



ROHDE & SCHWARZ

Division

Radiomonitoring and Radiolocation

Release Notes

Firmware Update Version 1.82

R&S[®] EM510

HF DIGITAL WIDEBAND RECEIVER

4065.7728.02

R&S[®] DX200

IF RECORDER CONVERTER

4070.2837.02

Copyright

This document and any parts thereof are protected by copyright. Any use without the approval of Rohde & Schwarz is prohibited. This especially applies to reproductions, translations, generation of microfilms as well as storage and processing in electronic systems.

Copyright © 2000. All rights reserved by Rohde & Schwarz.

Dear Customer,

throughout this manual, EM510 is generally used as an abbreviation for R&S[®] EM510 and, DX200 is generally used as an abbreviation for R&S[®] DX200

Trademarks

R&S[®] is a registered trademark of Rohde & Schwarz GmbH & Co. KG.

Product and company names listed are trademarks or trade names of their respective companies.

Win95, Win98, WinNT, Win2000, WinXP are trademarks of Microsoft.

WinPcap © is a trademark of "Politecnico di Torino"

Contents

1 General Information	4
Manual for EM510	4
Manual for DX200.....	4
EM510 and DX200	4
2 Firmware Update	5
2.1 System Requirements	5
2.1.1 System Requirements for Update via RS232	5
2.1.2 System Requirements for Update via LAN	5
2.2 Preparations before Update	5
2.2.1 Preparations before Update via RS232	5
2.2.2 Preparations before Update via LAN	5
2.3 Update Procedure	6
2.3.1 Prepare Update Data	6
2.3.2 Installation of WinPcap ©.....	6
2.3.3 Update via RS232	7
2.3.4 Update via Ethernet (LAN)	7
2.4 Messages and Indication.....	8
2.4.1 Update Messages	8
2.4.2 Indication on EM510 rear panel	8
3 New Features, Improvements and Changes.....	9
3.1 New Features	9
3.2 Improvements.....	9
3.3 Changes	9
3.4 Version History	9
4 Faults Remedied in Firmware Version 1.82	13
5 Restrictions - Known Problems - Workarounds	13
5.1 Restrictions.....	13
5.1.1 Boot Program Version.....	13
5.1.2 Main Board Version.....	13
5.1.3 Main Board CPLD Version	13
5.2 Known Problems	13

1 General Information

Manual for EM510

The following manual is supplied with the EM510: **Manual EM510**

The new firmware Version 1.82 corresponds with the EM510 Manual 4065.7763.34-01

Manual for DX200

The following manual is supplied with the DX200: **Manual DX200**

The new firmware Version 1.82 corresponds with the DX200 Manual 4070.2850.34-01

How to get a current version of the manual?

- Order a printed manual at Rohde & Schwarz, order no. 4065.7763.34-01 for EM510 and 4070.2850.34-01 for DX200
- You will also find pdf-files of the current release of the manual in the SALES INFORMATION Board on GLORIS. If you don't have access to this Board, please ask your local support for a manual in pdf format.

EM510 and DX200

The firmware for EM510 is also used for DX200.

The DX200 is based on EM510 hardware but has reduced functionality:

- The receiver is set to fixed frequency of 10.7 MHz.
- The demodulation bandwidth can be set to maximum 300kHz
- Only the receiver mode FFM (Fixed Frequency Mode) is available.

The DX200 can be upgraded to the full EM510 functionality with the software option DX200EM.

2 Firmware Update

The entire firmware (software for the PPC and DSP processors and for the FPGA) of the EM510 can be updated. The CPLD on the mainboard is only programmed in production by JTAG.

The firmware update of EM510 can be done via RS232 interface or via LAN interface or via VXI.

Firmware is updated on the serial interface (X13b on the EM510 rear panel) or on the LAN interface (X11 on the EM510 rear panel).

Update via LAN interface is only possible with the update tool UPD32.EXE which runs under WinNT, Win2000 and WinXP.

Update via RS232 is only possible with the update tool UPDATE.EXE which runs under DOS, Win95 and Win98 or with the update tool UPD32.EXE which runs under WinNT, Win2000 and WinXP.

