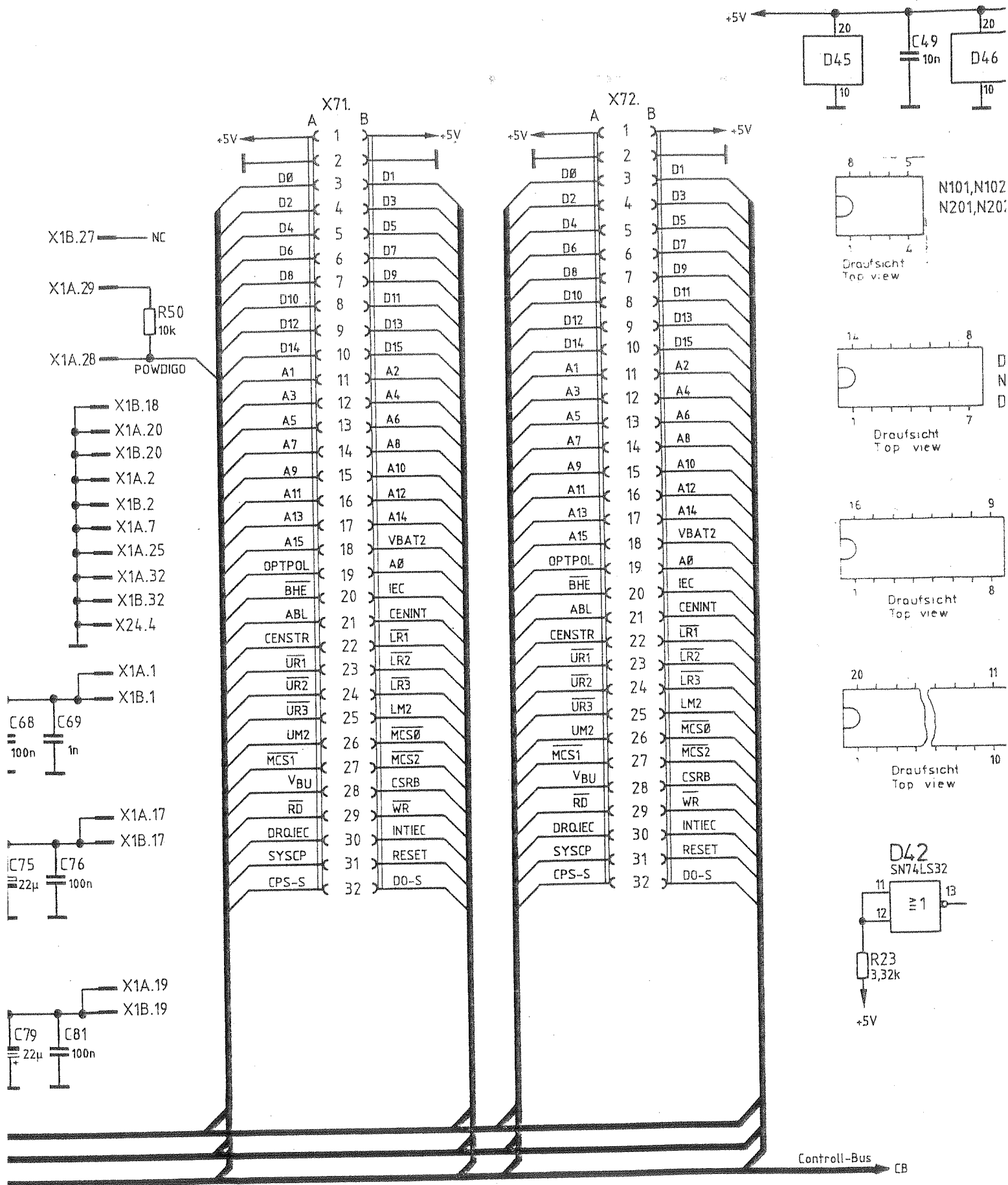


	Stromlauf zu		Digitalteil / Digital section		Z	Zeichn.-Nr. <b>802.4517</b>
	CMT	reg. i. V.	802.2020 V	erste Z.		





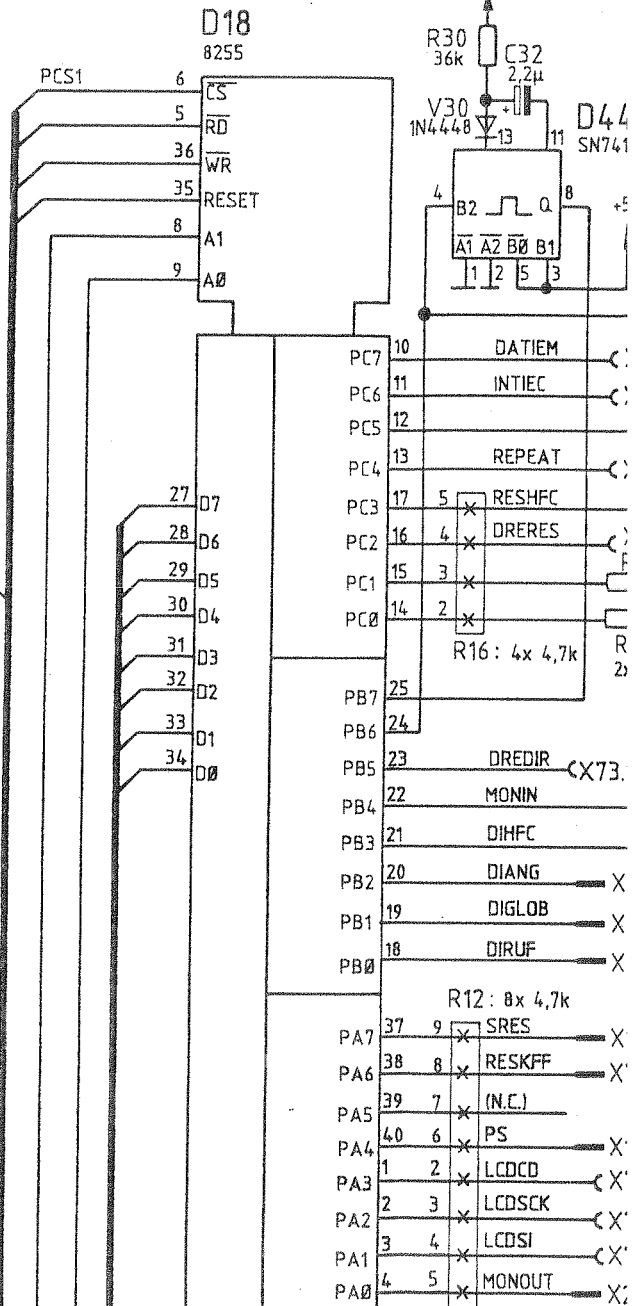
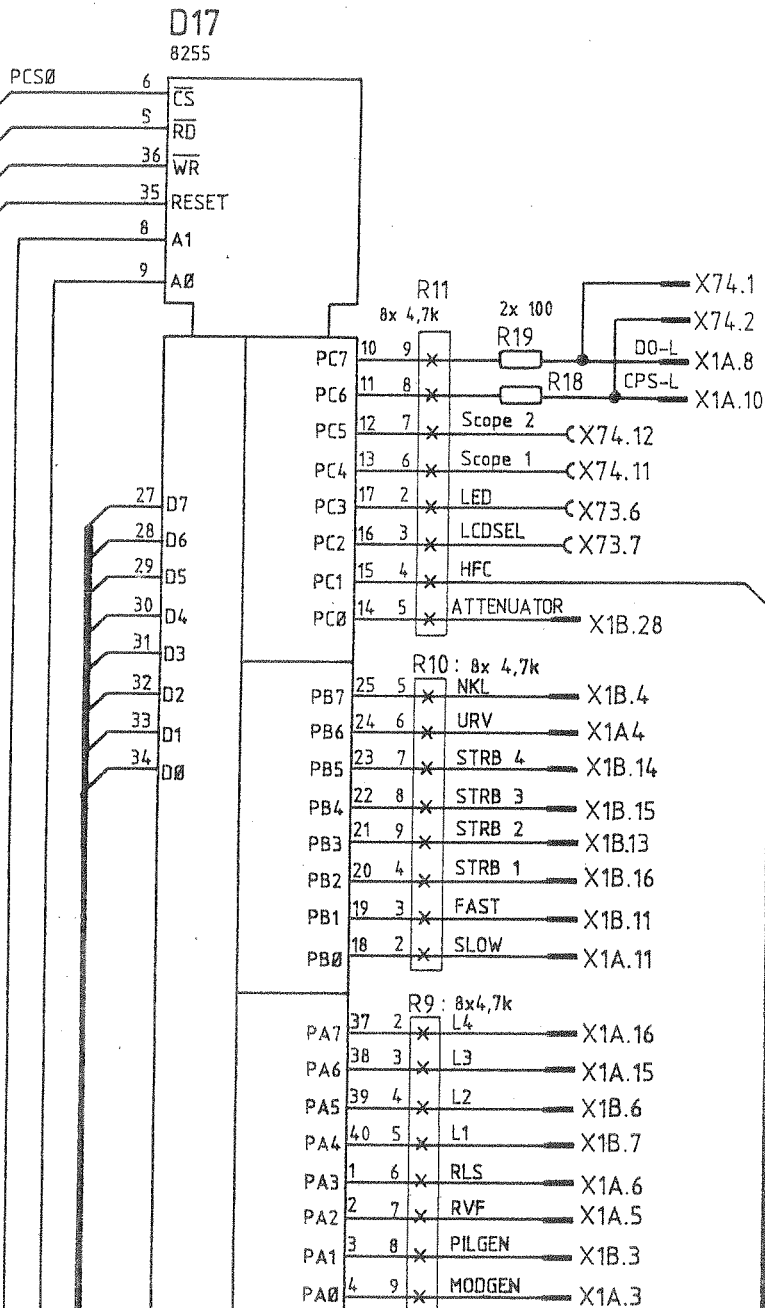
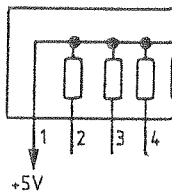
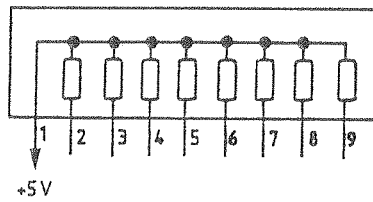




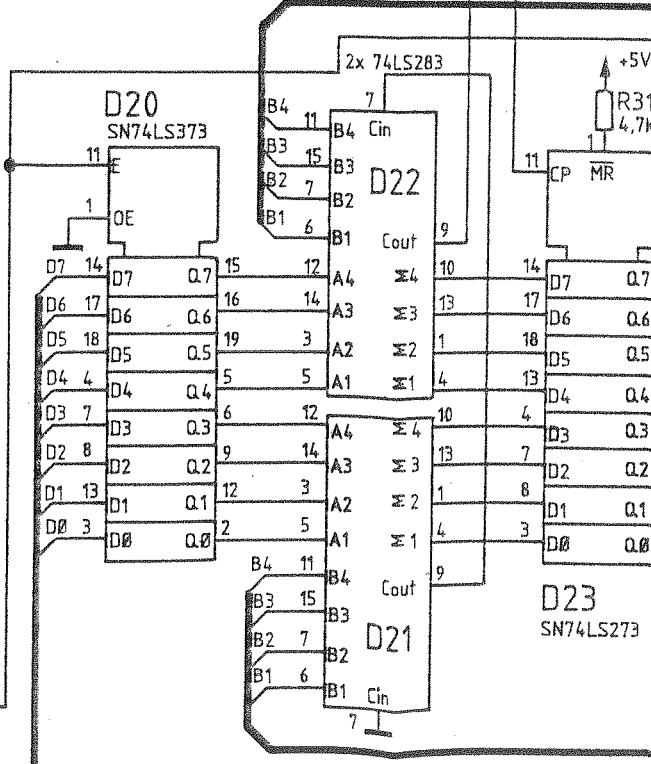
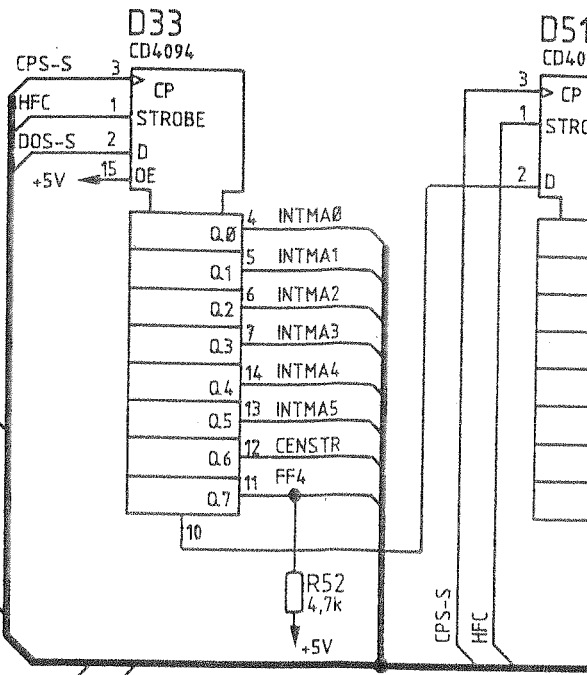
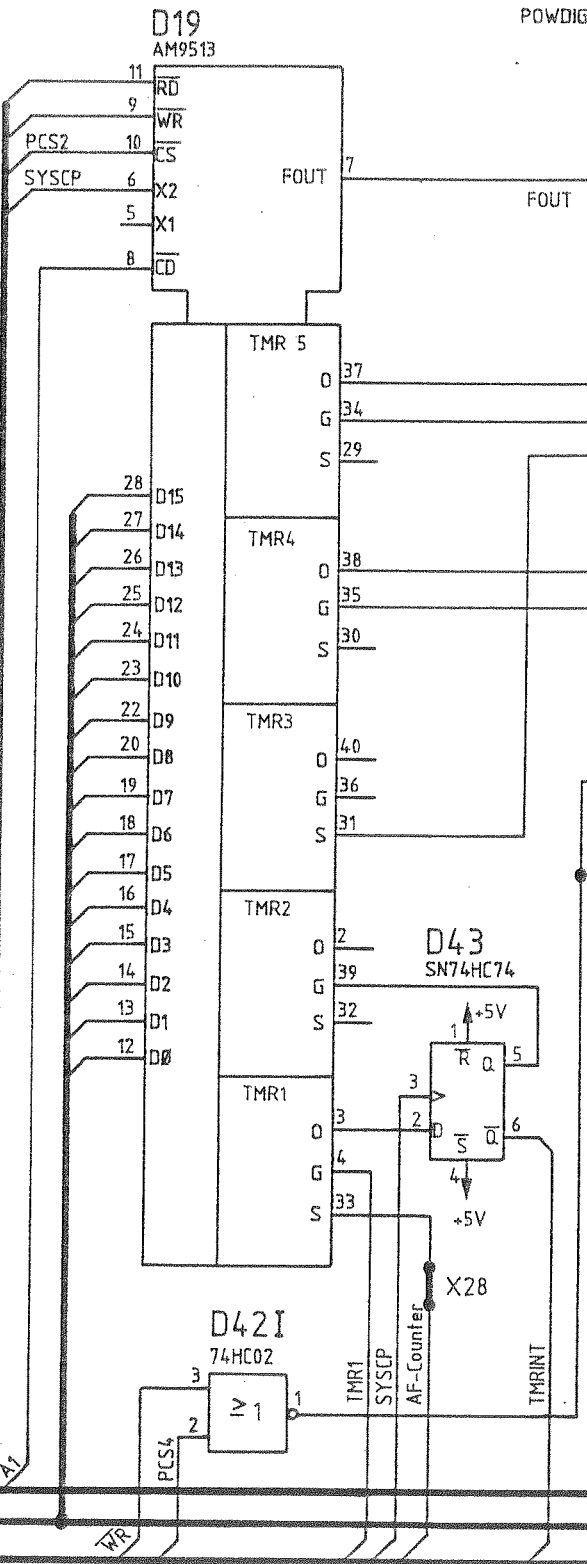
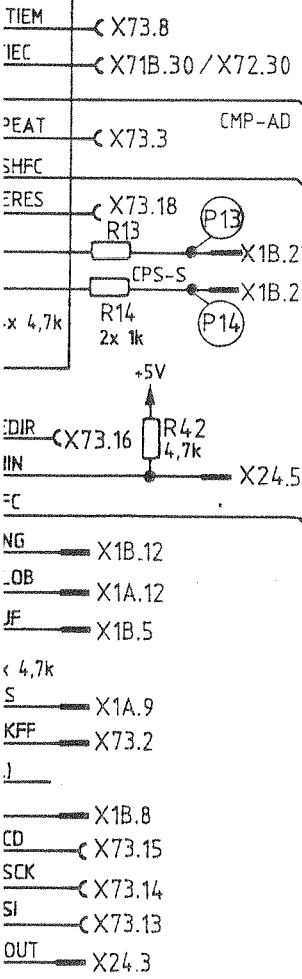
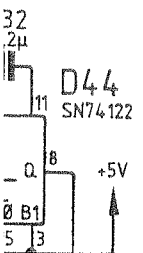
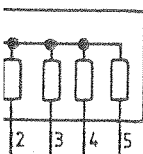


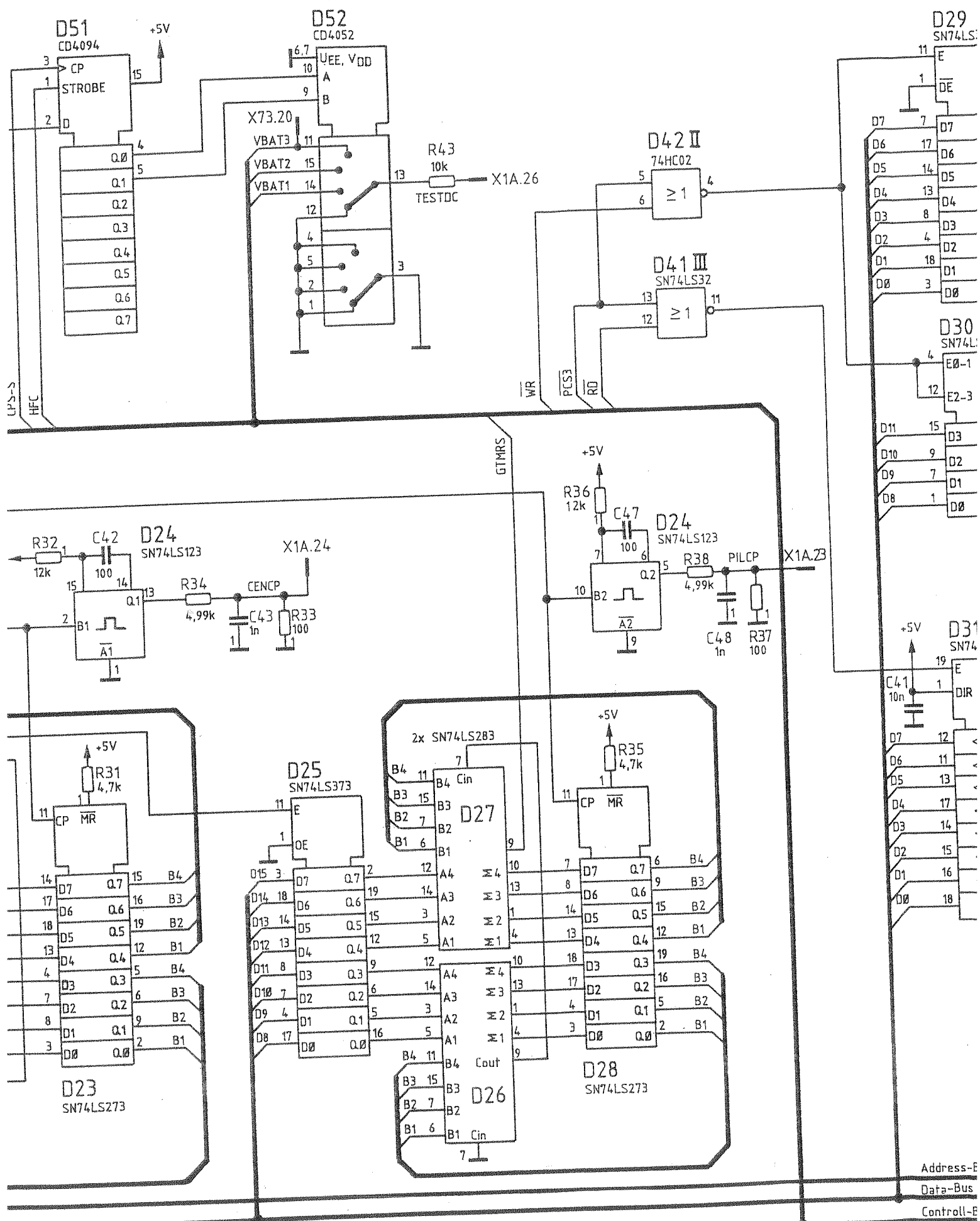
R9 - R12 : 8x 4,7k

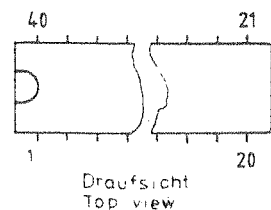
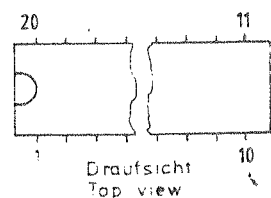
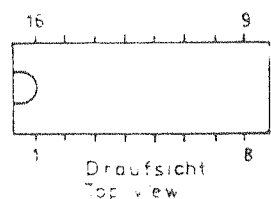
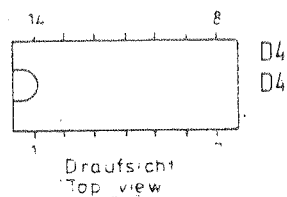
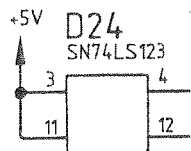
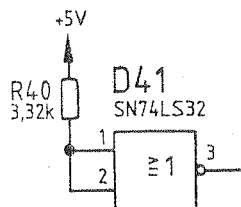
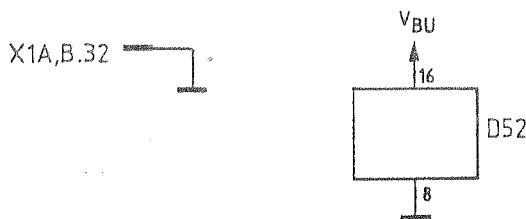
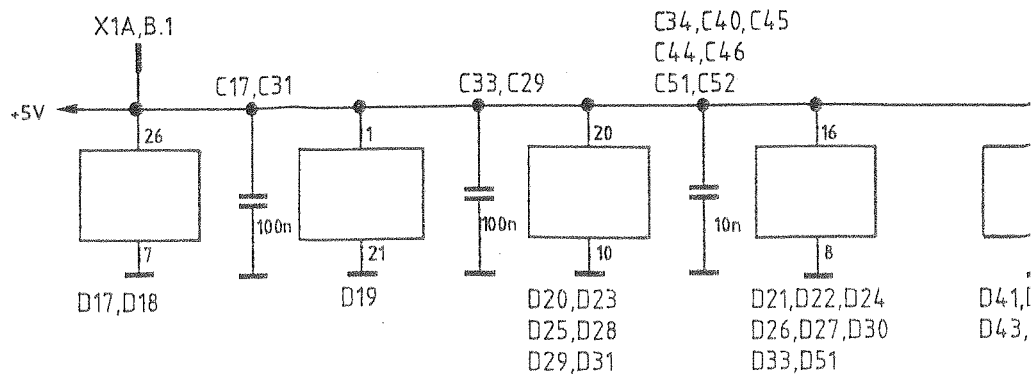
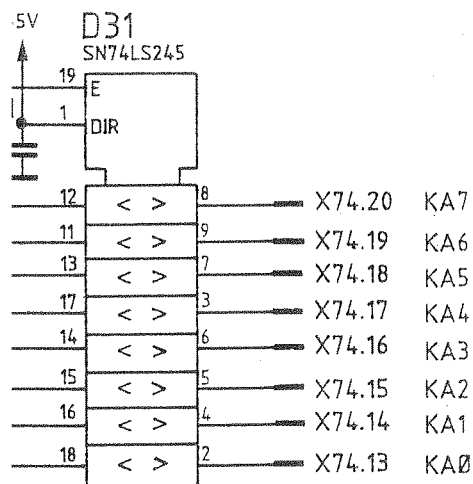
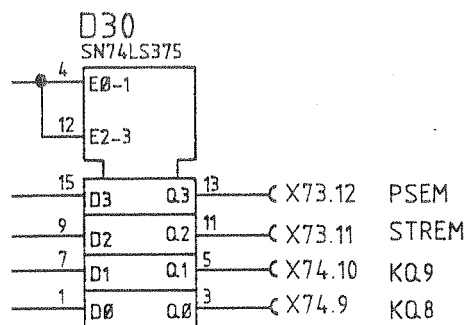
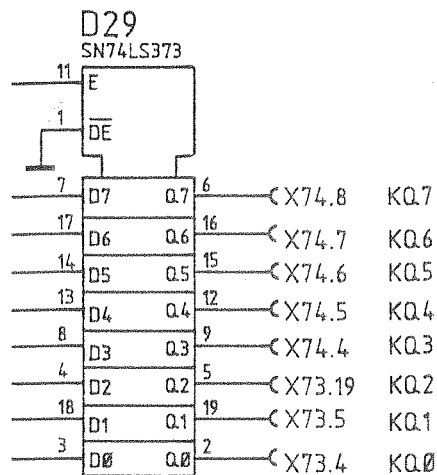
R16 : 4x 4,7k




4x 4,7k



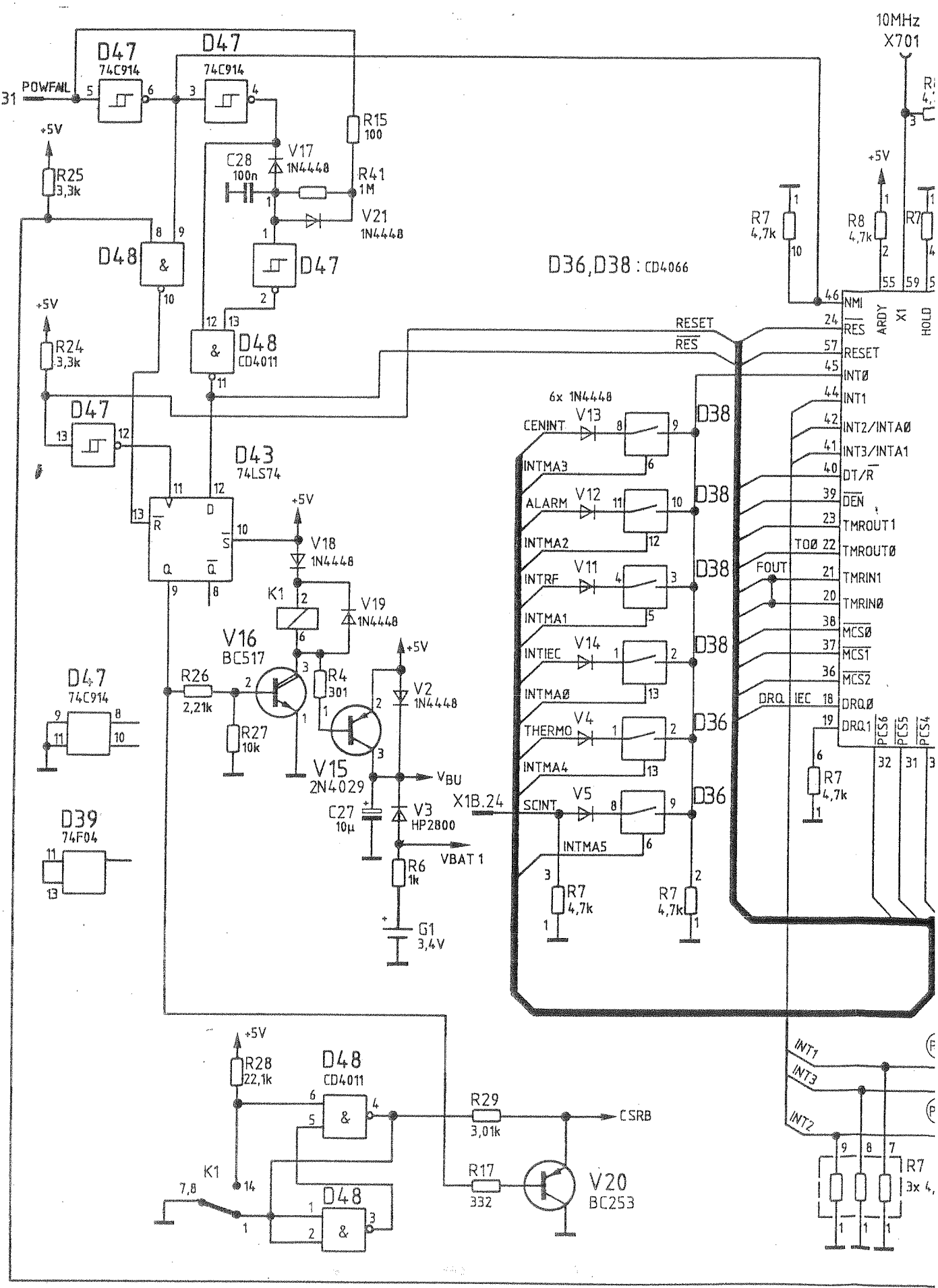


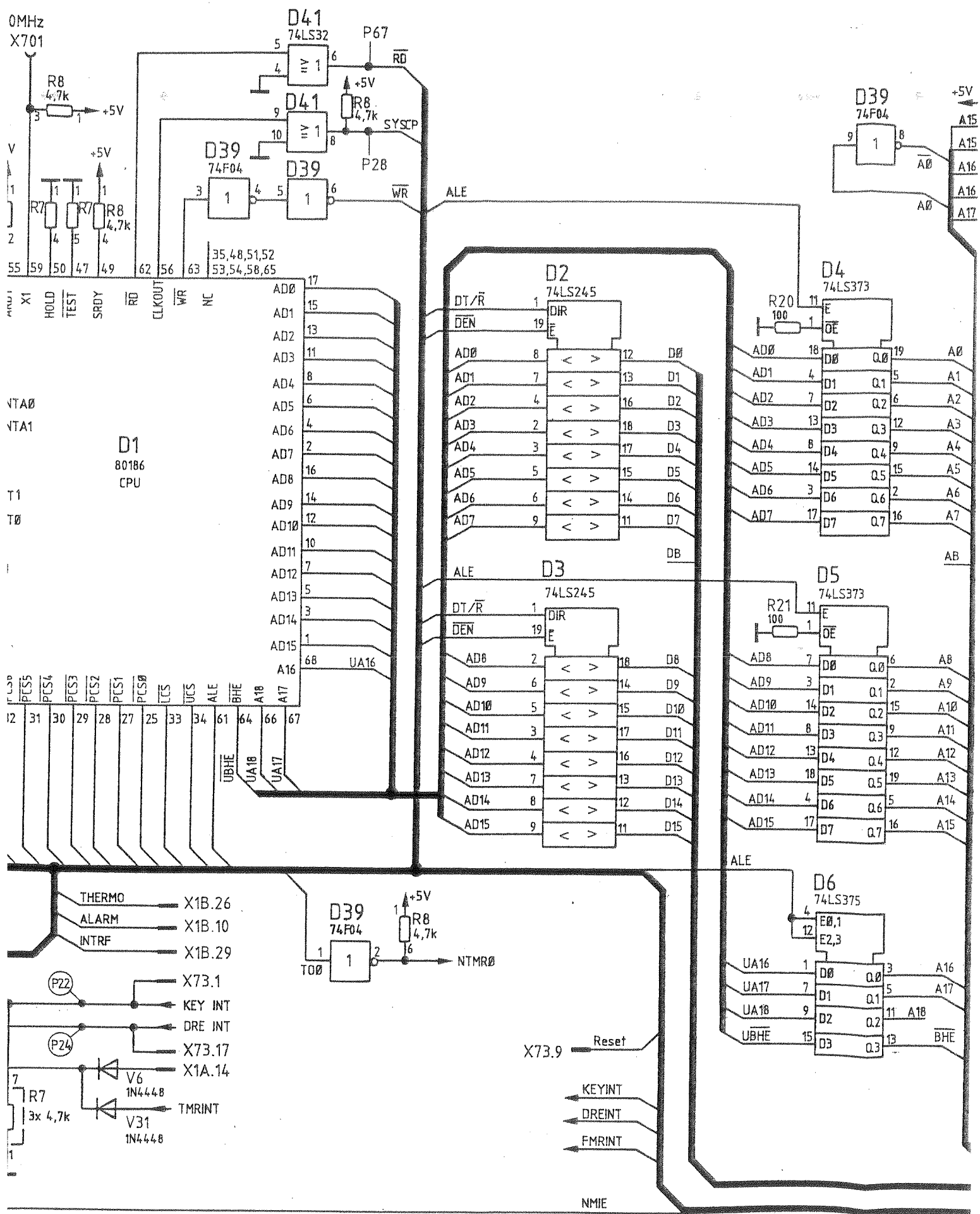


Address-Bus → AB  
 Data-Bus → DB  
 Controll-Bus → CB

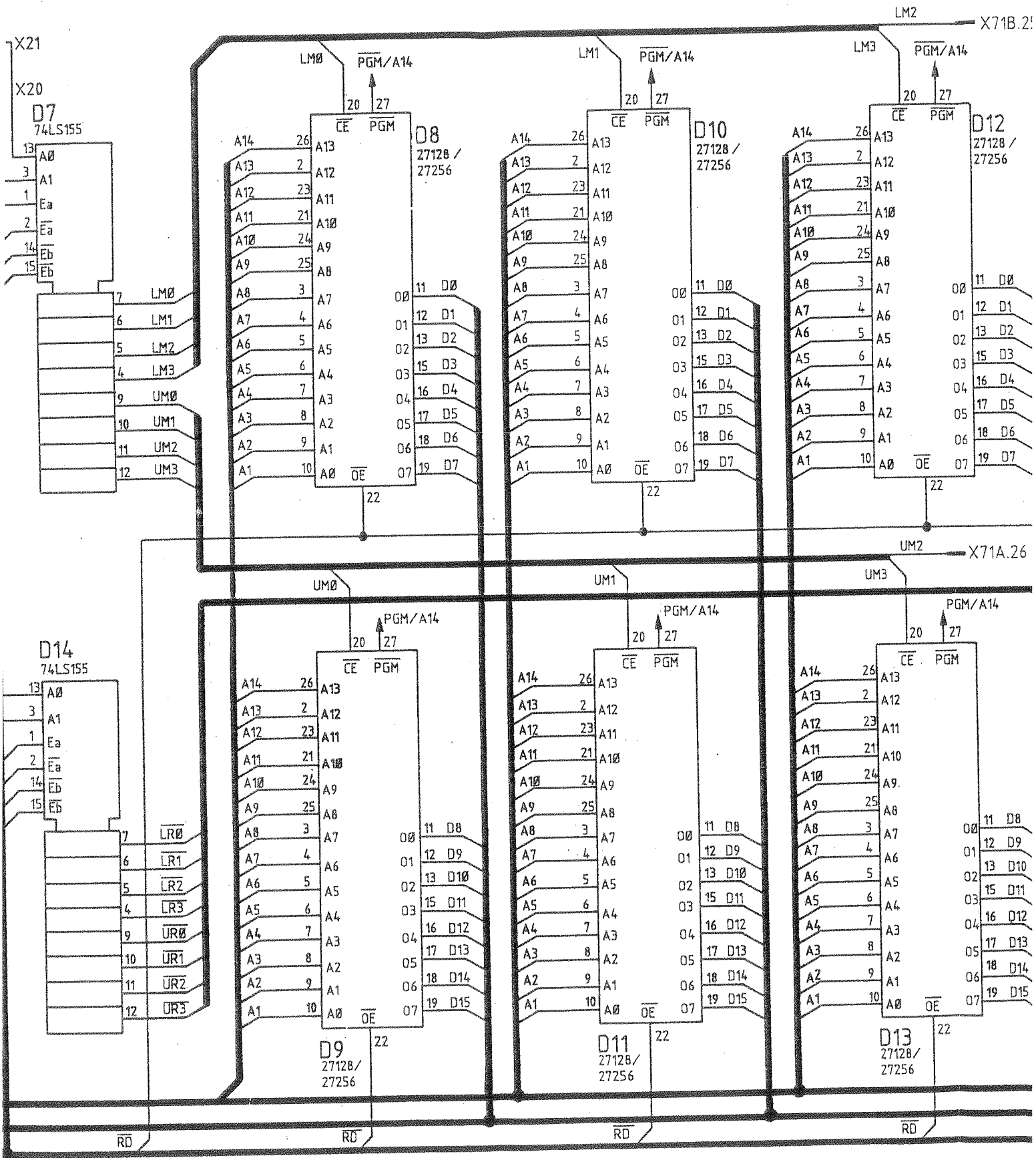
 Stromlauf zu <b>CMT Digitalteil / Digital section</b>			Zeichn.-Nr. <b>802.451</b>	
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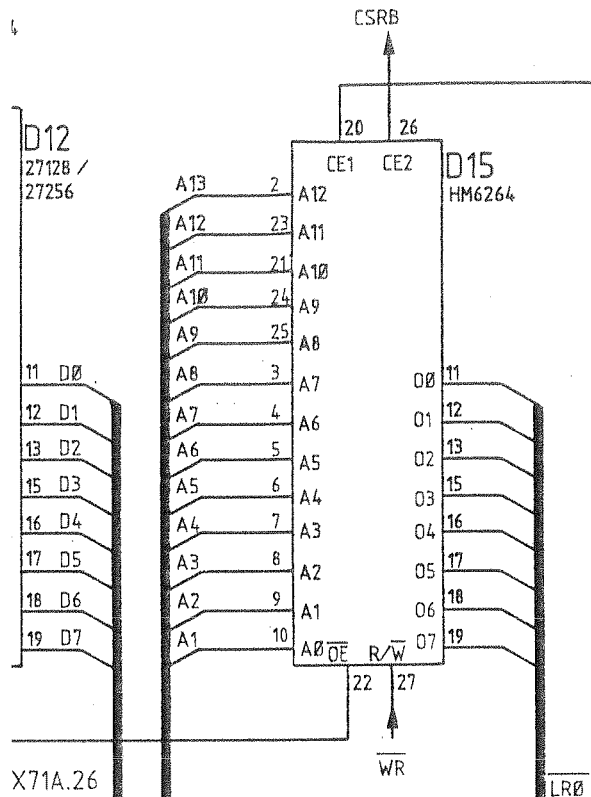




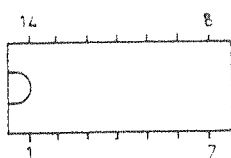
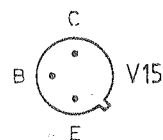
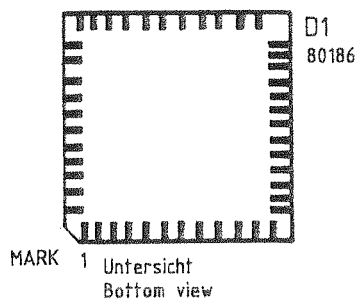
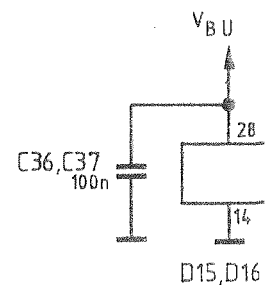
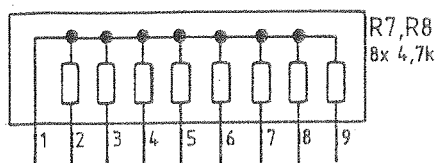
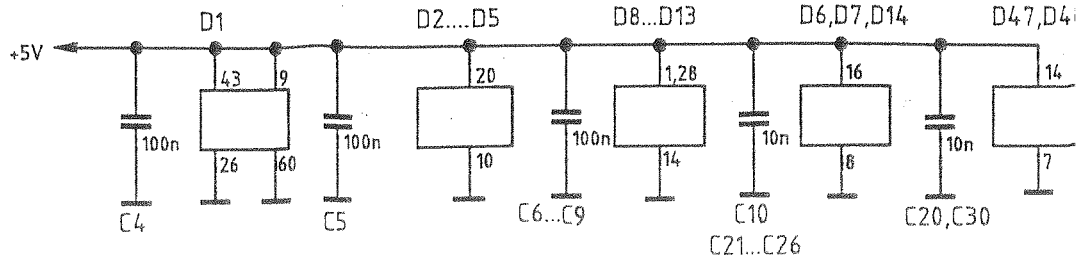
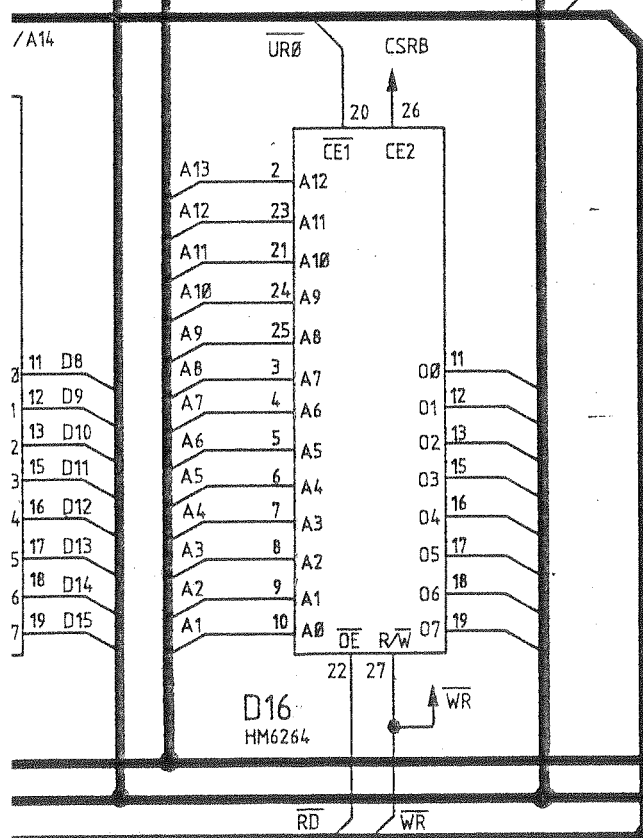
X27  
→ PGM/A14



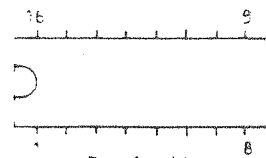
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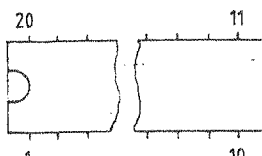
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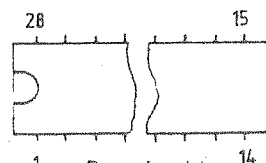
Draufsicht  
Top view  
D36, D38, D39  
D41, D47, D48



Draufsicht  
Top view  
D6, D7, D14



Draufsicht  
Top view  
D2...D5



Draufsicht  
Top view  
D8...D13, D15, D16

Stromlauf gilt für VAR 02, 04  
Circuit diagram is valid for model 02, 04

	Stromlauf zu		Z	Zeichn.-Nr.	802.4517 S	BU
	Digitalteil / Digital section					
CMT	reg. i. V.	802.2020 V	erste Z.			





**ROHDE & SCHWARZ**

SERVICE INSTRUCTIONS

1st Modulation Generator Module

802.5713.02

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Component lists  
Circuit diagrams  
Component layout diagrams

## 5.1 Function Description

The module consists of two function units: AF synthesizer and modulation control unit.

### 5.1.1 AF Synthesizer

The AF synthesizer covers the frequency range from 20 Hz to 25 kHz. It does not contain an oscillator and is driven at input GENCP via a TTL signal whose frequency is 32 times the desired AF and whose High level is divided from 5 V down to 100 mV before it is applied to the input comparator N100 of the AF synthesizer which is set to a threshold voltage of 50 mV.

The TTL signal regenerated in this manner clocks the shift registers D2 and D3 connected as a sinewave generator so that a stepped sinewave with 32 steps per cycle is generated. The change in polarity after 16 steps is achieved by the frequency divider D1 which divides the input frequency by 32 and thus loads the shift chain with 16 Low levels and 16 High levels per AF cycle. The stepped sinewave is balanced-to-earth at the output of adder N1 and has an amplitude of 2.5 V.

Three parallel, active Butterworth lowpass filters with different cut-off frequencies are then connected to smoothen the stepped sinewave. The first filter is used for frequencies from 20 Hz to 300 Hz, the second from >300 Hz to 4 kHz and the third from >4 kHz to 25 kHz. This prevents the distortion from being increased to a non-permissible level at low frequencies. The automatically selected filter is connected via N6.

A signal generated in the same manner from the same frequency range and with the same level ( $V_{rms} = 1.77$  V) can be added (double tone) at the summing input PILINT (N7).

The circuit then contains three digital level attenuators with which the output level can be finely adjusted. These attenuators are the D/A converter N8 for 256 steps, the fine range attenuator N10 with 8 steps and the coarse attenuator 1:10 following amplifier N11 with  $V = 2.9$ .

Switchover between the signal reduced 10 times and the connected signal takes place at output X3 of the AF synthesizer using a relay because of the high maximum possible level of  $V_{rms} = 5.1$  V.

### 5.1.2 Modulation Control Unit

The second function unit on the module is the modulation controller where different internal and external signals are combined and drive the AM and FM modulators at two outputs.

An external signal whose level can be modified in 8 steps (Gain = 0.4 to 10), in order to achieve  $V_{rms} = \text{approx. } 1 \text{ V}$ , is applied to X4. The signal obtained can be routed to a peak-value meter by N16 (internal output MODMES). N17 is used to select between the external signal and the signal of the AF synthesizer which is available here with a constant level. The internal input EXTMOD (X1.B24) is not used.

The connection of the adder N20 is selected such that the two internally generated signals "Pilot tone" and "AF synthesizer" have a maximum level of  $V_{rms} = 1 \text{ V}$  (AF synthesizer constant, pilot tone adjustable). These three signals can be distributed individually or combined to an AM path and an FM path via N21 (1st signal distribution) where the AM path is directly connected to the AM output and the following signal conditioning is possible with the FM path:

- + A programmable level attenuator is used to adjust to various operating points on the FM modulator characteristic depending on the selected centre frequency.
- + A second level divider is used to set the frequency deviation in 256 steps.

Optionally:

- + Internal preemphasis for FM generation with 20 dB/decade (0 dB at 10 kHz, -20 dB at 1 kHz) or
- + Direct output for FM.

## 5.2 Testing and Adjustment

### 5.2.1 Testing the Input Stage

X1.A22 (GENCP):  $f = 32 \times f_{AF}$ , i.e.  $640 \text{ Hz} < f < 800 \text{ kHz}$ , squarewave voltage ( $V_{\text{Low}} = 0 \text{ V}$ ,  $V_{\text{High}} = 100 \text{ mV}$ ) but distorted above  $f > 100 \text{ kHz}$  by series-connected lowpass;  $V_{\text{max}}$  remains at  $100 \text{ mV}$ .

P1: TTL signal with  $f = 32 \times f_{AF}$

### 5.2.2 Testing the Sinewave Generator

D1/3: TTL signal with  $f = f_{AF}$

P4: Stepped sinewave (32 steps/cycle) with  $f = f_{AF}$ ,  $v = 2.5 \text{ V} \pm 1\%$ .

### 5.2.3 Testing the Reference Voltage

P3: DC voltage  $V = +5 \text{ V} \pm 0.3\%$ .

### 5.2.4 Testing the Filter

P5: Sinewave signal with  $f = f_{AF}$  and  $V_{\text{rms}} = 1.768 \text{ V} \pm 1\%$

### 5.2.5 Testing and Adjustment of the Level Attenuator (Input Attenuator)

Set the following AF levels on the instrument with  $f = 1$  kHz.  
Set 5.10 V AF level. Using R51 adjust voltage at X505 to  $5.10 V_{rms} \pm 5$  mV.

Measure the voltages at P6.

AF level [V]	$V_{rms}$ [V] at P6
2.54	0.877
2.56	0.884
3.84	$1.326 \pm 2\%$
4.48	$1.547 \pm 2\%$
4.80	$1.657 \pm 2\%$
4.96	$1.713 \pm 2\%$
5.04	$1.740 \pm 2\%$
5.08	$1.754 \pm 2\%$
5.10	$1.761 \pm 2\%$

### 5.2.6 Testing the Fine Attenuator

Set the following AF levels on the instrument with  $f = 1$  kHz.

Measure the voltages at P7.

AF level [V]	$V_{rms}$ [V] at P7
4.00	$4.00 \pm 2\%$
2.00	$2.00 \pm 2\%$
1.00	$1.00 \pm 2\%$
0.40	$0.40 \pm 2\%$
0.20	$0.20 \pm 2\%$
0.10	$0.10 \pm 2\%$

### 5.2.7 Testing the Coarse Attenuator

Set the following AF levels on the instrument with  $f = 1$  kHz.

Measure the voltages at X505.

AF level [mV]	$V_{rms}$ [mV] at X505
50.0	$50.0 \pm 2\%$
50.5	$50.5 \pm 2\%$

### 5.2.8 Testing the Amplifier for External Modulation

Apply the following AF levels to X504 with  $f = 1$  kHz.

Measure the voltages at P8.

$V_{rms}$ [mV] at X504	$V_{rms}$ [mV] at P8
2500	1000 Tolerance: $\pm 1.5\%$
1560	1000
1000	1000
625	1000
385	1000
250	1000
156	1000
100	1000

### 5.2.9 Testing the Signal Selection

Apply a sinewave signal with  $f = 1$  kHz and  $V_{rms} = 1$  V to X504.

Setting	Key sequence (receiver test)	Monitoring using oscilloscope	
		At N18/7	At N20/6
two-tone AM via EXT and INT1 (3 kHz)	50% EXT 3 kHz AF INT1 50% INT1	—	EXT signal (1 kHz) AF synth. signal (3 kHz)
AM via INT1	OFF 50% INT1	—	AF synth. signal (3 kHz)
Double modulation: AM via INT1 (3 kHz) FM via EXT	50% INT1 2 kHz EXT	EXT signal (1 kHz)	AF synth. signal (3 kHz)
AM via EXT	OFF 50% EXT	EXT signal (1 kHz)	—

### 5.2.10 Testing the 1st Signal Distribution

Apply a sinewave signal with  $f = 1 \text{ kHz}$  and  $V_{\text{rms}} = 1 \text{ V}$  to X504.

Setting	Key sequence (receiver test)	Monitoring using oscilloscope	
		At N22/6	At N23/7 = P9
Double modulation: AM via EXT (1 kHz) FM via INT1 (3 kHz)	50% EXT 2 kHz INT1	EXT signal (1 kHz)	INT1 signal (3 kHz)
Double modulation: AM via INT1 (3 kHz) FM via EXT	50% INT1 2 kHz EXT	INT1 signal (3 kHz)	EXT signal (1 kHz)
FM via INT1	OFF 2 kHz INT1	————	INT1 signal (3 kHz)

### 5.2.11 Testing the FM Characteristic Correction

- Set 25 kHz FM modulation.
- Vary the carrier frequency in the range 1 MHz to 1 GHz.

The measured deviation may deviate by  $\pm 2\%$ .

### 5.2.12 Testing the FM Deviation Setting

- Set FM modulation; carrier frequency 500 MHz.
- Vary the deviation in the range 100 Hz to 100 kHz; AF = 1 kHz.

The error may be  $\pm 1.5 \%$ .

### 5.2.13 Testing the Preemphasis

- Set phase modulation, fixed centre frequency, fixed phase deviation.

When varying  $f_{\text{AF}}$ , the voltage at X1.B31 must change in the same direction and proportional to  $f_{\text{AF}}$ .



#### 5.2.14 Testing the 2nd Signal Distribution

- Set any FM modulation. The voltage at X1.B31 must remain constant when varying  $f_{AF}$ .
- Set any phase modulation. The voltage at X1.B31 must change proportionally to  $f_{AF}$  when the latter is changed.





ROHDE & SCHWARZ  
MÜNCHEN


Schaltteillisten  
Stromläufe  
Bestückungspläne  
Parts lists  
Circuit diagrams  
Components plans

<div><div><div></div><div></div></div><div>ROHDE &amp; SCHWARZ</div></div>	Äl Datum Date 16 0387	Schaltteilliste für Parts list for EE 1. MODULATIONS GENERATOR 1ST MOD. GENERATOR	Sachnummer Stock No. 802.5713.01 SA	Blatt Page 1
Kennzeichen Component No.	Benennung/Beschreibung Designation		Sachnummer Stock No.	enthalten in contained in
C1	CE 100UF+-20%25V 8RDX9,5 ELECTROLYTIC CAPACITOR MATSUSHITA ECE-A1ESS-101		803.0580	
C2	CE 100UF+-20%25V 8RDX9,5 ELECTROLYTIC CAPACITOR MATSUSHITA ECE-A1ESS-101		803.0580	
C3	CE 22UF+-20%16V5RDX5RAD.A ELECTROLYTIC CAPACITOR NCC SRE 22UF/16V+-20%		358.6062	
C4	CE 100UF+-20%25V 8RDX9,5 ELECTROLYTIC CAPACITOR MATSUSHITA ECE-A1ESS-101		803.0580	
C5	CE 22UF+-20%16V5RDX5RAD.A ELECTROLYTIC CAPACITOR NCC SRE 22UF/16V+-20%		358.6062	
C6	CE 100UF+-20%25V 8RDX9,5 ELECTROLYTIC CAPACITOR MATSUSHITA ECE-A1ESS-101		803.0580	
C7	CE 100UF+-20%25V 8RDX9,5 ELECTROLYTIC CAPACITOR MATSUSHITA ECE-A1ESS-101		803.0580	
C8	CE 22UF+-20%16V5RDX5RAD.A ELECTROLYTIC CAPACITOR NCC SRE 22UF/16V+-20%		358.6062	
C9	CE 100UF+-20%25V 8RDX9,5 ELECTROLYTIC CAPACITOR MATSUSHITA ECE-A1ESS-101		803.0580	
C10	CE 22UF+-20%16V5RDX5RAD.A ELECTROLYTIC CAPACITOR NCC SRE 22UF/16V+-20%		358.6062	
C11	CK 15NF+-1%63V7,5QUX13 KP CAPACITOR SIEMENS B33531-A5153-F		CK 340.8063	
C12	CK 10NF+-1%63V7,5QUX13 KP CAPACITOR SIEMENS B33531-A5103-F		CK 340.9076	
C13	CK 22NF+-5%63V5RM MKT CAPACITOR WIMA MKS2/63/0,022UF/5%		CK 099.2881	
C14	CK 10NF+-1%63V7,5QUX13 KP CAPACITOR SIEMENS B33531-A5103-F		CK 340.9076	
C15	CK 39NF+-1%63V10QUX13 KP CAPACITOR SIEMENS B33531-A5393-F		CK 099.1940	
C16	CK 2,4NF+-1%63V,3QUX11KP CAPACITOR SIEMENS B33531-A5242-F		CK 334.5637	
C17	CC 100NF+-10%50V5K1200VIE CAPACITOR UNION CARB CK05BX104K		CC 084.5350	
C18	CK 6,8NF+-2,5%63V RMS KP POLYPROPYLENE CAPACITOR WIMA FKP2 6800/2,5%/63V		CK 099.6170	

Für diese Unterlagen  
halten wir  
uns alle Rechte  
vor

 <b>ROHDE &amp; SCHWARZ</b>		Äl Datum Date	Schaltteilliste für Parts list for EE 1. MODULATIONSGENERATOR 1ST MOD. GENERATOR	Sachnummer Stock No.	Blatt Page
		16	0387	802.5713.01 SA	2
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.		enthalten in contained in	
C19	CK 4,7NF+-1%63V6,3X11 KP PLASTIC-FOIL CAPACITOR SIEMENS B33531-A5472-F	CK 283.1701			
C20	CK 6,8NF+-2,5%63V RM5 KP POLYPROPYLENE CAPACITOR WIMA FKP2 6800/2,5%/63V	CK 099.6170			
C21	CK 3,3NF+-1%63V6,3QUX11KP CAPACITOR SIEMENS B33531-A5332-F	CK 340.9030			
C22	CK 15NF+-1%63V7,5QUX13 KP CAPACITOR SIEMENS B33531-A5153-F	CK 340.8063			
C23	CK 1NF+-2,5%63V RM5 KP POLYPROPYLENE CAPACITOR WIMA FKP2 1000/2,5%/63V	CK 099.6129			
C24	CK 1,5NF+-2,5%63V RM5 KP POLYPROPYLENE CAPACITOR WIMA FKP2 1500/2,5%/63V	CK 099.6135			
C25	CK 1NF+-2,5%63V RM5 KP POLYPROPYLENE CAPACITOR WIMA FKP2 1000/2,5%/63V	CK 099.6129			
C26	CK 3,3NF+-2,5%63V RM5 KP POLYPROPYLENE CAPACITOR WIMA FKP2 3300/2,5%/63V	CK 099.6158			
C27	CK 470PF+-2,5%63V RM5 KP POLYPROPYLENE CAPACITOR WIMA FKP2 470/2,5%/63V	CK 099.6106			
C28	CC 10NF-20+50%7X8R4000 CAPACITOR VALVO 2222 63051 64051103	CC 087.7525			
C29	CC 10NF-20+50%7X8R4000 CAPACITOR VALVO 2222 63051 64051103	CC 087.7525			
C30	CC 100NF+-10%50V5K1200VIE CAPACITOR UNION CARB CK05BX104K	CC 084.5350			
C31	CC 100NF+-10%50V5K1200VIE CAPACITOR UNION CARB CK05BX104K	CC 084.5350			
C32	CC 100NF+-10%50V5K1200VIE CAPACITOR UNION CARB CK05BX104K	CC 084.5350			
C33	CC 10NF-20+50%7X8R4000 CAPACITOR VALVO 2222 63051 64051103	CC 087.7525			
C34	CC 10NF-20+50%7X8R4000 CAPACITOR VALVO 2222 63051 64051103	CC 087.7525			
C35	CC 10NF-20+50%7X8R4000 CAPACITOR VALVO 2222 63051 64051103	CC 087.7525			
C37	CK 2,7NF+-1%63V6,3QUX11KP CAPACITOR SIEMENS B33531-A5272-F	CK 340.6754			
C38	CK 3,3NF+-2,5%63V RM5 KP POLYPROPYLENE CAPACITOR WIMA FKP2 3300/2,5%/63V	CK 099.6158			

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Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.		enthalten in contained in	
C39	CK 3,3NF+-2,5%63V RM5 KP POLYPROPYLENE CAPACITOR WIMA FKP2 3300/2,5%/63V	CK 099.6158			
C40	CE 22UF+-20%16V5RDX5RAD.A ELECTROLYTIC CAPACITOR NCC SRE 22UF/16V+-20%	358.6062			
C41	CE 2,2UF+-20%50V 4RDX5 ELEKTROLYTIC CAPACITOR NATIONAL ECE-A1HKS-2R2	803.0944			
C42	CE 100UF+-20%25V 8RDX9,5 ELECTROLYTIC CAPACITOR MATSUSHITA ECE-A1ESS-101	803.0580			
D1	BL CD4520BE 2XBIN.COUNT COUNTER RCA CD4520BE	BL 299.6908			
D2	BL CD4015BE 2X4B.SH.REG SHIFT REGISTER RCA CD4015BE	BL 086.7044			
D3	BL CD4015BE 2X4B.SH.REG SHIFT REGISTER RCA CD4015BE	BL 086.7044			
D4	BL CD4094BE 8BIT SH.REG SHIFT REGISTER RCA CD4094BE	BL 586.7726			
BIS/TO D9					
K14	SR 5V2000HM 1MAL UM 1 REED RELAY ELECTROL RA 3042-1051-02	SR 267.5364			
N1	BO LF412CN 2XFET OPAMP OPERATIONAL AMPLIFIER NSC LF412CN	356.0521			
N2	BO LF412CN 2XFET OPAMP OPERATIONAL AMPLIFIER NSC LF412CN	356.0521			
BIS/TO N5					
N6	BL CD4053BE 3X2CH. MUX MULTIPLEXER RCA CD4053BE	BL 565.3080			
N7	BO LF412CN 2XFET OPAMP OPERATIONAL AMPLIFIER NSC LF412CN	356.0521			
N8	BJ AD7523JN 8B.D/A-CONV D/A CONVERTER MICRO POW. MP-7523JN	801.8219			
N9	BO LF351N BIFET OPAMP OPERATIONAL AMPLIFIER NSC LF351N	BO 301.6105			
N10	BL CD4051BE 8CH. MUX MULTIPLEXER RCA CD4051BE	BL 339.4174			

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Kennzeichen Component No.	Benennung/Beschreibung Designation		Sachnummer Stock No.	enthalten in contained in	
N11	BO LF351N BIFET OPAMP OPERATIONAL AMPLIFIER NSC LF351N		BO 301.6105		
N12	BJ TL601CP 2X ANALOGSCH ANALOG SWITCH TEXAS TL601CP MJG		BJ 213.4530		
N13	BO NE5532FE 2XL.N.OPAMP OPERATIONAL AMPLIFIER VALVO NE5532FE		BO 332.0444		
N15	BO LF412CN 2XFET OPAMP OPERATIONAL AMPLIFIER NSC LF412CN		356.0521		
N16	BJ TL601CP 2X ANALOGSCH ANALOG SWITCH TEXAS TL601CP MJG		BJ 213.4530		
N17	BL CD4053BE 3X2CH. MUX MULTIPLEXER RCA CD4053BE		BL 565.3080		
N18	BO LF412CN 2XFET OPAMP OPERATIONAL AMPLIFIER NSC LF412CN		356.0521		
N19	BO LF412CN 2XFET OPAMP OPERATIONAL AMPLIFIER NSC LF412CN		356.0521		
N20	BO LF351N BIFET OPAMP OPERATIONAL AMPLIFIER NSC LF351N		BO 301.6105		
N21	BL CD4052BE 2X4CHAN.MUX MULTIPLEXER/DEMUTIPLEXER MOTOROLA MC14052BCP		BL 243.1200		
N22	BO LF351N BIFET OPAMP OPERATIONAL AMPLIFIER NSC LF351N		BO 301.6105		
N23	BO LF412CN 2XFET OPAMP OPERATIONAL AMPLIFIER NSC LF412CN		356.0521		
N24	BL CD4052BE 2X4CHAN.MUX MULTIPLEXER/DEMUTIPLEXER MOTOROLA MC14052BCP		BL 243.1200		
N25	BJ AD7523JN 8B.D/A-CONV D/A CONVERTER MICRO POW. MP-7523JN		801.8219		
N26	BJ AD7523JN 8B.D/A-CONV D/A CONVERTER MICRO POW. MP-7523JN		801.8219		
N27	BO LF351N BIFET OPAMP OPERATIONAL AMPLIFIER NSC LF351N		BO 301.6105		
N28	BO LF412CN 2XFET OPAMP OPERATIONAL AMPLIFIER NSC LF412CN		356.0521		
N29	BO LM310N VOLT.FOLLOW VOLTAGE FOLLOWER NSC LM310N		266.0923		
N30	BO LM310N VOLT.FOLLOW VOLTAGE FOLLOWER NSC LM310N		266.0923		



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Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in
N31	BL CD4051BE 8CH. MUX MULTIPLEXER	BL 339.4174	
N100	RCA CD4051BE BO LM311N COMPAR COMPARATOR NSC LM311N	BO 394.8755	
P1	VL WIRE-WRAP PIN WIRE-WRAP PIN BERG NR. 75 403-001	VL 088.4507	
BIS/TO P16			
R1	RL 0,35W2,21 OHM+-1%TK50 METALFILMRESISTOR RESISTA MK2 2,21 OHM 1% TK50	RL 099.7948	
R2	RL 0,35W2,21 OHM+-1%TK50 METALFILMRESISTOR RESISTA MK2 2,21 OHM 1% TK50	RL 099.7948	
R3	RL 0,35W 10,0 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/100HM-F-D	RL 082.8852	
R4	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR DRALORIC SMA0207/100/HM-F-D	RL 082.6543	
R5	RL 0,35W2,21 OHM+-1%TK50 METALFILMRESISTOR RESISTA MK2 2,21 OHM 1% TK50	RL 099.7948	
R6	RL 0,35W2,21 OHM+-1%TK50 METALFILMRESISTOR RESISTA MK2 2,21 OHM 1% TK50	RL 099.7948	
R7	RL 0,35W 1KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1K-F-C	RL 082.2160	
R8	RL 0,35W 1KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1K-F-C	RL 082.2160	
R9	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D	RL 083.1297	
R10	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D	RL 083.1297	
R11	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR DRALORIC SMA0207/100/HM-F-D	RL 082.6543	
R12	RL 0,35W 4,75KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/4,75K-F-D	RL 083.1097	
R13	RL 0,35W 1KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1K-F-C	RL 082.2160	
R14	RL 0,35W 178 KOHM+-1%TK50 RESISTOR DRALORIC SMA/207/178K-F-C	RL 083.2187	

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Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.		enthalten in contained in	
R15	RL 0,35W 60,4KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/60,4K-F-C	RL 083.1851			
R16	RL 0,35W 36,5KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/36,5K-F-C	RL 083.1716			
R17	RL 0,35W 27,4KOHM+-1%TK50 RESISTOR DRALORIC SMA 0207/27,4K-F-C	RL 082.2583			
R18	RL 0,35W 22,6KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/22,6K-F-C	RL 082.2219			
R19	RL 0,35W 19,6KOHM+-1%TK50 RESISTOR DRALORIC SMA/207/19,6K-F-C	RL 083.1516			
R20	RL 0,35W 18,2KOHM+-1%TK50 RESISTOR DRALORIC SMA/207/18,2K-F-C	RL 083.1480			
R21	RL 0,35W 17,4KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/17,4K-F-C	RL 083.1468			
R22	RL 0,35W 17,4KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/17,4K-F-C	RL 083.1468			
R23	RL 0,35W 18,2KOHM+-1%TK50 RESISTOR DRALORIC SMA/207/18,2K-F-C	RL 083.1480			
R24	RL 0,35W 19,6KOHM+-1%TK50 RESISTOR DRALORIC SMA/207/19,6K-F-C	RL 083.1516			
R25	RL 0,35W 22,6KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/22,6K-F-C	RL 082.2219			
R26	RL 0,35W 27,4KOHM+-1%TK50 RESISTOR DRALORIC SMA 0207/27,4K-F-C	RL 082.2583			
R27	RL 0,35W 36,5KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/36,5K-F-C	RL 083.1716			
R28	RL 0,35W 60,4KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/60,4K-F-C	RL 083.1851			
R29	RL 0,35W 178 KOHM+-1%TK50 RESISTOR DRALORIC SMA/207/178K-F-C	RL 083.2187			
R30	RL 0,35W 10,2KOHM+-1%TK50 RESISTOR DRALORIC SMA/207/10,2K-F-C	RL 082.2331			
R31	RL 0,35W 1,74KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1,74K-F-D	RL 083.0784			
R32	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D	RL 083.1297			
R33	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D	RL 083.1297			





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Kennzeichen  
Component No.Benennung/Beschreibung  
DesignationSachnummer  
Stock No.enthalten in  
contained in

R34

RL 0,35W 10,0KOHM+-1%TK50  
RESISTOR

RL 083.1297

R35

DRALORIC SMA0207/10K-F-D  
RL 0,35W 17,4KOHM+-1%TK50  
RESISTOR

RL 083.1468

R36

DRALORIC SMA0207/17,4K-F-C  
RL 0,35W 57,6KOHM+-1%TK50  
RESISTOR

RL 083.6830

R37

DRALORIC SMA0207/57,6K-F-C  
RL 0,35W 19,1KOHM+-1%TK50  
RESISTOR

RL 083.1500

R38

DRALORIC SMA/207/19,1K-F-C  
RL 0,35W 35,7KOHM+-1%TK50  
RESISTOR

RL 083.1700

R39

DRALORIC SMA0207/35,7K-F-C  
RL 0,35W 30,1KOHM+-1%TK50  
RESISTOR

RL 083.1639

R40

DRALORIC SMA0207/30,1K-F-C  
RL 0,35W 53,6KOHM+-1%TK50  
RESISTOR

RL 082.2590

R41

DRALORIC SMA 0207/53,6K-F-C  
RL 0,35W 2,61KOHM+-1%TK50  
RESISTOR

RL 083.0903

R42

DRALORIC SMA0207/2,61K-F-D  
RL 0,35W 8,06KOHM+-1%TK50  
RESISTOR

RL 083.1222

R43

DRALORIC SMA0207/8,06K-F-D  
RL 0,35W 4,64KOHM+-1%TK50  
RESISTOR

RL 082.1687

R44

DRALORIC SMA0207/4,64K-F-C  
RL 0,35W 6,49KOHM+-1%TK50  
RESISTOR

RL 083.1168

R45

DRALORIC SMA0207/6,49K-F-D  
RL 0,35W 6,34KOHM+-1%TK50  
RESISTOR

RL 083.1151

R46

DRALORIC SMA0207/6,34K-F-D  
RL 0,35W 7,15KOHM+-1%TK50  
RESISTOR

RL 083.1174

R47

DRALORIC SMA0207/7,15K-F-D  
RL 0,35W 1,21KOHM+-1%TK50  
RESISTOR

RL 083.0655

R48

DRALORIC SMA0207/1,21K-F-D  
RL 0,35W 3,40KOHM+-1%TK50  
RESISTOR

RL 083.1000

R49

DRALORIC SMA0207/3,40K-F-D  
RL 0,35W 1,69KOHM+-1%TK50  
RESISTOR

RL 083.0778

R50

DRALORIC SMA0207/1,69K-F-D  
RL 0,35W 2,37KOHM+-1%TK50  
RESISTOR

RL 083.0878

R51

DRALORIC SMA0207/2,37K-F-D  
RS 0,3W 5KOHM+-10% CERMET  
TRIMMING POTENTIOMETER


RS 006.6698

R52

BOURNS 3296W-1- 5KOHM+-10%  
RL 0,35W 2,00KOHM+-1%TK50  
RESISTOR

RL 083.0826

DRALORIC SMA0207/2,00K-F-D

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Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in		
BIS/T0					
R54					
R55	RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160			
	DRALORIC SMA0207/1K-F-C				
R56	RL 0,35W 499 OHM+-1%TK50 RESISTOR	RL 083.0410			
	DRALORIC SMA0207/499OHM-F-D				
R57	RL 0,35W 301 OHM+-1%TK50 RESISTOR	RL 083.0210			
	DRALORIC SMA0207/301OHM-F-D				
R58	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543			
	DRALORIC SMA0207/100/HM-F-D				
R59	RL 0,35W 49,9 OHM+-1%TK50 RESISTOR	RL 082.9520			
	RESISTA MK2				
R60	RL 0,35W30,10 OHM+-1%TK50 RESISTOR	RL 082.9313			
	DRALORIC SMA0207/30,10HM-F-D				
R61	RL 0,35W 10,0 OHM+-1%TK50 RESISTOR	RL 082.8852			
	DRALORIC SMA0207/100HM-F-D				
R62	RL 0,35W 10,0 OHM+-1%TK50 RESISTOR	RL 082.8852			
	DRALORIC SMA0207/100HM-F-D				
R63	RL 0,35W 3,83KOHM+-1%TK50 RESISTOR	RL 082.6614			
	DRALORIC SMA0207/3,83K-F-D				
R64	RL 0,35W 2,00KOHM+-1%TK50 RESISTOR	RL 083.0826			
	DRALORIC SMA0207/2,00K-F-D				
R65	RL 0,35W 200KOHM+-1%TK50 RESISTOR	RL 083.2235			
	DRALORIC SMA0207/200K-F-D				
R66	RL 0,35W 200KOHM+-1%TK50 RESISTOR	RL 083.2235			
	DRALORIC SMA0207/200K-F-D				
R67	RL 0,35W18,20 OHM+-1%TK50 RESISTOR	RL 082.9107			
	DRALORIC SMA0207/18,20HM-F-D				
R68	TRIMMWERT/SELECTED RL 0,35W2,00 OHM+-1%TK50	RL 099.7931			
	METALFILMRESISTOR				
	RESISTA MK2 2,00 OHM 1%TK50				
R69	RL 0,35W 6,81KOHM+-1%TK50 RESISTOR	RL 082.2560			
	DRALORIC SMA 0207/6,81K-F-C				
R70	RG 1,62KOHM+-1%TK100 1206 CHIP RESISTOR	RG 006.9997			
	DRALORIC CGB 3216 1,62KOHM 1%				
R71	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297			
	DRALORIC SMA0207/10K-F-D				
R72	RL 0,35W3,97KOHM+-0,1%T25 RESISTOR	RL 084.2297			
	DRALORIC SMA0207				

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Kennzeichen  
Component No.Benennung/Beschreibung  
DesignationSachnummer  
Stock No.enthalten in  
contained in

R73

TRIMMWERT/SELECTED  
RL 0,35W 453 OHM+-1%TK50  
RESISTOR

RL 083.0378

R74

DRALORIC SMA0207/4530HM-F-D  
RL 0,35W 267 OHM+-1%TK50  
RESISTOR

RL 083.0161

R75

DRALORIC SMA0207/2670HM-F-D  
RL 0,35W 178 OHM+-1%TK50  
RESISTOR

RL 083.0003

R76

DRALORIC SMA0207/1780HM-F-D  
RL 0,35W 115 OHM+-1%TK50  
RESISTOR

RL 082.9836

R77

DRALORIC SMA0207/1150HM-F-D  
RL 0,35W 64,9 OHM+-1%TK50  
RESISTOR

RL 082.9620

R78

DRALORIC SMA0207/64,90HM-F-D  
RL 0,35W 45,3 OHM+-1%TK50  
RESISTOR

RL 082.9488

R79

DRALORIC SMA0207/45,30HM-F-D  
RL 0,35W 26,70 OHM+-1%TK50  
RESISTOR

RL 082.9265

R80

DRALORIC SMA0207/26,70HM-F-D  
RL 0,35W 47,5 OHM+-1%TK50  
RESISTOR

RL 082.9507

R81

DRALORIC SMA0207/47,50HM-F-D  
RL 0,35W 100 OHM+-1%TK50  
METALFILM-RESISTOR

RL 082.6543

R82

DRALORIC SMA0207/100/HM-F-D  
RL 0,35W 2,00KOHM+-1%TK50  
RESISTOR

RL 083.0826

R83

DRALORIC SMA0207/2,00K-F-D  
RL 0,35W 2,00KOHM+-1%TK50  
RESISTOR

RL 083.0826

R84

DRALORIC SMA0207/2,00K-F-D  
RL 0,35W 3,57KOHM+-1%TK50  
RESISTOR

RL 083.1022

R85

DRALORIC SMA0207/3,57K-F-D  
RL 0,35W 2,00KOHM+-1%TK50  
RESISTOR

RL 083.0826

R86

DRALORIC SMA0207/2,00K-F-D  
RL 0,35W 1KOHM+-1%TK50  
RESISTOR

RL 082.2160

R87

DRALORIC SMA0207/1K-F-C  
RL 0,35W 3,57KOHM+-1%TK50  
RESISTOR

RL 083.1022

R88

DRALORIC SMA0207/3,57K-F-D  
RL 0,35W 2,00KOHM+-1%TK50  
RESISTOR

RL 083.0826

R89

DRALORIC SMA0207/2,00K-F-D  
RL 0,35W 3,57KOHM+-1%TK50  
RESISTOR


RL 083.1022

R90

DRALORIC SMA0207/3,57K-F-D  
RL 0,35W 1KOHM+-1%TK50  
RESISTOR  
DRALORIC SMA0207/1K-F-C

RL 082.2160

Für diese Unterlage, halten wir  
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Kennzeichen Component No.	Benennung/Beschreibung Designation		Sachnummer Stock No.	enthalten in contained in	
R91	RL 0,35W 5,62KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/5,62K-F-C		RL 082.2190		
R92	RL 0,35W 5,90KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/5,90K-F-D TRIMMWERT/SELECTED		RL 083.1145		
R93	RL 0,35W 1,74KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1,74K-F-D		RL 083.0784		
R94	RL 0,35W 100KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/100K-F-C		RL 082.1764		
V1	AE BZX79/C9V1 0,5W Z-DI ZENER DIODE VALVO BZX79/C9V1		AE 012.2503		
V2	AD 1N4448 75V 0,15A UDI DIODE TEXAS INST 1N4448 GEGURTET		AD 012.0700		
V3	AD 1N4448 75V 0,15A UDI DIODE TEXAS INST 1N4448 GEGURTET		AD 012.0700		
V4	AE BZX79/C4V3 0,5W Z-DI ZENER DIODE VALVO BZX79/C4V3		AE 012.2426		
BIS/TO					
V9					
V10	AK BCY59IX NPN 45V 200MA TRANSISTOR SIEMENS BCY59IX		AK 010.5163		
V11	AE BZX79/C4V3 0,5W Z-DI ZENER DIODE VALVO BZX79/C4V3		AE 012.2426		
V12	AE BZX79/C4V3 0,5W Z-DI ZENER DIODE VALVO BZX79/C4V3		AE 012.2426		
V15	AD 1N4448 75V 0,15A UDI DIODE TEXAS INST 1N4448 GEGURTET		AD 012.0700		
W1	DX KABEL CABLE		802.5888		
X1	FP STECKERL.INDIR.64POLIG 64-PIN INSERT PANDUIT 100-064-033/999		FP 084.6470		
X2	FP BUCHSENLEISTE64P.ABGEW PANDUIT 100-064-533/999		FP 099.0614		
X504	FJ EINBAUSTECKER SYST.SMB FIXED CONNECTOR ROSENBERG 59S601-200D2		FJ 063.5116		
X505	FJ EINBAUSTECKER SYST.SMB FIXED CONNECTOR ROSENBERG 59S601-200D2		FJ 063.5116		



ROHDE &amp; SCHWARZ

Äl Datum  
Date

16 0387

Schaltteilliste für  
Parts list for  
EE 1. MODULATIONSGENERATOR  
1ST MOD. GENERATORSachnummer  
Stock No.

