

Slate R1260I

RFID UHF Desktop Reader



easy2read®



Technical Information Manual

Revision n. 02

19/06/2012

Scope of Manual

The goal of this manual is to provide the basic information to work with the SLATE R1260I UHF Desktop Reader.

Change Document Record

Date	Revision	Changes	Pages
20 Dec 2011	01	First release	-
19 Jun2012	02	Modified UHF RFID Reader Development Kit	7
		Added <i>Getting Started</i> chapter	10-14
		Renamed <i>Slate R1260I Functional Description</i> chapter into <i>Slate R1260I External Interfaces Description</i>	16
		Moved <i>Firmware Upgrade</i> paragraph into the <i>Slate R1260I Reader Upgrade</i> chapter	19
		Moved <i>Serial Port Emulator</i> paragraph into the <i>Getting Started</i> chapter	11

Reference Document

- [RD1] G.S.D. s.r.l. - Report CE mark – Slate R1260I - RFID UHF Desktop Reader. Test report n. 10507 Rev.00 - 28 June 2010
- [RD2] Independent Testing Laboratory – CMC Centro Misura Compatibilità s.r.l. – Report Federal Communication Commission (FCC) – Slate R1260I - RFID UHF Desktop Reader. Test report n. R11015101 - 25 March 2011
- [RD3] EPCglobal: EPC Radio-Frequency Identity Protocols Class-1 Generation-2 UHF RFID Protocol for Communications at 860 MHz – 960 MHz, Version 1.1.0 (December 17, 2005).

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Federal Communications Commission (FCC) Notice

This device was tested and found to comply with the limits set forth in Part 15 of the FCC Rules. Operation is subject to the following conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This device generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the instruction manual, the product may cause harmful interference to radio communications. Operation of this product in a residential area is likely to cause harmful interference, in which case, the user is required to correct the interference at their own expense. The authority to operate this product is conditioned by the requirements that no modifications be made to the equipment unless the changes or modifications are expressly approved by CAEN RFID.

Disposal of the product

Do not dispose the product in municipal or household waste. Please check your local regulations for disposal/recycle of electronic products.



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1 Introduction

This Chapter gives general information about the **SLATE R1260I Reader**. It contains these topics:

- [General Information](#)
- [Ordering Options](#)
- [Accessories](#)
- [Installation Notice](#)



General Information

The Slate (Model R1260I), the new desktop reader of the easy2read© Family, is an UHF multiregional RFID reader with integrated antenna for short to medium range applications.

The Slate Reader is powered and controlled directly by an USB cable, thus allowing to read EPC Class 1 Gen 2 UHF RFID tags in an easy desktop environment.

Thanks to its low profile (15 mm) and its size (approximately an A4 page), the Slate reader is the perfect choice for various applications such as point-of-sales, document tracking, RFID programming stations, access control and so on. It can be used as a building block for smart shelves and smart displays.

Being compliant with both European and US regulatory environments, the Slate reader allows installations in various countries worldwide as needed by retailers, forwarders, warehouses and other global organizations.

The core component of the Slate is the new CAEN RFID Quark module, the smallest and lowest power consuming module available on the market.



Fig. 1.1: Slate R1260I UHF Desktop Reader

[R1260I \(SLATE\) USB Desktop UHF RFID Reader Development Kit](#) is available:



Fig. 1.2: Slate R1260I USB Desktop UHF RFID Reader Development Kit

The R1260I (SLATE) reader development kit is a complete RFID set up, for a quick implementation of RFID solutions. It includes:

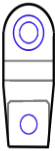
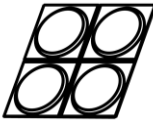


- n. 1 R1260I (SLATE) USB Desktop UHF RFID Reader
- n. 1 Set of Labels
- n. 1 [A927Z](#) Temperature Logger Tag
- n. 1 [RT0005](#) Temperature Logger Tag

Ordering Options

	Code	Description
Reader	WR1260IXAAAA	R1260I - RFID UHF Desktop Reader
Development Kit	WR1260IDKAAA	R1260IDK – development kit with Slate and temp tags

Accessories

Check for the supplied accessories below:

 <p>No. 2 wall hooks</p>	 <p>No. 4 rubber feet</p>
 <p>No. 2 rawplugs (ø 4 mm) +screws</p>	 <p>No. 2 small screws (ø 3 mm)</p>

Installation Notice

The Slate R1260I can be easily placed on a table for desktop applications or it is possible to hang it on the wall.

