R&S®RT-Zxx
STANDARD PROBES

Specifications

Data Sheet | Version 19.00

ROHDE&SCHWARZ

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CONTENTS

Definitions

General
Product data applies under the following conditions:

- Three hours storage at ambient temperature followed by 30 minutes warm-up operation
- Specified environmental conditions met
- Recommended calibration interval adhered to

Specifications with limits
Represent warranted product performance by means of a range of values for the specified parameter. These specifications are marked with limiting symbols such as <, ≤, >, ≥, ±, or descriptions such as maximum, limit of, minimum. Compliance is ensured by testing or is derived from the design. Test limits are narrowed by guard bands to take into account measurement uncertainties, drift and aging, if applicable.

Specifications without limits
Represent warranted product performance for the specified parameter. These specifications are not specially marked and represent values with no or negligible deviations from the given value (e.g. dimensions or resolution of a setting parameter). Compliance is ensured by design.

Typical data (typ.)
Characterizes product performance by means of representative information for the given parameter. When marked with <, > or as a range, it represents the performance met by approximately 80 % of the instruments at production time. Otherwise, it represents the mean value.

Measured values (meas.)
Characterize expected product performance by means of measurement results gained from individual samples.

Typical data as well as measured values are not warranted by Rohde & Schwarz.

Probe/oscilloscope chart

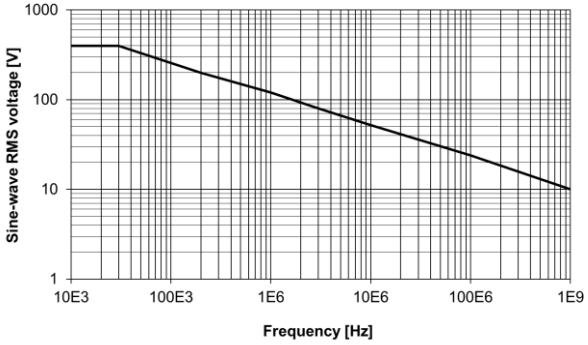
Base unit: R&S® / Probe: R&S®	Probe interface	RTC1000	RTB2000	RTM3000	RTA4000	RTE	RTO	RTH	RT-ZA9	Page
Passive probes										
RT-ZP03	BNC, 1 MΩ	●	●							5
RT-ZP05(S)	BNC, 1 MΩ, readout			●						8
RTM-ZP10										11
RT-ZP10					●	●	●			11
RT-ZP1X		○	○	●	●	●	●			14
RT-ZI10	BNC, 1 MΩ, isolated							●		–
RT-ZL03	pin header	●	●							16
RT-ZL04	Rohde & Schwarz extension			●	●	●	●	●		16

● recommended extra
○ possible accessory, with limited functionality of probe or base unit

R&S®RT-ZP03 passive probe

All parameters are valid when the probe is connected to an appropriate Rohde & Schwarz oscilloscope with an input impedance of 1 MΩ. See table on page 4 and Rohde & Schwarz oscilloscope operating manual for more details.

		R&S®RT-ZP03	
Attenuation setting		1:1	10:1
Step response			
Rise time	system, 10 % to 90 %	35 ns (meas.)	1.15 ns (meas.)
Frequency response			
Bandwidth	system, –3 dB, starting at DC	> 10 MHz (meas.)	> 300 MHz (meas.)
Input impedance			
DC input resistance	system	1 MΩ (meas.)	10 MΩ (meas.)
Input capacitance	system	82 pF (meas.)	12 pF (meas.)
Maximum rated input voltage			
Continuous voltage	derated, see figure on page 6	55 V (RMS)	400 V (RMS)
Transient overvoltage			±600 V
Base unit			
Use with		R&S®RTC1000, R&S®RTB2000	
Input coupling		1 MΩ AC/DC	



R&S®RT-ZP03 maximum rated sine-wave root mean square voltage versus frequency (CAT I)

