

# BLUETOOTH UHF RFID READER

R-PO-UHF-BT

Portable UHF Reading solution with Bluetooth connectivity

## USER MANUAL

Version 1.0



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# 1 Introduction

This manual is intended to give a brief introduction to the portable UHF reader with its different operating modes.

## 1.1 Location of controls

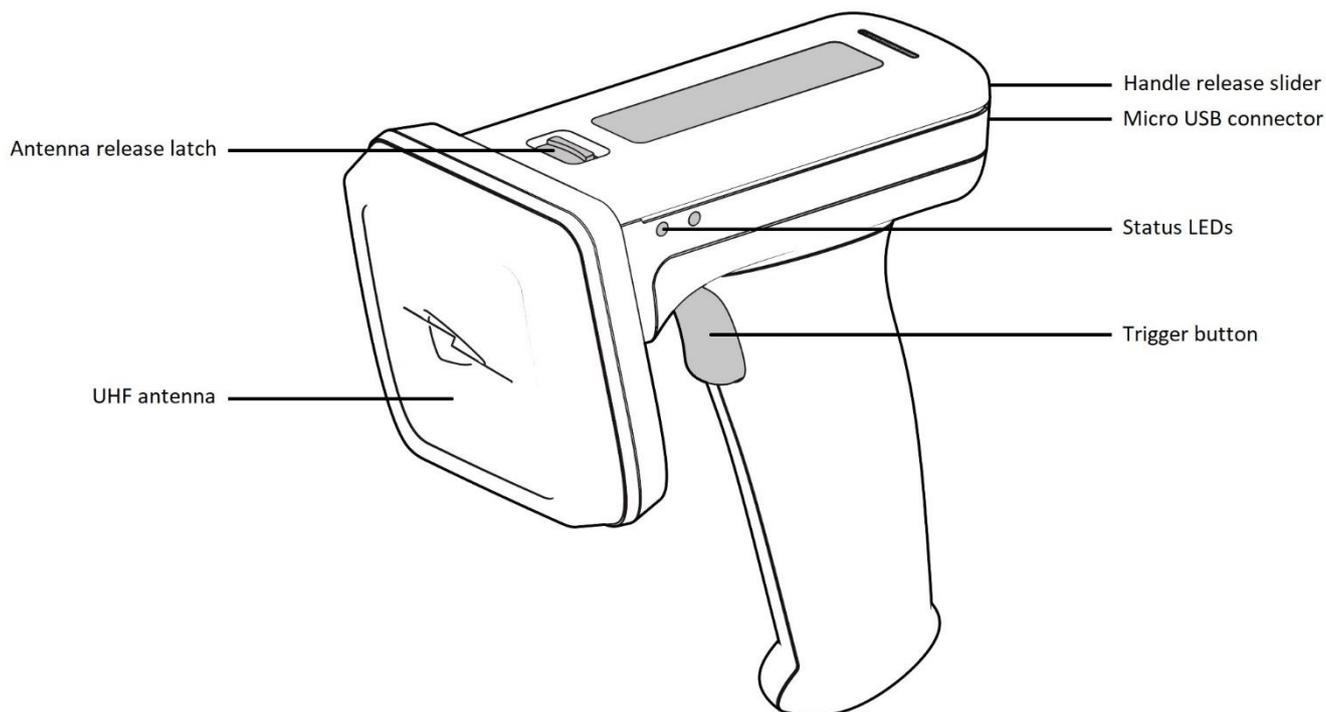


Figure 1 - Location of controls

## 2 Getting started with the reader

### 2.1 Battery installation or removal

The battery is charged using the supplied micro USB cable.

In the unlikely event that the battery need to be replaced, proceed as follow:

1. Pull up the handle release latch;

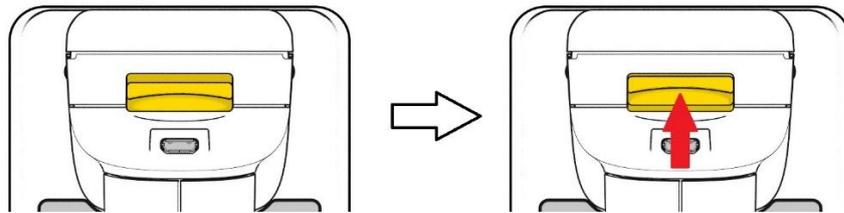


Figure 2 - Handle release latch

2. Slide the handle off;

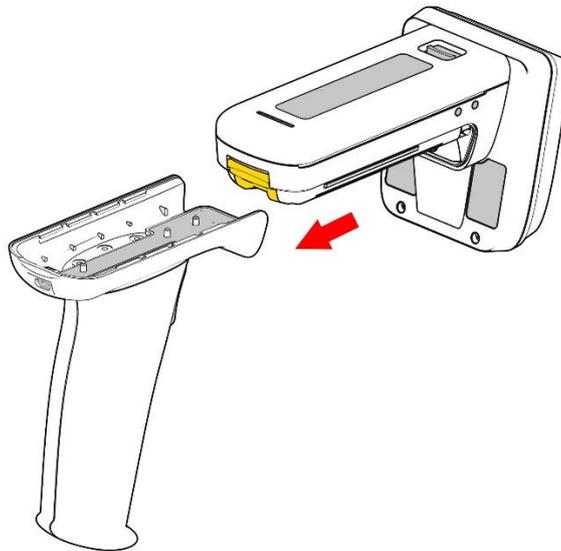


Figure 3 - Handle off

3. Remove the battery cover;

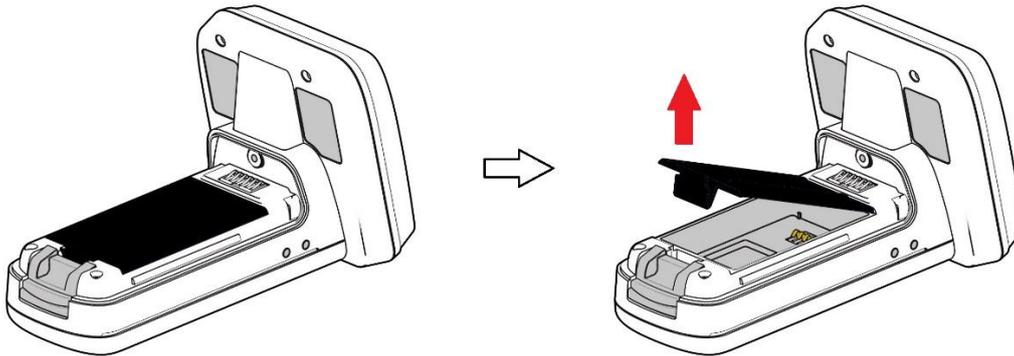


Figure 4 - Battery cover off

4. Place the battery into the compartment (make sure to place the battery in the right position by checking the contacts position);

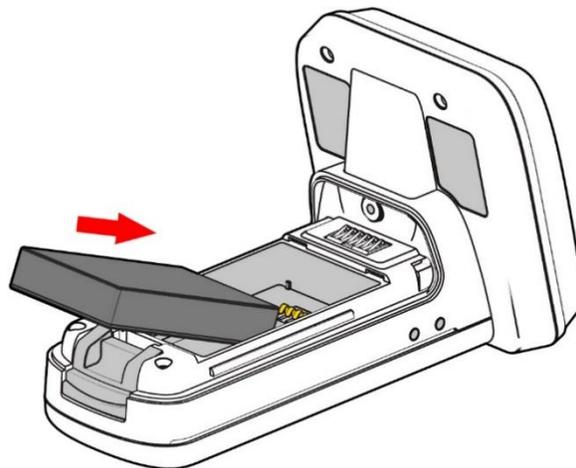


Figure 5 - Battery insertion

5. Re-place the battery cover;
6. Slide the handle into position.

## 2.2 Antenna installation or removal

To detach the antenna from the main body of the reader please proceed as follows:

1. Pull the antenna release latch;

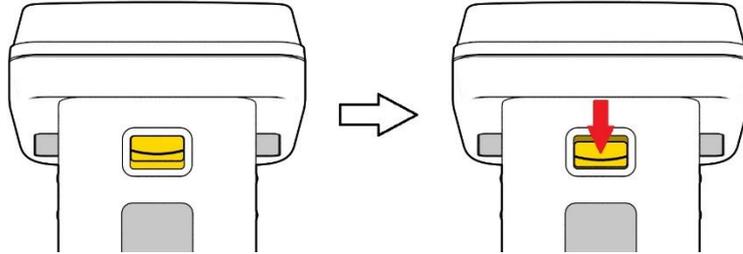


Figure 6 - Antenna release latch

2. Lift down the antenna.

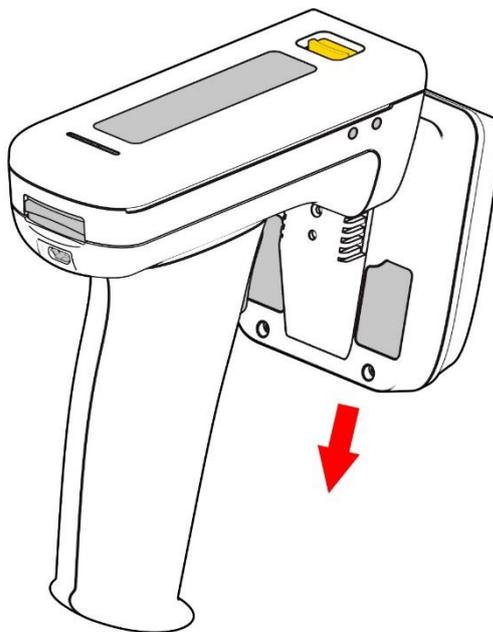


Figure 7 - Antenna off

### 2.3 Battery charging

The battery is supplied with less than 30% charge therefore it is very important to fully charge it before using your portable reader for the first time.

To charge your device, connect the supplied micro USB cable to the micro USB connector placed at the back of the unit and to a wall power outlet.

When charging the reader it is important to rest the device in an orientation that does not put pressure on the cable or port.

