

Release Note

R&S® IQR20
R&S® IQR100

Firmware Version 4.10.05

Status: RELEASED

Date: 2016-04-18



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1 Scope

This release note is a summary of IQR firmware version 4.10.05. It contains important last minute information about this release.

2 Revision History

Date	Release Note Revision	Changes
2016-04-18	4.10.05	bug fix release
2016-01-11	4.10.04	new features release
2015-11-09	4.00.21	bug fix release
2015-03-02	4.00.07	bug fix release
2014-12-12	4.00.06	new features release
2014-05-09	3.50.07	new features release
2014-03-13	3.10.12	bug fix release
2013-12-19	3.10.02	new features release
2013-11-07	3.00.18	new features release
2013-08-06	2.20.00	new features release
2013-06-27	2.10.09	new features release
2013-03-26	2.02.02	new features release
2012-06-29	2.01.13 BETA	bug fix BETA release
2012-04-24	2.01.03	new features release
2011-12-05	1.04.006	update and bug fix release
2011-07-04	1.03.001	update and bug fix release
2011-02-18	1.02.002	bug fix release
2011-01-19	1.02.001	update and bug fix release
2010-12-07	1.01.002	first customer firmware release

3 New Features

Version	Function
4.10.05	Bugfix release (see section "Eliminated Problems")
4.10.04	New IQR-B138F – 3.8 Tbyte SSD Option - 87.5MSa/s (99.5MSa/s with AHCI enabled – see section 5 AHCI Update) RAW Export now with 'Partial' Option, allowing an export of a portion of a file into raw format
4.00.21	Automatic file name creation: <ul style="list-style-type: none"> • If user is in Recorder mode and starts recording without specifying file name, IQR creates own file name based on time stamp • Example: "20150813_114559" Block Recording from "Unknown Device": <ul style="list-style-type: none"> • If user is in Recorder mode and wants to start a recording from a "Unknown device" recording is blocked and user is notified via a message box • Reason: a recording from a "unknown device" cannot be exported due to security reasons, so user shall take care of proper connection of Frontend and IQR IQR-K2: Support for R&S BTC
4.00.07	Bugfix release (see section "Eliminated Problems")
4.00.06	IQR-K2: Support for R&S SGT100A Expert Mode is removed from GUI, now always "on" ARB Mode is not available any more IQR FW now supports Record&Replay speed limits based on the source or destination: <ul style="list-style-type: none"> • Network Attached Streaming: 22MSa/s • HDD – IQR-B020: 20MSa/s • SSD – IQR-B110: 81MSa/s • SSD – IQR-B1x9F: 87.5MSa/s (99.5MSa/s with AHCI enabled – see section 5 AHCI Update)
3.50.07	IQR-K108 (1517.5076.02) Network Attached Streaming IQR-K2 now with AGC support for R&S SFC (SFC FW Version 2.90 or newer required) IQR FW now supports Record&Replay speed limits based on the source or destination: <ul style="list-style-type: none"> • Network Attached Streaming: 22MSa/s • HDD – IQR-B020: 20MSa/s • SSD – IQR-B110: 81MSa/s • SSD – IQR-B1x9F: 87.5MSa/s
3.10.12	Bugfix release (see section "Eliminated Problems")
3.10.02	IQR-K104 (1517.5182.02) Level accurate record & replay of RF Signals to support AGC IQR-K1 with additional possibility to activate the AGC functionality of the TSMW (FW version 1.15 or newer required)