802.5713.01 SA

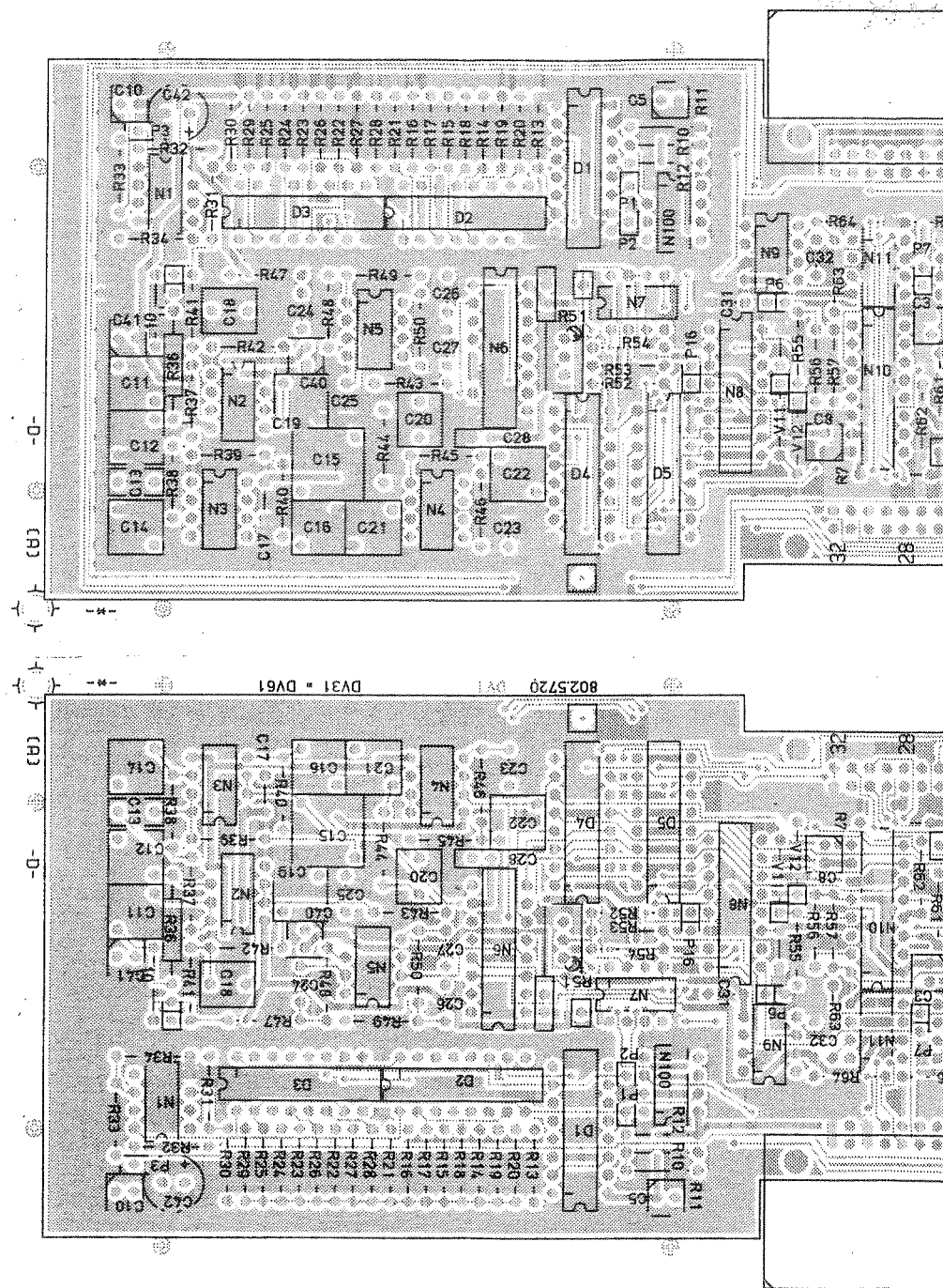
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11

Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in
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X3B	VL WIRE-WRAP PIN WIRE-WRAP PIN BERG NR. 75 403-001	VL 088.4507	
X4A	VL WIRE-WRAP PIN WIRE-WRAP PIN BERG NR. 75 403-001	VL 088.4507	
X4B	VL WIRE-WRAP PIN WIRE-WRAP PIN BERG NR. 75 403-001	VL 088.4507	
			- ENDE -

Für diese Unterlage  
alten wir  
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Ansicht und Leitungsführung Lötseite  
View of tracks on solder side

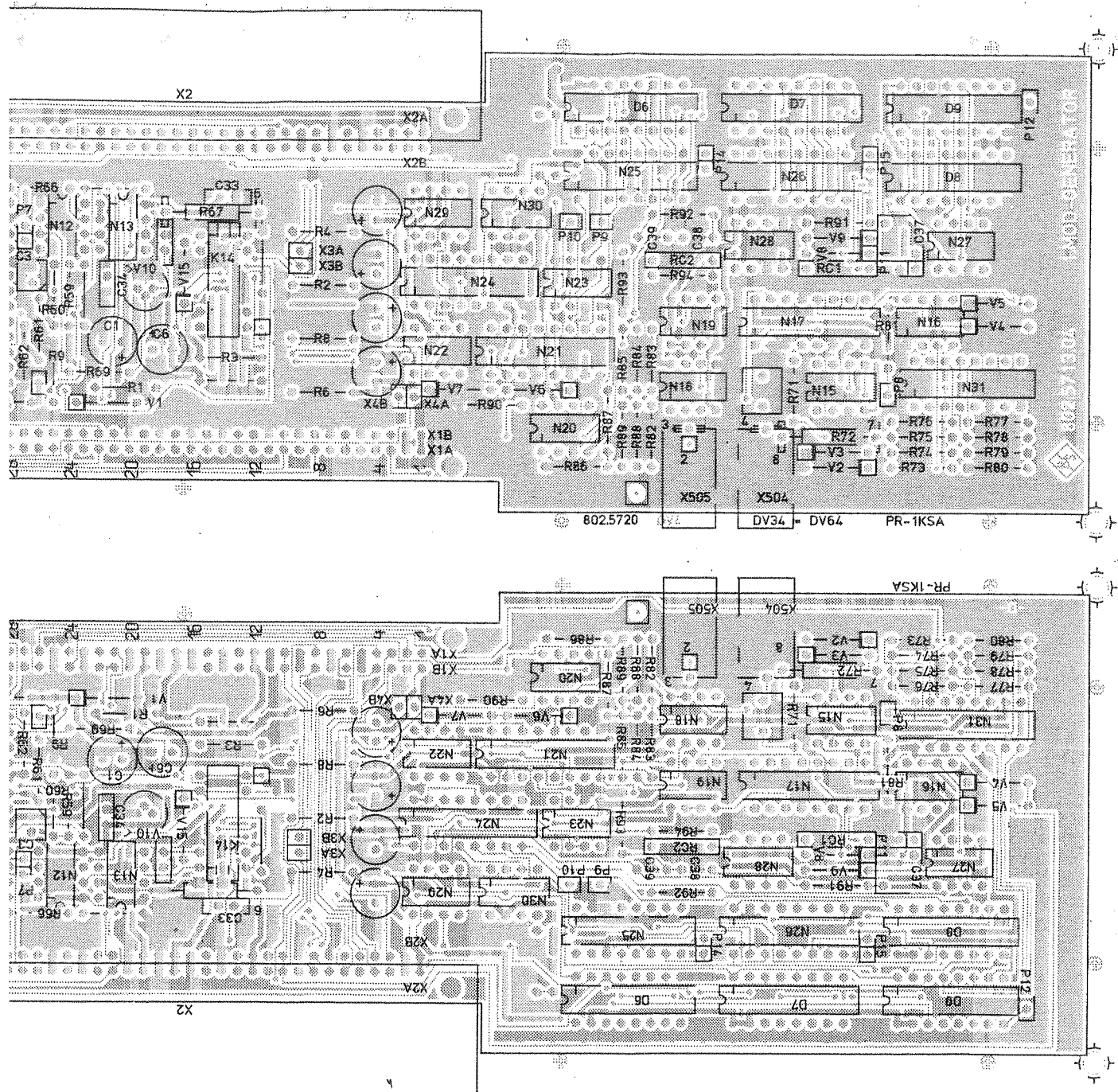


Chierzi HVC 2501




**ACHTUNG: EGB!**  
Elektrostatisch gefährdete  
Bauelemente erfordern eine  
besondere Handhabung.

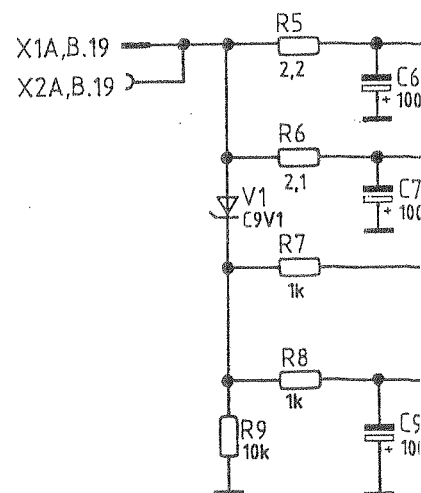
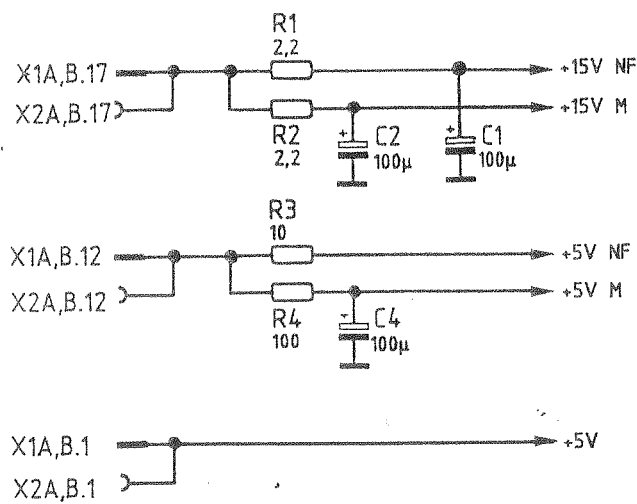
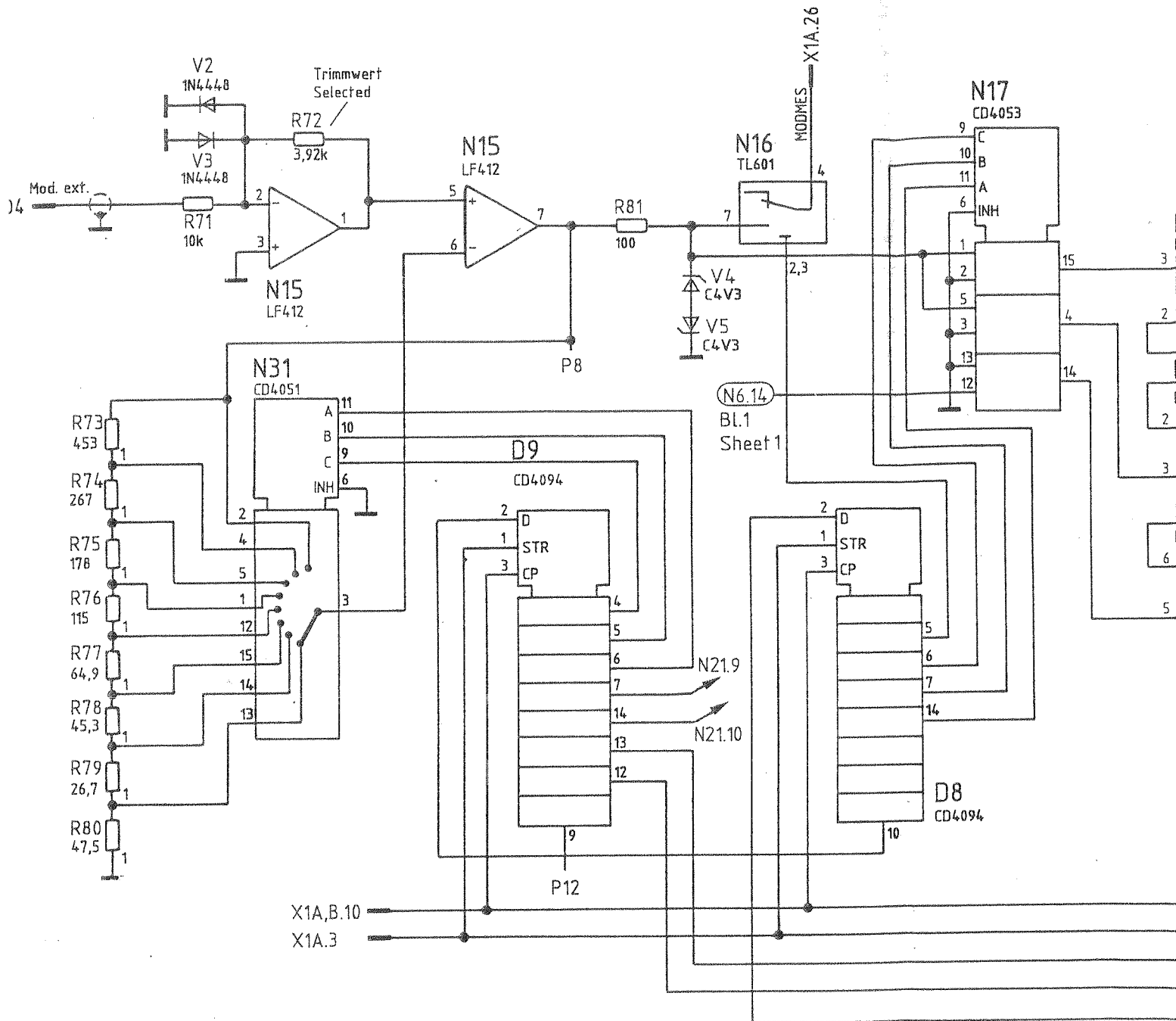
**ATTENTION ESD!**  
Electrostatic sensitive  
devices require a special  
handling.



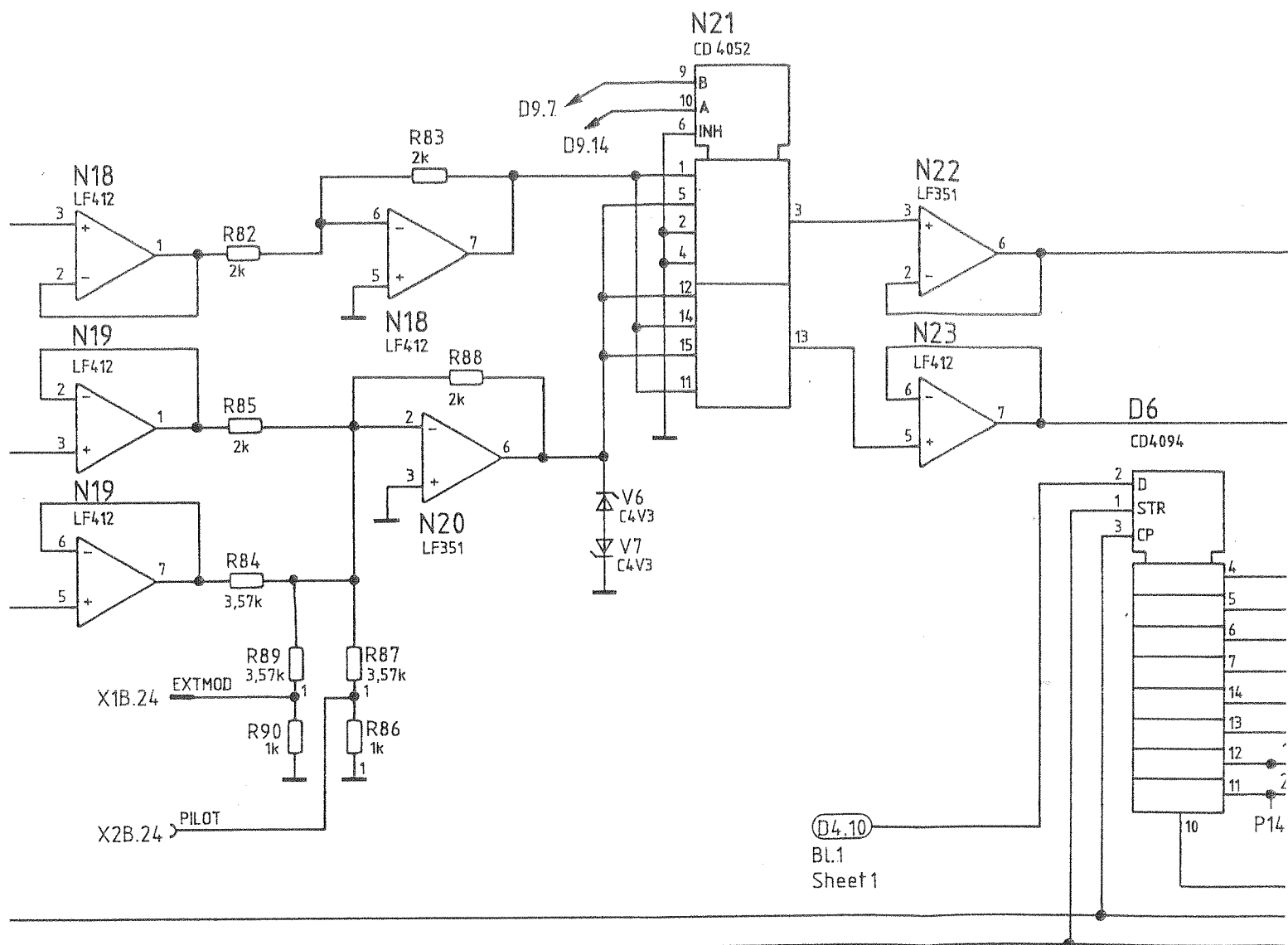
VARIANTENERKLÄRUNG/VERSION  
 VAR02 - GRUNDAUSFÜHRUNG/BASIC MODEL  
 VAR04 - AUSFÜHRUNG MIT C-NETZ MODIFKATION

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K	38951	11.87	IB			Halbzeug, Werkstoff				
				1KSA	Tag	Name	Benennung  Modulations Generator			Z
				Bearb.	12.86	PR				
				Gepr.						
				Norm						
				 <b>ROHDE &amp; SCHWARZ</b>			Zeichn.-Nr.		Blatt-Nr.	
Änd. Zust.	Änderungs-Mitteilung	Tag	Name				802.5713.01		EE	
				zu Gerät CMT		reg. i. V. 802.2020 V		erste Z.		v. 2 Bl.





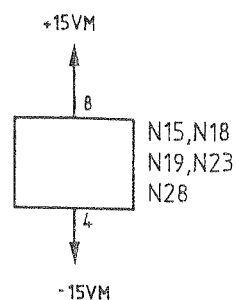
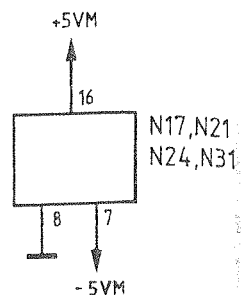
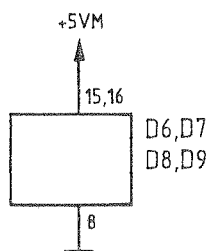
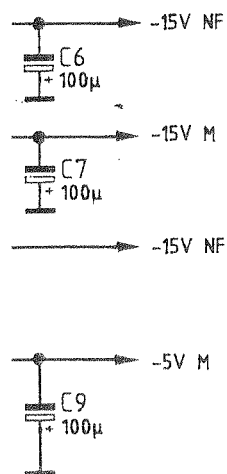


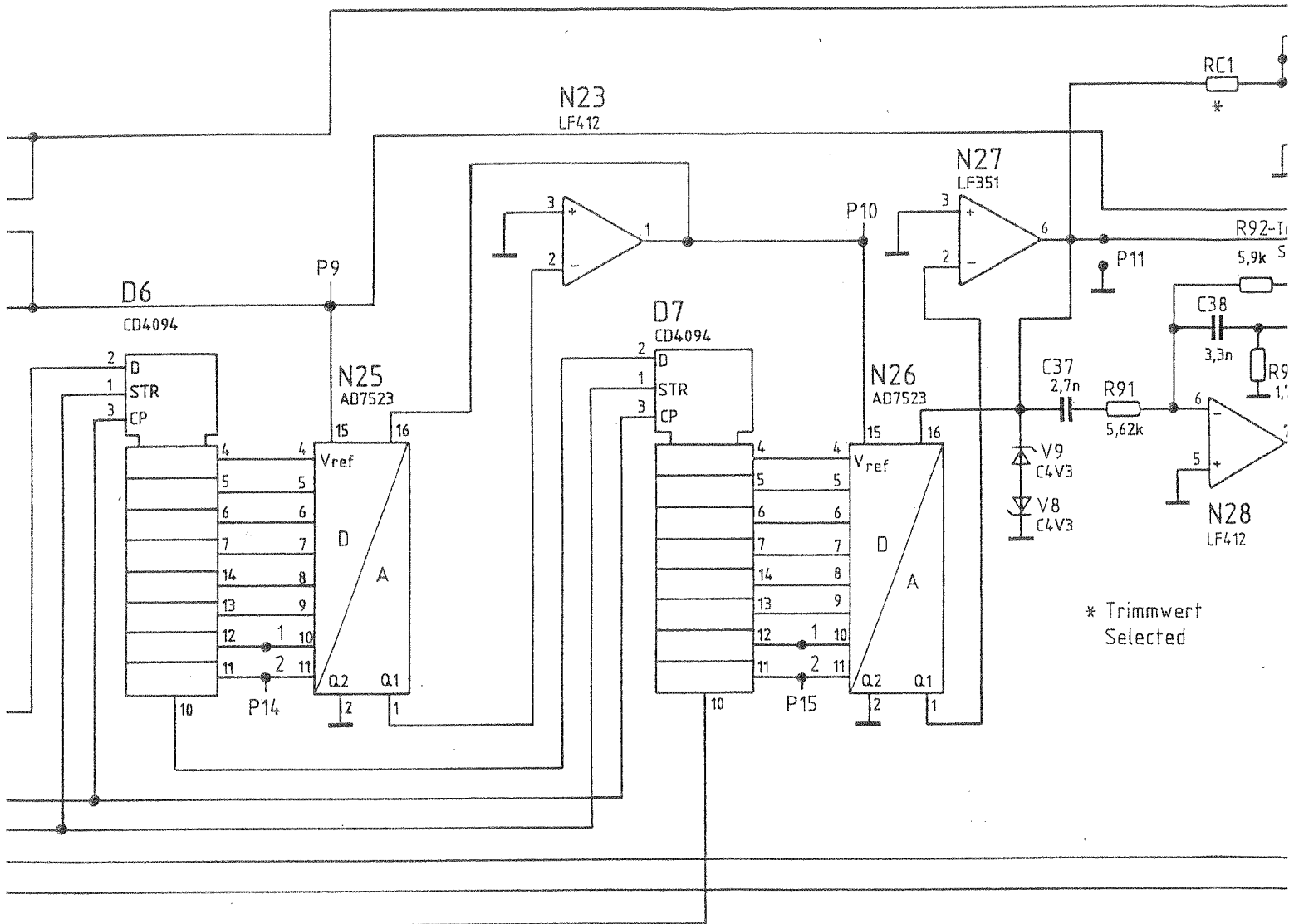


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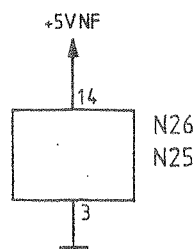
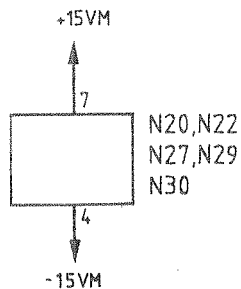
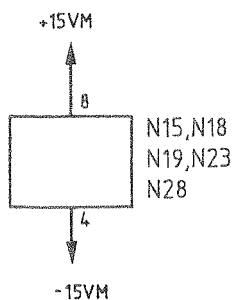
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Sheet 1



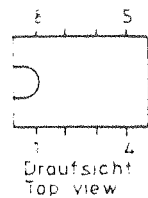
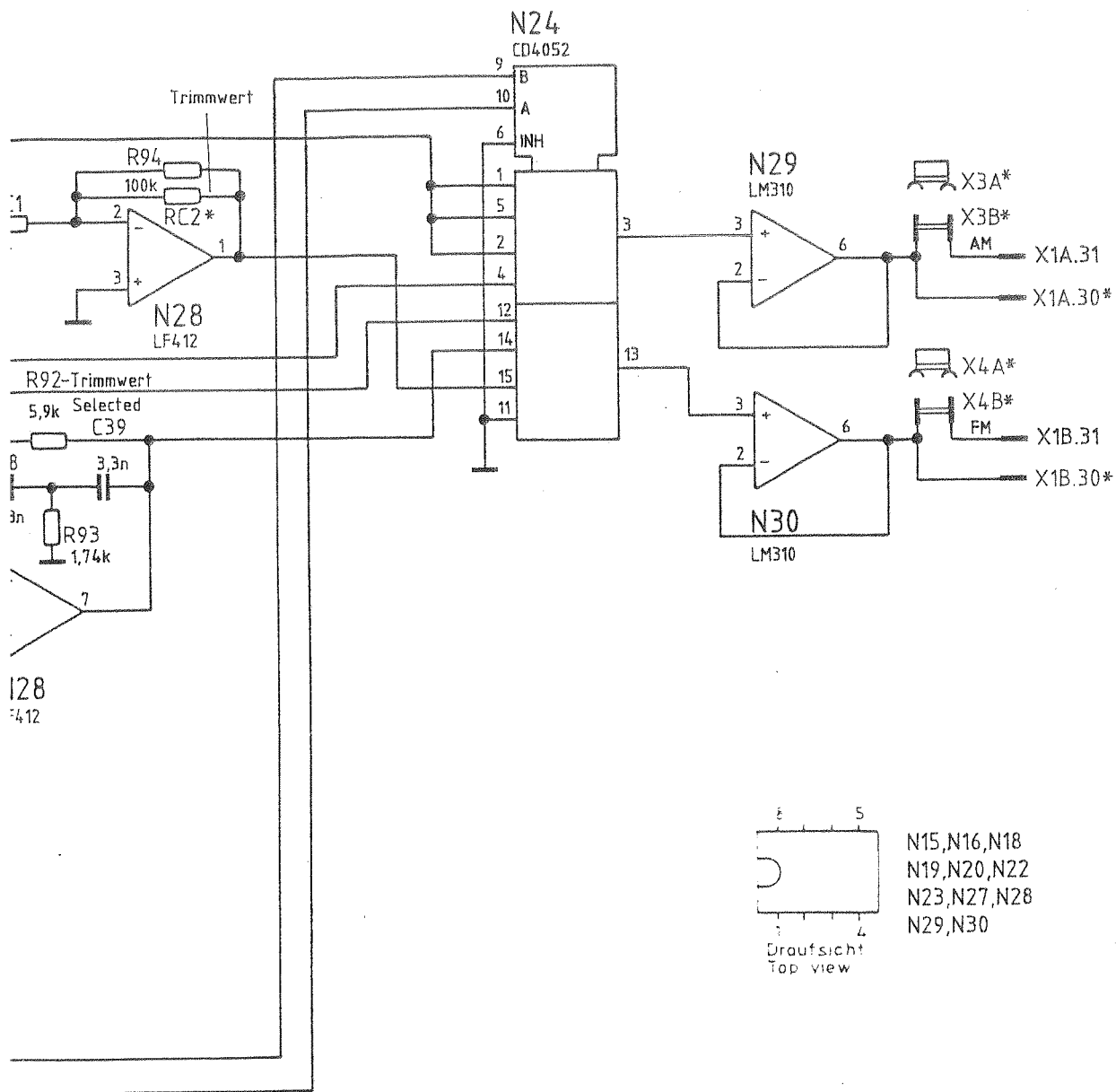
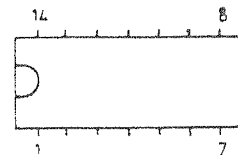


\* Trimmwert  
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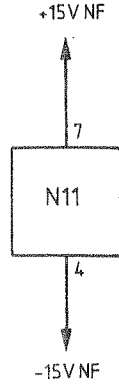
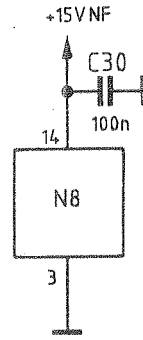
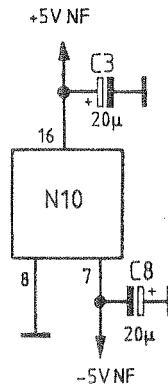
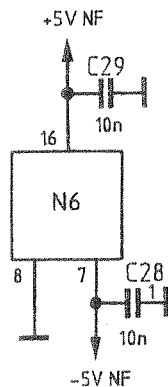
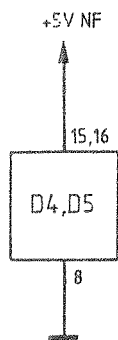
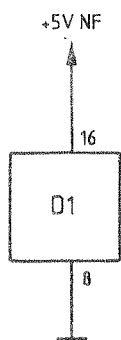
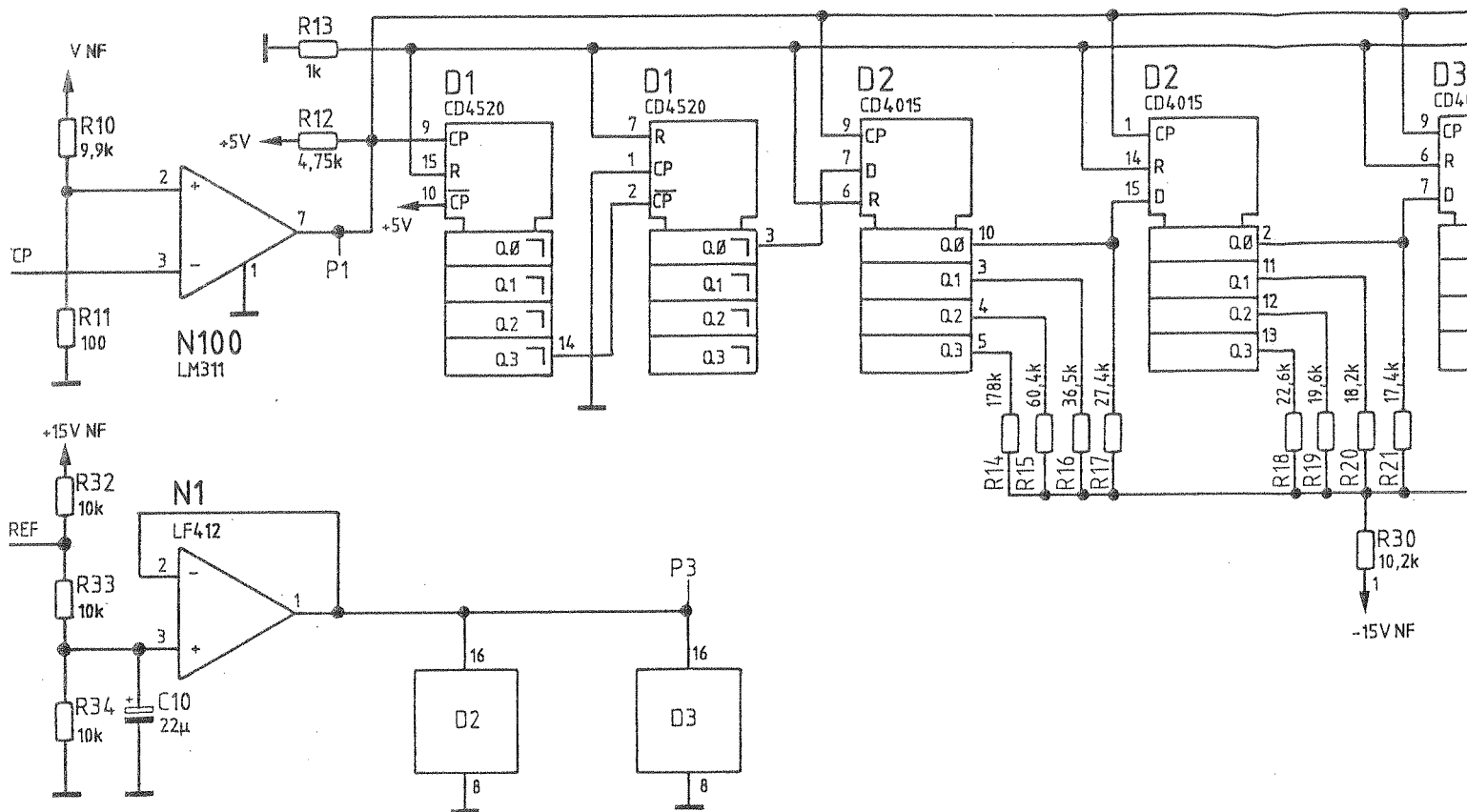
ROHDE & SCHWARZ

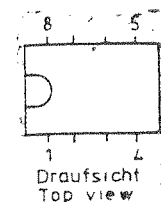
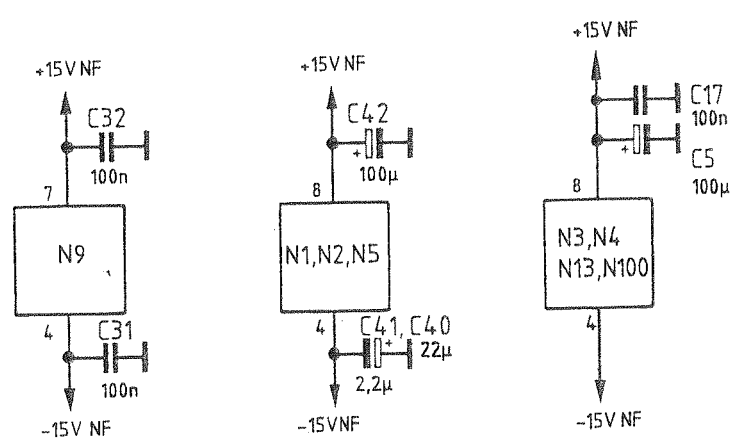
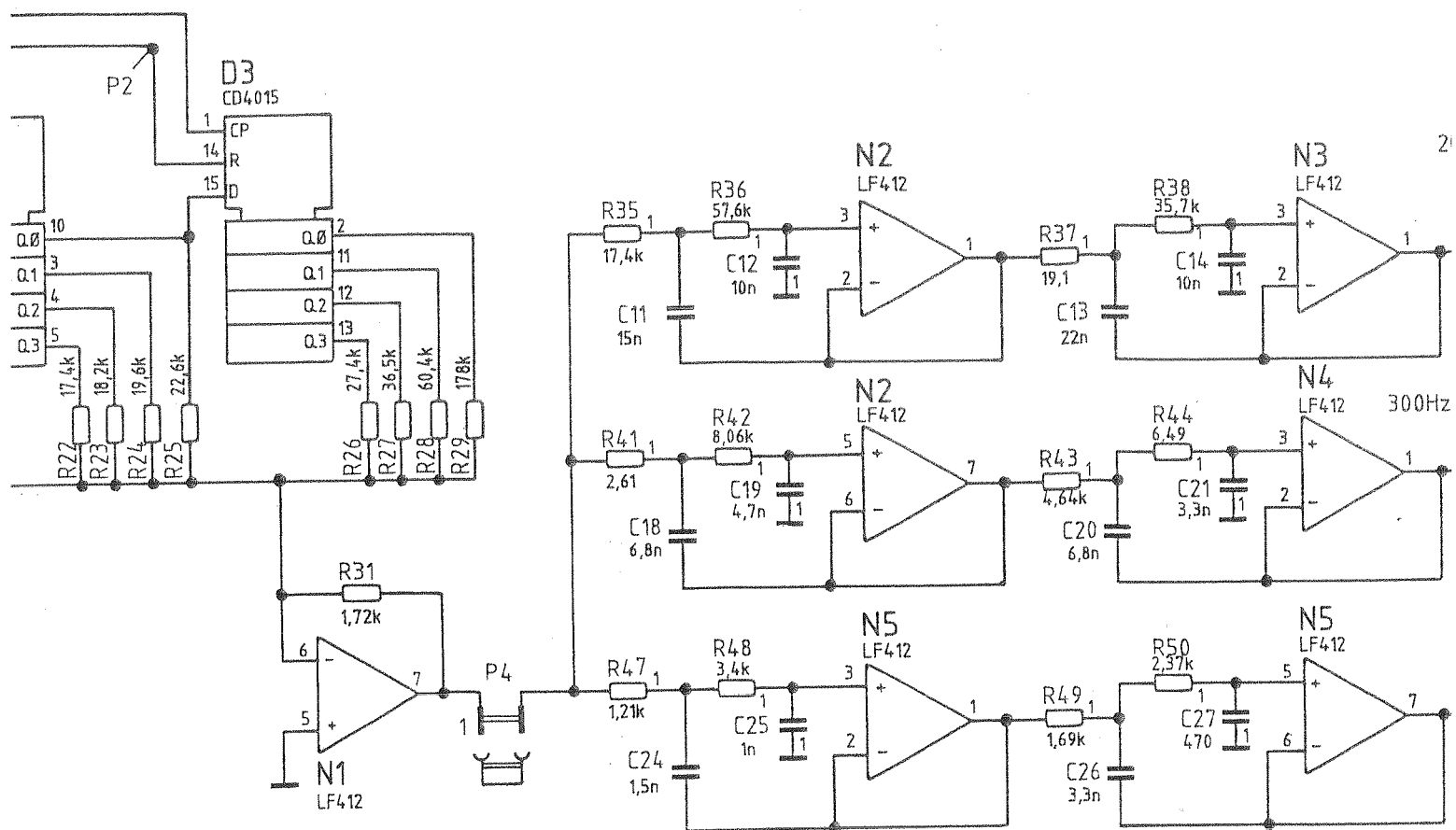
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C	35533	6.86	CO					Gepr	
Änd Zust	Änderungs- Merkmal	Datum	Name	Änd Zust	Änderungs- Merkmal	Datum	Name	Norm	

Draufsicht  
Top viewDraufsicht  
Top view

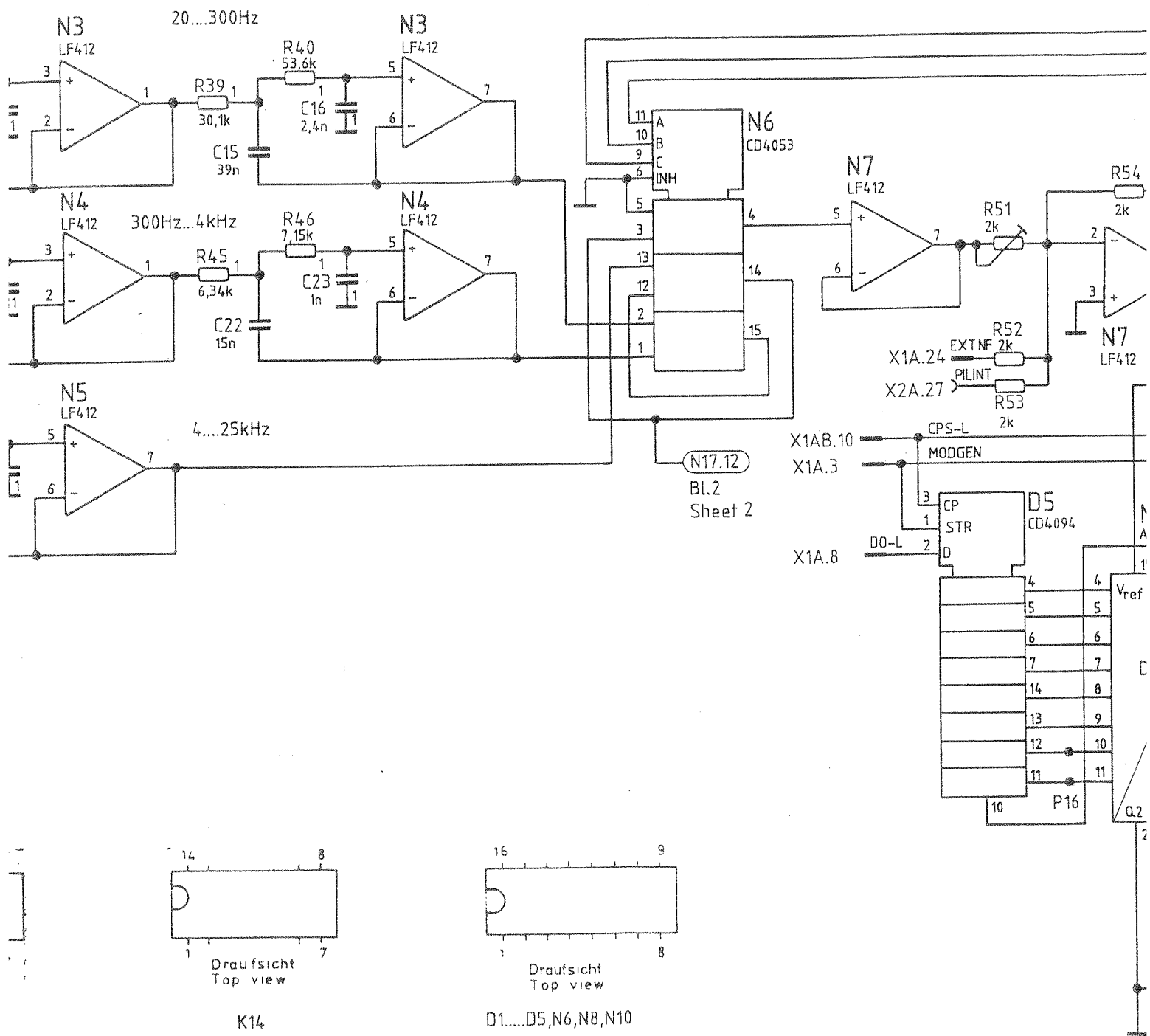
\*) nur für VAR 04  
only for model 04

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		zu Gerät CMT	rep. V 802.2020 V erste Z

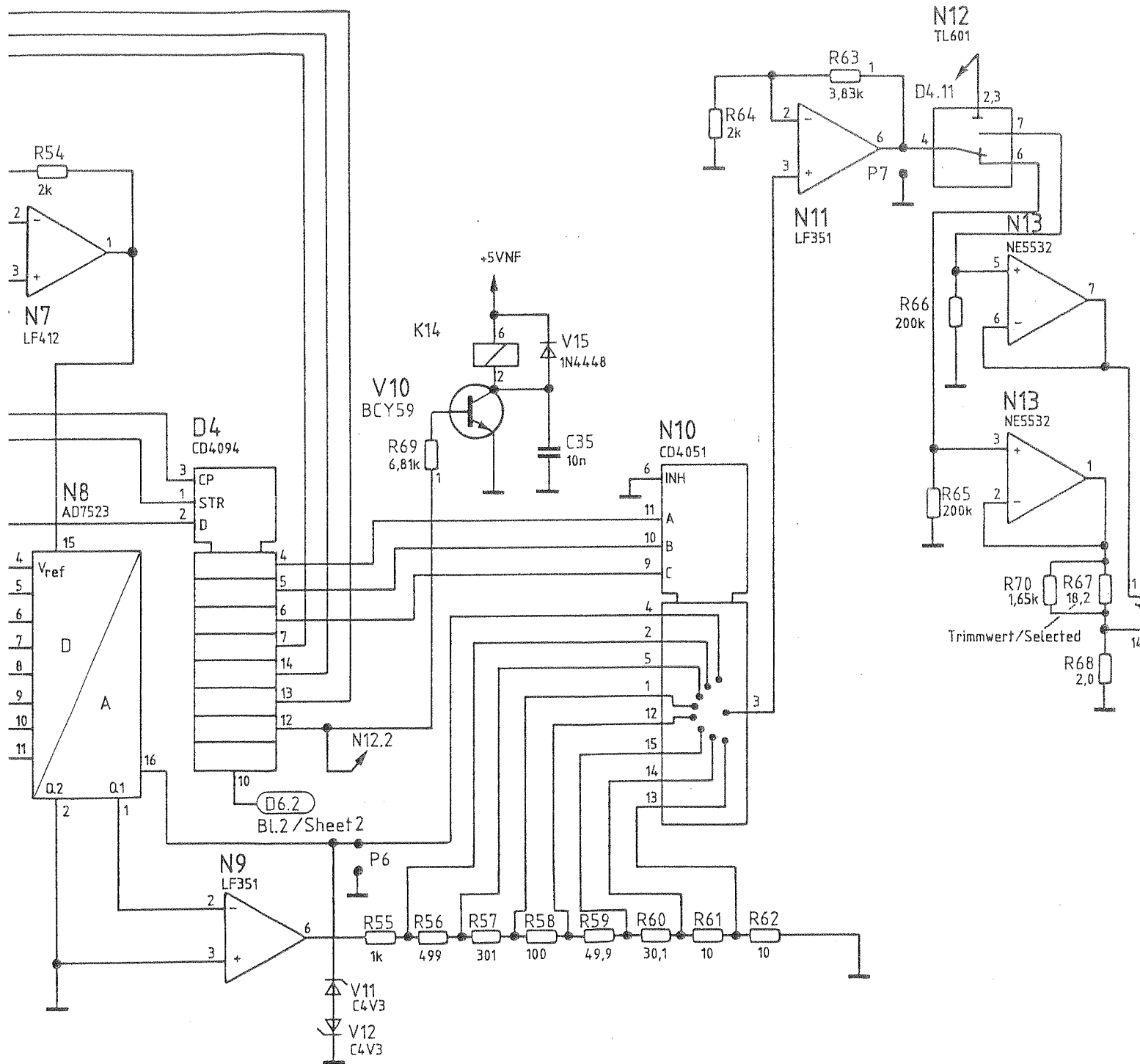




N1.....N5  
 N7,N9,N11  
 N12,N13



	A		7.85	CO	E	35547	5.87	IB	1KSA	Tag
	B	32954	4.86	CO					Bearb	7.85
	D	35533	11.86	CO					Gepr	
	And Zust	Änderungs- Mittelung	Datum	Name	And Zust	Änderungs- Mittelung	Datum	Name	Norm	



Stromlauf gilt für VAR 02, 04  
Circuit diagram is valid for model 02, 04

Tag	Name	Benennung	Zeichn.-Nr.
7.85	CO	1. MOD.-Generator / 1st MOD.-Generator	802.5713 S
		zu Gerät CMT	reg. V 802.2020 V erste Z



**ROHDE & SCHWARZ**

**SERVICE INSTRUCTIONS**

RF Oscillator Module Including  
Reference Oscillator Option (OCXO)  
802.8835.02



5	<u>Service Manual for RF Oscillator Module</u> <u>Including Reference Oscillator Option (OCXO) .....</u>	5.1
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Component lists  
Circuit diagrams  
Component layout diagrams

## 5.1      Function Description

The module contains a frequency synthesizer which delivers a frequency of 500 MHz to 1000 MHz with a resolution of 10 to 90 Hz. Two phase-locked loops are used for frequency synthesis. The individual loops are designated as RF loop and VCXO loop. The coarse spacing is generated in the RF loop and the fine spacing in the VCXO loop. The two phase-locked loops are synchronized with a crystal-stabilized reference frequency in order to obtain a stable output frequency. The output frequency is derived as follows:

$$F = (M/N) \times 400000 + M \times 200000 \text{ where } M = 2499 \text{ to } 4999 \\ \text{and } N = 3333 \text{ to } 10000$$

If e.g. a frequency of 750 MHz is set, then  $M=3749$  and  $N=7498$ .

A 100-MHz crystal oscillator generates the reference source for the frequency synthesis. All frequencies generated on the module are derived from this crystal oscillator. To obtain even greater stability, this crystal oscillator can be synchronized in a phase-locked loop with an external 10-MHz reference or an oven-stabilized 10-MHz crystal (option OXCO).

### 5.1.1      Reference Section

The tuning diode V512 is connected in series with the crystal (B500) in the 100-MHz crystal oscillator. The frequency can be adjusted within a small range using a tuning voltage which is adjustable with trimmer R632.

The oscillator frequency divided by 10 is compared with the 10-MHz signal of the external reference or the OCXO in the digital phase detector (D610) to bring it into synchronism. The pulses generated by the phase detector are integrated by a difference integrator (N620) into a DC voltage which is applied to the voltage-variable diode V512 as a tuning voltage. The tuning voltage is controlled such that the two 10-MHz signals at the phase detector always have the same phase. Switchover from self-oscillating to synchronized operation of the 100-MHz crystal oscillator takes place automatically when using the option (OCXO).

### 5.1.2 VCXO Loop

The 20-MHz signal from the reference unit is converted in the amplifier (V200) from ECL to TTL level and applied to the programmable N divider.

The N divider is a decadic counter with 4 digits. The counter is incremented with each clock pulse. The preset input of the individual counters is activated via the NAND gate (D202/2) when a count of 9999 is reached and the N divider is reset by the next clock pulse. Because a clock pulse is needed for loading the counter, it counts one step more than 9999. The required divider ratio at the output of the divider is therefore 10000 minus the initial count. If e.g. the divider ratio is to be  $N = 7498$ ,  $(10000 - 7498) = 2502$  must be loaded into the counter. This value is stored in BCD in the shift registers (D205, D206). The output signal of the N divider (2 to 6 kHz) is then mixed in the subsequent phase locked mixer to 10.002 to 10.006 MHz.

The voltage-controlled crystal oscillator (VCXO) consists of the oscillating transistor V230 and the resonant circuit elements B230, V232, L230, C232 and C233. The voltage-variable diode V232 enables the frequency to be tuned in the range from 10.002 MHz to 10.006 MHz. The oscillator signal is converted into a TTL level by D250. The output of D250 pin 10 is used to drive the divider D255 (100:1). The signal is applied from pin 1 of D250 to an active mixer D262 where it is converted down with 10 MHz from the reference section. The low intermediate frequency is applied via the lowpass filter R264, C264, R265, C265 to the comparator N260 which converts the signal to TTL level for the digital phase detector.

The phase detector, consisting of D210 and D202/4, compares the phase at pins 12 and 9. The signal at pin 12 is the output frequency of the N divider. The phase detector generates positive pulses at pin 5 if the frequency at pin 9 is higher than that at pin 12. These pulses cause the tuning voltage to drop following the inverting integrator N220 in order to reestablish synchronization. If the phase-locked loop has locked, only very narrow pulses are present at pins 2 and 5 of phase detector D210.

### 5.1.3 RF Loop

The output frequency range from 500 to 1000 MHz is generated in the RF loop. This range is divided amongst three oscillators.

Range in MHz		Transistor
Osc. 1	500 to 655	V30
Osc. 2	655 to 825	V60
Osc. 3	825 to 1000	V90

With negative impedance at its base, the oscillating transistor reduces the damping of a series resonant circuit. The inductance of the resonant circuit is generated using a coaxial cable in order to keep the microphony as low as possible. A voltage-variable diode is used for the tuning. The tuning voltage is applied to the cathode and the FM signal to the anode of the voltage-variable diode via RF chokes. The output power of the oscillator is set by the oscillating transistor using the adjustable constant current. A switching stage with two transistors driven at TTL level switches on the operating voltage for the oscillator as well as a switching diode to decouple the RF in the forward direction. The decoupling amplifier (V158) increases the output power of the oscillators from 0 dBm to 10 dBm. Following the decoupling amplifier, the signal is applied via an attenuator pad (R160, R161) to output connector X310 and via a second pad (R164, R165) and a hybrid amplifier (N300) to the M divider.

The M divider is a programmable high-frequency divider with a fixed divider (D310) and a selectable divider (D315). D310 divides the oscillator frequency by 4 down to between 125 and 250 MHz. D315 with the internal selector 11/10 operates together with auxiliary counter (D330) as a decadic counter stage in the 4-digit M divider.

D315 commences with the divider ratio of 11:1. The counters (D330 and D331) are incremented simultaneously after 11 input pulses. Once 9 has been reached on the auxiliary counter (D330), it switches the divider (D315) to a ratio 10:1. The auxiliary counter remains at its final value. The pulses divided by 10:1 are then only counted by the main counter (D331, D332 and D333). Once the main counter has also reached 9, the divider is again set to 11:1 by a reset pulse and the other dividers are set to the entered ratio. A new counting cycle can then commence. For example, if the dividing factor is 2654, the auxiliary counter and the main counter count 4 pulses and then the divider is switched from 11 to 10. The divider divides the input frequency by 10 for the remaining factor of the main counter (=261). The input frequency must deliver  $4 \times 11 + (265 - 4) \times 10 = 2654$  pulses for the complete counting cycle; this corresponds to the above dividing factor.

The M divider must be loaded with the difference between the final count and the dividing factor because it counts upwards. Ten additional input pulses are used because the loading of the counters requires 1 clock pulse and the divider is set to a factor of 10 during this period. For example, if the divider ratio is to be  $M = 2654$ , then  $(10009 - 2654) = 7355$  must be loaded into the counter. This value is stored in BCD code in the shift registers (D360 and D365).

With FM switched off, the output signal of the M divider (approx. 50 kHz) is directly applied to the phase detector (D390) via a gate (D371). The phase detector compares this signal with the frequency of the VCXO loop divided by 200 and readjusts the RF oscillator using the subsequent integrator (N400) if there is a difference in phase. If FM is switched on, the control bandwidth should be small to enable frequency modulation with low modulation frequencies. This is achieved by switching over the integrator time constants and reducing the phase detector current. Furthermore, the input frequency of the phase detector is divided by 5 using divider (D370).

#### 5.1.4 Control and Diagnosis

The module is controlled via a serial interface. The data for a complete setting are stored in 6 shift register ICs (D360, D365, D205, D206, D2, D18).

Eight different test points on the module can be polled by the multiplexer (D15) for diagnostic purposes. The tuning voltages of the oscillators are also constantly monitored by window discriminators (N240, N440, N660) and the loop-OK line is set to Low if the limits are violated.

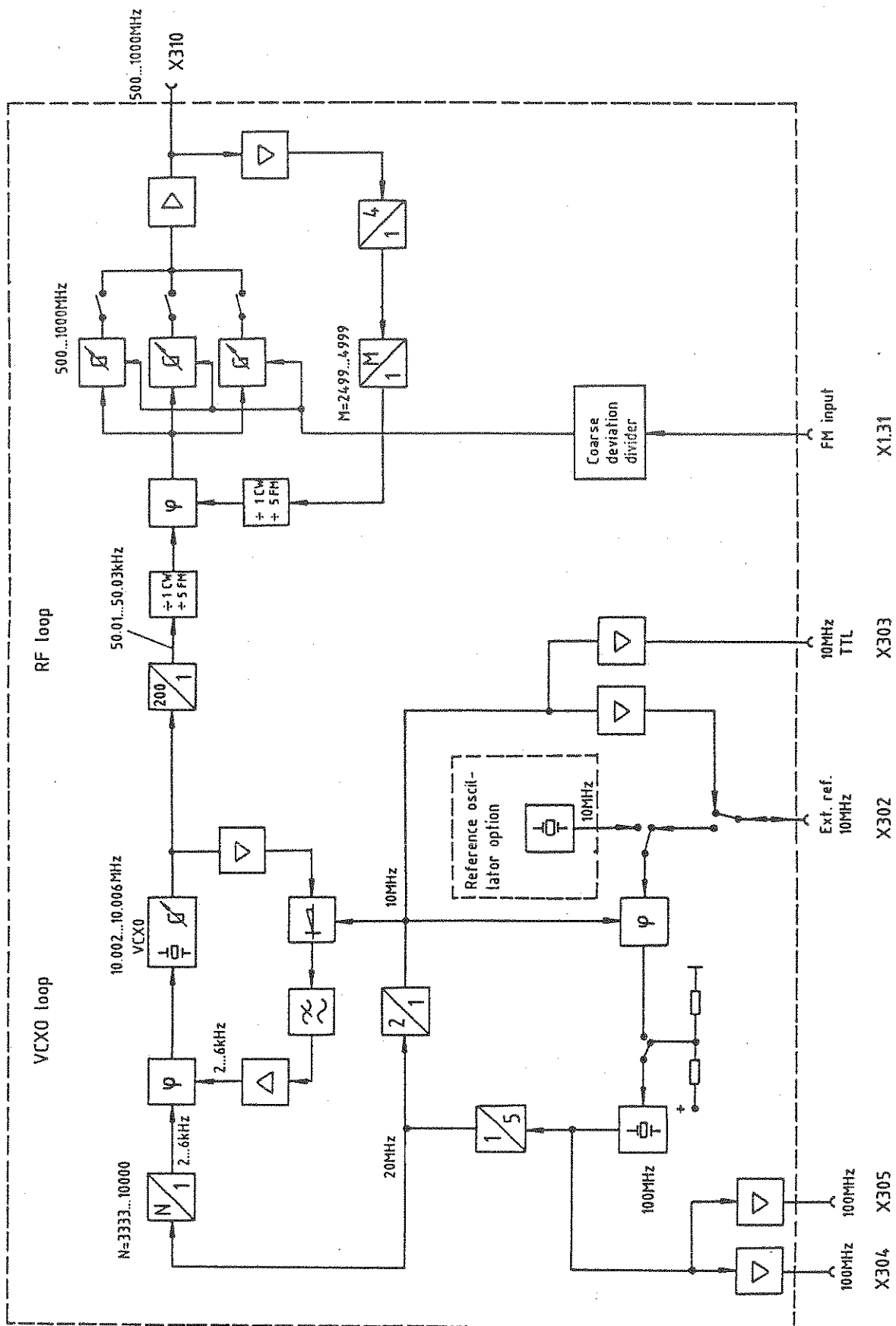


Fig. 5-1 Block diagram of the RF oscillator

## 5.2            Testing and Adjustment

### 5.2.1            Adjusting the 100-MHz Crystal Oscillator

- Plug the module onto the service adapter (included in service kit). Remove the OCXO option if fitted.
- Connect a voltmeter to anode V506. Adjust the voltage for minimum (9.5 to 11.2 V) using L500.
- Connect a voltmeter to X11 (jumper X11 remains inserted) and a frequency counter to RF connector X304. Set the frequency to 100 MHz  $\pm$  100 Hz using trimmer R632. The voltage at X11 is to be 8  $\pm$  1.5 V. Change L512 to 0.18  $\mu$ H if the voltage is too high and to 0.27  $\mu$ H if the voltage is too low (trimming value).
- Carry out the fine adjustment with the module closed. Adjust the frequency to 100 MHz  $\pm$  50 Hz using trimmer R632.

### 5.2.2            Testing the Synchronization with an External 10-MHz Reference Frequency

- Set instrument to "External reference frequency".
- Connect frequency counter to RF connection X304.
- Apply a frequency of 10 MHz with a level of -7 dBm to connector REF 10 MHz. Operate the signal generator and the frequency counter with the same reference frequency. The output frequency at X304 must change from 99.99995 MHz to 100.00005 MHz when the input frequency changes from 9.999995 MHz to 10.000005 MHz.

### 5.2.3            Adjusting the Reference Oscillator Option (OCXO)

- Set instrument to "Internal reference frequency".
- Wait 15 minutes for instrument to warm up.
- Connect calibrated frequency counter to X304.
- Adjust the frequency to 100 MHz  $\pm$  5 Hz using trimmer "REF. FREQ. OPTION".

#### 5.2.4 Testing the VCXO Loop

a) Instrument setting: frequency 500.1 MHz.

- The tuning voltage at X6 must be  $> 3$  V.
- The frequency at X3 must be 10.002 MHz.

b) Instrument setting: frequency 500.3 MHz.

- The tuning voltage at X6 must be  $> 12$  V.
- The frequency at X3 must be 10.006 MHz.

#### 5.2.5 Frequency Adjustment of the RF Oscillators

- Apply a DC voltage of  $2\text{ V} \pm 0.1\text{ V}$  to X9/2 and 3.
- Connect an RF analyzer or a frequency counter to RF connection X310.
- Set trimmers R49, R79, R109 to maximum current.
- Adjust the frequency according to the following table using trimmers C21, C51 and C81:

Instrument setting	Frequency at X310	Trimmer
520 MHz	500 MHz $\pm$ 5 MHz	C21
700 MHz	655 MHz $\pm$ 5 MHz	C51
900 MHz	825 MHz $\pm$ 5 MHz	C81



### 5.2.6 Testing the RF Loop

- Connect a frequency counter and a power meter to RF connection X310. Check the level and the frequency with the following instrument settings.
- Frequency setting on instrument:
  - 501 MHz
  - 654 MHz
  - 656 MHz
  - 824 MHz
  - 826 MHz
  - 1000 MHz
- The frequency must agree with the setting.
- The level must be 0 dBm  $\pm$ 3 dB.
- The tuning voltage at X9 must be between 2 and 20 V.

### 5.2.7 Testing the Spurious FM

Test the spurious FM with the module closed.

- Connect modulation analyzer to RF connection X310.
- Set various frequencies between 500 and 1000 MHz on the instrument and measure the spurious FM.
- The spurious FM (weighted to CCITT, RMS) must be < 8 Hz.

### 5.3 Troubleshooting

Troubleshooting can be readily carried out using the DC voltages and signal levels specified. The inductors L30, L60 and L90 must be checked if the RF oscillators have a high microphony sensitivity. The inductors must be positively adhered to the circuit board.

#### 5.3.1 DC Voltage Values

Source V500	1.5 V $\pm$ 0.5 V
Emitter V540	2.2 V $\pm$ 0.3 V
N520/pin 11	3.8 V $\pm$ 0.5 V
N570/pin 11	3.8 V $\pm$ 0.5 V
Emitter V230	6.8 V $\pm$ 1 V
D260/pin 6	8.6 V $\pm$ 1 V
N400/pin 3	2.5 V $\pm$ 0.3 V
Emitter V30, V60, V90	-9 V $\pm$ 1.5 V
Collector V158	6.5 V $\pm$ 1 V

### 5.3.2 Signal Level

N520/pin 7	100 MHz	ECL
N580/pin 7	10 MHz	TTL
D202/pin 3	20 MHz	TTL
P1	2 to 6 kHz	TTL
P2	2 to 6 kHz	TTL
X3	10,002 to 10,006 MHz	approx. 4 V <sub>pp</sub>
X7	10 MHz	approx. 30 mV <sub>pp</sub>
N260/pin 3	2 to 6 kHz	50 to 150 mV <sub>pp</sub>
X8	50 kHz	TTL
P3,P4	50 kHz (10 kHz with FM)	TTL

### 5.3.3 RF Level

The RF levels have been measured using a 500-Ω probe.