2.1 System Requirements

2.1.1 System Requirements for Update via RS232

- IBM-compatible PC with RS232 interface (COM1 or COM2)
- Serial null-modem cable (RxD, TxD crossed), 9-pin female to 9-pin female
- Serial Adapter X13B to 9-pin male

2.1.2 System Requirements for Update via LAN

- IBM-compatible PC with WinNT, Win2000 or WinXP and LAN interface
 - LAN crossed over cable with RJ45 connector, for point to point connection
- or
- LAN patch cable with RJ45 connector, direct for connection via HUB or network

2.2 Preparations before Update

2.2.1 Preparations before Update via RS232

- Plug the Serial Adapter in X13B of EM510.
- Use the null modem cable to connect the COM port of your PC to the adapter of your EM510

2.2.2 Preparations before Update via LAN

- Use the crossed over LAN cable to connect the Ethernet port of the PC directly to the X11 of the EM510

or

- Use the patch LAN cable to connect the hub or network to the X11 of the EM510

2.3 Update Procedure

2.3.1 Prepare Update Data

- Create a new directory on your PC by command:
md EM510_DX200\V01_82
- Copy the ZIP archive file to this directory.
- Unpack the ZIP archive file in the directory by command:
EM510_DX200_Application_V01_82.zip
- After unpacking you will find the following files in your directory:

Rel_V01_82e.pdf	this document
UPDATE.EXE	update program for DOS, Win95, Win98
UPDATE.HLP	help file for DOS update program
UPD32.EXE	update program for, WinNT, Win2000, WinXP
UPD32.HLP	help file for update program for WinNT, Win2000, WinXP
4.0.1-WinPcap.exe	Ethernet component for update via LAN
EM510P1P.cfg	configuration file
BOOTLOAD.ELF	boot loader
EM510P1P.elf	firmware update code

2.3.2 Installation of WinPcap ©

If you want to update your target via Ethernet you have to install the necessary WinPcap components. If WinPcap is already installed, you only have to reinstall WinPcap if your version of WinPcap is lower than 4.0.1.

The versions 3.31 and higher of UPD32.EXE are using WinPcap and its API for its Ethernet capabilities. WinPcap is a free, public system for direct network access under Windows.

The version of WinPcap delivered with EM510 Update has not necessarily to be the newest. To obtain the newest version of WinPcap and for further information about the software kit, see the home page at <http://winpcap.polito.it/> .

The version 3.51 of UPD32.EXE is developed and tested with WinPcap 4.0.1.

Install WinPcap simply by double clicking the supplied WinPcap installation file. Read the installation instructions carefully.

Read the following disclaimer as well very carefully and see also the About Box:

Important notes about WinPcap:

Neither the name of the "Politecnico di Torino" nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED.

IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

This product includes software developed by the University of California, Lawrence Berkeley Laboratory and its contributors.

2.3.3 Update via RS232

- Switch off the EM510 before running the update program.
- Start Update Program UPDATE.EXE under DOS and Win3.1, Win95, Win98
 - Select configuration file EM510P1P.CFG through:
File - Open Config File
 - Configure the connected COM port through:
File - COM port
 - Start update with:
Actions - Update device
- Start Update Program UPD32.exe under WinNT, Win2000, WinXP
 - Select configuration file EM510P1P.CFG through:
File - Config File
 - Configure the connected COM port through:
Config - COM Port
 - Start update through:
Update - via COM
 - Start Update Process
Switch the EM510 on within 30 seconds after the update has been started on the PC. This will start the update process on EM510.

2.3.4 Update via Ethernet (LAN)

In this mode one can bring several targets with the same update-software on the new status.

- Switch off the target(s) EM510 before running the update program.
- Start Update Program UPD32.exe under WinNT, Win2000, WinXP
- Select configuration file EM510P1P.CFG through menu "File - Config File"
- If there are more than one network adapters mounted in your computer, UPD32 takes the first as the default adapter which is used for the update. To change the network adapter select "Network Adapter" in the "Config" menu.
- Then select "via Ethernet" within the "Update" menu.
If the menu item is selected, the system sends out broadcast telegrams.
- Switch on or reset the target(s) EM510
The targets receive the broadcast telegrams and answer it with the hardware identification telegram. If this ID corresponds to the selected configuration file, the target is listed in the next line.
- Now one can select the desired targets from the list.
- Start the "Update-procedures" with the "START" button. Now one after another target will be updated with the new software.

