1128 UHF Reader User Guide

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History

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1.04	02/04/13	Approvals information added, LED functions updated
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1 Introduction

Technology Solutions' 1128 UHF Reader provides Ultra High Frequency (UHF) Radio Frequency Identification (RFID), with optional barcode scanning functionality. The unit can be used stand alone or paired with a Bluetooth host. It can be used with UHF transponders including the EPC Global Class 1 Generation 2 transponders.

2 Parts of the 1128 UHF Reader

Figure 1: Parts of the 1128 UHF Reader

3 Alternative configuration of the 1128 UHF Reader

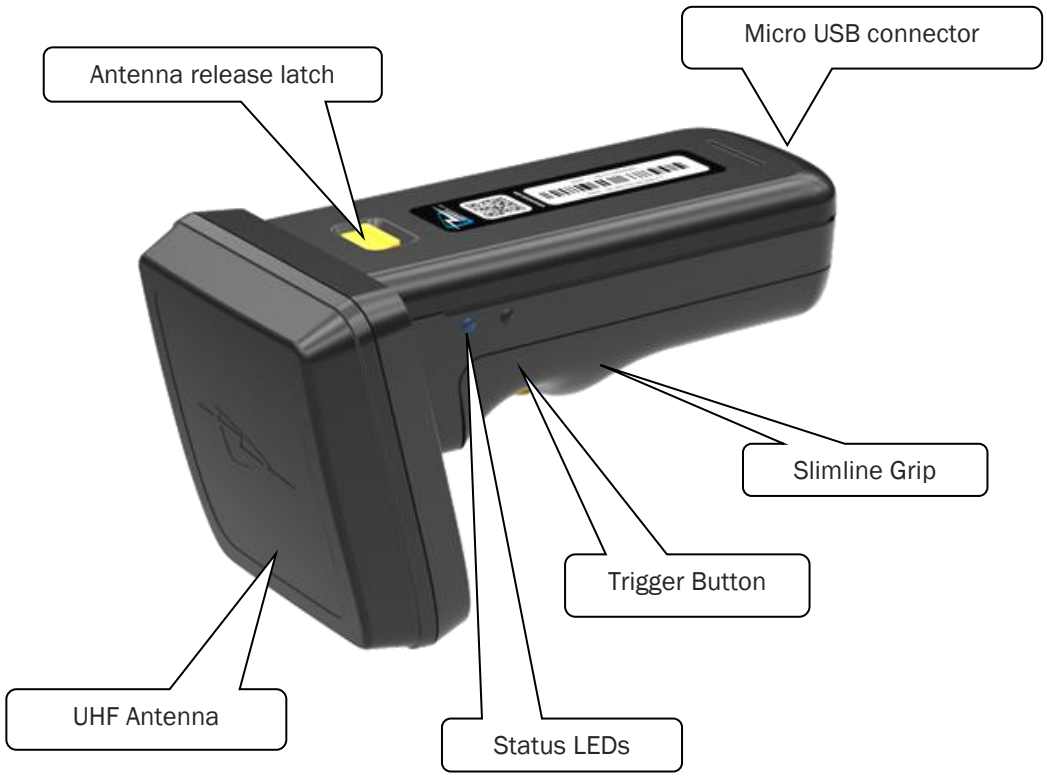


Figure 2: Parts of the 1128 UHF Reader

4 Using the UHF Reader

4.1 Battery Installation or Removal

The battery is charged using the supplied micro USB lead and therefore is unlikely to need to be changed once installed. To access the battery compartment the grip handle must first be removed.

Figure 3: Remove handle

The battery compartment has a release latch. The direction to push is shown in the diagram below.

Figure 4: Handle release latch operation

Figure 5: Slide handle off

Figure 6: Remove Battery Cover

The battery contacts need to be face down at the top of the battery to meet the contacts shown in the image below.

Figure 7: Battery Placement

Figure 8: Battery in position

Once the battery is installed the actions to replace the cover are:

- Align the battery cover using the indents in the cover to the pips on the case
- Push the battery cover down into position
- Slide the grip handle back onto the main unit
- The release latches will audibly ‘click’ to indicate the grip handle is securely in place

Figure 9: Replace Battery Cover

Figure 10: Slide handle on

4.2 Antenna Installation or Removal

The antenna can be detached from the main body of the reader. To remove the antenna, ensure that the reader is powered off, then move the release latch and antenna in the directions indicated in the diagrams below.

Figure 11: Antenna release latch operation

Figure 12: Antenna release latch location

4.3 Locking the Antenna

The antenna can be locked into position using an M2.5x5mm Torx pan head screw.

Figure 13: Antenna locking screw location

4.4 Charging and Micro USB Connection

4.4.1 Connecting the Micro USB cable

The 1128 UHF Reader kit is supplied with a micro USB lead for charging and synchronisation. A USB PSU is also supplied for independent charging of the 1128 UHF Reader. The Micro USB connector is inserted into the 1128 UHF Reader as shown below.

Figure 14: Attaching a Micro USB Cable

4.4.2 Reader orientation when using Micro USB Cable

When charging the 1128 UHF Reader with a slimline grip, it is important to rest the device in an orientation that does not put pressure on the cable or port.

