ROHDE&SCHWARZ

Measuring Instruments
and Systems Division

Manual

DC Probe URV5-Z1

395.0512.02

RF Probe URV5-Z7

395.2615.02/.03

10-V Insertion Unit URV5-Z2

395.1019.04/.55/.56

100-V Insertion Unit URV5-Z4

395.1619.04/.55/.56/.76

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2 Notes on Operation

DC Probe URV5-Z1, RF Probe URV5-Z7, 10-V Insertion Unit URV5-Z2 as well as 100-V Insertion Unit URV5-Z4 can also be used for Power Meter NRV. The respective pages of the URV5 manual, together with the NRV manual, supply the user of the NRV Power Meter with all the information required for the operating and maintenance of the URV5 measuring heads.

2.3.2 Probes

The probes are inserted into the openings 18 (A or B) together with the plug-in adapters. Correct insertion of the probes is recognized by the URV5 both in manual and in remote control mode, but it is recommended to insert the probes in manual mode only. In remote mode, with correspondingly adjusted interface (Q1 to Q3), the URV5 only sends SRQ (114) to the controller in order to avoid any interruption of the current program.

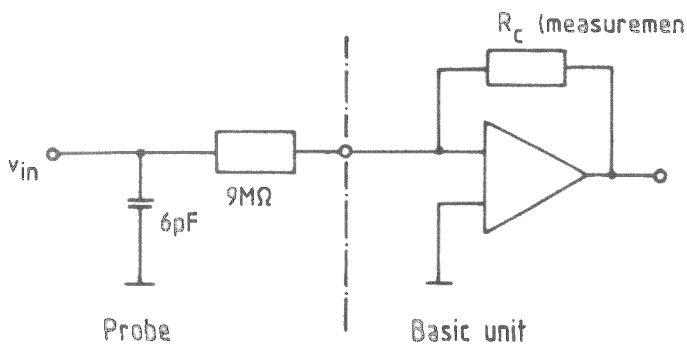
(When removing the probe in the main measurement channel: SRQ (104) and abortion of measurement).

The probe data for evaluation in the instrument are read in **immediately in local mode**, whereas **in remote mode** they are read in only **after the command CØ has been sent** to the URV5 or after switching to local mode.

The type of probe (DC/AC probe, RF probe etc.) and further probe-specific data such as frequency response, calibration and attenuation factors (e.g. for 100-V insertion unit) are thus known to the instrument and will be considered for the operation and evaluation of the corresponding channel. After the data have been read in, the URV5 is immediately ready for measurements.

> **Note:** For complete technical data and specifications please refer to the URV5 data sheet.
>
> The values cited in the manual are intended as guidelines for the user and can under circumstances differ from those of the data sheet.

2.3.2.1 DC Probe



V_{in}: 0 to 400 V

R_{in}: 9 MΩ shunted by 6pF

Fig. 2-3 Equivalent circuit diagram of DC probe

The maximum voltage for the DC probe is 400 V. Care should be taken that the probe is always referred to chassis ground, i.e. not floating. Reference potential is always the chassis ground.

An essential advantage of this DC probe is the low capacitive load (6 pF). Thus DC measurements are also possible on RF circuits.

It should be noted that the precision resistor in the probe is temperature-dependent (9 MΩ, approx. 100 ppm/°C), i.e. the probe temperature (raised e.g. by holding the probe for some time) will affect the measuring accuracy and may cause a slight drift in indication.

For measuring speed see section 2.3.8.

The ZERO-/PEAK and FRQ CORR keys are disabled in case of DC measurement.

2.3.2.2 AC Probes

2.3.2.2.1 General Remarks on RF Measurements and RF Probes

1. Waveform weighting

The URV5 reads out the rms value of sinewave voltages of any magnitude as long as they are within the measurement range of the instrument. With other waveforms, however, the weighting is dependent on the magnitude of the voltage to be measured, since a diode detector has a square-law response only at low voltages up to about 30 mV and therefore measures the true rms value only up to this value independent of the waveform of the test voltage. This range can be expanded to 3 V by means of plug-on voltage dividers, so that the true rms value of an AC voltage can be measured in the range from 200 µV to 3 V.

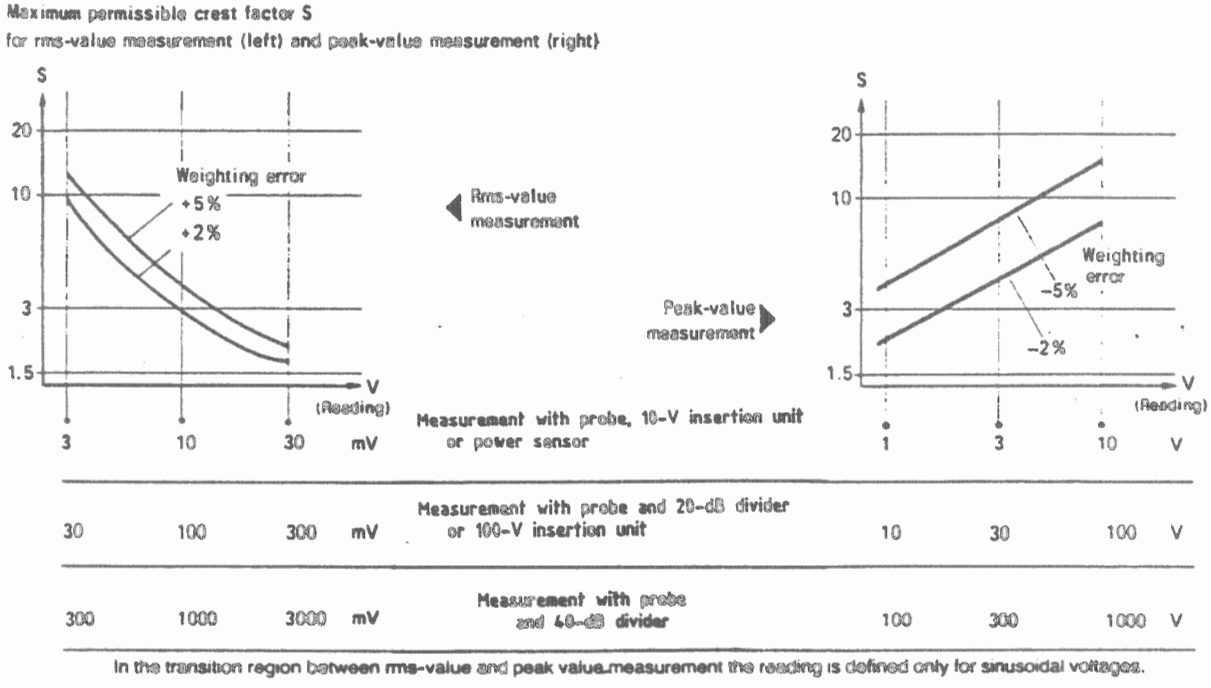


Fig. 2-4 Waveform weighting and maximum crest factor for RF measurements using URV5 probes

In the transition range from rms to peak-responding measurement the measured value is only defined for sinewave voltages.

In Fig. 2-4 the maximum permissible crest factor is shown as a function of the magnitude of the test voltage at which the error of the measured rms value relative to the true rms value does not exceed 2% or 5%.

With test voltages above 1 V (above 10 V using 20-dB divider or 100-V insertion unit, above 100 V using 40-dB divider), the diode detector acts a a peak-responding rectifier. Since a full-wave rectifier is incorporated in the probes, the peak-to-peak value is measured but the value $V_{pp}/2\sqrt{2}$ is indicated. For sinewave voltages this corresponds to readout of the rms value.

Fig. 2-4 shows the maximum permissible crest factor for a weighting error of the peak-responding rectifier of -2% and -5% as a function of the magnitude of the test voltage.

For peak-responding measurement see also section 2.3.6: PEAK (PEP) Measurement.

2. The lower cutoff frequency (3 dB) of the RF probes is temperature-dependent, the value specified for the individual probes being valid in the temperature range +18°C to +28°C. In addition, it can be assumed that as a rule of thumb this cut-off frequency is doubled for every 10 K temperature rise and halved for every 10 K temperature drop.

3. After large changes of the level, the URV5 exhibits a slight delay caused by residual charge effects. This longer settling time must also be taken into account.

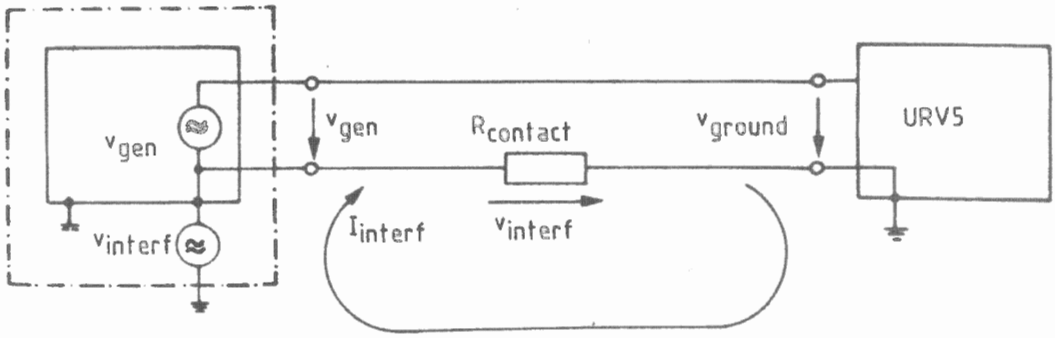
4. **All probes of the URV5 are referred to safety ground.**

5. **Measurements at low voltages**
(see also section 3: Maintenance)

a) The URV5 features broadband RF measurements. If low voltages are to be measured, care must therefore be taken of (RF) interfering signals as may for instance occur with microprocessor-controlled AC calibrators or AF generators. The useful signal may partly be superimposed by a noise spectrum (a few MHz) from the microprocessor clock, which does not cause any interference in the AF range (→ 200 kHz), but invalidates the result of the broadband measurement with the URV5.

Therefore it must be ensured that there is no such interference or that it is considered in the evaluation of the measurement result.

b) In the case of measurements on signal sources that are not referred to safety ground, interfering voltages may be caused by ground equalizing currents, which are added to the test voltage and thus also enter into the test result. This is particularly the case with poor plug-in and screw connections in the test line (Fig. 2-5).



$V_{interf} = R_{contact} \cdot I_{interf}$

$V_{ground} = V_{gen} + V_{interf}$

Fig. 2-5 Interfering voltages caused by ground equalizing currents

2.3.2.2.2 RF Probe

In the frequency range up to about 200 MHz, the probe enables direct measurement on the circuit; care should be taken that the ground connection to the probe is short (e.g. ground sleeve with solder strip). The screw-on ground cable can only be used for measurements up to about 50 MHz, since due to the cable length the measuring error may unduly increase at higher frequencies.

The voltage measurement range with probe is 200 µV to 10 V. The maximum permissible AC voltage at the probe is V_{rms} = 15 V; any higher voltage will cause damage to the rectifier diodes. The voltage measurement range of the probe can be extended to 100 V or 1000 V by using the 20-dB or 40-dB divider recommended as an extra.

In measurements with probe and 40-dB divider, the maximum measurable voltage of V_{rms} = 1000 V must not be applied at frequencies above 100 MHz, since the divider would be damaged due to the dielectric loss of the divider capacitance. Between 100 MHz and 500 MHz the permissible voltage drops inversely with frequency from 1050 V to 210 V.

With the aid of the BNC adapter the probe may also be used for measurements on coaxial systems (frequency range 20 kHz to 500 MHz). Using the matching sleeve supplied with the equipment, the probe can also be inserted into the adapter with plugged-on divider.

When using the 40-dB divider (frequency range 1 to 500 MHz), the maximum measurable voltage is only limited by the permissible voltage (V_p = 500 V) and the power-handling capacity of the BNC connector cable. Table 2-1 shows the power-handling capacity of BNC cables and the voltages calculated from it as a function of frequency.

Table 2-1

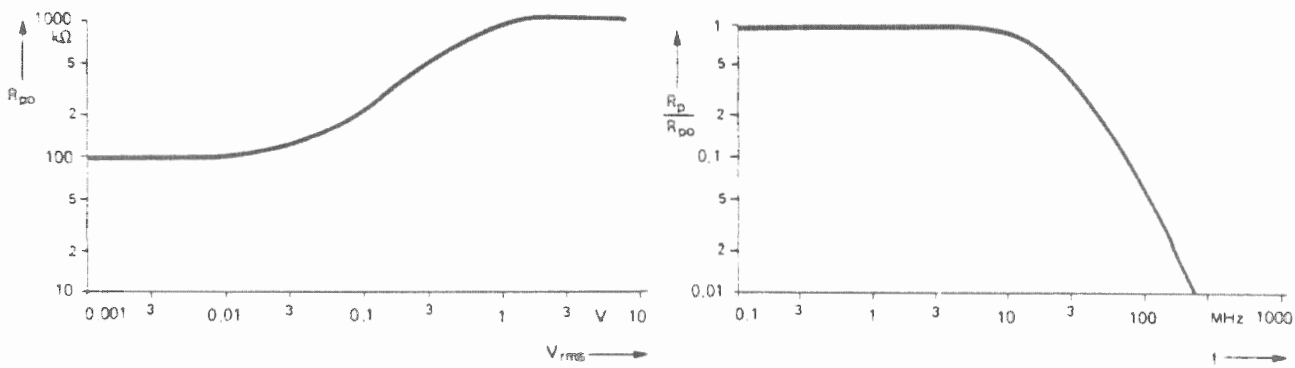
f/MHz	1	10	100	200	500
P_{max}/W	1300	410	130	82	42
V_{rms}/V	225	143	81	64	45

For high-accuracy measurements on coaxial systems low-reflection insertion units are provided.

When using the 20/40-dB dividers, the division factor can be entered into the URV5 (ATT/dB) and upon switching on the ATT CORR function the readout is correctly referred to the input voltage (see section 2.3.5.3).

Up to frequencies of about 20 MHz the input impedance of the probe is equivalent to a capacitance of 2.5 pF shunted by an ohmic resistance whose value at room temperature is between 100 kΩ and 1 MΩ depending on the test voltage (guaranteed value up to 10 MHz > 80 kΩ at room temperature). At higher frequencies, the resistive component of the input impedance decreases as the square of the frequency due to the losses of the input capacity (Fig. 2-6).

Through the 20-dB divider the input capacitance is reduced to 1 pF, through the 40-dB divider to 0.5 pF. In the frequency range up to 20 MHz the resistive component of the input impedance is increased to a few MΩ through the 20-dB divider and to above 10 MΩ through the 40-dB divider. At higher frequencies the resistive component also decreases as the square of the frequency.



Input resistance R_{po} for f < 3 MHz as a typical function of the test voltage (sinewave).

Typical frequency function of the input resistance R_p relative to the input resistance R_{po} at low frequencies.

Fig. 2-6 Input impedance of RF probe

Table 2-2 Overview of characteristic data of RF probe as well as of available dividers and adapters

	RF-probe	with 20-dB divider	with 40-dB divider	BNC adapter	50-Ω adapter	75-Ω adapter
Frequency range	20 kHz to 1 GHz	1 MHz to 500 MHz	0,5 MHz to 500 MHz (100 MHz)	20 kHz to 500 MHz	20 kHz to 1 GHz	20 kHz to 500 MHz
Voltage range	200 µV to 10 V	2 mV to 100 V	20 mV to 210 V (1000 V)	200 µV to 10 V	200 µV to 10 V	200 µV to 10 V
Input impedance C_{in} shunted by R	Fig. 2-6	1 pF >1 MΩ	0.5 pF >10 MΩ		50 Ω	75 Ω

For frequency response errors and reflection coefficients (50-Ω, 75-Ω adapter) please refer to the data sheet.

For measurements on 50-Ω and 75-Ω systems, the corresponding terminating adapters must be used.

The measuring accuracy can be improved in particular towards the upper frequency limit by entering the test frequency and switching on the FRQ CORR function (see section 2.3.5.4).

The frequency response correction curve of the RF probe is picked up by the 50-Ω adapter and is therefore also specified for this adapter.

When using other adapters or dividers and switching on the FRQ CORR function, this correction is only valid to a limited extent.

2.3.2.2.3 RF Insertion Units

Three insertion units with a characteristic impedance of 50 Ω or 75 Ω are available for the URV5. They are suitable for voltage measurements up to 10 V or 100 V. The attenuation factor of the 100-V insertion units is automatically taken into account by the URV5 and therefore need not be entered.

The low reflection coefficients of the 100-V insertion units are worth mentioning, since they render the insertion units particularly suitable for precision measurements on coaxial 50-Ω and 75-Ω systems.

Table 2-3 Overview of characteristic data of insertion units

	10-V insertion unit (50 Ω)	100-V insertion unit (50 Ω)	100-V insertion unit (75 Ω)
Frequency range	9 kHz to 2 GHz	100 kHz to 2 GHz	100 kHz to 2 GHz
Voltage range	200 µV to 10 V	2 mV to 100 V	2 mV to 100 V
Reflection coefficient r/%	up to 200 MHz 2	up to 1 GHz 2	up to 1 GHz 3

The measuring accuracy can be increased at the upper frequency limit by entering the test frequency and switching on the FRQ CORR function (see section 2.3.5.4 FRQ CORR).

2.3.6 PEAK (PEP) Key

The URV5 can measure the peak value of a modulated AC voltage present at the probe. The measured value is read out as an rms value.

The abbreviation PEP (= peak envelope power) is used in transmitter measurements and stands for the true power during one period of the carrier signal at the maximum momentary value of the modulation signal.

Therefore, the measured value ist read out in W when this function is switched on (LED in PEAK (PEP) key lights). The impedance value entered for the respective measurement channel is used as reference impedance. It is also possible to select another display mode by means of keys 11 SEL DIM and SEL REL. The measured value is however always read out as rms value of the peak value.

The gate time effective for PEAK measurement can be adjusted with the aid of the FILTER key and via the special function 3 as described in section 2.3.8 and basically corresponds to the measurement time (see Table 2-5). The gate time is the period of observation during which the peak value is determined and is followed by an automatic restart (internal reset of the peak-responding meter). Thus the gate time must be greater than the period of the measured signal.

This function is not effective for DC measurements (DC probe) and the key is not evaluated when actuated.

Table 2-5 [ ] - setting with FILTER key (F2/F4)

FØ	F1	F2	F3	F4	F5	← gate time (filter) setting
0.05/s	0.25/s	1/s	3.3/s	7/s	15/s	← display change
20 s	4.0 s	1 s	200 ms	40 ms	10ms	← gate time
20 s	4.1 s	1.1 s	300 ms	140 ms	60ms	← measurement time

(For dual channel operation, the indicated measurement times are twice as long.)

Generally, the following instructions and restrictions must be observed for this measurement mode:

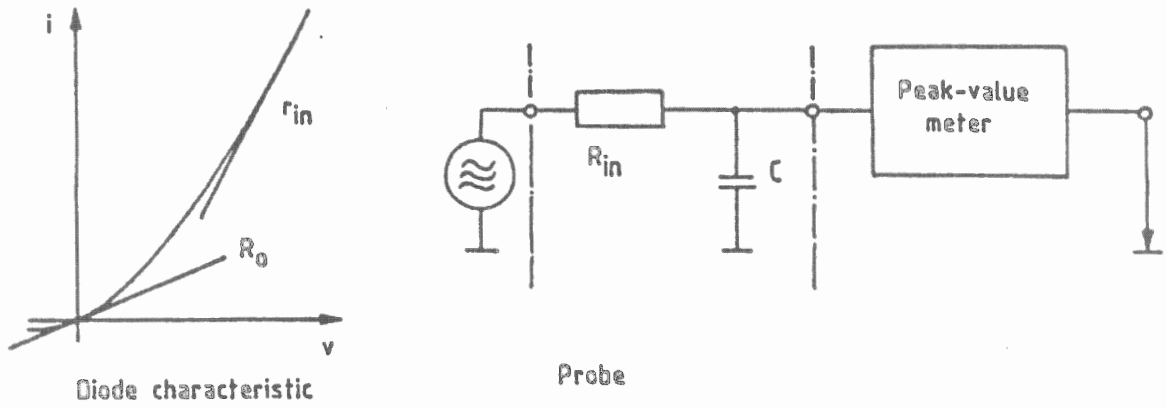


Fig. 2-7 Equivalent circuit diagram for peak-value measurement

As shown in Fig. 2-7, the internal resistance R_{in} of the measuring head diode forms in conjuction with the charging capacitor C a lowpass filter, with a level-dependent frequency response caused by R_{in}. Within the square-law range of the diode characteristic, the limit frequency (3 dB) is approx. 800 Hz for both insertion units (10 V, 100 V) and the RF probe. Since R_{in} is also temperature-dependent, this value is only valid at room temperature ($R_{in} \approx R_0$ (zero-point resistance) ≈200 kΩ).

At higher levels, measurements are possible with modulation and intermodulation frequencies up to the kHz range.

Definition of PEAK (PEP) measurement with respect to general measuring head characteristics

1. Unmodulated RF voltages:

   With unmodulated RF voltages there are no or only slight differences in the result from a "normal" measurement and a PEAK (PEP) measurement. Minor deviations are due to a residual ripple of the RF voltage.

   Basic measuring head characteristics (see Section 2.3.2.2) are as follows:

   < 30 mV (300 mV) rms-responding meas.
   > 1 V (10 V) peak-responding meas.
   } for non-sinewave voltages

The values given in parenthesis apply to 100-V insertion units.