2.4 Messages and Indication

2.4.1 Update Messages

UPD32 displays the following messages while „Load Program Code“:

STARTING COMMUNICATION FOR TARGET (ADR: 00 90 B8 10 01 14)

Load boot code....

Erasing...

Loading program code...

Calculating checksum...

UPDATE COMPLETE

2.4.2 Indication on EM510 rear panel

The lighted ACCE LED on the rear panel of the EM510 shows, that the update is in progress.

After update the ACCE LED is switched of and the FAIL LED is switched on.

If there is no problem detected, the EM510 application starts automatically and switches the FAIL LED of after approximately 10 seconds.

If a problem appears, the FAIL LED toggles the error codes.

Error Code	Definition	Note
0	ERROR_NO_ERROR	No error
1	ERROR_CPLD_NOT_PROGRAMMED	Internal
2	ERROR_EEPROM_NO_IDENT_BLOCK	Internal
3	ERROR_EEPROM_NO_SERIAL_NUMBER	Internal
4	ERROR_EEPROM_NO_ETH_ADDR	Internal
5	ERROR_WRONG_LOCATED	Internal
6	ERROR_NO_APPLICATION	There is no application in the Flash EEprom

3 New Features, Improvements and Changes

3.1 New Features

- With the new command SYSTEM:ERROR:ALL? the whole error queue can be read out.
- With the new command SYSTEM:ERROR:COUNT? the error count of the error queue can be read out.

3.2 Improvements

- The amount of possible udp paths has changed from 3 to 7.

3.3 Changes

- Due to a necessary hardware change in the HF preselection module from TAZ 1.04 the switch delay for the preamplifier had to be extended. Without this change the long test sometimes failed.
- The default udp path can not be deleted with the command TRACE:UDP:DELETE ALL but with the command TRACE:UDP:DEFAULT:DELETE ALL

3.4 Version History

Changes from Version 1.75 to Version 1.81:

New Features:

- Supported TV Standards: B,G,D,I,K,L,M,N

Improvements:

- If a client configures the device to send UDP data, the connection to this client is now continuously checked with a ping every second. In case of no response for five times, the UDP data output to this client is stopped. The device goes on to check with ping, if the client is risen from the dead again. If so the UDP data output is switched on again. Implementation of this behavior was necessary, because some switches in a network react to a disconnection of a client with broadcasting the UDP data to all their outputs. This could lead to a network collapse.

Changes:

- With elder main boards up to revision 2.30 the test point limits for "+3.3V" and "V_CORE_PPC" were too narrow. This firmware checks the main board revision and expands the limit range of these test points if necessary.
- The number of samples within the IFPAN has been increased by 2 points.
- The additional IF bandwidth 8 MHz has been integrated.

Faults Remedied:

- After setting the receiver to a new frequency it could happen that one sample of the IQ data stream got lost. This problem has been solved now.
- With RARP switched off and 32 bit IQ data output via LAN sometimes packets got lost. This problem has been solved now.
- If an internal temperature test point was out of range, the error message "Mainboard defective" was generated instead of "Temperature too high" or "Temperature too low". This problem has been solved now.
- With RDS statistics data there was a overflow of the packet counter after a few hours. This problem has been solved now.

Changes from Version 1.72 to Version 1.75:

Changes:

- With new SDRAM chips and high temperature a hardware problem occurred in the production To solve this problem a hardware change was necessary. This firmware V1.75 is necessary to react to the hardware change.

Faults Remedied:

- The command clear memory channels caused also to copy the flags of memory channel 0 to all the cleared memory channels. This problem has been solved.
- It was possible to copy a memory channel with frequency set to zero to the receiver. This is no more possible.
- The test output on the left corner of the video panorama is now eliminated.
- Due to a bug in the firmware V01.72 after 121 continuous open-close cycles of the TCP/IP socket the firmware hang. This problem has been solved.
- Due to a DSP firmware problem the lower range of BFO variation was limited to -4kHz. This problem has been solved.
- There were level variations up to 3 dB when running PSCAN with step width lower than 3.125 kHz. This problem has been solved.

