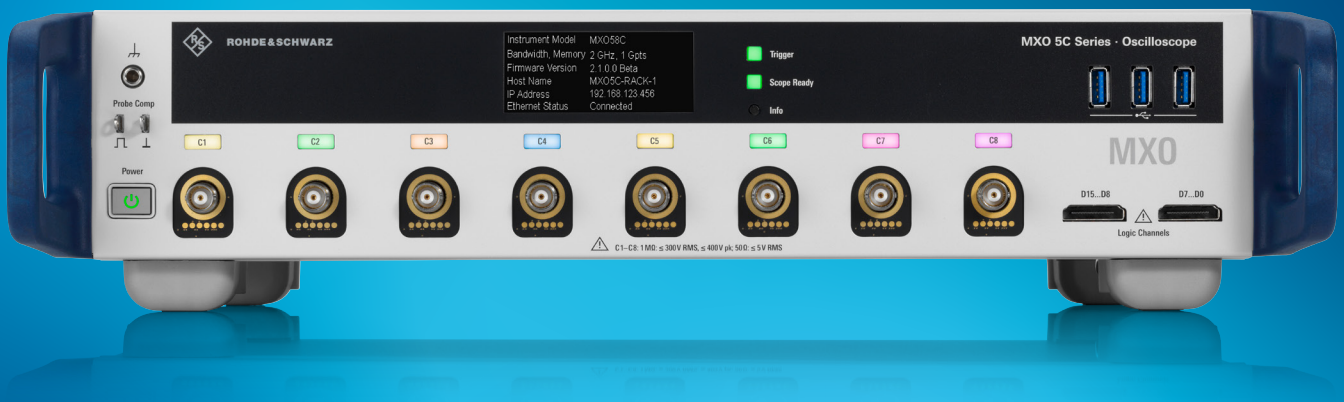
R&S®ESSENTIALS

MXO 5C Series OSCILLOSCOPE/DIGITIZER

Superior time and frequency measurements.
Compact for rackmount and bench applications.



Product Brochure
Version 02.02

More at: www.rohde-schwarz.com/product/mxo5C

ROHDE&SCHWARZ
Make ideas real

NEXT-GENERATION OSCILLOSCOPE IN A COMPACT FORM

MXO 54C: 4-channel model

MXO 58C: 8-channel model

Fastest acquisitions with 4.5 million waveforms/s

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

Deep memory capture with 500 million points/channel

Highest sensitivity with advanced digital trigger

WHY ENGINEERS LOVE ROHDE&SCHWARZ OSCILLOSCOPES

- A trusted, global high-quality company with a long-standing commitment to customers and continuous technological innovation
- The newest oscilloscope portfolio from 60 MHz to 16 GHz
- In-house ASICs developed for the most responsive oscilloscopes in the world
- Frontend technology development for pristine signal integrity
- 18-bit architecture with HD mode for the highest available resolution
- Digital triggers for the most sensitive event isolation in the world
- Superior user interface and front panel that streamlines workflows

WHY THE MXO 5C Series

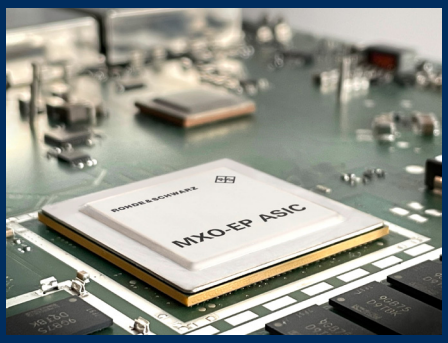
Based on the same technology as MXO 5:

- **Fastest oscilloscope in the world:** 8 channels, math and spectrum measurements and minimal blind time
- **Precise digital trigger:** highly accurate with 12-bit ADC, 18 bit with HD mode
- **Deep memory:** with up to 1 million waveform segments
- **Outstanding spectrum analysis:** fastest in its class with up to four analyses simultaneously

COMPELLING TECHNOLOGY BLOCKS

EVOLVING ACCELERATED INSIGHT

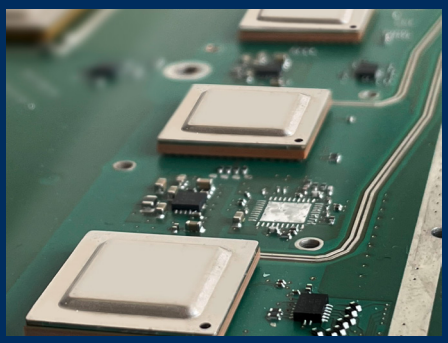
MXO 5C series oscilloscopes/digitizers have cutting-edge technology for swift and precise results. Equipped with advanced custom technological and revolutionary features, the instruments provide indispensable insight into circuit behavior.



MXO-EP processing ASIC

See more of your signals, faster.

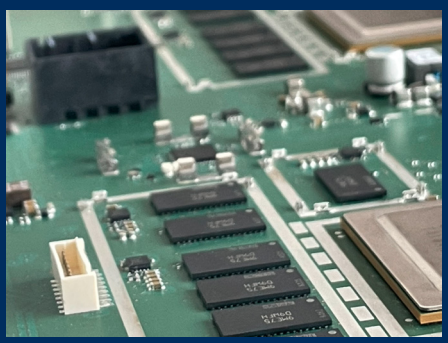
Every MXO 5C series has two MXO-EP (extreme performance) Rohde&Schwarz application-specific integrated circuits (ASIC). The MXO-EP ASIC architecture processes 400 Gbit/s for the world's fastest update rate of up to > 4.5 million acquisitions/s and a total of 18 million waveforms/s on multiple channels. See and capture more signals, faster and find rare signal anomalies quickly with the most responsive oscilloscopes in the industry.



12-bit ADC, 18-bit vertical architecture

Measure your signals accurately.

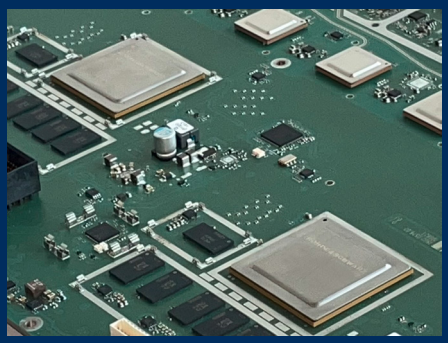
The MXO 5C series has an incredibly low-noise signal path, powered by a channel-dedicated 12-bit ADC with no sample rate limitations. The high definition mode (HD) enhances vertical resolution to a remarkable 18 bit for unwavering accuracy in every measurement. With ultra-low noise and a highly sensitive frontend, the offset voltage can be driven up to ±5 V at the highest sensitivity. Get precise results and greater versatility.



Responsive deep memory

Capture more of your signals.

MXO 5C series comes with the industry's deepest standard acquisition memory of 500 Mpoints per channel, the highest sample rate can capture up to 200 ms of power up or power down sequences on eight channels. Get even longer recordings with the 1 Gpoints memory expansion.



Advanced digital triggering system

Easily isolate subtle signal variations.

The MXO-EP ASIC incorporates advanced digital triggering to evaluate ADC samples in the acquisition path in real time. Trigger on small events with vertical divisions of less than 0.0001 that no other oscilloscope can isolate. Choose your own trigger hysteresis. Apply digital filters to suppress noise for the most precise triggering available.