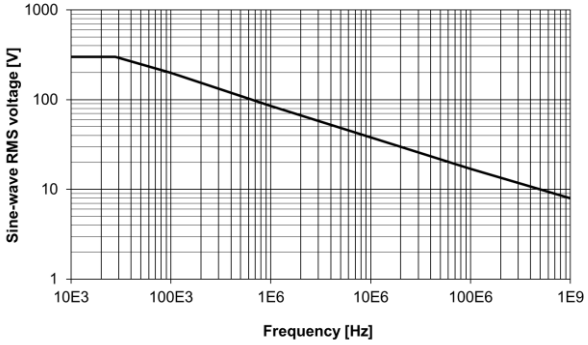
General data

Temperature		
Temperature loading	operating temperature range	0 °C to +40 °C
Climatic loading		80 % relative humidity without condensation
Altitude	operation	up to 2000 m
Safety		in line with Low Voltage Directive 2006/95/EC, IEC/EN 61010-31 (pollution degree 2)
RoHS		in line with EN50581
Mechanical data		
Dimensions	diameter of probe tip	approx. 5 mm (0.2 in)
	cable length	approx. 1.2 m (47 in)
Weight	probe only	approx. 60 g (0.13 lb)
Probe interface		
Connector		BNC

R&S®RT-ZP05(S) passive probe

All parameters are valid when the probe is connected to an appropriate Rohde & Schwarz oscilloscope with an input impedance of 1 MΩ. See table on page 4 and Rohde & Schwarz oscilloscope operating manual for more details.

		R&S®RT-ZP05(S)
Step response		
Rise time	system, 10 % to 90 %	700 ps (meas.)
Frequency response		
Bandwidth	system, –3 dB, starting at DC	> 500 MHz (meas.)
Input impedance		
DC input resistance	system	10 MΩ (meas.)
Input capacitance	system	10 pF (meas.)
DC characteristics		
Attenuation	system	10:1
Maximum rated input voltage		
Continuous voltage	derated, see figure on page 9	300 V (RMS)
Transient overvoltage		±450 V
Base unit		
Use with		R&S®RTM3000
Input coupling		1 MΩ AC/DC



R&S®RT-ZP05 maximum rated sine-wave root mean square voltage versus frequency (CAT I)

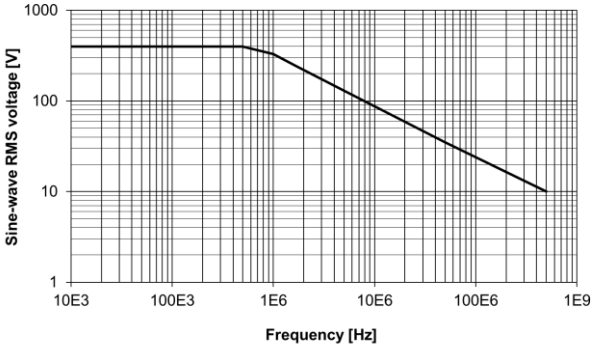
General data

Temperature		
Temperature loading	operating temperature range	0 °C to +40 °C
Climatic loading		80 % relative humidity without condensation
Altitude	operation	up to 2000 m
Safety		in line with Low Voltage Directive 2006/95/EC, IEC/EN 61010-31 (pollution degree 2)
RoHS		in line with EN50581
Mechanical data		
Dimensions	diameter of probe tip	approx. 5 mm (0.2 in)
	cable length	approx. 1.3 m (51 in)
Weight	probe only	approx. 55 g (0.12 lb)
Probe interface		
Connector		BNC with readout

R&S®RT-ZP10, R&S®RTM-ZP10 passive probes

All parameters are valid when the probe is connected to an appropriate Rohde & Schwarz oscilloscope with an input impedance of 1 MΩ. See table on page 4 and Rohde & Schwarz oscilloscope operating manual for more details.