3.00.18	<p>Support for new IQ Stream Modul (1513.4869.02) with 4Gb RAM and 2nd Digital IQ Out</p> <p>IQR-K107 SW Option (1517.5060.02) to enable 2nd Digital IQ Out</p> <p>IQR-U107 Upgrade Option (1517.5118.02) to upgrade from IQ Stream Module with one Digital IQ Out (1513.4852.02) to new IQ Stream Modul (1513.4869.02), including IQR-K107</p> <p>Center Frequency Information is now stored in data file</p> <p>FPGA Version 01.04.04</p>
2.20.00	<p>IQR-B119F SSD Option (1513.4723.19)</p> <p>IQR memory pack 1,9 Tbyte (SSD)</p> <p>High speed and rugged solid state memory</p> <ul style="list-style-type: none"> - high data rates, max. 400 Mbyte/s - mobile use (e.g. for drive tests) <p>FPGA Version 01.04.03</p>
2.10.09	<p>IQR-K2 (Generator Control): added</p> <p>IQR-K2 & IQR-K1 remote control via SCPI commands added</p> <p>User defined GPS update rate</p> <p>FPGA Version 01.04.02</p>
2.02.02	<p>recording and playback speed increased to 75MSa/s</p> <p>IQR-B109F SSD Option</p> <p>IQR-B020 HDD Option</p> <p>FPGA Version 01.04.02</p>
2.01.13 BETA	FPGA Version 01.02.150
2.01.09 BETA	<p>GPS update rate settings controllable through GUI (see below)</p> <p>FPGA Version 01.02.90</p>
2.01.03	<p>IQR-K105 (Multiplexing) : added</p> <p>Spectrum display for player and recorder added</p> <p>FSW support added</p> <p>FPGA Version 01.02.90</p>
1.04.006	<p>IQR-K1 (TSMW Control) : added</p> <p>IQR-K103 (GPS MAP): added. Replaced Google Maps (documented in the users manual) by OpenStreetMap</p> <p>IQR-K101 (Import/Export) : import and LAN drives added.</p> <p>set bookmarks in recorder added</p> <p>goto bookmarks in player added</p> <p>info interface actions enhanced</p> <p>progress bar enhanced</p> <p>FPGA Version 01.01.12</p>

1.03.001	<p>IQR-K101 (Import/Export) : Export and Archive functions to USB storage device added</p> <p>IQR-K102 (GPS Meta Data) : USB GPS navigation data logger added</p> <p>progress bar added</p> <p>goto function added</p> <p>master / slave mode added</p> <p>resolution of player sample rate increased</p> <p>time display added</p>
1.02.002	no new features
1.02.001	<p>added DIG IQ Info Interface.</p> <p>The instrument name and serial number will be shown on successful detection at the "Source" (Recorder) or "Destination" (Player) block</p>
1.01.002	first customer firmware release

4 Installation instructions

To install an R&S IQR firmware update,

1. Download a firmware file with the extension *.IQR on your computer and copy it to a USB stick.
2. Power down the R&S IQR.
3. Insert the stick into any of the master USB connectors on the front or rear panel of the R&S IQR.
4. Power up the R&S IQR again and wait for the firmware selection dialog.



figure 1 : IQR firmware installation

5. **Firmware selection:** if there is only one firmware file on your memory stick, it will be shown already highlighted in the list. If there are multiple firmware files on your USB stick or if you have connected more than one USB stick containing firmware files, all different firmware versions will be shown in the list. Select the firmware you want to install.
6. Tap "Install" to continue the update process. Otherwise tap "Cancel" to quit the update and launch the currently installed firmware version.
7. A warning will appear to prevent you from losing your own device settings. If you have already saved your configuration or if you want to return to default values, tap "Install" to proceed to the firmware update. Otherwise tap "Cancel" to quit the update and launch the currently installed firmware version.
8. The firmware update process will take a few minutes. After a successful firmware update, the new firmware version will automatically be started.
9. Remove your USB stick.
10. For Sample Rates higher than 87.5MSa/ see section 5 AHCI Update

5 AHCI Update

The IQR100 is able to record with sample rates of up to 99.5MSa/s. To achieve this, the IQR-B1x9F has to be installed and AHCI transfer mode has to be enabled. Please note, for Sample Rates below 87.5MSa/s or IQR20 this is not needed.

In the following the AHCI enabling process is described.

