

R&S®FSVA3000/FSV3000

Signal and Spectrum Analyzer

Release Notes

Firmware Version 2.10

These Release Notes apply to the following models of the R&S®FSV3000 and R&S®FSVA3000 Signal and Spectrum Analyzers:

R&S®FSV3004	order no. 1330.5000K04
R&S®FSV3007	order no. 1330.5000K07
R&S®FSV3013	order no. 1330.5000K13
R&S®FSV3030	order no. 1330.5000K30
R&S®FSV3044	order no. 1330.5000K43
R&S®FSV3050	order no. 1330.5000K50

R&S®FSVA3004	order no. 1330.5000K05
R&S®FSVA3007	order no. 1330.5000K08
R&S®FSVA3013	order no. 1330.5000K14
R&S®FSVA3030	order no. 1330.5000K31
R&S®FSVA3044	order no. 1330.5000K44
R&S®FSVA3050	order no. 1330.5000K51

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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®FSVA3000/FSV3000 is abbreviated as R&S FSVA3000/FSV3000.



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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 functions of firmware V2.10:

Version	Function
V2.10	Supports R&S FSV3-B271 Analog Baseband Inputs with 200 MHz analysis bandwidth for I and for Q Input each. Available in IQ Analyzer and R&S FSV3-K91 (WLAN) application.
V2.10	Supports new software option R&S FSV3-K96: Vector signal analysis software for generic OFDM signals.
V2.10	Supports display and control of video bandwidth Lin/Log State in the user interface.
V2.10	Additional 51 kHz, 150 kHz, 250 kHz, 400 kHz, 450kHz 3dB Gauss filter available for spectrum analyzer mode. These bandwidths can only be selected by entering the numeric values directly.
V2.10	Supports R&S FS-SNS90/SNS110: Smart noise sources for noise figure and gain measurement.
V2.10	Supports selection of input optimization Low Noise or Low Distortion. This setting is available for R&S FSV3-B271 Analog Baseband Inputs and for R&S FSV3-B200/B400 Bandwidth Extension.
V2.10	R&S FSV3-K7: Supports Online demodulation signal output to Video Out connector.
V2.10	R&S FSV3-K18: New feature: FFT parameters for all frequency domain displays are now configurable.
V2.10	R&S FSV3-K40: Supports Online IQ mode.
V2.10	R&S FSV3-K91: Supports "Smart Auto Level" for improved EVM performance at center frequencies < 7.5 GHz. FSV3-K91AX/BE: Supports 'AM/AM', 'AM/PM', 'AM/EVM'. FSV3-K91/N/AC/N/AX/BE: Supports 'Amplitude Tracking vs Symbol' result. FSV3-K91/N/AC/N/AX/BE: 'Tracking/Channel Estimation' dialog provides 'I/Q Mismatch Compensation Per Subcarrier' feature.
V2.10	R&S FSV3-K144/-K145/-K147/-K148/-K171/-K175: Supports "Smart Auto Level" for improved EVM performance for FR1 3GPP test models. Supports more than 8 component carriers in multi carrier ACLR.

Evaluates Bit/s in bitstream.

K148: N_ID^M for the sequence generation of PDSCH/PUSCH DMRS.

K171: Automatic determination of capture time in FR2-2.

K171: UL FR1: EVM calculation for reported transient period.

K175: Supports test model 3.2.5.1.1 in UL.

V2.10	R&S FSV3-K553: Supports LO IN/OUT settings of external frontend.
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New functions of firmware V2.00:

Version	Function
V2.00	Supports preamplifier (1330.4049.49) for R&S FSV3050 and R&S FSV3050.
V2.00	R&S FSV3-K553 External frontend control: Support for manual attenuation setting of the base instrument analyzer with active external frontend input. Firmware version V2.00 includes the external frontend microcontroller firmware V2.1.15. Please note: If the firmware versions installed on the analyzer and the external frontend are incompatible, connection to the external frontend is rejected. In this case, update the external frontend firmware (Input Source Config > External Frontend > Global Config > FW Update dialog). Supports new revisions of External Frontend frontend boards: <ul style="list-style-type: none"> FE50DTR_Frontend A/B, part number 1347.4476.02, revision >= 4.00 See table "Setup – System Config -> Hardware Info", column "Rev".
V2.00	Supports new software options: R&S FSV3-K175: O-RAN measurements in line with O-RAN.WG4.CONF.0-v05.00. R&S FSV3-K8: Bluetooth®/EDR measurements. R&S FSV3-K60P: Transient phase noise measurements.
V2.00	R&S FSV3-K144/-K145/-K147/-K148/-K171: Signal demodulation and analysis in line with TS38.211 V17.3.0. Time Alignment, Transmit On/Off Power, ACLR, SEM measurements in line with TS38.141-1/2 V17.6.0, TS38.521-1 V17.5.0 and TS38.521-2 V16.12.0. PN sequence can optionally be generated for only DL symbols. Evaluation of maximum crest factor over multiple frames. Visualization of boosted / de-boosted allocations in constellation diagram. Allocation specific color coding in constellation diagram is now supported.
V2.00	R&S FSV3-K18: Amplifier measurements: New results "AM/AM and AM/PM curve width peak-peak".
V2.00	R&S FSV3-K70: LSB first bit ordering is now supported as demodulation parameter.

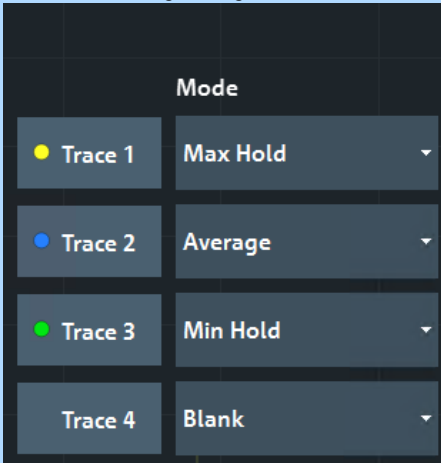
New functions of firmware V1.90:

Version	Function
V1.90	Supports new models for 50 GHz: <ul style="list-style-type: none"> R&S FSV3050 R&S FSV3050

V1.90	Supports option R&S FSV3-B54G "Frequency extension 54GHz" for R&S FSV3050.
V1.90	Supports option R&S FSV3-VSE "Local VSE Enabler".
V1.90	Supports R&S FS-SNS18 smart noise source for noise figure and gain measurements.
V1.90	Spectrum analyzer mode: Additional 8 MHz 3dB Gauss filter available for spectrum analyzer mode. The 8 MHz bandwidth selection needs numerical entry.
V1.90	R&S FSV3-K18: New features "Power Servoing" and "Detailed MSE".
V1.90	R&S FSV3-K106: Supports save & load user defined sets Supports NB-IoT downlink test model (N-TM) Supports bitstream result display with BER results Added NPDSCH settings
V1.90	R&S FSV3-K171: 5G NR R17 extension for uplink/downlink measurements. Supports frequency range FR-2-2 (FR2-2 Channel bandwidth; 480 kHz and 960 kHz for BWP, SS/PBCH blocks, PRACH; enhanced PUCCH formats 0/1/2/4). 1024 QAM modulation. 35 MHz and 45 MHz channel bandwidth. 3GPP test models 2b and 3.1b according to TS38.141-1 V17.5.0. R&S FSV3-K144/-K145/-K147/-K148: Signal demodulation and analysis in line with TS38.211 V17.1.0. Time alignment, transmit on/off power, ACLR, SEM measurements in line with TS38.141-1/2 V17.5.0, TS38.521-1 V17.4.0 and TS38.521-2 V16.11.0. BWP specific filtering. Multi numerology in uplink.
V1.90	R&S FSV3-K553 "External frontend control": Shows "IFCorr" in info bar, if external frontend IF cable correction is active.

