

**ROHDE & SCHWARZ**

Make ideas real



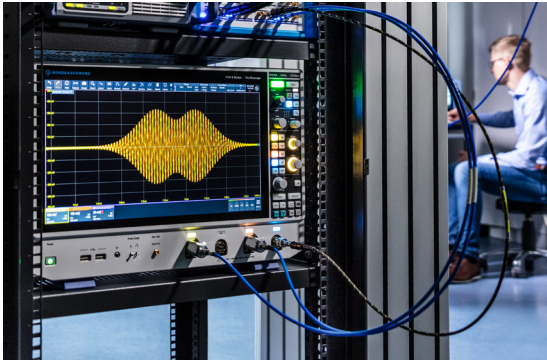
# OSCILLOSCOPE INNOVATION. MEASUREMENT CONFIDENCE.

[www.rohde-schwarz.com/oscilloscopes](http://www.rohde-schwarz.com/oscilloscopes)



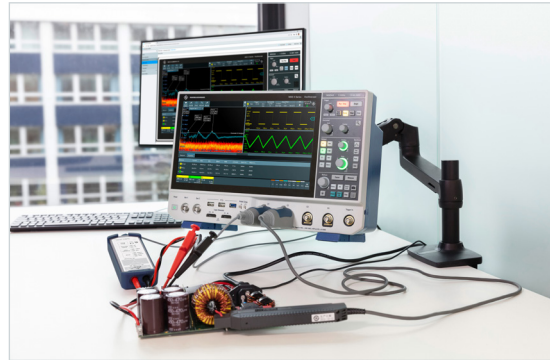
## Innovating with new performance

Over the past ten years, since Rohde&Schwarz introduced its new oscilloscope to the world, we have always focused on performance and usability. The high-performance R&S®RTO6 and R&S®RTP series boast the fastest acquisition rate. The mid-range R&S®RTM3000 and R&S®RTB2000 kicked off a performance race in the market with a 10-bit ADC and deep memory. The handheld R&S®ScopeRider RTH remains a powerful isolated channel oscilloscope for both the field and the lab. Our latest product, the MXO series emphasizes performance and opens up new possibilities with the world's fastest oscilloscope and a capture rate of > 95% for almost no blind time.



R&S®RTO6: fast acquisitions and deep segmentation memory are favored in quantum and physics research lab on pulse analysis.

It does not stop here. Innovation goes even further with an improved user interface that has redefined the oscilloscope market and is harmonized across our platform. Additional functions and tools are constantly being updated and improved to help users with a wide variety of challenging tasks: from power analysis to automotive debugging, high speed signal integrity and RF applications, more tools are available to simplify and speed up complex hardware architecture measurements. Our probe portfolio has continued to evolve with better performance and capabilities for many engineering challenges.



Superb CMRR on an R&S®RT-ZHD differential probe is a good pairing with the MXO 4 series in power conversion applications.

## Next generation oscilloscope: evolved for more challenges

Fastest acquisitions with  
4.5 million waveforms/s

Highest precision of  
12-bit ADC/18-bit HD resolutions

Deep memory capture with  
500 million points/channel

Highest sensitivity with  
advanced digital trigger

Increased visibility with  
15.6" full HD touchscreen

## MXO 5 Series OSCILLOSCOPE

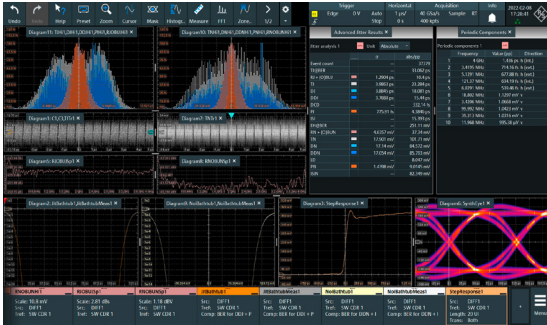




## Signal integrity debugging and analysis

The high-end R&S®RTP and R&S®RTO6 oscilloscopes offer comprehensive debugging and analysis tools for signal integrity tests on high speed interfaces and designs:

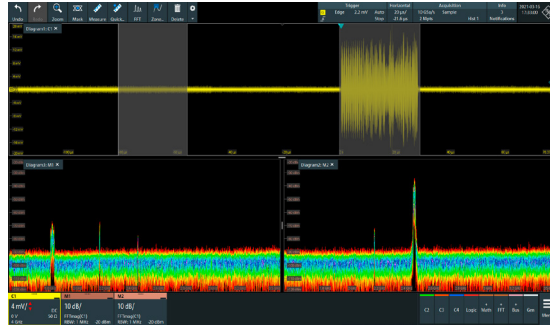
- ▶ Jitter and noise decomposition for deep system insights
- ▶ High speed serial pattern trigger with clock data recovery (CDR)
- ▶ Deembedding for signal path correction
- ▶ Compliance test solutions for USB, Ethernet, PCIe, MIPI, DDR
- ▶ Trigger and decode solutions for various standards
- ▶ First TDR/TDT solution in a real-time oscilloscope



Jitter and noise analysis: displays step response, individual jitter and noise components in histograms, spectrum, synthetic eye diagram and BER bathtub curves.

## Powerful spectrum analysis for EMI debugging

All Rohde & Schwarz oscilloscopes support powerful spectrum analysis. Implemented hardware processing capabilities make FFT conversion fast. The high dynamic range and input sensitivity of 1 mV/div at full measurement bandwidth make it possible to detect even weak emissions. The powerful FFT is ideal for frequency domain analysis, thanks to easy operation, high acquisition rates, peak lists and logarithmic scaling. The MXO 5, R&S®RTO6 and R&S®RTP support multi-spectral analysis for further debugging through comparison of spectral fingerprints on different time traces. Some models also come with spectrogram and zone triggers in the frequency domain for easier detection and isolation of sporadic emissions.



The R&S®RTO6 oscilloscope gated FFT function applies FFT analysis only to user-defined regions of the acquired time domain signal.

Instant insight meets  
in-depth information.

R&S®RTO6 OSCILLOSCOPE

Analog bandwidth  
from 600 MHz to 6 GHz

# ANALYSIS

We continually enhance our oscilloscope portfolio, adding new models, applications and accessories for high-quality analysis.