Procedure

- I. install IQR Firmware 04.00.06 or later
- II. connect a USB keyboard and mouse to IQR
- III. open windows explorer ("windows key" + "e" or "ctrl" + "ESC") and navigate to D:\FIRMWARE\AHCI
- IV. double-click on ahci-activation.bat
(update takes about 1 minute)
- V. IQR will reboot automatically
- VI. after reboot a post-installation automatically runs for about 10 seconds
- VII. IQR Firmware starts normally

Troubleshooting

"NTLDR is missing" message at boot

press CTRL+ALT+DEL to reboot
press DEL several times to enter bios setup
navigate to "advanced bios features -> boot options -> hard disk boot priority" and
move system disk up to top of list
save+exit

bluescreen at boot

press CTRL+ALT+DEL to reboot
press DEL several times to enter bios setup
navigate to "integrated peripherals -> onchip IDE device -> SATA mode" and change
to "IDE"
press F10 (save+exit)
after reboot repeat the one-click activation procedure

6 Eliminated Problems

Version	Eliminated Problems
4.10.05	<ul style="list-style-type: none"> prevent deadlock while streaming (for IQR-NAS) change default IP address for NAS from 192.168.0.250 to 192.168.1.250
4.10.04	
4.00.21	<ul style="list-style-type: none"> Bugfix for "Crash on *.rst while replay" Bugfix for "Crash on long SCPI" Bugfix for "IQR bootup took long with no IQR-NAS Connection" Bugfix for "K2 fix for second channel initialization on second channel of SMW" Bugfix for "GUI hang if timing between start & stop streaming is too short (a few seconds)" Bugfix for "Export: workaround for mixed map3/map1 single channel recordings from TSMW" Bugfix for "Long start up time if instrument has K108 & not physically connected to IQR-NAS" Bugfix for "IQR-NAS: dynamic check doesn't get updated ip address results in ping failure" Bugfix: change channel name (text only) from CH4 to CH0 in remapping mode (channel 4 in MAP3 file)
4.00.07	<ul style="list-style-type: none"> Bugfix for "SDRam Faulty" Root Cause
4.00.06	<ul style="list-style-type: none"> Bugfix for IQR-K1 when TSMW has option TSMW-K71 "Error:connection attempt was not successful: Frontend 2 does not exist" New structure for data buffering introduced, enabling higher device speed and less buffer underruns
3.50.07	
3.10.12	<ul style="list-style-type: none"> Bugfix for "Buffer Underrun" Problems
3.10.02	<ul style="list-style-type: none"> Fixed IQR-K2 update problems IQR-K2 now enables spectrum graphics support on R&S SMBV "Goto" Dialog is now working with IQR-K2
3.00.18	<ul style="list-style-type: none"> IQR-K1 & IQR-K2 controlled via SCPI are now in a "remote"-Mode, meaning there are no more messages boxes on IQR GUI Some SCPI commands were fixed, old commands are still working but not in documentation any more LAN export errors fixed IQR Master/Slave mode now working under SCPI
2.20.00	<ul style="list-style-type: none"> Replay on SMBV stops unintentionally in rare cases TSMW Channel 4 problem wrong SCPI cmd behaviour: OUTP:PLAY:WAV:CHAN4:SEL OFF
2.10.09	<ul style="list-style-type: none"> Usage of TVR290 based channel rate instead of measured clock for replay sampling rate when opening an IQ file Recording from TSMW Frontend 2 stops unintentionally Swapping of drive letters is now fixed by the FW (reboot needed)
2.02.02	<ul style="list-style-type: none"> Player very rarely sends about 34 MSa DIG IQ data twice.
2.01.13 BETA	
2.01.09 BETA	<ul style="list-style-type: none"> on screen keyboard shows up on FW start export / archive with no destination filename creates a file in C:\... GPS position entrys missing in wsm file. GPS sample counter stamp more accurate and more frequently The PLAY or REC buttons are inactive when the trigger source is set at EXTERNAL or IQ LEVEL trigger.

