R&S®RTP, R&S®RTO6 and R&S®RTO2000 Oscilloscopes Release Notes

Firmware Version 5.35.1.0

These Release Notes are for following models of R&S®RTP, R&S®RTO6 and R&S®RTO2000:
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® RTP 134,   order no. 1320.5007K13,
R&S® RTP 164,   order no. 1320.5007K16
R&S® RTP 044B, order no. 1803.7000K04,   R&S® RTP 064B, order no. 1803.7000K06,
R&S® RTP 084B, order no. 1803.7000K08,   R&S® RTP 134B, order no. 1803.7000K13,
R&S® RTP 164B, order no. 1803.7000K16

R&S® RTO6, order no. 1802.0001K04

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

1801.7148.00 | Version 06 | R&S®RTP, R&S®RTO6 and R&S®RTO2000 |
The software makes use of several valuable open source software packages. For information, see the "Open Source Acknowledgment" provided with the product.
The following abbreviations are used throughout this document: R&S®RTP, R&S®RTO6 and R&S®RTO2000 is abbreviated as R&S®RTx

PAD-T-M: 3574.3288.02/04.00/CI/1/EN

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Contents

1 Information on the current version and history

1.1 Version

New functionality

Version	Functions
5.35.1.0	Option R&S®RTP-K553 External Frontend Control: Integration of R&S® External frontend device (R&S®FE110SR)
5.35.1.0	Options R&S®RTP-K136/K137 Advanced Eye Analysis: Software CDR support
5.30.1.0	Support for Option R&S®RTP-K553 External Frontend Control: Integration of R&S® External frontend devices (R&S®FE44S, R&S®FE50DTR, R&S®FE170SR)
5.30.1.0	Options R&S®RTP/RTO-K39 User Defined Math: Integration of user defined python script into the firmware
5.30.1.0	Options R&S®RTP-K136/137 Advanced Eye Analysis: Constant Frequency Algorithm in Hardware CDR
5.30.1.0	Options R&S®RTP-K136/137 Advanced Eye Analysis: Save/Recall of Hardware CDR Information
5.20.1.0	Support for Options R&S®RTP-K136/137 Advanced Eye Analysis
5.20.1.0	Support for Options R&S®RTP-K510/520/530/540/550/560/570/580/590/600 triggering and decoding bundles and R&S®RTP-K500 bus analysis
5.10.1.0	Support for Option R&S®RTP-K73 PCI Express 3.0 serial triggering and decoding
5.10.1.0	Measurement arithmetic: Basic operations between measurements results
5.10.1.0	Common version for R&S®RTP, R&S®RTO6 and R&S®RTO2000 with improved user interface
5.0.1.0	Full HW support of R&S®RTO6
4.80.1.0	Support for Option R&S®RTP/RTO-K134 Advanced Jitter and Noise Analysis
4.80.1.0	Support for Option R&S®RTP/RTO-K58 1000BASE-T1 Triggering & Decoding
4.80.1.0	Option R&S®RTO/RTP-K133: Additional reverse-lock CDR, GUI improvements, interleaved histograms for rising and falling edges, results for OBUJ components
4.80.1.0	Option R&S®RTO/RTP-K40: Added decoding support for RFFE 3.0
4.80.1.0	Added diagram splitter to allow easier resizing of diagrams

4.75.1.0	Option R&S®RTO/RTP-K133: GUI setup and reporting improvements, differentiation of periodic components in extrinsic / intrinsic, export of jitter result graphs, rotary knob support for diagram scaling
4.75.1.0	Option R&S®RTx-K3/K9: Display of more frame fields, stuffed bits and stuffed bits error
4.75.1.0	Clipping indicator for analog channels
4.75.1.0	Horizontal result lines for selected amplitude measurements
4.75.1.0	ZVC Zero offset compensation
4.75.1.0	Support of R&S®RT-Z2T
4.70.1.0	Support for Option R&S®RTP-K11 IQ Software Interface for R&S®RTP134/164
4.70.1.0	Support for Option R&S®RTP-K133 and R&S®RTO-K133 Advanced Jitter Analysis
4.70.1.0	Increase number of math channels from 4 to 8.
4.70.1.0	CSV delimiter and decimal point can be selected by the user for waveform xml and CSV exports
4.70.1.0	Added License Server to allow the firmware and VSE to access licenses in parallel
4.70.1.0	Option R&S®RTP-K40 and R&S®RTO-K40: Update to RFFE version 2.1
4.70.1.0	Option R&S®RTx-K8: Trigger support
4.70.1.0	Option R&S®RTP-K61 and R&S®RTO-K61: Decoding of compliance patterns

