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1 FDM-S1 Overview

1.1 Description of the ELAD FDM-S1 receiver

The radio-receiver ELAD FDM-S1 is conceived as a SDR (Software Defined Radio). This approach means that the receiver is composed of an Hardware RF front-end and a PC with an ELAD software (ELAD FDM-SW1).

1.2 Front Panel Description

![Front Panel Image]

**Power Led**
Turns on when the receiver is connected to a USB port of the PC

**Communication Led**
Shows the communication between the receiver and the PC

**Antenna Input**
SMA 50Ω input connector.

**External Hardware Connector**
DB9 connector for external hardware (eg pre-selector filters board)
1.3 Rear Panel Description

**USB 2.0 Connector**
Connection with the PC. Please use the supplied cable.

2 Software & Driver Installation

2.1 Software installation in Windows 7 and Windows XP

2.1.1 First-time install in Windows 7

Double-click the file “setup.exe” in the CD.

The windows installer first installs the prerequisites:
- Microsoft VC++ 2010 Runtime libraries
- Microsoft .NET Framework 4.0

and then the FDM-SW1 software.
Click on “Accept”

Click on “Install”

Click on “Yes”
Click on Install

Microsoft Visual C++ 2010 x86 Redistributable installation is complete, click on “Finish”

Click on “Yes” to start the installation of the .Net Framework 4.0
Click to “Next” to start the FDM-SW1 software installation

Chose the installation folder, then click on “Next”
Click on “Next”

Click on “Yes”
The FDM-SW1 software installation is completed, click on “Close”
2.1.2 First-time install in Windows XP

Double-click the file “setup.exe” in the installation folder.

Click on “Accept”
Click on “Install”

**ELAD FDM-S1 Setup**

The following components will be installed on your machine:

*Visual C++ 2010 Runtime Libraries (x86)*

Do you wish to install these components?

If you choose Cancel, setup will exit.

[Install] [Cancel]

Click on “Install”

**Microsoft Visual C++ 2010 x86 Redistributable Setup**

Welcome to Microsoft Visual C++ 2010 x86 Redistributable Setup

Please accept the license terms to continue.

MICROSOFT SOFTWARE LICENSE TERMS

MICROSOFT VISUAL C++ 2010 RUNTIME LIBRARIES WITH SERVICE PACK 1

These license terms are an agreement between Microsoft Corporation (or based on where you live, one of its affiliates) and you. Please read them. They apply to the software named above.

I have read and accept the license terms.

[Install] [Cancel]
Click on Next to install the FDM-SW1 software

Select the installation folder, then click on “Next”
Click on “Next”

The FDM-SW1 Software installation is completed

Please use Windows Update to check for any critical updates to the .NET Framework.
2.1.3 Update an existing software version

If you need to update an existing software version, first uninstall the version already installed, then install the update.

Windows 7

- Go to: Control Panel->Programs->Programs and Features. Select the ELAD FDM-SW1 and click on “Uninstall”.
- Double click on file ELAD_FDM_SW1_V_x.xx.msi in the CD.

Windows XP

- Go to: Control Panel->Add or Remove Programs. Select the ELAD FDM-SW1 and click on “Remove”.
- Double click on file ELAD_FDM_SW1_V_x.xx.msi in the CD.
2.2 FDM-S1 USB driver

2.2.1 FDM-S1 USB driver installation in Windows 7

Connect the FDM-S1 to a free USB 2.0 port of the pc. Open the Control panel then, click on “Device Manager”.

Expand the “Other devices” node and select “ELAD FDM S1” device, right click and select “Update Driver Software...”
Select the second option

For 32 bit system select the folder:
C:\Program Files\ELAD\ELAD FDM-SW1\ELAD_FDM-S1_Driver

For 64 bit system select the folder:
C:\Program Files (x86)\ELAD\ELAD FDM-SW1\ELAD_FDM-S1_Driver

Click on “Next”
Ignore the warning and select the second option to install the driver.

The USB Driver installation is completed, click on “Close”

2.2.2 FDM-S1 USB driver installation in Windows XP

Connect the FDM-S1 to a free USB 2.0 port of the pc, the Hardware Update wizard starts automatically
Select the third option “No, no this time”, the click on “Next”

Select the option “Install from a list or specific location (Advanced)” and click on “Next”
Select “Search for the best driver in these location” and “Include this location in the search”, click on “Browse” and select the folder:

Local Drive (C:) \Programs\ELAD\ELAD FDM-SW1\ELAD_FDM-S1_Driver

Then click on “Next”.

Ignore the warning and click on “Continue Anyway”.

Hardware Installation

The software you are installing for this hardware:

ELAD FDM-S1

has not passed Windows Logo testing to verify its compatibility with Windows XP. [Tell me why this testing is important]

Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.

[Continue Anyway] [STOP installation]
The FDM-S1 USB driver is completed, click on “Finish”.
2.3 WoodBoxRadio Tmate USB driver installation

2.3.1 WoodBoxRadio Tmate USB driver installation in Windows 7

Connect the WoodboxRadio Tmate to a free USB 2.0 port of the pc.
Open the Control panel then, click on “Device Manager”

Expand the “Other devices” node and select “DSW:100XX USB” device, right click and select “Update Driver Software...”
Select the second option

For 32 bit system select the folder:
C:\Program Files\ELAD\ELAD FDM-SW1\TMateDriver
For 64 bit system select the folder:
C:\Program Files (x86)\ELAD\ELAD FDM-SW1\ TMateDriver
Click on “Next”
Ignore the warning and select the second option to install the driver.

