

## STATUS LEDs

The status LEDs on the left and right sides of the 2128 UHF Reader provide an indication of the operating status:

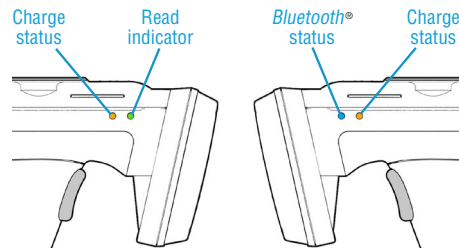


FIGURE 7: Location of status LEDs

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 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 - try reseating the antenna
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	The Reader is off and not charging

## HEALTH AND SAFETY

### Power Supply

Use only TSL®-approved cradles and power supplies with the 2128 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.

### 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 frequently used objects 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

## Laser Warning

A warning label is present on the back of the antenna when a barcode reader antenna is fitted.

The barcode reader module complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007, EN60825-1:2007 and IEC60825-1:2001 (Ed.1.2)

Avoid unnecessary exposure to the laser light emitted from the barcode reader.

Caution: Use of controls, adjustments or performance of procedures other than those specified herein may result in hazardous laser light exposure.

Caution: Viewing the illumination from the barcode reader with optical instruments may result in increased hazard.



## TERMS & CONDITIONS

Copyright © 2018 Technology Solutions (UK) Ltd. All rights reserved.

No part of this publication may be reproduced or used in any form, or by any electrical or mechanical means, without permission in writing from Technology Solutions (UK) Ltd. This includes electronic or mechanical means, such as photocopying, recording, or information storage and retrieval systems. The material in this manual is subject to change without notice.

Technology Solutions (UK) Ltd (TSL®) reserves the right to make changes to any software or product to improve reliability, function, or design. TSL® does not assume any product liability arising out of, or in connection with, the application or use of any product, circuit, or application described herein. No license is granted, either expressly or by implication, estoppel, or otherwise under any patent right or patent, covering or relating to any combination, system, apparatus, machine, material, method, or process in which TSL® products might be used. An implied license exists only for equipment, circuits, and subsystems contained in TSL® products. TSL® and the TSL® logo are registered trademarks of TSL®. Other product names mentioned in this manual may be trademarks or registered trademarks of their respective companies and are hereby acknowledged.

All software is provided strictly on an "as is" basis. All software, including firmware, furnished to the user is on a licensed basis. TSL® grants to the user a non-transferable and non-exclusive license to use each software or firmware program delivered hereunder (licensed program). Except as noted below, such license may not be assigned, sublicensed, or otherwise transferred by the user without prior written consent of TSL®. No right to copy a licensed program in whole or in part is granted, except as permitted under copyright law. The user shall not modify, merge, or incorporate any form or portion of a licensed program with other program material, create a derivative work from a licensed program, or use a licensed program in a network without written permission from TSL®. The user agrees to maintain TSL®'s copyright notice on the licensed programs delivered hereunder, and to include the same on any authorized copies it makes, in whole or in part. The user agrees not to decompile, disassemble, decode, or reverse engineer any licensed program delivered to the user or any portion thereof.

The *Bluetooth®* word mark and logos are registered trademarks owned by Bluetooth SIG, Inc. and any use of such marks by Technology Solutions (UK) Ltd is under license. Other trademarks and trade names are those of their respective owners.

## SUPPORT

### User Documentation

To download the 2128 *Bluetooth®* UHF RFID Reader User Guide, visit: [www.tsl.com/2128-downloads](http://www.tsl.com/2128-downloads)



User Guide and Downloads

### Troubleshooting

If you are having difficulties using your 2128 UHF Reader, please use the online Troubleshooting Guide at: [www.tsl.com/troubleshooting-guides](http://www.tsl.com/troubleshooting-guides)

If you have consulted both the 2128 UHF Reader User Guide and the online Troubleshooting Guide and still need assistance, contact TSL® at: [www.tsl.com/contact](http://www.tsl.com/contact)

### Warranty

TSL®'s hardware Products are warranted against manufacturing defects 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.