P5	500 to 655 MHz	-12 to -3 dBm
P6	655 to 825 MHz	-10 to 0 dBm
P7	825 to 1000 MHz	-12 to -5 dBm
P8	500 to 1000 MHz	+5 to +10 dBm
P9	500 to 1000 MHz	-4 to +5 dBm
P10	500 to 1000 MHz	-12 to -5 dBm
P11	500 to 1000 MHz	-6 to +2 dBm
P12	125 to 250 MHz	+4 to +9 dBm

### 5.3.4. Testing the Control Signals for the M Divider

Frequency setting on instrument  (MHz)	Control signals at															
	D365								D360							
	11	12	13	14	7	6	5	4	11	12	13	14	7	6	5	4
802	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
801.8	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
801.6	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0
801.2	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0
800.4	0	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0
800	0	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0
798	0	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0
794	0	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0
786	0	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0
782	0	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0
762	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0
722	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0
642	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0
842	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0

### 5.3.5 Testing the Control Signals for the N Divider

Frequency setting on instrument  (MHz)	Control signals at															
	D206								D205							
	11	12	13	14	7	6	5	4	11	12	13	14	7	6	5	4
500.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
500.6002	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1
1000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
999.8	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
999.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
999.2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
998.2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
996.2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
992.2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
990.2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
980.2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
960.2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
920.2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
900.2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
800.2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
600.2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0

## 5.4 Interfaces

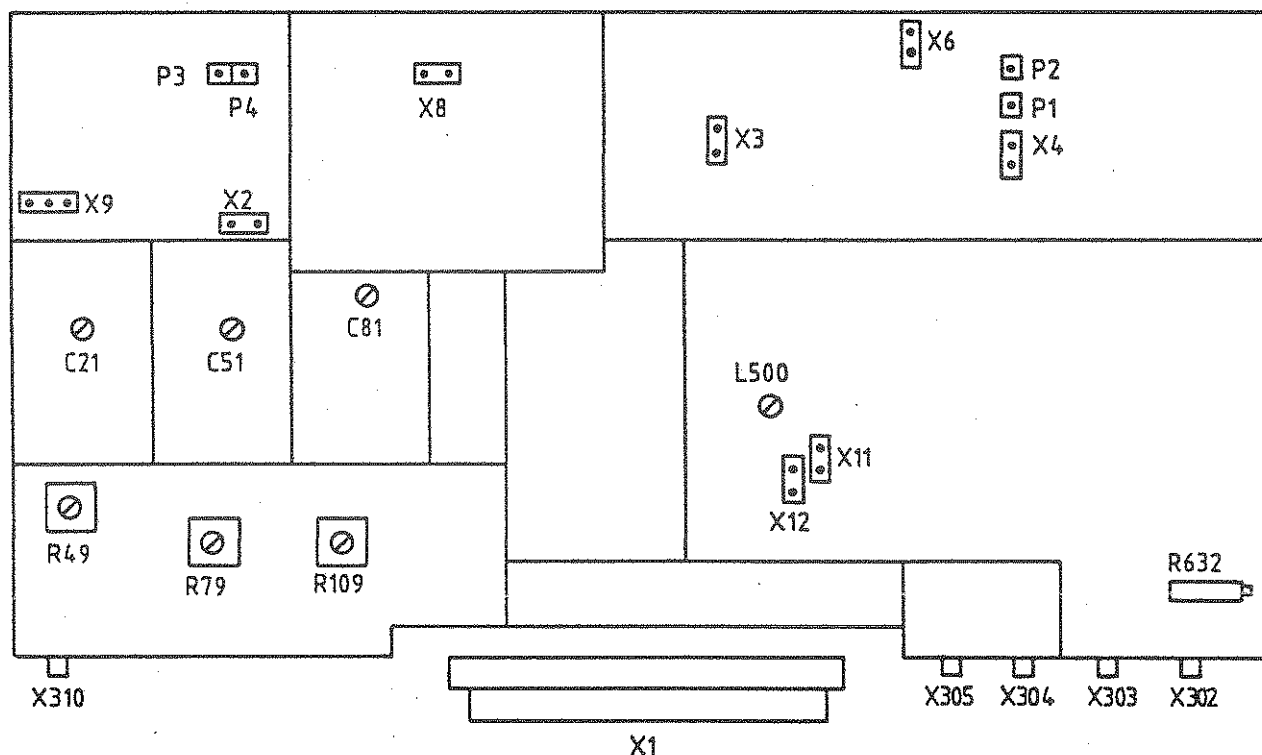


Bild 5-2 Location of the inputs/outputs and trimmers

Terminal	Designation	Frequency	Level
X302	REF.INT/EXT	10 MHz	0 dBm $\pm$ 3 dB
X303	10-MHz clock	10 MHz	TTL
X304	100-MHz ref.	100 MHz	0 dBm $\pm$ 3 dB
X305	100 MHz LO	100 MHz	0 dBm $\pm$ 3 dB
X310	RF output	500 to 1000 MHz	0 dBm $\pm$ 3 dB
X1.3	Loop OK	DC	0 to +5 V
X1.23	Test	DC	0 to +5 V
X1.31	FM input	50 Hz to 100 kHz	0 to 1 V <sub>rms</sub>

### Serial interface

X1.6	Strobe
X1.8	Data
X1.10	Clock



ROHDE & SCHWARZ  
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Schaltteillisten  
Stromläufe  
Bestückungspläne  
Parts lists  
Circuit diagrams  
Components plans

ROHDE&SCHWARZ		Az	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
		04	1087	ED HF-OSZILLATOR	802.8835.01 SA	1
Kennzeichen Component No.	Benennung/Beschreibung Designation			Sachnummer Stock No.	enthalten in contained in	
B230	EQ 10,006 MHZCL30HC49-1D3 QUARTZ CRYSTAL UNIT			EQ 090.2366		
B500	QUARZKERAM N. R&S SACHNUMMER EQ 100,000MHZ (5.)HC-43/U NUR VAR : 02 QUARTZ CRYSTAL UNIT			EQ 950.6346		
B500	QUARZKERAM N. R&S SACHNUMMER BD QUARZ MIT THERMOSTAT NUR VAR : 04			802.7145		
C3	CC 10NF-20+50%7X8R4000 CAPACITOR			CC 087.7525		
C4	VALVO 2222 63051 64051103 CC 10NF-20+50%7X8R4000 CAPACITOR			CC 087.7525		
C6	VALVO 2222 63051 64051103 CC 470PF+-5%50V NPO 1206 CERAMIC CHIP CAPACITOR			CC 099.8515		
C9	VITRAMON VJ1206A471JFA CC 22PF+-5%50V NPO 1206 CERAMIC CHIP CAPACITOR			CC 099.8396		
C10	VITRAMON VJ1206A220JFA CK 100NF+-5%63V5RM MKT CAPACITOR			CK 099.2930		
C11	WIMA MKS/2/63/0,1UF/5% CK 100NF+-5%63V5RM MKT CAPACITOR			CK 099.2930		
C12	WIMA MKS/2/63/0,1UF/5% CE 10 UF+-20%25V 7X 5X11 ELECTROLYTIC CAPACITOR			CE 023.5980		
C13	ROEDERSTEI ETR 3 10/25 20% CC 22PF+-5%50V NPO 1206 CERAMIC CHIP CAPACITOR			CC 099.8396		
C15	VITRAMON VJ1206A220JFA CC 470PF+-10%3X4R2000 CAPACITOR			CC 087.6993		
C16	VALVO 2222 63051 471 CC 100PF+-5%50V NPO 1206 CERAMIC CHIP CAPACITOR			CC 099.8415		
C17	VITRAMON VJ1206A101JFA CC 10NF-20+50%7X8R4000 CAPACITOR			CC 087.7525		
C18	VALVO 2222 63051 64051103 CC 10NF-20+50%7X8R4000 CAPACITOR			CC 087.7525		
C19	VALVO 2222 63051 64051103 CC 47PF+-2%5X6NPO CAPACITOR			CC 087.6506		
C20	VALVO 2222 678 10479 CC 47PF+-5550V COG 1206 CERAMIC CHIP CAPACITOR			CC 099.8496		
C21	VITRAMON VJ1206A470JFA CT 13PF 7RDX13TK50 250V TRIMMER TEKELEC LUFTTRAT5400			CT 450.7283		
802.8835.01 SA BL 1+						

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	04	1087		802.8835.01 SA	2
Kennzeichen Component No.	Benennung/Beschreibung Designation			Sachnummer Stock No.	enthalten in contained in
C22	CC 270PF+-5%50V NPO 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206A271JFA			CC 099.8867	
C23	CC 270PF+-5%50V NPO 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206A271JFA			CC 099.8867	
C24	CC 47PF+-5550V COG 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206A470JFA			CC 099.8496	
C27	CC 6PF+-0,5PF50V NPO CERAMIC CHIP CAPACITOR VITRAMON VJ1206A6RODFA			CC 099.8709	
C29	CC 10PF+-0,5PF50VNPO 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206A100DFA			CC 099.8480	
C30	CC 6PF+-0,5PF50V NPO CERAMIC CHIP CAPACITOR VITRAMON VJ1206A6RODFA			CC 099.8709	
C31	CC 8PF+-0,5PF50V NPO 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206A8RODFA			CC 099.8721	
C33	CC 8PF+-0,5PF50V NPO 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206A8RODFA			CC 099.8721	
C34	CC 22PF+-5%50V NPO 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206A220JFA			CC 099.8396	
C35	CC 10NF-20+50%7X8R4000 CAPACITOR VALVO 2222 63051 64051103			CC 087.7525	
C38	CC 330PF+-10%3X4R2000 CAPACITOR VALVO 2222 63051 331			CC 087.6970	
C40	CC 4,7NF+-10%6X9R2000 CAPACITOR VALVO 2222 63051 472			CC 087.7102	
C41	CE 4,7UF+-20%20V 7X 4X 8 ELECTROLYTIC CAPACITOR ROEDERSTEI ETR 2 4,7/20 20%			CE 022.8110	
C48	CE 1,0UF+-20%35V 5X 4X 7 ELECTROLYTIC CAPACITOR ROEDERSTEI ETR 1 1/40 20%			CE 022.8185	
C49	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR VALVO 2222 63051 102			CC 022.0784	
C50	CE 47UF-10+50% 40V 9X13 ELECTROLYTIC CAPACITOR ROEDERST EK 00 CB 247 G			CE 006.7142	
C51	CT 9,2PF TAUCHTR.RD 7X12 AIR-TYPE TRIMMER TEKELEC LUFTTRAT5200			CT 025.7367	
C52	CC 270PF+-5%50V NPO 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206A271JFA			CC 099.8867	
C53	CC 270PF+-5%50V NPO 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206A271JFA			CC 099.8867	
802.8835.01 SA BL 2+					



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		04	1087		802.8835.01 SA	3
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
C54	CE 10UF -10+50% 63V 9X13 ELECTROLYTIC CAPACITOR ROEDERST ELKOEK10/63	CE 022.7650				
C55	CC 10PF+-0,5PF50VNPO 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206A100DFA	CC 099.8480				
C59	CC 5PF+-0,5PF50V NPO 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206A5RODFA	CC 099.8696				
C60	CC 4PF+-0,25PF50V NPO1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206A4ROCFA	CC 099.8680				
C61	CC 2PF+-0,25PF50V NPO1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206A2ROCFA	CC 099.8673				
C63	CC 5PF+-0,5PF50V NPO 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206A5RODFA	CC 099.8696				
C64	CC 22PF+-5%50V NPO 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206A220JFA	CC 099.8396				
C65	CC 10NF-20+50%7X8R4000 CAPACITOR VALVO 2222 63051 64051103	CC 087.7525				
C68	CC 330PF+-10%3X4R2000 CAPACITOR VALVO 2222 63051 331	CC 087.6970				
C70	CC 4,7NF+-10%6X9R2000 CAPACITOR VALVO 2222 63051 472	CC 087.7102				
C71	CE 4,7UF+-20%20V 7X 4X 8 ELECTROLYTIC CAPACITOR ROEDERSTEI ETR 2 4,7/20 20%	CE 022.8110				
C81	CT 9,2PF TAUCHTR.RD 7X12 AIR-TYPE TRIMMER TEKELEC LUFTTRAT5200	CT 025.7367				
C82	CC 270PF+-5%50V NPO 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206A271JFA	CC 099.8867				
C83	CC 270PF+-5%50V NPO 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206A271JFA	CC 099.8867				
C87	CC 3PF+-0,25PF50V NPO1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206A3ROCFA	CC 099.8350				
C89	CC 10PF+-0,5PF50VNPO 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206A100DFA	CC 099.8480				
C90	CC 2PF+-0,25PF50V NPO1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206A2ROCFA	CC 099.8673				
C91	CC 2PF+-0,25PF50V NPO1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206A2ROCFA	CC 099.8673				
C92	CC 10NF-20+50%7X8R4000 CAPACITOR VALVO 2222 63051 64051103	CC 087.7525				

802.8835.01 SA BL 3

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		04	1087		802.8835.01 SA	4
Kennzeichen Component No.	Benennung/Beschreibung Designation			Sachnummer Stock No.	enthalten in contained in	
C93	CC 3PF+-0,25PF50V NPO1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206A3ROCFA			CC 099.8350		
C94	CC 22PF+-5%50V NPO 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206A220JFA			CC 099.8396		
C95	CE 4,7UF+-20%20V 7X 4X 8 ELECTROLYTIC CAPACITOR ROEDERSTEI ETR 2 4,7/20 20%			CE 022.8110		
C98	CC 330PF+-10%3X4R2000 CAPACITOR VALVO 2222 63051 331			CC 087.6970		
C99	CC 4PF+-0,25PF50V NPO1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206A4ROCFA			CC 099.8680		
C100	CC 4,7NF+-10%6X9R2000 CAPACITOR VALVO 2222 63051 472			CC 087.7102		
C116	CC 100PF+-5%50V NPO 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206A101JFA			CC 099.8415		
C139	CC 330PF+-10%3X4R2000 CAPACITOR VALVO 2222 63051 331			CC 087.6970		
C140	CE 1,0UF+-20%35V 5X 4X 7 ELECTROLYTIC CAPACITOR ROEDERSTEI ETR 1 1/40 20%			CE 022.8185		
C141	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR VALVO 2222 63051 102			CC 022.0784		
C156	CC 10NF-20+50%7X8R4000 CAPACITOR VALVO 2222 63051 64051103			CC 087.7525		
C160	CC 10PF+-0,5PF50VNPO 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206A100DFA			CC 099.8480		
C162	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR VALVO 2222 63051 102			CC 022.0784		
C200	CC 2,2NF+-10%5X6R2000 CAPACITOR VALVO 2222 63051 222			CC 087.7060		
C201	CC 10NF-20+50%7X8R4000 CAPACITOR VALVO 2222 63051 64051103			CC 087.7525		
BIS/TO C211 C212	CC 27PF+-2%4X5NPO CAPACITOR VALVO 2222 678 10279			CC 087.6470		
C220	CK 1UF+-10%50V5RM MKT CAPACITOR WIMA MKS2/50/1UF/10%			CK 099.2998		
C221	CC 10NF-20+50%7X8R4000 CAPACITOR VALVO 2222 63051 64051103			CC 087.7525		

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		04	1087	ED HF-OSZILLATOR	802.8835.01 SA	5
Kennzeichen Component No.	Benennung/Beschreibung Designation			Sachnummer Stock No.	enthalten in contained in	
C222	CC 10NF-20+50%7X8R4000 CAPACITOR			CC 087.7525		
	VALVO 2222 63051 64051103					
C223	CE 22UF-10+50% 63V 9X13 ELECTROLYTIC CAPACITOR			CE 006.7120		
	ROEDERST EK 00 CB 222 J					
C225	CK 220NF+-5%63V5RM MKT CAPACITOR			CK 099.2952		
	WIMA MKS2/63/0,22UF/5%					
C226	CK 47NF+-5%63V5RM MKT CAPACITOR			CK 099.2917		
	WIMA MKS2/63/0,047UF/5%					
C230	CE 47UF-10+50% 40V 9X13 ELECTROLYTIC CAPACITOR			CE 006.7142		
	ROEDERST EK 00 CB 247 G					
C231	CC 10NF-20+50%7X8R4000 CAPACITOR			CC 087.7525		
	VALVO 2222 63051 64051103					
C232	CC 100PF+-2%6X9NPO CAPACITOR			CC 087.6541		
	VALVO 2222 678 10101					
C233	CC 100PF+-2%6X9NPO CAPACITOR			CC 087.6541		
	VALVO 2222 678 10101					
C250	CC 10NF-20+50%7X8R4000 CAPACITOR			CC 087.7525		
	VALVO 2222 63051 64051103					
C251	CC 10NF-20+50%7X8R4000 CAPACITOR			CC 087.7525		
	VALVO 2222 63051 64051103					
C255	CE 47UF-10+50% 40V 9X13 ELECTROLYTIC CAPACITOR			CE 006.7142		
	ROEDERST EK 00 CB 247 G					
C257	CC 10NF-20+50%7X8R4000 CAPACITOR			CC 087.7525		
	VALVO 2222 63051 64051103					
C259	CE 100UF-10+50% 25V 13X13 ELECTROLYTIC CAPACITOR			CE 208.4007		
	ROEDERST ELKOEK100/25					
C260	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR			CC 022.0784		
	VALVO 2222 63051 102					
C261	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR			CC 022.0784		
	VALVO 2222 63051 102					
C262	CK 1UF+-10%50V5RM MKT CAPACITOR			CK 099.2998		
	WIMA MKS2/50/1UF/10%					
C263	CK 220NF+-5%63V5RM MKT CAPACITOR			CK 099.2952		
	WIMA MKS2/63/0,22UF/5%					
C264	CC 10NF-20+50%7X8R4000 CAPACITOR			CC 087.7525		
	VALVO 2222 63051 64051103					
BIS/TO						

802.8835.01 SA BL 5+

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		04	1087	ED HF-OSZILLATOR	802.8835.01 SA	6
Kennzeichen Component No.	Benennung/Beschreibung Designation			Sachnummer Stock No.	enthalten in contained in	
C267						
C268	CE 47UF-10+50% 40V 9X13 ELECTROLYTIC CAPACITOR ROEDERST EK 00 CB 247 G			CE 006.7142		
C269	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR VALVO 2222 63051 102			CC 022.0784		
C300	CC 3PF+-0,25PF50V NPO1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206A3ROCFA			CC 099.8350		
C301	CK 10NF+-5%63V5RM MKT CAPACITOR WIMA FKS 2/100/0,01UF/5%			CK 099.2869		
C302	CC 3PF+-0,25PF50V NPO1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206A3ROCFA			CC 099.8350		
C303	CC 100PF+-5%50V NPO 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206A101JFA			CC 099.8415		
C304	CC 100PF+-2%6X9NPO CAPACITOR VALVO 2222 678 10101			CC 087.6541		
C310	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR VALVO 2222 63051 102			CC 022.0784		
C311	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR VALVO 2222 63051 102			CC 022.0784		
C315	CC 10NF-20+50%7X8R4000 CAPACITOR VALVO 2222 63051 64051103			CC 087.7525		
C320	CC 10NF-20+50%7X8R4000 CAPACITOR VALVO 2222 63051 64051103			CC 087.7525		
C330	CC 10NF-20+50%7X8R4000 CAPACITOR VALVO 2222 63051 64051103			CC 087.7525		
BIS/TO						
C335						
C340	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR ROEDERST EK 00CB 310 D			CE 006.7165		
C341	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR ROEDERST EK 00CB 310 D			CE 006.7165		
C343	CE 100UF-10+50% 16V 9X13 ELECTROLYTIC CAPACITOR ROEDERST EK 00CB 310 D			CE 006.7165		
C344	CC 10NF-20+50%7X8R4000 CAPACITOR VALVO 2222 63051 64051103			CC 087.7525		
C345	CC 10NF-20+50%7X8R4000 CAPACITOR VALVO 2222 63051 64051103			CC 087.7525		
C346	CC 10NF-20+50%7X8R4000 CAPACITOR VALVO 2222 63051 64051103			CC 087.7525		
802.8835.01 SA BL 6+						

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		04	1087	ED HF-OSZILLATOR	802.8835.01 SA	7
Kennzeichen Component No.	Benennung/Beschreibung Designation			Sachnummer Stock No.	enthalten in contained in	
C348	CC 10NF-20+50%7X8R4000 CAPACITOR			CC 087.7525		
	VALVO 2222 63051 64051103					
C360	CC 220PF+-2%6X7N750 CAPACITOR			CC 087.6941		
	VALVO 2222 678 58221					
C362	CC 47PF+-2%5X6NPO CAPACITOR			CC 087.6506		
	VALVO 2222 678 10479					
C364	CC 47PF+-2%5X6NPO CAPACITOR			CC 087.6506		
	VALVO 2222 678 10479					
C366	CC 10NF-20+50%7X8R4000 CAPACITOR			CC 087.7525		
	VALVO 2222 63051 64051103					
C367	CC 10NF-20+50%7X8R4000 CAPACITOR			CC 087.7525		
	VALVO 2222 63051 64051103					
C370	CC 10NF-20+50%7X8R4000 CAPACITOR			CC 087.7525		
	VALVO 2222 63051 64051103					
C371	CC 10NF-20+50%7X8R4000 CAPACITOR			CC 087.7525		
	VALVO 2222 63051 64051103					
C380	CC 10NF-20+50%7X8R4000 CAPACITOR			CC 087.7525		
	VALVO 2222 63051 64051103					
C390	CC 10NF-20+50%7X8R4000 CAPACITOR			CC 087.7525		
	VALVO 2222 63051 64051103					
C400	CK 100NF+-5%63V5RM MKT CAPACITOR			CK 099.2930		
	WIMA MKS/2/63/0,1UF/5%					
C401	CK 470NF+-5%63V5RM MKT CAPACITOR			CK 099.2975		
	WIMA MKS2/63/0,47UF/5%					
C402	CE 22UF-10+50% 63V 9X13 ELECTROLYTIC CAPACITOR			CE 006.7120		
	ROEDERST EK 00 CB 222 J					
C410	CK 470NF+-10%160V27X7X17 WIMA MKP10 0,47UF160V 10%			803.0721		
C411	CC 4,7NF+-10%6X9R2000 CAPACITOR			CC 087.7102		
	VALVO 2222 63051 472					
C412	CK 470NF+-10%160V27X7X17 WIMA MKP10 0,47UF160V 10%			803.0721		
C413	CC 1,5PF+-0,25PF3X4P100 CAPACITOR			CC 087.6193		
	VALVO 2222 678 03158					
C426	CK 220NF+-10%160V18X7X14 MET.POLYPROP.CAPACITOR			803.0496		
	WIMA MKP10 0,22UF160V 10%					
C450	CC 470PF+-5%50V NPO 1206 CERAMIC CHIP CAPACITOR			CC 099.8515		
	VITRAMON VJ1206A471JFA					

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		04	1087	802.8835.01 SA	8
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in		
C461	CC 470PF+-5%50V NPO 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206A471JFA	CC 099.8515			
C501	CC 18PF+-2%3X4NPO CAPACITOR VALVO 2222 678 10189	CC 087.6458			
C503	CC 2,2NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y222KFA	CC 099.8444			
C504	CE 47UF-10+50% 40V 9X13 ELECTROLYTIC CAPACITOR ROEDERST EK 00 CB 247 G	CE 006.7142			
C505	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y102KFA	CC 099.8438			
C506	CC 2,2NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y222KFA	CC 099.8444			
C507	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y103KFA	CC 099.8521			
C508	CC 220PF+-5%50V NPO 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206A221JFA	CC 099.8850			
C509	CC 15PF+-2%3X4NPO CAPACITOR VALVO 2222 678 10159	CC 087.6441			
C510	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y102KFA	CC 099.8438			
C515	CC 2,2NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y222KFA	CC 099.8444			
C516	CC 10PF+-0,25PF3X4NPO CAPACITOR VALVO 2222 678 09109	CC 087.6429			
C520	CC 2,2NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y222KFA	CC 099.8444			
C525	CC 10NF-20+50%7X8R4000 CAPACITOR VALVO 2222 63051 64051103	CC 087.7525			
C530	CC 10NF-20+50%7X8R4000 CAPACITOR VALVO 2222 63051 64051103	CC 087.7525			
C540	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR VALVO 2222 63051 102	CC 022.0784			
C550	CC 10NF-20+50%7X8R4000 CAPACITOR VALVO 2222 63051 64051103	CC 087.7525			
C551	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR VALVO 2222 63051 102	CC 022.0784			
C561	CC 8,2PF+-0,25PF3X4NPO CAPACITOR VALVO 2222 678 09828	CC 087.6412			

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	04	1087		802.8835.01 SA	9
Kennzeichen Component No.	Benennung/Beschreibung Designation			Sachnummer Stock No.	enthalten in contained in
C562	CC 18PF+-2%3X4NPO CAPACITOR			CC 087.6458	
	VALVO 2222 678 10189				
C570	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR			CC 022.0784	
	VALVO 2222 63051 102				
C575	CC 10NF-20+50%7X8R4000 CAPACITOR			CC 087.7525	
	VALVO 2222 63051 64051103				
C576	CC 100PF+-2%6X9NPO CAPACITOR			CC 087.6541	
	VALVO 2222 678 10101				
C578	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR			CC 022.0784	
	VALVO 2222 63051 102				
C579	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR			CC 022.0784	
	VALVO 2222 63051 102				
C580	CC 10NF-20+50%7X8R4000 CAPACITOR			CC 087.7525	
	VALVO 2222 63051 64051103				
C581	CC 10NF-20+50%7X8R4000 CAPACITOR			CC 087.7525	
	VALVO 2222 63051 64051103				
C582	CC 100PF+-2%6X9NPO CAPACITOR			CC 087.6541	
	VALVO 2222 678 10101				
C583	CC 15PF+-5%50V NPO 1206 CERAMIC CHIP CAPACITOR			CC 099.8750	
	VITRAMON VJ1206A150JFA				
C585	CC 10NF-20+50%7X8R4000 CAPACITOR			CC 087.7525	
	VALVO 2222 63051 64051103				
C586	CC 10NF-20+50%7X8R4000 CAPACITOR			CC 087.7525	
	VALVO 2222 63051 64051103				
C590	CC 10NF-20+50%7X8R4000 CAPACITOR			CC 087.7525	
	VALVO 2222 63051 64051103				
C591	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR			CC 022.0784	
	VALVO 2222 63051 102				
C594	CC 82PF+-5%50V NPO 1206 CERAMIC CHIP CAPACITOR			CC 099.8821	
	VITRAMON VJ1206A820JFA				
C595	CC 4,7NF+-10%6X9R2000 CAPACITOR			CC 087.7102	
	VALVO 2222 63051 472				
C596	CC 330PF+-10%3X4R200C CAPACITOR			CC 087.6970	
	VALVO 2222 63051 331				
C597	CC 680PF+-10%4X5R2000 CAPACITOR			CC 087.7019	
	VALVO 2222 63051 681				
C598	CC 4,7NF+-10%6X9R2000 CAPACITOR			CC 087.7102	
	VALVO 2222 63051 472				
802.8835.01 SA BL 9+					

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		04	1087	ED HF-OSZILLATOR	802.8835.01 SA	10
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
C599	CC 330PF+-10%3X4R2000 CAPACITOR	CC 087.6970				
C600	VALVO 2222 63051 331 CC 560PF+-10%3X4R2000 CAPACITOR	CC 087.7002				
C601	VALVO 2222 63051 561 LD FILT.40DB/10GHZ10A300V LOWPASS-FILTER	911.0705				
C602	ERIE 9900-001-6020 LD FILT.40DB/10GHZ10A300V LOWPASS-FILTER	911.0705				
C603	ERIE 9900-001-6020 LD FILT.40DB/10GHZ10A300V LOWPASS-FILTER	911.0705				
C604	ERIE 9900-001-6020 CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8438				
C610	VITRAMON VJ1206Y102KFA CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525				
C620	VALVO 2222 63051 64051103 CK 1UF+-10%50V5RM MKT CAPACITOR	CK 099.2998				
C621	WIMA MKS2/50/1UF/10% CE 22UF-10+50% 63V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7120				
C622	ROEDERST EK 00 CB 222 J CC 470PF+-10%3X4R2000 CAPACITOR	CC 087.6993				
C623	VALVO 2222 63051 471 CK 1UF+-10%50V5RM MKT CAPACITOR	CK 099.2998				
C630	WIMA MKS2/50/1UF/10% CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525				
C631	VALVO 2222 63051 64051103 CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525				
C633	VALVO 2222 63051 64051103 CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784				
C634	VALVO 2222 63051 102 CC 68PF+-5%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 099.8815				
C640	VITRAMON VJ1206A680JFA CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525				
C641	VALVO 2222 63051 64051103 CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525				
C642	VALVO 2222 63051 64051103 CC 10NF-20+50%7X8R4000 CAPACITOR	CC 087.7525				
C650	VALVO 2222 63051 64051103 CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541				
	VALVO 2222 678 10101					

802 8835 01 SA BL10



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		04	1087		802.8835.01 SA	11
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
C667	CC 47PF+-5550V COG 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206A470JFA	CC 099.8496				
C668	CK 1UF+-10%50V5RM MKT CAPACITOR WIMA MKS2/50/1UF/10%	CK 099.2998				
C700	LD FILT.40DB/10GHZ10A300V LOWPASS-FILTER ERIE 9900-001-6020	911.0705				
D1	BL MM74HC4051N 8CH.AN.MUX 8CH.ANALOG MUX/DEMUX NSC MM74HC4051N	BL 099.9670				
D2	BL CD4094BF 8BIT SH.REG SHIFT REGISTER RCA CD4094BF	BL 418.0064				
D15	BL MM74HC4051N 8CH.AN.MUX 8CH.ANALOG MUX/DEMUX NSC MM74HC4051N	BL 099.9670				
D18	BL CD4094BF 8BIT SH.REG SHIFT REGISTER RCA CD4094BF	BL 418.0064				
D54	BO LT337AH -ADJ0A5 VREGL VOLTAGE REGULATOR LIN.TECHN. LT337AH	803.6665				
D150	BO UA78M12HC+12V0A5 VREGL VOLTAGE REGULATOR FAIRCHILD MA78M12HC	BO 569.3155				
D200	BL 74F162PC BCD DEC.COUNT BCD DECADE COUNTER FAIRCHILD 74F162APC	BL 099.9892				
D202	BL MM74HC00N 4X2IN.NAND QUAD 2-INPUT NAND GATE MOTOROLA MC74HC00N	BL 571.3194				
D203	BL 74F162PC BCD DEC.COUNT BCD DECADE COUNTER FAIRCHILD 74F162APC	BL 099.9892				
D205	BL CD4094BF 8BIT SH.REG SHIFT REGISTER RCA CD4094BF	BL 418.0064				
D206	BL CD4094BF 8BIT SH.REG SHIFT REGISTER RCA CD4094BF	BL 418.0064				
D207	BL MM74HC162N DEC.COUNT. SYNC.DECADE COUNTER NSC MM74HC162N	BL 099.9570				
D208	BL MM74HC162N DEC.COUNT. SYNC.DECADE COUNTER NSC MM74HC162N	BL 099.9570				
D210	BL MM74HC107N 2XJK-FF CL DUAL J-K FLIPFLOP W.CLEAR NSC MM74HC107N	BL 099.9534				
D250	BL SN74LS02N 4/2INP.NOR IC NOR GATE SN74LS02N TEXAS SN74LS020N	266.4658				
802.8835.01 SA BL11+						

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		04	1087		802.8835.01 SA	12
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.		enthalten in contained in		
D255	BL MM74HC390N 2X4B.COUNT DUAL 4-BIT DECADE COUNTER NSC MM74HC390N	BL 099.9640				
D260	BO MC1496L MOD/DEMOMOD MODULATOR/DEMOMODULATOR MOTOROLA MC1496L	BO 473.9024				
D310	BL CA3199ESEL 4:1 DIVID DIVIDER	801.8354				
D315	BL SP8647BDG10:1DIVID UHF DIVIDER PLESSEY SP8647BDG	BL 300.6747				
D320	BL 74F00PC 4X2IN.NANDG QUAD-NAND-GATE FAIRCHILD 74F00PC	BL 344.6659				
D330	BL 74F162PC BCD DEC.COUNT BCD DECADE COUNTER FAIRCHILD 74F162APC	BL 099.9892				
D331	BL 74F162PC BCD DEC.COUNT BCD DECADE COUNTER FAIRCHILD 74F162APC	BL 099.9892				
D332	BL 74F162PC BCD DEC.COUNT BCD DECADE COUNTER FAIRCHILD 74F162APC	BL 099.9892				
D333	BL 74F162PC BCD DEC.COUNT BCD DECADE COUNTER FAIRCHILD 74F162APC	BL 099.9892				
D360	BL CD4094BF 8BIT SH.REG SHIFT REGISTER RCA CD4094BF	BL 418.0064				
D365	BL CD4094BF 8BIT SH.REG SHIFT REGISTER RCA CD4094BF	BL 418.0064				
D370	BL MM74HC390N 2X4B.COUNT DUAL 4-BIT DECADE COUNTER NSC MM74HC390N	BL 099.9640				
D371	BL MM74HC02N 4X2IN.NORG QUAD 2-INPUT NOR GATE MOTOROLA MC74HC02N	BL 571.3142				
D380	BL MM74HC74N 2XD-FLIPFL DUAL D FLIP-FLOP NSC MM74HC74N	BL 571.3171				
D390	BL MM74HC107N 2XJK-FF CL DUAL J-K FLIPFLOP W.CLEAR NSC MM74HC107N	BL 099.9534				
D395	BL MM74HC00N 4X2IN.NAND QUAD 2-INPUT NAND GATE MOTOROLA MC74HC00N	BL 571.3194				
D400	BL MM74HC02N 4X2IN.NORG QUAD 2-INPUT NOR GATE MOTOROLA MC74HC02N	BL 571.3142				
D410	BJ IH401AJE 4X ANALOGSCH ANALOG SWITCH INTERSIL IH401AJE	BJ 334.3870				
D530	BL MC10138L 4B.COUNTER COUNTER MOTOROLA MC10138L	BL 564.8407				
802.8835.01 SA						BL12+

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		04	1087		802.8835.01 SA	13
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
D590	BL SN74LS04N 6/INVERTER HEXINVERTER	266.2010				
D610	TEXAS SN74LS04N BL MC4044P PHASE-L-L PHASE LOCKED LOOP	BL 443.2980				
D630	MOTOROLA MC4044P BJ TL604CP 2X ANALOGSCH ANALOG SWITCH	BJ 300.6199				
D670	TEXAS INST TL604CP SR 5V200OHM 1MAL UM 1 REED RELAY	SR 267.5364				
	ELECTROL RA 30421051-02					
L21	LD 0,33UH10%0,22OHM0,830A CHOKE	LD 067.2805				
L23	DELEVAN DROSSEL1025--08 LD 0,33UH10%0,22OHM0,830A CHOKE	LD 067.2805				
L24	DELEVAN DROSSEL1025--08 LD 0,39UH10%0,30OHM0,710A CHOKE	LD 067.2811				
L26	DELEVAN DROSSEL1025-10 LL SPULE	802.7474	802.6455			
L31	LD 0,33UH10%0,22OHM0,830A CHOKE	LD 067.2805				
L50	DELEVAN DROSSEL1025--08 LD 0,22UH10%0,14OHM1,045A CHOKE	LD 067.2786				
L51	DELEVAN DROSSEL1025-04 LD 0,22UH10%0,14OHM1,045A CHOKE	LD 067.2786				
L53	DELEVAN DROSSEL1025-04 LD 0,22UH10%0,14OHM1,045A CHOKE	LD 067.2786				
L54	DELEVAN DROSSEL1025-04 LD 0,33UH10%0,22OHM0,830A CHOKE	LD 067.2805				
L56	DELEVAN DROSSEL1025--08 LL SPULE	802.7422	802.6455			
L61	LD 0,22UH10%0,14OHM1,045A CHOKE	LD 067.2786				
L81	DELEVAN DROSSEL1025-04 LD 0,15UH10%0,10OHM1,230A CHOKE	LD 067.2763				
L83	DELEVAN DROSSEL1025-00 LD 0,15UH10%0,10OHM1,230A CHOKE	LD 067.2763				
L84	DELEVAN DROSSEL1025-00 LD 0,15UH10%0,10OHM1,230A CHOKE	LD 067.2763				
L86	DELEVAN DROSSEL1025-00 LL SPULE	802.7516	802.6455			
L91	LD 0,15UH10%0,10OHM1,230A CHOKE	LD 067.2763				
	DELEVAN DROSSEL1025-00					
802.8835 01 SA BL13+						

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	04	1087		802.8835.01 SA	14
Kennzeichen Component No.	Benennung/Beschreibung Designation		Sachnummer Stock No.	enthalten in contained in	
L140	LD 0,33UH10%0,22OHM0,830A CHOKE		LD 067.2805		
L156	DELEVAN DROSSEL1025--08 LD 1,00UH10%1,00OHM0,390A CHOKE		LD 067.2863		
L230	DELEVAN 1025-20 LD 15,0UH10%2,80OHM0,157A CHOKE		LD 067.3001		
L255	DELEVAN DROSSEL1025-48 LD 220 UH10%21,00OHM0,052A CHOKE		LD 067.3147		
L259	DELEVAN DROSSEL1025-76 LD 4,70UH10%1,20OHM0,239A CHOKE		LD 067.2940		
L304	DELEVAN DROSSEL1025-36 LD 1,50UH10%0,22OHM0,560A CHOKE		LD 067.2886		
L347	DELEVAN DROSSEL 1025-24 LD 2,20UH10%0,40OHM0,415A CHOKE		LD 067.2905		
L348	DELEVAN DROSSEL1025-28 LD 2,20UH10%0,40OHM0,415A CHOKE		LD 067.2905		
L349	DELEVAN DROSSEL1025-28 LD 2,20UH10%0,40OHM0,415A CHOKE		LD 067.2905		
L500	DELEVAN DROSSEL1025-28 LD 115NH/22PF Q50 ALUKERN COIL-CORE		807.3077		
L501	TOKO E521 AN-070023 LD 0,39UH10%0,30OHM0,710A CHOKE		LD 067.2811		
L512	DELEVAN DROSSEL1025-10 TRIMMWERT / SELECTED				
L550	LD 4,70UH10%1,20OHM0,239A CHOKE		LD 067.2940		
L561	DELEVAN DROSSEL1025-36 LD 0,39UH10%0,30OHM0,710A CHOKE		LD 067.2811		
L575	DELEVAN DROSSEL1025-10 LD 4,70UH10%1,20OHM0,239A CHOKE		LD 067.2940		
L579	DELEVAN DROSSEL1025-36 LD 0,047 UH 10% CHOKE		249.5995		
L595	INDUSTRIA BAUREIHE1025,0,047 LD 1,00UH10%1,00OHM0,390A CHOKE		LD 067.2863		
L599	DELEVAN 1025-20 LD 1,00UH10%1,00OHM0,390A CHOKE		LD 067.2863		
L600	DELEVAN 1025-20 LD 0,47UH10%0,35OHM0,660A CHOKE		LD 067.2828		
	DELEVAN DROSSEL1025-12				

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		04	1087	ED HF-OSZILLATOR	802.8835.01 SA	15
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
L633	LD 0,33UH10%0,22OHM0,830A CHOKE DELEVAN DROSSEL1025--08	LD 067.2805				
N10	BO NE5532AFE 2XL.N.OPAMP OPERATIONAL AMPLIFIER VALVO NE5532AFE	BO 356.0450				
N220	BO LF156J BIFET OPAMP OPERATIONAL AMPLIFIER MOTOROLA LF156J	BO 645.7251				
N240	BO LM393N 2X COMPAR COMPARATOR NSC LM393N	BO 803.0696				
N260	BO LM311N COMPAR COMPARATOR NSC LM311N	BO 394.8755				
N300	BM OM345 ANTENNEN-VERST ANTENNA AMPLIFIER VALVO OM345	BM 285.1596				
N400	BO LF356BJ BIFET OPAMP OPERATIONAL AMPLIFIER MOTOROLA LF356J	300.6053				
N440	BO LM393N 2X COMPAR COMPARATOR NSC LM393N	BO 803.0696				
N520	BL MC10H116L 3X L.RECEIV LINE RECEIVER MOTOROLA MC10H116L	803.0538				
N570	BL MC10H116L 3X L.RECEIV LINE RECEIVER MOTOROLA MC10H116L	803.0538				
N580	BJ SN75140P 2XLINE REC LINE RECEIVER TEXAS INST SN75140P	801.8254				
N620	BO LF156J BIFET OPAMP OPERATIONAL AMPLIFIER MOTOROLA LF156J	BO 645.7251				
N650	BO LM393N 2X COMPAR COMPARATOR NSC LM393N	BO 803.0696				
N660	BO LM393N 2X COMPAR COMPARATOR NSC LM393N	BO 803.0696				
P1	VL WIRE-WRAP PIN WIRE-WRAP PIN BERG NR. 75 403-003	VL 088.4542				
BIS/TO P4	1-POLIG					
R1	RL 0,35W 402 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/402OHM-F-D	RL 083.0326				
R2	RL 0,35W200 OHM+-0,1%TK25 RESISTOR DRALORIC SMA0207/200OHM-B-E	RL 083.7808				
		802.8835.01 SA	BL15+			

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		04	1087		802.8835.01 SA	16
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.		enthalten in contained in		
R3	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543				
R4	DRALORIC SMA0207/100/HM-F-D RL 0,35W 51,1 OHM+-1%TK50 RESISTOR	RL 082.9536				
R5	DRALORIC SMA0207/51,1OHM-F-D RL 0,35W24,90 OHM+-1%TK50 RESISTOR	RL 082.9236				
R6	DRALORIC SMA0207/24,9OHM-F-D RL 0,35W12,10 OHM+-1%TK50 RESISTOR	RL 082.8930				
R7	DRALORIC SMA0207/12,1OHM-F-D RL 0,35W6,19 OHM+-1%TK50 METALFILMRESISTOR	RL 099.8050				
R8	RESISTA MK2 6,19 OHM 1% TK50 RL 0,35W6,19 OHM+-1%TK50 METALFILMRESISTOR	RL 099.8050				
R9	RESISTA MK2 6,19 OHM 1% TK50 RL 0,35W 274 OHM+-1%TK50 RESISTOR	RL 083.0178				
R10	DRALORIC SMA0207/274OHM-F-D RL 0,35W 511 OHM+-1%TK50 RESISTOR	RL 083.0426				
R11	DRALORIC SMA0207/511OHM-F-D RL 0,35W15 OHM 1%TK50 RESISTOR	RL 082.9020				
R12	DRALORIC SMA0207/15OHM-F-D RL 0,35W 2,21KOHM+-1%TK50 RESISTOR	RL 082.2477				
R13	DRALORIC SMA 0207/2,21K-F-C RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160				
R14	DRALORIC SMA0207/1K-F-C RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160				
R15	DRALORIC SMA0207/1K-F-C RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160				
R16	DRALORIC SMA0207/1K-F-C RL 0,35W 562 OHM+-1%TK50 RESISTOR	RL 083.0461				
R24	DRALORIC SMA0207/562OHM-F-D RL 0,35W 221 OHM+-1%TK50 RESISTOR	RL 083.0084				
R26	DRALORIC SMA0207/221OHM-F-D RG 10 KOHM+-1%TK100 1206 CHIP RESISTOR	RG 007.0793				
R27	DALE CRCW1206 10,0KOHM FT RG 825 OHM+-1%TK100 1206 CHIP RESISTOR	RG 006.7259				
R29	DALE CRCW1206 825OHM F T RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 007.5566				
R30	DALE CRCW1206 47,5OHM F T RL 0,35W 2,21KOHM+-1%TK50 RESISTOR	RL 082.2477				
	DRALORIC SMA 0207/2,21K-F-C					

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		04	1087	ED HF-OSZILLATOR	802.8835.01 SA	17
Kennzeichen Component No.	Benennung/Beschreibung Designation			Sachnummer Stock No.	enthalten in contained in	
R35	RL 0,35W 2,74KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/2,74K-F-D			RL 083.0926		
R40	RL 0,35W 1KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1K-F-C			RL 082.2160		
R41	RL 0,35W 562 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/562OHM-F-D			RL 083.0461		
R42	RL 0,35W 47,5 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/47,5OHM-F-D			RL 082.9507		
R45	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D			RL 083.1297		
R47	RL 0,35W 3,32KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/3,32K-F-D			RL 083.0990		
R48	RL 0,35W 1KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1K-F-C			RL 082.2160		
R49	RS 0,5W500 OHM+-10%10X10X CERMET POTENTIOMETER T BOURNS 3386F-1-501			RS 247.7878		
R50	RL 0,35W 681 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/681OHM-F-D			RL 083.0490		
R51	RL 0,35W 3,24KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/3,24K-F-D			RL 082.6843		
R52	RL 0,35W 332 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/332OHM-F-D			RL 083.0255		
R54	RL 0,35W 221 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/221OHM-F-D			RL 083.0084		
R56	RG 10 KOHM+-1%TK100 1206 CHIP RESISTOR DALE CRCW1206 10,0KOHM FT			RG 007.0793		
R57	RG 825 OHM+-1%TK100 1206 CHIP RESISTOR DALE CRCW1206 825OHM F T			RG 006.7259		
R59	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP DALE CRCW1206 47,5OHM F T			RG 007.5566		
R60	RL 0,35W 2,21KOHM+-1%TK50 RESISTOR DRALORIC SMA 0207/2,21K-F-C			RL 082.2477		
R65	RL 0,35W 2,74KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/2,74K-F-D			RL 083.0926		
R70	RL 0,35W 1KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1K-F-C			RL 082.2160		
R71	RL 0,35W 562 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/562OHM-F-D			RL 083.0461		
802.8835.01 SA BL17+						

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		04	1087		802.8835.01 SA	18
Kennzeichen Component No.	Benennung/Beschreibung Designation			Sachnummer Stock No.	enthalten in contained in	
R72	RL 0,35W 47,5 OHM+-1%TK50 RESISTOR			RL 082.9507		
R75	DRALORIC SMA0207/47,5OHM-F-D RL 0,35W 10,0KOHM+-1%TK50 RESISTOR			RL 083.1297		
R77	DRALORIC SMA0207/10K-F-D RL 0,35W 3,32KOHM+-1%TK50 RESISTOR			RL 083.0990		
R78	DRALORIC SMA0207/3,32K-F-D RL 0,35W 1KOHM+-1%TK50 RESISTOR			RL 082.2160		
R79	DRALORIC SMA0207/1K-F-C RS 0,5W500 OHM+-10%10X10X CERMET POTENTIOMETER T			RS 247.7878		
R84	BOURNS 3386F-1-501 RL 0,35W 221 OHM+-1%TK50 RESISTOR			RL 083.0084		
R86	DRALORIC SMA0207/221OHM-F-D RG 10 KOHM+-1%TK100 1206 CHIP RESISTOR			RG 007.0793		
R87	DALE CRCW1206 10,0KOHM FT RG 825 OHM+-1%TK100 1206 CHIP RESISTOR			RG 006.7259		
R89	DALE CRCW1206 825OHM F T RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP			RG 007.5566		
R90	DALE CRCW1206 47,5OHM F T RL 0,35W 2,21KOHM+-1%TK50 RESISTOR			RL 082.2477		
R95	DRALORIC SMA 0207/2,21K-F-C RL 0,35W 2,74KOHM+-1%TK50 RESISTOR			RL 083.0926		
R100	DRALORIC SMA0207/2,74K-F-D RL 0,35W 1KOHM+-1%TK50 RESISTOR			RL 082.2160		
R101	DRALORIC SMA0207/1K-F-C RL 0,35W 562 OHM+-1%TK50 RESISTOR			RL 083.0461		
R102	DRALORIC SMA0207/562OHM-F-D RL 0,35W 39,2 OHM+-1%TK50 RESISTOR			RL 082.9420		
R105	DRALORIC SMA0207/39,2OHM-F-D RL 0,35W 10,0KOHM+-1%TK50 RESISTOR			RL 083.1297		
R107	DRALORIC SMA0207/10K-F-D RL 0,35W 3,32KOHM+-1%TK50 RESISTOR			RL 083.0990		
R108	DRALORIC SMA0207/3,32K-F-D RL 0,35W 1KOHM+-1%TK50 RESISTOR			RL 082.2160		
R109	DRALORIC SMA0207/1K-F-C RS 0,5W500 OHM+-10%10X10X CERMET POTENTIOMETER T			RS 247.7878		
R116	BOURNS 3386F-1-501 RG 825 OHM+-1%TK100 1206 CHIP RESISTOR			RG 006.7259		
	DALE CRCW1206 825OHM F T					
802.8835.01 SA BL18+						



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		04	1087	ED HF-OSZILLATOR	802.8835.01 SA	19
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
R155	RL 0,35W 47,5 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/47,5OHM-F-D	RL 082.9507				
R156	RL 0,35W 47,5 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/47,5OHM-F-D	RL 082.9507				
R157	RL 0,35W 27,4KOHM+-1%TK50 RESISTOR DRALORIC SMA 0207/27,4K-F-C	RL 082.2583				
R160	RG 33,2 OHM+-1%TK100 1206 RESISTOR CHIP DALE CRCW1206 33,2OHM F T	RG 007.5520				
R161	RG 121 OHM+-1%TK100 1206 CHIP RESISTOR DALE CRCW1206 121OHM F T	RG 006.8903				
R162	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR DALE CRCW1206 100OHM F T	RG 006.8884				
R163	RL 0,35W 47,5KOHM+-1%TK50 RESISTOR DRALORIC SMA/207/47,5K-F-C	RL 083.1800				
R164	RG 215 OHM+-2%TK200 1206 CHIP RESISTOR DRALORIC CGB3216 215OHM2% TK	006.8961				
R165	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR DALE CRCW1206 100OHM F T	RG 006.8884				
R166	RL 0,35W 475 KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/475K-F-C	RL 083.2593				
R168	RG 121 OHM+-1%TK100 1206 CHIP RESISTOR DALE CRCW1206 121OHM F T	RG 006.8903				
R169	RG 10 KOHM+-1%TK100 1206 CHIP RESISTOR DALE CRCW1206 10,0KOHM FT	RG 007.0793				
R200	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR DRALORIC SMA0207/100/HM-F-D	RL 082.6543				
R201	RL 0,35W 2,74KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/2,74K-F-D	RL 083.0926				
R202	RL 0,21W 221 OHM+-1%TK50 RESISTOR RESISTA MK1 221OHM 1% TK50	RL 092.1367				
R205	RL 0,35W 2,21KOHM+-1%TK50 RESISTOR DRALORIC SMA 0207/2,21K-F-C	RL 082.2477				
R210	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D	RL 083.1297				
R211	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D	RL 083.1297				
R221	RL 0,35W 4,75KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/4,75K-F-D	RL 083.1097				

802.8835 01 SA BL19+

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		04	1087		802.8835.01 SA	20
Kennzeichen Component No.	Benennung/Beschreibung Designation			Sachnummer Stock No.	enthalten in contained in	
R222	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D			RL 083.1297		
R223	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D			RL 083.1297		
R225	RL 0,35W 1,82KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1,82K-F-C			RL 082.2277		
R226	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D			RL 083.1297		
R230	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D			RL 083.1297		
R231	RL 0,35W 1KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1K-F-C			RL 082.2160		
R233	RL 0,35W 150 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/150OHM-F-D			RL 082.9942		
R234	RL 0,35W 2,21KOHM+-1%TK50 RESISTOR DRALORIC SMA 0207/2,21K-F-C			RL 082.2477		
R235	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D			RL 083.1297		
R236	RL 0,35W 2,21KOHM+-1%TK50 RESISTOR DRALORIC SMA 0207/2,21K-F-C			RL 082.2477		
R240	RL 0,35W 2,74KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/2,74K-F-D			RL 083.0926		
R241	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D			RL 083.1297		
R242	RL 0,35W 2,74KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/2,74K-F-D			RL 083.0926		
R243	RL 0,35W 33,2KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/33,2K-F-C			RL 083.1674		
R244	RL 0,35W 100KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/100K-F-C			RL 082.1764		
R245	RL 0,35W 39,2KOHM+-1%TK50 RESISTOR DRALORIC SMA/207/39,2K-F-C			RL 083.1745		
R249	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR DRALORIC SMA0207/100/HM-F-D			RL 082.6543		
R250	RL 0,35W 2,21KOHM+-1%TK50 RESISTOR DRALORIC SMA 0207/2,21K-F-C			RL 082.2477		
R251	RL 0,35W 1KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1K-F-C			RL 082.2160		
802.8835.01 SA BL20+						

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		04	1087	ED HF-OSZILLATOR	802.8835.01 SA	21
Kennzeichen Component No.	Benennung/Beschreibung Designation			Sachnummer Stock No.	enthalten in contained in	
R252	RL 0,35W 475 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/475OHM-F-D			RL 083.0390		
R253	RL 0,35W 2,21KOHM+-1%TK50 RESISTOR DRALORIC SMA 0207/2,21K-F-C			RL 082.2477		
R254	RL 0,35W 2,21KOHM+-1%TK50 RESISTOR DRALORIC SMA 0207/2,21K-F-C			RL 082.2477		
R255	RL 0,35W 150 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/150OHM-F-D			RL 082.9942		
R256	RL 0,35W 6,81KOHM+-1%TK50 RESISTOR DRALORIC SMA 0207/6,81K-F-C			RL 082.2560		
R257	RL 0,35W 1,82KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1,82K-F-C			RL 082.2277		
R258	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR DRALORIC SMA0207/100/HM-F-D			RL 082.6543		
R259	RL 0,35W 274 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/274OHM-F-D			RL 083.0178		
R260	RL 0,35W 3,92KOHM+-1%TK50 RESISTOR RESISTA MK2			RL 083.1039		
R261	RL 0,35W 3,92KOHM+-1%TK50 RESISTOR RESISTA MK2			RL 083.1039		
R262	RL 0,35W 475 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/475OHM-F-D			RL 083.0390		
R263	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D			RL 083.1297		
R264	RL 0,35W 1KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1K-F-C			RL 082.2160		
R265	RL 0,35W 1KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1K-F-C			RL 082.2160		
R266	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR DRALORIC SMA0207/100/HM-F-D			RL 082.6543		
R267	RL 0,35W 1KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1K-F-C			RL 082.2160		
R300	RL 0,35W 221 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/221OHM-F-D			RL 083.0084		
R302	RG 26,1 OHM+-2%TK200 1206 CHIP RESISTOR DRALORIC CGB3216 26,1OHM2% TK			006.8749		
R303	RG 82,5 OHM+-1%TK100 1206 CHIP RESISTOR DALE CRCW1206 82,5OHM F T			RG 006.8861		
802.8835.01 SA						BL21+

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		04	1087		802.8835.01 SA	22
Kennzeichen Component No.	Benennung/Beschreibung Designation			Sachnummer Stock No.	enthalten in contained in	
R310	RL 0,35W 1KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1K-F-C			RL 082.2160		
R311	RL 0,35W 1KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1K-F-C			RL 082.2160		
R312	RL 0,35W 1KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1K-F-C			RL 082.2160		
R315	RL 0,35W 681 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/681OHM-F-D			RL 083.0490		
R316	RL 0,35W 1,50KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1,50K-F-D			RL 083.0732		
R320	RL 0,35W 475 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/475OHM-F-D			RL 083.0390		
R333	RL 0,35W 2,21KOHM+-1%TK50 RESISTOR DRALORIC SMA 0207/2,21K-F-C			RL 082.2477		
R334	RL 0,35W 4,75KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/4,75K-F-D			RL 083.1097		
R400	RL 0,35W 100KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/100K-F-C			RL 082.1764		
R401	RL 0,35W 1KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1K-F-C			RL 082.2160		
R402	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D			RL 083.1297		
R403	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D			RL 083.1297		
R404	RL 0,35W 1KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1K-F-C			RL 082.2160		
R405	RL 0,35W 100KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/100K-F-C			RL 082.1764		
R406	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D			RL 083.1297		
R407	RL 0,35W 100KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/100K-F-C			RL 082.1764		
R410	RL 0,35W 27,4KOHM+-1%TK50 RESISTOR DRALORIC SMA 0207/27,4K-F-C			RL 082.2583		
R411	RL 0,35W 3,32KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/3,32K-F-D			RL 083.0990		
R412	RL 0,35W 33,2KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/33,2K-F-C			RL 083.1674		
802.8835.01 SA						BL22+

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		04	1087		802.8835.01 SA	23
Kennzeichen Component No.	Benennung/Beschreibung Designation			Sachnummer Stock No.	enthalten in contained in	
R420	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR			RL 083.1297		
R425	DRALORIC SMA0207/10K-F-D RL 0,35W 15,0KOHM+-1%TK50 RESISTOR			RL 083.1400		
R428	DRALORIC SMA0207/15K-F-D RL 0,35W 1,82KOHM+-1%TK50 RESISTOR			RL 082.2277		
R429	DRALORIC SMA0207/1,82K-F-C RL 0,35W 10,0KOHM+-1%TK50 RESISTOR			RL 083.1297		
R430	DRALORIC SMA0207/10K-F-D RL 0,35W 47,5KOHM+-1%TK50 RESISTOR			RL 083.1800		
R440	DRALORIC SMA/207/47,5K-F-C RL 0,35W 2,21KOHM+-1%TK50 RESISTOR			RL 082.2477		
R441	DRALORIC SMA 0207/2,21K-F-C RL 0,35W 33,2KOHM+-1%TK50 RESISTOR			RL 083.1674		
R442	DRALORIC SMA0207/33,2K-F-C RL 0,35W 20,0KOHM+-1%TK50 RESISTOR			RL 083.1522		
R445	DRALORIC SMA/207/20K-F-C RL 0,35W 1KOHM+-1%TK50 RESISTOR			RL 082.2160		
R450	DRALORIC SMA0207/1K-F-C RL 0,35W 100KOHM+-1%TK50 RESISTOR			RL 082.1764		
R451	DRALORIC SMA0207/100K-F-C RL 0,35W 22,1KOHM+-1%TK50 RESISTOR			RL 083.1545		
R460	DRALORIC SMA/207/22,1K-F-C RL 0,35W 10,0KOHM+-1%TK50 RESISTOR			RL 083.1297		
R461	DRALORIC SMA0207/10K-F-D RL 0,35W 10,0KOHM+-1%TK50 RESISTOR			RL 083.1297		
R500	DRALORIC SMA0207/10K-F-D RG 34,8 OHM+-2%TK200 1206 CHIP RESISTOR			006.8778		
R501	DRALORIC CGB3216 34,8OHM2% TK RG 4,64KOHM+-2%TK200 1206 CHIP RESISTOR			007.0712		
R502	DRALORIC CGB 3216 4,64KOHM 2% RG 2,37KOHM+-2%TK200 1206 CHIP RESISTOR			007.0641		
R503	DRALORIC CGB 3216 2,37KOHM 2% RG 3,32KOHM+-1%TK100 1206 RESISTOR CHIP			RG 007.5789		
R504	DALE CRCW1206 3,32KOHM FT RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR			RL 082.6543		
R505	DRALORIC SMA0207/100/HM-F-D RL 0,35W 825 OHM+-1%TK50 RESISTOR DRALORIC SMA 0207/825OHM-F-C			RL 082.2502		

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		04	1087		802.8835.01 SA	24
Kennzeichen Component No.	Benennung/Beschreibung Designation			Sachnummer Stock No.	enthalten in contained in	
R506	RL 0,35W 5,62KOHM+-1%TK50 RESISTOR			RL 082.2190		
R509	DRALORIC SMA0207/5,62K-F-C RL 0,21W 82 OHM2% UNGEW. RESISTOR			RL 092.5940		
R510	RESISTA MK1 82OHM 2% UNGEW. RG 383 OHM+-2%TK200 1206 CHIP RESISTOR			006.9022		
R512	DRALORIC CGB3216 383OHM2% TK RL 0,35W 10,0KOHM+-1%TK50 RESISTOR			RL 083.1297		
R513	DRALORIC SMA0207/10K-F-D RL 0,35W 10,0KOHM+-1%TK50 RESISTOR			RL 083.1297		
R520	DRALORIC SMA0207/10K-F-D RG 215 OHM+-2%TK200 1206 CHIP RESISTOR			006.8961		
R521	DRALORIC CGB3216 215OHM2% TK RG 681 OHM+-1%TK100 1206 CHIP RESISTOR			RG 006.9080		
R522	DALE CRCW1206 681OHM F T RG 681 OHM+-1%TK100 1206 CHIP RESISTOR			RG 006.9080		
R525	DALE CRCW1206 681OHM F T RG 681 OHM+-1%TK100 1206 CHIP RESISTOR			RG 006.9080		
R530	DALE CRCW1206 681OHM F T RG 681 OHM+-1%TK100 1206 CHIP RESISTOR			RG 006.9080		
R531	DALE CRCW1206 681OHM F T RG 681 OHM+-1%TK100 1206 CHIP RESISTOR			RG 006.9080		
R532	DALE CRCW1206 681OHM F T RG 681 OHM+-1%TK100 1206 CHIP RESISTOR			RG 006.9080		
R540	DALE CRCW1206 681OHM F T RL 0,35W 221 OHM+-1%TK50 RESISTOR			RL 083.0084		
R541	DRALORIC SMA0207/221OHM-F-D RL 0,35W 3,92KOHM+-1%TK50 RESISTOR			RL 083.1039		
R542	RESISTA MK2 RL 0,35W 6,81KOHM+-1%TK50 RESISTOR			RL 082.2560		
R543	DRALORIC SMA 0207/6,81K-F-C RL 0,35W 221 OHM+-1%TK50 RESISTOR			RL 083.0084		
R560	DRALORIC SMA0207/221OHM-F-D RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR			RL 082.6543		
R570	DRALORIC SMA0207/100/HM-F-D RL 0,35W 681 OHM+-1%TK50 RESISTOR			RL 083.0490		
R571	DRALORIC SMA0207/681OHM-F-D RL 0,35W 681 OHM+-1%TK50 RESISTOR			RL 083.0490		
	DRALORIC SMA0207/681OHM-F-D					

802.8835.01 SA RL24+

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		04	1087	ED HF-OSZILLATOR	802.8835.01 SA	25
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
R575	RL 0,35W 681 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/681OHM-F-D	RL 083.0490				
R578	RL 0,35W 1KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1K-F-C	RL 082.2160				
R579	RG 562 OHM+-1%TK100 1206 CHIP RESISTOR DALE CRCW1206 562OHM F T	RG 006.9068				
R580	RL 0,35W 221 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/221OHM-F-D	RL 083.0084				
R581	RL 0,35W 1KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1K-F-C	RL 082.2160				
R582	RL 0,35W 1KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1K-F-C	RL 082.2160				
R583	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR DRALORIC SMA0207/100/HM-F-D	RL 082.6543				
R590	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR DRALORIC SMA0207/100/HM-F-D	RL 082.6543				
R591	RL 0,35W 22,1KOHM+-1%TK50 RESISTOR DRALORIC SMA/207/22,1K-F-C	RL 083.1545				
R592	RL 0,35W 475 KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/475K-F-C	RL 083.2593				
R593	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D	RL 083.1297				
R594	RG 2,15KOHM+-2%TK200 1206 CHIP RESISTOR DRALORIC CGB 3216 2,15KOHM 2%	007.0635				
R595	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR DRALORIC SMA0207/100/HM-F-D	RL 082.6543				
R597	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR DRALORIC SMA0207/100/HM-F-D	RL 082.6543				
R600	RL 0,35W22,10 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/22,1OHM-F-D	RL 082.9188				
R601	RL 0,35W 221 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/221OHM-F-D	RL 083.0084				
R602	RL 0,35W 1KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1K-F-C	RL 082.2160				
R603	RL 0,35W 1KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1K-F-C	RL 082.2160				
R604	RL 0,35W 1KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1K-F-C	RL 082.2160				
802.8835.01 SA BL25+						

ROHDE&SCHWARZ		AZ	Datum Date	Schaltteilliste für Parts list for ED HF-OSZILLATOR	Sachnummer Stock Nr.	Blatt Page
		04	1087		802.8835.01 SA	26
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
R610	RL 0,35W 332 KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/332K-F-C	RL 083.2441				
R611	RL 0,35W 332 KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/332K-F-C	RL 083.2441				
R612	RL 0,35W 68,1KOHM+-1%TK50 RESISTOR DRALORIC SMA 0207/68,1K-F-C	RL 082.2602				
R620	RL 0,35W 68,1KOHM+-1%TK50 RESISTOR DRALORIC SMA 0207/68,1K-F-C	RL 082.2602				
R630	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA 0207/68,1K-F-C	RL 083.1297				
R631	RL 0,35W 2,74KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D	RL 083.0926				
R632	RS 0,75W10KOHM+-10% CERMET DEPOS.-CARBON POTENTIOMET BOURNS 3006P-1-10 KOHM+-10%	RS 037.7396				
R633	RL 0,35W 2,74KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/2,74K-F-D	RL 083.0926				
R640	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR DRALORIC SMA0207/100/HM-F-D	RL 082.6543				
R642	RL 0,35W 15,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/15K-F-D	RL 083.1400				
R650	RL 0,35W 332 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/332OHM-F-D	RL 083.0255				
R651	RL 0,35W 15,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/15K-F-D	RL 083.1400				
R652	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D	RL 083.1297				
R653	RL 0,35W 1KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1K-F-C	RL 082.2160				
R654	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D	RL 083.1297				
R655	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D	RL 083.1297				
R656	RG 1000 OHM+-1%TK100 1206 CHIP RESISTOR DALE CRCW1206 1,0KOHM F T	RG 006.7271				
R660	RL 0,35W 2,74KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/2,74K-F-D	RL 083.0926				
R661	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D	RL 083.1297				
802.8835.01 SA BL26+						



ROHDE&SCHWARZ		Az Date	Schaltteilliste für Parts list for ED HF-OSZILLATOR		Sachnummer Stock Nr.	Blatt Page
		04	1087		802.8835.01 SA	27
Kennzeichen Component No.	Benennung/Beschreibung Designation			Sachnummer Stock No.	enthalten in contained in	
R665	RL 0,35W 33,2KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/33,2K-F-C			RL 083.1674		
R666	RL 0,35W 1,82KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1,82K-F-C			RL 082.2277		
R667	RL 0,35W 100KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/100K-F-C			RL 082.1764		
R668	RL 0,35W 3,32KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/3,32K-F-D			RL 083.0990		
R669	RL 0,35W 39,2KOHM+-1%TK50 RESISTOR DRALORIC SMA/207/39,2K-F-C			RL 083.1745		
R671	RL 0,35W 4,75KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/4,75K-F-D			RL 083.1097		
R672	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D			RL 083.1297		
V12	AE BZX79/C5V1 0,5W Z-DI ZENER DIODE VALVO BZX79/C5V1			AE 012.2449		
V21	AE BB809 26/ 6PF CDI TUNING DIODE VALVO BB809			AE 092.9616		
V22	AE BB809 26/ 6PF CDI TUNING DIODE VALVO BB809			AE 092.9616		
V30	AK BFR96 NPN 15V 75MA TRANSISTOR VALVO BFR96			AK 093.2738		
V40	AK BC173C NPN 25V 100MA TRANSISTOR INTERMETAL BC173C			010.4444		
V45	AK BC173C NPN 25V 100MA TRANSISTOR INTERMETAL BC173C			010.4444		
V48	AK BC253C PNP 25V 100MA TRANSISTOR INTERMETAL BC253C			010.2829		
V50	AK BC253C PNP 25V 100MA TRANSISTOR INTERMETAL BC253C			010.2829		
V51	AE BB809 26/ 6PF CDI TUNING DIODE VALVO BB809			AE 092.9616		
V52	AE BB809 26/ 6PF CDI TUNING DIODE VALVO BB809			AE 092.9616		
V60	AK BFR96 NPN 15V 75MA TRANSISTOR VALVO BFR96			AK 093.2738		

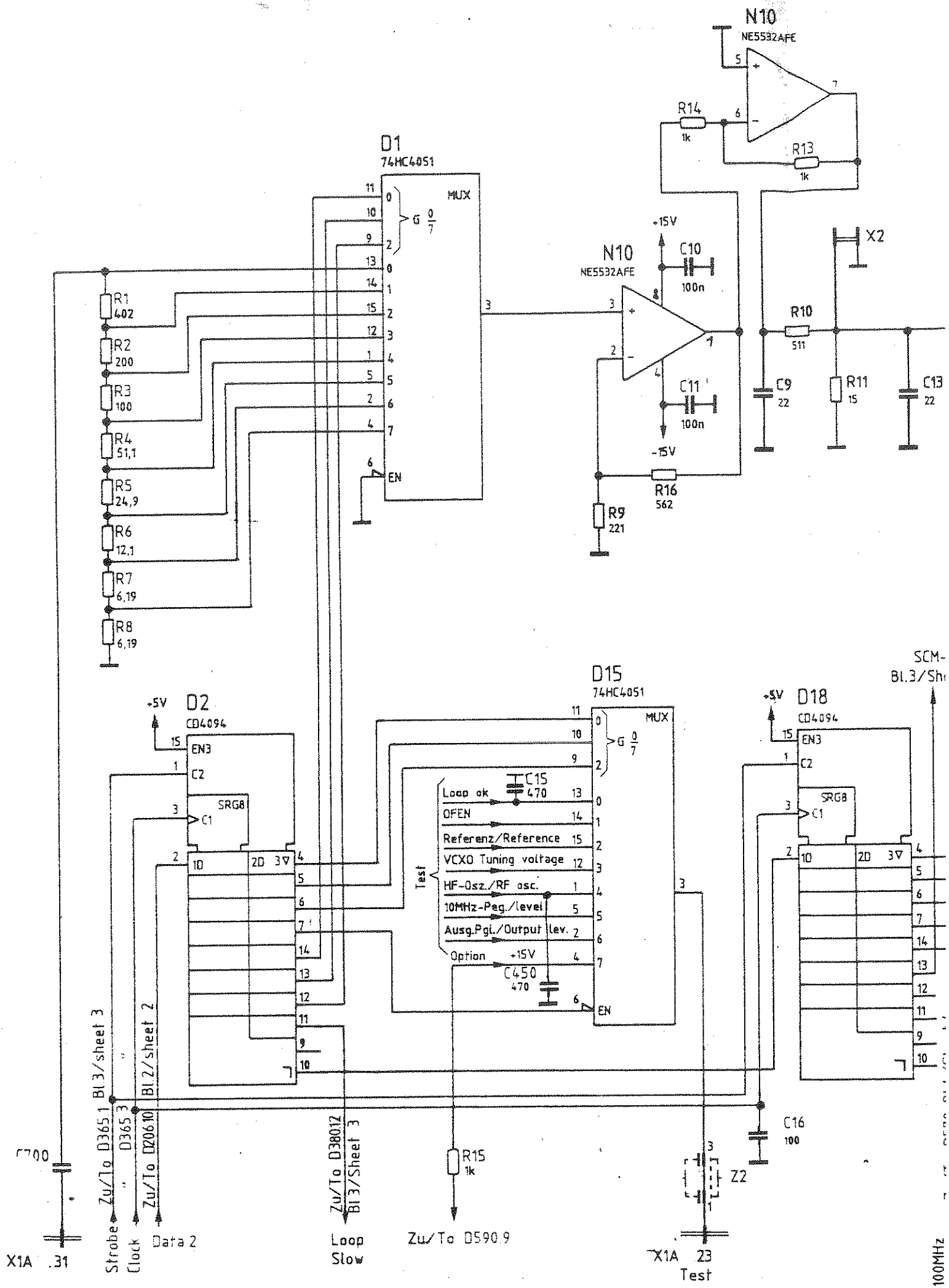
802.8835 01 SA BL27+

ROHDE&SCHWARZ		AZ	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
		04	1087	ED HF-OSZILLATOR	802.8835.01 SA	28
Kennzeichen Component No.	Benennung/Beschreibung Designation			Sachnummer Stock No.	enthalten in contained in	
V70	AK BC173C NPN 25V 100MA TRANSISTOR INTERMETAL BC173C			010.4444		
V75	AK BC173C NPN 25V 100MA TRANSISTOR INTERMETAL BC173C			010.4444		
V78	AK BC253C PNP 25V 100MA TRANSISTOR INTERMETAL BC253C			010.2829		
V81	AE BB809 26/ 6PF CDI TUNING DIODE VALVO BB809			AE 092.9616		
V82	AE BB809 26/ 6PF CDI TUNING DIODE VALVO BB809			AE 092.9616		
V90	AK BFR96 NPN 15V 75MA TRANSISTOR VALVO BFR96			AK 093.2738		
V100	AK BC173C NPN 25V 100MA TRANSISTOR INTERMETAL BC173C			010.4444		
V105	AK BC173C NPN 25V 100MA TRANSISTOR INTERMETAL BC173C			010.4444		
V108	AK BC253C PNP 25V 100MA TRANSISTOR INTERMETAL BC253C			010.2829		
V115	AD BAV99 2X70V 0,1 A UDI DIODE VALVO BAV99			911.0092		
V145	AD BAV99 2X70V 0,1 A UDI DIODE VALVO BAV99			911.0092		
V158	BM MAR8 BB.AMPL BROADBAND AMPLIFIER MCL MAR8			656.4720		
V162	AE BAR18 SCHOTTKYDI DIODE THOMSON BAR18			007.3440		
V175	AD BAV99 2X70V 0,1 A UDI DIODE VALVO BAV99			911.0092		
V200	AK 2N2369A NPN 15V 200MA TRANSISTOR VALVO 2N2369A			AK 010.4680		
V210	AD 1N4448 75V 0,15A UDI DIODE TEXAS INST 1N4448 GEGURTET			AD 012.0700		
V211	AD 1N4448 75V 0,15A UDI DIODE TEXAS INST 1N4448 GEGURTET			AD 012.0700		
V220	AD 1N4448 75V 0,15A UDI DIODE TEXAS INST 1N4448 GEGURTET			AD 012.0700		
V230	AK BC173C NPN 25V 100MA TRANSISTOR INTERMETAL BC173C			010.4444		
802.8835.01 SA						BL28+