Modified functionality

Version	Functions
5.35.1.0	Option R&S®RTP-K136/137 Advanced Eye Analysis: Horizontal range default changed to 2 nanoseconds
5.30.1.0	Option R&S®RTP-K136/137 Advanced Eye Analysis: Time unit default changed to Absolute time (sec) instead of unit interval (UI)
5.10.1.0	Option R&S®RTP/RTO-K133/134 Advanced Jitter and Noise Analysis: Further histograms for Jitter and Noise components
5.10.1.0	Option R&S®RTP-K140/141 HS Serial Pattern Trigger: Specific hardware CDR settings for trigger type "Serial pattern" (remove "Hardware" from software CDR dialog)
5.10.1.0	Option R&S®RTO-K13 Clock Data Recovery: Specific hardware CDR settings for trigger types "CDR" and "Serial pattern" (remove "Hardware" from software CDR dialog)
5.10.1.0	Option R&S®RTx-B6: improved startup behavior in Arbitrary Operation (Single Run)
4.75.1.0	Option R&S®RTO/RTP-K12: Jitter Wizard removed
4.75.1.0	The R&S®RTx-B1 option can be used without a license key
4.70.1.0	License Server Update for option key handling, allowing R&S®VSE usage on the instrument without dongle.

4.70.1.0	Docking of cursor results is the default setting
4.70.1.0	When turning on FFT Math1 is used as default. Previously Math4 was used as default
4.70.1.0	Multiple measurements enabled by default for histogram and statistics
4.70.1.0	Device Footprint includes List of installed Microsoft Patches on the instrument

Improvements

Version	Improvements
5.30.1.0	Option R&S®RTO/RTP-K40: Export of all results is supported.
4.70.2.0	Option R&S®RTO/E-K18 and R&S®RTP-K37: Display of spectrogram diagram is fixed.
4.70.1.0	Scaling of zoom on track signals has been optimized
4.70.1.0	In some cases, acquisition rate dropped when enabling differential/common signals and the vertical scaling was changed. This issue is fixed.

Known issues

Version	Known Issues
5.10.1.0	R&S®RTO6: After first firmware start with 5.10.1.0, a power cycle might be required.
5.10.1.0	Option R&S®RTP/RTO-K133/134 Advanced Jitter and Noise Analysis: Only automatic scaling supported for jitter and noise histograms

2 Modifications to the documentation

The current documentation is up-to-date.

Date	Release Notes Revision	Changes
13.11.2023	5.35.1.0	Common version for R&S®RTP, R&S®RTO6 and R&S®RTO2000
22.06.2023	5.30.1.0	Common version for R&S®RTP, R&S®RTO6 and R&S®RTO2000
14.12.2022	5.20.1.0	Common version for R&S®RTP, R&S®RTO6 and R&S®RTO2000
13.06.2022	5.15.1.0	Initial Version for R&S®RTP-B
16.12.2021	5.10.1.0	Common version for R&S®RTP, R&S®RTO6 and R&S®RTO2000
23.06.2021	5.0.1.0	Initial version for R&S®RTO6
17.12.2020	4.80.1.0	Added Option R&S®RTP/RTO-K134, R&S®RTP/RTO-K58. Added functionality for Option R&S®RTO/RTP-K133
28.05.2020	4.75.1.0	Horizontal result lines, new current probe R&S®RT-ZC31
18.02.2020	4.70.2.0	Option R&S®RTO/E-K18 and R&S®RTP-K37: Display of spectrogram diagram is fixed.
20.01.2020	4.70.1.0	Support for Option R&S®RTP-K133 and R&S®RTO-K133 Advanced Jitter Analysis

3 Firmware update

Firmware updates for the R&S RTx are available as a single download from the Rohde&Schwarz web page http://www.rohde-schwarz.com.