New functions of firmware V1.80:

Version	Function
V1.80	Spectrum analyzer mode: Additional 6 MHz 3dB Gauss Filter available for spectrum analyzer mode. The 6 MHz bandwidth selection needs numerical entry.
V1.80	Spectrum analyzer mode: Additional unit "dBm/Hz (Power)" available.
V1.80	CCDF measurement: Additional control "Normal Distribution On/Off" to show/hide the normal (Gaussian) distribution trace indication.

V1.80	<p>The "Trace Config" dialog indicates in addition the trace color of the active traces.</p> 
V1.80	B10: The firmware additionally supports the signal generator R&S SMM100A.
V1.80	<p>I/Q Analyzer: New result window "Phase vs Time" (unit rad) is available.</p>
V1.80	<p>R&S FSV3-K18: New features in FSV3-K18M – Hammerstein model and application of memory polynomial model to any given waveform. New feature in FSV3-K18D: Direct DPD now also available without active generator control.</p>
V1.80	R&S FSV3-K30: SCPI command for frequency readout added.
V1.80	R&S FSV3-K70: New mappings "DVB_RCS2" for $\pi/2$ -BPSK, QPSK, 8PSK and 16QAM.
V1.80	R&S FSV3-K70: Support for DVB-S2X super frame measurement added in DVB-S2(X) configuration tool.
V1.80	R&S FSV3-K100/-K104: New 1024QAM test models (E-TMs 2b and 3.1b)
V1.80	<p>R&S FSV3-K144/-K145/-K147/-K148: Signal demodulation and analysis in line with TS38.211 V17.0.0. Time Alignment, Transmit On/Off Power, ACLR, SEM measurements in line with TS38.141-1/2 V17.4.0, TS38.521-1 V17.3.0 and TS38.521-2 V16.10.0. Time alignment error measurement supports intra-band contiguous carrier aggregation. K147: Improved measurement speed by advanced parallel processing. K147: Capture mode "Tx only".</p>
V1.80	R&S FSV3-K147: New remote command to query all ACLR/SEM results at once.
V1.80	<p>R&S FSV3-K553 "External Frontend Control": Support for "Frequency Band Config" Auto Mode.</p>
V1.80	R&S FSV3-K980: Support of custom utilizations and custom device history entries.

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 V2.10:

Version	Function
V2.10	R&S FSV3-K18: Additional synchronization step "2nd stage Synchronization" synchronizes even in sparsely allocated conditions.
V2.10	R&S FSV3-K18M: Memory polynomial coefficients: scaling changed.
V2.10	R&S FSV3-K54: The status bar warning "Increase sweep points" is now displayed if less than 2 sweep points cover the resolution bandwidth. 2 sweep points within the resolution bandwidth is still according to EMI standards. The limit has former been at 3 sweep points.
V2.10	R&S FSV3-K144/-K145: For multi carrier measurements, the calculation of the nominal channel spacing was adapted according to 38.104 V17.7.0. For MC ACLR / CACLR / MSEM, the SCS input setting has been removed and the sub-block gap calculation was adapted accordingly.
V2.10	R&S FSV3-K145: In UL TP, the value range of the decoding parameter I_MCS is extended.
V2.10	R&S FSV3-K171: For FR2-2, the default value for the number of slots per frame to analyze is adapted to 80 according to 38.141-2 V17.9.0.

Modifications of firmware V2.00SP1:

Version	Function
V2.00SP1	Modified YIG preselector centering algorithm for production reasons.

Modifications of firmware V2.00:

Version	Function
V2.00	Measurements in FFT Mode have been optimized: especially measurements with larger spans are significantly faster now.
V2.00	R&S FSV3-K171: Updated available number of resource blocks per SCS and bandwidth part for FR2-2 according to 38.101-2 v17.6.0.
V2.00	R&S FSV3-K70: Predefined digital standards for Bluetooth® now set the bit ordering to LSB first.
V2.00	Updated NGINX to version 1.20.2.

V2.00	R&S FSV3-K144: For NR-TM 3.3 and 3.2, the n_RNTI=0,2 PDSCH allocation is no longer taken into account for the EVM calculation.
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Modifications of firmware V1.90:

Version	Function
V1.90	R&S FSV3-K144: The preamplifier can now be configured via the amplitude softkey menu.
V1.90	Detailed version information of the operating system is now displayed in the "Versions + Options" dialog.

