

ROHDE & SCHWARZ

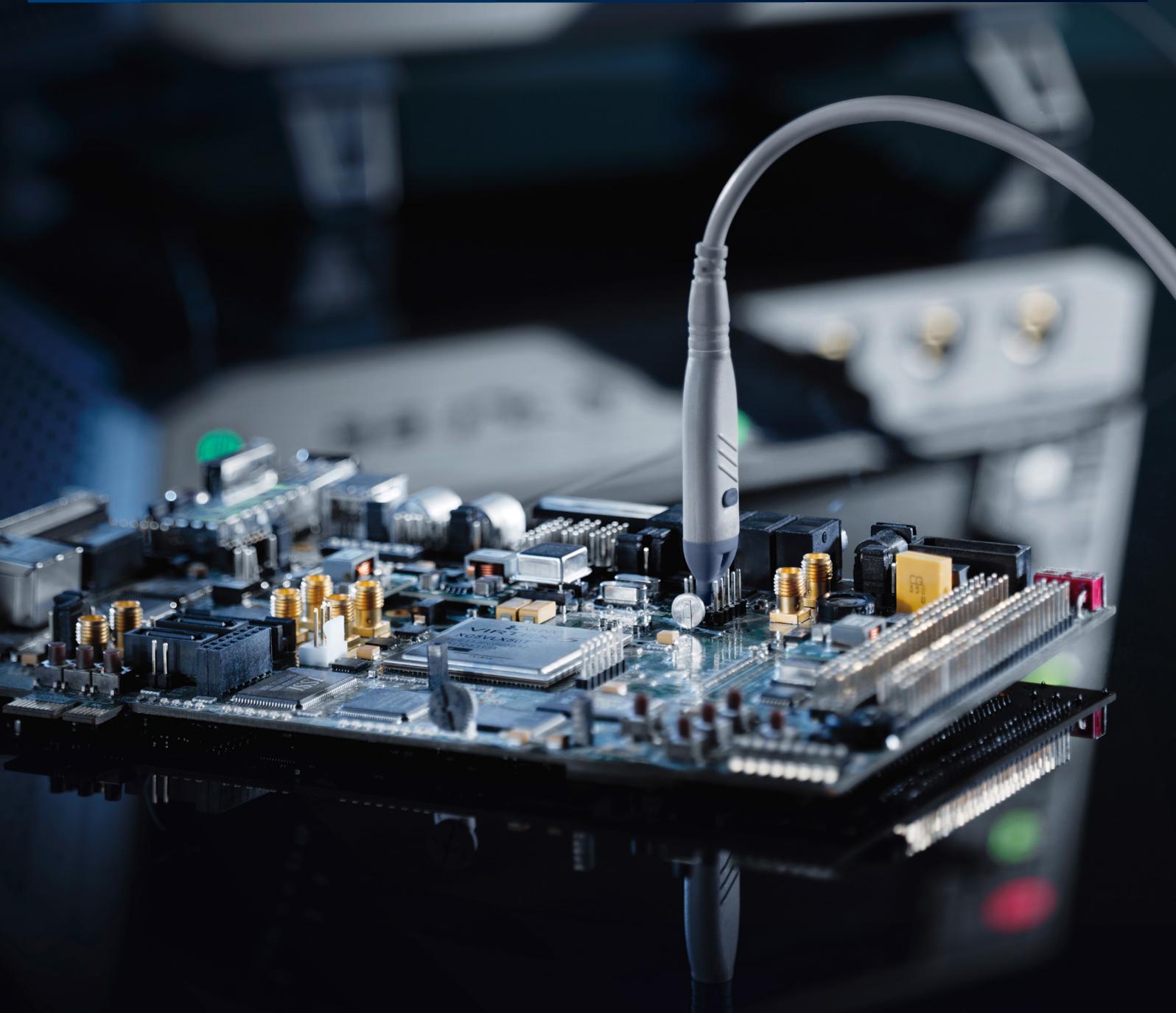
Make ideas real



PROBES AND ACCESSORIES

For Rohde & Schwarz oscilloscopes

Product Brochure | Version 21.00



AT A GLANCE

Oscilloscope test applications include debugging complex electronic circuits, measuring high-speed-bus signal integrity and characterizing power electronics with hazardous voltage levels. Measurement accuracy and operator safety depend on these probes and accessories.

Rohde&Schwarz passive probes are ideal for general-purpose measurements of low-frequency signals. The precision-engineered, spring-loaded tips ensure reliable and accurate contact with signal lines. The MXO 4, MXO 5 and MXO 5C series oscilloscopes come standard with 700 MHz passive probes.

Rohde&Schwarz active broadband probes deliver exceptional performance when minimal parasitic loading on the device under test (DUT) is crucial especially when measuring high-frequency signal components. The probes have an ultra-low load and a wide dynamic range for accurate measurements. The integrated, high-precision DC voltmeter quickly and easily tests DC levels on signal lines, independent of the oscilloscope settings. The unique micro button on the probe tips is configurable. Controlling RUN/STOP and saving screenshots give users flexibility and make setting up measurements easy.

Safety is vital when measuring power electronics.

Rohde&Schwarz high voltage and current probes ensure safe and reliable CAT III testing. The R&S®RT-ZISO isolated probing system has high common-mode rejection of 60 kV even at high bandwidths of 1 GHz and is ideal for wide bandgap power technology testing.

Our EMC near-field probes also open up new possibilities for oscilloscope applications. When combined, the MXO series and R&S®RTO6 oscilloscopes provide exceptional spectrum analysis capabilities for EMC troubleshooting.

We have a comprehensive range of probe accessories for optimal signal contacting and measurement flexibility. Our accessories are designed to meet your specific measurement application needs with fine, spring-loaded tips, high-voltage probes and current probes. You know you have the right tools for the job with Rohde&Schwarz.

KEY FACTS

- ▶ Probes for every application: differential or single-ended voltage measurements, current measurements, EMC near-field measurements
- ▶ Active probes with very low loads thanks to high input impedance of up to $1\text{ M}\Omega \parallel 0.3\text{ pF}$ and a wide dynamic range of $\pm 8\text{ V}$
- ▶ Modular broadband probes with low capacitive loading and flexible and configurable connectivity
- ▶ R&S®ProbeMeter: integrated voltmeter with 0.1% measurement uncertainty for precise DC measurements
- ▶ Simple operation using the configurable micro button
- ▶ Comprehensive accessories for maximum flexibility during contacting
- ▶ Passive probes included with every Rohde & Schwarz oscilloscope
- ▶ **NEW:** Isolated probing system for high voltage and fast switching environment up to 1 GHz bandwidth, $> 90\text{ dB CMRR}$ with $\pm 60\text{ kV}$ common mode range

MODELS



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SELECTING THE RIGHT PROBE

The first step in selecting the right probe is analyzing the measurement task. Is a single-ended or differential measurement needed? Which maximum frequency components need to be transferred? What is the maximum input voltage?

Differential or single-ended measurements

Differential probes enable voltage readings between two points without a common ground reference, which is very valuable when analyzing floating circuits or characterizing switching power supplies. While primarily designed for differential signals, the probes can also perform single-ended measurements. However, traditional single-ended probes often have higher input impedance, lower input capacitance and a wider dynamic range. The key characteristics in a differential probe suppress common mode signals, making them better in noisy environments.

Bandwidth and rise time

Bandwidth is one of the most important probe selection parameters. It defines the cutoff frequency, after which a signal appears 3 dB or 30% weaker than they actually are. Accurate signal representation requires a cutoff frequency for the measurement system (oscilloscope and probe) that is greater than the highest frequency component displayed. When measuring digital signals, the measurement bandwidth should be three to five times greater than the clock rate. When debugging a digital design, the bandwidth should be three times greater. The bandwidth must be five times greater than the clock rate for conformance tests on digital interfaces.

When measuring fast slopes (to characterize switching power supplies) the rise time for the measurement system (oscilloscope and probe) is critical.

Dynamic range

The dynamic range for a probe is the maximum measurable input voltage. It is specified for DC voltage and often decreases when frequency increases. Differential probes also have distinct dynamic ranges when in common or differential modes. The common mode dynamic range determines the valid input voltage range for a single differential input measured with a ground reference. The differential mode dynamic range defines the maximum measurable input differential voltage.

To accurately measure steep, large-amplitude slopes, a sufficiently wide dynamic range is needed at high frequencies. When measuring residual ripple in DC switching power supplies, very small signals with large DC components also need to be measured. Modern probes can feed in a DC offset for full A/D converter resolution.

Operator safety is vital with high voltage probes. High voltage probes have special insulation, protection against accidental contact and other protective mechanisms. The probes are characterized by maximum voltage to ground and measurement category. The measurement category defines the measurement environment where operators remain protected. A probe may only be used in its defined measurement categories.



Load on device under test (DUT)

A measurement system must not overload the circuit under test to prevent signal degradation and ensure that the DUT functions properly. The key is probes with high input impedance and low input capacitance. The resulting input impedance depends mainly on the frequency and is typically less than 500 Ω at the probe's cutoff frequency.

Passive probes typically have an input impedance of 10 M Ω at an input capacitance of > 10 pF. Active probes typically have an input capacitance of < 1 pF at an input impedance of 1 M Ω and are especially suited for measurements on circuits with high-speed signals > 100 MHz. Measurements demand proper probe accessories for contact with the DUT. Long pins and leads increase capacitance and inductance. Lowering the maximum measurement bandwidth leads to excessive overshoot and ringing artifacts on the pulse slopes.

Expanded functions and probe accessories

In addition to performance parameters, supplemental functions can also simplify daily tasks. Examples include an integrated digital voltmeter or the micro button. The micro button can be configured to allow direct control of an oscilloscope from the probe.

Diverse accessories provide flexibility during test point contacting, make day-to-day work easier and help prevent measurement errors. Available accessories include rigid and spring-loaded tips, browsers, adapters, probe positioners and extension leads. Rohde & Schwarz offers a comprehensive set of accessories for every probe.



| Probe (R&S®) | Probe interface | Recommended oscilloscope family | Usable oscilloscope family ¹⁾ |
|---|---------------------------------|--|--|
| Passive probes | | | |
| RT-ZP1X | BNC | R&S®RTC1000, R&S®RTB 2, R&S®RTM3000, R&S®RTA4000, MXO 3, MXO 4, MXO 5, MXO 5C, R&S®RTO6, R&S®RTP ²⁾ | R&S®RTH1000 (R&S®ScopeRider RTH) |
| RT-ZI10/-ZI10C/-ZI11 | BNC | R&S®RTH1000 (R&S®ScopeRider RTH) | |
| RT-ZP03S | BNC | R&S®RTC1000, R&S®RTB 2 | R&S®RTM3000, R&S®RTA4000, MXO 3, MXO 4 |
| RT-ZP05S | BNC | R&S®RTM3000 | R&S®RTA4000, MXO 3, MXO 4, MXO 5, MXO 5C |
| RT-ZP05M | BNC | MXO 3 | R&S®RTM3000, R&S®RTA4000, MXO 4, MXO 5, MXO 5C |
| RTM-ZP10 | BNC | only for discontinued R&S®RTM2000 | |
| RT-ZP10 | BNC | R&S®RTA4000, R&S®RTO6 | R&S®RTM3000, MXO 3, MXO 4, MXO 5, MXO 5C, R&S®RTP ²⁾ |
| RT-ZP11 | BNC | MXO 3, MXO 4, MXO 5, MXO 5C, R&S®RTO6 | R&S®RTM3000, R&S®RTA4000, R&S®RTP ²⁾ |
| RT-ZPMMCX | BNC | MXO 3, MXO 4, MXO 5, MXO 5C | R&S®RTM3000, R&S®RTA4000, R&S®RTO6, R&S®RTP ²⁾ |
| Passive broadband probes | | | |
| RT-ZZ80 | SMA/BNC | R&S®RTO6, R&S®RTP | R&S®RTM3000, R&S®RTA4000, MXO 3, MXO 4, MXO 5, MXO 5C |
| Active broadband probes | | | |
| RT-ZS10E/-ZS10/-ZS20/-ZS30/-ZS60 | Rohde & Schwarz probe interface | R&S®RTM3000, R&S®RTA4000, MXO 3, MXO 4, MXO 5, MXO 5C, R&S®RTO6, R&S®RTP | |
| RT-ZD10/-ZD20/-ZD30/-ZD40 | Rohde & Schwarz probe interface | R&S®RTM3000, R&S®RTA4000, MXO 3, MXO 4, MXO 5, MXO 5C, R&S®RTO6, R&S®RTP | |
| Modular broadband probes | | | |
| RT-ZM15/-ZM30/-ZM60/-ZM90/-ZM130/-ZM160 | Rohde & Schwarz probe interface | MXO 5, MXO 5C, R&S®RTO6, R&S®RTP | R&S®RTM3000, R&S®RTA4000, MXO 3, MXO 4 |
| Power rail probe | | | |
| RT-ZPR20/-ZPR40 | Rohde & Schwarz probe interface | R&S®RTM3000, R&S®RTA4000, MXO 3, MXO 4, MXO 5, MXO 5C, R&S®RTO6, R&S®RTP | |
| Multichannel power probe | | | |
| RT-ZVC02/-ZVC04 | MSO interface | R&S®RTO6, R&S®RTP | |
| High voltage probes | | | |
| RT-ZH03/-ZH10/-ZH11 | BNC | R&S®RTC1000, R&S®RTB 2, R&S®RTM3000, R&S®RTA4000, MXO 3, MXO 4, MXO 5, MXO 5C, R&S®RTO6 | R&S®RTP ²⁾ |
| RT-ZHD07/-ZHD15/-ZHD16/-ZHD60 | Rohde & Schwarz probe interface | R&S®RTM3000, R&S®RTA4000, MXO 3, MXO 4, MXO 5, MXO 5C, R&S®RTO6, R&S®RTP ²⁾ | |
| Current probes | | | |
| RT-ZC02/-ZC03 | BNC | R&S®RTH1000 (R&S®ScopeRider RTH), R&S®RTC1000, R&S®RTB 2 | R&S®RTM3000, R&S®RTA4000, MXO 3, MXO 4, MXO 5, MXO 5C, R&S®RTO6, R&S®RTP ²⁾ |
| RT-ZC10/-ZC20/-ZC30/-ZC31 | BNC | R&S®RTC1000, R&S®RTB 2, R&S®RTM3000, R&S®RTA4000, MXO 3, MXO 4, MXO 5, MXO 5C, R&S®RTO6, R&S®RTP ²⁾ | R&S®RTH1000 (R&S®ScopeRider RTH) |
| RT-ZC05B/-ZC10B/-ZC15B/-ZC20B | Rohde & Schwarz probe interface | R&S®RTM3000, R&S®RTA4000, MXO 3, MXO 4, MXO 5, MXO 5C, R&S®RTO6, R&S®RTP ²⁾ | |
| PEMUK Rogowski wideband current probes | | | |
| CWT15/30, CWTMN1, CMN50HF3/15/30/06/015, CWTUM1/06/15 | BNC | R&S®RTH1000 (R&S®ScopeRider RTH); R&S®RTC1000, R&S®RTB 2, R&S®RTM3000, R&S®RTA4000, MXO 3, MXO 4, MXO 5, MXO 5C, R&S®RTO6, R&S®RTP ²⁾ | |
| EMC near-field probes | | | |
| HZ-15/HZ-17 | BNC | R&S®RTM3000, R&S®RTA4000, MXO 3, MXO 4, MXO 5, MXO 5C, R&S®RTO6, R&S®RTP | |
| Isolated probing system | | | |
| RT-ZISO | Rohde & Schwarz probe interface | MXO 3, MXO 4, MXO 5, MXO 5C, R&S®RTO6, R&S®RTP | |

¹⁾ Limited functions possible.

²⁾ Requires R&S®RT-Z1M 1 MΩ adapter.



NEW: MXO 3 Series OSCILLOSCOPE AND R&S® RT-ZISO ISOLATED PROBING SYSTEM

PASSIVE PROBES

Passive probes are standard Rohde & Schwarz oscilloscope accessories. They are low-cost, general purpose probing solutions for a broad range of applications.

Universal application

Rohde & Schwarz passive probes are all-rounders. They are low-cost, general purpose solutions for a broad range of applications. The BNC connector lets them be used with almost any oscilloscope. Passive probes with readout pins let Rohde & Schwarz oscilloscopes automatically detect attenuation factors. A spring-loaded tip ensures good contact with the DUT.



Passive probes: all-rounders for every oscilloscope



R&S®RT-ZA4 mini clips and R&S®RT-ZA5 micro clips for reliable contacting, especially when using multiple probes



R&S®RT-ZPMMCX passive probe useful with R&S®RT-ZISO



Extensive R&S®RT-ZA1 accessory set for optimal contacting



R&S®RT-ZA40 accessory set for R&S®RT-ZP03S/05S and R&S®RT-ZH03

Individual adjustment for precise measurement

Optimum measurement accuracy demands that passive probes with a bandwidth greater than 350 MHz be adjusted to the oscilloscope input impedance. The R&S®RT-ZP10 500 MHz passive probe comes preadjusted for R&S®RTA4000, R&S®RTP and R&S®RTO6 oscilloscopes. The R&S®RT-ZP11 700 MHz passive probe comes preadjusted for the MXO 3, MXO 4 and MXO 5 oscilloscopes.

