

R&S®RTP, R&S®RTO and R&S®RTE Oscilloscopes

Release Notes

Firmware Version 4.15.3.0

These Release Notes are for following models of R&S®RTP, R&S®RTO and R&S®RTE:
R&S® RTP 044, order no. 1320.5007K04, R&S® RTP 064, order no. 1320.5007K06,
R&S® RTP 084, order no. 1320.5007K08,

R&S® RTO 2002, order no. 1329.7002K02, R&S® RTO 2004, order no. 1329.7002K04,
R&S® RTO 2012, order no. 1329.7002K12, R&S® RTO 2014, order no. 1329.7002K14,
R&S® RTO 2022, order no. 1329.7002K22, R&S® RTO 2024, order no. 1329.7002K24,
R&S® RTO 2032, order no. 1329.7002K32, R&S® RTO 2034, order no. 1329.7002K34,
R&S® RTO 2044, order no. 1329.7002K44, R&S® RTO 2064, order no. 1329.7002K64

R&S® RTE 1022, order no. 1317.2500K22, R&S® RTE 1024, order no. 1317.2500K24,
R&S® RTE 1032, order no. 1317.2500K32, R&S® RTE 1034, order no. 1317.2500K34,
R&S® RTE 1052, order no. 1317.2500K52, R&S® RTE 1054, order no. 1317.2500K54,
R&S® RTE 1102, order no. 1317.2500K02, R&S® RTE 1104, order no. 1317.2500K04,

R&S® RTE 1022, order no. 1326.2000K22, R&S® RTE 1024, order no. 1326.2000K24,
R&S® RTE 1032, order no. 1326.2000K32, R&S® RTE 1034, order no. 1326.2000K34,
R&S® RTE 1052, order no. 1326.2000K52, R&S® RTE 1054, order no. 1326.2000K54,
R&S® RTE 1102, order no. 1326.2000K62, R&S® RTE 1104, order no. 1326.2000K64,
R&S® RTE 1152, order no. 1326.2000K72, R&S® RTE 1154, order no. 1326.2000K74,
R&S® RTE 1202, order no. 1326.2000K82, R&S® RTE 1204, order no. 1326.2000K84

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The following abbreviations are used throughout this document:
R&S® RTP is abbreviated as R&S RTP , R&S® RTO as R&S RTO,
R&S® RTE as R&S RTE.

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1 Current Version and History

1.1 New Functions

The following table lists the new functions and indicates the version in which the new function was introduced:

Version	Function
4.15.1.0	Support of R&S®RT-Z2T Probe Adapter
4.15.1.0	Support for option R&S® RTP-K8 Ethernet Decoding
4.15.1.0	Support for option R&S® RTP-K57 100BASE-T1 Triggering & Decoding
4.15.1.0	Support for option R&S® RTO-K121 Deembedding
4.15.1.0	Support of R&S® RTP-B7 Differential Pulse Source
4.15.1.0	Support of login "NormalUser" with standard user rights for instrument operation
4.15.1.0	Decoding and eye analysis for option R&S® RTO-K91 DDR3 Signal Integrity Debug and Compliance Test
4.15.1.0	RTO2000, RTE: New action item "Start executable" for event actions
4.15.1.0	RTO2000, RTE: New export format "OneFile" with user settings and reference waveforms for export and import. This also allows the export and import of mask tests based on reference waveforms
4.15.1.0	RTO2000, RTE: User setting to select if the shaded area of the mask test shall be inverted to shade the non-violation area
4.15.1.0	RTO2000, RTE: The command SYSTem:SHUTdown is added to shut down the instrument remotely
4.15.1.0	RTP: Support of TV-Trigger
4.15.1.0	RTE: It is selectable if every measurement can have its own measurement gate
4.15.1.0	Option R&S® RTx-K19: ZoneTrigger can be activated in history mode
4.10.1.0	RTP version only
4.10.1.0	Support for option R&S® RTP-K1 I2C/SPI Triggering & Decoding
4.10.1.0	Support for option R&S® RTP-K2 UART/RS-232/RS-422/RS-485 Triggering & Decoding
4.10.1.0	Support for option R&S® RTP-K3 CAN/LIN Triggering & Decoding
4.10.1.0	Support for option R&S® RTP-K9 CAN-FD Triggering & Decoding
4.10.1.0	Support for option R&S® RTP-K40 MIPI RFFE Triggering & Decoding
4.10.1.0	Support for option R&S® RTP-K50 Manchester and NRZ Triggering & Decoding
4.10.1.0	Support for option R&S® RTP-K52 8b10b Decoding
4.10.1.0	Support for option R&S® RTP-K55 MDIO Triggering & Decoding
4.10.1.0	Support for option R&S® RTP-K72 PCI Express 1.1/2.0 Triggering & Decoding
4.10.1.0	RTP: Decoding and eye analysis for option R&S® RTP-K91 DDR3 Signal Integrity Debug and Compliance Test
4.10.1.0	RTP: User setting to select if the shaded area of the mask test shall be inverted to shade the non-violation area
4.10.1.0	RTP: The command SYSTem:SHUTdown is added to shut down the instrument remotely
4.0.1.0	RTP: Initial version
3.70.1.0	Support for R&S® ZHD probe portfolio
3.70.1.0	Support for Option R&S® RTO-K57 - 100BASE-T1 Triggering & Decoding
3.70.1.0	Support for Option R&S® RTE-K57 - 100BASE-T1 Triggering & Decoding
3.70.1.0	Support for Option R&S® RTO-K64 - USB 3.1 SSIC Triggering & Decoding
3.70.1.0	Support of R&S® RTE-B6 Waveform Generator for RTE
3.70.1.0	Support of R&S® RT-ZPR40 Power Rail Probe

