Millivoltmeter URV55

DC to 3/40 GHz

200 µV to 1000 V

100 pW to 30 W

RF/DC voltage, level and power measurements

Photo 40113

Brief description

Millivoltmeter URV55 is suitable for voltage measurements up to 3 GHz as well as for power and level measurements up to 40 GHz. Thanks to probes with calibration data memory and temperature sensors, which make adjustments by the user superfluous, URV55 provides at all times high-precision measurements free of operator's errors.

Main features

- Voltage, level and power measurements
- Large choice of intelligent probes and sensors (URV5-Z, NRV-Z)
- IEC/IEEE-bus interface
- DC frequency input for tracking frequency-response correction
- Analog output for YT recorder
- Menu-guided operation with softkeys
- Storage of 20 complete instrument setups
- 13 digital filters for noise suppression, automatic or manual filter selection
- Sensor check source (optional)

Measuring heads

The range of measuring heads includes high-impedance probes with plug-on dividers and adapters (URV5-Z7, -Z1) as well as insertion units for voltage measurements on coaxial lines (URV5-Z2, -Z4). All power sensors of the NRV-Z series can be used without any restrictions.

Specifications in brief: URV55, NRVS, NRVD; voltage probes page 262, power sensors page 266

Additional NRVD-specific features in bold

Measurement functions	average power, pulse power, peak envelope power **AM, reflection**, DC voltage (depending on sensor)
Frequency and level range	DC to 40 GHz, 100 pW to 30 W 9 kHz to 3 GHz, 200 µV to 1000 V (depending on sensor)
Probes and sensors	all NRV sensors and URV5 probes
Display	LCD for digits, units, menu-guided operation and analog display, **adjustable backlighting**
Display of results	single-channel (with optional display of correction frequency) or **dual-channel**
Absolute readout	W, dBm, V, dBµV, **dBV**
Relative readout NRVS, URV55	dB, %W or %V relative to a stored reference value
Relative readout NRVD	**dB, difference, percent and ratio, relative to a stored reference value or to the second measurement channel; VSWR, reflection coefficient, return loss in dB, AM modulation depth**
Analog display	automatic or with selectable scale
Digital display and resolution	max. $4^1/_2$ digits, resolution selectable (0.1/0.01/0.001 dB)
Display filtering	averaging over 1 to 512 readings to reduce display noise; manual or automatic setting depending on measurement range and resolution
Display noise	see sensors from page 262/266
Measurement rate	see table below
Accuracy of URV55 (without sensor)	
18 to 28°C	±0.02 dB ±1 digit
10 to 40°C	±0.04 dB ±1 digit
0 to 50°C	±0.06 dB ±1 digit
Accuracy of power readout in W (NRVS/D without sensors)	0.4% **(0.3%)** +1 digit (18 to 28°C) 0.9% **(0.8%)** +1 digit (10 to 40°C) 1.4% **(1.3%)** +1 digit (0 to 50°C)
Zero adjustment	manual or via IEC/IEEE bus, duration approx. 4 s
Frequency response correction	sensor-specific calibration data taken into account; numerical entry of test frequency (keyboard or via IEC/IEEE bus) or by frequency-proportional DC voltage
Attenuation compensation	external attenuation or gain taken into account; data entry via keyboard or IEC/IEEE bus, range ±200 dB
Entry of reference value	measured value on keystroke or numerical entry via keypad or IEC/IEEE bus
Reference impedance	for conversion between voltage and power, automatic readout of reference impedance from sensor data memory or numerical entry via keyboard or IEC/IEEE bus (for RF probe)
Remote control	IEC 625 (IEEE 488), **SCPI**, control of all instrument functions
Interface functions	SH1, AH1, T6, L4, SR1, RL1, DC1, DT1, PP0, **PP1**
DC frequency input	
URV55, NRVS	standard
NRVD	option NRVD-B2
Connector	BNC
Input voltage range	±12 V, linear with selectable scale
DC output	
URV55, NRVS	standard
NRVD	option NRVD-B2
Connector	BNC, R_{out} = 1 kΩ, EMF proportional to analog display
Left-/right-hand full-scale value	corresponding to 0/+3 V
Accuracy	±5 mV
Channels	1, 2
Input/Output Option NRVD-B2	**2 simultaneous DC voltage outputs, DC frequency input, trigger input (TTL, active low), ready output (TTL, active high)**
Sensor check source	
URV55, NRVS	option NRVS-B1
NRVD	standard
Output power	1 mW ±0.7%
Frequency	50 MHz
VSWR	1.05, ≤**1.03**
RF connector	N female
General data	
Power supply	115 V +15/–22% (–15%) 47 to 63 (440) Hz; 230 V +15/–22%, 47 to 63 Hz, 13 VA **100/120/220 V ±10%, 230 V –6/+15%; 47 to 400 Hz (25 VA)**
Dimensions (W x H x D); weight	219 mm x 103 mm x 350 mm; 3.2 kg **219 mm x 147 mm x 350 mm; 4.5 kg**

Ordering information

Millivoltmeter	URV55	1029.1701.02
Power Meter	NRVS	1020.1809.02
Dual-Channel Power Meter	NRVD	0857.8008.02
Options		
Input/Output Option for NRVD	NRVD-B2	0857.8908.02
Sensor Check Source for NRVS	NRVS-B1	1029.2908.02
Extras		
Service Kit for NRVS	NRVS-S1	1029.2708.02
for NRVD	NRVD-S1	1029.2808.02

Measurement time in seconds (from trigger to output of first byte) depending on filter setting

Resolution	Filter number												
	0	1	2	3	4	5	6	7	8	9	10	11	12
NRV-Z1 to -Z15	0.045	0.05	0.06	0.08	0.15	0.27	0.49	0.95	1.85	3.6	7.2	14.5	28.5
NRV-Z31 mod. 02	1.04	1.04	1.05	1.07	1.13	1.24	1.44	1.84	2.7	4.3	7.5	14	27
NRV-Z31 to -Z33 mod. 03, 04	0.135	0.14	0.15	0.17	0.23	0.34	0.54	0.94	1.77	3.4	6.6	13	26
NVR-Z32 mod. 05	0.435	0.44	0.45	0.47	0.53	0.64	0.84	1.24	2.07	3.7	6.9	14	27
NRV-Z51 to -Z55	0.115	0.12	0.13	0.15	0.21	0.32	0.52	0.92	1.75	3.4	6.6	13	26
URV 5-Z2, -Z4, -Z7	0.065	0.07	0.08	0.1	0.2	0.38	0.72	1.45	2.8	5.5	11	22	44