

# 2128L *Bluetooth*<sup>®</sup> UHF RFID Reader

High Performance, Wide Area UHF RFID reading with the convenience of ePop-Loq<sup>®</sup> connectivity and charging



## Maximum Performance

The 2128L UHF Reader boasts unrivalled levels of RFID read/write performance, particularly in applications where longer read range is required or where there is a very dense collection of tags.

The fixed High Gain Linear Antenna provides up to 15m (49ft) of read range. The Linear Antenna is tuned to give exceptional scanning performance to both the front and sides of the antenna.

## Enhanced Modes of Operation

The 2128L UHF RFID Reader can provide in-reader tag de-duplication for more than 50,000 unique tags from more than 1 million tag reads. In addition the Reader can store on-board (using the embedded micro SD card) more than 500 million unique tags with date and time stamping for a truly powerful batch collection mode of operation.

Sophisticated user feedback and embedded processes and accelerometers provide the most configurable, in-depth and capable 'search and find' features currently available.

## Connect Devices Using ePop-Loq<sup>®</sup>

The 2128L UHF RFID Reader features the new TSL<sup>®</sup> ePop-Loq<sup>®</sup> connector. The patented ePop-Loq<sup>®</sup> system allows data and charge connections to be passed from the reader to an attached device, such as a smartphone or handheld terminal.

The unique ePop-Loq<sup>®</sup> system is designed to safely separate when the reader is subject to large impacts, such as when dropped.

## Single Point Charge Solution

The 2128-CRD-02 Docking Cradle allows charging of both the 2128L UHF RFID Reader and a smartphone

or handheld terminal attached via an ePop-Loq<sup>®</sup> mount. This unique design can accommodate a wide range of devices from many handheld and smartphone manufacturers. The 2128L Docking Cradle Kit is supplied separately and includes the docking cradle, power supply unit and a USB data cable.

## Powerful and Comprehensive Software Development Tools

Applications developed for the 1128, 2128, 2128P 1153, 1166 or 2166 UHF RFID Readers can easily be configured to work with the 2128L, as all of these readers share TSL's unique 'ASCII 2 Protocol'. This sophisticated, parameterised set of commands carry out multiple actions locally within the reader. This approach enables multiple tag operations to be executed using simple pre-configured ASCII 2 commands which not only speeds integration of the reader into applications but also makes application development easier.

## Flexible *Bluetooth*<sup>®</sup> Connectivity

The 2128L supports both *Bluetooth*<sup>®</sup> Classic as well as *Bluetooth*<sup>®</sup> Low Energy (BLE). The reader can be operated in Serial Port Profile (SPP) or Human Interface Device mode (HID), as well as supporting iApp2 for Apple iOS devices. The reader also supports an automatic re-connect mode for both Android and Apple devices.

## Ultra Secure Data Gathering Option

As the ePop-Loq<sup>®</sup> system provides a wired connection between the host device and RFID Reader, sensitive data can be given that extra level of security by avoiding the use of wireless data transfer.

## Features:

### Wide Area Scanning

High Performance Linearly Polarised UHF RFID Antenna enables a wide beam shape ideal for retail applications.

### Hardware Platform Independence

Operates with wide variety of *Bluetooth*<sup>®</sup> wireless technology enabled host devices from smartphones to tablets, laptops and desktop computers.

### OS Independence

The reader is compatible with Android, iOS and Windows.

### Integrated ePop-Loq<sup>®</sup> Socket

A smarter way of mounting devices to the UHF RFID reader.

### Bluetooth LE Support

Lower power consumption and longer battery life.

### Direct USB Connection

For increased security of data transfer via ePop-Loq<sup>®</sup> mounts.



# 2128L Preliminary Specifications

## Physical and Environmental Characteristics

Dimensions:	240 x 88 x 180 mm (LxWxH)
Weight:	700 g (including integrated battery)
User input:	Trigger button
User feedback:	Speaker, vibration motor, LED - user configurable
Power:	Integrated 3.6 V 6700 mAh Lithium Polymer pack, 27 Watt hrs
Input Rating:	5.2VDC, 4.0A
Enclosure materials:	Polycarbonate

## Performance Characteristics

RFID engine:	TSL® custom module
Communication protocols:	TSL® ASCII 2.0 parameterised command set and Impinj binary protocol.
Compatible Host devices ( <i>Bluetooth</i> ®):	Any <i>Bluetooth</i> ® Host <sup>1</sup> supporting the Serial Port Profile (SPP) or Human Interface Device (HID) profile (Android, iOS, Linux, Mac, Windows). See <a href="#">Bluetooth® Mode Comparison</a> .
Compatible Host devices (USB):	Any USB host with FTDI VCP driver support (Windows, Linux, Mac, Android).