The USB Driver installation is completed, click on “Close”
2.3.2 WoodBoxRadio Tmate USB driver installation in Windows XP

Connect the WoodBoxRadio Tmate to a free USB 2.0 port of the PC, the Hardware Update wizard starts automatically.

Select the third option “No, no this time”, the click on “Next”

Select the option “Install from a list or specific location (Advanced)” and click on “Next”
Select “Search for the best driver in these locations” and “Include this location in the search”, click on “Browse” and select the folder:

Local Drive (C:) \Programs\ELAD\ELAD FDM-SW1\TMateDriver

Then click on “Next”.

Ignore the warning and click on “Continue Anyway”
The Tmate driver installation is completed, click on “Finish”
# ELAD FDM-S1
## TECHNICAL SPECIFICATIONS

### GENERAL

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency coverage</td>
<td>20 kHz ÷ 30 MHz (up to 170 MHz in down-sampling)</td>
</tr>
<tr>
<td>Mode</td>
<td>CW, CW SH+, CW SH-, USB, LSB, DSB, AM, SYNC AM, FM, WB FM, DRM (Software Defined)</td>
</tr>
<tr>
<td>Memory</td>
<td>XML Files (Software Defined)</td>
</tr>
<tr>
<td>Antenna connectors</td>
<td>SMA (50 Ω)</td>
</tr>
<tr>
<td>Temperature range</td>
<td>0 ÷ 40 °C</td>
</tr>
<tr>
<td>Frequency stability</td>
<td>TBD</td>
</tr>
<tr>
<td>Frequency resolution</td>
<td>1 Hz</td>
</tr>
<tr>
<td>PC Interface</td>
<td>High-Speed USB 2.0 (480 Mbit/s)</td>
</tr>
<tr>
<td>Power supply</td>
<td>USB powered</td>
</tr>
<tr>
<td>Power consumption</td>
<td>Less than 2.2 W</td>
</tr>
<tr>
<td>External I/O connector</td>
<td>Female DB9</td>
</tr>
<tr>
<td>Dimensions</td>
<td>108 (W) x 27 (H) x 88 (D) mm</td>
</tr>
<tr>
<td>Weight</td>
<td>180 g</td>
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</table>

### RECEIVER

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Configuration</td>
<td>Direct sampling</td>
</tr>
<tr>
<td>Digital USB Streaming</td>
<td>192 kHz, I/Q channels, 32 bit/sample (Software Defined)</td>
</tr>
<tr>
<td>Sampling Rate</td>
<td>192 kHz, I/Q channels, 32 bit/sample (Software Defined)</td>
</tr>
<tr>
<td>Bandwidth</td>
<td>150 kHz (Software Defined)</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>Typical 0.39 µV (CW, Bandwidth 500 Hz, 10 dB (S+N)/N)</td>
</tr>
<tr>
<td>Selectivity</td>
<td>&gt; 100 dB (Software Defined)</td>
</tr>
<tr>
<td>3rd Oder Intercept Point</td>
<td>&gt; +25 dBm @ 14 MHz, Spacing 2 kHz, Input level -97 dBm</td>
</tr>
<tr>
<td>IMD Dynamic Range</td>
<td>&gt; 105 dB @ 14 MHz, Spacing 2 kHz, Input level -97 dBm</td>
</tr>
<tr>
<td>Blocking gain compression</td>
<td>&gt; 100 dB @ 14 MHz, Spacing 2 kHz, CW, Bandwidth 500 Hz</td>
</tr>
<tr>
<td>Noise floor (MDS)</td>
<td>&lt; -121 dBm @ 14 MHz, CW, Bandwidth 500 Hz</td>
</tr>
<tr>
<td>Attenuator</td>
<td>0, 20 dB</td>
</tr>
<tr>
<td>RF Preselection filter</td>
<td>OFF (wide band), low pass (0 ÷ 30 MHz)</td>
</tr>
</tbody>
</table>

All stated specifications are derived using ELAD FDM-SW1 software (version 1.10) running on 2.2 GHz Intel Core i7 PC with Windows 7 operating system.

All stated specifications and other product information provided in this document are subject to change without notice or obligation.
Declaration of Conformity

The product marked as

FDM-S1

manufactured by

Manufacturer: ELAD S.r.l.
Address: Via Col De Rust, 11 - Sarone
33070 CANEVA (PN)

is produced in conformity to the requirements contained in the following EC directives:

- R&TTE Directive 1999/5/CE
- EMC Directive 2004/108/CE
- Low Voltage Directive 2006/95/CE

The product conforms to the following Product Specifications:

**Emissions & Immunity:**
ETSI EN 300 330-1
ETSI EN 301 489-1
ETSI EN 301 498-15
ETSI EN 301 783-2

**Safety:**
EN 60950-1: 2006 + A11: 2009

And further amendments.

This declaration is under responsibility of the manufacturer:

ELAD S.r.l.
Via Col De Rust, 11 - Sarone
33070 CANEVA (PN)

Issued by:

Name: Franco Milan
Function: President of ELAD

Caneva Place
March, 20th 2012 Date

Signature

www.eladit.com