2. Modulated RF voltages:

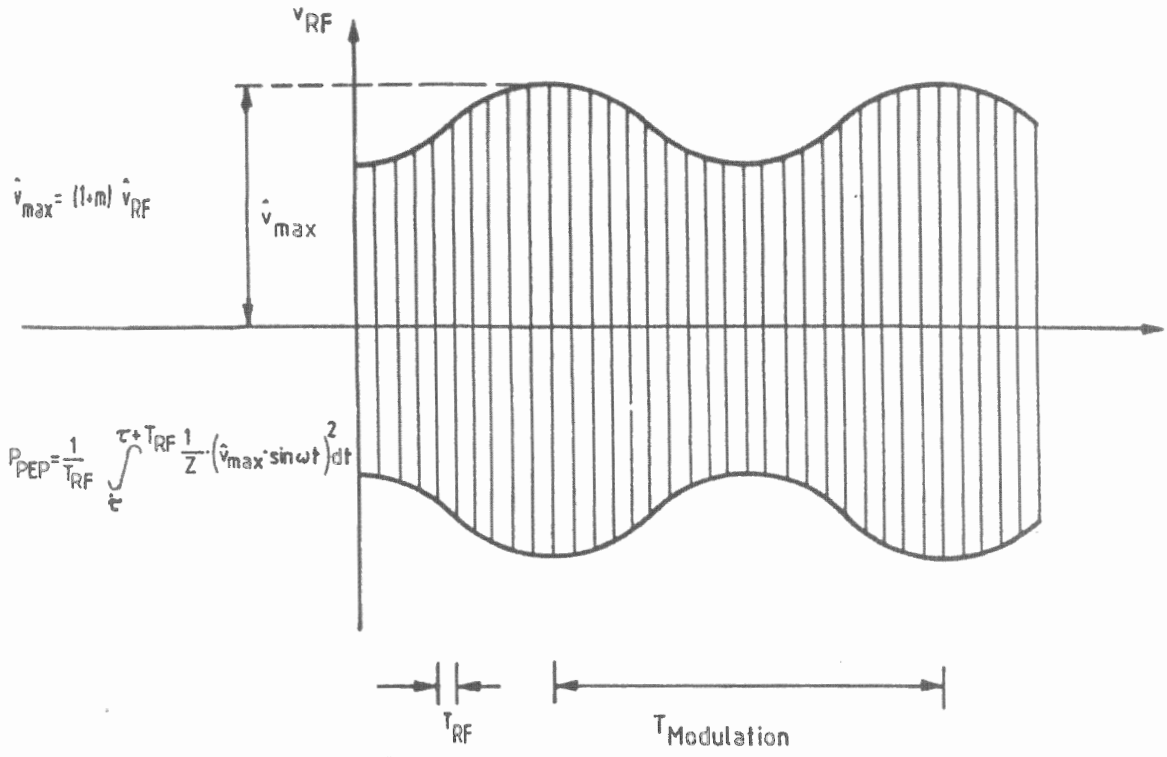


Fig. 2-8 Amplitude-modulated RF voltage

- PEAK (PEP) measurement (< 100 Hz)

  The PEAK (PEP) measurement can always be carried out up to modulation frequencies of about 100 Hz without causing a significant additional error.

  This holds true for any permissible input voltage.

- PEAK (PEP) measurement (> 100 Hz, < 1 V (10 V))

  At higher modulation frequencies, a value is obtained which is between the true rms (peak) value and the "normal" rms (average) value depending on the modulation frequency

- Measuring head characteristic

  At voltages > 1 V (10 V), the influence of the measuring head characteristic is predominant so that there is only little difference from the PEAK (PEP) measurement.

- Note for pulse modulation:

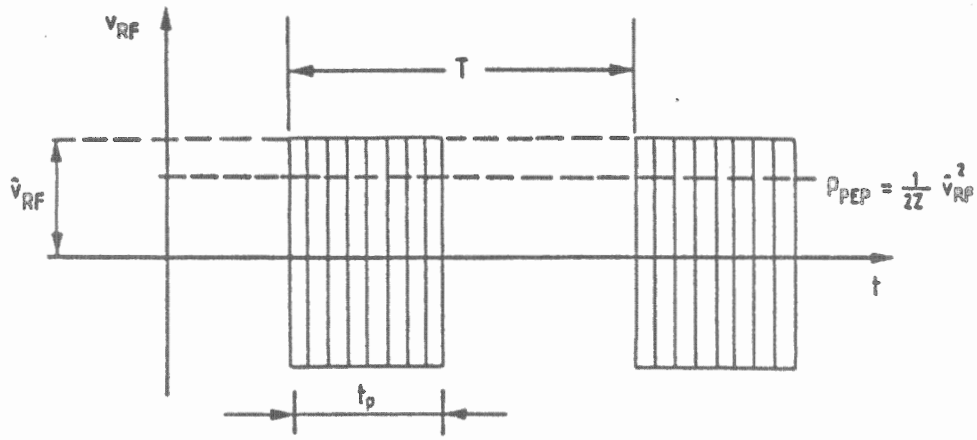


Fig. 2-9 Pulse-modulated RF voltage

The typical measuring error of pulse-modulated RF voltages at room temperature can be taken from Fig. 2-10. The curves shown apply to tp < T. The error decreases as tp → T.

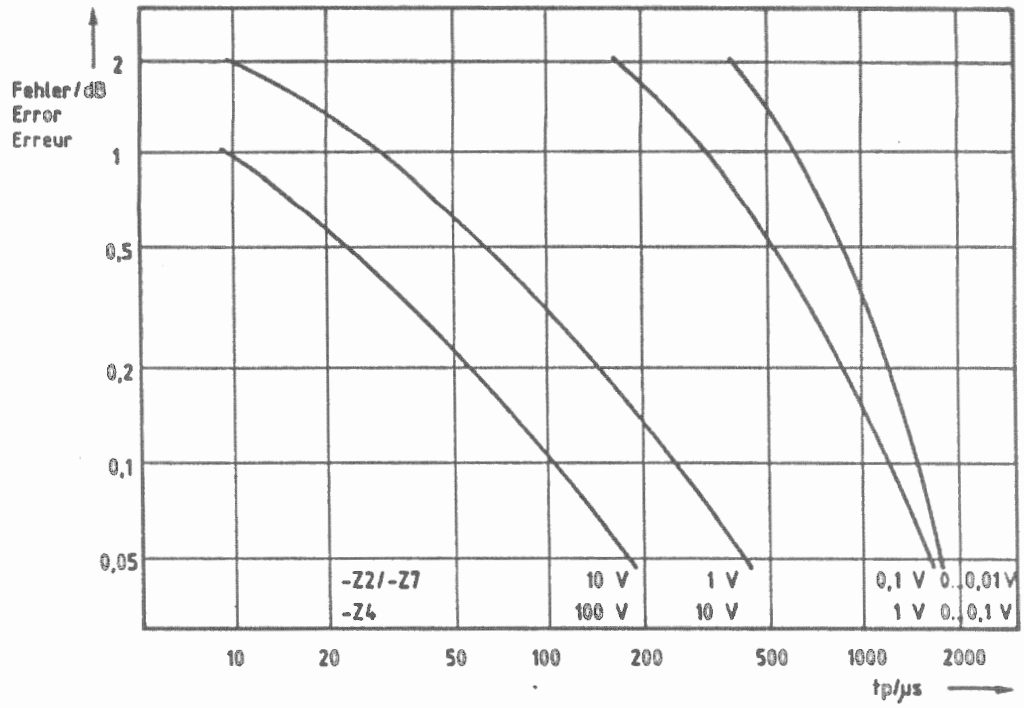


Fig. 2-10 Weighting error of PEAK(PEP) measurements for pulse-modulated RF with the use of URV5-Z2/-Z4/-Z7 as a function of the readout value.

3.2 RF Probe URV5-Z7

3.2.1 Required Measuring Equipment and Accessories

Ref. No.	Designation	Required specification	R&S Type	For use, see section
1	AC calibrator	200 µV to 10 V ±0.1% 200 kHz		3.2.2.1
2	Sinewave/waveform generator	1 V sinewave 10 MHz d < 1 %		3.2.2.2
3	20-dB divider for RF probe			3.2.2.2
4	BNC adapter for RF probe			3.2.2.1 3.2.2.2
5	Basic unit URV5			3.2.2.1 3.2.2.2

3.2.2 Checking the Rated Specifications

3.2.2.1 Checking the Linearity

In the following test the output voltage of an AC calibrator is measured at a frequency of 200 kHz with the aid of the RF probe (Fig. 3-2). Care should be taken that the interfering voltage of the AC calibrator determined by broadband measurement does not exceed 200 µV. Otherwise a divider or lowpass filter must be provided at the output. In this connection please refer also to section 2.3.2.2.1, where measurement of low RF voltages is described in detail.

Settings on URV5:	Channel A (B)	URV5-Z7
	Readout	V
	Filter	F2
	Autorange	on

Settings on
AC calibrator: 0.2 mV 10 Hz

With this calibrator setting, zero adjustment is triggered if the RF probe is connected. Due to the low frequency, the voltage of 0.2 mV is not considered; only the residual interfering voltage is measured and eliminated like an offset error.

After the zero adjustment the frequency is set to 200 kHz and the output voltage measured at the following values:

0.2 mV; 3 mV; 10 mV; 30 mV; 100 mV; 0.3 V; 1 V; 3 V; 10 V

The permissible tolerances are specified in the performance test report. Please carry out the measurements in the stated sequence. After measurement of high voltages the RF probe requires a certain recovery time before low levels can be measured again.

3.2.2.2 Checking the Input Capacitance

The input capacitance of the RF probe has a considerable influence on the dividing error if a 20-/40-dB divider is used. To check the input capacitance, it is recommended to check the division ratio in conjunction with a 20-dB divider. The adjustment error of the divider is so minimal that it can be neglected with respect to the error caused by the input capacitance.

The output signal of a sinewave generator is measured first without and then with 20-dB divider (Fig. 3-4). The permissible division ratio is shown in the performance test report. The output voltage of the sinewave generator is adjusted to approximately 1 V_{rms}/10 MHz. Care should be taken that the distortion does not exceed 1% since otherwise weighting errors in the same order of magnitude will have to be expected.

Settings on URV5:	Channel A (B)	URV5-Z7
	Readout	V (X/REF)
	Filter	F2
	Autorange	on

The measurement is first to be carried out without divider, the measured value to be stored as reference value and the readout then be switched to X/REF for the measurement with divider.

3.2.3 Performance Test Report

R&S
RF Probe URV5-Z7
Ident No.: 395.2615.02
Serial No.: .....

Date: .....

Name: .....

Ref. No.	Characteristic	Measured to section	Min	Actual	Max	Unit
1	Checking the linearity	3.2.2.1				
	Zero adjustment		———	.....	———	
	0.2 mV		0.155	.....	0.245	mV
	3 mV		2.962	.....	3.038	mV
	10 mV		9.897	.....	10.103	mV
	30 mV		29.67	.....	30.33	mV
	100 mV 200 kHz		98.97	.....	101.03	mV
	0.3 V		0.2967	.....	0.3033	V
	1 V		0.9897	.....	1.0103	V
	3 V		2.967	.....	3.033	V
	10 V		9.897	.....	10.103	V
2	Checking the input capacitance	3.2.2.2	0.0890	.....	0.1110	X/REF

3.3 10-V Insertion Unit 50 Ω URV5-Z2

3.3.1 Required Measuring Equipment and Accessories

Ref. No.	Designation	Required specifications	R&S Type	For use, see section
1	AC calibrator	200 µV to 10 V ±0.1% 100 kHz		3.3.2.1
2	Basic unit URV5			3.3.2.1
3	Reflection coefficient test set	100 MHz to 2 GHz Directivity >46 dB	see 3.8	3.3.2.2
4	Termination 50 Ω N male	VSWR < 1.01 up to 2 GHz		3.3.2.2

3.3.2 Checking the Rated Specifications

3.3.2.1 Checking the Linearity

In the following test the output voltage of an AC calibrator is measured at 100 kHz with the aid of the 10-V insertion unit (Fig. 3-2). Care should be taken that the interfering voltage of the AC calibrator determined by broadband measurement does not exceed 200 µV. Otherwise a divider or lowpass filter must be provided at the output. In this connection please refer also to section 2.3.2.2.1, where measurement of low RF voltages is described in detail.

Settings on URV5:	Channel A (B)	URV5-Z2
	Readout	V
	Filter	F2
	Autorange	on
Settings on AC calibrator:	0.2 mV	10 Hz

With this calibrator setting, zero adjustment is triggered if the insertion unit is connected. Due to the low frequency, the voltage of 0.2 mV is not considered; only the residual interfering voltage is measured and eliminated like an offset error.

After the zero adjustment the frequency is set to 100 kHz and the output voltage measured at the following values:

0.2 mV; 3 mV; 10 mV; 30 mV; 100 mV; 0.3 V; 1 V; 3 V; 10 V

The permissible tolerances are specified in the performance test report. Please carry out the measurements in the stated sequence. After measurement of high voltages the insertion unit requires a certain recovery time before low levels can be measured again.

3.3.2.2 Checking the Reflection Coefficient

Linearity and reflection coefficient are characteristic data of the 10-V insertion unit. If both are within the specifications, the frequency response will also be within the specified tolerances.

For measuring the reflection coefficient any test set up to 2 GHz and a directivity of at least 46 dB will be suitable. The measurement level is uncritical, since it has only little influence on the reflection coefficient. The 10-V insertion unit to be tested is terminated at one end by 50 Ω for low reflection; for the measurement result it is irrelevant whether the insertion unit is connected to the basic unit or not. Care should be taken that the reflection coefficient of the 50-Ω termination does not exceed 0.5%.

The permissible reflection coefficient tolerances for the 10-V insertion unit are specified for 100 MHz to 2 GHz in the performance test report.
These tolerances do however not include the measurement error of the test set used. Please check first what reflection coefficients you can still measure with sufficient accuracy. The following example should be helpful. A test set with a directivity of 46 dB already yields an uncertainty of ±0.5%. Together with the reflection coefficient of the termination of 0.5%, the entire test set has a measurement error of ±1%. Therefore, only reflection coefficients > 3% can reliably be determined. Consequently, the reflection coefficient of the 10-V insertion unit can only be checked for frequencies above 500 MHz.

A test set for measuring the reflection coefficient up to 2 GHz and with a directivity of 46 dB is described in section 3.8. It contains the R&S VSWR Bridge ZRB2 and a URV5 with two RF probes.

3.3.3 Performance Test Report

R&S
10-V Insertion unit 50 Ω URV5-Z2
Ident No.: 395.1019.55
Serial No.: .....

Date: .....
Name: .....

Ref. No.	Characteristic	Measured to section	Min	Actual	Max	Unit
1	Checking the linearity	3.3.2.1				
	Zero adjustment		———	.....	———	
	0.2 mV		0.155	.....	0.245	mV
	3 mV		2.962	.....	3.038	mV
	10 mV		9.897	.....	10.103	mV
	30 mV		29.67	.....	30.33	mV
	100 mV 100 kHz		98.97	.....	101.03	mV
	0.3 V		0.2967	.....	0.3033	V
	1 V		0.9897	.....	1.0103	V
	3 V		2.967	.....	3.033	V
	10 V		9.897	.....	10.103	V
2	Checking the reflection coefficient	3.3.2.2				
	100 MHz *		--	.....	1	%
	200 MHz *		--	.....	1	%
	500 MHz *		--	.....	2	%
	1 GHz		--	.....	7	%
	1.6 GHz		--	.....	10	%
	2.0 GHz		--	.....	15	%

* Note measurement error!

3.4.1 Required Measuring Equipment and Accessories

Ref. No.	Designation	Required specifications	R&S Type	For use, see section
1	AC calibrator	2 mV to 10 V ±0.3% 1 MHz 100 V ±0.1% 200 kHz		3.4.2.1
2	Basic unit URV5			3.4.2.1
3	Reflection coefficient test set	100 MHz to 2 GHz Directivity > 46 dB	see 3.8	3.4.2.2
4	50-Ω termination N male	VSWR < 1.01 up to 2 GHz		3.4.2.2

3.4.2 Checking the Rated Specifications

3.4.2.1 Checking the Linearity

In the following test the output voltage of an AC calibrator is measured with the aid of the 100-V insertion unit from 2 mV to 10 V at 1 MHz and with 100 V at a frequency of 200 kHz (Fig. 3-2). The relatively low frequency of 200 kHz in the last measurement causes only a slight deterioration of the measuring accuracy, since the lower cutoff frequency of all AC probes strongly decreases with increasing voltage.

Although the 100-V insertion unit is less sensitive by a factor of 10 than the RF probe and the 10-V insertion unit, care should be taken when setting up the test set that broadband interferences will not invalidate the measurement results (see section 2.3.2.2.1).

Settings on URV5:	Channel A (B)	URV5-Z4
	Readout	V
	Filter	F2
	Autorange	on
Settings on AC calibrator:	2 mV	10 Hz

With this calibrator setting, zero adjustment is triggered if the insertion unit is connected. Due to the low frequency the voltage of 2 mV is not considered; only the residual interfering voltage is measured and eliminated like an offset error.

After the zero adjustment the frequency is set to 1 MHz and the output voltage measured at the following values:

2 mV; 30 mV; 100 mV; 0.3 V; 1 V; 3 V; 10 V

The measurement is then carried out at 100 V and 200 kHz. The permissible tolerances are entered in the performance test report. Please carry out the measurements in the stated sequence. After measurement of high voltages the insertion unit requires a certain recovery time before low levels can be measured again.

3.4.2.2 Checking the Reflection Coefficient

Linearity and reflection coefficient are characteristic data of the 100-V insertion unit. If both are within the specifications, the frequency response will also be within the specified tolerances.

Measurement of the reflection coefficient of the 100-V insertion unit is slightly critical, since 3% is not exceeded over the entire frequency range. The measurement must therefore be carried out particularly carefully. The test set used should have a directivity of at least 46 dB. The measurement level is uncritical, since it has practically no influence on the reflection coefficient. The insertion unit to be tested is terminated at one end by 50 Ω for low reflection; for the measurement result it is irrelevant whether the insertion unit is connected to the basic unit or not. Care should be taken that the reflection coefficient of the 50-Ω termination does not exceed 0.5%.

The permissible reflection coefficient tolerances for the 100-V insertion unit are specified for 100 MHz to 2 GHz in the performance test report. These tolerances do however not include the measurement error of the test set used. Please check first what reflection coefficients you can still measure with sufficient accuracy. The following example should prove to be helpful. A test set with a directivity of 46 dB yields already an uncertainty of ±0.5%. Together with the reflection coefficient of the termination of 0.5%, the entire test set has a measurement error of ±1%. Therefore, only reflection coefficients > 3% can reliably be determined. Consequently, the reflection coefficient of the 100-V insertion unit can only be checked for frequencies above 1 GHz.

A test set for measuring the reflection coefficient up to 2 GHz and with a directivity of 46 dB is described in section 3.8. It contains the R&S VSWR Bridge ZRB2 and a URV5 with two RF probes.

3.4.3 Performance Test Report

R&S
100-V Insertion Unit 50 Ω URV5-Z4
Ident No.: 395.1619.55
Serial No.: .....

Date: .....

Name: .....

Ref. No.	Characteristic	Measured to section	Min	Actual	Max	Unit
1	Checking the linearity	3.4.2.1				
	Zero adjustment		———	.....	———	
	2 mV		1.54	.....	2.46	mV
	30 mV		29.47	.....	30.53	mV
	100 mV		98.47	.....	101.53	mV
	0.3 V 1 MHz		0.2952	.....	0.3048	V
	1 V		0.9847	.....	1.0153	V
	3 V		2.952	.....	3.048	V
	10 V		9.847	.....	10.153	V
	100 V 200 kHz		98.47	.....	101.53	V
2	Checking the reflection coefficient	3.4.2.2				
	100 MHz *		--	.....	1	%
	200 MHz *		--	.....	1	%
	500 MHz *		--	.....	1	%
	1 GHz *		--	.....	2	%
	1.6 GHz		--	.....	3	%
	2.0 GHz		--	.....	3	%

* Note measurement error!

3.5.1 Required Measuring Equipment and Accessories

Ref. No.	Designation	Required specifications	R&S Type	For use, see section
1	AC calibrator	2 mV to 10 V ±0.3% 1 MHz 100 V ±0.1% 200 kHz		3.5.2.1
2	Basic unit URV5			3.5.2.1
3	Reflection coefficient test set	100 MHz to 2 GHz Directivity > 46 dB		3.5.2.2
4	75-Ω termination N male	VSWR < 1.01 up to 2 GHz		3.5.2.2

3.5.2 Checking the Rated Specifications

3.5.2.1 Checking the Linearity

In the following test the output voltage of an AC calibrator is measured with the aid of the 100-V insertion unit from 2 mV to 10 V at 1 MHz and with 100 V at a frequency of 200 kHz (Fig. 3-2). The relatively low frequency of 200 kHz in the last measurement causes only a slight deterioration of the measuring accuracy, since the lower cutoff frequency of all AC probes strongly decreases with increasing voltage.

Although the 100-V insertion unit is less sensitive by a factor of 10 than the RF probe and the 10-V insertion unit, care should be taken when setting up the test set that broadband interferences will not invalidate the measurement results (see section 2.3.2.2.1).

Settings on URV5:	Channel A (B)	URV5-Z4
	Readout	V
	Filter	F2
	Autorange	on

Settings on AC calibrator:	2 mV	10 Hz

With this calibrator setting, zero adjustment is triggered if the insertion unit is connected. Due to the low frequency the voltage of 2 mV is not considered; only the residual interfering voltage is measured and eliminated like an offset error.

After the zero adjustment the frequency is set to 1 MHz and the output voltage measured at the following values:

2 mV; 30 mV; 100 mV; 0.3 V; 1 V; 3 V; 10 V

The measurement is then carried out at 100 V and 200 kHz. The permissible tolerances are entered in the performance test report. Please carry out the measurements in the stated sequence. After measurement of high voltages the insertion unit requires a certain recovery time before low levels can be measured again.

3.5.2.2 Checking the Reflection Coefficient

Linearity and reflection coefficient are characteristic data of the 100-V insertion unit. If both are within the specifications, the frequency response will also be within the specified tolerances.

Measurement of the reflection coefficient of the 100-V insertion unit is slightly critical, since 5% is not exceeded over the entire frequency range. The measurement must therefore be carried out particularly carefully. The test set used should have a directivity of at least 46 dB. The measurement level is uncritical, since it has practically no influence on the reflection coefficient. The insertion unit to be tested is terminated at one end by 75 Ω for low reflection; for the measurement result it is irrelevant whether the insertion unit is connected to the basic unit or not. Care should be taken that the reflection coefficient of the 75-Ω termination does not exceed 0.5%.

