

# R&S® RT-Zxx

## High-Voltage and Current Probes

### Specifications



**ROHDE & SCHWARZ**

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## 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	RTB2000	RTM	RTE	RTO	RTH	RT-ZA9	Page
<b>Probe: R&amp;S®</b>									
<b>Passive probes</b>									
RT-ZH03	BNC, 1 MΩ	●	●	●	●	●			6
RT-ZH10	BNC, 1 MΩ, readout	○	○	●	●	●			9
RT-ZH11	BNC, 1 MΩ, readout	○	○	●	●	●			9
RT-ZI10	BNC, 1 MΩ, isolated						●		12
RT-ZI10C	BNC, 1 MΩ, isolated						●		12
RT-ZI11	BNC, 1 MΩ, isolated						●		12
<b>Differential probes</b>									
RT-ZD01	BNC, 1 MΩ	●	●	●	●	●			16
RT-ZD02	BNC, 50 Ω <sup>1</sup>			●	●	●		●	19
RT-ZD08	BNC, 50 Ω <sup>1</sup>			●	●	○		●	19

<sup>1</sup> Probe requires 50 Ω input coupling. It can be attached to oscilloscopes with 1 MΩ input coupling using a BNC feedthrough termination adapter.

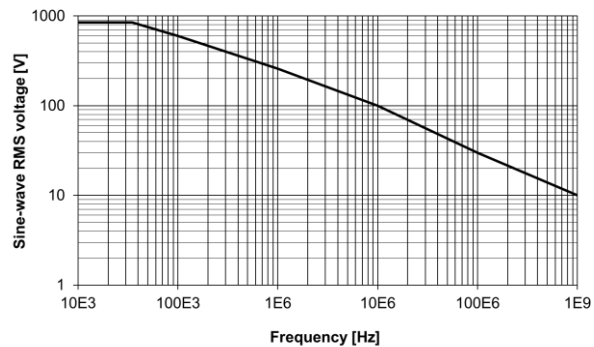
Base unit: R&S®	Probe interface	HMO1000	RTB2000	RTM	RTE	RTO	RTH	RT-ZA9	Page
<b>Probe: R&amp;S®</b>									
<b>Current probes</b>									
RT-ZC02	BNC, 1 MΩ	●	●	○	○	○	●		21
RT-ZC03	BNC, 1 MΩ	●	●	○	○	○	●		21
RT-ZC10	BNC, 1 MΩ	●	●	○	○	○			24
RT-ZC20	BNC, 1 MΩ	●	●	○	○	○			24
RT-ZC30	BNC, 1 MΩ	●	●	●	●	●			24
RT-ZC05B	R&S, 1 MΩ			●	●	●			24
RT-ZC10B	R&S, 1 MΩ			●	●	●			24
RT-ZC15B	R&S, 1 MΩ			●	●	●			24
RT-ZC20B	R&S, 1 MΩ			●	●	●			24

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

## R&S®RT-ZH03 high-voltage 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-ZH03
<b>Step response</b>		
Rise time	system, 10 % to 90 %	1.4 ns (meas.)
<b>Frequency response</b>		
Bandwidth	system, -3 dB, starting at DC	> 250 MHz (meas.)
<b>Input impedance</b>		
DC input resistance	system	100 M $\Omega$ (meas.)
Input capacitance	system	6.5 pF (meas.)
<b>DC characteristics</b>		
Attenuation	system, automatically corrected on base unit display	100:1
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 7	850 V (RMS)
Transient overvoltage		$\pm 1200$ V
<b>Base unit</b>		
Input capacitance	must be compensated by probe's LF compensation	10 pF to 50 pF
Input coupling		1 M $\Omega$ AC/DC



*R&S®RT-ZH03 maximum rated sine-wave root mean square voltage versus frequency.*

## General data

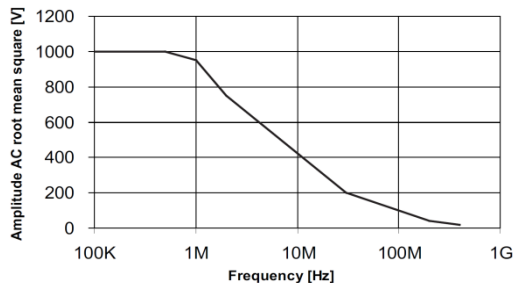
<b>Temperature</b>		
Temperature loading	operating temperature range	0 °C to +40 °C
Climatic loading		80 % relative humidity without condensation
Altitude	operation	up to 2000 m
<b>Safety</b>		in line with Low Voltage Directive 2006/95/EC, IEC/EN 61010-31 (pollution degree 2)
<b>RoHS</b>		in line with EN50581
<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



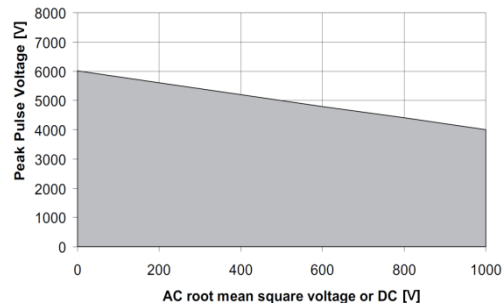
## R&S®RT-ZH10/-ZH11 high-voltage passive probes

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.

