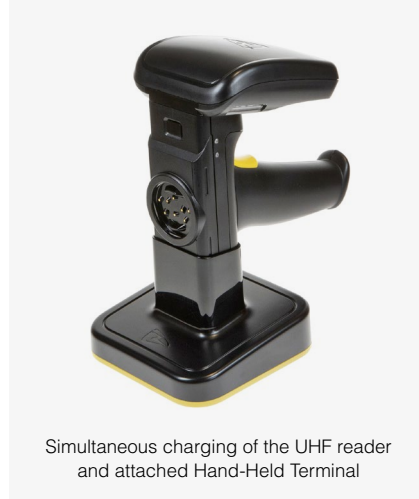




# 2128P **BLUETOOTH**<sup>®</sup> **RAIN**<sup>®</sup> RFID UHF READER

## HIGH PERFORMANCE, LONG RANGE RFID READING WITH THE CONVENIENCE OF **EPOP-LOQ**<sup>®</sup> CONNECTIVITY AND CHARGING



Simultaneous charging of the UHF reader and attached Hand-Held Terminal



Available with or without 2D Barcode Scanner

### High Performance RFID Reading

The fixed High Gain Antenna provides up to 9m (29.5ft) of read range.

### Enhanced Modes of Operation

The 2128P RAIN 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 provides the most configurable, in-depth and capable 'search and find' features currently available.

### Connect Devices Using ePop-Loq

The 2128P RAIN RFID Reader features the new TSL<sup>®</sup> ePop-Loq connector. The patented ePop-Loq 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 system is designed to safely separate when the reader is subject to large impacts, such as when dropped.

### Single Point Charge Solution

The 2128P Docking Station allows charging of both the 2128P RAIN RFID Reader and a smartphone or handheld terminal attached via an ePop-Loq mount. This unique design can accommodate a wide range of devices from many handheld and smartphone manufacturers. The 2128P Docking Station Kit is supplied separately and includes the docking station, power supply unit and a USB data cable.

### Powerful and Comprehensive Software Development Tools

Applications developed for the 1128, 2128, 2128P 1153, 1166 or 3166 RAIN 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 Connectivity

The 2128P supports both *Bluetooth* Classic as well as *Bluetooth* 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 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. The 2128P supports batch data collection and is equipped with a Micro SD socket and a real time clock. Up to 500 million transponder EPCs can be stored on a 32GB Micro SD card (optional purchase). This provides the ability to collect and log data even if USB or *Bluetooth* communication channels are not available. Docking the 2128P then enables this data to be synchronised with a PC.

### Features:

**Long Range RAIN RFID Reader**  
UHF RFID and 2D barcode data capture in a single device.

**Hardware Platform Independence**  
Operates with wide variety of *Bluetooth* 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 Socket**  
A smarter way of mounting devices to the RAIN RFID Reader.

**Bluetooth LE Support**  
Lower power consumption and longer battery life.

**Direct USB Connection**  
For increased security of data transfer via ePop-Loq mounts.

**Lightweight**  
Only 400g (14.1oz) including battery, trigger handle and 2D Imager.

**High Performance Barcode Scanning**  
Integrated 2D imaging engine provides class leading barcode scan performance via its unique patent pending fast pulse illumination which delivers outstanding motion tolerance and class leading 1D and 2D data capture.



## Physical and Environmental Characteristics

|                                       |   |
|---------------------------------------|---|
| Dimensions:                           | 158 x 98 x 170 mm (LxWxH).  |
| Weight:                               | 465 g / 16.4 oz (including Trigger Handle & battery).   |
| User input:                           | Trigger button.   |
| User feedback:                        | Speaker, vibration motor, LED - user configurable.  |
| Power:                                | Removable, rechargeable 3.7V, 2400mAh, 8.9Wh Lithium Polymer pack.  |
| Minimum operating time <sup>1</sup> : | Light use <sup>2</sup> : 8.5 hrs<br>Moderate use <sup>3</sup> : 5 hrs<br>Heavy use <sup>4</sup> : 2.5 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.  |
| Memory:                              | Optional Micro SD card (maximum 32GB capacity supported). Up to 500 million date and time stamped EPCs can be stored on a 32GB Micro SD card (separate purchase from alternative supplier).                  |
| Compatible Host devices (Bluetooth): | Any <i>Bluetooth</i> Host <sup>5</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.:                | Standard Trigger Handle (with Varta XL battery): 5°C to 40°C (41°F to 104°F).                                |
| Storage Temp.:                 | Less than 1 month at -20°C to +45°C (-4°F to 113°F).<br>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:                        | 1000 0.5 metre tumbles at room temperature (2000 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>6</sup> :  | Up to 9 m (29.5 ft). |
| Nominal write range <sup>6</sup> : | Up to 4 m (13.1 ft). |

|                       |  |
|-----------------------|--|
| Field:                | 150-degree forward facing.   |
| Antenna:              | Right Hand Circularly Polarized with optional 2D scanner.            |
| Frequency Range:      | 865 - 868 MHz (EX1/ES1 variant).<br>902 - 928 MHz (AX1/AS1 variant). |
| Maximum Output Power: | Up to 30 dBm (region dependent) + 4.0 dBiC Antenna.                  |