	R&S®RTH1000	R&S®RTC1000	R&S®RTB2000	R&S®RTM3000	MXO 4	MXO 5	R&S®RT06	R&S®RTP
<b>Measure</b>	cursor, parameter	cursor, parameter	cursor, parameter incl. statistics	cursor, parameter incl. statistics	cursor, parameter incl. statistics	cursor, parameter incl. statistics	cursor, parameter incl. statistics	cursor, parameter incl. statistics
<b>Mathematics</b>	elementary	elementary	basic (math on math)	basic (math on math)	basic (math on math)	basic (math on math)	advanced (formula editor, Python interface)	advanced (formula editor, Python interface)
<b>Mask test</b>	tolerance mask	tolerance mask	tolerance mask	tolerance mask			user configurable, hardware based	user configurable, hardware based
<b>Serial protocols triggering and decoding <sup>1)</sup></b>	I <sup>2</sup> C, SPI, UART/RS-232/RS-422/RS-485, CAN, LIN, CAN FD, SENT	I <sup>2</sup> C, SPI, UART/RS-232/RS-422/RS-485, CAN, LIN	I <sup>2</sup> C, SPI, UART/RS-232/422/485, CAN, LIN	I <sup>2</sup> C, SPI, UART/RS-232/422/485, CAN, LIN, I <sup>2</sup> S, MIL-STD-1553, ARINC 429	I <sup>2</sup> C, SPI, UART/RS-232/422/485, CAN, CAN FD, CAN XL, LIN	I <sup>2</sup> C, SPI, UART/RS-232/RS-422/RS-485, CAN, CAN FD, CAN XL, LIN	I <sup>2</sup> C, SPI, UART/RS-232/422/485, CAN, LIN, I <sup>2</sup> S, MIL-STD-1553, ARINC 429, FlexRay™, CAN FD, MIPI RFFE, USB 2.0/HSIC, MDIO, 8b10b, Ethernet, Manchester, NRZ, SENT, MIPI D-PHY, SpaceWire, MIPI M-PHY/UniPro, CXPI, USB 3.1 Gen1, USB-SSIC, PCIe 1.1/2.0, USB Power Delivery, Automotive Ethernet 100/1000BASE-T1	I <sup>2</sup> C, SPI, UART/RS-232/422/485, SENT, LIN, CAN, CAN FD, MIL-STD-1553, ARINC 429, SpaceWire, USB2.0/HSIC/PD, USB3.1 Gen1/2/SSIC, PCIe 1.1/2.0/3.0, 8b10b, MIPI RFFE, MIPI D/M-PHY/UniPro, Automotive Ethernet 100/1000BASE-T1, Ethernet 10/100BASE-TX, MDIO, Manchester, NRZ
<b>Display functions</b>	data logger	–	–	–	–	–	histogram, trend, track <sup>2)</sup>	histogram, trend, track <sup>2)</sup>
<b>Applications <sup>1)</sup></b>	high-resolution frequency counter, advanced spectrum analysis, harmonics analysis, user scripting	digital voltmeter (DVM), component tester, fast Fourier transform (FFT)	digital voltmeter (DVM), fast Fourier transform (FFT), frequency response analysis	power, digital voltmeter (DVM), spectrum analysis and spectrogram, frequency response analysis	power, digital voltmeter (DVM), frequency response analysis	power, digital voltmeter (DVM), frequency response analysis	power, advanced spectrum analysis and spectrogram, jitter and noise decomposition, clock data recovery, I/Q data and RF analysis (R&S®VSE), deembedding, TDR/TDT analysis	advanced spectrum and spectrogram, jitter and noise decomposition, real-time deembedding, TDR/TDT analysis, I/Q data analysis, RF analysis (R&S®VSE), advanced eye
<b>Generator <sup>1)</sup></b>	–	1-channel function, 4 bit pattern <sup>1), 2)</sup>	1-channel function, 1-channel arbitrary, 4 bit pattern <sup>1), 2)</sup>	1-channel function, 1-channel arbitrary, 4 bit pattern <sup>1), 2)</sup>	2-channel function, 2-channel arbitrary	2-channel function, 2-channel arbitrary	2-channel function, 2-channel arbitrary, 8 bit pattern <sup>1), 2)</sup> , 16 GHz differential pulse source	2-channel function, 2-channel arbitrary, 8 bit pattern <sup>1), 2)</sup> , 16 GHz differential pulse source
<b>Compliance testing <sup>1)</sup></b>	–	–	–	–	–	–	see specifications (PD 5216.1640.22)	see specifications (PD 3683.5616.22)

<sup>1)</sup> Upgradeable.

<sup>2)</sup> Requires an option.

