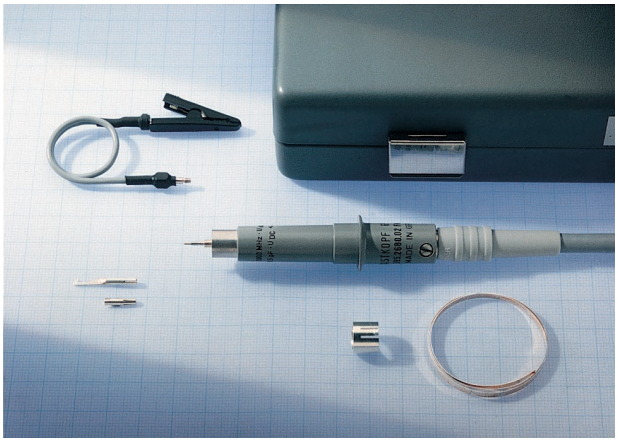
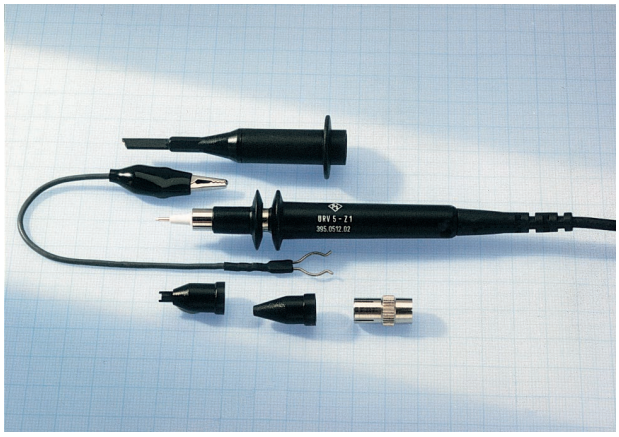
Probes and Insertion Units URV5-Z1, -Z2, -Z4, -Z7, -Z9 for voltage and level measurement



RF Probe URV5-Z7 (photo 40621-11)



DC Probe URV5-Z1 (photo 40621-10)

Brief description

URV5-Z probes and insertion units are indispensable tools for RF and microwave labs, test departments and service. They cover the frequency range from 9 kHz to 3 GHz and thus fill the gap between low-frequency voltage measurement at one end and microwave power measurement at the other end.

All corrections of the rectifier such as linearization, temperature compensation or frequency-response correction are made numerically. Each probe or insertion unit has a built-in calibration data memory with its individual data which are continuously read by the meter.

All AC probes read out the RMS value for unmodulated sinewave voltages.

RF Probe URV5-Z7
A versatile tool for measuring high-frequency voltages. Thanks to its low input capacitance of 2.5 pF ideal for practically no-load measurements on non-coaxial circuits up to about 500 MHz (with accessories up to 1 GHz). Measurement range with plug-on dividers 1000 V (input capacitance 0.5 pF).

Accessory Set URV-Z6
- Plug-on divider 20 dB and 40 dB for extending the measurement range and reducing the input capacitance to100 V/1 pF or 1000 V/0.5 pF.
- BNC adapter for level measurements on coaxial 50 Ω lines (see also Insertion Units URV5-Z2, -Z4).

Adapters
URV-Z50 (50 Ω), URV-Z3 (75 Ω)
With integrated termination for power measurements on matched sources.

Dual Direction Coupler URV5-Z9
Suitable for power and SWR measurements at higher powers in conjunction with two RF probes for forward and reflected power.

DC Probe URV5-Z1
Due to its low input capacitance ideal for DC voltage measurements on high-frequency modules.

Insertion Units URV5-Z2 (50 Ω), URV5-Z4 (50 Ω and 75 Ω)
Insertion units are used for non-interrupting level measurements between source and load and for power measurements with wide dynamic range. They are made up of a short, reflection-free and low-loss line section with voltage tap and rectifier in the middle of the line.

With a well-matched load, the transmitted power P can be calculated for the measured voltage V_{rms} and the characteristic impedance Z_0 according to the formula $P = V_{rms}^2/Z_0$.

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Specifications in brief

The indicated measurement uncertainties are valid in the temperature range 18°C to 28°C. Influences of the basic unit, meter noise, zero error, mismatch and temperature effects (beyond the indicated range) must also be taken into account.

1) With BNC adapter (URV-Z6); maximum power is limited by power loss of the adapter.