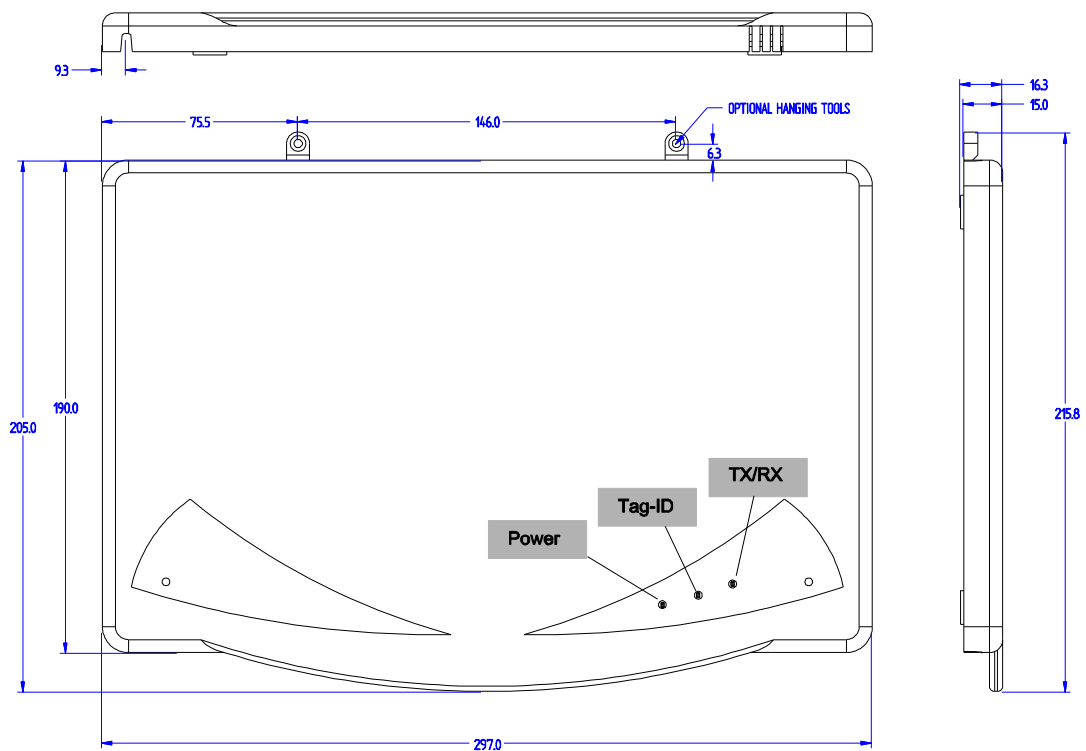


Fig. 1.3: Slate R1260I Technical drawings: top view

Horizontal Installation:

The Slate can be easily placed on a table for desktop applications affixing the 4 rubber feet to the bottom of the Slate R1260I to prevent it from sliding.

Vertical Installation:

The Slate can be hung on the wall (see *Fig. 1.4: Slate R1260I Wall mounting*).

First of all, use the two small screws (\varnothing 3 mm) to fix the 2 hooks on the Slate.

Then, to hang the Slate on the wall, fix the hooks to the wall using the 2 rawlplugs (\varnothing 4 mm) + screws at a distance of 146 mm each other.

If you want to hang the Slate on a wood panelling, fix the hooks to the wall just using the 2 screws.

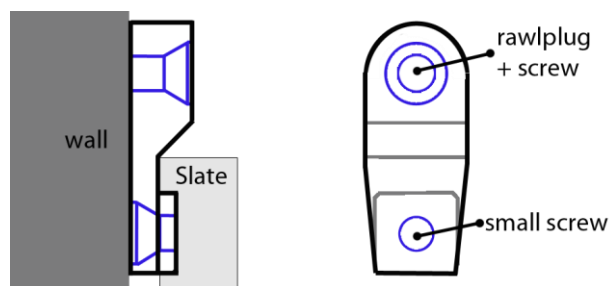


Fig. 1.4: Slate R1260I Wall mounting

2 Getting Started

This chapter provides simple steps to quickly start using the **SLATE R1260I Reader**. It contains these topics:

- [Introduction](#)
- [Serial Port Emulator](#)
- [Connecting the Slate R1260I Reader](#)



Introduction

This quickstart guide will help you to get started with your Slate R1260I reader.

For more detailed information on reader configuration, connections and setup options please refer to the next chapters.

To begin, you need first to download and install the [.NET framework 2.0](#) (only required if .NET is not already installed on your PC).

Serial Port Emulator

The SLATE R1260I can be connected to a PC via USB connection. The RFID reader emulates a serial port. In the next paragraph the procedure to install the required driver is presented.