The permissible reflection coefficient tolerances for the 100-V insertion unit are specified for 100 MHz to 2 GHz in the performance test report. These tolerances do however not include the measurement error of the test set used. Please check first what reflection coefficients you can still measure with sufficient accuracy. The following example should prove to be helpful. A test set with a directivity of 46 dB yields already an uncertainty of ±0.5%. Together with the reflection coefficient of the termination of 0.5%, the entire test set has a measurement error of ±1%. Therefore, only reflection coefficients > 3% can reliably be determined. Consequently, the reflection coefficient of the 100-V insertion unit can only be checked for frequencies above 1 GHz.

3.5.3 Performance Test Report

R&S
100-V Insertion Unit 75 Ω URV5-Z4
Ident No.: 395.1619.75
Serial No.: .....

Date: .....
Name: .....

Ref. No.	Characteristic	Measured to section	Min	Actual	Max	Unit
1	Checking the linearity	3.5.2.1				
	Zero adjustment		———	.....	———	
	2 mV		1.54	.....	2.46	mV
	30 mV		29.47	.....	30.53	mV
	100 mV		98.47	.....	101.53	mV
	0.3 V 1 MHz		0.2952	.....	0.3048	V
	1 V		0.9847	.....	1.0153	V
	3 V		2.952	.....	3.048	V
	10 V		9.847	.....	10.153	V
	100 V 200 kHz		98.47	.....	101.53	V
2	Checking the reflection coefficient	3.5.2.2				
	100 MHz *		--	.....	1.5	%
	200 MHz *		--	.....	1.5	%
	500 MHz *		--	.....	2	%
	1 GHz		--	.....	3	%
	1.6 GHz		--	.....	5	%
	2.0 GHz		--	.....	5	%

* Note measurement error!

3.6 DC Probe URV5-Z1

3.6.1 Required Measuring Equipment and Accessories

Ref. No.	Designation	Required specifications	R&S Type	For use, see section
1	DC calibrator	1 V to 400 V ±0.01%		3.6.2.1
2	Basic unit URV5			3.6.2.1

3.6.2 Checking the Rated Specifications

3.6.2.1 Checking the Measurement Accuracy

The output voltage of a DC calibrator is measured with the aid of the DC Probe URV5-Z1 (Fig. 3-1).

Settings on URV5:

Channel A (B)	URV5-Z1
Readout	V
Filter	F2
Autorange	on

Settings on DC calibrator:

0 V ±10 µV
±1 V/+10 V/+100 V/+400 V ±0.01%

The permissible tolerances are specified in the performance test report.

R&S
DC Probe URV5-Z1
Ident No.: 395.0512.02
Serial No.: .....

Date: .....

Name: .....

Ref. No.	Characteristic	Measured to section	Min	Actual	Max	Unit
1	Checking the measurement accuracy	3.6.2.1				
	0 V		-0.0005	.....	+0.0005	V
	+ 1 V		+0.9970	.....	+1.0030	V
	- 1 V		-0.9970	.....	-1.0030	V
	+ 10 V		+ 9.974	.....	+10.026	V
	+100 V		+ 99.74	.....	+100.26	V
	+400 V		+ 397.9	.....	+ 402.1	V

3.7 Checking the Frequency Response of RF Probes

Due to the narrow tolerances of the RF probes, frequency response measurements are extremely difficult and should therefore only be carried out with suitable test sets.

Similar to power meters, all RF probes are calibrated to the rms value of the voltage corresponding to the incident power:

$$V = \sqrt{Z \times P_i}$$

The power P_i can be determined with the aid of corresponding test sets. The connections of the insertion units and of the probe for these measurements are shown in Fig. 3-5.

Since - unlike microwave power meters - all RF probes measure voltages, the following should be observed:

1. The reflection coefficient of the connected terminations (probes and insertion units) causes a measurement error of the same amount due to the VSWR on the test line. A reflection coefficient of 1% for instance causes a measurement error of ±1%.

2. The distortion of the test signal causes at higher voltages measurement errors of the same order of magnitude. This is due to the characteristic of the detector, which at high voltages provides for a peak evaluation of the input signal. Therefore, either a low-distortion generator (d < 0.5%) must be used for the frequency response measurements or the measurements be carried out at low level. With an input voltage of 30 mV_{rms} (300 mV_{rms} for the 100-V insertion units) this effect can be neglected.

3.8 Test Setup for Measurement of Reflection Coefficient

The URV5 and the VSWR Bridge ZRB2, Mod. 52, can be combined to form an accurate and low-priced test setup for measurement of reflection coefficients in the frequency range 10 MHz to 2 GHz (Fig. 3-6). Due to the high directivity of the VSWR bridge (> 46 dB), the measurement error for low reflection coefficients is only ±(0.5% + 10% of rdg). The test setup is therefore suitable for checking the reflection coefficient of URV5 probes from approximately 500 MHz and above. The output power of the sweep generator may be between 0 and +26 dBm.

In the test setup according to Fig. 3-6 the URV5 measures the ratio of reflected and incident power and reads out the result as reflection coefficient or return loss. The reflected power is determined by means of the power sensor in the main measurement channel (B in Fig. 3-6), the incident power by means of the 100-V insertion unit in the second channel. Since even with total reflection only part of the input power will be transmitted to the bridge output, the transmission loss must also be considered in the measurement. The transmission loss is 13 dB and almost independent of frequency. The transmission loss is entered as attenuation correction value +13 dB for the main measurement channel (section 2.3.5.3). In both channels the selected unit is V. In the relative readout mode X/REF the reflection coefficient is directly indicated (1% = 0.01), in the ΔdB mode the return loss (in dB). It is not recommended to determine the transmission loss by means of a short circuit or open circuit, since with reflection coefficients > 30% the VSWR at the bridge input and, hence, the measurement error strongly increases.

URV5 settings tabularized:

	Channel B	Channel A
Autorange	on	on
Unit	V	V
Measurement speed	F2	F2
Attenuation correction	+13 dB	------
Relative readout	ΔEXT X/REF (ΔdB)	

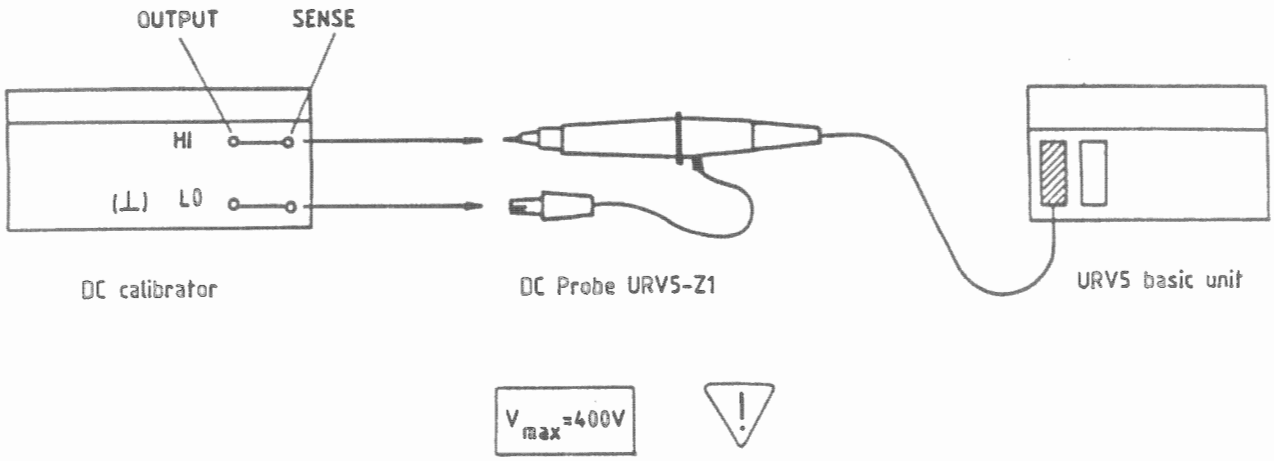


Fig. 3-1 Checking the DC measurement accuracy

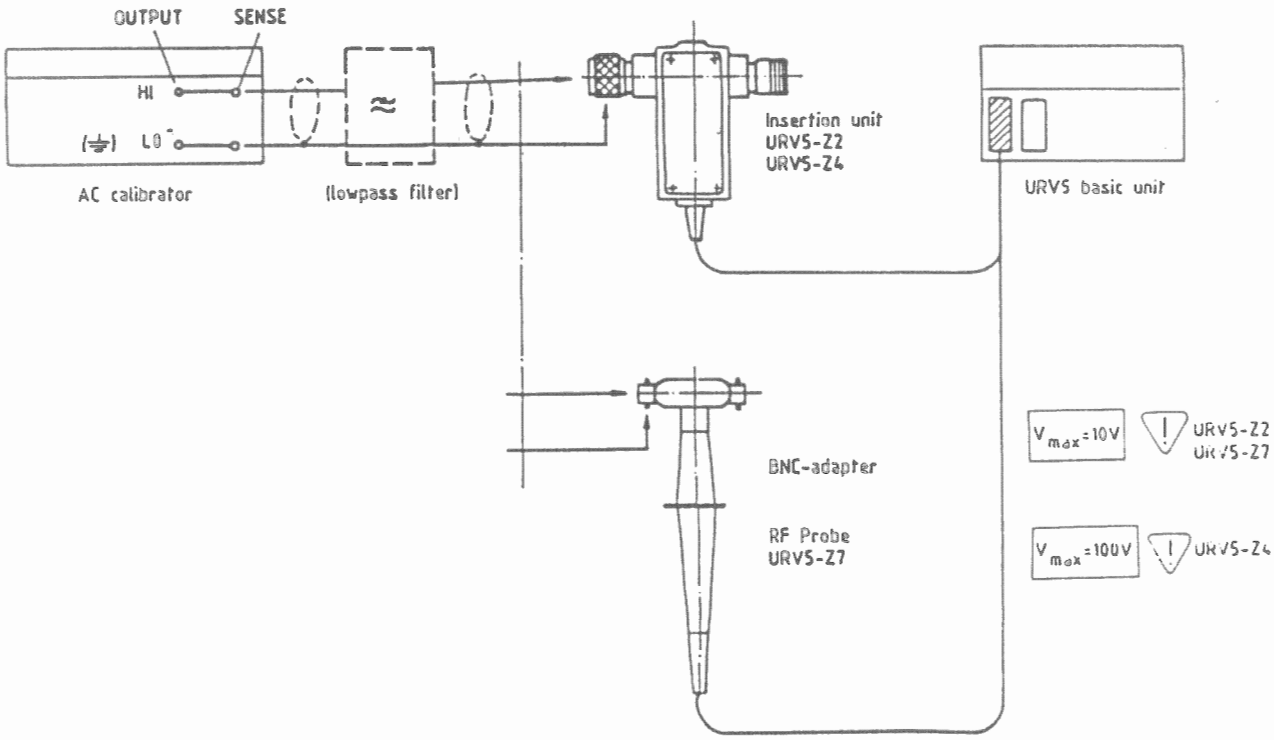


Fig. 3-2 Checking the AC measurement accuracy

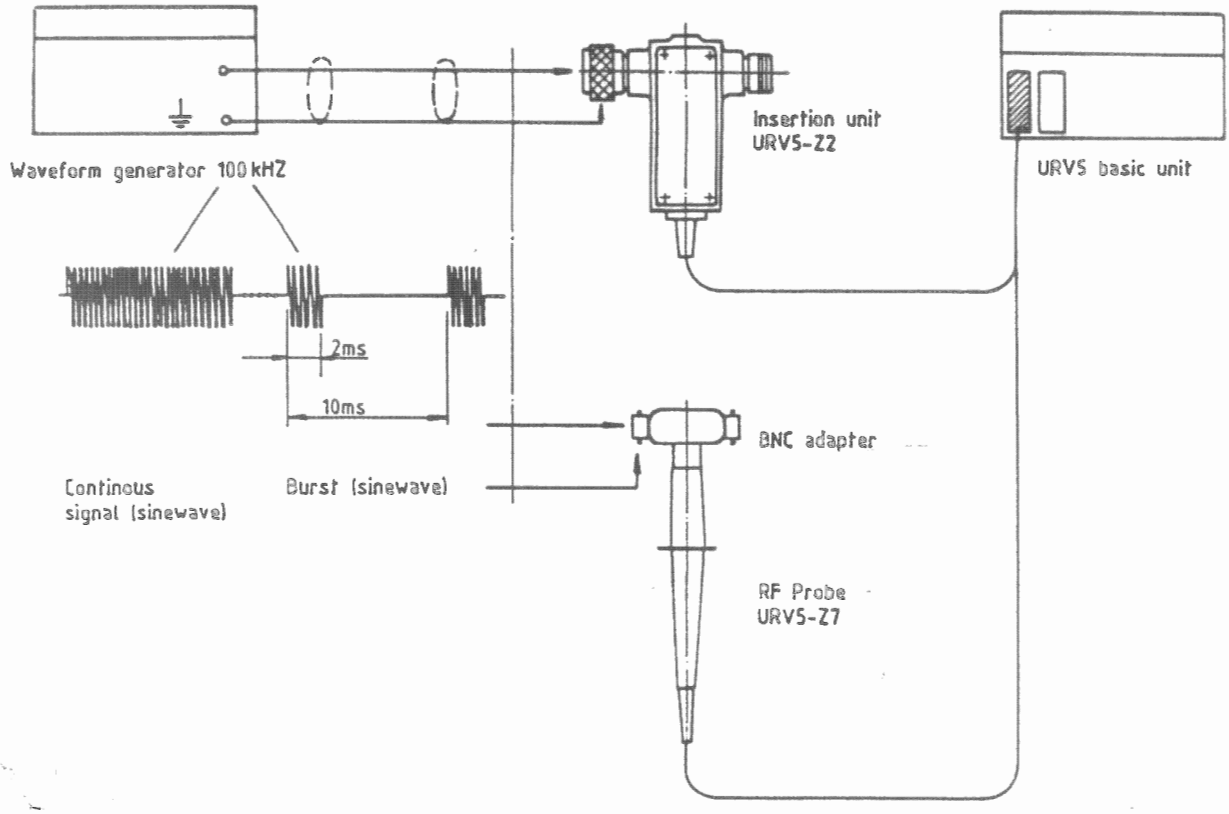


Fig. 3-3 Checking the PEAK (PEP) function

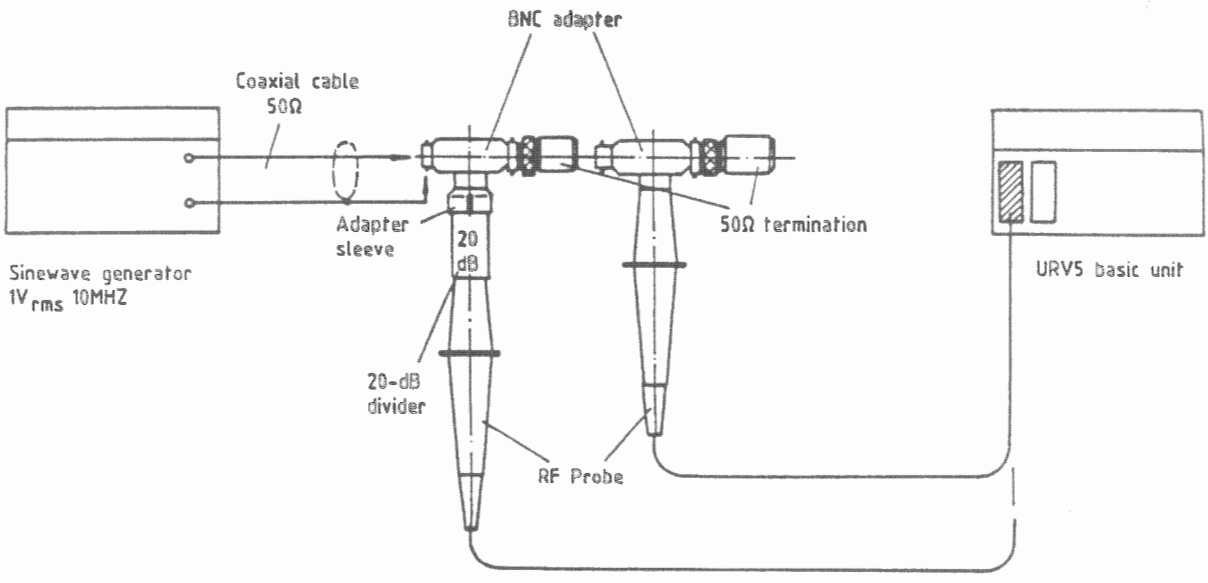


Fig. 3-4 Checking the input capacitance

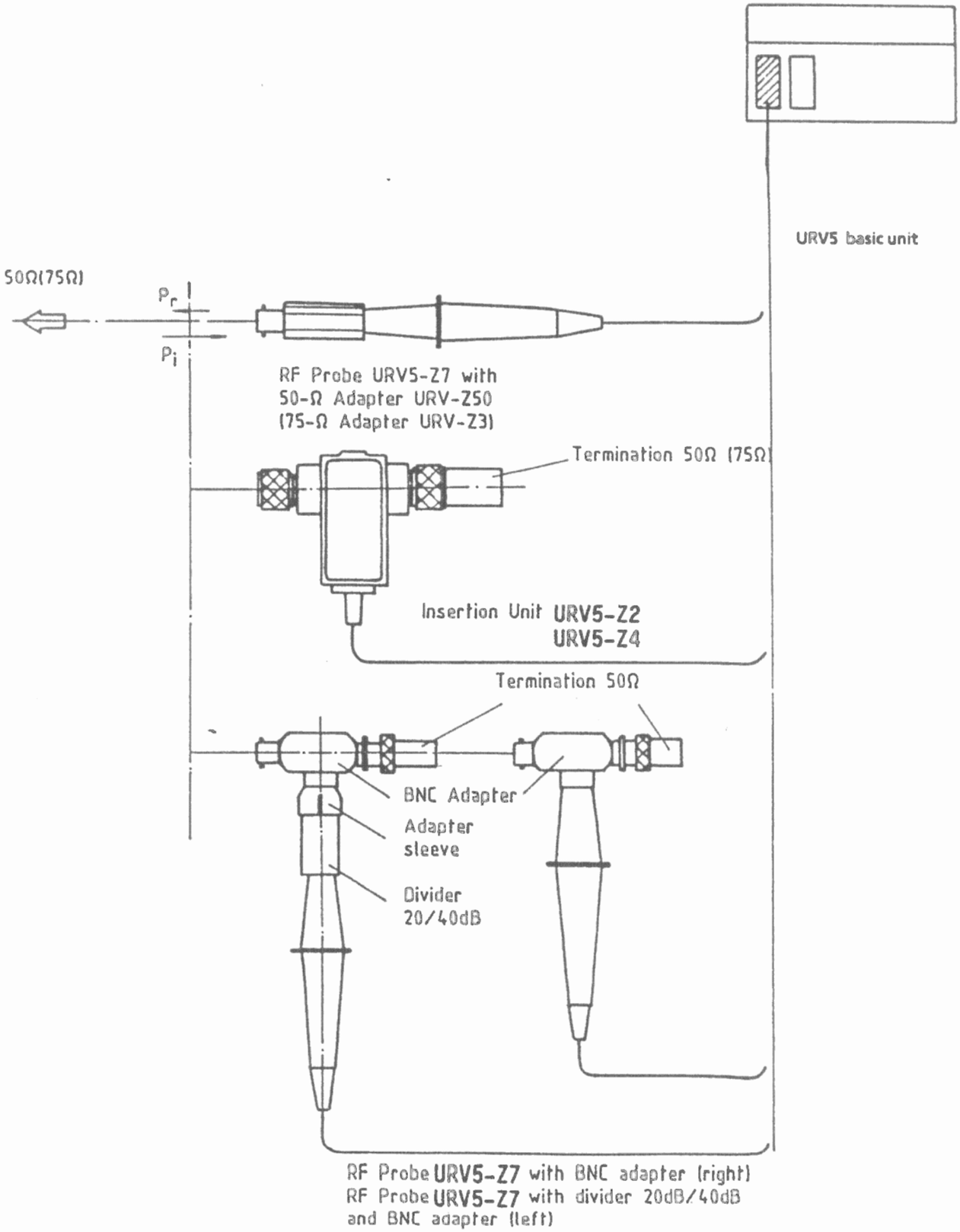


Fig. 3-5 Connection of RF probes for frequency response measurements

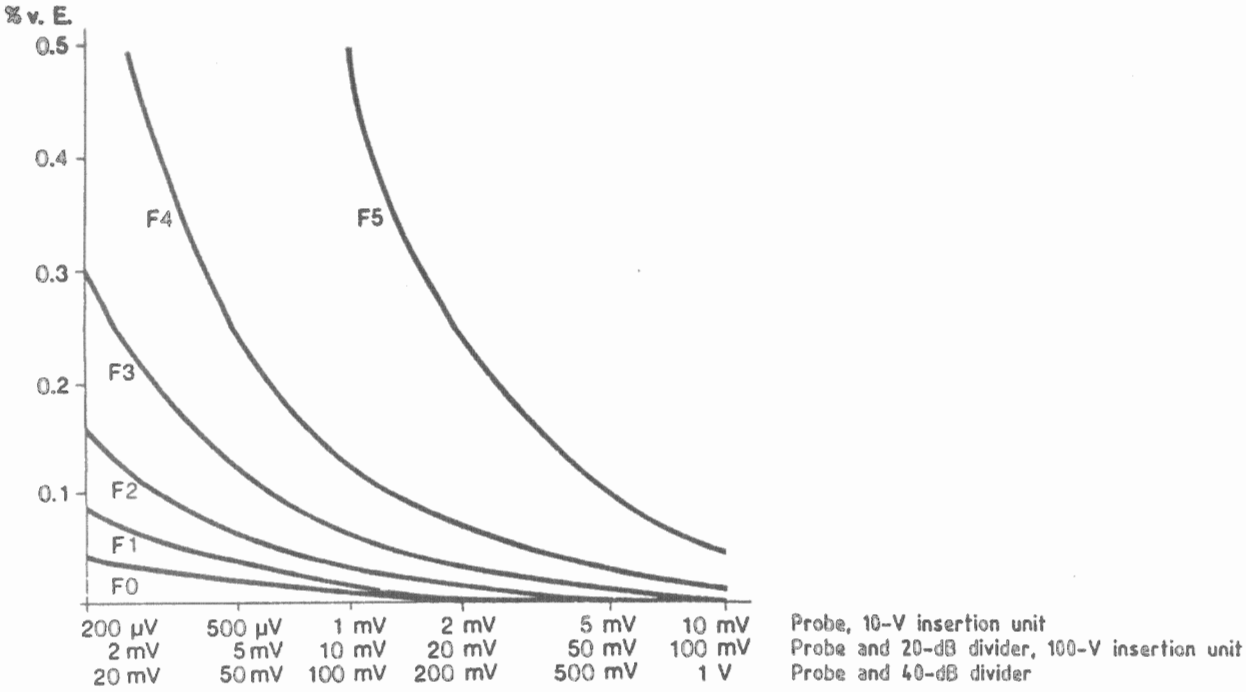


Fig. 2-11 Display noise

The display noise increases with the speed of the measurement.

