ROHDE&SCHWARZ

SERVICEUNTERLAGEN

Digitale Synthese

1038.7344.01

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7. Prüfen und Instandsetzen der Baugruppe

7.1 Funktionsbeschreibung

Die Baugruppe DIGITALE SYNTHESE (kurz DSYN) generiert mit Hilfe des DDS-Bausteines DDS-GA (DDS-Gate-Array) auf rein digitale Weise ein Sinussignal im Frequenzbereich 14.1...15.6MHz (SMP: 10.3...15.6MHz) mit der Auflösung von 50MHz/2^48=0.178uHz. Die erzeugte Frequenz ist so genau wie die Taktfrequenz vom DDS-GA (50MHz). Das Taktsignal kommt von der Baugruppe REFSS an die Eingangsbuchse REF50 (X81). Das Ausgangssignal an der Ausgangsbuchse FDDS (X89) wird zur Baugruppe SUMMIERSCHLEIFE geleitet und dient dort als Referenzsignal einer Phasenregelschleife.

Auf der Baugruppe befindet sich auch eine Phasenregelschleife, die sogenannte PUFFERSCHLEIFE (kurz PS), über die das DDS-Signal wahlweise geführt werden kann, damit nichtharmonische Störsignale weggefiltert werden.

In die Baugruppe DSYN kann die Tochterbaugruppe Option DATENCODER (kurz DCOD) eingebaut werden, die ein digitales Modulationssignal (FM) an das DDS-Gate-Array über ein Parallelport liefert.

Über das MOTHERBOARD können der Option DCOD Daten- und Taktsignale und dem DDS-Gate-Array ein FSK-Signal und ein serielles Modulationssignal (SYNTHESE-FM) zugeführt werden.

Als Schnittstelle zur Rechnerbaugruppe sind auf DSYN zwei SERBUS-DECODER. SERBUS-D1 ist ausschließlich für DSYN zuständig und SERBUS-D2 ausschließlich für die Tochterbaugruppe Option DATENCODER.

7.1.1 DIREKTE DIGITALE SYNTHESE

Nach der Eingangsbuchse REF50 wird das sinusförmige 50MHz-Referenzsignal mit einer Sternschaltung in drei Pfade geführt, dem Pfad für den DDS-GA-Takt, dem Pfad für den DCOD-Takt und dem für den DA-Wandler (DAC).
Vom CLOCK-AMPLIFIER wird das Sinussignal in ein HCMOS-Signal für das DDS_GA umgewandelt.
Die DELAY-LINE verzögert das Taktsignal zum DAC derart, daß die Daten vom DDS-GA zum optimalen Zeitpunkt in den DAC eingelesen werden.
Vom ALIASING-FILTER wird das Sample-And-Hold-Signal vom DAC in ein nahezu sinusförmiges Signal umgewandelt.
Die parallelen Modulationsdaten von DCOD kommen über die Leitungen FMDAT(0)...FMDAT(13) zum DDS-GA und werden mit der steigenden Flanke vom LOADM-Signal eingelesen.
Die seriellen Modulationsdaten vom MOTHERBOARD kommen über die Leitung DATA zum DDS-GA und werden mit der fallenden Flanke vom DATACLK-Signal eingelesen. Ein serielles Datenwort ist 16 Bit lang. Das MSB, welches zuerst übertragen wird, wird durch ein HIGH-Signal auf der Leitung BURST markiert.
Die Leitungen BURST, DATA und DATACLK führen alle zu Gerätebuchsen.

Für die FSK-Modulation ohne Basisbandfilterung (harte Umtastung), wird das Datensignal ebenfalls über die Leitung DATA dem DDS-GA zugeführt. Vom FSK-INVERTER kann dieses Signal invertiert werden.

7.1.2 PUFFERSCHLEIFE

Wird die PUFFERSCHLEIFE (kurz PS), mit PS_ON=1 eingeschaltet, so ist der PIN-Dioden-Schalter V600 und V603 geschlossen.

Zwischen OSCILLATOR, dem VCO und dem PHASE-DETECTOR befindet sich kein frequenzumsetzendes Modul, sodaß die Ausgangsfrequenz (VCO-Frequenz) mit der Eingangsfrequenz identisch ist.

Mit dem MOS-Schalter N700 kann die Schleifenbandbreite zwischen 1kHz und 100kHz umgeschaltet werden. Es gibt drei verschiedene Modi, diese Umschaltung zu Nutzen:

MODUS1: Wird vom Rechner BAND=1 gesetzt, so ist die Bandbreite fest auf 100kHz.

MODUS2: Wird vom Rechner BAND=0 und AUTO=1 gesetzt, so ist die Bandbreite fest auf 1kHz.

MODUS3: Wird vom Rechner BAND=0 und AUTO=0 gesetzt, so ist die Bandbreite auf 1kHz, wird jedoch bei jedem Frequenzwechsel vom MONOFLOP für 250us auf 100kHz geschaltet, damit die Einschwingzeit geringer wird.

Der MODUS3 wird bei CW-Betrieb verwendet, wenn der Frequenzsprung größer als 3kHz ist. Bei Frequenzsprüngen unter 3kHz, wird auf MODUS2 geschaltet, da die Schleife im Fangbereich bleibt.
Mit der schmalbandigen Regelschleife werden bei CW-Betrieb nichtharmonische Störsignale weggefiltert.

Der MODUS1 wird dazu verwendet, nichtharmonische Störsignale wie z.B. Aliasingprodukte unter 100kHz neben dem Träger, bei digitaler FM-Modulation wegzufiltern.
Wenn die PUFFERSCHLEIFE eingeschaltet ist (PS_ON=1), jedoch nicht synchronisiert (VCO-Abstimmspannung an X37 oder Diagnosespannung 305 am unteren oder oberen Anschlag; <0V oder >21.5V), so löst der INTERRUPT-DETECTOR beim SERBUS-D1 Interrupt aus und es erscheint am Gerätedisplay eine Fehlermeldung.

7.2 Meßgeräte und Hilfsmittel

- Servicekit 1039.3520
- Zweikanaloszilloskop (0...250 MHz)
- Spektrumanalysator (1...100 MHz)
- Rechteckgenerator (100Hz...1MHz) (z.B. ADS)
- Prüfmustergenerator (z.B. ADS)
- Frequenzzähler (10...20MHz) (im FSA enthalten)
- Modulationsanalysator (z.B. FMB)

7.3 Fehlersuche

Fehlerhafte Datenübertragung (siehe 7.4.2).	Prüfe SERBUS-D1 (D110), SERBUS-BUFFER (D50) und die Schieberegister D150 und D155.
Taktsignal an P32/P33 außer Toleranz (siehe 7.4.4).	Prüfe den CLOCK-AMPLIFIER (V220, Diagnosepunkt 303).
Taktsignal und Datensignal zum DAC (D300) an P4/P14 und P5/P15 außer Toleranz (siehe 7.4.5).	Prüfe die DELAY-LINE und den Taktverstärker V210 (Die Setup- und die Hold-Zeit kann mit R215 bzw. R212 durch Verändern der DELAY-LINE-Laufzeit korrigiert werden.)
Ausgangssignal bei CW-Betrieb außer Toleranz (DIG. MOD OFF) (siehe 7.4.8).	Prüfe, ob die Spannung an P6 -9.5+-1V ist. Prüfe die Pindiode V603 und den OSCILLATOR.
Ausgangssignal bei abgeschalteter PS außer Toleranz (FSK-MOD. ON) (siehe 7.4.8).	Prüfe, ob die Spannung an P6 11.6+-1V ist. Prüfe das DDS-Gatearray D20, die Pindiode V601, den DAC (D300), das ALIASING-FILTER (L405) und den DDS-AMPLIFIER (N400).
Phasenregelschleife (Pufferschleife) synchronisiert nicht (siehe 7.4.7.1).	Prüfe, ob die Steckbrücke X36/X37 gesteckt ist. Prüfe OSCILLATOR (V512), Taktverstärker V610 und V612, CONTROL-AMPLIFIER (N700, N702, D700, V702, V704). Prüfe, ob die Spannung an P6 -9.5V+-1V ist, und prüfe die Pindioden V603, V600 und V601. Prüfe ob die Spannung an P9/P8 24V/0V+-1V oder 0V/24V+-1V ist.
Es erscheint die Fehlermeldung "Digital synthesis buffer VCO unlocked" (siehe 7.4.10).	Prüfe, ob die Phasenregelschleife synchronisiert (Spng. an P7 1V...21V, Diagnosepunkt 305). Wenn nicht, siehe vorhergehenden Absatz. Prüfe den INTERRUPT-DETEKTOR (N120, V150).

7.4 Prüfen und Abgleich

Vorbemerkung:

Zum Servicebetrieb wird der obere Deckel abgeschraubt, anstelle der Baugruppe wird der Serviceadapter in den Steckplatz eingesetzt und anschließend die Baugruppe auf den Adapter gesteckt. Nachdem die HF-Verbindungen hergestellt worden sind, ist die Baugruppe wieder betriebsbereit.

7.4.1 Prüfung der Stromaufnahme

Die Stromaufnahme der Baugruppe kann geprüft werden, indem anstelle der Spulen L80, L82, L76, L78 und des Widerstandes R48 jeweils ein Ampermeter eingeschleift wird. Die Sollwerte zu den jeweiligen Versorgungsspannungen finden sich in Kap. 7.6.

7.4.2 Prüfen der Datenübertragung

- Den lötseitigen Deckel abschrauben und an D150 nach folgender Tabelle die Spannungen prüfen.

Einstellung	D150 Pin 4	5	6	7	14	13	12	11	
PRESET	0	0	0	0	x	0	0	1	
DIG.MOD-FSK-SOURCE-PRBS	x	x	x	x	x	0	1	1	
DIG.MOD-GFSK-SOURCE-PRBS	x	x	x	x	x	0	0	0	
DIG.MOD-FSK-SOURCE-PRBS -POLARITY-INV	x	x	x	x	x	1	1	1	

- Den lötseitigen Deckel wieder verschrauben.

7.4.3 Prüfung der Spannungsregler

- Die Baugruppe Option DM-CODER wenn vorhanden ausbauen, damit die Prüfpunkte P20 und P21 zugänglich sind.

▶ Die Spannung am Prüfpunkt P20 muß +5V±0.15V betragen.

▶ Die Spannung am Prüfpunkt P21 muß -5V±0.15V betragen.

7.4.4 Prüfen des Taktsignales zum DDS-GA D20

- Oszilloskop an P32/P33 (Signal/Masse) anschließen (50Ω).

▶ Es muß eine periodische Wechselspannung mit der Frequenz 50MHz, der Maximalspannung über 0.19V und der Minimalspannung unter 0.048V zu messen sein (Zwischen Signal und Prüfpunkt befindet sich ein 1kΩ-Vorwiderstand).

7.4.5 Prüfen der digitalen Signale am DA-Wandler (DAC, D300)

- Einstellung: **FREQUENCY 1350.8MHz**

- Oszilloskop, Kanal1 an P4/P14 (Taktsignal) und Kanal2 an P5/P15 (Datensignal) anschließen und die Triggerschwelle für das Taktsignal auf -40mV einstellen (Triggerung bei negativer Flanke, Impedanz 50Ω).

▶ Das Datensignal sollte als Augenmuster erscheinen. Der HIGH-Pegel sollte zum Triggerzeitpunkt -40mV±7mV betragen.

▶ Der LOW-Pegel sollte zum Triggerzeitpunkt -83mV±7mV betragen.

▶ Die obere Spitzenspannung des Taktsignales sollte >-10mV sein und die untere Spitzenspannung <-110mV sein.