# OSCILLOSCOPE PORTFOLIO



	R&S®RTH1000	R&S®RTC1000	R&S®RTB2000	R&S®RTM3000
<b>Vertical system</b>				
Bandwidth <sup>1)</sup>	60/100/200/350/500 MHz	50/70/100/200/300 MHz	70/100/200/300 MHz	100/200/350/500 MHz/1 GHz
Number of channels	2 plus DMM/4	2	2/4	2/4
ADC resolution; system architecture	10 bit; 16 bit	8 bit; 16 bit	10 bit; 16 bit	10 bit; 16 bit
V/div, 1 M $\Omega$	2 mV to 100 V	1 mV to 10 V	1 mV to 5 V	500 $\mu$ V to 10 V
V/div, 50 $\Omega$	–			500 $\mu$ V to 1 V
<b>Horizontal system</b>				
Sampling rate per channel (in Gsample/s)	1.25 (4-channel model); 2.5 (2-channel model); 5 (all channels interleaved)	1; 2 (2 channels interleaved)	1.25; 2.5 (2 channels interleaved)	2.5; 5 (2 channels interleaved)
Maximum memory (per channel; 1 channel active)	125 kpoints (4-channel model); 250 kpoints (2-channel model); 500 kpoints	1 Mpoints; 2 Mpoints	10 Mpoints; 20 Mpoints	40 Mpoints; 80 Mpoints
Segmented memory	standard, 50 Mpoints	–	option, 320 Mpoints	option, 400 Mpoints
Acquisition rate (in waveforms/s)	50 000	10 000	50 000 (300 000 in fast segmented memory mode <sup>2)</sup> )	64 000 (2 000 000 in fast segmented memory mode <sup>2)</sup> )
<b>Trigger</b>				
Types	digital	analog	analog	analog
Sensitivity	–	–	at 1 mV/div: > 2 div	at 1 mV/div: > 2 div
<b>Mixed signal option (MSO)</b>				
Number of digital channels <sup>1)</sup>	8	8	16	16
<b>Display and operation</b>				
Size and resolution	7" touchscreen, 800 x 480 pixel	6.5", 640 x 480 pixel	10.1" touchscreen, 1280 x 800 pixel	10.1" touchscreen, 1280 x 800 pixel
<b>General data</b>				
Dimensions in mm (W x H x D)	201 x 293 x 74	285 x 175 x 140	390 x 220 x 152	390 x 220 x 152
Weight in kg	2.4	1.7	2.5	3.3
Battery	lithium-ion, > 4 h	–	–	–

<sup>1)</sup> Upgradeable.

<sup>2)</sup> Requires an option.

Excellent signal fidelity, high acquisition rates, an innovative trigger system and a smart user interface – this is what you get with a Rohde & Schwarz oscilloscope.

Choose from a wide range of oscilloscopes, from high-volume oscilloscopes for service, maintenance and education to top-class instruments for R&D and EMI debugging in the 600 MHz to 16 GHz range. Benefit from the high product quality and the in-depth development and production expertise at Rohde & Schwarz.



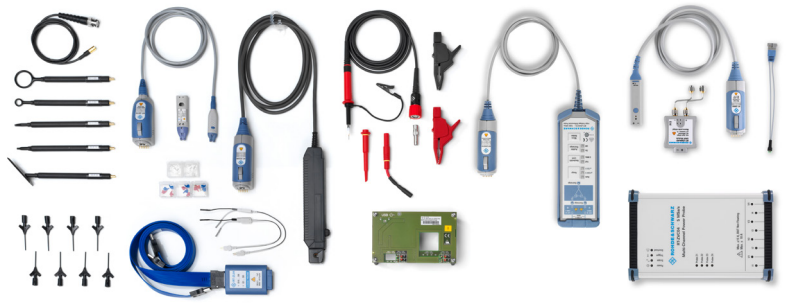
MXO 4	MXO 5	R&S®RT06	R&S®RTP
200/350/500 MHz/1/1.5 GHz	100/200/350/500 MHz/1/2 GHz	600 MHz/1/2/3/4/6 GHz	4/6/8/13/16 GHz
4	4/8	4	4
12 bit; 18 bit	12 bit; 18 bit	8 bit; 16 bit	8 bit; 16 bit
500 $\mu$ V to 10 V	500 $\mu$ V to 10 V	1 mV to 10 V (HD mode: 500 $\mu$ V to 10 V)	
500 $\mu$ V to 1 V	500 $\mu$ V to 1 V	1 mV to 1 V (HD mode: 500 $\mu$ V to 1 V)	2 mV to 1 V (HD mode: 1 mV to 1 V)
2.5; 5 (2 channels interleaved)	5 on 4 channels; 2.5 on 8 channels (2 channels interleaved)	10; 20 (2 channels interleaved in 4 GHz and 6 GHz model)	20; 40 (2 channels interleaved)
standard: 400 Mpoints; max. upgrade: 800 Mpoints <sup>2)</sup>	standard: 500 Mpoints max. upgrade: 1 Gpoints <sup>2)</sup>	standard: 200 Mpoints/800 Mpoints; max. upgrade: 1 Gpoints/2 Gpoints	standard: 100 Mpoints/400 Mpoints; max. upgrade: 3 Gpoints
standard: 10000 segments; option: 1000000 segments	standard: 10000 segments; option: 1000000 segments	standard	standard
> 4500000	> 4500000 on 4 channels	1000000 (2500000 in ultra-segmented memory mode)	750000 (3200000 in ultra-segmented memory mode)
digital	digital	digital (includes zone trigger)	advanced (includes zone trigger), digital trigger (14 trigger types) with real-time deembedding <sup>2)</sup> , high speed serial pattern trigger including 8/16 Gbps clock data recovery (CDR) <sup>2)</sup>
0.0001 div, across full bandwidth, user controllable	0.0001 div, across full bandwidth, user controllable	0.0001 div, across full bandwidth, user controllable	0.0001 div, across full bandwidth, user controllable
16	16	16	16
13.3" touchscreen, 1920 x 1080 pixel (Full HD)	15.6" touchscreen, 1920 x 1080 pixel (Full HD)	15.6" touchscreen, 1920 x 1080 pixel (Full HD)	13.3" touchscreen, 1920 x 1080 pixel (Full HD)
414 x 279 x 162	445 x 314 x 154	450 x 315 x 204	441 x 285 x 316
6	9	10.7	18
–	–	–	–