Changes from Version 1.69 to Version 1.72:

Faults Remedied:

- During the warm up time of the OCXO the test point TUNE_76.8M is out of his permissible working limits. This sometimes lead to the error message 10, "Component failure; Mainboard defective" after power on of the cold device. The test point limits are now valid after one minute warm up time.
- The service tool works now also on a raw main board and on DX200.

New Features:

- This is the first firmware version to run also on a DX200.

Improvements:

- The accuracy of AFC has been improved.

Changes from Version 1.68 to Version 1.69:

Faults Remedied:

- The timing problem with environment temperature higher than 45 degree Celsius is solved now. The new FPGA image works on old FPGA SG4 (BF 2085.4138.00) and new FPGA SG5 (BF 2110.8289.00) as well.

Changes from Beta Version 1.68 to Version 1.68:

New Features:

- The dynamic IP address configuration is now possible via RARP or DHCP. The configuration can be done via UPD32 "CONFIG"- "LAN Settings via Ethernet" or via remote command "SYST:COMM:LAN:AUTO RARP | DHCP". If DHCP is used and a name server is present in the network the EM510 can be addressed with his name. The name is put together for example like RS-EM510-100016-002 if serial number is 100016 and the variant is 002.

Improvements:

- The speed of PSCAN in the instantaneous window with step width 100kHz has been improved by factor 2. Thus the speed up to 34 GHz/s can be reached.

Faults Remedied:

- The network subnet mask and the gateway are now handled correctly. Thus communication via router is possible.
- There were level variations up to 3 dB when running PSCAN with step width lower than 3.125 kHz. This problem has been solved.

Changes from Beta Version 1.61 to Beta Version 1.68:

New Features:

- The number of memory location has been raised from 1000 to 10 000.
- The audio filter mode can now be configured to notch, noise reduction or speech filter.
- A new command defines a hold time for attenuation changes.
- With a new command the BFO frequency for CW can be changed.
- A new command specifies the timing behavior of the gain control.
- The new audio mute function can be activated by setting low level to X12.B5 of the AUX connector. While being activated the audio outputs AF_HEADPHONE on X10 and AF_MONO on X12A.2 are muted.

Improvements:

- The squelch function is now activated immediately after the signal has disappeared.
- The following PSCAN step widths have been added: 2.5 kHz, 1.25 kHz, 625 Hz, 500 Hz, 250 Hz and 125 Hz.

- With all LAN configuration SCPI commands the syntax 'SOCKeT' is also possible instead of 'LAN'.
- The short form BYT and BIT of the commands BYTaux and BITaux are also accepted.

4 Faults Remedied in Firmware Version 1.82

- None

5 Restrictions - Known Problems - Workarounds

5.1 Restrictions

This new firmware version can be run on every EM510 or DX200 hardware. Until now there is no problem known which causes incompatibility to higher firmware versions.

5.1.1 Boot Program Version

The boot program is the root boot loader located at a secure section of the flash memory. It is not changed with the normal flash update procedure. You can read out the boot program version with the command: "DIAG:INFO:SVER5?"

The current version is 2.70. Please contact R&S if you need to change the boot program.

5.1.2 Main Board Version

You can read out the main board version with the command: "DIAG:INFO:MOD? MB".

5.1.3 Main Board CPLD Version

You can read out the main board CPLD version with the command: "DIAG:INFO:SVER4?"

The current version is 2.15. Please contact R&S if you need to change the boot program.

5.2 Known Problems

For UDP data output if for example audio tag and audio flag are set within one command string the first setting is ignored.

Work around: Use separate strings for setting UDP configurations.

Hotline

Should you have any questions or suggestions, please use the hotline:

Telephone: ++49-180-5124242

FAX : ++49-89-4129-13777

E-mail: CustomerSupport@rsd.rohde-schwarz.com