▶ Die SETUP-Zeit und die HOLD-Zeit des Datensignales bezüglich des Triggerzeitpunktes (Datenübernahme), sollte <5ns betragen.

7.4.6 OSCILLATOR-Abgleich

Auf Bauelementeseite ein Spezialdeckel verschrauben, der die Kammer A und F frei läßt, damit verschiedene Prüfpunkte zugänglich sind, und der zum Abgleich von L507 und L506 zwei Löcher hat. Dieser Deckel soll im weiteren mit OSCILLATOR-Deckel bezeichnet werden.

- Einstellung: **FREQUENCY 1000MHz**
- Steckbrücke X36/X37 ziehen und Gleichspannung an X37 einspeisen.
- Spektrumanalysator an X89 (FDDS) anschließen.

▶ Den Oszillator nach folgender Tabelle wechselweise abgleichen. Die anzustrebenden Frequenzwerte sind 10.3 bzw. 15.6 MHz. Falls diese Werte nicht erreicht werden können, so ist der angegebene Toleranzbereich einzuhalten, wobei hierbei an beiden Abgleichpunkten ein möglichst gleicher Frequenzfehler anzustreben ist.
Beim Abgleichpunkt OSZ3 kann wahlweise L506 oder L507 oder beide Spulen abgeglichen werden.

Spannung X37	Abgleichpunkt	Sollfrequenz an X89
18V	OSZ3(L506/L507)	15.6 ... 15.9 MHz
1.6V	OSZ4 (R433)	10 ... 10.3 MHz

- Die Steckbrücke X36/X37 wieder stecken.

7.4.7 Prüfung der PUFFERSCHLEIFE

7.4.7.1 Statisches Verhalten

- Der OSCILLATOR-Deckel muß verschraubt sein.
- Einstellung: **FREQUENCY 1350.2/1351.4MHz**

▶ Die Spannung an P7 muß 14.6/18.0+-1V sein.

7.4.7.2 Einschwingverhalten

- Die Baugruppe Option DATENCODER ausbauen, damit der Prüfpunkt P28 zugänglich ist.
- Der OSCILLATOR-Deckel muß verschraubt sein.
- An P35 (PD-Signal) ein Oszilloskop anschließen, das mit dem FRS-Signal an P28 getriggert wird (negative Flanke, Triggerschwelle 3V).
- Einstellung: **FREQUENCY laut Tabelle**
  (schmalbandige PS)

▶ Die Spannung an P35 muß bei einem Frequenzsprung von 1350.2 auf 1351.4MHz und umgekehrt 3ms nach der Triggerung den Wert von 0.1V unterschritten haben.

- Prüfung bei Ausrüstung mit DATENCODER.
- Einstellung: **FREQUENCY laut Tabelle**
  DIGITAL MOD - 4FSK - SOURCE EXT
  (breitbandige PS)

▶ Die Spannung an P35 muß bei einem Frequenzsprung von 1350.2 auf 1351.4MHz und umgekehrt 70us nach der Triggerung den Wert von 0.1V unterschritten haben.

7.4.7.3 Übertragungsverhalten

- Die Option DATENCODER muß eingebaut sein.
- Der OSCILLATOR-Deckel muß verschraubt sein.
- An X89 (FDDS) einen Modulationsanalysator (z.B. FMB) anschließen und einen Tiefpaß mit 23kHz einschalten.
- Einstellung: **FREQUENCY 835MHz**
  DIGITAL MOD - 4FSK - SOURCE DATA (breitb. PS)
  -FILL-LIST DATA "1000"

▶ Das FM-demodulierte Signal muß einen Spitzenhub von 4.6875kHz+-1% und eine Modulationsfrequenz von 1.5625kHz+-1% haben. Es dürfen keine Überschwinger zu sehen sein.

7.4.8 Prüfung des Ausgangssignales bei CW-Betrieb

- Der OSCILLATOR-Deckel muß verschraubt sein.
- An den Ausgang X89 (FDDS) einen Spektrumanalysator anschließen.
- Einstellung: **FREQUENCY laut Tabelle**
  DIGITAL MOD - FSK - SOURCE EXT/OFF
  - DEVIATION 0Hz

▶ Nach folgender Tabelle verschiedene Frequenzen einstellen und am Ausgang die Frequenz für SOURCE EXT und SOURCE OFF prüfen.

FREQUENCY/MHz	1350.2	1351.4
Sollfrequ./MHz+-1kHz	14.351	15.551

▶ Der Pegel soll 2+-1.5dBm und der Oberwellenabstand <-40dBc betragen.

▶ Nach folgender Tabelle verschiedene Nebenwellen prüfen:

FREQU. in MHz	EXT / OFF	Träger-Frequenz in MHz	Offset-Frequenz in MHz	Nebenw.-Abstand in dBc
1350.69275	EXT	14.84375+-0.1	+-1.5625	<-66
1350.69275	OFF	14.84375+-0.0001	+-1.5625	<-80
1351.27869	EXT	15.4296875+-0.1	+-1.5625	<-66
1351.27869	OFF	15.4296875+-0.0001	+-1.5625	<-80
835.1	EXT	15.1+-0.1	+-0.2	<-66
835.1	OFF	15.1+-0.0001	+-0.2	<-80

7.4.9 Prüfung der Interrupt-Funktion

- Einstellung: **FREQUENCY 1000MHz**

▶ Steckbrücke X36/X37 ziehen. Es muß die Fehlermeldung "Digital synthesis buffer VCO unlocked" erscheinen.

7.4.10 Prüfung der Diagnose

- Einstellung: **FREQUENCY 1000MHz**
  UTILITIES - DIAG - TPOINT...

TPOINT	Meßpunkt	Faktor	Sollspannung
300	+15V-Versorgung	4	14...16V
301	DCOD, OSZ.-Abst.sp.	5	-100...100mV
302	DCOD, OSZ.-Pegel	1	-20...20mV
303	DDS-GA-Taktpegel	1	0.5...1.5V
304	Pegel am Ausg. FDDS	1	50...200mV
305	OSZ.-Abstimmsp.	5	12...20V
306	-15V-Versorgung	4	-14...16V
307	+7.5V-Versorgung	2	14...16V

7.4.11 Prüfung der CODAM-Leitung

- An X3.19/20 (SIG/GND) einen Signalgenerator (50Ohm) anschließen und 10MHz/10dBm einspeisen.
- An X80.9/11 (SIG/GND) einen Spektrumanalysator anschließen und CENTER 10MHz einstellen.

▶ Der zu messende Pegel bei 10MHz muß 4dBm+-2 dB betragen.

Nach dem Öffnen des Gerätes, entriegeln der Baugruppen und dem Lösen der HF-Verbindungen an X81 und X89 kann die Baugruppe aus ihrem Steckplatz genommen werden. Die Schirmdeckel der Baugruppe sind auf herkömmliche Art verschraubt.

7.5 Zerlegung und Zusammenbau

Nach dem Öffnen des Gerätes, Entriegeln der Baugruppe und dem Lösen der HF-Verbindungen an X81 und X89 kann die Baugruppe aus ihrem Steckplatz genommen werden. Die Schirmdeckel der Baugruppe sind auf herkömmliche Art verschraubt.

7.6 Externe Schnittstellen

Pin	Name	Ein/Ausgang	Herkunft/Ziel	Wertebereich	Signalbeschreibung
X80.A12	SERBUS-CLK	Eingang	A3, FRO X50.40	HCMOS-Pegel	Serbus-Clock
X80.A14 X80.A15	SERBUS-DAT	bidir.	A3, FRO X50.39	HCMOS-Pegel	Serbus-Daten
X80.A17	SERBUS-INT	Ausgang	A3, FRO X50.38	HCMOS-Pegel	Serbus-Interrupt
X80.A18	RES-P	Eingang	A3, FRO X50.28	HCMOS-Pegel	Serbus-Reset
X80.A19	DIAG-5V	Ausgang	A3, FRO X50.44	-5V...5V	Diagnose
X80.A24	VA15-P	Eingang	A2, POWS1	14.80V...15.75V 44...66mA	Versorgungsspannung analog
X80.A26	VA7.5-P	Eingang	A2, POWS1	7.45V...7.95V 328...500mA	Versorgungsspannung analog
X80.A28	VD-5P	Eingang	A2, POWS1	5.10V...5.25V 0...10mA	Versorgungsspannung digital
X80.A30	VA15-N	Eingang	A2, POWS1	-15.75V...-14.85V 208...310mA	Versorgungsspannung analog
X80.A1	DATACLK	bidir.	A3, FRO	HCMOS-Pegel	Datentakt des DATENCODER
X80.A2	DATA	bidir	A3, FRO	HCMOS-Pegel	Datensignal des DATENCODER
X80.A3	BURST	bidir.	Rückwand	HCMOS-Pegel	BURST-Signal des DATENCODER
X80.A9	CODAM	Ausgang	A10, OPU1	-1V...+1V	AM-Signal vom DATENCODER
X80.A32	LSWI	Ausgang	A10, OPU1	HCMOS-Pegel	LEVEL-SWITCH-Signal zum OPU
X81	REF50	Eingang	A5, MGEN X99	9dBm+-2dB	HF-Eingang, Referenzsignal
X89	FDDS	Ausgang	A9, SUM, X51	2dBm+-2dB	HF-Ausgang, DDS-Signal

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SERVICE INSTRUCTIONS

Digital Synthesis

1038.7344.01

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7. Checking and Repair of the Module

7.1 Functional Description

Using the DDS component DDS-GA (DDS gate array), the DIGITAL SYNTHESIS module (DSYN for short) digitally generates a sinewave signal in the frequency range 14.1 to 15.6 MHz (SMP: 10.3 to 15.6 MHz) with a resolution of 50 MHz/2^48=0.178 uHz. The generated frequency is as accurate as the clock frequency of the DDS-GA (50 MHz). The clock signal is taken from the REFSS module to the input socket REF50 (X81). The output signal at the output socket FDDS (X89) is routed to the SUMMING LOOP module, where it serves as reference signal for a phase-locked loop.

The module also contains a phase-locked loop, the so-called buffer loop (PS for short (German: PufferSchleife)). The DDS signal can be routed via this loop for suppression of non-harmonic spurious signals.

The DATA CODER option (DCOD) can be fitted in the DSYN module. It provides a digital modulation signal (FM) to the DDS gate array via a parallel port.

Data and clock signals can be applied to the DCOD option and an FSK signal and a serial modulation signal (SYNTHESE-FM) to the DDS gate array via the motherboard.

DSYN contains two SERBUS DECODERs as interfaces to the controller module. SERBUS-D1 is exclusively used for DSYN and SERBUS-D2 for the DATA CODER option.

7.1.1 DIRECT DIGITAL SYNTHESIS

Following the input socket REF50, the sinewave 50-MHz reference signal is divided into three paths by means of a Y-connection: the path for the DDS-GA clock, the path for the DCOD clock and that for the D/A converter (DAC).
The CLOCK AMPLIFIER converts the sinewave signal into a HCMOS signal for the DDS_GA.
The DELAY LINE delays the clock signal for the DAC such that the data from the DDS-GA are read into the DAC at the optimal point in time.
The ALIASING FILTER converts the sample-and-hold signal from the DAC into an sinewave signal.
The parallel modulation data from DCOD are applied via the lines FMDAT(0)...FMDAT(13) to the DDS-GA and are read in with the rising edge of the LOADM signal.
The serial modulation data from the MOTHERBOARD are applied via the DATA line to the DDS-GA and read in with the falling edge of the DATACLK signal. A serial data word is 16 bits long. The MSB, which is transferred first, is marked by a HIGH signal on the BURST line.
The lines BURST, DATA and DATACLK all lead to instrument sockets.