2) 1 mV to 100 V

3) 100 V to 400 V

Model	Frequency range Impedance	Voltage measurement range Max. load	Power measurement range Level meas. range	Max. VSWR (reflection coefficient)		Meas. uncertainty in dB (% of voltage)		RF connector
RF Probe URV5-Z7	20 kHz to 500 MHz 2.5 pF/80 kΩ	200 µV to 10 V 15 V (RMS) 22 V (PK) 400 V (DC)	1 nW to 2 W –60/+33 dBm	–	–	0.07 to 1.1	(0.8 to 12)	BNC female/ female[1])
with 20 dB divider (URV-Z6)	1 to 500 MHz 1 pF/1 MΩ	2 mV to 100 V 150 V (RMS) 220 V (PK) 1000 V (DC)	100 nW to 20 W –40/+43 dBm	–	–	1.1 to 1.9	(12 to 20)	BNC female/ female[1])
with 40 dB divider (URV-Z6)	0.5 to 500 MHz 0.5 pF/10 MΩ	20 mV to 1000 V 1050 V (RMS) 1500 V (PK) 1000 V (DC)	10 µW to 20 W –20/+43 dBm	–	–	0.63 to 1.9	(7.3 to 20)	BNC female/ female[1])
with 50 Ω Adapter URV-Z50	20 kHz to 1 GHz 50 Ω	200 µV to 10 V 10 V (RMS) 22 V (PK)	1 nW to 2 W –60/+33 dBm	20 to 50 kHz >0.05 to 50 MHz >50 to 100 MHz >100 to 500 MHz >500 to 700 MHz >0.7 to 1 GHz	1.03 (0.015) 1.03 (0.015) 1.06 (0.030) 1.11 (0.050) 1.22 (0.10) 1.44 (0.18)	0.90 0.12 to 0.20 0.20 0.30 to 0.63 1.0 to 1.4 1.0 to 1.4	(10) (1.3 to 2.3) (2.3) (3.3 to 7.3) (11 to 18) (11 to 18)	BNC female (male)
with 75 Ω Adapter URV-Z3	20 kHz to 500 MHz 75 Ω	200 µV to 10 V 12 V (RMS) 22 V (PK)	500 pW to 1.3 W –62/+31 dBm	20 to 50 kHz >0.05 to 100 MHz >100 to 200 MHz >200 to 500 MHz	1.03 (0.015) 1.03 (0.015) 1.06 (0.03) 1.22 (0.10)	0.90 0.12 to 0.20 0.38 1.10	(10) (1.3 to 2.3) (4.3) (12)	BNC male 2.5/6 male 1.6/5.6 male
with Dual Directional Coupler URV5-Z9	100 kHz to 80 MHz 50 Ω	Max. load see data sheet	10 µW to 2 kW –20/+63 dBm	0.1 to 30 MHz >30 to 80 MHz	1.02 (0.01) 1.03 (0.015)	0.10 to 0.20 0.15 to 0.20	(1.2 to 2.3) (1.7 to 2.3)	N female/ male
DC Probe URV5-Z1	3 pF/9 MΩ	1 mV to 100 V 400 V (PK)	–	–	–	0.013 dB 0.030 dB	(0.15%)[2]) (0.35%)[3])	BNC male
10 V Insertion Unit URV5-Z2	9 kHz to 3 GHz 50 Ω	200 µV to 10 V 15 V (RMS) 22 V (PK) 50 V (DC)	1 nW to 2 W –60/+33 dBm	9 to 20 kHz >20 to 50 kHz >50 kHz to 200 MHz >200 to 500 MHz >500 MHz to 1 GHz >1.0 to 2.0 GHz >2.0 to 3.0 GHz	1.04 (0.02) 1.04 (0.02) 1.04 (0.02) 1.10 (0.048) 1.22 (0.10) 1.35 (0.15) 1.35 (0.15)	0.20 to 0.35 0.17 to 0.20 0.13 to 0.17 0.20 to 0.25 0.25 to 0.30 0.30 to 0.50 0.40 to 0.75	(2.3 to 4) (2.0 to 2.3) (1.5 to 2.0) (2.3 to 2.8) (2.8 to 3.4) (3.4 to 5.6) (4.5 to 8.3)	N female/ male
100 V Insertion Unit URV5-Z4	100 kHz to 3 GHz 50 Ω	2 mV to 100 V 150 V (RMS) 220 V (PK) 1000 V (DC)	100 nW to 200 W –40/+53 dBm	100 to 200 kHz >200 to 500 kHz >0.5 to 3 MHz >3 to 200 MHz >200 to 500 MHz >0.5 to 1 GHz >1 to 2 GHz >2 to 3 GHz	1.04 (0.02) 1.04 (0.02) 1.04 (0.02) 1.04 (0.02) 1.04 (0.02) 1.07 (0.035) 1.07 (0.035) 1.10 (0.048)	0.50 to 1.50 0.25 to 0.60 0.13 to 0.20 0.13 0.17 to 0.20 0.20 to 0.25 0.30 to 0.50 0.45 to 1.05	(5.6 to 16) (2.8 to 6.7) (1.5 to 2.3) (1.5) (2.0 to 2.3) (2.3 to 2.8) (3.4 to 5.6) (5.0 to 11.4)	N female/ male
100 V Insertion Unit URV5-Z4	100 kHz to 2 GHz 75 Ω	2 mV to 100 V 150 V (RMS) 220 V (PK) 1000 V (DC)	50 nW to 130 W –42/+51 dBm	0.1 to 0.5 MHz >0.5 to 200 MHz >200 to 500 MHz >0.5 to 1 GHz >1 to 2 GHz	1.03 (0.015) 1.03 (0.015) 1.04 (0.02) 1.06 (0.03) 1.11 (0.05)	0.7 to 1.9 0.12 to 0.2 0.25 0.47 0.63 to 1.2	(8 to 20) (1.3 to 2.3) (2.8) (5.3) (7.3 to 15)	N female/ male

Ordering information

DC Probe with ground cable, clip tip and BNC adapter	URV5-Z1	0395.0512.02
10 V Insertion Unit (50 Ω, 3 GHz)	URV5-Z2	0395.1019.02
100-V Insertion Unit		
50 Ω, 2 GHz	URV5-Z4	0395.1619.02
75 Ω, 2 GHz	URV5-Z4	0395.1619.75
RF Probe with case, ground cable, ground sleeve and tape, hook and solder tip	URV5-Z7	0395.2615.02
Accessory Set for RF Probe Plug-on divider 20 dB and 40 dB, BNC adapter 50 Ω, reducing sleeve for divider, ground sleeves and ground tape	URV-Z6	0292.5364.02
50 Ω Terminating Adapter BNC female connector, with adapter to BNC male	URV-Z50	0394.9816.50
75 Ω Terminating Adapter with adapters to BNC, 2.5/6 and 1.6/5.6 connectors	URV-Z3	0243.9118.70

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