



2128 **BLUETOOTH**[®] **RAIN**[®] RFID UHF READER

HIGH PERFORMANCE RFID READING WITH THE CONVENIENCE OF EPOP-LOQ[®] CONNECTIVITY AND CHARGING



Integrated ePop-Loq socket allows data and charge connections to a Smartphone or Hand-Held Terminal



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

Connect Devices Using ePop-Loq

The 2128 RAIN RFID Reader introduces the revolutionary TSL[®] 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.

The 2128 RAIN RFID Reader has flat landing contact pads, allowing for quicker docking and greater durability.

Single Point Charge Solution

The 2128 Docking Station allows charging of both the 2128 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 2128 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 2128 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 2128 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 2128 then enables this data to be synchronised with a PC.

Features:

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 365g (12.8oz) including battery



2128 SPECIFICATIONS

Physical and Environmental Characteristics

Dimensions:	16.0 cm x 7.7 cm x 17.5cm (LxWxH).
Weight:	365 g / 12.8 oz (including battery).
User input:	Trigger button.
User feedback:	Speaker, vibration motor, LED.
Power:	Removable, rechargeable 3.7V, 2400mAh, 8.9Wh Lithium Polymer pack. (Optional Power Handle with 6700 mAh Lithium Polymer pack available).
Minimum operating time ¹ :	Light use ² : 6.5 hrs Moderate use ³ : 4.5 hrs Heavy use ⁴ : 2 hrs
Enclosure materials:	Polycarbonate.

Performance Characteristics

RFID engine:	TSL custom module with embedded Impinj R2000.
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 ⁵ supporting the Serial Port Profile (SPP) or Human Interface Device (HID) profile (Android, iOS, Linux, Mac, Windows). See Bluetooth Mode Comparison .
Compatible Host devices (USB):	Any USB host with FTDI VCP driver support (Windows, Linux, Mac, Android).

Environmental

Operating Temp.:	-10°C to 40°C (14°F to 104°F).
Charging Temp.:	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). 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).
Environmental Sealing:	IP54.
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 ⁶ :	Up to 6 m (19.6 ft).
Nominal write range ⁶ :	Up to 3 m (9.8 ft).
Field:	150-degree forward facing.
Antenna:	Detachable, Right Hand Circularly Polarised.
Frequency Range:	EU: 865-868 MHz; US: 902-928 MHz.
Maximum Output Power:	Up to 30 dBm (region dependent) + 3.0 dBiC Antenna.

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 ⁷ :	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 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).
Power Handle	Alternative trigger handle gives approximately 3X the original battery capacity.
Other Accessories:	New ePop-Loq cases can be ordered by special request (volume dependent, lead times apply).

¹ 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.

² Light Use: Continuous RFID inventories for 20s of every 120s

³ Moderate Use: Continuous RFID inventories for 10s of every 30s

⁴ Heavy Use: Continuous RFID inventories for 59s of every 60s

⁵ Compatible *Bluetooth* stack required in the Host device

⁶ Tag Read/Write performance is dependent on tag type, items tagged, number of tags in the field and other radio and environmental factors

⁷ Open field

2128 SPECIFICATIONS

Regulatory

Regions	EU (CE), USA (FCC), Canada, Australia, New Zealand and more (see page 4 for details)
FCC ID	S6J2128
IC	8948A-2128
EMC	EN 55032:2012 +AC:2013 EN 55024:2010 EN 301 489-1 V2.1.1
RF	EN 302 208 V3.1.1 EN 300 328 V2.1.1 EN 301 489-17 V3.1.1 47 CFR Part 15C 15.247 RSS-247 Issue 2
RF Exposure	EN 50566:2013 EN 62209-1:2016 EN 62209-2:2010 EN 62479:2010 47 CFR Part 2.1093 RSS-102 Issue 5
Electrical Safety	IEC 62368-1:2014 CB EN 62368-1:2014 +A11:2017 UL 62368-1:2014 CAN/CSA C22.2 No. 62368-1-14
Environmental	2011/65/EU (RoHS 2) Restriction of the use of certain Hazardous Substances in electrical and electronic equipment 2015/863 (RoHS 3) Amendment to Annex II of 2011/65/EU

Warranty

The TSL 2128 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.

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:



Zebra TC20 / TC25



Zebra TC70 / TC75



Zebra TC51 / TC56



Datalogic Memor 1



Datalogic Memor 10



Honeywell D75e



Honeywell CT50 / CT60



Honeywell EDA50



Honeywell CT40



Janam XT30 / XT40



TSL RFID Apps



RFID Explorer
www.tsl.com/apps/rfid-explorer



RFID Tag Finder
www.tsl.com/apps/rfid-tag-finder



RFID Web Wedge
www.tsl.com/apps/rfid-web-wedge



TSL Reader Configuration
www.tsl.com/apps/tsl-reader-configuration

2128 PART NUMBERS

Countries			Part Numbers	Operating Frequency
Albania Andorra Austria Belgium Bhutan Bosnia & Herzegovina Bulgaria Croatia Cyprus Czech Republic Denmark Estonia Falkland Islands Finland France French Guiana	Georgia (Licence Required) Germany Greece Greenland Guernsey Guadeloupe Hungary Iceland Ireland Italy Jersey Latvia Liechtenstein Lithuania Luxembourg Macedonia	Malta Martinique Monaco Montenegro Netherlands Norway Poland Portugal Romania Slovakia Slovenia Spain Sweden Switzerland United Kingdom (UK)	2128-EX0	865 – 868 MHz 4 Channels
United States of America (USA) Guam Guatemala Northern Mariana Islands	Canada Ecuador Puerto Rico		2128-AX0	902 – 928 MHz 50 Channels
Australia			2128-AX0-AU	920 – 926 MHz 12 Channels
Bangladesh			2128-AX0-BD	925 – 927 MHz 4 Channels
Brazil (Licensed via ACURA)			2128-AX0-BR	902 – 907.5, 915 – 928 MHz 50 Channels
Colombia			2128-AX0-CO	915 – 928 MHz 24 Channels
India			2128-EX0-IN	865 – 867 MHz 4 Channels
New Zealand (Licensed via EMC)			2128-AX0-NZ	921.5 – 928 MHz 11 Channels
Singapore (Licence Free)			2128-AX0-SG	920 – 925 MHz 10 Channels, Power Limited: 500mW ERP
Singapore (Licence Required)			2128-AX0-SGA	920 – 925 MHz 10 Channels

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

Accessories

Part Numbers

2128 Docking Station, Power Supply and Mini USB Cable	2128-CRD-03-KIT
4-Slot Battery Charger Kit	2136-01-4WMS-CHG
Spare Battery for 1128/2128 UHF Reader	1128-00-BA-2000
Power Handle for 2128, 2128P RAIN RFID Readers	2102-PH-Y

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

Address:	Technology Solutions (UK) Ltd, Suite A, Loughborough Technology Centre, Epinal Way, Loughborough, Leicestershire, LE11 3GE, United Kingdom.
Telephone:	+44 1509 238248
Fax:	+44 1509 214144
Email:	enquiries@tsl.com
Website:	www.tsl.com

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.

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