Fig. 2-11 shows a group of typical curves for the various RF probes and insertion units.

2.3.9 Secondary Function Level

The secondary function level of the keyboard - blue markings on the keys - is used for entering data, such as reference value for relative value indication, correction values and for calling up the special functions (key 7 SPEC), e.g. calibration or input of the IEC-bus address. Switchover between the two function levels is effected by means of key 8 SHIFT, whose LED lights when the secondary functions are activated, while the LEDs in all other keys - except for the LEDs indicating the selected channel - go out. The measured value indicated last remains in the display. During the entry the entire measurement section of the instrument operates as usual and autoranging also remains operative.

If prior to the switchover to the secondary function level a reference or correction value has been indicated, the entered unit and the value remain in the display for correction.

4.1.5 Measuring Heads

(See Fig. 4-1 and circuit diagrams 395.0512 S, 395.2680 S, 395.1019 S and 395.1619 S)

The 12-way connector of each measuring head contains a data memory, in which all characteristics and correction values required for the measurement are stored. The data are read out either when the instrument is switched on or when a probe is exchanged. For this purpose the data memory is first connected to the 5-V supply of the analog board via relay K101 and its content is then read out in serial form. The EPROM D12 is addressed via the two cascaded counters D11 and D10 by increasing the address by one after every 8 clock pulses. The parallel-serial conversion of the addressed 8-bit word is effected in the multiplexer D13 which upon each clock pulse (X10.7) addresses the next higher bit. The two counters D10/D11 are reset by logic H via X10.9 at the beginning of the read-out process. The "chip enable" for the EPROM D12 (logic L) is also effected via X10.9. The data memories are driven by the addressable latch D101 on the analog board. The clock pulses are jointly produced for both probes (D101.10), reset/chip enable separately, i.e. for channel A at terminal D101.9, for channel B at terminal D101.11. The outputs of the data memories are taken separately for the two channels to the multiplexer (26) (D508).

With the aid of the probe detector (27) it is possible to recognize whether a probe has been inserted in the basic unit or removed from it. The probe detector basically consists of an R/S flipflop for each of the channels A and B, which with non-operative channel is set by the corresponding pull-up resistor (R523, R524). With a probe inserted, the set input is kept at logic L level via the resistor R13 (data memory).

4.1.5.1 RF Probe URV5-Z7

The RF probe is made up of a full-wave rectifier which is capacitively coupled to the test input and supplies two rectified voltages of the same amount but with opposite polarity. The rectified voltages are further boosted in the basic unit by the probe amplifiers A or B. In order to compensate for the relatively strong temperature-dependence of the rectifier diodes, the temperature is measured in the vicinity of the rectifier diodes by means of the sensor V3 and is then considered in the microprocessor calculations. V3 acts like a Zener diode with temperature-dependent break-down voltage and is cyclically switched on only for a few milliseconds (N503.2) in order to minimize errors caused by selfheating.

4.1.5.1.1 20-/40-dB Dividers

The dividers that can be plugged onto the probe tip form in conjunction with the input capacitance of the probe a capacitive divider. Due to the greater base capacitance the 40-dB divider can already be used at 500 kHz, whereas the 20-dB divider can only be used at 1 MHz and above. The dividers are preferrably used for measuring high voltages or for measurements with low load capacitance. The input capacitance of the probe with 40-dB divider is 0.5 pF only, with 20-dB divider it is 1 pF. (this is without BNC adapter).

4.1.5.1.2 50-/75-Ω Adapters

With the aid of the two adapters and the RF probe, low-reflection RF voltage measurements can be carried out in 50-/75-Ω systems. The adapters contain a 50-/75-Ω termination which is connected to the inner and outer conductor and to which the probe tip is connected via matching pads. The reflection coefficients specified for the adapters are only valid with the probe inserted.

4.1.5.2 10-V Insertion Unit URV5-Z2

This measuring head is of similar design as the RF probe. It mainly differs in the greater frequency range. The lower measurement limit is reduced to approx. 9 kHz by the coupling capacitance of 10 nF.

4.1.5.3 100-V Insertion Units URV5-Z4

In these measuring heads a capacitive divider designed as tubular divider is connected ahead of the rectifier. Due to the low base capacitance resulting from the circuit design, the lower frequency limit is higher than for the probe and 10-V insertion unit.

4.1.5.4 DC Probe URV5-Z1

The DC probe contains a 9-MΩ precision resistor as input resistance for the inverting amplifier (20).

ROHDE&SCHWARZ

Liste mechanischer Teile

List of mechanical parts

Bilder zur Liste mechanischer Teile

Figures pertaining to list of mechanical parts

R 41830

Lfd. Nr. No.	Kenn-zeichen Unit/ Comp.No	Stück-zahl Qty	Benennung/Beschreibung Designation	Sachnummer Stock No.
80		1	FR 3 pol. Transistorfassung für TO3 3-way transistor socket	FR 513.3343
81	N1	1	BO Spannungsregler +5 V LM 323 K Voltage regulator +5 V	BO 342.1672
82		2	VS Zylinderschraube 6-32 UNCX 5/8"A1 Cheese-head screw	517.8179
83		2	3,5 DIN 137	VS 005.0309
84		1	VL Lötöse für M6 Soldering lug for M6	VL 034.9930
85	W2	1	Kabel enth. in lfd. Nr.28 Cable incl. in No.28	395.0258
86		1	MP Verschlußstopfen Stopper	336.7208
87		1.	MP Verschlußstopfen Stopper	545.3410
100		1	Kabel Cable	395.1160
101		1	ED Datenspeicher Data memory	395.2915.02
102		1	MZ Kontaktfeder Contact spring	395.0658
103		1	Unterteil, metallisiert Bottom plate, metal-coated	395.0612
104		1	Oberteil, metallisiert Top plate, metal-coated	395.0635

Lfd. Nr. No.	Kenn-zeichen Unit/ Comp.No	Stück-zahl Qty	Benennung/Beschreibung Designation	Sachnummer Stock No.
105		1	M 2x10 DIN 7985 A4	VS 081.8942
106		1	M 2 DIN 934 A4	VS 061.5225
107		4	M 2x6 DIN 7985 A4	VS 081.8920
110	X22	1	FJ Umrüststecker Dezifix B/ Syst.-N, 50 Ω-Ausführung Adapter Dezifix B/N, 50 Ω	395.1954
		1	FJ Umrüststecker Dezifix B/ Syst.-N, 75 Ω-Ausführung Adapter Dezifix B/N, 75 Ω	017.7655
111	X21	1	FJ Umrüstbuchse Dezifix B/ Syst.-N, 50 Ω-Ausführung Adapter Dezifix B/N, 50 Ω	017.5398
		1	FJ Umrüstbuchse Dezifix B/ Syst.-N, 75 Ω-Ausführung Adapter Dezifix B/N, 75 Ω	017.5446
115		1	Deckel, URV5-Z2 VAR 55 Cover plate (URV5-Z2, model 55)	395.1219
		1	Deckel, URV5-Z4 VAR 55 Cover plate (URV5-Z4, model 55)	395.1719
		1	Deckel, URV5-Z4 VAR 75 Cover plate (URV5-Z4, model 75)	395.1725
116		4	M 2x4 DIN 7985 A4	VS 081.8913

Lfd. Nr.	Kenn-zeichen	Stück-zahl	Benennung/Beschreibung	Sachnummer
No.	Unit/ Comp.No	Qty	Designation	Stock No.
120		2	FB Umrüststecker Dezifix B, 50 Ω-Ausführung Adapter Dezifix B, 50 Ω	018.2486
		2	FB Umrüststecker Dezifix B, 75 Ω-Ausführung Adapter Dezifix B, 75 Ω	018.2592
122		2	FA Umrüststecker Dezifix B/ Dezifix A, 50 Ω-Ausführung Adapter Dezifix B/ Dezifix A, 50 Ω	018.1915
124		2	FA Umrüststecker Dezifix B/ Precifix A, 50 Ω-Ausführung Adapter Dezifix B/ Precifix A, 50 Ω	018.1980
126		1	FK Umrüstbuchse Dezifix B/4,1/ 9,5, 50 Ω-Ausführung Adapter Dezifix B/4.1/9.5, 50 Ω	017.8516
127		1	FK Umrüststecker Dezifix B/ 4,1/9,5, 50 Ω-Ausführung Adapter Dezifix B/4.1/9.5, 50 Ω	017.9106

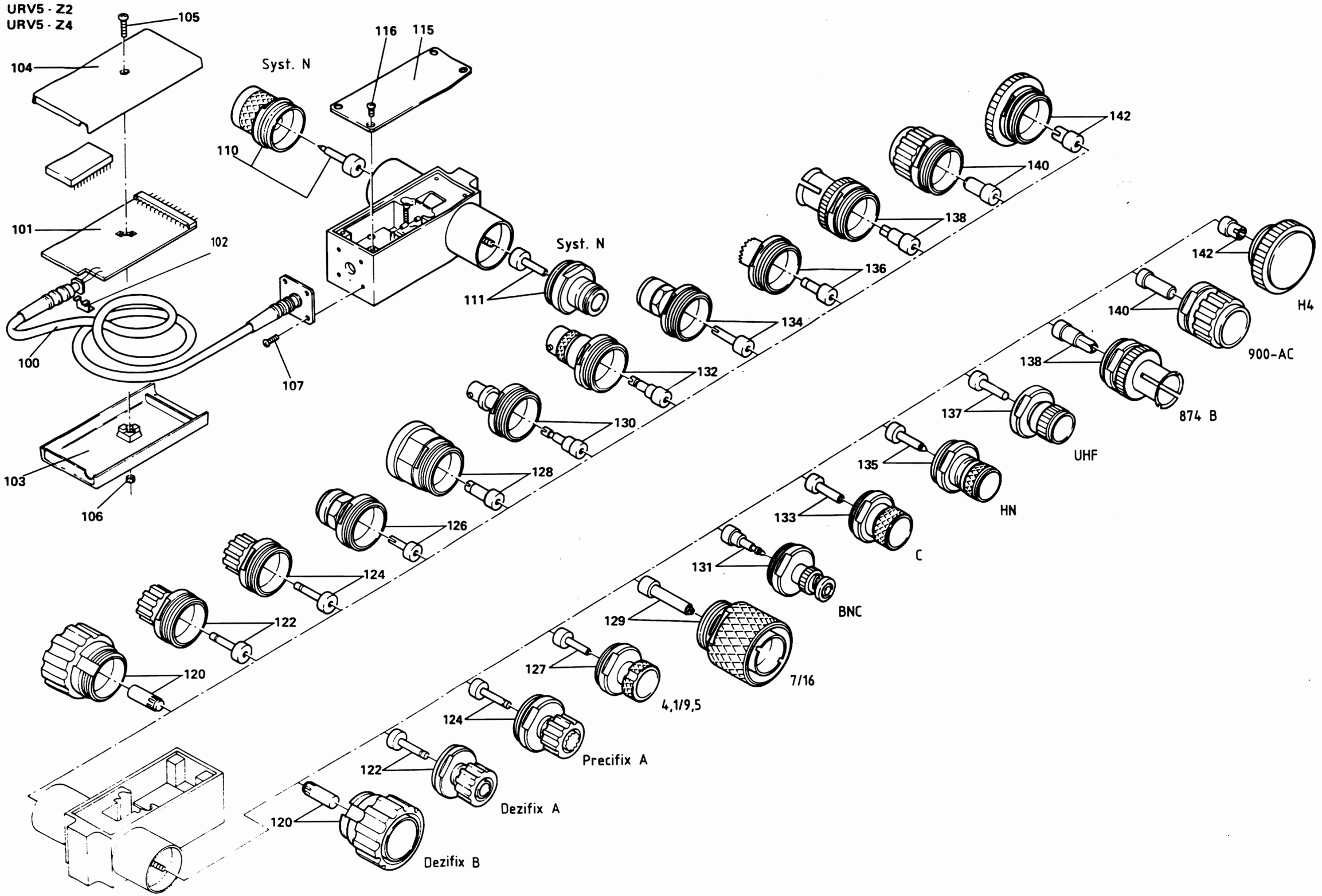
Lfd. Nr.	Kenn-zeichen	Stück-zahl	Benennung/Beschreibung	Sachnummer
No.	Unit/ Comp.No	Qty	Designation	Stock No.
128		1	FK Umrüstbuchse Dezifix B/ Syst. 7/16, 50 Ω-Ausführung Adapter Dezifix B/ conn. 7/16, 50 Ω	017.8739
129		1	FK Umrüststecker Dezifix B/ Syst. 7/16, 50 Ω-Ausführung Adapter Dezifix B/ conn. 7/16, 50 Ω	017.9258
130		1	FJ Umrüstbuchse Dezifix B/BNC, 50 Ω-Ausführung Adapter Dezifix B/BNC, 50 Ω	017.5730
		1	FJ Umrüstbuchse Dezifix B/BNC, 75 Ω-Ausführung Adapter Dezifix B/BNC, 75 Ω	017.5846
131		1	FJ Umrüststecker Dezifix B/BNC 50 Ω-Ausführung Adapter Dezifix B/BNC, 50 Ω	017.7832
132		1	FJ Umrüstbuchse Dezifix B/C, 50 Ω-Ausführung Adapter Dezifix B/C, 50 Ω	017.5530
		1	FJ Umrüstbuchse Dezifix B/C, 75 Ω-Ausführung Adapter Dezifix B/C, 75 Ω	017.5575

Lfd. Nr.	Kenn-zeichen	Stück-zahl	Benennung/Beschreibung	Sachnummer
No.	Unit/ Comp.No	Qty	Designation	Stock No.
133		1	FJ Umrüststecker Dezifix B/C, 50 Ω-Ausführung Adapter Dezifix B/C, 50 Ω	017.7761
134		1	FJ Umrüstbuchse Dezifix B/HN, 50 Ω-Ausführung Adapter Dezifix B/HN, 50 Ω	017.5998
135		1	FJ Umrüststecker Dezifix B/HN, 50 Ω-Ausführung Adapter Dezifix B/HN, 50 Ω	017.7978
136		1	FJ Umrüstbuchse Dezifix B/UHF, 50 Ω-Ausführung Adapter Dezifix B/UHF, 50 Ω	017.5217
		1	FJ Umrüstbuchse Dezifix B/UHF, 75 Ω-Ausführung Adapter Dezifix B/UHF, 75 Ω	017.5252
137		1	FJ Umrüststecker Dezifix B/UHF 50 Ω-Ausführung Adapter Dezifix B/UHF, 50 Ω	017.7384
138		2	FJ Umrüststecker Dezifix B/ Syst. 874B, 50 Ω-Ausführung Adapter Dezifix B/874B syst., 50 Ω	017.9564
140		2	FJ Umrüststecker Dezifix B/ 900-AC, 50 Ω-Ausführung Adapter Dezifix B/900-AC, 50 Ω	017.9706
142		2	FJ Umrüststecker Dezifix B/ Syst. H4, 50 Ω-Ausführung Adapter Dezifix B/H4 syst., 50 Ω	017.9835

Lfd. Nr.	Kenn-zeichen	Stück-zahl	Benennung/Beschreibung	Sachnummer
No.	Unit/ Comp.No	Qty	Designation	Stock No.
170		1	Zubehörsatz Set of accessories	395.0564
171		1	ED Datenspeicher Data memory	395.2915.03
172		1	MZ Kontaktfeder Contact spring	395.0658
173		1	Unterteil, metallisiert Bottom plate, metal-coated	395.0612
174		1	Oberteil, metallisiert Top plate. metal-coated	395.0635
175		1	M 2x10 DIN 7985 A4	VS 081.8942
176		1	M 2 DIN 934 A4	VS 061.5225
181		1	ED Datenspeicher Data memory	395.2915.02
182		1	MZ Kontaktfeder Contact spring	395.0658
183		1	Unterteil, metallisiert Bottom plate, metal-coated	395.0612
184		1	Oberteil, metallisiert Top plate, metal-coated	395.0635
185		1	M 2x10 DIN 7985 A4	VS 081.8942
186		1	M 2 DIN 934 A4	VS 061.5225
190		1	Masseband Earth ribbon	243.9053
191		1	Massekabel Earth cable	241.0620

Lfd. Nr.	Kenn-zeichen	Stück-zahl	Benennung/Beschreibung	Sachnummer
No.	Unit/ Comp.No	Qty	Designation	Stock No.
192		1	Massehülse Earth sleeve	241.0688
193		1	Hakenspitze Hook tip	265.4631
194		1	Anlötspitze Solder tip	265.4648
195		1	Zubehörkasten (ohne Zubehör) Case for accessories (without accessories)	395.2980
196		2	Massehülse Earth sleeve	241.1649
197		1	Vorsteckteiler 20 dB 20-dB divider	241.1510
198		1	Vorsteckteiler 40 dB 40-dB divider	241.1710
200		1	URV-Z3 75 Ω-Adapter 75-Ω adapter	243.9118.70
201		1	FK Übergang Uni 9 / BNC enth. in lfd. Nr.200 Adapter Uni 9 / BNC incl. in No.200	243.9282.
202		1	FK Übergang Uni 9 1,6/5,6 enth. in lfd. Nr.200 Adapter Uni 9 - 1.6/5.6 incl. in No.200	
203		1	FK Übergang Uni 9 2,5/6 enth. in lfd. Nr.200 Adapter Uni 9 - 2.5/6 incl. in No.200	243.9260

Lfd. Nr.	Kenn-zeichen	Stück-zahl	Benennung/Beschreibung	Sachnummer
No.	Unit/ Comp.No	Qty	Designation	Stock No.
204		1	URV-Z50 50 Ω-Adapter 50-Ω adapter	394.9816.50
205		1	FJ Kupplung BNC - ST/ST enth. in lfd. Nr.204 Adapter BNC - ST/ST incl. in No.204	FJ 018.4620
206		1	BNC-Adapter BNC adapter	241.1110.02
207		1	Reduzierhülse enth. in lfd. Nr.206 Matching sleeve incl. in No.206	241.1278


URV5 - Z2
URV5 - Z4
105
104
101
102
100
103
106
107
116
115
Syst. N
110
111
Syst. N
142
140
138
136
134
132
130
128
126
124
122
120
Dezifix B
122
Dezifix A
124
Precifix A
127
4,1/9,5
129
7/16
131
BNC
133
C
135
HN
137
UHF
138
874 B
140
900-AC
142
H4