MXO 5C Series AT A GLANCE

FRONT

E-ink display
- Low-power display: shows key information such as IP address, firmware version and software options
- Available also when the instrument is turned off

Status LEDs
- Trigger LED indicates that the oscilloscope is triggering
- Scope Ready LED shows the oscilloscope firmware is running

USB interfaces
- Three USB 3.0 host ports

Active probe interfaces
- Support for over 30 Rohde&Schwarz current and voltage probes
- 50 Ω and 1 MΩ paths enable support of an even wider range of passive and active probes, including ones from third parties

16 logic channels
- Add 16 logic channels without reducing the number of analog channels
- High MSO sample rates for precise time synchronization between the oscilloscope and probes

BACK

Interfaces
- Two USB 3.0 host ports
- One 1 Gbit LAN
- Use HDMI™ V2.0 and DisplayPort++ V1.3 to connect the oscilloscope to an external display or touchscreen and enjoy the same user-friendly UI as MXO 5 series

Removable M.2 SSD card
- Data storage in a secure location
- Easily removable

On/off switch
- AC power supply connector
- Mains power switch disconnects the instrument from the AC power line

Integrated arbitrary waveform generator
- Two-channel 100 MHz arbitrary waveform generator
- Wide range of waveforms and modulation types
- Easy configuration of frequency, amplitude, offset and noise

Reference clock and trigger IN/OUT
- 10 MHz reference clock input and output connectors for superior time based accuracy
- Trigger input and trigger output

COMPACT FORM FACTOR SAVES SPACE

RACK IT

- Four or eight simultaneous channels per two height units
- 1 Gbit LAN standard
- Trigger IN/OUT and other I/O connectors
- 100 % SCPI command compatibility with MXO 5 and MXO 4 series oscilloscopes
- Scalable price points and bandwidth upgradeability
- Integrated e-ink display with key information such as instrument IP and status for fast setup
- Many digitizer functionalities with complete oscilloscope functionality

STACK IT

- Use for bench applications where vertical space is desired
  - Full HD video out
  - Optional external display (including touchscreen)
  - Add a USB mouse
- Stack an MXO 5 on top to get up to 16 channels or add an MXO 5C on top
- Place other test equipment on top, for example a laptop
- 100 % SCPI commands, waveforms and saveset file compatibility with the MXO 4 and MXO 5 series oscilloscopes

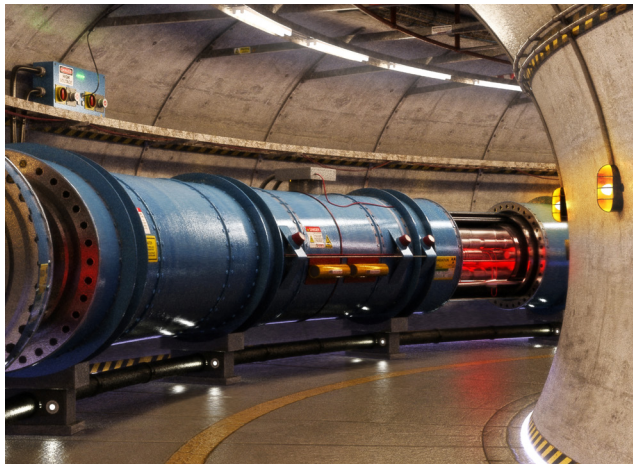
COMPACT FORM, HIGH CHANNEL DENSITY TO FIT YOUR NEEDS

Combining high performance with a compact form, the MXO 5C is an ideal oscilloscope/digitizer for high channel density applications without needing a screen.

HIGH-ENERGY PHYSICS

Do you work in particle or quantum physics or other another area that needs oscilloscope/digitizer measurements? The MXO 5C has four or eight inputs in a compact form factor with minimal audible noise and can work standalone on a bench or in a rack.

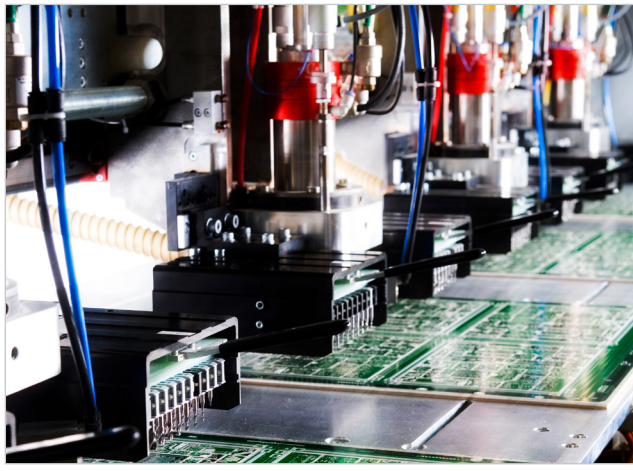
Do you need lots of channels to monitor test signals? Combine multiple MXO 5C units for a solution with superior channel density.



MANUFACTURING TESTING

The MXO 5C fast measurement speeds for production testing. Automated measurements can be made quickly and precisely. Develop your R&D tests in the lab with an MXO 5 or MXO 5C connected to an external display. Then, move the tests into the manufacturing process with a low-profile MXO 5C in a rack. The instrument also contains an integrated ARB if test signals are needed.

Use the e-ink front panel display to check the instrument status or IP address. The integrated web server offers remote access via an IP address. The remote screen is exactly the same as the one on the MXO 5.



RACKMOUNT

Do you need rackmount equipment for testing? With small two height units, the MXO 5C is the better choice for rack applications than an oscilloscope with a display that may take six to eight height units.

Interact with the instrument simply over LAN with SCPI commands or via a built-in web server. If ever needed, you can always connect an external display via HDMI™ or DisplayPort to access the oscilloscope locally.

KEY SPECIFICATIONS

MXO 5 TECHNOLOGY

The MXO 5C is based on MXO 5 hardware, firmware and software. When connected to a web browser, the user interface is an identical to an MXO 5 front panel. The SCPI commands, savesets and waveform formats are also identical.

Key specifications

	MXO 5 series		MXO 5C series
Channels	4	8	identical
Bandwidth	350 MHz, 500 MHz, 1 GHz, 2 GHz	100/200/350/500 MHz, 1 GHz, 2 GHz	identical
Maximum sample rate	5 Gsample/s (on 4 channels)	5 Gsample/s (on 4 channels); 2.5 Gsample/s (on 8 channels)	identical
Record length	500 Mpoints; 1 Gpoints (optional)		identical
Vertical resolution	12-bit ADC (up to 18 bit with HD mode)		identical
Acquisition rate	> 4.5 million waveforms/s (on 4 channels); 17000 FFT/s (on 4 channels)		identical
Hardware options	MSO (16 logic channels); 100 MHz generator (dual Arb)		identical
Operating system	Linux		identical
Web browser	intuitive user interface with MXO 5 front panel		identical

General data

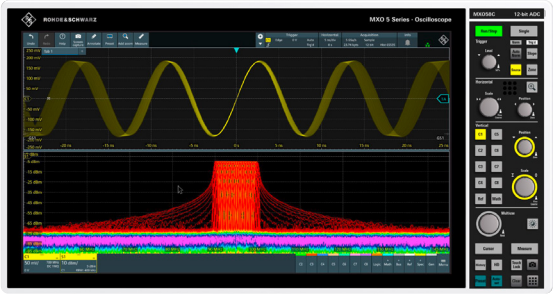
	MXO 5 series	MXO 5C series
Rackmount height	8 HU	2 HU
Display	integrated 15.6"	external via DisplayPort or HDMI™
Touch display	integrated with display	on external display that supports touch via USB
Front panel	standard	virtual with web browser, e-ink display for status and connectivity info
Passive probes	included, 1 probe per channel	optional

INTERACTIVE USE MODELS

SEE (AND TOUCH) YOUR SIGNALS ON A BIG DISPLAY

If your work area is crowded with lots of equipment or your oscilloscope needs to be mounted in a rack, the MXO 5C is the right choice.

Want an even bigger oscilloscope display? Add any full HD compatible display for a greater display area. Just choose the size and connect via standard HDMI™ or DisplayPort. Add a mouse or choose a display with USB based touch capability. Or, connect locally via LAN with the integrated web browser for the virtual front panel.



EASILY ACCESS YOUR OSCILLOSCOPE REMOTELY

Do you need access to a remote oscilloscope? Are you working from home and need to take measurements? Do you need to collaborate across geographical or company boundaries? All MXO 5C instruments incorporate a built-in web browser. Security and documentation features come standard. Even with a MXO 5C, a virtual front panel display is available with same knobs and buttons that are on the MXO 5.

INTERACT WITH YOUR OSCILLOSCOPE IN AN EASY WAY

Do you need to develop oscilloscope test applications or download waveforms and/or measurement values for analysis in other applications? All MXO 5C models come standard with a 1 Gbit LAN connection for fast and easy interaction.