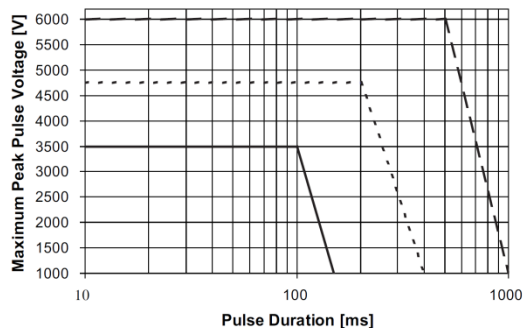
		R&S®RT-ZH10	R&S®RT-ZH11
<b>Step response</b>			
Rise time	system, 10 % to 90 %	900 ps (meas.)	
<b>Frequency response</b>			
Bandwidth	system, –3 dB, starting at DC	> 400 MHz	
<b>Input impedance</b>			
DC input resistance	system	50 MΩ ± 1 %	
Input capacitance	system	7.5 pF (meas.)	
<b>DC characteristics</b>			
Attenuation	system, automatically corrected on base unit display	100:1	1000:1
Attenuation error	probe only, with ideal 1 MΩ load impedance	±2 %	
Attenuation voltage coefficient		±0.0005 %/V (meas.)	
<b>Maximum rated input voltage</b>			
Continuous voltage	derated, see figures on page 10	1000 V (RMS), CAT II	
Transient overvoltage		±4000 V	
<b>Base unit</b>			
Input capacitance	must be compensated by probe's LF compensation	5 pF to 20 pF	
Input coupling		1 MΩ AC/DC	



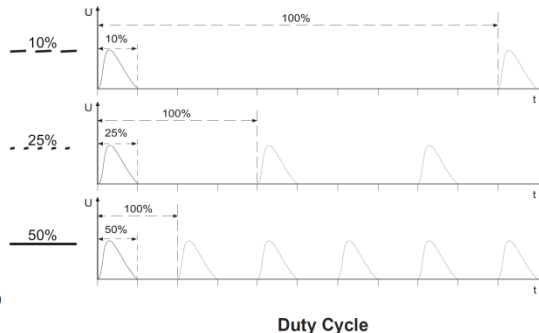
*R&S®RT-ZH10/-ZH11 maximum rated sine-wave root mean square voltage versus frequency, CAT I.*



*R&S®RT-ZH10/-ZH11 maximum root mean square voltage versus peak pulse voltage, CAT I.*



*R&S®RT-ZH10/-ZH11 maximum pulse derating, CAT I.*



## General data

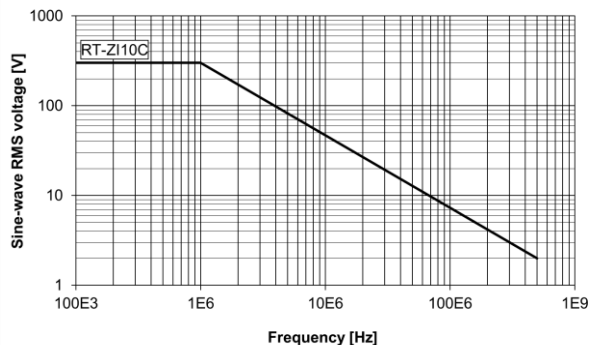
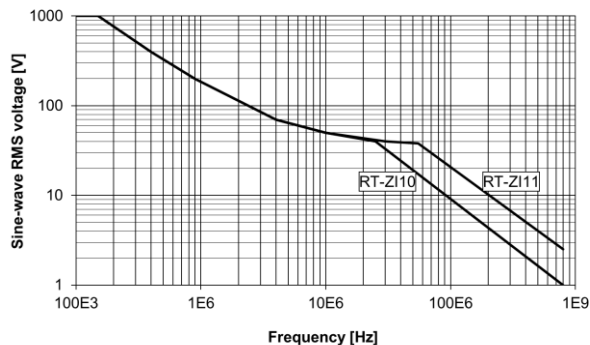
<b>Temperature</b>		
Temperature loading	operating temperature range	0 °C to +50 °C
	storage temperature range	–40 °C to +70 °C
Climatic loading		80 % relative humidity for temperatures up to +31 °C, decreasing linearly to 40 % at +50 °C
Altitude	operation	up to 2000 m
	transport	up to 15000 m
<b>Safety</b>		in line with Low Voltage Directive 2006/95/EC, IEC/EN 61010-31 (pollution degree 2)
<b>RoHS</b>		in line with EN50581
<b>Mechanical data</b>		
Dimensions	diameter of probe tip	approx. 5 mm (0.2 in)
	cable length	approx. 2 m (79 in)
Weight	probe only	approx. 67 g (0.15 lb)
<b>Probe interface</b>		
Connector		BNC with readout