The R&S®RT-ZPMMCX probe is also a perfect addition for many test applications.

Extensive accessories

Rohde & Schwarz offers the R&S®RT-ZA1 passive probe accessory set for optimal contacting. The set includes spare spring-loaded tips, rigid tips, ground contact springs, ground leads and color-coded rings.

For more details,
see our website:



| Model | Bandwidth | Attenuation factor | Input impedance | Dynamic range | Comment | Order No. |
|--------------------|-----------|--------------------|-------------------|--|--|--------------|
| Probes | | | | | | |
| R&S®RT-ZP1X | 38 MHz | 1:1 | 1 MΩ 39 pF | 55 V (RMS) CAT II | 2.5 mm probe tip, spring-loaded | 1333.1370.02 |
| R&S®RT-ZP03S | 300 MHz | 10:1 | 10 MΩ 12 pF | 400 V (RMS)/55 V (RMS) | robust 5 mm probe tip, no readout, for R&S®RTB 2 | 1803.1001.02 |
| R&S®RT-ZP05S | 500 MHz | 10:1 | 10 MΩ 10 pF | 300 V (RMS) | 5 mm probe tip, spring-loaded, for R&S®RTM3000 | 1333.2401.02 |
| R&S®RT-ZP05M | 500 MHz | 10:1 | 10 MΩ 10 pF | 300 V (RMS) | 5 mm probe tip, spring-loaded, for MXO 3 | 1335.3505.02 |
| R&S®RT-ZP10 | 500 MHz | 10:1 | 10 MΩ 9.5 pF | 400 V (RMS), 300 V (RMS) CAT II | 2.5 mm probe tip, spring-loaded, preadjusted, for R&S®RTO6/RTA4000 | 1409.7550.00 |
| R&S®RT-ZP11 | 700 MHz | 10:1 | 10 MΩ 9.5 pF | 400 V (RMS), 300 V (RMS) CAT II | 0.5 mm spring tip gold plated preadjusted, for MXO 4/MXO 5 | 1803.0005.02 |
| R&S®RT-ZPMMCX | 700 MHz | 25:1 | 14.9 MΩ < 4 pF | ±42 V (peak), 30 V (RMS), ±60 V DC | probe input: MMCX (male) | 1803.1599.02 |
| R&S®RT-ZI10 | 500 MHz | 10:1 | 10 MΩ 12 pF | 600 V (RMS) CAT IV, 1000 V (RMS) CAT III | for R&S®ScopeRider RTH | 1326.1761.02 |
| R&S®RT-ZI10C | 500 MHz | 10:1 | 10 MΩ 11 pF | 300 V (RMS) CAT III | compact laboratory probe, for R&S®ScopeRider RTH | 1326.3106.02 |
| R&S®RT-ZI10C-2 | 500 MHz | 10:1 | 10 MΩ 11 pF | 300 V (RMS) CAT III | dual-pack of R&S®RT-ZI10C | 1333.1811.02 |
| R&S®RT-ZI10C-4 | 500 MHz | 10:1 | 10 MΩ 11 pF | 300 V (RMS) CAT III | quad-pack of R&S®RT-ZI10C | 1333.1328.02 |
| Accessories | | | | | | |
| R&S®RT-ZA1 | | | | | accessory set, for R&S®RTM-ZP10/RT-ZP10/RT-ZP1X | 1409.7566.02 |
| R&S®RT-ZA4 | | | | | mini clips | 1416.0428.02 |
| R&S®RT-ZA5 | | | | | micro clips | 1416.0434.02 |
| R&S®RT-ZA6 | | | | | lead set | 1416.0440.02 |
| R&S®RT-ZA21 | | | | | extension set, for R&S®RT-ZI10/RT-ZI11 | 1326.1984.02 |
| R&S®RT-ZA40 | | | | | probe tip accessory set, for R&S®RT-ZP03S/-ZP05S/-ZH03, includes rigid and flexible probe tips | 1338.0742.02 |
| R&S®RT-ZA42 | | | | | ground clips, for R&S®RT-ZP10/R&S®RT-ZP11 | 1801.8873.00 |

PASSIVE BROADBAND PROBES

Low noise, high linearity and passive implementation make passive broadband probes an economical solution to measuring controlled impedance lines. The compact design facilitates measurements on densely packed printed circuit boards.

Economical alternative for measurements on controlled impedance lines

Passive broadband probes are economical, powerful alternatives to active probes for measuring high-speed signals on low impedance lines. In contrast to active probes, their input impedance is low but remains practically constant over the entire frequency range. They feature an extremely low input capacitance and low noise. Their passive implementation renders them highly linear and ideal for spectrum analysis applications.

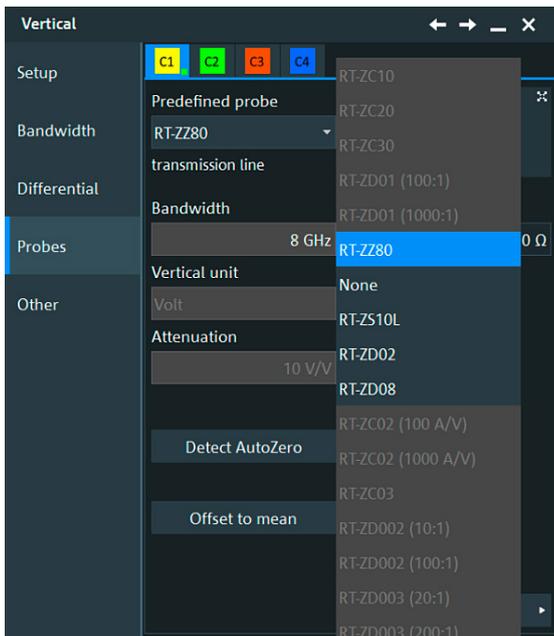
The R&S®RT-ZZ80 8 GHz probe has an attenuation factor of 10:1 at an input impedance of $500 \Omega \parallel 0.3 \text{ pF}$. The SMA plug is connected to the oscilloscope via the SMA-BNC adapter. The probe can be easily selected as a predefined probe from the R&S®RTO6 or R&S®RTP oscilloscope menu. Correctly configure an instrument in a few simple steps.



Passive broadband probes: powerful alternative for measurements on controlled impedance lines

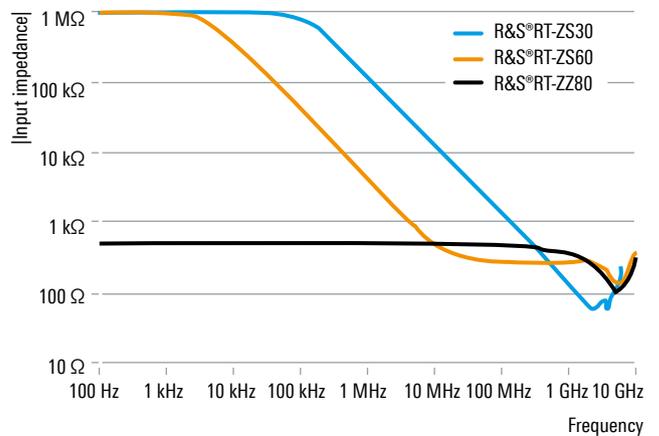
Maximum bandwidth through customized accessories

The maximum probe bandwidth is defined by its accessories. Rohde&Schwarz supplies accessories tailored to both the probe and the application to provide the maximum bandwidth for several contacting methods. The extensive standard accessories for the R&S®RT-ZZ80 include solder-in pins, rigid tips, solder-in ground pins, spring-loaded ground tips and pin connector adapters. Since all probe tips have the same design, R&S®RT-ZZ80 accessories are compatible with both single-ended and differential active probes (R&S®RT-ZS60 and R&S®RT-ZD40).



Selecting predefined probes with SMA or BNC connector on the R&S®RT06

Input impedance versus frequency



| Model | Bandwidth | Attenuation factor | Input impedance | Dynamic range | Comment | Order No. |
|--------------|-----------|--------------------|-----------------|----------------------------------|--------------------------|--------------|
| Probe | | | | | | |
| R&S®RT-ZZ80 | 8 GHz | 10:1 | 500 Ω 0.3 pF | 20 V (RMS) max. input voltage | SMA-BNC adapter included | 1409.7608.02 |

ACTIVE BROADBAND PROBES

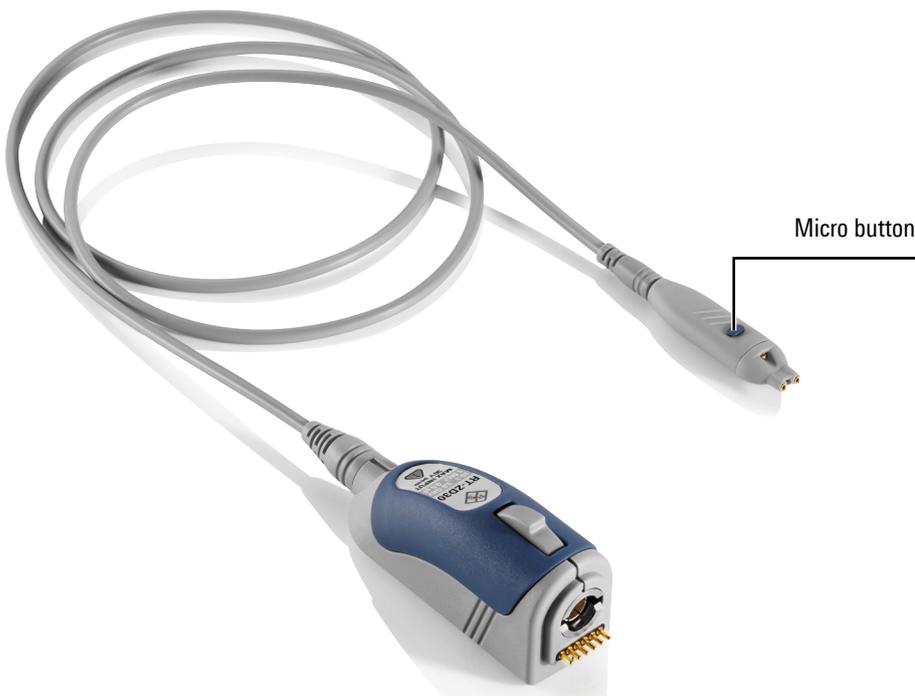
Rohde & Schwarz has an extensive range of active broadband probes with high input impedance of 1 M Ω , low input capacitance of < 1 pF and a wide dynamic range. Useful functions, such as offset compensation, a high-precision integrated voltmeter and a micro button for convenient oscilloscope control set the probes apart.

Designed for high bandwidths

High-bandwidth probes are only possible with application-specific integrated circuits (ASIC). Rohde & Schwarz ASICs focus on performance. The result is low noise, high DC accuracy and minimal drift versus temperature and time. Individual laser trimming of the probes in production results in very high accuracy and a very flat frequency response. The contact accessory designs also permit a high measurement bandwidth for various contacting methods, including manual contacting, solder-in and plug-in connections. The compact probe head allows measurements even on densely populated printed circuit boards, and the low weight keeps the load at the contact point to a minimum.

Minimal influence on the measurement signal

When measuring high-speed signals in modern electronic designs, the probe load must be low. Rohde & Schwarz active probes have 1 M Ω input impedance at an input capacitance of < 1 pF to minimize the influence on the circuit during measurements. The optimized probe tip design and accessories ensure accurate rise times and minimize overshoot and ringing.



R&S®RT-ZS10/20/30



R&S®RT-ZS60



R&S®RT-ZD10/20/30



R&S®RT-ZD40

Rohde & Schwarz active broadband probes with a variety of heads to match the application (e.g. R&S®RT-ZS60/-ZD40: special head design for particularly low input capacitance)

Wide dynamic range and high linearity: ideal for spectrum analysis

All Rohde&Schwarz active broadband probes have a wide dynamic range that is also available at high frequencies. Even very fast signals and steep, high-amplitude pulse slopes can be measured. The R&S®RT-ZS60 single-ended probe has high linearity (THD of -70 dB at 16 V peak-to-peak at 1 GHz) and is ideal for measurements with very stringent linearity requirements (such as widespan FFT analyses with oscilloscopes). The optional R&S®RT-ZA9 N(m) adapter lets Rohde&Schwarz broadband probes be used with spectrum and signal analyzers.

Integrated micro button for convenient instrument control

Measuring with multiple probes often requires a third hand to operate the oscilloscope. The integrated micro button on the probe tip solves this problem. The button can be configured on Rohde&Schwarz oscilloscopes to perform a variety of functions, such as run/stop, auto set or save waveform.

R&S®ProbeMeter: integrated, high-precision voltmeter

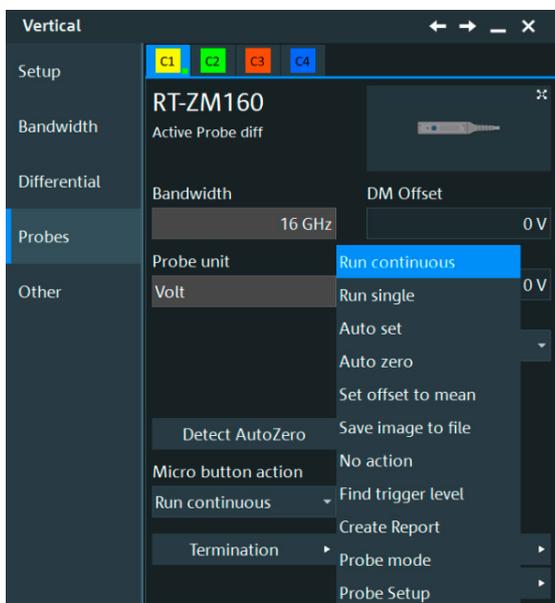
Rohde&Schwarz active probes have an integrated voltmeter that operates independently of the oscilloscope and can measure the DC component of a signal with 0.1 % accuracy. The full dynamic range of the R&S®ProbeMeter is always available, regardless of the oscilloscope settings. Supply voltage and operating points can be quickly and precisely measured and DC components can be automatically compensated in AC measurements – with optimal dynamic range. In differential probes, the DC components of the input signal differential and common mode components can be measured simultaneously.

Integrated memory and future-ready probe interface

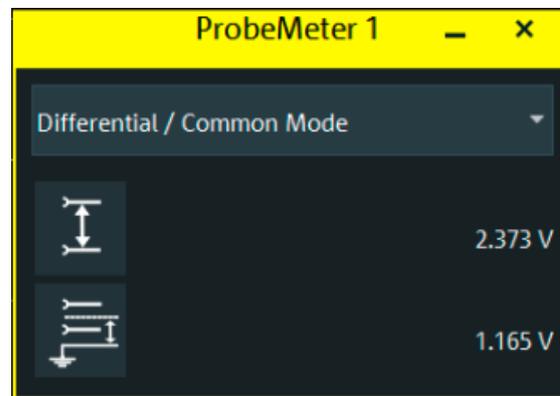
The data memory in Rohde&Schwarz active broadband probes is loaded with probe-specific calibration data for maximum accuracy and automatic probe detection. Active probes have an interface with a precision BNC-compatible connector that can transmit signals up to 18 GHz. The probes will also be compatible with future Rohde&Schwarz broadband oscilloscopes.



R&S®RT-ZA9 N(m) adapter for active broadband probes for use with signal and spectrum analyzers



Flexible configuration of the micro button function on the oscilloscope



R&S®ProbeMeter: high DC measurement accuracy, independent of the instrument settings and in parallel with the measurement channel

SINGLE-ENDED BROADBAND PROBES

A wide dynamic range, exceptionally low offset and gain errors and the right accessories make these probes ideal for Rohde & Schwarz oscilloscopes.

High signal fidelity with active probes

Single-ended active probes accurately measure ground-referenced signals. They precisely measure both high-speed and low-frequency signals. The probe impedance must place a minimal load on the test point. Rohde & Schwarz has a variety of models with a maximum bandwidth of up to 6 GHz. Rohde & Schwarz single-ended active probes feature high input impedance of 1 M Ω , low input capacitance of 0.3 pF and noise of 2 mV (RMS) referenced to the input.

