R&S®Scope Rider RTH
Release Notes
Firmware Version 1.80.3.4

These Release Notes describe the following models and options of the R&S®Scope Rider:
R&S®RTH1004, order no. 1317.5000K04
R&S®RTH1002, order no. 1317.5000K02

New Features of V1.80.3.4:

- None, this is a bugfix release

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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®Scope Rider RTH is abbreviated as R&SScope Rider RTH.

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ROHDE&SCHWARZ

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1 Information on the 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.

New Function of Firmware 1.80.3.4:

Version	Function
1.80.3.4	None.

New Function of Firmware 1.80.3.1:

Version	Function
1.80.3.1	New option R&S®RTH-K38 User scripts
1.80.3.1	Channel invert
1.80.3.1	New measurements area, V PWM, f PWM, V/f PWM

New Function of Firmware 1.70.3.2:

Version	Function
1.70.3.2	User definable probe settings
1.70.3.2	FFT mode: export of FFT data
1.70.3.2	Selectable record length in acquire menu (max, middle, min)
1.70.3.2	Protocol: zoom coupling sets zoom factor to fit selected frame on display
1.70.3.2	Display of horizontal zoom scale when zoom is activated
1.70.3.2	DMM: measuring range ‘Ohm’ added
1.70.3.2	Creation of service reports added to Maintenance/Service menu

New Function of Firmware 1.60.3.3:

Version	Function
1.60.3.3	Option R&S®RTH-K9 CAN-FD Trigger & Decode
1.60.3.3	Option R&S®RTH-K10 SENT Trigger & Decode
1.60.3.3	Logger: user defined slot names
1.60.3.3	Logger: manual and automatic vertical scaling

New Function of Firmware 1.50.4.2:

Version	Function
1.50.4.2	Option R&S®RTH-K18 Spectrum Analysis

Version	Function
1.50.4.2	Option R&S®RTH-K34 Harmonic Analysis
1.50.4.2	Transfer of analog waveform data with remote command CHANnel<m>:DATA
1.50.4.2	File browser functionality extended; copy between SD card and USB flash drive supported; delete supported

New Function of Firmware 1.40.3.8:

Version	Function
1.40.3.8	Option R&S®RTH-K33 Frequency counter
1.40.3.8	FFT mode: displaying frequency domain of selected analog signal
1.40.3.8	Protocol Analysis / Frame Table view for options R&S®RTH-K1, K2 or K3
1.40.3.8	DBC label list support for CAN trigger & decode
1.40.3.8	SCPI commands to query serial protocol decode results
1.40.3.8	Find level functionality to automatically determine threshold level of analog signals for trigger & decode
1.40.3.8	Option R&S®RTH-K200: list of certified countries extended by Taiwan

New Function of Firmware 1.30.3.5:

Version	Function
1.30.3.5	Option R&S®RTH-K3 CAN/LIN Trigger & Decode
1.30.3.5	Roll mode: displaying untriggered signals in time bases between 50 ms and 500 s
1.30.3.5	Option R&S®RTH-K200: list of certified countries extended by India
1.30.3.5	Improved usability of the web interface: file browser, instrument remote control, SCPI device control (some features only available with option R&S®RTH-K201)

New Function of Firmware 1.20.3.4:

Version	Function
1.20.3.4	Waveform export as csv and compressed csv
1.20.3.4	Onetouch documentation functionality
1.20.3.4	Option R&S®RTH-K200: list of certified countries extended by Armenia, Australia, Belarus, China, Japan, Kazakhstan, Kyrgyz Republic, New Zealand and Singapore

New Function of Firmware 1.10.2.10:

Version	Function
1.10.2.10	Option R&S®RTH-K15, History and Segmented Memory
1.10.2.10	Selfalignment for DMM part of RTH1002
1.10.2.10	Option R&S®RTH-K200: Russia added in the list of certified countries
1.10.2.10	Switch off/on of touchscreen by long press of “SHIFT” key
1.10.2.10	Hold function for meter on RTH1004 and DMM on RTH1002. Activation with “RUN/STOP” key

New Function of Firmware 1.0.1.19:

Version	Function
1.0.1.19	Support of 2-channel oscilloscope R&S®Scope Rider RTH1002 with hardware digital multimeter
1.0.1.19	Option R&S®RTH-B1, Mixed-Signal Option
1.0.1.19	Option R&S®RTH-K1, I2C/SPI Serial Triggering and Decoding
1.0.1.19	Option R&S®RTH-K2, UART/RS-232/RS-422/RS-485 Serial Triggering and Decoding
1.0.1.19	Option R&S®RTH-K19, Advanced Triggering
1.0.1.19	Options R&S®RTH-K200 and R&S®RTH-K200US, Wireless LAN
1.0.1.19	Option R&S®RTH-K201 Web Interface Remote Control

New Function of Firmware 0.90.8.30:

Version	Function
0.90.8.30	This is a first release.