Version	Eliminated Problems
1.04.006	<ul style="list-style-type: none"> • free disk space now checked before installation starts • occasionally incomplete detection of source instruments at the DIG IQ input • export permissions occasionally wrong in file header
1.03.001	<ul style="list-style-type: none"> • If Player and Recorder file is the same, sample count and sample rate of next record was incorrect • Sine and rectangle ARB generator did not save resulting file correctly
1.02.002	<p>Record / Play</p> <ul style="list-style-type: none"> • If record and play happen at different timezone settings, data will be corrupt
1.02.001	<p>General functions</p> <ul style="list-style-type: none"> • Instrument occasionally suspends playing or recording unsolicited. • SW crashes for certain key combinations in recording filename entry. <p>ARB</p> <ul style="list-style-type: none"> • The ARB sample counter only starts counting after a previous streaming session has been executed • ARB session must be followed by "Set to Default", else next recording session records corrupted data. <p>Record</p> <ul style="list-style-type: none"> • Last two blocks of a recording session occasionally contain zeroes or invalid data • Recording at slow sample rates can run into timeout on STOP • Recorded sample rate written to file header occasionally wrong. • Recording under the same file name is no longer possible when a previous recording under that name occupies the entire space on the memory pack. The instrument reports an "Insufficient disk space" error in that case. <p>Info Interface</p> <ul style="list-style-type: none"> • If the source or destination device doesn't support the I/Q info interface, then the name of the devices will be not displayed (e.g. TSMW, SFE)
1.01.002	initial version

7 Known Problems

7.1 Overview

The following table lists the known problems in firmware version 4.10.05

Version	Function
4.10.05	<p>also watch chapter 7.3 Version Compatibility Issues below</p> <p><u>Installation</u></p> <ul style="list-style-type: none"> If installation of a new FW stops with “error 1603”, disk C:\ has not enough space left. → you may delete all contents of the folder c:\windows\downloaded installations → check for *.wva / *.wvd / *.wvh files which have been exported / archived to a wrong location, and delete / move these files. <p><u>Instrument start</u></p> <ul style="list-style-type: none"> Internal hardware detection at FW start fails occasionally. → Restart the instrument. <p><u>General functions</u></p> <ul style="list-style-type: none"> Text input in the file manager and save/recall dialog needs an external keyboard After input of text or numbers always press ENTER. Then tap OK (this is also needed for the on screen keyboard) File select box occasionally initialises with wrong drive letter. Always confirm drive letter selection by watching the drive letter (see 7.2 File Selection Issues) Exchanging the disk option may result in bad drive assignment (see 7.4 Drive Letter Assignment) <p><u>Trigger</u></p> <ul style="list-style-type: none"> Trigger source DIG IQ GP for recording not implemented Gated Trigger only runs a REC / PLAY after the first active edge and until the first inactive edge. Player data is corrupt after the first retrigger pulse in retrigger mode <p><u>Digital IQ In / Out</u></p> <ul style="list-style-type: none"> occasionally the source or destination instrument detection fails. → Remove the Digital IQ cable. Ensure that the IQR is not in “armed” state. Plug in the Digital IQ cable.

	<p><u>Player / Streaming</u></p> <ul style="list-style-type: none">• playback of short files at high sample rates in single trigger mode (playback time less than 7 seconds) may result in continuous playback or does not stop after the first playback cycle.• files created with FW versions 1.3.1 or older show 10 bit resolution in tooltip and IQ Channels dialog box, but will be played correctly. <p><u>Recorder</u></p> <ul style="list-style-type: none">• spectrum display very rarely corrupt before and after recording runs. → Power cycle the instrument to fix.• If the source instrument is a FSV, never stop the DIG IQ interface on the FSV while IQR is in “armed” state, else IQR’s input PLL will get unlock and data will be corrupt. <p><u>Option IQR-K103</u></p> <ul style="list-style-type: none">• if streaming playback switches to another data file with no GPS meta data, the old track will still be active. → Close the map application and reopen to delete the track.• track not shown correctly on GOTO or continuous playback.
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7.2 File Selection Issues

Take care on the drive letters. Occasionally, the initial drive letter is wrong in the file selection dialog box. You might see for example the following import destination file dialog.