For the FSK modulation without baseband filtering (hard frequency-shift keying), the data signal is also applied via the DATA line to the DDS-GA. This signal can be inverted by the FSK-INVERTER.

7.1.2 BUFFER LOOP

When the buffer loop (PS for short) is activated with PS_ON=1, the PIN diode switches V600 and V603 are closed.

There is no frequency-converting module between the OSCILLATOR (VCO) and the PHASE DETECTOR so that the output frequency (VCO frequency) and the input frequency are identical.

MOS switch N700 permits to switch the loop bandwidth between 1 kHz and 100 kHz. There are three modes of switching:

MODE 1: If BAND=1 is set by the controller, the bandwidth is set to 100 kHz.

MODE 2: If BAND=0 and AUTO=1 are set by the controller, the bandwidth is set to 1 kHz.

MODE 3: If BAND=0 and AUTO=0 are set by the controller, the bandwidth is set to 1 kHz, however, each time the frequency is changed, it is set to 100 kHz for 250 us by the MONOFLOP in order to reduce the settling time.

MODE 3 is used in CW mode if the frequency change is greater than 3 kHz. In the case of a frequency change below 3 kHz, MODE 2 is selected, since the loop remains in the lock-in range.
The narrowband control loop is used to suppress non-harmonic spurious signals in CW mode.

MODE 1 is used to suppress non-harmonic spurious signals, e.g. aliasing products above 100 kHz off the carrier in the case of digital FM modulation.
If the buffer loop is activated (PS_ON=1) but does not synchronize (VCO tuning voltage at X37 or diagnostic voltage 305 at lower or upper stop; <0 V or >21.5 V), the INTERRUPT DETECTOR causes an interrupt at the SERBUS-D1, and an error message is indicated on the instrument display.

7.2 Measuring Instruments and Accessories

- Service kit 1039.3520
- Dual-channel oscilloscope (0 to 250 MHz)
- Spectrum analyzer (1 to 100 MHz)
- Squarewave generator (100 Hz to 1 MHz) (e.g. ADS)
- Test pattern generator (e.g. ADS)
- Frequency counter (10 to 20 MHz) (included in FSA)
- Modulation analyzer (e.g. FMB)

7.3 Troubleshooting

Faulty data transmission (see 7.4.2).	Check SERBUS-D1 (D110), SERBUS BUFFER (D50) and the shift registers D150 and D155.
Clock signal at P32/P33 out of tolerance (see 7.4.4).	Check CLOCK AMPLIFIER (V220, diagnostic point 303).
Clock signal and data signal to DAC (D300) at P4/P14 and P5/P15 out of tolerance (see 7.4.5).	Check the DELAY LINE and the clock amplifier V210 (The setup and hold time can be corrected using R215 or R212 by varying the DELAY LINE delay.)
Output signal out of tolerance in CW mode (DIG. MOD OFF) (see 7.4.8).	Check whether the voltage at P6 corresponds to -9.5+-1 V. Check pin diode V603 and the OSCILLATOR.
Output signal out of tolerance with PS deactivated (FSK-MOD. ON) (see 7.4.8).	Check whether the voltage at P6 corresponds to 11.6+-1 V. Check the DDS gate array D20, pin diode V601, the DAC (D300), the ALIASING FILTER (L405) and the DDS AMPLIFIER (N400).
Phase-locked loop (buffer loop) does not synchronize (see 7.4.7.1).	Check whether jumper X36/X37 is inserted. Check OSCILLATOR (V512), clock amplifier V610 and V612, CONTROL AMPLIFIER (N700, N702, D700, V702, V704). Check whether the voltage at P6 is -9.5 V+-1 V, check pin diodes V603, V600 and V601. Check whether the voltage at P9/P8 is 24 V/0 V+-1 V or 0 V/24 V+-1 V.
The error message "Digital synthesis buffer VCO unlocked" is indicated (see 7.4.10).	Check whether is phase-locked loop synchronizes (voltage at P7 1 V to 21 V, diagnostic point 305). If not, see the above paragraph. Check the INTERRUPT DETECTOR (N120, V150).

7.4 Checking and Adjustment

Preliminary remark:

For service operation, unscrew the upper cover, insert the service adapter into the location instead of the module and plug the module onto the adapter. After the RF connections have been restored, the module is ready for use again.

7.4.1 Testing the Current Consumption

The current consumption of the module can be checked by replacing coils L80, L82, L76, L78 and resistor R48 by an ammeter each. The nominal values for the respective supply voltages are to be obtained from section 7.6.

7.4.2 Testing the Data Transmission

- Unscrew the cover on the solder side and check the voltages according to the following table.

Setting	D150 Pin 4	5	6	7	14	13	12	11	
PRESET	0	0	0	0	x	0	0	1	
DIG.MOD-FSK-SOURCE-PRBS	x	x	x	x	x	0	1	1	
DIG.MOD-GFSK-SOURCE-PRBS	x	x	x	x	x	0	0	0	
DIG.MOD-FSK-SOURCE-PRBS -POLARITY-INV	x	x	x	x	x	1	1	1	

- Fasten the cover on the solder side again.

7.4.3 Testing the Voltage Regulators

- Remove the DM-CODER option, if fitted, so that test points P20 and P21 are accessible.

▶ The voltage at test point P20 must be +5 V ±0.15 V.

▶ The voltage at test point P21 must be -5 V ±0.15 V.

7.4.4 Testing the Clock Signal to the DDS-GA D20

- Connect oscilloscope to P32/P33 (signal/ground) (50 Ω).

▶ A periodic AC voltage with the frequency 50 MHz, the maximum voltage above 0.19 V and the minimum voltage below 0.048 V must be measured (There is a 1-kΩ series resistor between signal and test point).

7.4.5 Testing the Digital Signals at the D/A-Converter (DAC, D300)

- Setting: **FREQUENCY 1350.8MHz**

- Connect the oscilloscope with channel1 to P4/P14 (clock signal) and channel2 to P5/P15 (data signal) and set the trigger threshold for the clock signal to -40 mV (negative-edge triggering, impedance 50 Ω).

▶ The data signal should appear as an eye pattern. The HIGH level should be -40 mV ±7 mV at the trigger point.

▶ The LOW level should be -83 mV± 7 mV at the trigger point.

▶ The upper peak voltage of the clock signal should be >-10 mV and the lower peak voltage <-110 mV.

▶ The SETUP time and the HOLD time of the data signal referred to the trigger point (data acquisition) should be <5 ns.

7.4.6 Adjustment of OSCILLATOR

Fasten a special cover with screws on the component side so that chamber A and F and thus various test points remain freely accessible. For adjustment of L507 and L506, this cover features two holes. It will be referred to as OSCILLATOR cover in the following.

- Setting: **FREQUENCY 1000MHz**
- Remove jumper X36/X37 and apply DC voltage to X37.
- Connect spectrum analyzer to X89 (FDDS).

▶ Alternately adjust the oscillator according to the following table. The intended frequency values are 10.3 and 15.6 MHz. If these values cannot be obtained, the specified tolerance range is to be observed, and, if possible, the same frequency error should be obtained at both trimmers.
In the case of trimmer OSZ3, either L506 or L507 or both coils can be adjusted.

Voltage X37	Trimmer	Nom. frequency at X89
18 V	OSZ3(L506/L507)	15.6 ... 15.9 MHz
1.6 V	OSZ4 (R433)	10 ... 10.3 MHz

- Replace jumper X36/X37.

7.4.7 Testing the BUFFER LOOP

7.4.7.1 Static Response

- The OSCILLATOR cover must be fastened with screws.
- Setting: **FREQUENCY 1350.2/1351.4 MHz**

▶ The voltage at P7 must be 14.6/18.0 +-1 V.

7.4.7.2 Transient Response

- Remove the DATA CODER option so that test point P28 becomes accessible.
- The OSCILLATOR cover must be fastened with screws.
- Connect an oscilloscope to P35 (PD signal), which is triggered with the FRS signal at P28 (negative edge, trigger threshold 3 V).
- Setting: **FREQUENCY acc. to table (narrowband PS)**

▶ When the frequency changes from 1350.2 to 1351.4 MHz and vice versa, the voltage at P35 must be below 0.1 V 3 ms after triggering.

- Testing with a DATA CODER fitted.
- Setting: **FREQUENCY acc. to table**
  DIGITAL MOD - 4FSK - SOURCE EXT
  (broadband PS)

▶ When the frequency changes from 1350.2 to 1351.4 MHz and vice versa, the voltage must be below 0.1 V 70 us after triggering.

7.4.7.3 Transmission Response

- The DATA CODER option must be fitted.
- The OSCILLATOR cover must be fastened with screws.
- Connect a modulation analyzer to X89 (FDDS) (e.g. FMB) and cut in a 23-kHz lowpass.
- Setting: **FREQUENCY 835MHz**
  DIGITAL MOD - 4FSK - SOURCE DATA (broadb. PS)
  -FILL-LIST DATA "1000"

▶ The FM-demodulated signal must feature a peak deviation of 4.6875 kHz +-1% and a modulation frequency of 1.5625 kHz +-1%. There must not be any overshoots.

7.4.8 Testing the Output Signal in CW Mode

- The OSCILLATOR cover must be fastened with screws.

- Connect a spectrum analyzer to output X89 (FDDS).
- Setting: **FREQUENCY acc. to table**
  DIGITAL MOD - FSK - SOURCE EXT/OFF
  - DEVIATION 0Hz

▶ Set various frequencies according to the following table and check the frequency for SOURCE EXT and SOURCE OFF at the output.

FREQUENCY/MHz	1350.2	1351.4
Nom. freq./MHz+-1kHz	14.351	15.551

▶ The level must be 2 +-1.5 dBm and the harmonics suppression <-40 dBc.

▶ Check nonharmonic spuria according to the following table:

FREQU. in MHz	EXT / OFF	Carrier frequency in MHz	Offset frequency in MHz	Nonharm. spuria in dBc
1350.69275	EXT	14.84375+-0.1	+-1.5625	<-66
1350.69275	OFF	14.84375+-0.0001	+-1.5625	<-80
1351.27869	EXT	15.4296875+-0.1	+-1.5625	<-66
1351.27869	OFF	15.4296875+-0.0001	+-1.5625	<-80
835.1	EXT	15.1+-0.1	+-0.2	<-66
835.1	OFF	15.1+-0.0001	+-0.2	<-80

7.4.9 Testing the Interrupt Function

- Setting: **FREQUENCY 1000MHz**

▶ Remove jumper X36/X37. The error message "Digital synthesis buffer VCO unlocked" must be displayed.

7.4.10 Testing the Diagnosis

- Setting: **FREQUENCY 1000MHz**
  UTILITIES - DIAG - TPOINT...

TPOINT	Test point	Factor	Nom. voltage
300	+15V supply	4	14...16 V
301	DCOD, OSC.tun. volt.	5	-100...100 mV
302	DCOD, OSC. level	1	-20...20 mV
303	DDS-GA clock level	1	0.5...1.5 V
304	Level at outp. FDDS	1	50...200 mV
305	OSC. tuning voltage	5	12...20 V
306	-15-V supply	4	-14...16 V
307	+7.5-V supply	2	14...16 V

7.4.11 Testing the CODAM Line

- Connect a signal generator (50 Ω) to X3.19/20 (SIG/GND) and apply 10 MHz/10 dBm.
- Connect a spectrum analyzer to X80.9/11 (SIG/GND) and set CENTER 10 MHz.