Figure 15: Micro USB cable and UHF reader orientations

4.5 Button Operation

The 1128 UHF Reader has a Primary button action and a Secondary button action which can be initiated by different button clicks: By default, the Primary action scans for UHF transponders, whilst the Secondary action initiates the laser barcode scanner (Barcode scanning is only available with the 2D Imager Antenna variant). Which operation is performed depends on the way in which the button is pressed. The Single and Double press button options are also programmable.

4.5.1 Primary Button Click and Hold - UHF Transponder Read

The primary button click is a standard button action

- To initiate a primary button click press and hold the trigger button.
- To terminate a primary button click release the trigger button.

In the default configuration the 1128 UHF Reader scans for UHF transponders as the primary function. The 1128 UHF Reader will continue to scan for UHF transponders while the button is pressed. It will stop scanning once the button is released (and the current operation completes).

4.5.2 Secondary Button Double Click and Hold – Barcode Scan

(2D Imager Antenna only)

The secondary button click is a single click quickly followed by a second press (press-release-press).

- To initiate a secondary button click press then release then press and hold the trigger button
- To terminate a secondary button click release the trigger button

In the default configuration the 1128 UHF Reader scans for barcodes as the secondary function. The 1128 UHF Reader will continue to scan for a barcode while the button is pressed. It will stop scanning when any of the following conditions are met:

- A barcode is scanned
- The button is released
- The barcode engine times out

4.6 Reading Transponders

RFID transponders can be read when they are in range of the antenna. The antenna is located on the front of the 1128 UHF Reader. The range at which a transponder can be read depends on the transponder type and size, and the number of transponders in the field.

Figure 16: Antenna location and read direction

4.7 Status LED

The status LEDs on the top of the 1128 UHF Reader provides an indication of the operating status of the 1128 UHF Reader.

LED	Status
Blue slow flash (50% on, 50% off)	The reader is awake but there is no connection
Blue constant	The reader is awake and the reader is connected to a host
Short Green flash	The reader has successfully read a tag or barcode or executed the alert command.
Green slow flash (50% on, 50% off)	Antenna error
Orange slow flash (50% on, 50% off)	Battery low warning (<10% capacity remaining), please recharge immediately.
Orange short single slow flash	Battery charging with battery level less than 33%
Orange short double flash	Battery charging with battery level less than or equal to 66%
Orange short triple flash	Battery charging with battery level greater than 66%
Orange rapid flash	There is a charge error / battery fault
Orange constant	The reader is fully charged
All off	Reader is off and not charging

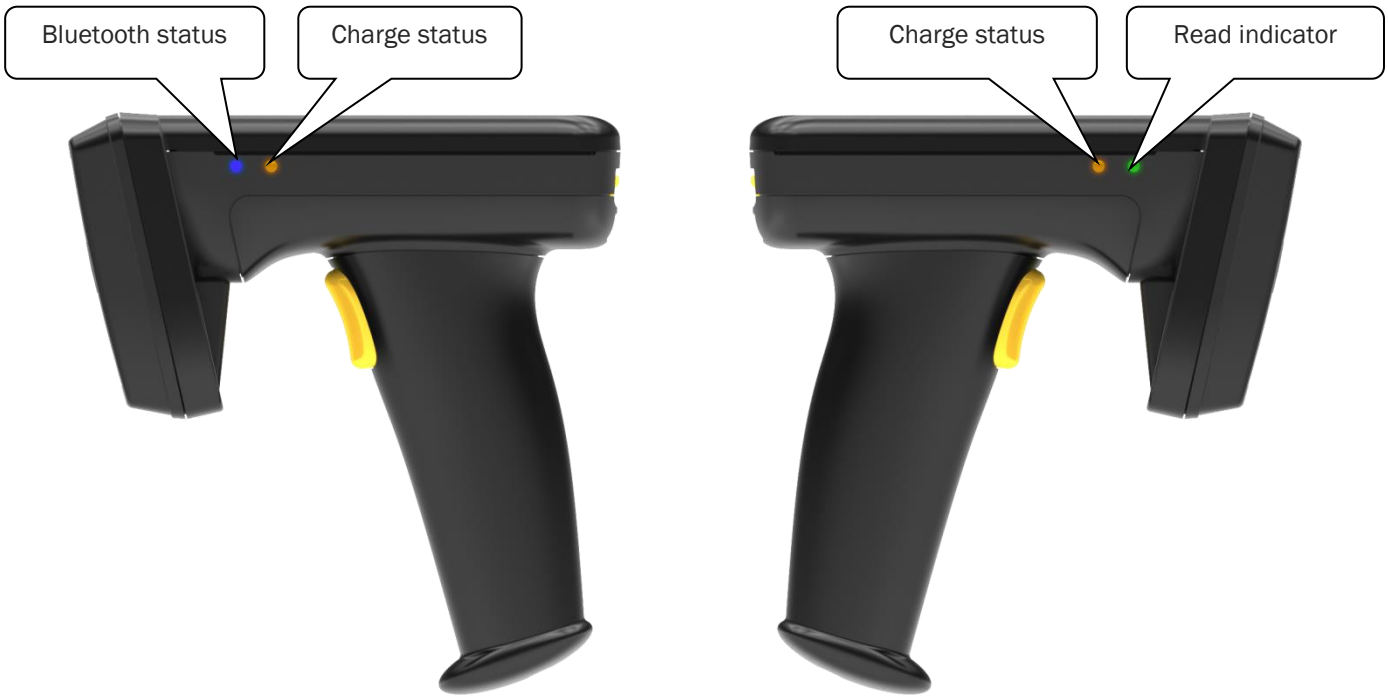
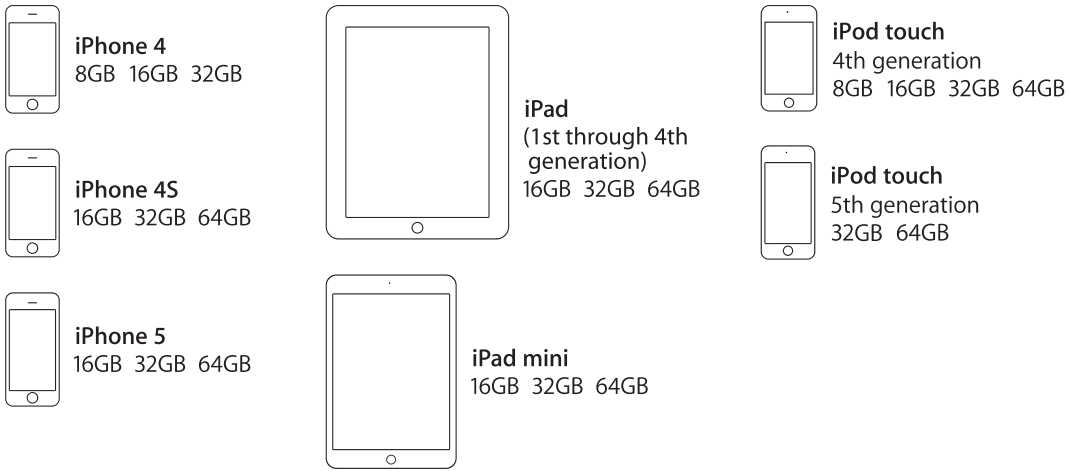