ADAPTING TO YOUR WORK STYLE

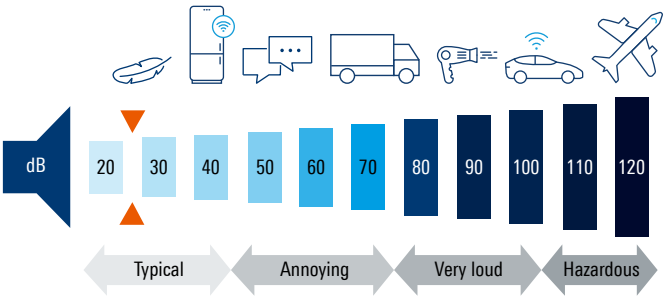
SEAMLESSLY OPTIMIZED TO WORK ALONGSIDE YOU

Free up your bench

Do you need more bench space? The MXO 5C with 2 HU and only 405 mm depth, can be placed on your desk with up to 50 kg stacked on top. Alternatively, if your bench area is full, place it beneath your desk and connect it to a display for easy operation through the web browser.

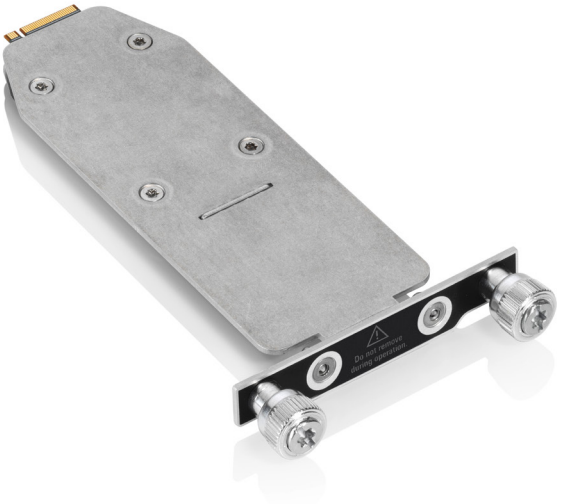
Peace and quiet

Do you need a quiet space? Do loud instruments disturb others? Is equipment too loud? With an operating audible noise level of less than 30 dBA when 1 m from the instrument, the MXO 5C series sounds like a soft whisper. You might not even notice that it is turned on.



Removable M.2 memory

If security is a priority, there is no better method for protecting instrument information than physically storing it in a secure location. The MXO 5C series supports removable M.2 memory cards. When working in a secure lab, simply add M.2 drives and secure them as needed.

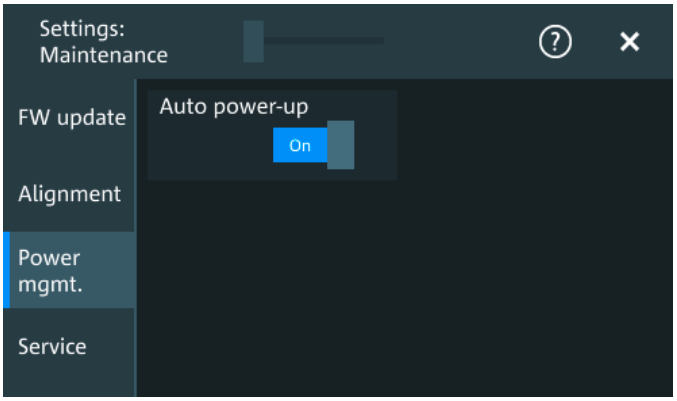


SUSTAINABLE PERFORMANCE

KEEP POWER CONSUMPTION IN CHECK

Reduce power consumption

Reducing power consumption is important both now and in the future. The electrical power used over the lifecycle of an electronic device can make up 90 % of its CO_2 footprint. Minimizing power consumption reduces environmental impact of an oscilloscope. Rising energy prices make reducing power consumption essential to long-term affordability.



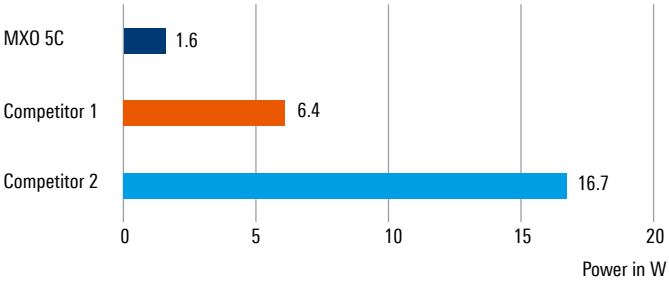
Remotely turn on/off your Rohde&Schwarz oscilloscope

When working remotely, keeping the unit powered in the lab 24/7 can waste a lot of energy. While remote IP controlled socket power supplies are possible, most electronic equipment will only power up to a standby state with the main power switched on. The MXO 5C has a convenient feature that allows it to be turned on automatically as soon as electric power is switched on. By simply connecting it into a smart socket system, you can enable the option of remotely turning on the device only when you intend to use it, while keeping it powered off at other times.

Maximum performance, minimum consumption

Compared to previous oscilloscope generations [1], the MXO 5C reduces standby consumption by remarkable 40 %. More impressive is that despite doubling the number of channels, enlarging the display and exponentially increasing acquisition performance, typical power consumption remains almost unchanged [2].

Standby power consumption



[1] Evaluations performed with the R&S®HMC8015 power analyzer.
[2] Compared with the R&S®RTE1024.

AND THERE IS SO MUCH MORE ...

AN OSCILLOSCOPE THAT EVOLVES FOR YOUR NEEDS

Grows with your needs: easy software based upgrades

The MXO 5C series adapts as your needs evolve. Simply install the necessary software licenses, bandwidth upgrades, triggering and decoding of serial protocols, memory expansions and the frequency response analysis option. The waveform generator is built-in, just activate it with a software license. The MSO logic analysis just requires activation of the logic probes. The bandwidth can be upgraded to 2 GHz with a software license for very easy retrofits.

Regular firmware updates

Regular firmware updates add new functionalities to the MXO 5C.
Download the latest firmware version at www.rohde-schwarz.com.
Use a USB storage device or LAN connection for installation.

Easy rackmounting

The R&S®ZZA-KN2NS rackmount kit allows easy installation of the oscilloscope in integrated environments.

SPECIFICATIONS IN BRIEF

Vertical system: analog channels		
Input channels		4 channels or 8 channels
Input impedance		50 Ω ± 1.5%, 1 MΩ ± 1% || 12 pF (meas.)
Analog bandwidth (–3 dB)	4-channel instrument MXO 54C	
	at 50 Ω input impedance	
	MXO 5C	≥ 350 MHz
	MXO 5C with -B405 option	≥ 500 MHz
	MXO 5C with -B410 option	≥ 1 GHz
	MXO 5C with -B420 option	≥ 2 GHz
	at 1 MΩ input impedance	
	MXO 5C	≥ 350 MHz (meas.)
	MXO 5C with -B405 option	≥ 500 MHz (meas.)
	MXO 5C with -B410 option	≥ 700 MHz (meas.) [1]
	MXO 5C with -B420 option	≥ 700 MHz (meas.) [1]
	8-channel instrument MXO 58C	
	at 50 Ω input impedance	
	MXO 5C	≥ 100 MHz
	MXO 5C with -B802 option	≥ 200 MHz
	MXO 5C with -B803 option	≥ 350 MHz
	MXO 5C with -B805 option	≥ 500 MHz
	MXO 5C with -B810 option	≥ 1 GHz
	MXO 5C with -B820 option	≥ 2 GHz [2]
	at 1 MΩ input impedance	
	MXO 5C	≥ 100 MHz (meas.)
	MXO 5C with -B802 option	≥ 200 MHz (meas.)
	MXO 5C with -B803 option	≥ 350 MHz (meas.)
	MXO 5C with -B805 option	≥ 500 MHz (meas.)
	MXO 5C with -B810 option	≥ 700 MHz (meas.) [1]
	MXO 5C with -B820 option	≥ 700 MHz (meas.) [1]
Additional bandwidth filters available up to instrument bandwidth		1 GHz, 500/350/200/100/50/20 MHz (meas.)
Rise/fall time (calculated)	10% to 90% at 50 Ω	
	4-channel instrument MXO 54C	
	MXO 5C	< 1.75 ns
	MXO 5C with -B405 option	< 700 ps
	MXO 5C with -B410 option	< 350 ps
	MXO 5C with -B420 option	< 175 ps
	8-channel instrument MXO 58C	
	MXO 5C	< 3.5 ns
	MXO 5C with -B802 option	< 1.75 ns
	MXO 5C with -B803 option	< 1 ns
	MXO 5C with -B805 option	< 700 ps
	MXO 5C with -B810 option	< 350 ps
	MXO 5C with -B820 option	< 175 ps [2] (interleaved), < 350 ps (non interleaved)
Vertical resolution		12 bit, 18 bit for high definition (HD) mode
Input sensitivity	at 50 Ω	0.5 mV/div to 3 V/div, entire analog bandwidth supported for all input sensitivities
	at 1 MΩ	0.5 mV/div to 10 V/div, entire analog bandwidth supported for all input sensitivities

[1] With R&S®RT-ZP11 passive probe.
[2] 2 GHz analog bandwidth in interleave mode with 5 Gsample/s real-time sampling rate.