Version	Function
3.70.1.0	Support of the differential probes R&S® RT-ZD002 and R&S® RT-ZD003
3.70.1.0	User button for taking the R&S® RT-ZPR powermeter value as channel offset value
3.70.1.0	RTO1000 and RTO2000: The user can couple all measurements to one single gate via gate coupling
3.70.1.0	RTO2000: Print option to create a screenshot without the signal bar
3.70.1.0	RTO-K18: Peak list in FFT can be sorted by frequency or by value
3.70.1.0	Decode result table supports automatic zoom on frame by clicking frame table entry
3.70.1.0	Option R&S® RTO/RTE-K50: supports search features

1.2 Modified Functions

The following table lists the modified functions and indicates the version in which the modification was carried out:

Version	Function
4.15.1.0	Strong increase of value range for the channel delay
4.15.1.0	RTO2000: Support of operating systems Windows 7 Embedded as well as Windows 10 IoT Ent LTSB 2016
4.15.1.0	RTO2000: Sidebar is not only supported for the creation of elements but also for modification of these elements
4.15.1.0	RTO2000: Measurement dialog is updated for better ease of use
4.15.1.0	RTO2000, RTE: "Wait for trigger" dialog information moved into the horizontal settings signal bar
4.15.1.0	RTO2000, RTE: File Save/ Recall dialogs are updated for better ease of use
4.15.1.0	RTO2000, RTE: Menu structure is updated for better ease of use
4.15.1.0	RTO2000, RTE: Docking of measurement results is the default setting
4.15.1.0	RTO2000, RTE: The track functionality is part of the base functionality and available to all users
4.15.1.0	RTO2000, RTE:: Signal icons show the x-unit of track signals
4.15.1.0	RTO2000, RTE:: If a USB stick is connected to the instrument the USB stick is automatically selected for data export
4.15.1.0	RTO2000, RTE: The "Clear Screen" functionality is renamed to "Clear all" and now clears the waveform display, measurement statistics, histograms and the history.
4.15.1.0	RTO2000, RTE: Renaming of "Ultra segmentation" to "Fast segmentation"
4.15.1.0	RTO2000, RTE: Data logging export and fast segmentation data limits strongly extended
4.15.1.0	RTE: In the screenshot the signal bar is positioned next to the diagram areas to prevent overlapping of the waveforms by the signal bar
4.15.1.0	Option R&S® RTO/RTE-K1: Performance enhancements for I2C triggering & decoding
4.15.1.0	Option R&S® RTO/RTE-K8: Performance enhancements for Ethernet decoding
4.15.1.0	Option R&S® RTO-K42: Performance enhancements D-PHY triggering & decoding
4.10.1.0	RTP: Signal icons show the x-unit of track signals
4.10.1.0	RTP: If a USB stick is connected to the instrument the USB stick is automatically selected for data export
4.10.1.0	RTP: The "Clear Screen" functionality is renamed to "Clear all" and now clears the waveform display, measurement statistics, histograms and the history.
3.70.1.0	Option R&S® RTO/RTE-K1: Performance enhancements for the SPI decode
3.70.1.0	Option R&S® RTO/RTE-K2: Performance enhancements and 9-bit support for UART
3.70.1.0	Default color of math functions is change to get better readability of the math function grid annotation
3.70.1.0	The date and the base unit is written into the header file when exporting a waveform