ROHDE&SCHWARZ		AZ	Datum Date	Schaltteilliste für Parts list for ED HF-OSZILLATOR	Sachnummer Stock Nr.	Blatt Page
		04	1087		802.8835.01 SA	29
Kennzeichen Component No.	Benennung/Beschreibung Designation			Sachnummer Stock No.	enthalten in contained in	
V232	AE BB809 26/ 6PF CDI TUNING DIODE VALVO BB809			AE 092.9616		
V233	AD 1N4448 75V 0,15A UDI DIODE TEXAS INST 1N4448 GEGURTET			AD 012.0700		
V400	AE BAV45 35V PICOAMP.DI LOW LEAKAGE DIODE VALVO BAV45			AE 252.5386		
V401	AE BAV45 35V PICOAMP.DI LOW LEAKAGE DIODE VALVO BAV45			AE 252.5386		
V402	AE BAV45 35V PICOAMP.DI LOW LEAKAGE DIODE VALVO BAV45			AE 252.5386		
V403	AE BAV45 35V PICOAMP.DI LOW LEAKAGE DIODE VALVO BAV45			AE 252.5386		
V405	AK BC173C NPN 25V 100MA TRANSISTOR INTERMETAL BC173C			010.4444		
V412	AE BZX79/C10 0,5W Z-DI ZENER DIODE VALVO BZX79/C10			AE 012.2510		
V420	AK BC253C PNP 25V 100MA TRANSISTOR INTERMETAL BC253C			010.2829		
V425	AK BC173C NPN 25V 100MA TRANSISTOR INTERMETAL BC173C			010.4444		
V460	AD 1N4448 75V 0,15A UDI DIODE TEXAS INST 1N4448 GEGURTET			AD 012.0700		
V500	AK BFY90 NPN 15V 25MA TRANSISTOR VALVO BFY90			AK 010.4550		
V506	AE 5082-2800 SCHOTTKYDI DIODE HEWLETT-P. 5082-2800			AE 012.9066		
V512	AE BB909B 25/ 3PF CDI TUNING DIODE VALVO BB909B			AE 092.9600		
V550	AK BFY90 NPN 15V 25MA TRANSISTOR VALVO BFY90			AK 010.4550		
V590	AD 1N4448 75V 0,15A UDI DIODE TEXAS INST 1N4448 GEGURTET			AD 012.0700		
V650	AL BD438 PNP 45V 4A0 TRANSISTOR VALVO BD438			AL 010.0403		
V651	AK BC173C NPN 25V 100MA TRANSISTOR INTERMETAL BC173C			010.4444		
V652	AK BC173C NPN 25V 100MA TRANSISTOR INTERMETAL BC173C			010.4444		

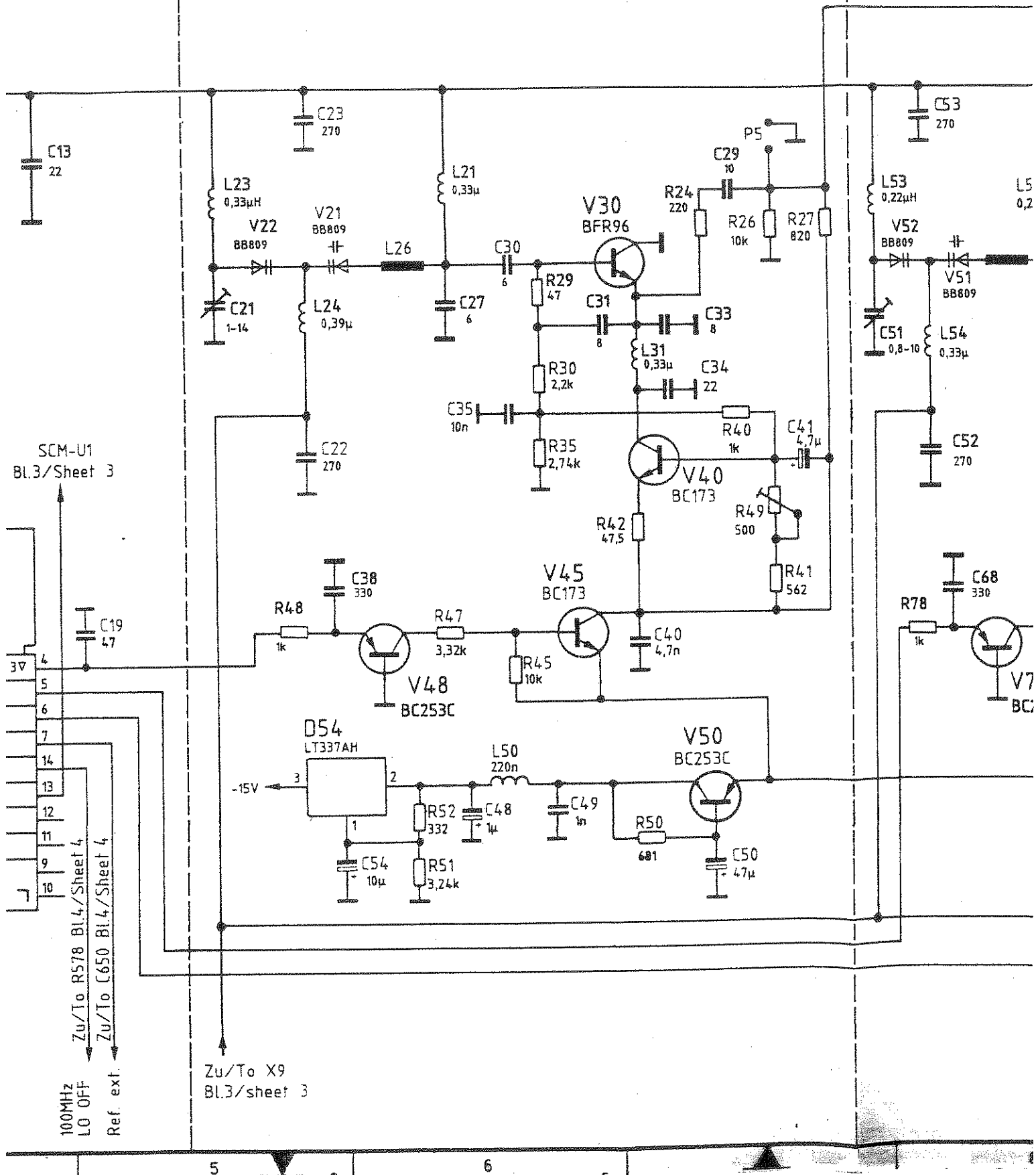
ROHDE&SCHWARZ		ÄZ	Datum Date	Schaltteilleiste für Parts list for ED HF-OSZILLATOR	Sachnummer Stock Nr.	Blatt Page
		04	1087		802.8835.01 SA	30
Kennzeichen Component No.	Benennung/Beschreibung Designation			Sachnummer Stock No.	enthalten in contained in	
V670	AD 1N4448 75V 0,15A UDI DIODE			AD 012.0700		
V671	TEXAS INST 1N4448 GEGURTET AK BC173C NPN 25V 100MA TRANSISTOR			010.4444		
V672	INTERMETAL BC173C AD 1N4448 75V 0,15A UDI DIODE			AD 012.0700		
	TEXAS INST 1N4448 GEGURTET					
W1	DX HF-KABEL			802.6578	802.6455	
X1	FP STECKERLEISTE 32POL. MULTIPOINT CONNECTOR			FP 514.4550		
	PANDUIT 100-232-033/999					
X2	VL WIRE-WRAP PIN			VL 088.4542		
	WIRE-WRAP PIN					
	BERG NR. 75 403-003					
X3	VL WIRE-WRAP PIN			VL 088.4542		
	WIRE-WRAP PIN					
	BERG NR. 75 403-003					
X4	VL WIRE-WRAP PIN			VL 088.4542		
	WIRE-WRAP PIN					
	BERG NR. 75 403-003					
X6	VL WIRE-WRAP PIN			VL 088.4542		
	WIRE-WRAP PIN					
	BERG NR. 75 403-003					
X7	VL WIRE-WRAP PIN			VL 088.4542		
	WIRE-WRAP PIN					
	BERG NR. 75 403-003					
	2-POLIG					
X8	VL WIRE-WRAP PIN			VL 088.4542		
	WIRE-WRAP PIN					
	BERG NR. 75 403-003					
	2-POLIG					
X9	VL WIRE-WRAP PIN			VL 088.4542		
	WIRE-WRAP PIN					
	BERG NR. 75 403-003					
	3-POLIG					
X11	VL WIRE-WRAP PIN			VL 088.4542		
	WIRE-WRAP PIN					
	BERG NR. 75 403-003					
	2-POLIG					
X12	VL WIRE-WRAP PIN			VL 088.4542		
	WIRE-WRAP PIN					
	BERG NR. 75 403-003					
	2-POLIG					
X302	FJ EINBAUSTECKER SYST.SMB ANGLE CONNECTOR			FJ 602.8804		
	ROSENBERG R&S-ZCHNG.602.8804					
X303	FJ EINBAUSTECKER SYST.SMB ANGLE CONNECTOR			FJ 602.8804		
	ROSENBERG R&S-ZCHNG.602.8804					
X304	FJ EINBAUSTECKER SYST.SMB ANGLE CONNECTOR			FJ 602.8804		
	ROSENBERG R&S-ZCHNG.602.8804					
						802.8835.01 SA BL30+

ROHDE&SCHWARZ		AZ	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
		04	1087	ED HF-OSZILLATOR	802.8835.01 SA	31
Kennzeichen Component No.	Benennung/Beschreibung Designation			Sachnummer Stock No.	enthalten in contained in	
X305	FJ EINBAUSTECKER SYST.SMB ANGLE CONNECTOR			FJ 602.8804		
	ROSENBERG R&S-ZCHNG.602.8804					
X310	FJ EINBAUSTECKER SYST.SMB ANGLE CONNECTOR			FJ 602.8804		
	ROSENBERG R&S-ZCHNG.602.8804					
Z2	LD 10GHZ 50DB100V10A4RDX9 LEAD THROUGH FILTER			LD 451.4636		
BIS/TO Z8	ERIE R&S-ZCHNG.451.4636					
						- ENDE -

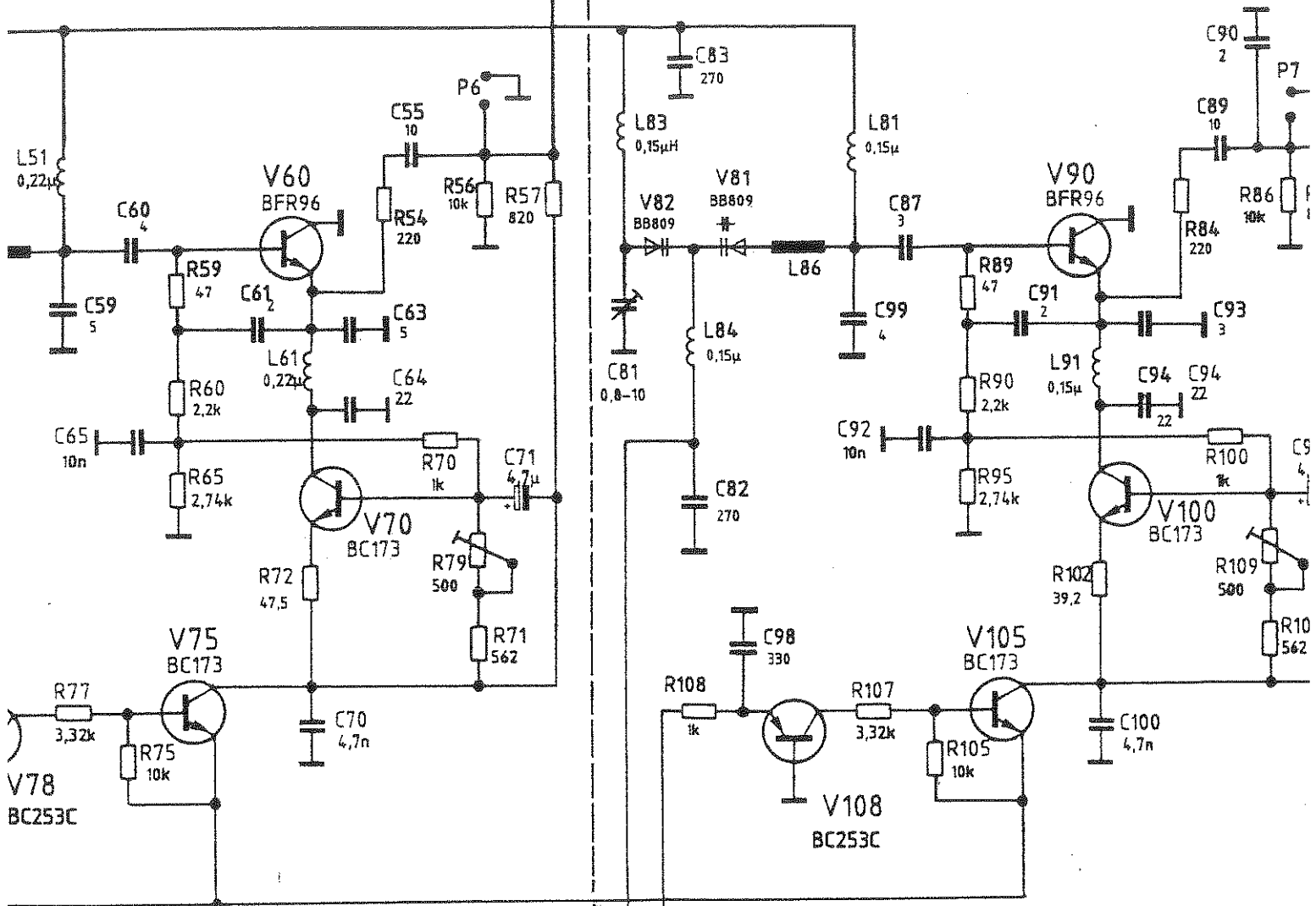


Oscillator 1  
Oscillator 1

Oscillator 2  
Oscillator 2

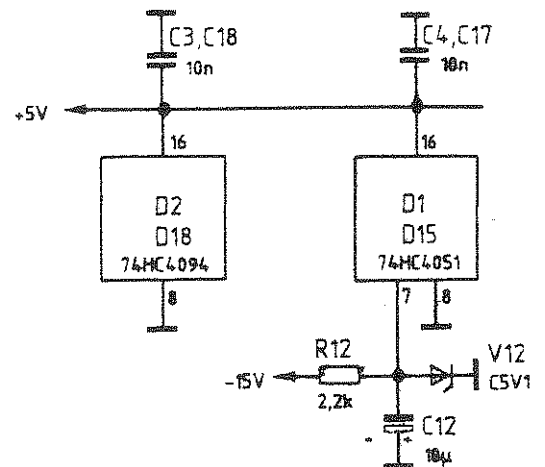
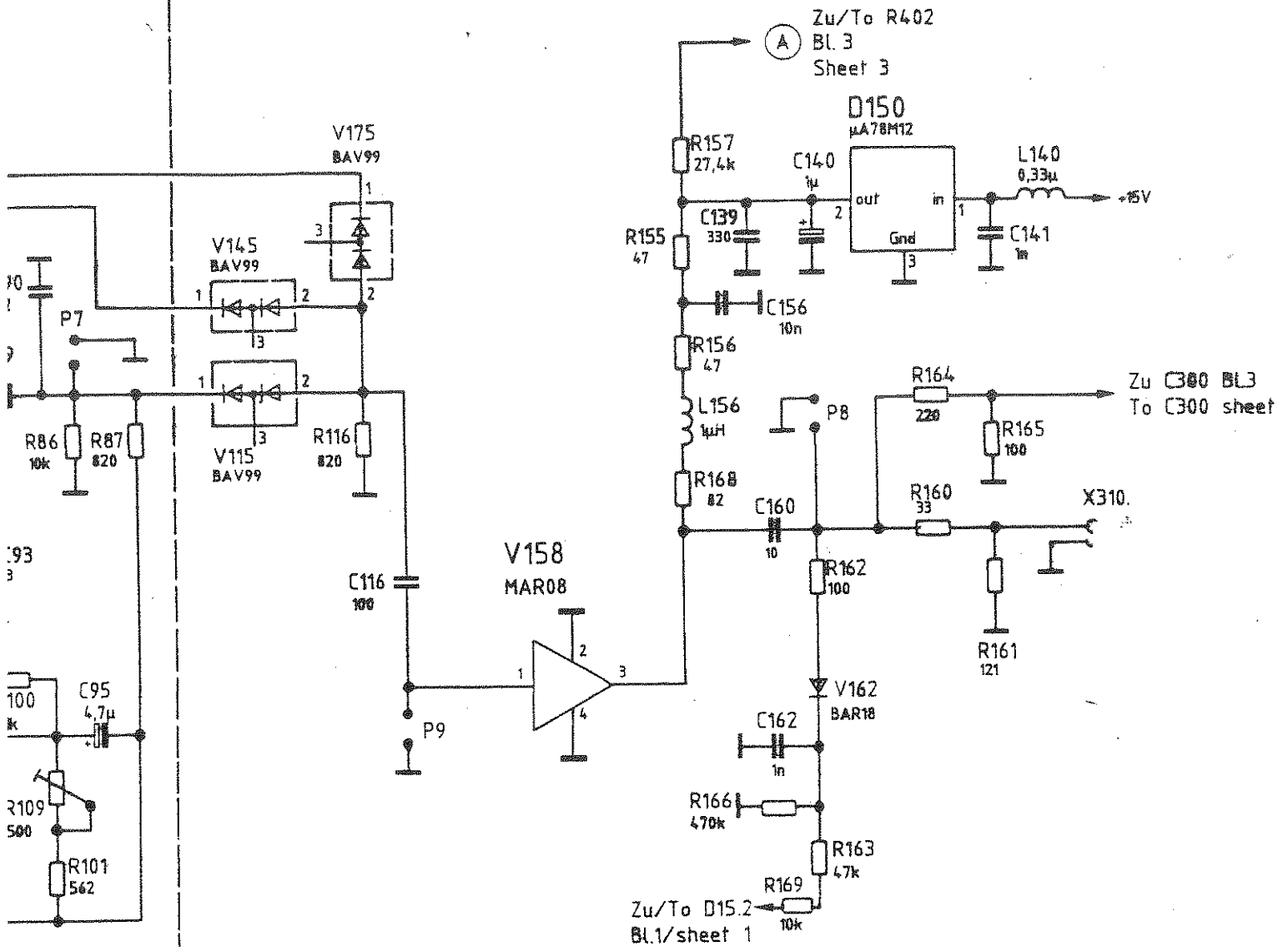


Oszillator 3  
Oscillator 3





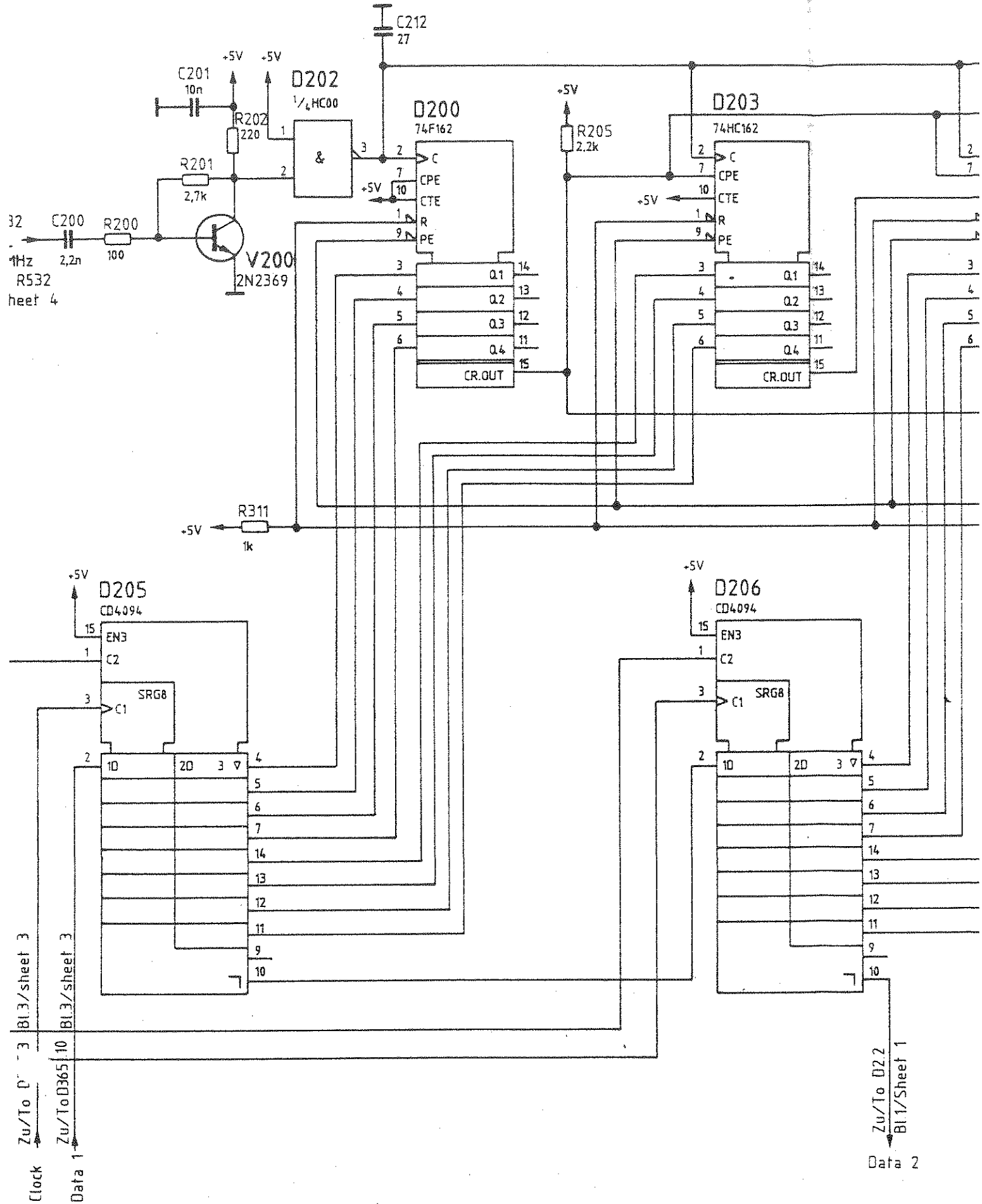
Verstärker  
Amplifier



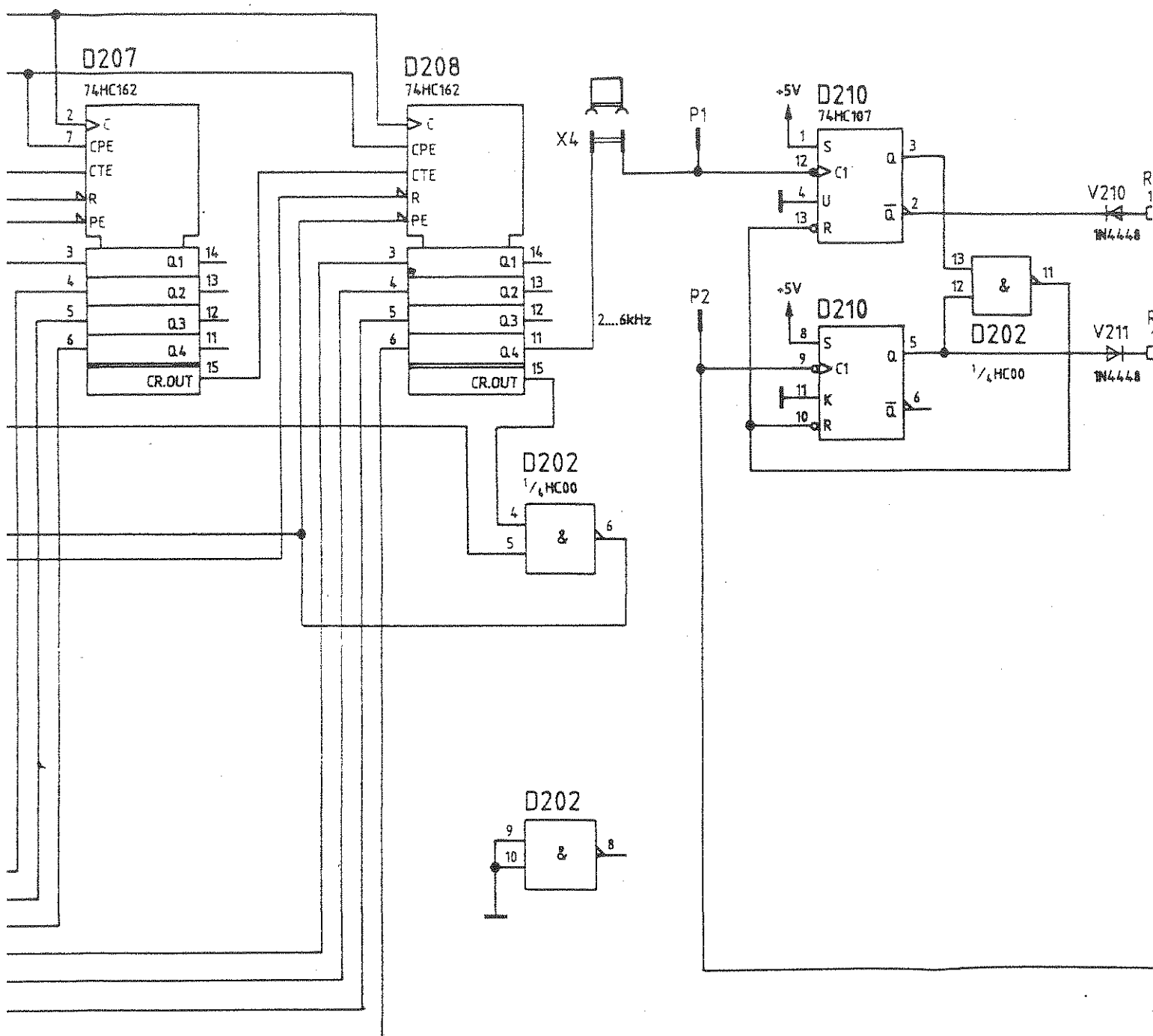
Stromlauf gilt für VAR 02,04  
Circuit diagram is valid for model 02,04

	Stromlauf zu <b>HF-Oszillator / RF oscillator</b>	Zeichn.-Nr. <b>802. 8835</b>
	reg. i. V. 802.2020 V	erste Z

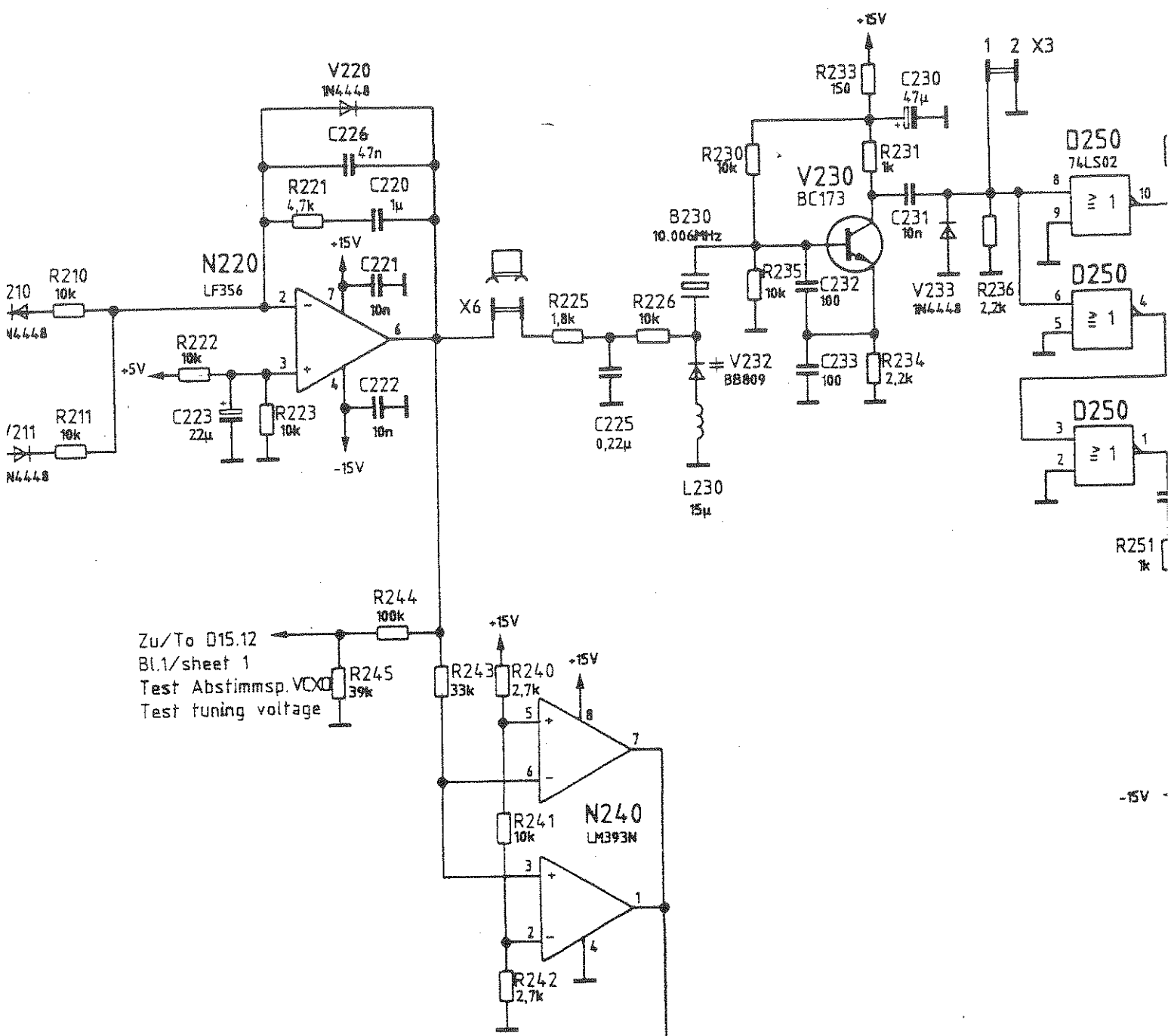
N-Teiler  
N-Divider  
3333...10000



Phasendetektor  
Phase detector



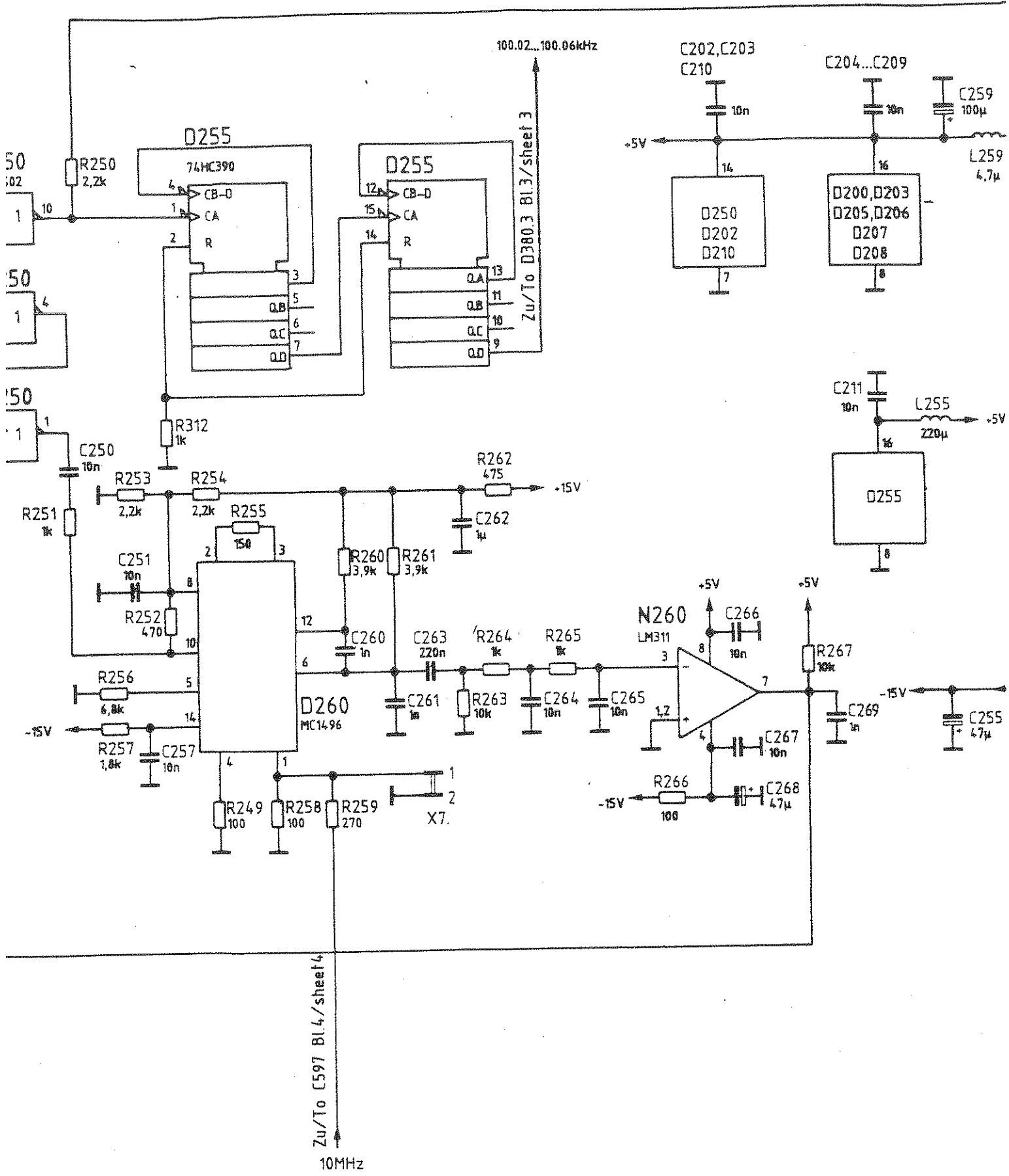
VCXO  
10.002...10.006MHz



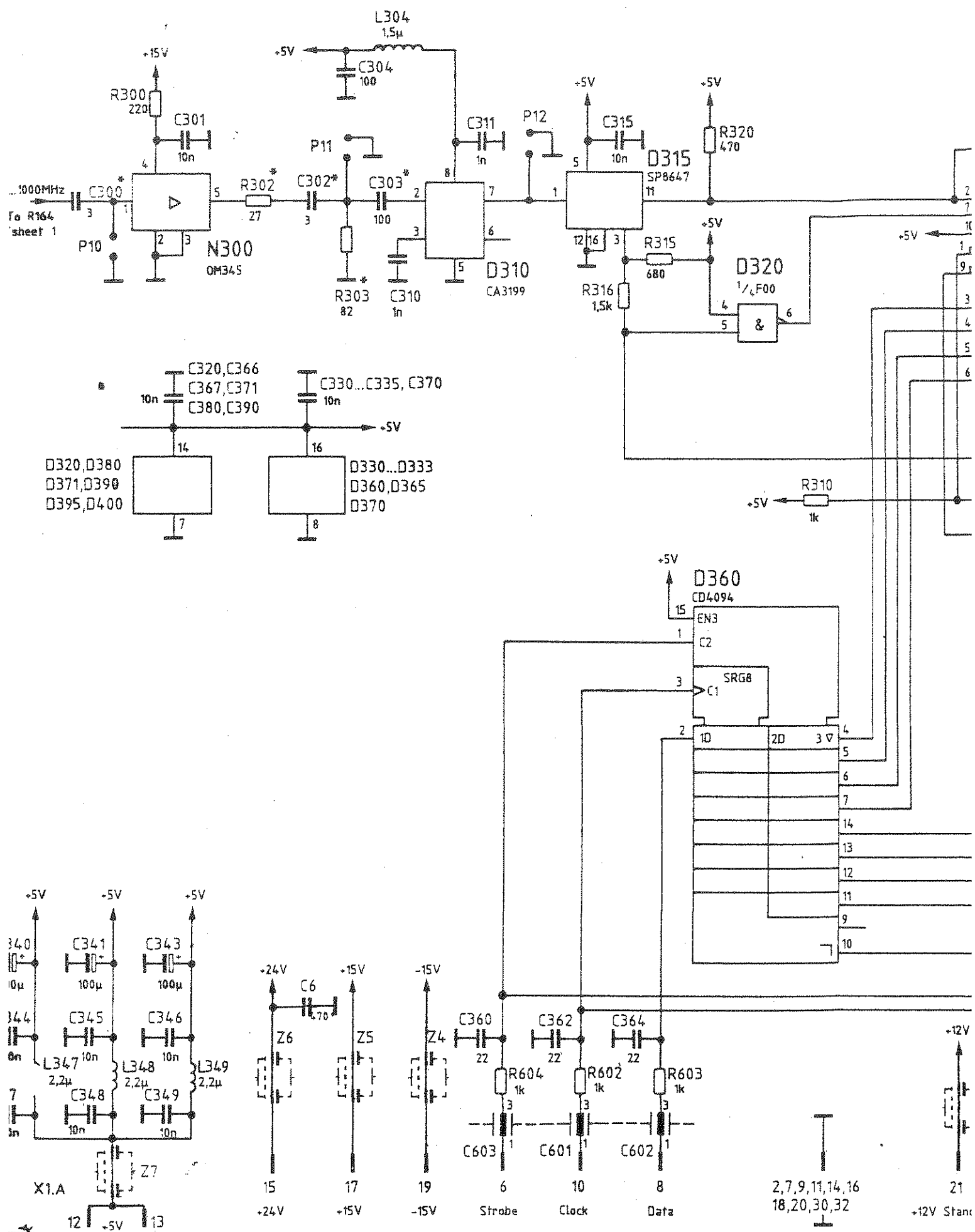
Zu/To D15.12  
Bl.1/sheet 1  
Test Abstimmsp. VCXO  
Test tuning voltage

Zu/To N40.1 Bl.3/sheet 3

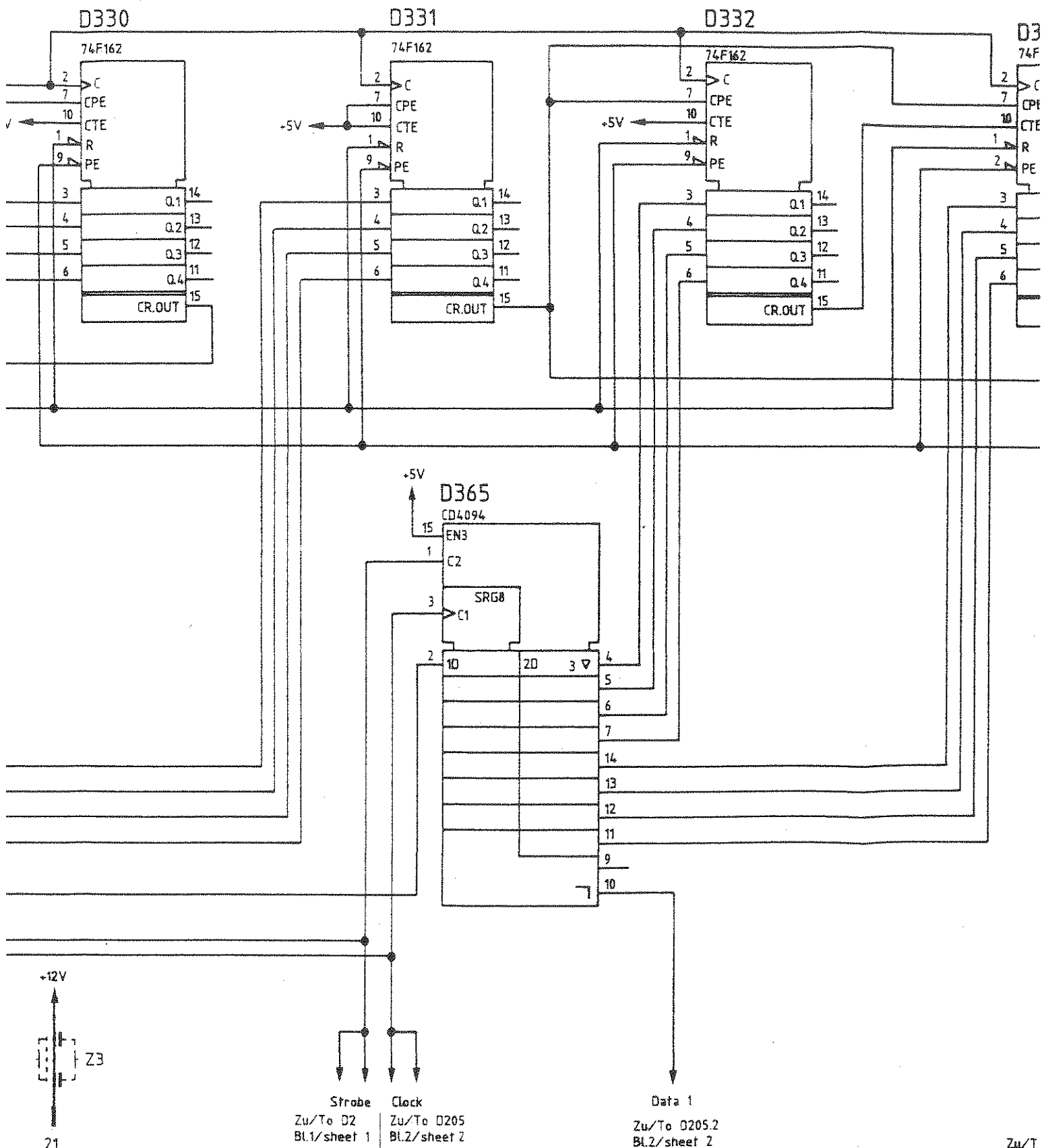
Loop OK



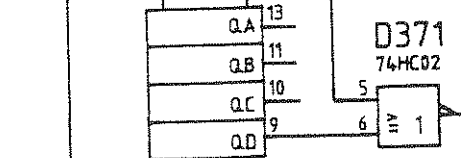
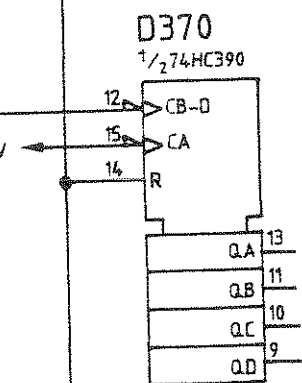
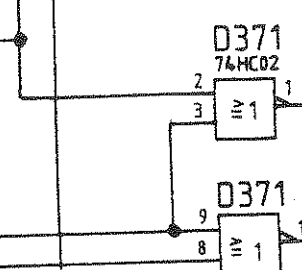
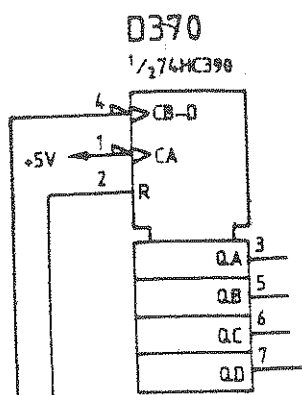
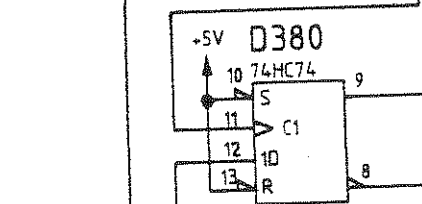
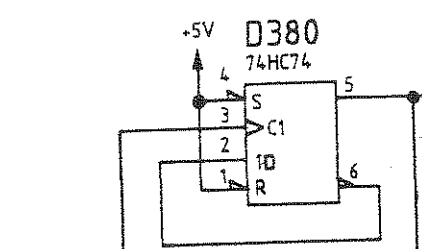
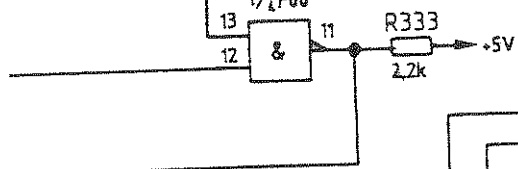
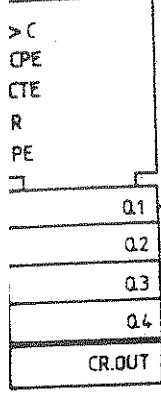
	Stromlauf zu		HF-Oszillator / RF oscillator	Z	Zeichn.-Nr.
	reg. i. V.		802.2020 V	erste Z.	802. 8835



M-Teiler  
M-Divider  
M = 2499...4999

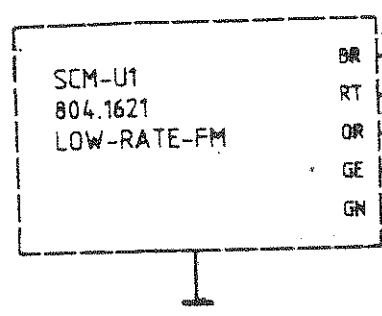
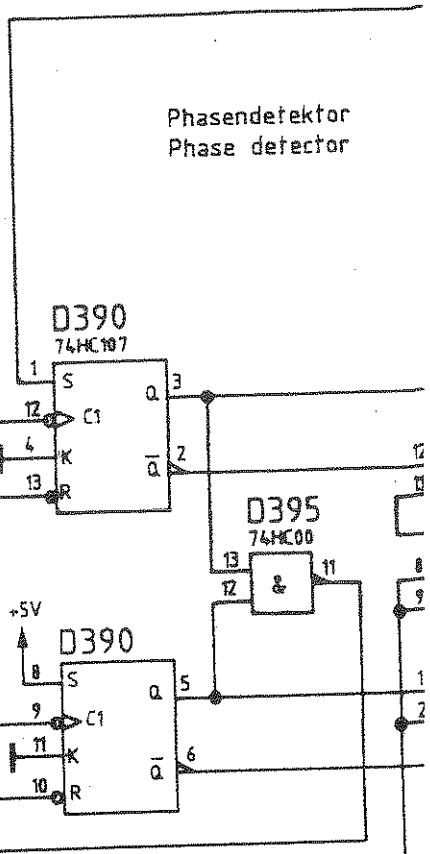


D333  
6F162



P4

P3



- BR → +24V
- RT → N400.3 Bl.3/Sheet 3
- OR → -5V
- GE → D10.13 Bl.1/Sheet 1
- GN → +5V

Zu/To D255.9  
Bl.2/sheet 2

Zu/To D2.11  
Bl.1/sheet 1

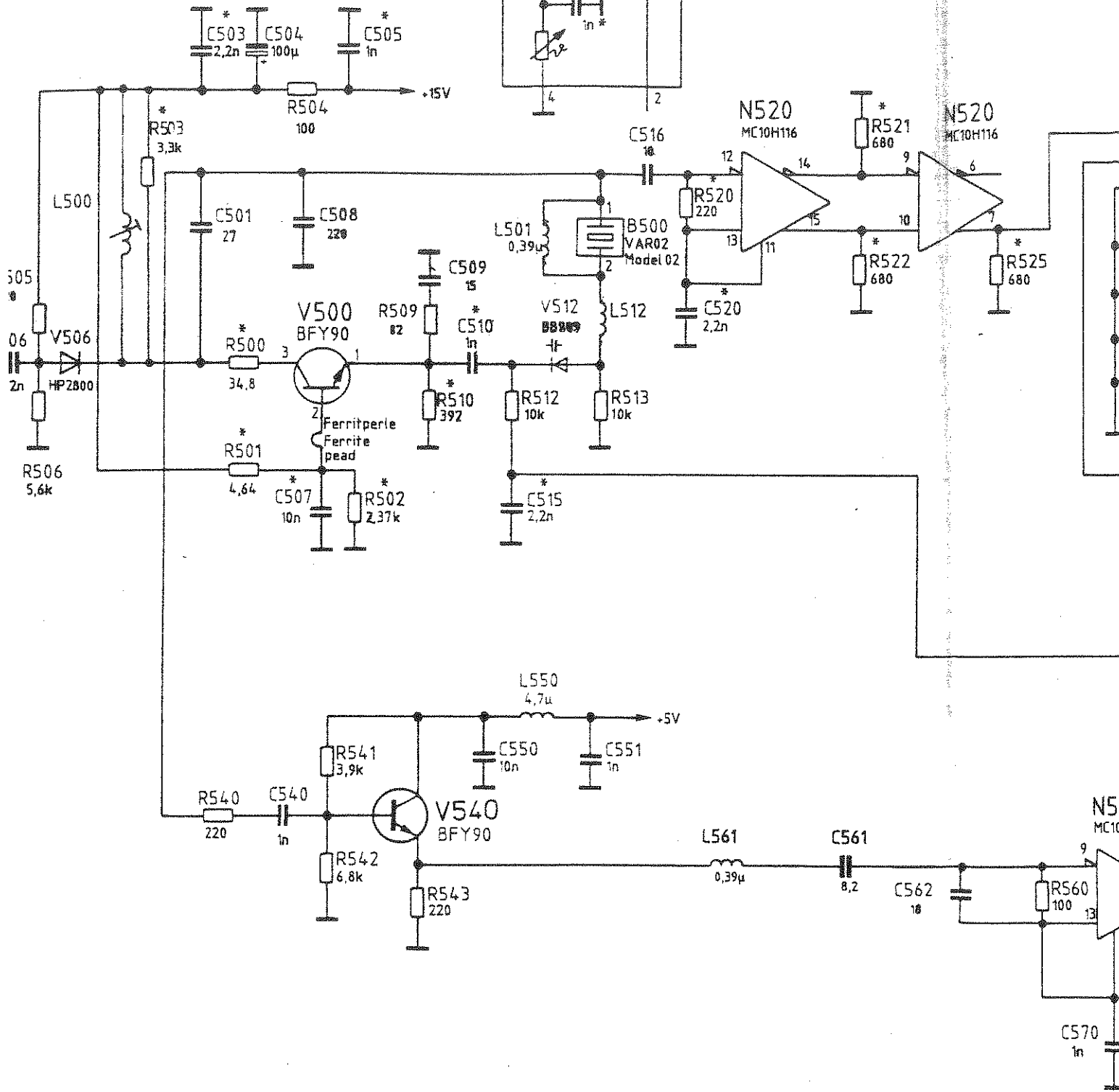




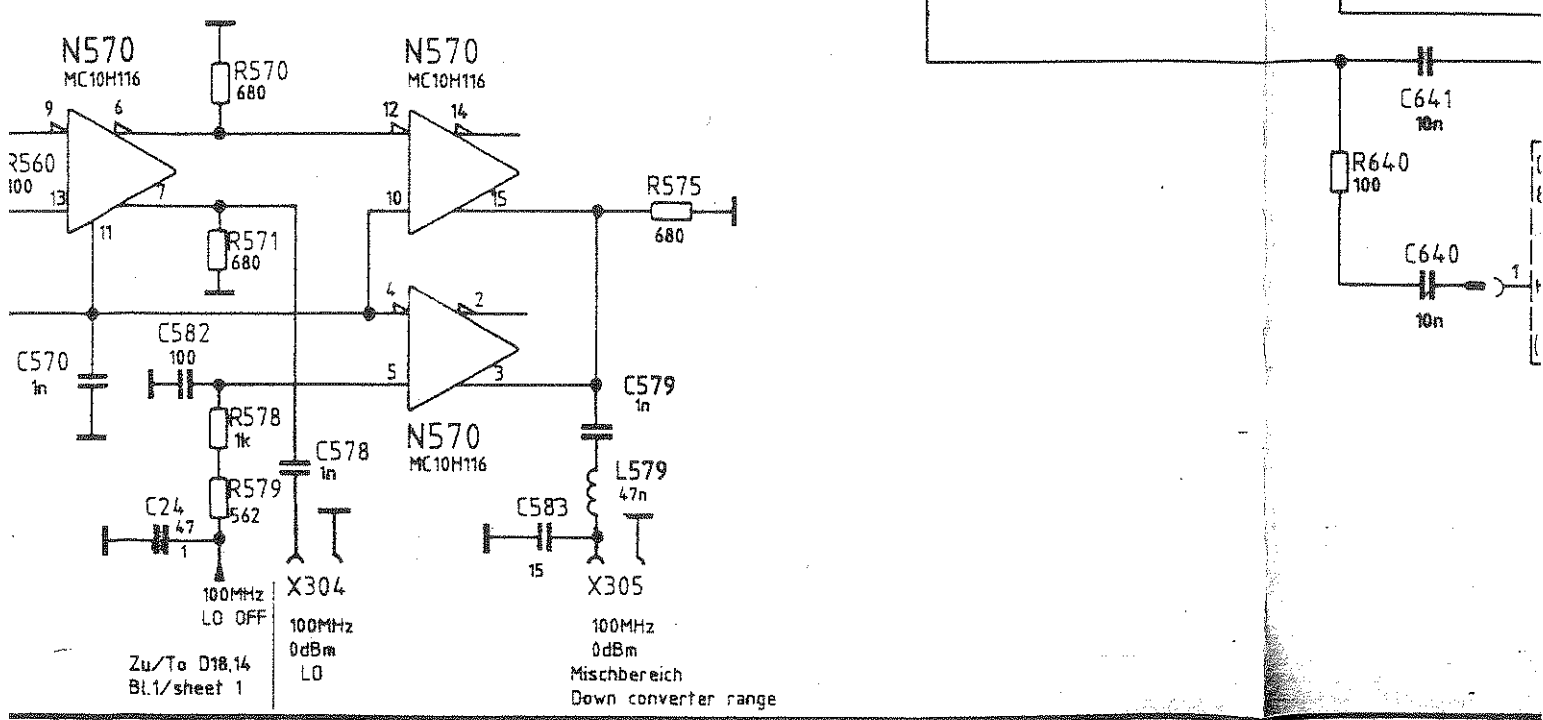
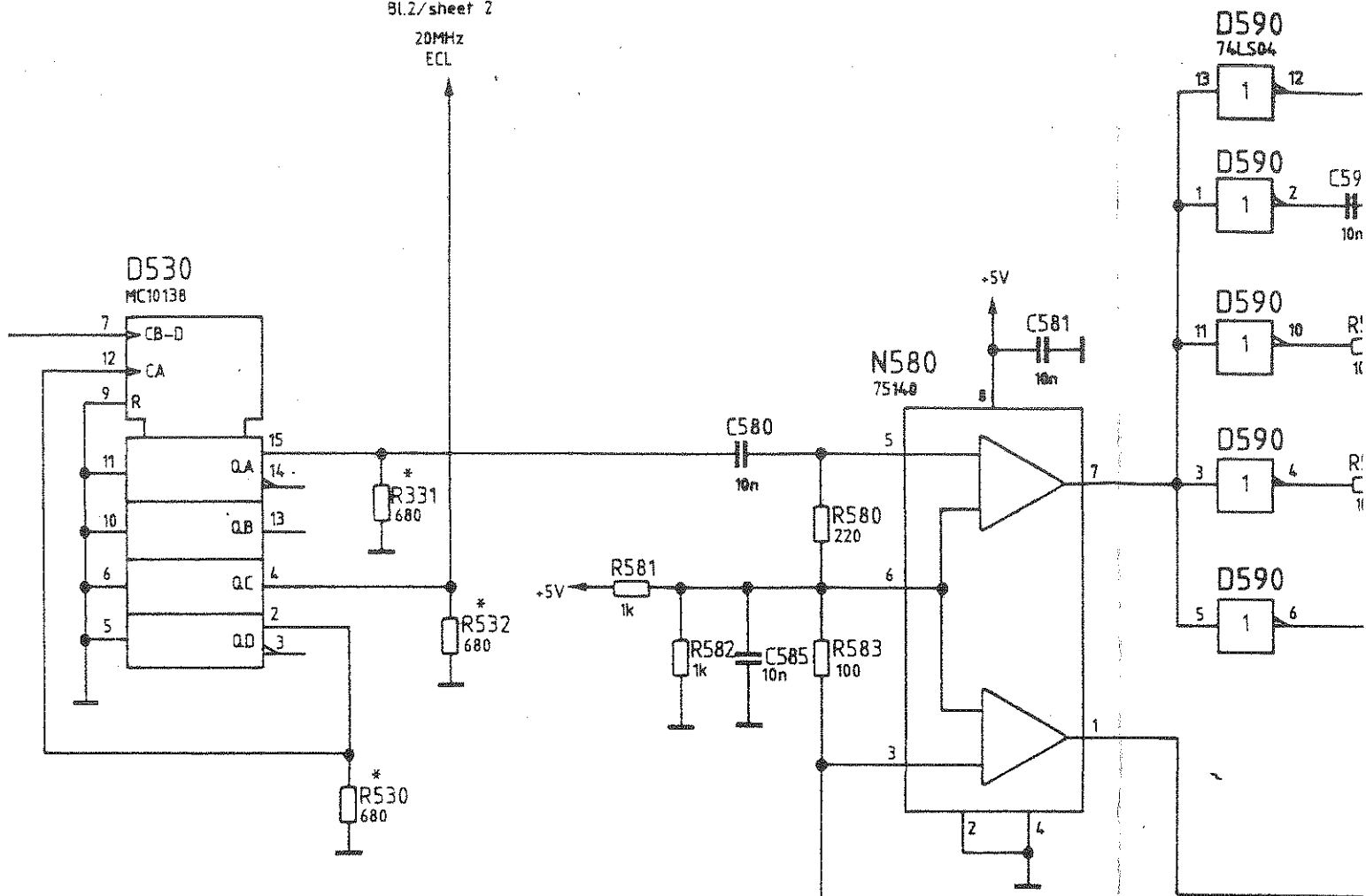
100MHz-Quarzoszillator  
Crystal oscillator

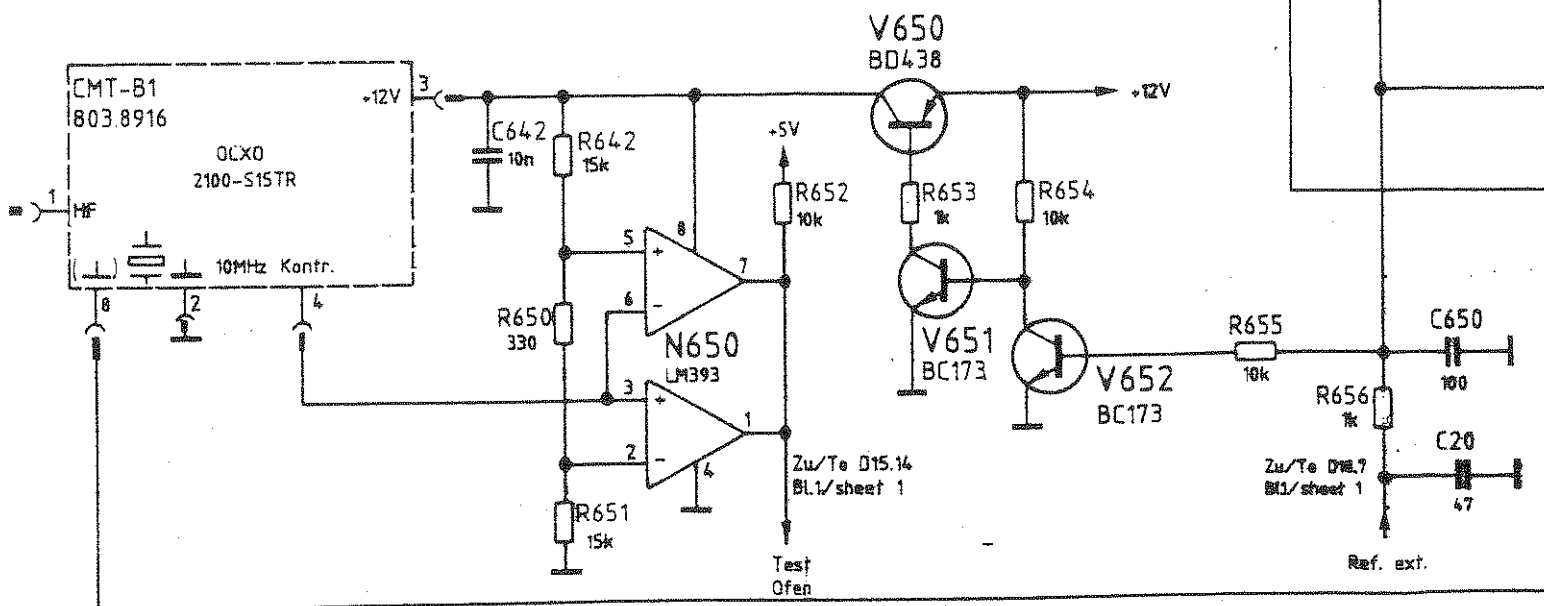
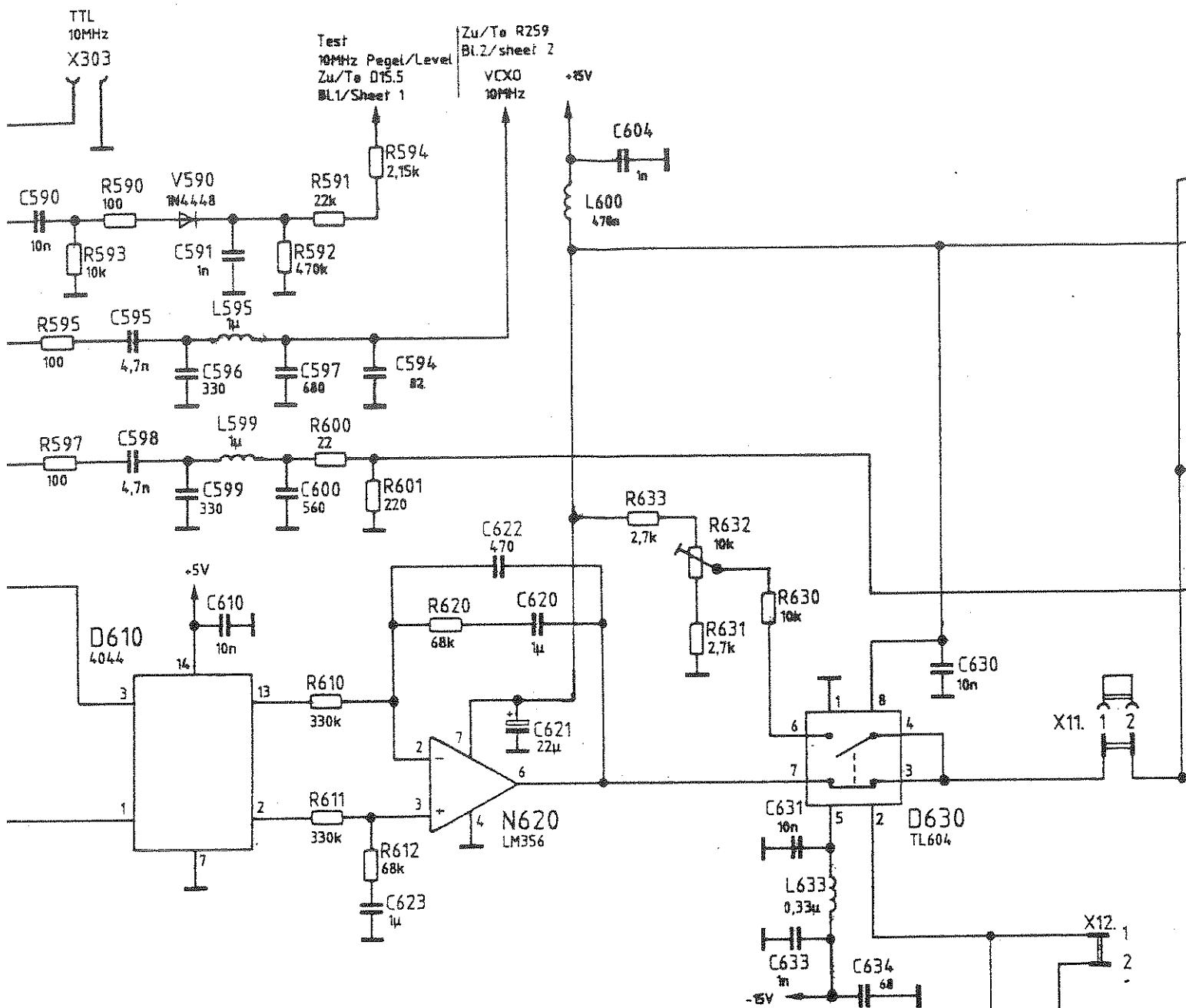
-15V

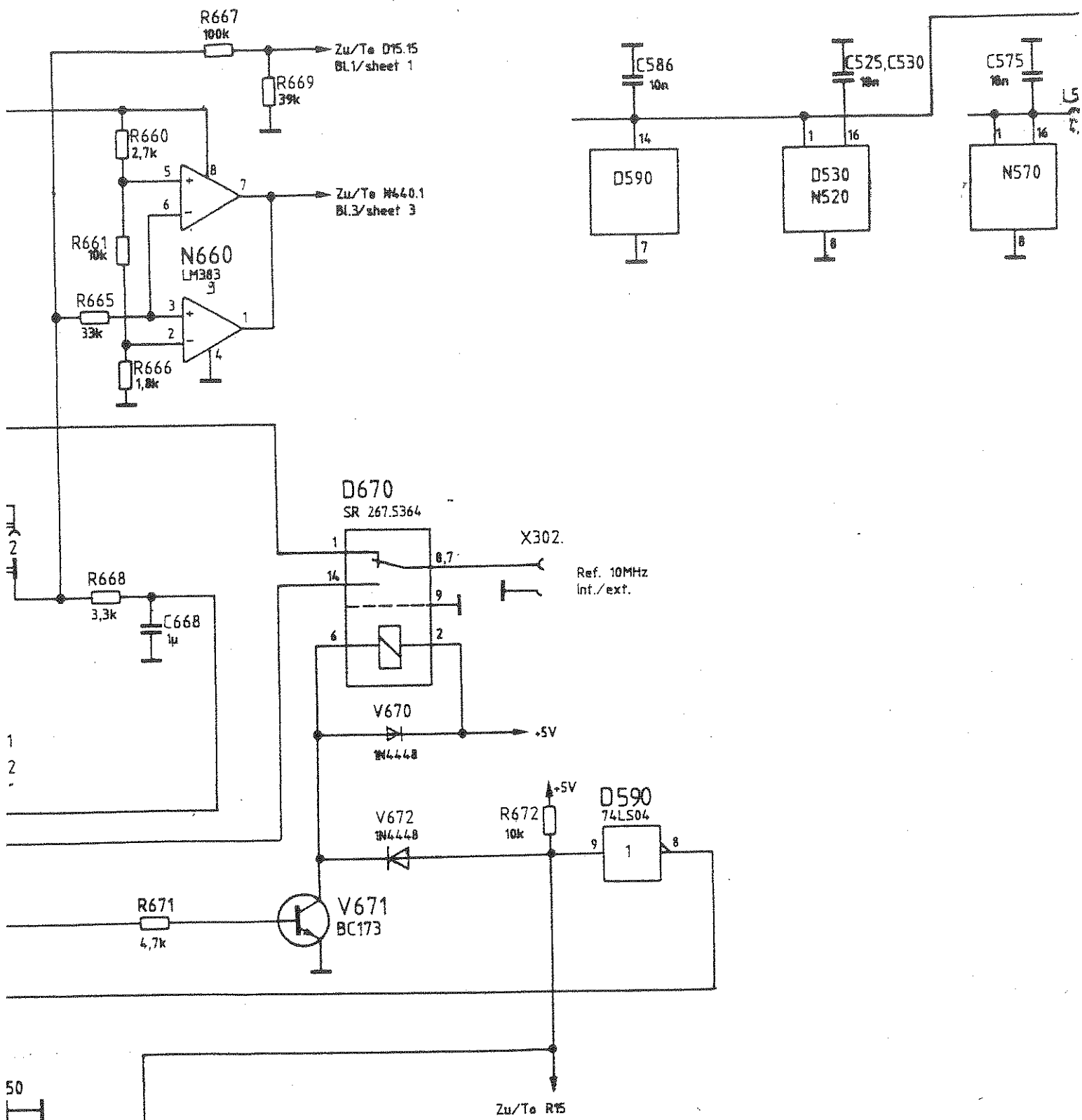
B500  
(VAR 04, Model 04)