## R&S®RT-ZI10(C)/-ZI11 isolated probes

All parameters are valid when the probe is connected to an appropriate Rohde & Schwarz oscilloscope with an input impedance of 1 M $\Omega$ . The R&S RT-ZI10/-ZI11 must be used only with insulated oscilloscopes provided with touch-protected inputs. See table on page 4 and Rohde & Schwarz oscilloscope operating manual for more details.

		R&S®RT-ZI10	R&S®RT-ZI11
<b>Step response</b>			
Rise time	system, 10 % to 90 %	900 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 ± 1 % (meas.)	100 MΩ ± 1 % (meas.)
Input capacitance	system	12 pF (meas.)	4.6 pF (meas.)
<b>DC characteristics</b>			
Attenuation	system	10:1	100:1
Maximum rated input voltage	between probe tip and probe reference terminal derated, see figure on page 14	1000 V (RMS)	3540 V (RMS)
		1000 V (RMS), CAT III 600 V (RMS), CAT IV	
	between probe terminals and earth ground derated, refer to base unit manual	1000 V (RMS)	
<b>Base unit</b>			
Use with		R&S®RTH	
Input capacitance	must be compensated by probe's LF compensation	10 pF to 22 pF	10 pF to 25 pF
Input coupling		1 MΩ AC/DC	

		<b>R&amp;S®RT-ZI10C</b>
<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 ± 1 % (meas.)
Input capacitance	system	11 pF (meas.)
<b>DC characteristics</b>		
Attenuation	system	10:1
	between probe tip and probe reference terminal derated, see figure on page 14	300 V (RMS), CAT III
	between probe terminals and earth ground derated, refer to base unit manual	300 V (RMS)
<b>Base unit</b>		
Use with		R&S®RTH
Input capacitance	must be compensated by probe's LF compensation	10 pF to 22 pF
Input coupling		1 MΩ AC/DC



*R&S®RT-ZI10(C)/-ZI11 maximum rated sine-wave root mean square voltage between probe tip and probe reference terminal versus frequency (CAT III).*

## General data

<b>Temperature</b>		
Temperature loading	operating temperature range	+5 °C to +40 °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
<b>Safety</b>		in line with Low Voltage Directive 2006/95/EC, IEC/EN 61010-31 (pollution degree 2)
<b>RoHS</b>		in line with EN50581
<b>Mechanical data</b>		
Dimensions	diameter of probe tip	approx. 5 mm (2 in)
	diameter of reference terminal (R&S®RT-ZI10 and R&S®RT-ZI11 only)	approx. 2 mm (0.8 in)
	cable length	approx. 1.2 m (47 in)
Weight	probe only	approx. 75 g (0.17 lb)
<b>Probe interface</b>		
Connector		BNC, isolated

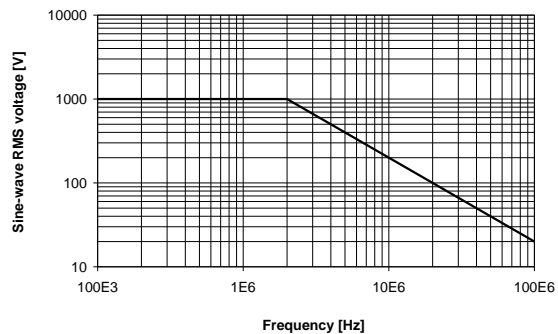
## R&S®RT-ZD01 high-voltage differential probe

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-ZD01	
Attenuation setting		100:1	1000:1
Step response			
Rise time	10 % to 90 %	< 3.5 ns (meas.)	
Frequency response			
Bandwidth	starting at DC, calculated from 0.35/rise time	100 MHz	
Common mode rejection	DC to 100 Hz	80 dB (meas.)	
	100 Hz to 1 MHz	50 dB (meas.)	
Input impedance			
DC input resistance	differential (between signal sockets)	8 MΩ	
	single-ended (each signal socket to ground)	4 MΩ	
Input capacitance	differential (between signal sockets)	3.5 pF (meas.)	
	single-ended (each signal socket to ground)	7 pF (meas.)	
DC characteristics			
Attenuation error		±2 %	
Zero error	referenced to probe input	±0.5 V (meas.)	±5 V (meas.)
Dynamic range			
Differential input	between signal sockets	±140 V	±1400 V
Operating voltage window	each signal socket to ground	±1400 V	
Noise voltage	referenced to probe input	90 mV (RMS) (meas.)	0.9 V (RMS) (meas.)