Figure 17: Location of status LEDs

5 Bluetooth Connection

5.1 Compatible Apple product models:

Made for:



5.2 Other compatible products:

The 1128 Bluetooth Handheld UHF RFID Reader is compatible with many other Bluetooth enabled host devices including Android, Windows CE, Windows Mobile 5/6.1/6.5 and Windows XP/Vista/7/8.

5.3 Setting up a Bluetooth connection with an Apple product

Awaken the 1128 UHF Reader by squeezing the trigger, which is confirmed by the flashing of the blue LED. To pair with your iOS device, navigate to the Bluetooth option within the Settings menu on your iOS device. The Bluetooth settings are in different places in iOS 5 & iOS 6:

5.4 View list of Bluetooth Devices (iOS 5)

iPad® :

- Go to the Settings App.
- Select the General settings in the left hand column

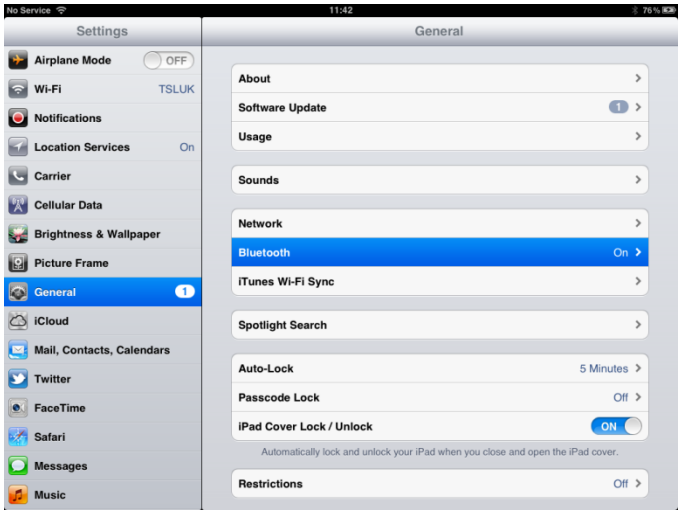


Figure 18: Select Bluetooth settings

- In the right hand panel tap on the Bluetooth row to be taken to the Bluetooth settings

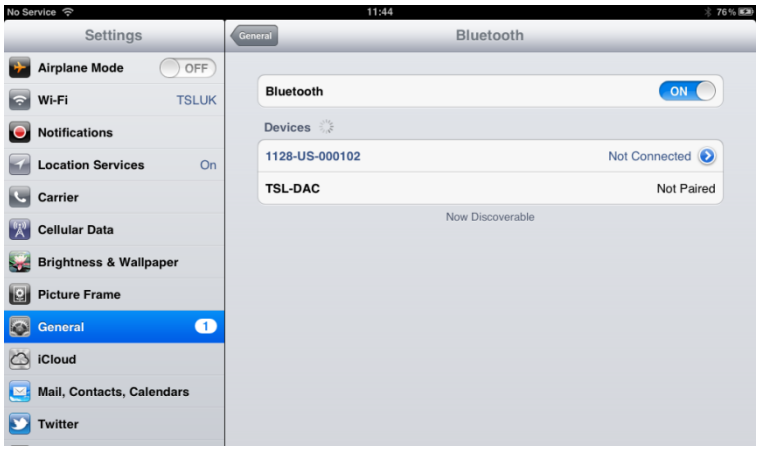


Figure 19: List of devices in Bluetooth settings

iPod®/iPhone®:

- Go to the Settings App.
- Tap the General settings row
- Tap on the Bluetooth row to be taken to the Bluetooth settings