Vertical system: analog channels		
DC gain accuracy	offset and position set to 0 V, after self-alignment	
	input sensitivity	
	> 5 mV/div	±1 % full scale
	≤ 5 mV/div to ≥ 1 mV/div	±1.5 % full scale
	500 µV/div	±2.5 % full scale
Input coupling	at 50 Ω	DC
	at 1 MΩ	DC, AC
Maximum input voltage	at 50 Ω	5 V (RMS), 30 V (V_p)
	at 1 MΩ	300 V (RMS), 400 V (V_p), derates at 20 dB/decade to 5 V (RMS) above 250 kHz
	at 1 MΩ with R&S®RT-ZP11 passive probe	400 V (RMS), 1650 V (V_p), 300 V (RMS) CAT II; for derating and details, see R&S®RT-Zxx Standard Probes specifications (PD 3607.3851.22)
Position range		±5 div
Offset range at 50 Ω	input sensitivity	
	120 mV/div to 3 V/div	±(15 V – input sensitivity × position)
	33 mV/div to < 120 mV/div	±(7 V – input sensitivity × position)
	0.5 mV/div to < 33 mV/div	±(2 V – input sensitivity × position)
Offset range at 1 MΩ	input sensitivity	
	800 mV/div to 10 V/div	±200 V
	80 mV/div to < 800 mV/div	±50 V
	0.5 mV/div to < 80 mV/div	±(5 V – input sensitivity × position)
Offset accuracy		±(0.35 % × |net offset| + 0.5 mV + 0.1 div × input sensitivity); (net offset = offset – position × input sensitivity)
DC measurement accuracy	after adequate suppression of measurement noise using high definition (HD) mode or waveform averaging or a combination of both	±(DC gain accuracy × |reading – net offset| + offset accuracy)
Channel-to-channel isolation (each channel at same input sensitivity)	input frequency inside instrument bandwidth	> 60 dB (1:1000)

RMS noise floor [3)]

At 50 Ω (meas.)	Input sensitivity	Analog bandwidth (–3 dB)					
		100 MHz	200 MHz	350 MHz	500 MHz	1 GHz	2 GHz
	0.5 mV/div	19 µV	26 µV	33 µV	39 µV	66 µV	111 µV
	1 mV/div	24 µV	33 µV	42 µV	51 µV	85 µV	141 µV
	2 mV/div	25 µV	35 µV	44 µV	53 µV	89 µV	146 µV
	5 mV/div	34 µV	46 µV	59 µV	71 µV	116 µV	182 µV
	10 mV/div	66 µV	89 µV	115 µV	138 µV	226 µV	350 µV
	20 mV/div	134 µV	181 µV	233 µV	280 µV	461 µV	713 µV
	50 mV/div	324 µV	436 µV	563 µV	677 µV	1.12 mV	1.78 mV
	100 mV/div	610 µV	815 µV	1.05 mV	1.26 mV	2.08 mV	3.25 mV
	200 mV/div	1.26 mV	1.69 mV	2.17 mV	2.60 mV	4.31 mV	6.74 mV
	500 mV/div	4.21 mV	5.54 mV	6.94 mV	8.21 mV	12.93 mV	18.63 mV
	1 V/div	6.88 mV	9.20 mV	11.71 mV	14.02 mV	22.57 mV	32.89 mV
	2 V/div	11.45 mV	15.21 mV	19.45 mV	23.21 mV	37.85 mV	54.59 mV
	3 V/div	15.77 mV	20.78 mV	26.54 mV	31.71 mV	51.80 mV	73.68 mV

[3)] HD mode active for bandwidth ≤ 500 MHz.

At 1 MΩ (meas.)	Input sensitivity	Analog bandwidth (–3 dB)					
		100 MHz	200 MHz	350 MHz	500 MHz	700 MHz	
	0.5 mV/div	35 µV	40 µV	46 µV	54 µV	85 µV	
	1 mV/div	36 µV	42 µV	49 µV	57 µV	89 µV	
	2 mV/div	38 µV	45 µV	54 µV	64 µV	101 µV	
	5 mV/div	47 µV	58 µV	77 µV	92 µV	141 µV	
	10 mV/div	68 µV	89 µV	126 µV	152 µV	229 µV	
	20 mV/div	120 µV	161 µV	235 µV	285 µV	428 µV	
	50 mV/div	297 µV	401 µV	592 µV	719 µV	1.08 mV	
	100 mV/div	678 µV	892 µV	1.25 mV	1.47 mV	2.16 mV	
	200 mV/div	1.21 mV	1.62 mV	2.33 mV	2.77 mV	4.09 mV	
	500 mV/div	2.88 mV	3.88 mV	5.68 mV	6.76 mV	10.01 mV	
	1 V/div	6.11 mV	8.08 mV	11.54 mV	13.56 mV	18.51 mV	
	2 V/div	11.42 mV	15.20 mV	22.04 mV	25.98 mV	35.39 mV	
	5 V/div	29.10 mV	38.75 mV	56.46 mV	66.60 mV	90.40 mV	
	10 V/div	44.33 mV	58.62 mV	85.77 mV	101.12 mV	137.86 mV	

Vertical system: digital channels

Input channels		16 logic channels (D0 to D15)
Arrangement of input channels		arranged in two logic probes with 8 channels each, assignment of the logic probes to the channels (D0 to D7 and D8 to D15) is displayed on the probe
Input impedance		100 kΩ ± 2 % || ~4 pF (meas.) at probe tips
Maximum input frequency	signal with minimum input voltage swing and hysteresis setting: normal	400 MHz (meas.)
Maximum input voltage		±40 V (V_p)
Minimum input voltage swing		500 mV (V_{pp}) (meas.)
Threshold groups		D0 to D3, D4 to D7, D8 to D11 and D12 to D15
Threshold level	range	±8 V in 25 mV steps
	predefined	CMOS 5.0 V, CMOS 3.3 V, CMOS 2.5 V, TTL, ECL, PECL, LVPECL
Threshold accuracy	threshold level between ±4 V	±(100 mV + 3 % of threshold setting)
Comparator hysteresis		normal, robust, maximum

Horizontal system

Timebase range		selectable between 200 ps/div and 10 000 s/div, time per div settable to any value within range
Deskew range (channel deskew)	between analog channels	±20 ms
	between digital channels	±100 ns
Reference position		0 % to 100 % of measurement display area
Horizontal position range (trigger offset range)	max.	+(memory depth/current sampling rate)
	min.	–5000 s
Modes		normal
Channel-to-channel skew	between analog channels	< 100 ps (meas.)
	between digital channels	< 500 ps (meas.)
Timebase accuracy	after delivery/calibration, at +23 °C	±0.2 ppm
	during calibration interval	±1 ppm
Delta time accuracy	corresponds to time error between two edges on same acquisition and channel; signal amplitude greater than five divisions, measurement threshold set to 50 %, vertical gain 10 mV/div or greater; rise time lower than four sample periods; waveform acquired in real-time mode	±(0.20/real-time sampling rate + timebase accuracy × |reading|) (peak) (meas.)