1.2 Modified Functions

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

Modifications of Firmware 1.80.3.4:

Version	Function
1.80.3.4	

Modifications of Firmware 1.80.3.1:

Version	Function
1.80.3.1	Protocol decode tables: time resolution increased to higher number of digits
1.80.3.1	Webbrowser, links to web pages updated
1.80.3.1	Load setup file from USB drive via SCPI was only possible after a write setup. This was changed so that load is now possible without a first write.
1.80.3.1	Cursor movement via flywheel, improved behaviour when going from large scale to small scale and vive versa.
1.80.3.1	Offset menu was moved further up in the channel menu for easier access
1.80.3.1	Selfalignment steps for continuity and resistance added for multimeter.

Modifications of Firmware 1.70.3.2:

Version	Function
1.70.3.2	Option CAN FD: default sampling point set from 50% to 66%
1.70.3.2	Probe behavior changed: if probe factor changes, vertical scale is changed
1.70.3.2	Option K34 Harmonic Analysis: increased range of fundamental frequency from 1 kHz to 1 MHz

Version	Function
1.70.3.2	Trigger level is limited to 1 LSB less than max. sample value to permit trigger events on clipped waveforms
1.70.3.2	Scope: show only one waveform if persistence type is set to “Off, Last Acq” and no trigger event occurs during a running acquisition

Modifications of Firmware 1.60.3.3:

Version	Function
1.60.3.3	Scope: show only one waveform or all waveforms after acquisition stops, depending on user configuration in display menu (persistence type)
1.60.3.3	Scope, acquire menu: user configuration to display the waveform only after full acquisition is completed. This increases the available record length.
1.60.3.3	Logger: source and sample rate can be changed during logging
1.60.3.3	Protocol: in frame information view, frame number can be changed by wheel
1.60.3.3	Waveform export: added relative and absolute time stamp in meta data
1.60.3.3	File dialogs: display files with all relevant file extensions

Modifications of Firmware 1.50.4.2:

Version	Function
1.50.4.2	File dialogs: USB mass memory device is automatically selected if available
1.50.4.2	METer<m>:READ? now resets the hardware and all statistical values and performs a measurement before returning the current measurement result. To get the former functionality use METer<m>:FETch? instead.
1.50.4.2	Option R&S®RTH-K200: access in WLAN client mode without password possible (empty passphrase)

Modifications of Firmware 1.40.3.8:

Version	Function
1.40.3.8	Logger: if scope is used as logger source the trigger mode is set to auto if single acquisition was set.
1.40.3.8	Hysteresis level for period based measurements is set depending on vertical scale and bandwidth limit.
1.40.3.8	Precision of sample value in file export has been increased.
1.40.3.8	OneTouch directory can be chosen by selecting a directory in a file path dialog instead of typing the path.
1.40.3.8	Threshold technology of analog is set to user and value is set to zero if a current probe is selected. If a voltage probe is selected again, the prior settings are restored.
1.40.3.8	Option K1, K2 and K3: if the maximum amount of events is exceeded during an acquisition a “gap” event is displayed to visualize that more events where detected but could not be stored.

Modifications of Firmware 1.30.3.5:

Version	Function
1.30.3.5	Configuration of cursors and measurements does not interrupt and restart acquisition anymore. Configuration can be done while acquisition continues running.
1.30.3.5	Display menu: new configuration window for intensity. Can be used to configure the intensity of the displayed waveforms (scope mode only).

Version	Function
1.30.3.5	STOP mode: increased reactivity when changing parameters such as vertical or horizontal settings or zoom.

Modifications of Firmware 1.20.3.4:

Version	Function
1.20.3.4	Option B1, protocol trigger: setting of the thresholds in the protocol menu is now independent of the trigger level that is currently applied.
1.20.3.4	RTH1002: PT1000 platinum temperature sensor was removed from the menu, as this accessory is not supported by the instrument. Only PT100 and PT500 are supported.

Modifications of Firmware 1.10.2.10:

Version	Function
1.10.2.10	Selfalignment extended by DMM section for RTH1002: For RTH1002, scope mode: selection between scope vertical alignment only and all scope and DMM alignment steps (“full”). For RTH1002, DMM mode: selection between DMM alignment only and all scope and DMM alignment steps (“full”).
1.10.2.10	To restore the factory settings, hold down the PRESET key during the boot process. Improved: the PRESET key can be released once the pop-up window appears where the restore has to be confirmed or cancelled. It is not necessary anymore to keep the PRESET button pressed all the time.