Figure 20: Select General settings

Figure 21: Select Bluetooth settings

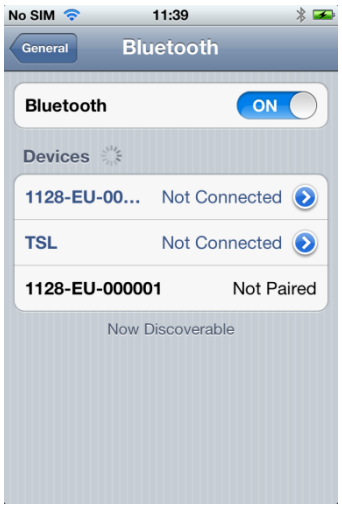


Figure 22: List of devices in Bluetooth settings

5.5 View list of Bluetooth Devices (iOS 6)

iPad:

- Go to the Settings App.
- Select the Bluetooth settings in the left hand column.

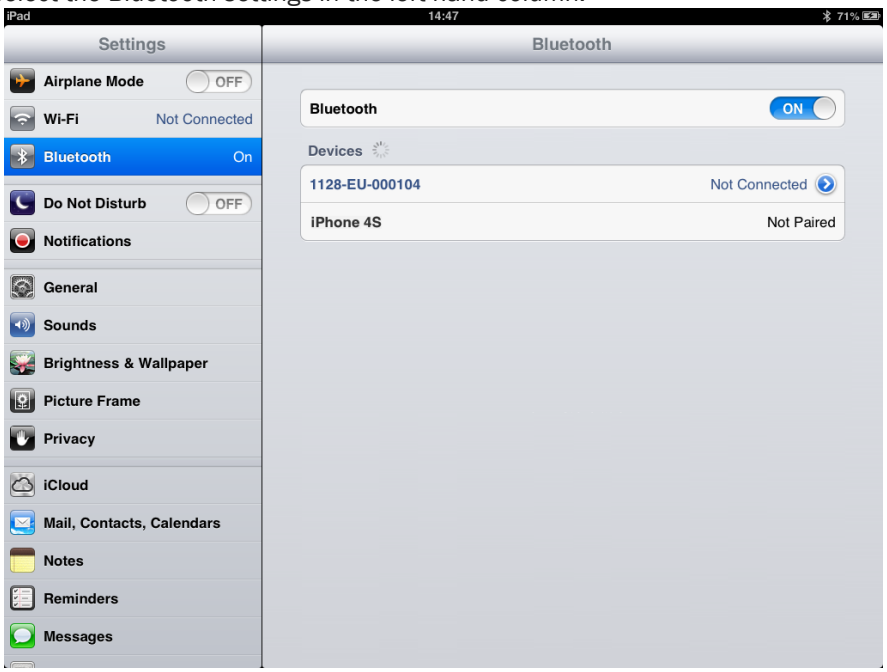


Figure 23: List of devices in Bluetooth settings

iPod/iPhone:

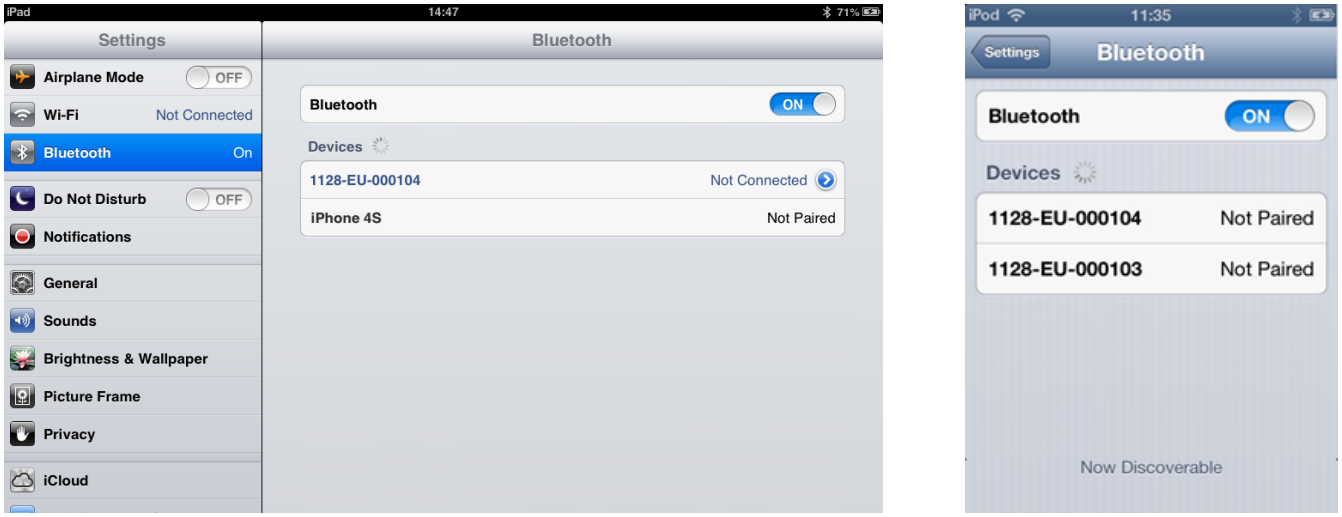
- Go to the Settings App.
- Tap on the Bluetooth row to be taken to the Bluetooth settings.