Acquisition system		
Sampling rate	analog channels (real time)	max. 5 Gsample/s on 4 channels, max. 2.5 Gsample/s on 8 channels
	analog channels (interpolated)	max. 5 Tsample/s
	digital channels	max. 5 Gsample/s on each channel
Waveform acquisition rate	max.	> 4500000 waveforms/s
Trigger rearm time	min.	< 21 ns
Memory depth [4]	standard	
	analog channels only	with 8 active channels: ► max. 500 Mpoints (single capture) ► max. 250 Mpoints (run continuous) 4 active channels: ► max. 500 Mpoints (single capture and run continuous)
	digital channels only (MSO)	with 16 digital channels: ► max. 500 Mpoints (single capture) with 8 digital channels: ► max. 500 Mpoints (run continuous)
	mix analog and digital	with 2 analog and 8 digital channels: ► max. 500 Mpoints (single capture) ► max. 250 Mpoints (run continuous)
	with R&S®MXO5C-B110 memory option 1 Gpoints	
	analog channels only	with 4 active channels: ► max. 1 Gpoints (single capture) with 2 active channels: ► max. 1 Gpoints (run continuous)
	digital channels only (MSO)	with 16 digital channels: ► max. 500 Mpoints (single capture) ► max. 250 Mpoints (run continuous) with 8 digital channels: ► max. 1 Gpoints (single capture) ► max. 500 Mpoints (run continuous)
	mix analog and digital	with 2 analog and 8 digital channels: ► max. 500 Mpoints (single capture) ► max. 250 Mpoints (run continuous)
	math	
	with 1 active math	max. 87.5 Mpoints
	with 2 active math	max. 42.5 Mpoints
	with 4 active math	max. 20 Mpoints
	with 8 active math	max. 10 Mpoints
Acquisition modes	sample	middle sample in decimation interval
	peak detect	largest and smallest sample in decimation interval
	average	average value of samples in decimation interval
	number of averaged waveforms	2 to 16777215
	envelope	envelope of acquired waveforms
Sampling modes	real-time mode	max. sampling rate set by digitizer
	interpolated time	enhancement of sampling resolution by interpolation; max. sampling rate is 5 Tsample/s
Interpolation modes		linear, sin(x)/x, sample&hold
Fast segmentation mode	continuous recording of waveforms in acquisition memory without interruption due to visualization	
	max. real-time waveform acquisition rate	> 4600000 waveforms/s
	min. blind time between consecutive acquisitions	< 21 ns

[4] The maximum available memory depth depends on the bit resolution of the acquired data and, therefore, on the acquisition system settings such as decimation mode, use of waveform arithmetics or high definition (HD) mode. Interleave channels of the MXO 58C are on C1 and C5, C2 and C6, C3 and C7 as well as C4 and C8. For the MXO 54C, all 4 channels run with 5 Gsample/s and maximum bandwidth.

High definition mode		
General description	The high definition mode increases the bit resolution of the waveform signal by using digital filtering, leading to reduced noise. Because of the digital trigger concept of the MXO 5C, signals with increased numeric resolution are used as the input for triggering.	
Numeric resolution	bandwidth, at 5 Gsample/s	bit resolution
	1 kHz to 10 MHz	18 bit
	100 MHz	16 bit
	200 MHz	15 bit
	500 MHz	14 bit
Real-time sampling rate	all models	max. 2.5 Gsample/s on 4 channels, max. 1.25 Gsample/s on 8 channels

Trigger system		
Trigger sources		analog channels (C1 to C8), digital channels (D0 to D15), trigger input, line trigger, serial bus
Trigger level range		±5 div from center of screen
Trigger modes		auto, normal, single, n single
Trigger sensitivity		0.0001 div, from DC to instrument bandwidth for all vertical scales, user adjustable
Trigger jitter	full-scale sine wave of frequency set to –3 dB bandwidth	< 1 ps (RMS) (meas.)
Coupling mode	standard	same as selected channel
	HF reject	cutoff frequency selectable from 1 kHz to 500 MHz
	LF reject	attenuates frequencies < 50 kHz
Trigger hysteresis	modes	auto (default setting) or manual
	adjustment resolution	0.0001 div, from DC to instrument bandwidth for all vertical scales
Holdoff range	time	100 ns to 10 s, fixed and random
Main trigger modes		
Edge	triggers on specified edge (positive, negative or either) and level	
Glitch	triggers on glitches of positive, negative or either polarity that are shorter or longer than specified width	
	glitch width	200 ps to 1000 s
Width	triggers on positive or negative pulse of specified width; width can be shorter, longer, inside or outside a specified range	
	pulse width	200 ps to 1000 s
Runt	triggers on pulse of positive, negative or either polarity that crosses one threshold but fails to cross a second threshold before crossing the first one again; runt pulse width can be arbitrary, shorter, longer, inside or outside a specified range	
	runt pulse width	200 ps to 1000 s
Window	triggers when signal enters or exits a specified voltage range; triggers also when signal stays inside or outside the voltage range for a specified period of time	
Timeout	triggers when signal stays high, low or unchanged for a specified period of time	
	timeout	0 ps to 1000 s
Interval	triggers when time between two consecutive edges of same slope (positive or negative) is shorter, longer, inside or outside a specified range	
	interval time	200 ps to 1000 s
Slew rate	triggers when the time required by a signal edge to toggle between user-defined upper and lower voltage levels is shorter, longer, inside or outside a specified range; edge slope may be positive, negative or either	
	toggle time	0 ps to 1000 s
Setup & hold	triggers on setup time and hold time violations between clock and data present on any two input channels; monitored time interval may be specified by the user in the range from –100 s to 100 s around a clock edge and must be at least 200 ps wide	
Pattern	triggers when a logical combination (and, nand, or, nor) of the input channels stays true for a period of time shorter, longer, inside or outside a specified range	
State	triggers when a logical combination (and, nand, or, nor) of the input channels stays true at a slope (positive, negative or either) in one selected channel	

Trigger system		
Advanced trigger modes		
Sequence trigger (A/B/R trigger)	triggers on B event after occurrence of A event; delay condition after A event specified as time interval; an optional R event resets the trigger sequence to A	
	trigger sources	analog channels (C1 to C8)
	A event	edge, glitch, width, runt, window, timeout, interval, slew rate
	B event	edge, glitch, width, runt, window, timeout, interval, slew rate
	R event	edge, glitch, width, runt, window, timeout, interval, slew rate
Serial bus trigger	optional	see dedicated triggering and decoding options
Trigger input	input impedance	50 Ω (meas.) or 1 MΩ (meas.) || 11 pF (meas.)
	max. input voltage at 50 Ω	30 V (V_p)
	max. input voltage at 1 MΩ	300 V (RMS), 400 V (V_p), derates at 20 dB/decade to 5 V (RMS) above 250 kHz
	trigger level	±5 V
	sensitivity	
	input frequency ≤ 500 MHz	300 mV (V_{pp}) (meas.)
	input coupling	AC, DC (50 Ω and 1 MΩ)
	trigger filter	HF reject (attenuates > 50 kHz), LF reject (attenuates < 50 kHz), noise reject
	trigger modes	edge (positive, negative or either)
Trigger output	functionality	A pulse is generated for each event triggering signal acquisition.
	output voltage	0 V to 5 V (nom.) at high impedance; 0 V to 2.5 V (nom.) at 50 Ω
	pulse width	selectable between 16 ns and 50 ms
	pulse polarity	low active or high active
	output delay	depends on trigger settings

Spectrum analysis		
General description	spectrum analysis allows up to four signal analysis in the frequency domain	
Spectrum	sources	channel 1 to channel 8
	setup parameters	center frequency, frequency span, resolution bandwidth (automatic or manual), gate position, gate width, vertical scaling, vertical position
	scaling	dBm, dBV, dBµV, V (RMS)
	span	1 Hz to 1.8 GHz[5)]
	resolution bandwidth (RBW)	(span/4) ≥ RBW ≥ (span/6000)
	windows	flat top, Hanning, Hamming, Blackman, rectangular, Kaiser Bessel, Gaussian
	trace types	normal, max. hold, min. hold, average
	max. real-time waveform acquisition rate	> 40 000 waveforms/s
Gate	delimits the display region used for spectrum analysis	
Peak list	values in the peak list are also shown in the diagram for easy correlation	

[5)] The stop frequency depends on the analog bandwidth of the instrument.

