R&S®FPS
Signal and Spectrum Analyzer
Release Notes

Firmware Version V1.70SP4

These Release Notes apply to the following models of the R&S®FPS Signal and Spectrum Analyzer:

R&S® FPS4, order no. 1319.2008K04
R&S® FPS7, order no. 1319.2008K07
R&S® FPS13, order no. 1319.2008K13
R&S® FPS30, order no. 1319.2008K30
R&S® FPS40, order no. 1319.2008K40

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 New functions

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

New functions of firmware V1.70SP3:

Version	Function
V1.70SP3	FPS-K144 5G NR: Support for 35MHz and 45MHz channel bandwidth setting.

New functions of firmware V1.70SP2:

Version	Function
V1.70SP2	Support for CPU board with part number 1206.3874.00.

New functions of firmware V1.70SP1:

Version	Function
V1.70SP1	Support for CPU board with part number 1206.3974.00.

New functions of firmware V1.70:

Version	Function
V1.70	Support for FPS-K148 5G NR Rel. 16 extension for uplink/downlink measurements.
V1.70	Maximum number of peaks of marker peak list has been increased to 500.
V1.70	Switchable x-axis value distribution in frequency domain.
V1.70	TOI measurements: An additional maximum and minimum third-order intercept point value is calculated and displayed in the marker table and can be queried using the remote commands: `CALCulate<n>:MARKer<m>:FUNCtion:TOI:RESULT:MAXimum?` and `CALCulate<n>:MARKer<m>:FUNCtion:TOI:RESULT:MINimum?`
V1.70	Self alignment scheduler to perform self alignments regularly at specific days and times.
V1.70	Power sensor measurements: Support for thermal power sensor R&S NRP90T, order no. 1424.6473.02. thermal power sensor R&S NRP90TN, order no. 1424.6480.02.

		three-path diode power sensor R&S NRP67S, order no. 1424.6396.02. three-path diode power sensor R&S NRP67SN, order no. 1424.6409.02.
V1.70		Power sensor measurements: An independent level offset for power sensor results can be set.
V1.70		FPS-B10: Additionally supports R&S SMW200A 40 GHz, R&S SMW200A 44 GHz and R&S SMCV100B.
V1.70		FPS-B10: Source calibration data can be stored and loaded in configuration files.
V1.70		FPS-K6: • Increased numerical resolution of marker display for Parameter Trend and Parameter Distribution displays. • The overall measured pulse count is now shown in the Pulse Results table header and per parameter as an extra row in the Pulse Statistics table.
V1.70		FPS-K18: • Trace detectors and configurable number of trace points are now available for all traces. • Trace statistics is now available for all traces. • New GUI layout in Reference Signal dialog. • New statistical evaluation of results including a Statistics Table display. • New control switches for signal estimation / compensation (Frequency Error, Sample Rate Error). • K18D: new default value for power linearity tradeoff and modified algorithm. New default value of 50% provides same results as previous versions with 100%.
V1.70		FPS-K30: • Supports ENR measurements inside the option. • Supports saving and recalling calibration results.
V1.70		FPS-K70 • New predefined digital standard: DMR (Digital Mobile Radio). • Improved burst search for low reference levels. • Improved coarse synchronization for 64APSKs.
V1.70		FPS-K144: • Signal demodulation and analysis in line with TS38.211 V16.2.0. • Test Models, Time Alignment, ACLR, SEM measurements in line with TS38.141-1/2 V16.4.0. • Supports slotwise calculation of result summary. • Supports EVM peak, frame start offset in result summary. • Supports PDSCH VRB to PRB mapping. • Supports a shortcut for I/Q export in capture buffer display header. • Supports LTE-CRS Coexistence. • Supports PRB bundling combining PDSCH allocations with same user ID. • Supports frequency error limit check. • Supports half frame offset for synchronization signals. • PDSCH/CORESET reference data "All 0" or "NR-TM PN23". • Supports CSI periodicities greater than one frame Supports analysis of multiple CSI RS resources. • Supports transport block scaling factor. • Supports timing position Custom, EVM_h and EVM_I as EVM calculation method. • Supports additional settings to ease the configuration of multi carrier setups. • Supports Extended Cyclic Prefix. • Supports extended frequency lock range.