Figure 24: Select Bluetooth settings

Figure 25: List of devices in Bluetooth settings

5.6 Pair with TSL Bluetooth Device

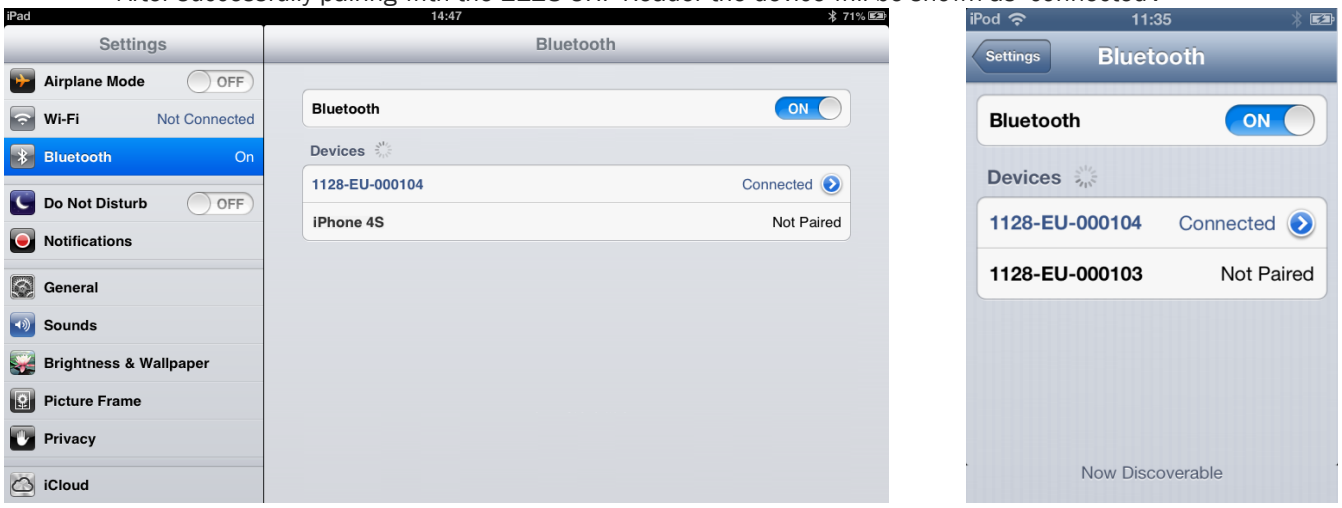
In the list of Bluetooth devices, the 1128 UHF reader will be identified by its serial number (1128-xx-xxxxxx). Click on the corresponding arrow to pair with the reader.



iPad iPod/iPhone

Figure 26: Identify device

After successfully pairing with the 1128 UHF Reader the device will be shown as 'connected'.



iPad iPod/iPhone

Figure 27: Device connected

Open TSL's RFID Explorer App.

The RFID Explorer App can be downloaded from the App Store.

If the app is starting up for the first time, no reader will be selected. To select a reader, tap on 'Change Devices' in the top left-hand corner.

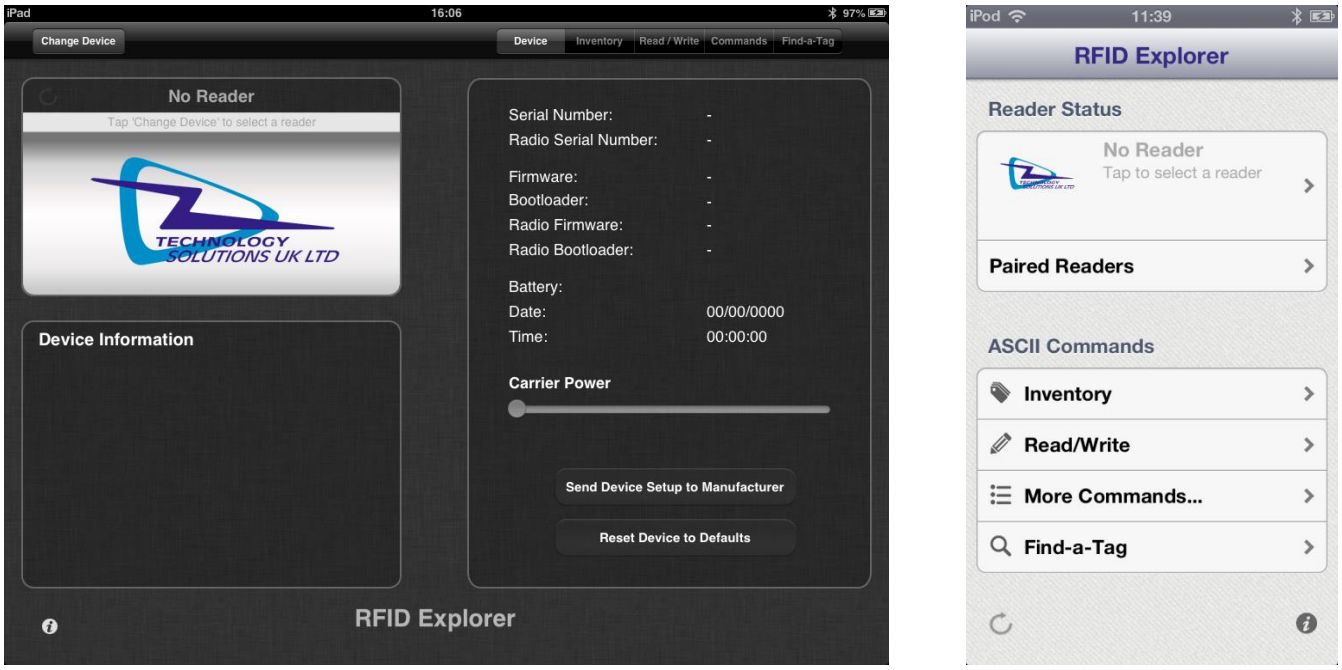


Figure 28: TSL RFID Explorer App on first load – no reader selected

A list of compatible and currently paired Bluetooth devices will appear. Select the device to be used with the RFID Explorer App.