RF characteristics		
Sensitivity/noise density	at 1 GHz (measurement of the power spectral density at 1 GHz at input sensitivity 2 mV/div, corresponding to –30 dBm input range of the oscilloscope, using spectrum analysis with center frequency 1 GHz, span 500 kHz, RBW 3 kHz)	–160 dBm (1 Hz) (meas.)
Noise figure	at 1 GHz (calculated based on the noise power density above)	14 dB (meas.)
Dynamic range	measured for a 1 GHz input carrier with level –3 dBm at input of oscilloscope, using spectrum analysis with center frequency 1 GHz, span 2 MHz, RBW 400 Hz at +20 MHz from center frequency	106 dB (meas.)
Absolute amplitude accuracy	0 Hz to 1.2 GHz	±1 dB (meas.)
Spurious-free dynamic range (excluding harmonics)	measured for a 250 MHz input carrier with level –3 dBm at input sensitivity 50 mV/div, using spectrum analysis with center frequency 900 MHz, span 1.8 GHz, RBW 300 kHz	67 dBc (meas.)
Second harmonic distortion	measured for a 250 MHz input carrier with level –3 dBm at input sensitivity 50 mV/div, using spectrum analysis with center frequency 900 MHz, span 1.8 GHz, RBW 300 kHz	–65 dBc (meas.)
Third harmonic distortion	measured for a 250 MHz input carrier with level –3 dBm at input sensitivity 50 mV/div, using spectrum analysis with center frequency 900 MHz, span 1.8 GHz, RBW 300 kHz	–49 dBc (meas.)

Waveform measurements		
Automatic measurements	measurements on acquired waveforms (input channels), math waveforms, reference waveforms	amplitude, high, low, maximum, minimum, peak-to-peak, mean, RMS, sigma, positive overshoot, negative overshoot, area, rise time, fall time, positive pulse width, negative pulse width, period, frequency, positive duty cycle, negative duty cycle, delay, phase, burst width, pulse count, edge count, pulse train, positive switching, negative switching, cycle area, cycle mean, cycle RMS, cycle sigma, setup, hold, setup/hold time, setup/hold ratio, slew rate rising, slew rate falling, delay to trigger
	gate	delimits the display region evaluated for automatic measurements
	reference levels	user-configurable vertical levels define support structures for automatic measurements
	statistics	displays maximum, minimum, mean, standard deviation and measurement count for each automatic measurement
	number of active measurements	24
Cursor measurements	available cursors	up to four cursor sets on screen, each set with two horizontal and two vertical cursors
	target waveforms	acquired waveforms (input channels), math waveforms, reference waveforms, XY diagrams
	operating modes	vertical measurements, horizontal measurements, or both; vertical cursors either set manually or locked to waveform

Waveform math		
General features	number of math equations	up to 8
	number of reference waveforms	up to 8
	sources	channel 1 to 8, math waveforms 1 to 8, reference waveforms 1 to 8
Functions	operators	add, subtract, multiply, divide, absolute value, square, square root, integrate, differentiate, log10, loge, log2, reciprocal, invert, lowpass, highpass, rescale (a · x + b)
	filters	lowpass, highpass
	filter types	Gaussian, rectangular
	gate	delimits the display region used for waveform math

Digital voltmeter		
Accuracy		related to channel settings of voltmeter source
Measurements		DC, DC RMS, AC RMS
Sources	MXO 54C	C1, C2, C3, C4
	MXO 58C	C1, C2, C3, C4, C5, C6, C7, C8
Number of measurements		up to 4
Resolution		up to 6 digits
Bandwidth		up to 20 MHz

Display characteristics	
Diagram types	Yt, zoom, spectrum
Display configuration (waveform layout)	display area can be split into separate diagram areas by dragging and dropping signal icons, each diagram can hold any number of signals, diagrams can be stacked on top of each other and later accessed via dynamic tabs (Tab 1, etc.)
Signal icons	each active waveform is represented by a signal icon on the signal bar; the signal icon displays the individual vertical and acquisition settings
Toolbar	enables quick access to important tools; most common parameters can be set directly in a simple menu and gives access to more detailed parameters in the main menu, user-defined selection of tools in the toolbar
Upper menu bar	displays trigger, horizontal and acquisition system settings; allows quick access to these settings
Main menu	provides access to all instrument settings in a compact menu structure
Axis label	x-axis and y-axis are labeled with values and physical unit
Diagram label	diagrams can be individually labeled with a descriptive, user-defined name
Diagram layout	grid, cross hair, axis labeling and diagram labeling can be switched on and off separately
Persistence	50 ms to 50 s, or infinite
Zoom	vertical and horizontal; touch interface simplifies resize and drag operations on zoom window
Signal colors (waveform coding)	predefined or user-defined color tables for persistence display

History and segmented memory			
Acquisition memory	automatic	automatic setting of segment size and sample rate	
	manual	user-defined setting of segment size and sample rate	
Memory segmentation	function	memory segments for the acquisition	
	number of segments	record length	segments[6] (up to)
		1 kpoints	1 048 575
		2 kpoints	524 287
		5 kpoints	262 143
		10 kpoints	131 071
		20 kpoints	65 535
		50 kpoints	32 767
		100 kpoints	16 383
		200 kpoints	9361
		500 kpoints	4095
		1 Mpoints	2113
		2 Mpoints	1056
		5 Mpoints	427
		10 Mpoints	213
		20 Mpoints	106
		50 Mpoints	41
		100 Mpoints	20
		200 Mpoints	9
		500 Mpoints	3
		1 Gpoints	1
	Segmentation is available for all analog and logic channels, protocol decoding and spectrum analysis.		
Fast-segmented mode	continuous recording of waveforms in acquisition memory without interruption due to visualization; for blind time between consecutive acquisitions, see Acquisition system		
History mode	function	history mode is an always-on function and provides access to past acquisitions in the segmented memory	
	timestamp resolution	1 ns	
	history player	replays the recorded waveforms; repetition possible; adjustable speed; manual switching to next/previous segment; numerical segment number input	
	analyze options	overlay all segments, average all segments, envelope all segments	

Miscellaneous		
Remote control	web interface	full operation of the instrument's touch interface, keys and multifunction wheel via web browser
	VNC	control of the instrument through virtual network computing
	SCPI	standard instrument programming interface through VISA
	WebDAV	support for the web distributed authoring and versioning (WebDAV) protocol, which provides secure access through an application proxy
Languages	available languages for the user interface	English, German, French, Simplified Chinese, Traditional Chinese, Japanese, Russian, Spanish, Italian, Portuguese, Korean, Czech, Polish
	online help on the instrument	English

[6] With R&S®MXO5C-B110 memory option. The maximum number of segments depends on the number of active channels and the bit resolution of the acquired data and, therefore, on the acquisition system settings such as decimation mode, use of waveform arithmetics or high definition (HD) mode. The maximum number of segments without the R&S®MXO5C-B110 memory option is limited to 10000.

