TECHNICAL INFORMATION MANUAL

Revision 0.1 – 14 December 2016



RFID UHF Desktop Reader







Scope of Manual

The goal of this manual is to provide the basic information to work with the Slate R1260UB RFID UHF Desktop Reader.

Change Document Record

Date	Revision	Changes	Pages
14 December 2016	0.1	Preliminary release	-

Reference Document

[RD1]

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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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

Product Description

The Slate (Model R1260UB), the new desktop reader of the easy2read[©] Family, is an UHF RFID reader with integrated antenna for short 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.

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

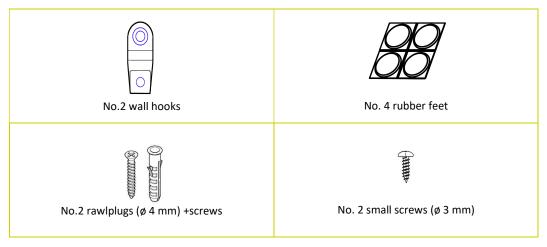


Fig. 1.1: Slate R1260UB RFID UHF Desktop Reader



Accessories

Check for the supplied accessories below:



Installation Notice

The Slate R1260UB can be easily placed on a table for desktop applications or it is possible to hang it on the wall.

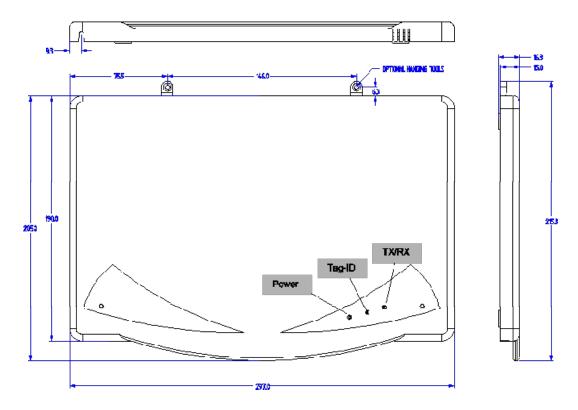


Fig. 1.2: Slate R1260UB Technical drawings: top view



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 R1260UB to prevent it from sliding.

Vertical Installation:

The Slate can be hanged on the wall (see Fig. 1.3: Slate R1260UB Wall mounting).

First of all, use the two small screws (ø 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 (Ø 4 mm) + screws at a distance of 146 mm each others.

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

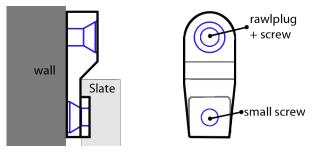


Fig. 1.3: Slate R1260UB Wall mounting



2 FUNCTIONAL DESCRIPTION

Main Features

- FCC part 15 compliant
- SRRC RFID national standards compliant
- EPC C1 G2/ISO18000-6C compliant
- Integrated circular polarized antenna
- Programmable output RF power
- Powered by USB
- Low profile

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 R1260UB is powered through the USB host.

Front Panel LEDs

The Slate R1260UB front panel houses the following LEDs (see Fig. 1.2: Slate R1260UB Technical drawings: top view):

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

Tab. 2.1: Slate R1260UB Front Panel LEDs



Serial Port Emulator

The SLATE R1260UB 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 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.

Found New Hardware Wizard		
	Welcome to the Found New Hardware Wizard Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission). Read our privacy policy Can Windows connect to Windows Update to search for software? Yes, this time only Yes, now and every time I connect a device No, not this time	
< Back Next > Cancel		

- 3. Insert the CD provided together with the SLATE R1260UB. Select "No, not this time" and click on next.
- 4. Select "Install from a list or specific location and click on next.

Found New Hardware Wiz	ard
	This wizard helps you install software for: USB <-> Serial If your hardware came with an installation CD or floppy disk, insert it now. What do you want the wizard to do?
	O Install the software automatically (Recommended)
Provide States	Install from a list or specific location (Advanced)
	Click Next to continue.
	< <u>B</u> ack <u>N</u> ext> Cancel



5. Select "Search removable media" and click on next.

Found New Hardware Wizard		
Please choose your search and installation options.		
Search for the best driver in these locations.		
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.		
Search removable media (floppy, CD-ROM)		
Include this location in the search:		
E:\ Browse		
O Don't search. I will choose the driver to install.		
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.		
Cancel		

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

Found New Hardware Wize	ard
	Completing the Found New Hardware Wizard The wizard has finished installing the software for: USB Serial Port
	K Back Finish Cancel



7. Now the driver installation procedure is completed. Open the System properties (right click on "My computer" icon) → Hardware → Device Manager.

em Proper	ties		?
System Re:	store Auto	omatic Updates	Remote
General	Computer Name	Hardware	Advanced
🛒 on	- e Device Manager lists	all the hardware device Device Manager to ch	
		Device Ma	anager
🖾 cor	npatible with Windows	ike sure that installed dr . Windows Update lets o Windows Update for Windows U	you set up drivers.
Hardware Pro		a way for you to set up	and store
	erent hardware configu		
		OK Cancel	Apply

8. See the emulated serial port in the "USB serial port(COM X)", in the case below COM4.





- 9. Once the serial port connection is established, CAEN RFID Show software can be used to interface the reader:
 - Open CAEN RFID Show
 - Click on File -> Connect
 - Type the COM port the reader is using (in the example COM4) and click on Connect button.