The installation file for R&S RTx is named "**Setup_Rtx_V5.35.1.0_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.

3.1 Operating system support

Windows 7 devices are no longer supported by this version. Please check if a Windows 10 upgrade is available for your device.

3.2 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:

2. Connect the instrument to your LAN

3. Start the remote desktop on your PC (C:\winnt\system32\mstsc.exe)

4. 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

5. Login to the instrument (user name: "instrument" and password "894129" by default)

6. Copy the firmware installation file from your PC to a new folder on the instrument

7. You can now access this directory with the installation file from the instrument firmware

Using a network drive:

8. Connect your instrument to your LAN, and establish a connection to one of your servers (ask your local IT administrator for support)

9. Copy the firmware installation file from your PC to a directory on this server

10. You can now access the directory with the installation file from the instrument firmware

3.3 Performing the Firmware Update on the Instrument

The firmware update process is performed with the following steps:

11. Switch the instrument on and wait until the Oscilloscope has resumed operation

12. 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

13. Press the SETUP key or select "Setup" from the "File" menu at the bottom of the screen

14. Select the "System" tab

15. 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

16. Change the path to the drive and directory which you prepared in the step 3.1 (USB stick directory, remote PC directory or directory on a server) and close the dialog with the "Select" button

17. 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

18. 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.

19. 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.

3.4 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 3.1. Make a double click on this file and proceed with step 7 to update the instrument firmware.

3.5 Firmware downgrade

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

- R&S®RTP / R&S®RTO6 / R&S®RTO2000

    — For devices a downgrade from version 4.70.1.0 or higher to version 4.60.2.0 or lower, the application R&S®License Server must be manually uninstalled from the device.
    — When downgrading from 5.20.1.0 or higher to 5.10.1.0 following steps must be executed to ensure a proper installation:
    - Shutdown RTx firmware
    - Download 5_20_Downgrade.zip from R&S device download website
    - Copy zip-file to device, extract the content and execute DriverInstaller.exe
    - Run FW installer of desired version

- R&S®RTO2000

    — For Windows 10 devices a downgrade from version 4.15.1.0 or higher to version 3.70.1.0 or lower is not supported.
- R&S®RTO6

    — Device cannot be downgraded to versions lower 5.0.1.0
- R&S®RTP

    — A downgrade from version 4.10.1.0 or higher to version 3.70.1.0 or lower is not supported.
    — For devices with serial numbers ≥ 103.000, a downgrade from version 4.60.1.0 or higher to version 4.50.1.0 or lower is not supported.
    — For a downgrade from version 4.80 or higher to version 4.75 or lower it is required to execute the "Downgrade RTx_V4.80.1.0.exe" with elevated privileges. The file can be downloaded on the Rohde & Schwarz R&S®RTP Homepage in the section firmware.

Downgrade restrictions after installing the Oct. 2020 cumulative security update

After installing the cumulative security update KB4580346 or any other update containing this patch, only FW versions newer or equal 4.80 can be used.

3.6   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:

20.   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.

21.   After successful validation the message "option key valid" is displayed. If the validation failed, the firmware option is not installed.

22.   If more than one firmware option shall be installed, step 1 and 2 needs to be repeated several times.

Reboot the device or restart the firmware.

4 Customer support

Technical support – where and when you need it

For quick, expert help with any Rohde & Schwarz product, contact our customer support center. A team of highly qualified engineers provides support and works with you to find a solution to your query on any aspect of the operation, programming or applications of Rohde & Schwarz products.

Contact information

Contact our customer support center at www.rohde-schwarz.com/support or follow this QR code:

Bild 4-1: QR code to the Rohde & Schwarz support page