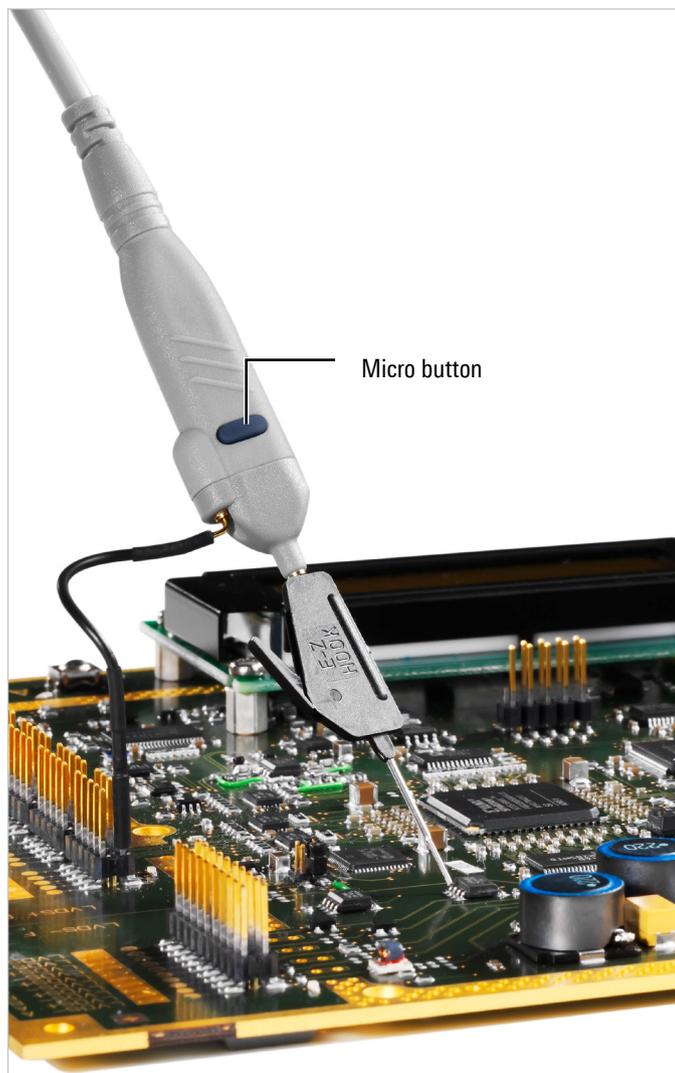
Wide dynamic range with additional offset compensation

In addition to the wide dynamic range, Rohde & Schwarz single-ended active probes also have offset compensation. The DC component of the measured signal can be compensated so that the signal components of interest are displayed on the oscilloscope at maximum resolution.

A low voltage, single-ended probe typically measures high-speed, ground-referenced signals up to 12 V. The maximum input voltage of 30 V ensures that the probe is not overloaded.

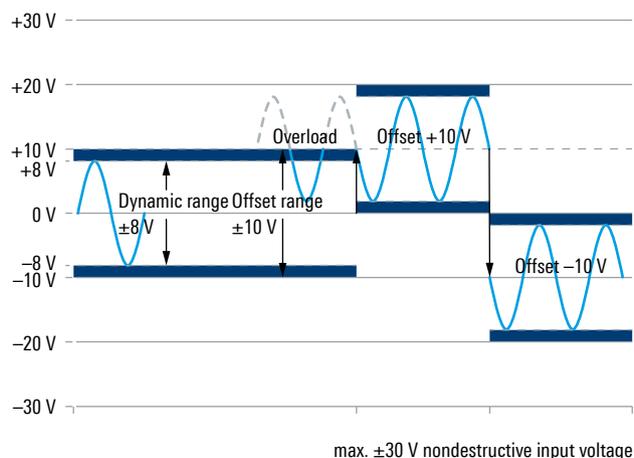
Exceptionally low offset and gain errors, minimal temperature drift

Rohde & Schwarz single-ended active probes have impressively low offset and gain errors. The minimal gain drift coupled with the offset compensation permits precise measurements – even over extended periods of time and at varying temperatures. Frequent compensation during the measurement is no longer necessary, simplifying everyday measurements.



Practical design: micro button for convenient instrument control
Diverse probe tips and ground cables are included as standard.

Wide dynamic range: ± 8 V, expandable with additional offset compensation of ± 12 V (± 10 V for R&S® RT-ZS60)



Rohde & Schwarz probe interface extension set

When R&S®RT-ZA50 and R&S®RT-ZA51 adapters are combined, they serve as an extension set for the Rohde & Schwarz probe interface. Rohde & Schwarz probes can be operated up to 3 m away from oscilloscopes in production testing and ATE systems.



R&S®RT-ZA2



R&S®RT-ZA3



R&S®RT-ZA4



R&S®RT-ZA5



R&S®RT-ZA6

R&S®RT-ZA9



R&S®RT-ZA50



R&S®RT-ZA51



| Model | Bandwidth | Attenuation factor | Input impedance | Dynamic range | Comment | Order No. |
|--------------------|-----------|--------------------|-----------------|-----------------------------|---|--------------|
| Probes | | | | | | |
| R&S®RT-ZS10E | 1.0 GHz | 10:1 | 1 MΩ 0.8 pF | ±8 V | Rohde & Schwarz probe interface | 1418.7007.02 |
| R&S®RT-ZS10 | 1.0 GHz | 10:1 | 1 MΩ 0.8 pF | ±8 V | R&S®ProbeMeter and micro button for instrument control, Rohde & Schwarz probe interface | 1410.4080.02 |
| R&S®RT-ZS20 | 1.5 GHz | 10:1 | 1 MΩ 0.8 pF | (±12 V offset compensation) | | 1410.3502.02 |
| R&S®RT-ZS30 | 3.0 GHz | 10:1 | 1 MΩ 0.8 pF | (±10 V offset compensation) | | 1410.4309.02 |
| R&S®RT-ZS60 | 6.0 GHz | 10:1 | 1 MΩ 0.3 pF | (±10 V offset compensation) | | 1418.7307.02 |
| Accessories | | | | | | |
| R&S®RT-ZA2 | | | | | accessory set, for R&S®RT-ZS10/20E/20/30 | 1416.0405.02 |
| R&S®RT-ZA3 | | | | | pin set, for R&S®RT-ZS10/10E/20/30 | 1416.0411.02 |
| R&S®RT-ZA4 | | | | | mini clips | 1416.0428.02 |
| R&S®RT-ZA5 | | | | | micro clips | 1416.0434.02 |
| R&S®RT-ZA6 | | | | | lead set | 1416.0440.02 |
| R&S®RT-ZA9 | | | | | N(m) adapter, for R&S®RT-Zxx oscilloscope probes | 1417.0909.02 |
| R&S®RT-ZA50 | | | | | adapter, Rohde & Schwarz probe interface to 2.92 mm/3.5 mm/SMA including DC power cable, USB 3.1 cable C/C and SMA cable adapter, 2.92 mm/3.5 mm/SMA to Rohde & Schwarz probe interface | 1803.5265.02 |
| R&S®RT-ZA51 | | | | | | 1803.5365.02 |

DIFFERENTIAL BROADBAND PROBES

Flat frequency response and high input impedance with low input capacitance permit precise measurements on differential signals while minimizing the DUT load. The high common mode rejection over the entire probe bandwidth ensures high immunity to interference. Special browser adapters allow flexible contacting with high signal fidelity.

High common mode rejection

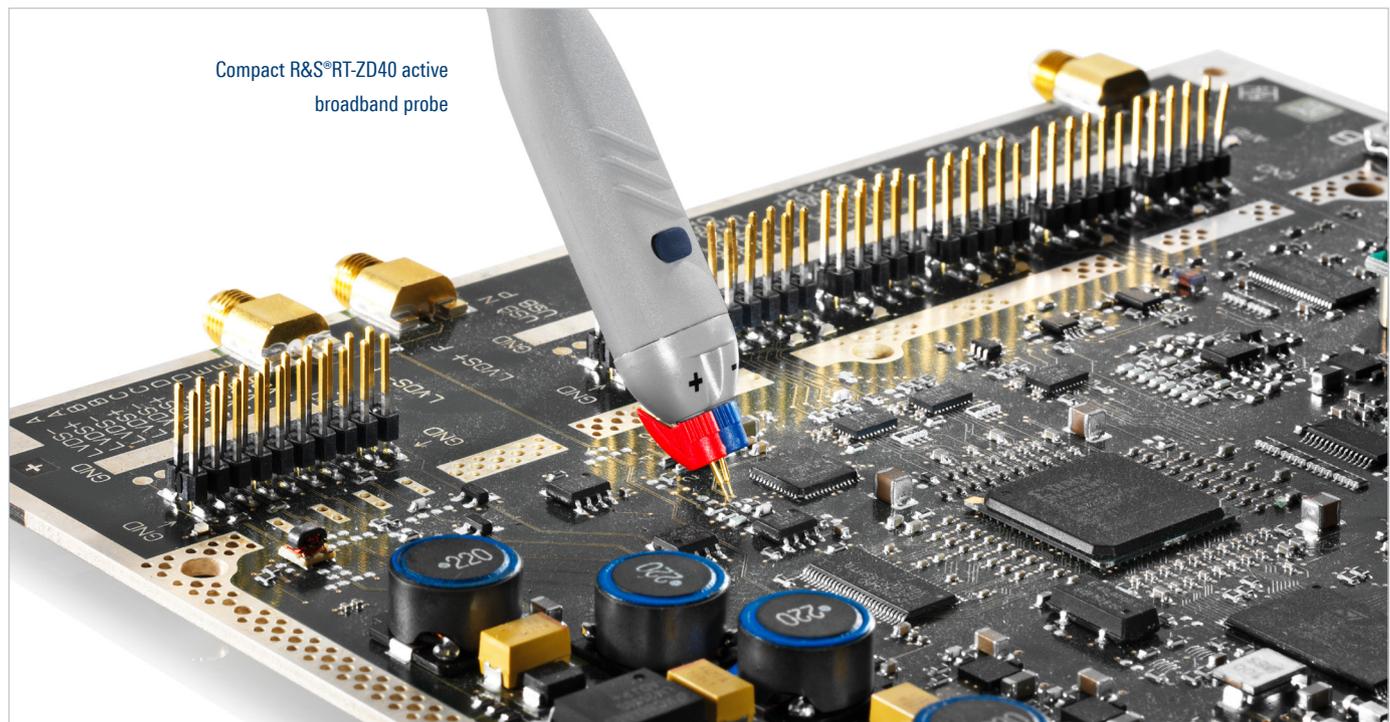
Differential signals are used at high clock rates to effectively suppress common mode interference and transmit error-free broadband signals. The signals can only be measured accurately with differential probes. Common mode rejection is an important quality parameter. Rohde&Schwarz differential probes suppress common mode interference over the entire probe bandwidth.

High common mode rejection over the entire probe bandwidth (example: R&S®RT-ZD40)



Low loading at DC and high frequencies

DC voltage needs to differentiate between input impedance for differential and common mode signals, which is particularly important when measuring low voltage differential signaling (LVDS) lines. Although the differential input impedance of LVDS receivers is typically 100 Ω , the operating point is often set to a high impedance level. Excessive loading on the signal line can shift the operating point outside of the receiver input voltage range and impair the functioning of the circuit. Almost all Rohde&Schwarz differential probes have a very high differential input impedance of 1 M Ω and a common mode impedance of 250 k Ω to keep the load low.



Wide dynamic range expands the range of applications

The R&S®RT-ZD10/-ZD20/-ZD30/-ZD40 differential broadband probes have a wide dynamic range of ± 5 V with additional offset compensation of ± 5 V (differential mode) and ± 22 V¹⁾ (common mode), making them universal measurement tools. High-speed, single-ended signals at DDR storage ports can be measured just as easily as symmetrically fed RF signals or voltage without reference to ground in switching power supplies.

The R&S®RT-ZD10 active differential probe, together with the R&S®RT-ZA15 external attenuator (included in delivery) can measure voltage up to ± 60 V DC/ ± 42.4 V AC (peak) at a bandwidth of 1 GHz.

¹⁾ This option is available for the R&S®RT-ZD20/-ZD30/-ZD40 starting with serial number 200000.

Focus on usability

Rohde & Schwarz focuses probe accessory design on usability. The positive and negative inputs are clearly identified. An extensive array of probe tips, easy and precisely adjustable pin offsets and spring-loaded tips for the browser adapters are just some of the special features.



R&S®RT-ZD40: browser adapters to easily vary the pin offset



R&S®RT-ZA15 external attenuator for R&S®RT-ZD20/-ZD30

| Model | Bandwidth | Attenuation factor | Input impedance | Dynamic range | Comment | Order No. |
|--------------------|-----------|------------------------------|---|---|--|--------------|
| Probes | | | | | | |
| R&S®RT-ZD10 | 1 GHz | 10:1/ 100:1 ¹⁾ | 1 M Ω 0.6 pF/ 1 M Ω 1.3 pF ¹⁾ | ± 5 V, with R&S®RT-ZA15: ± 60 V DC ± 42.4 V AC (peak); offset compensation: ± 5 V (differential mode), ± 22 V ¹⁾ (common mode) | R&S®ProbeMeter and micro button for instrument control; R&S®RT-ZA15 included with R&S®RT-ZD10; Rohde & Schwarz probe interface | 1410.4715.02 |
| R&S®RT-ZD20 | 1.5 GHz | 10:1 | 1 M Ω 0.6 pF | | | 1410.4409.02 |
| R&S®RT-ZD30 | 3.0 GHz | 10:1 | 1 M Ω 0.6 pF | | | 1410.4609.02 |
| R&S®RT-ZD40 | 4.5 GHz | | 1 M Ω 0.4 pF | | | ± 5 V |
| Accessories | | | | | | |
| R&S®RT-ZA4 | | | | | mini clips | 1416.0428.02 |
| R&S®RT-ZA5 | | | | | micro clips | 1416.0434.02 |
| R&S®RT-ZA6 | | | | | lead set | 1416.0440.02 |
| R&S®RT-ZA7 | | | | | pin set, for R&S®RT-ZD10/20/30 | 1417.0609.02 |
| R&S®RT-ZA8 | | | | | pin set, for R&S®RT-ZD40 | 1417.0867.02 |
| R&S®RT-ZA15 | 2 GHz | 10:1 | 1 M Ω 1.3 pF | ± 60 V DC/ ± 42.4 V AC (peak) | external attenuator, for R&S®RT-ZD20/30; included with R&S®RT-ZD10 | 1410.4744.02 |

¹⁾ With R&S®RT-ZA15.

MODULAR BROADBAND PROBES

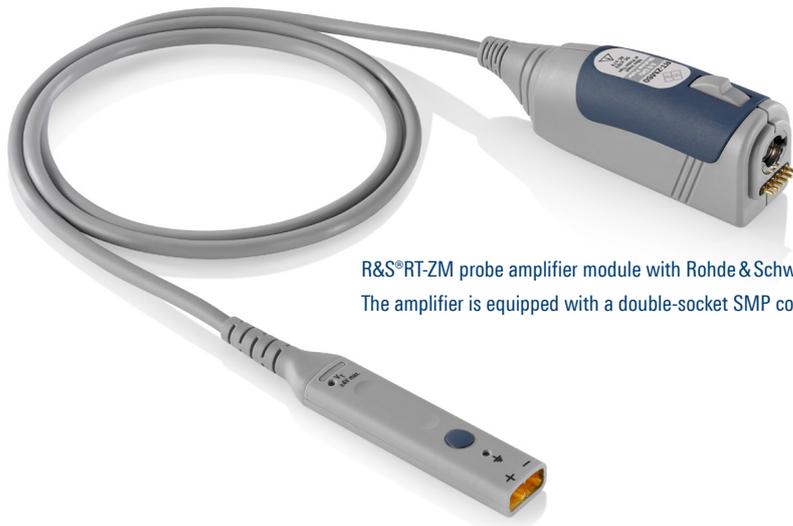
High-speed probing challenges

The R&S®RT-ZM modular probe system is a technically sophisticated and easy-to-handle solution for current probing requirements. The systems include a high probing bandwidth and dynamic range together with a low capacitive load. The probe system is available with amplifier module bandwidths from 1.5 GHz to 16 GHz. The modules come with a Rohde & Schwarz probe interface for automatic probe detection and configuration with Rohde & Schwarz oscilloscopes.

The system includes probe tip modules for various measurements and conditions, including semi-permanent solder-in probe tips for small areas or solutions for environmental tests in climatic chambers at temperatures from -55°C to +125°C. The integrated R&S®ProbeMeter function lets multiple high-precision DC voltage measurements be performed at the same time.

Multimode function

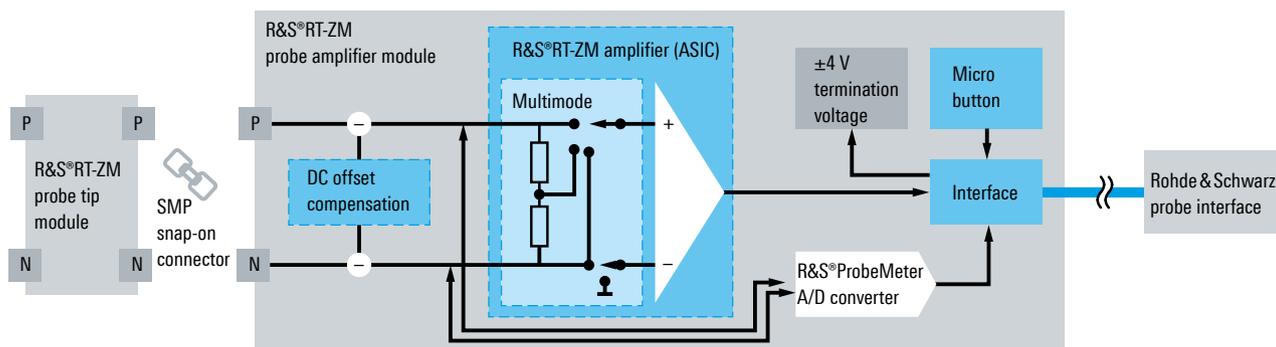
The modular probe system has a unique multimode function that lets users switch between differential, common and single-ended modes. The probe is highly flexible and can be set up for various measurements. You can toggle between the differential and common modes to compare noise and determine the crosstalk noise couples from nearby sources. Being able to shift to single-ended mode lets you access several probe points with one probe tip and is especially useful in DDR setups.



