

Oscilloscopes Feature Enhanced Usability And Performance

[Rohde & Schwarz](#) builds on the success of its RTO family with the introduction of the all-new and redesigned R&S RTO6 digital oscilloscope. Featuring an updated user interface on a larger, 15.6-inch full HD touchscreen and straightforward workflows, this scope is said to speed up daily measurement tasks. According to the vendor, the R&S RTO6 delivers deep insights into designs on the engineer's workbench with state-of-the-art specifications such as a 9.4 ENOB, an update rate of 1 million waveforms per second as well as a comprehensive toolset of analysis functions (Fig. 1).

The R&S RTO6 offers six different bandwidth models from 600 MHz to 6 GHz and a sample rate of up to 20 Gsample/s. Offering a fully integrated test solution for the time and frequency domain, as well as protocol and logic analysis, this scope is intended to support design engineers from all industries.

When developing the new R&S RTO6 oscilloscope, Rohde & Schwarz engineers focused on improving the oscilloscope's everyday usability. To this end they redesigned the user interface for increased productivity, implementing a 15.6-inch full HD screen, with an easy-to-use touch functionality and a redesigned front panel, which enables test engineers to quickly set up measurements. When compared with the 12-inch screen in previous models, the R&S RTO6's larger screen can display a maximized waveform viewing area, and signals can be dragged and dropped to different parts of the screen with the R&S SmartGrid. The app cockpit provides access to all of the oscilloscope's applications with a single tap. Key features of the interface that contribute to the scope's enhanced usability are highlighted in Fig. 2.

The R&S RTO6 architecture has been implemented with a dedicated ASIC for optimized signal processing that delivers an exceptional acquisition rate of up to one million waveforms per second. This allows users to reliably detect even sporadic signal faults. A low-noise frontend and single-core A-D converters with extremely small linearity errors achieve excellent signal integrity with a spurious-free dynamic range (SFDR) of 65 dBc and a 9.4 ENOB. This allows users to capture all signal details with maximum precision.

Additional signal details can be revealed using the high definition (HD) mode. This increases the vertical resolution of the R&S RTO6 oscilloscopes up to 16 bits with digital filtering, resulting in sharper waveforms and less noise. This filtered 16-bit signal is also used by the patented digital trigger system. This allows the R&S RTO6 to achieve unprecedented trigger sensitivity and the ability to isolate even the smallest signal details, according to the vendor.

Furthermore, the R&S RTO6 has several features that provide users with quick results. Mask tests, which users can set up with simple touch gestures, allow signal anomalies to be easily identified within defined tolerance limits. Thanks to the unique zone trigger, events can be graphically isolated in both the time and frequency domain.

With a standard acquisition memory of 200 Mpts and an optional 2 Gpts per channel, the R&S RTO6 can analyze long pulse and protocol sequences without difficulties. The constantly enabled history mode also allows previous trigger events to be analyzed, while comprehensive search functions further simplify this task.

More than 90 measurement functions are included in the R&S RTO6 series, organized into amplitude and time measurements, jitter, eye, histogram and spectral measurements. In addition, multiple application-specific software options for complex measurements are available, and users can easily unlock them with a keycode as their testing requirements evolve, even after purchasing the instrument.

These options include triggering and decoding of serial protocols, automated compliance tests on high-speed digital interfaces, detailed options for jitter analysis and power analysis, as well as spectrum, power, TDR/TDT and signal analysis. Additionally, an extensive probe portfolio is available to support all measurement tasks. Thanks to its extensive toolset, the R&S RTO6 covers a multitude of applications, ranging from EMI debugging and spectrum analysis to automotive Ethernet testing and serial bus analysis, as well as power electronics testing and digital design.

With regard to power electronics measurements, the company offers Bode plot software that can be used with the RTO series scopes for making gain and phase margin measurements up to 100 MHz using the RTO's internal signal generator. This software, which enables the scope to perform as a frequency response analyzer, is available to RTO scope users at no charge.

With prices starting at \$19,800, the R&S RTO6 is now available from Rohde & Schwarz as a four-channel base instrument with bandwidth options of 600 MHz, 1 GHz, 2 GHz, 3 GHz, 4 GHz and 6 GHz. For more detailed descriptions of this scope's features, see the [brochure](#). And for more information, see the R&S RTO6 oscilloscope [page](#).



Fig. 1. Along with a large, 15.6-inch full HD display, the R&S RTO6 digital oscilloscopes offer four input channels, bandwidths ranging from 600 MHz to 6 GHz, an update rate of 1 million waveforms per second, a 9.4 effective number of bits, 2 Gpoints of maximum memory and a frequency zone trigger. An optional MSO provides 16 digital channels.