▶ The level to be measured at 10 MHz must be 4 dBm +-2 dB.

The module can be removed from its location after opening the instrument, unlocking the modules and loosening the RF connections at X81 and X89. The screening covers of the module are conventionally fastened with screws.

7.5 Removal and Assembly

The module can be removed from its location after opening the instrument, unlocking the module and loosening the RF connections at X81 and X89. The screening covers of the module are conventionally fastened with screws.

7.6 Interface Description

Pin	Name	Inp./Output	Origin/Destination	Value range	Signal description
X80.A12	SERBUS-CLK	Input	A3, FRO X50.40	HCMOS level	Serbus clock
X80.A14 X80.A15	SERBUS-DAT	bidir.	A3, FRO X50.39	HCMOS level	Serbus data
X80.A17	SERBUS-INT	Output	A3, FRO X50.38	HCMOS level	Serbus interrupt
X80.A18	RES-P	Input	A3, FRO X50.28	HCMOS level	Serbus reset
X80.A19	DIAG-5V	Output	A3, FRO X50.44	-5V...5V	Diagnosis
X80.A24	VA15-P	Input	A2, POWS1	14.80V...15.75V 44...66mA	Supply voltage analog
X80.A26	VA7.5-P	Input	A2, POWS1	7.45V...7.95V 328...500mA	Supply voltage analog
X80.A28	VD-5P	Input	A2, POWS1	5.10V...5.25V 0...10mA	Supply voltage digital
X80.A30	VA15-N	Input	A2, POWS1	-15.75V...-14.85V 208...310mA	Supply voltage analog
X80.A1	DATACLK	bidir.	A3, FRO	HCMOS level	Data clock of DATA CODER
X80.A2	DATA	bidir	A3, FRO	HCMOS level	Data signal of DATA CODER
X80.A3	BURST	bidir.	Rear panel	HCMOS level	BURST signal of DATA CODER
X80.A9	CODAM	Output	A10, OPU1	-1V...+1V	AM signal from DATA CODER
X80.A32	LSWI	Output	A10, OPU1	HCMOS level	LEVEL-SWITCH signal to OPU
X81	REF50	Input	A5, MGEN X99	9dBm+-2dB	RF input, reference signal
X89	FDDS	Output	A9, SUM, X51	2dBm+-2dB	RF output, DDS signal

ROHDE&SCHWARZ

Schaltteillisten
numerisch geordnet
Part lists
in numerical order
Listes des pièces détachées
par numéros de référence

(R 29500 B) 1)
895 1800 B) 1)

Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
C50	CE 4,7UF+-10% 10V 3528 TANTALUM SMD-CAPACITOR	CE 0007.7275.00	KEMET	T491 B 475 K 010 AS	
C77	CE 47UF+-20%50V RM2,5 ELECTROLYTIC CAPACITOR	CE 0008.7479.00	PANASONIC	ECA-1HFG470I	
C79	CE 100UF+-20%25V RM2.5 ELECTROLYTIC CAPACITOR	CE 0008.7891.00	PANASONIC	ECA-1EFG101I	
C81	CE 220UF+-20%10V RM2,5 ELECTROLYTIC CAPACITOR	CE 0008.7927.00	PANASONIC	ECA 1 AFG 221 I	
C83	CE 100UF+-20%25V RM2.5 ELECTROLYTIC CAPACITOR	CE 0008.7891.00	PANASONIC	ECA-1EFG101I	
C100	CE 100UF+-20%6,3V AL-CHIP SMD-ELECTROLYTIC CAPACIT.	CE 0008.1841.00	VALVO	TYP 2222 139 63101	
C102	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C110	CE 100UF+-20%6,3V AL-CHIP SMD-ELECTROLYTIC CAPACIT.	CE 0008.1841.00	VALVO	TYP 2222 139 63101	
C111	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C112	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C114 ..120	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C129	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C130	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C131	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C132	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C133	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C134	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C135	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C150	CE 10UF+-20%50V ALU-CHIP SMD-ELECTROLYTIC CAPACIT.	CE 0008.1812.00	VALVO	TYP 2222 139 61109	
C162	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C168	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C180	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C182	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C186	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C200	CE 220UF+-20%10V RM2,5 ELECTROLYTIC CAPACITOR	CE 0008.7927.00	PANASONIC	ECA 1 AFG 221 I	
C202	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C203	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C204	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C205	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C210	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C212	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C214	CE 10UF +-10% 25V 7343 TANTALUM SMD-CAPACITOR	CE 0007.7246.00	KEMET	T491D106K025AS	
C216	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C218	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C219	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C220	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C222	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C230	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C231	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	

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C232	CC 2,2PF+-0,25 50VNP01206 CERAMIC CHIP CAPACITOR	CC 0007.8171.00	MURATA	GRM42-6C0G 2R2 C50PT	
C233	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C300	CE 10UF +-10% 25V 7343 TANTALUM SMD-CAPACITOR	CE 0007.7246.00	KEMET	T491D106K025AS	
C302	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C304	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C306	CE 220UF+-20%10V RM2,5 ELECTROLYTIC CAPACITOR	CE 0008.7927.00	PANASONIC	ECA 1 AFG 221 I	
C308	CE 220UF+-20%10V RM2,5 ELECTROLYTIC CAPACITOR	CE 0008.7927.00	PANASONIC	ECA 1 AFG 221 I	
C310	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C312	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C402	CC 180PF+-1%50V NPO 1206 CHIP CAPACITOR	CC 0099.8844.00	PHILIPS_CO	2238 863 18181	
C403	CC 27PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8409.00	MURATA	GRM42-6C0G 270F 50PT	
C404	CC 180PF+-1%50V NPO 1206 CHIP CAPACITOR	CC 0099.8844.00	PHILIPS_CO	2238 863 18181	
C405	CC 100PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8415.00	MURATA	GRM42-6C0G 101F 50PT	
C406	CC 180PF+-1%50V NPO 1206 CHIP CAPACITOR	CC 0099.8844.00	PHILIPS_CO	2238 863 18181	
C407	CC 68PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8815.00	MURATA	GRM42-6C0G 680F 50PT	
C408	CC 330PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8873.00	PHILIPS_CO	2238 863 18331	
C409	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C410	CC 390PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8880.00	PHILIPS_CO	2238 863 18391	
C411	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C412	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C414	CE 10UF +-10% 25V 7343 TANTALUM SMD-CAPACITOR	CE 0007.7246.00	KEMET	T491D106K025AS	
C420	CE 10UF +-10% 25V 7343 TANTALUM SMD-CAPACITOR	CE 0007.7246.00	KEMET	T491D106K025AS	
C500	CC 270PF+-5% 200V PELL CAPACITOR TRIMMWERT/SELECTED"	CC 0556.8730.00	TEKELEC	201 CHB 271J WL	
C502	CC 56PF+-5% 500V PELL CAPACITOR	CC 0556.8660.00	TEKELEC	501 CHB 560 J(W/V)LE	
C505	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C506	CC 470PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8515.00	PHILIPS_CO	2238 863 18471	
C508	CC 470PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8515.00	PHILIPS_CO	2238 863 18471	
C510	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C512	CC 39PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8796.00	MURATA	GRM42-6C0G 390F 50PT	
C514	CE 10UF +-10% 25V 7343 TANTALUM SMD-CAPACITOR	CE 0007.7246.00	KEMET	T491D106K025AS	
C516	CC 150PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8509.00	PHILIPS_CO	2238 863 18151	
C518	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C519	CE 10UF +-10% 25V 7343 TANTALUM SMD-CAPACITOR	CE 0007.7246.00	KEMET	T491D106K025AS	
C600	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C602	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C604	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C620	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C621	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
C622	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C623	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C624	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C625	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C626	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C627	CC 220PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8850.00	PHILIPS_CO	2238 863 18221	
C628	CC 330PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8873.00	PHILIPS_CO	2238 863 18331	
C629	CC 220PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8850.00	PHILIPS_CO	2238 863 18221	
C630	CC 2,2PF+-0,25 50VNP01206 CERAMIC CHIP CAPACITOR	CC 0007.8171.00	MURATA	GRM42-6C0G 2R2 C50PT	
C631	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C640	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C641	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C642	CC 470PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8515.00	PHILIPS_CO	2238 863 18471	
C646	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C647	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C648	CC 470PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8515.00	PHILIPS_CO	2238 863 18471	
C662	CC 10PF+-0,25 50VNPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8480.00	MURATA	GRM42-6C0G 100 C50PT	
C663	CC 10PF+-0,25 50VNPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8480.00	MURATA	GRM42-6C0G 100 C50PT	
C700	CE 47UF+-20%50V RM2,5 ELECTROLYTIC CAPACITOR	CE 0008.7479.00	PANASONIC	ECA-1HFG470I	
C701	CE 220UF+-20%10V RM2,5 ELECTROLYTIC CAPACITOR	CE 0008.7927.00	PANASONIC	ECA 1 AFG 221 I	
C702	CK 22NF +-1% 63V RM5 KP POLYPROPYLENE CAPACITOR	CK 0007.7675.00	ROEDERSTEI	KP1830-322 06 1 3 W	
C703	CK 1UF+-5%50V7,5X5,5X10,5 CAPACITOR	CK 0099.2998.00	ERO	MKT 1826-510/054-R	
C705	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C706	CC 100PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8415.00	MURATA	GRM42-6C0G 101F 50PT	
C710	CC 68PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8815.00	MURATA	GRM42-6C0G 680F 50PT	
D20	BG L5A8836 DDS GA ASIC IC GATE-ARRAY	1036.4325.00	LSI_LOGIC	R&S-SACHNR.	
D50	BL PC74HCT125T 4XBUFF. 3S QUAD LINE DRIVER	BL 0007.5395.00	PHILIPS_SE	(PC)74HCT125(D/T)	
D110	BG TH3032.1C SERBUSD ASIC IC GATE ARRAY	0008.6143.00	THESYS	TH3032.1C	
D112	BG TH3032.1C SERBUSD ASIC IC GATE ARRAY	0008.6143.00	THESYS	TH3032.1C	
D120	BL PC74HCT132T 4X2IN SCHM NAND SCHMITT TRIGGER	BL 0007.6340.00	PHILIPS	(PC)74HCT132(D/T)	
D125	BL PC74HCT132T 4X2IN SCHM NAND SCHMITT TRIGGER	BL 0007.6340.00	PHILIPS	(PC)74HCT132(D/T)	
D130	BL PC74HCT4051T 8CH.A.MUX ANALOG MULTIPLEXER	BL 0007.6827.00	PHILIPS	(PC)74HCT4051(T)	
D135	BL 74ACT86SC 4X 2IN-EXOR QUAD 2-INPUT EXOR GATE	BL 2005.4307.00	HARRIS	(CD74)ACT86(M)	
D150	BL PC74HCT4094T 8ST.SHREG SHIFT REGISTER	BL 0007.6885.00	PHILIPS	(PC)74HCT4094(D)	
D155	BL PC74HCT4094T 8ST.SHREG SHIFT REGISTER	BL 0007.6885.00	PHILIPS	(PC)74HCT4094(D)	
D175	BL PC74HC4538T 2X MULTIV DUAL MULTIVIBRATOR	BL 6014.4382.00	PHILIPS_SE	(PC)74HC4538(T)	
D300	BJ CX20201A-1 MPY 10B-DAC IC DIGITAL/ANALOG CONV	1039.1340.00	HARRIS	HI20201JCB	
D600	BL 74AC74SC 2XD-FLIPFL DUAL D-TYPE FLIPF	BL 0820.3602.00	NSC	74AC74(SC)	