		R&S®RT-ZP10	R&S®RTM-ZP10
Step response			
Rise time	system, 10 % to 90 %	700 ps (meas.)	
Frequency response			
Bandwidth	system, –3 dB, starting at DC	> 500 MHz	
Input impedance			
DC input resistance	system	10 MΩ ± 1 %	
Input capacitance	system	9.5 pF (meas.)	
DC characteristics			
Attenuation	system, automatically corrected on base unit display	10:1	
Attenuation error	probe only, with ideal 1 MΩ load impedance	±2 %	
Attenuation voltage coefficient		±0.0025 %/V (meas.)	
Maximum rated input voltage			
Continuous voltage	derated, see figure on page 12	400 V (RMS), CAT I	
		300 V (RMS), CAT II	
Transient overvoltage		1650 V	
Base unit			
Use with		R&S®RTA4000, R&S®RTE, R&S®RTO	
Input capacitance	must be compensated by probe's LF compensation	5 pF to 20 pF	
Input coupling		1 MΩ AC/DC	



R&S®RT-ZP10, R&S®RTM-ZP10 maximum rated sine-wave root mean square voltage versus frequency

General data

Temperature		
Temperature loading	operating temperature range	0 °C to +50 °C
	storage temperature range	−40 °C to +70 °C
Climatic loading		80 % relative humidity for temperatures up to +31 °C, decreasing linearly to 40 % at +50 °C
Altitude	operation	up to 2000 m
	transport	up to 15000 m
Safety		in line with Low Voltage Directive 2006/95/EC, IEC/EN 61010-31 (pollution degree 2)
RoHS		in line with EN50581
Mechanical data		
Dimensions	diameter of probe tip	approx. 2.5 mm (0.1 in)
	cable length	approx. 1.3 m (51 in)
Weight	probe only	approx. 48 g (0.1 lb)
Probe interface		
Connector		BNC with readout

R&S®RT-ZP1X passive probe

All parameters are valid when the probe is connected to an appropriate Rohde & Schwarz oscilloscope with an input impedance of 1 MΩ. See table on page 4 and Rohde & Schwarz oscilloscope operating manual for more details.

		R&S®RT-ZP1X
Step response		
Rise time	system, 10 % to 90 %	9 ns (meas.)
Frequency response		
Bandwidth	system, –3 dB, starting at DC, oscilloscope with input capacitance < 15 pF	> 38 MHz (meas.)
Input impedance		
DC input resistance	system	1 MΩ (meas.)
Input capacitance	system	39 pF + oscilloscope input impedance (meas.)
DC characteristics		
Attenuation	system	1:1
Maximum rated input voltage		
DC input voltage		60 V
AC input voltage	observe derating of oscilloscope	30 V (RMS)
Base unit		
Input coupling		1 MΩ AC/DC

General data

Temperature		
Temperature loading	operating temperature range	0 °C to +50 °C
	storage temperature range	–40 °C to +71 °C
Climatic loading		80 % relative humidity for temperatures up to +31 °C, decreasing linearly to 40 % at +50 °C
Altitude	operation	up to 2000 m
	transport	up to 15000 m
Safety		in line with Low Voltage Directive 2006/95/EC, IEC/EN 61010-31 (pollution degree 2)
RoHS		in line with EN50581
Mechanical data		
Dimensions	diameter of probe tip	approx. 2.5 mm (0.1 in)
	cable length	approx. 1.3 m (51 in)
Weight	probe only	approx. 48 g (0.1 lb)
Probe interface		
Connector		BNC with readout

R&S®RT-ZL03/-ZL04 logic probes

All parameters are valid when the probe is connected to an appropriate Rohde & Schwarz oscilloscope.
See table on page 4 and Rohde & Schwarz oscilloscope operating manual for more details.

		R&S®RT-ZL03	**R&S®RT-ZL04**
Input channels		8 (D0-D7)	8 (D0-D7)
Frequency response			
Maximum input frequency		350 MHz (meas.)	400 MHz (meas.)
Input impedance			
DC input resistance		100 kΩ ± 2 % (meas.)	
Input capacitance		4 pF (meas.)	
DC characteristics			
Minimum input voltage swing		500 mV (V_{pp}) (meas.)	
Threshold groups		1	2 (D0-D3, D4-D7)
Threshold voltage setting range		±8 V	
Threshold error		±(100 mV + 3 % of threshold setting) (meas.)	
Hysteresis settings		normal, robust, maximum	
Maximum rated input voltage			
Transient overvoltage		±40 V (V_p)	
Base unit			
Use with		R&S®RTC1000, R&S®RTB2000	R&S®RTM3000, R&S®RTA4000, R&S®RTH, R&S®RTE, R&S®RTO