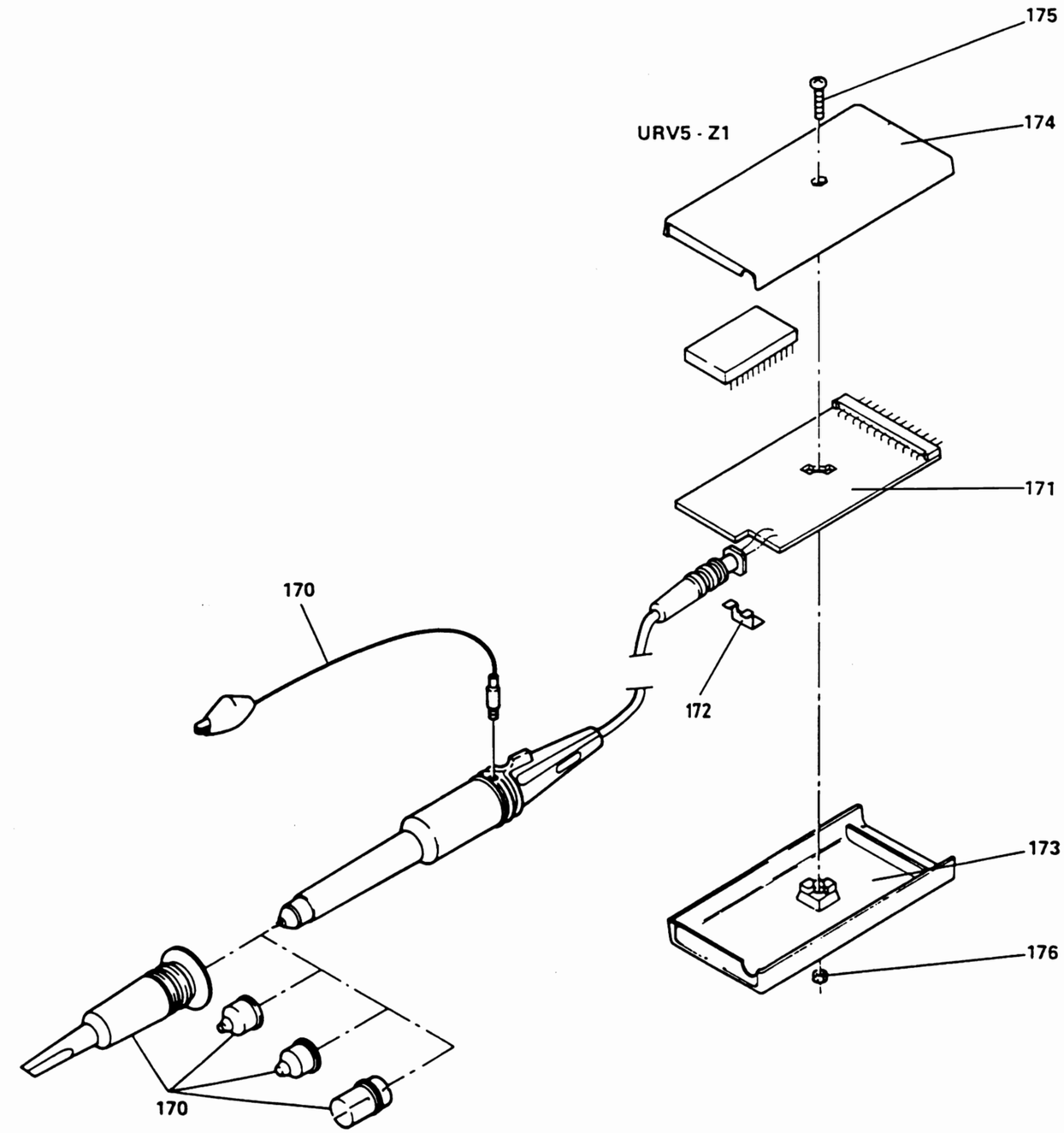
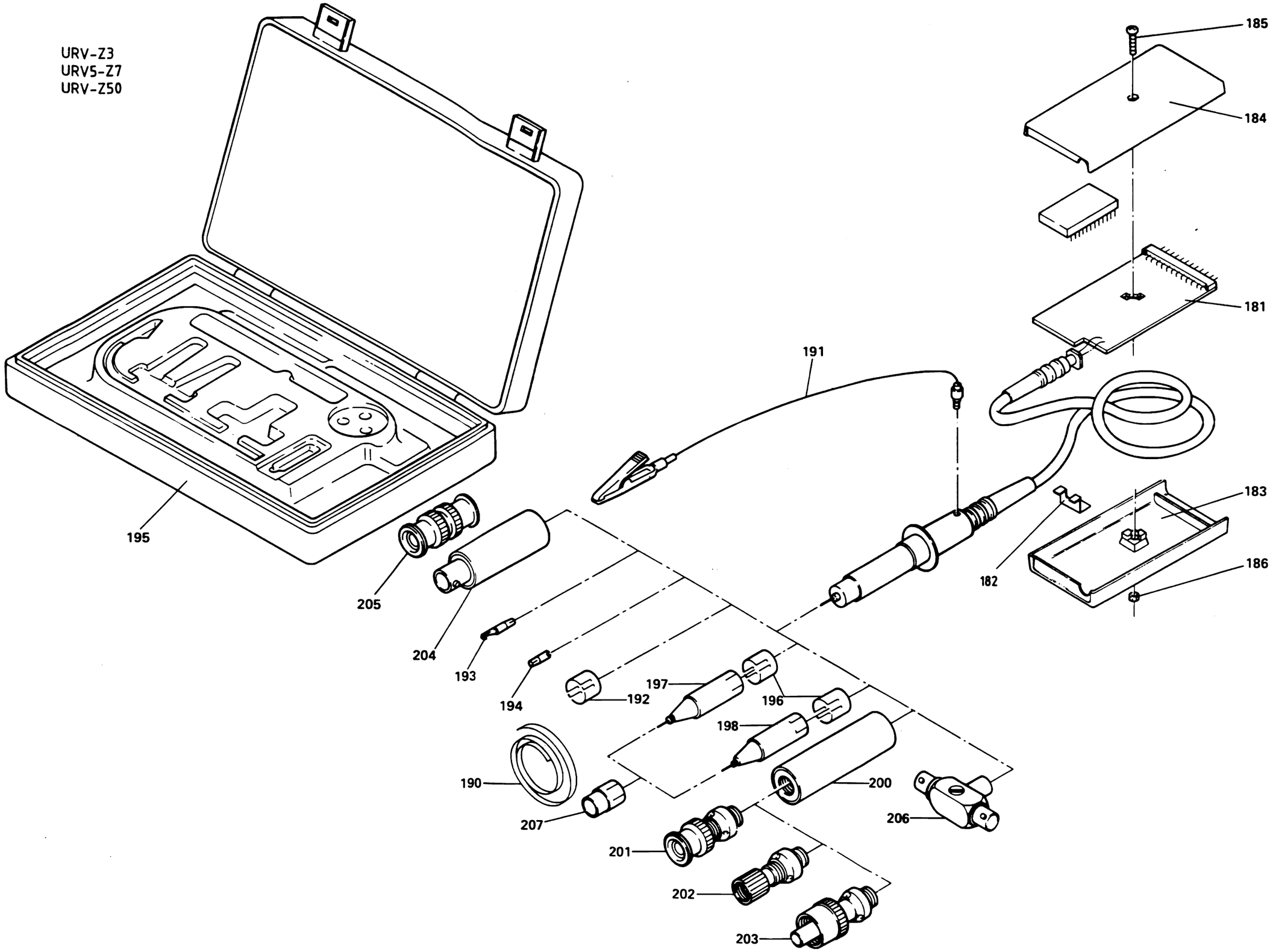


Bild 4 - 14
Fig 4 - 14

URV-Z3
URV5-Z7
URV-Z50



ROHDE&SCHWARZ

Schaltteillisten
Stromläufe
Bestückungspläne
Part lists
Circuit diagrams
Components plans
Listes des pièces détachées
Schémas de Circuit
Plans des composants

(R 29500 BI 7)
095.1000 BI. 2

ROHDE&SCHWARZ

R&S-Schlüsselliste
R&S key list
Liste des symboles de référence R&S

Die R&S-Schaltteillisten nennen in der Spalte "Benennung/Beschreibung" die technischen Daten der Bauelemente in Kurzform. Die Art des Bauelements (z.B. Schicht-, Draht-Widerstand usw.) beschreiben die 2 Kennbuchstaben vor der "Benennung" (evtl. auch vor der "Sachnummer"), die nachfolgend erklärt werden. In Ersatzteil-Bestellungen an R&S ist stets die Angabe der vollständigen Sachnummer erforderlich.

The R&S Parts Lists give the technical data of the components in short form in the column "Benennung/Beschreibung" (designation). The type of component (e.g. depos.-carbon resistor, wire-wound resistor etc.) is indicated by 2 identification letters before the designation, possibly also before the "Sachnummer" (order number), which are explained below. When ordering spare parts from R&S, the complete order number must always be specified.

La colonne «Désignation/description» des listes de pièces de R&S indique les caractéristiques des éléments sous forme abrégée. Le type d'élément (p. ex. résistance à couche, résistance bobinée etc. ...) est décrit par les deux lettres précédant la désignation (et éventuellement le numéro de référence), dont voici l'explication. Prière d'indiquer le numéro de référence («Sachnummer») complet dans toute commande de pièces de rechange.

Teile-familie	Art des Bauelementes	Parts family	Type of component	Famil-le	Type d'élément
A	**Aktive Bauelemente, Halbleiter**	**A**	**Active components, semiconductors**	**A**	**Composants actifs, semiconducteurs**
AD	Universaldiode, z.B. Gleichrichter, Sperrdiode	AD	General-purpose diode, e.g. rectifier, high-resistance diode	AD	Diode d'usage général, p.ex. redresseur, diode à haute résistance
AE	Spezialdiode, z.B. Tunnel-, Kapazitäts-, Zener-Diode	AE	Diode (special), e.g. tunnel diode, varactor, Zener diode	AE	Diode spéciale, p.ex. diode tunnel, varactor, diode Zener
AF	Fotohalbleiter, z.B. Foto-Diode, -Transistor, -Widerstand, Leuchtdiode	AF	Photo-semiconductor, e.g. resistor, diode, transistor; LED	AF	Semiconducteur photoélectrique, p.ex. diode, transistor, résistance photoél., DEL
AG	Leistungs-Gleichrichter, z.B. Thyristor, Triac, Selengleichrichter	AG	Power rectifier, e.g. thyristor, triac, selenium rectifier	AG	Redresseur de puissance, p.ex. thyristor, triac, redresseur, au sélénium
AK	Kleinsignal-Transistor	AK	Small-signal transistor	AK	Transistor faible puissance
AL	Leistungs-Transistor	AL	High-power transistor	AL	Transistor grande puissance
AM	Spezial-Transistor, z.B. FET, MOSFET	AM	Transistor (special), e.g. FET, MOS-FET	AM	Transistor spécial, p.ex. TEC, MOSTEC
AP	Peltier-, Hall-Element	AP	Peltier element, Hall element	AP	Element Peltier, élement Hall
AR	Röhre für Empfänger, Verstärker, Gleichrichter	AR	Valve for receiver, amplifier, rectifier	AR	Tube pour récepteur, amplificateur, redresseur
AS	Spezialröhre, z.B. Senderöhre, EW-Widerstand, Stabilisator	AS	Valve (special), e.g. for transmitter, baretter, ballast valve	AS	Tube (spécial), p.ex. pour émetteur, résistance fer-hydrogène, ballast
AT	Katodenstrahlröhre, z.B. Bildröhre, Ziffern-Anzeigeröhre	AT	Cathode ray tube, e.g. picture tube, digital indicator tube	AT	Tube à rayon cathodique, p.ex. tube à image, tube à affichage numérique
AZ	Zubehör für Halbleiter u. Röhren	AZ	Accessories for semiconductors and valves	AZ	Accessoires pour semiconducteurs et tubes
B	**Bausteine**	**B**	**PC boards, chips**	**B**	**Cartes imprimées, puces**
BC	Integr. Schaltkreis (Microcomp.)	BC	Integrated circuit (interface, A/D)	BC	Circuit intégré (microprocesseur)
BD	R&S-Dunnschicht- und Dickschichtschaltung	BD	R&S thinfilm or thickfilm circuit	BD	Circuit R&S à couche mince ou épaisse
BG	R&S-spezifische Gate-Arrays	BG	R&S gate arrays	BG	Circuits intégrés prédiffusés R&S
BJ	Integrierter Schaltkreis (Interface, A/D-Wandler)	BJ	Integrated circuit (interface, A/D converter)	BJ	Circuit intégré (interface, convertisseur A/N)
BL	Log. Schaltkreis z.B. DTL, TTL, HTL, ECL, C-MOS	BL	Logic circuit, e.g. DTL, TTL, HTL, ECL, C-MOS	BL	Circuit logique, p.ex. DTL, TTL, HTL, ECL, C-MOS
BM	Hybridbaustein, z.B. Mischer, Tuner, Modulator	BM	Hybrid chip, e.g. mixer, tuner, modulator	BM	Puce hybride, p.ex. mélangeur, tuner, modulateur
BO	Analogschaltkreis, z.B. Operationsverstärker	BO	Analog circuit, e.g. operational amplifier	BO	Circuit analogique, p.ex. amplificateur opérationnel
BP	Optoelektronischer Baustein, z.B. Anzeigeeinheit, Koppler	BP	Optoelectronic component, e.g. display, coupler	BP	Composant optoélectronique, p.ex. afficheur, coupleur
BS	Schalt- und Steuerbaustein, elektronischer Sensor	BS	Switching and control modul, electronic sensor	BS	Modul de commutation et de commande, sonde électronique
BV	Stromversorgung, Übersp.-Schutz	BV	Power pack, protective circuit	BV	Alimentation, protection surcharge
BZ	Zubehör	BZ	Accessories	BZ	Accessoires

Teile-familie	Art des Bauelementes	Parts family	Type of component	Famille	Type d'élément
C	**Kondensatoren**	**C**	**Capacitors**	**C**	**Condensateurs**
CB	Bypass-, Durchf.-Kondensator	CB	Bypass capacitor, feed-through capacitor	CB	Condensateur bypass, condensateur de traversée
CC	Keramischer Kondensator	CC	Ceramic capacitor	CC	Condensateur céramique
CD	Drehkondensator	CD	Variable capacitor	CD	Condensateur variable
CE	Elektrolytkondensator	CE	Electrolytic capacitor	CE	Condensateur électrolytique
CG	Glimmerkondensator	CG	Mica capacitor	CG	Condensateur au mica
CH	Sperrschichtkondensator	CH	Semiconductor capacitor	CH	Condensateur semiconducteur
CK	Kunstfolienkondensator	CK	Synthetic-foil capacitor	CK	Condensateur à feuille synthétique
CL	Ker. Hochsp.-Kondensator	CL	HV capacitor (ceramic)	CL	Condensateur HT céramique
CM	Metallpapier-Kondensator	CM	MP capacitor	CM	Condensateur à papier métallisé
CN	Kondensatornetzwerk	CN	Capacitor network	CN	Réseau capacitif
CP	Papierkondensator	CP	Paper capacitor	CP	Condensateur au papier
CS	Störschutzkondensator	CS	Interference-suppression capacitor	CS	Condensateur anti-parasite
CT	Trimmkondensator	CT	Trimmer capacitor	CT	Condensateur ajustable
CV	Vakuum-Kondensator	CV	Vacuum capacitor	CV	Condensateur à vide
D	**Drähte, Leitungen**	**D**	**Wires, lines**	**D**	**Fils, lignes**
DD	Schalt- und Wickeldraht	DD	Hook-up or winding wire	DD	Fil de câblage, fil de bobinage
DF	Flachleitung, Litze	DF	Flat multiple line, stranded wire	DF	Ligne plate, ligne torsadée
DG	Abgeschirmte Leitung	DG	Shielded line	DG	Ligne blindé
DH	Koaxialkabel	DH	Coaxial line	DH	Ligne coaxiale
DJ	Isolierschläuche, Schrumpfschläuche, Wellrohre, Schutzschläuche	DJ	Insulating sheaths, shrink-on sleeves, corrugated tubes, protective tubes	DJ	Gaines isolantes, gaines thermorétractables tubes ondulés, gaines protectrices
DL	HF-Litzen	DL	RF stranded wires	DL	Lignes torsadées RF
DM	Schaltlitzen (mehrdrähtige Leiter)	DM	Multi-conductor wires	DM	Lignes torsadées (multiconducteurs)
DN	Antenne	DN	Antenna	DN	Antenne
DO	Lichtleiter (optisch)	DO	Optical waveguides	DO	Guides d'onde optiques
DP	Leiterplatten (unbestückt)	DP	Printed circuit boards (bare)	DP	Cartes imprimées (non équipées)
DQ	Multilayer (unbestückt)	DQ	Multilayer boards (bare)	DQ	Cartes multicouche (non équipées)
DS	Anschlußkabel (mehradrig)	DS	Connecting cable, multicore	DS	Câble de connexion (multiconducteur)
DU	Substratplatten für Dickschichtschaltungen	DU	Substrate boards for thickfilm circuits	DU	Cartes à substrat pour circuits à couche épaisse
DW	Festmantelkabel	DW	Rigid cables	DW	Câbles rigides
E	**Elektrische Teile**	**E**	**Electric parts**	**E**	**Organes électriques**
EB	Blei-, NC-Akku, Batterie	EB	Lead or alkaline accumulator, battery	EB	Accumulateur Pb/NC, batterie
ED	Gedruckte Schaltung (bestückte Leiterplatte), nicht steckbar	ED	Printed circuits (assembled), non-pluggable	ED	Circuits imprimés (équipés) non enfichables
EE	Gedruckte Schaltung (bestückte Leiterplatte), steckbar	EE	Printed circuits (assembled), pluggable	EE	Circuits imprimés (équipés) enfichables
EF	Glühlampe, Leuchte	EF	Incandescent lamp, pilot lamp	EF	Lampe à incandescence, voyant
EG	Glimmlampe, Entladungslampe	EG	Glow lamp, discharge lamp	EG	Lampe à luminescence lampe à décharge
EK	Kontakt-Streifen, -Feder	EK	Contact clip, contact spring	EK	Lampe de contact, ressort de contact
EL	Lautsprecher, Kopfhörer, Mikrofon	EL	Loudspeaker, headphones, microphone	EL	Haut-parleur, casque, microphone
EM	Motor, Hubmagnet, Drehfeldsystem	EM	Motor, lifting magnet, synchro system	EM	Moteur, électro-aimant de levage, système synchro
EO	Oszillator, z.B. Quarzoszillator	EO	Oscillator, e.g. crystal oscillator	EO	Oscillateur p.ex. oscillateur à quartz
EP	Tief-, Band-, Hochpaß, Bandsperre, Diskriminator	EP	Lowpass, bandpass, highpass filter, band-stop filter, discriminator	EP	Filtre passe-bas, passe-bande, passe-haut, suppression de bande, discriminateur
EQ	Schwing-, Filter-Quarz	EQ	Oscillator or filter crystal	EQ	Quartz oscillateur, quartz de filtre
ER	Resonator, piezoelektr./magnetostriktiv	ER	Resonator, piezoelectric/ magnetostrictive	ER	Résonateur piézo-électrique/ magneto-strictif
ES	Passive SHF-Bauteile	ES	Passive SHF-components	ES	Composant SHF passif
ET	Thermostat	ET	Thermostat	ET	Thermostat
EV	Lüfter, Gebläse	EV	Ventilator, blower	EV	Ventilateur, soufflerie

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Teile-familie	Art des Bauelementes	Parts family	Type of component	Famille	Type d'élément
F	**Fassungen, Steckverbindungen**	**F**	**Sockets, connectors**	**F**	**Douilles, connecteurs**
FG	Koax-Umrüstsatz	FG	Coaxial screw-in assembly	FG	Ensemble vissable coaxial
FH	Koax-Übergang auf Fremdsystem	FH	Coaxial adapter	FH	Adaptateur coaxial
FJ	BNC-Systemteil	FJ	BNC screw-in assembly	FJ	Ensemble vissable BNC
FK	Koaxial-UHF-Systemteil	FK	Coaxial UHF screw-in assembly	FK	Ensemble vissable coaxial UHF
FM	Mehrfachstecker, Buchsenleiste	FM	Multipoint connector	FM	Connecteur multiple
FN	Netz-Steckverbindung	FN	AC-supply connector	FN	Connecteur secteur
FO	Runde Mehrfach-Steckverbindung	FO	Round multipoint connector	FO	Connecteur multipoles rond
FP	Druckschalt-Steckverbindung	FP	Multipoint connector for PC boards	FP	Connecteur multipoles pour cartes imprimées
FR	Fassung für Lampe, Sicherung, usw.	FR	Socket for lamp, fuse, etc.	FR	Douille pour lampe, fusible etc. . . .
FT	Schwachstrom-Steckverbindung	FT	LV plug and socket	FT	Connecteur pour faible courant
FU	Hochspannungs-Steckverbindung	FU	HV plug and socket	FU	Connecteur pour haute tension
FV	Verbinder (z.B. AMP)	FV	Push-on connector	FV	Connecteur à enfichage
FZ	Zubehör für koax. Bauelemente	FZ	Accessories for coax. components	FZ	Accessoires pour composants coax.
H	**Software**	**H**	**Software**	**H**	**Logiciel**
HP	Software-Komponenten und Software-Module	HP	Rights to software components and software modules	HP	Droits d'utilisation de composants et modules logiciel
HS	Auf Informationsträger geladene Software	HS	Software data media	HS	Logiciel sur support d'information
J	**Meßinstrumente**	**J**	**Indicators**	**J**	**Indicateurs**
JD	Drehspul-Anzeigeinstrument	JD	Moving-coil meter	JD	Galvanomètre à cadre mobile
JE	Dreheisen-Anzeigeinstrument	JE	Moving-iron meter	JE	Galvanomètre à fer mobile
JF	Frequenzmesser	JF	Frequency meter	JF	Fréquencemètre
JG	Drehspulinstrument mit Gleichrichter	JG	Moving-coil meter with rectifier	JG	Galvanomètre à cadre mobile avec redresseur
JH	Betriebsstundenzähler	JH	Operating-hours counter	JH	Compteur d'heures de fonctionnement
JJ	Impulszähler	JJ	Pulse counter	JJ	Compteur d'impulsions
JK	Kleinst-Instrument, z.B. Abstimmanzeiger	JK	Mini-instrument, e.g. tuning indicator	JK	Petit indicateur, p.ex. indicateur d'accord
JM	Mechanisches Zählwerk	JM	Mechanical counter	JM	Compteur mécanique
JP	Projektions-Instrument (Leuchtziffer)	JP	Digital display	JP	Afficheur numérique
JQ	Quotientenmesser (Kreuzspulinstrum.)	JQ	Ratiometer (cross coul)	JQ	Quotientmètre (à cadres croisés)
JU	Uhrwerk	JU	Clockwork	JU	Mouvement d'horlogerie
JW	Elektrodyn. Anzeigeinstrument	JW	Electrodynamic meter	JW	Instrument électrodynamique
L	**Induktivitäten, Magnetik**	**L**	**Inductors, magnetic components**	**L**	**Composants inductifs et magnétiques**
LB	Blech- und Schnittbandkern mit Zubehör	LB	Laminated and C-cores with accessories	LB	Noyaux feuilletés et noyaux de type C, avec accessoires
LC	Keramische Spule	LC	Ceramic coil	LC	Bobine céramique
LD	Netz-, HF-Drossel, Df-Filter	LD	Choke, lead-through filter	LD	Self de choc, filtre de traversée
LE	Einzelkreis, Bandfilter	LE	Single tuned circuit, bandpass filter	LE	Circuit accordé, filtre passe-bande
LF	Ferritkern mit Zubehör	LF	Ferrite cores with accessories	LF	Noyaux en ferrite avec accessoires
LK	Karbonyleisenkern und elektrischer Kupferkern mit Zubehör	LK	Iron carbonyl slugs and copper slugs with accessories	LK	Noyaux en fer carbonyle et en cuivre, avec accessoires
LL	Luftspule	LL	Air-core coils	LL	Bobines à air
LM	Magnetband und -platte	LM	Magnetic tapes and disks	LM	Bandes et disques magnétiques
LS	Schirmbecher	LS	Screening cans	LS	Boîtiers de blindage
LT	Netztransformator	LT	Power transformer	LT	Transformateur secteur
LU	NF-Übertrager	LU	AF transformer	LU	Transformateur BF
LV	Variometer	LV	Variometer	LV	Variomètre
LW	Wickelkörper, allgemein	LW	Coil formers, general	LW	Carcasses de bobine, en général

Teile-familie	Art des Bauelementes	Parts family	Type of component	Famille	Type d'élément
R	**Widerstände**	**R**	**Resistors**	**R**	**Résistances**
RD	Drahtwiderstand	RD	Wire-wound resistor	RD	Résistance bobinée
RF	Kohleschicht-Widerstand	RF	Carbon-film resistor	RF	Résistance à couche de carbone
RG	Metallglasur-Widerstand	RG	Metal-coated resistor	RG	Résistance à couche métallique
RJ	Metalloxyd-Widerstand	RJ	Metal-oxide resistor	RJ	Résistance à oxyde métallique
RK	Kaltleiter, Heißleiter, Varistor	RK	PTC, NTC resistors, varistors	RK	Résistances CPT, CNT, varistors
RL	Metallfilm-Widerstand	RL	Metal-film resistor	RL	Résistance à film métallique
RN	Widerstandsnetzwerk	RN	Resistor network	RN	Réseau de résistance
RR	Draht-Potentiometer	RR	Wire-wound potentiometer	RR	Potentiomètre bobiné
RS	Schicht-Potentiometer	RS	Carbon-film potentiometer	RS	Potentiomètre à couche
RT	Dämpfungsglied, Abschlußwiderstand	RT	Attenuator, termination	RT	Atténuateur, charge
RV	Drahtwiderstand mit Abgriff	RV	Wire-wound resistor, tapped	RV	Résistance bobinée à prise
RW	Wendelpotentiometer	RW	Helical potentiometer	RW	Potentiomètre hélicoidal
S	**Schalter, Relais, Sicherungen**	**S**	**Switches, relays, fuses**	**S**	**Commutateurs, relais, fusibles**
SB	Drucktastenschalter	SB	Pushbutton switch	SB	Commutateur à touche
SD	Drehschalter	SD	Rotary switch	SD	Commutateur rotatif
SF	Kontaktfedersatz	SF	Spring contact assembly	SF	Jeu de ressorts de contact
SH	HF-Koaxialschalter, -Relais, -Teiler	SH	Coaxial RF switch, RF relay, RF attenuator	SH	Commutateur RF coaxial, relais RF, atténuateur RF
SK	Kipp-, Wipp- und Schiebeschalter	SK	Toggle switch, slide switch	SK	Commutateur à bascule, à glissière
SL	Leistungsschalter Netz/HF	SL	AC supply switch, high-power RF switch	SL	Commutateur secteur, de puissance RF
SM	Mikroschalter	SM	Microswitch	SM	Microrupteur
SN	Elektromagnet, Relais	SN	Electromagnetic relay	SN	Relais électromagnétique
SP	Leistungsrelais, Luftschütz	SP	Power relay, air-type contactor	SP	Relais de puissance, contacteur à air
SR	Reedrelais	SR	Reed relay	SR	Relais reed
SS	Sicherung, Schutzschalter	SS	Fuse, automatic cut-out	SS	Fusible, coupe-circuit automatique
ST	Thermoschalter	ST	Thermal circuit breaker	ST	Disjoncteur thermique
SU	Überspannungs-Ableiter	SU	Arrester	SU	Eclateur
SW	Wechselrichter, Näherungsschalter	SW	Inverter (DC-AC), proximity switch	SW	Inverseur (DC-AC), commutateur de proximité
SZ	Zeitschalter	SZ	Time switch	SZ	Interrupteur horaire
V	**Verbindungselemente**	**V**	**Connecting elements**	**V**	**Eléments de raccordement**
VK	Klemme, Klemmleiste	VK	Clamp, terminal strip	VK	Pince, réglette à bornes
VL	Lotöse, Stützpunkt	VL	Soldering lug	VL	Cosse à souder
VS	Schraube, Mutter, Scheibe	VS	Screw, nut, washer	VS	Vis, écrou, disque

Farbcode für Widerstände und Kondensatoren

Anmerkung:
Die Wertangabe der weitgehend miniaturisierten Bauelemente erfolgt überwiegend durch Farbkennzeichnungen, deren Bedeutung der nachfolgenden Tabelle entnommen werden kann.