Modifications of firmware V1.80:

Version	Function						
V1.80	The trace unit conversion for unit dBm/MHz now takes the noise bandwidth into account. In earlier firmware versions the pulse bandwidth was used instead.						
V1.80	Continuous Gating: The maximum "Period Count" has been increased from 1023 to 65535.						
V1.80	The date format has changed to "YYYY-MM-DD". Hint: The behavior of the remote commands "SYST:TIME?" and "SYST:DATE?" is not affected by this modification.						
V1.80	Extended time stamp in filenames for automated creation of trace export files: Function "Event Based Action – export trace" creates a file including a time stamp with <year>-<month>-<day>_<hour>-<minute>-<second>. In case of identical seconds an additional _<milli seconds> suffix is added. e.g. <table border="0"> <tr> <td>ABC_2022-04-19_09-56-35</td> <td>first export</td> </tr> <tr> <td>ABC_2022-04-19_09-56-35_234</td> <td>2nd</td> </tr> <tr> <td>ABC_2022-04-19_09-56-35_448</td> <td>3rd</td> </tr> </table>	ABC_2022-04-19_09-56-35	first export	ABC_2022-04-19_09-56-35_234	2 nd	ABC_2022-04-19_09-56-35_448	3 rd
ABC_2022-04-19_09-56-35	first export						
ABC_2022-04-19_09-56-35_234	2 nd						
ABC_2022-04-19_09-56-35_448	3 rd						
V1.80	R&S FSV3-K18: "Force ARB mode" now recalculates header information of wv files. AM/AM and AM/PM curve width measurement point is now configurable. Direct DPD (K18D) now adjusts signal level when the evaluation range is shorter than the full reference signal, resulting in improved DPD for bursted signals.						
V1.80	Updated NGINX to version 1.20.2.						
V1.80	R&S FSV3-K145: Transform precoding configurable also via physical settings dialog.						

1.3 Improvements

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

Improvements of firmware V2.10:

since	Function
V1.90	In Spectrum Emission Mask measurements for specific measurement configuration, some results were not displayed. This issue is solved.
V1.10	R&S FSV3-K91AX/BE: For HETB, EHTTB PPDUs reduced EVM variance.
V2.00	R&S FSV3-K100: Custom sync weight can be set per antenna in MIMO configuration. CONFigure[:LTE]:DL[:CC{cc}]:SYNC:CSWeight:ANTenna{ant}:FHFRame:REAL <numeric> CONFigure[:LTE]:DL[:CC{cc}]:SYNC:CSWeight:ANTenna{ant}:FHFRame:IMAGinary <numeric> CONFigure[:LTE]:DL[:CC{cc}]:SYNC:CSWeight:ANTenna{ant}:SHFRame:REAL <numeric> CONFigure[:LTE]:DL[:CC{cc}]:SYNC:CSWeight:ANTenna{ant}:SHFRame:IMAGinary <numeric>
V2.00	R&S FSV3-K144: When the signal configuration was modified after a test model was loaded, the former test model name was still displayed in the signal configuration dialog. The issue is solved.
V2.00	R&S FSV3-K144: In 5G MC ACLR, the response to the remote query of the result summary (e.g. CALCulate1:MARKer1:FUNCTION:POWER1:RESult:DETAils? GACLR) was missing separating commas. The issue is solved.
V2.00	R&S FSV3-K144: In 5G ACLR, the ASCII trace export did not work via the trace dialog. The issue is solved.
V2.00	R&S FSV3-K144: The EVM vs. Symbol X Carrier results could not be exported in binary format. The issue is solved.

Improvements of firmware V2.00:

since	Function
V1.90	R&S FSV3-K18: Amplifier measurements: Phase display provides unwrapping. The display is now additionally updated after changing the phase unit. K18M modelling algorithms have been optimized for highly non-linear DUTs.

Improvements of firmware V1.90:

since	Function
V1.10	The export of averaged I/Q data using "TRAC:IQ:DATA?" with "TRAC:IQ:AVER ON" returned zero values only. This issue is solved.

