



ROHDE & SCHWARZ

Radiomonitoring and Radiolocation
Division

Release Notes

Firmware V4.30

R&S[®] PR100

4071.9006.02, 4079.9011.02

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1 General Information

This new firmware version V4.30 corresponds to the following software and manual versions:

- PR100 Operating Manuals “4080.0966.02/03 - 02”.
- PRView V4.0.3
- PR100Control V5.6.0.12158
- ARBToolbox Plus V1.7.0
- OSMWizard 5.0.0

2 Firmware update

2.1 Update preparations

Stop running scans

A running scan will severely delay downloading of upgrade files (see below), so the user should first stop any running scans, either interactively or by using SCPI commands ABORT or *RST.

Format storage card

Use either

- the key sequence FILE – F6(SD Card) – F4(Tools) – "Format SD Card" – ENTER – F1(Yes)
- or the SCPI command: MMEM:INIT

to format the SD-Card to make sure it is empty.

SD card formatting in the R&S® PR100 is also required to prepare for high-performance recording. Note that this step is not required, if you do not intend to use the Internal Recording Option.

2.2 Firmware update from SD-card

This method is convenient, if you have physical access to the SD card and do not want to establish a LAN connection or do not have the Remote Control Option on the R&S® PR100.

- Copy the files from Target\SD_card to the root of the SD-card:
 - bootloader_MR_V4_30.bin
 - flashfilesystem_MR_V4_30.bin
 - osimage_MR_V4_30.bin
 - updater_MR_V4_30.bin
 - cploadfiles_MR_V4_30.bin
 - splashscreen_PR100.bmp
- Insert the SD-card in the R&S® PR100 and turn it off.
- Connect the mains power adapter.
- Press the buttons [LOCK] and [8] at the same time and turn on the R&S® PR100.

- After about 5 seconds you can release the buttons [LOCK] and [8].
- Continue following the instructions on the instrument's screen.

IMPORTANT:

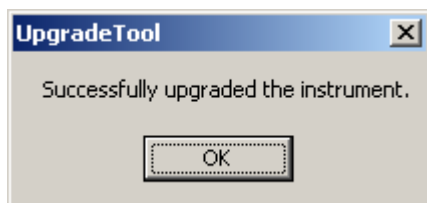
DURING FIRMWARE UPGRADE, DO NOT TURN OFF THE R&S® PR100 .

2.3 Firmware update by Firmware Upgrade Tool

Firmware after version 1.21 is bundled with the Firmware Upgrade Tool, which allows a firmware upgrade over LAN without physical access to the SD card.

Before starting the upgrade, make sure that the R&S® PR100 is connected to power and that a SD card is inserted. Check that the R&S® PR100 can be contacted via LAN from the PC.

Start the Upgrade Tool “PR100_UpgradeTool_V4_30.exe” and follow the instructions on the PC screen. Do not switch off the PC or the receiver until upgrading is complete. The successful message is shown below.



Please note:

The Firmware Upgrade Tool requires the Remote Control Option on the R&S® PR100.

2.4 Loading default setup during start-up

It is possible to get the default setup loaded when the [LOCK] button is pressed during the startup of the instrument ([LOCK] and switch the R&S® PR100 [ON] at the same time).

3 Remote Connections

To start a remote connection it is necessary to have the “Remote Control” option installed.

To install the “Remote Control” option:

- Power up the R&S® PR100
- Press the "CONF" button
- Select "General" via the soft-button (F4)
- Read the serial number
- Ask R&S® for the “option-key” for the “Remote Control” option
- Scroll to the Option “Remote Control”
- Press “ENTER” and enter the “option key”

3.1 Configuring the IP address and port on the R&S® PR100

The R&S® PR100 is delivered with a fixed IP address with the values below.

Default configuration:

- DHCP: Disabled
- IP address: 172.17.75.1
- SCPI port: 5555
- Subnet mask: 255.255.255.0

When connecting directly to a PC, it's usually easier to configure a fixed IP address:

- Power up the R&S® PR100
- Press the "CONF" button
- Select "General" via the soft-button
- Scroll to the IP settings (down button)
- Apply the following settings:
 - DHCP: Disabled
 - IP address: <something in the same subnet as the PC> e.g. 172.17.75.1
 - IP port: 5555
 - Subnet mask: <same as the PC connector> e.g. 255.255.255.0
- Alternatively, set DHCP : Enabled to add the R&S® PR100 to a DHCP-enabled network

3.2 Configuring the IP Address and Port on the PC

- Select the properties of Local Area connection on the PC.
- Select properties of the Internet Protocol (TCP/IP).
 - Switch off DHCP by selecting “Use the following IP Address”.
 - IP Address : <ip-address in the range of the R&S® PR100> e.g. 172.17.75.20
 - Subnet mask: <same as the PC connector> e.g. 255.255.255.0
- Connect an Ethernet cable from PC to R&S® PR100. The status of the Local Area Network should now be “connected”.