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
D700	BS SD5400CY 4X ANALOGSCH QUAD ANALOG SWITCH	0351.0000.00	SILICONIX	SD5400CY	
L76	LD 150UH BEI 0,17A 6,20HM CHOKE	LD 0026.4055.00	DALE	IM 6	
L78	LD 150UH BEI 0,17A 6,20HM CHOKE	LD 0026.4055.00	DALE	IM 6	
L80	LD 3,3UH BEI 1,63AO,160HM CHOKE	LD 0026.4061.00	DALE	IM 6	
L82	LD 15UH 10% 1R2 0,46A CHOKE	LD 0026.4149.00	DALE	IM 6	
L110	LD 1UH 10% 0,38A 1210 SMD-INDUCTOR	LD 6006.0130.00	SIEMENS	B82422-A1102-J(K)100	
L135	LD 1UH 10% 0,38A 1210 SMD-INDUCTOR	LD 6006.0130.00	SIEMENS	B82422-A1102-J(K)100	
L150	LD 100UH 10% 0,06A 1210 SMD-INDUCTOR	LD 0007.9261.00	SIEMENS	B82422-A1104-J(K)100	
L200	LD 0,22UH10%0,140HM1,045A CHOKE	LD 0067.2786.00	DALE	IM2	
L201	LD 1UH 10% 0,38A 1210 SMD-INDUCTOR	LD 6006.0130.00	SIEMENS	B82422-A1102-J(K)100	
L202	LD 0,47UH10%0,350HMO,660A CHOKE	LD 0067.2828.00	DALE	IM2	
L204	LD 0,47UH10%0,350HMO,660A CHOKE	LD 0067.2828.00	DALE	IM2	
L206	LD 0,47UH10%0,350HMO,660A CHOKE	LD 0067.2828.00	DALE	IM2	
L208	LD 0,22UH10%0,140HM1,045A CHOKE	LD 0067.2786.00	DALE	IM2	
L210	LD 4,70UH10%1,200HMO,239A CHOKE	LD 0067.2940.00	DALE	IM2	
L212	LD 1UH 10% 0,38A 1210 SMD-INDUCTOR	LD 6006.0130.00	SIEMENS	B82422-A1102-J(K)100	
L214	LD 1UH 10% 0,38A 1210 SMD-INDUCTOR	LD 6006.0130.00	SIEMENS	B82422-A1102-J(K)100	
L216	LD 1UH 10% 0,38A 1210 SMD-INDUCTOR	LD 6006.0130.00	SIEMENS	B82422-A1102-J(K)100	
L300	LD 1UH 10% 0,38A 1210 SMD-INDUCTOR	LD 6006.0130.00	SIEMENS	B82422-A1102-J(K)100	
L302	LD 1UH 10% 0,38A 1210 SMD-INDUCTOR	LD 6006.0130.00	SIEMENS	B82422-A1102-J(K)100	
L304	LD 1UH 10% 0,38A 1210 SMD-INDUCTOR	LD 6006.0130.00	SIEMENS	B82422-A1102-J(K)100	
L306	LD 1UH 10% 0,38A 1210 SMD-INDUCTOR	LD 6006.0130.00	SIEMENS	B82422-A1102-J(K)100	
L403	LD 0,39UH10%0,300HMO,710A CHOKE	LD 0067.2811.00	DALE	IM2	
L405	LD 0,22UH10%0,140HM1,045A CHOKE	LD 0067.2786.00	DALE	IM2	
L406	LD 0,22UH10%0,140HM1,045A CHOKE	LD 0067.2786.00	DALE	IM2	
L408	LD 10 UH 10% 3R3 144 MA CHOKE	LD 0026.4184.00	DALE	IM2	
L500	LD 56,0UH10%5,700HMO,100A CHOKE	LD 0067.3076.00	DALE	IM2	
L502	LD 56,0UH10%5,700HMO,100A CHOKE	LD 0067.3076.00	DALE	IM2	
L504	LD 22,0UH10%3,300HMO,114A CHOKE	LD 0067.3024.00	DALE	IM2	
L506	LD 530NH 9,5W CM19P FE-K COIL	0817.0058.00	TOKO	E526 HN-100109	
L507	LD 530NH 9,5W CM19P FE-K COIL	0817.0058.00	TOKO	E526 HN-100109	
L508	LD 56,0UH10%5,700HMO,100A CHOKE	LD 0067.3076.00	DALE	IM2	
L514	LD 2,70UH10%0,550HMO,355A CHOKE	LD 0067.2911.00	DALE	IM2	
L516	LD 1,50UH10%0,220HMO,560A CHOKE	LD 0067.2886.00	DALE	IM2	
L600	LD 10UH 10% 0,18A 1210 SMD-INDUCTOR	LD 0007.9255.00	SIEMENS	B82422-A1103-J(K)100	
L602	LD 560NH 5% 0R5 0,495A CHOKE	0300.9752.00	DALE	IM 2	
L603	LD 560NH 5% 0R5 0,495A CHOKE	0300.9752.00	DALE	IM 2	
L700	LD 100UH 10% 0,06A 1210 SMD-INDUCTOR	LD 0007.9261.00	SIEMENS	B82422-A1104-J(K)100	

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
L701	LD 100UH 10% 0,06A 1210 SMD-INDUCTOR	LD 0007.9261.00	SIEMENS	B82422-A1104-J(K)100	
L705	LD 56,0UH10%5,700HM0,100A CHOKE	LD 0067.3076.00	DALE	IM2	
N100	BO LM2940CT LOWDROP+VREGL VOLTAGE REGULATOR	BO 0350.5809.00	NSC	LM2940CT-5.0	
N110	BO UA7905UC -5V1AO VREGL VOLTAGE REGULATOR	BO 0282.5449.00	NSC	LM7905 CT	
N120	BO LM2903D 2XLP COMPAR DUAL	0520.7734.00	SIGNETICS	LM2903(D)	
N130	BO LM2903D 2XLP COMPAR DUAL	0520.7734.00	SIGNETICS	LM2903(D)	
N400	BM MAR8 MMIC BROADBAND AMPLIFIER	0656.4720.00	MINI-CIRCU	MAR8	
N600	BO MC1458D 2X OPAMP OPERATION AMPLIFIER	0007.3763.00	SIGNETICS	MC1458(D)	
N700	BO NE5534D OPAMP OPERATIONAL AMPLIFIER	0815.7555.00	SIGNETICS	NE5534(D)	
N702	BO AD829JR 1XLOLN OPAMP IC OPAMP	1036.4254.00	ANALOG_DEV	AD829JR	
P1	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P2	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P3	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P4	VL EINPRESSSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5	
P5	VL EINPRESSSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5	
P6	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P7	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P8	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P9	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P10	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P11	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P12	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P13	VL EINPRESSSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5	
P14	VL EINPRESSSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5	
P15	VL EINPRESSSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5	
P16	VL EINPRESSSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5	
P17	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P18	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P20	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P21	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P22	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P23	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P24	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P27	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P28	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P29	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P30	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P32	VL EINPRESSSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5	

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
P33	VL EINPRESSSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5	
P34	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P35	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P39	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P40	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P41	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P42	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P43	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P44	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
R48	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R49	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R50	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R51	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R52 ..61	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R64	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R65	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R66	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R67	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R68	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R69	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R70	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R71	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R72	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R73	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R74	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R75	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R93	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R94	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R96	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R101	RG 909 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.7265.00	ROEDERSTEI	D25	
R102	RG 909 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.7265.00	ROEDERSTEI	D25	
R103	RG 909 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.7265.00	ROEDERSTEI	D25	
R104	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R106	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R108	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R110	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R112	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R114	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
R117	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RCO2	
R118	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RCO2	
R119	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RCO2	
R121	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RCO2	
R124	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RCO2	
R128	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RCO2	
R129	RG 47,5KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5950.00	ROEDERSTEI	D25	
R130	RG 2,7MOHM+-5%TK200 1206 CHIP RESISTOR	0007.9984.00	ROEDERSTEI	D 25	
R131	RG 27,4KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5895.00	ROEDERSTEI	D25	
R132	RG 27,4KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5895.00	ROEDERSTEI	D25	
R133	RG 27,4KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5895.00	ROEDERSTEI	D25	
R134	RG 27,4KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5895.00	ROEDERSTEI	D25	
R135	RG 27,4KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5895.00	ROEDERSTEI	D25	
R136	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RCO2	
R137	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R140	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RCO2	
R142	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RCO2	
R143	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R144	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R145	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R146	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R148	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R149	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RCO2	
R150	RG 27,4KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5895.00	ROEDERSTEI	D25	
R151	RG 12,1KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.0841.00	PHILIPS_CO	RCO2	
R152	RG 100,0KOH+-1%TK100 1206 CHIP RESISTOR	RG 0007.1948.00	ROEDERSTEI	D25	
R153	RG 130,0KOH+-1%TK100 1206 RESISTOR CHIP	RG 0007.5966.00	ROEDERSTEI	D25	
R154	RG 0-OHM WIDERSTAND-CHIP RESISTOR CHIP 0-OHM	RG 0007.5108.00	DRALORIC	CR 1206	
R155	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RCO2	
R156	RG 100,0KOH+-1%TK100 1206 CHIP RESISTOR	RG 0007.1948.00	ROEDERSTEI	D25	
R157	RG 33,2KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5914.00	ROEDERSTEI	D25	
R158	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RCO2	
R159	RG 90,9KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.1931.00	ROEDERSTEI	D25	
R160	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RCO2	
R161	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RCO2	
R162	RG 33,2KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5914.00	ROEDERSTEI	D25	
R163	RG 100,0KOH+-1%TK100 1206 CHIP RESISTOR	RG 0007.1948.00	ROEDERSTEI	D25	
R164	RG 33,2KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5914.00	ROEDERSTEI	D25	
R165	RG 562 KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.6091.00	ROEDERSTEI	D25	