Driver installation

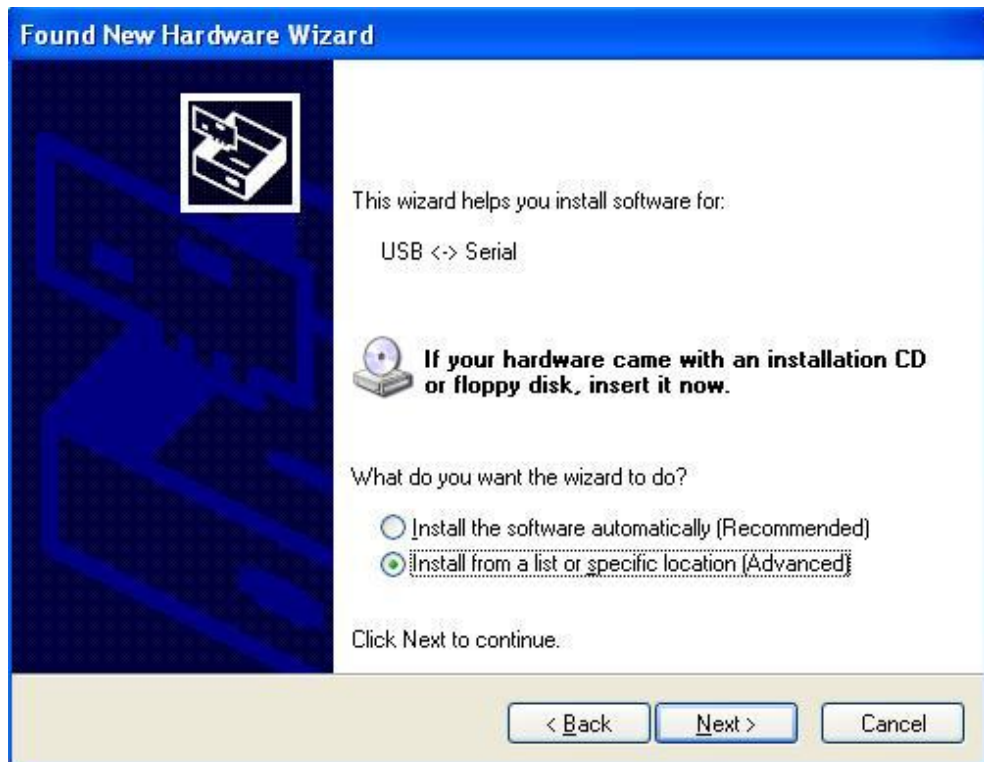
The Slate reader is based on a FTDI chip. To connect it to the PC you need to install the VCP (Virtual Com Port) drivers for your operating system. You can download VCP drivers for Windows based systems from the CAEN RFID Web Site at [Slate R1260I page](#) or from <http://www.ftdichip.com/Drivers/VCP.htm> for different operating systems (or for the most updated version).

The procedure to install the USB driver is presented below:

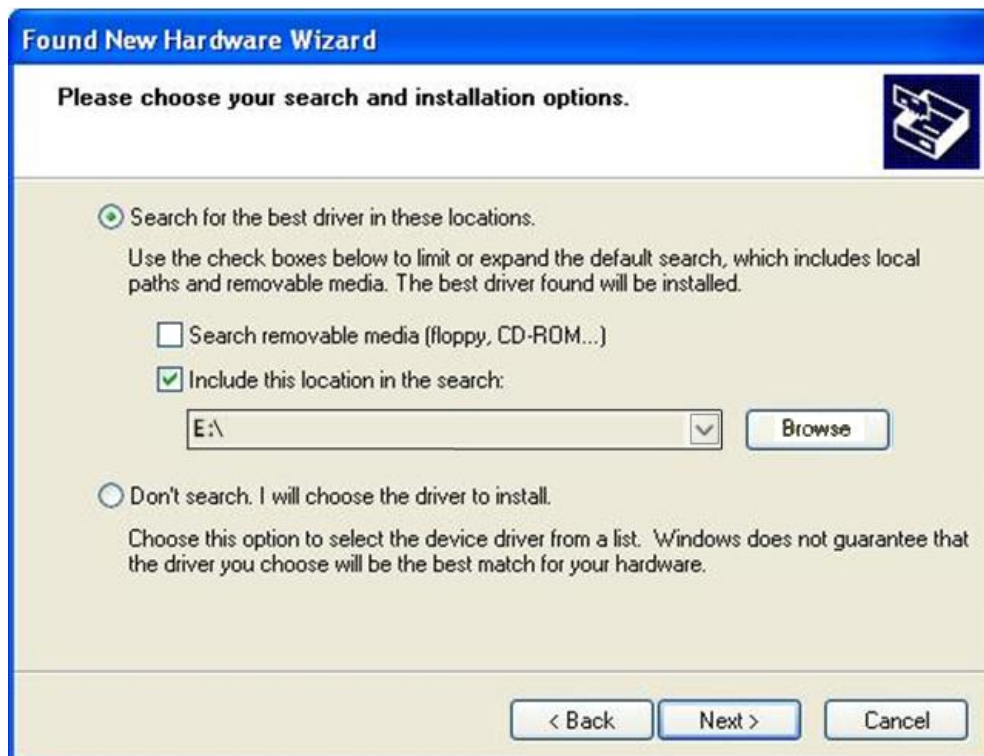
1. Verify that the USB cable is correctly plugged into the PC.
2. If the USB to Serial driver is not installed on the PC the following pop-up window is displayed.