Hinweis:
Im Zuge des technischen Fortschrittes setzt R&S zunehmend Metallschichtwiderstände mit 1% Toleranz anstelle von Kohleschichtwiderständen mit 5% Toleranz ein. Metallschichtwiderstände können sich dabei an Stellen befinden, an denen gemäß Schaltteilliste Kohleschichtwiderstände vorgesehen sind. Etwaige geringfügige Differenzen der Nennwerte zwischen Stromlaufplan, Schaltteilliste und Gerät liegen im zulässigen Toleranzbereich.

Colour code for resistors and capacitors

Note:
The electrical values of the largely miniaturized components are mainly identified by a colour code, the meaning of which can be taken from the table below.

N. B.:
Following the state of the art R&S makes increasing use of metal-film resistors (1% tolerance) instead of carbon-film resistors (5% tolerance). Metal-film resistors may have been employed where carbon-film resistors are specified in the parts list. Any slight differences of nominal values between circuit diagram, parts list and equipment are within tolerance.

Code couleur pour résistances et condensateurs

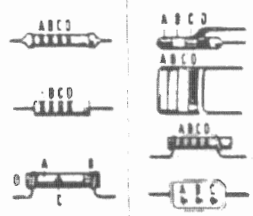
Remarque:
Les valeurs électriques des composants fort miniaturisés sont indiquées dans la plupart des cas par un code couleur dont voici l'explication.

N. B.:
Suivant le progrès technique R&S utilise de plus en plus des résistances à film métallique (tolérance 1%) au lieu des résistances à couche de carbone (tolérance 5%). Des résistances à film métallique peuvent se trouver en des points où des types à couche de carbone figurent dans la liste des composants. Les différences minimes des valeurs nominales existant éventuellement entre le schema de circuit, la liste des composants et l'appareil sont dans la marge de tolérance.

Farbe/Colour/Couleur	A	B	C	D
Schwarz/Black/Noir	—	0		
Braun/Brown/Marron	1	1	0	± 1%
Rot/Red/Rouge	2	2	00	± 2%
Orange/Orange	3	3	000	
Gelb/Yellow/Jaune	4	4	0000	
Grün/Green/Vert	5	5	00000	± 0.5%
Blau/Blue/Bleu	6	6	000000	
Violett/Violet	7	7	—	± 0.1%
Grau/Gray/Gris	8	8	—	
Weiß/White/Blanc	9	9	—	
Gold/Dore	—	—	—	± 5%
Silber/Silver/Argente	—	—	—	± 10%
Ohne Farbe/No colour/Pas de couleur	—	—	—	± 20%

Anordnungsbeispiele für / Examples for / Exemple pour

Widerstände (R) / Resistors (R) / Résistance (R) — Kondensat. (C) / Capacitors (C) / Condensateur (C)



1) Toleranzring, hier nicht spezifiziert
1) Tolerance ring, here not specified.
1) Anneau de tolérance, ne pas specifié ici.

Definition* / Définition *

Kennzeichen A (Bauteilfarbe/1. Farbring) = 1. Zahl
Kennzeichen B (Bauteilende/2. Farbring) = 2. Zahl
Kennzeichen C (Punkt/3. Farbring) = 3. Zahl = Zahl der Nullen
Kennzeichen D (Punkt/4. Farbring) = Toleranz des Nennwerts in %
(Fehlendes Kennzeichen für D bedeutet ±20%)

Das Fehlen eines Kennzeichens bedeutet, daß die Farbe des Bauteilkörpers die Wertangabe darstellt.

Marking A (body colour or first coloured ring) = 1st digit
Marking B (body end or second coloured ring) = 2nd digit
Marking C (dot or third coloured ring) = number of zeroes
Marking D (dot or fourth coloured ring) = tolerance on nominal value in %
(with no D marking tolerance ± 20%)

The absence of a marking signifies that the body colour gives the corresponding information.

Repérage A (couleur du corps ou 1er anneau) = 1er chiffre
Repérage B (bout du corps ou 2e anneau) = 2e chiffre
Repérage C (point ou 3e anneau) = nombre de zéros.
Repérage D (point ou 4e anneau) = tolérance en % de la valeur nominale
(L'absence du repérage D signifie ± 20%)

L'absence de tout repérage signifie que la couleur du corps du composant représente la valeur correspondante.

* Siehe auch DIN 41 429 und DIN 40 825
* see also IEC publication 62-1952 and 62-1968
* Voir aussi DIN 41 429 et DIN 40 825

ROHDE&SCHWARZ	ÄZ	Datum / Date	Schaltteilliste für / Parts list for	Sachnummer / Stock No.	Blatt / Page
	19	0686	URV5-Z1 DC-PROBE	395.0512.01 SA	1

Kennzeichen / Component No.	Benennung/Beschreibung / Designation	Sachnummer / Stock No.	enthalten in / contained in
.	ZUGEH.STROML./CIRC.DIAGR. 395.0512 S		
C10	CC 100NF+-10% 50V5K1200 C CAPACITOR VITRAMON VJ1812Y104KFA	CC 082.3473	395.2915.01
D10	BL MM74HC393N 2X4B.B.CTR NUR VAR : 02 03 DUAL 4-BIT BINARY COUNTER NSC MM74HC393N	BL 395.2950	395.2915.01
D10	BL MM74HC393N 2X4B.B.CTR NUR VAR : 04 DUAL 4-BIT BINARY COUNTER NSC MM74HC393N	BL 395.2950	395.2915.01
D11	BL MM74HC393N 2X4B.B.CTR NUR VAR : 02 03 DUAL 4-BIT BINARY COUNTER NSC MM74HC393N	BL 395.2950	395.2915.01
D11	BL MM74HC393N 2X4B.B.CTR NUR VAR : 04 DUAL 4-BIT BINARY COUNTER NSC MM74HC393N	BL 395.2950	395.2915.01
D12	BC D2732A-25 PROGR.1	395.0812	
D13	BL MM74HC151N 8CH.DIGMUX NUR VAR : 02 03 8CHANNEL DIGITAL MUX NSC MM74HC151N	BL 395.2967	395.2915.01
D13	BL SN74LS151N MULTIPLEXER NUR VAR : 04 IC MULTIPLEXER SN74LS151N TEXAS SN74LS151N	266.7963	395.2915.01
R10	RL 0,21W 1,00KOHM+-1%TK50 NUR VAR : 02 03 RESISTOR RESISTA MK1 1K00 1% TK50	RL 092.1444	395.2915.01
R10	RL 0-WIDERSTAND DIN 0204 NUR VAR : 04 0-OHM RESISTOR DRALORIC OMA 0204	RL 069.0000	395.2915.01
R11	RL 0,21W 1,00KOHM+-1%TK50 NUR VAR : 02 03 RESISTOR RESISTA MK1 1K00 1% TK50	RL 092.1444	395.2915.01
R11	RL 0,21W 10,0KOHM+-1%TK50 NUR VAR : 04 RESISTOR RESISTA MK1 10K0 1% TK50	RL 092.1567	395.2915.01
R12	RL 0,21W 1,00KOHM+-1%TK50 NUR VAR : 02 03 RESISTOR RESISTA MK1 1K00 1% TK50	RL 092.1444	395.2915.01
R12	RL 0,21W 10,0KOHM+-1%TK50 NUR VAR : 04 RESISTOR RESISTA MK1 10K0 1% TK50	RL 092.1567	395.2915.01

Kennzeichen Component No.	Benennung/Beschreibung Designation	Sachnummer Stock No.	enthalten in contained in
R13	RL 0,21W 1,00KOHM+-1%TK50 NUR VAR : 02 03 RESISTOR RESISTA MK1 1K00 1% TK50	RL 092.1444	395.2915.01
R14	RL 0-WIDERSTAND DIN 0204 0-OHM RESISTOR DRALORIC 0MA 0204	RL 069.0000	395.2915.01
V10	AE BZX79/B5V6 0,5W Z-DI NUR VAR : 02 03 ZENER DIODE VALVO BZX79/B5V6	AE 012.5254	395.2915.01
X10	FP WINK.STECKERLEISTE 12P NUR VAR : 02 03 04 BINDER R&S.ZCHNG.516.0200	516.0200	395.2915.01
X11	VL LOETOESE 6,9 X 0,9 NUR VAR : 02 03 SOLDERING PIN DYTRONA ZEICHNUNG 082.5253	VL 082.5253	395.2915.01
X12	VL LOETOESE 6,9 X 0,9 NUR VAR : 02 04 SOLDERING PIN DYTRONA ZEICHNUNG 082.5253	VL 082.5253	395.2915.01
X13	VL LOETOESE 6,9 X 0,9 NUR VAR : 02 04 SOLDERING PIN DYTRONA ZEICHNUNG 082.5253	VL 082.5253	395.2915.01
X14	VL LOETOESE 6,9 X 0,9 NUR VAR : 04 SOLDERING PIN DYTRONA ZEICHNUNG 082.5253	VL 082.5253	395.2915.01
X15	VL LOETOESE 6,9 X 0,9 NUR VAR : 02 SOLDERING PIN DYTRONA ZEICHNUNG 082.5253	VL 082.5253	395.2915.01
X16	VL LOETOESE 6,9 X 0,9 NUR VAR : 02 04 SOLDERING PIN DYTRONA ZEICHNUNG 082.5253	VL 082.5253	395.2915.01
X17	VL LOETOESE 6,9 X 0,9 SOLDERING PIN DYTRONA ZEICHNUNG 082.5253	VL 082.5253	395.2915.01
X18	VL LOETOESE 6,9 X 0,9 NUR VAR : 04 SOLDERING PIN DYTRONA ZEICHNUNG 082.5253	VL 082.5253	395.2915.01
X19	FP WINKELSTECKERLEIST.36P NUR VAR : 03 ANGLE PIN CONNECTOR BERG 75168-113-36 1-POLIG/1 PIN	FP 243.3578	395.2915.01
X20	VL LOETOESE 6,9 X 0,9 NUR VAR : 04 SOLDERING PIN DYTRONA ZEICHNUNG 082.5253	VL 082.5253	395.2915.01
			- ENDE -

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
.	VARIANTENERKL. / VERSIONS VAR 55 = 50 OHM AUSF. M. N-STECKER UND N-BUCHSE MOD 55 = 50 OHM-MODEL WITH N-PLUG+ N-SOCKET VAR 04 = EMBARGO-AUSFHRG. MOD 04 = EMBARGO MODEL VAR 56 = 50 OHM AUSF. M.N-ST+N-BU.M. ANSCHL.KABEL 5M LG. MOD 56 = 50 OHM MODEL WITH N-PLUG+ N-SOCKET CONNECTING CABLE,5M LENGTH				
.	ZUGEH.STROML./CIRC.DIAGR. 395.1019 S				
C1	CC 10NF+-10% 50V W5R CHIP CAPACITOR	CC 093.2115	VITRAMON	VJ0805Y103KFA	395.1419.01
C3	CC 100NF+-10%50V X7R 1206 NUR VAR/ONLY MOD: 23 CERAMIC CHIP CAPACITOR	CC 007.5237	VITRAMON	VJ1206Y104KFA	395.1319.01 F
C3	CC 2X1NF+-20%50V W5R8X4X2 KOAXIAL CAPACITOR	395.1402	ERIE	D03-201-050-2X1NF20%	395.1148.01
C4	CC 1NF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 007.7398	VITRAMON	VJ1206A102JFAT	395.1319.01
C10	CC 100NF+-10% 50V5K1200 C CAPACITOR	082.3473	VITRAMON	VJ1812Y104KFA	395.2915.01
D10	BL MM74HC393N 2X4B.B.CTR NUR VAR/ONLY MOD: 02 03 DUAL 4-BIT BINARY COUNTER	BL 395.2950	NSC	MM74HC393N	395.2915.01
D10	BL MM74HC393N 2X4B.B.CTR NUR VAR/ONLY MOD: 04 DUAL 4-BIT BINARY COUNTER	BL 395.2950	NSC	MM74HC393N	395.2915.01
D11	BL MM74HC393N 2X4B.B.CTR NUR VAR/ONLY MOD: 02 03 DUAL 4-BIT BINARY COUNTER	BL 395.2950	NSC	MM74HC393N	395.2915.01
D11	BL MM74HC393N 2X4B.B.CTR NUR VAR/ONLY MOD: 04 DUAL 4-BIT BINARY COUNTER	BL 395.2950	NSC	MM74HC393N	395.2915.01
D12	HS D 2732A - 25 NUR VAR/ONLY MOD: 55 56	395.1490			
D12	D2732A-25 (EMBARGO) NUR VAR/ONLY MOD: 04	395.1502			
D13	BL MM74HC151N 8CH.DIGMUX NUR VAR/ONLY MOD: 02 03 8CHANNEL DIGITAL MUX	BL 395.2967	NSC	MM74HC151N	395.2915.01
D13	BL SN74LS151N MULTIPLEXER NUR VAR/ONLY MOD: 04 IC MULTIPLEXER SN74LS151N	266.7963	TEXAS	SN74LS151N	395.2915.01
R1	RL 0,5W47 OHM1% TK50 0204 METAL FILM RESISTOR	394.9845	DRALORIC	SMA0204HF 47OHM 1%	395.1419.01 F
R1	RG 0-OHM WIDERSTAND-CHIP RESISTOR CHIP 0-OHM	RG 007.5108	DALE	CRCW1206 00HM F T	395.1319.01
R2	RG 0-OHM WIDERSTAND-CHIP RESISTOR CHIP 0-OHM	RG 007.5108	DALE	CRCW1206 00HM F T	395.1319.01
R3	RG 0-OHM WIDERSTAND-CHIP NUR VAR/ONLY MOD: 02 22 RESISTOR CHIP 0-OHM	RG 007.5108	DALE	CRCW1206 00HM F T	395.1319.01
R3	RG 1,82KOHM+01%TK100 1206 NUR VAR/ONLY MOD: 23 RESISTOR CHIP	RG 007.5720	DALE	CRCW1206 1,82KOHM FT	395.1319.01 F
R3	RL 0,21W 10,0KOHM+-1%TK50 RESISTOR	RL 092.1567	RESISTA	MK1 10K0 1% TK50	395.1148.01
R4	RL 0,21W 10,0KOHM+-1%TK50 RESISTOR	RL 092.1567	RESISTA	MK1 10K0 1% TK50	395.1148.01
R10	RL 0,21W 1,00KOHM+-1%TK50 NUR VAR/ONLY MOD: 02 03 RESISTOR	RL 092.1444	RESISTA	MK1 1K00 1% TK50	395.2915.01
R10	RL 0-OHM-WIDERST. 0204 NUR VAR/ONLY MOD: 04 0-OHM RESISTOR	RL 069.0000	DRALORIC	OMA 0204	395.2915.01

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
R11	RL 0,21W 1,00KOHM+-1%TK50 NUR VAR/ONLY MOD: 02 03 RESISTOR	RL 092.1444	RESISTA	MK1 1K00 1% TK50	395.2915.01
R11	RL 0,21W 10,0KOHM+-1%TK50 NUR VAR/ONLY MOD: 04 RESISTOR	RL 092.1567	RESISTA	MK1 10K0 1% TK50	395.2915.01
R12	RL 0,21W 1,00KOHM+-1%TK50 NUR VAR/ONLY MOD: 02 03 RESISTOR	RL 092.1444	RESISTA	MK1 1K00 1% TK50	395.2915.01
R12	RL 0,21W 10,0KOHM+-1%TK50 NUR VAR/ONLY MOD: 04 RESISTOR	RL 092.1567	RESISTA	MK1 10K0 1% TK50	395.2915.01
R13	RL 0,21W 1,00KOHM+-1%TK50 NUR VAR/ONLY MOD: 02 03 RESISTOR	RL 092.1444	RESISTA	MK1 1K00 1% TK50	395.2915.01
R14	RL 0-OHM-WIDERST. 0204 0-OHM RESISTOR	RL 069.0000	DRALORIC	OMA 0204	395.2915.01
V1	ZE DIODENPAAR2X BAT16-046 V2 ENTH. IN V1 V2 INCL. IN V1 PAIR OF DIODES	395.2873			
V3	BJ LM335H TEMP.SENSOR PRECION TEMP.SENSOR	395.2867	NSC	LM335H	395.1319.01
V10	AE BZX79/B5V6 0,5W ZDI NUR VAR/ONLY MOD: 02 03 ZENER DIODE	AE 012.5254	VALVO	BZX79/B5V6	395.2915.01
X1 ..8	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 078.2747	-	R&S-ZCHNG.078.2747	395.1319.01
X9	VL STECKLOETOESE 7,5X1,1 NUR VAR/ONLY MOD: 22 23 PLUG-IN SOLDERING LUG	VL 078.2747	-	R&S-ZCHNG.078.2747	395.1319.01
X10	VL STECKLOETOESE 7,5X1,1 NUR VAR/ONLY MOD: 22 23 PLUG-IN SOLDERING LUG	VL 078.2747	-	R&S-ZCHNG.078.2747	395.1319.01
X10	FP WINK.STECKERLEISTE 12P NUR VAR/ONLY MOD: 02 03 04 CONNECTOR	516.0200	BINDER	R&S.ZCHNG.516.0200	395.2915.01
X11	VL LOETOESE 6,9 X 0,9 NUR VAR/ONLY MOD: 02 03 SOLDERING PIN	VL 082.5253	DYTRONA	ZEICHNUNG 082.5253	395.2915.01
X12	VL LOETOESE 6,9 X 0,9 NUR VAR/ONLY MOD: 02 04 SOLDERING PIN	VL 082.5253	DYTRONA	ZEICHNUNG 082.5253	395.2915.01
X13	VL LOETOESE 6,9 X 0,9 NUR VAR/ONLY MOD: 02 04 SOLDERING PIN	VL 082.5253	DYTRONA	ZEICHNUNG 082.5253	395.2915.01
X14	VL LOETOESE 6,9 X 0,9 NUR VAR/ONLY MOD: 04 SOLDERING PIN	VL 082.5253	DYTRONA	ZEICHNUNG 082.5253	395.2915.01
X15	VL LOETOESE 6,9 X 0,9 NUR VAR/ONLY MOD: 02 SOLDERING PIN	VL 082.5253	DYTRONA	ZEICHNUNG 082.5253	395.2915.01
X16	VL LOETOESE 6,9 X 0,9 NUR VAR/ONLY MOD: 02 04 SOLDERING PIN	VL 082.5253	DYTRONA	ZEICHNUNG 082.5253	395.2915.01
X17	VL LOETOESE 6,9 X 0,9 SOLDERING PIN	VL 082.5253	DYTRONA	ZEICHNUNG 082.5253	395.2915.01
X18	VL LOETOESE 6,9 X 0,9 NUR VAR/ONLY MOD: 04 SOLDERING PIN	VL 082.5253	DYTRONA	ZEICHNUNG 082.5253	395.2915.01
X19	FP WINKELSTECKERLEIST.36P NUR VAR/ONLY MOD: 03 1-POLIG/1 PIN ANGLE PIN CONNECTOR	FP 243.3578	BINDER	742-5-11-0187-00-36	395.2915.01
X20	VL LOETOESE 6,9 X 0,9 NUR VAR/ONLY MOD: 04 SOLDERING PIN	VL 082.5253	DYTRONA	ZEICHNUNG 082.5253	395.2915.01
X21	FJ UMR.BUCHSE DEZ.B/N SCREW-IN ASSEMBLY 50	017.5398			
X22	FJ PRAEZ.N-ST,UMR.EBENE	395.1954			
					- ENDE -