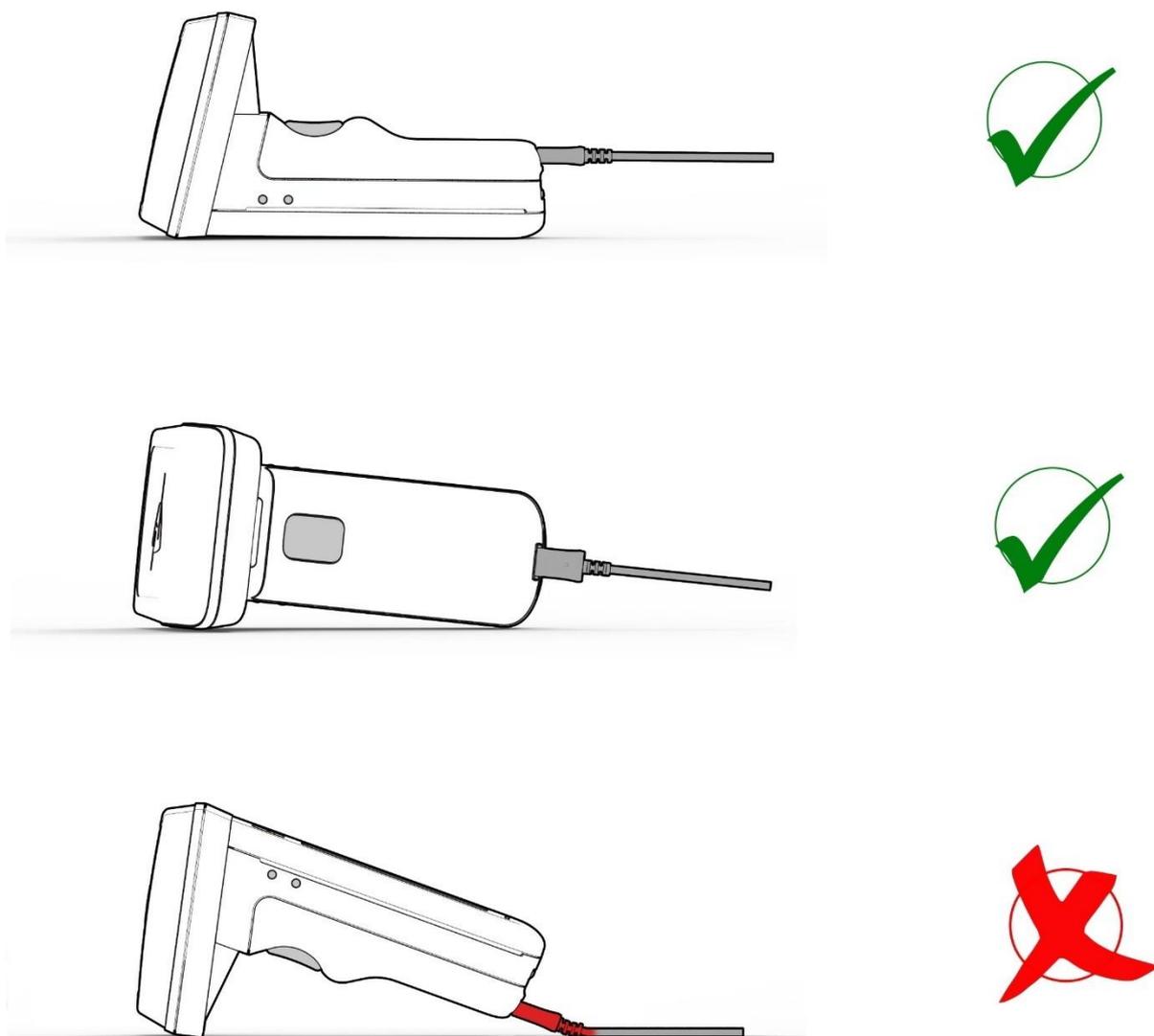


Figure 8 - Charging position

### 3 Reading Transponders

The reader can read and write UHF RFID transponders when they are in range of the antenna which is located on the front of the reader. The reading range depends on the transponder type, size and quantity in the field.

