TECHNICAL INFORMATION MANUAL

Revision 01 - 08 July 2014



Keyfob Bluetooth UHF RFID Reader









Visit <u>qIDmini R1170I</u> web page, you will find the latest revision of data sheets, manuals, certifications, technical drawings, software and firmware. All you need to start using your reader in a few clicks!

Scope of Manual

The goal of this manual is to provide the basic information to work with the qIDmini R1170I Keyfob Bluetooth UHF RFID Reader.

Change Document Record

Date	Revision	Changes	Pages
23 June 2014	00	Preliminary release	-
08 July 2014	01	Added note in the Tab. 1.2: qIDmini R1170I Power LED Status Table	8 8
		Added warning in the Charging paragraph	8

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).

CAEN RFID srl

Via Vetraia, 11 55049 Viareggio (LU) - ITALY Tel. +39.0584.388.398 Fax +39.0584.388.959 <u>info@caenrfid.com</u> <u>www.caenrfid.com</u>

© CAEN RFID srl - 2014

Disclaimer

No part of this manual may be reproduced in any form or by any means, electronic, mechanical, recording, or otherwise, without the prior written permission of CAEN RFID.

The information contained herein has been carefully checked and is believed to be accurate; however, no responsibility is assumed for inaccuracies. CAEN RFID reserves the right to modify its products specifications without giving any notice; for up to date information please visit <u>www.caenrfid.com</u>.

Preliminary Product Information

This document contains information for a new product. CAEN RFID reserves the right to modify this product without notice.

"Preliminary" product information describes products that are ready for production, but for which full characterization data is not yet available. CAEN RFID believes that the information contained in this document is accurate and reliable. However, the information is subject to change without notice and is provided "AS IS" without warranty of any kind (Express or implied). You are advised to obtain the latest version of relevant information to verify, before placing orders, that information being relied on is current and complete. All products are sold subject to the terms and conditions of sale supplied at the time of order acknowledgement, including those pertaining to warranty, patent infringement, and limitation of liability. No responsibility is assumed by CAEN RFID for the use of this information, including use of this information as the basis for manufacture or sale of any items, or for infringement of patents or other rights of third parties.

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.



Index

	Scope of Manual	2
	Change Document Record	2
	Reference Document	2
Inde	ex	4
List o	of Figures	5
List o	of Tables	5
1	INTRODUCTION	6
	Product Description	6
	Front panel	7
	Charging	8
	USB connector	8
	Accessories	9
	Development Kit	
	Ordering Options	
2	GETTING STARTED	
_	Introduction	
	Bluetooth Communication Setup using the Fasy Controller for Android	12
3	OIDMINI FASY2RD PROFILE	
•	Introduction	
	Android devices	19
	Bluetooth Communication Setun using the Easy Controller for Android	10
	Windows PCs	
	Bluetooth Communication Setun	23
	LISB Communication Setup	25
	Connecting the alDmini using the Fasy Controller for Windows	23
	iOS devices	29
	Bluetooth Communication Setun	29
4		32
-		27
	Android devices	
	Bluetooth Communication Setun	
	Windows DCs	
	Pluotooth Communication Sotup	
	LISE Communication Setup	
	iOS devices	
	IOS devices	
5		
5		
0		
	REED	
7		
'		40
Q		40 ло
0	Contract Conditions Table	40 ،
	Pondor - Tag Link Drofilos	
	Neauei – Tag Lillik Fluilles Padiation Dattorne	
	Naulaliuli raliellis	
	Wodel P1170IL (EC version)	

List of Figures

Fig. 1.1: qIDmini R1170I Keyfob Bluetooth UHF RFID Reader	6
Fig. 1.2: qIDmini R1170I Front Panel	7
Fig. 1.3: glDmini R1170I Accessories	9
Fig. 1.4: R1170IDK – gIDmini Keyfob Bluetooth UHF RFID Reader Development Kit	10
Fig. 8.1: gIDmini R1170IE Radiation pattern H plane	50
Fig. 8.2: glDmini R1170IE Radiation pattern V plane	50
Fig. 8.3: glDmini R1170IU Radiation pattern H plane	51
Fig. 8.4: glDmini R1170IU Radiation pattern V plane	51
· · · · · · · · · · · · · · · · · · ·	

List of Tables

Tab. 1.1: qIDmini R1170I Front Panel LEDs and Buttons	7
Tab. 1.2: qlDmini R1170I Power LED Status Table	8
Tab. 1.3: qIDmini R1170I Bluetooth LED status table	8
Tab. 1.4: Compatibility table between the Apple/HID models and different OS	11
Tab. 3.1: Compatibility table between the Apple/HID models and different OS in the EASY2RD profile	17
Tab. 4.1: Compatibility table between the Apple/HID models and different OS in the HID profile	32
Tab. 8.1: glDmini R1170I Technical Specifications Table	48
Tab. 8.2: qlDmini R1170I Reader to tag link profiles	49



1 INTRODUCTION

Product Description

The qIDmini (Model R1170I) is a handheld reader of the easy2read[©] product family, compliant with UHF RFID ISO 18000-6C/EPC C1G2 standards.

The qIDmini has an integrated antenna suited for short to medium range applications and, thanks to the Bluetooth[®] communication interface, it is a perfect UHF RFID add-on for any Bluetooth[®] enabled host such as a PC, a smartphone, a PDA or a tablet. The reader is compatible with Windows XP/7, Windows CE/Mobile, Android, iPhone and iPad.

The HID version supports native keyboard emulation allowing to interact directly with legacy application, office automation SW or any other generic solution requiring manual input.

When paired to a smartphone or a tablet, the qIDmini is a cost effective alternative to more expensive handheld devices.