3.3 Starting the Remote Interface via SCPI

In order to connect to the remote SCPI interface, a telnet-like session is required. The IP-port is 5555.

In a DOS box, enter

telnet <ip-address of the R&S® PR100> 5555 e.g. telnet 172.17.75.1 5555

In the telnet screen you don't see any echo of your commands. You can enter SCPI commands via telnet now, see user manual for more details on SCPI.

4 New Features in this Release

See the change history for the complete list of changes.

4.1 DF Mode Param Menu

In DF mode, access to more parameters is added under the “SCAN->Param” menu.

* requires DF option *

Step Mode	Manual
Step	6.25 kHz
Selectivity	Default
DF Squelch	Off
DF Squelch Level	+10 dB μ V
DF Quality Squelch	+70.0 %
DF Measurement Time	+100.0 ms
DF Antenna Reference	North Offset Only
North Offset	+0.0 °
Correction Set	[Default]
Compass Position	Bottom Right
IF-PAN Span	10 MHz
Use DF Preset Values	

4.2 New Demodulation Type

PM demodulation type is added.

BW: 9 kHz	MOD: PM	LEVEL: Max Peak	AFC: Off	ATT: Off
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4.3 New Trigger Action Item

Trigger Action Item: "Save GPS Position" is added. The new trigger can also be set using SCPI command.

* requires ETM option *

Note that trigger functions are not available when the map view is opened (An error message “Trigger action is not possible” will be displayed if attempting to do so).

Trigger Action	Save GPS Position
----------------	-------------------

4.4 New User Key Action

User key can be now be assigned to perform “Triangulate”. At least two GPS points need to be included for the triangulate operation to be successful.

* requires GPS option *

User Key 1	Triangulate
------------	-------------

4.5 System Default Preset

User Preset List: Added system default preset as the first entry in the list. Recalling this preset will restore settings to the system defaults. This preset cannot be deleted:

User Preset List			18/09/12 08:51
Status	Location	Description	
<input checked="" type="checkbox"/>	Default Preset	SystemDefaultPreset	
<input type="checkbox"/>	User Preset 0		
<input type="checkbox"/>	User Preset 1		
<input type="checkbox"/>	User Preset 2		

4.6 Saving of waterfall buffer

The waterfall buffer can now be saved to the SD-card. This function can be activated under “FILE->Save Waterfall”. The waterfall buffer will be saved in the “.rtr” file format which can be replayed on the instrument.

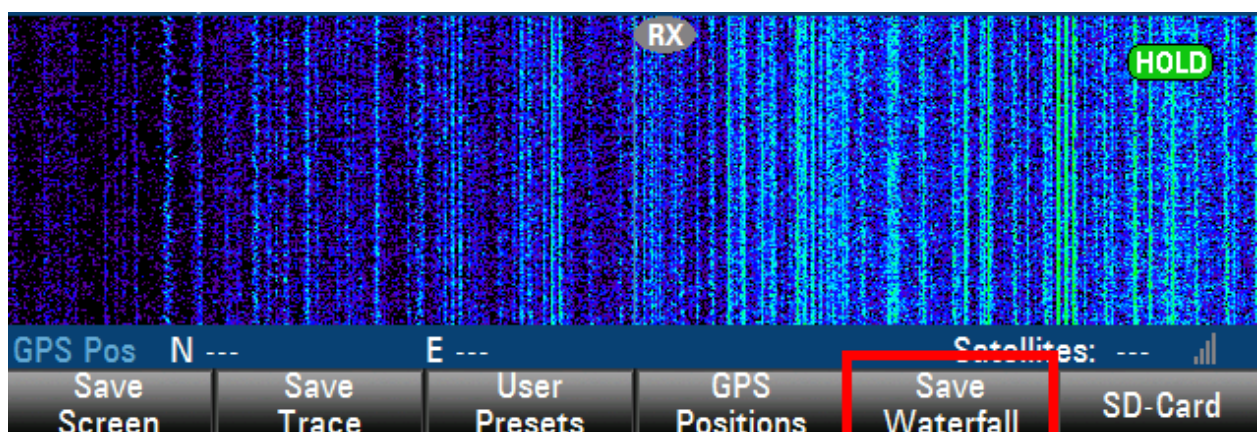
* Requires internal recording option*

Note that this function is only available under the following conditions:

- The display mode is either “Waterfall” or “Spectrum + Waterfall”.
- The waterfall is in “Hold” state.