General data

		R&S®RT-ZL03	R&S®RT-ZL04
Temperature			
Temperature loading	operating temperature range	+5 °C to +40 °C	0 °C to +45 °C
	storage temperature range	−40 °C to +70 °C	
Climatic loading		80 % relative humidity for temperatures up to +31 °C, decreasing linearly to 40 % at +50 °C	
Altitude	operation	up to 3000 m	
	transport	up to 4600 m	
Safety		in line with Low Voltage Directive 2006/95/EC, IEC/EN 61010-31 (pollution degree 2)	
RoHS		in line with EN50581	
EMC		in line with EN 61326-1 (class A)	
Mechanical data			
Dimensions	probe module (L × W × H)	approx. 75 mm × 45 mm × 14 mm (3 in × 1.8 in × 0.6 in)	
	length of probe cable	approx. 1 m (39 in)	
	length of tip cables	approx. 160 mm (6.3 in)	
Weight	probe only	approx. 100 g (0.22 lb)	
Probe interface			
Connector		pin header (26-pole)	Rohde & Schwarz extension interface

Ordering information

Designation	Type	Order No.
Standard probes		
300 MHz passive voltage probe, 1:1/10:1, 10 MΩ, 12 pF, 400 V (RMS) Incl. adjustment tool; coding clips (set) 2 × 4 colors; signal pin (2); sprung hook 5 mm; ground spring; ground lead 14 cm; insulating cap; protective cap; operating manual	R&S®RT-ZP03	3622.2817.02
500 MHz passive voltage probe, 10:1, 10 MΩ, 10 pF, 300 V (RMS) Incl. adjustment tool; coding clips (set) 2 × 4 colors; signal pin (2); sprung hook 5 mm; ground spring; ground lead 14 cm; insulating cap; protective cap; BNC adapter; operating manual	R&S®RT-ZP05S	1333.2401.02
500 MHz passive voltage probe, 10:1, 10 MΩ, 10 pF, 300 V (RMS) double pack of R&S®RT-ZP05S	R&S®RT-ZP05	1409.8010.02
500 MHz passive voltage probe, 10:1, 10 MΩ, 9.5 pF, 400 V (RMS) Incl. adjustment tool; coding rings (set) 3 × 4 colors; ground lead 15 cm; ground spring 2.5; solid tip CuBe 0.5 mm; sprung hook 2.5; spring tip gold-plated 0.5 mm; operating manual	R&S®RT-ZP10	1409.7550.00
500 MHz passive voltage probe, 10:1, 10 MΩ, 9.5 pF, 400 V (RMS) See R&S®RT-ZP10 for equipment included	R&S®RTM-ZP10	1409.7708.02
38 MHz passive voltage probe, 1:1, 1 MΩ, 39 pF, 55 V (RMS) Incl. BNC adapter 2.5; coding rings (set) 3 × 4 colors; ground blade 2.5; copper pad, self- adhesive (2 cm × 2 cm) (0.79 in × 0.79 in) (2); ground lead 15 cm; ground spring 2.5; IC-cap 2.5 0.5 mm pitch green; IC-cap 2.5 0.65 mm pitch blue; IC-cap 2.5 0.8 mm pitch grey; IC-cap 2.5 1.0 mm pitch brown; IC-cap 2.5 01.27 mm pitch black; insulating cap 2.5; protection cap; solid tip CuBe 0.5 mm (2); sprung hook 2.5; spring tip gold-plated 0.5 mm (2); operating manual	R&S®RT-ZP1X	1333.1370.02
350 MHz logic probe, 8 channels, 100 kΩ, 4 pF Incl. tip cable (8); mini clip (8); lead, 6 cm (8); lead, 10 cm (2); number stickers; operating manual	R&S®RT-ZL03	1333.0715.02