R&S®RT-ZM probe amplifier module with Rohde & Schwarz probe interface
The amplifier is equipped with a double-socket SMP connector.

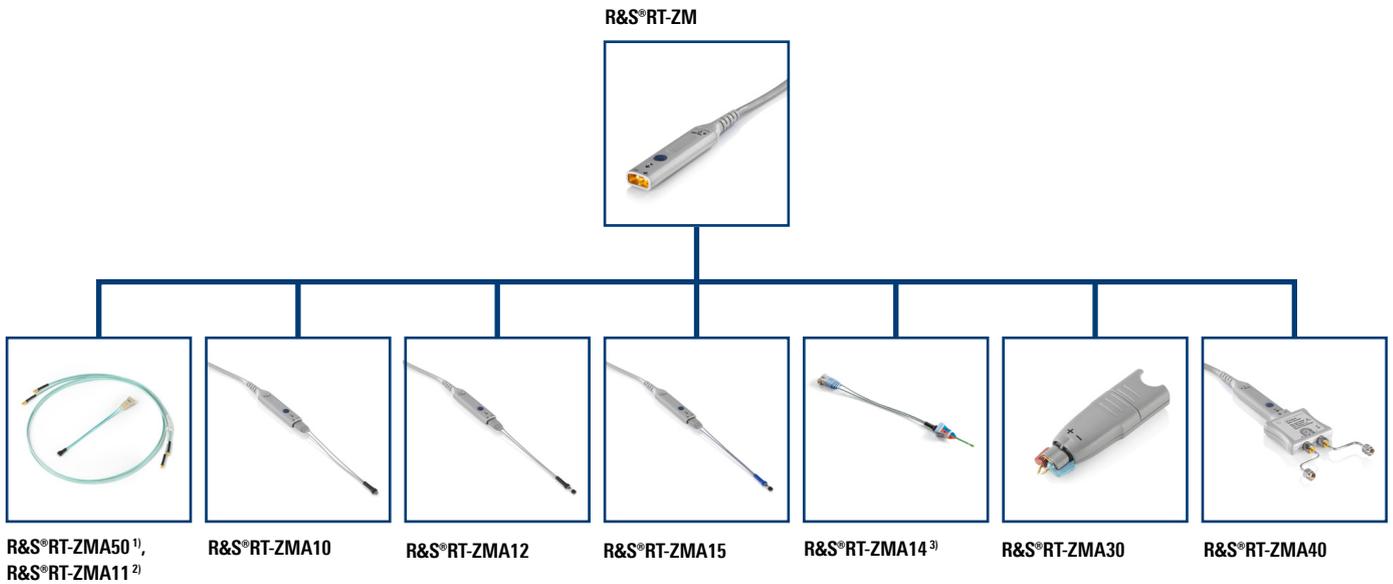
R&S®RT-ZM modular probe system with exchangeable R&S®RT-ZM probe tip module

(connected via a high-performance double-socket SMP snap-on interface to an R&S®RT-ZM probe amplifier module with Rohde & Schwarz probe interface)



Probe tip modules for the R&S®RT-ZM modular probe system

► For detailed information, see R&S®RT-ZM flyer PD 3607.5690.32



R&S®RT-ZMA50 ¹⁾,
R&S®RT-ZMA11 ²⁾

R&S®RT-ZMA10

R&S®RT-ZMA12

R&S®RT-ZMA15

R&S®RT-ZMA14 ³⁾

R&S®RT-ZMA30

R&S®RT-ZMA40

¹⁾ Contains the R&S®RT-ZMA11 and a pair of matched extension cables (length: 1 m).

²⁾ For the R&S®RT-ZMA50.

³⁾ Contains 10 solder-in flex tips.

| Model | System bandwidth | Rise time (10% to 90%) | Multimode ¹⁾ | Comment | Order No. |
|--------------------------------|------------------|------------------------|-------------------------|--|--------------|
| Probe amplifier modules | | | | | |
| R&S®RT-ZM15 | > 1.5 GHz | < 230 ps | | | 1800.4700.02 |
| R&S®RT-ZM30 | > 3 GHz | < 100 ps | | | 1419.3005.02 |
| R&S®RT-ZM60 | > 6 GHz | < 75 ps | | | 1419.3105.02 |
| R&S®RT-ZM90 | > 9 GHz | < 50 ps | | | 1419.3205.02 |
| R&S®RT-ZM130 | > 13 GHz | < 35 ps | | | 1800.4500.02 |
| R&S®RT-ZM160 | 16 GHz | < 28 ps | | | 1800.4600.02 |
| Probe tip modules | | | | | |
| R&S®RT-ZMA10 | 16 GHz (meas.) | 28 ps | P/N/DM/CM | length: 15 cm (5.9 in), suitable for R&S®RT-ZMA50 | 1419.4301.02 |
| R&S®RT-ZMA10-6 | | | | set of 6 R&S®RT-ZMA10 solder-in probe tip modules | 1801.4349.02 |
| R&S®RT-ZMA11 | 16 GHz (meas.) | 28 ps | P/N/DM/CM | length: 15 cm | 1419.4318.02 |
| R&S®RT-ZMA12 | 6 GHz (meas.) | 75 ps | P/N/DM/CM | length: 15 cm | 1419.4324.02 |
| R&S®RT-ZMA14 | 16 GHz (meas.) | 28 ps | P/N/DM/CM | length: 15 cm, incl. 10 solder-in flex tips | 1338.1010.02 |
| R&S®RT-ZMA15 | 12 GHz (meas.) | 37 ps | P/N/DM/CM | length: 15 cm | 1419.4224.02 |
| R&S®RT-ZMA30 | 16 GHz (meas.) | 28 ps | DM | | 1419.4353.02 |
| R&S®RT-ZMA40 | 16 GHz (meas.) | 28 ps | P/N/DM/CM | 50 Ω/100 Ω, suitable for SMA, 3.5 mm and 2.92 mm systems, termination voltage ±4 V, supplied from R&S®RT-ZM probe amplifier module | 1419.4201.02 |
| R&S®RT-ZMA50 | 12 GHz (meas.) | 37 ps | P/N/DM/CM | cable length: 1 m; consists of R&S®RT-ZMA11 and a pair of matched extension cables, temperature range: -55 °C to +125 °C | 1419.4218.02 |
| Accessories | | | | | |
| R&S®RT-ZMA1 | | | | for up to 6 R&S®RT-ZMAxx probe tip modules | 1419.3928.02 |
| R&S®RT-ZAP | | | | 3D probe positioner | 1326.3641.02 |
| R&S®RT-ZF30 | | | | test fixture for probe characterization with R&S®RTP-B7 | 1333.2099.02 |

¹⁾ Multimode:

DM: differential measurement, CM: common mode measurement, P: single-ended measurement on positive pin, N: single-ended measurement on negative pin.

POWER RAIL PROBE

High bandwidth, high sensitivity, very low noise and extra-large offset compensation make the R&S®RT-ZPR power rail probes ideal for characterizing power rails. An integrated high-precision DC voltmeter provides an instant DC voltage readout.

Up to 4.0 GHz bandwidth and very low added noise

Low voltage combined with tight tolerance makes testing power rails difficult. Not only do newer power rails require more precise low-voltage measurements, they are susceptible to coupling with high-speed clocks and RF sources.

The R&S®RT-ZPR power rail probes can provide precise ripple measurements with up to 4.0 GHz of bandwidth, excellent sensitivity thanks to the 1:1 attenuation ratio and low noise. The solution also helps isolate periodic and random disturbances (PARD) when combined with the MXO 3¹⁾, MXO 4¹⁾, MXO 5¹⁾, R&S®RTO6 and R&S®RTP, which offer the best spectrum analysis in the industry.

¹⁾ Only with R&S®RT-ZPR20.

Measuring slight voltage on large DC offsets

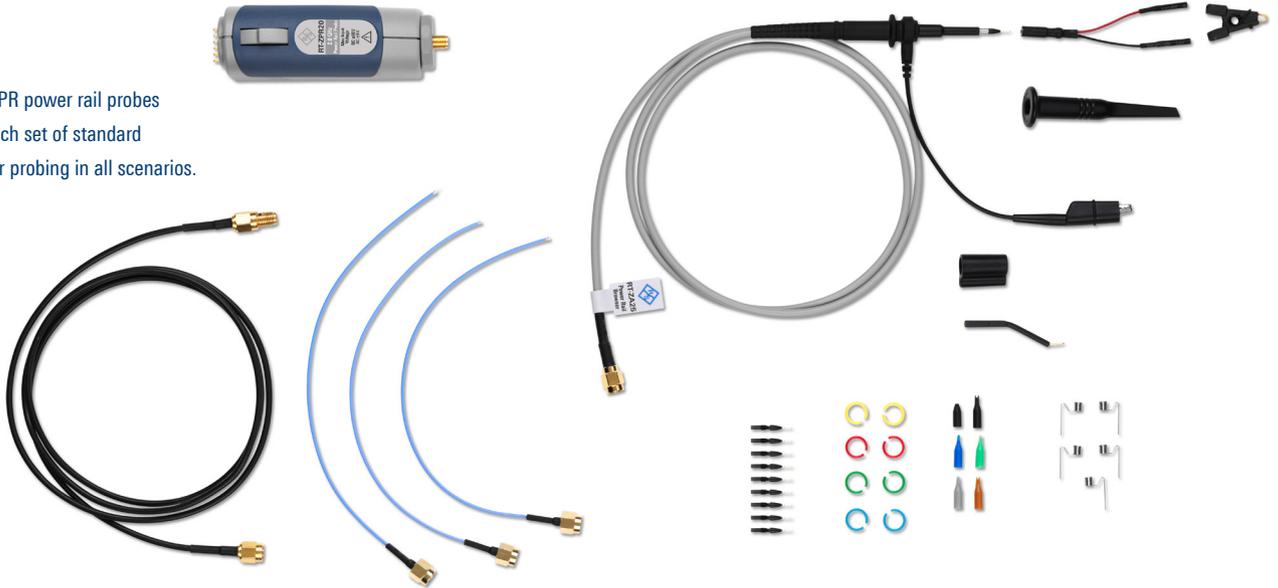
The built-in offset is typically not enough to zoom in and accurately measure peak-to-peak voltage on DC power rails, making accurate ripple measurements impossible. The ± 60 V offset compensation range in R&S®RT-ZPR power rail probes lets users zoom in on DC voltage with high offset levels. Whether zooming in on a 1 V power rail or something much higher, the probe has the necessary offset.



R&S®ProbeMeter: integrated high-accuracy DC voltmeter

While other oscilloscopes only have a waveform view of power rails under test, the R&S®RT-ZPR power rail probes has a high-precision DC voltmeter to quickly reveal rail values. The integrated DC voltmeter with an input voltage range of ± 60 V accurately monitors long-term DC level drift. Combined with the ripple voltage readings from the oscilloscope, you can see at any time whether the power supply ripple leaves the permitted operating voltage window for the DUT.

The R&S®RT-ZPR power rail probes come with a rich set of standard accessories for probing in all scenarios.



Comprehensive accessories included

The R&S®RT-ZPR power rail probes come with solder-in cables for broadband probing and a 350 MHz browser kit to easily measure at different places on a PCB or to verify the DC power supply with the R&S®ProbeMeter.



The high bandwidth of the R&S®RT-ZPR power rail probes allow you to capture even high-frequency noise components that can be easily analyzed with the R&S®RT06 spectrum analysis function.



Accurately verify DC level and power supply load response during initialization of a DDR3 memory with the R&S®ProbeMeter and the R&S®RT06 oscilloscope's flexible math functions.

| Model | Bandwidth | Attenuation factor | Input impedance | Dynamic range | Comment | Order No. |
|--------------------|-----------|--------------------|-----------------|--|--|--------------|
| Probes | | | | | | |
| R&S®RT-ZPR20 | 2.0 GHz | 1:1 | 50 k Ω | ± 0.85 V (± 60 V offset compensation), optional AC coupling | R&S®ProbeMeter | 1800.5006.02 |
| R&S®RT-ZPR40 | 4.0 GHz | 1:1 | 50 k Ω | | R&S®ProbeMeter | 1800.5406.02 |
| Accessories | | | | | | |
| R&S®RT-ZA25 | – | – | – | – | power rail browser kit, included with R&S®RT-ZPR20/40 | 1800.5329.00 |
| R&S®RT-ZA26 | – | – | – | – | pigtail cable, 15 cm, solder-in, SMA for R&S®RT-ZPR20/40 power rail probe, included with R&S®RT-ZPR20/40 | 1800.5258.00 |

MULTICHANNEL POWER PROBE

Power consumption is a major concern with the internet of things (IoT) and consumer electronics devices. The R&S®RT-ZVC multichannel power probe has up to four voltage and four current channels with 18-bit resolution for current and voltage measurements with a high dynamic range. When two R&S®RT-ZVC probes are attached to an R&S®RTO6 or R&S®RTP oscilloscope, eight high dynamic range voltage signals and current signals can be analyzed in parallel using signals captured by the oscilloscope.

To optimize the battery life for embedded devices, active, sleep, hibernate and current consumption should be balanced. While active current consumption can be up to tens or hundreds of mA, sleep current is often only a few μA , which can still significantly influence battery life since devices remain mostly in sleep mode.

Very high dynamic range with 18-bit ADC resolution

With up to four current and four voltage input channels with 18-bit ADC resolution each, the R&S®RT-ZVC02/-ZVC04 multichannel power probe has the dynamic range needed to analyze current consumption in all mobile device activity phases.

Internal and external shunt current measurement with switchable sensitivity

Three built-in shunts and an external shunt mode in combination with switchable gain factors help optimize the input current range. Differential inputs for floating measurements are within an input voltage operating window of $\pm 15\text{ V}$. Settings are fully controlled from the oscilloscope user interface.



High bandwidth with flexible filtering for noise reduction

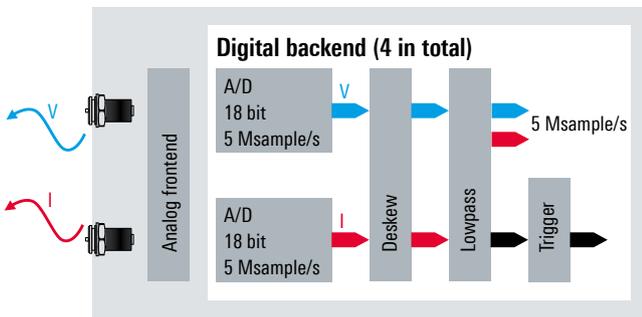
A bandwidth of 1 MHz and a sampling rate of 5 Msample/s can capture fast current pulses. To analyze overall power consumption for battery powered devices, the very low sleep mode current levels have to be captured simultaneously. The integrated lowpass filter reduces the bandwidth to 5 kHz and minimizes overall system noise for very high dynamic range measurements.

Precisely measure up to eight power rails simultaneously

One R&S®RTO6 or R&S®RTP oscilloscope supports up to two R&S®RT-ZVC probes and eight power domains can be observed in parallel with a DC accuracy of 0.1% for voltage measurements and 0.2% for current measurements. Ramp-up processes and power rail tolerances can easily be tested with the probe. The SCPI remote control in the oscilloscope enables automatic testing.

Digital acquisition system

The R&S®RT-ZVC probe digital acquisition system has 18-bit resolution, a 5 Msample/s sampling rate and 1 MHz bandwidth. Each voltage and current input pair forms a high dynamic range power measurement system.



Current ranges

Low-gain mode, shunt

±4.5 µA; ±45 µA, 10 kΩ

±4.5 mA; ±45 mA, 10 Ω

±4.5 A; ±10 A, 10 mΩ

±45 mV¹⁾; ±450 mV¹⁾; external

Voltage ranges

±1.88 V

±3.75 V

±7.5 V

±15 V

¹⁾ Current range depends on shunt value.



The R&S®RT-ZVC probe provides an extraordinarily high dynamic range for measuring both active state currents and sleep currents, in this example 12 mA and 30 µA. Automated measurements make it possible to calculate the total energy consumption.

Very low-noise frontend for measuring sensor signals

The extraordinarily high dynamic range and low-noise of the R&S®RT-ZVC probe enables clear measurement of faint sensor signals. Maximum sensitivity is possible with the current inputs in external shunt mode for 18-bit resolution at 45 mV full-scale differential input voltage. A cardiac voltage pulse with a signal level of only 200 μ V (peak-to-peak) can easily be captured and analyzed.