Note that there are the following restrictions:

- GPS, compass and DF information will not be saved in the file.



4.7 FFM mode – Spectrum Diff mode

“Diff Mode” for spectrum in FFM mode is added. This function can be accessed via “SCAN->Diff Mode”. When the “Diff Mode” is enabled, the spectrum at that point in time is used as the reference spectrum. If the span or centre frequency is changed, the first spectrum after the change will be used as the reference spectrum.



4.8 DF Mode – Internal Recording

In DF mode, internal recording for Audio, Audio SQL and Trace has been added.

Note:

- Audio recording in DF mode will have a choppy effect.
- IQ recording in DF mode cannot be supported.
- Replay of a recorded DF trace should be performed in DF mode. If the recorded DF trace is performed in FFM mode, the associated DF results (e.g. DF azimuth, quality) will not be shown.

4.9 KFactor Tables for ADD107 and ADD207

Default kfactor tables for ADD107 and ADD207 DF antennas are added and can be selected. The default ADD107 and ADD207 entries in the antenna configuration menu will use these kfactor tables.

IMPORTANT:

You need to perform a “Reset to Factory Settings” (In CONF->General menu) in order to see these kfactor tables and antenna list changes.

NOTE that a factory reset will clear the device’s memory lists, antenna lists, suppress lists, user presets, user kfactor tables and correction sets on the device.

Antenna Configuration Menu	
Antenna 10	
Antenna Name	ADD107
Antenna Code	49
K-Factor Table	ADD107_20MHz_1300MHz
Correction Set	[Default]
Start Frequency	20.000.000 MHz

4.10 External Reference Icon

When external reference is enabled, an indicator icon will be shown as follows:



- External reference is in lock.



- External reference is not in lock. Please check the external reference cable.

4.11 GPS Position List Changes

In the “GPS Position List”, up to 20 points can be included and shown on the map. If 20 points have already been included and the user saves another GPS position, the point with the smallest number in the list will be excluded and the new GPS position will be included.

4.12 SCPI Command Changes

1. SENSE:BANDwidth:DF
added “UP” and “DOWN” support.
2. TRIGger:ACTion
added “GPSPosn” trigger.
3. SYSTem:DECLination?
- Query the currently used magnetic declination value.
4. SYSTem:ANTenna:USED?
- Query the name of the antenna used

5 Known Bugs / Limitations

- “Restart Display Max Hold” is not working in DF mode.

6 Change History

V4.30

- Added: In DF mode, access to more parameters in the “SCAN->Param” menu.
- Added: PM demodulation type.
- Added: Trigger action item “Save GPS Position”.
- Added: User key can be assigned to perform “Triangulate”.
- Added: System default preset in the user preset list.
- Added: Saving of waterfall buffer to SD-card (requires internal recording option). Note that GPS, compass and DF information will not be saved.
- Added: “Diff Mode” for spectrum in FFM mode.
- Added: Internal recording in DF mode (Audio, Audio SQL and Trace only).
- Added: Default kfactor tables for ADD107 and ADD207 DF antennas.
- Added: External reference indicator icon to show reference in lock or not in lock.
- Added: SCPI command “SYSTem:DECLination?”, “SYSTem:ANTenna:USED?”
- Changed: SCPI command “SENSe:BANDwidth:DF”, “TRIGger:ACTion”
- Changed: In “GPS Position List” up to 20 points can be included and shown on the map.

- Bugfix: GPSCompass UDP stream incorrectly used negative LAT/LON values when the GPS Longitude Reference is WEST or the GPS Latitude Reference is SOUTH. It has been corrected to use positive LAT/LON values.
- Bugfix: Device displays “GPS Compass msg queue overrun message lost!” dialog box.
- Bugfix: In DF mode, the DF Squelch line displayed was incorrectly tied to the audio squelch level.
- Bugfix: GPS PDOP data in the DF UDP stream was always zero.
- Bugfix: In DF mode, mtrace requests for AZIM and DFQ returns invalid values.
- Bugfix: “system:compass:data?” returned heading type which is different from the GPSCompass UDP stream.
- Bugfix: TRAC:UDP? Query with invalid client number was returning an inappropriate error code.