Improvements of firmware V1.80:

since	Function
V1.60	The noise cancellation was not taken into account when switching a trace to "View" mode. This issue is solved.

V1.60	The graphical representation of limit lines with logarithmic frequency axis before and after zooming in and zooming out again did not match. Note: The limit check algorithm and its result (pass or fail) was not affected by this issue. This issue is solved.
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V1.60	For ACLR measurements, other trigger sources than "external" were also selectable, although for gated measurements in sweep mode only external triggers are allowed as the trigger source. The selection has been reduced to external triggers.
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The License Manager of the instrument may have indicated the following message.

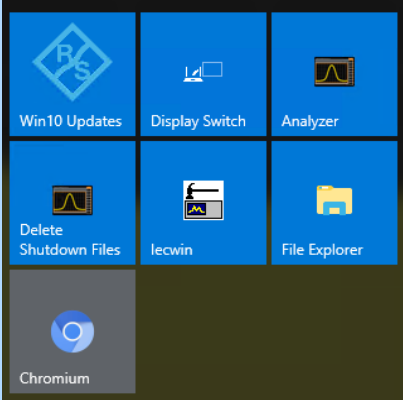
Sorry, your browser does not support essential features required for running the R&S License Server Web-UI.

We recommend to use any of the latest versions of Chrome, Firefox, Safari, Edge or Opera.

This issue is solved by including the Chromium browser into the firmware update package.

Note: To get rid of the message activate the Chromium browser as default browser:

- Open the windows start menu and start the Chromium browser.



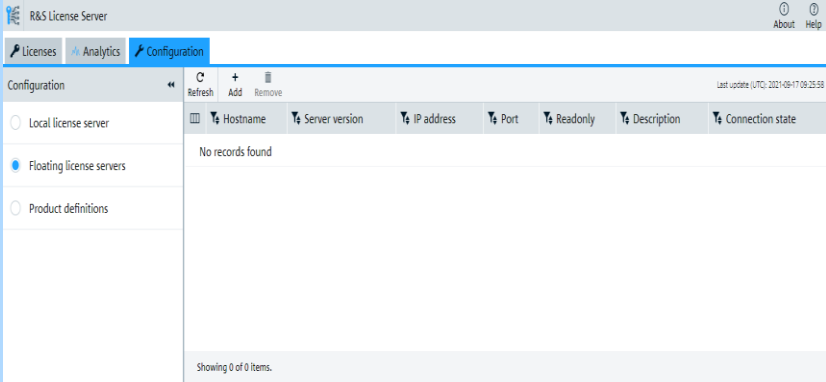
- Click on "Set as default"

Chromium isn't your default browser Set as default

V1.10	The sensitivity when using transducer files (TDF) in combination with "Adjust Ref Level" setting "Auto" has been improved.
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1.4 Known issues

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

since	Function
V1.70	R&S FSV3-B10: With R&S SMBV100A firmware version < 4.70.108.41 the TTL synchronization via handshake might lead to an TTL handshake error. In this case, upgrade the R&S SMBV100A firmware to version 4.70.108.41 or higher.
V1.70	R&S FSV3-K18: Zeroing, Meas->Ref, and Unit settings are currently not available in power sensor mode.
V1.60	R&S FSV3-K980: For very large HUMS database sizes, the remote command DIAGnostic:HUMS[:ALL]? may fail. In this case, use SNMP or REST (Representational State Transfer).
V1.60	<p>The floating license server has to be configured by the instrument's webpage with firmware version 1.60 or above.</p> <p>Open the license server web page with your own browser with the instrument's IP address followed by a colon and the number 9444, e.g. http://10.11.12.13:9444, select tab "Configuration – Floating license servers" and enter the related data.</p>  <p>Changing the configuration by using the instrument's dialog will show an error message.</p>
V1.60	<p>R&S FSV3-K553:</p> <p>When trying to connect to an external frontend providing an invalid host name or aborting (e.g. setting connection state to OFF) an ongoing connection attempt, the application becomes unresponsive for a few seconds.</p>
V1.60	<p>R&S FSV3-B21:</p> <p>Firmware version V1.60 and above fully support the following applications:</p> <ul style="list-style-type: none"> • Spectrum • I/Q Analyzer • R&S FSV3-K7 – Analog Modulation Analysis • R&S FSV3-K18 – Amplifier Measurements • R&S FSV3-K60 – Transient Measurements • R&S FSV3-K70 – Vector Signal Analysis • R&S FSV3-K144 "3GPP 5G NR DL Measurements". • R&S FSV3-K145 "3GPP 5G NR UL Measurements".