Flexible connectivity options for every application

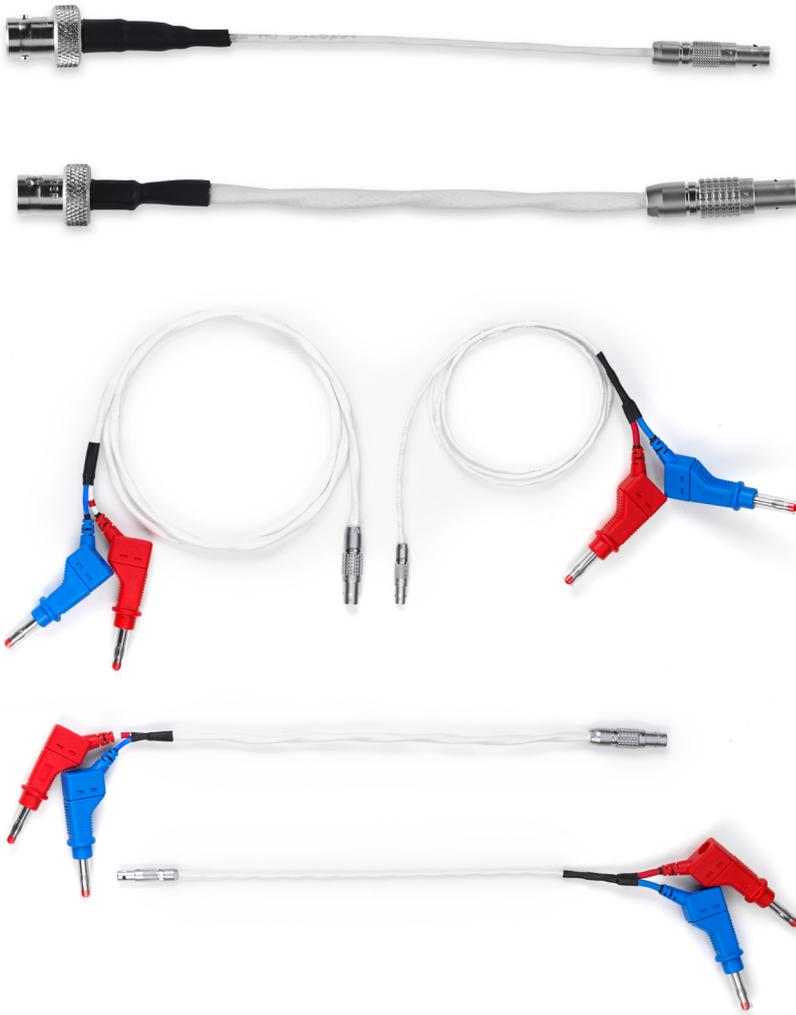
The R&S®RT-ZVC multichannel power probe comes with a set of high-quality pin connector cables and solder-in leads to connect the probe in typical embedded electronics measurement scenarios. 4 mm connector cables of varying lengths are also available as are BNC-type connector cables for standard oscilloscope voltage and current probes to extend the voltage and current measurement range.



Small signals such as a 200 μ V cardiac pulse can easily be measured.



Standard accessories include PCB connector cables for each channel and solder-in leads.



4 mm cables with different lengths and BNC connector cables are optionally available.

| Model | Input channels | Bandwidth/sampling rate | Resolution | Input impedance | Full-scale input range | Common mode input voltage range | Order No. |
|--------------|----------------------|-------------------------|------------|--|---|---------------------------------|--------------|
| R&S®RT-ZVC02 | 2 current, 2 voltage | 1 MHz/5 Msample/s | 18 bit | | ▶ voltage ±1.88/±3.75/±7.5/±15 V | ±15 V | 1326.0259.02 |
| R&S®RT-ZVC04 | 4 current, 4 voltage | 1 MHz/5 Msample/s | 18 bit | ▶ voltage channels: 10 MΩ 48 pF ▶ current channels: 1 MΩ shunt resistor | ▶ current - internal shunt 10 kΩ: ±4.5 μA, ±45 μA, 10 Ω: ±4.5 m, ±45 mA, 10 mΩ: ±4.5 A, ±10 A - external shunt (voltage range) ±45 mV, ±450 mV (all channels) | ±15 V | 1326.0259.04 |

| Accessories | Comment | Order No. |
|--------------|--|--------------|
| R&S®RT-ZA30 | extended cable set, for R&S®RT-ZVC, PCB probing, 1 current and 1 voltage lead, length: 32 cm | 1333.1686.02 |
| R&S®RT-ZA31 | extended cable set, for R&S®RT-ZVC, 4 mm probing, 1 current and 1 voltage lead, length: 32 cm | 1333.1692.02 |
| R&S®RT-ZA33 | oscilloscope interface cable, for R&S®RT-ZVC (included with R&S®RT-ZVC02/-ZVC04, 1326.0259.02/.04) | 1333.1770.02 |
| R&S®RT-ZA34 | extended cable set, for R&S®RT-ZVC, 4 mm probing, 1 current and 1 voltage lead, length: 1 m | 1333.1892.02 |
| R&S®RT-ZA35 | extended cable set, for R&S®RT-ZVC, PCB probing, 1 current and 1 voltage lead, length: 1 m | 1333.1905.02 |
| R&S®RT-ZA36 | solder-in cable set, for R&S®RT-ZVC, 4 current and voltage solder-in cables, solder-in pins | 1333.1911.02 |
| R&S®RT-ZA37 | extended cable set, for R&S®RT-ZVC, BNC connector, 1 current and 1 voltage lead, length: 16 cm | 1337.9130.02 |
| R&S®RTP-B1E | digital extension port, for R&S®RT-ZVC, usage with the R&S®RTP oscilloscope (included with R&S®RTP-B1) | 1337.9581.02 |
| R&S®RTO6-B1E | digital extension port, for R&S®RT-ZVC, usage with the R&S®RTO6 oscilloscope (included with R&S®RTO6-B1) | 1801.6735.02 |

Up to 2000 V offset capability at highest vertical sensitivity

To measure ripple voltage on the DC link, high offset voltage with high vertical sensitivity is needed. The integrated offset circuitry give R&S®RT-ZHD probes an offset voltage range that is independent of the vertical oscilloscope settings and probe attenuation factor. Now you can measure the slightest ripple voltage for high DC link voltage levels without compromising sensitivity.

Easy-to-use and fully integrated into

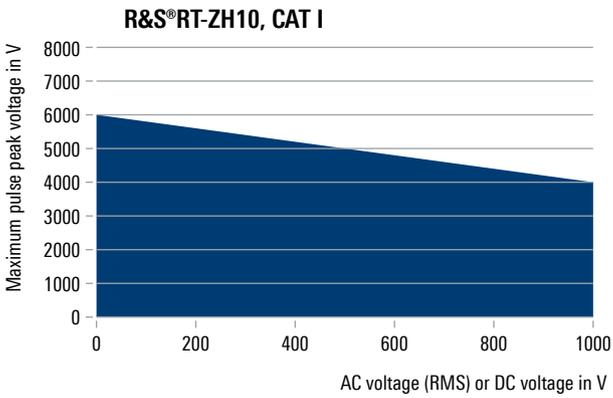
Rohde & Schwarz oscilloscopes

A built-in 5 MHz analog filter, automatic range switching and the audible common mode voltage overrange indicator make the probe easy to use. The integrated micro button on the probe box allows you to control the oscilloscope for run/stop acquisitions, autoset and when saving screenshots. The probe can be detected and ready for remote control and automation without an external power supply when used with the Rohde & Schwarz probe interface.



Rich set of standard accessories for the R&S®RT-ZHD high voltage differential probes

Maximum pulse peak voltage as a function of RMS voltage



Single-ended passive probes for up to 1000 V (RMS) and 6000 V (peak)

If differential measurements are not required, single-ended passive probes are a powerful, cost-effective solution. R&S®RT-ZH10 and R&S®RT-ZH11 passive high voltage probes have up to 400 MHz of bandwidth and attenuation factors of 100:1 and 1000:1.

Both probes are designed for RMS voltage levels up to 1000 V (CAT II) and – when used exclusively for pulse measurements – for peak voltage levels up to 6000 V (CAT I). Accessories include safety alligator clips, rigid and spring-loaded tips and protection caps.



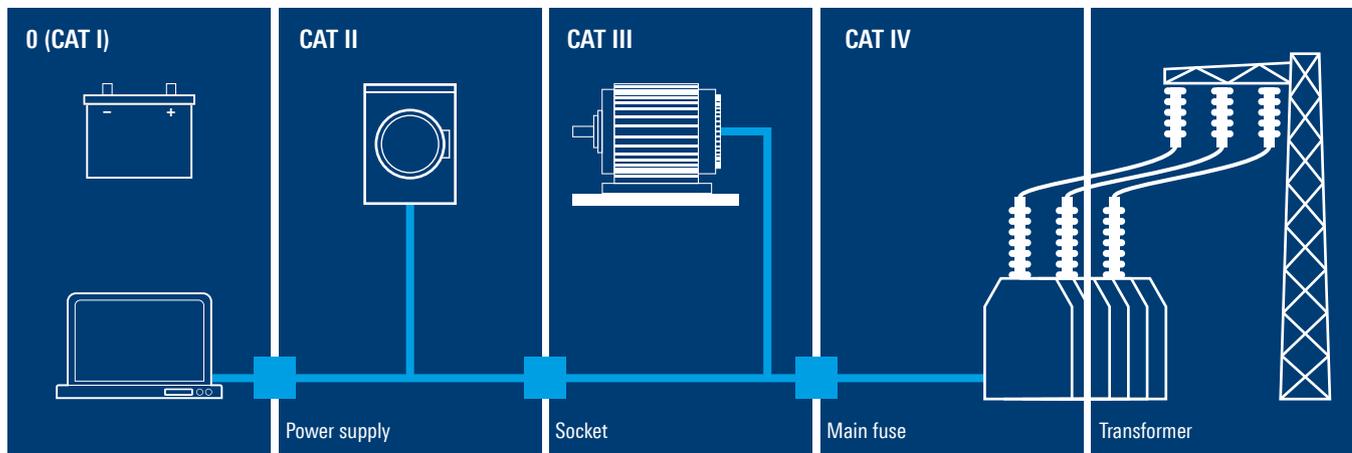
The R&S®RT-ZH03 passive high voltage probe has a robust 5 mm probe tip and is the perfect choice if 250 MHz bandwidth is sufficient.



The R&S®RT-ZH10 and R&S®RT-ZH11 passive high voltage probes provide 400 MHz bandwidth and a spring-loaded 5 mm tip.

Overview of measurement categories CAT I through CAT IV

The probe design determines its area of application and the maximum rated voltage against protective ground.

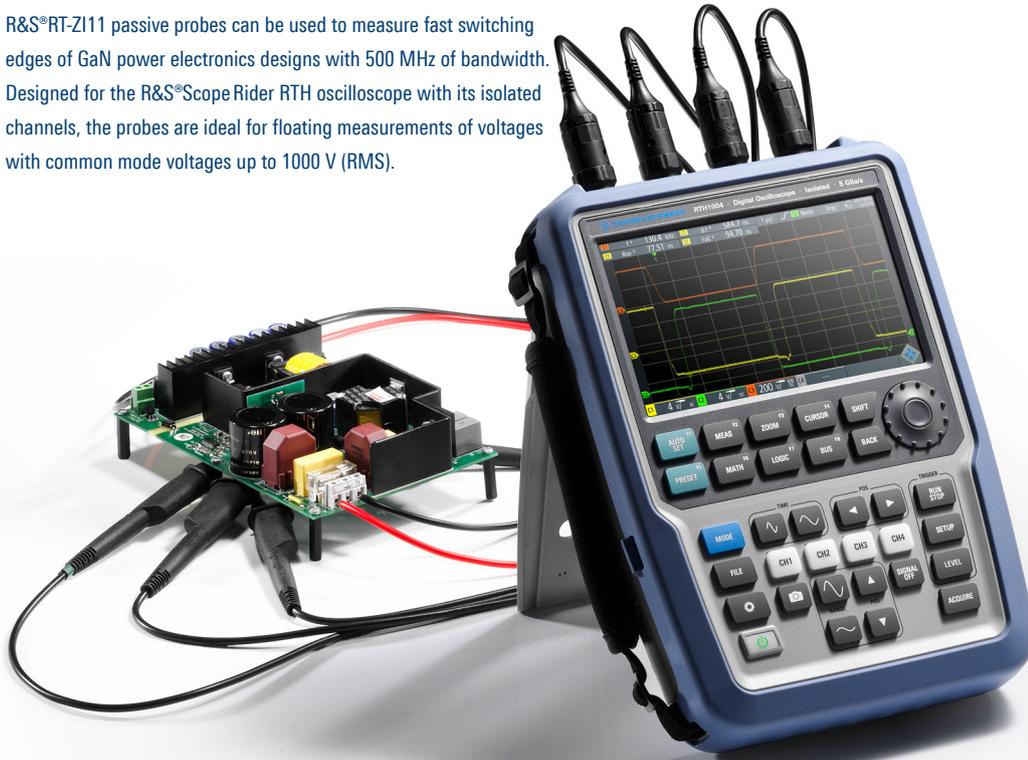


Measuring voltages up to 1000 V (RMS) with 500 MHz bandwidth

Measuring in high voltage environments requires special safety precautions in line with the European Low Voltage Directive that depend on the actual measurement environment.

R&S®RT-ZI11 passive probes can be used to measure fast switching edges of GaN power electronics designs with 500 MHz of bandwidth. Designed for the R&S®ScopeRider RTH oscilloscope with its isolated channels, the probes are ideal for floating measurements of voltages with common mode voltages up to 1000 V (RMS).

The R&S®ScopeRider RTH lets you safely measure voltages up to 1000 V in CAT III environments or 600 V in CAT IV environments. Bandwidth of 500 MHz is possible when combined with the R&S®RT-ZI11 100:1 passive high voltage probe. This makes the solution interesting for measurements on GaN based power electronics components.



| Model | Bandwidth | Attenuation factor | Input impedance | Dynamic range | Comment | Order No. |
|------------------------------------|-----------|--------------------|--------------------------|--------------------------------|--|--------------|
| Passive probes | | | | | | |
| R&S®RT-ZH03 | 250 MHz | 100:1 | 100 M Ω 6.5 pF | 850 V (RMS) | robust 5 mm probe tip | 1333.0873.02 |
| R&S®RT-ZH10 | 400 MHz | 100:1 | 50 M Ω 7.5 pF | 1000 V (RMS), 6000 V (peak) | 1000 V (RMS) CAT II, 5 mm probe tip, spring-loaded | 1409.7720.02 |
| R&S®RT-ZH11 | 400 MHz | 1000:1 | 50 M Ω 7.5 pF | 1000 V (RMS), 6000 V (peak) | 1000 V (RMS) CAT II, 5 mm probe tip, spring-loaded | 1409.7737.02 |
| R&S®RT-ZI11 | 500 MHz | 100:1 | 100 M Ω 4.6 pF | 1000 V (RMS) | 600 V (RMS) CAT IV, 1000 V (RMS) CAT III, 3540 V (RMS) CAT 0, for R&S®ScopeRider RTH only | 1326.1810.02 |
| Active, differential probes | | | | | | |
| R&S®RT-ZHD07 | 200 MHz | 25:1/250:1 | 5 M Ω 2.5 pF | \pm 750 V | 300 V (RMS) CAT III | 1800.2307.02 |
| R&S®RT-ZHD15 | 100 MHz | 50:1/500:1 | 10 M Ω 2 pF | \pm 1500 V | 1000 V (RMS) CAT III | 1800.2107.02 |
| R&S®RT-ZHD16 | 200 MHz | 50:1/500:1 | 10 M Ω 2 pF | \pm 1500 V | 1000 V (RMS) CAT III | 1800.2207.02 |
| R&S®RT-ZHD60 | 100 MHz | 100:1/1000:1 | 40 M Ω 2 pF | \pm 6000 V | 1000 V (RMS) CAT III | 1800.2007.02 |
| Choose your cable length | | | | | | |
| R&S®ZHD-B15 | | | | | 1.5 m cable, for all R&S®RT-ZHD models | 1800.2142.02 |
| R&S®ZHD-B30 | | | | | 3.0 m cable, for R&S®RT-ZHD15 and R&S®RT-ZHD60 | 1800.2159.02 |
| R&S®ZHD-B45 | | | | | 4.5 m cable, for R&S®RT-ZHD15 and R&S®RT-ZHD60 | 1800.2165.02 |
| Accessory | | | | | | |
| R&S®RT-ZA24 | | | | | replacement kit, for R&S®RT-ZHD probes | 1800.2707.00 |

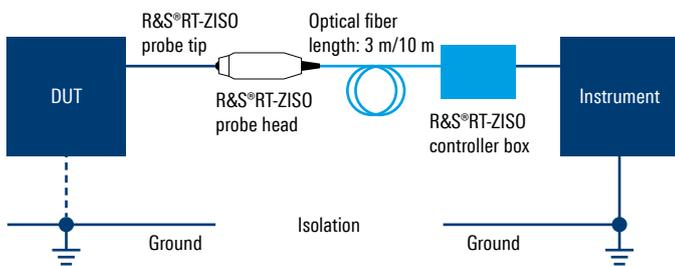
OPTICALLY ISOLATED PROBES

Rohde & Schwarz has expanded its portfolio for high and fast CM signals with the R&S®RT-ZISO isolated probing system for WBG and faster IGBT switch node testing applications. Many different models allow measurements up to 3000 V in CAT III environments. R&S®RT-ZISO probes have a large common mode rejection ratio (CMRR) over a wide frequency range.

The R&S®RT-ZISO isolated probing system addresses several measurement challenges faced by engineers who work on high power and fast switching systems, particularly those that use wide bandgap technology. Gallium nitride (GaN) and silicon carbide (SiC) power devices are gaining market share and replacing older silicon MOSFET and IGBT devices for higher power efficiency and density.

Isolating ground connections is important for reducing common noise loops. The R&S®RT-ZISO isolated probing system uses lasers to communicate between the probe head and receiver to eliminate potential electrical return paths for common mode signals. The probe tip and head are floating and measurement signals that are optically transmitted to the probe receiver. Even when the instrument and DUT can be connected on the same ground plane, the lack of an electrical path completely isolates common mode loops.