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
R1	DT ABSCHLUSSWDST. 75 OHM TERMINATION 75 OHMS DUENNSCHICHT-SPEZ.TEIL	094.6050			243.9153
X1	FK UEBERGANG UNI 9 2.5/6 ADAPTER	243.9260	WANDEL&GOL	UNI9 2.5/6 S344 0000	243.9218
X2	FK UEBERGANG UNI9 1,6/5,6 ADAPTER	243.9276	WANDEL&GOL	UNI9-1,6/5.6 S346 0	243.9218
X3	FK UEBERGANG UNI9/BNC ADAPTER	243.9282	WANDEL&GOL	S825 00002691.815	243.9218
X4	FK EINBAUBUCHSE UNI9 H	243.9253	WANDEL&GOL	0000-1686.009/5	
X5A	MB FEDERBUCHSE SOCKET	243.9147			
X5B	MB AUSSENLEITER	243.9130			
					- ENDE -

ROHDE & SCHWARZ	Äl	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock Nr.	Blatt Page
	01	0888	URV-Z3 75 OHM ADAPTER	243.9118.01 SA	1-

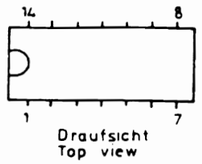
Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
.	VARIANTENERKL. / VERSIONS VAR 04 = EMBARGO AUSFUEHRG MOD 04 = EMBARGO-MODEL VAR 55 = 50 OHM AUSF. MIT N-STECKER UND N-BUCHSE VAR 56 = 50 OHM AUSF.MIT MOD 55 = 50 OHM MODEL WITH N-PLUG+N-SOCKET N-ST+N-BU+ ANSCHL.KABEL 5M LANG MOD 56 = 50 OHM MODEL WITH N-PLUG+N-SOCKET+ CONNECTING CABLE 5MM LENGTH VAR 75 = 75 OHM-AUSF. M.N-STECKER UND N-BUCHSE MOD 75 = 75 OHM MODEL WITH N-PLUG+N-SOCKET VAR 76 = 75 OHM-AUSF.M. N-ST.+N-BU UND ANSCHL.KABEL 5M.LANG MOD 76 = 75 OHM MODEL WITH N-PLUG+N-SOCKET+ CONNECTING,CABLE, 5M LENGTH				
..	ZUGEH.STROML./CIRC.DIAGR. 395.1619 S				
C3	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR NUR VAR/ONLY MOD: 23	CC 007.5237	VITRAMON	VJ1206 Y 104 K FAT	395.1319.01
C3	CC 2X1NF+-20%50V W5R8X4X2 KOAXIAL CAPACITOR	395.1402	ERIE	D03-201-050-2X1NF20%	395.1783.01
C4	CC 1NF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 007.7398	VITRAMON	VJ1206 A 102 F FAT	395.1319.01
C10	CC 100NF+-10% 50V5K1200 C CAPACITOR	082.3473	VITRAMON	VJ1812Y104KFA	395.2915.01
D10	BL MM74HC393N 2X4B.B.CTR DUAL 4-BIT BINARY COUNTER NUR VAR/ONLY MOD: 02 03	BL 395.2950	NSC	MM74HC393N	395.2915.01
D10	BL MM74HC393N 2X4B.B.CTR DUAL 4-BIT BINARY COUNTER NUR VAR/ONLY MOD: 04	BL 395.2950	NSC	MM74HC393N	395.2915.01
D11	BL MM74HC393N 2X4B.B.CTR DUAL 4-BIT BINARY COUNTER NUR VAR/ONLY MOD: 02 03	BL 395.2950	NSC	MM74HC393N	395.2915.01
D11	BL MM74HC393N 2X4B.B.CTR DUAL 4-BIT BINARY COUNTER NUR VAR/ONLY MOD: 04	BL 395.2950	NSC	MM74HC393N	395.2915.01
D12	HS BC 2732 PROGR.1 BC 2732 PROGR.1 NUR VAR/ONLY MOD: 55 56 75 76	395.1890			
D12	BC 2732 PROGR.1(EMBARGO) EPROM NUR VAR/ONLY MOD: 04	395.1902			
D13	BL MM74HC151N 8CH.DIGMUX 8CHANNEL DIGITAL MUX NUR VAR/ONLY MOD: 02 03	BL 395.2967	NSC	MM74HC151N	395.2915.01
D13	BL SN74LS151N MULTIPLEXER IC MULTIPLEXER SN74LS151N NUR VAR/ONLY MOD: 04	266.7963	TEXAS	SN74LS151N	395.2915.01
R1	RL 0.5W47 OHM1% TK50 0204 METAL FILM RESISTOR	394.9845	DRALORIC	SMA0204HF 470HM 1%	395.1819.01 F
R1	RG 0-OHM WIDERSTAND-CHIP RESISTOR CHIP 0-OHM	RG 007.5108	DALE	CRCW1206-10 OR F-T	395.1319.01
R2	RG 0-OHM WIDERSTAND-CHIP RESISTOR CHIP 0-OHM	RG 007.5108	DALE	CRCW1206-10 OR F-T	395.1319.01
R3	RG 0-OHM WIDERSTAND-CHIP RESISTOR CHIP 0-OHM NUR VAR/ONLY MOD: 22	RG 007.5108	DALE	CRCW1206-10 OR F-T	395.1319.01

Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
R3	RG 1,82KOHM+01%TK100 1206 RESISTOR CHIP NUR VAR/ONLY MOD: 23	RG 007.5720	DALE	CRCW1206-10 1K82 F-T	395.1319.01
R3	RL 0,21W 10,0KOHM+-1%TK50 RESISTOR	RL 092.1567	RESISTA	MK1 10KO 1% TK50	395.1783.01 F
R3	RL 0,21W 10,0KOHM+-1%TK50 RESISTOR	RL 092.1567	RESISTA	MK1 10KO 1% TK50	
R4	RL 0,21W 10,0KOHM+-1%TK50 RESISTOR	RL 092.1567	RESISTA	MK1 10KO 1% TK50	395.1783.01 F
R4	RL 0,21W 10,0KOHM+-1%TK50 RESISTOR	RL 092.1567	RESISTA	MK1 10KO 1% TK50	
R10	RL 0,21W 1,00KOHM+-1%TK50 RESISTOR NUR VAR/ONLY MOD: 02 03	RL 092.1444	RESISTA	MK1 1K00 1% TK50	395.2915.01
R10	RL 0-OHM-WIDERST. 0204 0-OHM RESISTOR NUR VAR/ONLY MOD: 04	RL 069.0000	DRALORIC	OMA 0204	395.2915.01
R11	RL 0,21W 1,00KOHM+-1%TK50 RESISTOR NUR VAR/ONLY MOD: 02 03	RL 092.1444	RESISTA	MK1 1K00 1% TK50	395.2915.01
R11	RL 0,21W 10,0KOHM+-1%TK50 RESISTOR NUR VAR/ONLY MOD: 04	RL 092.1567	RESISTA	MK1 10KO 1% TK50	395.2915.01
R12	RL 0,21W 1,00KOHM+-1%TK50 RESISTOR NUR VAR/ONLY MOD: 02 03	RL 092.1444	RESISTA	MK1 1K00 1% TK50	395.2915.01
R12	RL 0,21W 10,0KOHM+-1%TK50 RESISTOR NUR VAR/ONLY MOD: 04	RL 092.1567	RESISTA	MK1 10KO 1% TK50	395.2915.01
R13	RL 0,21W 1,00KOHM+-1%TK50 RESISTOR NUR VAR/ONLY MOD: 02 03	RL 092.1444	RESISTA	MK1 1K00 1% TK50	395.2915.01
R14	RL 0-OHM-WIDERST. 0204 0-OHM RESISTOR	RL 069.0000	DRALORIC	OMA 0204	395.2915.01
V1	ZE DIODENPAAR2X BAT16-046 PAIR OF DIODES V2 ENTH. IN V1 V2 INCL. IN V1	395.2873			
V3	BJ LM335H TEMP.SENSOR PRECION TEMP.SENSOR	395.2867	NSC	LM335H	395.1319.01
V10	AE BZX79/B5V6 0,5W ZDI ZENER DIODE NUR VAR/ONLY MOD: 02 03	AE 012.5254	VALVO	BZX79/B5V6	395.2915.01
X1 ..8	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 078.2747	-	R&S-ZCHNG.078.2747	395.1319.01
X9	VL STECKLOETOESE 7.5X1,1 PLUG-IN SOLDERING LUG NUR VAR/ONLY MOD: 22 23	VL 078.2747	-	R&S-ZCHNG.078.2747	395.1319.01
X10	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG NUR VAR/ONLY MOD: 22 23	VL 078.2747	-	R&S-ZCHNG.078.2747	395.1319.01
X10	FP WINK.STECKERLEISTE 12P CONNECTOR NUR VAR/ONLY MOD: 02 03 04	516.0200	BINDER	R&S.ZCHNG.516.0200	395.2915.01
X11	VL LOETOESE 6,9 X 0,9 SOLDERING PIN NUR VAR/ONLY MOD: 02 03	VL 082.5253	DYTRONA	ZEICHNUNG 082.5253	395.2915.01
X12	VL LOETOESE 6,9 X 0,9 SOLDERING PIN NUR VAR/ONLY MOD: 02 04	VL 082.5253	DYTRONA	ZEICHNUNG 082.5253	395.2915.01
X13	VL LOETOESE 6,9 X 0,9 SOLDERING PIN NUR VAR/ONLY MOD: 02 04	VL 082.5253	DYTRONA	ZEICHNUNG 082.5253	395.2915.01
X14	VL LOETOESE 6,9 X 0,9 SOLDERING PIN NUR VAR/ONLY MOD: 04	VL 082.5253	DYTRONA	ZEICHNUNG 082.5253	395.2915.01
X15	VL LOETOESE 6,9 X 0,9 SOLDERING PIN NUR VAR/ONLY MOD: 02	VL 082.5253	DYTRONA	ZEICHNUNG 082.5253	395.2915.01
X16	VL LOETOESE 6,9 X 0,9 SOLDERING PIN NUR VAR/ONLY MOD: 02 04	VL 082.5253	DYTRONA	ZEICHNUNG 082.5253	395.2915.01
X17	VL LOETOESE 6,9 X 0,9 SOLDERING PIN	VL 082.5253	DYTRONA	ZEICHNUNG 082.5253	395.2915.01
X18	VL LOETOESE 6,9 X 0,9 SOLDERING PIN NUR VAR/ONLY MOD: 04	VL 082.5253	DYTRONA	ZEICHNUNG 082.5253	395.2915.01

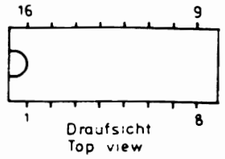
Kennz. Comp.No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
X19	FP WINKELSTECKERLEIST.36P ANGLE PIN CONNECTOR NUR VAR/ONLY MOD: 03 1-POLIG/1 PIN	FP 243.3578	BINDER	742-5-11-0187-00-36	395.2915.01
X20	VL LOETOESE 6,9 X 0,9 SOLDERING PIN NUR VAR/ONLY MOD: 04	VL 082.5253	DYTRONA	ZEICHNUNG 082.5253	395.2915.01
X21	FJ UMR.BUCHSE DEZ.B/N SCREW-IN ASSEMBLY 50 NUR VAR/ONLY MOD: 04 55 56	017.5398			
X21	FJ UMR.BUCHSE DEZ. B/N SCREW-IN ASSEMBLY 75 OHMS NUR VAR/ONLY MOD: 75 76	017.5446			
X22	FJ PRAEZ.N-ST.UMR.EBENE NUR VAR/ONLY MOD: 04 55 56	395.1954			
X22	FJ UMRUESTST.DEZ.B/SYST.N SCREW-IN ASSEMBLY NUR VAR/ONLY MOD: 75 76	017.7655			
					- ENDE -

Kennz. Comp.No.	Benennung Designation		Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
.	VARIANTENERKL. / VERSIONS VAR 02 = GRUNDAUSFUEHRUNG MOD 02 = BASIC MODEL VAR 03 = M.ANSCHL.KABEL 5M LANG MOD 03 = WITH CONNECTING CABLE,5MLENGT					
..	ZUGEH.STROML./CIRC.DIAGR. 395.2680 S					
C1	CC 680PF+50-20%5R4000 CERAMIC CAPACITOR		022.4850	DRALORIC	SEFK5/680/2050R4000	395.2880
C2	CC 1NF+-10%100V3K1200CHIP CAPACITOR		082.3221	VITRAMON	VJ1005Y102KFB	395.2815.01
C3	CC 1NF+-10%100V3K1200CHIP CAPACITOR		082.3221	VITRAMON	VJ1005Y102KFB	395.2815.01
C4	CC 100PF+-5%100V3NPO CHIP CERAMIC CAPACITOR		022.4409	VITRAMON	VJ1005A101JFB	395.2815.01
C5	CC 100PF+-5%100V3NPO CHIP CERAMIC CAPACITOR		022.4409	VITRAMON	VJ1005A101JFB	395.2815.01
C6	CC 1NF+-10%100V2K1200CHIP CAPACITOR	CC	082.7385	VITRAMON	VJ0805Y102KFA	395.2815.01
C10	CC 100NF+-10% 50V5K1200 C CAPACITOR		082.3473	VITRAMON	VJ1812Y104KFA	395.2915.01
D10	BL MM74HC393N 2X4B.B.CTR NUR VAR/ONLY MOD: 02 03 DUAL 4-BIT BINARY COUNTER	BL	395.2950	NSC	MM74HC393N	395.2915.01
D10	BL MM74HC393N 2X4B.B.CTR NUR VAR/ONLY MOD: 04 DUAL 4-BIT BINARY COUNTER	BL	395.2950	NSC	MM74HC393N	395.2915.01
D11	BL MM74HC393N 2X4B.B.CTR NUR VAR/ONLY MOD: 02 03 DUAL 4-BIT BINARY COUNTER	BL	395.2950	NSC	MM74HC393N	395.2915.01
D11	BL MM74HC393N 2X4B.B.CTR NUR VAR/ONLY MOD: 04 DUAL 4-BIT BINARY COUNTER	BL	395.2950	NSC	MM74HC393N	395.2915.01
D12	HS BC D2732A-25 PROGR.1		395.2944			
D13	BL MM74HC151N 8CH.DIGMUX NUR VAR/ONLY MOD: 02 03 8CHANNEL DIGITAL MUX	BL	395.2967	NSC	MM74HC151N	395.2915.01
D13	BL SN74LS151N MULTIPLEXER NUR VAR/ONLY MOD: 04 IC MULTIPLEXER SN74LS151N		266.7963	TEXAS	SN74LS151N	395.2915.01
R1	RL 0,21W 182 OHM+-1%TK50 RESISTOR	RL	092.1350	RESISTA	MK1 182OHM 1% TK50	395.2815.01
R2	RL 0,21W 182 OHM+-1%TK50 RESISTOR	RL	092.1350	RESISTA	MK1 182OHM 1% TK50	395.2815.01
R3	RL 0,21W 10,0KOHM+-1%TK50 RESISTOR	RL	092.1567	RESISTA	MK1 10KO 1% TK50	395.2815.01
R4	RL 0,21W 10,0KOHM+-1%TK50 RESISTOR	RL	092.1567	RESISTA	MK1 10KO 1% TK50	395.2815.01
R10	RL 0,21W 1,00KOHM+-1%TK50 NUR VAR/ONLY MOD: 02 03 RESISTOR	RL	092.1444	RESISTA	MK1 1KOO 1% TK50	395.2915.01
R10	RL 0-OHM-WIDERST. 0204 NUR VAR/ONLY MOD: 04 0-OHM RESISTOR	RL	069.0000	DRALORIC	OMA 0204	395.2915.01
R11	RL 0,21W 1,00KOHM+-1%TK50 NUR VAR/ONLY MOD: 02 03 RESISTOR	RL	092.1444	RESISTA	MK1 1KOO 1% TK50	395.2915.01
R11	RL 0,21W 10,0KOHM+-1%TK50 NUR VAR/ONLY MOD: 04 RESISTOR	RL	092.1567	RESISTA	MK1 10KO 1% TK50	395.2915.01
R12	RL 0,21W 1,00KOHM+-1%TK50 NUR VAR/ONLY MOD: 02 03 RESISTOR	RL	092.1444	RESISTA	MK1 1KOO 1% TK50	395.2915.01
R12	RL 0,21W 10,0KOHM+-1%TK50 NUR VAR/ONLY MOD: 04 RESISTOR	RL	092.1567	RESISTA	MK1 10KO 1% TK50	395.2915.01
R13	RL 0,21W 1,00KOHM+-1%TK50 NUR VAR/ONLY MOD: 02 03 RESISTOR	RL	092.1444	RESISTA	MK1 1KOO 1% TK50	395.2915.01
R14	RL 0-OHM-WIDERST. 0204 0-OHM RESISTOR	RL	069.0000	DRALORIC	OMA 0204	395.2915.01

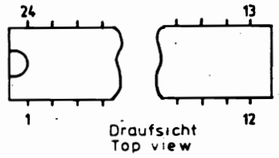
Kennz. Comp.No.	Benennung Designation		Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
V1	ZE DIODENPAAR2X BAT16-046 V2 ENTHALTEN IN V1 V2 INCLUDED IN V1 PAIR OF DIODES		395.2873			395.2715
V3	BJ LM335H TEMP.SENSOR PRECION TEMP.SENSOR		395.2867	NSC	LM335H	395.2815.01
V10	AE BZX79/B5V6 0,5W ZDI NUR VAR/ONLY MOD: 02 03 ZENER DIODE	AE	012.5254	VALVO	BZX79/B5V6	395.2915.01
X1	FP EINLOETBUCHSE F.0,43 SOCKET		395.2973	AMP	6-330808-5	395.2880
X2	FP EINLOETBUCHSE F.0,43 SOCKET		395.2973	AMP	6-330808-5	395.2880
X3	FP EINLOETBUCHSE F.0,43 SOCKET		395.2973	AMP	6-330808-5	395.2815.01
X4	FP EINLOETBUCHSE F.0,43 SOCKET		395.2973	AMP	6-330808-5	395.2815.01
X5	FP EINLOETBUCHSE SOCKET		470.6447	BINDER	08-0090-0036	395.2880
X10	FP WINK.STECKERLEISTE 12P NUR VAR/ONLY MOD: 02 03 04 CONNECTOR		516.0200	BINDER	R&S.ZCHNG.516.0200	395.2915.01
X11	VL LOETOESE 6,9 X 0,9 NUR VAR/ONLY MOD: 02 03 SOLDERING PIN	VL	082.5253	DYTRONA	ZEICHNUNG 082.5253	395.2915.01
X12	VL LOETOESE 6,9 X 0,9 NUR VAR/ONLY MOD: 02 04 SOLDERING PIN	VL	082.5253	DYTRONA	ZEICHNUNG 082.5253	395.2915.01
X13	VL LOETOESE 6,9 X 0,9 NUR VAR/ONLY MOD: 02 04 SOLDERING PIN	VL	082.5253	DYTRONA	ZEICHNUNG 082.5253	395.2915.01
X14	VL LOETOESE 6,9 X 0,9 NUR VAR/ONLY MOD: 04 SOLDERING PIN	VL	082.5253	DYTRONA	ZEICHNUNG 082.5253	395.2915.01
X15	VL LOETOESE 6,9 X 0,9 NUR VAR/ONLY MOD: 02 SOLDERING PIN	VL	082.5253	DYTRONA	ZEICHNUNG 082.5253	395.2915.01
X16	VL LOETOESE 6,9 X 0,9 NUR VAR/ONLY MOD: 02 04 SOLDERING PIN	VL	082.5253	DYTRONA	ZEICHNUNG 082.5253	395.2915.01
X17	VL LOETOESE 6,9 X 0,9 SOLDERING PIN	VL	082.5253	DYTRONA	ZEICHNUNG 082.5253	395.2915.01
X18	VL LOETOESE 6,9 X 0,9 NUR VAR/ONLY MOD: 04 SOLDERING PIN	VL	082.5253	DYTRONA	ZEICHNUNG 082.5253	395.2915.01
X19	FP WINKELSTECKERLEIST.36P NUR VAR/ONLY MOD: 03 1-POLIG/1 PIN ANGLE PIN CONNECTOR	FP	243.3578	BINDER	742-5-11-0187-00-36	395.2915.01
X20	VL LOETOESE 6,9 X 0,9 NUR VAR/ONLY MOD: 04 SOLDERING PIN	VL	082.5253	DYTRONA	ZEICHNUNG 082.5253	395.2915.01
						- ENDE -