Designed for mobile operators in indoor or outdoor areas, the qIDmini is ideal for in-store inventory management, field sales mobility, service and maintenance applications.



Fig. 1.1: qIDmini R1170I Keyfob Bluetooth UHF RFID Reader

The reader is available either in ETSI or FCC version (see § Ordering Options page 11):

- 865.600 + 867.600 MHz (ETSI EN 302 208 v. 1.4.1) (Mod. R1170IEHIDP and R1170IEAPLP)
- 902÷928 MHz (FCC part 15.247) (Mod. R1170IUHIDP and R1170IUAPLP)



The reader is available in two models: **APPLE** or **HID** (see § *Ordering Options* page 11):

- APPLE model
 - EASY2RD profile: the reader can be connected to all the devices supporting the Bluetooth SPP profile and to iOS devices.
 - HID profile: not supported.
- HID model
 - EASY2RD profile: the reader can be connected to all the devices supporting the Bluetooth SPP profile but not to iOS devices.
 - HID profile: the reader can be connected to all the devices supporting the Bluetooth HID profile (keyboard emulation), including iOS devices.

For more information about EASY2RD and HID profiles, please refer to § PROFILE paragraph page 44.

Front panel

The qIDmini R1170I front panel houses the following LEDs and buttons (see figure below):



Fig. 1.2: qIDmini R1170I Front Panel

No.	Name	Description	
1 Display LCD Alphanumeric (8 chars x 2 lines		LCD Alphanumeric (8 chars x 2 lines)	
2	Link LED	Indicates the Bluetooth and USB/charger connection (see § Tab. 1.3: qIDmini R1170I Bluetooth LED status table)	
3 Power LED Indicates the reader status Status Table)		Indicates the reader status and battery level (see § Tab. 1.2: qIDmini R1170I Power LED Status Table)	
4	4 Trigger button	Inventory mode: press to perform an inventory cycle (hold down the button to repeat inventory cycles)	
		Menu mode: quick press to scroll, hold down for a few seconds to activate an option	
5	Device hutter	Press the button to switch on the reader, press for at least 2 seconds to switch it off	
5	FOWER DULLOIT	Menu mode: press to return to the main menu	

Tab. 1.1: qIDmini R1170I Front Panel LEDs and Buttons



Status	Description		
Green Reader is active and the battery charge is in the range 35÷100%			
Orange Reader is active and the battery charge is in the range 15÷35%			
Red ¹	Reader is active and the battery charge is in the range 0+15%		

Tab. 1.2: qIDmini R1170I Power LED Status Table

Status	Description		
OFF	No connection established		
Orange	USB cable connected (both to a PC or to the AC power adapter)		
Blue	Bluetooth connected		

Tab. 1.3: qIDmini R1170I Bluetooth LED status table

Charging

The qIDmini R1170I is supplied with an USB cable and a power supply for charging (see § Accessories page 9).

When you put the reader in charge, the display lights up and shows the blinking charge indicator. The fixed indication "charge 100%" informs you that the charging is complete.



Warning: EMPTY BATTERY CONDITION

In case that the battery is fully discharged, the display may not turn on when the charger is connected. In this case you have to leave the reader connected to the charger for at least 5 minutes, then disconnect the USB cable, perform the reset procedure (see § *RESET THE QIDMINI READER* page 41), switch off the reader by pressing the power button and then connect the USB cable again.

USB connector

A micro USB Type B socket connector is located in the bottom side of qIDmini R1170I and can be used to connect the reader to an USB host port or to an AC/DC battery charger.

 $^{^{1}}$ Blinking red LED at power on indicates that the battery is empty and a recharge shall be performed



Accessories

Check for the supplied accessories below:





Development Kit



<u>R1170IDK – Keyfob Bluetooth UHF RFID Reader Development Kit</u> is available:

Fig. 1.4: R1170IDK – qIDmini Keyfob Bluetooth UHF RFID Reader Development Kit

The qIDmini R1170IDK development kit is a complete RFID set up, for a quick implementation of RFID solutions. It includes:

- n. 1 R1170I qIDmini Keyfob Bluetooth UHF RFID Reader
- n. 1 Set of Labels
- n. 1 A927Z Temperature Logger Tag
- n. 1 <u>RT0005 Temperature Logger Tag</u>
- n. 1 Lanyard
- n. 1 Retractable Roller
- n. 1 Power supply
- n. 1 USB cable



Ordering Options

	Code	Description
	WR1170IEAPLP	R1170IEAPLP - qIDmini - Keyfob Bluetooth UHF RFID Reader (ETSI) with Apple profile
Pondor	WR1170IEHIDP	R1170IEHIDP - qIDmini - Keyfob Bluetooth UHF RFID Reader (ETSI) with HID profile
Reduer	WR1170IUAPLP	R1170IUAPLP - qIDmini - Keyfob Bluetooth UHF RFID Reader (FCC) with Apple profile
	WR1170IUHIDP	R1170IUHIDP - qIDmini - Keyfob Bluetooth UHF RFID Reader (FCC) with HID profile
	WR1170IDKEAP	R1170IDKEAP - Development kit with qIDmini - R1170I Reader (ETSI with Apple profile) and demo tags
Dovelopment kit	WR1170IDKEHI	R1170IDKEHI - Development kit with qIDmini - R1170I Reader (ETSI with HID profile) and demo tags
Development kit	WR1170IDKUAP	DescriptionR1170IEAPLP - qIDmini - Keyfob Bluetooth UHF RFID Reader (ETSI) with Apple profileR1170IEHIDP - qIDmini - Keyfob Bluetooth UHF RFID Reader (ETSI) with HID profileR1170IUAPLP - qIDmini - Keyfob Bluetooth UHF RFID Reader (FCC) with Apple profileR1170IUHIDP - qIDmini - Keyfob Bluetooth UHF RFID Reader (FCC) with HID profileR1170IUHIDP - qIDmini - Keyfob Bluetooth UHF RFID Reader (FCC) with HID profileR1170IDKEAP - Development kit with qIDmini - R1170I Reader (ETSI with Apple profile) and demo tagsR1170IDKEHI - Development kit with qIDmini - R1170I Reader (ETSI with HID profile) and demo tagsR1170IDKUA - Development kit with qIDmini - R1170I Reader (FCC with Apple profile) and demo tagsR1170IDKUA - Development kit with qIDmini - R1170I Reader (FCC with Apple profile) and demo tagsR1170IDKUA - Development kit with qIDmini - R1170I Reader (FCC with Apple profile) and demo tagsR1170IDKUA - Development kit with qIDmini - R1170I Reader (FCC with HID profile) and demo tagsR1170IDKUA - Development kit with qIDmini - R1170I Reader (FCC with HID profile) and demo tags
	WR1170IDKUHI	R1170IDKUA - Development kit with qIDmini - R1170I Reader (FCC with HID profile) and demo tags