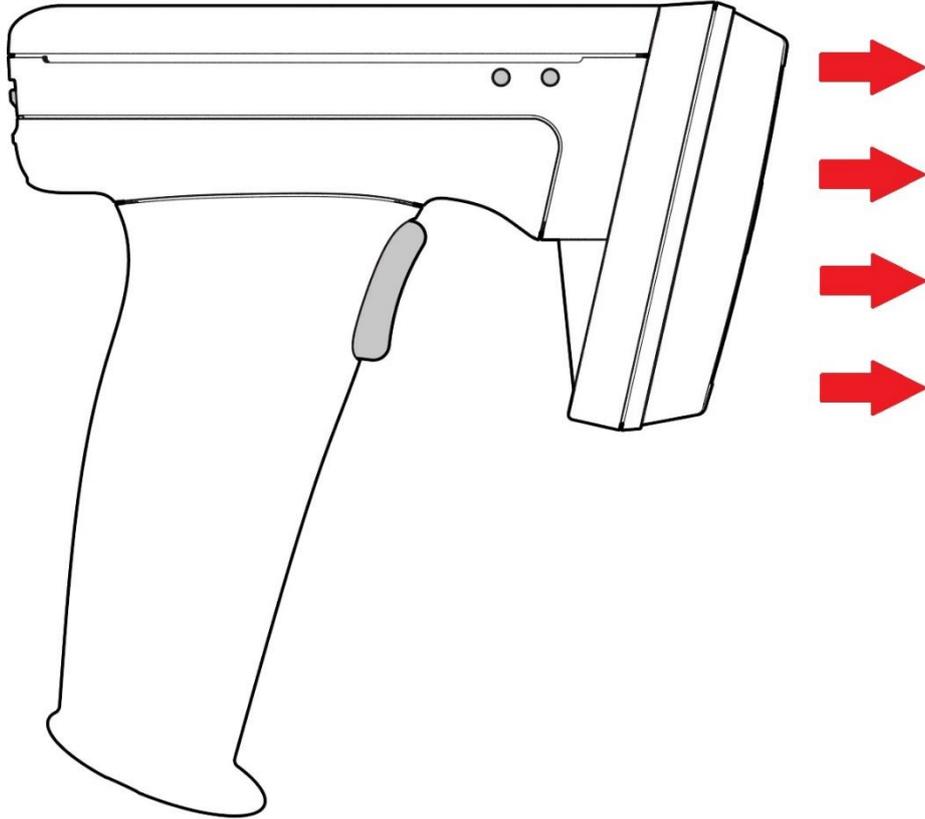


Figure 9 - Reading Area

## 4 Status indicators

There are four LEDs located on the two sides of the reader which provide an indication of the operating status of the reader.

### 4.1 Configuration commands

LED	Status
Blue slow flash	The reader is awake but not connected.
Solid blue	The reader is awake and connected to a host.
Short green flash	The reader has successfully read a transponder/barcode or executed the alert command.
Green slow flash	Antenna error.
Orange slow flash	Battery low warning (battery level < 10%)
Orange short single slow flash	Battery charging (battery level < 33%)
Orange short double flash	Battery charging (battery level ≤ 66%)
Orange short triple flash	Battery charging (level > 66%)
Orange rapid flash	There is a charge error / battery fault
Solid orange	The reader is fully charged
All off	The reader is off and not charging

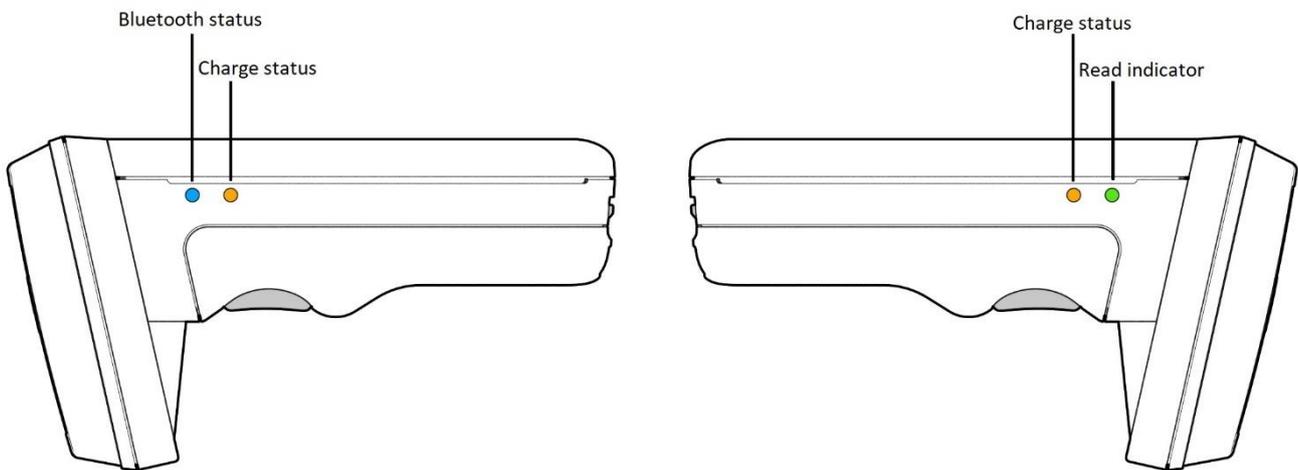


Figure 10 – Status LEDs location

## 5 Bluetooth operating modes

When connected over Bluetooth the reader can either be set to use the TSL ASCII 2 protocol (SPP mode - Serial Port Profile) or it can appear as a Bluetooth keyboard (HID mode - Human Interface Device).

Note: When connected via USB cable, the reader only supports the TSL ASCII 2 protocol. It is nevertheless possible to convert the ASCII 2 stream into an HID/Keyboard interface using the SmartWedge software. For further information, please contact [support-tid@datamars.com](mailto:support-tid@datamars.com).

### 5.1 Differences between the operating modes

In SPP mode, once the reader has been paired with the PC/smartphone, it can be controlled using any Bluetooth terminal App (already existing or custom-written) that supports Serial Port Profile (SPP) communication.

In HID mode the reader behaves like a Bluetooth keyboard and the data read by the reader is sent to the host as if it were typed on the host's keyboard. This mode has the advantage that the reader can be used with existing software (for example MS Excel), but it also has the disadvantage that the data throughput is typically around 40 characters per second, this makes the reading of large transponder populations slow.

The HID mode has two variants: HID mode which is compatible with Android, Windows and Apple devices and HID Apple mode which is compatible only with Apple devices.

The following table should help you understanding the differences between the two operating modes.

SPP Mode	HID Mode
Apps need to be written with specific support for the Reader.	Apps can use the Reader without modification.
The reader can be paired in the Bluetooth settings or directly from the App (the app controls the connection/disconnection).	Reader can be paired in the Host Bluetooth settings (often appears as a keyboard).
Apps receive and interpret TSL ASCII 2 Protocol responses when the user triggers a transponder or barcode scan.	App receive input as key strokes from the reader including Tab and Return/Enter keys.
The app can respond and react intelligently to responses.	The reader types text for each transponder/barcode scan received.
The app can change the reader's behaviour.	The reader can only send scanned data to the host, the host cannot change the reader's behaviour.
The reader's behaviour and command parameters are controlled in real time by the app.	The reader's behaviour can be configured only once at start-up.
Configuration is held within the app (any configuration in the AUTO.txt is likely to be overridden by the app settings)	Configuration is held in AUTO.txt file stored on the optional SD card.
All reader activity, by default, is saved to a log file if an SD-card is fitted.	All reader activity, by default, is saved to a log file if an SD-card is fitted.