V4.20

- Changed: DF gated and normal mode behaviour during UDP streaming updated to be similar to ESMD.
- Changed: The indicator icon for “RX frequency outside current antenna band, field strength measurement option” has been updated.
- Bugfix: When switching from DF mode to FFM mode, the FFM measurement mode was always incorrectly set to CONTinuous.
- Bugfix: If the SD card is write-protected, the mmem:init command would cause the SD card to be unmounted.
- Bugfix: When selecting an update file in the Antenna Service Menu, an “Operation Failure” message was always displayed.

V4.12

- Bugfix: Resolved stability issue on newer hardware revisions where the device might hang after extended periods of continuous usage. Downgrading to lower firmware versions is no longer possible after updating to this firmware version.

V4.02

- Added: Displayed fieldstrength level unit can now be set to either dBuV/m or V/m via the configuration menu.
- Added: Direction finder software option PR100-DF.
- Added: SCPI command to provide SCPI-compatibility with ESMD/EB500:
[SENSe]:FREQuency[:CW|FIXed]:RANGe:HF[:UPPer] <receive_frequency>
- Added: SCPI command to allow the user to set the DF Bandwidth directly:
[SENSe]:BANDwidth:DF <numeric value>|MIN|MAX
- Added: Support for Antenna Correction Set for direction finding antennas.
- Bugfix: During DF Squelch Normal mode, if the level is below DF squelch, the resulting DF azimuth and quality will now be correctly set to invalid.
- Bugfix: DF accuracy is improved for certain span and steps settings.

V4.01

- Added: Local Date, Local Time and Timezone.
- Added: Time Synchronisation via GPS.
- Added: Time Synchronisation via NTP.
- Added: Voice Inversion Descrambling.
- Added: Audio Notch Filter.
- Added: Magnetic Declination support.
- Changed: Maximum internal recording memory size reduced to 52MB.
- Added: External Reference Lock check.
- Changed: During IFPan streaming or internal trace recording, 1601 level values will be streamed/written compared to 1599 values in previous versions.

V3.10

- Added: Save User Presets to SD card.
- Added: User key actions for
 - enabling/disabling External Triggered Measurement.
 - Saving current GPS location.
- Changed: Different start-stop frequencies for PSCAN and FSCAN.
- Added: The save trace file is extended with the Main and Delta marker information if markers are switched on.
- Added: Antenna Service Menu to upgrade and calibrate the HE300 antenna.
- Added: Recall memories from the memory list in FFM mode.
- Added: Max-Hold persistent time.
- Changed: Select instrument mode via pop-up menu.
- Changed: Memory list screen extended with red error status symbol if content of that memory is invalid.
- Bugfix: The last item in the User Preset list was not correctly updated when scrolling down.
- Bugfix: Restart Display Max Hold did not work in PSCAN Dual Spectrum display mode.
- Bugfix: Zoom-In button was enabled but no response when clicking it.

V3.00

- Added: GPS-Compass option.
- Changed: Fieldstrength option is independent from SHF option.
- Added: Possible to display saved screenshots.
- Added: Chinese language support.
- Changed: If display brightness is set to 0%, upon power cycle of the device, it will be set to 5%.
- Changed: Max-hold is reset when RX frequency is changed (except when changed by AFC or flywheel).
- Changed: Possible to display T1 spectrum in PSCAN hold mode.
- Changed: Maximum internal recording memory size reduced to 56MB.
- Changed: File browser performance improved, able to handle max 512 files in one directory.
- Bugfix: Trigger Icon was not correctly updated in "Waterfall + Spectrum mode".
- Bugfix: FSCAN/MSCAN: Constantly pressing RUN+/- can freeze the scan/trace/numeric.
- Bugfix: RX Marker shows "0.0" instead of "--." in PSCAN.
- Bugfix: During Device Controlled, RX marker not shown under certain circumstances.
- Bugfix: When a query from one SCPI client is pending in a transaction (e.g. SENS:DATA? "VOLT:AC"), a query from a second SCPI client is accepted as part of the ongoing transaction and handled.
- Bugfix: SCPI command SENS:DATA? "VOLT:AC" freezes UI.
- Bugfix: DataSize field in the common header for IF (IQ) streaming was not correctly filled.
- Bugfix: FScan doesn't perform the 10 cycles, when set to 10 under some special circumstances.
- Bugfix: GetMarkers in Trace replay can push M- and D-marker out of view.
- Bugfix: Under certain conditions, the Fieldstrength is not correct in PSCAN.
- Bugfix: Audio Stream hick-up and slow recovery (5s).
- Bugfix: RX changes results in flickering RX view.
- Bugfix: Slow startup of instrument with large memory-lists.