In the following table it is shown the compatibility between the Apple/HID models and different Operating Systems (Android, PC and iOS):

	PROFILES			
	EASY2RD	HID		
ANDROID	V	-		
PC	V	-		
iOS	V	-		

	PRO	FILES
HID MODEL	EASY2RD	HID
ANDROID	V	V
PC	V	V
iOS	-	V

Tab. 1.4: Compatibility table between the Apple/HID models and different OS

² APPLE Model Ordering Options: WR1170IEAPLP, WR1170IUAPLP, WR1170IDKEAP, WR1170IDKUAP

³ HID Model Ordering Options: WR1170IEHIDP, WR1170IUHIDP, WR1170IDKEHI, WR1170IDKUHI



2 GETTING STARTED

Introduction

This quickstart guide will help you to get started with your qIDmini (Model R1170I) reader.

The qlDmini R1170I has two communication interfaces: USB and Bluetooth. The last one is the preferred communication interface using the SPP profile (Serial Port Profile).

After powering on the reader, the Bluetooth interface is available to accept incoming connection requests (discoverable) from Bluetooth enabled hosts like PCs, PDAs, Tablets, Smartphones and so on.

In the qIDmini Configuration Menu you can choose between two different profile options:

- EASY2RD (factory default): choosing this option you select the CAEN RFID easy2read communication protocol. Select this option in order to control the reader using the <u>CAEN RFID Easy Controller Application</u> or the <u>SDK (Software Development Kits)</u> library. For details on the use with the EASY2RD profile please refer to § *QIDMINI EASY2RD PROFILE* chapter page 17.
- **HID**⁴: choosing this option you select the keyboard emulation protocol. For details on the use on the HID profile please refer to § *QIDMINI HID PROFILE* chapter page 32.

The reader is sold with the factory profile set to EASY2RD. This guide helps you to getting started with your reader using the EASY2RD profile.

Bluetooth Communication Setup using the Easy Controller for Android

- 1. Download the CAEN RFID Easy Controller for Android App from the <u>qlDmini R1170I web page</u>, by clicking on the Android APP on Google Play icon.
- 2. Launch the CAEN RFID Easy Controller for Android App.

⁴ HID profile is not available for qIDmini R1170I with APPLE profile (ordering options: WR1170IEAPLP, WR1170IUAPLP, WR1170IDKEAP, WR1170IDKEAP)



3. Click on "Add reader":



4. Click on "Bluetooth" in the "Connection Type" window:





5. Click on "yes" to confirm the Bluetooth permission request:



6. Select the qIDmini R1170I reader from the list of Bluetooth devices:





7. Confirm the passkey:



- 8. Once the connection is established the Bluetooth blue light turns on.
- 9. To start using your qIDmini R1170I, click on the reader line:





10. Click on "Start Inventory":

CAENRFID EXXY Controller			
TOTAL FOUND:	0	Tags/Sec:	0
Start Invento	ory	Clea	ar

11. A list of the read tags is shown:

CAENRFID EXTY Convenien			
TOTAL FOUND:	7	Tags/Sec:	13
1234567812341234	56781234	20	
000000000000000000000000000000000000000	00CF127D		
300EFE2F94D0FB000	00004683	18	
00653000000000000	0000328F	20	
E200102682080249	122099D2		
E280681000000390	013775FC		
000000000000000000000000000000000000000	00000253	13	
Stop Inven	itory	Clea	ar



3 QIDMINI EASY2RD PROFILE

Introduction

Choosing the **EASY2RD** profile option you select the CAEN RFID easy2read communication protocol. Select this option in order to control the reader using the <u>CAEN RFID Easy Controller Application</u> or the <u>SDK (Software Development Kits)</u> library.

For details on the available profiles and on the activation method please refer to § PROFILE paragraph page 44.

Note that the **APPLE** model reader (see § *Ordering Options* page 11) can be connected to all devices using the EASY2RD profile, while the **HID** model reader can be connected through the EASY2RD profile to all devices except the iOS ones.