## 5.2 Change operating mode

To change the operating mode please follow the steps below.

1. Connect to this [link](#) to start the “Desktop Firmware Loader” download and then install it;
2. Delete existing BT pairings the reader (from your smartphone and/or PC);
3. Launch the “Desktop Firmware Loader”;
4. Connect the reader to the PC using the supplied micro USB cable;
5. The driver is automatically installed. The loader should prompt as the COM port arrives and select the right port automatically (“Port COMn arrived”);

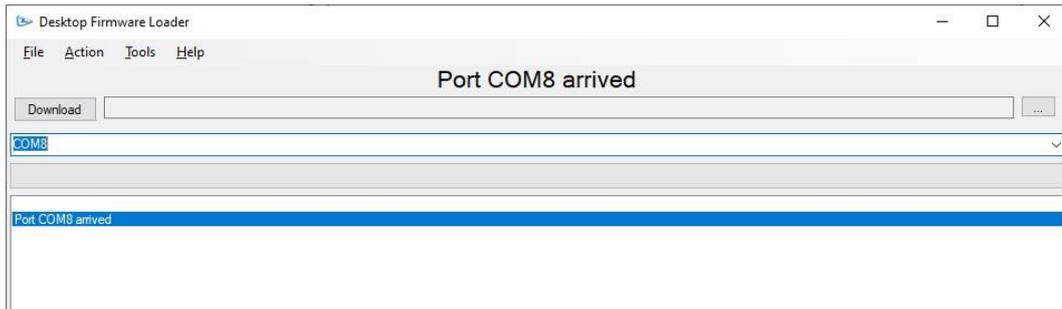


Figure 11 - Desktop Firmware Loader setting

6. Select **Action -> Reset Bluetooth to “xx” mode**, where “x” is the operating mode you want to switch to;

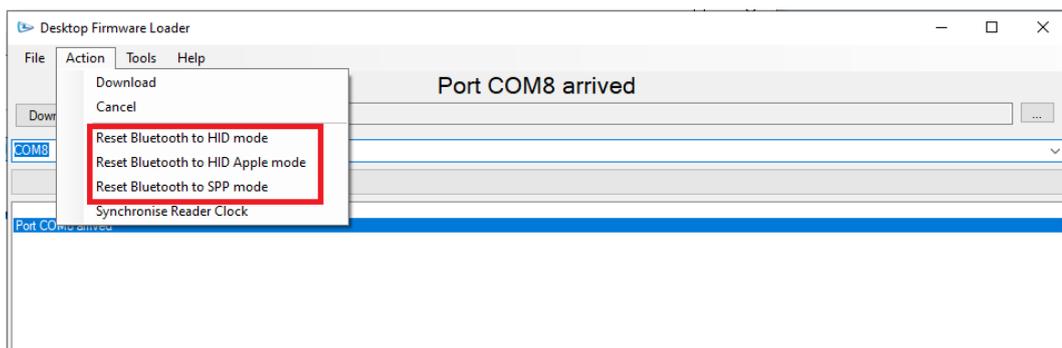


Figure 12 - Desktop Firmware Loader setting

7. Wait until the message “Operation Completed” is shown;

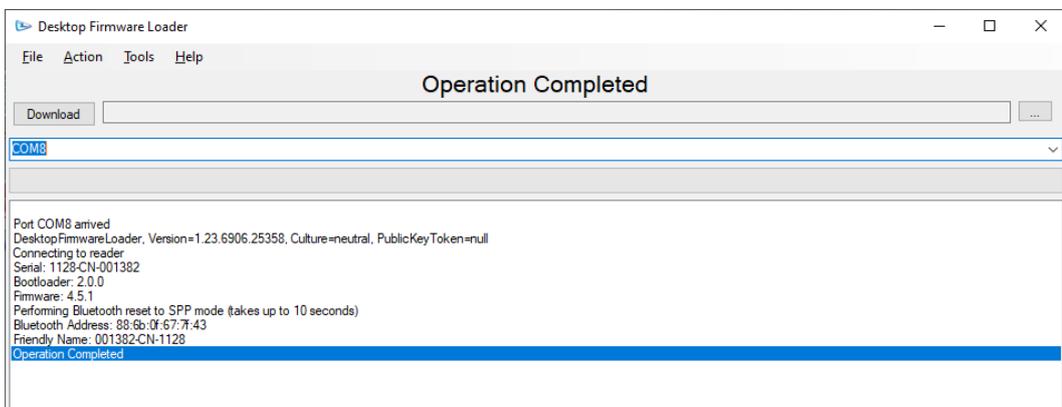


Figure 13 - Desktop Firmware Loader setting

8. Unplug the micro USB cable;
9. Pair to the reader on your device as explained in the following chapters.

5.2.1 HID Mode

To connect the reader to your PC in “HID mode” proceed as follows (example made with Windows 10):