<b>Maximum rated input voltage</b>		
Continuous voltage	derated, see figure, each signal socket to ground	1000 V (RMS), CAT III
<b>Base unit</b>		
Input coupling		1 M $\Omega$ AC/DC



*Maximum rated sine-wave root mean square voltage versus frequency.*

## General data

<b>Temperature</b>		
Temperature loading	operating temperature range	0 °C to +40 °C
	storage temperature range	-30 °C to +70 °C
Climatic loading		85 % relative humidity
Altitude	operation	up to 2000 m
	transport	up to 4600 m
<b>EMC</b>		in line with EMC Directive 2004/108/EC, IEC/EN 61326-1, IEC/EN 61326-2-2
<b>Calibration interval</b>		2 years
<b>Safety</b>		in line with Low Voltage Directive 2006/95/EC, IEC/EN 61010-31 (pollution degree 2)
<b>RoHS</b>		in line with EN50581
<b>Mechanical data</b>		
Dimensions	probe head (L x W x H)	approx. 207 mm x 83 mm x 38 mm (8.1 in x 3.2 in x 1.5 in)
	length of input leads	approx. 30 cm (12 in)
	length of probe cable	approx. 90 cm (35 in)
Weight	probe only	approx. 500 g (1.1 lb)
<b>Probe interface</b>		
Connector		BNC
Supply type		battery or USB adapter
Supply voltage		4.5 V to 12 V
Battery type		4 times AA cells

## R&S®RT-ZD02/-ZD08 high-voltage differential probes

All parameters are valid when the probe is connected to an appropriate Rohde & Schwarz oscilloscope with an input impedance of 50  $\Omega$ . See table on page 4 and Rohde & Schwarz oscilloscope operating manual for more details.

		R&S®RT-ZD02	R&S®RT-ZD08
<b>Step response</b>			
Rise time	10 % to 90 %	1.75 ns (meas.)	437 ps (meas.)
<b>Frequency response</b>			
Bandwidth	–3 dB, starting at DC, calculated from 0.35/rise time	200 MHz	800 MHz
Common mode rejection	DC to 100 Hz	80 dB (meas.)	60 dB (meas.)
	100 Hz to 10 MHz	50 dB (meas.)	–
	100 Hz to 500 MHz	–	15 dB (meas.)
<b>Input impedance</b>			
DC input resistance	differential (between signal sockets)	1 M $\Omega$ (meas.)	200 k $\Omega$ (meas.)
	single-ended (each signal socket to ground)	500 k $\Omega$ (meas.)	100 k $\Omega$ (meas.)
Input capacitance	differential (between signal sockets)	3.5 pF (meas.)	1 pF (meas.)
	single-ended (each signal socket to ground)	7 pF (meas.)	2 pF (meas.)
<b>DC characteristics</b>			
Max. differential input	between signal sockets	$\pm 20$ V	$\pm 15$ V
Operating voltage window	each signal socket to ground	$\pm 60$ V	$\pm 30$ V
Attenuation		10:1	10:1
Attenuation error	probe only, with ideal 50 $\Omega$ load impedance	$\pm 1$ % (meas.)	$\pm 2$ % (meas.)
Zero error		$\pm 2$ mV (meas.)	$\pm 5$ mV (meas.)
<b>Maximum rated input voltage</b>			
DC peak voltage	single-ended (each signal socket to ground)	$\pm 60$ V	$\pm 40$ V
AC peak voltage	single-ended (each signal socket to ground)	$\pm 60$ V	$\pm 40$ V
<b>Base unit</b>			
Input coupling		50 $\Omega$	

**General data**

		R&S®RT-ZD02	R&S®RT-ZD08
<b>Temperature</b>			
Temperature loading	operating temperature range	+5 °C to +40 °C	
	storage temperature range, with battery removed	-20 °C to +70 °C	
Climatic loading		85 % relative humidity without condensation	
Altitude	operation	up to 3000 m	
	transport	up to 15,300 m	
<b>Safety</b>		in line with EN 61010-1	
<b>RoHS</b>		in line with EN50581	
<b>EMC</b>		in line with EN 61326-1	
<b>Calibration interval</b>		2 years	
<b>Mechanical data</b>			
Dimensions	probe head (L × W × H)	approx. 111 mm × 22 mm × 14 mm (4.3 in × 0.9 in × 0.6 in)	
	length of probe cable	approx. 1.2 m (47 in)	
	length of input leads	approx. 15 cm (6 in)	–
Weight	probe only	approx. 170 g (0.37 lb)	
<b>Probe interface</b>			
Connector		BNC	
Supply voltage		4.5 V to 12 V	
Supply type		battery or USB adapter	
Battery type		9 V Alkaline battery	
Battery lifetime		7.5 h (meas.)	4.5 h (meas.)