In the following table it is shown the compatibility between the Apple/HID models and different Operating Systems (Android, PC and iOS) in the EASY2RD profile:

	ANDROID	PC	iOS
APPLE MODEL ⁵	V	V	V
HID MODEL ⁶	V	V	-

Tab. 3.1: Compatibility table between the Apple/HID models and different OS in the EASY2RD profile

⁵ APPLE Model Ordering Options: WR1170IEAPLP, WR1170IUAPLP, WR1170IDKEAP, WR1170IDKUAP

⁶ HID Model Ordering Options: WR1170IEHIDP, WR1170IUHIDP, WR1170IDKEHI, WR1170IDKUHI



Android devices

Bluetooth Communication Setup using the Easy Controller for Android

- 1. Download the *CAEN RFID Easy Controller for Android App* from the <u>qIDmini R11701 web page</u>, by clicking on the Android App on Google Play icon.
- 2. Launch the CAEN RFID Easy Controller for Android App.
- 3. Click on "Add reader":





4. Click on "*Bluetooth"* in the "Connection Type" window:



5. Click on *"yes"* to confirm the *Bluetooth permission request*:





6. Select the qIDmini R1170I reader from the list of Bluetooth devices:



7. Confirm the passkey:





- 8. Once the connection is established the Bluetooth blue light turns on.
- 9. To start using your qIDmini R1170I, click on the reader line:



10. Click on "Start Inventory":





11. A list of the read tags is shown:

CAENRFID EASY Controller			
TOTAL FOUND:	7	Tags/Sec:	13
12345678123412345	6781234	20	
000000000000000000000000000000000000000	0CF127D		
300EFE2F94D0FB000	0004683	18	
006530000000000000000000000000000000000	000328F	20	
E2001026820802491	22099D2		
E280681000000390	13775FC		
000000000000000000000000000000000000000	0000253	13	
Stop Inven	tory	C	lear



Windows PCs

Bluetooth Communication Setup

1. In case of Windows 8 Operating System:

Right click on the *Bluetooth* icon in the taskbar -> Add a Bluetooth Device:



Select the qID mini R1170I reader and click on "Pair":





Click on "yes" to confirm the passcode:

\bigcirc PC and devices \checkmark	Manage Bluetooth devices			
Lock screen	Bluetooth On			
Display	Your PC is searching for and can be discovered by Bluetooth devices.			
	Logitech® V470 Cordless Laser Mouse for Bluetooth® Not connected			
Devices	QID-12360019 Not connected			
Compare the passcodes				
	Does the passcode on qIDmini-14230008 match this one?			
	660707			
	Yes <u>N</u> o Cancel			

In case of Windows XP Operating System, when discovered by the host, the qlDmini reader can be identified by its Bluetooth device name and paired using the pass-key; both parameters are provided below:

- Bluetooth device name: "qIDmini" + device serial number
- Pass-key: 1234
- 2. Once the connection is established the Bluetooth blue light turns on.

Now you can use the <u>CAEN RFID Easy Controller</u> Application to control the reader. For details refer to § *Connecting the qIDmini using the Easy Controller for Windows* page 27.

Warning: Note that, in the EASY2RD profile, holding down the *trigger* button activates the tag inventory only if the continuous mode is active (see the function *EventInventoryTag Method* in the *CAEN RFID API Reference Manual* that can be download from <u>qIDmini R11701 web page</u>, *Documents* section).



USB Communication Setup

The qIDmini reader can be connected to a PC using the provided USB cable and it is detected by the PC as an emulated serial port. In order to correctly operate with the reader you need to install a driver.

- 1. Power ON the reader and plug the USB cable into the qIDmini USB port.
- In order to connect the qIDmini reader 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 from the <u>qIDmini R1170I web page</u>, SW/FW section or from the <u>Software and Firmware download area</u>.
- 3. Open the System properties: go to *Control Panel* → *All Control Panel Items* → *System* and click on *Device Manager*.





4. After having installed the driver, the reader is detected by the PC as an emulated serial port (VCP):



Now you can use the <u>CAEN RFID Easy Controller</u> Application to control the reader. For details refer to § *Connecting the qIDmini using the Easy Controller for Windows* page 27.

Warning: Note that, in the EASY2RD profile, holding down the *trigger* button activates the tag inventory only if the continuous mode is active (see the function *EventInventoryTag Method* in the *CAEN RFID API Reference Manual* that can be download from <u>qIDmini R11701 web page</u>, *Documents* section).



Connecting the qIDmini using the Easy Controller for Windows

Both USB and Bluetooth interface creates virtual COM ports on the host PC that can be used to connect to the reader with the CAEN RFID Easy Controller application.

The activation of the EASY2RD profile is required to connect the qIDmini using the Easy Controller application for Windows.

Follow the steps below to connect the qIDmini reader using the Easy Controller for Windows via Bluetooth:

- 1. Download from the CAEN RFID web site the latest version of the CAEN RFID <u>Easy Controller for Windows</u> software and install it.
- 2. Connect the qlDmini reader to your PC using either the USB or the Bluetooth connection.
- 3. Right click on the *Bluetooth* icon in the taskbar -> *Open Settings*:

		Add a Bluetooth Device	
/		A <u>l</u> low a Device to Connect	
		Show Bluetooth Devices	
		Join a Personal Area Network	
		Open Settings	
		Remove Icon	
	_		N.
<u>^</u> ∛		💛 TL TL 🦁 🍆 ITA 6/6/20)14



4. Look for the emulated serial port in the "Bluetooth Settings":

)	Blu	etooth Settings	;
Options COM P	orts Hardware	e Shared Folder Audio	
This PC is usin whether you with your Blu	ng the COM (s need a COM p etooth device.	erial) ports listed below. To determine ort, read the documentation that came	
Port	Direction	Name]
331-B3C2	Incoming		
COM10	Incoming	qID-12360019	
COM11	Incoming	qlDmini-14130016	
COM14	Incoming	qlDmini-14230024	
COM15	Outgoing	qlDmini-14230024 'RNI-SPP'	
COM3	Incoming		
COM7	Incoming	qID-12410028	
쳌쳌쳌쳌4	. Incoming		
		Add Remove	
		<u>Hemore</u>	
		OK Cancel Apply	

- 5. Launch the CAEN RFID Easy Controller application.
- 6. On the main application window click on *File* \rightarrow *Connect;* the connection dialog box will appear.
- 7. Select *RS232* from the *Connection Type* combo box and the right COM port number from the *RS232 Port* combo box.
- 8. Click on Connect.
- 9. Place a tag in front of the reader and click on *Start Inventory* to see the tag information displayed on the main window.