Designation	Type	Order No.
400 MHz logic probe, 8 channels, 100 kΩ, 4 pF Incl. tip cable (8); mini clip (8); lead, 6 cm (8); lead, 10 cm (2); number stickers; documentation card	R&S®RT-ZL04	1333.0721.02
Accessories and sets		
Accessory kit for R&S®RT-ZP10, R&S®RTM-ZP10 passive voltage probes Contains: adjustment tool; BNC adapter 2.5; coding rings (set) 3 × 4 colors; dual adapter 2.5 mm to 0.8 mm sockets; ground blade 2.5; copper pad, self-adhesive (2 cm × 2 cm) (0.79 in × 0.79 in) (2); ground lead 15 cm; ground spring 2.5 (5); IC-cap 2.5 0.5 mm pitch green; IC-cap 2.5 0.65 mm pitch blue; IC-cap 2.5 0.8 mm pitch grey; IC-cap 2.5 1.0 mm pitch brown; IC-cap 2.5 01.27 mm pitch black; insulating cap 2.5; solid tip CuBe 0.5 mm (5); sprung hook 2.5; spring tip gold-plated 0.5 mm (5)	R&S®RT-ZA1	1409.7566.02
Mini clips, contains: mini clip (10)	R&S®RT-ZA4	1416.0428.02
Micro clips, contains: micro clip (4)	R&S®RT-ZA5	1416.0434.02
Lead set, contains: lead 6 cm (2.4 in) (5); lead 15 cm (5.9 in) (5)	R&S®RT-ZA6	1416.0440.02
Adapter BNC to 4 mm dual banana	R&S®RT-ZA11	1333.0796.02
Adapter for PCB connection of 2.5 mm passive probes	R&S®RT-ZA27	1801.4784.02
Adapter for PCB connection of 2.5 mm passive probes, angled	R&S®RT-ZA28	1801.4790.02
Probe positioner, 2 legged	R&S®RT-ZA29	1801.4803.02
Probe tip accessory set for R&S®RT-ZP03, R&S®RT-ZP05S, R&S®RT-ZH03 passive voltage probes Contains: ground lead; retractable hook; adjustment tool; protection cap; identification tags; IC insulating cap; solid probe tip (2); spring-loaded probe tip (2); ground clip; BNC adapter;	R&S®RT-ZA40	1338.0742.02
3D probe positioner	R&S®RT-ZAP	1326.3641.02
Power deskew fixture	R&S®RT-ZF20	1800.0004.02

Service options		
Extended warranty, one year	R&S®WE1	Please contact your local Rohde & Schwarz sales office.
Extended warranty, two years	R&S®WE2	
Extended warranty, three years	R&S®WE3	
Extended warranty, four years	R&S®WE4	
Extended warranty with calibration coverage, one year	R&S®CW1	
Extended warranty with calibration coverage, two years	R&S®CW2	
Extended warranty with calibration coverage, three years	R&S®CW3	
Extended warranty with calibration coverage, four years	R&S®CW4	
Extended warranty with accredited calibration coverage, one year	R&S®AW1	
Extended warranty with accredited calibration coverage, two years	R&S®AW2	
Extended warranty with accredited calibration coverage, three years	R&S®AW3	
Extended warranty with accredited calibration coverage, four years	R&S®AW4	

Extended warranty with a term of one to four years (WE1 to WE4)
Repairs carried out during the contract term are free of charge [1]. Necessary calibration and adjustments carried out during repairs are also covered.

Extended warranty with calibration (CW1 to CW4)
Enhance your extended warranty by adding calibration coverage at a package price. This package ensures that your Rohde & Schwarz product is regularly calibrated, inspected and maintained during the term of the contract. It includes all repairs [1] and calibration at the recommended intervals as well as any calibration carried out during repairs or option upgrades.

Extended warranty with accredited calibration (AW1 to AW4)
Enhance your extended warranty by adding accredited calibration coverage at a package price. This package ensures that your Rohde & Schwarz product is regularly calibrated under accreditation, inspected and maintained during the term of the contract. It includes all repairs [1] and accredited calibration at the recommended intervals as well as any accredited calibration carried out during repairs or option upgrades.

[1] Excluding defects caused by incorrect operation or handling and force majeure. Wear-and-tear parts are not included.