Isolation with optical fiber



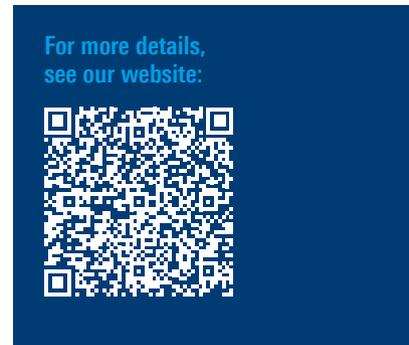
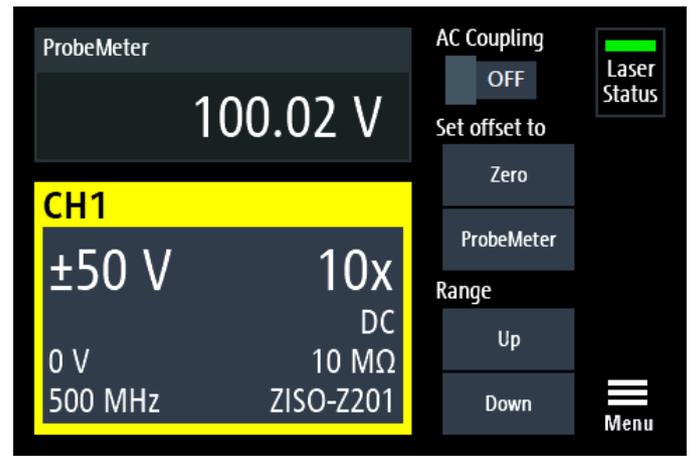
CMRR performance (meas.)

| | |
|---------|--------|
| DC | 145 dB |
| 1 MHz | 145 dB |
| 100 MHz | 110 dB |
| 200 MHz | 100 dB |
| 500 MHz | 100 dB |
| 1 GHz | 90 dB |



Operating an R&S®RT-ZISO with the Rohde&Schwarz probe interface offers seamless control over the probe system. The oscilloscope automatically reads out the tip data and processes it to set up the correct system attenuation and skew. Offset and range control can be easily configured on the oscilloscope. The Rohde&Schwarz probe interface also delivers power to the probe system directly. Setting up the R&S®RT-ZISO with a Rohde&Schwarz oscilloscope ensures the correct settings for your measurement. Users also get the highest acquisition rate, finer details with 18-bit vertical resolution and access to features such as zone trigger and fast spectrum for deep waveform insights.

The R&S®RT-ZISO isolated probing system also lets you connect to any oscilloscope with a BNC or SMA interface. The probe receiver comes with a touchscreen display for controlling and viewing the probe system settings. Controlling the input range and offset settings are made easy while also showing the connected probe tip.



| Model | Bandwidth | Attenuation factor | Input impedance | Dynamic range | Comment | Order No. |
|--|-------------|----------------------|------------------|-------------------------|--|--------------|
| Probe configuration, base model | | | | | | |
| R&S®RT-ZISO | up to 1 GHz | defined by probe tip | | defined by probe tip | different probe tips MMCX, square pin TIP, wide square pin TIP, handheld browser TIP | 1804.5000.02 |
| Choose your cable length | | | | | | |
| R&S®ZISO-B403 | | | | | 3 m optical fiber cable | 1804.5017.02 |
| R&S®ZISO-B410 | | | | | 10 m optical fiber cable | 1804.5023.02 |
| Choose your system bandwidth | | | | | | |
| R&S®ZISO-B901 | | | | | 100 MHz option | 1804.5030.02 |
| R&S®ZISO-B902 | | | | | 200 MHz option | 1804.5046.02 |
| R&S®ZISO-B903 | | | | | 350 MHz option | 1804.5052.02 |
| R&S®ZISO-B905 | | | | | 500 MHz option | 1804.5069.02 |
| R&S®ZISO-B910 | | | | | 1 GHz option | 1804.5075.02 |
| Choose your probe tips | | | | | | |
| R&S®ZISO-Z101 | 1 GHz | 1.5:1 | 50 Ω | 8 V (RMS), ±45 V (peak) | MMCX tip module, 1 kV (RMS) CAT III | 1803.4100.02 |
| R&S®ZISO-Z201 | 1 GHz | 10:1 | 10 MΩ 3.7 pF | ±300 V (peak) | MMCX tip module, 1 kV (RMS) CAT III | 1803.4200.02 |
| R&S®ZISO-Z202 | 1 GHz | 25:1 | 10 MΩ 3.5 pF | ±300 V (peak) | SQPIN tip module, 1 kV (RMS) CAT III | 1803.4300.02 |
| R&S®ZISO-Z203 | 1 GHz | 100:1 | 40 MΩ 3.2 pF | ±3 kV (peak) | WSQPIN tip module, 1 kV (RMS) CAT III | 1803.4400.02 |
| R&S®ZISO-Z301 | 500 MHz | 10:1 | 10 MΩ 11 pF | ±300 V (peak) | browser tip module, 300 V (RMS) CAT III | 1803.4500.02 |
| R&S®ZISO-Z302 | 500 MHz | 100:1 | 100 MΩ 4.6 pF | ±3 kV (peak) | browser, 1 kV (RMS) CAT III | 1803.4600.02 |
| Accessories | | | | | | |
| R&S®RT-ZAMXHTS | | | | | MMCX socket to solder-in cable HT, temperature range -40°C to +155°C | 1803.1660.02 |
| R&S®RT-ZAMXUFL | | | | | MMCX socket to U.F.L adapter, temperature range -40°C to +125°C | 1803.1676.02 |
| R&S®RT-ZAMXSQ | | | | | MMCX socket to dual square pin, temperature range -40°C to +125°C | 1803.1660.02 |

CURRENT PROBES

Rohde & Schwarz current probes enable accurate, non-intrusive measurement of DC and AC current levels. Different models can measure current in the 1 mA to 2000 A range with up to 120 MHz of bandwidth.

DC and AC measurements without circuit interruption

The R&S®RT-ZC current probes precisely measure direct and alternating current levels without interrupting the power circuit during measurement. The extra-large opening on the R&S®RT-ZC10 can accommodate conductors with a diameter of up to 20 mm. The R&S®RT-ZC10 can measure peak currents up to 300 A (500 A for a single pulse). The more compact R&S®RT-ZC20 with a measurement bandwidth of 100 MHz is ideal when measuring low-amplitude, high-frequency currents.

The R&S®RT-ZC31 can switch between three different sensitivity ranges to cover a very broad dynamic range with high bandwidth.

Robust design and easy operation

Rohde & Schwarz current probes have a robust design and are easy to operate. The degauss and offset correction can be done directly at the probe connector. The compact R&S®RT-ZA13 probe power supply supplies up to four current probes. The current probes can be selected as pre-defined probes on R&S®RTM3000, R&S®RTA4000, MXO 3, MXO 4, MXO 5 and R&S®RTO6 oscilloscopes.



R&S®RT-ZC20B current probe with Rohde & Schwarz probe interface (100 MHz, 30 A (RMS))



External power supply for up to four current probes

Easy deskewing for simultaneous current and voltage measurements

Meaningful measurements on power electronics must have no time delay (skew) between the current and voltage measurements. The R&S®RT-ZF20 power deskew and calibration test fixture has a variety of test signals to easily compensate for skew between Rohde&Schwarz current and voltage probes. The oscilloscope USB port supplies power to the power deskew and calibration test fixture.



R&S®RT-ZF20 power deskew and calibration test fixture:
Easy deskewing for measurements on power electronics.

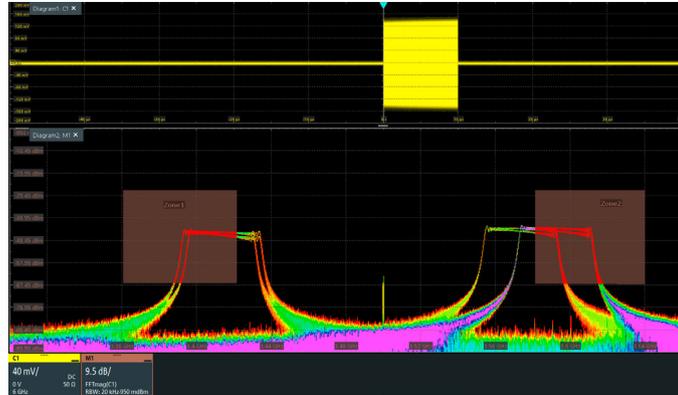
| Model | Bandwidth | Sensitivity | Dynamic range | Rise time | Comment | Order No. |
|--------------------|-----------|------------------------------|---|-----------|---|--------------|
| Probes | | | | | | |
| R&S®RT-ZC02 | 20 kHz | 0.01 V/A, 0.001 V/A | ±200 A, ±2000 A | 5 µs | battery powered | 1333.0850.02 |
| R&S®RT-ZC03 | 100 kHz | 0.1 V/A | 20 A (RMS), ±30 A (peak) | 1 µs | battery powered | 1333.0844.02 |
| R&S®RT-ZC05B | 2 MHz | 0.01 V/A | 500 A (RMS), 700 A (peak) | 175 ns | power supply via Rohde&Schwarz probe interface | 1409.8204.02 |
| R&S®RT-ZC10 | 10 MHz | 0.01 V/A | 150 A (RMS), ±300 A (peak), ±500 A (peak) (single pulse) | 35 ns | power supply via R&S®RT-ZA13 | 1409.7750K02 |
| R&S®RT-ZC10B | 10 MHz | 0.01 V/A | | 35 ns | power supply via Rohde&Schwarz probe interface | 1409.8210.02 |
| R&S®RT-ZC15B | 50 MHz | 0.1 V/A | | 7 ns | power supply via Rohde&Schwarz probe interface | 1409.8227.02 |
| R&S®RT-ZC20 | 100 MHz | 0.1 V/A | 30 A (RMS), ±50 A (peak) | 3.5 ns | power supply via R&S®RT-ZA13 | 1409.7766K02 |
| R&S®RT-ZC20B | 100 MHz | 0.1 V/A | | 3.5 ns | power supply via Rohde&Schwarz probe interface | 1409.8233.02 |
| R&S®RT-ZC30 | 120 MHz | 1 V/A | 5 A (RMS), 7.5 A (peak) | 2.9 ns | power supply via R&S®RT-ZA13 | 1409.7772K02 |
| R&S®RT-ZC31 | 120 MHz | 0.1 V/A, 1 V/A, 10 V/A | 30 A (RMS), 5 A (RMS), 0.5 A (RMS) | 2.9 ns | power supply via R&S®RT-ZA13 | 1801.4932K02 |
| Accessories | | | | | | |
| R&S®RT-ZF20 | | | | | power deskew and calibration test fixture | 1800.0004.02 |
| R&S®RT-ZA13 | | | | | external power supply for up to four Rohde&Schwarz current probes | 1409.7789.02 |

EMC NEAR-FIELD PROBES

Powerful E and H near-field probes for the 30 MHz to 3 GHz frequency range with optional preamplifier expand the R&S®RTM3000, R&S®RTA4000, MXO 3, MXO 4, MXO 5, R&S®RTO6 and R&S®RTP oscilloscope application range to include EMI debugging.

Powerful FFT analysis function in Rohde & Schwarz oscilloscopes

Developers now have a cost-effective solution for EMI debugging right on their lab bench. Unwanted EMI can be displayed simultaneously in both the time and frequency domains to speed up debugging.



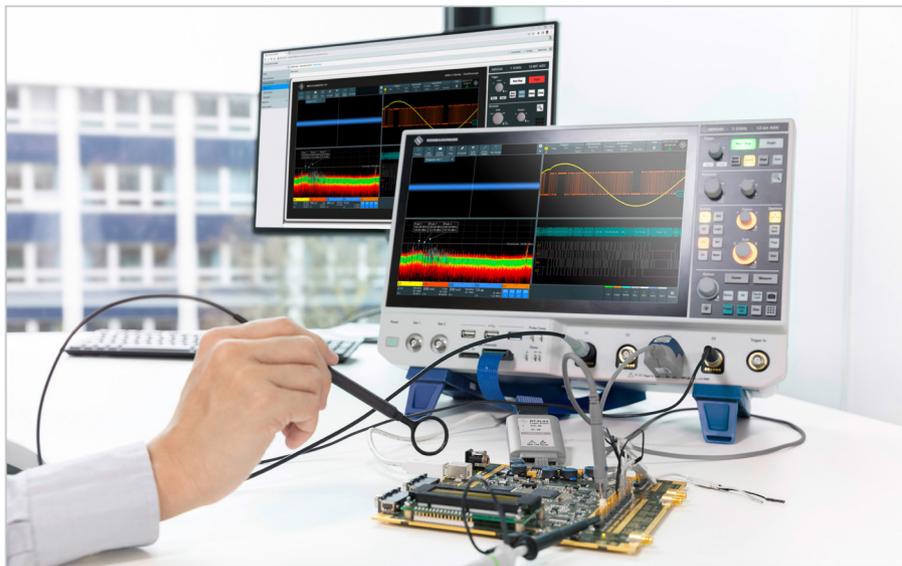
Direct acquisition and analysis of sporadically occurring EMI thanks to the R&S®RTO6 oscilloscope's powerful spectrum analysis function

Versatile near-field probe sets

Near-field probes can analyze EMC problems in electronic circuits and identify their causes. Rohde & Schwarz has several near-field probe sets that include E-field and H-field probes for use with oscilloscopes, signal and spectrum analyzers and EMI test receivers.

The R&S®HZ-15 E and H near-field probe set consists of several passive near-field probes that are ideal for diagnosing EMC problems on printed circuit boards. The compact design help find sources of EMI, even in individual conductors. The optional R&S®HZ-16 preamplifier has 20 dB gain for greater sensitivity in the 100 kHz to 3 GHz frequency range.

The R&S®HZ-17 H-field probe set is an economical near-field set for EMI debugging when E field measurements are not required.



EMI debugging and power measurement with the MXO 4

| Model | Frequency range | Comment | Order No. |
|-------------------------|------------------|--|--------------|
| Near-field probe | | | |
| R&S®HZ-15 | 30 MHz to 3 GHz | compact E and H near-field probe set | 1147.2736.02 |
| R&S®HZ-17 | 30 MHz to 3 GHz | compact H near-field probe set | 1339.4141.02 |
| Accessory | | | |
| R&S®HZ-16 | 100 kHz to 3 GHz | 3 GHz, 20 dB, preamplifier 100 V to 230 V power adapter | 1147.2720.02 |

ACCESSORIES

Probe interface adapter

The R&S®RT-Z2T probe interface adapter lets certain Tektronix TekProbe interface with level II probes used with Rohde&Schwarz oscilloscopes. Tektronix active probes can be used with the TekProbe-BNC interfaces on Rohde&Schwarz oscilloscopes, for convenient and straightforward access to a broad range of active, current, differential, high voltage and electro-optical probes.

Support of the following Tektronix probes

| Type | Model |
|---|--|
| Single-ended active probes (without offset control) | <ul style="list-style-type: none"> ▶ P6205: 750 MHz, 10:1 ▶ P6243: 1 GHz, 10:1 ▶ P6245: 1.5 GHz, 10:1 ▶ P6241: 4 GHz, 10:1 ▶ P6249: 4 GHz, 5:1 |
| Current probes | TCP202: 50 MHz AC/DC current probe |
| Differential active probes (without offset control) | <ul style="list-style-type: none"> ▶ P6246: 400 MHz, 10:1/1:1 ▶ P6247: 1 GHz, 10:1/1:1 ▶ P6248: 1.5 GHz, 10:1/1:1 ▶ P6250: 500 MHz, 50:1/5:1 ▶ P6251: 1 GHz, 50:1/5:1 |
| High voltage differential probes | <ul style="list-style-type: none"> ▶ P5205: 100 MHz, 50:1/500:1 ▶ P5210: 50 MHz, 100:1/1000:1 |
| Electro-optical probes | <ul style="list-style-type: none"> ▶ P6701B: 1 GHz ▶ P6703B: 1.2 GHz ▶ P6711: 250 MHz ▶ P6713: 300 MHz |



R&S®RT-Z2T probe interface adapter

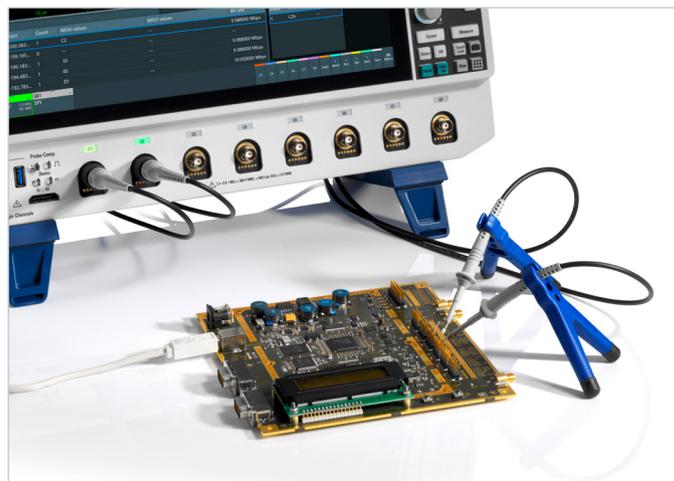
The R&S®RT-Z2T probe interface adapter allows you to connect TekProbe-BNC level II probes to the following Rohde&Schwarz oscilloscopes:

- ▶ R&S®RTM3000
- ▶ R&S®RTA4000
- ▶ R&S®RTO6
- ▶ MXO 3
- ▶ MXO 4
- ▶ MXO 5

Probe positioners

The two-leg R&S®RT-ZA29 probe positioner lets three different probe diameters be used and the probe tip can be precisely placed at a contact spot as needed. The R&S®RT-ZAP 3D probe positioner offers precise and flexible probe positioning for advanced electronic testing. Engineers can accurately and flexibly place probes at different angles and orientations and have easy access to desired probe points on complex circuits and components. The high-precision mechanics help the R&S®RT-ZAP streamline measurement workflows, reduce setup times and improve measurement reliability. The positioner is vital asset for any modern electronics laboratory.