15.6" high-resolution capacitive touchscreen

- ▶ High resolution: 1920 × 1080 pixel (FullHD)
- ▶ Gesture support speeds up scaling and zooming
- ▶ Easy to see signal detail

Maximized waveform area

- ▶ Simplified GUI for enhanced workflows
- ▶ Optimized icon arrangement
- ▶ Optimized waveform display

Customizable waveform display

- ▶ Quickly arrange your view with R&S®SmartGrid
- ▶ Manage multiple diagrams simultaneously with tabs
- ▶ Axis scales annotation speeds determining values

Intuitive front panel increases user productivity

- ▶ Fast, direct access to primary instrument settings
- ▶ Quickly adjust settings with knobs and buttons
- ▶ Sectional layout makes finding the right button easy

RTO 6 Series · Oscilloscope

Trigger	Horizontal	Acquisition	Info	2021-03-16
-60 μV Auto Trg'd	1 μs/ 0 s	20 GSa/s Sample 1 Mpts	No Notifications	13:32:34

RTO64 · 6GHz · 20GSa/s

Run / Stop Single
Trigger Norm Trig'd
Level Auto Norm Slope

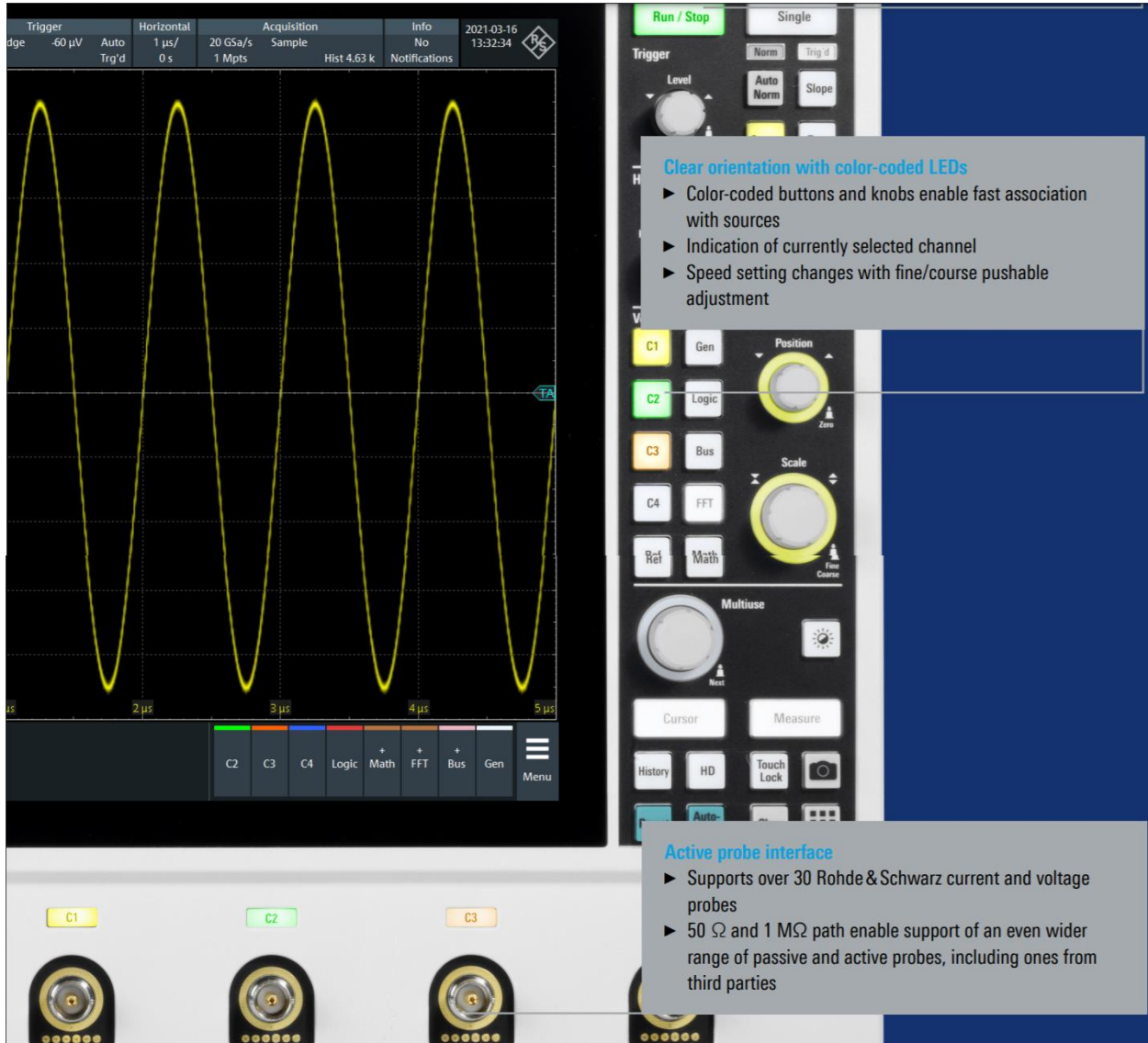


Fig. 2. The high-resolution capacitive touchscreen, maximized waveform area, customizable waveform display, intuitive front panel design, color-coded buttons and active probe interface contribute to the enhanced usability of the RTO 6 series scopes as called out here in these various views of the front panel.

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