For more information on the CAEN RFID *Easy Controller for Windows* application usage, please refer to the relevant user manual: you can download it from the <u>qIDmini R11701 web page</u>, *Documents Section*, from the CAEN RFID <u>Easy</u> <u>Controller for Windows</u> web page or in the <u>Manual and Documents</u> web area.

A CAEN RFID *Easy Controller for Android* application is also available. For more information please refer to the CAEN RFID <u>Easy Controller for Android</u> web page.



iOS devices

Bluetooth Communication Setup

1. On your iOS device, go to Setting and enable the Bluetooth:

iPad	12:32 🐇 37% 🗈
Settings	General
Airplane Mode OFF	
Wi-Fi Not Connected	About
Notifications On	Sounds
Location Services On	
🙀 Brightness & Wallpaper	Network
Picture Frame	Bluetooth On >
General	Spotlight Search
🧕 Mail, Contacts, Calendars	
🛃 Safari	Auto-Lock Never >
iPod	Passcode Lock Off >
🚰 Video	iPad Cover Lock / Unlock OFF
📌 Photos	Automatically lock and unlock your iPad when you close and open the iPad cover.
FaceTime	Restrictions Off >

2. A list of the Bluetooth available devices is shown:

iPad	12:32	* 37% 🔳
Settings	General Bluetooth	1
Airplane Mode OFF		
SWI-FI Not Connected	Bluetooth	ON
Notifications On	Devices	
Location Services On	qID-12490048	Not Paired
🙀 Brightness & Wallpaper	qlDmini-14130012	Not Paired
Picture Frame	Now Discovera	ole
Seneral		
🔄 Mail, Contacts, Calendars		
Mafari Safari		
🐻 iPod		
Wideo		
😠 Photos		
S FaceTime		



3. Click on the qIDmini R1170I reader and wait while the pairing is completed:

iPad		12:32	≵ 37% ₪
Settings	-	General Blu	letooth
🗭 Airplane Mode 📃	OFF		
S Wi-Fi Not Con	nected	Bluetooth	ON
Notifications	On	Devices	
Location Services	On	qIDmini-14130012	Connected 📀
Brightness & Wallpaper		qID-12490048	Not Paired
Picture Frame		Now E	Discoverable
General			
🔄 Mail, Contacts, Calenda	rs		
🛃 Safari			
iPod			
Wideo Video			
🙊 Photos			
FaceTime			

- 4. Once the connection is established the Bluetooth blue light turns on.
- 5. Download the CAEN RFID qID Start App from the <u>qIDmini R1170I web page</u>, by clicking on the App Store icon.
- 6. Launch the *qID Start App*:





7. Now you can start the tag inventory just clicking on button. You can see the EPC of the tags displayed on the screen:





4 QIDMINI HID PROFILE

Introduction

Choosing the HID profile option you select the keyboard emulation protocol.

For details on the available profiles and on the activation method please refer to § PROFILE paragraph page 44.

Note that the **APPLE** model reader (see § *Ordering Options* page 11) does not implement the Bluetooth *HID profile*, while the **HID** model reader can be connected through the *HID profile* to all the devices, including the iOS ones.

In the following table it is shown the compatibility between the Apple/HID models and different Operating Systems (Android, PC and iOS) in the HID profile:

	ANDROID	PC	iOS
APPLE MODEL ⁷	-	-	-
HID MODEL ⁸	V	V	V

Tab. 4.1: Compatibility table between the Apple/HID models and different OS in the HID profile

Android devices

Bluetooth Communication Setup

1. On your Android device, go to Setting and enable the Bluetooth. A list of the Bluetooth available devices is shown:



⁷ APPLE Model Ordering Options: WR1170IEAPLP, WR1170IUAPLP, WR1170IDKEAP, WR1170IDKUAP

⁸ HID Model Ordering Options: WR1170IEHIDP, WR1170IUHIDP, WR1170IDKEHI, WR1170IDKUHI



2. Click on the qIDmini R1170I reader and wait while the pairing is completed:



- 3. Once the connection is established the Bluetooth blue light turns on.
- 4. Launch a text editing App (or any other App accepting keyboard input).
- 5. Start an inventory cycle by pressing the *trigger* button.
- 6. On the text editing App window you will see the EPCs of the tags:



Note that, when configured in HID profile and paired to a device, the qIDmini will automatically reconnect to the same device every time the Bluetooth link is active (qIDmini switched ON and Bluetooth activated on the host). You can verify this behaviour looking at the blue LED that, in this case, turns ON automatically as soon as you switch on the qIDmini.