## Environmental

Operating Temp.:	-10°C to 50°C (14°F to 122°F).
Charging Temp.:	0°C to 45°C (32°F to 113°F).
Storage Temp.:	Less than 1 month at -20°C to +45°C (-4°F to 113°F). Less than 6 months at -20°C to +35°C (-4°F to 95°F).
Humidity:	5% to 85% non-condensing.
Drop Spec:	Multiple drops to concrete: 4 ft./1.2 m ambient, 3ft / 0.9m across the operating temperature range.
Tumble:	500 0.5 metre tumbles at room temperature (1,000 cycles).
Electrostatic Discharge (ESD):	± 15kVdc air discharge; ± 8kVdc contact discharge.
MIL-STD 810F:	Meets and exceeds applicable MIL-STD 810F for drop, tumble and sealing.

## RFID Performance

Standards supported:	EPC Class 1 Gen 2.
Nominal read range <sup>2</sup> :	Up to 15 m (49 ft).
Nominal write range <sup>2</sup> :	Up to 6 m (19.6 ft).
Antenna:	Linearly Polarised with field shaping.
Frequency Range:	865 - 868 MHz (EX1 variant) 902 - 928 MHz (AX1 variant)
Maximum Output Power:	35 dBm EIRP <sup>3</sup>

## Communication

<i>Bluetooth</i> ®:	<i>Bluetooth</i> ® Version 4.2.
<i>Bluetooth</i> ® Profiles:	SPP Profile, HID Profile, Apple iAP2, <i>Bluetooth</i> ® Low Energy.

<i>Bluetooth</i> ® Range:	Up to 100m.
<i>Bluetooth</i> ® Pairing:	Simple Secure Pairing, NFC OOB Pairing
Direct USB	USB connection to handheld terminal via ePop-Loq® cases (separate purchase)

## Peripherals and Accessories

External interface:	Custom connector - requires Docking Cradle for battery charging, and USB connectivity.
USB operating modes:	Tethered for real time data capture in conjunction with SmartWedge software. Download of stored scan data.
Desktop charger:	TSL® 2128-CRD-02 Docking Cradle (separate purchase).
Other Accessories:	New ePop-Loq® cases can be ordered by special request (volume dependent, lead times apply).

## Regulatory

EMC:	47 CFR Part 15B 15.107, 15.109 EN 55032:2015 +AC:2016 EN 55024:2010 +A1:2015 EN 301 489-1 V2.2.0 EN 301 489-3 V2.1.1 EN 301 489-17 V3.2.0
Radio:	47 CFR Part 15C 15.247 EN 300 328 V2.1.1 EN 302 208 V3.1.1
Radio Exposure:	47 CFR Part 2.1091, OET Bulletin 65 EN 62479:2010
Safety:	IEC 62368-1:2014 EN 62368-1:2014 +AC:2015 UL 62368-1:2014

## Part Numbers

2128L-EX1	2128L <i>Bluetooth</i> ® UHF Reader with Linear High Gain UHF Antenna and integrated battery (ETSI - 865 - 868 MHz)
2128L-AX1	2128L <i>Bluetooth</i> ® UHF Reader with Linear High Gain UHF Antenna and integrated battery (FCC - 902 - 928 MHz)
2128-CRD-02-KIT	Docking Cradle, PSU and Mini USB cable

<sup>1</sup> Compatible *Bluetooth*® stack required in the Host device

<sup>2</sup> Tag Read/Write performance is dependent on tag type, items tagged, number of tags in the field and other radio and environmental factors

<sup>3</sup> 35 dBm EIRP or maximum for regulatory region

## TSL® RFID Apps



RFID Explorer  
[www.tsl.com/apps/rfid-explorer](http://www.tsl.com/apps/rfid-explorer)



RFID Tag Finder  
[www.tsl.com/apps/rfid-tag-finder](http://www.tsl.com/apps/rfid-tag-finder)



RFID Web Wedge  
[www.tsl.com/apps/rfid-web-wedge](http://www.tsl.com/apps/rfid-web-wedge)



RFID Scan Scan Write  
[www.tsl.com/apps/rfid-scan-scan-write](http://www.tsl.com/apps/rfid-scan-scan-write)



TSL® Reader Configuration  
[www.tsl.com/apps/tsl-reader-configuration](http://www.tsl.com/apps/tsl-reader-configuration)

## Warranty

The TSL® 2128L reader is warranted against defects in workmanship and materials for a period of one year (12 months) from date of shipment, provided the product remains unmodified and is operated under normal and proper conditions.

## Terms

"Made for iPod," "Made for iPhone," and "Made for iPad" mean that an electronic accessory has been designed to connect specifically to iPod, iPhone, or iPad, respectively, and has been certified by the developer to meet Apple performance standards. Apple is not responsible for the operation of this device or its compliance with safety and regulatory standards. Please note that the use of this accessory with iPod, iPhone, or iPad may affect wireless performance.

iPod, iPhone, iPod and iPod touch are trademarks of Apple Inc., registered in the U.S. and other countries.

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.

## Mounts

Connect smartphones or Hand-Held Terminals using ePop-Loq® mounts:



**Honeywell  
D75e**



**Honeywell  
CT50 / CT60**



**Honeywell  
EDA50**



**Honeywell  
CT40**



**Zebra  
TC51 / TC56**



**Zebra  
TC70 / TC75**



## About TSL®

Technology Solutions UK Ltd (TSL®) 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.

TSL® is an ISO 9001:2015 certified company.



ISO 9001: 2015

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