TEKTRONIX, TEK, and TEKPROBE are registered trademarks of Tektronix, Inc.



R&S®RT-ZA29 probe positioner with two legs

| Model | Comment | Order No. |
|-------------|---|--------------|
| R&S®RT-Z2T | probe interface adapter, for selected Tektronix probes with TekProbe-BNC level II interface | 1338.0007.02 |
| R&S®RT-ZA29 | probe positioner, 2 legs | 1801.4803.02 |
| R&S®RT-ZAP | 3D probe positioner | 1326.3641.02 |

External frontends

The different R&S®FExx external frontend models are a convenient way to extend the usable frequency of R&S®RTP oscilloscopes up to 170 GHz. The frontends come fully calibrated with built-in high performance local oscillators for top signal quality. It is an easy-to-use, complete and compact solution.



R&S®RT-ZAP 3D probe positioner in use with the R&S®RT-ZD30

An R&S®RTP oscilloscope controls the external frontends via LAN interface. With the R&S®RTP-K553 external frontend control option, setup and control is completely integrated in the oscilloscope user interface. The R&S®RTP also corrects the frequency and phase response of the external frontends, based on the individual characteristics stored in the EEPROM external frontends.

Recommended products

| | |
|--------------------------|--|
| External frontends | <ul style="list-style-type: none"> ▶ R&S®FE44S, 24 GHz to 44 GHz ▶ R&S®FE50DTR, 36 GHz to 50 GHz ▶ R&S®FE110SR, 70 GHz to 110 GHz ▶ R&S®FE170SR, 110 GHz to 170 GHz |
| Oscilloscope and options | <ul style="list-style-type: none"> ▶ R&S®RTP164B high-performance oscilloscope, 16 GHz ▶ R&S®RTP-K11 I/Q software interface ▶ R&S®RTP-K121 deembedding base ▶ R&S®RTP-K553 external frontend control |
| R&S®VSE options, e.g.: | R&S®VSE-KT144 3GPP 5G-NR DL/UL measurements (SL) |



R&S®RTP oscilloscope with two external frontends for multichannel analysis

| Model | Comment | Order No. |
|---------------|---|--------------|
| R&S®FE44S | external frontend, 24 GHz to 44 GHz | 1338.7001.02 |
| R&S®FE50DTR | external frontend, 36 GHz to 50 GHz | 1347.4099.02 |
| R&S®FE110SR | external frontend, 70 GHz to 110 GHz | 1348.4840.02 |
| R&S®FE170SR | external frontend, 110 GHz to 170 GHz | 1347.9090.02 |
| R&S®RTP164B | high-performance oscilloscope, 16 GHz | 1803.7000.16 |
| R&S®RTP-K11 | I/Q software interface option | 1800.6683.02 |
| R&S®RTP-K121 | deembedding base option | 1326.3064.02 |
| R&S®RTP-K553 | external frontend control option | 1803.6890.02 |
| R&S®VSE-KT144 | 3GPP 5G-NR DL/UL measurements (SL) option | 1345.1740.02 |

THIRD PARTY SOLUTIONS

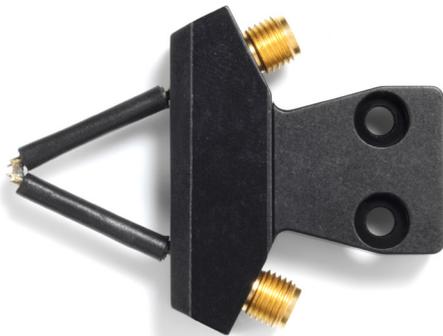
TESTED AND RECOMMENDED BY ROHDE & SCHWARZ

Rohde & Schwarz constantly seeks innovative solutions to help achieve your goals. We have identified solutions that complement our portfolio and offer a comprehensive range of options.

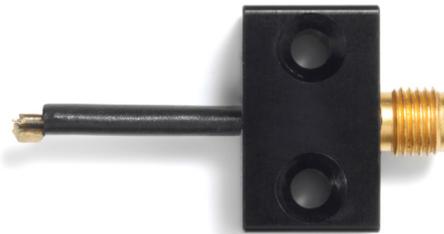
PacketMicro, Inc - Home

- ▶ Single-ended S-Probes:
Designed for RF, power integrity and signal integrity testing with up to 20 GHz. The strong beryllium copper (BeCu) tips are good for direct probing of uneven surfaces, such as solder pads and circuit components.
- ▶ Differential D-Probes:
The 20 GHz bandwidth is ideal for signal integrity testing. The two signal pins let D-Probes perform accurate measurements without any ground pads nearby. The probes are great for the R&S®RTP 16 GHz oscilloscope TDR/TDT option as well as impedance measurements of power delivery networks (PDN) and PCB time-domain measurements with Rohde & Schwarz vector network analyzers. They are branded as PacketMicro, Inc. OEM products.

More information at www.packetmicro.com.



DPSS2015xx differential probe, 20 GHz



SPGRxxxxx single-ended probe, up to 20 GHz

Ordering information

| Designation | Type | Order No. |
|------------------------------------|------------|--------------|
| Differential probe, 20 GHz, 0.3 mm | DPSS201503 | 1801.4649.02 |
| Differential probe, 20 GHz, 0.4 mm | DPSS201504 | 1801.4655.02 |
| Differential probe, 20 GHz, 0.5 mm | DPSS201505 | 1801.4661.02 |
| Differential probe, 20 GHz, 0.8 mm | DPSS201508 | 1801.4678.02 |
| Differential probe, 20 GHz, 1.0 mm | DPSS201510 | 1801.4684.02 |
| Differential probe 20 GHz, 1.2 mm | DPSS201512 | 1801.4690.02 |
| Single-ended probe, 16 GHz, 1.2 mm | SPGR161512 | 1801.4755.02 |
| Single-ended probe, 16 GHz, 1.4 mm | SPGR161514 | 1801.4761.02 |
| Single-ended probe, 16 GHz, 1.6 mm | SPGR161516 | 1801.4778.02 |
| Single-ended probe, 18 GHz, 0.8 mm | SPGR181508 | 1801.4732.02 |
| Single-ended probe, 18 GHz, 1.0 mm | SPGR181510 | 1801.4749.02 |
| Single-ended probe, 20 GHz, 0.2 mm | SPGR201502 | 1801.4703.02 |
| Single-ended probe, 20 GHz, 0.4 mm | SPGR201504 | 1801.4710.02 |
| Single-ended probe, 20 GHz, 0.5 mm | SPGR201505 | 1801.4726.02 |
| D-Probe handle | DP-HAND01 | 1801.4826.02 |

PEM UK

Wideband Rogowski coils support the development of applications for power semiconductors along with development and production of electric vehicles, motor drives or renewable energy. The coils have solutions to meet evolving technological requirements and help increase efficiency, security and performance. The brilliant solution is now available in the Rohde&Schwarz product list.

The PEM UK website has a wide range of applications examples: double pulse testing, EMC applications or large AC currents.

More information at www.pemuk.com



CMN50HF (CWTMini50HF) wideband AC current probe for measurements of power devices and converters



CWTUM (CWT Ultra-mini) wideband AC current probe for measurements of power devices and converters where a thin coil is required

Ordering information

| Designation | Type | Order No. |
|--|------------|--------------|
| CWT/15/(B)/2.5/300 wide-bandwidth AC current probe | CWT15 | 1801.8209.02 |
| CWT/30/(B)/2.5/300 wide-bandwidth AC current probe | CWT30 | 1801.8215.02 |
| CWTMini/1/(B)/2.5/100/5 wide-bandwidth AC current probe | CWTMN1 | 1801.8221.02 |
| CWT Mini50HF/3/(B)/2.5/100/5 wide-bandwidth AC current probe | CMN50HF3 | 1801.8238.02 |
| CWTMini50HF/15/(B)/2.5/100/5 wide-bandwidth AC current probe | CMN50HF15 | 1801.8244.02 |
| CWTMini50HF/30/(B)/2.5/100/5 wide-bandwidth AC current probe | CMN50HF30 | 1801.8250.02 |
| CWTMini50HF/015/(B)/1/100/2 wide-bandwidth AC current probe | CMN50HF015 | 1801.8267.02 |
| CWTMini50HF/06/(B)/1/100/2 wide-bandwidth AC current probe | CMN50HF06 | 1801.8273.02 |
| CWTUM/015/(B)/1/80 wide-bandwidth AC current probe | CWTUM015 | 1801.8280.02 |
| CWTUM/06(B)/1/80 wide-bandwidth AC current probe | CWTUM06 | 1801.8296.02 |
| CWTUM/1/(B)/1/80 wide-bandwidth AC current probe | CWTUM1 | 1801.8309.02 |
| All above listed models with accredited calibration have the same order numbers with last two numbers changed to: xxxx.xxxx.22. | | |
| 13S power adapter, for use with CWT Ultra-mini, CWTUM-S, CWTUM-F + CWTUM-HF, CWTMini50HF, CWTHF + CWTLF and CMC | UNI13S | 1801.8538.02 |
| 21S power adapter, for use with CWT (original) and LFR | UNI21S | 1801.8573.02 |

ORDERING INFORMATION

| Designation | Type | Order No. |
|---|----------------|--------------|
| Probes | | |
| Passive probes | | |
| 38 MHz, 1:1, 1 M Ω , 39 pF, 55 V (RMS) CAT II | R&S®RT-ZP1X | 1333.1370.02 |
| 300 MHz, 10:1, 10 M Ω , 5 mm tip, no probe detection | R&S®RT-ZP03S | 1803.1001.02 |
| 500 MHz, 10:1, 10 M Ω , 5 mm tip | R&S®RT-ZP05S | 1333.2401.02 |
| 500 MHz, 10:1, 10 M Ω , 5 mm tip | R&S®RT-ZP05M | 1335.3505.02 |
| 500 MHz, 10:1, 10 M Ω , 400 V (RMS) | R&S®RT-ZP10 | 1409.7550.00 |
| 700 MHz, 10:1, 10 M Ω , 400 V (RMS) | R&S®RT-ZP11 | 1803.0005.02 |
| Set of 4 \times R&S®RT-ZP11 probes | R&S®RT-ZP11-4 | 1801.8167.02 |
| 500 MHz, 10:1, 10 M Ω , 400 V (RMS) | R&S®RTM-ZP10 | 1409.7708.02 |
| 700 MHz, 25:1, 1 M Ω , 30 V (RMS) | R&S®RT-ZPMMCX | 1803.1599.02 |
| 500 MHz, 10:1, 10 M Ω , 12 pF | R&S®RT-ZI10 | 1326.1761.02 |
| 500 MHz, 10:1, 10 M Ω , 11 pF | R&S®RT-ZI10C | 1326.3106.02 |
| 500 MHz, 10:1, 10 M Ω , 11 pF, dual-pack of R&S®RT-ZI10C | R&S®RT-ZI10C-2 | 1333.1811.02 |
| 500 MHz, 10:1, 10 M Ω , 11 pF, quad-pack of R&S®RT-ZI10C | R&S®RT-ZI10C-4 | 1333.1328.02 |
| Passive broadband probes | | |
| 8.0 GHz, 10:1, 500 Ω , 20 V (RMS) | R&S®RT-ZZ80 | 1409.7608.02 |
| Active broadband probes: single-ended | | |
| 1.0 GHz, 1 M Ω , Rohde & Schwarz probe interface | R&S®RT-ZS10E | 1418.7007.02 |
| 1.0 GHz, 1 M Ω , R&S®ProbeMeter, micro button, Rohde & Schwarz probe interface | R&S®RT-ZS10 | 1410.4080.02 |
| 1.5 GHz, 1 M Ω , R&S®ProbeMeter, micro button, Rohde & Schwarz probe interface | R&S®RT-ZS20 | 1410.3502.02 |
| 3.0 GHz, 1 M Ω , R&S®ProbeMeter, micro button, Rohde & Schwarz probe interface | R&S®RT-ZS30 | 1410.4309.02 |
| 6.0 GHz, 1 M Ω , R&S®ProbeMeter, micro button, Rohde & Schwarz probe interface | R&S®RT-ZS60 | 1418.7307.02 |
| Active broadband probes: differential | | |
| 1.0 GHz, 1 M Ω , R&S®ProbeMeter, micro button, including 10:1 external attenuator, 1 M Ω , 70 V DC, 46 V AC (peak), Rohde & Schwarz probe interface | R&S®RT-ZD10 | 1410.4715.02 |
| 1.5 GHz, 1 M Ω , R&S®ProbeMeter, micro button, Rohde & Schwarz probe interface | R&S®RT-ZD20 | 1410.4409.02 |
| 3.0 GHz, 1 M Ω , R&S®ProbeMeter, micro button, Rohde & Schwarz probe interface | R&S®RT-ZD30 | 1410.4609.02 |
| 4.5 GHz, 1 M Ω , R&S®ProbeMeter, micro button, Rohde & Schwarz probe interface | R&S®RT-ZD40 | 1410.5205.02 |
| Modular broadband probes | | |
| Probe amplifier module, 1.5 GHz, 10:1 or 2:1, 400 k Ω (differential mode), 200 k Ω (single-ended mode) | R&S®RT-ZM15 | 1800.4700.02 |
| Probe amplifier module, 3 GHz, 10:1 or 2:1, 400 k Ω (differential mode), 200 k Ω (single-ended mode) | R&S®RT-ZM30 | 1419.3005.02 |
| Probe amplifier module, 6 GHz, 10:1 or 2:1, 400 k Ω (differential mode), 200 k Ω (single-ended mode) | R&S®RT-ZM60 | 1419.3105.02 |
| Probe amplifier module, 9 GHz, 10:1 or 2:1, 400 k Ω (differential mode), 200 k Ω (single-ended mode) | R&S®RT-ZM90 | 1419.3205.02 |
| Probe amplifier module, 13 GHz, 10:1 or 2:1, 400 k Ω (differential mode), 200 k Ω (single-ended mode) | R&S®RT-ZM130 | 1800.4500.02 |
| Probe amplifier module, 16 GHz, 10:1 or 2:1, 400 k Ω (differential mode), 200 k Ω (single-ended mode) | R&S®RT-ZM160 | 1800.4600.02 |
| Power rail probe | | |
| 2.0 GHz, 1:1, 50 k Ω , ± 0.85 V, ± 60 V offset, R&S®ProbeMeter | R&S®RT-ZPR20 | 1800.5006.02 |
| 4.0 GHz, 1:1, 50 k Ω , ± 0.85 V, ± 60 V offset, R&S®ProbeMeter | R&S®RT-ZPR40 | 1800.5406.02 |
| Multichannel power probe | | |
| 1 MHz, 5 Msample/s, 2 \times voltage, 2 \times current | R&S®RT-ZVC02 | 1326.0259.02 |
| 1 MHz, 5 Msample/s, 4 \times voltage, 4 \times current | R&S®RT-ZVC04 | 1326.0259.04 |
| High voltage probes: passive | | |
| 250 MHz, 100:1, 100 M Ω , 850 V (RMS) | R&S®RT-ZH03 | 1333.0873.02 |
| 400 MHz, 100:1, 50 M Ω , 1000 V (RMS) CAT II | R&S®RT-ZH10 | 1409.7720.02 |
| 400 MHz, 1000:1, 50 M Ω , 1000 V (RMS) CAT II | R&S®RT-ZH11 | 1409.7737.02 |
| 500 MHz, 11:1, 100 M Ω , 600 V (RMS) CAT IV, 1000 V (RMS) CAT III, 3540 V (RMS) CAT 0, for R&S®ScopeRider RTH only | R&S®RT-ZI11 | 1326.1810.02 |