Windows PCs

Bluetooth Communication Setup

1. In case of Windows 8 Operating System:

Right click on the Bluetooth icon in the taskbar -> Add a Bluetooth Device:



Select the qID mini R1170I reader and click on "Pair":

€ PC and devices	Manage Bluetooth devices
Lock screen	Bluetooth On
Display	Your PC is searching for and can be discovered by Bluetooth devices.
Bluetooth	Logitech® V470 Cordless Laser Mouse for Bluetooth® Not connected
Devices	qID-12360019 Not connected
Mouse and touchpad	alDmini-14220009
Typing	Ready to pair
Corners and edges	Pair
Power and sleep	
AutoPlay	
Spazio su disco	
PC info	



Click on "yes" to confirm the passcode:

	Manage Dhusta ath dauisea			
PC and devices	Manage Bluetooth devices			
Lock screen	Bluetooth On			
Display	Your PC is searching for and can be discovered by Bluetooth devices.			
	Logitech® V470 Cordless Laser Mouse for Bluetooth® Not connected			
Devices	QID-12360019 Not connected			
Compare the passcodes				
	Does the passcode on qIDmini-14230008 match this one?			
	660707			
	Yes <u>N</u> o Cancel			

In case of Windows XP Operating System, when discovered by the host, the qIDmini reader can be identified by its Bluetooth device name and paired using the pass-key; both parameters are provided below:

- Bluetooth device name: "qIDmini" + device serial number
- Pass-key: 1234
- 2. Once the connection is established the Bluetooth blue light turns on.
- 3. Launch a text editing App (or any other App accepting keyboard input).
- 4. Start an inventory cycle by pressing the *trigger* button.
- 5. On the text editing window you will see the EPCs of the tags:

Example with a .txt file:

	New Text Document.txt - Notepad – 🗖	x
<u>F</u> ile <u>E</u> dit F <u>o</u> rmat <u>V</u> iew <u>H</u> elp		
123456781234123456781234 300EFE2F94D0FB0000004683 300833B2DDD9014035050000 0000000000000000000000253		^
<	1	×



Example with Microsoft Excel:

🗶 📙	🛣 🚽 🍠 🕶 🖙 🚽 🗸 Cartel 1 - Microsoft Excel 🛛 🚽 🗖 🔁				×			
File	Hor	ne Inserisci Layout di	Formule Da	ti Revision	Visualizz	Compon	∝ 🕜 🗆	er 23
	Å ⊫⊒ - '≪″	Calibri \checkmark 11 \checkmark G C S \checkmark A [*] \checkmark \textcircled{O} \checkmark A [*] Carattere G \textcircled{O}		■ ■ •	%	i Celle	Σ × ŽŢ× ↓ × AA × ∠ × Modifica	
	Α4	- (8	f _x					~
		А		В	С	D	E	
1 12	2345678	1234123456781234						
2 00	000000	000000000000253						
3 30	00833B2	DDD9014035050000						
4								
6								
7								
8								
9								
10								=
11								
12								
13								
15								
16								
17								
18								
19								
20								
21								-
	FC	glio1 / Foglio2 / Fog	io3 / 🔁 /		4			
Pronto	D				<u>шш</u> 100	<i>m</i> –	0	÷.,;;

Note that, when configured in HID profile and paired to a device, the qIDmini will automatically reconnect to the same device every time the Bluetooth link is active (qIDmini switched ON and Bluetooth activated on the host). You can verify this behaviour looking at the blue LED that, in this case, turns ON automatically as soon as you switch on the qIDmini.



USB Communication Setup

The qIDmini reader can be connected to a PC using the provided USB cable and it is detected by the PC as an emulated serial port. In order to correctly operate with the reader you need to install a driver.

- 1. Power ON the reader and plug the USB cable into the qIDmini USB port.
- In order to connect the qIDmini reader 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 from the <u>qIDmini R1170I web page</u>, SW/FW section or from the <u>Software and Firmware download area</u>.
- 3. Open the System properties (right click on *My computer* icon) → *All Control Panel Items* → *System* and click on *Device Manager*.





4. After having installed the driver, the reader is detected by the PC as an emulated serial port (VCP):





Warning: Note that, when configured in the HID profile, the qIDmini reader cannot be controlled using the CAEN RFID Easy Controller Application.

The qIDmini reader, when configured in the HID profile and connected via USB to a PC, sends the EPCs of the detected tags on the serial port as ASCII characters. So, in order to operate with the reader in this configuration, follow these steps:

- 1. Launch a terminal emulator application (e.g Hyperterminal)
- 2. Connect the terminal emulator application to the virtual COM port assigned to the qIDmini reader
- 3. Press the trigger button to perform an inventory cycle (hold down the button to repeat inventory cycles)
- 4. The EPCs are displayed on the terminal emulator window



iOS devices

Bluetooth Communication Setup

1. On your iOS device, go to *Setting* and enable the Bluetooth:

iPad	12:32 🐇 37% 🗈
Settings	General
Airplane Mode OFF	
Wi-Fi Not Connected	About
Notifications On	Sounds
Location Services On	
🙀 Brightness & Wallpaper	Network
Picture Frame	Bluetooth On >
Seneral	Spotlight Search
🧕 Mail, Contacts, Calendars	
🛃 Safari	Auto-Lock Never >
iPod	Passcode Lock Off >
🚰 Video	iPad Cover Lock / Unlock OFF
Photos	Automatically lock and unlock your iPad when you close and open the iPad cover.
FaceTime	Restrictions Off >

2. A list of the Bluetooth available devices is shown:

iPad	11:46	∦ 32% 🔳
Settings	General Bluetooth	
Airplane Mode OFF		
S Wi-Fi Not Connected	Bluetooth	ON
Notifications On	Devices	
Location Services On	qlDmini-14230024	Not Paired
🙀 Brightness & Wallpaper	Now Discover	able
Picture Frame		
General		
Sail, Contacts, Calendars		
Mafari Safari		
📴 iPod		
Wideo		
🔎 Photos		
S FaceTime		



3. Click on the qIDmini R1170I reader and wait while the pairing is completed:



- 4. Once the connection is established the Bluetooth blue light turns on.
- 5. Launch a text editing App (or any other App accepting keyboard input).
- 6. Start an inventory cycle by pressing the trigger button.
- 7. On the text editing App window you will see the EPCs of the tags:

iPad	11:48	🗚 31 % 📼
Notes	E200680600000000000	÷
	Today	13 giu 11:48
	E20068060000000000000000	
	E2806E8F0000003900605F5C	
	0000AD000013070122335212	
	0000AD000013062413020809	
	300833B2DDD901400000000	
	300833B2DDD9014000000000	
	AU2B300041E2097E3A000072	



5 RESET THE QIDMINI READER

To reset the reader, press the *power* and the *trigger* buttons (see § *Fig. 1.2: qIDmini R1170I Front Panel* page 7) simultaneously for about six seconds and then release the buttons. The reader restarts by itself.