CAEN RFID Show File Settings Advanced Command	is About	
	D))CAENRFID	
Start Acquisition	Connection Type RS232 Connection Connect	
Enable Beep	RS232 Port Cancel Com4	
Read Data		
Write Data		
RFID Status: Disconnected		

10. Now the Slate R1260UB is ready to perform tag scanning and read/write operations.



Firmware Upgrade

The Slate R1260UB 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

🔡 Quark U	pgrade Tool	<u>_0×</u>
Image file	R1230CB-1.1.3.bin	Open
COM Port	COM4 •	
	Upgrade	

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

🔜 Quark U	pgrade Tool 📃 🗖	×
Image file	R1230CB-1.1.3.bin Open	X
COM Port	COM4	Upgrade Completed!
	Upgrade	

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



3 TECHNICAL SPECIFICATIONS

Technical Specifications Table

Frequency Band ¹	902÷928 MHz (FCC part 15)		
	920.625÷924.375 MHz (SRRC RFID national standards)		
RF Power	Programmable in 15 levels (1dB step) from 4dBm ERP to 18dBm ERP (from		
RF POWEI	2.5mW ERP to 67mW ERP)		
Antenna	Integrated Circular Polarized Antenna		
	50 hopping channels (compliant to FCC part 15.247).		
Number of Channels	16 hopping channels (compliant to SRRC RFID national standards).		
	All subsets of FCC band are supported via FW upgrade		
Standard Compliance	EPC C1G2/ISO 18000-6C		
	Green LED: Power		
User Interface	Blinking red LED: Tag detection		
User Interface	Blinking yellow LED: USB communication activity		
	Buzzer: user programmable event signaling		
	USB Type A plug connector		
	Bus powered USB 2.0 device		
	Must be connected to Hight-power Port (500 mA @ VBUS)		
	It appears as USB serial port		
	Virtual Com Port (VCP) drivers for Windows XP/Vista/Seven (7), Windows		
USB Device Port	CE 4.2, Linux 2.40 and greater		
	Baudrate: 115200		
	Databits: 8		
	Stopbits: 1		
	Parity: none		
	Flow control: none		
Dimension	(W)297 x (L)205 x (H)15 mm ³		
Dimensions	$(11.7 \times 8 \times 0.6 \text{ inch}^3)$		
	5 V DC bus powered (USB)		
Electrical Power	Max 400 mA		
Operating Temperature	-10 °C to +55 °C		
Weight	525 g		
Length of USB cable	1.5 m		
ab. 3.1: Slate R1260UB Technical Spe	cifications		

Tab. 3.1: Slate R1260UB Technical Specifications

Warning: The RF settings must match the country/region of operating to comply with local laws and regulations.

The usage of the reader in different countries/regions from the one in which the device has been sold is not allowed.

¹ Requested operating frequency band shall be specified in the purchase order and it is factory locked



Reader – Tag Link Profiles

Slate R1260UB 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 FCC regulation.

Link profile #	Regulation	Modulation	Return Link		
0	FCC	DSB–ASK; f=40kHz	FM0; f = 40kHz		
1	FCC	DSB–ASK; f=40kHz	Miller (M=4); f = 256kHz		
Table 3.3. Class D43COUD Data data ta a l'al confilme					

Tab. 3.2: Slate R1260UB Reader to tag link profiles



Radiation Patterns

The radiation patterns of Slate R1260UB are shown in the following figures.

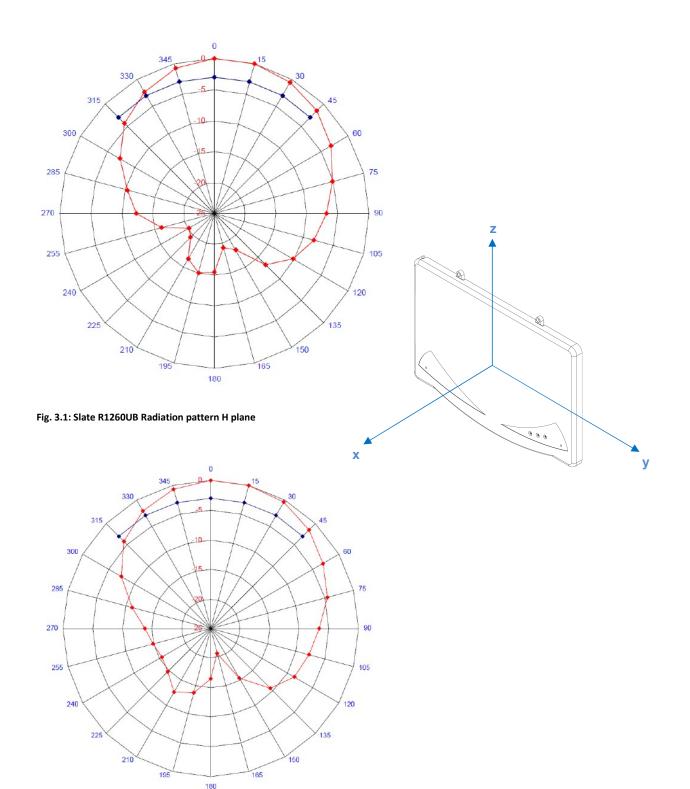


Fig. 3.2: Slate R1260UB Radiation pattern V plane



FCC Compliance

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two 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.

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

The device shall be used such that a minimum separation distance of 20cm is maintained between the reader and user's/nearby people's body.