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
R166	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	
R167	RG 2,21KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5743.00	ROEDERSTEI	D25	
R168	RG 2,21KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5743.00	ROEDERSTEI	D25	
R169	RG 33,2KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5914.00	ROEDERSTEI	D25	
R170	RG 562 KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.6091.00	ROEDERSTEI	D25	
R171	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	
R172	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	
R174	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R175	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R176	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R177	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R178	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R179	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R180	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R181	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R182	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R183	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R184	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R185	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R186	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R187	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R188	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R189	RG 2,7MOHM+-5%TK200 1206 CHIP RESISTOR	0007.9984.00	ROEDERSTEI	D 25	
R190	RG 2,7MOHM+-5%TK200 1206 CHIP RESISTOR	0007.9984.00	ROEDERSTEI	D 25	
R191	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R192	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R193	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R194	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R195	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R196	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	
R197	RG 100,0KOH+-1%TK100 1206 CHIP RESISTOR	RG 0007.1948.00	ROEDERSTEI	D25	
R198	RG 33,2KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5914.00	ROEDERSTEI	D25	
R200	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R201	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R202	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R203	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R204	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R205	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R206	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
R207	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R210	RG 68,1 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8849.00	ROEDERSTEI	D25	
R211	RG 562 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9068.00	PHILIPS_CO	RC02	
R212	RG 22,1KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5872.00	ROEDERSTEI	D25	
R215	RG 15,OKOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5843.00	ROEDERSTEI	D25	
R216	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R218	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R220	RG 56,2 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8826.00	ROEDERSTEI	D25	
R222	RG 68,1 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8849.00	ROEDERSTEI	D25	
R224	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R226	RG 6,81KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.0758.00	ROEDERSTEI	D25	
R228	RG 221 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5614.00	ROEDERSTEI	D25	
R240	RG 562 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9068.00	PHILIPS_CO	RC02	
R241	RG 562 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9068.00	PHILIPS_CO	RC02	
R242	RG 562 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9068.00	PHILIPS_CO	RC02	
R243	RG 562 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9068.00	PHILIPS_CO	RC02	
R244	RG 562 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9068.00	PHILIPS_CO	RC02	
R245	RG 562 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9068.00	PHILIPS_CO	RC02	
R246	RG 562 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9068.00	PHILIPS_CO	RC02	
R247	RG 562 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9068.00	PHILIPS_CO	RC02	
R248	RG 562 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9068.00	PHILIPS_CO	RC02	
R249	RG 562 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9068.00	PHILIPS_CO	RC02	
R250	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R252	RN 9X330 OHM+-2%SIL10 H5 RESISTOR NETWORK	0379.8306.00	BI_TECHNOL	L 10 1 S 331 M*	
R253	RG 332 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5650.00	PHILIPS_CO	RC02	
R256	RN 9X330 OHM+-2%SIL10 H5 RESISTOR NETWORK	0379.8306.00	BI_TECHNOL	L 10 1 S 331 M*	
R257	RG 332 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5650.00	PHILIPS_CO	RC02	
R260	RG O-OHM WIDERSTAND-CHIP RESISTOR CHIP O-OHM	RG 0007.5108.00	DRALORIC	CR 1206	
R261	RG 121 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8903.00	ROEDERSTEI	D25	
R262	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R263	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R264	RG 68,1 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8849.00	ROEDERSTEI	D25	
R265	RG 6,81KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.0758.00	ROEDERSTEI	D25	
R266	RG 221 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5614.00	ROEDERSTEI	D25	
R267	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R268	RG 47,5KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5950.00	ROEDERSTEI	D25	
R269	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R270	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R271	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
R272	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R273	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R274	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R277	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R300	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R302	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R304	RG 2,74KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5766.00	PHILIPS_CO	RC02	
R306	RG 2,74KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5766.00	PHILIPS_CO	RC02	
R310	RG 8,25KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.0770.00	ROEDERSTEI	D25	
R312	RG 1,21KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9968.00	ROEDERSTEI	D25	
R314	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R400	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R401	RG 56,2 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8826.00	ROEDERSTEI	D25	
R402	RG 56,2 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8826.00	ROEDERSTEI	D25	
R403	RG 18,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5466.00	ROEDERSTEI	D25	
R404	RG 1,1KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9951.00	ROEDERSTEI	D25	
R405	RG 27,4 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5508.00	ROEDERSTEI	D25	
R406	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R407	RG 68,1 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8849.00	ROEDERSTEI	D25	
R408	RG 68,1 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8849.00	ROEDERSTEI	D25	
R409	RG 68,1 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8849.00	ROEDERSTEI	D25	
R420	RG 100,0KOH+-1%TK100 1206 CHIP RESISTOR	RG 0007.1948.00	ROEDERSTEI	D25	
R424	RG 27,4KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5895.00	ROEDERSTEI	D25	
R433	RS 0,5W5OKOHM+-10%10X10X5 CERMET POTENTIOMETER T	RS 0087.7677.00	SPECTROL	63X ... TO10	
R502	RG 681 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9080.00	ROEDERSTEI	D25	
R503	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R504	RG 274 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5637.00	ROEDERSTEI	D25	
R505	RG 18,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5466.00	ROEDERSTEI	D25	
R506	RG 274 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5637.00	ROEDERSTEI	D25	
R510	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R512	RG 1,5 KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5714.00	ROEDERSTEI	D25	
R514	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	
R516	RG 3,32KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5789.00	ROEDERSTEI	D25	
R518	RG 82,5 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8861.00	PHILIPS_CO	RC02	
R519	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R520	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	
R521	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	
R600	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R601	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
R602	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	
R603	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	
R604	RG 68,1KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.1902.00	ROEDERSTEI	D25	
R605	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R606	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R607	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R610	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R611	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R612	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R614	RG 47,5KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5950.00	ROEDERSTEI	D25	
R618	RG 18,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5466.00	ROEDERSTEI	D25	
R619	RG 18,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5466.00	ROEDERSTEI	D25	
R620	RG 18,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5466.00	ROEDERSTEI	D25	
R630	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R631	RG 68,1 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8849.00	ROEDERSTEI	D25	
R632	RG 3,32KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5789.00	ROEDERSTEI	D25	
R633	RG 221 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5614.00	ROEDERSTEI	D25	
R634	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R635	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R636	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R637	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R640	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R641	RG 68,1 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8849.00	ROEDERSTEI	D25	
R642	RG 3,32KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5789.00	ROEDERSTEI	D25	
R643	RG 221 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5614.00	ROEDERSTEI	D25	
R646	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R647	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R650	RG 150 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5589.00	ROEDERSTEI	D25	
R652	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R653	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R702	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R704	RG 392 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5672.00	ROEDERSTEI	D25	
R705	RG 332 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5650.00	PHILIPS_CO	RC02	
R706	RG 24,3KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5889.00	ROEDERSTEI	D25	
R707	RG 332 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5650.00	PHILIPS_CO	RC02	
R708	RG 0-OHM WIDERSTAND-CHIP RESISTOR CHIP 0-OHM	RG 0007.5108.00	DRALORIC	CR 1206	
R709	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R710	RG 332 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5650.00	PHILIPS_CO	RC02	
R712	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
R713	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	
R715	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R716	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R717	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
T200	LU HF-UEBERTR. 0,2-350MHZ WIDE-BAND TRANSFORMER	0276.3619.00	MINI-CIRCU	T 4-1 W38	
V100	AD BAV99 70V DUO UDI DIODE	AD 0911.0092.00	VALVO	BAV99	
V102	AD BAV99 70V DUO UDI DIODE	AD 0911.0092.00	VALVO	BAV99	
V104	AD BAV99 70V DUO UDI DIODE	AD 0911.0092.00	VALVO	BAV99	
V150	AM BSS123 N-E 100V MOSF FET	0815.7961.00	SIEMENS	BSS 123 E-6327	
V152	AD BAV99 70V DUO UDI DIODE	AD 0911.0092.00	VALVO	BAV99	
V153	AD BAV99 70V DUO UDI DIODE	AD 0911.0092.00	VALVO	BAV99	
V154	AD BAV99 70V DUO UDI DIODE	AD 0911.0092.00	VALVO	BAV99	
V200	AE BB620 45/03PF CDI TUNING DIODE	0848.5251.00	SIEMENS	BB620	
V202	AE BB620 45/03PF CDI TUNING DIODE	0848.5251.00	SIEMENS	BB620	
V204	AE BB620 45/03PF CDI TUNING DIODE	0848.5251.00	SIEMENS	BB620	
V206	AE BB620 45/03PF CDI TUNING DIODE	0848.5251.00	SIEMENS	BB620	
V210	AK BFS17 N 30V 50MA TRANSISTOR	AK 0010.6460.00	VALVO	BFS17	
V220	AK BFS17 N 30V 50MA TRANSISTOR	AK 0010.6460.00	VALVO	BFS17	
V222	AE HSMS2800 SCHOTTKY DIODE	AE 0836.8421.00	HEWLETT_PA	HSMS-2800(#L31)	
V500	AE BB130PAAR 300/22PF CDI TUNING DIODE (PAIR)	0372.2231.00	PHILIPS	BB130/PAAR	
V501	AE BB130PAAR 300/22PF CDI TUNING DIODE (PAIR)	0372.2231.00	PHILIPS	BB130/PAAR	
V502	AE BB130PAAR 300/22PF CDI TUNING DIODE (PAIR)	0372.2231.00	PHILIPS	BB130/PAAR	
V503	AE BB130PAAR 300/22PF CDI TUNING DIODE (PAIR)	0372.2231.00	PHILIPS	BB130/PAAR	
V504	AE BB130PAAR 300/22PF CDI TUNING DIODE (PAIR)	0372.2231.00	PHILIPS	BB130/PAAR	
V505	AE BB130PAAR 300/22PF CDI TUNING DIODE (PAIR)	0372.2231.00	PHILIPS	BB130/PAAR	
V507	AE BB212 2X500/22PF CDI TUNNING DIODE	0373.6901.00	PHILIPS_SE	BB212	
V510	AK BFQ81 N 16V 30MA TRANSISTOR	0920.1717.00	SIEMENS	BFQ81	
V512	AK BFQ81 N 16V 30MA TRANSISTOR	0920.1717.00	SIEMENS	BFQ81	
V514	AK BFQ81 N 16V 30MA TRANSISTOR	0920.1717.00	SIEMENS	BFQ81	
V516	AK BCX71J P 45V 200MA TRANSISTOR	AK 0007.2096.00	VALVO	BCX71J GEGURTET	
V518	AK BCX71J P 45V 200MA TRANSISTOR	AK 0007.2096.00	VALVO	BCX71J GEGURTET	
V600	AE BAR14-1 2X 100V PIN PIN DIODE	0820.3283.00	SIEMENS	BAR14-1	
V601	AE BAR14-1 2X 100V PIN PIN DIODE	0820.3283.00	SIEMENS	BAR14-1	
V603	AE BAR14-1 2X 100V PIN PIN DIODE	0820.3283.00	SIEMENS	BAR14-1	
V605	AE HSMS2800 SCHOTTKY DIODE	AE 0836.8421.00	HEWLETT_PA	HSMS-2800(#L31)	
V610	AK BFS17 N 30V 50MA TRANSISTOR	AK 0010.6460.00	VALVO	BFS17	
V612	AK BFS17 N 30V 50MA TRANSISTOR	AK 0010.6460.00	VALVO	BFS17	
V614	AD BAS16 75V UDI DIODE	AD 0007.4924.00	VALVO	BAS16 (A6P)	

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
V615	AD BAS16 75V UDI DIODE	AD 0007.4924.00	VALVO	BAS16 (A6P)	
V702	AK BC850B N 45V 200MA TRANSISTOR	AK 0007.7969.00	VALVO	BC850B	
V704	AK BC860B P 45V 200MA TRANSISTOR	AK 0007.7975.00	MOTOROLA	BC860B	
V708	AE HSMS2800 SCHOTTKY DIODE	AE 0836.8421.00	HEWLETT_PA	HSMS-2800(#L31)	
X1	FP STIFTLEISTE 20P.2REIH. CONNECTOR 20P.	FP 0520.6521.00	BINDER	11-0209-00-20	
X2	FP STIFTLEISTE 20P.2REIH. CONNECTOR 20P.	FP 0520.6521.00	BINDER	11-0209-00-20	
X3	FP STIFTLEISTE 20P.2REIH. CONNECTOR 20P.	FP 0520.6521.00	BINDER	11-0209-00-20	
X36	VL EINPRESSSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5	
X37	VL EINPRESSSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5	
X38	VL EINPRESSSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5	
X80	FP STECKERLEISTE 32POL. CONNECTOR 32P.	FP 0008.5718.00	DEUT_ELCO	16 8457 064 002 027	
X81	FJ EINBAUSTECKER F.GS SMB ANGLE CONNECTOR	FJ 0602.8804.00	IMS	81.1524.201	
X89	FJ EINBAUSTECKER F.GS SMB ANGLE CONNECTOR	FJ 0602.8804.00	IMS	81.1524.201	
Z52	LD SMD-T-FILTER 100PF SMD-FILTER	1039.1356.00	MURATA	NFM61R00T101T1	
Z54	LD SMD-T-FILTER 100PF SMD-FILTER	1039.1356.00	MURATA	NFM61R00T101T1	
Z56	LD SMD-T-FILTER 100PF SMD-FILTER	1039.1356.00	MURATA	NFM61R00T101T1	
Z58	LD SMD-T-FILTER 100PF SMD-FILTER	1039.1356.00	MURATA	NFM61R00T101T1	
Z60	LD SMD-T-FILTER 100PF SMD-FILTER	1039.1356.00	MURATA	NFM61R00T101T1	
Z64	LD SMD-T-FILTER 100PF SMD-FILTER	1039.1356.00	MURATA	NFM61R00T101T1	
Z66	LD SMD-T-FILTER 100PF SMD-FILTER	1039.1356.00	MURATA	NFM61R00T101T1	
Z68	LD SMD-T-FILTER 100PF SMD-FILTER	1039.1356.00	MURATA	NFM61R00T101T1	
Z70	LD SMD-T-FILTER 100PF SMD-FILTER	1039.1356.00	MURATA	NFM61R00T101T1	
Z72	LD SMD-T-FILTER 100PF SMD-FILTER	1039.1356.00	MURATA	NFM61R00T101T1	
Z74	LD SMD-T-FILTER 100PF SMD-FILTER	1039.1356.00	MURATA	NFM61R00T101T1	
Z76	LD SMD-T-FILTER 3,3NF SMD-FILTER	1039.1362.00	MURATA	NFM61R20T332T1	
Z78	LD SMD-T-FILTER 3,3NF SMD-FILTER	1039.1362.00	MURATA	NFM61R20T332T1	
Z80	LD SMD-T-FILTER 3,3NF SMD-FILTER	1039.1362.00	MURATA	NFM61R20T332T1	
Z82	LD SMD-T-FILTER 3,3NF SMD-FILTER	1039.1362.00	MURATA	NFM61R20T332T1	