Warning: Note that the reader SHALL NOT be connected to the USB port or to the battery charger during the reset, otherwise the reader enters in the firmware upgrade state. If, by mistake, you entered in the firmware upgrade state, in order to restore the normal reader operation, disconnect the USB cable and repeat the reset procedure.



6 QIDMINI CONFIGURATION MENU

Introduction

To access the main menu, turn on the device and hold down the *trigger* button within two second.

To scroll through the main menu, press quickly the *trigger* button.

The qIDmini R1170I menu options are the following:

- PROFILE
- BEEP
- VIBRATE
- POWER

To select a menu option, hold down the *trigger* button.



The complete structure of the qIDmini R1170I menu is the following:





PROFILE

Access the configuration menu as explained in the Introduction paragraph page 42.

The PROFILE menu is the first option of the main menu. To select it, hold down the trigger button.

To scroll through the PROFILE options, press quickly the trigger button.

The PROFILE submenu options are the following:

- EASY2RD (factory default): choosing this option you select the CAEN RFID easy2read communication protocol. Select this option in order to control the reader using the <u>CAEN RFID Easy Controller Application</u> or the <u>SDK (Software Development Kits)</u> library. For details on the use with the EASY2RD profile please refer to § *QIDMINI EASY2RD PROFILE* chapter page 17.
- **HID**⁹: choosing this option you select the keyboard emulation protocol. For details on the use on the HID profile please refer to § *QIDMINI HID PROFILE* chapter page 32.

To return to the main menu, quickly press the power button.

The currently active profile is marked with an asterisk.

You can activate only one profile at a time.

To activate a different profile, scroll through the PROFILE options by pressing quickly the *trigger* button until the desired profile is displayed. Hold down the *trigger* button for a few seconds: the name of the profile will begin to flash. Once activated, the device returns to the main menu.

When you turn on the reader, the display shows the currently active profile and then the message "ready" to inform you that the reader is ready to operate.



Warning: Note that if the reader is in the HID profile you must disconnect it from any connected device before to select another profile.

BEEP

Access the configuration menu as explained in the Introduction paragraph page 42.

To scroll through the menu options, press quickly the trigger button.

The BEEP menu is the second option of the menu. To select it, hold down the *trigger* button.

The BEEP submenu options are the following:

- PWRUP: beep at the power on of the reader
- PWRDOWN: beep at the power off of the reader
- SCANTAG: beep at the identification of a tag

To enable/disable the submenu options, scroll through the BEEP options menu by pressing quickly the *trigger* button until the desired BEEP option and then hold down the *trigger* button for a few seconds.

Scroll through *enable* and *disable* options by pressing quickly the *trigger* button and hold down the *trigger* button for a few seconds to activate one of them. The *enable* (or *disable*) option will begin to flash. Once activated, the device returns to the main menu.

The currently active state is marked with an asterisk. By default, all the BEEP options are disabled.

Note that you can *enable* or *disable* the beeper for any option independently so that the beeper can be active on more than one option simultaneously.

To return to the main menu, quickly press the *power* button.

⁹ HID profile is not available for qIDmini R1170I with APPLE profile (ordering options: WR1170IEAPLP, WR1170IUAPLP, WR1170IDKEAP, WR1170IDKEAP)



VIBRATE

Access the configuration menu as explained in the Introduction paragraph page 42.

To scroll through the menu options, press quickly the *trigger* button.

The VIBRATE menu is the third option of the menu. To select it, hold down the trigger button.

The VIBRATE submenu options are the following:

- PWRUP: vibration at the power on of the reader
- **PWRDOWN:** vibration at the power off of the reader
- SCANTAG: vibration at the identification of a tag

To enable/disable the submenu options, scroll through the VIBRATE options menu by pressing quickly the *trigger* button until the desired VIBRATE option and then hold down the *trigger* button for a few seconds.

Scroll through *enable* and *disable* options by pressing quickly the *trigger* button and hold down the *trigger* button for a few seconds for the activation of one of them. The *enable* (or *disable*) option will begin to flash. Once activated, the device returns to the main menu.

The currently active state is marked with an asterisk. By default, all the VIBRATE options are disabled.

Note that you can *enable* or *disable* the vibration for any option independently so that the vibration can be active on more than one option simultaneously.

To return to the main menu, quickly press the *power* button.

POWER

Through the POWER menu you can set the power level emitted by the reader.

Note that, when the reader is configured in the EASY2RD profile, to set the power you can also use the <u>CAEN RFID Easy</u> <u>Controller Application</u> or the <u>SetPower</u> function of the <u>SDK (Software Development Kits)</u> library.

Access the configuration menu as explained in the Introduction paragraph page 42.

To scroll through the menu options, press quickly the *trigger* button.

The POWER menu is the fourth option of the menu. To select it, hold down the trigger button.

The POWER submenu options are the following:

- 25 mW
- 50 mW
- 100 mW
- 200 mW
- 500 mW

To scroll through the POWER options, press quickly the trigger button.