## R&S®RT-ZC02/-ZC03 current 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-ZC02	
Sensitivity setting		0.01 V/A	0.001 V/A
Step response			
Rise time	10 % to 90 %	5 µs (meas.)	
Frequency response			
Bandwidth	–3 dB, starting at DC	20 kHz (meas.)	
DC characteristics			
Dynamic range		±200 A	±2000 A
Sensitivity error	+23 °C ±1 °C, ±1500 A	±1 % (meas.)	
	+23 °C ±1 °C, ±2000 A	±5 % (meas.)	
Temperature drift, sensitivity		± 0.15 %/°C (meas.)	
Zero error	referenced to probe input after demagnetizing and zero adjustment	±100 mA (meas.)	±500 mA (meas.)
AC characteristics			
Maximum slew rate		±20 A/µs (meas.)	
Maximum rated input			
Maximum continuous current		1000 A (RMS)	
Maximum working voltage	for uninsulated conductors	300 V (RMS) CAT III	
Other			
Noise	with 20 MHz lowpass filter	30 mA (RMS) (meas.)	80 mA (RMS) (meas.)
Base unit			
Input coupling		1 MΩ	

		<b>R&amp;S®RT-ZC03</b>
<b>Step response</b>		
Rise time	10 % to 90 %	1 $\mu$ s (meas.)
<b>Frequency response</b>		
Bandwidth	–3 dB, starting at DC	100 kHz (meas.)
<b>DC characteristics</b>		
Dynamic range		$\pm 30$ A
Sensitivity		0.1 V/A
Sensitivity error	+23 °C $\pm 1$ °C	$\pm 1$ % (meas.)
Temperature drift, sensitivity		$\pm 0.01$ %/°C (meas.)
Zero error	referenced to probe input after demagnetizing and zero adjustment	$\pm 2$ mA (meas.)
<b>AC characteristics</b>		
Maximum slew rate		$\pm 20$ A/ $\mu$ s (meas.)
<b>Maximum rated input</b>		
Maximum continuous current		20 A (RMS)
Maximum working voltage	for uninsulated conductors	300 V (RMS) CAT III
<b>Other</b>		
Noise	with 20 MHz lowpass filter	2 mA (RMS) (meas.)
<b>Base unit</b>		
Input coupling		1 M $\Omega$

## General data

		R&S®RT-ZC02	R&S®RT-ZC03
<b>Temperature</b>			
Temperature loading	operating temperature range	0 °C to +50 °C	
	storage temperature range, with battery removed	-20 °C to +85 °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	
<b>Safety</b>		in line with EN 61010-1 in line with EN 61010-2-032 (pollution degree 2)	
<b>RoHS</b>		in line with EN50581	
<b>EMC</b>		in line with EN 61326-2-2	
<b>Calibration interval</b>		2 years	
<b>Mechanical data</b>			
Dimensions	diameter of probe tip	approx. 32 mm (1.3 in)	approx. 25 mm (1.0 in)
	cable length	approx. 2.0 m (79 in)	
Weight	probe only	approx. 320 g (0.7 lb)	
<b>Probe interface</b>			
Connector		BNC	
Battery type		9 V Alkaline battery, PP3, MN 1604 or IEC6LR61	
Battery lifetime		50 h (meas.)	25 h (meas.)

## R&S®RT-ZC05B/-ZC10(B)/-ZC15B/-ZC20(B)/-ZC30 current 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-ZC05B	R&S®RT-ZC10(B)
<b>Step response</b>			
Rise time	10 % to 90 %	175 ns (meas.)	35 ns (meas.)
<b>Frequency response</b>			
Bandwidth	–3 dB, starting at DC	2 MHz (meas.)	10 MHz (meas.)
<b>Input impedance</b>		see figure on page 29	
<b>DC characteristics</b>			
Sensitivity		0.01 V/A	
Sensitivity error	+23 °C $\pm$ 3 °C	$\pm$ 1 %	
Zero error	referenced to probe input after demagnetizing and zero adjustment	$\pm$ 500 mA (meas.)	$\pm$ 100 mA (meas.)
<b>AC characteristics</b>			
AC sensitivity error (sinusoidal, 45 Hz to 66 Hz)	+23 °C $\pm$ 3 °C	$\pm$ 1 % $\pm$ 500 mA (RMS) (meas.)	$\pm$ 1 % $\pm$ 100 mA (RMS) (meas.)
	0 °C to +40 °C	$\pm$ 3 % $\pm$ 500 mA (RMS) (meas.)	$\pm$ 3 % $\pm$ 100 mA (RMS) (meas.)
Measurement due to external magnetic fields	400 A/m magnetic field, DC or 60 Hz, referenced to probe input	< 800 mA (RMS) (meas.)	< 150 mA (RMS) (meas.)
<b>Maximum rated input</b>			
Maximum continuous current	derated, see figures on page 29	500 A (RMS)	150 A (RMS)
Maximum transient current	peak	$\pm$ 700 A	$\pm$ 300 A
<b>Other</b>			
Noise	20 MHz measurement bandwidth, referenced to probe input	25 mA (RMS) (meas.)	