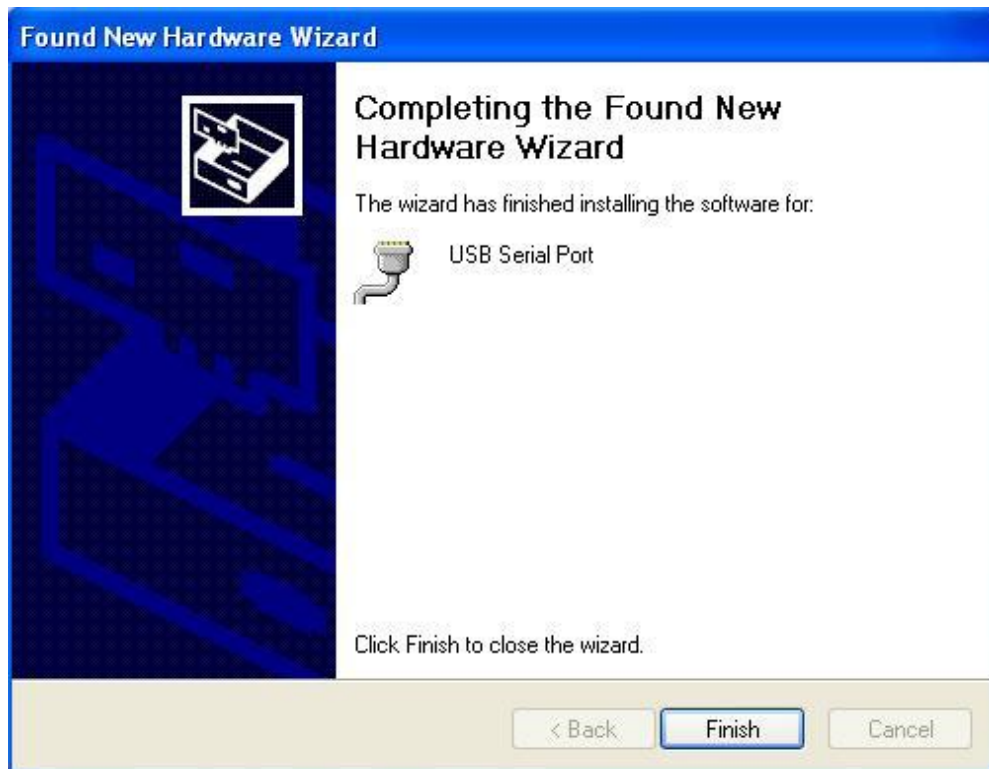
3. Select *No, not this time* and click on *next*.
4. Select *Install from a list or specific location* and click on *next*.



5. Select *Include this location in the search* and browse the folder where you have downloaded the VCP drivers then click on *next*.