## Barcode Scanning

|                             |  |             |            |
|-----------------------------|--|-------------|------------|
| Optional 2D Barcode Engine: | Optional TSL custom 2D Barcode Scan Engine module.   |             |            |
| Sensor Resolution:          | 1280 x 960 pixels, rolling shutter   |             |            |
| Field of View:              | Horizontal: 44.5°, vertical: 33.5°   |             |            |
| Focal Distance:             | From front of engine: 15.24 cm (6 in.)   |             |            |
| Aiming LED:                 | Green LED  |             |            |
| Illumination:               | 1 warm white LED   |             |            |
| Symbologies Supported:      | 1D: All major codes<br>2D: PDF417, MicroPDF417, Composite, RSS, TLC-39, Datamatrix, QR code, Micro QR code, Aztec, MaxiCode Postal Codes: US PostNet, US Planet, UK Postal, Australian Postal, Japan Postal, Dutch Postal (KIX). |             |            |
| Ranges <sup>7</sup> :       | <b>Barcode</b>   | <b>Near</b> | <b>Far</b> |
|                             | 5 mil Code 39  | 6.1 cm      | 24.1 cm    |
|                             | 5 mil Code 128   | 7.1 cm      | 22.9 cm    |
|                             | 6.67 mil PDF 417   | 6.1 cm      | 20.3 cm    |
|                             | 10 mil DataMatrix  | 7.4 cm      | 21.6 cm    |
|                             | 100% UPCA  | 4.6 cm      | 49.5 cm    |
|                             | 15 mil QR  | 3.0 cm      | 29.2 cm    |
|                             | 20 mil QR  | 3.0 cm      | 35.6 cm    |

## Communication

|                                       |   |
|---------------------------------------|---|
| <i>Bluetooth</i> :                    | <i>Bluetooth</i> Version 4.2.   |
| <i>Bluetooth</i> Frequency Range:     | 2.4 - 2.4835 GHz.   |
| <i>Bluetooth</i> Profiles:            | SPP Profile, HID Profile, Apple iAP2, <i>Bluetooth</i> Low Energy.          |
| <i>Bluetooth</i> Range <sup>8</sup> : | 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). |

<sup>1</sup> Minimum operating time figures are based on new units that have been stored, charged and operated within the stated Environmental Specifications. Units stored over 3 months must be recharged every 3 months. Number of transponders in the environment affects minimum operating time.

<sup>2</sup> Light Use: Continuous RFID inventories for 20s of every 120s

<sup>3</sup> Moderate Use: Continuous RFID inventories for 10s of every 30s

<sup>4</sup> Heavy Use: Continuous RFID inventories for 59s of every 60s

<sup>5</sup> Compatible *Bluetooth* stack required in the Host device

<sup>6</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>7</sup> Artificial lighting can affect scanning performance

<sup>8</sup> Open field

# 2128P SPECIFICATIONS\*

\*These specifications only apply to TSL 2128P Readers with serial numbers higher than 7000.

## Peripherals and Accessories

|                      |  |
|----------------------|--|
| External interface:  | Custom connector - requires 2128 Docking Station 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 Docking Station (separate purchase).  |
| Other Accessories:   | New ePop-Loq cases can be ordered by special request (volume dependent, lead times apply).                 |

## Regulatory

|             |  |
|-------------|--|
| Regions     | EU (CE), USA (FCC), Canada, Australia (see page 4 for details)   |
| FCC ID      | S6J2128P   |
| IC          | 8948A-2128P  |
| EMC         | EN 55032:2015 +AC:2016<br>EN 55024:2010 +A1:2015<br>EN 301 489-1 V2.2.0<br>47 CFR Part 15B 15.107, 15.109<br>ICES-003 Issue 6      |
| RF          | EN 300 328 V2.1.1<br>EN 302 208 V3.1.1<br>EN 301 489-3 V2.1.1<br>EN 301 489-17 V3.2.0<br>47 CFR Part 15C 15.247<br>RSS-247 Issue 2 |
| RF Exposure | EN 50566:2017<br>EN 62209-2:2010<br>EN 50663:2017<br>EN 62479:2010<br>47 CFR Part 2.1093<br>RSS-102 Issue 5                        |

|                   |  |
|-------------------|--|
| Electrical Safety | IEC 62368-1:2014 CB<br>EN 62368-1:2014 +A11:2017<br>UL 62368-1:2014<br>CAN/CSA C22.2 No. 62368-1-14  |
| Environmental     | <b>2011/65/EU (RoHS 2)</b><br>Restriction of the use of certain Hazardous Substances in electrical and electronic equipment<br><b>2015/863 (RoHS 3)</b><br>Amendment to Annex II of 2011/65/EU |



Integrated ePop-Loq socket

## Warranty

The TSL 2128P reader is warranted against manufacturing defects 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.