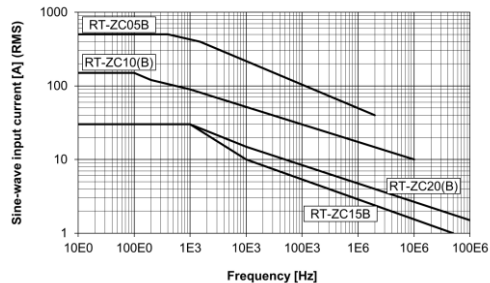


		R&S®RT-ZC15B	R&S®RT-ZC20(B)
<b>Step response</b>			
Rise time	10 % to 90 %	7 ns (meas.)	3.5 ns (meas.)
<b>Frequency response</b>			
Bandwidth	–3 dB, starting at DC	50 MHz (meas.)	100 MHz (meas.)
<b>Input impedance</b>		see figure on page 29	
<b>DC characteristics</b>			
Sensitivity		0.1 V/A	
Sensitivity error	+23 °C ±3 °C	±1 %	
Zero error	referenced to probe input after demagnetizing and zero adjustment	±10 mA (meas.)	
<b>AC characteristics</b>			
AC sensitivity error (sinusoidal, 45 Hz to 66 Hz)	+23 °C ±3 °C	±1 % ± 10 mA (RMS) (meas.)	
	0 °C to +40 °C	±3 % ± 10 mA (RMS) (meas.)	
Measurement due to external magnetic fields	400 A/m magnetic field, DC or 60 Hz, referenced to probe input	< 20 mA (RMS) (meas.)	< 5 mA (RMS) (meas.)
<b>Maximum rated input</b>			
Maximum continuous current	derated, see figures on page 29	30 A (RMS)	
Maximum transient current	peak	±50 A	
<b>Other</b>			
Noise	20 MHz measurement bandwidth, referenced to probe input	2.5 mA (RMS) (meas.)	

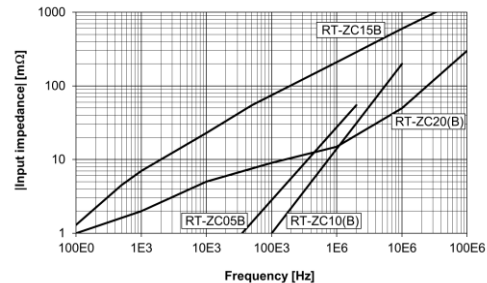
		R&S®RT-ZC30
<b>Step response</b>		
Rise time	10 % to 90 %	2.9 ns (meas.)
<b>Frequency response</b>		
Bandwidth	–3 dB, starting at DC	120 MHz (meas.)
<b>Input impedance</b>		see figure on page 29
<b>DC characteristics</b>		
Sensitivity		1 V/A
Sensitivity error	+23 °C ±3 °C	±3 %
Zero error	referenced to probe input after demagnetizing and zero adjustment	±1 mA (meas.)
<b>AC characteristics</b>		
AC sensitivity error (sinusoidal, 45 Hz to 66 Hz)	+23 °C ±3 °C	±3 % ± 1 mA (RMS) (meas.)
	0 °C to +40 °C	±5 % ± 1 mA (RMS) (meas.)
Measurement due to external magnetic fields	400 A/m magnetic field, DC or 60 Hz, referenced to probe input	< 5 mA (RMS) (meas.)
<b>Maximum rated input</b>		
Maximum continuous current	derated, see figures on page 29	5 A (RMS)
Maximum transient current	peak	±7.5 A
<b>Other</b>		
Noise	30 MHz measurement bandwidth, referenced to probe input	60 µA (RMS) (meas.)

