TECHNOLOGY SOLUTIONS UK LTD
part of HID

www.tsl.com

2128P *BLUETOOTH*® UHF RFID RAIN READER

HIGH PERFORMANCE, LONG RANGE RFID READING WITH THE CONVENIENCE OF EPOP-LOQ® CONNECTIVITY AND CHARGING



RAIN RFID



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® 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 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 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.

Made for iPod iPhone iPad

Bluetooth®

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2128P SPECIFICATIONS*

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

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[1]:	Light use[2]: 8.5 hrs Moderate use[3]: 5 hrs Heavy use[4]: 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 *Bluetooth* 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 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). 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[6]:	Up to 9 m (29.5 ft).
Nominal write range[6]:	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). 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 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[7]:	

Barcode	Near	Far
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

Bluetooth:	*Bluetooth* Version 4.2.
Bluetooth Frequency Range:	2.4 - 2.4835 GHz.
Bluetooth Profiles:	SPP Profile, HID Profile, Apple iAP2, *Bluetooth* Low Energy.
Bluetooth Range[8]:	Up to 100m.
Bluetooth Pairing:	Simple Secure Pairing, NFC OOB Pairing.
Direct USB	USB connection to handheld terminal via ePop-Loq cases (separate purchase).

[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] Artificial lighting can affect scanning performance

[8] Open field

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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 EN 55024:2010 +A1:2015 EN 301 489-1 V2.2.0 47 CFR Part 15B 15.107, 15.109 ICES-003 Issue 6
RF	EN 300 328 V2.1.1 EN 302 208 V3.1.1 EN 301 489-3 V2.1.1 EN 301 489-17 V3.2.0 47 CFR Part 15C 15.247 RSS-247 Issue 2
RF Exposure	EN 50566:2017 EN 62209-2:2010 EN 50663:2017 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 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.

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.

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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

RFID Scan Scan Write
www.tsl.com/apps/rfid-scan-scan-write

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



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2128P PART NUMBERS

Countries	Part Numbers	Operating Frequency
Albania, Andorra, Austria, Belgium, 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, UAE, United Kingdom	With 2D barcode imager: 2128P-ES1 No barcode imager: 2128P-EX1	865 – 868 MHz
United States of America (USA), Guam, Guatemala, Northern Mariana Islands, Canada, Ecuador, Puerto Rico	With 2D barcode imager: 2128P-AS1 No barcode imager: 2128P-AX1	902 – 928 MHz
Australia	2128P-AS1-AU 2128P-AX1-AU	920.25 – 925.75 MHz
Bangladesh	2128P-AS1-BD 2128P-AX1-BD	925 – 927 MHz
Brazil (Licensed via ACURA)	2128P-AS1-BR 2128P-AX1-BR	902 – 907.5, 915 – 928 MHz
Colombia	2128P-AS1-CO 2128P-AX1-CO	915 – 928 MHz
India	2128P-ES1-IN 2128P-EX1-IN	865 – 867 MHz
New Zealand	2128P-AS1-NZ 2128P-AX1-NZ	920.25 – 925.75 MHz
Peru (Licensed via ACURA)	2128P-AS1-PE 2128P-AX1-PE	915-928MHz

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
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

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MOUNTING A HOST DEVICE ON THE UHF READER

You can physically connect Enterprise Hand-Held Terminals to your UHF RFID Reader using ePop-Loq® mounts. These custom made mounts can provide direct USB charge and data connections (when available) between the Reader and host device. To enquire about ePop-Loq mounts for devices not listed below, please contact enquiries@tsl.com.


Datalogic Memor 10/11




Datalogic Memor 12/17




Datalogic Memor 30/35




Honeywell CT40/45/45XP/47




Honeywell CT50/60




Honeywell D75e




Honeywell EDA50/51




Janam XT30/40




Zebra TC22/27




Zebra TC51/52/56/67



Device Mount	Part Numbers
ePop-Loq Mount for Datalogic Memor 10/11	2108-A-EPL-CASE
ePop-Loq Mount for Datalogic Memor 12/17	2118-A-EPL-CASE
ePop-Loq Mount for Datalogic Memor 30/35	2117-A-EPL-CASE
ePop-Loq Mount for Honeywell CT40, CT45/ CT45XP and CT47 (CT47: Charging only)	2103-A-EPL-CASE-V2
ePop-Loq Mount for Honeywell CT50/CT60	1192-A-EPL-CASE
ePop-Loq Mount for Honeywell D75e	1190-A-EPL-CASE
ePop-Loq Mount for Honeywell EDA50	1195-C-EPL-CASE
ePop-Loq Mount for Honeywell EDA51	1217-C-EPL-CASE
ePop-Loq Mount for Janam XT30/XT40	ATC-XT-01 (order through Janam Technologies)
ePop-Loq Mount for Xiaomi Mi A2	2106-A-EPL-CASE
ePop-Loq Mount for Zebra TC22/TC27	2119-A-EPL-CASE
ePop-Loq Mount for Zebra TC51/52/56/57	1199-A-EPL-CASE



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ABOUT TSL

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

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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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