Zu/To C200  
Bl.2/sheet 2  
20MHz  
ECL

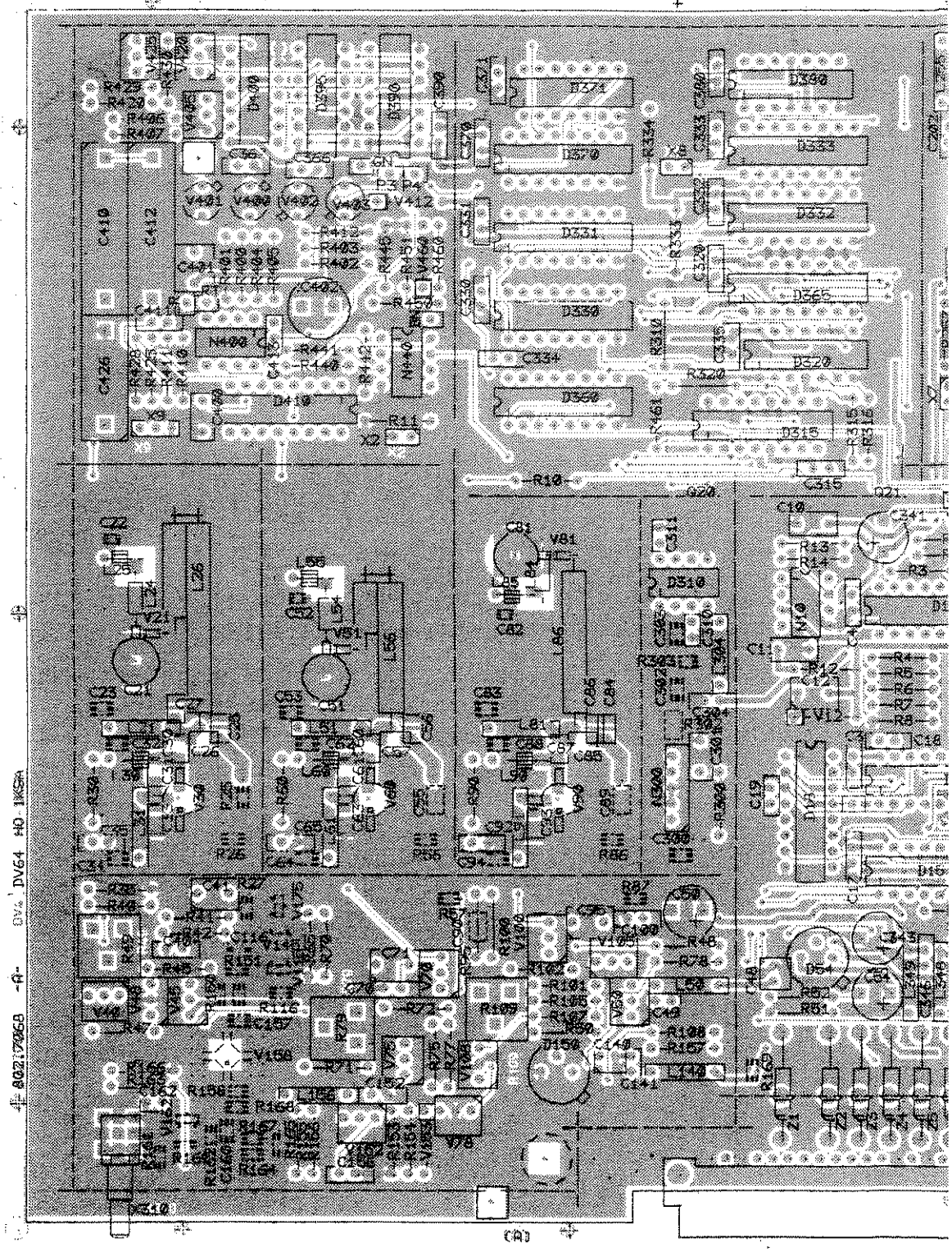






	<b>HF-Oszillator / RF oscillator</b> reg. i. V. 802.2020 V erste Z.	Zeichen.-Nr. <b>802. 8835 S</b>
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A  
B  
C  
D  
E  
F



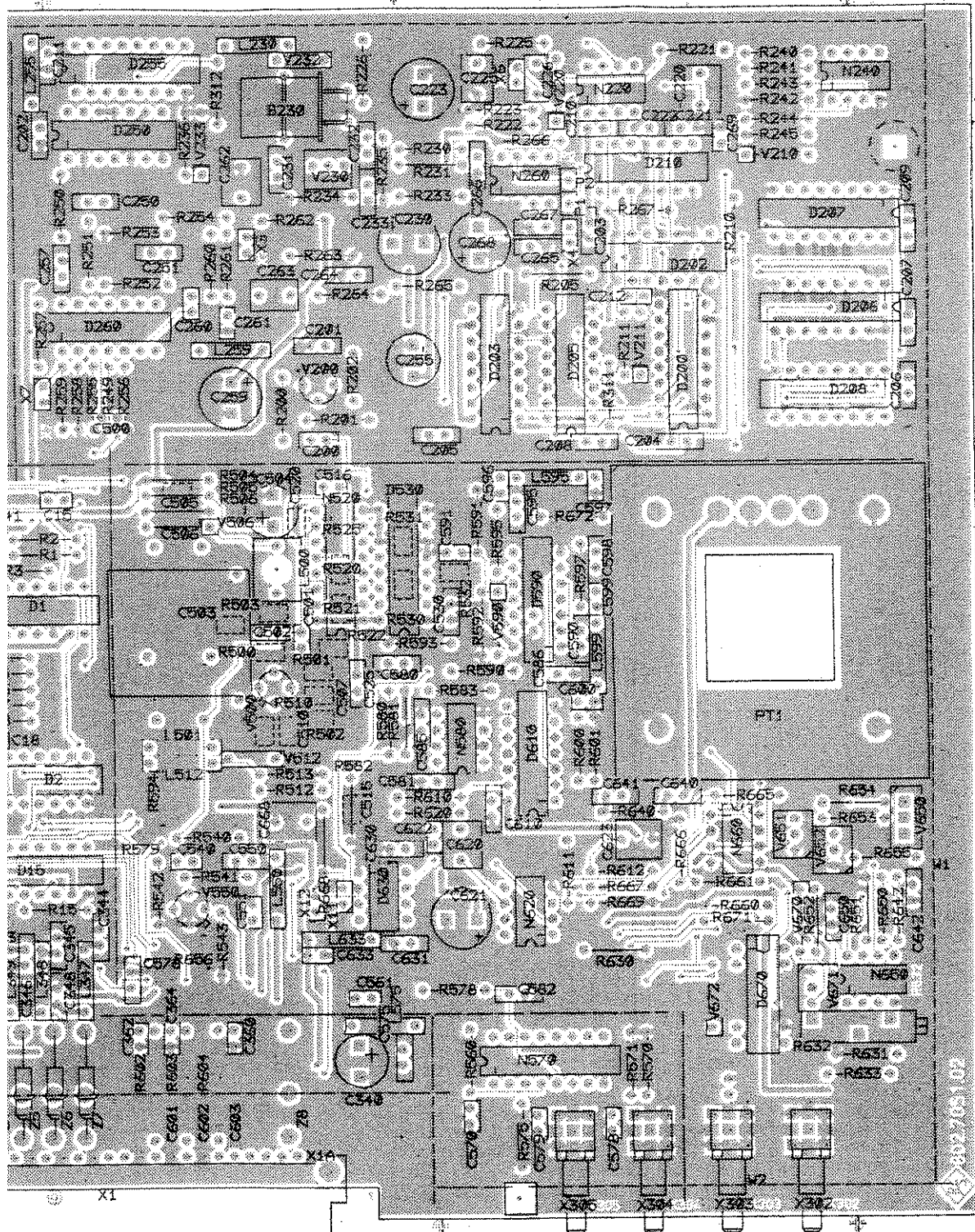
Ansicht und Leitungsführung Bauteilseite  
View of tracks on component side

(hierzu HVC 250)



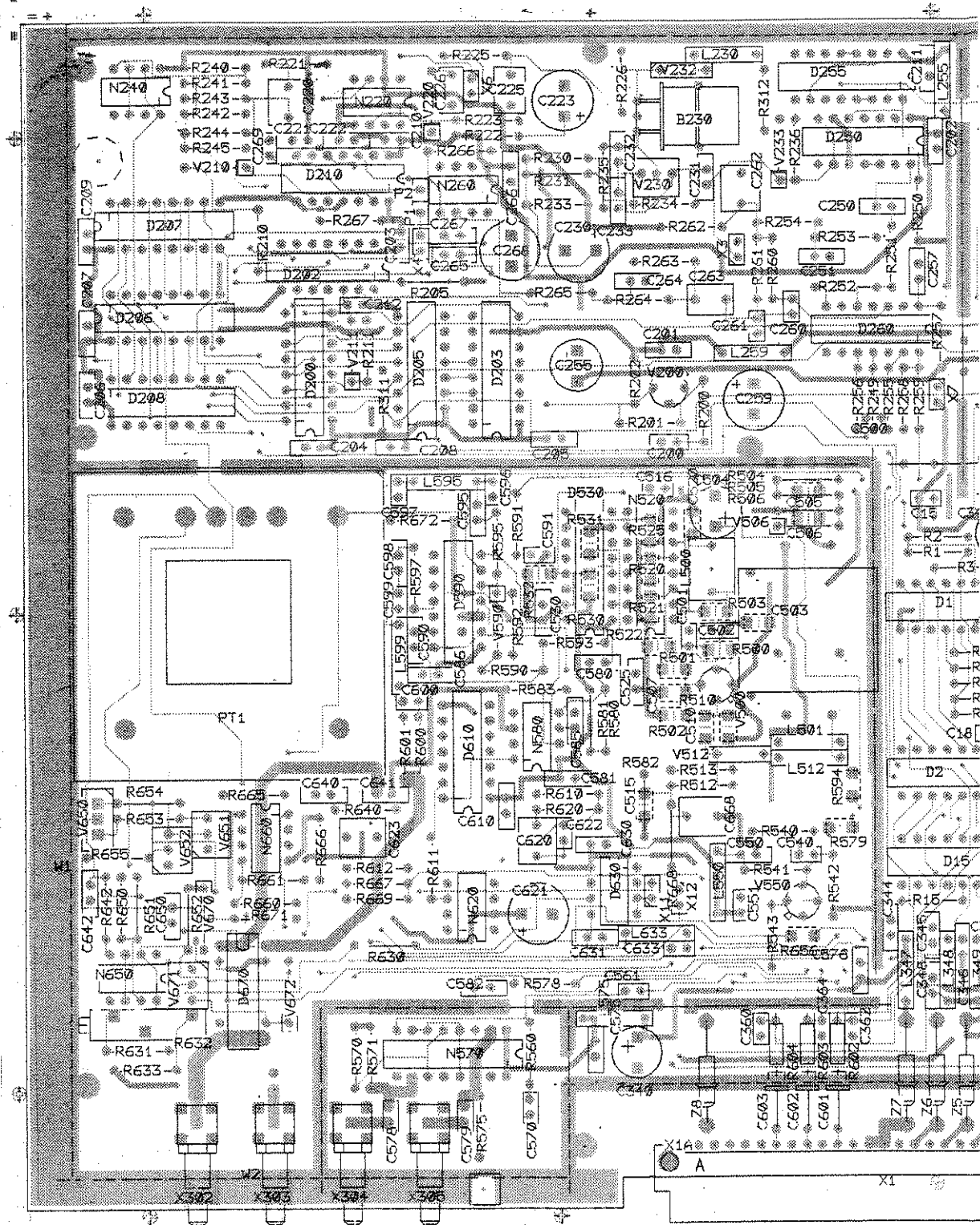
ACHTUNG: EGB!  
Elektrostatisch gefährdete  
Bauelemente erfordern eine  
besondere Handhabung.  
ATTENTION ESD!  
Electrostatic sensitive  
devices require a special  
handling.

VARIANTENERKLÄRUNG / VERSION  
VAR 02 - GRUNDAUSFÜHRUNG / BASIC MO



						Maße ohne Toleranzangabe		Maßstab	1 : 1		
									Halbzeug, Werkstoff		
						1 KSA	Tag	Name	Benennung		Z
						Bearb.	10.87	LS	HF-OSZILLATOR		
						Gepr.			RF - OSCILLATOR		
						Norm					
						</					





Ansicht und Leitungsführung: Lötseite  
View of tracks on solder side

Therzu HVC 250



ACHTUNG: EGB!  
Elektrostatisch gefährdete  
Bauelemente erfordern eine  
besondere Handhabung.

ATTENTION ESD!  
Electrostatic sensitive  
devices require a special  
handling.

VARIANTENERKLÄRUNG / VERSION  
VAR 02 - GRUNDAUSFÜHRUNG / BASIC MODEL









**ROHDE & SCHWARZ**

SERVICE INSTRUCTIONS

Attenuation Set Module

802.4223.02

## Contents

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5.2	Testing and Adjustment .....	5.3
5.3	Interfaces .....	5.3

Component lists  
Circuit diagrams  
Component layout diagrams

## 5 Service Manual for Attenuation Set

(See circuit diagram 802.4223 S and block diagram)

**Caution:** The module must not be opened. The guarantee is otherwise void and the instrument must be recalibrated.

### 5.1 Function Description

The switches on the attenuator pads are driven by D1, a shift register (serial in/parallel out), via the power drivers D10, D11, D12, D13. The power attenuator pad (L) is driven via D3 and V8 because it is necessary to switch the pad from the RF overvoltage protection (limiter diodes Z9) in addition to via the controller interface. The signal path in this case is: Z9 + Z11/Z12 + comparators N1 + D3 (pin 6) + V8 + power attenuator pad. Once the limiter diodes have responded, the circuit V50 and V60 effects the diodes so, that they are fully driven in the forward direction for approx. 10 ms thus the RF power, which may be up to 50 W, is short-circuited until the power attenuator pad Z10 is switched on. If the function of the limiter diodes is no longer required, they can be switched in the reverse direction using V9, V10 and V11 so that they do not produce intermodulation. The components V15/R2 and V1/R27 determine the operating point of the limiter diodes.

The attenuation set is connected between the output stage of the RF synthesizer and the input/output of the instrument. The function of the attenuation set during the receiver test is to attenuate the level of the RF synthesizer. Two 40-dB attenuator pads, two 20-dB attenuator pads (one as part of the 12-dB power divider), one 10-dB attenuator pad and one 5-dB attenuator pad are used to this end. The smallest possible resolution is therefore 5 dB. The intermediate values are produced electronically by the output stage (802.7616.02).

A differentiation is made between two cases in the transmitter test: on the one hand, the signal passes directly via the power divider. If the power divider is bypassed, the signal on the RF overvoltage protection switches the divider on. The power is divided amongst 3 paths in this second case: to the rear (RF -30 dB) for further external processing, to the power meter and to the demodulators.

The signal of the power test point of Z10 is applied via Z13 and Z14 to the subtracting amplifier N5 whose output X41.16 is connected to the A/D converter. Once this analog signal has been digitized using the comparator, a power above a threshold of approx. 1 W indicates to the controller via D3 using an interrupt that a power is present. The power measuring diodes can also be biased in the reverse direction via N5 (pins 1, 2, 3) in order to prevent intermodulation whilst relinquishing the power measuring function.



## 5.2 Testing and Adjustment

Potentiometer R34 is used to adjust the response threshold of the RF overvoltage protection. The adjustment is carried out in the complete instrument (see Section 4).

## 5.3 Interfaces

Connector	Input Output	Designation	Value
W1	I/O	RF IN/OUT	I: 5 mW to 50 W O: 1 V
W2	I	RF IN	1 V
Z13	O	Input voltage	$V_{PK\ RF} - 16\ dB$
Z14	O	Reference voltage	$-0.25\ V \pm 0.1\ V$
Z11	I/O	Positive overvoltage protect.	+3 V
Z12	I/O	negative	-3 V
X41.16	O	Power: DC	$V_{PK\ RF} - 16\ dB$
X41.13	O	Power: Trigger	TTL **)
X41.11	I	Data	CMOS 5 V
X41.12	I	Clock	CMOS 5 V
X41.15	I	Strobe	CMOS 5 V
X41.3	O	Interrupt: Power	CMOS 5 V
X41.14	O	Interrupt: Thermo	CMOS 5 V
X41.8	I	+24 V	<10 mA
X41.7	I	+15 V	<40 mA
X41.10	I	-15 V	<10 mA
X41.5	I	+ 5 V	<10 mA

\*) Dependent on R34 in unloaded status

\*\*) Threshold with  $V_{RF} = \text{approx. } 1\ V$



ROHDE & SCHWARZ  
MÜNCHEN

Schaltteillisten  
Stromläufe  
Bestückungspläne  
Parts lists  
Circuit diagrams  
Components plans



ROHDE&SCHWARZ		AZ	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
		09	0987	ZE EICHLEITUNG FUER CMT	802.4223.01 SA	1
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
A170	ED ANSTEUERUNG EICHLEIT. NUR VAR : 04	802.4298.04				
C1	CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	802.4298.01			
C2	WIMA MKS/2/63/0,1UF/5% CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930	802.4298.01			
C3	WIMA MKS/2/63/0,1UF/5% CE 220UF+-20%25V RD8X14 ELECTROLYTIC CAPACITOR NIPPON SXE 25 VB 220 8X14	803.1063	802.4298.01			
BIS/TO C7						
C8	CE 100UF+-20%25V RD8X9,5 ELECTROLYTIC CAPACITOR	803.0580	802.4298.01			
C9	MATSUSHITA ECE-ALESS-101 CE 100UF+-20%25V RD8X9,5 ELECTROLYTIC CAPACITOR	803.0580	802.4298.01			
C10	MATSUSHITA ECE-ALESS-101 CE 470UF+-20%25V12,5X12,5 ELECTROLYTIC CAPACITOR	803.0715	802.4298.01			
C11	MATSUSHITA ECE-ALESS-471U CE 470UF+-20%25V12,5X12,5 ELECTROLYTIC CAPACITOR	803.0715	802.4298.01			
C12	MATSUSHITA ECE-ALESS-471U TRIMMWERT / SELECTED		802.4298.01			
C30	CE 22UF-10+50% 63V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7120	802.4298.01			
C31	ROEDERST EK 00 CB 222 J CE 47UF-10+50% 40V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7142	802.4298.01			
C32	ROEDERST EK 00 CB 247 G CE 100UF+-20%25V RD8X9,5 ELECTROLYTIC CAPACITOR	803.0580	802.4298.01			
C33	MATSUSHITA ECE-ALESS-101 CE 47UF-10+50% 40V 9X13 ELECTROLYTIC CAPACITOR	CE 006.7142	802.4298.01			
C50	ROEDERST EK 00 CB 247 G CK 680NF+-10%50VRM MKT CAPACITOR	CK 099.2981	802.4298.01			
C60	WIMA MKS2/50/0,68UF/10% CK 680NF+-10%50VRM MKT CAPACITOR	CK 099.2981	802.4298.01			
	WIMA MKS2/50/0,68UF/10%					
D1	BL CD4094BF 8BIT SH.REG SHIFT REGISTER	BL 418.0064	802.4298.01			
D3	RCA CD4094BF BL CD4013BE 2XD- FLIPFL FLIPFLOP	BL 086.7021	802.4298.01			
D10	RCA CD4013BE BJ SN75361AP 2XTTL/MOS-LC LEVEL CONVERTER NSC DS75361N	BJ 294.8490	802.4298.01			
		802.4223.01 SA	BL 1+			

ROHDE&SCHWARZ		AZ	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
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Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.		enthalten in contained in		
BIS/TO D13						
K1	ZM ELEKTROMAGNET ELECTROMAGNET	294.8425		294.8760		
BIS/TO K5						
K7	ZM ELEKTROMAGNET ELECTROMAGNET	294.8425		294.8760		
K9	ZM ELEKTROMAGNET ELECTROMAGNET	294.8425		294.8760		
N1	BO LF412CN 2XFET OPAMP OPERATIONAL AMPLIFIER NSC LF412CN	356.0521		802.4298.01		
N3	BO LF412CN 2XFET OPAMP OPERATIONAL AMPLIFIER NSC LF412CN	356.0521		802.4298.01		
N5	BO TL074IN 4XFET OPAMP OPERATIONAL AMPLIFIER TEXAS INST TL074IN	568.7528		802.4298.01		
R1	RL 0,35W 4,75KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/4,75K-F-D	RL 083.1097		802.4298.01		
R2	RN 5X4,7KOHM+-2% SIL10 H5 RESISTOR NETWORK BOURNS 4310R-102-472	RN 647.5779		802.4298.01		
R3	RL 0,35W 10,0 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/10OHM-F-D	RL 082.8852		802.4298.01		
R4	RL 0-WIDERSTAND DIN 0204 0-OHM RESISTOR DRALORIC OMA 0204	RL 069.0000		802.4298.01		
R6	RL 0,35W 18,2KOHM+-1%TK50 RESISTOR DRALORIC SMA/207/18,2K-F-C	RL 083.1480		802.4298.01		
R7	RL 0,35W 100KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/100K-F-C	RL 082.1764		802.4298.01		
R8	RL 0,35W 11,5KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/11,5K-F-D	RL 083.1339		802.4298.01		
R9	RL 0,35W 47,5KOHM+-1%TK50 RESISTOR DRALORIC SMA/207/47,5K-F-C	RL 083.1800		802.4298.01		
R10	RL 0,35W 5,11KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/5,11K-F-C	RL 082.2348		802.4298.01		
R14	RN 5X 39KOHM+-2%SIL10 H5 RESISTOR NETWORK BOURNS 4310R-102-393	RN 569.3184		802.4298.01		
R15	RL 0,35W 1,50KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1,50K-F-D	RL 083.0732		802.4298.01		
802.4223.01 SA BL 2+						

ROHDE&SCHWARZ		AZ	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
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Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
R16	RL 0,35W 221 KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/221K-F-C	RL 083.2270	802.4298.01			
R17	RL 0,35W 221 KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/221K-F-C	RL 083.2270	802.4298.01			
R18	RL 0,35W 4,75KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/4,75K-F-D	RL 083.1097	802.4298.01			
R19	RL 0,35W 4,75KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/4,75K-F-D	RL 083.1097	802.4298.01			
R20	RL 0,35W 14,7KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/14,7K-F-D	RL 083.1397	802.4298.01			
R21	RL 0,35W 301 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/301OHM-F-D	RL 083.0210	802.4298.01			
R22	RL 0,35W 1KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1K-F-C	RL 082.2160	802.4298.01			
R23	RS 0,5W1KOHM+-10%10X10X5 CERMET POTENTIOMETER BOURNS 3386X-1-102	RS 247.5917	802.4298.01			
R25	RL 0,35W 12,1KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/12,1K-F-D	RL 083.1351	802.4298.01			
R26	RL 0,35W 3,01KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/3,01K-F-D	RL 083.0961	802.4298.01			
R27	RL 0-WIDERSTAND DIN 0204 0-OHM RESISTOR DRALORIC OMA 0204	RL 069.0000	802.4298.01			
R29	RL 0,35W 100KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/100K-F-C	RL 082.1764	802.4298.01			
R30	RL 0,35W 10,0 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/10OHM-F-D	RL 082.8852	802.4298.01			
R31	RL 0,35W4,75 OHM+-1%TK50 METALFILMRESISTOR RESISTA MK2 4,75 OHM 1% TK50	RL 099.8021	802.4298.01			
R32	RL 0,35W 10,0 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/10OHM-F-D	RL 082.8852	802.4298.01			
R33	RL 0,35W 10,0 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/10OHM-F-D	RL 082.8852	802.4298.01			
R34	RS 0,5W5KOHM+-10%10X10X5 CERMET POTENTIOMETER BOURNS 3386X-1-502	RS 247.7978	802.4298.01			
R35	RL 0,35W 18,2KOHM+-1%TK50 RESISTOR DRALORIC SMA/207/18,2K-F-C	RL 083.1480	802.4298.01			
R37	RL 0,35W 11,5KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/11,5K-F-D	RL 083.1339	802.4298.01			
802.4223.01 SA BL 3+						

ROHDE&SCHWARZ		AZ	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
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Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
R38	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D	RL 083.1297	802.4298.01			
R39	RL 0,35W 5,62KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/5,62K-F-C	RL 082.2190	802.4298.01			
R40	RL 0,35W 2,00KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/2,00K-F-D	RL 083.0826	802.4298.01			
R41	RL 0,35W 1KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1K-F-C	RL 082.2160	802.4298.01			
R42	RL 0,35W 226 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/226OHM-F-D	RL 083.0090	802.4298.01			
R43	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D	RL 083.1297	802.4298.01			
R44	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D	RL 083.1297	802.4298.01			
R50	RL 0,35W 475 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/475OHM-F-D	RL 083.0390	802.4298.01			
R51	RL 0,35W 20,0KOHM+-1%TK50 RESISTOR DRALORIC SMA/207/20K-F-C	RL 083.1522	802.4298.01			
R52	RL 0,35W 82,5KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/82,5K-F-C	RL 082.2302	802.4298.01			
R60	RL 0,35W 475 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/475OHM-F-D	RL 083.0390	802.4298.01			
R61	RL 0,35W 20,0KOHM+-1%TK50 RESISTOR DRALORIC SMA/207/20K-F-C	RL 083.1522	802.4298.01			
R62	RL 0,35W 82,5KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/82,5K-F-C	RL 082.2302	802.4298.01			
S1	ST OEFFNER 71GRD C+-6%SH THERMO SWITCH MICROTHERM R&S-ZCHNG.294.8790	294.8790				
V1	AE BZX85/C5V6 1,3W Z-DI ZENER DIODE THOMSON BZX85/C5V6	AE 092.8232	802.4298.01			
V2	AE BZX79/C8V2 0,5W Z-DI ZENER DIODE VALVO BZX79/C8V2	AE 012.2490	802.4298.01			
V3	AD 1N4448 75V 0,15A UDI DIODE TEXAS INST 1N4448 GEGURTET	AD 012.0700	802.4298.01			
BIS/TO V6						
802.4223.01 SA BL 4+						

ROHDE&SCHWARZ		AZ	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
		09	0987	ZE EICHLERLEITUNG FUER CMT	802.4223.01 SA	5
Kennzeichen Component No.	Benennung/Beschreibung Designation			Sachnummer Stock No.	enthalten in contained in	
V7	AE BZX79/C15 0,5W Z-DI ZENER DIODE VALVO BZX79/C15			AE 012.2555	802.4298.01	
V8	AK BC173C NPN 25V 100MA TRANSISTOR INTERMETAL BC173C			010.4444	802.4298.01	
V9	AK BC173C NPN 25V 100MA TRANSISTOR INTERMETAL BC173C			010.4444	802.4298.01	
V10	AK BC253C PNP 25V 100MA TRANSISTOR INTERMETAL BC253C			010.2829	802.4298.01	
V11	AK BC253C PNP 25V 100MA TRANSISTOR INTERMETAL BC253C			010.2829	802.4298.01	
V12	AD 1N4448 75V 0,15A UDI DIODE TEXAS INST 1N4448 GEGURTET			AD 012.0700	802.4298.01	
V13	AD 1N4448 75V 0,15A UDI DIODE TEXAS INST 1N4448 GEGURTET			AD 012.0700	802.4298.01	
V14	AE BZX79/C5V6 0,5W Z-DI ZENER DIODE VALVO BZX79/C5V6			AE 012.2455	802.4298.01	
V15	AE BZX85/C5V6 1,3W Z-DI ZENER DIODE THOMSON BZX85/C5V6			AE 092.8232	802.4298.01	
V16	AE BZX79/C8V2 0,5W Z-DI ZENER DIODE VALVO BZX79/C8V2			AE 012.2490	802.4298.01	
V17	AD 1N4448 75V 0,15A UDI DIODE TEXAS INST 1N4448 GEGURTET			AD 012.0700	802.4298.01	
V18	AD 1N4448 75V 0,15A UDI DIODE TEXAS INST 1N4448 GEGURTET			AD 012.0700	802.4298.01	
V20	TRIMMWERT / SELECTED				802.4298.01	
V50	AK BC173C NPN 25V 100MA TRANSISTOR INTERMETAL BC173C			010.4444	802.4298.01	
V52	AD 1N4448 75V 0,15A UDI DIODE TEXAS INST 1N4448 GEGURTET			AD 012.0700	802.4298.01	
V60	AK BC253C PNP 25V 100MA TRANSISTOR INTERMETAL BC253C			010.2829	802.4298.01	
V62	AD 1N4448 75V 0,15A UDI DIODE TEXAS INST 1N4448 GEGURTET			AD 012.0700	802.4298.01	
W27	DX KABEL W27 CABLE W27			803.0273		
X41	FR IC-FASSUNG 16 POLIG 16-PIN IC-SOCKET PRECICONT US016T			FR 249.6091	802.4298.01	

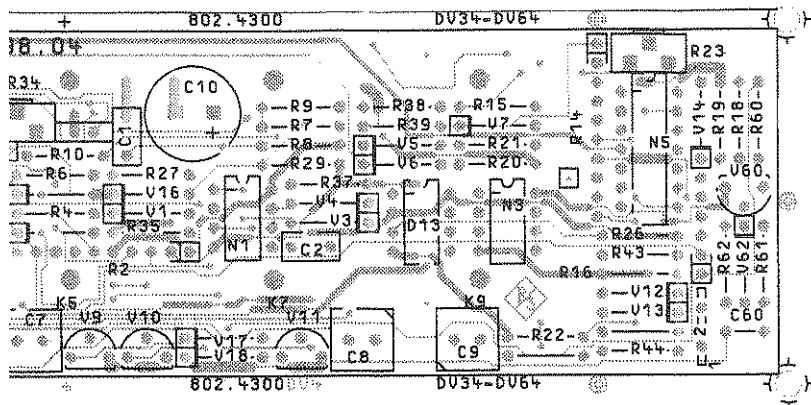
ROHDE&SCHWARZ		AZ	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
		09	0987	ZE EICHLEITUNG FUER CMT	802.4223.01 SA	6
Kennzeichen Component No.	Benennung/Beschreibung Designation			Sachnummer Stock No.	enthalten in contained in	
X42	FP INDIREKT.STECKERL.36P. PIN CONNECTOR			FP 242.3600	802.4298.01	
X113	BERG 75160-102-36 FP STECKERL.ABGEW.36-POL. ANGLE PIN CONNECTOR			FP 087.9105	802.4298.01	
	BERG 75168-114-36					
Z1	DT DAEMPFUNGSGLIED40DB/50 ATTENUATOR 40DB/50			912.5269	800.9205	
Z2	DT DAEMPFUNGSGLIED20DB/50 ATTENUATOR 20DB/50			912.5252	800.9205	
Z3	BD DAEMPFUNGSGLIED 5DB/50 ATTENUATION 5DB/50			912.5281	800.9205	
Z4	DT DAEMPFUNGSGLIED10DB/50 ATTENUATOR 10DB/50			912.5246	800.9205	
Z5	DT DAEMPFUNGSGLIED40DB/50 ATTENUATOR 40DB/50			912.5269	800.9205	
Z6	DT DAEMPFUNGSGLIED 4DB/50 ATTENUATOR 4DB/50			912.5230	800.9205	
Z7	DT 2X14DB DAEMPFUNGSGLD.			915.0400	800.9205	
Z8	DT VERBINDUNGSLEITUNG			912.5298	800.9205	
Z9	BD UEBERSPANNUNGSSCHUTZ			800.9570	800.9205	
Z10	BD LEISTUNGSVERTEILUNG			915.0300	800.9205	
						- ENDE -



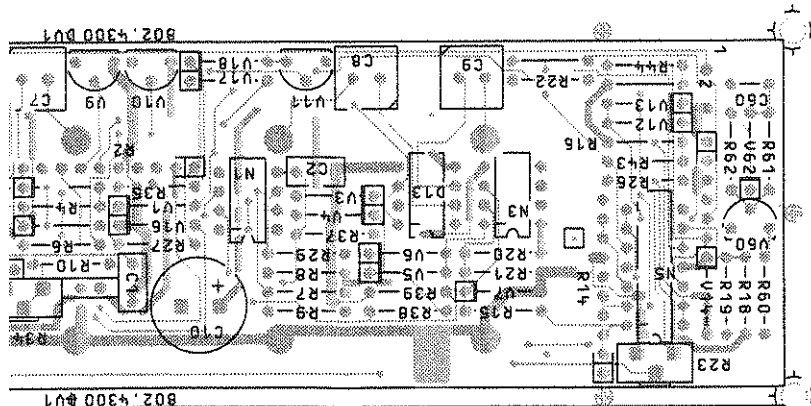
**ACHTUNG: EGB!**  
Elektrostatisch gefährdete Bauelemente erfordern eine besondere Handhabung.

**ATTENTION ESD!**  
Electrostatic sensitive devices require a special handling.

gsführung Bauteilseite  
omponent side



gsführung Lötseite  
older side



VARIANTENERKLÄRUNG / VERSION  
VAR 02 - GRUNDAUSFÜHRUNG / BASIC MODEL  
VAR 04 - AUSF. MIT C - NETZ MODIF.

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W42

ge/yel

gn/grn

or/orn

Ansteuerung Eichleitung  
Attenuator control  
802.4298

or/orn

X42.5 X42.6 X42.3

W2

S1

K1

C3  
220 $\mu$

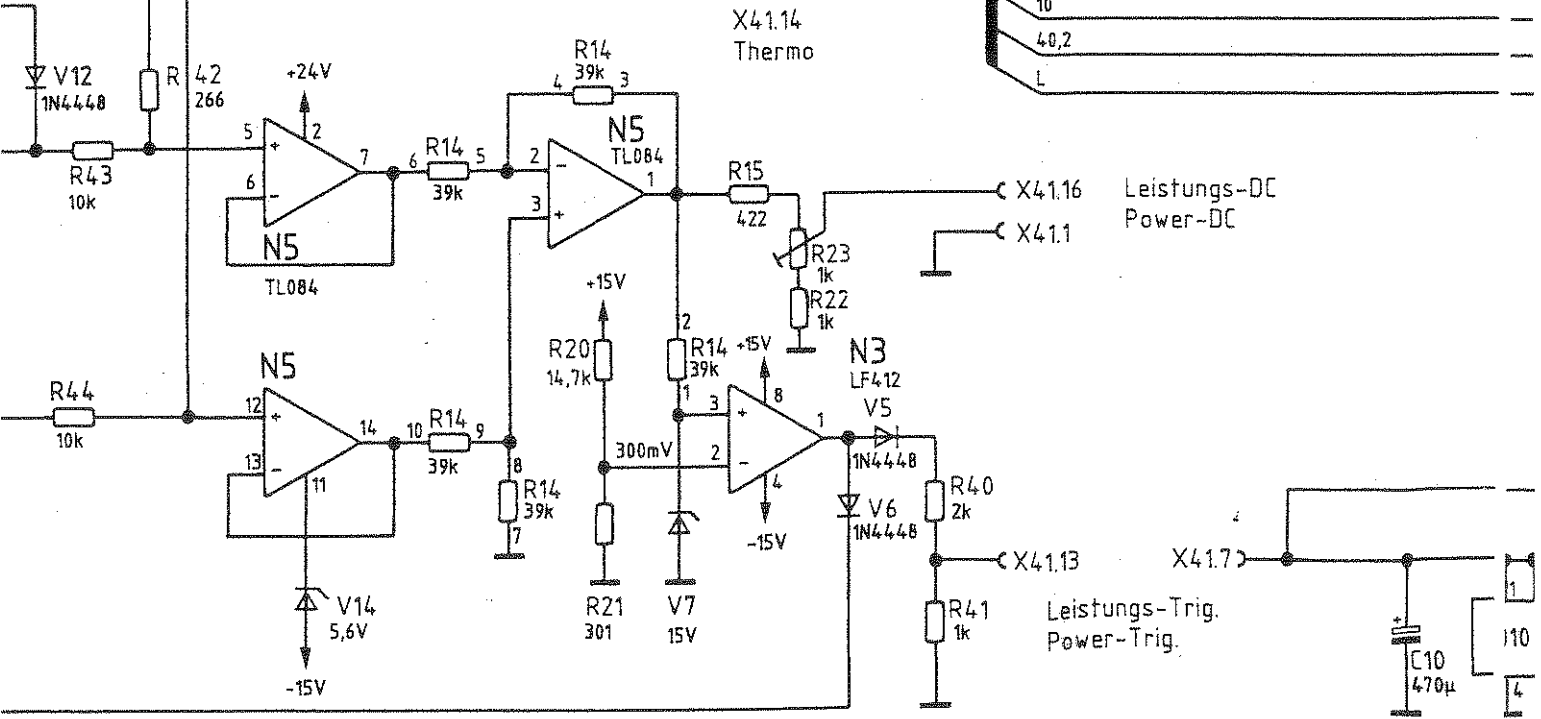
D10  
75361

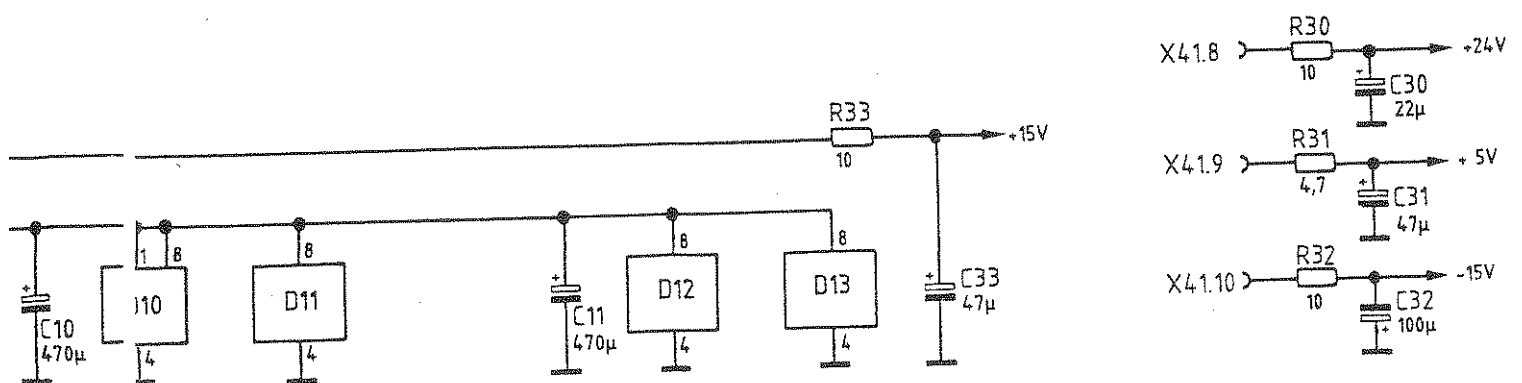
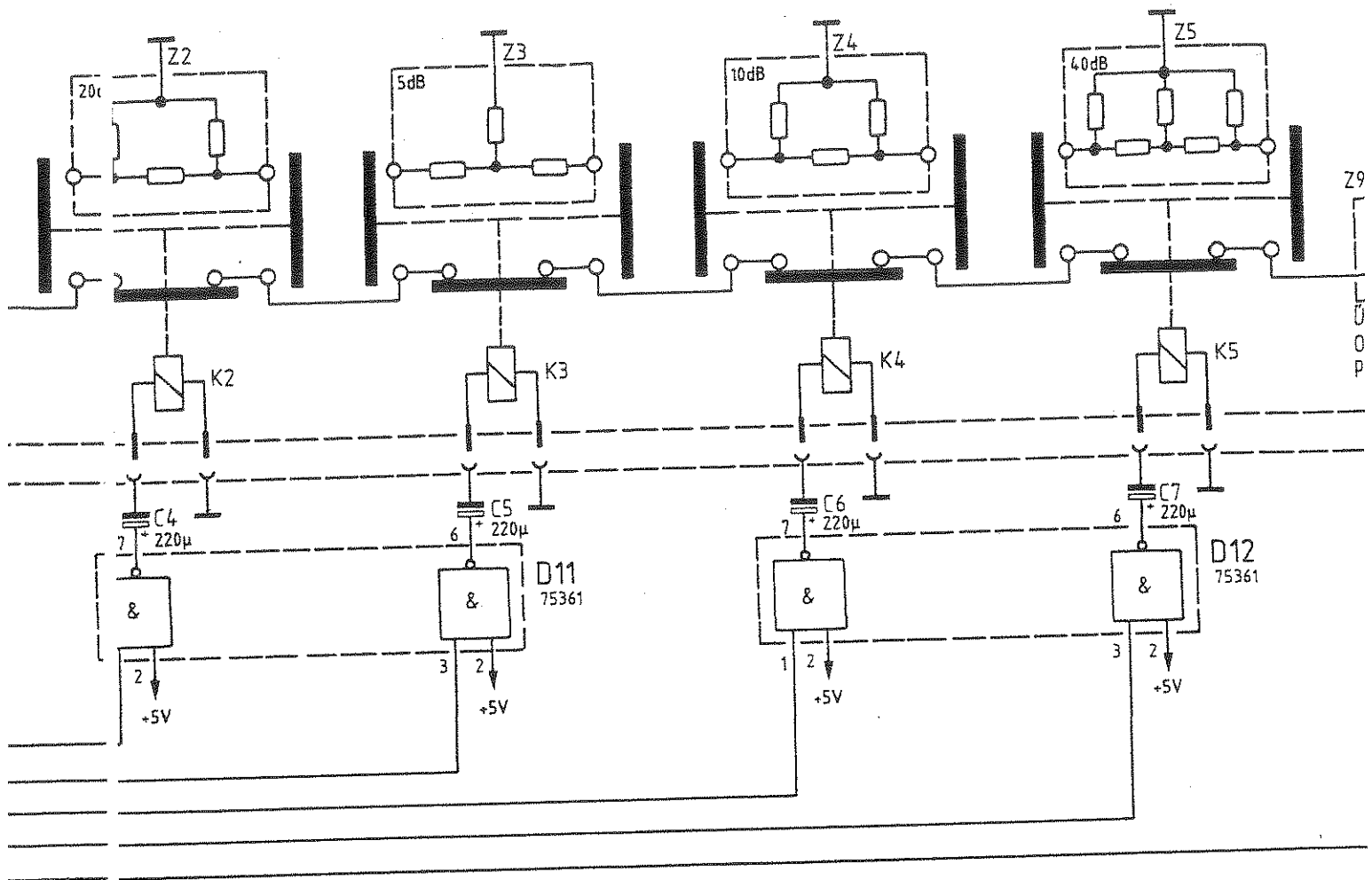
+5V  
R1  
4,75k

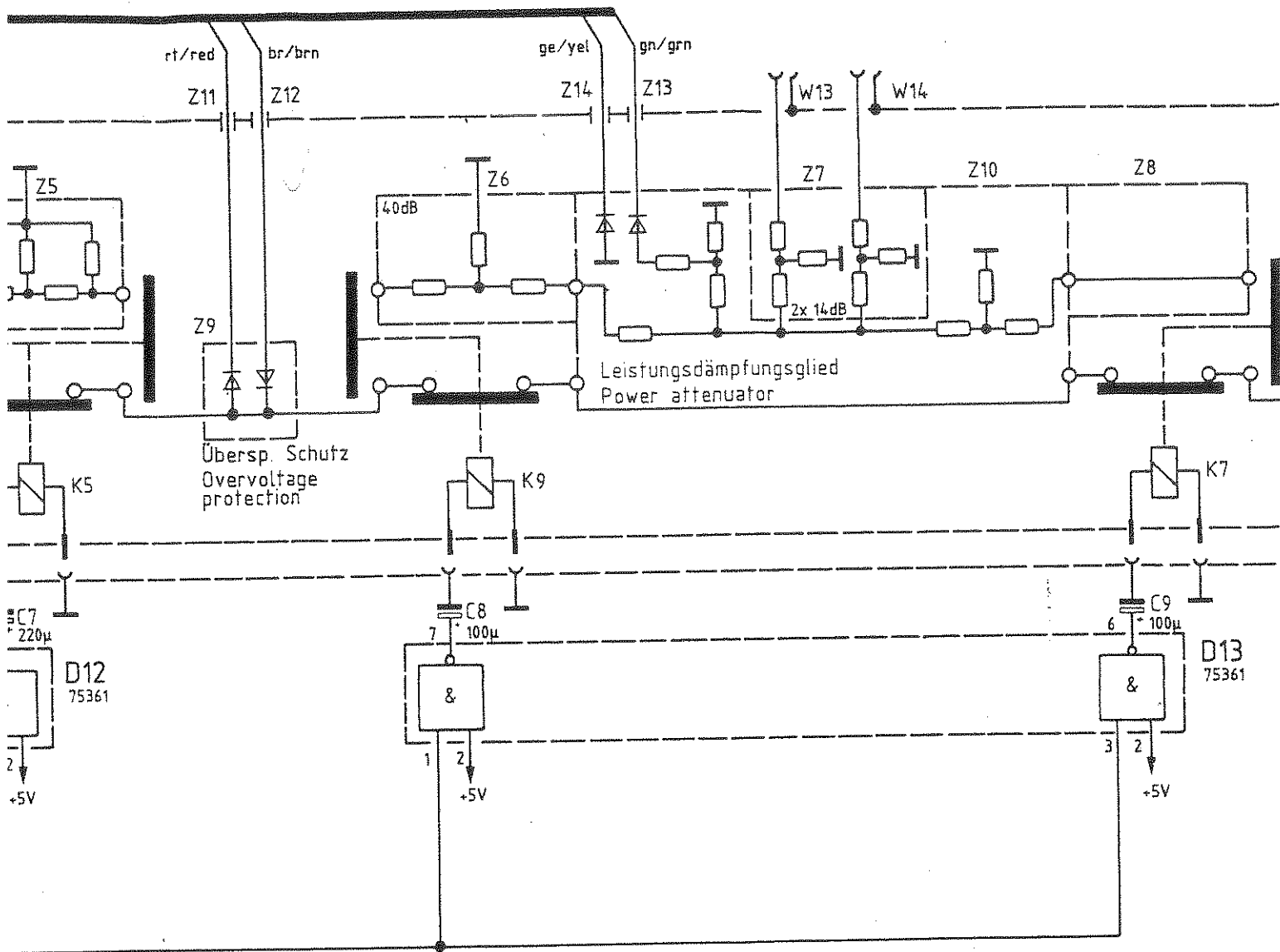
X41.14  
Thermo

Leistungs-DC  
Power-DC

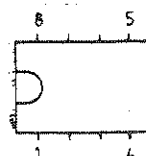
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Power-Trig.



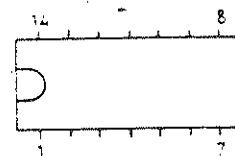




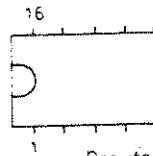
V8...V11



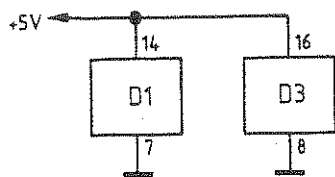
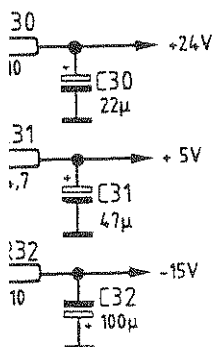
Draufsicht  
Top view  
N1, N3  
D11, D12, D13



Draufsicht  
Top view  
N5, D3



Draufsicht  
Top view  
D1



Stromlauf gilt für VAR 04  
Circuit diagram is valid for model 04

	Stromlauf zu CMT Eichleitung / CMT Attenuator	Z	Zeichn.-Nr. 802.4223 S
CMT	reg. i. V. 802.2020 V	erste Z. 802.2020	



**ROHDE & SCHWARZ**

**SERVICE INSTRUCTIONS**

Analog Unit

802.8435.02

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Component lists  
Circuit diagrams  
Component layout diagrams

(See circuit diagram 802.8435 S and block diagrams 5-1 to 5-5)

### 5.1 Function Description

The analog unit is divided into the following function units:

- RF amplifier
- LO conditioning
- Demodulator
- AF conditioning
- DC amplifier

It conditions the signals to be measured according to the requirements and converts them into corresponding DC voltages. The analog unit is driven via two separate data channels.

#### 5.1.1 RF Amplifier

(See circuit diagram 802.8435 S, sheet 1 and Fig. 5-1)

The RF amplifier controls the RF signals applied to the two selectable inputs to a constant level and then applies them to the RF counter and the RF input of the mixer. Amplifiers and attenuator pads connected in series suppress the LO mixer signal sufficiently at the inputs of the RF amplifier.

The signal from the power distributor is switched off by a diode switch in order to reduce the crosstalk between the inputs if the switchover relay is switched to the other input. A selectable attenuator pad is connected ahead of the following PIN diode attenuator to increase the dynamic range. The attenuator pad is switched on or off according to the result of the power measurement. A temperature-compensated peak-value rectifier detects the RF signal at the RF counter output and applies it to the integrator to generate the PIN attenuator voltage. The integrator operates with a selectable time constant and reference voltage depending on the type of modulation (FM,  $\Phi$ M or AM).

The output signal of the rectifier is compared with a reference and a signal is then generated which informs the controller if the signal at the input is too small for the RF counter. The monoflop in this signal path bridges the dips which result with amplitude modulation.



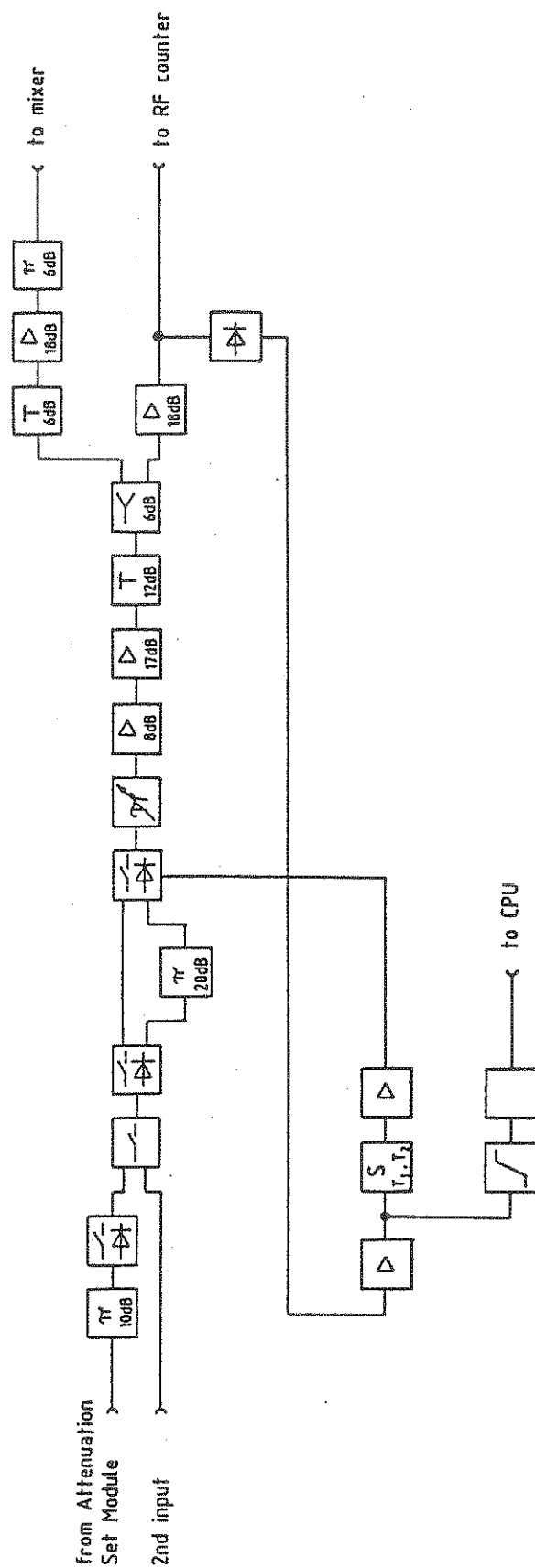


Fig. 5-1 Block diagram of the RF amplifier

### 5.1.2 LO Conditioning

(See circuit diagram 802.8435 S, sheet 4 and Fig. 5-2)

The RF synthesizer in the instrument generates frequencies in the range from 31.25 MHz to 1 GHz with a level of  $-6 \text{ dBm} \pm 3 \text{ dB}$  for frequency conversion. The LO conditioning circuit generates the level required for mixing and divides the LO frequency to enable evaluation of frequencies  $< 30.795 \text{ MHz}$ .

The LO conditioning circuit also generates the test signal for the demodulators. This test signal is generated by dividing the LO frequency to the IF of 455 kHz. This signal path is also used to calibrate the deviation of the RF synthesizer.

The LO signal present at connector X4 is directly applied to the mixer for frequencies  $> 31.25 \text{ MHz}$  via a selectable amplifier and a PIN diode switch. Frequencies in the range from 31.25 MHz to 62.5 MHz are amplified to TTL level and applied to the frequency dividers. A 1:2 divider is connected in series with the programmable 7-bit divider in order to achieve a duty factor of 0.5. This arrangement enables dividing factors of  $1/2$ ,  $1/4$ ,  $1/4(N+1)$ , ( $N=0$  to 127) to be set. Unrequired dividers are switched off to suppress subharmonics.

The output signal of the programmable divider is applied to the test generator. This divides the frequency to 455 kHz and passes it on to the demodulators via a selectable voltage divider. The voltage divider can be bypassed using a switch which is opened and closed at the rate of 222 Hz ( $455 \text{ kHz} : 2048$ ). The result is amplitude modulation with a modulation frequency of approx. 110 Hz and a modulation depth of approx. 45%. If the RF demodulator is to be tested, permanently close the switch and frequency-modulate the input signal to the LO conditioning circuit.

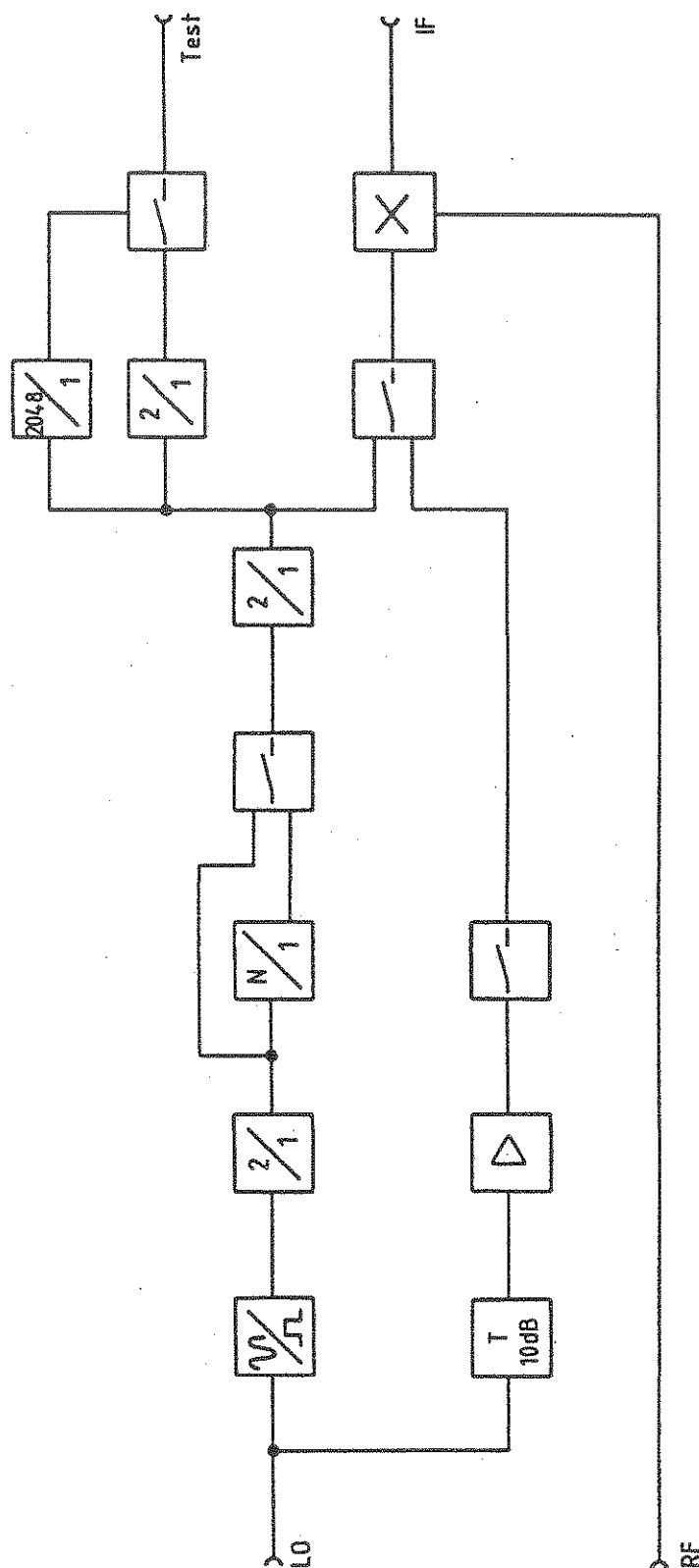


Fig. 5-2 Block diagram of the LO conditioning circuit

### 5.1.3 Demodulators

(See circuit diagram 802.8435 S, sheet 3 and Fig. 5-3)

This section conditions the frequency and level of the RF signals converted in the mixer and demodulates them according to the type of modulation AM, FM,  $\phi$ M.

The RF signal converted in the mixer to the IF centre frequency of 455 kHz is applied to the first low-noise amplifier stage via a 725-kHz lowpass which suppresses undesired mixer products. The signal is then applied directly or via a further amplifier with a series-connected 25-kHz bandpass filter to the regulated (AM) or limiting amplifier (FM,  $\phi$ M). The bandpass filter is used for selection with remote measurements and adjacent-channel power measurements.

#### 5.1.3.1 FM ( $\phi$ M) Demodulator

The FM demodulator operates according to the principle of a counter discriminator. The FM signal is converted in a limiter into squarewave pulses of constant width (monoflop); both the positive and negative edges of the FM signal are used for triggering. Twice the IF, in this case 910 kHz, is thus present at the monoflop output. If the pulses of constant width are integrated, a DC voltage is produced which is proportional to the number of pulses per unit of time and thus the frequency of the input signal; the AC voltage component is the required demodulated AF voltage. Since the phase modulation corresponds to the frequency modulation when the modulated signal is integrated, the counter discriminator is also suitable for demodulating phase-modulated signals. A suitable filter corrects the frequency response of the demodulated signal.

The FM demodulator is frequency-linear up to 20 kHz; deemphasis with a time constant of 750  $\mu$ s can be connected if required.

#### 5.1.3.2 AM Demodulator

The AM demodulator operates as a bidirectional rectifier with subsequent lowpass filters. The AC voltage components are filtered out from the output signal of the rectifier and the remaining DC voltage applied via an integrator to the controlled amplifier; the DC voltage is used with FM to switch the signal path on and off (squench function) since it is a measure of the signal strength of the IF.



#### 5.1.4 AF Conditioning

(See circuit diagram 802.8435 S, sheet 2 and Fig. 5-4)

The AF conditioning circuit processes the two main AF paths in the instrument (demodulated and externally applied AF signals), weights them and applies them to the meter rectifiers, the oscilloscope (if fitted), the loudspeaker amplifier, the tone sequence decoder and the AF counter.

##### 5.1.4.1 Signal Distribution

The external AF signal is applied directly to the main signal switch via a selectable 20-dB attenuator pad and also via the selectable CCITT filter.

The demodulated signal is applied to the main signal switch directly via a selectable 300-Hz highpass filter to suppress any pilot tones and/or via the selectable CCITT filter. The following combinations are therefore possible at the output of the switch:

AF external	Demodulated signal
Demodulated signal	-
AF external, CCITT	Demodulated signal
Demodulated signal, CCITT	Demodulated signal
AF external	AF external, CCITT
AF external	Demodulated signal, CCITT

Using further selectors it is possible to apply each of these signals to the peak-value meter, rms meter, SINAD meter, tone sequence decoder, AF counter, loudspeaker and oscilloscope.

##### 5.1.4.2 RMS Path

The rms signal to be evaluated is applied to the 150-Hz highpass filter via a selectable 40/0-dB amplifier whose gain is determined from the result of the rms measurement. The highpass filter is connected when measurements are made in FAST mode (cf. Section 5.1.5, DC Amplifier). The signal is applied to the DC amplifier via three calibration switches which are required to determine the offset and gain errors of the rms meter.

#### 5.1.4.3 Peak-value Path

The peak-value path is similar to the rms path. A signal inverter is fitted instead of the 150-Hz highpass filter so that the positive and negative peaks of the signal can be measured in the case of demodulation since the peak-value meter only detects positive signals.

Prior to the inverter, the external modulation signal connected via the modulation control is applied to the peak-value meter via a selector to enable calibration if necessary.

#### 5.1.4.4 SINAD/Distortion

The SINAD/distortion meter is basically a controlled amplifier with a series-connected notch filter. A constant rms value is used as the setpoint; the output signal of the amplifier is square-rooted, integrated and applied to the controller, an OTA in the negative feedback path of the amplifier. The fundamental frequency (1 kHz) is subsequently filtered and the rms weighted from the regulated signal. A three-pole notch filter with pole frequencies at 990 Hz, 1 kHz and 1.01 kHz is used as the filter in order to intercept small differences between the fundamental frequency and the pole frequency.





### 5.1.5 DC Amplifier

(See circuit diagram 802.8435 S, sheet 5 and Fig. 5-5)

The DC amplifier circuit conditions the incoming AC and DC voltages for the subsequent A/D converter.

#### 5.1.5.1 RMS Meter

The rms meter is an IC which basically multiplies the input signal and subsequently generates the mean value. The rms meter is operated in two modes, fast and slow, in order to achieve a higher measuring rate. The selection of the two modes involves, on the one hand, changing the charging capacitor required to generate the mean value and, on the other, the switchover of the cut-off frequency of a 4th order lowpass filter with an optimized transient response connected in series with the IC. The cut-off frequencies of the input voltages are 50 Hz in the slow mode and 150 Hz in the fast mode. A 2nd order highpass filter is connected ahead of the rms meter to prevent AC voltages to be superimposed on the DC output voltage at input voltages <150 Hz in the fast mode (see Section 5.1.4.2, RMS Path).

#### 5.1.5.2 DC Multiplexer

All DC voltages to be measured are combined and cyclically scanned on the DC multiplexer. A selectable amplifier ensures that the subsequent A/D converter operates in a high resolution range as far as possible.

The DC voltages applied to the DC multiplexer are:

- Peak-value meter (demodulation, MOD.EXT. input)
- RMS meter (AF voltmeter, spurious modulation)
- Distortion/SINAD meter
- Power measurement
- AM demodulator
- Adjacent-channel power meter
- +5-V calibration voltage
- PIN control voltage of the RF amplifier
- Self-test voltages
- RF millivoltmeter
- Ground

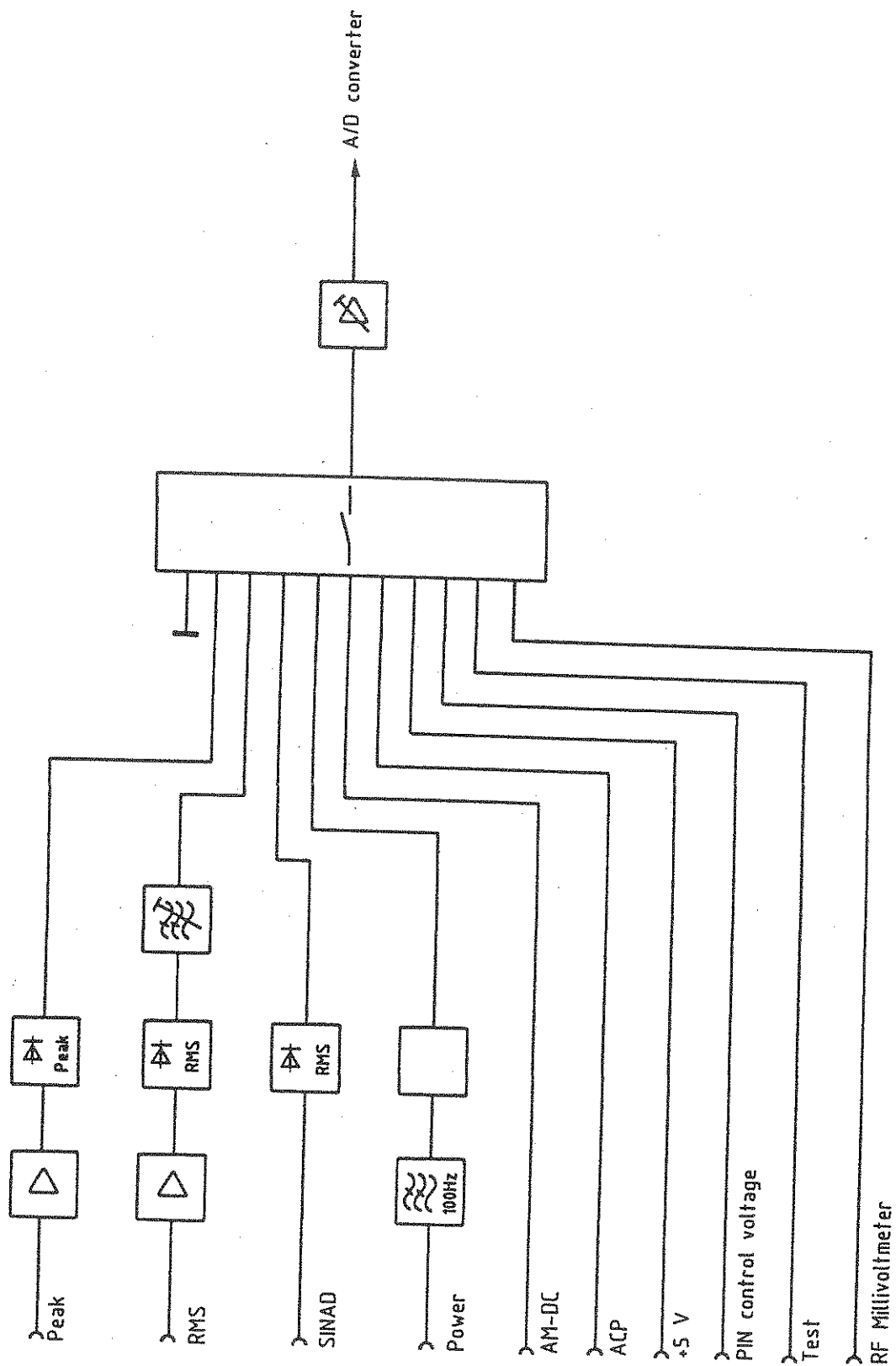


Fig. 5-5 Block diagram of the DC amplifier

### 5.1.6 Calibration

The analog unit of the instrument contains a number of calibration routines which counteract influences such as aging and temperature fluctuations.

The main calibration routines are:

Calibration of the

- + RF synthesizer
- + peak-value meter
- + rms meter
- + DC multiplexer.

#### 5.1.6.1 Calibration of the RF Synthesizer

The RF synthesizer is calibrated with respect to the FM characteristics; a specific deviation is set at a defined RF frequency, measured by the analog unit and stored as a reference value. The signal required in the transmitter test for mixing is divided on the LO conditioning circuit to the IF of 455 kHz, applied to the FM demodulator via the test generator and then measured and stored in the usual way.

#### 5.1.6.2 Calibration of the DC Multiplexer, Peak-value Meter and RMS Meter

The corresponding IC is calibrated by connecting its input to ground via a switch and then measuring the offset voltage. In order to correct gain errors, an extremely accurate reference voltage of +1 V<sub>DC</sub> is applied, measured and stored as a correction factor. For measuring the offset voltage, the input of the corresponding IC is connected to ground. In addition, an AC voltage of 40 mV is applied to the rms meter from outside. Since offset voltages can be strongly temperature-dependent, this calibration is carried out immediately after the instrument is switched on and repeated cyclically at extended intervals of time.

## 5.2 Testing and Adjustment

Basic setting of the module is to be performed before each adjustment:

\*

1	1	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	0	1	1	1	1	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

\* 1st bit of the shift register,  
last bit to be shifted in.

The designations of the adjustments refer to the front panel labels.

### 5.2.1 LEVEL FM R87 Adjustment

(See circuit diagram 802.8435 S, sheet 1)

Setting: Bit No. 1=H, 2=H, 3=H, 4=H

- Terminate X609 with 50  $\Omega$ .
- Apply 500 MHz, 20 mV to X601.
- Adjust level at X610 to 150 mV  $\pm$ 10 mV using R87.

### 5.2.2 LEVEL AM R88 Adjustment

(See circuit diagram 802.8435 S, sheet 1)

The LEVEL FM R87 adjustment must have been carried out before starting this adjustment.

Setting: Bit No. 3=L, 4=L

- Terminate X609 with 50  $\Omega$ .
- Apply 500 MHz, 20 mV to X601.
- Adjust level at X610 to 75 mV  $\pm$ 5 mV using R88.

### 5.2.3 LO TTL R102 Adjustment

(See circuit diagram 802.8435 S, sheet 4)

Setting: Bit No. 48=H, 49=H

- Apply 62.5 MHz -3 dBm  $\pm$ 3 dB to X608.
- Set TTL level at D100/3 using R102.
- Check whether TTL level with half the input frequency is present at P30.

#### 5.2.4 FM DC R213 Adjustment

(See circuit diagram 802.8435 S, sheet 3)

Setting: Basic setting

- Apply 500 MHz, 20 mV to X601.
- Apply 500.455 MHz, -6 dBm  $\pm$  3 dBm to X608.
- Terminate X610 with 50  $\Omega$ .
- Connect X609 to X607.
- Apply 10 V  $\pm$  0.5 mV to X1.A21.
- Adjust DC voltage at X602 to 0 V  $\pm$  5 mV using R213.

#### 5.2.5 DEMOD LEVEL R304 Adjustment

(See circuit diagram 802.8435 S, sheet 3)

Setting: Basic setting

Repeat the first five steps given in 5.2.4:

- Apply 500 MHz, 20 mV, 100 kHz deviation and 1 kHz AF to X601.
- Adjust rms voltage at X602 to 3.535 V  $\pm$  1 mV (corresp. to 5 V<sub>p</sub>) using R304.