Full warranty information can be downloaded from the TSL website at [www.tsl.com/warranty](http://www.tsl.com/warranty).

## 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. iPad, 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 Enterprise Hand-Held Terminals using ePop-Loq mounts:



# 2128P PART NUMBERS

| Countries   |   |  | Part Numbers  | Operating Frequency                       |
|---|---|--|---|---|
| Albania<br>Andorra<br>Austria<br>Belgium<br>Bhutan<br>Bosnia & Herzegovina<br>Bulgaria<br>Croatia<br>Cyprus<br>Czech Republic<br>Denmark<br>Estonia<br>Falkland Islands<br>Finland<br>France<br>French Guiana | Georgia (Licence Required)<br>Germany<br>Greece<br>Greenland<br>Guernsey<br>Guadeloupe<br>Hungary<br>Iceland<br>Ireland<br>Italy<br>Jersey<br>Latvia<br>Liechtenstein<br>Lithuania<br>Luxembourg<br>Macedonia | Malta<br>Martinique<br>Monaco<br>Montenegro<br>Netherlands<br>Norway<br>Poland<br>Portugal<br>Romania<br>Slovakia<br>Slovenia<br>Spain<br>Sweden<br>Switzerland<br>United Kingdom (UK) | With 2D barcode imager:<br><a href="#">2128P-ES1</a><br><br>No barcode imager:<br><a href="#">2128P-EX1</a> | 865 – 868 MHz<br>4 Channels               |
| United States of America (USA)<br>Guam<br>Guatemala<br>Northern Mariana Islands   | Canada<br>Ecuador<br>Puerto Rico  |  | With 2D barcode imager:<br><a href="#">2128P-AS1</a><br><br>No barcode imager:<br><a href="#">2128P-AX1</a> | 902 – 928 MHz<br>50 Channels              |
| Australia   |   |  | <a href="#">2128P-AS1-AU</a><br><a href="#">2128P-AX1-AU</a>  | 920 – 926 MHz<br>12 Channels              |
| Bangladesh  |   |  | <a href="#">2128P-AS1-BD</a><br><a href="#">2128P-AX1-BD</a>  | 925 – 927 MHz<br>4 Channels               |
| Brazil (Licensed via ACURA)   |   |  | <a href="#">2128P-AS1-BR</a><br><a href="#">2128P-AX1-BR</a>  | 902 – 907.5, 915 – 928 MHz<br>50 Channels |
| Colombia  |   |  | <a href="#">2128P-AS1-CO</a><br><a href="#">2128P-AX1-CO</a>  | 915 – 928 MHz<br>24 Channels              |
| India   |   |  | <a href="#">2128P-ES1-IN</a><br><a href="#">2128P-EX1-IN</a>  | 865 – 867 MHz<br>4 Channels               |
| Peru (Licensed via ACURA)   |   |  | <a href="#">2128P-AS1-PE</a><br><a href="#">2128P-AX1-PE</a>  | 915-928MHz                                |

If you are interested in purchasing for a country/region that is not listed above, please contact [enquiries@tsl.com](mailto:enquiries@tsl.com) for assistance.

## Accessories

## Part Numbers

|  |                                  |
|--|----------------------------------|
| Docking Station, Power Supply and Mini USB Cable | <a href="#">2128-CRD-03-KIT</a>  |
| 4-Slot Battery Charger Kit                       | <a href="#">2136-01-4WMS-CHG</a> |
| Spare Battery for 1128/2128 UHF Reader           | <a href="#">1128-00-BA-2000</a>  |

## 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)

## ABOUT TSL



**TECHNOLOGY  
SOLUTIONS** UK LTD  
part of **HID**

Technology Solutions UK Ltd (TSL), part of HID, 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

## CONTACT

|                   |   |
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| <b>Website:</b>   | <a href="http://www.tsl.com">www.tsl.com</a>  |

## ABOUT HID



**HID powers the trusted identities of the world's people, places and things.** We make it possible for people to transact safely, work productively and travel freely. Our trusted identity solutions give **people** convenient access to physical and digital **places** and connect **things** that can be identified, verified and tracked digitally. Millions of people around the world use HID products and services to navigate their everyday lives, and billions of things are connected through HID technology. We work with governments, educational institutions, hospitals, financial institutions, industrial businesses and some of the most innovative companies on the planet. Headquartered in Austin, Texas, HID has over 4,000 employees worldwide and operates international offices that support more than 100 countries. HID is an ASSA ABLOY Group brand.

For more information, visit [www.hidglobal.com](http://www.hidglobal.com).

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