| Designation | Type | Order No. |
|---|-----------------------------|--------------|
| High voltage probes: differential | | |
| 200 MHz, 25:1/250:1, 5 M Ω , \pm 750 V, 300 V (RMS) CAT III, 1.5 m cable length | R&S [®] RT-ZHD0715 | 1800.2307P02 |
| 100 MHz, 50:1/500:1, 10 M Ω , \pm 1500 V, 1000 V (RMS) CAT III, 1.5 m cable length | R&S [®] RT-ZHD1515 | 1800.2107P02 |
| 200 MHz, 50:1/500:1, 10 M Ω , \pm 1500 V, 1000 V (RMS) CAT III, 1.5 m cable length | R&S [®] RT-ZHD1615 | 1800.2207P02 |
| 100 MHz, 100:1/1000:1, 40 M Ω , \pm 6000 V, 1000 V (RMS) CAT III, 1.5 m cable length | R&S [®] RT-ZHD6015 | 1800.2007P02 |
| 100 MHz, 50:1/500:1, 10 M Ω , \pm 1500 V, 1000 V (RMS) CAT III, 3.0 m cable length | R&S [®] RT-ZHD1530 | 1800.2107P30 |
| 100 MHz, 50:1/500:1, 10 M Ω , \pm 1500 V, 1000 V (RMS) CAT III, 4.5 m cable length | R&S [®] RT-ZHD1545 | 1800.2107P45 |
| 100 MHz, 100:1/1000:1, 40 M Ω , \pm 6000 V, 1000 V (RMS) CAT III, 3.0 m cable length | R&S [®] RT-ZHD6030 | 1800.2007P30 |
| 100 MHz, 100:1/1000:1, 40 M Ω , \pm 6000 V, 1000 V (RMS) CAT III, 4.5 m cable length | R&S [®] RT-ZHD6045 | 1800.2007P45 |
| Isolated probing system | | |
| Isolated probing system, \pm 30 V, 1 kV (RMS) CAT III (depending on tip module), Rohde&Schwarz probe interface and BNC Incl. carrying case; operating manual | R&S [®] RT-ZISO | 1804.5000.02 |
| 100 MHz isolated probe package with 3 m length, includes R&S [®] ZISO-Z301 probe tip | R&S [®] RT-ZISO01 | 1804.5000P11 |
| 100 MHz isolated probe package with 10 m length, includes R&S [®] ZISO-Z301 probe tip | R&S [®] RT-ZISO01L | 1804.5000P21 |
| 200 MHz isolated probe package with 3 m length, includes R&S [®] ZISO-Z301 probe tip | R&S [®] RT-ZISO02 | 1804.5000P12 |
| 200 MHz isolated probe package with 10 m length, includes R&S [®] ZISO-Z301 probe tip | R&S [®] RT-ZISO02L | 1804.5000P22 |
| 350 MHz isolated probe package with 3 m length, includes R&S [®] ZISO-Z301 probe tip | R&S [®] RT-ZISO03 | 1804.5000P13 |
| 350 MHz isolated probe package with 10 m length, includes R&S [®] ZISO-Z301 probe tip | R&S [®] RT-ZISO03L | 1804.5000P23 |
| 500 MHz isolated probe package with 3 m length, includes R&S [®] ZISO-Z301 probe tip | R&S [®] RT-ZISO05 | 1804.5000P14 |
| 500 MHz isolated probe package with 10 m length, includes R&S [®] ZISO-Z301 probe tip | R&S [®] RT-ZISO05L | 1804.5000P24 |
| 1 GHz isolated probe package with 3 m length, includes R&S [®] ZISO-Z201 and R&S [®] ZISO-Z301 probe tips | R&S [®] RT-ZISO10 | 1804.5000P15 |
| 1 GHz isolated probe package with 10 m length, includes R&S [®] ZISO-Z201 and R&S [®] ZISO-Z301 probe tips | R&S [®] RT-ZISO10L | 1804.5000P25 |
| Current probes | | |
| 20 kHz, AC/DC, 0.01 V/A and 0.001 V/A, \pm 200 A and \pm 2000 A | R&S [®] RT-ZC02 | 1333.0850.02 |
| 100 kHz, AC/DC, 0.1 V/A, 20 A (RMS), \pm 30 A (peak) | R&S [®] RT-ZC03 | 1333.0844.02 |
| 2 MHz, AC/DC, 0.01 V/A, 500 A (RMS), Rohde&Schwarz probe interface | R&S [®] RT-ZC05B | 1409.8204.02 |
| 10 MHz, AC/DC, 0.01 V/A, 150 A (RMS) | R&S [®] RT-ZC10 | 1409.7750K02 |
| 100 MHz, AC/DC, 0.1 V/A, 30 A (RMS) | R&S [®] RT-ZC20 | 1409.7766K02 |
| 120 MHz, AC/DC, 1 V/A, 5 A (RMS) | R&S [®] RT-ZC30 | 1409.7772K02 |
| 120 MHz, AC/DC, 0.1 V/A / 1 V/A / 10 V/A, 30 A, 5 A, 0.5 A (RMS) | R&S [®] RT-ZC31 | 1801.4932K02 |
| 10 MHz, AC/DC, 0.01 V/A, 150 A (RMS), Rohde&Schwarz probe interface | R&S [®] RT-ZC10B | 1409.8210.02 |
| 50 MHz, AC/DC, 0.1 V/A, 30 A (RMS), Rohde&Schwarz probe interface | R&S [®] RT-ZC15B | 1409.8227.02 |
| 100 MHz, AC/DC, 0.1 V/A, 30 A (RMS), Rohde&Schwarz probe interface | R&S [®] RT-ZC20B | 1409.8233.02 |
| EMC near-field probes | | |
| Compact probe set, for E and H near-field measurements, 30 MHz to 3 GHz | R&S [®] HZ-15 | 1147.2736.02 |
| Compact H near-field probe set, 30 MHz to 3 GHz | R&S [®] HZ-17 | 1339.4141.02 |
| Logic probes (included with R&S[®]RTx-B1 or R&S[®]MX0x-B1 mixed signal oscilloscope options) | | |
| 300 MHz logic probe, 8 channels | R&S [®] RT-ZL03 | 1333.0715.02 |
| 300 MHz logic probe, 8 channels | R&S [®] RT-ZL03X | 1335.3005.02 |
| 400 MHz logic probe, 8 channels | R&S [®] RT-ZL04 | 1333.0721.02 |

| Designation | Type | Order No. |
|--|-------------|--------------|
| Third party solutions | | |
| PacketMicro, Inc - Home probes | | |
| Differential probe, 20 GHz, 0.3 mm | DPSS201503 | 1801.4649.02 |
| Differential probe, 20 GHz, 0.4 mm | DPSS201504 | 1801.4655.02 |
| Differential probe, 20 GHz, 0.5 mm | DPSS201505 | 1801.4661.02 |
| Differential probe, 20 GHz, 0.8 mm | DPSS201508 | 1801.4678.02 |
| Differential probe, 20 GHz, 1.0 mm | DPSS201510 | 1801.4684.02 |
| Differential probe 20 GHz, 1.2 mm | DPSS201512 | 1801.4690.02 |
| Single-ended probe, 16 GHz, 1.2 mm | SPGR161512 | 1801.4755.02 |
| Single-ended probe, 16 GHz, 1.4 mm | SPGR161514 | 1801.4761.02 |
| Single-ended probe, 16 GHz, 1.6 mm | SPGR161516 | 1801.4778.02 |
| Single-ended probe, 18 GHz, 0.8 mm | SPGR181508 | 1801.4732.02 |
| Single-ended probe, 18 GHz, 1.0 mm | SPGR181510 | 1801.4749.02 |
| Single-ended probe, 20 GHz, 0.2 mm | SPGR201502 | 1801.4703.02 |
| Single-ended probe, 20 GHz, 0.4 mm | SPGR201504 | 1801.4710.02 |
| Single-ended probe, 20 GHz, 0.5 mm | SPGR201505 | 1801.4726.02 |
| D-Probe handle | DP-HAND01 | 1801.4826.02 |
| PEM UK probes | | |
| CWT/15/(B)/2.5/300 wide-bandwidth AC current probe | CWT15 | 1801.8209.02 |
| CWT/30/(B)/2.5/300 wide-bandwidth AC current probe | CWT30 | 1801.8215.02 |
| CWTMini/1/(B)/2.5/100/5 wide-bandwidth AC current probe | CWTMN1 | 1801.8221.02 |
| CWT Mini50HF/3/(B)/2.5/100/5 wide-bandwidth AC current probe | CMN50HF3 | 1801.8238.02 |
| CWTMini50HF/15/(B)/2.5/100/5 wide-bandwidth AC current probe | CMN50HF15 | 1801.8244.02 |
| CWTMini50HF/30/(B)/2.5/100/5 wide-bandwidth AC current probe | CMN50HF30 | 1801.8250.02 |
| CWTMini50HF/015/(B)/1/100/2 wide-bandwidth AC current probe | CMN50HF015 | 1801.8267.02 |
| CWTMini50HF/06/(B)/1/100/2 wide-bandwidth AC current probe | CMN50HF06 | 1801.8273.02 |
| CWTUM/015/(B)/1/80 wide-bandwidth AC current probe | CWTUM015 | 1801.8280.02 |
| CWTUM/06(B)/1/80 wide-bandwidth AC current probe | CWTUM06 | 1801.8296.02 |
| CWTUM/1/(B)/1/80 wide-bandwidth AC current probe | CWTUM1 | 1801.8309.02 |
| All above listed models with accredited calibration have the same order numbers with last two numers changed to: xxxx.xxxx.22. | | |
| 13S power adapter, for use with CWT Ultra-mini, CWTUM-S, CWTUM-F + CWTUM-HF, CWTMini50HF, CWTMF + CWTLF and CMC | UNI13S | 1801.8538.02 |
| 21S power adapter, for use with CWT (original) and LFR | UNI21S | 1801.8573.02 |
| Probe accessories | | |
| Accessory set, for R&S®RT-ZP10 and R&S®RT-ZP1X passive probes (2.5 mm probe tip) | R&S®RT-ZA1 | 1409.7566.00 |
| Spare accessory set, for R&S®RT-ZS10/10E/20/30 | R&S®RT-ZA2 | 1416.0405.02 |
| Pin set, for R&S®RT-ZS10/10E/20/30 | R&S®RT-ZA3 | 1416.0411.02 |
| Mini clips | R&S®RT-ZA4 | 1416.0428.02 |
| Micro clips | R&S®RT-ZA5 | 1416.0434.02 |
| Lead set | R&S®RT-ZA6 | 1416.0440.02 |
| Pin set, for R&S®RT-ZD10/20/30 | R&S®RT-ZA7 | 1417.0609.02 |
| Pin set, for R&S®RT-ZD40 | R&S®RT-ZA8 | 1417.0867.02 |
| N(m) adapter, for R&S®RT-Zxx oscilloscope probes | R&S®RT-ZA9 | 1417.0909.02 |
| SMA adapter | R&S®RT-ZA10 | 1416.0457.02 |
| BNC/banana adapter | R&S®RT-ZA11 | 1333.0796.02 |
| PT100 temperature probe, -50°C to +400°C, 2-wire | R&S®RT-ZA12 | 1333.0809.02 |
| Power supply, for probes | R&S®RT-ZA13 | 1409.7789.02 |
| Spare power supply, for R&S®ScopeRider RTH, incl. power plugs for EU, GB, US | R&S®RT-ZA14 | 1326.2874.02 |
| External attenuator 10:1, 2.0 GHz, 1.3 pF, 60 V DC, 42.4 V AC (peak), for R&S®RT-ZD20/30 probes | R&S®RT-ZA15 | 1410.4744.02 |
| 16 GHz PBNC to SMA adapter | R&S®RT-ZA16 | 1320.7074.02 |
| Matched pair TDR cable | R&S®RT-ZA17 | 1337.8991.02 |
| Accessory case, for R&S®RTx oscilloscopes | R&S®RT-ZA19 | 1335.7875.02 |
| Accessory set, for R&S®RT-ZI10/11 | R&S®RT-ZA20 | 1326.1978.02 |

| Designation | Type | Order No. |
|--|----------------|--------------|
| Extension set, for R&S®RT-ZI10/11 | R&S®RT-ZA21 | 1326.1984.02 |
| Test leads, 600 V CAT IV | R&S®RT-ZA22 | 1326.0988.02 |
| Replacement kit, for R&S®RT-ZHD probes | R&S®RT-ZA24 | 1800.2707.00 |
| Power rail browser kit, included with R&S®RT-ZPR20/40 | R&S®RT-ZA25 | 1800.5329.00 |
| Pigtail cable, 15 cm, solder-in, SMA, for R&S®RT-ZPR20/40 | R&S®RT-ZA26 | 1800.5258.00 |
| PCB adapter, 2.5 mm | R&S®RT-ZA27 | 1801.4784.02 |
| PCB adapter, 2.5 mm angle | R&S®RT-ZA28 | 1801.4790.02 |
| Probe positioner, 2 legs | R&S®RT-ZA29 | 1801.4803.02 |
| Extended cable set, for R&S®RT-ZVC, PCB probing, 1 current and 1 voltage lead, length: 32 cm | R&S®RT-ZA30 | 1333.1686.02 |
| Extended cable set, for R&S®RT-ZVC, 4 mm probing, 1 current and 1 voltage lead, length: 32 cm | R&S®RT-ZA31 | 1333.1692.02 |
| Power adapter | R&S®RT-ZA32 | 1333.1705.02 |
| Oscilloscope interface cable, for R&S®RT-ZVC (included with R&S®RT-ZVC02/04) | R&S®RT-ZA33 | 1333.1770.02 |
| Extended cable set, for R&S®RT-ZVC, 4 mm probing, 1 current and 1 voltage lead, length: 1 m | R&S®RT-ZA34 | 1333.1892.02 |
| Extended cable set, for R&S®RT-ZVC, PCB probing, 1 current and 1 voltage lead, length: 1 m | R&S®RT-ZA35 | 1333.1905.02 |
| Solder-in cable set, for R&S®RT-ZVC, 4 current and voltage solder-in cables, solder-in pins | R&S®RT-ZA36 | 1333.1911.02 |
| Extended cable set, for R&S®RT-ZVC, BNC connector, 1 current and 1 voltage lead, length: 16 cm | R&S®RT-ZA37 | 1337.9130.02 |
| Probe tip accessory set, for R&S®RT-ZP03S, R&S®RT-ZP05S, R&S®HZO10 and R&S®RT-ZH03 | R&S®RT-ZA40 | 1338.0742.02 |
| Ground clips, for R&S®RT-ZP10/R&S®RT-ZP11 | R&S®RT-ZA42 | 1801.8873.00 |
| Adapter, Rohde&Schwarz probe interface to 2.92 mm/3.5 mm/SMA, incl. USB-C port | R&S®RT-ZA50 | 1803.5265.02 |
| Adapter, 2.92 mm/3.5 mm/SMA to Rohde&Schwarz probe interface, incl. USB-C port | R&S®RT-ZA51 | 1803.5365.02 |
| MMCX solder-in cable | R&S®RT-ZAMXHTS | 1803.1660.02 |
| MMCX to dual square pin | R&S®RT-ZAMXSQ | 1803.1647.02 |
| MMCX to U.FL adapter | R&S®RT-ZAMXUFL | 1803.1676.02 |
| Power deskew and calibration test fixture | R&S®RT-ZF20 | 1800.0004.02 |
| 3 GHz, 20 dB preamplifier, 100 V to 230 V power adapter, for R&S®HZ-15 | R&S®HZ-16 | 1147.2720.02 |
| For R&S®RT-ZM probe amplifier module | | |
| 3D positioner with central tensioning knob for easy clamping and positioning of probes (span width: 200 mm, clamping range: 15 mm) | R&S®RT-ZAP | 1326.3641.02 |
| Probe tip module case, for up to 6 R&S®RT-ZMAxx probe tip modules | R&S®RT-ZMA1 | 1419.3928.02 |
| Solder-in probe tip module, up to 16 GHz | R&S®RT-ZMA10 | 1419.4301.02 |
| Set of 6 R&S®RT-ZMA10 solder-in probe tip modules | R&S®RT-ZMA10-6 | 1801.4349.02 |
| Solder-in probe tip module for extended temperature range from -55°C to +125°C, up to 16 GHz | R&S®RT-ZMA11 | 1419.4318.02 |
| Square-pin probe tip module, up to 6 GHz | R&S®RT-ZMA12 | 1419.4324.02 |
| Flex connect solder-in probe tip module up to 16 GHz for R&S®RT-ZM probe amplifier module, length: 15 cm, multimode P/N/DM/CM | R&S®RT-ZMA14 | 1338.1010.02 |
| Quick-connect probe tip module, up to 12 GHz | R&S®RT-ZMA15 | 1419.4224.02 |
| Browser module, up to 16 GHz | R&S®RT-ZMA30 | 1419.4353.02 |
| SMA module, up to 16 GHz | R&S®RT-ZMA40 | 1419.4201.02 |
| Extreme temperature kit, up to 12 GHz | R&S®RT-ZMA50 | 1419.4218.02 |
| Deskew fixture, for power measurements | R&S®RT-ZF20 | 1800.0004.02 |
| Test fixture, for probe characterization with R&S®RTP-B7 | R&S®RT-ZF30 | 1333.2099.02 |
| Accessories | | |
| 1 MΩ adapter, for R&S®RTP oscilloscope | R&S®RT-Z1M | 1337.9200.02 |
| Probe pouch, for R&S®RTO6 oscilloscopes | R&S®RTO-Z5 | 1317.7031.02 |
| Digital extension port, for R&S®RT-ZVC, usage with the R&S®RTO6 oscilloscope (included with R&S®RTO6-B1) | R&S®RTO6-B1E | 1801.6735.02 |
| Digital extension port, for R&S®RT-ZVC, usage with the R&S®RTP oscilloscope (included with R&S®RTP-B1) | R&S®RTP-B1E | 1337.9581.02 |
| Probe interface adapter, for selected Tektronix probes with TekProbe-BNC level II interface | R&S®RT-Z2T | 1338.0007.02 |

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