- Major enhancement of DL auto detection.
- Extension of results summary for All CC results in multi carrier scenarios.
- Supports slot / allocation copying for eased signal configuration.
- Supports faster Auto EVM speed via additional Auto Set configuration settings.
- Supports parsing of DCI parameters (all DCI formats).
- Supports Auto Demod Once functionality.
- Supports RS Magnitude display.
- Supports Frequency Error vs. Subframe display.
- Extension of Beamforming Summary for Average RS Weights and rel. power results.
- Extension of Bitstream for total number of bits and bit errors of PDSCH/PUSCH.
- Supports Generator to Analyzer settings transfer (requires generator 5G application version 20.12 or higher).
- Supports 3D display view for Alloc ID / Power / EVM vs. Symb X carrier displays.

V1.70   FPS-K100:

- Supports Custom Sync Weight for P-/S-sync.
- Supports Suppress Interferer for synchronization.
- Multi carrier SEM (MSEM) supports up to 5 component carriers.
- Supports "Layer EVM" in Allocation Summery.
- Supports modulation type information for 2D result displays in marker result.

V1.70   FPS-K106:

- Supports "After MIMO/CDMA Decoder" filter for Constellation result.
- Supports "MIMO Compensate Crosstalk" setting in Demodulation dialog.
- Supports "NB-IoT Power" in Result Summary for Stand-alone and Guardband modes.
- Supports "Layer EVM" in Allocation Summery.
- Supports modulation type information for 2D result displays in marker result.

New functions of firmware V1.60:

Version	Function
V1.60	Firmware supports Windows 10 operating system.
V1.60	Support of R&S FPS-K144 5G-NR Downlink Measurements (in line with TS38.211 15.6.0).
V1.60	Frequency offset limit has been extended from 100 GHz to 1 THz.
V1.60	Supports 5G ACLR standard configurations in spectrum mode.
V1.60	The behavior of the number block for text input in entry fields and dialogs can now be switched from text (default) to number.
V1.60	New self alignment features: "Await warm-up operation" and "Shutdown after Alignment" supported. These features can also be selected from the FPSSetup.exe installation program.
V1.60	Support for Thermal Waveguide Power Sensor WR-15 NRP75TWG, order no. 1700.2529.02. Thermal Waveguide Power Sensor WR-12 NRP90TWG, order no. 1700.2312.02. Thermal Waveguide Power Sensor WR-10 NRP110TWG, order no. 1173.8709.02.

V1.60	Spurious Emission Measurement: Added SCPI command `LIST:XADJust` for adjusting the x axis.
V1.60	I/Q Analyzer: Support of Time Domain Power markers (under Marker Functions).
V1.60	FPS-B10: Supports R&S SMW 12.75 GHz and R&S SMW 31.8 GHz.
V1.60	FPS-B10: Supports generator control for R&S SMB100B and R&S SMBV100B.
V1.60	FPS-B10: Support generator control for R&S SMA100B.
V1.60	FPS-K6: The maximum possible analysis pulse width has been increased from 1 million to 25 million I/Q samples.
V1.60	FPS-K6: The overall measured pulse count is now shown in the Pulse Results table header and per parameter as an extra row in the Pulse Statistics table.
V1.60	FPS-K6: New Pulse-Pulse Spectrum display useful for Doppler measurements. New user-definable Detection Range for analyzing a subset of the acquisition. New fixed-level algorithm for pulse envelope measurements. Incorporation of Trigger Position in Sample into timestamp values for better resolution with external trigger.
V1.60	FPS-K7: New marker function AF Phase. This function allows relative signal delay measurements for the result displays AM/FM/PM spectrum.
V1.60	FPS-K7: Supports Band Power/Deviation Markers in the displays: RF spectrum, AM spectrum, PM spectrum and FM spectrum.
V1.60	FPS-K18: Generator control can now be activated or deactivated with an extra ON/OFF-button.
V1.60	FPS-K18: The "Read and Load Current Signal from Generator" functionality now also supports the R&S®SMW-K355 application.
V1.60	FPS-K18: Added a configurable delay that is automatically applied whenever the input signal changes (e.g. when the generator power changes).
V1.60	FPS-K18: Added a configurable delay that is automatically applied whenever the input signal changes (e.g. when the generator power changes).
V1.60	FPS-K18: Equalizer results can now be exported in "*.fres" file format.
V1.60	FPS-K18: The `TRACe:DATA` command now also supports 64 bit format.
V1.60	FPS-K18: Support of "Moving Average" for I/Q averaging.
V1.60	FPS-K18: The "Read and Load Current Signal from Generator"-functionality now also supports SMW-K141 (802.11ad), SMW-K118 (V5GTF) and SMW-K542 (Power Sweep).
V1.60	FPS-K18D: New gain expansion parameter now allows for increasing peak power during Direct DPD.
V1.60	FPS-K30: Supports trace smoothing similar to spectrum mode.
V1.60	FPS-K30: Supports smart noise sources R&S®FS-SNS.
V1.60	FPS-K30: Supports measurements with variable RBW and sweep time for frequencies below 10 MHz.