# PROBE PORTFOLIO

## Probe type

- Passive
- Active single-ended
- Active differential
- Modular
- Power rail
- Multi-channel
- High voltage
- Current
- Near-field



Type	Description	Bandwidth	Dynamic range
R&S®RT-ZP10	passive, single-ended, 10:1	500 MHz	400 V (RMS)
R&S®RT-ZP11	passive, single-ended, 10:1	700 MHz	400 V (RMS)
R&S®RT-ZI10	passive, single-ended, 10:1, isolated	500 MHz	600 V CAT IV, 1000 V CAT III
R&S®RT-ZZ80	passive, single-ended, 10:1, broadband	8 GHz	20 V (RMS)
R&S®RT-ZP1X	passive, single-ended, 1:1	38 MHz	55 V (RMS)
R&S®RT-ZS10L	active, single-ended, 10:1	1 GHz	±8 V
R&S®RT-ZS10E	active, single-ended, 10:1 <sup>1)</sup>	1 GHz	±8 V
R&S®RT-ZS10/20/30/60	active, single-ended, 10:1 <sup>1), 2)</sup>	1/1.5/3/6/13/16 GHz	±8 V
R&S®RT-ZD10/20/30	active, differential, 10:1 <sup>1), 2)</sup>	1/1.5/3 GHz	±5 V, with R&S®RT-ZA15: ±70 V DC, ±46 V AC (peak)
R&S®RT-ZD40	active, differential, 10:1 <sup>1), 2)</sup>	4.5 GHz	±5 V
R&S®RT-ZM15/30/60/90/130/160	active, multimode amplifier module, 10:1/2:1 <sup>1), 2)</sup>	1.5/3/6/9/13/16 GHz	depends on tip module used
R&S®RT-ZMA10	solder-in <sup>3)</sup>	<sup>4)</sup>	±2.5 V (10:1), ±0.5 V (1:1)
R&S®RT-ZMA12	square-pin <sup>3)</sup>	<sup>4)</sup> , max. 6 GHz	±2.5 V (10:1), ±0.5 V (1:1)
R&S®RT-ZMA14	flex solder-in <sup>3)</sup>	<sup>4)</sup>	±2.5 V (10:1), ±0.5 V (1:1)
R&S®RT-ZMA15	quick-connect <sup>3)</sup>	<sup>4)</sup>	±2.5 V (10:1), ±0.5 V (1:1)
R&S®RT-ZMA30	browser <sup>3)</sup>	<sup>4)</sup>	±2.5 V (10:1), ±0.5 V (1:1)
R&S®RT-ZMA40	SMA <sup>3)</sup>	<sup>4)</sup> , max. 6 GHz	±2.5 V (10:1), ±0.5 V (1:1)
R&S®RT-ZMA50	extreme temperature solder-in <sup>3)</sup>	<sup>4)</sup> , max. 2.5 GHz	±2.5 V (10:1), ±0.5 V (1:1)
R&S®RT-ZPR20/40	active, single-ended, 1:1 <sup>1)</sup>	2 GHz/4 GHz	±850 mV
R&S®RT-ZVC02/04	multi-channel power probe	1 MHz	±1.8 V to ±15 V, ±4.5 µA to ±10 A
R&S®RT-ZH10	passive, single-ended, 100:1	400 MHz	1 kV (RMS)
R&S®RT-ZH11	passive, single-ended, 1000:1	400 MHz	1 kV (RMS)
R&S®RT-ZI10C	passive, single-ended, 10:1, isolated, compact	500 MHz	300 V CAT III
R&S®RT-ZI11	passive, single-ended, 100:1, isolated	500 MHz	600 V CAT IV, 1000 V CAT III, 3540 V CAT 0