1. Delete existing pairings to the reader (from your smartphone and/or PC);
2. Double click on the reader’s trigger button;
3. Open the “Bluetooth & other devices” settings and click on “Add Bluetooth or other device”;

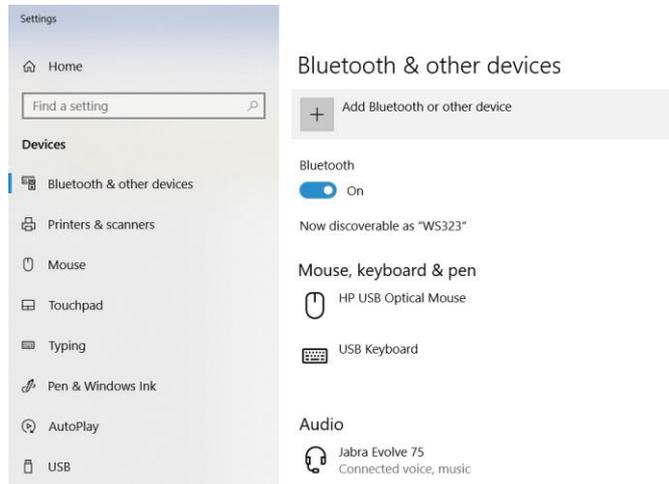


Figure 14 - HID Mode setting

4. Click on “Bluetooth” and select the reader. Usually It appears with a keyboard icon.

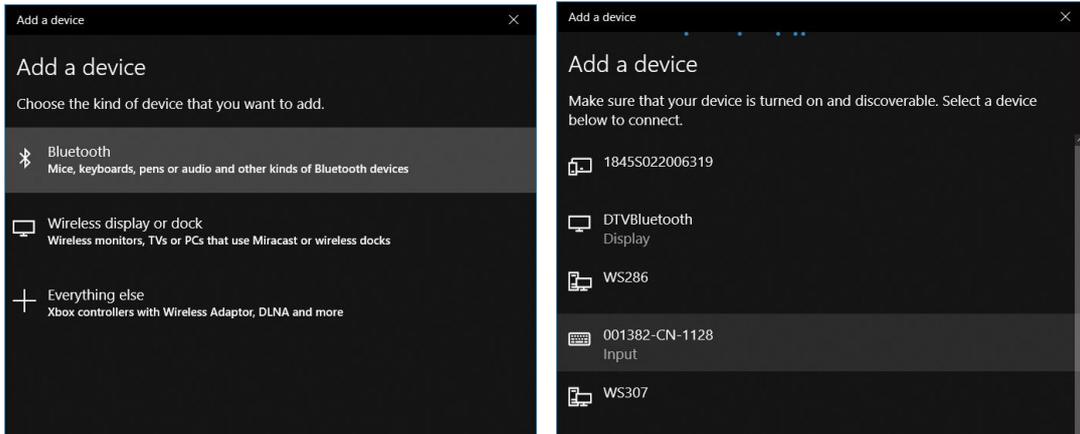


Figure 15 - HID Mode setting

5. If the device is correctly paired, the following message is shown.

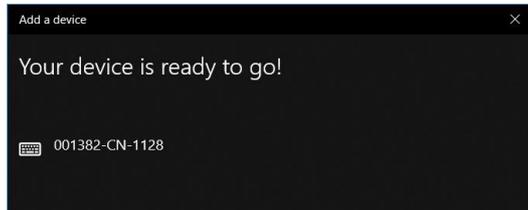


Figure 16 - HID Mode setting

6. Your device is now connected and ready to use. The scanned data will now be typed into the current application (e.g. MS Word, notepad, etc...).

## 5.2.2 SPP Mode

To connect the reader to your PC in “SPP mode” proceed as follows (example made with Windows 10):

1. Delete existing pairings to the reader (from your smartphone and/or PC);
2. Double click on the reader’s trigger button;
3. Open the “Bluetooth & other devices” settings and click on “Add Bluetooth or other device”;