V1.60	FPS-K30: Support of calibration loss. Temperatures can be considered for input loss, output loss and calibration loss.
V1.60	FPS-K70: New predefined standard: GBAS (Ground Based Augmentation System).
V1.60	FPS-K70: New mapping "Gray" for pi/4-QPSK.
V1.60	FPS-K70: Density trace mode for polar displays and eye diagram.
V1.60	FPS-K70: New "Marker To" functionality to move the marker to the start of the current result range automatically, i.e. the result range highlighted in blue.
V1.60	FPS-K70: Various new SCPI commands that facilitate the handling of burst/pattern search scenarios and bit error rate measurements.
V1.60	FPS-K70: Auto-refresh functionality in Run Single mode.
V1.60	FPS-K70: New "SMx" mapping for π/8-D8PSK and π/4-DQPSK.
V1.60	FPS-K70: Supports QAMs with orders up to 16,384.
V1.60	FPS-K70: New mappings for 512QAM and 2048QAM.
V1.60	FPS-K70: Added DVB-S2(X) start of frame pattern.
V1.60	FPS-K70: Support of I/Q skew measurement and compensation (only for PSK/QAM/Offset QPSK).
V1.60	FPS-K70: Support of 64FSK.
V1.60	FPS-K70: Support of new Bluetooth standards Bluetooth5_LE1M and Bluetooth5_LE2M.
V1.60	FPS-K70: Increased precision for filter roll-off factor (Alpha/BT). Now three digits after the decimal point can be entered.
V1.60	FPS-K70: Several new mappings (e.g. for 1024QAM and 4096QAM).
V1.60	FPS-K91: Added Error Vector Magnitude results according to the legacy standard versions IEEE802.11b-1999 and IEEE802.11b-2012 for FPS-K91 standards 802.11b & 802.11g DSSS.
V1.60	FPS-K91N: Added spectrum emission mask files `802_11n_20MHz_2.4GHz_band.XML` and `802_11n_40MHz_2.4GHz_band.XML`.
V1.60	FPS-K91N/AC: New setting to resolve the cyclic shift delay (CSD) ambiguity in case of SISO signals. `:CONFigure:WLAN:MIMO:CSD <APPLy | IGNore>`
V1.60	FPS-K100: New settings to exclude a specific resource block which is used for embedded NB-IoT. This feature is only available in case that option FPS-K102 is installed.
V1.60	FPS-K100/101: Support for measuring additional operating band limits in Spectrum Emission Mask measurement.
V1.60	FPS-K102/103: Support of carrier aggregation measurements for up to 5 CCs.

V1.60	FPS-K106: New result "RB power excluding E-UTRA (dBm)" in result summary of downlink inband mode. This result is necessary for calculating the "NB-IoT RB power dynamic range" in 3GPP specification 36.141 chapter 6.3.3.
V1.60	FPS-K118: Support of xPUCCH, dual UL-PCRS transmission, xPDSCH/xPUSCH DMRS rel. power.
V1.60	FPS-K118: Extended Physical Broadcast Channel is supported.