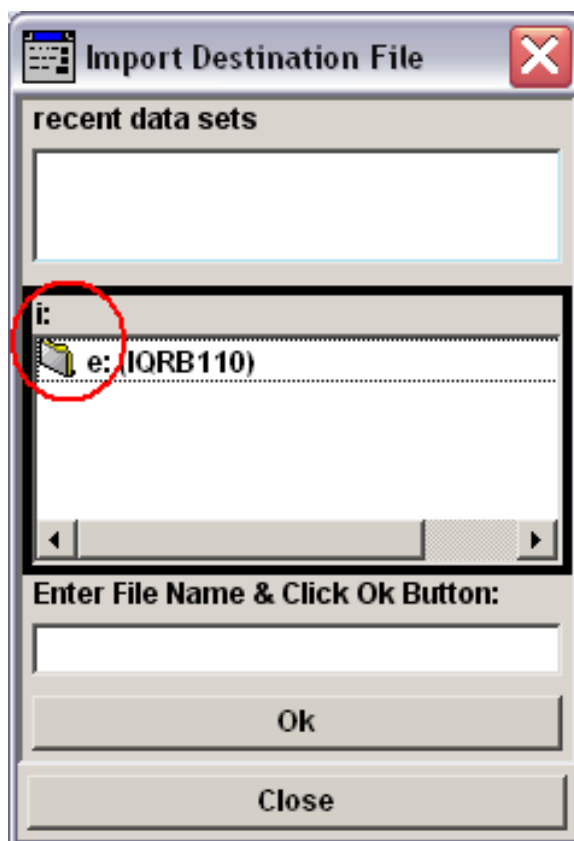


figure 2 : file select dialog

If you would enter a file name now and confirm entry with ENTER key, the file would be written to drive i: instead of drive e:

Solution :

Double tap or double click the e: (IQRB110) to select drive e: The i: shall change to e:.. Then enter a file name in the line below, and press ENTER to confirm the file name.

7.3 Version Compatibility Issues

- File extensions for archive and exported files have changed. To import files archived or exported by version 1.03.001, the file extension has to be changed manually.

Mode	old file extension	new file extension
archive	*.wv	*.wva
raw (header)	*.wv	*.whv
raw (data)	*.dat	*.wvd

- Files recorded with versions before 1.03.001 can not be exported in raw format

7.4 Drive Letter Assignment

If a new disk option is installed in an IQR, it may happen that the drive letter assignment by Windows is not executed properly. The IQR then can't find the disk option correctly and the firmware can't load files.

Drive letters "E" and "G" must be on Disk 0, "F" and "H" must be on Disk 2.