To return to the main menu, quickly press the *power* button.

The currently active power is marked with an asterisk. By default, the 200 mW power level is active.

You can activate only one power level at a time.

To activate a different power level, scroll through the POWER options by pressing quickly the *trigger* button until the desired power level is displayed. Hold down the *trigger* button for a few seconds: the power level option will begin to flash. Once activated, the device returns to the main menu.



7 QIDMINI FIRMWARE UPGRADE

Firmware Upgrade

The qlDmini R1170I firmware upgrade can be managed via USB by using the SW upgrade program. The qlDmini Upgrade Tool is available for free at the <u>qlDmini R1170I web page</u> of the CAEN RFID Web Site, *SW/FW* section.

In order to upgrade the firmware follow the steps described below:

- 1. Connect the qIDmini reader to the USB port of the PC.
- 2. Press simultaneously the *trigger* and the *power* button for about six seconds.
- 3. Open the FW upgrade program.
- 4. Click on Next button:

R1170I USB Firmwa	re Upgrade v. 1.0.0	(()	
R117	70I USB Fir Upgrade	mware	
	0 0 00		

5. In the window you will see the message "Found 1 device" (if the message is "No device connected" repeat the points 2,3, 4 and 5).



6. Select the FW image file by clicking on the "Browse" button:

🕞 R1170I USB Firmware Upgrade v. 1.0.0		
Filename D:\R1170IUpgrade\R1170I_1_1_0.msp430-txt	Browse	
Upgrade Firmware	Found 1 device	
		Close

- 7. Click on the "Upgrade Firmware" button and wait for the upgrade process to be completed.
- 8. At the end of procedure, if the upgrade has been successfully performed, you will see the messages reported in the image below and the module is ready for normal operation.

R1170I USB Firmware Upgrade v. 1.0.0	
F ''	
Filename	
D:\R1170IUpgrade\R1170I_1_0.msp430-txt	Browse
Upgrade Firmware	No device connected
Verifying memory Memory successfully verified	<u> </u>
Total programming time is 3s	
Starting application	
Done!	~
	Close



8 QIDMINI TECHNICAL SPECIFICATIONS

Technical Specifications Table

	865.600÷867.600 MHz (ETSI EN 302 208 v. 1.4.1) (Mod. R1170IEHIDP and					
Frequency Band	R1170IEAPLP)					
	902÷928 MHz (FCC part 15.247) (Mod. R1170IUHIDP and R1170IUAPLP)					
RF Power	Programmable in 18 levels from 5dBm e.r.p. (3mW e.r.p.) to 22dBm e.r.p. (150mW					
Ni i owei	e.r.p.)					
Antenna	Integrated linear (horizontal)					
	4 channels (compliant to ETSI EN 302 208 v. 1.4.1.)(Mod. R1170IEHIDP and					
Number of Channels	R1170IEAPLP)					
Number of channels	50 hopping channels (compliant to FCC part 15.247)(Mod. R1170IUHIDP and					
	R1170IUAPLP)					
Standard Compliance	ISO 18000-6C/EPC C1G2					
Read Range	up to 90cm (typical)					
	USB Interface: USB 2.0 Full Speed (12 Mbit/s) device port					
	Bluetooth Interface: Class 2 with output power 4dBm e.i.r.p.					
	Virtual COM port parameters:					
	- Baudrate: up to 230.400kbps					
Connectivity	- Databits: 8					
connectivity	- Stopbits: 1					
	- Parity: none					
	- Flow control: none					
	HID profile available (mod. R1170IEHIDP and R1170IUHIDP)					
	Apple compatibility available (mod. R1170IEAPLP and R1170IUAPLP)					
	Button #1:ON/OFF					
	Button #2: Trigger					
	Led #1: power indication and battery status (green: high; red: low)					
User Interface	Led #2: communication activity (blue: Bluetooth; orange: USB)					
	Buzzer: bitonal for events signalling					
	Vibration: for events signalling					
	Display: LCD Alphanumeric (8 chars x 2 lines)					
Internal Buffer Size	48kByte (equivalent to 4096 EPC codes@96bit) (TBC)					
Battery Type	Li-lon 3.7V, 570mAh					
Battery Life	Operating: > 12h with 40.000 tag readings					
	Standby: > 15 days					
Battery Charging Time	;ing Time 2h (typical)					
IP Rating IP 32						
Dimensions	(W)99 x (L)54 x (H)20 mm max.					
	(3.9 x 2.1 x 0.8 in [*])					
Length of USB cable	1.5 m					
Operating Temperature -10 °C to +55 °C						
Weight	57 g					

Tab. 8.1: qIDmini R1170I Technical Specifications Table



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.



Reader – Tag Link Profiles

The qIDmini R1170I reader supports different modulations and return link profiles according to EPC Class1 Gen2 protocol [RD1].

All profiles that have been tested for the compliance with ETSI and FCC regulations are reported in the following table:

Link profile #	Regulation	Modulation	Return Link
0	ETSI - FCC	PR-ASK; f=40kHz	FM0; f = 40kHz
1	ETSI - FCC	PR-ASK; f=40kHz	Miller (M=4); f = 256kHz ¹⁰
2	ETSI - FCC	PR-ASK; f=40kHz	Miller (M=4); f = 320kHz

Tab. 8.2: qIDmini R1170I Reader to tag link profiles

¹⁰ Default value.



Radiation Patterns

The radiation patterns of qIDmini R1170I are shown in the following figures.



Fig. 8.2: qIDmini R1170IE Radiation pattern V plane



Model R1170IU (FCC version)





Fig. 8.4: qIDmini R1170IU Radiation pattern V plane