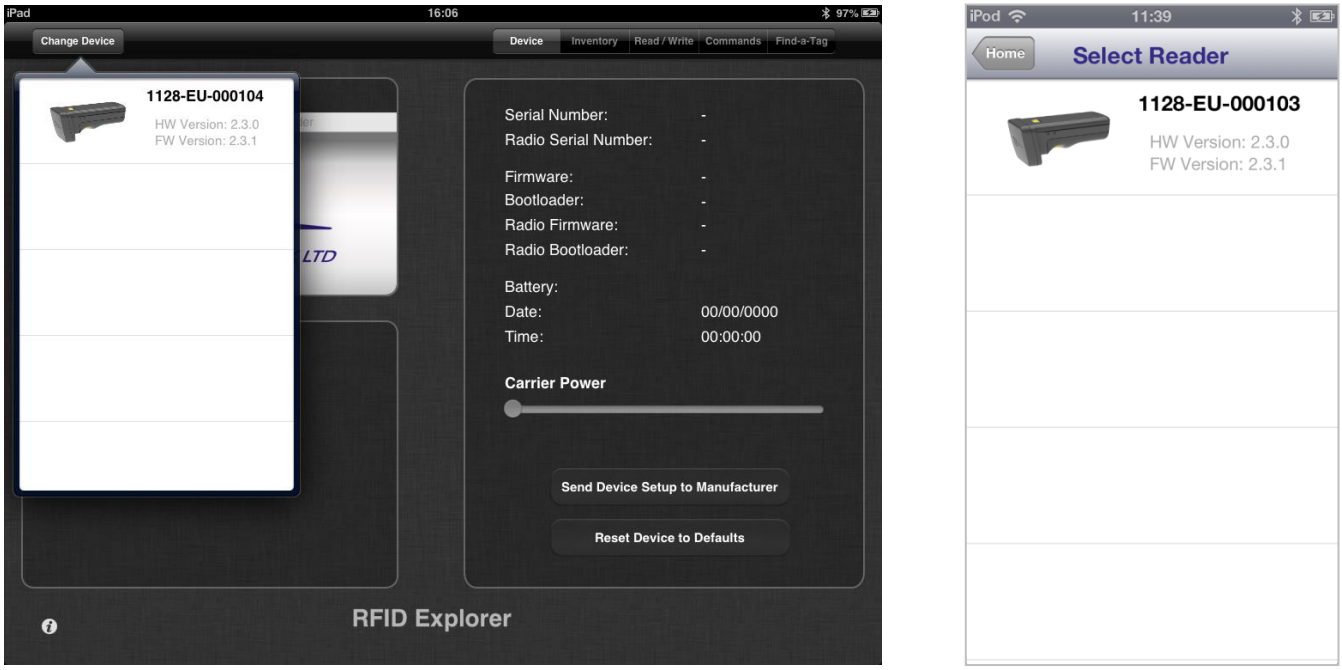


Figure 29: List of paired Bluetooth devices

The selected device's image will appear, accompanied by relevant device information. The 'Inventory', 'Read/Write', 'Commands' and 'Find a Tag' features can now be explored. To maximise battery life it is recommended to release the 1128 UHF Reader from its Bluetooth connection if the reader is not to be used for a significant period of time.