#### 5.2.6 AM LEVEL R197 Adjustment

(See circuit diagram 802.8435 S, sheets 3/5)

Setting: Bit No. 3=L, 4=L, 35=H, 36=L, 37=L  
Same as in 5.2.4 except:

- Apply 500 MHz, 20 mV, 99% AM and 1 kHz AF to X601.
- Adjust DC level at D680/1 to 250 mV  $\pm$  2 mV using R197.

This adjustment influences the AM DC R275 and AM SYMMETRY R254 adjustments and these must therefore be readjusted.

#### 5.2.7 AM SYMMETRY R254 Adjustment

(See circuit diagram 802.8435 S, sheet 3)

Setting: As in 5.2.6

Same as in 5.2.6.

- Connect oscilloscope to X602.
- Adjust the limitation of the bottom 1-kHz half-wave to a minimum using R254.

This adjustment influences the AM DC R275 adjustment and this must therefore be readjusted.

#### 5.2.8 AM DC R275 Adjustment

(See circuit diagram 802.8435 S, sheet 3)

The DEMOD LEVEL R304, AM LEVEL R197 and AM SYMMETRY R254 adjustments must already have been carried out.

Setting: As in 5.2.6

Same as in 5.2.6.

- Adjust rms voltage at X602 to  $3.535 \text{ V} \pm 1 \text{ mV}$  (corresp. to  $5 \text{ V}_p$ ) using R275.
- Check the AM LEVEL R197 adjustment.

#### 5.2.9 CCITT R388 Adjustment

(See circuit diagram 802.8435 S, sheet 2)

Setting: Bit No. 17=L, 18=H

- Apply 800 Hz,  $1 \text{ V}_{\text{rms}}$  to X603.
- Adjust the rms voltage at P15 to  $1 \text{ V} \pm 1 \text{ mV}$  using R388.

#### 5.2.10 LEVEL R543 Adjustment

(See circuit diagram 802.8435 S, sheet 2)

Setting: Basic setting

- Apply 1 kHz, 500 mV to X22/2.
- Adjust rms voltage at X23/1 to  $1 \text{ V} \pm 5 \text{ mV}$  using R543.

#### 5.2.11 BALANCE R542 Adjustment

(See circuit diagram 802.8435 S, sheet 2)

Setting: Basic setting

- Apply 1 kHz, 500 mV to X22/2.
- Adjust an accurate  $\sin^2$  using R542.

#### 5.2.12 1 kHz R557, R556 Adjustment

(See circuit diagram 802.8435 S, sheet 2)

Setting: Basic setting

- Apply 1 kHz, 1 V to X23/2.
- Adjust the minimum voltage at P24 using R556 and R557 alternately.

#### 5.2.13 990 Hz R566 Adjustment

(See circuit diagram 802.8435 S, sheet 2)

Setting: Basic setting

- Apply 1 V, 990 Hz to X23/2.
- Adjust to minimum voltage at P25 using R566.

#### 5.2.14 1010 Hz R571 Adjustment

(See circuit diagram 802.8435 S, sheet 2)

Setting: Basic setting

- Apply 1 V, 1010 Hz to X23/2.
- Adjust to minimum voltage at P26 using R571.

#### 5.2.15 POWER METER Adjustment

(See circuit diagram 802.8435 S, sheet 5)

The adjustment is made in the instrument (see Service Manual for Complete Instrument, Section 4).

## 5.3 Troubleshooting

### 5.3.1 Removal and Installation of ICs

The analog unit is a multilayer module, i.e. the printed circuit consists of several boards adhered together. Great care must therefore be taken when removing ICs. The ICs must be completely freed from tin using a desoldering tool and gently removed from the holes since the lead-through bushes could otherwise be torn and thus lines detached from the central layers.

The solder side of the module contains chip capacitors, chip resistors and chip ICs. Since these ICs are also adhered (automatic fitting), they should only be unsoldered if known for certain to be faulty; the ICs are often mechanically damaged because of the high soldering temperatures required so that corresponding spare parts should be available. New ICs should first be fixed using a non-conducting adhesive and then soldered at a low temperature using a very fine soldering iron.

An important indication of a mechanical defect in ICs (break in the substrate support, splitting or overheating of the soldered connections) is the function of the IC at frequencies above approx. 100 MHz; this particularly applies to chip capacitors.

### 5.3.2 Data Channels of the Analog Unit

The analog unit is addressed by the controller via two separate data channels (56-bit and 12-bit wide). The following tables listing the IC connections and the function can be used to test these data channels.



Table 5-1 Slow data channel

Component	Function	Function with H level
D97/4	Selection of X601 or X604 as input	X601
D97/5	Switch on/off the 20-dB attenuator pad	Switched off
D97/6	FM/AM time constant of control	FM
D97/7	RF level at X609 / 50 mV or 25 mV corresp. to FM or AM, respectively	50 mV, FM
D97/14	None	---
D97/13	None	---
D97/12	None	---
D97/11	None	---
D465/4	Connect calibration switch A ahead of rms meter to continuity or ground	Ground
D465/5	Connect calibration switch B ahead of rms meter to continuity or +5 V	+5 V
D465/6	Switch on/off 40-dB amplifier in peak-value path	40 dB switched on
D465/7	Connect MOD. EXT signal to peak-value meter	Switched off
D465/14	None	---
D465/13	Switch on/off 40-dB amplifier in rms path	40 dB switched on
D465/12	Switch on/off 150-Hz HP in rms path	150-Hz HP switched on
D465/11	None	---
D466/4	Switch on/off 20-dB attenuation at AF input	20 dB switched on
D466/5	Connect AF or demodulation signal to CCITT filter	AF signal
D466/6	Switch on/off 300-Hz HP in demodulation branch	Switched off
D466/7	None	---
D466/14	Connect beat or AF/demodulation signal to loudspeaker, AF counter, oscilloscope	Beat signal
D466/13	Connect AF or demodulation signal to peak-value path	AF signal
D466/12	Main distribution switch	See Table 5-2
D466/11	Main distribution switch	See Table 5-2

Component	Function	Function with H level
D467/4	Connect AF/demodulation/beat or pole filter signal to oscilloscope	Pole filter signal
D467/5	Connect calibration switch C ahead of rms meter to continuity or ground	Ground
D467/6	Connect rms or peak-value path to loudspeaker, AF counter, oscilloscope	Peak-value path
D467/7	Connect rms or peak-value path to distortion control	rms path
D467/14	Connect calibration switch C ahead of peak-value meter to continuity or ground	Ground
D467/13	Connect calibration switch B ahead of peak-value meter to continuity or +5 V	+5 V
D467/12	Connect calibration switch A ahead of peak-value meter to continuity or ground	Ground
D467/11	Connect AF or demodulation signal to rms path	AF signal
D320/4	IF distribution switch	See Table 5-3
D320/5	IF distribution switch	See Table 5-3
D320/6	Switch on/off FM demodulator	Switched off
D320/7	Selection of demodulation	See Table 5-4
D320/14	Selection of demodulation	See Table 5-4
D320/13	Switch on/off demodulation signal	Switched on
D320/12	Switch on/off automatic IF level system (squelch)	Switched off
D320/11	Gain of demodulation signal, $G = 1$ or $G = 4$	$G = 4$
D104/4	None	---
D104/5	None	---
D104/6	Switch on/off calibration generator	Switched off
D104/7	Modulation of calibration generator, AM or FM	AM
D104/14	None	---
D104/13	Divider factor of LO conditioning	See table 5-5
D104/12	Divider factor of LO conditioning	See table 5-5
D104/11	Switch on/off first divider in LO branch	Switched on
D105/4	LO frequency <31.25 MHz or >31.25 MHz	>31.25 MHz

Table 5-2 Main distribution switch

D466/12	13	Function	
		RMS path	Peak-value path
L	L	AF signal	Demodulation signal
L	H	Demodulation signal	Ground
H	L	CCITT filter	Demodulation signal
H	H	AF signal	CCITT filter

Table 5-3 IF distribution switch

D320/4	5	Function
L	L	IF narrowband, 25 kHz
L	H	IF wideband
H	L	Calibration of RF synthesizer, test
H	H	Calibration of adjacent-channel power filter

Table 5-4 Selection of demodulation

D320/7	14	Function
L	L	AM demodulation
L	H	FM demodulation with deemphasis
H	L	FM demodulation
H	H	FM demodulation

Table 5-5 Divider factor of LO conditioning

D104/13	12	Function
L	L	Divider factor : 2
L	H	Switched off
H	L	Divider factor : 4
H	H	Divider factor : 4 (N+2)

The divider factor N is determined by the data at D105;  
H level corresponds to divider factor 0.  
The MSB is D105/5, the LSB is D105/11; the data width is 7 bit.

Table 5-6 Gain of DC amplifier

D698/4	5	6	Function
L	L	L	0 dB
L	L	H	6 dB
L	H	L	16 dB
L	H	H	26 dB
H	L	L	36 dB
H	L	H	46 dB
H	H	L	56 dB
H	H	H	impermissible

Table 5-7 DC multiplexer

D698/7	14	13	Function
L	L	L	Peak value
L	L	H	rms value
L	H	L	Distortion
L	H	H	Power
H	L	L	AM DC
H	L	H	RF millivoltmeter
H	H	L	Adjacent-channel power
H	H	H	Test voltages

Table 5-8 Peak-value meter

D698/12	11	Function
L	L	Measure peak value
L	H	Hold peak value
H	L	Reset peak value
H	H	---

Table 5-9 Premultiplexer

D697/5	4	Function
L	L	Test voltages / slow rms measurement
L	H	Ground / slow rms measurement
H	L	PIN control voltage / fast rms measurement
H	H	+5-V calibration voltage/ fast rms measurement

D697/4: Switchover to positive or negative peak value.  
L level corresponds to negative peak value.

### 5.3.3 Test Points

Circuit diagram 802.8435 S, sheet 3 (demodulators)

- P1 Amplified output signal of mixer.  
In normal mode, frequency  $f_{IF} = 455$  kHz,  
level approx. 135 mV (typical).
- P2 Control voltage for controlled amplifier.  
In normal mode with AM demodulation approx. 2 to 6  
V<sub>DC</sub>, with FM demodulation approx. 2 V.
- P3, P4 Difference outputs of controlled amplifier.  
In normal mode with AM demodulation, no clipped  
signal  $V_{pp} \sim 1$  V; with FM demodulation, squarewave  
signal of approx. 2.8 V<sub>pp</sub>.
- P5 Sum of signals at P3 und P4.
- P6 Voltage of -5 V generated from the 10-V reference  
voltage.  
Tolerance  $\pm 1\%$  + tolerance of reference.
- P7 +5 V, otherwise as P6.
- P8 Output signal of FM demodulator.  
TTL level, frequency 910 kHz.
- P10 Amplified signal of P9.  
Level:  $V_{pp} = 10$  V corresponding to tolerance of  
reference voltage.

- P11 Output signal of  $\Phi$ M filter.
- P12 Output signal of AM demodulator.  
Positive full-wave rectified signal of P5.
- P13 Signal to switch the demodulated signal on/off.

Circuit 802.8435 S, sheet 2 (AF conditioning)

- P14 AF signal at X603 divided by 1 or 10.
- P15 Output signal of CCITT filter.
- P16 Selectable input/output signal of 300-Hz highpass.
- P17 Output signal of 150-Hz highpass.
- P18 Signal to rms meter.
- P19 Signal to peak-value meter.
- P20 Negative operating voltage to supply the CMOS switches,  
 $V_{DC} = -10 \text{ V} \pm 5\%$  + tolerance of -15 V operating  
voltage.
- P21 Positive operating voltage to supply the CMOS switches,  
 $V_{DC} = 6 \text{ V} \pm 10\%$
- P24 Output signal of 1-kHz notch filter.
- P25 Output signal of 990-Hz notch filter.
- P26 Output signal of 1010-Hz notch filter.

Circuit diagram 802.8435 S, sheet 4 (LO conditioning)

- P30 Frequency at X608 divided by 2.  
Frequency range 15.625 to 31.25 MHz,  
level: TTL.

## 5.3.4 Interfaces (Pin Assignments)

### 5.3.4.1 Coaxial Connectors

**X601** Low level range input of RF amplifier.  
Impedance: 50  $\Omega$   
Level: 5 to 500 mV  
Frequency: 1 to 1000 MHz

**X602** Demodulated signal.  
Impedance: 600  $\Omega$   
Frequency: DC to 20 kHz  
Level: 5 V<sub>p</sub> corresp. to 100 kHz  $\Delta F$   
5 V<sub>p</sub> corresp. to 100% AM  
5 V<sub>p</sub> corresp. to 25 rad  $\Delta\phi$

With  $\phi M$ , frequency range 300 Hz to 10 kHz.

**X603** AF voltmeter input.  
Impedance: >100 k $\Omega$   
Frequency: 50 Hz to 50 kHz  
Level: 100  $\mu V$  to 35 V

**X604** High level range input of RF amplifier.  
Impedance: 50  $\Omega$   
Frequency: 1 to 1000 MHz  
Level: 31.6 mV to 1.58 V

**X605** Output for oscilloscope.

**X606** IF output for adjacent-channel power.  
Impedance: 1.5 k $\Omega$   
Frequency: 455 kHz  $\pm 12.5$  kHz  
Level: approx. 250 mV

**X607** RF input of mixer.  
Impedance: 50  $\Omega$   
Frequency: 1 to 1000 MHz  
Level: 50 mV  $\pm 3$  dB FM  
25 mV  $\pm 3$  dB AM

X608 LO input.  
Impedance: 50  $\Omega$   
Frequency: 31.25 to 1000 MHz  
Level: -3 dBm  $\pm$ 3 dB 31.25 < f < 62.5 MHz  
-6 dBm  $\pm$ 3 dB 62.5 < f < 1000 MHz

X609 RF output of RF amplifier.  
Impedance: 50  $\Omega$   
Frequency: 1 to 1000 MHz  
Pegel: 50 mV  $\pm$ 3 dB FM  
25 mV  $\pm$ 3 dB AM

X610 Counter output of RF amplifier.  
Impedance: 50  $\Omega$   
Frequency: 1 to 1000 MHz  
Level: 150 mV  $\pm$ 3 dB FM  
75 mV  $\pm$ 3 dB AM



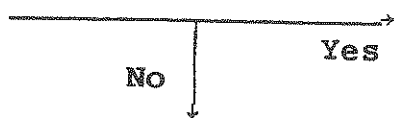
#### 5.3.4.2 64-contact Multipoint Connector

1a	Output for controller: RF level too small (CMOS level)
1b	Power supply +5 V
3a	Strobe for fast data channel
3b	Clock for fast data channel
4a	Strobe for slow data channel
4b	Data for fast data channel
8a	Data for slow data channel
10a,b	Clock for slow data channel
12a,b	Power supply +5 V
17a,b	Power supply +15 V
18b	Output for AF counter
19a,b	Power supply -15 V
21a	10-V reference voltage input
25a	Output for loudspeaker amplifier
26a	Input to measure MOD.EXT.
27a	Self-test voltages input
27b	Power measurement input
28a	RF millivoltmeter input
29a	Adjacent-channel power meter input
30a,b	Output of signal ground for A/D converter
31b	Output of DC voltage for A/D converter

### 5.3.5 Troubleshooting Diagram

Incorrect or no demodulation measurement

Correct demod.  
signal at X602 ?  
5  $V_p$  corresp. to  
100 kHz,  
100% AM, 25 rad



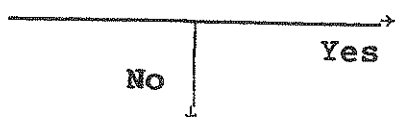
DC amplifier  
AF conditioning

Fault only with AM ?



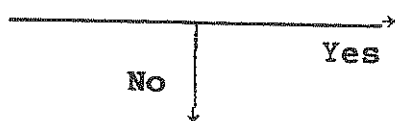
RF amplifier  
AM demodulation

IF of 455 kHz  
at P1 ?



FM demodulator,  
squelch,  
controlled amplifier

Fault only with  
 $F < 31.25$  MHz ?



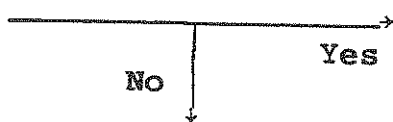
Divider in  
LO conditioning

RF synthesizer OK ?



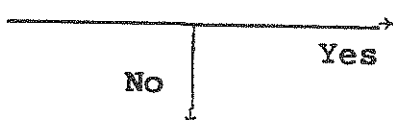
RF synthesizer

Frequency counter  
OK ?



Mixer,  
LO conditioning

Demodulation via  
INPUT2 OK ?



RF amplifier, switchover

RF amplifier



ROHDE & SCHWARZ  
MÜNCHEN

Schaltteillisten  
Stromläufe  
Bestückungspläne  
Parts lists  
Circuit diagrams  
Components plans

Kennzeichen  
Component No.

Benennung/Beschreibung  
Designation

Sachnummer  
Stock No.

enthalten in  
contained in

C1	CC 100NF+-10% 50V5K1200 C CAPACITOR VITRAMON VJ1812Y104KFA	CC 082.3473	
C2	CC 100NF+-10% 50V5K1200 C CAPACITOR VITRAMON VJ1812Y104KFA	CC 082.3473	
C5	CC 100NF+-10% 50V5K1200 C CAPACITOR VITRAMON VJ1812Y104KFA	CC 082.3473	
C20	CC 100NF+-10% 50V5K1200 C CAPACITOR VITRAMON VJ1812Y104KFA	CC 082.3473	
C22	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y103KFA	CC 099.8521	
C23	CC 0,5PF+-0,25PF50V NPO CERAMIC CHIP CAPACITOR ERIE GR42-6 0,5PF NPO50V	099.8650	
C25	CC 100NF+-10% 50V5K1200 C CAPACITOR VITRAMON VJ1812Y104KFA	CC 082.3473	
C26	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y103KFA	CC 099.8521	
C27	CC 100NF+-10% 50V5K1200 C CAPACITOR VITRAMON VJ1812Y104KFA	CC 082.3473	
BIS/TO			
C30			
C31	CC 4,3PF+-0,25PF50V2NPO CAPACITOR VITRAMON VJ0805A4R3CFA	CC 093.5643	
C32	CC 3,3NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y332KFA	CC 099.8909	
C34	CC 100NF+-10% 50V5K1200 C CAPACITOR VITRAMON VJ1812Y104KFA	CC 082.3473	
C35	CC 330PF+-5%50V NPO 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206A331JFA	CC 099.8873	
C40	CK 100NF+-5%63V5RM MKT CAPACITOR WIMA MKS/2/63/0,1UF/5%	CK 099.2930	
C41	CC 1,5NF+-10%4X5R2000 CAPACITOR VALVO 2222 63051 152	CC 087.7048	
C42	CK 100NF+-5%63V5RM MKT CAPACITOR WIMA MKS/2/63/0,1UF/5%	CK 099.2930	
C45	CC 100NF+-10% 50V5K1200 C CAPACITOR VITRAMON VJ1812Y104KFA	CC 082.3473	
C46	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y103KFA	CC 099.8521	

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ROHDE&SCHWARZ	AZ	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
	07	1087	ED ANALOGTEIL	802.8435.01 SA	2
Kennzeichen Component No.	Benennung/Beschreibung Designation		Sachnummer Stock No.	enthalten in contained in	
C47	CC 100NF+-10% 50V5K1200 C CAPACITOR VITRAMON VJ1812Y104KFA		CC 082.3473		
C48	CC 15PF+-5%50V NPO 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206A150JFA		CC 099.8750		
C49	CC 5PF+-0,5PF50V NPO 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206A5RODFA		CC 099.8696		
C51	CC 100NF+-10% 50V5K1200 C CAPACITOR VITRAMON VJ1812Y104KFA		CC 082.3473		
C52	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y103KFA		CC 099.8521		
C53	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y103KFA		CC 099.8521		
C55	CC 100NF+-10% 50V5K1200 C CAPACITOR VITRAMON VJ1812Y104KFA		CC 082.3473		
C56	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y103KFA		CC 099.8521		
C57	CC 100NF+-10% 50V5K1200 C CAPACITOR VITRAMON VJ1812Y104KFA		CC 082.3473		
C65	CC 100NF+-10% 50V5K1200 C CAPACITOR VITRAMON VJ1812Y104KFA		CC 082.3473		
C66	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y102KFA		CC 099.8438		
C67	CC 100NF+-10% 50V5K1200 C CAPACITOR VITRAMON VJ1812Y104KFA		CC 082.3473		
C68	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y103KFA		CC 099.8521		
BIS/TO					
C71					
C72	CE 10UF+-20%16V RD3,5X5 ELECTROLYTIC CAPACITOR MATSUSHITA SRE 10UF+-20% 16V		803.0173		
C76	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y102KFA		CC 099.8438		
C77	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y103KFA		CC 099.8521		
C78	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y103KFA		CC 099.8521		
C80	CK 1UF+-10%50V5RM MKT CAPACITOR WIMA MKS2/50/1UF/10%		CK 099.2998		
802.8435.01 SA BL 2+					

ROHDE&SCHWARZ		AZ	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
		07	1087	ED ANALOGTEIL	802.8435.01 SA	3
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
C81	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y103KFA	CC 099.8521				
C82	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR VALVO 2222 63051 102	CC 022.0784				
C83	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y102KFA	CC 099.8438				
C85	CK 100NF+-5%63V5RM MKT CAPACITOR WIMA MKS/2/63/0,1UF/5%	CK 099.2930				
C95	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR VALVO 2222 63051 102	CC 022.0784				
C96	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR VALVO 2222 63051 102	CC 022.0784				
C97	CK 47NF+-5%63V5RM MKT CAPACITOR WIMA MKS2/63/0,047UF/5%	CK 099.2917				
C100	CC 100NF+-10% 50V5K1200 C CAPACITOR VITRAMON VJ1812Y104KFA	CC 082.3473				
C101	CC 100NF+-10% 50V5K1200 C CAPACITOR VITRAMON VJ1812Y104KFA	CC 082.3473				
C102	CC 100NF+-10% 50V5K1200 C CAPACITOR VITRAMON VJ1812Y104KFA	CC 082.3473				
C103	LD FILT.40DB/10GHZ10A300V LOWPASS-FILTER ERIE 9900-001-6020	911.0705				
C104	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y103KFA	CC 099.8521				
C106	CC 27PF+-5%50V NPO 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206A270JFA	CC 099.8409				
BIS/TO C109 C110	CK 1UF+-10%50V5RM MKT CAPACITOR WIMA MKS2/50/1UF/10%	CK 099.2998				
C111	CC 27PF+-5%50V NPO 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206A270JFA	CC 099.8409				
C112	CC 27PF+-5%50V NPO 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206A270JFA	CC 099.8409				
C113	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y103KFA	CC 099.8521				
BIS/TO C118						

802.8435.01 SA BL 3+

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		07	1087	ED ANALOGTEIL	802.8435.01 SA	4
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
C119	CC 330PF+-5%50V NPO 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206A331JFA	CC 099.8873				
C120	CC 3,3NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y332KFA	CC 099.8909				
C121	CC 330PF+-5%50V NPO 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206A331JFA	CC 099.8873				
C122	CC 330PF+-5%50V NPO 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206A331JFA	CC 099.8873				
C123	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y103KFA	CC 099.8521				
C124	CC 3,3NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y332KFA	CC 099.8909				
C126	CC 100NF+-10% 50V5K1200 C CAPACITOR VITRAMON VJ1812Y104KFA	CC 082.3473				
C129	CC 220PF+-5%50V NPO 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206A221JFA	CC 099.8850				
C130	CC 100NF+-10% 50V5K1200 C CAPACITOR VITRAMON VJ1812Y104KFA	CC 082.3473				
C131	CC 330PF+-5%50V NPO 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206A331JFA	CC 099.8873				
C132	CC 330PF+-5%50V NPO 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206A331JFA	CC 099.8873				
C133	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y104KFA	007.5237				
C135	LD FILT.40DB/10GHZ10A300V LOWPASS-FILTER ERIE 9900-001-6020	911.0705				
C136	LD FILT.40DB/10GHZ10A300V LOWPASS-FILTER ERIE 9900-001-6020	911.0705				
C137	LD FILT.40DB/10GHZ10A300V LOWPASS-FILTER ERIE 9900-001-6020	911.0705				
C138	LD FILT.40DB/10GHZ10A300V LOWPASS-FILTER ERIE 9900-001-6020	911.0705				
C141	CE 10UF+-20%35V RD5X5 ELECTROLYTIC CAPACITOR NATION PAN ECE-A1VKS-100	803.0667				
C144	CE 10UF+-20%35V RD5X5 ELECTROLYTIC CAPACITOR NATION PAN ECE-A1VKS-100	803.0667				
C147	CE 22UF+-20%16V5RDX5RAD.A ELECTROLYTIC CAPACITOR NCC SRE 22UF/16V+-20%	358.6062				
802.8435.01 SA BL 4+						

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		07	1087	ED ANALOGTEIL	802.8435.01 SA	5
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
C150	CK 1,8NF+-1%63V6,3X11 KP PLASTIC-FOIL CAPACITOR	CK 283.1699				
C151	SIEMENS B33531-A5182-F CC 100PF+-5%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 099.8415				
C152	VITRAMON VJ1206A101JFA CK 7,5NF+-1,25%63V7,5QUAD CAPACITOR	CK 213.4376				
C153	SIEMENS B33531-A5752-F CC 56PF+-2%5X6NPO CAPACITOR	CC 087.6512				
C154	VALVO 2222 678 10569 CK 6,8NF+-1%63V6,3QUX11KP CAPACITOR	CK 099.1927				
C155	SIEMENS B33531-A5682-F CC 56PF+-2%5X6NPO CAPACITOR	CC 087.6512				
C156	VALVO 2222 678 10569 CC 1PF+-0,25PF3X4P100 CAPACITOR	CC 087.6170				
C157	VALVO 2222 678 03108 CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8521				
C158	VITRAMON VJ1206Y103KFA CC 390PF+-5%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 099.8880				
C159	VITRAMON VJ1206A391JFA CC 10PF+-0,5PF50VNPO 1206 CERAMIC CHIP CAPACITOR	CC 099.8480				
C160	VITRAMON VJ1206A100DFA CE 10UF+-20%35V RD5X5 ELECTROLYTIC CAPACITOR	803.0667				
C161	NATION PAN ECE-ALVKS-100 CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8521				
C162	VITRAMON VJ1206Y103KFA CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8521				
C163	VITRAMON VJ1206Y103KFA CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8521				
C165	VITRAMON VJ1206Y103KFA CE 10UF+-20%35V RD5X5 ELECTROLYTIC CAPACITOR	803.0667				
C166	NATION PAN ECE-ALVKS-100 CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541				
C168	VALVO 2222 678 10101 CC 100PF+-2%6X9NPO CAPACITOR	CC 087.6541				
C170	VALVO 2222 678 10101 CC 390PF+-5%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 099.8880				
C171	VITRAMON VJ1206A391JFA CK 1UF+-10%50V5RM MKT CAPACITOR	CK 099.2998				
	WIMA MKS2/50/1UF/10%					

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		07	1087	ED ANALOGTEIL	802.8435.01 SA	6
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
C172	CK 1UF+-10%50V5RM MKT CAPACITOR	CK 099.2998				
C175	WIMA MKS2/50/1UF/10% CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930				
C176	WIMA MKS/2/63/0,1UF/5% CE 10UF+-20%35V RD5X5 ELECTROLYTIC CAPACITOR	803.0667				
C177	NATION PAN ECE-A1VKS-100 CK 22NF+-5%63V5RM MKT CAPACITOR	CK 099.2881				
C180	WIMA MKS2/63/0,022UF/5% CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8521				
C181	VITRAMON VJ1206Y103KFA CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8521				
C182	VITRAMON VJ1206Y103KFA CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930				
C183	WIMA MKS/2/63/0,1UF/5% CE 10UF+-20%35V RD5X5 ELECTROLYTIC CAPACITOR	803.0667				
C184	NATION PAN ECE-A1VKS-100 CE 10UF+-20%35V RD5X5 ELECTROLYTIC CAPACITOR	803.0667				
C185	NATION PAN ECE-A1VKS-100 CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930				
C190	WIMA MKS/2/63/0,1UF/5% CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8521				
C195	VITRAMON VJ1206Y103KFA CE 2,2UF+-20%20V 5X 4X 7 ELECTROLYTIC CAPACITOR	CE 022.8104				
C202	ROEDERSTEI ETR 1 2,2/20 20% CE 10 UF+-20%16V 7X 4X 8 ELECTROLYTIC CAPACITOR	CE 022.8085				
C205	ROEDERSTEI ETR 2 10/16 20% CE 22UF+-20%16V5RDX5RAD.A ELECTROLYTIC CAPACITOR	358.6062				
C206	NCC SRE 22UF/16V+-20% CE 22UF+-20%16V5RDX5RAD.A ELECTROLYTIC CAPACITOR	358.6062				
C210	NCC SRE 22UF/16V+-20% CE 22UF+-20%16V5RDX5RAD.A ELECTROLYTIC CAPACITOR	358.6062				
C211	NCC SRE 22UF/16V+-20% CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8521				
C212	VITRAMON VJ1206Y103KFA CE 22UF+-20%16V5RDX5RAD.A ELECTROLYTIC CAPACITOR	358.6062				
C213	NCC SRE 22UF/16V+-20% CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930				
	WIMA MKS/2/63/0,1UF/5%					
802.8435.01 SA BL 6+						

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		07	1087	ED ANALOGTEIL	802.8435.01 SA	7
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
C215	CC 120PF+-2%6X9NPO CAPACITOR	CC 087.6558				
C216	VALVO 2222 678 10121 CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930				
C217	WIMA MKS/2/63/0,1UF/5% CE 22UF+-20%16V5RDX5RAD.A ELECTROLYTIC CAPACITOR	358.6062				
C220	NCC SRE 22UF/16V+-20% CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8521				
C221	VITRAMON VJ1206Y103KFA CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930				
C223	WIMA MKS/2/63/0,1UF/5% CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 022.0784				
C225	VALVO 2222 63051 102 CE 22UF+-20%16V5RDX5RAD.A ELECTROLYTIC CAPACITOR	358.6062				
C226	NCC SRE 22UF/16V+-20% CE 22UF+-20%16V5RDX5RAD.A ELECTROLYTIC CAPACITOR	358.6062				
C230	NCC SRE 22UF/16V+-20% CK 22NF+-1%63V8X8X11 KP CAPACITOR	CK 213.4553				
C231	SIEMENS B33531-A5223-F CK 560PF+-1%63V6,3X11 KP PLASTIC-FOIL CAPACITOR	CK 283.1660				
C232	SIEMENS B33531-A5561-F CC 10PF+-0,25PF3X4N750 CAPACITOR	CC 087.6787				
C233	VALVO 2222 678 57109 CK 11NF+-1% 63V 7,5QUAD CAPACITOR	CK 099.1679				
C234	SIEMENS B33531-A5113-F CK 10NF+-1%63V7,5QUX13 KP CAPACITOR	CK 340.9076				
C235	SIEMENS B33531-A5103-F CK 27NF+-1% 63V 10QUAD CAPACITOR	CK 099.1685				
C237	SIEMENS B33531-A5273-F CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930				
C238	WIMA MKS/2/63/0,1UF/5% CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930				
C240	WIMA MKS/2/63/0,1UF/5% CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8521				
C241	VITRAMON VJ1206Y103KFA CK 10NF+-5%63V5RM MKT CAPACITOR	CK 099.2869				
C250	WIMA FKS 2/100/0,01UF/5% CE 10UF+-20%35V RD5X5 ELECTROLYTIC CAPACITOR NATION PAN ECE-A1VKS-100	803.0667				

802.8435 01 SA BL 7+

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		07	1087	ED ANALOGTEIL	802.8435.01 SA	8
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
C251	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y103KFA	CC 099.8521				
C253	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y103KFA	CC 099.8521				
C254	CC 6,8PF+-0,25PF4X5P100 CAPACITOR VALVO 2222 678 03688	CC 087.6270				
C255	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y103KFA	CC 099.8521				
C256	CE 10UF+-20%35V RD5X5 ELECTROLYTIC CAPACITOR NATION PAN ECE-ALVKS-100	803.0667				
C261	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR VALVO 2222 63051 102	CC 022.0784				
C262	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR VALVO 2222 63051 102	CC 022.0784				
C273	CC 3,9PF/O,25PF63V3X5N150 CAPACITOR VALVO 2222 678 33398	CC 099.5545				
C274	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y103KFA	CC 099.8521				
C275	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y103KFA	CC 099.8521				
C282	CE 10UF+-20%35V RD5X5 ELECTROLYTIC CAPACITOR NATION PAN ECE-ALVKS-100	803.0667				
C283	CE 10UF+-20%35V RD5X5 ELECTROLYTIC CAPACITOR NATION PAN ECE-ALVKS-100	803.0667				
C284	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y103KFA	CC 099.8521				
C285	CE 22UF+-20%16V5RDX5RAD.A ELECTROLYTIC CAPACITOR NCC SRE 22UF/16V+-20%	358.6062				
C300	CK 220PF+-2,5%63V RM5 KP POLYPROPYLENE CAPACITOR WIMA FKP2 220/2,5%/63V	CK 099.6087				
C302	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y103KFA	CC 099.8521				
C303	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y103KFA	CC 099.8521				
C305	CK 680PF+-2,5%63V RM5 KP POLYPROPYLENE CAPACITOR WIMA FKP2 680/2,5%/63V	CK 099.6112				
C306	CK 470PF+-2,5%63V RM5 KP POLYPROPYLENE CAPACITOR WIMA FKP2 470/2,5%/63V	CK 099.6106				
802.8435.01 SA BL 8						

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		07	1087	ED ANALOGTEIL	802.8435.01 SA	9
Kennzeichen Component No.	Benennung/Beschreibung Designation			Sachnummer Stock No.	enthalten in contained in	
C310	CK 2,2NF+-2,5%63V RM5 KP POLYPROPYLENE CAPACITOR WIMA FKP2 2200/2,5%/63V			CK 099.6141		
C311	CK 470PF+-2,5%63V RM5 KP POLYPROPYLENE CAPACITOR WIMA FKP2 470/2,5%/63V			CK 099.6106		
C312	CE 10UF+-20%35V RD5X5 ELECTROLYTIC CAPACITOR NATION PAN ECE-A1VKS-100			803.0667		
C313	CE 10UF+-20%35V RD5X5 ELECTROLYTIC CAPACITOR NATION PAN ECE-A1VKS-100			803.0667		
C315	CC 27PF+-2%4X5NPO CAPACITOR VALVO 2222 678 10279			CC 087.6470		
C340	CC 27PF+-2%4X5NPO CAPACITOR VALVO 2222 678 10279			CC 087.6470		
C350	CK 1UF+-10%50V5RM MKT CAPACITOR WIMA MKS2/50/1UF/10%			CK 099.2998		
C351	CK 100NF+-5%63V5RM MKT CAPACITOR WIMA MKS/2/63/0,1UF/5%			CK 099.2930		
C352	CE 10UF+-20%35V RD5X5 ELECTROLYTIC CAPACITOR NATION PAN ECE-A1VKS-100			803.0667		
C353	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y103KFA			CC 099.8521		
C354	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y103KFA			CC 099.8521		
C355	CK 6,8NF+-2,5%63V RM5 KP POLYPROPYLENE CAPACITOR WIMA FKP2 6800/2,5%/63V			CK 099.6170		
C356	CK 6,8NF+-2,5%63V RM5 KP POLYPROPYLENE CAPACITOR WIMA FKP2 6800/2,5%/63V			CK 099.6170		
C357	CK 100NF+-5%63V5RM MKT CAPACITOR WIMA MKS/2/63/0,1UF/5%			CK 099.2930		
C358	CE 10UF+-20%35V RD5X5 ELECTROLYTIC CAPACITOR NATION PAN ECE-A1VKS-100			803.0667		
C359	CK 100NF+-5%63V5RM MKT CAPACITOR WIMA MKS/2/63/0,1UF/5%			CK 099.2930		
C360	CK 6,8NF+-2,5%63V RM5 KP POLYPROPYLENE CAPACITOR WIMA FKP2 6800/2,5%/63V			CK 099.6170		
C361	CK 6,8NF+-2,5%63V RM5 KP POLYPROPYLENE CAPACITOR WIMA FKP2 6800/2,5%/63V			CK 099.6170		
C365	CK 68NF+-1%63V12X12X12 PP CAPACITOR SIEMENS B33531-A5683-F			CK 303.7067		
802.8435.01 SA						BL 9+

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		07	1087	ED ANALOGTEIL	802.8435.01 SA	10
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.		enthalten in contained in		
C366	CK 68NF+-1%63V12X12X12 PP CAPACITOR SIEMENS B33531-A5683-F	CK 303.7067				
C370	CK 68NF+-1%63V12X12X12 PP CAPACITOR SIEMENS B33531-A5683-F	CK 303.7067				
C371	CK 68NF+-1%63V12X12X12 PP CAPACITOR SIEMENS B33531-A5683-F	CK 303.7067				
C372	CK 100NF+-5%63V5RM MKT CAPACITOR WIMA MKS/2/63/0,1UF/5%	CK 099.2930				
C373	CK 100NF+-5%63V5RM MKT CAPACITOR WIMA MKS/2/63/0,1UF/5%	CK 099.2930				
C380	CK 20NF+-1%63V6,3QUX11 KP CAPACITOR SIEMENS B33531-A5203-F	CK 334.5550				
C381	CK 20NF+-1%63V6,3QUX11 KP CAPACITOR SIEMENS B33531-A5203-F	CK 334.5550				
C382	CK 20NF+-1%63V6,3QUX11 KP CAPACITOR SIEMENS B33531-A5203-F	CK 334.5550				
C383	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y103KFA	CC 099.8521				
C384	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y103KFA	CC 099.8521				
C385	CK 3,9NF+-1%63V6,3QUX11KP CAPACITOR SIEMENS B33531-A5392-F	CK 340.8057				
C386	CC 100PF+-2%6X9NPO CAPACITOR VALVO 2222 678 10101	CC 087.6541				
C387	CK 6,8NF+-1%63V6,3QUX11KP CAPACITOR SIEMENS B33531-A5682-F	CK 099.1927				
C391	CC 56PF+-2%5X6NPO CAPACITOR VALVO 2222 678 10569	CC 087.6512				
C392	CK 1NF+-1,25%63V7,5QUAD. CAPACITOR SIEMENS B33531-A5102-F	CK 213.4353				
C393	CK 10NF+-1%63V7,5QUX13 KP CAPACITOR SIEMENS B33531-A5103-F	CK 340.9076				
C400	CK 100NF+-1%63V 11RDX22 CAPACITOR ROEDERST CK1853-410/06/1%	CK 024.6438				
C402	CK 560PF+-1%63V6,3X11 KP PLASTIC-FOIL CAPACITOR SIEMENS B33531-A5561-F	CK 283.1660				
C403	CK 47NF+-1%63V7,5QUX13 KP CAPACITOR SIEMENS B33531-A5473-F	CK 099.1904				
802.8435.01 SA						BL10+

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		07	1087	ED ANALOGTEIL	802.8435.01 SA	11
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
C404	CK 47NF+-1%63V7,5QUX13 KP CAPACITOR	CK 099.1904				
C405	SIEMENS B33531-A5473-F CK 20NF+-1%63V6,3QUX11 KP CAPACITOR	CK 334.5550				
C406	SIEMENS B33531-A5203-F CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930				
C407	WIMA MKS/2/63/0,1UF/5% CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930				
C408	WIMA MKS/2/63/0,1UF/5% CE 10UF+-20%35V RD5X5 ELECTROLYTIC CAPACITOR	803.0667				
C409	NATION PAN ECE-A1VKS-100 CE 10UF+-20%35V RD5X5 ELECTROLYTIC CAPACITOR	803.0667				
C410	NATION PAN ECE-A1VKS-100 CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8521				
C411	VITRAMON VJ1206Y103KFA CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8521				
C415	VITRAMON VJ1206Y103KFA CE 10UF+-20%35V RD5X5 ELECTROLYTIC CAPACITOR	803.0667				
C416	NATION PAN ECE-A1VKS-100 CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8521				
C418	VITRAMON VJ1206Y103KFA CE 22UF+-20%16V5RDX5RAD.A ELECTROLYTIC CAPACITOR	358.6062				
C419	NCC SRE 22UF/16V+-20% CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8521				
C420	VITRAMON VJ1206Y103KFA CE 10UF+-20%35V RD5X5 ELECTROLYTIC CAPACITOR	803.0667				
C425	NATION PAN ECE-A1VKS-100 CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930				
C426	WIMA MKS/2/63/0,1UF/5% CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930				
C427	WIMA MKS/2/63/0,1UF/5% CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8521				
C428	VITRAMON VJ1206Y103KFA CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8521				
C429	VITRAMON VJ1206Y103KFA CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 099.8521				
C430	VITRAMON VJ1206Y103KFA CK 1UF+-10%50V5RM MKT CAPACITOR	CK 099.2998				
	WIMA MKS2/50/1UF/10%					
802.8435.01 SA						BL11+

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		07	1087	ED ANALOGTEIL	802.8435.01 SA	12
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
C435	CE 10UF+-20%35V RD5X5 ELECTROLYTIC CAPACITOR NATION PAN ECE-A1VKS-100	803.0667				
C436	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y103KFA	CC 099.8521				
C438	CE 22UF+-20%16V5RDX5RAD.A ELECTROLYTIC CAPACITOR NCC SRE 22UF/16V+-20%	358.6062				
C439	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y103KFA	CC 099.8521				
C440	CE 10UF+-20%35V RD5X5 ELECTROLYTIC CAPACITOR NATION PAN ECE-A1VKS-100	803.0667				
C445	CK 1UF+-10%50V5RM MKT CAPACITOR WIMA MKS2/50/1UF/10%	CK 099.2998				
C446	CK 1UF+-10%50V5RM MKT CAPACITOR WIMA MKS2/50/1UF/10%	CK 099.2998				
C448	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y103KFA	CC 099.8521				
C449	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y103KFA	CC 099.8521				
C451	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR VALVO 2222 63051 102	CC 022.0784				
C452	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y103KFA	CC 099.8521				
C455	CK 100NF+-5%63V5RM MKT CAPACITOR WIMA MKS/2/63/0,1UF/5%	CK 099.2930				
C456	CK 100NF+-5%63V5RM MKT CAPACITOR WIMA MKS/2/63/0,1UF/5%	CK 099.2930				
C457	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y103KFA	CC 099.8521				
C458	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y103KFA	CC 099.8521				
C465	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR VITRAMON VJ1206Y103KFA	CC 099.8521				
C470	CE 22UF+-20%16V5RDX5RAD.A ELECTROLYTIC CAPACITOR NCC SRE 22UF/16V+-20%	358.6062				
C475	CE 22UF+-20%16V5RDX5RAD.A ELECTROLYTIC CAPACITOR NCC SRE 22UF/16V+-20%	358.6062				
C480	CE 100UF+-20%25V RD8X9,5 ELECTROLYTIC CAPACITOR MATSUSHITA ECE-A1ESS-101	803.0580				
802.8435.01 SA BL12+						

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		07	1087	ED ANALOGTEIL	802.8435.01 SA	13
Kennzeichen Component No.	Benennung/Beschreibung Designation			Sachnummer Stock No.	enthalten in contained in	
C485	CE 100UF+-20%25V RD8X9,5 ELECTROLYTIC CAPACITOR			803.0580		
C500	MATSUSHITA ECE-ALESS-101 CK 1UF+-10%50V5RM MKT CAPACITOR			CK 099.2998		
C501	WIMA MKS2/50/1UF/10% CC 22PF+-2%3X4N750 CAPACITOR			CC 087.6829		
C502	VALVO 2222 678 58229 CC 4,7PF+-0,25PF3X4NPO CAPACITOR			CC 087.6387		
C511	VALVO 2222 678 09478 CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR			CC 099.8521		
C512	VITRAMON VJ1206Y103KFA CC 3,3PF+-0,25PF3X4NPO CAPACITOR			CC 087.6364		
C513	VALVO 2222 678 09338 CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR			CC 099.8521		
C521	VITRAMON VJ1206Y103KFA CE 22UF+-20%16V5RDX5RAD.A ELECTROLYTIC CAPACITOR			358.6062		
C522	NCC SRE 22UF/16V+-20% CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR			CC 099.8521		
C523	VITRAMON VJ1206Y103KFA CE 10UF+-20%35V RD5X5 ELECTROLYTIC CAPACITOR			803.0667		
C530	NATION PAN ECE-A1VKS-100 CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR			CC 099.8521		
C531	VITRAMON VJ1206Y103KFA CE 10UF+-20%35V RD5X5 ELECTROLYTIC CAPACITOR			803.0667		
C533	NATION PAN ECE-A1VKS-100 CK 1UF+-10%50V5RM MKT CAPACITOR			CK 099.2998		
C540	WIMA MKS2/50/1UF/10% CE 22UF+-20%16V5RDX5RAD.A ELECTROLYTIC CAPACITOR			358.6062		
C545	NCC SRE 22UF/16V+-20% CE 22UF+-20%16V5RDX5RAD.A ELECTROLYTIC CAPACITOR			358.6062		
C550	NCC SRE 22UF/16V+-20% CK 1UF+-10%50V5RM MKT CAPACITOR			CK 099.2998		
C552	WIMA MKS2/50/1UF/10% CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR			CC 099.8521		
C553	VITRAMON VJ1206Y103KFA CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR			CC 099.8521		
C555	VITRAMON VJ1206Y103KFA CC 5,6NF+- 5%100V NPO VIE CAPACITOR			CC 060.0988		
	ERIE 8737-100-COG-5,6NF-J					



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		07	1087	ED ANALOGTEIL	802.8435.01 SA	14
Kennzeichen Component No.	Benennung/Beschreibung Designation			Sachnummer Stock No.	enthalten in contained in	
C557	CC 5,6NF+- 5%100V NPO VIE CAPACITOR			CC 060.0988		
	ERIE 8737-100-COG-5,6NF-J					
C565	CC 5,6NF+- 5%100V NPO VIE CAPACITOR			CC 060.0988		
	ERIE 8737-100-COG-5,6NF-J					
C568	CC 5,6NF+- 5%100V NPO VIE CAPACITOR			CC 060.0988		
	ERIE 8737-100-COG-5,6NF-J					
C570	CC 5,6NF+- 5%100V NPO VIE CAPACITOR			CC 060.0988		
	ERIE 8737-100-COG-5,6NF-J					
C573	CC 5,6NF+- 5%100V NPO VIE CAPACITOR			CC 060.0988		
	ERIE 8737-100-COG-5,6NF-J					
C580	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR			CC 099.8521		
	VITRAMON VJ1206Y103KFA					
C581	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR			CC 099.8521		
	VITRAMON VJ1206Y103KFA					
C582	CE 22UF+-20%16V5RDX5RAD.A ELECTROLYTIC CAPACITOR			358.6062		
	NCC SRE 22UF/16V+-20%					
C601	CK 100NF+-5%63V5RM MKT CAPACITOR			CK 099.2930		
	WIMA MKS/2/63/0,1UF/5%					
C603	CC 100NF+-10%50V5K1200VIE CAPACITOR			CC 084.5350		
	UNION CARB CK05BX104K					
C635	CK 100NF+-5%63V5RM MKT CAPACITOR			CK 099.2930		
	WIMA MKS/2/63/0,1UF/5%					
C636	CK 100NF+-5%63V5RM MKT CAPACITOR			CK 099.2930		
	WIMA MKS/2/63/0,1UF/5%					
C637	CK 4,7NF+-2,5%63V RM5 KP POLYPROPYLENE CAPACITOR			CK 099.6164		
	WIMA FKP2 4700/2,5%/63V					
C638	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR			CC 099.8521		
	VITRAMON VJ1206Y103KFA					
C645	CK 100NF+-5%63V5RM MKT CAPACITOR			CK 099.2930		
	WIMA MKS/2/63/0,1UF/5%					
C646	CK 100NF+-5%63V5RM MKT CAPACITOR			CK 099.2930		
	WIMA MKS/2/63/0,1UF/5%					
C647	CK 220NF+-5%63V5RM MKT CAPACITOR			CK 099.2952		
	WIMA MKS2/63/0,22UF/5%					
C648	CK 470NF+-5%63V5RM MKT CAPACITOR			CK 099.2975		
	WIMA MKS2/63/0,47UF/5%					
C650	CK 680NF+-10%50VRM MKT CAPACITOR			CK 099.2981		
	WIMA MKS2/50/0,68UF/10%					
						802.8435.01 SA BL14+

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		07	1087	ED ANALOGTEIL	802.8435.01 SA	15
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
C651	CK 470NF+-5%63V5RM MKT CAPACITOR	CK 099.2975				
C653	WIMA MKS2/63/0,47UF/5% CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930				
C654	WIMA MKS/2/63/0,1UF/5% CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930				
C655	WIMA MKS/2/63/0,1UF/5% CK 330NF+-5%63V5RM MKT CAPACITOR	CK 099.2969				
C656	WIMA MKS2/63/0,33UF/5% CK 1UF+-10%50V5RM MKT CAPACITOR	CK 099.2998				
C660	WIMA MKS2/50/1UF/10% CE 2,2UF+-20%35V 7X 5X11 ELECTROLYTIC CAPACITOR	CE 022.8191				
C661	ROEDERSTEI ETR 3 2,2/40 20% CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930				
C662	WIMA MKS/2/63/0,1UF/5% CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930				
C663	WIMA MKS/2/63/0,1UF/5% CE 10 UF+-20%16V 7X 4X 8 ELECTROLYTIC CAPACITOR	CE 022.8085				
C664	ROEDERSTEI ETR 2 10/16 20% CE 10UF -10+50% 63V 9X13 ELECTROLYTIC CAPACITOR	CE 022.7650				
C670	ROEDERST ELKOEK10/63 CE 4,7UF+-20%20V 7X 4X 8 ELECTROLYTIC CAPACITOR	CE 022.8110				
C671	ROEDERSTEI ETR 2 4,7/20 20% CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930				
C672	WIMA MKS/2/63/0,1UF/5% CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930				
C675	WIMA MKS/2/63/0,1UF/5% CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930				
C676	WIMA MKS/2/63/0,1UF/5% CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930				
C680	WIMA MKS/2/63/0,1UF/5% CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930				
C685	WIMA MKS/2/63/0,1UF/5% CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930				
C686	WIMA MKS/2/63/0,1UF/5% CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930				
C687	WIMA MKS/2/63/0,1UF/5% CK 100NF+-5%63V5RM MKT CAPACITOR	CK 099.2930				
	WIMA MKS/2/63/0,1UF/5%					

802.8435.01 SA BL15+

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Kennzeichen Component No.	Benennung/Beschreibung Designation			Sachnummer Stock No.	enthalten in contained in	
C700	CE 470UF+-20%25V12,5X12,5 ELECTROLYTIC CAPACITOR MATSUSHITA ECE-ALESS-471U			803.0715		
C701	CE 470UF+-20%25V12,5X12,5 ELECTROLYTIC CAPACITOR MATSUSHITA ECE-ALESS-471U			803.0715		
C703	CE 22UF+-20%16V5RDX5RAD.A ELECTROLYTIC CAPACITOR NCC			358.6062		
C704	SRE 22UF/16V+-20% CC 10NF-20+50%7X8R4000 CAPACITOR			CC 087.7525		
C705	VALVO 2222 63051 64051103 CC 10NF-20+50%7X8R4000 CAPACITOR			CC 087.7525		
C706	VALVO 2222 63051 64051103 CC 10NF-20+50%7X8R4000 CAPACITOR			CC 087.7525		
	VALVO 2222 63051 64051103					
D76	BL CD4053BE 3X2CH. MUX MULTIPLEXER			BL 565.3080		
D96	RCA CD4053BE BL CD4047AE MULTIVIBR. MULTIVIBRATOR			BL 086.7221		
D97	RCA CD4047AE BL HEF4094BT 8B.SHIFTREG 8 STAGE BUS REGISTER			803.0867		
D100	VALVO HEF4094BT, GEGURTET BL SN74S74N 2XD-FLIPFL. FLIP-FLOP			266.6621		
D101	TEXAS SN74S74N BL 74F161PC 4B.BIN.CNT 4BIT SYNC.PRES.BIN.COUNT.			BL 344.7103		
D102	VALVO N74F161N BL 74F161PC 4B.BIN.CNT 4BIT SYNC.PRES.BIN.COUNT.			BL 344.7103		
D103	VALVO N74F161N BL SN74LS153N DATENSELEKT IC MULTIPLEXER SN74LS153N			266.4729		
D104	TEXAS SN74LS153N BL HEF4094BT 8B.SHIFTREG 8 STAGE BUS REGISTER			803.0867		
D105	VALVO HEF4094BT, GEGURTET BL HEF4094BT 8B.SHIFTREG 8 STAGE BUS REGISTER			803.0867		
D106	VALVO HEF4094BT, GEGURTET BL CD4040BE 12B.COUNTER COUNTER			BL 086.7180		
D110	RCA CD4040BE BJ TL601CP 2X ANALOGSCH ANALOG SWITCH			BJ 213.4530		
D220	TEXAS TL601CP {MJG} BJ N8T20F 1XLINE REC LINE RECEIVER			BJ 289.4502		
	SIGNETICS N8T20F					
802.8435.01 SA BL16+						

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		07	1087	ED ANALOGTEIL	802.8435.01 SA	17
Kennzeichen Component No.	Benennung/Beschreibung Designation			Sachnummer Stock No.	enthalten in contained in	
D225	BL HEF4011BT 4X2IN.NANDG NAND GATE VALVO HEF4011BT			350.4154		
D280	BL CD4052BE 2X4CHAN.MUX MULTIPLEXER/DEMULTIPLEXER MOTOROLA MC14052BCP			BL 243.1200		
D282	BJ TL601CP 2X ANALOGSCH ANALOG SWITCH TEXAS TL601CP {MJG}			BJ 213.4530		
D315	BJ TL601CP 2X ANALOGSCH ANALOG SWITCH TEXAS TL601CP {MJG}			BJ 213.4530		
D320	BL HEF4094BT 8B.SHIFTREG 8 STAGE BUS REGISTER VALVO HEF4094BT, GEGURTET			803.0867		
D352	BL CD4053BE 3X2CH. MUX MULTIPLEXER RCA CD4053BE			BL 565.3080		
D410	BL CD4052BE 2X4CHAN.MUX MULTIPLEXER/DEMULTIPLEXER MOTOROLA MC14052BCP			BL 243.1200		
D415	BL CD4053BE 3X2CH. MUX MULTIPLEXER RCA CD4053BE			BL 565.3080		
D430	BL CD4053BE 3X2CH. MUX MULTIPLEXER RCA CD4053BE			BL 565.3080		
D435	BJ TL601CP 2X ANALOGSCH ANALOG SWITCH TEXAS TL601CP {MJG}			BJ 213.4530		
D445	BL CD4053BE 3X2CH. MUX MULTIPLEXER RCA CD4053BE			BL 565.3080		
D450	BL CD4053BE 3X2CH. MUX MULTIPLEXER RCA CD4053BE			BL 565.3080		
D455	BL CD4053BE 3X2CH. MUX MULTIPLEXER RCA CD4053BE			BL 565.3080		
D465	BL CD4094BF 8BIT SH.REG SHIFT REGISTER RCA CD4094BF			BL 418.0064		
D466	BL CD4094BF 8BIT SH.REG SHIFT REGISTER RCA CD4094BF			BL 418.0064		
D467	BL CD4094BF 8BIT SH.REG SHIFT REGISTER RCA CD4094BF			BL 418.0064		
D470	BL CD4053BE 3X2CH. MUX MULTIPLEXER RCA CD4053BE			BL 565.3080		
D650	BL MC14066BAL 4X ANALOGSW ANALOG SWITCH MOTOROLA MC14066BAL			BL 418.0135		
D675	BL CD4052BE 2X4CHAN.MUX MULTIPLEXER/DEMULTIPLEXER MOTOROLA MC14052BCP			BL 243.1200		

802.8435.01 SA BL17+

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		07	1087	ED ANALOGTEIL	802.8435.01 SA	18
Kennzeichen Component No.	Benennung/Beschreibung Designation			Sachnummer Stock No.	enthalten in contained in	
D680	BL CD4051BE 8CH. MUX MULTIPLEXER RCA CD4051BE			BL 339.4174		
D685	BL CD4051BE 8CH. MUX MULTIPLEXER RCA CD4051BE			BL 339.4174		
D695	BL SN74LS05N 6/INVERT. OC IC INVERTER SN74LS05N TEXAS SN74LS05N			266.7911		
D696	BL SN74LS05N 6/INVERT. OC IC INVERTER SN74LS05N TEXAS SN74LS05N			266.7911		
D697	BL HEF4094BT 8B.SHIFTREG 8 STAGE BUS REGISTER VALVO HEF4094BT, GEGURTET			803.0867		
D698	BL HEF4094BT 8B.SHIFTREG 8 STAGE BUS REGISTER VALVO HEF4094BT, GEGURTET			803.0867		
E160	ER 455KHZ-BANDP.KER.B:30K 455KHZ-BANDPASS,CER.BW30K MURATA CFW 455 B			803.0809		
H600	EF 6V 0,02A OHNE SOCKEL LAMP 6V BUERKLIN 33 G112			EF 803.0815		
K5	SN HF-RELAIS 12V 1XUM RELAY SDS RF1E-12V			803.0821		
K166	SR 5 V 1XU DIL RELAY ELECTROL RA 30421051			SR 340.4551		
K168	SR 5 V 1XU DIL RELAY ELECTROL RA 30421051			SR 340.4551		
K350	SR 5V360OHM1MAL1RH-JC-GEH RELAY CLARE PRME 15.005			SR 412.0027		
L1	LD 680 UH10%60,0OHM0,030A CHOKE DELEVAN DROSSEL1025-88			LD 067.3201		
L2	LD 680 UH10%60,0OHM0,030A CHOKE DELEVAN DROSSEL1025-88			LD 067.3201		
L20	LD 390 UH10%35,0OHM0,040A CHOKE DELEVAN DROSSEL1025-82			LD 067.3176		
L21	LD 390 UH10%35,0OHM0,040A CHOKE DELEVAN DROSSEL1025-82			LD 067.3176		
L25	LD 390 UH10%35,0OHM0,040A CHOKE DELEVAN DROSSEL1025-82			LD 067.3176		
802.8435.01 SA						BL18+

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		07	1087	ED ANALOGTEIL	802.8435.01 SA	19
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
L26	LD 470 UH10%42,00HM0,036A CHOKE	LD 067.3182				
L27	DELEVAN DROSSEL1025-84 LD 1000UH10%72,00HM0,028A CHOKE	LD 037.8005				
L30	DELEVAN DROSSEL1025-92 LD 390 UH10%35,00HM0,040A CHOKE	LD 067.3176				
L33	DELEVAN DROSSEL1025-82 LD 270 UH10%25,00HM0,047A CHOKE	LD 067.3153				
L46	DELEVAN DROSSEL1025-78 LD 470 UH10%42,00HM0,036A CHOKE	LD 067.3182				
L50	DELEVAN DROSSEL1025-84 LD 390 UH10%35,00HM0,040A CHOKE	LD 067.3176				
L55	DELEVAN DROSSEL1025-82 LD 390 UH10%35,00HM0,040A CHOKE	LD 067.3176				
L100	DELEVAN DROSSEL1025-82 LD 470 UH10%42,00HM0,036A CHOKE	LD 067.3182				
L123	DELEVAN DROSSEL1025-84 LD 100 UH10%8,00OHM0,084A CHOKE	LD 067.3101				
L130	DELEVAN DROSSEL1025-68 LD 1000UH10%72,00HM0,028A CHOKE	LD 037.8005				
L149	DELEVAN DROSSEL1025-92 LD 1,00UH10%1,00OHM0,390A CHOKE	LD 067.2863				
L150	DELEVAN 1025-20 LD 18UH+-2% 0,36A1,95 OHM MINI CHOKE	LD 283.1001				
L151	JAHRE 74.11-18ROG LD 18UH+-2% 0,36A1,95 OHM MINI CHOKE	LD 283.1001				
L180	JAHRE 74.11-18ROG LD 100 UH10%8,00OHM0,084A CHOKE	LD 067.3101				
L185	DELEVAN DROSSEL1025-68 LD 100 UH10%8,00OHM0,084A CHOKE	LD 067.3101				
L210	DELEVAN DROSSEL1025-68 LD 100 UH10%8,00OHM0,084A CHOKE	LD 067.3101				
L212	DELEVAN DROSSEL1025-68 LD 100 UH10%8,00OHM0,084A CHOKE	LD 067.3101				
L213	DELEVAN DROSSEL1025-68 LD 100 UH10%8,00OHM0,084A CHOKE	LD 067.3101				
L216	DELEVAN DROSSEL1025-68 LD 100 UH10%8,00OHM0,084A CHOKE	LD 067.3101				
	DELEVAN DROSSEL1025-68					

802.8435.01 SA BL19+

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		07	1087	ED ANALOGTEIL	802.8435.01 SA	20
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
L315	LD 10,0UH10%3,300HM0,144A CHOKE	LD 026.4184				
L340	DELEVAN DROSSEL1025-44 LD 10,0UH10%3,300HM0,144A CHOKE	LD 026.4184				
	DELEVAN DROSSEL1025-44					
N10	BO MC1558JG 2X OPAMP OPERATIONAL AMPLIFIER	275.0816				
	NSC LM1558J					
N15	BO MC1558JG 2X OPAMP OPERATIONAL AMPLIFIER	275.0816				
	NSC LM1558J					
N45	BM OM350R ANTENNEN-VERST BROADBAND AMPLIFIER	803.0838				
	VALVO OM350R SPEZ.					
N50	BM OM350R ANTENNEN-VERST BROADBAND AMPLIFIER	803.0838				
	VALVO OM350R SPEZ.					
N55	BM OM350R ANTENNEN-VERST BROADBAND AMPLIFIER	803.0838				
	VALVO OM350R SPEZ.					
N70	BO LF412CN 2XFET OPAMP OPERATIONAL AMPLIFIER	356.0521				
	NSC LF412CN					
N90	BO LF412CN 2XFET OPAMP OPERATIONAL AMPLIFIER	356.0521				
	NSC LF412CN					
N100	BM OM350 ANTENNEN-VERST ANTENNA AMPLIFIER	BM 334.4953				
	VALVO OM350					
N115	BM TFM2 MIXER 1.0GHZ MIXER	BM 302.6080				
	MCL TFM-2					
N120	BM OM361A ANTENNEN-VERST ANTENNA AMPLIFIER	BM 334.5314				
	VALVO OM361A					
N130	BO LF156J BIFET OPAMP OPERATIONAL AMPLIFIER	BO 645.7251				
	MOTOROLA LF156J					
N170	BO LF157J BIFET OPAMP OPERATIONAL AMPLIFIER	BO 343.1530				
	MOTOROLA LF157J					
N175	BO MC1590BGCS HF AMPL HF AMPLIFIER	BO 455.4047				
	MOTOROLA MC1590BGCS					
N180	BO LF156J BIFET OPAMP OPERATIONAL AMPLIFIER	BO 645.7251				
	MOTOROLA LF156J					
N190	BO LF412CN 2XFET OPAMP OPERATIONAL AMPLIFIER	356.0521				
	NSC LF412CN					
N205	BO MC1558JG 2X OPAMP OPERATIONAL AMPLIFIER	275.0816				
	NSC LM1558J					
					802.8435.01 SA	BL20+

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		07	1087	ED ANALOGTEIL	802.8435.01 SA	21
Kennzeichen Component No.	Benennung/Beschreibung Designation			Sachnummer Stock No.	enthalten in contained in	
N230	BO LF412CN 2XFET OPAMP OPERATIONAL AMPLIFIER NSC LF412CN			356.0521		
N240	BO LF411CN JFET OPAMP OPERATIONAL AMPLIFIER NSC LF411CN			349.3058		
N250	BO LF411CN JFET OPAMP OPERATIONAL AMPLIFIER NSC LF411CN			349.3058		
N270	BO SE5534AFE LOW N.OPAMP OPERATIONAL AMPLIFIER SIGNETICS SE5534AFE			301.3335		
N290	BO LF411CN JFET OPAMP OPERATIONAL AMPLIFIER NSC LF411CN			349.3058		
N300	BO LF412CN 2XFET OPAMP OPERATIONAL AMPLIFIER NSC LF412CN			356.0521		
N310	BO NE5532AFE 2XL.N.OPAMP OPERATIONAL AMPLIFIER VALVO NE5532AFE			BO 356.0450		
N350	BO LF411CN JFET OPAMP OPERATIONAL AMPLIFIER NSC LF411CN			349.3058		
N352	BO LF411CN JFET OPAMP OPERATIONAL AMPLIFIER NSC LF411CN			349.3058		
N355	BO LF412CN 2XFET OPAMP OPERATIONAL AMPLIFIER NSC LF412CN			356.0521		
N365	BO LF412CN 2XFET OPAMP OPERATIONAL AMPLIFIER NSC LF412CN			356.0521		
N380	BO LF412CN 2XFET OPAMP OPERATIONAL AMPLIFIER NSC LF412CN			356.0521		
N385	BO LF412CN 2XFET OPAMP OPERATIONAL AMPLIFIER NSC LF412CN			356.0521		
N400	BO NE5532AFE 2XL.N.OPAMP OPERATIONAL AMPLIFIER VALVO NE5532AFE			BO 356.0450		
N415	BO NE5532AFE 2XL.N.OPAMP OPERATIONAL AMPLIFIER VALVO NE5532AFE			BO 356.0450		
N425	BO LF412CN 2XFET OPAMP OPERATIONAL AMPLIFIER NSC LF412CN			356.0521		
N435	BO NE5532AFE 2XL.N.OPAMP OPERATIONAL AMPLIFIER VALVO NE5532AFE			BO 356.0450		
N445	BO LF412CN 2XFET OPAMP OPERATIONAL AMPLIFIER NSC LF412CN			356.0521		
N455	BO CA3240AE 2XMOS OPAMP OPERATIONAL AMPLIFIER RCA CA3240AE			302.7040		

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		07	1087	ED ANALOGTEIL	802.8435.01 SA	22
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
N460	BO LF156J BIFET OPAMP OPERATIONAL AMPLIFIER MOTOROLA LF156J	BO 645.7251				
N500	BO LF412CN 2XFET OPAMP OPERATIONAL AMPLIFIER NSC LF412CN	356.0521				
N505	BO LF411CN JFET OPAMP OPERATIONAL AMPLIFIER NSC LF411CN	349.3058				
N510	BO LM13600AN 2XOTA TRANSCONDUCTANCE AMPL. NSC LM13600AN	803.0796				
N520	BO MC1595L MULTIPLIER MULTIPLIER MOTOROLA MC1595L	BO 451.4365				
N530	BO LF412CN 2XFET OPAMP OPERATIONAL AMPLIFIER NSC LF412CN	356.0521				
N550	BO LF412CN 2XFET OPAMP OPERATIONAL AMPLIFIER NSC LF412CN	356.0521				
N565	BO LF412CN 2XFET OPAMP OPERATIONAL AMPLIFIER NSC LF412CN	356.0521				
N570	BO LF412CN 2XFET OPAMP OPERATIONAL AMPLIFIER NSC LF412CN	356.0521				
N580	BO LF412CN 2XFET OPAMP OPERATIONAL AMPLIFIER NSC LF412CN	356.0521				
N600	BO LF412CN 2XFET OPAMP OPERATIONAL AMPLIFIER NSC LF412CN	356.0521				
N630	BO LF411CN JFET OPAMP OPERATIONAL AMPLIFIER NSC LF411CN	349.3058				
N635	BJ PKD01FP PEAK DETECT PEAK DETECTOR PMI PKD01	358.6256				
N640	BO LF411CN JFET OPAMP OPERATIONAL AMPLIFIER NSC LF411CN	349.3058				
N645	BJ AD536AJH RMS/DC-CONV RMS/DC-CONVERTER ANALOG DEV AD536AJH	BJ 350.2639				
N650	BO LF412CN 2XFET OPAMP OPERATIONAL AMPLIFIER NSC LF412CN	356.0521				
N660	BJ AD636JH RMS/DC-CONV RMS/DC-CONVERTER ANALOG DEV AD636JH	BJ 350.2780				
N670	BO LF412CN 2XFET OPAMP OPERATIONAL AMPLIFIER NSC LF412CN	356.0521				
N685	BO LF411CN JFET OPAMP OPERATIONAL AMPLIFIER NSC LF411CN	349.3058				
					802.8435.01 SA	BL22+

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		07	1087	ED ANALOGTEIL	802.8435.01 SA	23
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
P1	FP INDIREKT.STECKERL.36P. PIN CONNECTOR BERG 75160-102-36 22X1POL.	FP 242.3600				
P2	FP INDIREKT.STECKERL.36P. PIN CONNECTOR BERG 75160-102-36	FP 242.3600				
P3	FP INDIREKT.STECKERL.36P. PIN CONNECTOR BERG 75160-102-36	FP 242.3600				
P4	FP INDIREKT.STECKERL.36P. PIN CONNECTOR BERG 75160-102-36 1X3POL	FP 242.3600				
P5	FP INDIREKT.STECKERL.36P. PIN CONNECTOR BERG 75160-102-36	FP 242.3600				
BIS/TO P8 P10	FP INDIREKT.STECKERL.36P. PIN CONNECTOR BERG 75160-102-36	FP 242.3600				
BIS/TO P21 P24	FP INDIREKT.STECKERL.36P. PIN CONNECTOR BERG 75160-102-36	FP 242.3600				
P25	FP INDIREKT.STECKERL.36P. PIN CONNECTOR BERG 75160-102-36	FP 242.3600				
P26	FP INDIREKT.STECKERL.36P. PIN CONNECTOR BERG 75160-102-36	FP 242.3600				
P28	FP INDIREKT.STECKERL.36P. PIN CONNECTOR BERG 75160-102-36	FP 242.3600				
P30	FP INDIREKT.STECKERL.36P. PIN CONNECTOR BERG 75160-102-36	FP 242.3600				
R1	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR DALE CRCW1206 100OHM F T	RG 006.8884				
R2	RG 68,1 OHM+-1%TK100 1206 CHIP RESISTOR DALE CRCW1206 68,1OHM F T	RG 006.8849				
R3	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR DALE CRCW1206 100OHM F T	RG 006.8884				
R4	RD 0,8W 1,0KOHM+-3% WIRE-WOUND RESISTOR SAGE 1000S/1K/3%	RD 067.0602				
R5	RD 0,8W 1,0KOHM+-3% WIRE-WOUND RESISTOR SAGE 1000S/1K/3%	RD 067.0602				