	Although activation dialogs for external mixers may be accessible in other applications, this feature is not yet fully supported and tested in these applications.
V1.30	<p>R&S FSV3-K6:</p> <p>When applying a trigger offset, the selected analysis bandwidth may be wider than expected:</p> <ul style="list-style-type: none"> -200 MHz in case that the bandwidth was set to 160 MHz -400 MHz in case that the bandwidth was set to 320MHz or 250 MHz <p>Other analysis bandwidth settings are not affected.</p> <p>There are two possibilities to avoid this issue:</p> <ul style="list-style-type: none"> - adjust the trigger offset before setting the analysis bandwidth. set the trigger offset in two steps: set it first to any value $\neq 0$ s (example 100 ns) and in a second step to the desired value.
V1.10	Changing the configuration of the hard key number block (Setup-> System Config -> Number Block Behavior) to numeric does not work.
V1.10	In rare cases the Selftest of the device does not finish. If this happens, abort and restart the Selftest.
V1.10	For IQ-Export > 600 Mio. Samples no Iq.tar preview is available and a Windows message warning about low memory may be displayed. This issue only occurs with option R&S FSV3-B114 Enhanced Computing Power.
V1.10	R&S FSV3-K91/n/ac/ax: The R&S FSV3-K91 does not yet support the Auto Reference Level functionality. Before using remote control scripts developed for other R&S spectrum analyzers, the SCPI command [:CONF:POW:AUTO] must be commented out.
V1.10	<p>A message box "Warning: Missing smartcard or smartcard not initialized" may appear during startup of the instrument in rare cases.</p> <p>In this case, please switch the instrument off and on using the power switch on the rear side of the instrument or disconnect/reconnect the power line to solve this issue.</p>

1.5 Optimizing 10 Gbit LAN Speed (R&S FSV3-B6)

To obtain optimum LAN speed performance using the R&S FSV3-B6 (10Gbit/s LAN Interface), driver settings have to be adjusted. Here is a recommendation on how to adjust the settings for optimized speed:

1. Open Windows “Start Menu”.
2. Search for “Network and Sharing Center”.
3. Select “Network and Sharing Center”.
4. Select “Change adapter settings”.
5. Select “Ethernet 3 – Intel® Ethernet Converged Network Adapter X550-T1”
6. Select “Configure”
7. Select Tab “Advanced”
8. Adjust the following settings:
 - “Interrupt Moderation” > Value: “Enabled”
 - “Jumbo Packet” > “9014 Bytes”
 - “Maximum Number of RSS Queues” > “16 Queues”
 - “Performance Options” > “Properties”
 - “Interrupt Moderation Rate” > “Off”
 - “Receive Buffers” > “4096”
 - “Transmit Buffers” > “16384”

1.6 Windows 10

The R&S FSV3000/R&S FSVA3000 uses the Windows 10 IoT Enterprise LTSC operating system, which is the embedded version of Windows 10 with long term support for Windows patches.

2 Modifications to the documentation

R&S FSV3-B271: Note the following modifications to descriptions in the current user manuals:

- Analog Baseband Inputs (R&S FSV3-B271) are not available in combination with the Analog Demodulation application.
- The input setting parameter "Optimization" for Analog Baseband Inputs (R&S FSV3-B271) does not require the bandwidth extension option R&S FSV3-B200 or B400, nor a specific analysis bandwidth setting.
- I/Q Power is available as trigger source in combination with Analog Baseband Inputs (R&S FSV3-B271).

