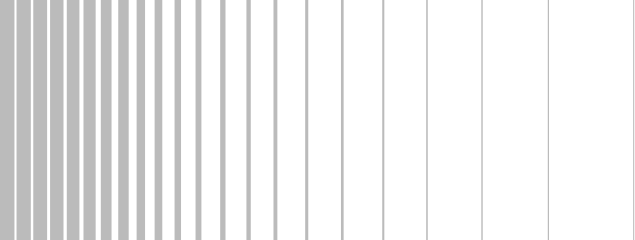


# R&S® RT-Zxx Standard Probes Specifications



## CONTENTS

Definitions.....	3
Probe/oscilloscope chart.....	4
R&S®RT-ZP03 passive probe .....	5
R&S®RT-ZP05(S) passive probe .....	8
R&S®RT-ZP10, R&S®RTM-ZP10 passive probes .....	11
R&S®RT-ZP1X passive probe.....	14
R&S®RT-ZL03/-ZL04 logic probes .....	16
Ordering information.....	18

## 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  $<$ ,  $\leq$ ,  $>$ ,  $\geq$ ,  $\pm$ , 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

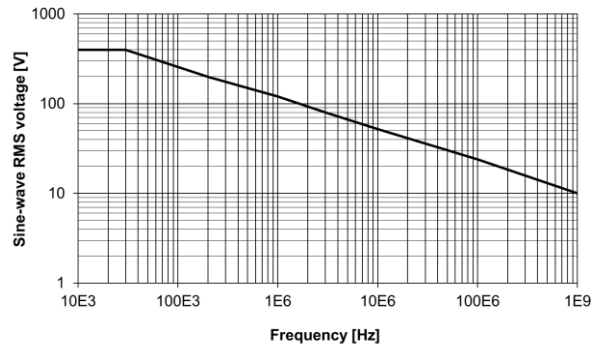
Base unit: R&S®	Probe interface	HMO1000	HMO2000	RTM	RTE	RTO	RTH	RT-ZA9	Page
<b>Probe: R&amp;S®</b>									
<b>Passive probes</b>									
RT-ZP03	BNC, 1 MΩ	●	●						5
RT-ZP05(S)	BNC, 1 MΩ, readout								8
RTM-ZP10	BNC, 1 MΩ, readout			●					11
RT-ZP10	BNC, 1 MΩ, readout				●	●			11
RT-ZP1X	BNC, 1 MΩ, readout	○	○	●	●	●			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 M $\Omega$ . See table on page 4 and Rohde & Schwarz oscilloscope operating manual for more details.

		<b>R&amp;S®RT-ZP03</b>	
<b>Attenuation setting</b>		1:1	10:1
<b>Step response</b>			
Rise time	system, 10 % to 90 %	35 ns (meas.)	1.15 ns (meas.)
<b>Frequency response</b>			
Bandwidth	system, -3 dB, starting at DC	> 10 MHz (meas.)	> 300 MHz (meas.)
<b>Input impedance</b>			
DC input resistance	system	1 M $\Omega$ (meas.)	10 M $\Omega$ (meas.)
Input capacitance	system	82 pF (meas.)	12 pF (meas.)
<b>Maximum rated input voltage</b>			
Continuous voltage	derated, see figure on page 6	55 V (RMS)	400 V (RMS)
Transient overvoltage			$\pm$ 600 V
<b>Base unit</b>			
Use with		HMO1000	
Input coupling		1 M $\Omega$ AC/DC	