Input and output		
Front		
Channel inputs		BNC; for details, see Vertical system
	probe interface	auto detection of passive probes, Rohde&Schwarz active probe interface
Digital channel inputs	D15 to D8, D7 to D0	interface for R&S®RT-ZL04 logic probe
Probe compensation output	signal shape	rectangle, V_{low} = 0 V, V_{high} = 3.3 V amplitude 3.3 V (V_{pp}) ± 5% (meas.)
	frequency	1 kHz ± 1% (meas.)
USB interfaces		3 × USB 3.1 Gen 1 ports, type A plug
Ground jack		connected to ground
Rear		
Trigger input		BNC; for details, see Trigger system
	probe interface	auto detection of passive probes
Trigger out		BNC; for details, see Trigger system
Reference input	connector	BNC
	impedance	50 Ω (nom.)
	input frequency	10 MHz (±20 ppm)
	sensitivity	≥ –10 dBm into 50 Ω, ≤ 10 dBm at 10 MHz
Reference output	connector	BNC
	impedance	50 Ω (nom.)
	output signal	10 MHz (specified with timebase accuracy), 8 dBm (nom.)
Waveform generator outputs (requires R&S®MXO5C-B6 option)		2 × BNC; for details, see R&S®MXO5C-B6, waveform generator, demo lugs and GND lug
USB interface		2 × USB 3.1 Gen 1 port
LAN interface		RJ-45 connector, supports 10/100/1000BASE-T
External monitor interface		HDMI™ 2.0 and DisplayPort++ 1.3, output of oscilloscope display

General data		
Display	type	2.9" e-ink display (EPD)
	resolution	296 × 128 pixel (monochrome)
Temperature		
Temperature loading	operating temperature range	0°C to +50°C
	storage temperature range	–40°C to +70°C
		in line with MIL-PRF-28800F section 4.5.5.1.1.1 class 3 tailored to +45°C for operation
Climatic loading		+25°C/+50°C at 85% relative humidity, noncondensing, cyclic, in line with IEC 60068-2-30
Altitude		
Operating		up to 3000 m above sea level
Nonoperating		up to 4600 m above sea level
Mechanical resistance		
Vibration	sinusoidal	5 Hz to 150 Hz, max. 1.8 g at 55 Hz; 0.5 g from 55 Hz to 150 Hz, in line with EN 60068-2-6
		10 Hz to 55 Hz, in line with MIL-PRF-28800F, section 4.5.5.3.2 class 3
	random	8 Hz to 500 Hz, acceleration 1.2 g (RMS), in line with EN 60068-2-64
		5 Hz to 500 Hz, acceleration 2.058 g (RMS), in line with MIL-PRF-28800F, section 4.5.5.3.1 class 3
Shock		40 g shock spectrum, in line with MIL-STD-810G, method no. 516.6, procedure I
		30 g functional shock, halfsine, duration 11 ms, in line with MIL-PRF-28800F, section 4.5.5.4.1

General data		
Electromagnetic compatibility (EMC)		
RF emission		in line with CISPR 11/EN 55011 group 1 class A (for a shielded test setup); the instrument complies with the emission requirements stipulated by EN 55011, EN 61326-1 and EN 61326-2-1 class A, making the instrument suitable for use in industrial environments
Immunity		in line with IEC/EN 61326-1 table 2, immunity test requirements for industrial environment [7]
Certifications		VDE, $_{C}$CSA$_{US}$, KC
Calibration interval		1 year
Power supply		
AC supply		100 V to 240 V ±10 % at 50 Hz to 60 Hz and 400 Hz ±5 %, max. 4 A to 2.5 A, in line with MIL-PRF-28800F, section 3.5
Power consumption	standby mode	1.6 W
	all channels on, without probes	161 W (typ.)
	max.	338 W
Safety		in line with: ► IEC/EN 61010-1, IEC/EN 61010-2-030 ► CAN/CSA-C22.2 no. 61010-1 ► UL 61010-1 ► CAN/CSA C22.2 no. 61010-2-030 ► UL 61010-2-030
Mechanical data		
Dimensions (W × H × D)	with front handles and feet	462 mm × 107 mm × 403 mm (18.19 in × 4.22 in × 15.87 in)
	without front handles and feet	445 mm × 89 mm × 358 mm (17.52 in × 3.51 in × 14.10 in)
Weight	without options, nominal	8.7 kg (19.18 lb)
Rackmount height	with R&S®ZZA-KN2NS rackmount kit	2 HU

[7] Test criterion is displayed noise level within ±1 div for input sensitivity of 5 mV/div.

ORDERING INFORMATION

Designation	Type	Order No.
MXO 5C series, base models		
Oscilloscope, 350 MHz, 4 channels	MXO 54C	1802.3000.04
Oscilloscope, 100 MHz, 8 channels	MXO 58C	1802.3000.08
Base unit (including quick start guide, power cord)		
Choose your bandwidth upgrade		
Upgrade of MXO 54C to 500 MHz bandwidth	R&S®MXO5C-B405	1802.3081.02
Upgrade of MXO 54C to 1 GHz bandwidth	R&S®MXO5C-B410	1802.3046.02
Upgrade of MXO 54C to 2 GHz bandwidth	R&S®MXO5C-B420	1802.3069.02
Upgrade of MXO 58C to 200 MHz bandwidth	R&S®MXO5C-B802	1802.3117.02
Upgrade of MXO 58C to 350 MHz bandwidth	R&S®MXO5C-B803	1802.3100.02
Upgrade of MXO 58C to 500 MHz bandwidth	R&S®MXO5C-B805	1802.3098.02
Upgrade of MXO 58C to 1 GHz bandwidth	R&S®MXO5C-B810	1802.3052.02
Upgrade of MXO 58C to 2 GHz bandwidth	R&S®MXO5C-B820	1802.3075.02
Choose your options		
Mixed signal option, for MXO 5C series with 16 digital channels	R&S®MXO5C-B1	1802.3023.02
Arbitrary waveform generator, 100 MHz, 2 analog channels	R&S®MXO5C-B6	1802.3030.02
Additional M.2 SSD	R&S®MXO5C-B19	1803.1460.02
Memory option 1 Gpoints	R&S®MXO5C-B110	1803.1382.02
Power analysis	R&S®MXO5C-K31	1802.3130.02
Frequency response analysis	R&S®MXO5C-K36	1802.3146.02
Low speed serial triggering and decoding (I²C/SPI/UART/RS-232/RS-422/RS-485)	R&S®MXO5C-K510	1802.1418.02
Automotive serial triggering and decoding (CAN/CAN FD/CAN XL/LIN)	R&S®MXO5C-K520	1802.1424.02
MIPI low speed protocols (SPMI)	R&S®MXO5C-K550	1803.1447.02
Automotive Ethernet protocols (10BASE-T1S, 100BASE-T1)	R&S®MXO5C-K560	1803.1453.02
Application bundle, consists of the following options: R&S®MXO5C-B6, R&S®MXO5C-K31, R&S®MXO5C-K36, R&S®MXO5C-K510, R&S®MXO5C-K520	R&S®MXO5C-PK1	1803.1682.02
Choose your additional probes		
Single-ended passive probes		
500 MHz, 10 MΩ, 10:1, 400 V, 9.5 pF, 2.5 mm	R&S®RT-ZP10	1409.7550.00
500 MHz, 10 MΩ, 10:1, 300 V, 10 pF, 5 mm	R&S®RT-ZP05S	1333.2401.02
38 MHz, 1 MΩ, 1:1, 55 V, 39 pF, 2.5 mm	R&S®RT-ZP1X	1333.1370.02
Active broadband probes: single-ended		
1.0 GHz, 10:1, 1 MΩ, BNC interface	R&S®RT-ZS10L	1333.0815.02
1.0 GHz, active, 1 MΩ, Rohde&Schwarz probe interface	R&S®RT-ZS10E	1418.7007.02
1.0 GHz, active, 1 MΩ, R&S®ProbeMeter, micro button, Rohde&Schwarz probe interface	R&S®RT-ZS10	1410.4080.02
1.5 GHz, active, 1 MΩ, R&S®ProbeMeter, micro button, Rohde&Schwarz probe interface	R&S®RT-ZS20	1410.3502.02
Active broadband probes: differential		
1.0 GHz, active, differential, 1 MΩ, R&S®ProbeMeter, micro button, incl. 10:1 external attenuator, 1 MΩ, 60 V DC, 42.4 V AC (peak), Rohde&Schwarz probe interface	R&S®RT-ZD10	1410.4715.02
1.5 GHz, active, differential, 1 MΩ, R&S®ProbeMeter, micro button, Rohde&Schwarz probe interface	R&S®RT-ZD20	1410.4409.02
Modular broadband probes		
Probe amplifier module, 1.5 GHz, 10:1 or 2:1, 400 kΩ (differential mode), 200 kΩ (single-ended mode)	R&S®RT-ZM15	1800.4700.02
Probe amplifier module, 3 GHz, 10:1 or 2:1, 400 kΩ (differential mode), 200 kΩ (single-ended mode)	R&S®RT-ZM30	1419.3005.02
Power rail probe		
2.0 GHz, 1:1, 50 kΩ, ±0.85 V, ±60 V offset, Rohde&Schwarz probe interface	R&S®RT-ZPR20	1800.5006.02
High voltage probes: passive		
250 MHz, 100:1, 100 MΩ, 850 V, 6.5 pF	R&S®RT-ZH03	1333.0873.02
400 MHz, 100:1, 50 MΩ, 1000 V, 7.5 pF	R&S®RT-ZH10	1409.7720.02
400 MHz, 1000:1, 50 MΩ, 1000 V, 7.5 pF	R&S®RT-ZH11	1409.7737.02