3 Firmware update

3.1 Validity information

The R&S FSV3000 installer is valid for:

Device	Order Number
R&S®FSV3004	1330.5000K04
R&S®FSV3007	1330.5000K07
R&S®FSV3013	1330.5000K13
R&S®FSV3030	1330.5000K30
R&S®FSV3044	1330.5000K43
R&S®FSV3050	1330.5000K50
R&S®FSVA3004	1330.5000K05
R&S®FSVA3007	1330.5000K08
R&S®FSVA3013	1330.5000K14
R&S®FSVA3030	1330.5000K31
R&S®FSVA3044	1330.5000K44
R&S®FSVA3050	1330.5000K51

3.2 Update information

The firmware update file for the R&S FSVA/R&S FSV is one file including the firmware version number e.g. FSV3000_V1.30.exe. It is referred to as FSV3000Setup.exe later in the text. The file can be found on the Rohde & Schwarz web page <https://www.rohde-schwarz.com>.

3.3 Performing the Firmware Update on the Instrument

There are three ways to make the FSV3000Setup.exe setup file visible to the device:

Using a memory stick:

1. Copy the file to a directory of the memory stick.
2. Insert the memory stick into one of the USB sockets of the R&S FSV3000.

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

1. Connect the R&S FSV3000 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 you want to update. The IP address consists of 4 numbers between 0 and 255.
(To get the TCP/IP address of the R&S FSVA/R&S FSV, press the "Setup" key, then select "Network + Remote".)
4. Ensure that the "local resources" > "drives" option is selected.
5. Press the "Connect" button.
6. Log on to the instrument (user name: "instrument" and default password "894129").
7. Copy the FSV3000Setup.exe from your PC to a new folder, e.g. C:\FWUpdate.
8. You can now access this directory with the FSV3000Setup.exe from the R&S FSVA/R&S FSV analyzer firmware.

Using a network drive:

1. Connect your R&S FSVA/R&S FSV to your LAN and establish a connection to one of your servers. (Ask the local IT administrator for support.)
2. Copy the FSV3000Setup.exe from your PC to a directory on this server.
3. You can now access the directory with the FSV3000Setup.exe file from the R&S FSVA/R&S FSV analyzer firmware.

Performing the update on the instrument:

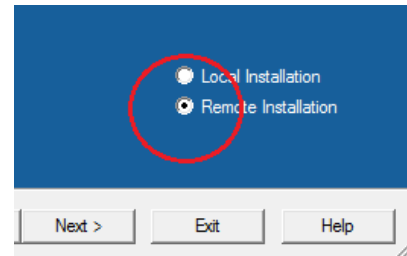
Update the firmware by performing the following steps:

1. Switch the instrument on and wait until the analyzer has resumed operation.
2. Press the "SETUP" key, then select "System Config" > "Firmware Update" tab.
3. A file browser is displayed to select the proper FSV3000*.exe setup file.
4. Change the path to the drive and directory which you prepared in the step before (USB stick directory, remote PC directory or directory on a server).
5. Select "Install" to close the dialog.
6. Select "Next" to display the selection of the firmware packages. By default, all applications are installed. Ensure that the required applications are selected.
7. Select "Install".
8. The firmware is stopped and the installation starts. After a few minutes, the system restarts automatically. After the restart, the firmware installation is complete. After the firmware update, the "UNCAL" flag appears. A self alignment is necessary.
9. Press the "SETUP" key, then select "Alignment" > "Start Self Alignment" to invoke the alignment procedure.

3.4 Performing the Firmware Update from a Windows PC

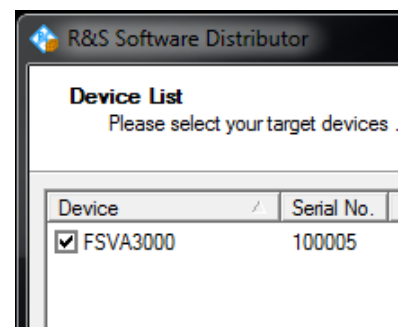
The R&S FSVA/R&S FSV firmware can also be uploaded without using a memory stick or a network drive. Just a LAN connection from the instrument and a Windows PC is necessary.