R&S®RT-ZHD07	active, differential, 25:1/250:1 <sup>1), 2)</sup>	200 MHz	±750 V (peak)
R&S®RT-ZHD15/16	active, differential, 50:1/500:1 <sup>1), 2)</sup>	100 MHz/200 MHz	±1500 V (peak)
R&S®RT-ZHD60	active, differential, 100:1/1000:1 <sup>1), 2)</sup>	100 MHz	±6000 V (peak)
R&S®RT-ZC02	AC/DC two range current probe	20 kHz	100 A (RMS), 1000 A (RMS), 0.01 V/A, 0.001 V/A switchable
R&S®RT-ZC03	AC/DC current probe	100 kHz	20 A (RMS), ±30 A (peak), 0.1 V/A
R&S®RT-ZC05B	AC/DC current probe <sup>1)</sup>	2 MHz	500 A (RMS), ±700 A (peak), 0.01 V/A
R&S®RT-ZC10/B	AC/DC current probe <sup>1)</sup>	10 MHz	150 A (RMS), ±300 A (peak), 0.01 V/A
R&S®RT-ZC15B	AC/DC current probe <sup>1)</sup>	50 MHz	30 A (RMS), ±50 A (peak), 0.1 V/A
R&S®RT-ZC20/B	AC/DC current probe <sup>1)</sup>	100 MHz	30 A (RMS), ±50 A (peak), 0.1 V/A
R&S®RT-ZC30	AC/DC high-sensitivity current probe	120 MHz	5 A (RMS), ±7.5 A (peak), 1 V/A
R&S®RT-ZC31	AC/DC three range current probe	120 MHz	30 A (RMS), ±50 A (peak), 0.1 V/A, 1 V/A, 10 V/A switchable
R&S®HZ-15	passive E and H near-field probe set	30 MHz to 3 GHz	N/A
R&S®HZ-17	compact H near-field probe set	30 MHz to 3 GHz	N/A

<sup>1)</sup> Includes Rohde & Schwarz probe interface. <sup>2)</sup> Includes R&S®ProbeMeter and micro button for instrument control.

<sup>3)</sup> Tip module for R&S®RT-ZMxx probes.

<sup>4)</sup> Depends on amplifier module.

**Service at Rohde & Schwarz**  
**You're in great hands**

- ▶ Worldwide
- ▶ Local and personalized
- ▶ Customized and flexible
- ▶ Uncompromising quality
- ▶ Long-term dependability

**Rohde & Schwarz**

The Rohde & Schwarz technology group is among the trailblazers when it comes to paving the way for a safer and connected world with its leading solutions in test and measurement, technology systems, and networks and cybersecurity. Founded 90 years ago, the group is a reliable partner for industry and government customers around the globe. The independent company is headquartered in Munich, Germany and has an extensive sales and service network with locations in more than 70 countries.

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