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		07	1087		802.8435.01 SA	24
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
R10	RL 0,35W 68,1 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/68,1OHM-F-D	RL 082.9636				
R15	RL 0,35W 47,5KOHM+-1%TK50 RESISTOR DRALORIC SMA/207/47,5K-F-C	RL 083.1800				
R16	RL 0,35W 47,5KOHM+-1%TK50 RESISTOR DRALORIC SMA/207/47,5K-F-C	RL 083.1800				
R17	RL 0,35W 68,1 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/68,1OHM-F-D	RL 082.9636				
R18	RL 0,35W 68,1 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/68,1OHM-F-D	RL 082.9636				
R20	RL 0,35W 243 OHM+-1%TK50 DEPOS.-CARBON RESISTOR DRALORIC SMA0207/243OHM-F-D	RL 083.0126				
R21	RD 0,8W 1,2KOHM+-3% WIRE WOUND RESISTOR SAGE 1000S/1,2K/3%	RD 067.7113				
R22	RG 61,9 OHM+-1%TK100 1206 CHIP RESISTOR DALE CRCW1206 61,9OHM F T	RG 006.8832				
R23	RG 237 OHM+-2%TK200 1206 CHIP RESISTOR DRALORIC CGB3216 237OHM2% TK	006.8978				
R24	RG 61,9 OHM+-1%TK100 1206 CHIP RESISTOR DALE CRCW1206 61,9OHM F T	RG 006.8832				
R25	RL 0,35W 243 OHM+-1%TK50 DEPOS.-CARBON RESISTOR DRALORIC SMA0207/243OHM-F-D	RL 083.0126				
R26	RL 0,35W 499 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/499OHM-F-D	RL 083.0410				
R27	RL 0,35W 2,49KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/2,49K-F-D	RL 083.0890				
R30	RL 0,35W 453 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/453OHM-F-D	RL 083.0378				
R31	RG 46,4 OHM+-2%TK200 1206 CHIP RESISTOR DRALORIC CGB3216 46,4OHM2% TK	006.8803				
R32	RL 0,35W 2,74KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/2,74K-F-D	RL 083.0926				
R33	RG 178 OHM+-2%TK200 1206 CHIP RESISTOR DRALORIC CGB3216 178OHM2% TK	006.8949				
R34	RL 0,21W 270 OHM2% UNGEW. RESISTOR RESISTA MK1 270OHM 2% UNGEW.	RL 092.6000				
R40	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D	RL 083.1297				
802.8435.01 SA BL24+						

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		07	1087	ED ANALOGTEIL	802.8435.01 SA	25
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
R41	RL 0,35W 511 OHM+-1%TK50 RESISTOR	RL 083.0426				
R42	DRALORIC SMA0207/511OHM-F-D RL 0,35W22,10 OHM+-1%TK50 RESISTOR	RL 082.9188				
R45	DRALORIC SMA0207/22,1OHM-F-D RG 147 OHM+-2%TK200 1206 CHIP RESISTOR	006.8926				
R46	DRALORIC CGB3216 147OHM2% TK RL 0,35W 130 OHM+-1%TK50 RESISTOR	RL 082.9888				
R47	DRALORIC SMA0207/130OHM-F-D RG 34,8 OHM+-2%TK200 1206 CHIP RESISTOR	006.8778				
R48	DRALORIC CGB3216 34,8OHM2% TK RG 56,2 OHM+-1%TK100 1206 CHIP RESISTOR	RG 006.8826				
R49	DALE CRCW1206 56,2OHM F T RG 68,1 OHM+-1%TK100 1206 CHIP RESISTOR	RG 006.8849				
R50	DALE CRCW1206 68,1OHM F T RG 23,7 OHM+-2%TK200 1206 CHIP RESISTOR	006.8732				
R51	DRALORIC CGB3216 23,7OHM2% TK RL 0,35W 130 OHM+-1%TK50 RESISTOR	RL 082.9888				
R55	DRALORIC SMA0207/130OHM-F-D RG 38,3 OHM+-2%TK200 1206 CHIP RESISTOR	006.8784				
R56	DRALORIC CGB3216 38,3OHM2% TK RG 178 OHM+-2%TK200 1206 CHIP RESISTOR	006.8949				
R57	DRALORIC CGB3216 178OHM2% TK RG 10,0 OHM+-1%TK100 1206 CHIP -RESISTOR	RG 006.8649				
R58	DALE CRCW1206 10,0 OHM FT RL 0,35W 130 OHM+-1%TK50 RESISTOR	RL 082.9888				
R60	DRALORIC SMA0207/130OHM-F-D RG 147 OHM+-2%TK200 1206 CHIP RESISTOR	006.8926				
R61	DRALORIC CGB3216 147OHM2% TK RG 34,8 OHM+-2%TK200 1206 CHIP RESISTOR	006.8778				
R62	DRALORIC CGB3216 34,8OHM2% TK RG 147 OHM+-2%TK200 1206 CHIP RESISTOR	006.8926				
R65	DRALORIC CGB3216 147OHM2% TK RG 274 KOHM+-1%TK100 RESISTOR CHIP	RG 007.4460				
R66	DALE CRCW1206 274KOHM 1% RG 56,2 OHM+-1%TK100 1206 CHIP RESISTOR	RG 006.8826				
R67	DALE CRCW1206 56,2OHM F T RG 4,64KOHM+-2%TK200 1206 CHIP RESISTOR	007.0712				
	DRALORIC CGB 3216 4,64KOHM 2%					

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		07	1087	ED ANALOGTEIL	802.8435.01 SA	26
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
R70	RL 0,35W 274 KOHM+-1%TK50 RESISTOR	RL 083.2364				
R71	DRALORIC SMA/207/274K-F-C RL 0,35W 4,75KOHM+-1%TK50 RESISTOR	RL 083.1097				
R75	DRALORIC SMA0207/4,75K-F-D RN 4X 100KOHM+-2%SIL 8 H5 RESISTOR NETWORK	RN 333.9497				
R76	BOURNS 4308R-102-104 RL 0,35W 47,5KOHM+-1%TK50 RESISTOR	RL 083.1800				
R77	DRALORIC SMA/207/47,5K-F-C RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297				
R80	DRALORIC SMA0207/10K-F-D RL 0,35W 2,00KOHM+-1%TK50 RESISTOR	RL 083.0826				
R81	DRALORIC SMA0207/2,00K-F-D RL 0,35W 5,62KOHM+-1%TK50 RESISTOR	RL 082.2190				
R85	DRALORIC SMA0207/5,62K-F-C RL 0,35W 47,5KOHM+-1%TK50 RESISTOR	RL 083.1800				
R86	DRALORIC SMA/207/47,5K-F-C RL 0,35W 59,0KOHM+-1%TK50 RESISTOR	RL 083.1845				
R87	DRALORIC SMA0207/59,0K-F-C RS 0,5W2KOHM+-10%10X10X5 CERMET POTENTIOMETER	RS 247.7961				
R88	BOURNS 3386X-1-202 RS 0,5W100KOHM+-10%10X10X CERMET POTENTIOMETER T	RS 087.7683				
R90	BOURNS 3386X-1-104 RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543				
R91	DRALORIC SMA0207/100/HM-F-D RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297				
R95	DRALORIC SMA0207/10K-F-D RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764				
R96	DRALORIC SMA0207/100K-F-C RL 0,35W 8,06KOHM+-1%TK50 RESISTOR	RL 083.1222				
R97	DRALORIC SMA0207/8,06K-F-D RL 0,35W 4,75KOHM+-1%TK50 RESISTOR	RL 083.1097				
R98	DRALORIC SMA0207/4,75K-F-D RL 0,35W 1MOHM+-1%TK50 RESISTOR	RL 082.7862				
R99	DRALORIC SMA0207/1M-F-D RG 4,64KOHM+-2%TK200 1206 CHIP RESISTOR	007.0712				
R100	DRALORIC CGB 3216 4,64KOHM 2% RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543				
	DRALORIC SMA0207/100/HM-F-D					
802.8435.01 SA BL26+						

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	07	1987	ED ANALOGTEIL	802.8435.01 SA	27

Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in
R102	RS 0,3W 10KOHM+-10% CERMET TRIMMING POTENTIOMETER	RS 006.9145	
R103	BECKMAN 67W 10KOHM 10% RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543	
R106	DRALORIC SMA0207/100/HM-F-D RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	
R107	DRALORIC SMA0207/1K-F-C RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	
R110	DRALORIC SMA0207/1K-F-C RG 3,16KOHM+-2%TK200 1206 CHIP RESISTOR	007.0670	
R111	DRALORIC CGB 3216 3,16KOHM 2% RG 3,16KOHM+-2%TK200 1206 CHIP RESISTOR	007.0670	
R112	DRALORIC CGB 3216 3,16KOHM 2% RG 100KOHM+-1%TK100 1206 CHIP RESISTOR	RG 007.1948	
R113	DALE CRCW1206 100KOHM F T RG 100KOHM+-1%TK100 1206 CHIP RESISTOR	RG 007.1948	
R114	DALE CRCW1206 100KOHM F T RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160	
R120	DRALORIC SMA0207/1K-F-C RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 006.8884	
R121	DALE CRCW1206 100OHM F T RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 006.8884	
R122	DALE CRCW1206 100OHM F T RG 23,7 OHM+-2%TK200 1206 CHIP RESISTOR	006.8732	
R123	DRALORIC CGB3216 23,7OHM2% TK RL 0,35W 20,0KOHM+-1%TK50 RESISTOR	RL 083.1522	
R124	DRALORIC SMA/207/20K-F-C RL 0,35W 37,4 OHM+-1%TK50 RESISTOR	RL 082.9407	
R125	DRALORIC SMA0207/37,4OHM-F-D RL 0,35W 1,50KOHM+-1%TK50 RESISTOR	RL 083.0732	
R126	DRALORIC SMA0207/1,50K-F-D RL 0,35W 1,50KOHM+-1%TK50 RESISTOR	RL 083.0732	
R127	DRALORIC SMA0207/1,50K-F-D RG 147 OHM+-2%TK200 1206 CHIP RESISTOR	006.8926	
R128	DRALORIC CGB3216 147OHM2% TK RG 20,0 OHM+-1%TK100 1206 RESISTOR CHIP	RG 007.5472	
R129	DALE CRW1206 20,0OHM F-T RG 51,1 OHM+-1%TK100 1206 CHIP RESISTOR	RG 006.8810	
	DALE CRCW1206 51,1OHM F T		

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		07	1087	ED ANALOGTEIL	802.8435.01 SA	28
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
R130	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297				
R131	DRALORIC SMA0207/10K-F-D RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764				
R132	DRALORIC SMA0207/100K-F-C RL 0,35W 20,0KOHM+-1%TK50 RESISTOR	RL 083.1522				
R136	DRALORIC SMA/207/20K-F-C RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160				
R137	DRALORIC SMA0207/1K-F-C RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160				
R138	DRALORIC SMA0207/1K-F-C RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160				
R139	DRALORIC SMA0207/1K-F-C RG 1000 OHM+-1%TK100 1206 CHIP RESISTOR	RG 006.7271				
R140	DALE CRCW1206 1,0KOHM F T RG 1000 OHM+-1%TK100 1206 CHIP RESISTOR	RG 006.7271				
R150	DALE CRCW1206 1,0KOHM F T RL 0,35W 49,9 OHM+-1%TK50 RESISTOR	RL 082.9520				
R151	RESISTA MK2 RG 51,1 OHM+-1%TK100 1206 CHIP RESISTOR	RG 006.8810				
R154	DALE CRCW1206 51,1OHM F T RL 0,21W 10,0 OHM+-1%TK50 RESISTOR	RL 092.1715				
R156	RESISTA MK1 10,0OHM 1% TK50 RL 0,21W 1,21KOHM+-1%TK50 RESISTOR	RL 092.1450				
R157	RESISTA MK1 1K21 1% TK50 RL 0,21W 221 OHM+-1%TK50 RESISTOR	RL 092.1367				
R158	RESISTA MK1 221OHM 1% TK50 RL 0,21W 1,82KOHM+-1%TK50 RESISTOR	RL 092.1473				
R159	RESISTA MK1 1K82 1% TK50 RL 0,21W 2,00KOHM+-1%TK50 RESISTOR	092.0283				
R160	RESISTA MK1 2K 1% TK50 RL 0,21W 10,0KOHM+-1%TK50 RESISTOR	RL 092.1567				
R161	RESISTA MK1 10K0 1% TK50 RL 0,21W 10,0KOHM+-1%TK50 RESISTOR	RL 092.1567				
R162	RESISTA MK1 10K0 1% TK50 RL 0,21W 1,50KOHM+-1%TK50 RESISTOR	RL 092.1467				
R163	RESISTA MK1 1K5 1% TK50 RL 0,21W 90,9 OHM+-1%TK50 RESISTOR	092.0125				
	RESISTA MK1					
802.8435.01 SA BL28+						

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		07	1987	ED ANALOGTEIL	802.8435.01 SA	29
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
R164	RL 0,21W 1,21KOHM+-1%TK50 RESISTOR	RL 092.1450				
R165	RESISTA MK1 1K21 1% TK50 RL 0,21W 1,50KOHM+-1%TK50 RESISTOR	RL 092.1467				
R166	RESISTA MK1 1K5 1% TK50 RL 0,21W 10,0KOHM+-1%TK50 RESISTOR	RL 092.1567				
R167	RESISTA MK1 10K0 1% TK50 RG 1,47KOHM+-2%TK200 1206 CHIP RESISTOR	006.9980				
R168	DRALORIC CGB 3216 1,47KOHM 2% RL 0,21W 10,0KOHM+-1%TK50 RESISTOR	RL 092.1567				
R169	RESISTA MK1 10K0 1% TK50 RG 3,16KOHM+-2%TK200 1206 CHIP RESISTOR	007.0670				
R170	DRALORIC CGB 3216 3,16KOHM 2% RL 0,35W 2,21KOHM+-1%TK50 RESISTOR	RL 082.2477				
R171	DRALORIC SMA 0207/2,21K-F-C RL 0,35W 221 KOHM+-1%TK50 RESISTOR	RL 083.2270				
R172	DRALORIC SMA0207/221K-F-C RG 28,7KOHM+-2%TK200 1206 CHIP RESISTOR	007.0964				
R175	DRALORIC CGB 3216 28,7KOHM 2% RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160				
R176	DRALORIC SMA0207/1K-F-C RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160				
R177	DRALORIC SMA0207/1K-F-C RL 0,35W 221 OHM+-1%TK50 RESISTOR	RL 083.0084				
R180	DRALORIC SMA0207/221OHM-F-D RN 4X1,0KOHM+-2%SIL 8 H5 RESISTOR NETWORK	RN 291.4370				
R190	BOURNS 4308R-102-102 RL 0,35W 4,99KOHM+-1%TK50 RESISTOR	RL 083.1116				
R191	DRALORIC SMA0207/4,99K-F-D RL 0,35W 32,4KOHM+-1%TK50 RESISTOR	RL 083.1668				
R192	DRALORIC SMA0207/32,4K-F-C RL 0,35W 4,75KOHM+-1%TK50 RESISTOR	RL 083.1097				
R195	DRALORIC SMA0207/4,75K-F-D RN 4X 10KOHM+-2%SIL 8 H5 RESISTOR NETWORK	RN 291.5154				
R196	BOURNS 4308R-102-103 RL 0,35W 665 OHM+-1%TK50 RESISTOR	RL 082.2419				
R197	DRALORIC SMA0207/665OHM-F-C RS 0,3W2,0KOHM+-10% CERMET TRIMMING POTENTIOMETER BECKMAN 67W 2KOHM 10%	RS 006.9139				



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		07	1087	ED ANALOGTEIL	802.8435.01 SA	30
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
R198	RL 0,35W 30,9KOHM+-1%TK50 RESISTOR	RL 083.1645				
R200	DRALORIC SMA0207/30,9K-F-C RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297				
R201	DRALORIC SMA0207/10K-F-D RL 0,35W10,0KOHM+-0,1%T25 RESISTOR	RL 084.3064				
R202	DRALORIC SMA0207/10K-B-E RL 0,35W10,0KOHM+-0,1%T25 RESISTOR	RL 084.3064				
R203	DRALORIC SMA0207/10K-B-E RL 0,35W10,0KOHM+-0,1%T25 RESISTOR	RL 084.3064				
R204	DRALORIC SMA0207/10K-B-E RL 0,35W10,0KOHM+-0,1%T25 RESISTOR	RL 084.3064				
R213	DRALORIC SMA0207/10K-B-E RS 0,3W 500 OHM+-10% CERM. TRIMMING POTENTIOMETER	RS 006.6675				
R214	BOURNS 3296W-1- 500OHM+-10% RG 13,0KOHM+-1%TK100 1206 RESISTOR CHIP	RG 007.5837				
R215	DALE CRCW1206 13,0KOHM FT RG 13,0KOHM+-1%TK100 1206 RESISTOR CHIP	RG 007.5837				
	DALE CRCW1206 13,0KOHM FT .TRIMMWERT					
R220	RG 4,64KOHM+-2%TK200 1206 CHIP RESISTOR	007.0712				
R221	DRALORIC CGB 3216 4,64KOHM 2% RG 4,64KOHM+-2%TK200 1206 CHIP RESISTOR	007.0712				
R222	DRALORIC CGB 3216 4,64KOHM 2% RG 1000 OHM+-1%TK100 1206 CHIP RESISTOR	RG 006.7271				
R223	DALE CRCW1206 1,0KOHM F T RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297				
R224	DRALORIC SMA0207/10K-F-D RL 0,35W 374 KOHM+-1%TK50 RESISTOR	RL 083.2493				
R225	RESISTA MK2 RL 0,35W 1MOHM+-1%TK50 RESISTOR	RL 082.7862				
R227	DRALORIC SMA0207/1M-F-D RL 0,35W 402 OHM+-1%TK50 RESISTOR	RL 083.0326				
R228	DRALORIC SMA0207/402OHM-F-D RG 38,3KOHM+-2%TK200 1206 CHIP RESISTOR	007.0993				
R230	DRALORIC CGB 3216 38,3KOHM 2% RL 0,35W 10,0KOHM+-1%TK50 RESISTOR	RL 083.1297				
	DRALORIC SMA0207/10K-F-D					

802.8435.01 SA BL30

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		07	1087	ED ANALOGTEIL	802.8435.01 SA	31
Kennzeichen Component No.	Benennung/Beschreibung Designation			Sachnummer Stock No.	enthalten in contained in	
R231	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D			RL 083.1297		
R232	RL 0,35W 60,4KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/60,4K-F-C			RL 083.1851		
R233	RL 0,35W66,5KOHM+-0,1%T25 RESISTOR DRALORIC SMA/207/66,5K-B-E			RL 084.4648		
R234	RL 0,35W 14,3KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/14,3K-F-D			RL 083.1380		
R235	RL 0,35W 115 KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/115K-F-C			RL 083.2058		
R240	RL 0,21W 10,0KOHM+-1%TK50 RESISTOR RESISTA MK1 10K0 1% TK50			RL 092.1567		
R241	RL 0,35W 75,0KOHM+-1%TK50 RESISTOR DRALORIC SMA/207/75K-F-C			RL 083.1916		
R242	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D			RL 083.1297		
R250	RG 4,64KOHM+-2%TK200 1206 CHIP RESISTOR DRALORIC CGB 3216 4,64KOHM 2%			007.0712		
R252	RL 0,35W 243 OHM+-1%TK50 DEPOS.-CARBON RESISTOR DRALORIC SMA0207/243OHM-F-D			RL 083.0126		
R254	RS 0,3W 10KOHM+-10% CERMET TRIMMING POTENTIOMETER BECKMAN 67W 10KOHM 10%			RS 006.9145		
R260	RL 0,35W 2,21KOHM+-1%TK50 RESISTOR DRALORIC SMA 0207/2,21K-F-C			RL 082.2477		
R261	RL 0,35W 3,32KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/3,32K-F-D			RL 083.0990		
R262	RL 0,35W 3,32KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/3,32K-F-D			RL 083.0990		
R263	RL 0,35W 2,21KOHM+-1%TK50 RESISTOR DRALORIC SMA 0207/2,21K-F-C			RL 082.2477		
R264	RG 464 OHM+-2%TK200 1206 CHIP RESISTOR DRALORIC CGB3216 464OHM2% TK			006.9045		
R265	RL 0,35W 475 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/475OHM-F-D			RL 083.0390		
R266	RL 0,35W 511 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/511OHM-F-D			RL 083.0426		
R267	RL 0,35W 511 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/511OHM-F-D			RL 083.0426		
802.8435.01 SA BL31+						

ROHDE&SCHWARZ		AZ	Datum Date	Schaltteilliste für Parts list for ED ANALOGTEIL	Sachnummer Stock Nr.	Blatt Page
		07	1987		802.8435.01 SA	32
Kennzeichen Component No.	Benennung/Beschreibung Designation			Sachnummer Stock No.	enthalten in contained in	
R270	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D			RL 083.1297		
R271	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D			RL 083.1297		
R272	RL 0,35W 143 KOHM+-1%TK50 RESISTOR DRALORIC SMA/207/143K-F-C			RL 083.2112		
R273	RL 0,35W 143 KOHM+-1%TK50 RESISTOR DRALORIC SMA/207/143K-F-C			RL 083.2112		
R274	RL 0,35W 22,1KOHM+-1%TK50 RESISTOR DRALORIC SMA/207/22,1K-F-C			RL 083.1545		
R275	RS 0,3W100KOHM+-10%CERMET TRIMMING POTENTIOMETER BECKMAN 67W 100KOHM 10%			RS 006.9168		
R279	RL 0,35W 1KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1K-F-C			RL 082.2160		
R281	RG 10,0 OHM+-1%TK100 1206 CHIP -RESISTOR DALE CRCW1206 10,0 OHM FT			RG 006.8649		
R282	RG 10 KOHM+-1%TK100 1206 CHIP RESISTOR DALE CRCW1206 10,0KOHM FT			RG 007.0793		
R283	RG 38,3KOHM+-2%TK200 1206 CHIP RESISTOR DRALORIC CGB 3216 38,3KOHM 2%			007.0993		
R284	RG 38,3KOHM+-2%TK200 1206 CHIP RESISTOR DRALORIC CGB 3216 38,3KOHM 2%			007.0993		
R285	RL 0,21W 39,2KOHM+-1%TK50 RESISTOR RESISTA MK1 39K2 1% TK50			RL 092.1638		
R288	RL 0,35W 100KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/100K-F-C			RL 082.1764		
R289	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D			RL 083.1297		
R290	RG 38,3KOHM+-2%TK200 1206 CHIP RESISTOR DRALORIC CGB 3216 38,3KOHM 2%			007.0993		
R291	RL 0,35W1,50MOHM+-1%TK50 METALFILMRESISTOR RESISTA MK2 1,50MOHM 1% TK50			RL 099.8138		
R292	RL 0,35W 56,2KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/56,2K-F-C			RL 082.2231		
R294	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D			RL 083.1297		
R300	RL 0,35W 14,3KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/14,3K-F-D			RL 083.1380		

802.8435.01 SA BL32+

ROHDE&SCHWARZ		AZ	Datum Date	Schalttailliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
		07	1087	ED ANALOGTEIL	802.8435.01 SA	33
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
R302	RL 0,35W 3,57KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/3,57K-F-D	RL 083.1022				
R303	RL 0,35W 511 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/511OHM-F-D	RL 083.0426				
R304	RS 0,3W 1KOHM+-10% CERMET TRIMMING POTENTIOMETER BOURNS 3296W-1- 1KOHM+-10%	RS 006.6681				
R305	RL 0,35W 2,15KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/2,15K-F-D	RL 083.0855				
R306	RL 0,35W 4,87KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/4,87K-F-D	RL 083.1100				
R310	RL 0,35W 3,09KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/3,09K-F-D	RL 083.0978				
R311	RL 0,35W 3,83KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/3,83K-F-D	RL 082.6614				
R314	RL 0,35W 604 OHM+-1%TK50 RESISTOR DRALORIC SMA/207/604OHM-F-C	RL 082.2425				
R315	RL 0,35W 604 OHM+-1%TK50 RESISTOR DRALORIC SMA/207/604OHM-F-C	RL 082.2425				
R317	RL 0,35W 3,01KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/3,01K-F-D	RL 083.0961				
R318	RL 0,35W 1KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1K-F-C	RL 082.2160				
R350	RL 0,35W 909 KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/909K-F-C	RL 083.2858				
R351	RL 0,35W 97,6KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/97,6K-F-C	RL 083.2006				
R352	RL 0,35W 4,75KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/4,75K-F-D	RL 083.1097				
R353	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D	RL 083.1297				
R354	RL 0,35W 4,12KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/4,12K-F-D	RL 083.1051				
R355	RL 0,35W 30,9KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/30,9K-F-C	RL 083.1645				
R357	RL 0,35W 39,2KOHM+-1%TK50 RESISTOR DRALORIC SMA/207/39,2K-F-C	RL 083.1745				
R360	RL 0,35W 110 KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/110K-F-C	RL 083.2041				
802.8435.01 SA BL33+						

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		07	1087	ED ANALOGTEIL	802.8435.01 SA	34
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
R361	RL 0,35W 26,7KOHM+-1%TK50 RESISTOR DRALORIC SMA/207/26,7K-F-C	RL 083.1597				
R365	RL 0,35W 29,4KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/29,4K-F-C	RL 083.1622				
R366	RL 0,35W 1,78KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1,78K-F-D	RL 082.6643				
R370	RL 0,35W 604 OHM+-1%TK50 RESISTOR DRALORIC SMA/207/604OHM-F-C	RL 082.2425				
R371	RL 0,35W 110 KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/110K-F-C	RL 083.2041				
R380	RL 0,35W 76,8KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/76,8K-F-C	RL 083.1922				
R381	RL 0,35W 28,0KOHM+-1%TK50 RESISTOR DRALORIC SMA/207/28,0K-F-C	RL 083.1600				
R382	RL 0,35W 5,62KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/5,62K-F-C	RL 082.2190				
R385	RL 0,35W 21,0KOHM+-1%TK50 RESISTOR DRALORIC SMA/207/21,0K-F-C	RL 083.1539				
R386	RL 0,35W 19,6KOHM+-1%TK50 RESISTOR DRALORIC SMA/207/19,6K-F-C	RL 083.1516				
R387	RL 0,35W 1KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1K-F-C	RL 082.2160				
R388	RS 0,5W500 OHM+-10%10X10X CERMET POTENTIOMETER BOURNS 3386X-1-501	RS 247.7955				
R389	RL 0,35W 1,96KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1.96K-F-D	RL 083.0810				
R390	RL 0,35W 18,2KOHM+-1%TK50 RESISTOR DRALORIC SMA/207/18,2K-F-C	RL 083.1480				
R391	RL 0,35W 18,2KOHM+-1%TK50 RESISTOR DRALORIC SMA/207/18,2K-F-C	RL 083.1480				
R400	RL 0,35W 5,90KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/5,90K-F-D	RL 083.1145				
R401	RL 0,35W 5,90KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/5,90K-F-D	RL 083.1145				
R402	RL 0,35W 5,62KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/5,62K-F-C	RL 082.2190				
R403	RL 0,35W4,64KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/4,64K-F-C	RL 082.1687				

802.8435.01 SA BL34+

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		07	1087	ED ANALOGTEIL	802.8435.01 SA	35
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
R404	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR	RL 082.6543				
R405	DRALORIC SMA0207/100/HM-F-D RL 0,35W 26,1KOHM+-1%TK50 RESISTOR	RL 082.2431				
R415	DRALORIC SMA/207/26,1K-F-C RL 0,35W 300KOHM+-1%TK50 RESISTOR	RL 082.7840				
R416	DRALORIC SMA0207/300K-F-D RL 0,35W 1,50KOHM+-1%TK50 RESISTOR	RL 083.0732				
R417	DRALORIC SMA0207/1,50K-F-D RL 0,35W 1,54KOHM+-1%TK50 RESISTOR	RL 083.0749				
R425	DRALORIC SMA0207/1,54K-F-D RL 0,35W 35,7KOHM+-1%TK50 RESISTOR	RL 083.1700				
R426	DRALORIC SMA0207/35,7K-F-C RL 0,35W 5,62KOHM+-1%TK50 RESISTOR	RL 082.2190				
R427	DRALORIC SMA0207/5,62K-F-C RL 0,35W 115 KOHM+-1%TK50 RESISTOR	RL 083.2058				
R430	DRALORIC SMA0207/115K-F-C RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764				
R435	DRALORIC SMA0207/100K-F-C RL 0,35W 300KOHM+-1%TK50 RESISTOR	RL 082.7840				
R436	DRALORIC SMA0207/300K-F-D RL 0,35W 1,50KOHM+-1%TK50 RESISTOR	RL 083.0732				
R437	DRALORIC SMA0207/1,50K-F-D RL 0,35W 1,54KOHM+-1%TK50 RESISTOR	RL 083.0749				
R445	DRALORIC SMA0207/1,54K-F-D RL 0,35W 2,21KOHM+-1%TK50 RESISTOR	RL 082.2477				
R446	DRALORIC SMA 0207/2,21K-F-C RL 0,35W 2,21KOHM+-1%TK50 RESISTOR	RL 082.2477				
R447	DRALORIC SMA 0207/2,21K-F-C RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764				
R448	DRALORIC SMA0207/100K-F-C RL 0,35W 100KOHM+-1%TK50 RESISTOR	RL 082.1764				
R451	DRALORIC SMA0207/100K-F-C RL 0,35W 1KOHM+-1%TK50 RESISTOR	RL 082.2160				
R452	DRALORIC SMA0207/1K-F-C RL 0,35W 249 OHM+-1%TK50 RESISTOR	RL 083.0132				
R455	DRALORIC SMA0207/249OHM-F-D RL 0,35W 16,9KOHM+-1%TK50 RESISTOR DRALORIC SMA/207/16,9K-F-C	RL 083.1451				
802.8435.01 SA						BL35+

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ROHDE&SCHWARZ		Az	Datum Date	Schaltteilliste für Parts list for ED ANALOGTEIL	Sachnummer Stock Nr.	Blatt Page
		07	1087		802.8435.01 SA	36
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
R456	RL 0,35W 102 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/102OHM-F-D	RL 082.9788				
R460	RL 0,35W 49,9KOHM+-1%TK50 RESISTOR DRALORIC SMA 0207/49,9K-F-C	RL 082.6114				
R461	RL 0,35W 2,21KOHM+-1%TK50 RESISTOR DRALORIC SMA 0207/2,21K-F-C	RL 082.2477				
R471	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR DRALORIC SMA0207/100/HM-F-D	RL 082.6543				
R472	RL 0,35W4,64KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/4,64K-F-C	RL 082.1687				
R475	RL 0,35W4,64KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/4,64K-F-C	RL 082.1687				
R480	RL 0,35W 10,0 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/10OHM-F-D	RL 082.8852				
R485	RL 0,35W 10,0 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/10OHM-F-D	RL 082.8852				
R500	RL 0,35W 30,1KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/30,1K-F-C	RL 083.1639				
R501	RL 0,35W 59,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/59,0K-F-C	RL 083.1845				
R502	RL 0,35W3,92MOHM+-1%TK50 METALFILMRESISTOR RESISTA MK2 3,92MOHM 1% TK50	RL 099.8238				
R510	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D	RL 083.1297				
R511	RL 0,35W 100KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/100K-F-C	RL 082.1764				
R512	RL 0,35W 1KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1K-F-C	RL 082.2160				
R513	RL 0,35W 100KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/100K-F-C	RL 082.1764				
R514	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D	RL 083.1297				
R515	RL 0,35W 16,9KOHM+-1%TK50 RESISTOR DRALORIC SMA/207/16,9K-F-C	RL 083.1451				
R520	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D	RL 083.1297				
R521	RL 0,35W13,7KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/13,7K-F-D	RL 082.6608				
802.8435.01 SA BL36+						

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		07	1987	ED ANALOGTEIL	802.8435.01 SA	37
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
R522	RL 0,35W13,7KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/13,7K-F-D	RL 082.6608				
R523	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D	RL 083.1297				
R524	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D	RL 083.1297				
R525	RL 0,35W 3,01KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/3,01K-F-D	RL 083.0961				
R530	RL 0,35W 2,74KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/2,74K-F-D	RL 083.0926				
R531	RL 0,35W 2,74KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/2,74K-F-D	RL 083.0926				
R532	RL 0,35W25,5KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/25,5K-F-C	RL 083.1580				
R533	RL 0,35W25,5KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/25,5K-F-C	RL 083.1580				
R534	RL 0,35W 37,4KOHM+-1%TK50 RESISTOR DRALORIC SMA/207/37,4K-F-C	RL 083.1722				
R540	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D	RL 083.1297				
R541	RL 0,35W 1,47KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1,47K-F-D	RL 083.0726				
R542	RS 0,5W20KOHM+-10%10X10X5 CERMET POTENTIOMETER T BOURNS 3386X-1-203	RS 087.7660				
R543	RS 0,5W20KOHM+-10%10X10X5 CERMET POTENTIOMETER T BOURNS 3386X-1-203	RS 087.7660				
R544	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D	RL 083.1297				
R545	RL 0,35W 1,47KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/1,47K-F-D	RL 083.0726				
R550	RL 0,35W 30,1KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/30,1K-F-C	RL 083.1639				
R552	RL 0,35W 11,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/11K-F-D	RL 083.1322				
R553	RL 0,35W 11,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/11K-F-D	RL 083.1322				
R555	RL 0,35W 26,7KOHM+-1%TK50 RESISTOR DRALORIC SMA/207/26,7K-F-C	RL 083.1597				
802.8435.01 SA BL37+						



ROHDE&SCHWARZ		ÄZ	Datum Date	Schaltteilleiste für Parts list for ED ANALOGTEIL	Sachnummer Stock Nr.	Blatt Page
		07	1087		802.8435.01 SA	38
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
R556	RS 0,5W5KOHM+-10%10X10X5 CERMET POTENTIOMETER BOURNS 3386X-1-502	RS 247.7978				
R557	RS 0,5W5KOHM+-10%10X10X5 CERMET POTENTIOMETER BOURNS 3386X-1-502	RS 247.7978				
R558	RL 0,35W 26,7KOHM+-1%TK50 RESISTOR DRALORIC SMA/207/26,7K-F-C	RL 083.1597				
R559	RL 0,35W 2,00KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/2,00K-F-D	RL 083.0826				
R560	RL 0,35W 1,02KOHM+-0,1%T25 RESISTOR DRALORIC SMA0207	RL 083.9169				
R561	RL 0,35W 51,1KOHM+-1%TK50 RESISTOR DRALORIC SMA/207/51,1K-F-C	RL 083.1822				
R562	RL 0,35W 5,49KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/5,49K-F-D	RL 083.1139				
R565	RL 0,35W 20,0KOHM+-1%TK50 RESISTOR DRALORIC SMA/207/20K-F-C	RL 083.1522				
R566	RS 0,5W5KOHM+-10%10X10X5 CERMET POTENTIOMETER BOURNS 3386X-1-502	RS 247.7978				
R567	RL 0,35W 18,2KOHM+-1%TK50 RESISTOR DRALORIC SMA/207/18,2K-F-C	RL 083.1480				
R568	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D	RL 083.1297				
R569	RL 0,35W 20,0KOHM+-1%TK50 RESISTOR DRALORIC SMA/207/20K-F-C	RL 083.1522				
R570	RL 0,35W 20,0KOHM+-1%TK50 RESISTOR DRALORIC SMA/207/20K-F-C	RL 083.1522				
R571	RS 0,5W5KOHM+-10%10X10X5 CERMET POTENTIOMETER BOURNS 3386X-1-502	RS 247.7978				
R572	RL 0,35W 17,4KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/17,4K-F-C	RL 083.1468				
R573	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D	RL 083.1297				
R574	RL 0,35W 20,0KOHM+-1%TK50 RESISTOR DRALORIC SMA/207/20K-F-C	RL 083.1522				
R580	RL 0,35W 5,49KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/5,49K-F-D	RL 083.1139				
R581	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D	RL 083.1297				

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		07	1087		802.8435.01 SA	39
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.		enthalten in contained in		
R582	RL 0,35W 750 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/750OHM-F-C	RL 082.2360				
R600	RL 0,35W 100KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/100K-F-C	RL 082.1764				
R601	RL 0,35W 107 KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/107K-F-C	RL 083.2035				
R635	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/107K-F-C	RL 083.1297				
R636	RL 0,35W 150 KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D	RL 083.2129				
R637	RL 0,35W 100 OHM+-1%TK50 METALFILM-RESISTOR DRALORIC SMA/207/150K-F-C	RL 082.6543				
R650	RL 0,35W 2,43KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/100/HM-F-D	RL 083.0884				
R651	RL 0,35W 5,11KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/2,43K-F-D	RL 082.2348				
R652	RL 0,35W 15,4KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/5,11K-F-C	RL 083.1416				
R653	RL 0,35W 7,50KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/15,4K-F-D	RL 083.1197				
R655	RL 0,35W 2,55KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/7,5K-F-D	RL 082.2354				
R656	RL 0,35W 5,36KOHM+-1%TK50 RESISTOR DRALORIC SMA/207/2,55K-F-C	RL 082.2460				
R657	RL 0,35W 12,1KOHM+-1%TK50 RESISTOR DRALORIC SMA 0207/5,36K-F-C	RL 083.1351				
R658	RL 0,35W 5,90KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/12,1K-F-D	RL 083.1145				
R660	RL 0,35W 24,3KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/5,90K-F-D	RL 083.1574				
R670	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA/207/24,3K-F-C	RL 083.1297				
R671	RL 0,35W 4,22KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/10K-F-D	RL 083.1068				
R674	RL 0,35W 10,0KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/4,22K-F-D	RL 083.1297				
R675	RN 4X 10KOHM+-2%SIL 8 H5 RESISTOR NETWORK BOURNS 4308R-102-103	RN 291.5154				

ROHDE&SCHWARZ	AZ	Datum Date	Schaltteilliste für Parts list for ED ANALOGTEIL	Sachnummer Stock Nr.	Blatt Page
	07	1087		802.8435.01 SA	40
Kennzeichen Component No.	Benennung/Beschreibung Designation			Sachnummer Stock No.	enthalten in contained in
R685	RL 0,35W 14,3KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/14,3K-F-D			RL 083.1380	
R686	RL 0,35W 9,76KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/9,76K-F-D			RL 083.1280	
R687	RL 0,35W 3,09KOHM+-1%TK50 RESISTOR DRALORIC SMA0207/3,09K-F-D			RL 083.0978	
R688	RL 0,35W 976 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/976OHM-F-D			RL 083.0603	
R689	RL 0,35W 309 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/309OHM-F-D			RL 083.0226	
R690	RL 0,35W 97,6 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/97,6OHM-F-D			RL 082.9771	
R691	RL 0,35W 45,3 OHM+-1%TK50 RESISTOR DRALORIC SMA0207/45,3OHM-F-D			RL 082.9488	
R695	RN 5X 10KOHM+-2%SIL 6 H5 RESISTOR NETWORK BOURNS 4306R-101-103			RN 099.2675	
R696	RN 9X100KOHM+-2%SIL10 H5 RESISTOR NETWORK BOURNS 4310R-101-104			RN 542.5092	
V1	AE BA483 BER.SCH.DIOD.UHF DIODE VALVO BA483			AE 568.2290	
V2	AE BA483 BER.SCH.DIOD.UHF DIODE VALVO BA483			AE 568.2290	
V3	AE BA483 BER.SCH.DIOD.UHF DIODE VALVO BA483			AE 568.2290	
V6	AD 1N4448 75V 0,15A UDI DIODE TEXAS INST 1N4448 GEGURTET			AD 012.0700	
V10	AK BC173C NPN 25V 100MA TRANSISTOR INTERMETAL BC173C			010.4444	
V11	AK BC253C PNP 25V 100MA TRANSISTOR INTERMETAL BC253C			010.2829	
V15	AK BC173C NPN 25V 100MA TRANSISTOR INTERMETAL BC173C			010.4444	
V16	AK BC253C PNP 25V 100MA TRANSISTOR INTERMETAL BC253C			010.2829	
V17	AK BC253C PNP 25V 100MA TRANSISTOR INTERMETAL BC253C			010.2829	
802.8435.01 SA BL40+					

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		07	1087	ED ANALOGTEIL	802.8435.01 SA	41
Kennzeichen Component No.	Benennung/Beschreibung Designation			Sachnummer Stock No.	enthalten in contained in	
V18	AK BC173C NPN 25V 100MA TRANSISTOR INTERMETAL BC173C			010.4444		
V20	AE BA483 BER.SCH.DIOD.UHF DIODE VALVO BA483			AE 568.2290		
V21	AE BA483 BER.SCH.DIOD.UHF DIODE VALVO BA483			AE 568.2290		
V23	AE BA483 BER.SCH.DIOD.UHF DIODE VALVO BA483			AE 568.2290		
V24	AE BA483 BER.SCH.DIOD.UHF DIODE VALVO BA483			AE 568.2290		
V25	AE BZX79/C5V6 0,5W Z-DI ZENER DIODE VALVO BZX79/C5V6			AE 012.2455		
V26	AE BZX79/C9V1 0,5W Z-DI ZENER DIODE VALVO BZX79/C9V1			AE 012.2503		
V27	AE MA47111 200V PINDI PIN DIODE M/A-COM MA47111			803.0773		
V28	AE 5082-3081 100V PINDI PIN DIODE HEWLETT-P. 5082-3081			803.0780		
V29	AE 5082-3081 100V PINDI PIN DIODE HEWLETT-P. 5082-3081			803.0780		
V32	AK NE85637 NPN 12V 100MA TRANSISTOR NEC NE85637			801.8231		
V40	AK BC253C PNP 25V 100MA TRANSISTOR INTERMETAL BC253C			010.2829		
V41	AD 1N4448 75V 0,15A UDI DIODE TEXAS INST 1N4448 GEGURTET			AD 012.0700		
V65	AE 5082-2804 2XSCHOTTKYDI DIODE HEWLETT-P. 5082-2804			AE 012.8724		
V70	AE 5082-2804 2XSCHOTTKYDI DIODE HEWLETT-P. 5082-2804			AE 012.8724		
V77	AE BZX79/C10 0,5W Z-DI ZENER DIODE VALVO BZX79/C10			AE 012.2510		
V78	AE BZX79/C10 0,5W Z-DI ZENER DIODE VALVO BZX79/C10			AE 012.2510		
V80	AK BC173C NPN 25V 100MA TRANSISTOR INTERMETAL BC173C			010.4444		
V95	AE BZX79/C4V7 0,5W Z-DI ZENER DIODE VALVO BZX79/C4V7			AE 012.2432		
802.8435.01 SA						BL41+

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		07	1087	ED ANALOGTEIL	802.8435.01 SA	42
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
V99	AD 1N4448 75V 0,15A UDI DIODE	AD 012.0700				
V123	TEXAS INST 1N4448 GEGURTET AK BC253C PNP 25V 100MA TRANSISTOR	010.2829				
V125	INTERMETAL BC253C AE BA483 BER.SCH.DIOD.UHF DIODE	AE 568.2290				
V126	VALVO BA483 AE BA483 BER.SCH.DIOD.UHF DIODE	AE 568.2290				
V156	VALVO BA483 AK BFT66 NPN 15V 30MA TRANSISTOR	AK 252.5728				
V160	SIEMENS BFT66 AK BC173C NPN 25V 100MA TRANSISTOR	010.4444				
V166	INTERMETAL BC173C AK BC253C PNP 25V 100MA TRANSISTOR	010.2829				
V167	INTERMETAL BC253C AD 1N4448 75V 0,15A UDI DIODE	AD 012.0700				
V168	TEXAS INST 1N4448 GEGURTET AK BC253C PNP 25V 100MA TRANSISTOR	010.2829				
V169	INTERMETAL BC253C AD 1N4448 75V 0,15A UDI DIODE	AD 012.0700				
V175	TEXAS INST 1N4448 GEGURTET AE BZX79/C9V1 0,5W Z-DI ZENER DIODE	AE 012.2503				
V200	VALVO BZX79/C9V1 AE BA483 BER.SCH.DIOD.UHF DIODE	AE 568.2290				
V205	VALVO BA483 AL BD139 NPN 80V 1A0 TRANSISTOR	AL 274.8994				
V220	VALVO BD139 AD 1N4448 75V 0,15A UDI DIODE	AD 012.0700				
V222	TEXAS INST 1N4448 GEGURTET AE BZX55/B5V1 0,5W Z-DI ZENER DIODE	AE 262.5837				
V264	VALVO BZX55/B5V1 AK BC253C PNP 25V 100MA TRANSISTOR	010.2829				
V265	INTERMETAL BC253C AE 5082-2800 SCHOTTKYDI DIODE	AE 012.9066				
V266	HEWLETT-P. 5082-2800 AK BC173C NPN 25V 100MA TRANSISTOR	010.4444				
V267	INTERMETAL BC173C AE 5082-2800 SCHOTTKYDI DIODE	AE 012.9066				
	HEWLETT-P. 5082-2800					

802.8435.01 SA BL42+

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		07	1087	ED ANALOGTEIL	802.8435.01 SA	43
Kennzeichen Component No.	Benennung/Beschreibung Designation			Sachnummer Stock No.	enthalten in contained in	
V279	AE BZX79/C6V2 0,5W Z-DI ZENER DIODE VALVO BZX79/C6V2			AE 012.2461		
V280	AE BZX79/C4V3 0,5W Z-DI ZENER DIODE VALVO BZX79/C4V3			AE 012.2426		
V281	AE BZX79/C4V3 0,5W Z-DI ZENER DIODE VALVO BZX79/C4V3			AE 012.2426		
V284	AD 1N4448 75V 0,15A UDI DIODE TEXAS INST 1N4448 GEGURTET			AD 012.0700		
V290	AD 1N4448 75V 0,15A UDI DIODE TEXAS INST 1N4448 GEGURTET			AD 012.0700		
V351	AK BC253C PNP 25V 100MA TRANSISTOR INTERMETAL BC253C			010.2829		
V352	AE BZX55/B5V1 0,5W Z-DI ZENER DIODE VALVO BZX55/B5V1			AE 262.5837		
V353	AE BZX55/B5V1 0,5W Z-DI ZENER DIODE VALVO BZX55/B5V1			AE 262.5837		
V354	AD 1N4448 75V 0,15A UDI DIODE TEXAS INST 1N4448 GEGURTET			AD 012.0700		
V355	AE BZX55/B5V1 0,5W Z-DI ZENER DIODE VALVO BZX55/B5V1			AE 262.5837		
V356	AE BZX55/B5V1 0,5W Z-DI ZENER DIODE VALVO BZX55/B5V1			AE 262.5837		
V365	AE BZX55/B5V1 0,5W Z-DI ZENER DIODE VALVO BZX55/B5V1			AE 262.5837		
V366	AE BZX55/B5V1 0,5W Z-DI ZENER DIODE VALVO BZX55/B5V1			AE 262.5837		
V405	AE BZX55/B5V1 0,5W Z-DI ZENER DIODE VALVO BZX55/B5V1			AE 262.5837		
V406	AE BZX55/B5V1 0,5W Z-DI ZENER DIODE VALVO BZX55/B5V1			AE 262.5837		
V415	AE BZX55/B5V1 0,5W Z-DI ZENER DIODE VALVO BZX55/B5V1			AE 262.5837		
V416	AE BZX55/B5V1 0,5W Z-DI ZENER DIODE VALVO BZX55/B5V1			AE 262.5837		
V425	AE BZX55/B5V1 0,5W Z-DI ZENER DIODE VALVO BZX55/B5V1			AE 262.5837		
V426	AE BZX55/B5V1 0,5W Z-DI ZENER DIODE VALVO BZX55/B5V1			AE 262.5837		
802.8435.01 SA						BL43+

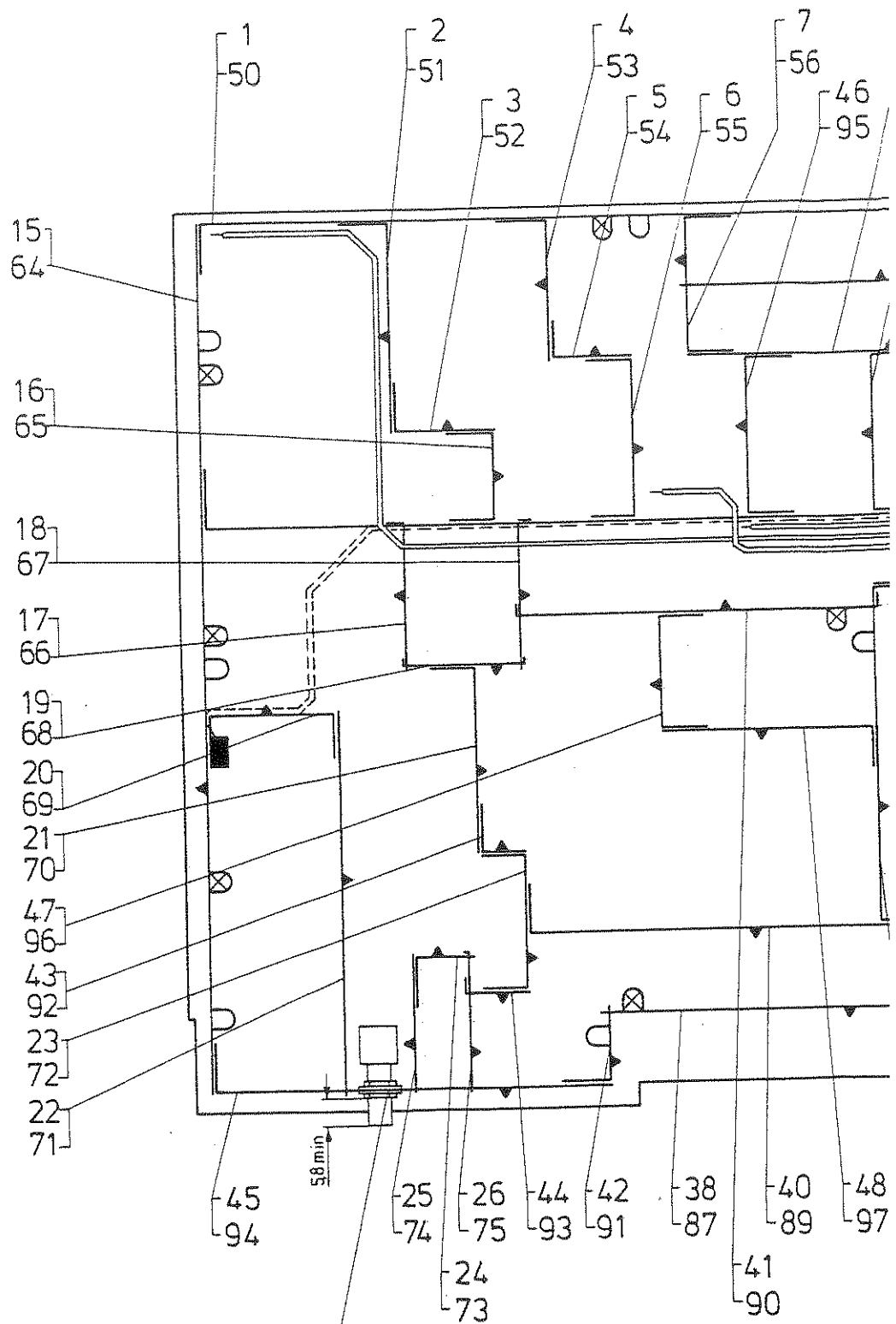
ROHDE&SCHWARZ		AZ 07	Datum Date 1087	Schaltteilliste für Parts list for ED ANALOGTEIL	Sachnummer Stock Nr. 802.8435.01 SA	Blatt Page 44
Kennzeichen Component No.	Benennung/Beschreibung Designation			Sachnummer Stock No.	enthalten in contained in	
V435	AE BZX55/B5V1 0,5W Z-DI ZENER DIODE VALVO BZX55/B5V1			AE 262.5837		
V436	AE BZX55/B5V1 0,5W Z-DI ZENER DIODE VALVO BZX55/B5V1			AE 262.5837		
V445	AE BZX55/B5V1 0,5W Z-DI ZENER DIODE VALVO BZX55/B5V1			AE 262.5837		
V446	AE BZX55/B5V1 0,5W Z-DI ZENER DIODE VALVO BZX55/B5V1			AE 262.5837		
V448	AE BZX55/B5V1 0,5W Z-DI ZENER DIODE VALVO BZX55/B5V1			AE 262.5837		
V449	AE BZX55/B5V1 0,5W Z-DI ZENER DIODE VALVO BZX55/B5V1			AE 262.5837		
V472	AE BZX55/B5V1 0,5W Z-DI ZENER DIODE VALVO BZX55/B5V1			AE 262.5837		
V475	AE BZX79/C6V8 0,5W Z-DI ZENER DIODE VALVO BZX79/C6V8			AE 012.2478		
V476	AK BC173C NPN 25V 100MA TRANSISTOR INTERMETAL BC173C			010.4444		
V510	AF HLMP1200 LED RT RD3 LED HEWLÉTT 5082-4487			AF 273.0448		
V660	AE BZX79/C10 0,5W Z-DI ZENER DIODE VALVO BZX79/C10			AE 012.2510		
V661	AE BZX79/C10 0,5W Z-DI ZENER DIODE VALVO BZX79/C10			AE 012.2510		
V674	AK BC550B NPN 50V 100MA TRANSISTOR SIEMENS BC550B GURT, POL.CBE			AK 007.2050		
W1	DX HF-KABEL RF CABLE			802.8512		
W2	DX HF-KABEL RF CABLE			802.8535		
W3	DX HF-KABEL RF CABLE			802.8558		
W4	DX HF-KABEL RF CABLE			802.8570		
X1	FP STECKERL.INDIR.64POLIG 64-PIN INSERT PANDUIT 100-064-033/999			FP 084.6470		
X10	FP INDIREKT.STECKERL.36P. PIN CONNECTOR BERG 75160-102-36			FP 242.3600		
802.8435.01 SA BL44+						

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		07	1087	ED ANALOGTEIL	802.8435.01 SA	45
Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in			
X22	FP INDIREKT.STECKERL.36P. PIN CONNECTOR BERG 75160-102-36	FP 242.3600				
X23	FP INDIREKT.STECKERL.36P. PIN CONNECTOR BERG 75160-102-36 2X3POL.	FP 242.3600				
X24	FP INDIREKT.STECKERL.36P. PIN CONNECTOR BERG 75160-102-36	FP 242.3600				
X30	FP INDIREKT.STECKERL.36P. PIN CONNECTOR BERG 75160-102-36	FP 242.3600				
X31	FP INDIREKT.STECKERL.36P. PIN CONNECTOR BERG 75160-102-36 4X2POL.	FP 242.3600				
X601	FJ EINBAUSTECKER SYST.SMB ANGLE CONNECTOR ROSENBERG R&S-ZCHNG.602.8804	FJ 602.8804				
X602	FJ EINBAUSTECKER SYST.SMB FIXED PLUG RADIAL R.114 554	FJ 063.5139				
X603	FJ EINBAUSTECKER SYST.SMB FIXED PLUG RADIAL R.114 554	FJ 063.5139				
X604	FJ EINBAUSTECKER SYST.SMB ANGLE CONNECTOR ROSENBERG R&S-ZCHNG.602.8804	FJ 602.8804				
X605	FJ EINBAUSTECKER SYST.SMB ANGLE CONNECTOR ROSENBERG R&S-ZCHNG.602.8804	FJ 602.8804				
X606	FJ EINBAUSTECKER SYST.SMB ANGLE CONNECTOR ROSENBERG R&S-ZCHNG.602.8804	FJ 602.8804				
X607	FJ EINBAUSTECKER SYST.SMB ANGLE CONNECTOR ROSENBERG R&S-ZCHNG.602.8804	FJ 602.8804				
X608	FJ EINBAUWINKELST. SMC ANGLE CONNECTOR RADIAL R 112 669	FJ 249.9684				
X609	FJ EINBAUSTECKER SYST.SMB ANGLE CONNECTOR ROSENBERG R&S-ZCHNG.602.8804	FJ 602.8804				
X610	FJ EINBAUSTECKER SYST.SMB ANGLE CONNECTOR ROSENBERG R&S-ZCHNG.602.8804	FJ 602.8804				
Z1	LD 10GHZ 50DB100V10A4RDX9 LEAD THROUGH FILTER ERIE R&S-ZCHNG.451.4636	LD 451.4636				
Z2	LD 10GHZ 50DB100V10A4RDX9 LEAD THROUGH FILTER ERIE R&S-ZCHNG.451.4636	LD 451.4636				
Z5	LD 10GHZ 50DB100V10A4RDX9 LEAD THROUGH FILTER ERIE R&S-ZCHNG.451.4636	LD 451.4636				

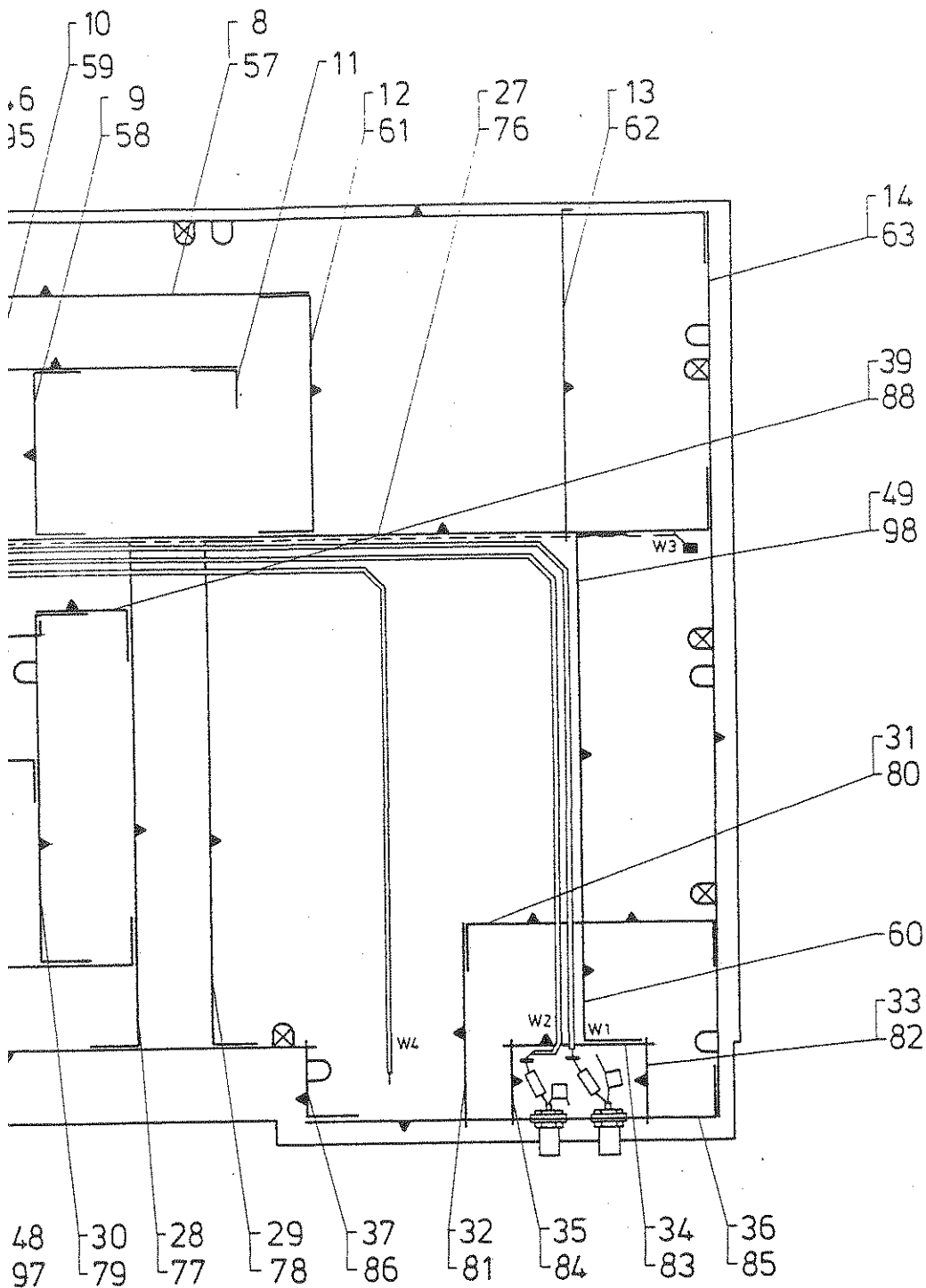
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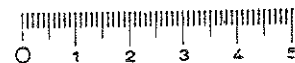
ROHDE&SCHWARZ		AZ	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
		07	1087	ED ANALOGTEIL	802.8435.01 SA	46
Kennzeichen Component No.	Benennung/Beschreibung Designation			Sachnummer Stock No.	enthalten in contained in	
Z20	LD 10GHZ 50DB100V10A4RDX9 LEAD THROUGH FILTER ERIE R&S-ZCHNG.451.4636			LD 451.4636		
Z25	LD 10GHZ 50DB100V10A4RDX9 LEAD THROUGH FILTER ERIE R&S-ZCHNG.451.4636			LD 451.4636		
Z26	LD 10GHZ 50DB100V10A4RDX9 LEAD THROUGH FILTER ERIE R&S-ZCHNG.451.4636			LD 451.4636		
Z30	LD 10GHZ 50DB100V10A4RDX9 LEAD THROUGH FILTER ERIE R&S-ZCHNG.451.4636			LD 451.4636		
Z50	LD 10GHZ 50DB100V10A4RDX9 LEAD THROUGH FILTER ERIE R&S-ZCHNG.451.4636			LD 451.4636		
Z101	LD 10GHZ 50DB100V10A4RDX9 LEAD THROUGH FILTER ERIE R&S-ZCHNG.451.4636			LD 451.4636		
Z102	LD 10GHZ 50DB100V10A4RDX9 LEAD THROUGH FILTER ERIE R&S-ZCHNG.451.4636			LD 451.4636		
Z103	LD 10GHZ 50DB100V10A4RDX9 LEAD THROUGH FILTER ERIE R&S-ZCHNG.451.4636			LD 451.4636		
- ENDE -						
802.8435.01 SA BL46						



017.6107 (10 Stück)  
 303.4197 (20 Stück)  
 Montage ohne Zahnscheibe



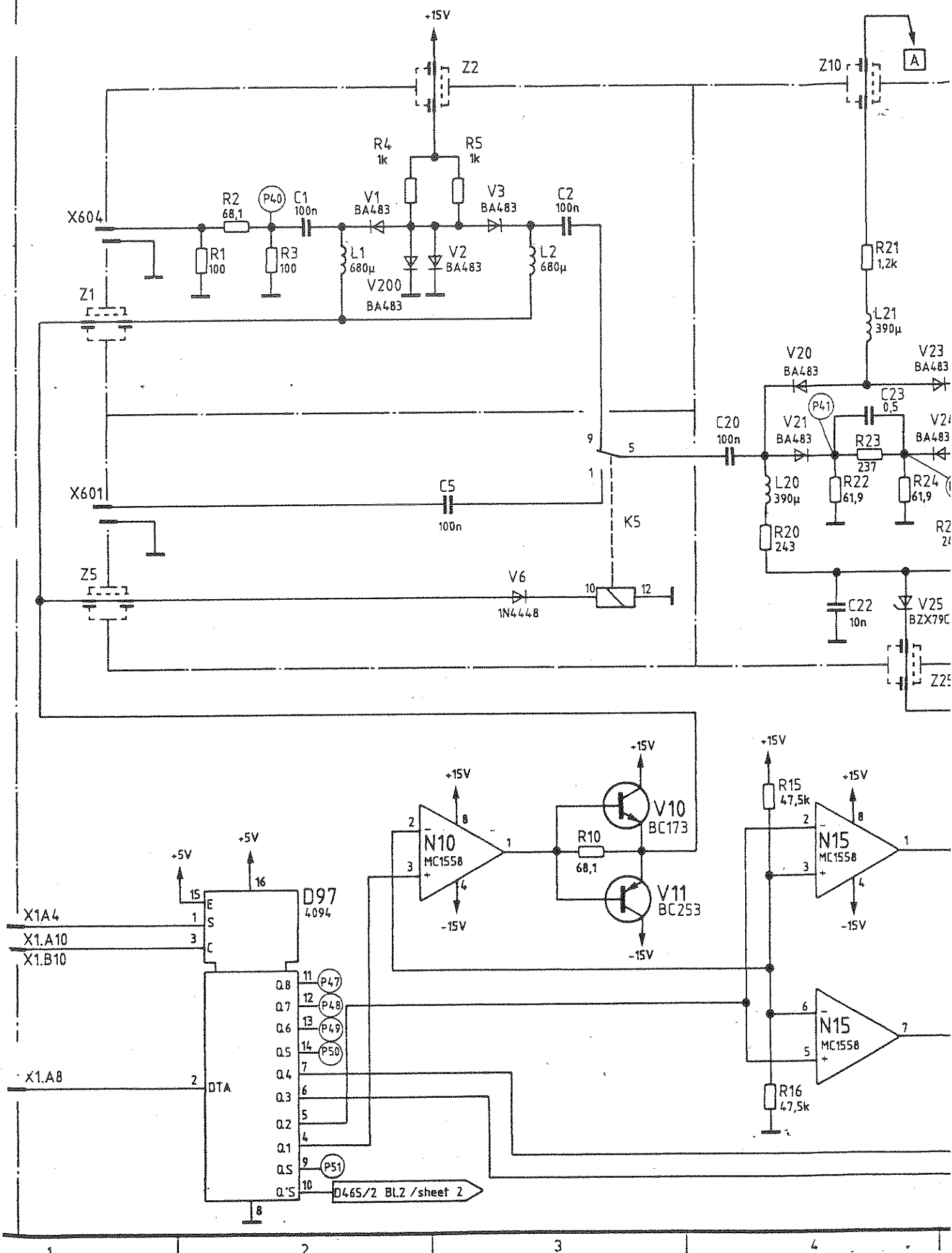
VS 078.2224 (22 Stück)

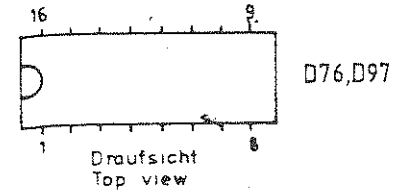
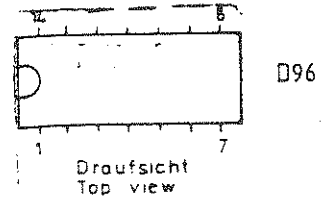
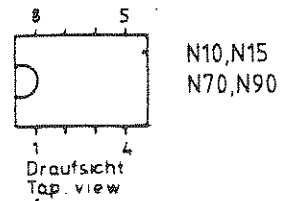
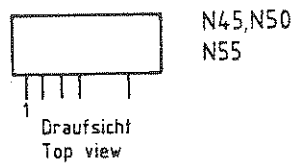
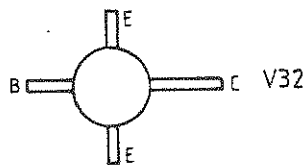
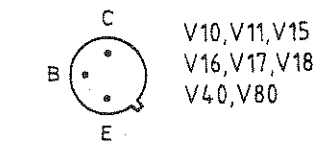
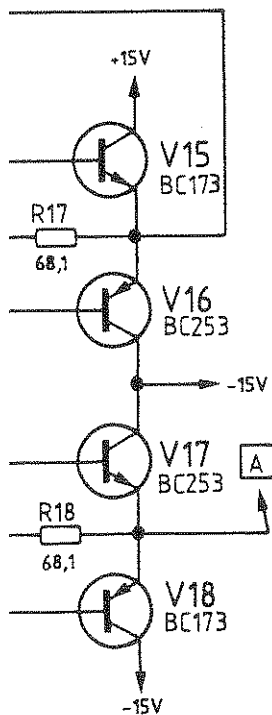
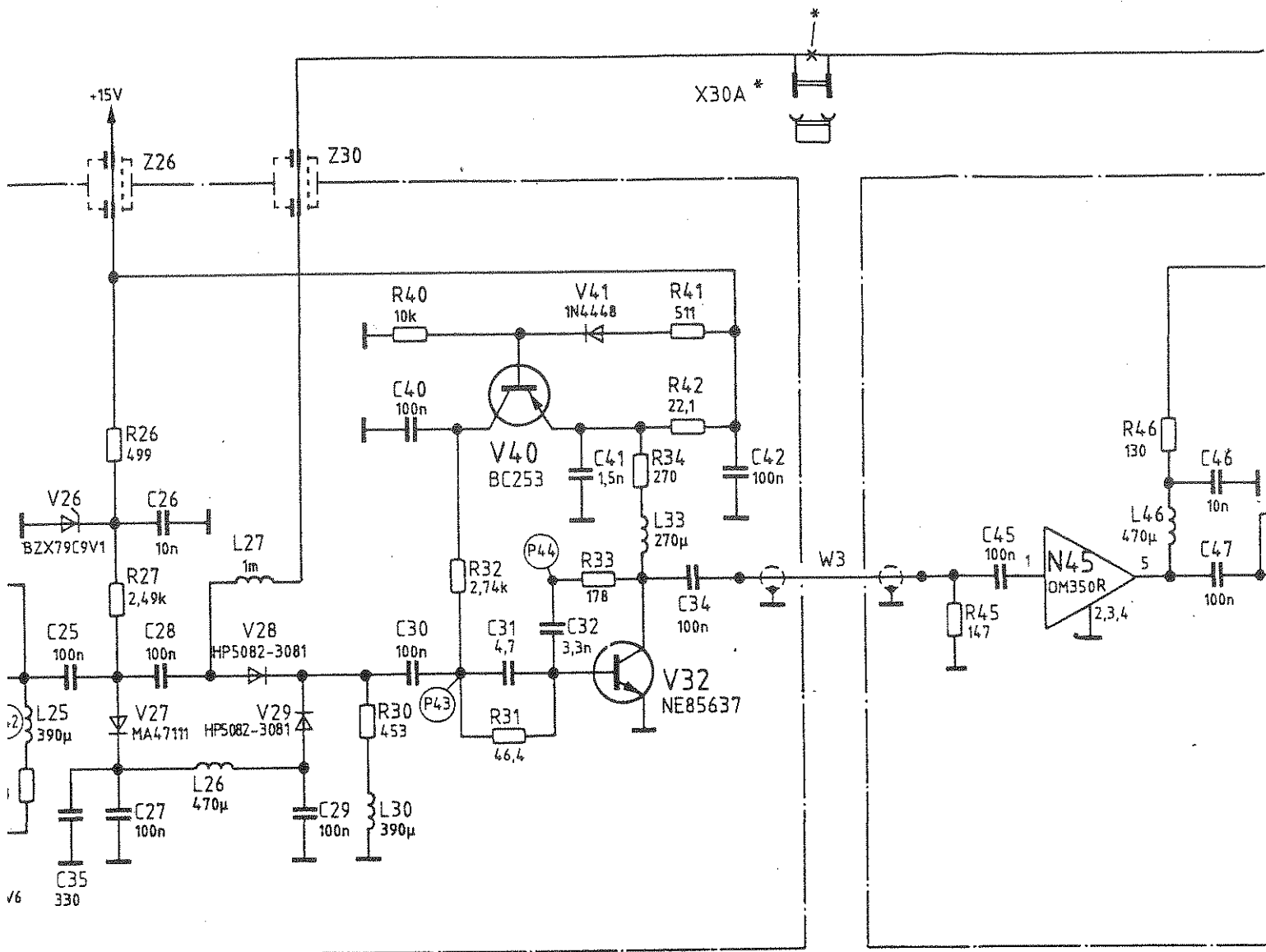