6. When the installation is successfully terminated, press on Finish.



7. Now the driver installation procedure is completed.

Connecting the Slate R1260I Reader

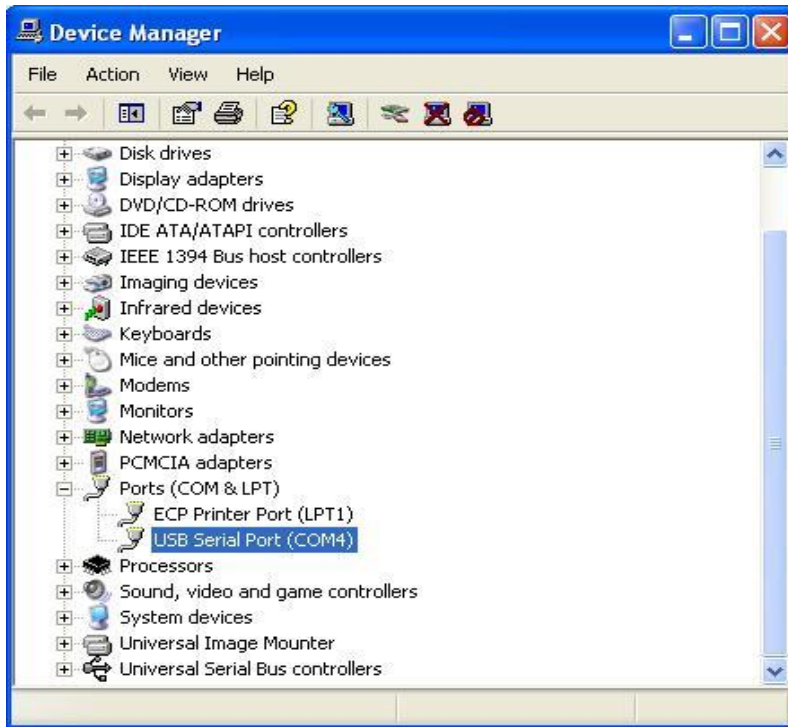
You can connect to the Slate R1260 Reader using the *EasyController* software via USB connection.

Connecting the Slate using the EasyController

1. Download from the CAEN RFID web site the latest version of the [EasyController software](#) and install it.
2. Follow the procedure described in *Driver installation* paragraph pag. 11.
3. Connect the Slate to your pc using the USB connection.
4. Open the System properties (right click on *My computer* icon) → *Hardware* → *Device Manager*.



5. See the emulated serial port in the “USB serial port (COM X)”, in the case below COM4.



6. Once the serial port connection is established, CAEN RFID *EasyController* software can be used to interface the reader. Launch the Easycontroller by double clicking on the icon on your desktop.
7. Click on *File* → *Connect*, select the RS232 Connection Type and select from the pull-down menu the COM port number where the driver has mapped the virtual port for the Slate (in the example COM4) and then click on **connect**.
8. Place a tag on the reader, click on *start inventory* and see the tag information displayed on the main window.

For more info on the use of the *EasyController*, please refer to the manual *RFID Easy Controller Software*.

3 SLATE R1260I

External Interfaces Description

This Chapter gives a description of the **SLATE R1260I Reader** external interfaces. It contains these topics:

- [External Connection](#)
- [Front Panel Leds](#)



External Connection

The external connection is via USB port.

The USB cable is located in the back side of the Slate. You can pass the USB cable through the opening at the bottom or at the top of the Slate back side. The mechanical specification of the USB Port is as follows:

- USB Port: USB Type A plug connector

The Slate R1260I is powered through the USB host.

Front Panel Leds

The Slate R1260I front panel houses the following Leds (see figure below):

LEDS	FUNCTION	TYPE
POWER	Power ON	Green Led
TAG-ID	Tag detection	Blinking Red Led
TX/RX	USB communication activity	Blinking Yellow Led