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ROHDE&SCHWARZ

XY-Liste

XY List

Erklärung der Spaltenbezeichnungen:

Part: Bauelement-Kennzeichen.

Side: Leiterplatten-Seite, auf der sich das Bauelement befindet.

X/Y: Koordinaten (Millimeter) des Bauelementes auf der Leiterplatte bezogen auf den Nullpunkt.

SQR, PG: Planquadrat und Seite des Schaltbildes für das jeweilige Bauelement.

Explanation of column designations:

Part: Identification of instrument part.

Side: Side of the PC board on which instrument part is positioned.

X/Y: Coordinates (millimeter) of the component on the PC board in reference to zero point.

SQR, PG: Square and page of the diagram for the respective instrument part.

Service-Relevante Bauteile / Service-Relevant Components

Part	Side	X	Y	Sqr	Pg
L506	B	240	63	10C	4
L507	B	226	45	10C	4
P1	B	134	72	5D	2
P2	B	121	72	5D	2
P3	B	196	137	5E	3
P4	B	258	94	5B	3
P5	B	231	109	4B	3
P6	B	278	21	3C	4
P7	B	205	76	8C	4
P8	B	112	65	12E	2
P9	B	94	65	12E	2
P10	B	293	58	8D	3
P11	B	250	60	11C	4
P12	B	264	63	11C	4
P13	B	255	94	5B	3
P14	B	261	94	5B	3
P15	B	231	106	4B	3
P16	B	252	94	5B	3
P17	B	90	72	7C	2
P18	B	76	72	7B	2
P20	B	69	44	4E	5
P21	B	46	44	4D	5
P22	B	107	117	6B	2
P23	B	88	107	6B	2
P24	B	137	101	6D	2
P27	B	88	99	7B	2
P28	B	148	120	9E	2
P29	B	116	119	10E	2
P30	B	109	128	10C	2
P32	B	215	138	5D	3
P33	B	217	138	5D	3
P34	B	274	116	6C	3
P35	B	177	67	6E	4
P39	B	273	48	10E	4
R214	B	227	139	3B	3
R433	B	291	139	9E	4
X1	B	164	136	3F	3
X2	B	164	104	6F	2
X3	B	164	71	4F	2
X36	B	200	70	7D	4
X37	B	200	73	8D	4
X38	B	200	76	8D	4
X80A	B	189	11	1D	2
X80D	B	189	11		
X81	B	17	15	4F	3
X89	B	296	15	5B	4

Nicht-Service-Relevante Bauteile / Non-Service-Relevant Components

Part	Side	X	Y	Sqr	Pg
1	B	283	122	6D	3
C50	B	139	18	2D	5
C77	B	177	30	2C	5
C79	B	182	30	2B	5
C81	B	106	18	2E	5
C83	B	106	26	2D	5
C100	B	69	36	4E	5
C102	A	113	49	3C	2
C110	B	57	36	4D	5
C111	A	81	86	5E	5
C112	A	124	78	5E	5
C114	B	102	114	6E	5
C115	B	102	100	7E	5
C116	B	146	126	8E	5
C117	B	142	133	8E	5
C118	B	145	111	5D	5
C119	B	124	111	5D	5
C120	B	150	97	7E	5
C129	A	96	119	5C	2
C130	A	95	107	5B	2
C131	A	156	123	5B	2
C132	A	151	123	5B	2
C133	A	151	133	5A	2
C134	A	140	124	5A	2
C135	A	140	130	5A	2
C150	B	110	53	7E	5
C162	A	114	121	9E	2
C168	A	103	62	10E	2
C180	B	103	128	6D	5
C182	B	105	69	7D	5
C186	B	124	126	6D	5
C200	B	217	133	3E	3
C202	A	197	127	3D	3
C203	A	187	120	3E	3
C204	A	197	114	2D	3
C205	A	200	120	3D	3
C210	B	182	98	3D	3
C212	A	215	98	2B	3
C214	A	227	133	2C	3
C216	B	222	89	2A	3
C218	B	231	88	3A	3
C219	B	226	98	4A	3
C220	A	221	102	3B	3
C222	A	237	106	4B	3
C230	B	185	137	4D	3
C231	A	200	132	5E	3
C232	A	194	133	5E	3
C233	A	189	126	6D	3
C300	A	270	130	6C	3
C302	A	265	122	6C	3
C304	A	265	108	6C	3
C306	B	275	125	6C	3
C308	B	275	112	6C	3
C310	A	272	103	6B	3
C312	A	261	103	5B	3
C401	B	290	116	7C	3
C402	B	299	117	7C	3
C403	B	297	111	7C	3
C404	B	299	99	7C	3
C405	B	296	104	8C	3
C406	B	297	99	8C	3
C407	B	290	96	8C	3
C408	B	295	89	8C	3
C409	A	290	81	7D	3
C410	B	293	86	7D	3
C411	B	293	70	7D	3
C412	A	295	53	7E	3
C414	A	290	48	7E	3
C420	A	290	125	9E	4
C500	B	232	68	8B	4
C502	B	240	68	10C	4
C505	B	240	74	8C	4
C506	B	250	68	10C	4
C508	B	252	63	10C	4
C510	B	263	70	11D	4
C512	B	275	70	10D	4
C514	A	257	74	11D	4
C516	B	269	51	11E	4
C518	B	255	57	10C	4
C519	A	244	48	11B	4
C600	A	224	24	5B	5
C602	A	266	24	6B	5
C604	A	250	28	6B	5
C620	A	244	32	2C	4
C621	A	252	36	2B	4
C622	A	281	22	3B	4
C623	B	278	30	4C	4
C624	B	280	37	3B	4
C625	B	295	33	4B	4
C626	B	289	30	4B	4
C627	B	295	30	4B	4
C628	B	292	25	4B	4
C629	B	287	15	5B	4

ROHDE & SCHWARZ	-I	Datum Date	XY-Liste f"r XY-list for	Sach-Nummer Stock-Nr	Blatt Page
	04	22.11.94	EE DIGITALE_SYNTHESE DIGITAL_SYNTHESIS	1038.7344.01 XY	1+

Part	Side	X	Y	Sqr	Pg
C630	B	281	15	5B	4
C631	A	267	17	5B	4
C640	B	250	30	2D	4
C641	B	241	36	3E	4
C642	B	217	34	4D	4
C646	B	250	18	2E	4
C647	B	241	12	3F	4
C648	B	217	11	4E	4
C662	A	296	28	4B	4
C663	A	290	22	4B	4
C700	B	185	49	5C	5
C701	B	191	49	5C	5
C702	B	192	69	7E	4
C703	B	192	62	7E	4
C705	A	192	73	7E	4
C706	B	205	72	7C	4
C708	B	185	60	6E	4
C710	A	188	60	6C	4
C712	B	195	54	6C	4
D20A	B	196	131	3E	3
D50-A	A	137	17	2C	2
D50-B				2C	2
D50-C				2B	2
D50-D				2B	2
D50-E				2D	5
D110-A	B	128	77	5D	2
D110-B				5E	5
D112-A	B	83	77	7C	2
D112-B				6E	5
D120-A	A	98	112	4B	2
D120-B				5B	2
D120-C				5B	2
D120-D				4A	2
D120-E				7E	5
D125-A	A	98	98	4B	2
D125-B				5B	2
D125-C				5B	2
D125-D				3B	2
D125-E				7E	5
D130-A	A	142	124	4B	2
D130-B				8E	5
D135-A	A	147	95	7E	2
D135-B				11D	2
D135-C				11D	2
D135-D				11C	2
D135-E				8E	5
D150-A	A	142	109	7E	2
D150-B				5E	5
D155-A	A	121	109	7D	2
D155-B				6E	5
D175-A	A	121	124	9E	2
D175-B				11C	2
D175-C				6E	5
D300	B	257	125	5C	3
D600-A	B	226	27	4D	4
D600-B				4E	4
D600-C				5B	5
D700-A	A	178	69	6E	4
D700-B				6E	4
D700-C				7E	4
D700-D				7E	4
L76	B	182	18	2C	5
L78	B	182	23	2B	5
L80	B	111	18	2E	5
L82	B	111	23	2D	5
L110	A	109	78	5F	5
L135	A	141	94	7F	5
L150	A	119	55	6E	5
L200	B	182	96	3D	3
L201	A	217	128	3D	3
L202	B	195	91	2C	3
L204	B	200	96	2C	3
L206	B	215	91	2B	3
L208	B	218	96	2B	3
L210	B	215	96	2B	3
L212	A	221	105	3B	3
L214	A	237	103	4B	3
L216	A	203	128	5E	3
L300	A	277	119	6C	3
L302	A	275	103	6B	3
L304	A	268	100	6B	3
L306	A	264	100	5B	3
L403	B	299	104	7C	3
L405	B	289	102	8C	3
L406	B	293	89	8C	3
L408	B	298	72	7D	3
L500	B	217	71	8B	4
L502	B	214	72	8C	4
L504	B	233	77	8C	4
L508	B	247	51	11C	4
L514	B	269	60	11E	4
L516	B	279	57	11E	4
L600	A	230	30	5B	5
L602	B	289	28	4B	4
L603	B	290	15	5B	4
L700	A	189	46	5C	5
L701	A	193	52	5C	5
L705	B	203	76	8C	4
N100	B	74	31	3E	5
N110	B	51	31	3D	5
N120-A	A	98	126	9C	2
N120-B				9C	2
N120-C				7E	5
N130-A	A	100	67	11E	2
N130-B				11E	2
N130-C				7E	5
N400	B	293	78	7D	3
N600-A	A	257	24	2C	4
N600-B				6B	4
N600-C				6B	5
N700-A	A	179	58	5E	4
N700-B				5C	5
N702-A	A	182	51	6D	4
N702-B				6C	5
P40	B	140	29	2F	2
P41	B	135	29	2E	2
P42	B	150	29	2E	2
P43	B	156	29	2D	2
P44	B	145	29	2D	2
R48	A	121	18	2D	5
R49	A	134	21	2C	2
R50	A	146	22	2B	2
R51	A	149	19	2B	2
R52	B	143	29	3F	2
R53	B	141	45	3F	2
R54	A	138	29	3E	2
R55	A	136	45	3E	2
R56	A	153	29	3E	2
R57	A	151	45	3E	2
R58	A	158	29	3D	2
R59	A	156	45	3D	2
R60	A	148	29	3D	2
R61	A	146	45	3D	2
R64	A	112	29	3C	2
R65	A	110	45	3C	2
R66	A	123	29	3C	2
R67	A	121	45	3C	2
R68	A	128	29	3B	2
R69	A	126	45	3B	2
R70	A	133	29	3B	2
R71	A	131	45	3B	2
R72	A	117	29	3B	2
R73	A	116	45	3B	2
R74	A	107	29	3A	2
R75	A	105	45	3A	2
R92	B	100	78	6B	2
R93	B	100	81	6B	2
R94	B	100	83	6B	2
R95	B	100	86	6B	2
R96	B	100	88	6B	2
R97	B	100	91	6B	2
R98	B	100	93	6B	2
R101	A	154	55	4E	2
R102	A	159	55	4E	2
R103	A	149	55	4E	2
R104	A	151	55	5E	2
R106	A	156	55	5E	2
R108	A	146	55	5E	2
R110	B	145	75	5D	2
R111	B	145	77	5D	2
R112	B	145	80	5D	2
R113	B	145	83	5D	2
R114	B	145	90	5D	2
R115	B	145	93	5D	2
R116	B	145	95	5D	2