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

**General data**

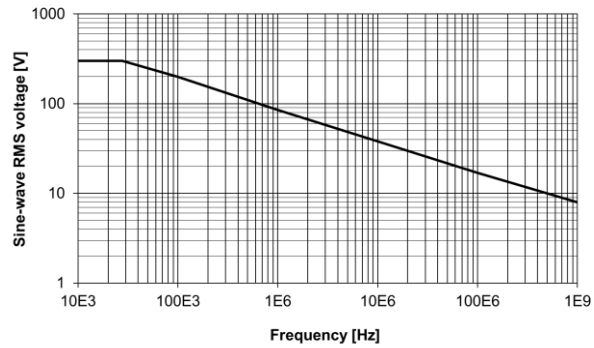
<b>Temperature</b>		
Temperature loading	operating temperature range	0 °C to +40 °C
Climatic loading		80 % relative humidity without condensation
Altitude	operation	up to 2000 m
<b>Safety</b>		in line with Low Voltage Directive 2006/95/EC, IEC/EN 61010-31 (pollution degree 2)
<b>Mechanical data</b>		
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)
<b>Probe interface</b>		
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
<b>Step response</b>		
Rise time	system, 10 % to 90 %	700 ps (meas.)
<b>Frequency response</b>		
Bandwidth	system, -3 dB, starting at DC	> 500 MHz (meas.)
<b>Input impedance</b>		
DC input resistance	system	10 MΩ (meas.)
Input capacitance	system	10 pF (meas.)
<b>DC characteristics</b>		
Attenuation	system	10:1
<b>Maximum rated input voltage</b>		
Continuous voltage	derated, see figure on page 9	300 V (RMS)
Transient overvoltage		±450 V
<b>Base unit</b>		
Input coupling		1 MΩ AC/DC





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

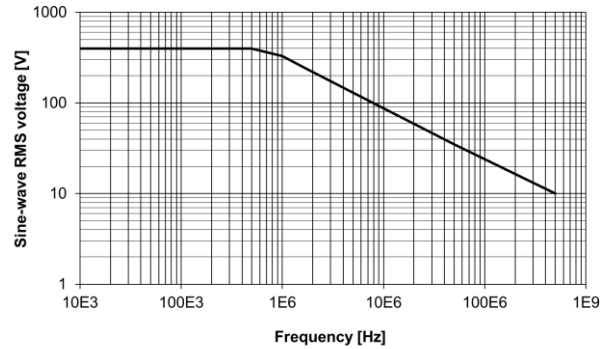
## General data

<b>Temperature</b>		
Temperature loading	operating temperature range	0 °C to +40 °C
Climatic loading		80 % relative humidity without condensation
Altitude	operation	up to 2000 m
<b>Safety</b>		in line with Low Voltage Directive 2006/95/EC, IEC/EN 61010-31 (pollution degree 2)
<b>Mechanical data</b>		
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)
<b>Probe interface</b>		
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 M $\Omega$ . See table on page 4 and Rohde & Schwarz oscilloscope operating manual for more details.

		R&S®RT-ZP10	R&S®RTM-ZP10
<b>Step response</b>			
Rise time	system, 10 % to 90 %	700 ps (meas.)	
<b>Frequency response</b>			
Bandwidth	system, -3 dB, starting at DC	> 500 MHz	
<b>Input impedance</b>			
DC input resistance	system	10 M $\Omega$ $\pm$ 1 %	
Input capacitance	system	9.5 pF (meas.)	
<b>DC characteristics</b>			
Attenuation	system, automatically corrected on base unit display	10:1	
Attenuation error	probe only, with ideal 1 M $\Omega$ load impedance	$\pm$ 2 %	
Attenuation voltage coefficient		$\pm$ 0.0025 %/V (meas.)	
<b>Maximum rated input voltage</b>			
Continuous voltage	derated, see figure on page 12	400 V (RMS), CAT I 300 V (RMS), CAT II	
Transient overvoltage		$\pm$ 1250 V	
<b>Base unit</b>			
Use with		R&S®RTO	R&S®RTM
Input capacitance	must be compensated by probe's LF compensation	5 pF to 20 pF	
Input coupling		1 M $\Omega$ AC/DC	



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

**General data**

<b>Temperature</b>		
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
<b>Safety</b>		in line with Low Voltage Directive 2006/95/EC, IEC/EN 61010-31 (pollution degree 2)
<b>Mechanical data</b>		
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)
<b>Probe interface</b>		
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 M $\Omega$ . See table on page 4 and Rohde & Schwarz oscilloscope operating manual for more details.