Designation	Type	Order No.
High voltage probes: differential		
200 MHz, 250:1/25:1, 5 MΩ, 750 V (peak), 300 V CAT III, Rohde&Schwarz probe interface	R&S®RT-ZHD07	1800.2307.02
100 MHz, 500:1/50:1, 10 MΩ, 1500 V (peak), 1000 V CAT III, Rohde&Schwarz probe interface	R&S®RT-ZHD15	1800.2107.02
200 MHz, 500:1/50:1, 10 MΩ, 1500 V (peak), 1000 V CAT III, Rohde&Schwarz probe interface	R&S®RT-ZHD16	1800.2207.02
100 MHz, 1000:1/100:1, 40 MΩ, 6000 V (peak), 1000 V CAT III, Rohde&Schwarz probe interface	R&S®RT-ZHD60	1800.2007.02
Current probes		
20 kHz, AC/DC, 0.01 V/A and 0.001 V/A, ±200 A and ±2000 A, BNC interface	R&S®RT-ZC02	1333.0850.02
100 kHz, AC/DC, 0.1 V/A, 30 A, BNC interface	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), BNC interface	R&S®RT-ZC10	1409.7750K02
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), BNC interface	R&S®RT-ZC20	1409.7766K02
100 MHz, AC/DC, 0.1 V/A, 30 A (RMS), Rohde&Schwarz probe interface	R&S®RT-ZC20B	1409.8233.02
120 MHz, AC/DC, 1 V/A, 5 A (RMS), BNC interface	R&S®RT-ZC30	1409.7772K02
EMC near-field probe		
Probe set for E and H near-field measurements, 30 MHz to 3 GHz	R&S®HZ-15	1147.2736.02
Logic probe [1]		
400 MHz logic probe, 8 channels	R&S®RT-ZL04	1333.0721.02
Probe accessories		
Accessory set for R&S®RT-ZP11 passive probe (2.5 mm probe tip)	R&S®RT-ZA1	1409.7566.00
Probe power supply for R&S®RT-ZC10/-ZC20/-ZC30	R&S®RT-ZA13	1409.7789.02
External attenuator 10:1, 2.0 GHz, 1.3 pF, 60 V DC, 42.4 V AC (peak), for R&S®RT-ZD20/-ZD30 probes	R&S®RT-ZA15	1410.4744.02
Probe pouch for the logic probes	R&S®RT-ZA19	1335.7875.02
Power deskew and calibration test fixture	R&S®RT-ZF20	1800.0004.02
3D positioner with central tensioning knob for easy clamping and positioning of probes (span width: 200 mm, clamping range: 15 mm)	R&S®RT-ZA1P	1326.3641.02
Bipod probe positioner	R&S®RT-ZA29	1801.4803.02
Choose your accessory		
Rackmount kit, for MXO 5C series	R&S®ZZA-KN2NS	1703.1498.00

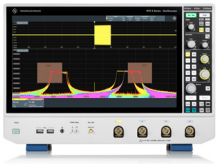
[1] The R&S®MXO5C-B1 mixed signal option contains two R&S®RT-ZL04 logic probes.

OSCILLOSCOPE PORTFOLIO




	R&S®RTH1000	R&S®RTC1000	R&S®RTB2000	R&S®RTM3000
Vertical system				
Bandwidth [1]	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
Vertical resolution; system architecture	10 bit; 16 bit	8 bit; 16 bit	10 bit; 16 bit	10 bit; 16 bit
V/div, 1 MΩ	2 mV to 100 V	1 mV to 10 V	1 mV to 5 V	500 µV to 10 V
V/div, 50 Ω	–			500 µV to 1 V
Horizontal system				
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 [2])	64 000 (2 000 000 in fast segmented memory mode [2])
Trigger				
Types	digital	analog	analog	analog
Sensitivity	–	–	at 1 mV/div: > 2 div	at 1 mV/div: > 2 div
Mixed signal option (MSO)				
Number of digital channels [1]	8	8	16	16
Analysis				
Mask test	tolerance mask	tolerance mask	tolerance mask	tolerance mask
Mathematics	elementary	elementary	basic (math on math)	basic (math on math)
Serial protocols triggering and decoding [1]	I²C, SPI, UART/RS-232/RS-422/RS-485, CAN, LIN, CAN FD, SENT	I²C, SPI, UART/RS-232/RS-422/RS-485, CAN, LIN	I²C, SPI, UART/RS-232/RS-422/RS-485, CAN, LIN	I²C, SPI, UART/RS-232/RS-422/RS-485, CAN, LIN, I²S, MIL-STD-1553, ARINC 429
Applications [1], [2]	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
Compliance testing [1], [2]	–	–	–	–
Display and operation				
Size and resolution	7" touchscreen, 800 × 480 pixel	6.5", 640 × 480 pixel	10.1" touchscreen, 1280 × 800 pixel	10.1" touchscreen, 1280 × 800 pixel
General data				
Dimensions in mm (W × H × D)	201 × 293 × 74	285 × 175 × 140	390 × 220 × 152	390 × 220 × 152
Weight in kg	2.4	1.7	2.5	3.3
Battery	lithium-ion, > 4 h	–	–	–

[1] Upgradeable. [2] Requires an option.



MXO 4	MXO 5/MXO 5C	R&S®RTO6	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 µV to 10 V	500 µV to 10 V	1 mV to 10 V (HD mode: 500 µV to 10 V)	
500 µV to 1 V	500 µV to 1 V	1 mV to 1 V (HD mode: 500 µV 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[2)]	standard: 500 Mpoints max. upgrade: 1 Gpoints[2)]	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[2)], high speed serial pattern trigger including 8/16 Gbps clock data recovery (CDR)[2)]
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
		user configurable, hardware based	user configurable, hardware based
advanced (formula editor)	advanced (formula editor)	advanced (formula editor, Python interface)	advanced (formula editor, Python interface)
I²C, SPI, UART/RS-232/RS-422/RS-485, CAN, CAN FD, CAN XL, LIN, SPMI, 10BASE-T1S	I²C, SPI, UART/RS-232/RS-422/RS-485, CAN, CAN FD, CAN XL, LIN, SPMI, 10BASE-T1S, 100BASE-T1	I²C, SPI, UART/RS-232/RS-422/RS-485, CAN, LIN, I²S, 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 Gen 1, USB-SSIC, PCIe 1.1/2.0, USB Power Delivery, Automotive Ethernet 100/1000BASE-T1	I²C, SPI, UART/RS-232/RS-422/RS-485, SENT, CAN, LIN, CAN FD, MIL-STD-1553, ARINC 429, SpaceWire, USB 2.0/HSIC/PD, USB 3.1 Gen 1/Gen 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
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 (CDR), I/Q data and RF analysis (R&S®VSE), deembedding, TDR/TDT analysis	advanced spectrum analysis and spectrogram, jitter and noise decomposition, real-time deembedding, TDR/TDT analysis, I/Q data and RF analysis (R&S®VSE), advanced eye diagram
–		see specifications (PD 5216.1640.22)	see specifications (PD 3683.5616.22)
13.3" touchscreen, 1920 × 1080 pixel (Full HD)	for MXO 5 only: 15.6" touchscreen, 1920 × 1080 pixel (Full HD)	15.6" touchscreen, 1920 × 1080 pixel (Full HD)	13.3" touchscreen, 1920 × 1080 pixel (Full HD)
414 × 279 × 162	MXO 5: 445 × 314 × 154 MXO 5C: 445 × 105 × 405	450 × 315 × 204	441 × 285 × 316
6	MXO 5: 9 MXO 5C: 8.7	10.7	18
–	–	–	–

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MXO 5C Series Oscilloscope/Digitizer

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