Modifications of Firmware 1.0.1.19:

Version	Function
1.0.1.19	Demo K0 enables all K-options and B1 option.
1.0.1.19	Selftest reworked: all visible test steps are able to run; test steps that are not implemented or require user interaction were removed from the list of selectable test steps.

Modifications of Firmware 0.90.8.30:

Version	Function
0.90.8.30	None, as this is a first release

1.3 Improvements

The following tables list the improvements and indicate since which version the issue could be observed:

Improvements of Firmware 1.80.3.4:

since	Function
1.80.3.4	Solved: RTH1002 frequency counter, incorrect measurement results, mainly for 1000 Hz range.
1.80.3.4	Solved: RTH-K38 User Scripting: recall not supported; scpi.init only accepts commands that start with colon ':'
1.80.3.4	Solved: certain types of USB 3.0 16 MB drives were not recognized anymore after booting, when they remained plugged in during the boot process.

Improvements of Firmware 1.80.3.1:

since	Function
1.80.3.1	Solved: save settings does not include offset and technology
1.80.3.1	Solved: configuration of channel settings for offset and technology is set to default after reboot
1.80.3.1	Solved: counter, invalid results for ranges starting with 3
1.80.3.1	Solved: multimeter, bargraph shows wrong scale at 1Mohms manual setting
1.80.3.1	Solved: download of directories that contain zipped files does not work with One Touch
1.80.3.1	Solved: when applying the label list to the decoded frame of the CAN bus the mapping of the labels is wrong
1.80.3.1	Solved: history timestamps deviate from instrument system time.
1.80.3.1	Solved: some CAN bus decoding issues
1.80.3.1	Solved: in voltmeter mode it was sometimes not possible to adjust the vertical range using the keys

Improvements of Firmware 1.70.3.2:

since	Function
1.70.3.2	Solved: wrong trigger position with time bases higher than 20 ms/div
1.70.3.2	Solved: resolution of time in exported waveforms too low
1.70.3.2	Solved: import of DBC files too slow
1.70.3.2	Solved: USB MSC devices with more than one logical unit (card reader) are not detected
1.70.3.2	Solved: DC level changes when switching between 1, 2 or 4 channel operation or different DC level measurement results on different channels
1.70.3.2	Solved: protocol table shows wrong content
1.70.3.2	Solved: file name of saved file differs from name set in “Save as...” dialog
1.70.3.2	Solved: incorrect DC offset of devices with bandwidth lower 500 MHz after reboot
1.70.3.2	Solved: incorrect logging of meter results when auto ranging kicks in
1.70.3.2	Solved: wrong channel indicator of math signal if operation is |S1|
1.70.3.2	Solved: Hann and Hamming window function in FFT and option Spectrum Analysis mixed up
1.70.3.2	Solved: statistics of meter results is reset if auto ranging kicks in in relative mode
1.70.3.2	Solved: device is visible in WLAN networks by IP address only – not by host name
1.70.3.2	Solved: display brightness too low if device is shut down while display was dimmed by power saving mode

Improvements of Firmware 1.60.3.3:

since	Function
1.60.3.3	Solved: power consumption in battery standby mode too high under certain circumstances
1.60.3.3	Solved: stop on violation in mask test mode does not display the first trace with violation when history is on
1.60.3.3	Solved: imprecise mask creation under certain circumstances
1.60.3.3	Solved: statistic in DMM/Voltmeter mode is reset by auto ranging
1.60.3.3	Solved: wrong subnet mask 255.0.0.0 in WLAN access point mode
1.60.3.3	Solved: history player is not displayed in protocol mode
1.60.3.3	Solved: some USB flash drives were not mounted at all or did not work correctly. This was solved by support of USB flash drives without partition table.

Improvements of Firmware 1.50.4.2:

since	Function
1.50.4.2	Solved: Selfalignment failed in certain instruments with version 1.40.3.8 only
1.50.4.2	Solved: Display of decoded UART frame with frame mode set to “Idle Time” may be incorrect.
1.50.4.2	The logic of remote command HCOPy:COLor <BlackWhite> has been corrected.