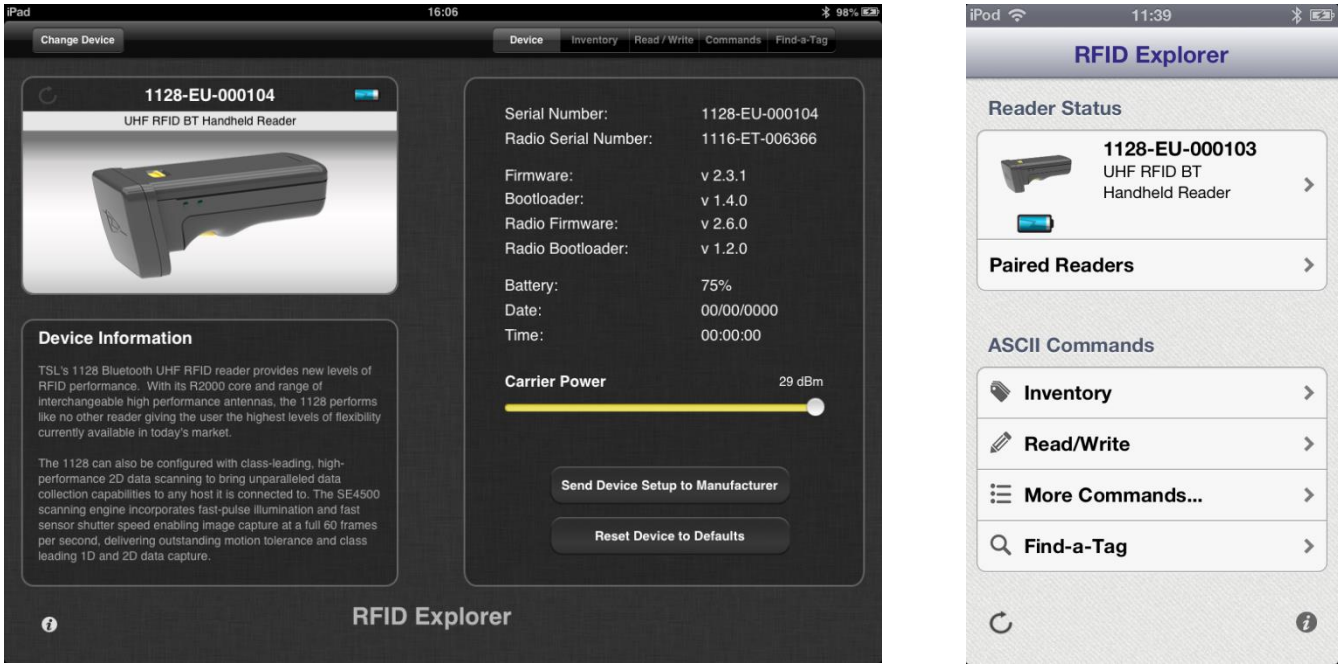


Figure 30: 1128 UHF Reader selected and ready to use

6 Software Development

To make full use of the functionality of the 1128 UHF Reader, a customised software application will be required.

The new 1128 Bluetooth UHF RFID reader incorporates TSL's unique ASCII protocol for faster and easier application development. This sophisticated parameterised ASCII protocol provides the developer a powerful set of commands that carry out multiple actions locally within the Bluetooth reader. This approach enables multiple tag operations executed using simple pre-configured ASCII commands which not only speeds integration of the reader into applications but also abstracts the developer from some of the complexities of the underlying Native API. Simple, text based commands are sent to the reader and responses are returned as text. This allows straightforward access to RFID tag functions such as inventory, read and write. Details of the ASCII command mode are available for download from http://www.tsl.uk.com/1128-downloads/.

7 Troubleshooting and Maintenance

7.1 Maintenance

For trouble-free service please observe the following tips when using the 1128 UHF Reader:

- Protect the 1128 UHF Reader from temperature extremes. Do not leave it on the dashboard of a car on a hot day, and keep it away from heat sources.

7.2 Troubleshooting

Symptoms	Possible Cause	Action
Nothing happens when the yellow button is pressed.	If the LEDs are not on then the battery may be flat.	Charge the 1128 UHF Reader.
	The 1128 UHF Reader may have button actions disabled.	Check the 1128 UHF Reader configuration and restore to defaults if unsure.
The orange LED flashes rapidly when charging.	There is a battery fault.	Replace the battery pack
	The battery pack temperature is outside recommended limits.	Ensure that charging only occurs between 5°C and 40°C.
The host Bluetooth discovery does not find the 1128 UHF Reader.	The 1128 UHF Reader has powered off.	Press the yellow button and ensure the blue LED is flashing.
	The 1128 UHF Reader is out of range.	Move the 1128 UHF Reader closer to the host.
	The Bluetooth friendly name of the 1128 UHF Reader has been changed.	Check the Bluetooth friendly name or restore the 1128 UHF Reader to factory defaults if unsure.
Opening the Bluetooth virtual com port does not connect to the 1128 UHF Reader.	The host has paired to a different Bluetooth device.	Pair to the required 1128 UHF Reader.
	The host Bluetooth function has an error	Warm boot the host. If this does not help, delete the 1128 UHF Reader from the favourites list and re-pair.
Bluetooth pairing fails.	The PIN on the 1128 UHF Reader has been changed	Set the Bluetooth PIN to a known value

8 Regulatory information

8.1 Information to the user – FCC

FCC warning statement:

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.

To comply with FCC RF exposure compliance requirements this unit must be operated in the hand with a minimum separation of 20cm from the body and other persons. Other operating configurations should be avoided. This unit must not be co-located or operated in conjunction with any other transmitter / antenna except those already approved in this filing.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment

8.2 Information to the user – Industry Canada

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada.

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication."

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

(1) this device may not cause interference, and

(2) this device must accept any interference, including interference that may cause undesired operation of the device.

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada.

Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante."

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

(1) l'appareil ne doit pas produire de brouillage, et

(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

9 Health and Safety Recommendations

Ergonomic Recommendations

Caution: In order to avoid or minimize the potential risk of ergonomic injury, follow the recommendations below. Consult with your local Health & Safety Manager to ensure that you are adhering to your company's safety programs to prevent employee injury.

- Reduce or eliminate repetitive motion
- Maintain a natural position
- Reduce or eliminate excessive force
- Keep objects that are used frequently within easy reach
- Perform tasks at correct heights
- Reduce or eliminate vibration
- Reduce or eliminate direct pressure
- Provide adjustable workstations
- Provide adequate clearance
- Provide a suitable working environment
- Improve work procedures.