Tab. 3.1: Slate R1260I Front Panel Leds

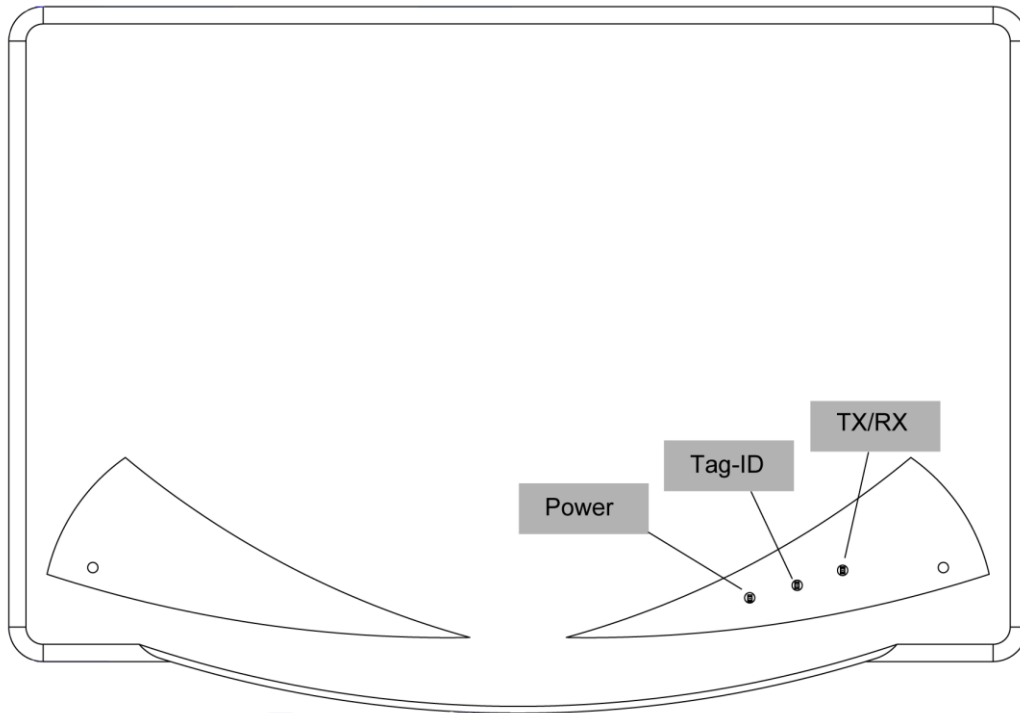


Fig. 3.1: Slate R1260I Front Panel LEDs

4 SLATE R1260I Reader Upgrade

This Chapter describes the **SLATE R1260I Reader Upgrade**.



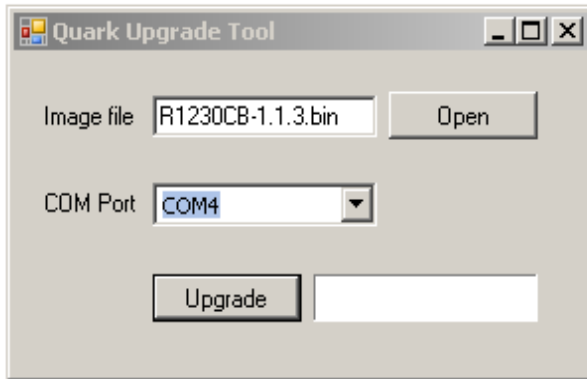
Firmware Upgrade

The Slate Upgrade Tool is available for free at [Slate R1260I page](#) of the CAEN RFID Web Site.

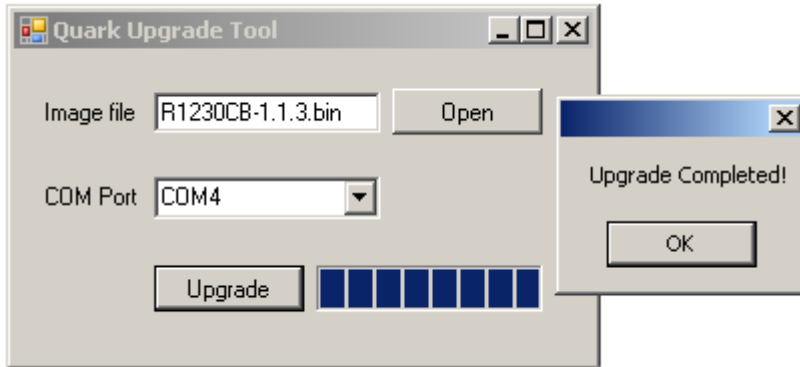
The Slate R1260I firmware upgrade can be managed via USB.

In order to upgrade the firmware follow the steps below:

- Verify the virtual COM port associated to the reader
- Open the FW upgrade program
- Select the COM port
- Select the image file by clicking on "Open" button



- Click on "Upgrade" button
- Wait for the upgrade to be completed



- Disconnect the USB cable
- Connect again the USB cable: now the reader is ready

5 SLATE R1260I Technical Specifications

This Chapter introduces the technical specifications of the **SLATE R1260I Reader**. It contains these topics:

- [Technical Specifications Table](#)
- [Reader – Tag Link Profiles](#)
- [Radiation Patterns](#)



Technical Specifications Table

Frequency Band	902÷928 MHz (FCC part 15) 865.600÷867.600 MHz (ETSI EN 302 208)
RF Power	Programmable in 15 levels (1dB step) from 12dBm ERP to 26dBm ERP (from 16mW ERP to 400mW ERP)
Antenna	Integrated Circular Polarized Antenna
Number of Channels	4 channels (compliant to ETSI EN 302 208 v1.2.1) 50 hopping channels (compliant to FCC part 15.247). All subsets of FCC band are supported
Standard Compliance	EPC C1G2/ISO 18000-6C
User Interface	Green LED: Power Blinking red LED: Tag detection Blinking yellow LED: USB communication activity Buzzer: user programmable event signalling
USB Device Port	USB Type A plug connector Bus powered USB 2.0 device Must be connected to High-power Port (500 mA @ VBUS) It appears as USB serial port Virtual Com Port (VCP) drivers for Windows XP/Vista/Seven (7), Windows CE 4.2, Linux 2.40 and greater Baudrate: 115200 Databits: 8 Stopbits: 1 Parity: none Flow control: none
Dimensions	(W)297 x (L)205 x (H)15 mm ³ (11.7 x 8 x 0.6 inch ³)
Electrical Power	5 V DC bus powered (USB) Max 400 mA
Operating Temperature	-10 °C to +55 °C
Weight	525 g
Length of USB cable	1.5 m