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 V1.70:

Version	Function
V1.70	Zero span: The same x-axis scaling algorithm is now used for traces and diagram grid.
V1.70	ACLR measurement: ACLR power bars are shown as transparent bars for better readability.
V1.70	FPS-K7: Resolution of modulation frequency in Result Summary table improved.
V1.70	FPS-K70: • Preview windows have been removed to allow for more compact dialogs. • In order to better visualize the symbol transitions, the sample points are now connected in the density trace mode for result type 'Vector I/Q'. • After preset and for the predefined standard 3G_WCMDA.xml, the trace in the constellation diagram in window 1 is now a "Density" trace and no longer a "Clear Write" trace. This only affects the coloring of the trace. The trace values remain the same.
V1.70	FPS-K100/K101: SEM measurement in line with TS36.141 V16.2.0 / TS36.521-1 V16.1.0 [SENSe]:POWer:SEM:UL:REQuirement GEN|NS3|NS4|NS67|NS27|NS35
V1.70	FPS-K106: Rename "RB Power Excluding EUTRA" to "NB-IoT Power" in Result Summary for Inband mode. FETCh[:CC{cc}]:SUMMary:NBPower[:AVERage]? FETCh[:CC{cc}]:SUMMary:NBPower:MAXimum? FETCh[:CC{cc}]:SUMMary:NBPower:MINimum?
V1.70	FPS-K144: Relative and Absolute limit check in 5G ACLR according to TS38.141-1/2
V1.70	FPS-K18: Power Servoing no longer available

Modifications of firmware V1.60:

Version	Function
V1.60	Grid annotations displayed semi-transparent in front of traces to enhance the readability of the annotation values.
V1.60	The maximum frequency of transducers and limit lines is increased to 2.5 THz.
V1.60	FPS-B10: Switching the B10 source state to OFF now also sets the RF state of the connected external generator to OFF.
V1.60	Online help now also supports result displays in FPS-K18, FPS-K30 and FPS-K40.
V1.60	FPS-K7: The Marker AF Phase Display result is now displayed with 5 decimal digits in unit rad, 2 digits in unit mrad and 3 digits in unit deg.
V1.60	FPS-K7: The Modulation Frequency result is now display with 7 decimal digits.
V1.60	FPS-K18: Default Synchronization Confidence has been reduced to 80%.
V1.60	FPS-K18: The trace export dialog has been redesigned and improved. It is now also possible to export all traces of a selected window.
V1.60	FPS-K18: The attenuator of the connected SMW is no longer changed by FPS-K18 during Parameter Sweep. This leads to more stable Parameter Sweep results when sweeping over Input Power.
V1.60	FPS-K18: Segments configured in the "Custom Waveform File" dialog are now automatically activated on the connected generator when pressing the "Load and Export Selected Waveform to Generator" button.
V1.60	FPS-K18: Marker 1 is now automatically set to "Restart" on the connected generator when using "Generate Own Signal" or Direct DPD.
V1.60	FPS-K18D: The Direct DPD sequence now checks if the synchronization was successful for every iteration. If no synchronization was found for an iteration, the iteration automatically gets repeated up to 10 times until a synchronization is found.
V1.60	FPS-K18D: Continuous sweeping is no longer stopped when pressing "Abort" or "Finish" while the Direct DPD is running.
V1.60	FPS-K18D: Direct DPD now also supports bursted (= TDD) signals.
V1.60	FPS-K30: Maximum number of measurement points increased to 1201.
V1.60	FPS-K30: The frequency in trace export files now reflects either RF or IF.
V1.60	FPS-K30: For ENR table import the ENR table values can now be separated by spaces or commas
V1.60	FPS-K40: Its now possible to edit the Nominal Frequency & Level during a tracked measurement
V1.60	FPS-K70: "Channel Bar" now displays more setting parameters.
V1.60	FPS-K70: Only relevant for capture lengths > 256,000 samples: Title of the window now clarifies whether the entire capture buffer or only a section of the entire capture buffer is displayed.