D10,D11



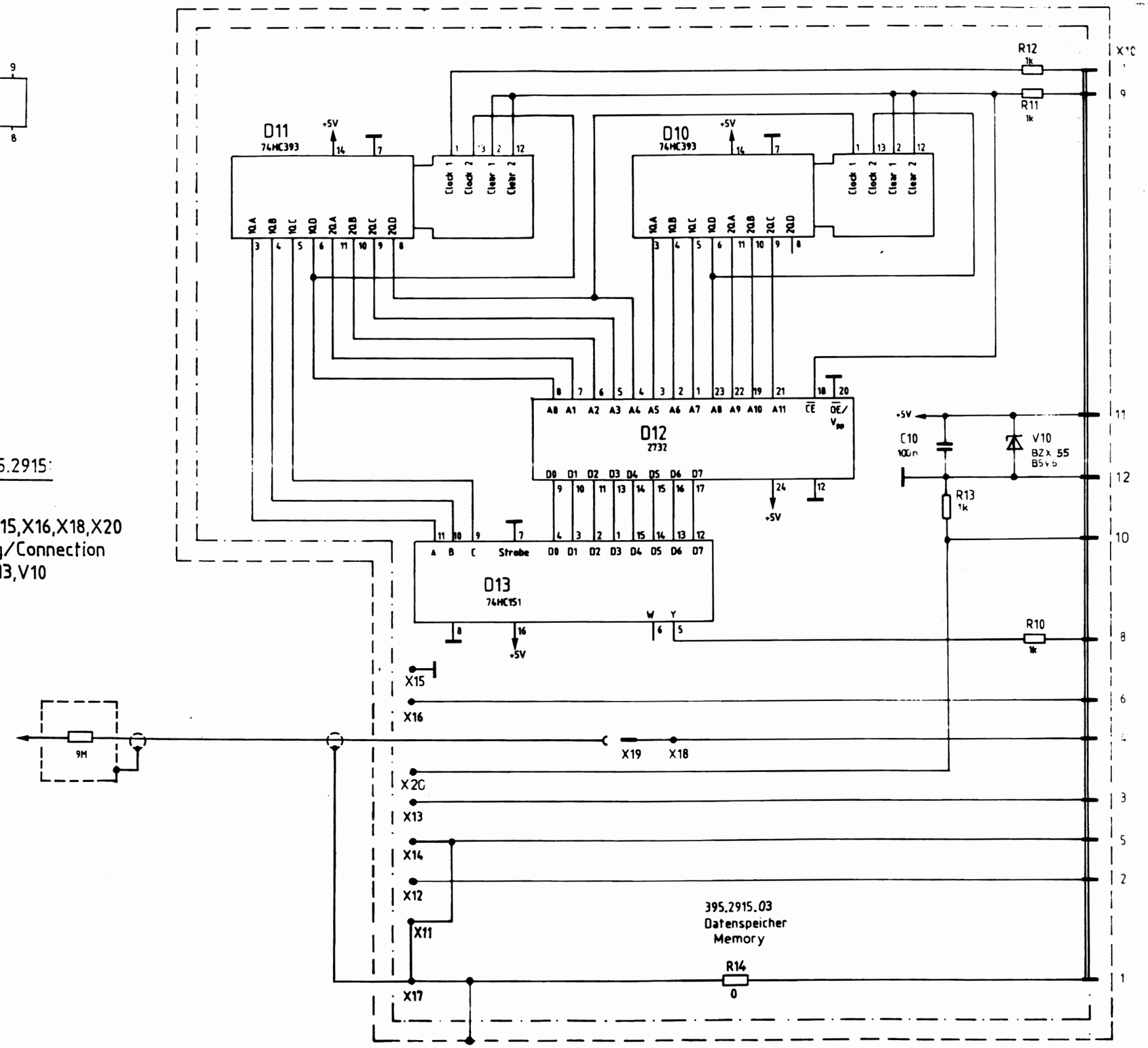
D12



D13

Variantenerklärung/Version zu/to 395.2915:

VAR 02 ohne/not incl. X18,X19,X20
VAR 03 ohne/not incl. X12,X13,X14,X15,X16,X18,X20
mit/with X11-X17 Verbindung/Connection
VAR 04 ohne/not incl. X11, ,X19,R13,V10



Stromlauf zu	DC-Tastkopf URV5-Z1 DC-Probe	Z	Zeichn Nr 395.0512S	
			reg V 395.0512V	erste Z

ROHDE & SCHWARZ MUNCHEN

	Name	Datum
gezeichnet	Hi	10.83
bearbeitet	Li	08.84
geprüft	Hg	
normgeprüft	Li	

Ausg. A, 30854
Ausg. B, 31397

ROHDE & SCHWARZ MUNCHEN

A	3139 8	03.84	Li
B	34340	8.85	Li
C	39963	5.88	Hi

03.84	Hg	
	Li	

D11
74HC393

D10
74HC393

D12
2732

D13
74HC151

D12
Draufsicht
Top view

D13
Draufsicht
Top view

V3
LM335H
Draufsicht
Top view

D10,D11
Draufsicht
Top view

395.1319.02
Sensorplatte
Sensor board

395.1419.02
Anschlußplatte
Connector board

395.2915.02
Datenspeicher
Memory

X10
X16
X15
X19
X20
X13
X12
X11
X17
X21
X22

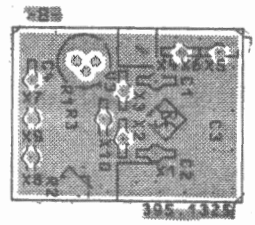
R1 47
C1 10n
R3 10k
R4 10k
R10 1k
R11 1k
R12 1k
R13 1k
R14 0
C10 100n
C3 1n
C4 1n
V10 BZX 55 B5V6

ge/yel
gn/grn
ws/wht
br/brn

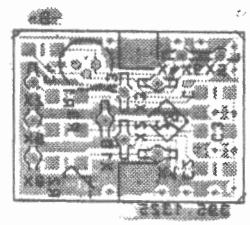
+5V

10V Durchgangskopf 10V Insertion unit	URV5-Z2	Ersatz für	395.1019 S
		Ersatz für	395.1019
		erste Ausgabe	395.1019

Ansicht und Leitungsführung Bauteilseite
View of tracks on component side



Ansicht und Leitungsführung Lötseite
View of tracks on solder side



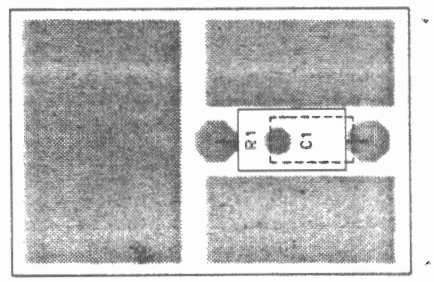
C 39963 (2) 06.88 Li			Maße ohne Toleranzangabe		Maßstab 1 : 1
					Halbzeug, Werkstoff
			1KGU	Tag	Name
			Bearb	12.85	Li
			Gepr		
			Norm		
			ROHDE&SCHWARZ		Zeichn.-Nr 395.1319
Änd. Zust.	Änderungs Mitteilung	Tag	Name	zu Gerät URV 5 - Z2	reg. V 395.1019 V erste Z 395.1019

Benennung: Sensorplatte / Sensor board

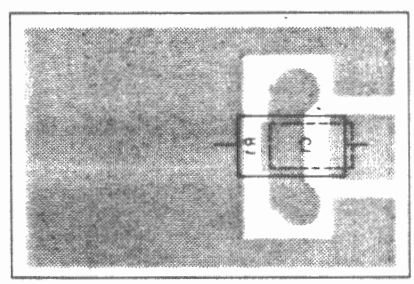
Z

Blatt Nr. 2

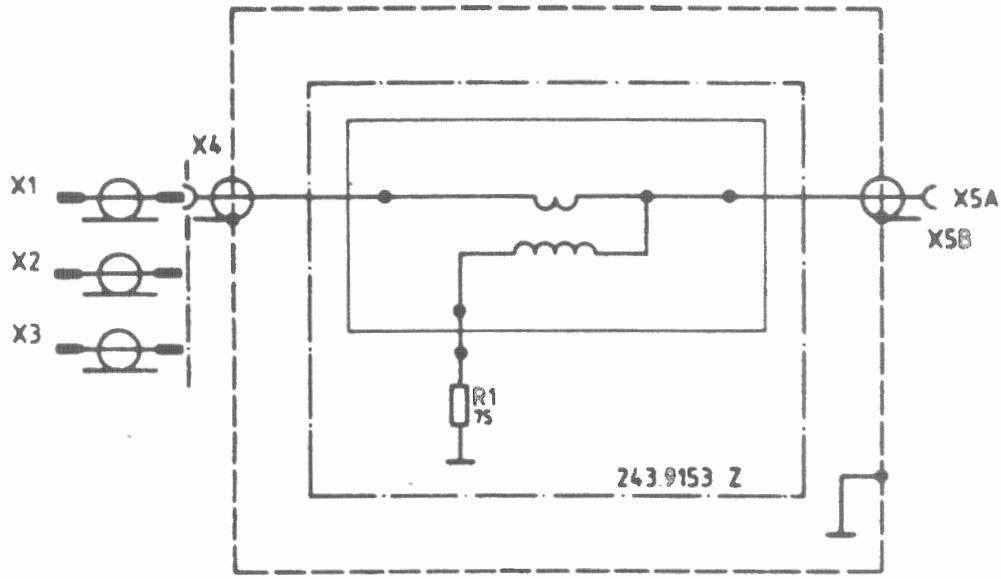
Ansicht und Leitungsfuhrung Bauteilseite
View of tracks on component side



Ansicht und Leitungsfuhrung Lotseite
View of tracks on solder side



A — 9.83 KL	Maße ohne Toleranzangabe	Maßstab 4 : 1	
		Halbzeug Werkstoff	
	1KGU Tag Name	Benennung	
	Bearb 9.83 KL	Anschlußplatte	Z
	Gepr	Connector board	
	Norm		
Änd Dat Änderungs Mitteilung Tag Name	ROHDE & SCHWARZ	Zeichn.-Nr 395.1419	Blatt-Nr 2
	z. Gerät URV5-Z2	Ers. f. 395 1019 V	Ers. d. 395 1019



Variantenerklärung/Versions:
VAR 70 = Grundausführung/Basic model

			1KSU	Tag	Name	Benennung	Z
			Bearb	09.87	WK	75 OHM Adapter	
			Gepr				
			Norm				
						Zeichn.-Nr	Blatt-Nr
			RHODE&SCHWARZ			243.9118 S	1
Änd Zust	Änderungs-Mitteilung	Tag	Name	zu Gerät URV - Z3		reg. v 243.9118 V erste Z	v 1 Bl

ROHDE & SCHWARZ MUNCHEN

	Name	Datum	Norme
A	3144302	03.84	Li
B	32719	03.85	Li
C	38213	06.88	Li
D	—	10.88	Li

Ers. f.	Hg	
Ers. d.	Li	
1KGU	34 03.84	

D11
74HC393

D10
74HC393

D12
2732

D13
74HC151

D10,D11

D12

D13

Draufsicht
Top view

V3
LM335H

C4 1n

C10 100n

V10
BZX 55
B5V6

R1 47

R3 10K

R4 10K

R10 1k

R11 1k

R12 1k

R13 1k

R14 0

V1

V2

C3I 1n

C3 1n

X10

X21

X22

X1 X2 X3 X4 X5 X6 X7 X8

X11 X12 X13 X15 X16 X17 X19 X20

ge/yel

gn/grn

ws/wht

br/brn

395.1319.02
Sensorplatte
Sensor board

395.1819.02
Anschlußplatte
Connector board

395.2915.02
Datenspeicher
Memory

+5V

Strobe

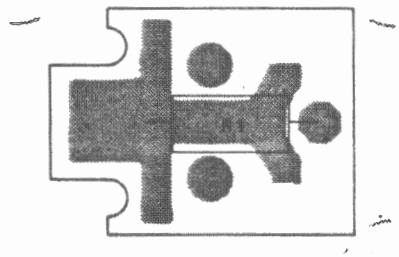
100V Durchgangskopf
100V Insertion unit

URV5-Z4

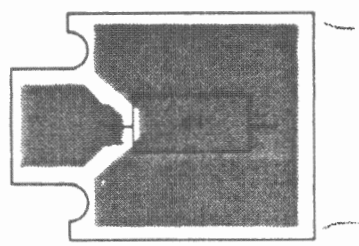
Zeichn. Nr 395.1619 S

Ers. f. 395.1619 Ers. d. 395.1619

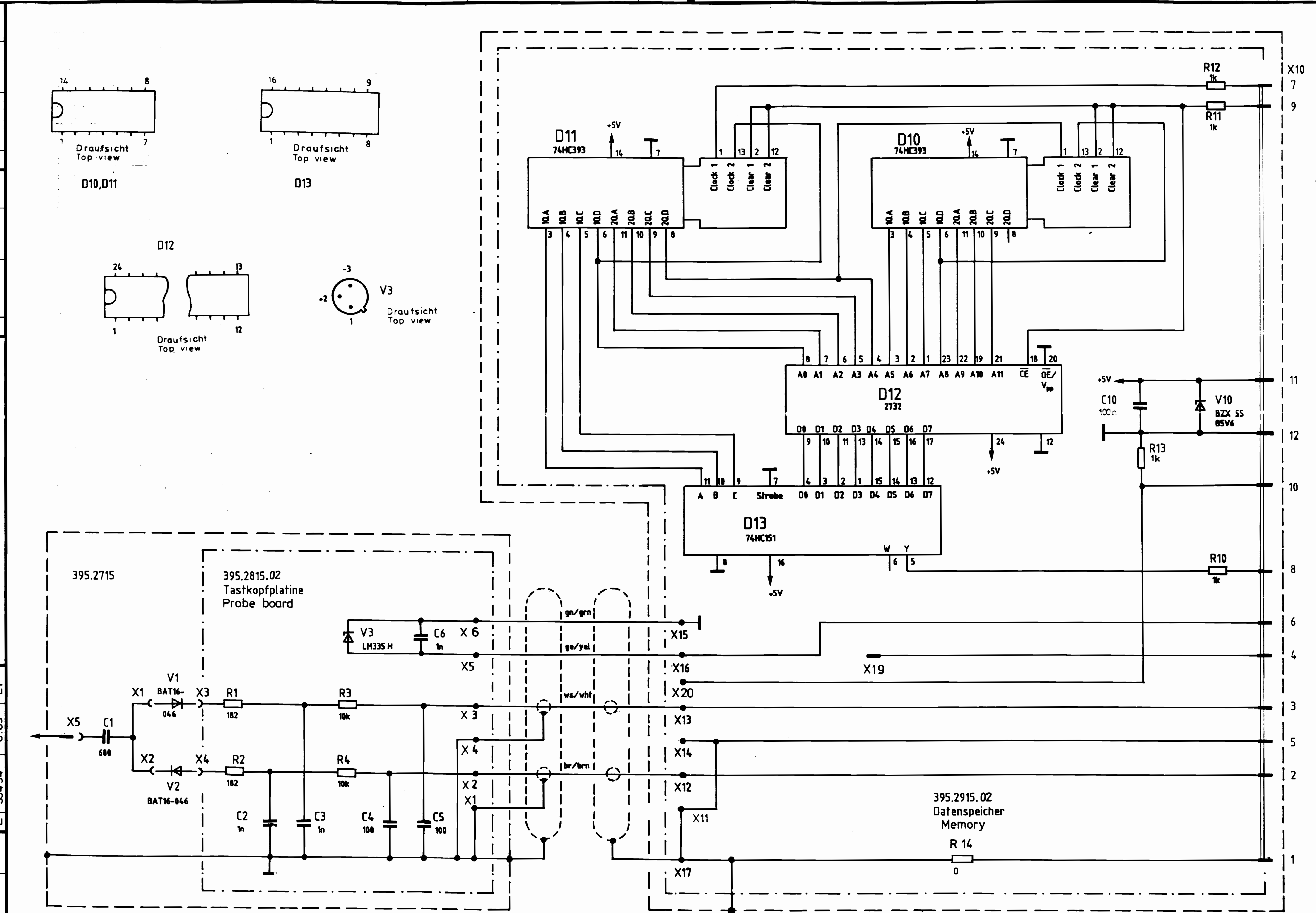
Ansicht und Leitungsfuhrung Bauteilseite
View of tracks on component side



Ansicht und Leitungsfuhrung Lotseite
View of tracks on solder side



A	9.83	KL	Maße ohne Toleranzangabe	Maßstab 4 : 1	
				Halbzeug, Werkstoff	
			1KGU / Tag / Name	Benennung	
			Bearb 9.83 KL	Anschlußplatte Connector board	Z
			Gepr		
			Norm		
			ROHDE&SCHWARZ	Zeichn.-Nr 395.1819	Blatt-Nr 2
And Zust	Änderungs-Mitteilung	Tag Name	zu Gerät URV5-Z4	reg. v 395.1619 V erste Z 395.1619	v Bl



Variantenerkl. / Versions
VAR 02 = Grundausf. MOD 02 = Basic Model
VAR 03 = m. Anschl. Kabel 5m lang MOD 03 = with Connecting Cable 5m lengt

Stromlauf zu
HF-Tastkopf
RF-Probe

Z

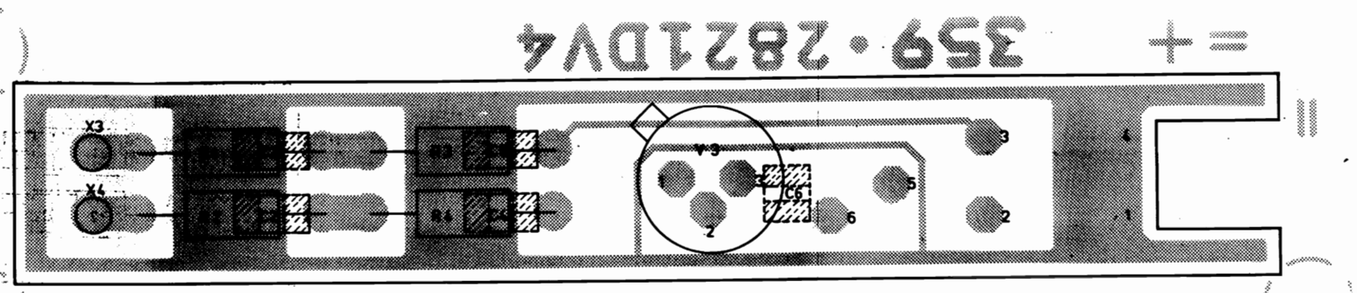
Zeichn. Nr. 395.2680S

reg. i.V. 395.2615V

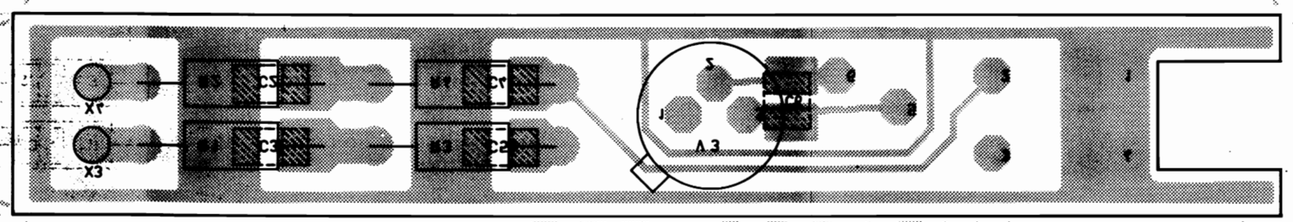
erste Z. 395.2615

Änd.-zust.	Änd.-Mittg. Nr.	Datum	Name
A	30855	10.83	Hi
B	31399	2.84	Li
C	31399	4.84	Li
D	31399	6.84	Li
E	33494	8.85	Li
F	39333	9.88	Li

Ansicht und Leitungsführung Bauteilseite
View of tracks on component side



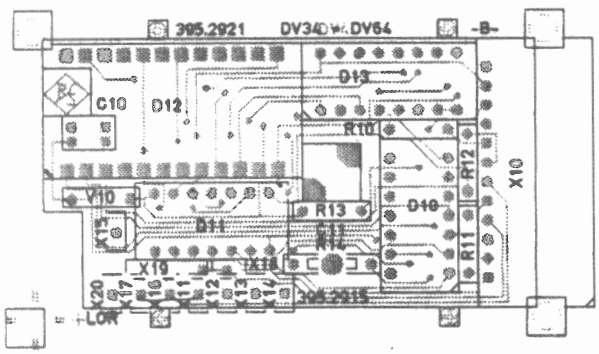
Ansicht und Leitungsführung Lötseite
View of tracks on solder side

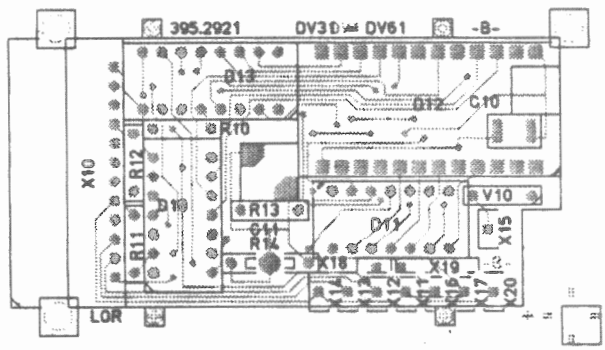


395·2821DV1

C	31399	08.84	Li	Maße ohne Toleranzangabe		Maßstab 4 : 1	
D	34871	4.86	Li			Halbzeug, Werkstoff	
				1KGE	Tag / Name	Benennung	
				Bearb.	3.83 NL	Tastkopfplatte	Z
				Gepr.		Probe board	
				Norm			
Änd. Zust.	Änderungs-Mitteilung	Tag	Name	ROHDE&SCHWARZ		Zeichn.-Nr. 395.2815	Blatt-Nr. 2
				zu Gerät		reg. i. V. 395.2615V / erste Z. 395.2715	v. Bl.

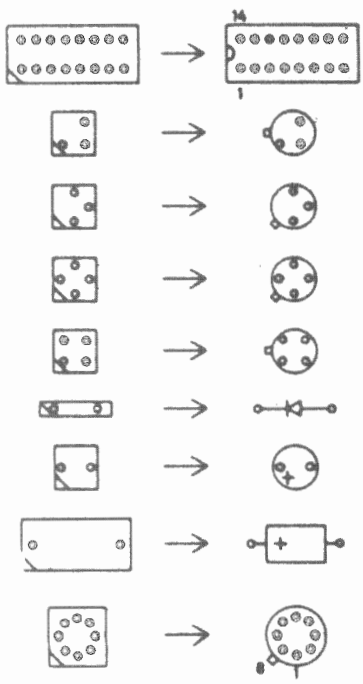
Ansicht und Leitungsführung Bauteilseite
View of tracks on component side





Ansicht und Leitungsführung Lötseite
View of tracks on solder side

Symbolschlüssel



Achtung! MOS-Bauteile
Caution. MOS components

B		9.83	LI	Maße ohne Toleranzangabe		Maßstab 1 : 1	
						Halbzeug, Werkstoff	
				1KGU	Tag	Name	Benennung: Datenspeicher / Memory — Z
				Bearb	9.83	LI	
				Gepr.			
				Norm			
				ROHDE&SCHWARZ		Zeichn.-Nr 395.2915	Blatt-Nr 2
And. Zust.	Änderungs-Mitteilung	Tag	Name	zu Gerät URV5-Z7		reg. v 395.2615V	erste Z 395.2680