For further warranty information and provisions, please see the Warranty section of the 2128 UHF Reader User Guide (available to download at [www.tsl.com/2128-downloads](http://www.tsl.com/2128-downloads))

## ABOUT

### TSL® - Global Leaders in Mobile RFID

Technology Solutions UK Ltd (TSL®), part of HID Global, is a leading manufacturer of high performance mobile RFID readers used to identify and track products, assets, data or personnel.

For over two decades, TSL® has delivered innovative data capture solutions to Fortune 500 companies around the world using a global network of distributors and system integrators. Specialist in-house teams design all aspects of the finished products and software ecosystems, including electronics, firmware, application development tools, RF design and injection mould tooling.



ISO 9001: 2015

TSL® is an ISO 9001:2015 certified company.

## CONTACT

**Address:** Technology Solutions (UK) Limited  
Suite A, Loughborough Technology Centre, Epinal Way,  
Loughborough, Leicestershire, LE11 3GE. United Kingdom.

**Telephone:** +44 (0)1509 238248

**Fax:** +44 (0)1509 214144

**Email:** [enquiries@tsl.com](mailto:enquiries@tsl.com)

**Website:** [www.tsl.com](http://www.tsl.com)

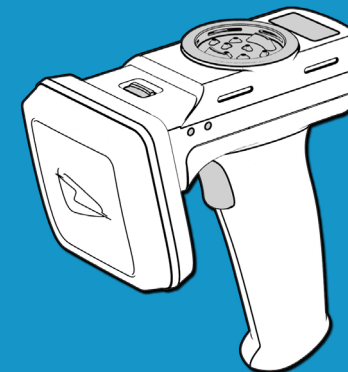


TECHNOLOGY  
SOLUTIONS UK LTD

part of **HID**

# 2128

## Bluetooth® UHF RFID Reader



## Quick Start Guide

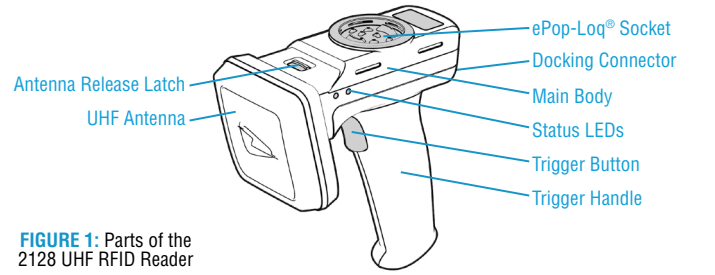
[www.tsl.com](http://www.tsl.com)

Design • Development • Manufacture

# INTRODUCTION

The TSL® 2128 *Bluetooth*® UHF RFID Reader provides Ultra High Frequency (UHF) Radio Frequency Identification (RFID), with optional barcode scanning functionality. The unit can be used in batch mode using an optional Micro SD card, or can be connected via USB through the *ePop-Loq*® socket, or connected to a host device via *Bluetooth*®. The 2128 can read and write to EPC Global Class 1 Gen 2 UHF RFID transponders.

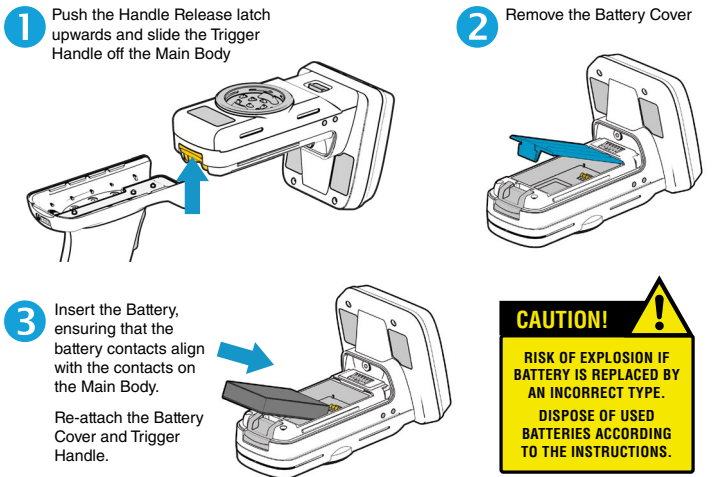
For detailed information on setting up and using the 2128 UHF Reader, please visit [www.tsl.com/2128-downloads](http://www.tsl.com/2128-downloads) to download the 2128 UHF Reader User Guide.