ROHDE & SCHWARZ	-I	Datum Date	XY-Liste für XY-list for	Sach-Nummer Stock-Nr	Blatt Page
	04	22.11.94	EE DIGITALE_SYNTHESE DIGITAL_SYNTHESIS	1038.7344.01 XY	2+

Part	Side	X	Y	Sqr	Pg
R117	A	124	76	5D	2
R118	A	112	76	5C	2
R119	A	115	79	5C	2
R120	B	131	101	6D	2
R121	A	135	99	6D	2
R122	A	132	99	6D	2
R123	A	130	99	6D	2
R124	A	127	99	6D	2
R125	A	124	99	6D	2
R126	A	122	99	6C	2
R127	A	119	99	6C	2
R128	A	104	109	4C	2
R129	A	95	117	5B	2
R130	A	95	104	5B	2
R131	A	159	123	6B	2
R132	A	154	123	6B	2
R133	A	151	131	6A	2
R134	A	136	121	6A	2
R135	A	140	133	6A	2
R136	A	92	97	4C	2
R137	A	149	93	7E	2
R140	A	155	111	6E	2
R142	A	134	111	6D	2
R143	A	140	99	6C	2
R144	A	117	99	6C	2
R145	A	114	99	6C	2
R146	B	141	85	6C	2
R148	B	141	88	6C	2
R149	A	142	103	6C	2
R150	A	116	133	9C	2
R151	A	118	136	9C	2
R152	A	96	126	9C	2
R153	A	100	132	9C	2
R154	A	103	135	9C	2
R155	A	134	109	5E	5
R156	A	167	76	3B	5
R157	A	156	74	3B	5
R158	A	92	122	10D	2
R159	A	74	34	3E	5
R160	A	114	126	9E	2
R161	A	114	129	9E	2
R162	A	114	124	9E	2
R163	A	80	34	3E	5
R164	A	95	71	10E	2
R165	A	98	71	11E	2
R166	A	98	61	11E	2
R167	A	105	59	10E	2
R168	A	100	62	11E	2
R169	A	102	65	11E	2
R170	A	109	71	11E	2
R171	A	109	61	11E	2
R172	A	93	67	10D	2
R174	A	108	106	6F	5
R175	A	108	102	7F	5
R176	B	140	121	8E	5

Part	Side	X	Y	Sqr	Pg
R177	A	142	135	8E	5
R178	A	155	109	5E	5
R179	A	84	77	6B	2
R180	A	72	90	6A	2
R181	A	138	107	6D	2
R182	A	118	107	6C	2
R183	A	75	82	7A	2
R184	A	132	135	11C	2
R185	A	130	135	11C	2
R186	A	132	120	11C	2
R187	A	130	120	11B	2
R188	A	156	98	10C	2
R189	A	167	74	3B	5
R190	A	49	34	3D	5
R191	A	97	82	7A	2
R192	A	77	89	7A	2
R193	A	80	98	7A	2
R194	A	97	84	7A	2
R195	A	97	87	7A	2
R196	A	100	79	8A	2
R197	A	49	37	3D	5
R198	A	55	34	3C	5
R200	A	187	115	2E	3
R201	A	189	115	2E	3
R202	A	192	115	2E	3
R203	A	199	115	2D	3
R204	A	202	115	2D	3
R205	A	204	115	2D	3
R206	A	178	112	2D	3
R207	A	178	115	2D	3
R210	B	154	133	4E	3
R211	B	147	138	4E	3
R212	A	235	139	3B	3
R215	A	228	137	3B	3
R216	A	224	135	3C	3
R218	A	224	128	3C	3
R220	B	222	96	2A	3
R222	B	225	88	3A	3
R224	B	228	86	2A	3
R226	B	228	92	3A	3
R228	B	220	98	3B	3
R240	B	234	134	4C	3
R241	B	234	131	4C	3
R242	B	234	129	4C	3
R243	B	234	126	4C	3
R244	B	234	124	4C	3
R245	B	234	121	4C	3
R246	B	234	119	4C	3
R247	B	234	116	4C	3
R248	B	234	114	4C	3
R249	B	234	111	4C	3
R250	B	237	109	4C	3
R252-A	B	243	111	4C	3
R252-B				4C	3
R252-C				4C	3

Part	Side	X	Y	Sqr	Pg
R252-D				4C	3
R252-E				4C	3
R252-F				4C	3
R252-G				4C	3
R252-H				4C	3
R252-I				4C	3
R253	A	243	105	4C	3
R256-A	B	241	111	4C	3
R256-B				4C	3
R256-C				4C	3
R256-D				4C	3
R256-E				4C	3
R256-F				4C	3
R256-G				4C	3
R256-H				4C	3
R256-I				4C	3
R257	A	241	108	4C	3
R260	B	144	136	4E	3
R261	B	154	136	4E	3
R262	B	150	138	4E	3
R263	B	176	137	4D	3
R264	B	179	137	4D	3
R265	B	190	140	4D	3
R266	B	201	140	5E	3
R267	B	199	136	5E	3
R268	A	191	126	6E	3
R269	A	205	136	5E	3
R270	A	189	98	2E	3
R271	A	192	98	2E	3
R272	A	178	105	2E	3
R273	A	178	107	2E	3
R274	A	178	110	2E	3
R277	A	194	98	2D	3
R300	A	261	105	5C	3
R302	A	261	113	5C	3
R304	A	257	108	5C	3
R306	A	257	110	5C	3
R310	A	275	128	6C	3
R312	A	268	133	6C	3
R314	A	253	97	5B	3
R400	B	288	117	6C	3
R401	B	290	118	7C	3
R402	B	297	117	7C	3
R403	B	290	89	7D	3
R404	A	290	75	7D	3
R405	B	293	64	7D	3
R406	B	295	91	8C	3
R407	A	298	55	7E	3
R408	A	289	53	7E	3
R409	A	289	59	7E	3
R420	A	294	133	9F	4
R424	A	287	137	8E	4
R502	B	260	73	11D	4
R503	A	261	70	11D	4
R504	B	272	51	11E	4

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	04	22.11.94	EE DIGITALE_SYNTHESE DIGITAL_SYNTHESIS	1038.7344.01 XY	3+

Part	Side	X	Y	Sqr	Pg
R505	B	269	48	11E	4
R506	B	272	44	11E	4
R510	B	244	55	11C	4
R512	B	250	51	11C	4
R514	B	255	54	10C	4
R516	B	255	59	10C	4
R518	B	261	63	11C	4
R519	A	257	42	11B	4
R520	B	258	48	10B	4
R521	B	247	45	9B	4
R600	A	247	34	2C	4
R601	A	247	27	2C	4
R602	A	252	42	2C	4
R603	A	252	33	2B	4
R604	A	255	22	3C	4
R605	A	266	22	3B	4
R606	A	281	25	3B	4
R607	B	278	24	3B	4
R610	B	286	37	3B	4
R611	B	293	33	3B	4
R612	B	286	30	4B	4
R614	A	274	17	5B	4
R618	B	272	30	4C	4
R619	B	268	33	4C	4
R620	B	265	30	4C	4
R630	B	250	33	2D	4
R631	B	244	30	2D	4
R632	B	237	30	3D	4
R633	B	238	36	3E	4
R634	A	225	34	3F	4
R635	A	222	34	4F	4
R636	B	220	31	4D	4
R637	B	220	37	5D	4
R640	B	250	16	2E	4
R641	B	244	18	2E	4
R642	B	237	18	3E	4
R643	B	238	12	3F	4
R646	B	217	18	4E	4
R647	B	215	14	5E	4
R650	B	212	24	4E	4
R652	A	261	30	6B	4
R653	A	269	28	6B	4
R702	A	177	64	6E	4
R704	A	179	67	6E	4
R705	A	186	67	6E	4
R706	A	179	64	6E	4
R707	A	186	64	6E	4
R708	A	187	69	7E	4
R709	A	179	54	5D	4
R710	A	203	73	8D	4
R712	A	196	75	7E	4
R713	A	190	77	8E	4
R715	A	197	56	7D	4
R716	A	194	60	6D	4
R717	A	199	56	6D	4
T200	B	235	92	4B	3
V100	A	154	51	4E	2
V102	A	159	51	4E	2
V104	A	149	51	4E	2
V150	A	103	122	9C	2
V152	A	103	73	10E	2
V153	A	105	75	10E	2
V154	A	125	120	9E	2
V200	B	185	88	2C	3
V202	B	195	88	2C	3
V204	B	205	88	2B	3
V206	B	215	88	2B	3
V210	B	228	96	3A	3
V220	B	191	136	5D	3
V222	A	189	134	6E	3
V500	B	217	68	8B	4
V501	B	218	55	7B	4
V502	B	222	68	8B	4
V503	B	224	55	7B	4
V504	B	227	68	8B	4
V505	B	229	55	7B	4
V507	B	236	74	8C	4
V510	B	257	65	10D	4
V512	B	252	65	10C	4
V514	B	257	63	10C	4
V516	B	258	52	10B	4
V518	B	250	47	10B	4
V600	B	289	35	3B	4
V601	B	294	35	3B	4
V603	B	283	32	4B	4
V605	A	276	14	5B	4
V610	B	237	16	3E	4
V612	B	237	34	3D	4
V614	B	216	22	4E	4
V615	B	216	28	4E	4
V702	A	196	64	7D	4
V704	A	200	64	7C	4
V708	B	179	56	6D	4
Z52	B	141	35	3F	2
Z54	B	136	35	3E	2
Z56	B	151	35	3E	2
Z58	B	156	35	3D	2
Z60	B	146	35	3D	2
Z64	B	110	35	3C	2
Z66	B	121	35	3C	2
Z68	B	126	35	3B	2
Z70	B	131	35	3B	2
Z72	B	116	35	3B	2
Z74	B	105	35	3A	2
Z76	B	177	35	3C	5
Z78	B	182	35	3B	5
Z80	B	96	23	3E	5
Z82	B	96	28	3D	5

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Stromläufe
Bestückungspläne
Circuit diagrams
Components plans
Schémas de circuit
Plans des composants

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