Version	Function
3.70.1.0	Menu item "Tutorials" has moved into menu "File"

1.3 Improvements

The following table lists the eliminated issues and indicates the version in which the issues were eliminated:

Version	Function
4.15.3.0	When the probe unit was set to "A" manually and the settings were saved, recalling the settings set the unit back to "V". Autoset also reset the manual probe unit setting "A" to "V". This issue is fixed
4.15.3.0	When a RT-ZM probe was attached and a selfalignment was done, the instrument needed a restart to handle the probe offset correctly. This issue is fixed
4.15.2.0	If the instrument language was set to a language other than English, the "Unca1" indicator was displayed after startup of the instrument even though the instrument was aligned. This issue is fixed
4.15.1.0	When connecting the instrument to an external monitor, the resolution handling for the connection is improved
4.15.1.0	RTO2000, RTE: In stop mode measurement results are not unnecessarily discarded
4.15.1.0	RTO2000, RTE: The roll mode is not automatically switched off when an X/Y diagram is active
4.15.1.0	RTO2000, RTE: In some cases the remote desktop connection to the instruments did not work correctly. This issue is fixed
4.10.1.0	RTP: The roll mode is not automatically switched off when an X/Y diagram is active
3.70.1.0	The probe group delay is specific for different RT-ZCxxB variants
3.70.1.0	The full offset range of the R&S® RT-ZPR probe is taken into account in Autoset
3.70.1.0	Long term display with time as x-scale was not always displayed correctly with respect to the time axis. This issue is fixed
3.70.1.0	Track export was not saved when multiple waveform export was turned on. This issue is fixed
3.70.1.0	If the trigger is set to "Normal" and Autozero is executed for probes, the trigger was set to "Auto" afterwards. This issue is fixed
3.70.1.0	There were cases when the Autozero for probes modified the offset settings of other channels. This issue is fixed
3.70.1.0	It could happen that a measurement result dialog was shifted out of the visible display area. This issue is fixed
3.70.1.0	When loading a user defined preset with a different language setting than the active language, the firmware crashed. This issue is fixed

1.4 Known Issues

The following table lists the known issues and indicates since which version the issue could be observed:

Since	Function

1.5 Modifications to the Documentation

Revision History:

Date	Release Notes Revision	Changes
21.11.2018	4.15.3.0	Correct handling when manually setting the probe unit "A"
30.10.2018	4.15.2.0	Display of "UncaI" indicator even though instrument is aligned
18.10.2018	4.15.1.0	Common version for RTP, RTO2000 and RTE
15.07.2018	4.10.1.0	Launch version for RTP
17.05.2018	4.0.1.0	Initial version for RTP
05.12.2017	3.70.1.0	Support for Options R&S® RTO-K57and R&S® RTO-K64

2 Firmware Update

Firmware updates for the R&S RTP, R&S RTO2000 and R&S RTE are available as a single download from the Rohde&Schwarz web page <http://www.rohde-schwarz.com>.

The installation file for R&S RTP, R&S RTO2000 and R&S RTE is named "**Setup_Rtx_V4.15.3.0_x64.exe**".

After the update to this firmware version, the instrument will start with preset instrument settings. To check the installed firmware version select "Setup" from the "File" menu and switch to the system tab. The firmware version is shown in the upper left corner of this dialog.

2.1 Preparing the Installation

There are several ways how to update the device after downloading the firmware installation file.

Using a memory stick:

1. Copy the file(s) to a directory of the memory stick and insert the memory stick into one of the USB sockets of the instrument.