## General data

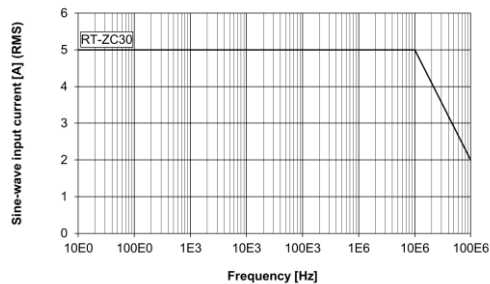
		R&S®RT-ZC05B/ R&S®RT-ZC10(B)	R&S®RT-ZC15B/ R&S®RT-ZC20(B)/ R&S®RT-ZC30
Temperature			
Temperature loading	operating temperature range	0 °C to +40 °C	
	storage temperature range	-10 °C to +50 °C	
Climatic loading		80 % relative humidity	
Altitude	operation	up to 2000 m	
Safety		in line with EN 61010-2-032 (type D sensor, insulated conductor only)	
RoHS		in line with EN50581	
EMC		in line with EN 61326-1, CISPR 11/EN 55011 (class B, table 2)	
Calibration interval		2 years	
Mechanical data			
Dimensions	max. conductor diameter	approx. 20 mm (0.79 in)	approx. 5 mm (0.2 in)
	cable length, probe	approx. 2 m (78.7 in)	approx. 1.5 m (59 in)
	cable length, power supply of R&S®RT-ZCxx	approx. 1 m (39.4 in)	approx. 1 m (39.4 in)
	probe head (W x H x L, approx.)	27 mm x 69 mm x 176 mm (1.06 in x 2.72 in x 6.93 in)	18 mm x 40 mm x 175 mm (0.71 in x 1.57 in x 6.89 in)
Weight	probe only	approx. 500 g (1.1 lb)	approx. 240 g (0.53 lb)
Probe interface			
Connector	R&S®RT-ZCxx	BNC	
	R&S®RT-ZCxxB	Rohde & Schwarz probe interface	
Supply voltage	R&S®RT-ZCxx	external power supply necessary (e.g. R&S®RT-ZA13) ±12 V ± 0.5 V (5.5 W)	
	R&S®RT-ZCxxB	power supply by Rohde & Schwarz probe interface	



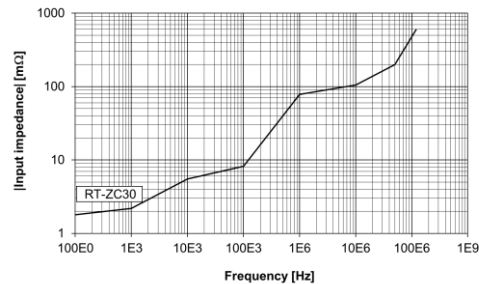
Maximum rated sine-wave root mean square input current versus frequency.



Input impedance (meas.).



Maximum rated sine-wave root mean square input current versus frequency.



Input impedance (meas.).

## R&S®RT-ZA13 probe power supply

<b>Electrical data</b>		
Number of channels		4
Output voltage		$\pm 12 \text{ V} \pm 0.5 \text{ V}$
Maximum output current	sum total of all channels	2.5 A
Power requirements		100 V to 240 V, 50/60 Hz
Maximum rated input power		170 W

### General data

<b>Safety</b>		in line with EN 61010-1
<b>RoHS</b>		in line with EN50581
<b>EMC</b>		in line with EN 61326-1 (class B equipment), EN 61000-3-2, EN 61000-3-3
<b>Mechanical data</b>		
Dimensions	W × H × L	approx. 80 mm × 119 mm × 200 mm (3.1 in × 4.7 in × 7.9 in)
Weight		approx. 1.1 kg (2.4 lb)
Connector		LEMO FFA.OS.304.CLAC44Z

## Ordering information

Designation	Type	Order No.
<b>High-voltage passive probes</b>		
250 MHz High-Voltage Probe, passive, 100:1, 100 M $\Omega$ , 6.5 pF, 850 V (RMS) Incl. adjustment tool; coding clips (set) 2 x 4 colors; signal pin (2); sprung hook 5 mm; ground lead 14 cm; insulating cap; protective cap; operating manual	R&S®RT-ZH03	1333.0873.02
400 MHz High-Voltage Probe, passive, 100:1, 50 M $\Omega$ , 7.5 pF, 1 kV (RMS) Incl. adjustment tool; BNC adapter 5.0-L; coding rings (set) 3 x 4 colors; flexible adapter 5.0-L; ground lead 22 cm (2); ground lead 22 cm to 4 mm banana plug; insulating cap 5.0-L; operating manual; protection cap 5.0-L; safety alligator clip (2); solid tip 0.8 mm (5); spring tip 0.8 mm (5); sprung hook 5.0-L (2)	R&S®RT-ZH10	1409.7720.02
400 MHz High-Voltage Probe, passive, 1000:1, 50 M $\Omega$ , 7.5 pF, 1 kV (RMS) See R&S®RT-ZH10 for equipment included	R&S®RT-ZH11	1409.7737.02
500 MHz Isolated Probe, passive, 10:1, 10 M $\Omega$ , 12 pF, 1 kV (RMS) CAT III Incl. coding rings (set) 5 x 2 colors; ground lead 32 cm with safety alligator clip; sprung hook; ground pin; operating manual	R&S®RT-ZI10	1326.1761.02
500 MHz Isolated Probe, passive, 10:1, 10 M $\Omega$ , 11 pF, 300 V (RMS) CAT III Incl. coding rings (set) 5 x 2 colors; ground lead with safety alligator clip; sprung hook; ground pin; BNC adapter, operating manual	R&S®RT-ZI10C	1326.3106.02
500 MHz Isolated Probe, passive, 100:1, 100 M $\Omega$ , 4.6 pF, 1 kV (RMS) CAT III Incl. coding rings (set) 5 x 2 colors; ground lead 32 cm with safety alligator clip; sprung hook; ground pin; operating manual	R&S®RT-ZI11	1326.1810.02