V2.21

- Bugfix: V2.20 did not support the new flash.

V2.20

- Added: Periodic measuring mode for IF-PAN traces.
- Added: Device Controlled 100 lines/s in waterfall in FFM mode.
- Added: Compressed Waterfall.
- Added: Max-Hold

- Changed: Param and Range menu behavior is improved where the menus stay open when changing parameters.
- Changed: Config menu behavior improved, where each config screen remembers the last position in the screen and wrap around functionality is added.
- Added: Auto range functionality in "Spectrum + Waterfall" display mode.
- Changed: All markers shall not be visible when waterfall is running in FFM mode.
- Bugfix: Equal filling of Itrace/Mtrace when using SCPI.
- Bugfix: Combinations of the short-form and long-form of "FREqency":OFFSet" was not accepted

V2.10

- Added: Trace replay for internal recording trace files.
- Added: External triggered measurement software option.
- Added: Frequency processing software option.
- Added: Timestamps added in the data streams and replay trace.
- Added: IP gateway functionality.
- Changed: Minor user interface updates.
- Bugfix: *RST was not clearing marker menu.
- Bugfix: IQ stream zero value at center frequency.
- Changed: MSCAN points are skipped if their antenna is not in the "included" state on the antenna list.

V2.00

- Added: Internal recording software option
- Changed: User interface updates:
 - Spectrum view BW-indication around the RX-marker can be set On/Off in CONFIG menu.
 - Additional IF-Bandwidths (SPAN): 5kHz, 2kHz and 1kHz
 - Overlapping FFT's engaged with small IF-Bandwidth for quick display update
 - New languages: Czech, German, Russian
 - Range and level setting possible in dBm or dBuV (automatic conversion to level unit)
 - Audio Mute added in LOCK menu
 - Overload indicator colour changed to red
- Changed: Config Menu:
 - Displayed Level unit can be switched between dBm and dbuV. dBuV and dBm entry keys can be used, the entry is converted to the correct unit.
 - Displayed Demodulation Bandwidth Bar can be turned on or off.
 - User keys added new functionality: "Record On/Off".
 - Hostnames with serial number implemented.
 - Default fixed IP-address : 172.17.75.1
- Added: SCPI:
 - Trace:Record:xxx
 - Trace:Replay:xxx
 - UDP stream for Audio added
 - Timestamps in trace streams IFPan and Pscan added
- Bugfix: Bug "Corrupt internal File System"
- Bugfix: When inserting and removing SD card, the system freezes for several seconds.
- Bugfix: Middle status bar in Dual Screen display mode was not updated correctly.
- Bugfix: When changing the settings (ref.range, colour), the waterfall was not updated with the correct settings.
- Bugfix: K-Fac symbol shown wrong indication without fieldstrength software option installed.

V1.21

- Bugfix: Occasional SCPI command delay

V1.20

- Added: MSCAN.
- Changed: Performance improvement for scanning.
- Changed: IF-Pan trace speed improved to ≥ 20 updates per second.
- Added: Manual setting for antenna bits added.
- Added: Support for “overlapping FFTs”.
- Changed: Updated SCPI functionalities.
- Changed: RX marker behavior in trace, waterfall and PSCAN screens.
- Added: Portuguese and French Language.
- Added: Indoor, Outdoor and B&W colour schemes.
- Added: “Param” button in SCAN button bar for FSCAN, MSCAN and PSCAN.
- Added: “Save Trace” button added to file button bar.
- Added: DHCP IP address displayed in the config screen.
- Changed: Zoom function disabled in PSCAN.
- Changed: Max dwell and no-signal time increased to 60s.
- Changed: MEM function disabled in PSCAN.
- Changed: “ANT” string below symbol is changed into “K-FAC”.
- Changed: Red line is added to empty battery symbol.
- Changed: Number of user presets increased to 50.
- Changed: Outdoor colour scheme is the default.
- Bugfix: Top line could not be reached in config menu.
- Bugfix: “-” key could not be used in entry text boxes.

V1.12

- First version.