Using the remote desktop and copying the installation files to a directory of the instrument:

1. Connect the instrument to your LAN
2. Start the remote desktop on your PC (C:\winnt\system32\mstsc.exe)
3. Enter the TCP/IP address of the instrument that you want to update. Ensure that the "local resources" > "drives" option is selected and press the "Connect" button
4. Login to the instrument (user name: "instrument" and password "894129" by default)
5. Copy the firmware installation file from your PC to a new folder on the instrument
6. You can now access this directory with the installation file from the instrument firmware

Using a network drive:

1. Connect your instrument to your LAN, and establish a connection to one of your servers (ask your local IT administrator for support)
2. Copy the firmware installation file from your PC to a directory on this server
3. You can now access the directory with the installation file from the instrument firmware

2.2 Performing the Firmware Update on the Instrument

The firmware update process is performed with the following steps:

1. Switch the instrument on and wait until the Oscilloscope has resumed operation
2. Ensure that the acquisition mode is not running. If the RUN CONT or the RUN Nx SINGLE key is shining green, press this key to stop the acquisition
3. Press the SETUP key or select "Setup" from the "File" menu at the bottom of the screen
4. Select the "System" tab
5. The selected dialog box contains a box with the title "Select setup for firmware update". Press the Button "Open" within this box. A file selection dialog appears
6. Change the path to the drive and directory which you prepared in the step 2.1 (USB stick directory, remote PC directory or directory on a server) and close the dialog with the "Select" button
7. The installation starts and a new dialog box appears. Press the "Next" button to navigate to the selection of the firmware packages. By default all applications should be installed
8. Press the "Install" button to start the firmware update:
The installation continues and the firmware is stopped. After a few minutes the system restarts automatically.
Depending on the previously installed firmware version, a reconfiguration of the hardware may be required during the first start of the firmware. In this case, a message box is displayed and the update of the FPGA starts automatically. **Do not switch off the instrument during this update!** After the update of the FPGA the instrument performs another instrument restart automatically.
If a special FPGA update is required the instrument must execute a cold boot. In such a case, a message appears on the screen asking to switch off the instrument. Press the "Ok" button and wait until the instrument is completely switched off. As a final step switch on the instrument. The instrument resumes operation.
9. After the firmware update a self alignment is recommended. Select "Self alignment" from the "File" menu. Select "Start Alignment" to start the self alignment procedure.
A message box appears to indicate the running alignment procedure. Wait until this message box disappears. This will take several minutes.

Now the instrument is ready for operation.

2.3 Performing the Firmware Update without a running oscilloscope application

If a firmware update shall be executed without running firmware, the windows explorer can be started. Change the path to the drive and directory prepared in step 2.1. Make a double click on this file and proceed with step 7 to update the instrument firmware.

2.4 Firmware downgrade

A firmware downgrade is handled like a normal firmware installation with the following exceptions:

R&S RTO2000: A firmware downgrade from version 4.15.1.0 or higher to version 3.70 or lower is not supported for instruments with Windows 10.

R&S RTO2000: A firmware downgrade from version 3.50 or higher to version 3.40.1.2 or lower requires a manual restart of the instrument after the automatic finalization of the installation procedure to ensure the correct functioning of the touchscreen.

R&S RTO2000: A firmware downgrade from version 3.30 or higher to version 3.0.1.1 or lower is not supported.

2.5 Installing Firmware Options

The firmware update includes all currently available firmware options. No additional installation is required. A firmware update has no side effects to firmware options already installed.

The instructions in this chapter are only needed, if a firmware option is purchased and needs to be enabled on the instrument.

Enabling Options by Entering Option Key Codes

To activate firmware options, enter a license key for validation. The license key is in the device certificate or delivered as a part of the software package. The process is performed in the following steps:

1. Press the SETUP key. A dialog box appears. Select the "SW options" tab. The selected tab contains a box with the title "Install a new option". There are two ways to install a firmware option:
 - a) If a file including the option key is provided, select "Open" in the box with the title "Install from file". Navigate to the directory containing the option key file. Choose the file and click "Select"
 - b) If an option key number is provided double click on the data entry filed with the title "Enter new option key". A key pad appears. Enter the option key number and press the "Enter" button.
2. After successful validation the message "option key valid" is displayed. If the validation failed, the firmware option is not installed.
3. If more than one firmware option shall be installed, step 1 and 2 needs to be repeated several times.
4. Reboot the device or restart the firmware.

3 Customer Support

Technical support – where and when you need it

For quick, expert help with any Rohde & Schwarz equipment, contact one of our Customer Support Centers. A team of highly qualified engineers provides telephone support and will work with you to find a solution to your query on any aspect of the operation, programming or applications of Rohde & Schwarz equipment.

Up-to-date information and upgrades

To keep your instrument up-to-date and to be informed about new application notes related to your instrument, please send an e-mail to the Customer Support Center stating your instrument and your wish. We will take care that you will get the right information.

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