V1.60	FPS-K70: Only relevant for capture lengths > 256,000 samples: Lines in the Mag Overview (Capture Buffer) display now visualize which section of the capture buffer is displayed in windows that show only a part of the entire capture, e.g. Mag (Selected CB Section).
V1.60	FPS-K70: Only relevant for capture lengths > 256,000 samples: Windows that display just a section of the capture buffer only support the trace modes "ClearWrite" and "View".
V1.60	FPS-K70: Improved layouts for the "Predefined Display Configurations".
V1.60	FPS-K70: Up/Down increment for the capture length and result length parameters has been increased, both for the scroll wheel step size and for the corresponding SCPI commands.
V1.60	FPS-K70: Adding/changing a result window triggers an auto refresh on the current capture buffer. The currently selected result range is then the last possible result range in the current capture buffer.
V1.60	FPS-K70: The name of the default QPSK mapping has changed from "WCDMA" to "GRAY". The mapping values themselves remain identical. Depending on the order of settings in a remote script, this might change the default mappings for other modulation schemes as well.
V1.60	FPS-K70: The blue marker that highlights the currently analyzed result range in the capture buffer is now also displayed if there is only one result range in the capture buffer.
V1.60	FPS-K70: The default directories for file manual loading (e.g. user modulation, user filter) have changed
V1.60	FPS-K70: SCPI commands that involve file loading can now be defined relative to the default directory path, too. (Absolute paths still work as before).
V1.60	FPS-K70: PSK/QAM constellations are now always normalized to an RMS value of 1. This may lead to a different scaling of the results based on the measurement or reference signal, e.g. the I/Q constellation diagram.
V1.60	FPS-K70: The bit error rate result is now displayed in scientific format.
V1.60	FPS-K70: Symbol Errors that are detected in a bit error rate measurement are no longer highlighted with a red frame anymore, but are displayed in red text within the symbol table.
V1.60	FPS-K70: Increased limit for maximum burst length (upper limit now equal to the limit for the result length)
V1.60	FPS-K91N: The outer-most ranges for the spectrum emission mask files `802_11n_20MHz_5GHz_band.XML` and `802_11n_40MHz_5GHz_band.XML` have been revised.
V1.60	FPS-K106: Extended F_offset for SEM measurement to +/- 200 kHz in case of standalone distribution according to table 5.6-3A of 3GPP of document 36.141 revision 14
V1.60	FPS-K106: Deployment guard-band now provides a list of all possible offsets to the E-UTRA carrier frequency

1.3 Improvements

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

Improvements of firmware V1.70SP4:

since	Function
V1.10	Some instruments reported a defective fan, although none of its fans showed an anomaly during operation. This issue is solved.

Improvements of firmware V1.70SP2:

since	Function
V1.60	The signal at the video output was not the expected signal in some cases. This issue is solved.

Improvements of firmware V1.70:

since	Function
V1.10	The firmware remote installation was sometimes not possible on FPS-13 devices. This issue is solved.

Improvements of firmware V1.60SP1:

since	Function
V1.60	Due to a driver installation issue the remote control via GPIB may fail with version V1.60 on some devices. This is now solved.
V1.60	The configuration of the LAN IP address in case of "DHCP off" via FPS mini display is now supported again.

Improvements of firmware V1.60:

since	Function
V1.50	ACLR measurement limited Multi-Standard Radio standard sub block frequency to 20 GHz. This issue is solved.
V1.50	Trace export frequency values in frequency domain could differ from the marker readout frequency values when using an even number of sweep points. This issue is solved.
V1.50	FPS-B10: The interface configuration could not always be reloaded after recalling a saveset. This issue is solved.
V1.50	FPS-B33 did not appear in the version and option dialog although the USB Mass Memory Write Protection was active. The functionality of the write protection was not affected. This issue is solved.