For vehicle installation and use

An air bag inflates with great force. DO NOT place objects, including either installed or portable wireless equipment, in the area over the air bag or in the air bag deployment area. If in-vehicle wireless equipment is improperly installed and the air bag inflates, serious injury could result.

RF signals may affect improperly installed or inadequately shielded electronic systems in motor vehicles (including safety systems). Check with the manufacturer or its representative regarding your vehicle. You should also consult the manufacturer of any equipment that has been added to your vehicle.

Power Supply

Use only TSL-approved cradles, chargers and power supplies with the 1128 UHF Reader. Use of an alternative power supply will invalidate any approval given to this device, void the warranty for the product and may be dangerous.

10 Waste Electrical and Electronic Equipment (WEEE)

For EU Customers: All products at the end of their life must be returned to TSL for recycling. For information on how to return product please contact TSL.

11 Warranty

(A) Warranty TSL's hardware Products are warranted against defects in workmanship and materials for a period of twelve (12) months from the date of shipment, unless otherwise provided by TSL in writing, provided the Product remains unmodified and is operated under normal and proper conditions. Warranty provisions and durations on software, integrated installed systems, Product modified or designed to meet specific customer specifications ("Custom Products"), remanufactured products, and reconditioned or upgraded products, shall be as provided in the applicable Product specification in effect at the time of purchase or in the accompanying software license.

(B) Spare Parts Spare parts (i.e. parts, components, or subassemblies sold by TSL for use in the service and maintenance of Products) are warranted against defects in workmanship and materials for a period of thirty (30) days from the date of shipment. Spare parts may be new or originate from returned units under the conditions set forth in subsection D below.

(C) Repair of TSL branded hardware For repairs on TSL branded hardware Products under this Agreement, including repairs covered by warranty, the repair services provided are warranted against defects in workmanship and materials on the repaired component of the Product for a period of thirty (30) days from the shipment date of the repaired Product, or until the end of the original warranty period, whichever is longer. Any such defects shall be notified to TSL in writing within 7 days of the same becoming apparent.

(D) Product Service Products may be serviced or manufactured with parts, components, or subassemblies that originate from returned products and that have been tested as meeting applicable specifications for equivalent new material and Products. The sole obligation of TSL for defective hardware Products is limited to repair or replacement (at TSL's option) on a "return to base (RTB)" basis with prior TSL authorisation.

Customer is responsible for prompt shipment to TSL and assumes all costs and risks associated with this transportation; return shipment to the Customer will be at TSL's expense. Customer shall be responsible for return shipment charges for product returned where TSL determines there is no defect ("No Defect Found"), or for product returned that TSL determines is not eligible for warranty repair. No charge will be made to Buyer for replacement parts for warranty repairs. TSL is not responsible for any damage to or loss of any software programs, data or removable data storage media, or the restoration or reinstallation of any software programs or data other than the software, if any, installed by TSL during manufacture of the Product.

(E) Original Warranty Period Except for the warranty applying solely to the repaired component arising from a repair service as provided in Section C above, the aforementioned provisions do not extend the original warranty period of any Product that had either been repaired or replaced by TSL.

(F) Warranty Provisions The above warranty provisions shall not apply to any Product

(i) which has been repaired, tampered with, altered or modified, except by TSL's authorized service personnel; (ii) in which the defects or damage to the Product result from normal wear and tear, misuse, negligence, improper storage, water or other liquids, battery leakage, use of parts or accessories not approved or supplied by TSL, or failure to perform operator handling and scheduled maintenance instructions supplied by TSL;

(iii) which has been subjected to unusual physical or electrical stress, abuse, or accident, or forces or exposure beyond normal use within the specified operational and environmental parameters

set forth in the applicable Product specification; nor shall the above warranty provisions apply to any expendable or consumable items, such as batteries, supplied with the Product.

EXCEPT FOR THE WARRANTY OF TITLE AND THE EXPRESS WARRANTIES STATED ABOVE, TSL DISCLAIMS ALL WARRANTIES ON PRODUCTS FURNISHED HEREUNDER INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR USE. ANY IMPLIED WARRANTIES THAT MAY BE IMPOSED BY LAW ARE LIMITED IN DURATION TO THE LIMITED WARRANTY PERIOD. SOME STATES OR COUNTRIES DO NOT ALLOW A LIMITATION ON HOW LONG AN IMPLIED WARRANTY LASTS OR THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES OR CONSUMER PRODUCTS. IN SUCH STATES OR COUNTRIES, FOR SUCH PRODUCTS, SOME EXCLUSIONS OR LIMITATIONS OF THIS LIMITED WARRANTY MAY NOT APPLY.

The stated express warranties are in lieu of all obligations or liabilities on the part of TSL for damages, including but not limited to, special, indirect or consequential damages arising out of or in connection with the use or performance of the Product or service. TSL's liability for damages to Buyer or others resulting from the use of any Product or service furnished hereunder shall in no way exceed the purchase price of said Product or the fair market value of said service, except in instances of injury to persons or property.

TSL is not responsible for any damages incurred during shipment if the approved shipping container is not used. Shipping the units improperly can possibly void the warranty. If the original shipping container was not kept, contact your local distributor or TSL to have another sent to you.

TSL shall not be responsible for any injury, damage or loss of whatever kind caused directly or indirectly by the goods whether as a result of their manufacture, operation, use or otherwise and the customer shall indemnify TSL from any claim arising from any loss suffered by any third party.