Improvements of Firmware 1.40.3.8:

since	Function
1.40.3.8	Solved: Position of indicators for digital channels are shown correctly when changing scale or visibility of digital channels.
1.40.3.8	SCPI commands to set minimum and maximum width for outside-range pattern trigger are now available
1.40.3.8	Solved: Self-alignment status dialog now keeps visible after alignment has finished.
1.40.3.8	Solved: Option K3: bus functionality disabled when Option K1 or Option K2 not installed

Improvements of Firmware 1.30.3.5:

since	Function
1.30.3.5	Solved: Option K1, K2 threshold setting: It is necessary to first select the channel and only after that set the threshold. If the threshold is entered before selecting a new channel, the threshold value will not be applied.
1.30.3.5	Solved: For time bases between 500 s/DIV … 50 ms/DIV the instrument seems very slow as it only starts to display the trace after the acquisition has been fully completed and processed by firmware.

Improvements of Firmware 1.20.3.4:

since	Function
1.20.3.4	Options K1, K2 and K19: several problems solved with triggering, also in combinations of K1 or K2 with K19
1.20.3.4	Solved: Option B1: Measurements on digital channels are not supported.
1.20.3.4	Solved: K15, History player cannot be stopped in mode automatic with 5000 segments
1.20.3.4	Solved: Option B1: In stop mode artefacts may be visible on digital channels.

since	Function
1.20.3.4	Some issues with the autoset functionality were solved.
1.20.3.4	Solved: RTH1002, indication of statistics in frequency measurement (min, max, average over all frequencies) may not be correct in some cases
1.20.3.4	Solved: RTH1002/RTH1004 full selfalignment. In rare cases the AB alignment step fails. In this case repeat the full alignment. Typically the second try will pass.
1.20.3.4	Solved: Very rarely, if instrument is switched on and idle for a certain time: instrument reacts very slowly or not at all to keypad and touchscreen operation and needs to be rebooted.
1.20.3.4	Solved: Using Cursor with Math as input channel in combination with zoom is not supported. Combination can be selected, but leads to incorrect behavior of the instrument.

Improvements of Firmware 1.10.2.10:

since	Function
1.10.2.10	Option B1, assignment of channel indicators corrected; user can now move digital channels on the screen
1.10.2.10	Support added on RTH1002: temperature measurement using PT500 platinum sensor
1.10.2.10	Improvement in trigger hysteresis, especially for 10:1 probe settings.
1.10.2.10	Solved: Option K2, UART: the value of the parity bit is not correct
1.10.2.10	Solved: Option K1, I2C bus triggers: trigger types address, data and address and data do not trigger reliably

Improvements of Firmware 1.0.1.19:

since	Function
1.0.1.19	Solved: Very sporadic incorrect trigger on the analog channels
1.0.1.19	Solved: The battery controller consumes very much energy from the battery when the RTH is switched off and disconnected from the mains. Therefore the battery runs empty very quickly.
1.0.1.19	Solved: Screenshot button: if pressed a second time before the pop-up window disappears the instrument will freeze.
1.0.1.19	Solved: Logger does not provide a backup of the log results yet if the RTH is switched off during logging.

Improvements of Firmware 0.90.8.30:

since	Function
0.90.8.30	This is a first release.

1.4 Known Issues

The following tables list the known issues and indicate since which version the issue could be observed:

Known issues of Firmware 1.80.3.4:

since	Function
1.80.3.1	Korean language sub-menu items: some terms are too long and do not fit into the space available, therefore they are truncated.
1.70.3.2	Creation of mask for math signal is incorrect if vertical scale or offset of math operands differ too much. This leads to wrong mask test results.
1.70.3.2	Reference waveforms cannot be saved if a preset has been executed. After loading an existing reference waveform, new reference waveforms can be saved again.

2 Modifications to the Documentation

The current documentation is up-to-date.

3 Firmware Update

3.1 Update Information

The firmware update file for the R&S RTH is a single rsi-file. This is the firmware image for R&S®RTH1004 and R&S®RTH1002

Please transfer the following file to a USB drive: RTH_Update_1.80.3.1.rsi

3.2 Updating the Firmware

Follow these steps to update the instrument firmware:

1. Make sure that the instrument has sufficient battery power or connect the instrument to the mains supply.
2. Insert the USB drive into the USB port of the oscilloscope
3. Press the  key or tap on the “Menu” button and select “Setup”
4. Scroll down to “Firmware Update” > “Open File”
5. In the path menu navigate to the location of the RTH_Update_xxx.rsi file on your USB drive and press “Select”
6. Confirm with “Yes” the start of the update process.
7. Wait until the update process is finished. This may take up to 15 minutes. The instrument automatically reboots itself once the update process is finished.

Interruption of the power during the update process can make the instrument unusable!

4 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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