V1.50	I/Q Analyzer: During I/Q Vector ASCII Trace Export, the I-values were sorted in ascending order. This issue is solved and these values are not sorted anymore.
V1.50	FPS-K6: The delta marker on magnitude displays did show units of dBm instead of dB. This issue is solved.
V1.50	FPS-K6: The order of table headers and table column data did not correctly match up in an exported CSV file. This issue is solved.
V1.50	FPS-K7: Relative FM/PM results were not updated in the result table. Remote Control was not affected. This issue is solved.
V1.50	FPS-K7: The values of HP and LP filters were missing on hardcopies. This issue is solved.
V1.50	FPS-K18: The indices returned for the "`TRACe<n>:DATA?`" command by the SCPI recorder did not match the selected result display. This issue is solved.
V1.50	FPS-K18: Files created by the Trace Export functionality always contained the instrument settings, even when "Include Instrument & Measurement Settings" was disabled. This issue is solved.
V1.50	FPS-K18: Accidentally it was possible to activate Moving Average during Direct DPD calculation. This issue is solved.
V1.50	FPS-K18: A running FPS-K18 application unintentionally stopped continuous sweeping when using the sequencer functionality. This issue is solved.
V1.50	FPS-K18: I/Q averaging in combination with Parameter Sweep was not working as expected. This issue is solved.
V1.50	FPS-K18: When training the FPS-K18 equalizer, instead of the averaged I/Q data, only the last I/Q capture was used. This issue is solved.
V1.50	FPS-K18: Improved appearance of spectrum trace for short result ranges.
V1.50	FPS-K18: Polynomial DPD did not produce optimum results when using AM/AM first in combination with "Generate Predistorted Waveform File". This issue is solved.
V1.50	FPS-K18D: Activating and deactivating the Direct DPD in quick succession could lead to a state in which the output level of the connected generator and the generator level displayed in FPS-K18 were not matching each other. This issue is solved.
V1.50	FPS-K30: For ENR table import the ENR table values can now be separated by spaces or commas
V1.50	FPS-K40: Reference Measurement did not work below 30 Hz, this issue is solved.
V1.50	FPS-K70: Improved measurement speed, if pattern search is active.
V1.50	FPS-K70: Remote commands `INP:IMP?` and `INP:IMP:PTYP?` did not work. This issue is solved.
V1.50	FPS-K91: Very short PPDUs (1 to 5 symbols) gave too optimistic EVM if payload channel estimation was used. In this case, a warning message was displayed. This issue is solved.

V1.50	FPS-K91: An HE SU PPDU was detected as an HE MU PPDU due to CSD (cyclic shift delay). This issue is solved.
V1.50	FPS-K91: MIMO measurements using R&S OSP (open switch and control platform) did not work. This issue is solved.
V1.50	FPS-K91N: In cases when statistics and time tracking is used, the message "No PPDU of desired type to analyze!" might occur. This issue is solved.
V1.50	FPS-K100: after loading a predefined standard the editor of the PDSCH allocation table showed a strange behaviour. This problem is solved.
V1.50	FPS-K104: Power vs Time: Measurement did not work if Reference Level Offset was set to values below -20 dB. This issue is solved.
V1.50	FPS-K118: Running multi carrier analysis for a long time could result in an out of memory indication. This issue is solved.

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	The instrument's License Manager indicates 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. Try to proceed anyway **Work around:** Open this page on your own browser with the instrument's IP address followed by a colon and the number 9444, e.g. "10.11.12.13:9444"
V1.40	Web Browser Interface : The browser window shows a windows login screen instead of the analyzer application, but the user log in is not possible. This only happens if a windows remote desktop connection was used before. Reboot the analyzer in that case and reopen the web browser window.
V1.21	Power Sensors: Remote command SENSe1:PMETer1:TRIGger:HOLDoff ignores the parameter unit. The base unit [s] is used instead.
V1.00	The activation of the on-screen keyboard display is not supported.

Known issues of the web browser Interface

since	Function
V1.40	With version V1.40 the Web Control on the LXI webpage (`http://<address of device>`) allows remote display and easy interaction with the device from any browser.

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If no external monitor is connected to the R&S FPS, an additional driver is required on the instrument in order to control the R&S FPS via its web browser interface. If the driver is not available, the browser does not show "Web Contol".

Download the TightVNC DFMirage driver from the official TightVNC website (http://www.tightvnc.com/download.php) and install it as described on the website.

The current R&S FPS firmware was tested with the TightVNC DFMirage driver version 2.0.301.

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2 Modifications to the documentation

The current documentation is up-to-date.

3 Firmware update

3.1 Validity information

The FPS installer is valid for:

Device	Order Number
R&S® FPS4	1319.2008K04
R&S® FPS7	1319.2008K07
R&S® FPS13	1319.2008K13
R&S® FPS30	1319.2008K30
R&S® FPS40	1319.2008K40

3.2 Update information

The firmware update file for the R&S FPS is one file including the main firmware version number e.g. FPSSetup_V1.00.exe. It will be referred as FPSSetup.exe later in the text. The file can be found on 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 setup FPSSetup.exe 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 FPS.

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

1. Connect the R&S FPS 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 FPS, 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 FPSSetup.exe from your PC to a new folder, e.g. C:\FWUpdate.