**FIGURE 1:** Parts of the 2128 UHF RFID Reader

# BATTERY INSTALLATION

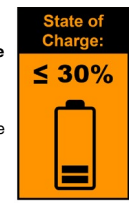
The battery is charged using a docking station and is therefore unlikely to need to be changed once installed. To access the battery compartment the grip handle must first be removed.



**CAUTION!**  
**RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.**  
**DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.**

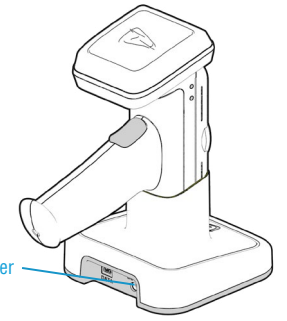
# CHARGING

To comply with international shipping regulations, **all batteries included with TSL® products are discharged to less than 30% of their maximum capacity when shipped.** It is therefore important that the unit is fully charged before using your 2128 UHF Reader for the first time.



The 2128 UHF Reader can be charged using the dedicated 2128 Docking Station. The Docking Station has an input for power and a Mini USB connector for data communications.

Use 5.2V 4A Power Supply Only



**FIGURE 2:** Charging the 2128 UHF Reader

# BUTTON OPERATION

The 2128 UHF Reader has a Primary button action and a Secondary button action, which can be initiated by single or double-clicks of the Trigger Button:

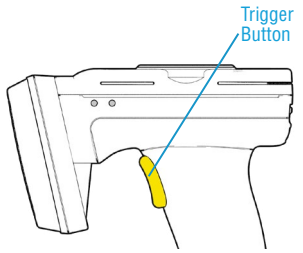
## Single-click and hold:

Primary action (by default, the Primary action scans for UHF transponders).

## Double-click and hold:

Secondary action (by default, the Secondary action initiates the laser barcode scanner - this is only available when using the 2D Imager Antenna variant).

The Single and Double-click button options are also programmable for custom applications.

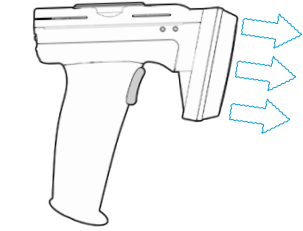


**FIGURE 3:** Trigger Button location

# READING TRANSPONDERS

The 2128 UHF Reader can read and write to UHF RFID transponders when they are in range of the antenna. The antenna is located on the front of the 2128 UHF Reader and the read zone is in front of the antenna.

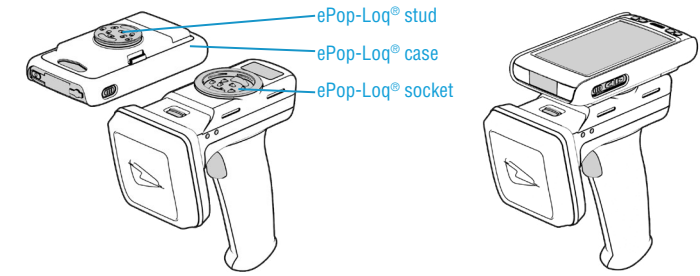
The range at which a transponder can be read depends on the transponder type and size, and the number of transponders in the field.



**FIGURE 4:** Antenna read direction

# ATTACHING DEVICES

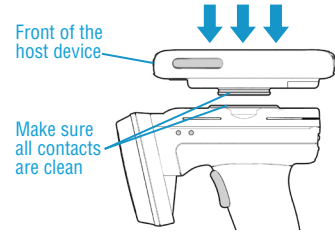
The 2128 UHF RFID Reader has an *ePop-Loq*® mount which allows smartphones and mobile terminals to be physically attached to the 2128 UHF Reader. Custom *ePop-Loq*® cases allow compatible devices with custom applications to communicate with the reader via USB instead of *Bluetooth*®.