		R&S®RT-ZP1X
<b>Step response</b>		
Rise time	system, 10 % to 90 %	9 ns (meas.)
<b>Frequency response</b>		
Bandwidth	system, -3 dB, starting at DC, oscilloscope with input capacitance < 15 pF	> 38 MHz (meas.)
<b>Input impedance</b>		
DC input resistance	system	1 M $\Omega$ (meas.)
Input capacitance	system	39 pF + oscilloscope input impedance (meas.)
<b>DC characteristics</b>		
Attenuation	system	1:1
<b>Maximum rated input voltage</b>		
Continuous voltage	observe derating of oscilloscope	55 V (RMS), CAT II
<b>Base unit</b>		
Input coupling		1 M $\Omega$ AC/DC

**General data**

<b>Temperature</b>		
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
<b>Safety</b>		in line with Low Voltage Directive 2006/95/EC, IEC/EN 61010-31 (pollution degree 2)
<b>Mechanical data</b>		
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)
<b>Probe interface</b>		
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.

		<b>R&amp;S®RT-ZL03</b>	<b>R&amp;S®RT-ZL04</b>
Input channels		8 (D0-D7)	8 (D0-D7)
<b>Frequency response</b>			
Maximum input frequency		350 MHz (meas.)	400 MHz (meas.)
<b>Input impedance</b>			
DC input resistance		100 k $\Omega$ $\pm$ 2 % (meas.)	
Input capacitance		4 pF (meas.)	
<b>DC characteristics</b>			
Minimum input voltage swing		500 mV ( $V_{pp}$ ) (meas.)	
Threshold groups		1	2 (D0-D3, D4-D7)
Threshold voltage setting range		$\pm$ 8 V	
Threshold error		$\pm$ (100 mV + 3 % of threshold setting) (meas.)	
Hysteresis settings		normal, robust, maximum	
<b>Maximum rated input voltage</b>			
Transient overvoltage		$\pm$ 40 V ( $V_p$ )	
<b>Base unit</b>			
Use with		R&S®HMO	R&S®RTH R&S®RTM R&S®RTE R&S®RTO



**General data**

		R&S®RT-ZL03	R&S®RT-ZL04
<b>Temperature</b>			
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	
<b>Safety</b>		in line with Low Voltage Directive 2006/95/EC, IEC/EN 61010-31 (pollution degree 2)	
<b>EMC</b>		in line with EN 61326-1 (class A)	
<b>Mechanical data</b>			
Dimensions	probe module (L x W x H)	approx. 75 mm x 45 mm x 14 mm (3 in x 1.8 in x 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)	
<b>Probe interface</b>			
Connector		pin header (26-pole)	Rohde & Schwarz extension interface

## Ordering information

Designation	Type®	Order No.
<b>Standard probes</b>		
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 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-ZH10 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 0.127 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

<b>Designation</b>	<b>Type</b>	<b>Order No.</b>
400 MHz Logic Probe, 8 channels, 100 k $\Omega$ , 4 pF Incl. tip cable (8); mini clip (8); lead, 6 cm (8); lead, 10 cm (2); number stickers; documentation card	R&S <sup>®</sup> RT-ZL04	1333.0721.02
<b>Accessories and sets</b>		
Accessory Kit for R&S <sup>®</sup> RT-ZP10, R&S <sup>®</sup> RTM-ZP10 passive voltage probes Contains: adjustment tool; BNC adapter 2.5; coding rings (set) 3 x 4 colors; dual adapter 2.5 mm to 0.8 mm sockets; ground blade 2.5; copper pad, self-adhesive (2 cm x 2 cm) (0.79 in x 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 <sup>®</sup> RT-ZA1	1409.7566.02
Mini Clips, contains: mini clip (10)	R&S <sup>®</sup> RT-ZA4	1416.0428.02
Micro Clips, contains: micro clip (4)	R&S <sup>®</sup> RT-ZA5	1416.0434.02
Lead Set, contains: lead 6 cm (2.4 in) (5); lead 15 cm (5.9 in) (5)	R&S <sup>®</sup> RT-ZA6	1416.0440.02

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