Tab. 5.1: Slate R1260I Technical Specifications

Reader – Tag Link Profiles

Slate R1260I reader supports different modulation and return link profiles according to EPC Class1 Gen2 protocol.

In the following table are reported all profiles that have been tested for the compliance with ETSI and FCC regulations.

Link profile #	Regulation	Modulation	Return Link
0	ETSI - FCC	DSB-ASK; f=40kHz	FMO; f = 40kHz
1	ETSI - FCC	DSB-ASK; f=40kHz	Miller (M=4); f = 256kHz

Tab. 5.2: Slate R1260I Reader to tag link profiles

Radiation Patterns

The radiation patterns of Slate R1260I are shown in the following figures.

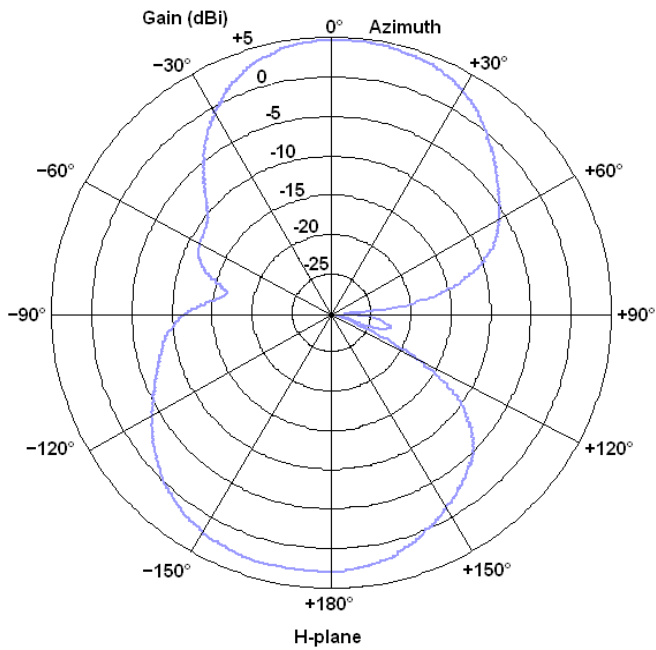


Fig. 5.1: Slate R1260I Radiation pattern H plane

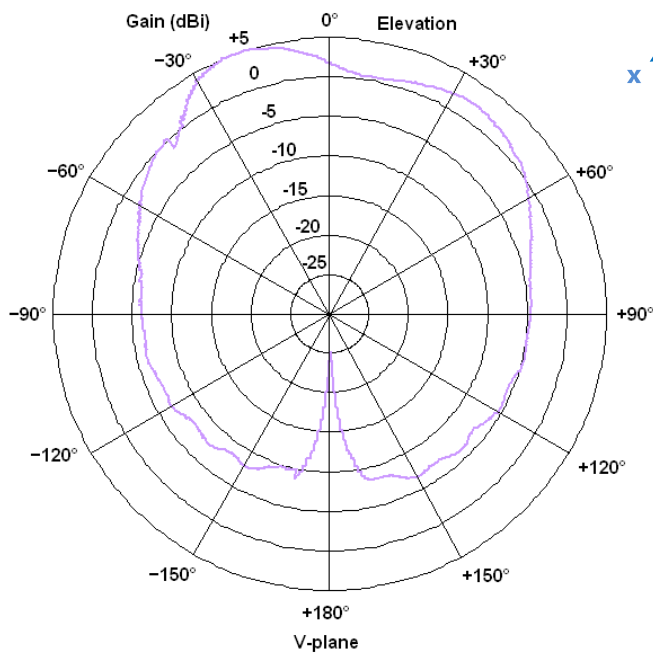
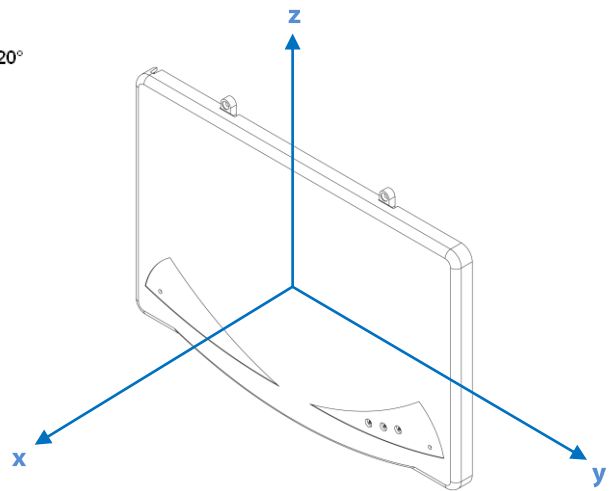