**FIGURE 5:** *ePop-Loq*® component parts

# Fitting an *ePop-Loq*® case

1. Ensure the phone / mobile terminal is fitted into its *ePop-Loq*® case *before* attaching the case to the 2128 UHF RFID Reader. This prevents over-flexing of the case.
2. Make sure all of the contacts - on both the *ePop-Loq*® socket and stud - are clean and free from dirt or debris.
3. Align the *ePop-Loq*® stud with the *ePop-Loq*® socket - ensuring that the front of the host device is pointing towards the antenna - and press the two parts together until they click into place.
4. To remove the *ePop-Loq*® case, pull in the opposite direction. Do not twist the devices when separating.



**FIGURE 6:** Attaching an *ePop-Loq*® case

# USB CONNECTION

The *ePop-Loq*® USB connection on the 2128 can be configured in one of two modes – Charge-Only or Charge-and-Data. Please ensure the mode required is correctly configured.

- Charge-Only mode: Both the 2128 UHF Reader and the mounted device will be charged when docked in the charging cradle, but will never use the USB data connection.
- Charge-and-Data mode: Compatible devices will use the USB data connection when not in the charging cradle. Note that USB data connection to the 2128 requires a custom application that supports the TSL® ASCII protocol over USB.

To configure the USB mode, please refer to the 2128 User Guide (the 2128 User Guide can be downloaded at [www.tsl.com/2128-downloads](http://www.tsl.com/2128-downloads)).

# BLUETOOTH® CONNECTION

The 2128 *Bluetooth*® Handheld UHF RFID Reader is compatible with many *Bluetooth*® wireless technology enabled host devices including Android, iOS and Windows 10/8/7.

The *Bluetooth*® version is BT4.2 and supports both *Bluetooth*® Low Energy and *Bluetooth*® Classic.

# To pair with a *Bluetooth*® host device

Squeeze the Trigger Button to wake up the 2128 UHF Reader and wait for the blue LED to start flashing (if it does not flash, please check the battery is charged and properly installed).

In your host device's '*Bluetooth*®' Settings page, search for and pair with the 2128 UHF Reader. In the list of *Bluetooth*® devices, the 2128 UHF Reader will be identified by its serial number (xxxxxx-2128). (Make sure the Reader has not 'timed-out' and gone to sleep, as it will not be discoverable).



Once a *Bluetooth*® connection has been successfully established, the blue LED will stop flashing and stay on continuously.

Install a compatible application (such as TSL's RFID Explorer App) on your smartphone or tablet. RFID Explorer can be downloaded from the App Store or Google Play.

Open your compatible application and select the 2128 UHF Reader from the list of available devices. The 2128 UHF Reader should now be ready to use!

# BLUETOOTH® OPERATING MODES

PLEASE NOTE: Our UHF RFID *Bluetooth*® Readers support **two different modes of operation** over *Bluetooth*®.

## 1. *Bluetooth*® SPP Mode

By default the 2128 UHF Reader is set to SPP Mode. In this mode, the 2128 UHF Reader will only work with Apps that have been written with specific support for the 2128 UHF Reader. SPP Mode allows access to the full range of features available on the 2128 UHF Reader.

The 2128 UHF Reader must be set to SPP mode in order to work with RFID Explorer or any of the other free TSL® Apps ([www.tsl.com/apps](http://www.tsl.com/apps)).

## 2. *Bluetooth*® HID Mode

In HID mode, the 2128 UHF Reader appears as a *Bluetooth*® Keyboard, making it compatible with the majority of Apps or Web Apps. Apps receive input as key strokes from the Reader. HID mode is better suited to reading UHF tags one at a time.

# Further Information

For a detailed comparison between *Bluetooth*® HID and SPP modes - and instructions on how to switch between these modes - download the '*Comparison of Bluetooth® Modes for TSL® UHF Readers*' document from the 2128 Downloads Page ([www.tsl.com/2128-downloads](http://www.tsl.com/2128-downloads)).

For information and examples on configuring HID mode, download the '*Bluetooth® HID mode*' application note ([www.tsl.com/2128-downloads](http://www.tsl.com/2128-downloads)).