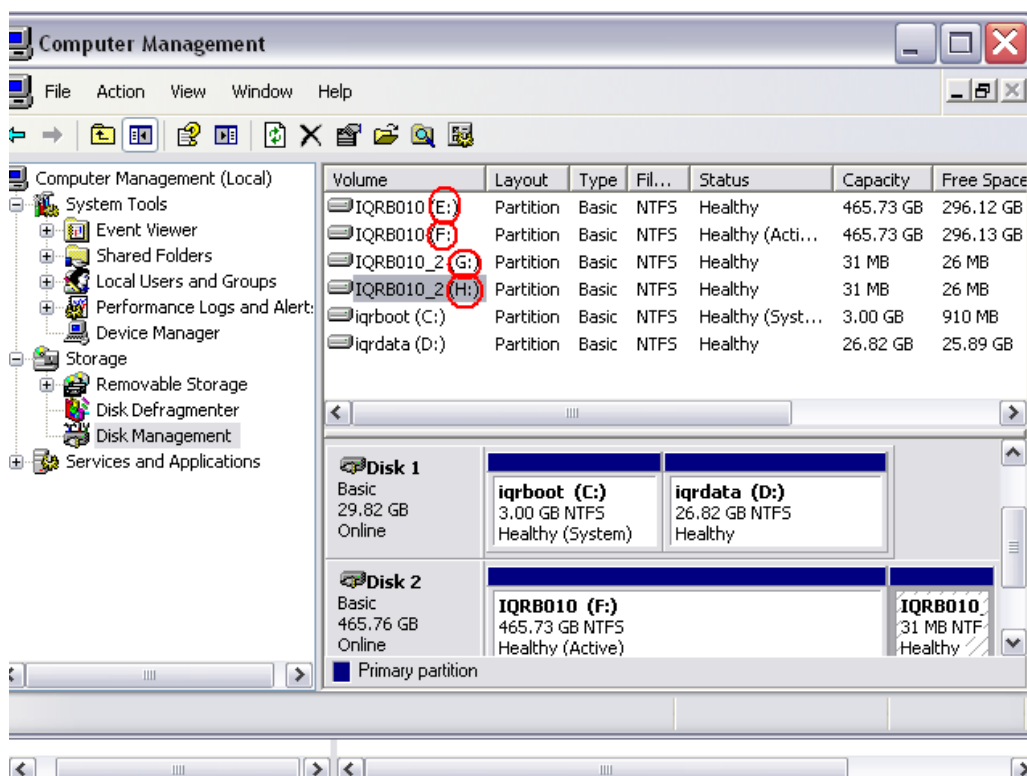


figure 2 : correct driver letter assignment

To fix this error, use the windows disk management tools. Execute the following steps :

- connect USB keyboard and USB mouse
- terminate the IQR application (ALT-F4)
- open Windows explorer (Windows-key and E pressed simultaneously)
- right click on "instrument <deviceid>"
- select "Manage"
- click "Storage→Disk Management"
- right click the wrong drive letter
- select "Change drive letter and paths"
- select any unused drive letter (e.g. Z)
- confirm the windows warning message with "OK"
- repeat this step for the other wrong driver letters, using unused drive letters as preliminary letters

- finally assign the correct drive letters to the partitions
- exit the Computer Management tool.
- Power down the IQR
- Power on again.

After that, *.ws1 files will reside on drive E and *.ws2 files will reside on drive F

7.5 Special Update Procedure for FW 1.01.002

To run the update from the first official firmware version 1.01.002, a special handling is needed. Please follow the instructions below.

To update from any newer versions, use the method via USB memory stick as described in the users manual.

NOTE : Always run “Update FPGA” from the IQR Main Menu after any SW update / downgrade

Preparation

- 1) copy the new FW file “Firmware_xx.yy.zz.iqr” to a USB memory stick
- 2) start the IQR
- 3) connect a mouse, a keyboard, and the USB memory stick to USB ports
- 4) wait until the IQR prompts you to run the update
- 5) Cancel this update dialog box
- 6) wait until the IQR firmware has started completely

Terminate the IQR Firmware

- 1) Press CTRL-ALT-DEL keys simultaneously
- 2) Click “Task Manager”
- 3) Select the “Applications” tab
- 4) End the application “STREAM”

Deinstall current FW manually

- 1) Click Start→Control Panel
- 2) Click “Add or remove programs”
- 3) browse to R&S IQR Firmware
- 4) click “Remove”
- 5) browse to R&S Software Platform ...
- 6) click “Remove”
- 7) close “Add or Remove Programs” and the “Control Panel”

delete Registry keys.

- 1) press Windows key and R simultaneously
- 2) enter “regedit”
- 3) browse to HKEY_LOCAL_MACHINE\SOFTWARE
- 4) delete Rohde&Schwarz key

unzip new firmware to D:\firmware

- 1) open the windows explorer (Windows key + E)
- 2) browse to the “Firmware_xx.yy.zz.iqr” file containing the new firmware to be installed now on the USB memory stick
- 3) copy “Firmware_xx.yy.zz.iqr” to D:\temp
- 4) rename the file on D:\temp to “Firmware_xx.yy.zz.zip”
- 5) double click “Firmware_xx.yy.zz.zip”
- 6) copy all files and folders to D:\firmware, overwrite existing files

install new firmware

- 1) go to IQRSW folder in D:\firmware

- 2) double click setup.exe. Answer all questions with the default answer, and accept the licence agreement
- 3) delete all files in D:\temp except the folder WPDNSE
- 4) remove the USB memory stick
- 5) browse to C:\Program Files\Rohde&Schwarz\IQRFirmware
- 6) run two times "IQRRegisterComponents.cmd" (two double clicks)

Installation finished. You may start the IQR Firmware by a double click on the Icon in the upper left corner of the desktop or reboot the instrument

8 Contacting Customer Support

For queries regarding technical aspects of our products, contact our customer support at <http://www.customersupport.rohde-schwarz.com>.

Contact information is also provided on the documentation CD-ROM.