Designation	Type	Order No.
<b>Differential probes</b>		
100 MHz Differential Probe, $\pm 1.4$ kV, 1 kV RMS (CAT III), BNC Incl. sprung hook 4 mm (2); USB power cord; carrying case; operating manual	R&S®RT-ZD01	1422.0703.02
200 MHz Differential Probe, $\pm 20$ V, BNC Incl. safety alligator clip 4 mm (2); sprung hook 4 mm (2); USB power cord; 9 V battery; carrying case; operating manual	R&S®RT-ZD02	1333.0821.02
800 MHz Differential Probe, $\pm 15$ V, BNC Incl. lead 11 cm (2); lead 7 cm (2); signal pin (6); dual pin (4); mini clip (2); micro clip (2); USB power cord; 9 V battery; carrying case; operating manual	R&S®RT-ZD08	1333.0838.02
<b>Current probes</b>		
20 kHz Current Probe, AC/DC, 0.01/0.001 V/A, 1000 A, 300 V (RMS) CAT III, BNC Incl. operating manual	R&S®RT-ZC02	1333.0850.02
100 kHz Current Probe, AC/DC, 0.1 V/A, 30 A, 300 V (RMS) CAT III, BNC Incl. operating manual	R&S®RT-ZC03	1333.0844.02
10 MHz Current Probe, AC/DC, 0.01 V/A, 150 A (RMS), BNC Incl. carrying case; operating manual	R&S®RT-ZC10	1409.7750K02
100 MHz Current Probe, AC/DC, 0.1 V/A, 30 A (RMS), BNC Incl. carrying case; operating manual	R&S®RT-ZC20	1409.7766K02
120 MHz Current Probe, AC/DC, 1 V/A, 5 A (RMS), BNC Incl. carrying case; operating manual	R&S®RT-ZC30	1409.7772K02
2 MHz Current Probe, AC/DC, 0.01 V/A, 500 A (RMS), Rohde & Schwarz probe interface Incl. carrying case; operating manual	R&S®RT-ZC05B	1409.8204.02
10 MHz Current Probe, AC/DC, 0.01 V/A, 150 A (RMS), Rohde & Schwarz probe interface Incl. carrying case; operating manual	R&S®RT-ZC10B	1409.8210.02
50 MHz Current Probe, AC/DC, 0.1 V/A, 30 A (RMS), Rohde & Schwarz probe interface Incl. carrying case; operating manual	R&S®RT-ZC15B	1409.8227.02
100 MHz Current Probe, AC/DC, 0.1 V/A, 30 A (RMS), Rohde & Schwarz probe interface Incl. carrying case; operating manual	R&S®RT-ZC20B	1409.8233.02

Designation	Type	Order No.
<b>Accessories and sets</b>		
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
Probe Box to N/USB Adapter	R&S®RT-ZA9	1417.0909.02
SMA(f) to BNC(m) Adapter	R&S®RT-ZA10	1416.0457.02
Adapter BNC to 4 mm Dual Banana	R&S®RT-ZA11	1333.0796.02
Probe Power Supply	R&S®RT-ZA13	1409.7789.02
Spare Accessory Set for R&S®RT-ZI10/11 Isolated Probes, contains: insulating sleeve (2), reference contact (2), reference leads with crocodile clip, color clips, sprung hook	R&S®RT-ZA20	1326.1978.02
Extended Accessory Set for R&S®RT-ZI10/11 Isolated Probes, contains: jaw clip, safety jaw clip, reference lead with 4 mm connector, reference lead with hook clip, 4 mm test probe, BNC connector, dual 4 mm to safety BNC adapter	R&S®RT-ZA21	1326.1984.02
Multimeter Test Leads, two leads (red/black), 1000 V CAT III	R&S®RT-ZA22	1326.0988.02
3D Probe Positioner	R&S®RT-ZAP	1326.3641.02
Power Deskew Fixture	R&S®RT-ZF20	1800.0004.02



<b>Service options</b>		
Extended Warranty, one year	R&S®WE1	Not available for all products. 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 a term of one to four years (WE1 to WE4)**

Repairs carried out during the contract term are free of charge <sup>2</sup>. 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 <sup>2</sup> and calibration at the recommended intervals as well as any calibration carried out during repairs or option upgrades.

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<sup>2</sup> Excluding defects caused by incorrect operation or handling and force majeure. Wear-and-tear parts are not included.





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- ▮ Energy efficiency and low emissions
- ▮ Longevity and optimized total cost of ownership

Certified Quality Management

**ISO 9001**

Certified Environmental Management

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PD 5214.2362.22 | Version 17.00 | April 2017 (sk)

R&S®RT-Zxx High-Voltage and Current Probes

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