1. Run `FSV3000Setup.exe` on your PC.
2. Select "Remote Installation".
3. Select "Next."
4. Select the packages to install.
5. Select "Next".



Note:

FOR FIREWALL USERS: The `FSV3000Setup.exe` communicates with the instruments via LAN. Therefore, the `FSV3000Setup.exe` file must pass the firewall. Add it to the firewall rules, then restart the scan using "Rescan".



6. The setup procedure scans your LAN subnet and displays all found instruments
7. Select the instruments you want to update.

NOTICE

Be careful and check twice if you have selected the correct instruments. Depending on your company's network structure, also instruments of other departments are included!

8. Select "Help" to display additional help.
Select "Install" to start the installation.
9. Confirm the message to reboot the instrument to activate the firmware update.
The instrument then restarts automatically.
10. After the restart, the firmware installation is complete and the "UNCAL" flag appears. A self alignment is necessary.
11. Press the "SETUP" key, then select "Alignment" > "Start Self Alignment" to invoke the alignment procedure.

3.5 Installing firmware options

3.5.1 Firmware options included in basic instrument

The R&S FSV3-K7, R&S FSV3-K9, R&S FSV3-K33, R&S-K553, R&S FSV3-K544, R&S FSV3-K703 and R&S FSV3-K980 application software packages are included in the basic instrument firmware. Therefore, they do not have a separate item in the installer to be selected.

3.5.2 Other firmware options within the FSV3000setup.exe File

The R&S FSV3-K6, R&S FSV3-K8, R&S FSV3-K10, R&S FSV3-K18, R&S FSV3-K30, R&S FSV3-K40, R&S FSV3-K60, R&S FSV3-K70, R&S FSV3-K72/73, R&S FSV3-K91, R&S-K96, R&S FSV3-K100/101/102/104/105/106, R&S FSV3-K144/145/147/148/171/175 application software packages have their own installation item and are therefore added to the selection list during the firmware update. Ensure that the checkbox is checked if the installation is requested.

NOTICE

The functionality of R&S FSV3-K18D, R&S FSV3-K18F, and R&S FSV3-K18M is integrated within R&S FSV3-K18 and is activated by its own key code.
The functionality of R&S FSV3-K70M, R&S FSV3-K70P are integrated within R&S FSV3-K70 and are activated by their own key code.
The functionality of the R&S FSV3-K91P, R&S FSV3-K91N, R&S FSV3-K91AC, R&S FSV3-K91AX and R&S FSV3-K91BE are integrated within R&S FSV3-K91 and are activated by their own key code.
The functionality of the R&S FSV3-K60C, R&S FSV3-K60H and R&S FSV3-K60P are integrated within R&S FSV3-K60 and are activated by their own key code.

3.5.3 Enabling options by entering option key codes

NOTICE

Skip this section if the option key was entered once.

To activate application software packages, you must enter a license key for validation.

If an XML-file with an option key was sent to you see the install description below.

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. Open a Remote Desktop Connection to the instrument via ethernet or connect an external monitor and keyboard/mouse]
2. Select "SETUP".
3. Go to the tab "Versions + Options"
4. Press the button "Install Option".
A dialog box is displayed.
5. Enter the option key number using the keypad.
6. Press "ENTER".
After a successful validation the message "Option Key valid" is displayed. If the validation failed, the option software is not installed.
7. Reboot the device.

Installation of options via XML-file

1. Open a Remote Desktop Connection to the instrument via ethernet or connect an external monitor and keyboard/mouse]
2. Select "SETUP".
3. Go to the tab "Versions + Options"
4. Press the button "Install Option by XML".
A file browser is displayed.
5. Select the path to the XML file (e.g. network drive or USB stick)
6. Press "Select".
After a successful validation the message "Option Key valid" is displayed. If the validation failed, the option software is not installed.
6. Reboot the device.

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:



QR code to the Rohde & Schwarz support page