Fig. 5.2: Slate R1260I Radiation pattern V plane

6 SLATE R1260I Regulatory Compliance

This Chapter gives information on the **SLATE R1260I Reader** Regulatory Compliance. It contains these topics:

- [FCC Compliance](#)
- [CE Compliance](#)
- [RoHS EU Directive](#)
- [CE DECLARATION OF CONFORMITY](#)
- [FCC GRANT](#)



FCC Compliance

This equipment has been tested and found to comply with Part 15 of the FCC Rules.

NOTE:

(a) Any changes or modification not approved by CAEN RFID could void the user's authority to operate the equipment.

(b) The Slate R1260I reader contains an integrated circular antenna with 5dBi gain. The maximum radiated power is 400mW e.r.p. (650 mW e.i.r.p.). Use of other than the approved antenna with this unit may result in harmful interference with other users, and cause the unit to fail to meet regulatory requirements.

Reference document: Test report n. R11015101 [RD2].

See § *FCC GRANT* pag.26 for the Slate R1260I FCC Compliance Certificate.

CE Compliance

Reference standard:

CEI EN 60950-1:2004

ETSI EN 301 489-1 V. 1.8.1:2008

ETSI EN 301 489-3 V. 1.4.1:2002

ETSI EN 302 208-2 V. 1.2.1:2008

CEI EN 50364:2002

CEI EN 50357:2002

Reference document: Test report n. 10507 [RD1].

See § *CE DECLARATION OF CONFORMITY* pag. 25 for the Slate R1260I CE Compliance Certificate.

RoHS EU Directive

Slate - R1260I - RFID UHF Desktop Reader is compliant with the EU Directive 2002/95/EC on the Restriction of the Use of certain Hazardous Substances in Electrical and Electronic Equipment (RoHS).



CE DECLARATION OF CONFORMITY

Manufacturer: CAEN RFID Srl
Via Vetraia, 11
55049 Viareggio (LU)
Italy

Product Model Code: WR1260IXAAAA

Product Model Description: Slate - R1260I - RFID UHF Desktop Reader

Standards to which conformity is declared
CEI EN 60950-1:2004
ETSI EN 301 489-1 V. 1.8.1:2008
ETSI EN 301 489-3 V. 1.4.1:2002
ETSI EN 302 208-2 V. 1.2.1:2008
CEI EN 50364:2002
CEI EN 50357:2002

The present document declares that the specified product complies with the reported standards and satisfies the essential requirements of the European regulation R&TTE Directive 99/5/EC.

Viareggio, 08/07/2010

Chief Executive Officer

Adriano Bigongiari

On the basis of this declaration, this product will bear the following mark:



TCB

**GRANT OF EQUIPMENT
AUTHORIZATION**

TCB

**Certification
Issued Under the Authority of the
Federal Communications Commission
By:**

**EMCCert Dr. Rasek GmbH
Boelwiese 5
D-91320 Ebermannstadt,
Germany**

**Date of Grant: 04/06/2011
Application Dated: 04/06/2011**

**CAEN RFID srl
via Vetralla, 11 - 55049 Viareggio (LU) - ITALY
Viareggio, 55049
Italy**

Attention: Adriano Bigongiari , CEO

NOT TRANSFERABLE

EQUIPMENT AUTHORIZATION is hereby issued to the named GRANTEE, and is VALID ONLY for the equipment identified hereon for use under the Commission's Rules and Regulations listed below.

FCC IDENTIFIER: UVECAENRFID011
Name of Grantee: CAEN RFID srl
Equipment Class: Part 15 Spread Spectrum Transmitter
Notes: Low Power Communication Device Transmitter

<u>Grant Notes</u>	<u>FCC Rule Parts</u>	<u>Frequency Range (MHZ)</u>	<u>Output Watts</u>	<u>Frequency Tolerance</u>	<u>Emission Designator</u>
	15C	902.75 - 927.25	0.134		

Power output listed is peak conducted. The antenna used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.