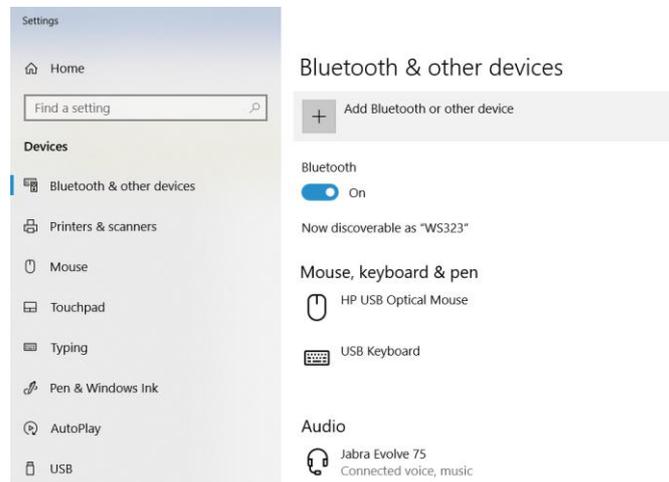


Figure 17 - SPP Mode setting

4. Click on “Bluetooth” and select the reader;

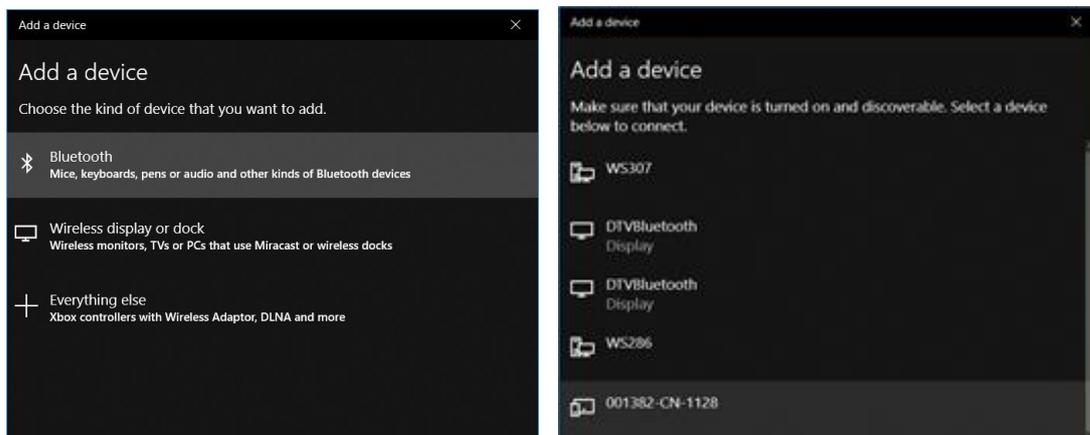


Figure 18 - SPP Mode setting

5. If the device is correctly paired, the following message is shown;

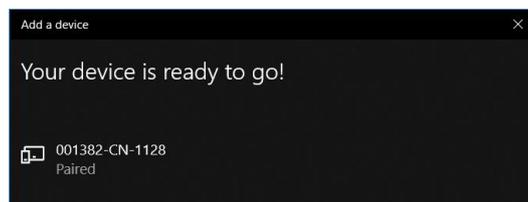


Figure 19 - SPP Mode setting

6. Your device is now connected and ready to use. Launch an application that supports Serial Port Profile communication (e.g. Bluetooth Serial Terminal for windows, etc...).

### 5.2.3 Use with smartphone

To connect the reader to your smartphone proceed as follows (example made with IOS):

1. Download the app “RFID explorer” on your smartphone;
2. Delete existing pairings to the reader (from your smartphone and/or PC);
3. Go to your smartphone’s Bluetooth settings and pair the reader with your smartphone;



Figure 20 - reader and smartphone pairing

4. Launch the RFID explorer;

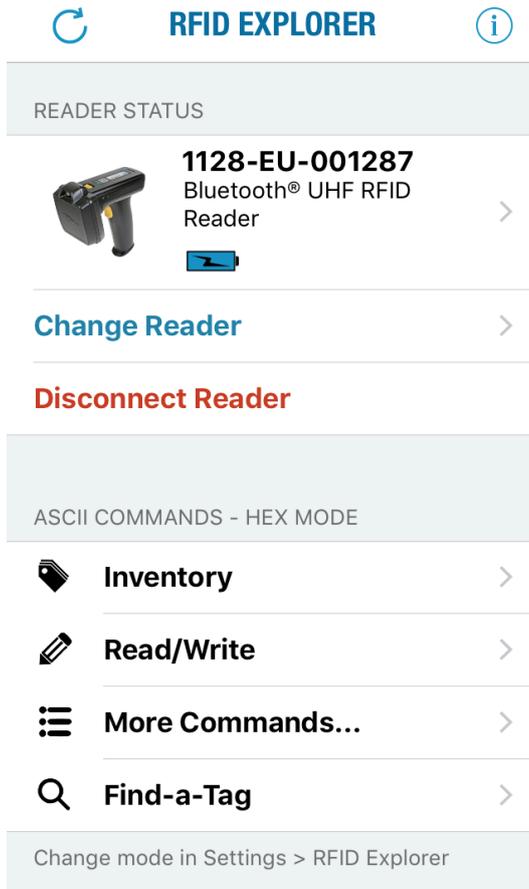


Figure 21 - RFID explorer homepage

## 6 Micro SD-card

An optional micro SD-card (up to 32GB) can be installed into the reader. The card must be SD/SDHC compatible and FAT16 or FAT32 formatted.

### 6.1 Autorun file (AUTO.txt)

One of the purposes of the SD-card is to create a text file named "AUTO.txt" in which you can specify a list of commands that will automatically be executed when the reader powers up. This is an easy way to automatize the reader set-up to your own application constraints.

The Autorun file should be located at the root folder of the card and called AUTO.txt.

If no card is inserted or no Autorun file is created, the reader will automatically use the default parameters.

To set-up your customized AUTO.txt file, please contact [support-tid@datamars.com](mailto:support-tid@datamars.com).

### 6.2 Log file (LOG.txt)

If a SD-card is installed, a log file is created on its root folder. The file will contain every command that is executed by the reader (e.g. events such as Power Up are also appended to the file).

The ASCII 2 command ".rl" (Read Log File) is provided to enable/disable logging and to read or delete the log file.

### 6.3 SD-card installation or removal

To insert a SD-card proceed as follows:

1. Remove the battery as explained before (chapter 2.1);
2. Place a SD-card into the compartment;
3. Push down the SD-card.