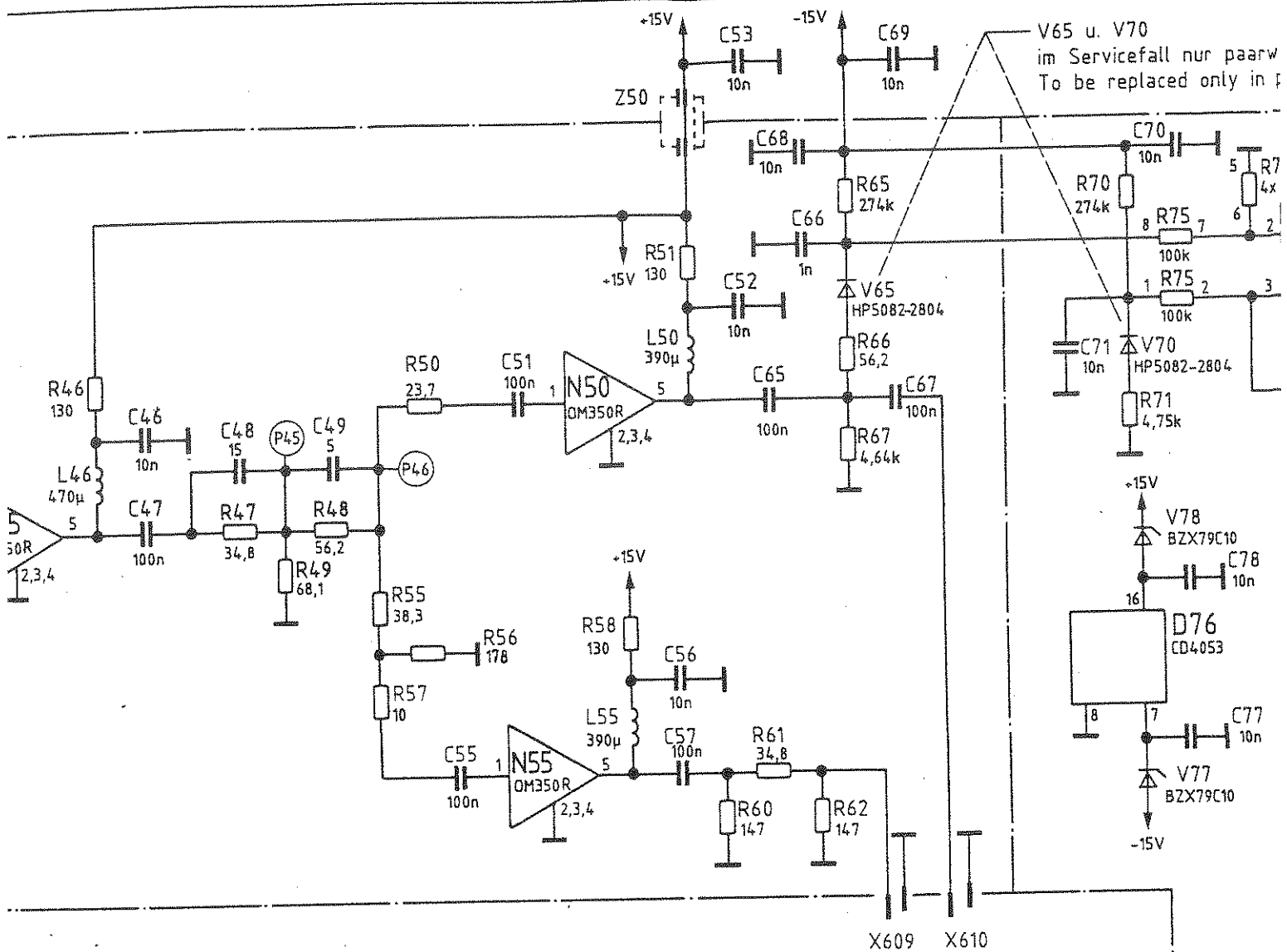
VERKLEINERUNG

Achtung! MOS - Bauteile  
Caution. MOS components

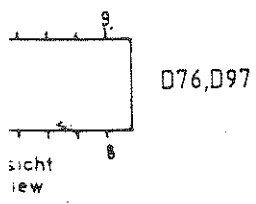
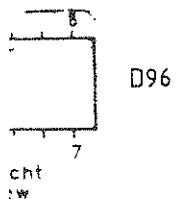
Maße ohne Toleranzangabe			Maßstab 1 : 1	
			Halbzeug, Werkstoff	
IKSA	Tag	Name	Benennung	
Bearb	6.87	BT		
Geor				
Norm				
			Analogteil	
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			Zeichn. Nr.	
			802.84.35.01	
			Z	
			802.2014 V	
			CMT	



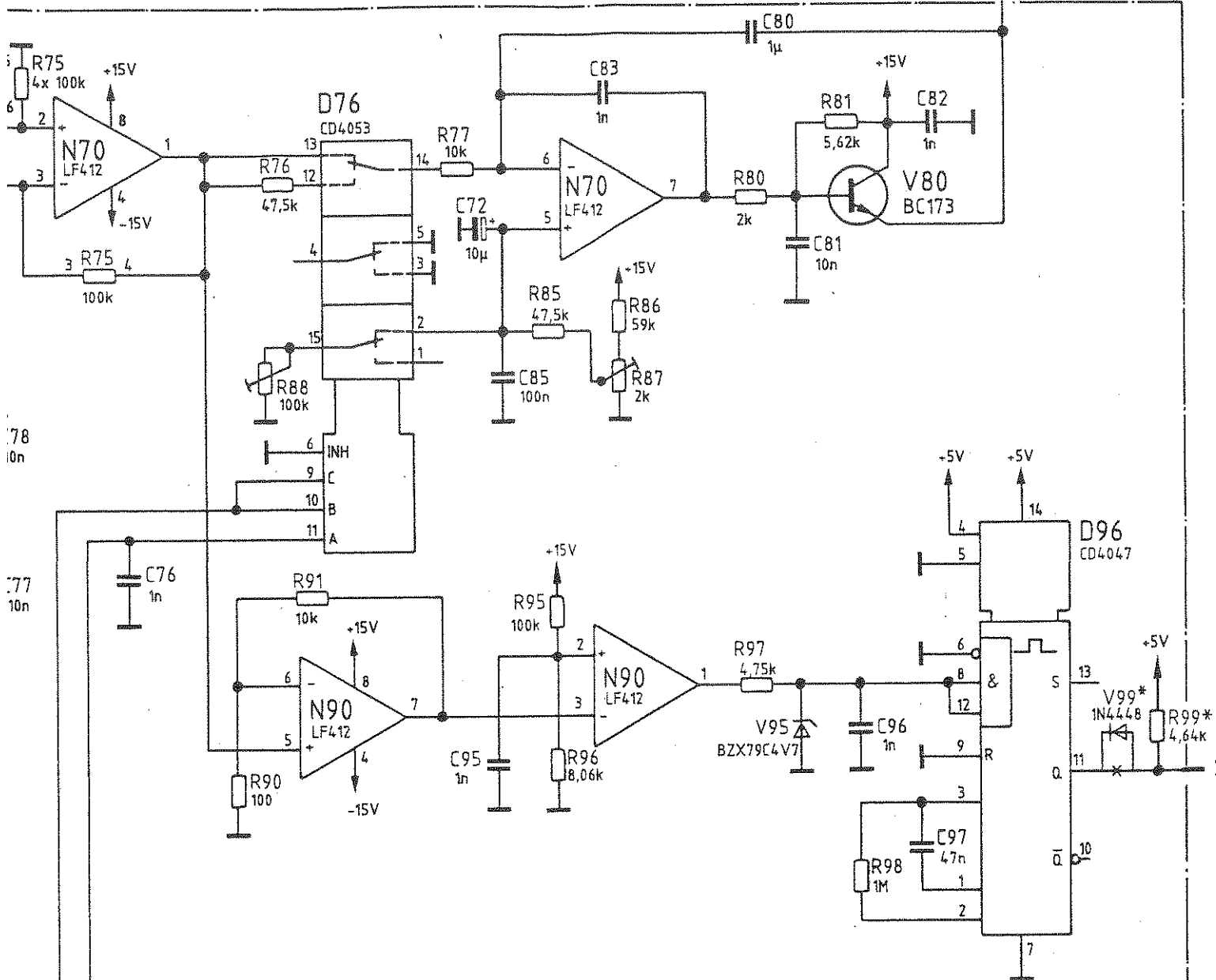




N10,N15  
N70,N90



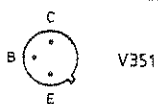
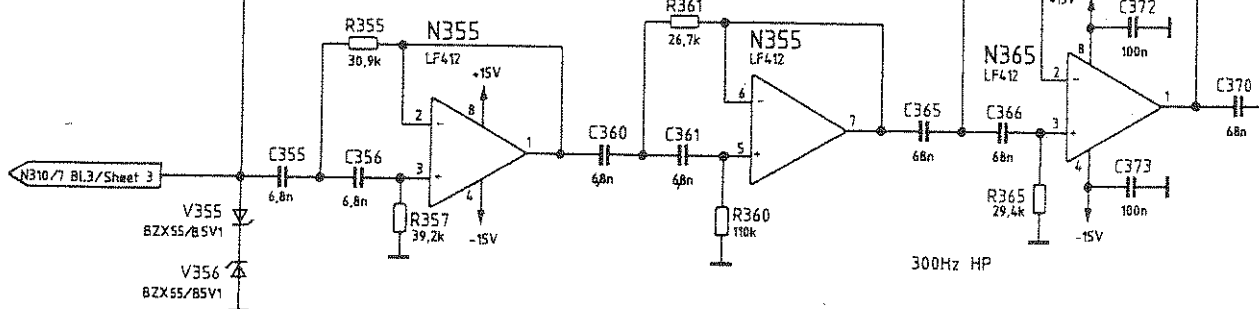
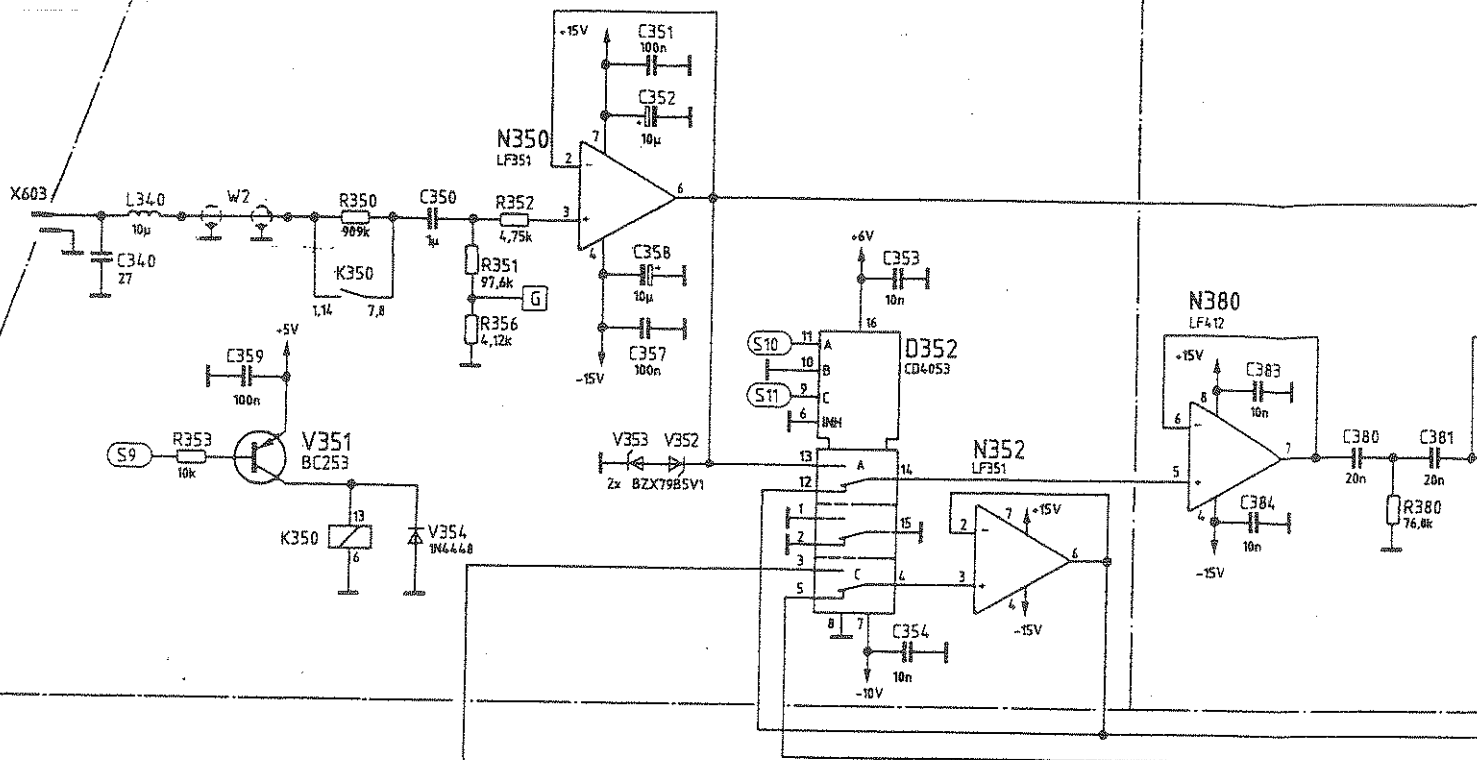
paarweise austauschen  
/ in pairs



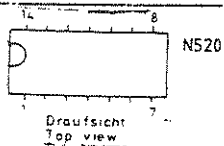
\*) nur für VAR 04, 06  
only for model 04, 06

Stromlauf gilt für VAR 02, 04, 06, 08  
Circuit diagram is valid for model 02, 04, 06, 08

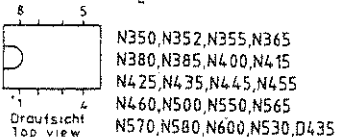
	Stromlauf zu <b>Analogteil / Analog section</b> CMT reg. i. V. 802.2020 V erste Z. 802.2066	Zeichn.-Nr. <b>802.8435 S</b>
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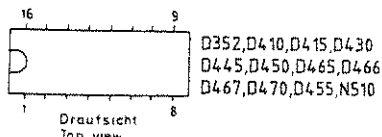
V351



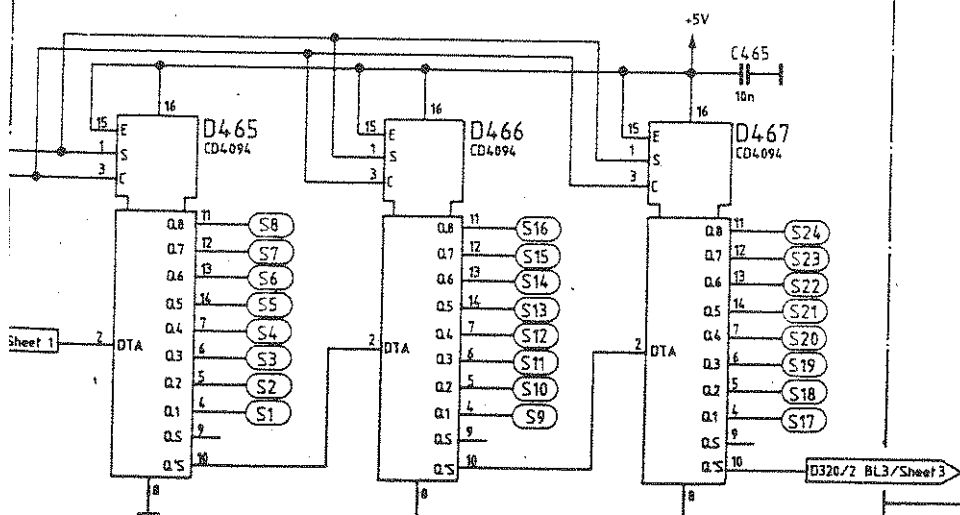
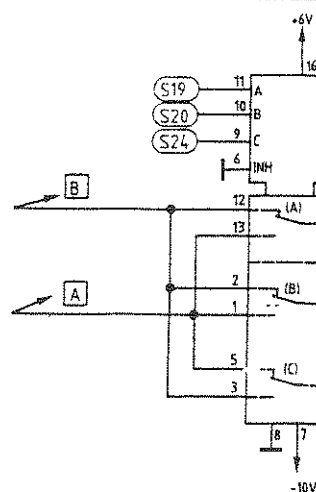
Draufsicht  
Top view



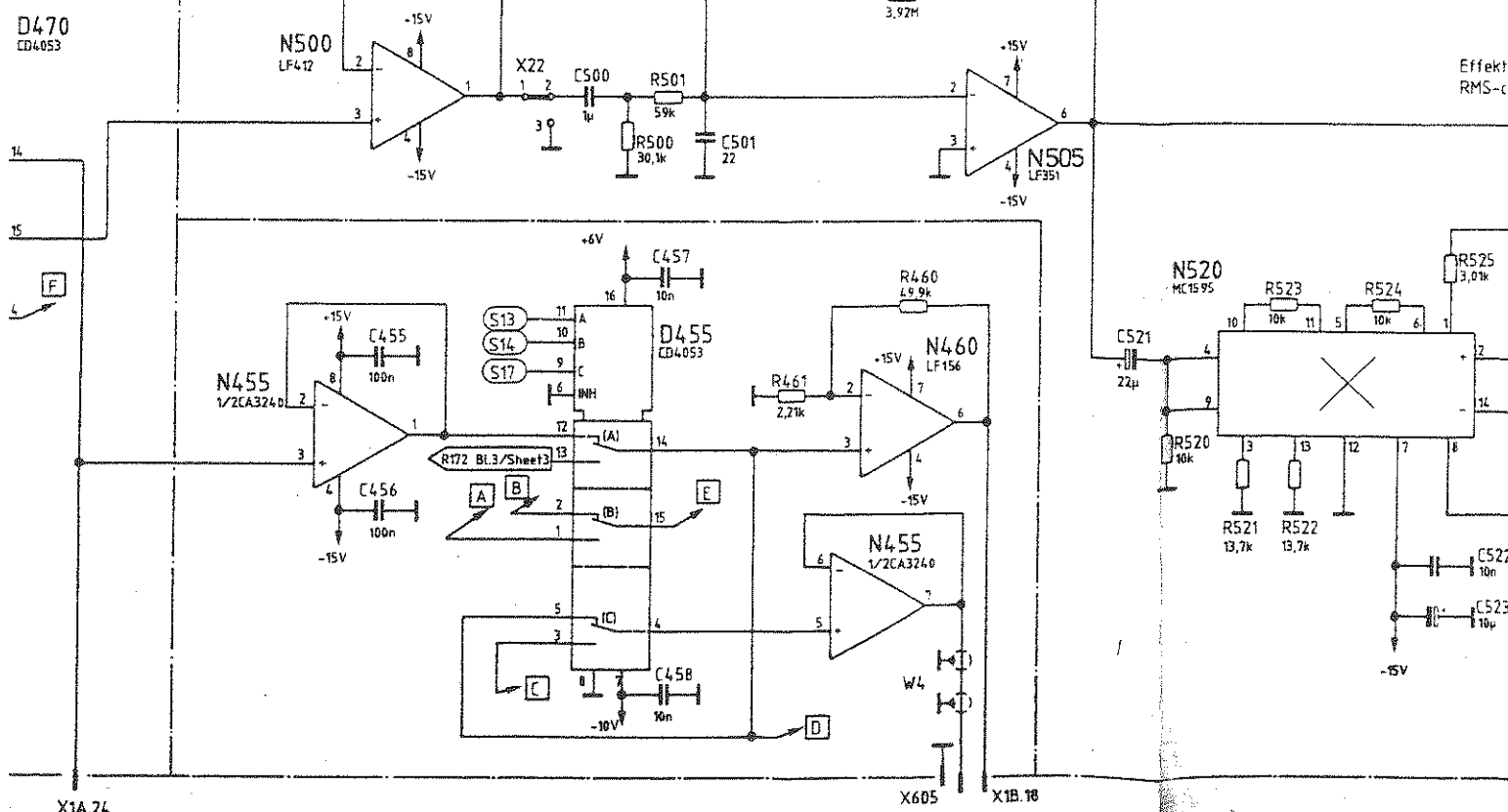
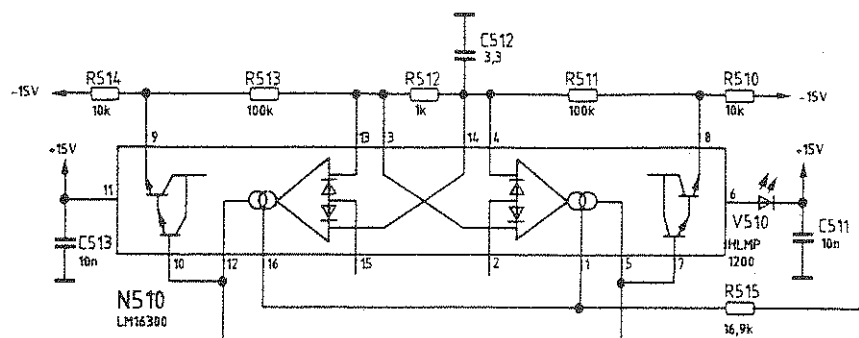
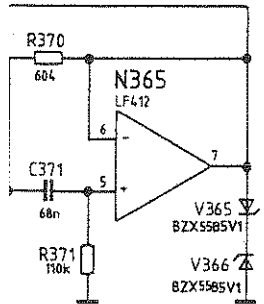
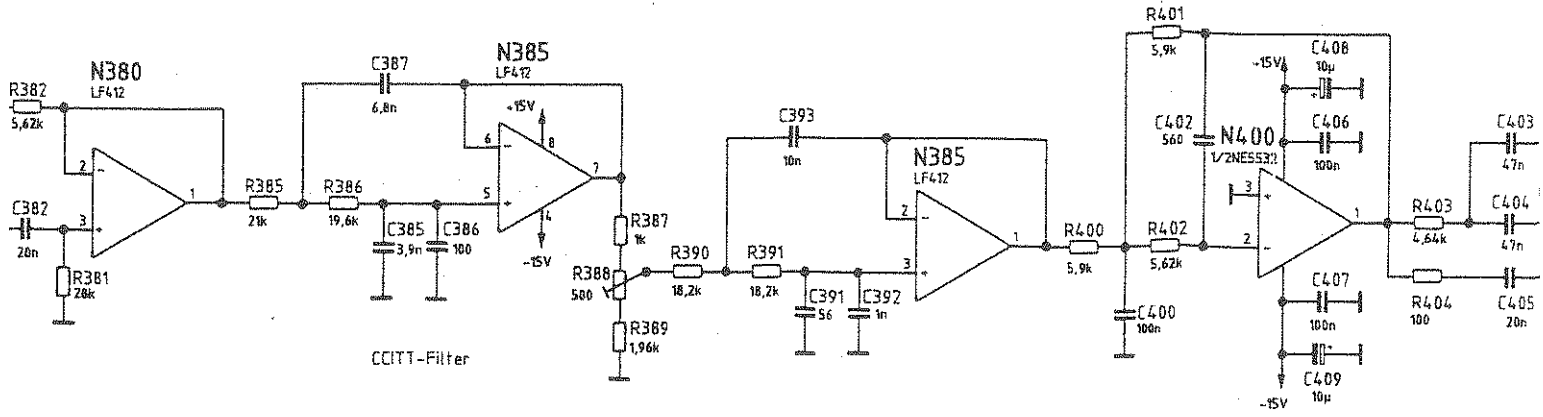
Draufsicht  
Top view



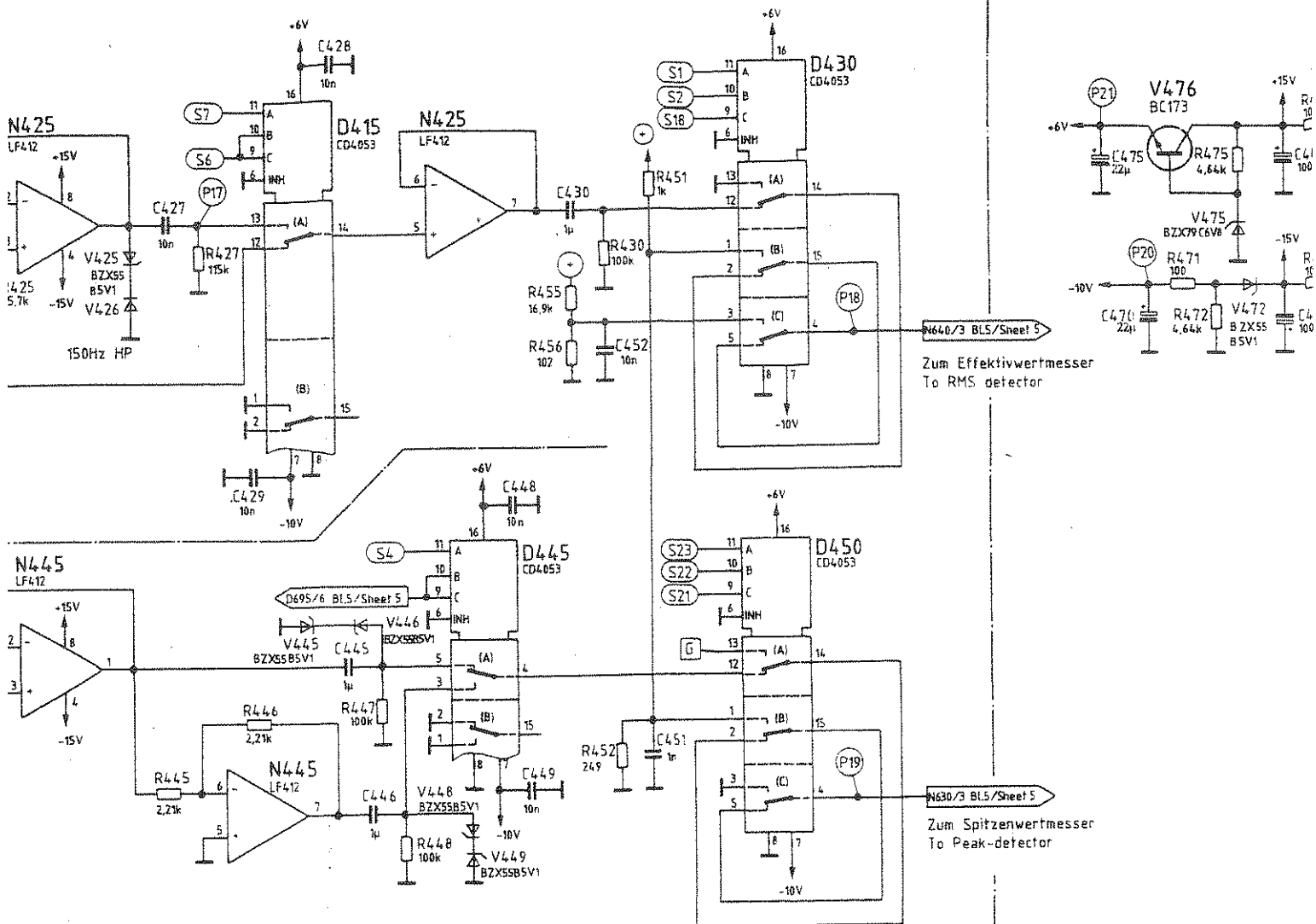
Draufsicht  
Top view



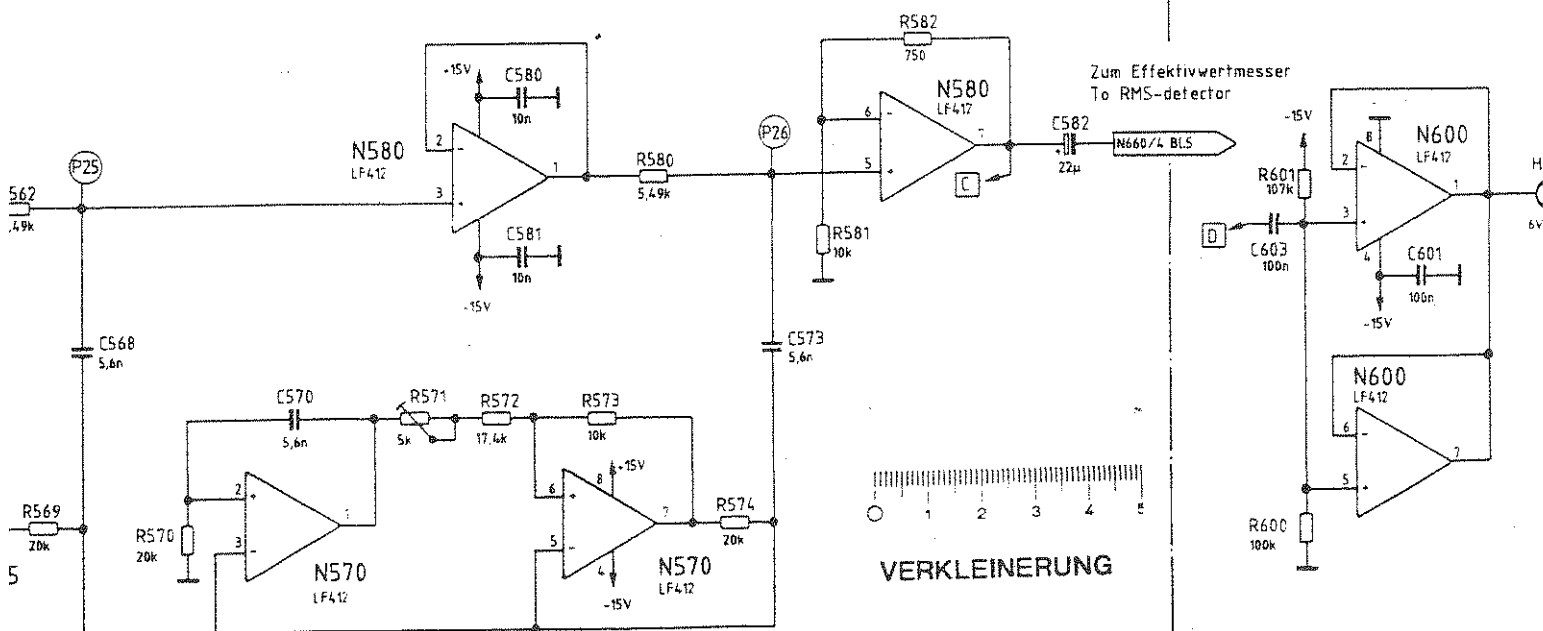








0.990 - 1010kHz Notchfilter



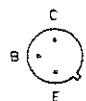
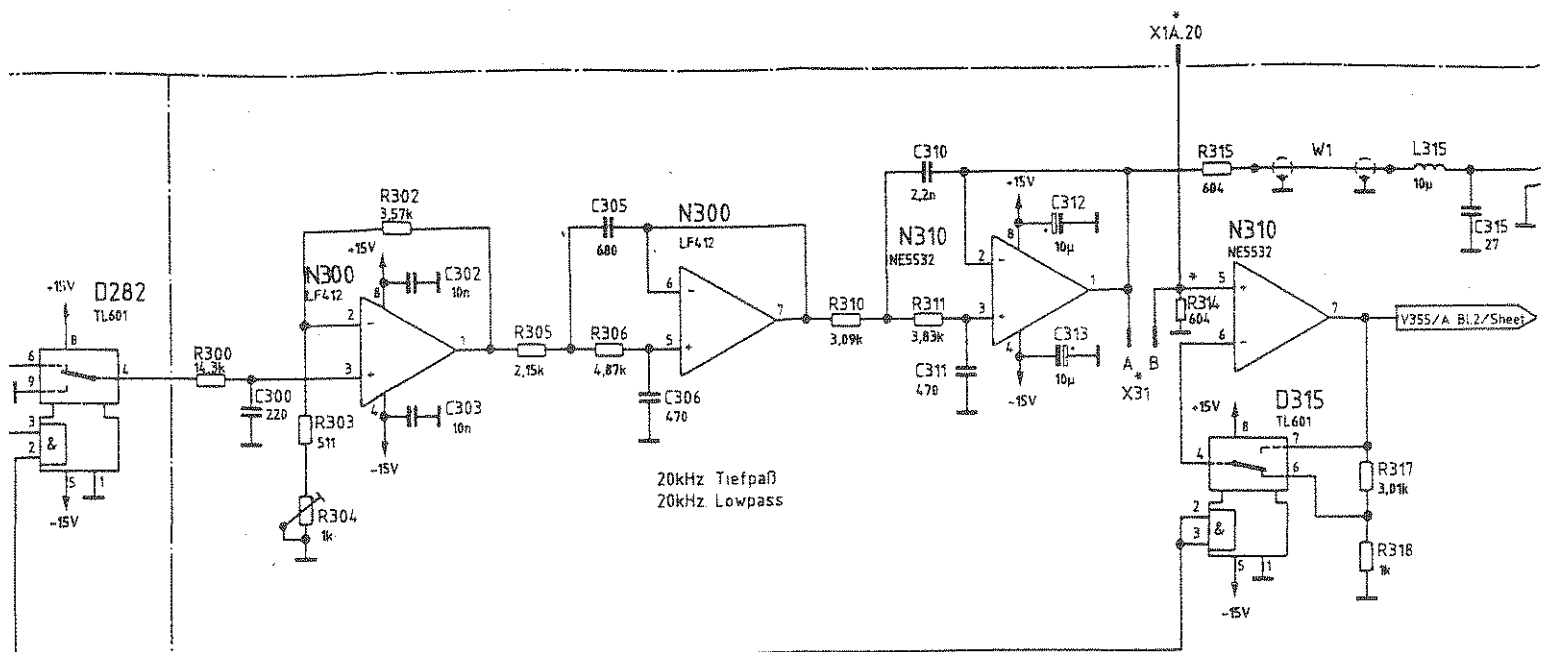
VERKLEINERUNG

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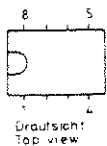






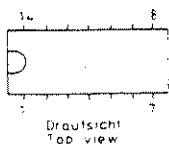


V156, V160, V166, V168  
V205, V264, V266



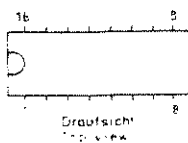
Draufsicht  
Top view

N170, N175, N180  
N190, N205, N230  
N240, N250, N270, D282  
N290, N300, N310, D315



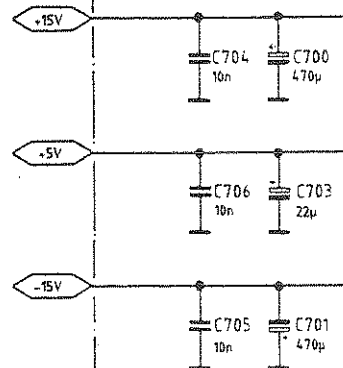
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Top view

D325



Draufsicht  
Top view

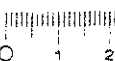
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D320



\*) nur für VAR 04  
only for model 04

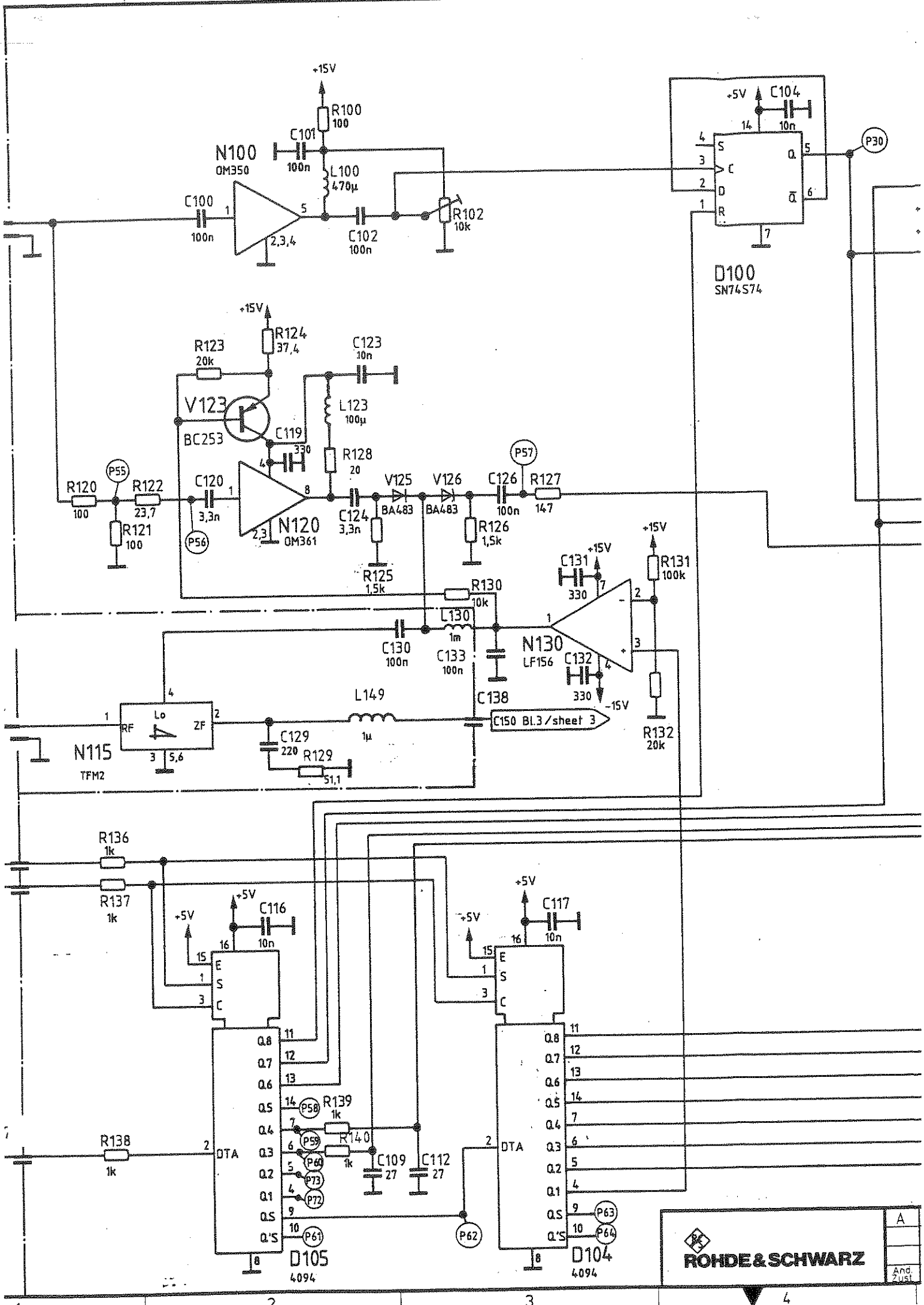
\*\*) nur für VAR 02.08  
only for model 02.08

\*\*) nur für VAR 06  
only for model 06

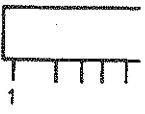
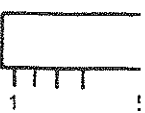
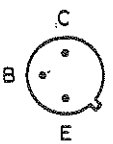
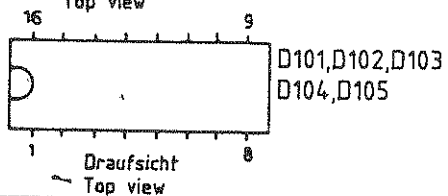
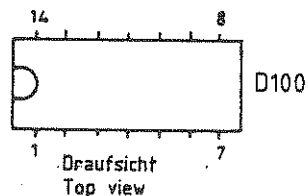
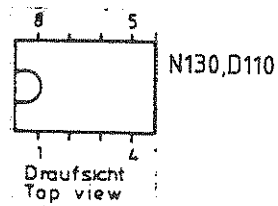
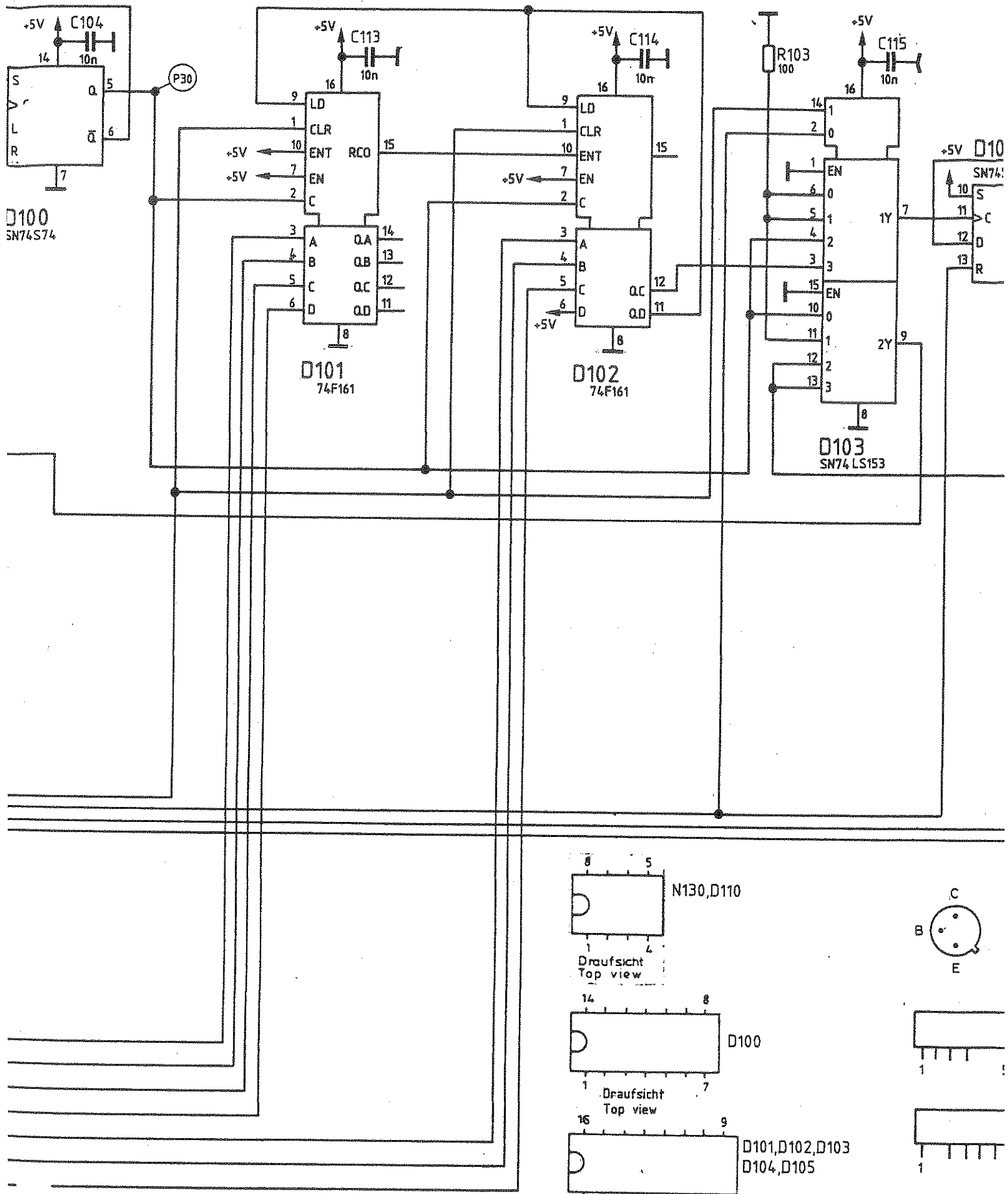


VERKLE

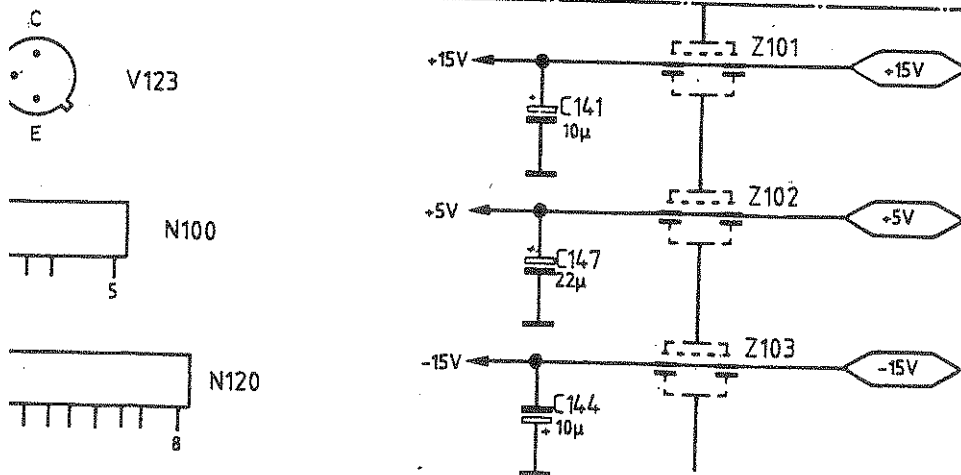
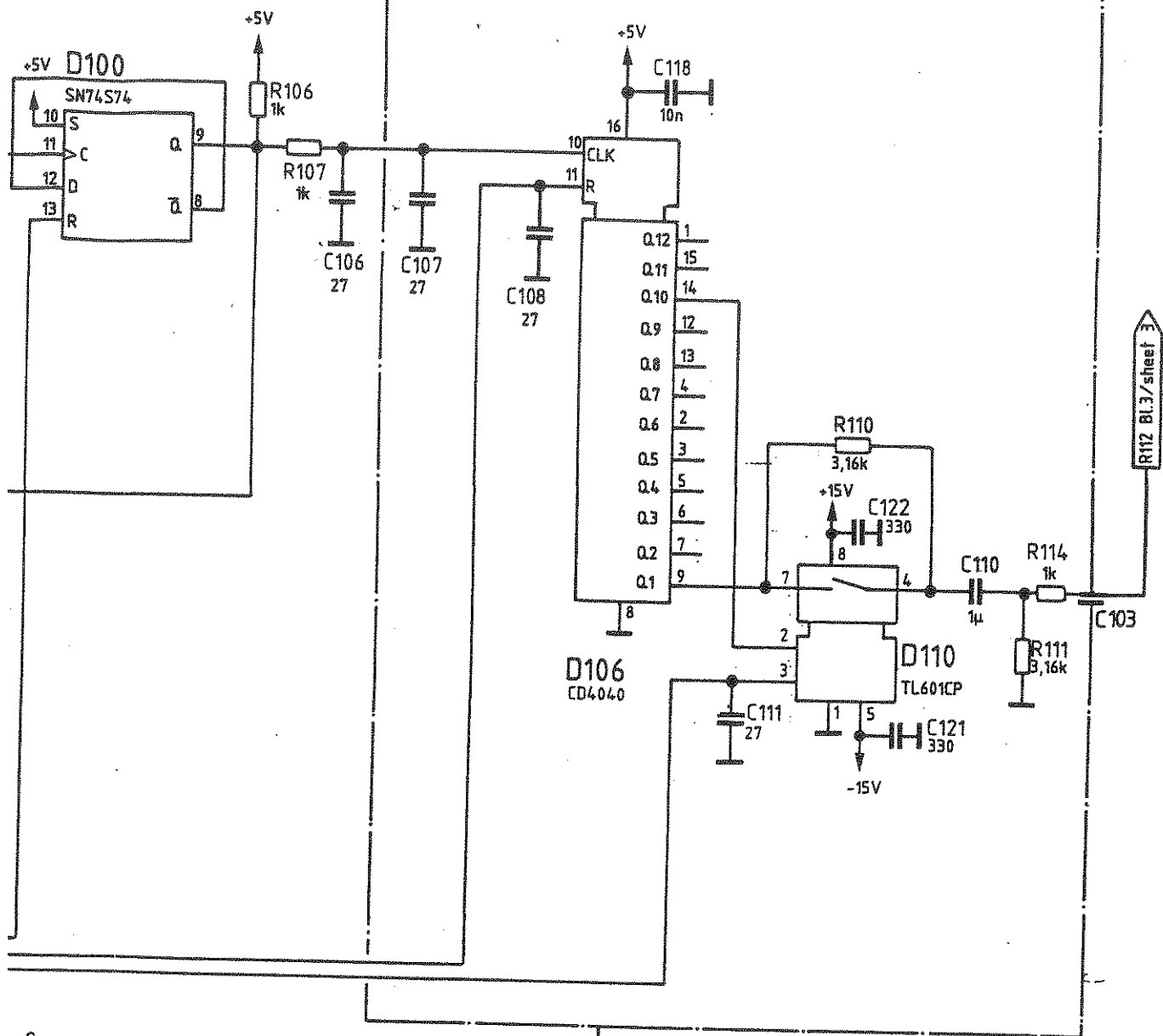
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Datum	Name	And.	Änderungs- Markierung	Datum	Name	Norm			revis. v.	802.2020 V	



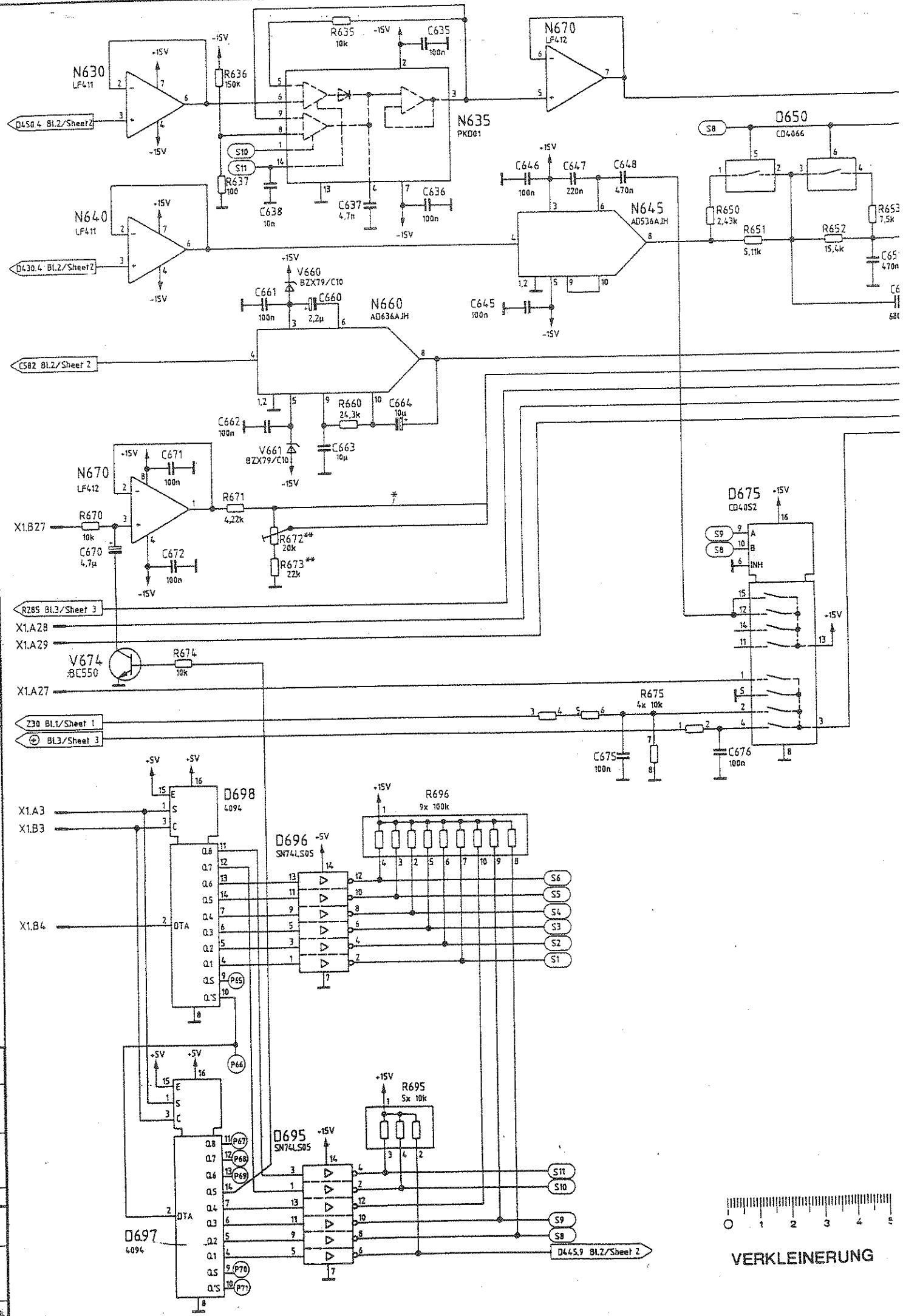


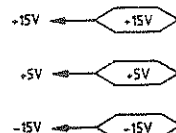
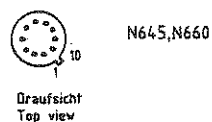
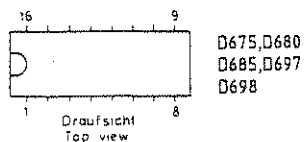
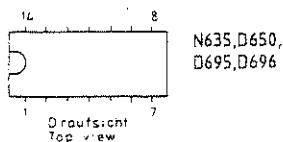
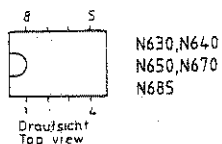
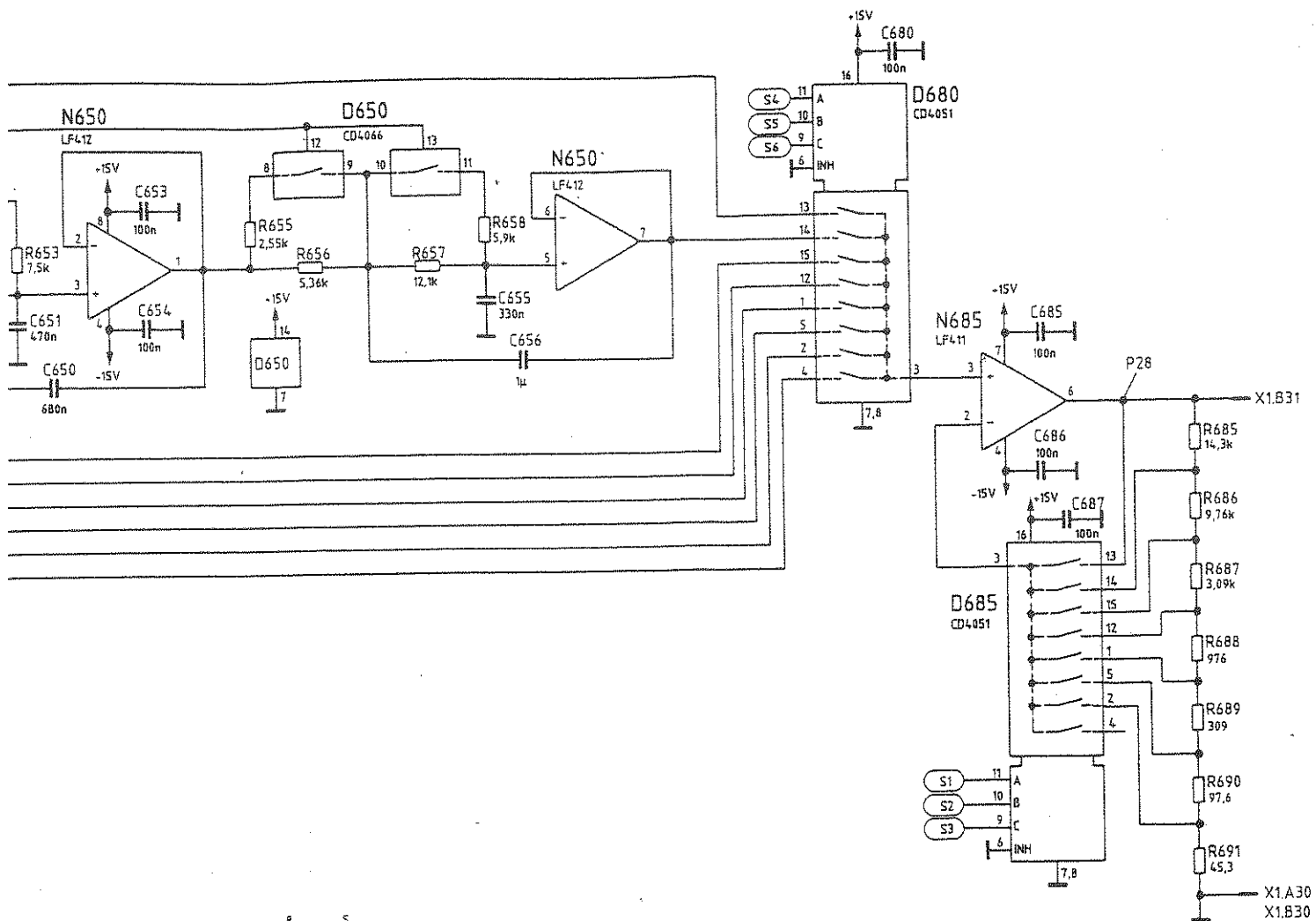


A	38 951	09.87	lb				1KGA	Tag	Name	Benennung
							Bearb.	4.85	BT	
							Gepr.			
And. Zust.	Änderungs-Mitteilung	Datum	Name	And. Zust.	Änderungs-Mitteilung	Datum	Name	Norm		



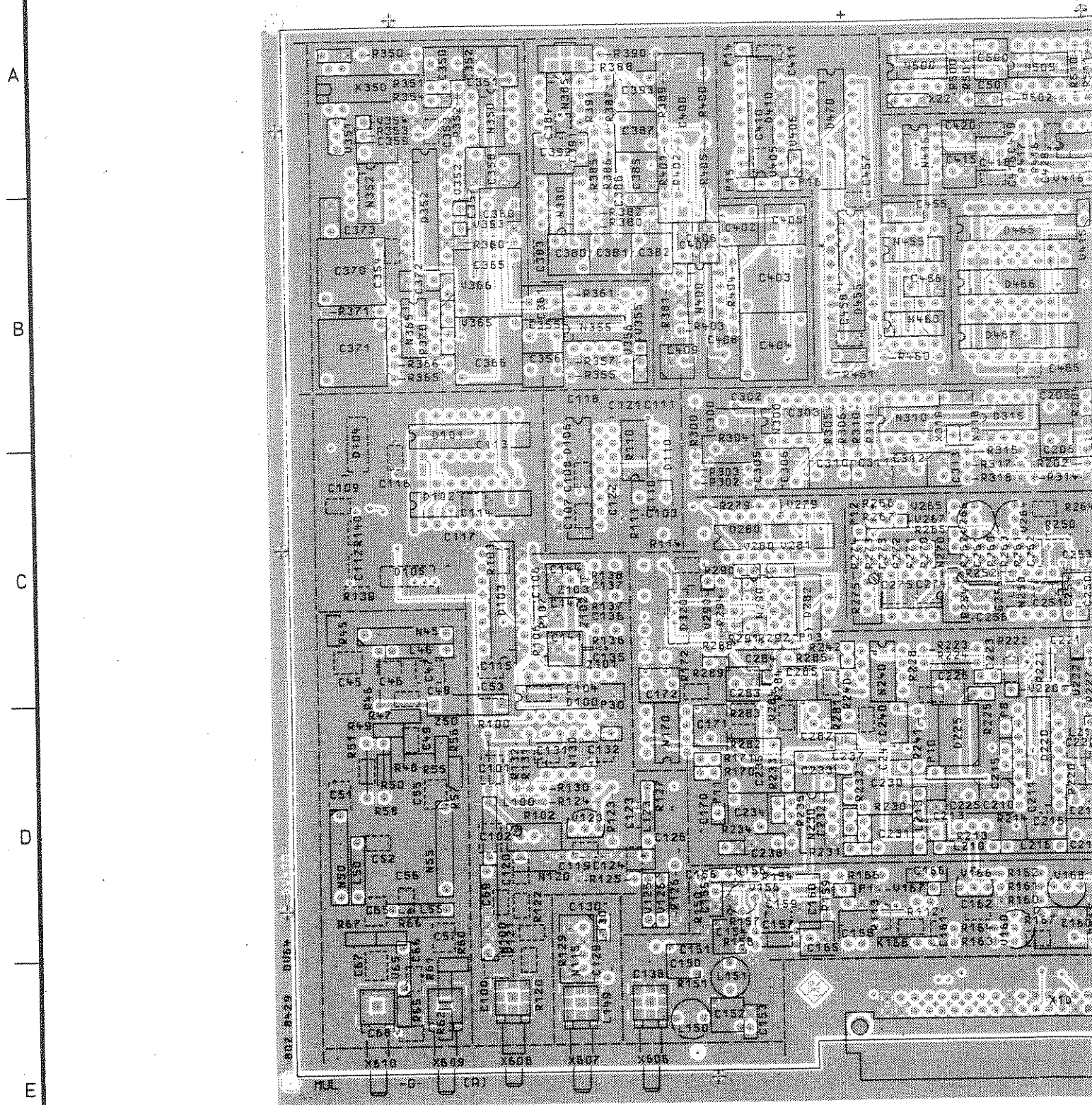
Benennung	Z	Zeichn.-Nr.	Blatt-Nr.
Analogteil / Analog section		802.8435 S	4
zu Gerät:	CMT	reg. i. V. 802.2020 V	v. BI
8	9	erste Z. 802.2066	10





\*1) nur für VAR 04  
only for model 04

\*\*1) nur für VAR 02,08  
only for model 02,08



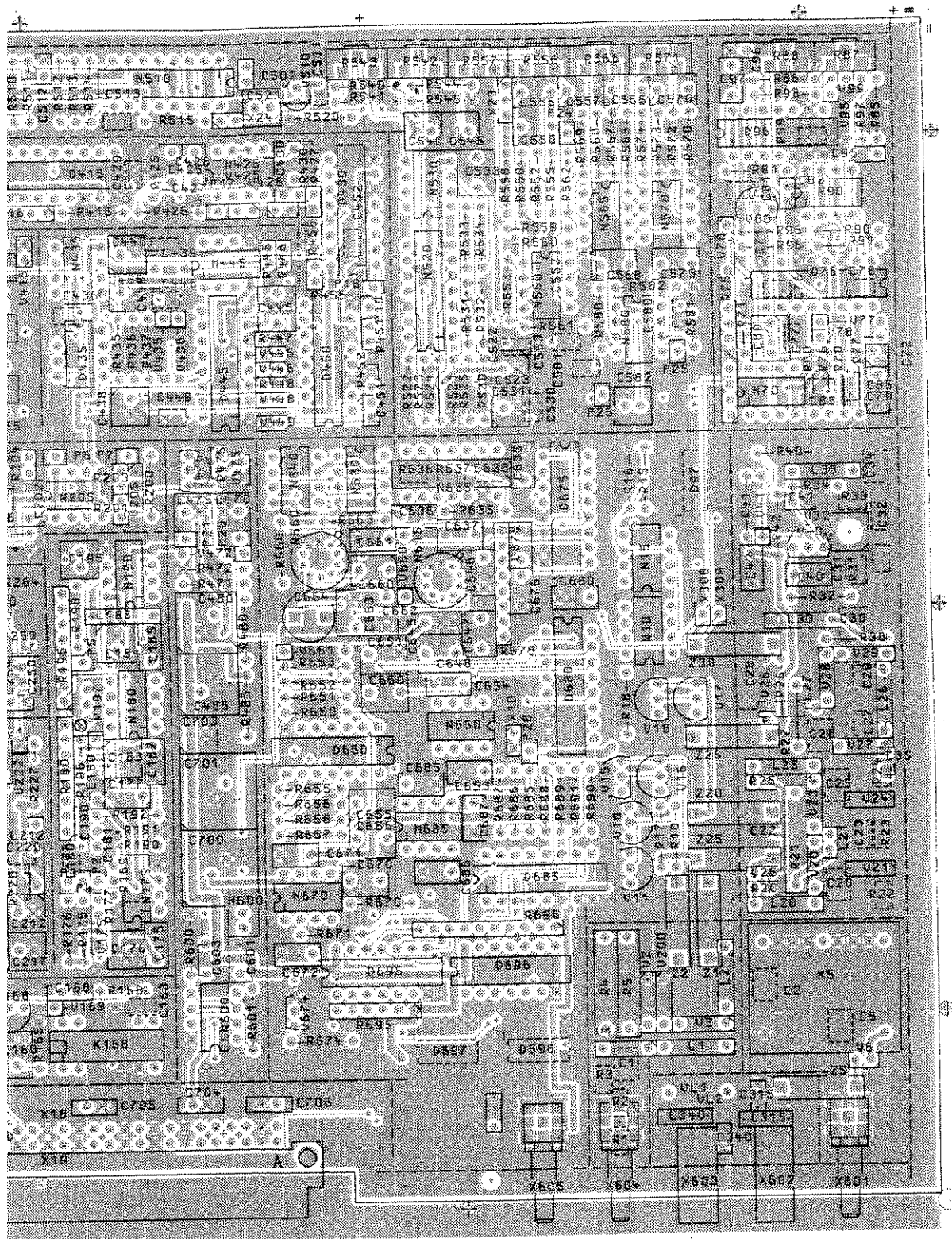
Ansicht und Leitungsführung Bauteilseite  
View of tracks on component side

DV 41



**ACHTUNG: EGB!**  
Elektrostatisch gefährdete  
Bauelemente erfordern eine  
besondere Handhabung.

**ATTENTION ESD!**  
Electrostatic sensitive  
devices require a special  
handling.



VARIANTENERKLÄRUNG/VERSION  
VAR 02-GRUNDAUSFÜHRUNG/BASIC MODEL

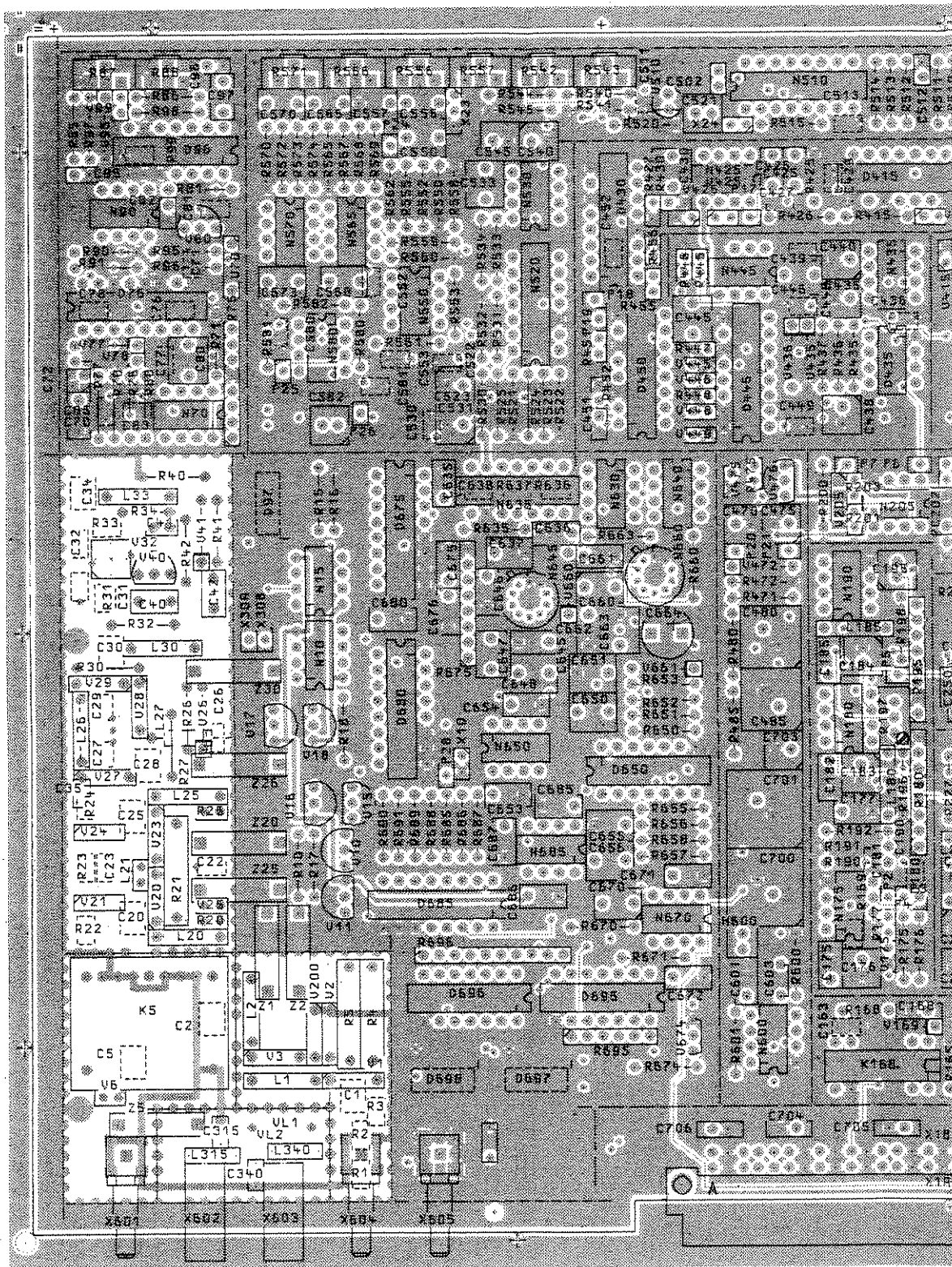
[illegible]











Ansicht und Leitungsführung Lötseite  
View of tracks on solder side

DV 13

(hierzu HVC 250)



ACHTUNG: EGB!  
Elektrostatisch gefährdete  
Bauelemente erfordern eine  
besondere Handhabung.  
ATTENTION ESD!  
Electrostatic sensitive  
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