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Firmware update

8. You can now access this directory with the FPSSetup.exe from the R&S FPS analyzer firmware.

Using a network drive:

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

Performing the update on instrument:

Update the firmware by performing the following steps:

9. Using external monitor and keyboard/mouse:
   Connect an external monitor, USB keyboard/mouse, switch the instrument on and wait until the Analyzer has resumed operation.
   Or using remote desktop connection:
   Switch the instrument on and wait until the Analyzer has resumed operation. Open the remote desktop on your PC and connect to the instrument as described above.
10. Press the "SETUP" key, then select "System Config" > "Firmware Update" tab.
11. 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).
12. Select "Install" to close the dialog.
13. Select "Next" to display the selection of the firmware packages. By default, all applications are installed. Ensure that the required applications are selected.
14. Select "Install".
15. 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.

NOTICE

The remote desktop connection will be closed during firmware update as it reboots the instrument. You have to reopen the remote desktop connection again

16. Press the "SETUP" key, then select "Alignment" > "Start Self Alignment" to invoke the alignment procedure.

Operation with and without Administrator Rights

With firmware version V1.30 or higher, the analyzer may be operated with or without administrator rights. Some administrative tasks (e.g. a firmware update or a LXI functions or network configuration) do require administrator rights. In the default configuration, auto login is enabled, and the "Instrument" account with administrator rights is active. This means that no password is required, and the full functionality of the analyzer is available. An additional user account (user name "NormalUser" with default password "894129") is pre-defined. Use standard Windows functionality if you

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wish to deactivate the auto login mechanism and activate the "NormalUser" account. Please refer also to the Quick Start Manual of the FPS.

3.4 Performing the Firmware Update from a Windows PC

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

1. Run `FPSSetup.exe` on your PC.

2. Select "Remote Installation".

3. Select "Next".

4. Select the packages to install.

5. Select "Next".
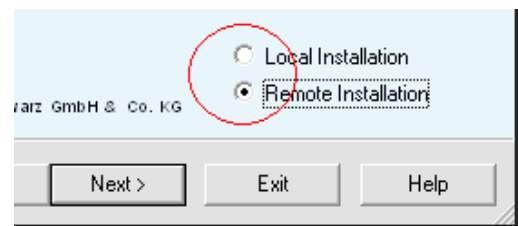
    Note:

    FOR FIREWALL USERS: The `FPSSetup.exe` communicates with the instruments via LAN. Therefore, the `FPSSetup.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.
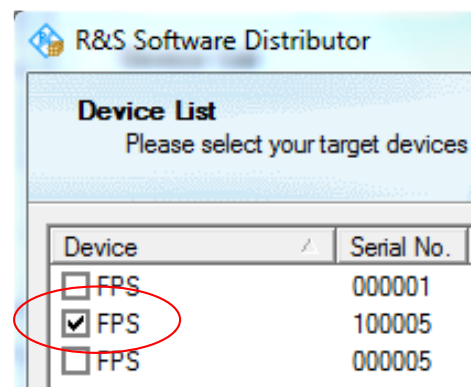
NOTICE

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 FPS-K7 and R&S FPS-K33 application software package is included in the basic instrument firmware. They therefore do not have a separate item in the installer to be selected.

3.5.2 Other firmware options within the FPSsetup.exe File

The R&S FPS-K6, R&S FPS-K10, R&S FPS-K18, R&S FPS-K70, R&S FPS-K72/73, R&S FPS-K76/77, R&S FPS-K82/83, R&S FPS-K84/85, R&S FPS-K91, R&S FPS-K100/101/102/104/105/106, R&S FPS-K118, R&S FPS-K144/148 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 the FPS-K91p, FPS-K91n and FPS-K91ac is integrated within FPS-K91 and are activated by their own key code.
The functionality of the FPS-K101, FPS-K102, FPS-K103, FPS-K104, FPS-K105 and FPS-K106 is integrated within FPS-K100 and is activated by it's own key code.
The functionality of the FPS-K18D is integrated within FPS-K18 and is activated by it's own key code.
The functionality of the FPS-K148 is integrated within FPS-K144 and is activated by it's 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

8. Open a Remote Desktop Connection to the instrument via ethernet or connect an external monitor and keyboard/mouse]

9. Select "SETUP".

10. Go to the tab "Versions + Options"

11. Press the button "Install Option by XML".
    A file browser is displayed.

12. Select the path to the XML file (e.g. network drive or USB stick)

13. 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