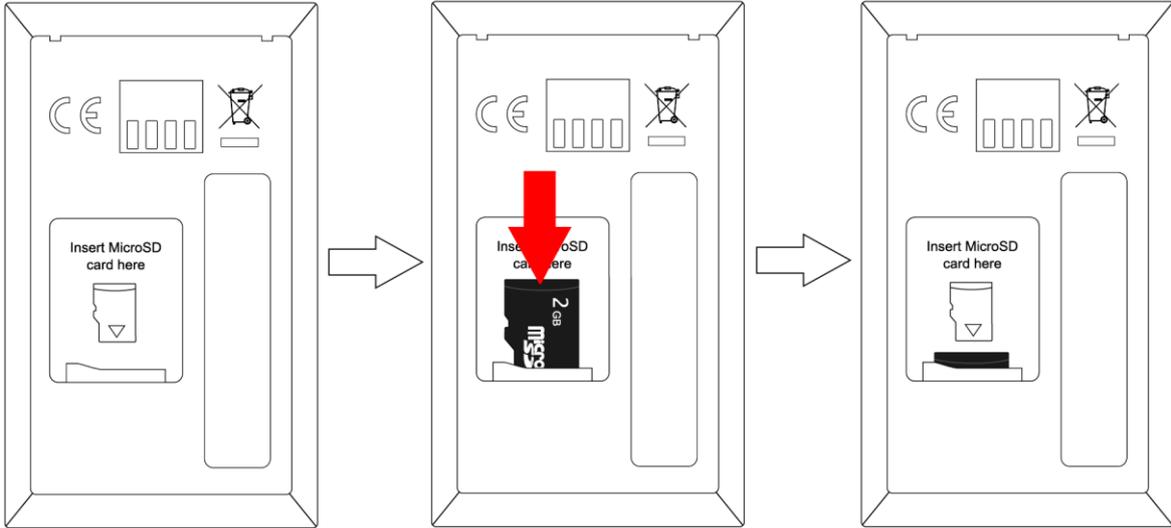


Figure 22 - SD-card insertion

To remove the SD-card proceed as follows:

1. Remove the battery;
2. Push down the SD-card;
3. Pull up the SD-card.

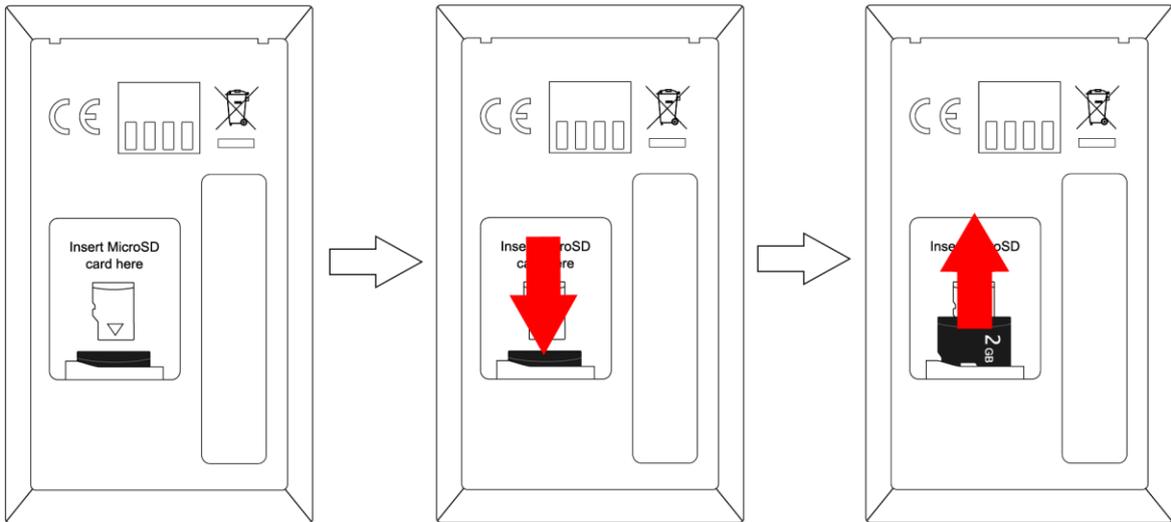


Figure 23 - SD-card removal

## 7 Troubleshooting

Symptoms	Possible cause	Action
Nothing happens when the trigger button is pressed.	If the LEDs are not ON, the battery may be low.	Charge the battery using the supplied micro USB cable.
	The trigger button may have actions disabled.	Check the reader's configuration and set an action to the trigger button or restore to defaults.
The orange LED flashes rapidly when charging.	There a Battery fault.	Replace the battery.
	The battery temperature is out of the recommended limit.	Ensure that charging occurs between 5°C and 40°C.
The Bluetooth Host discovery does not find the reader.	The reader is powered off.	Wake the reader up by pressing the trigger button
	The reader is out of range.	Move the reader closer to the host.
	The reader's name has been changed.	Check the reader's name or restore it to defaults if unsure.
Opening the Bluetooth virtual COM port does not connect to the reader.	The host has paired to a different Bluetooth device.	Pair to the required reader.
	The reader is already paired to another host.	Delete existing pairings to the reader.
	The Bluetooth host has an error.	Warm boot the host. If this does not help, delete the reader from the favourites list and re-try.
Bluetooth pairing fails.	The PIN on the reader has been changed.	Set the Bluetooth PIN to a known value.
The reader's configuration is always restored to defaults.	The SD-card or Autorun file is not read.	Make sure your SD-card with the Autorun file is correctly inserted.
Other symptoms.	Other fault.	Contact DM service at <a href="mailto:support-tid@datamars.com">support-tid@datamars.com</a>