



## 2173 BLUETOOTH® LF, HF & NFC RFID READER

A MULTI-BAND,  
MULTI-ISO,  
PLATFORM-  
INDEPENDENT RFID  
READER



### Features

The 2173 reader enables a compatible Bluetooth® host to read and write a wide variety of HF and LF RFID transponders as well as capture 1D and 2D barcodes (imager version only). These can be 'typed' into any application on the host device using the Bluetooth® HID keyboard mode. Alternatively, the reader can be commanded from an app on the host device. As the 2173 uses the existing TSL® ASCII 2 Protocol, developers can take advantage of the comprehensive, free SDKs provided by TSL® to develop in Xamarin, Java, Objective C or .NET.

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### Dual RFID Frequencies

The combined LF and HF RFID reader provides the ability to read and write to a wide variety of transponders at 125/134.2 kHz (LF) and 13.56 MHz (HF) including ISO 15693, the complete Mifare family of ISO14443 (A&B) and the NFC standard ISO18092 ECMA-340.

## Performance Characteristics

### Comprehensive Compatibility

Supported Manufacturer specific transponders include HID, Elatec, NXP, EM Microelectronic, Atmel, Calypso e TI (Texas Instruments).

### Multi-band RFID Reading and Writing

Combined LF RFID, HF RFID and NFC reading and writing in an incredibly compact and lightweight device.

### OS Independence

The reader is compatible with Android, iOS and Windows.

### 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.

### Multi-ISO RFID

Supports multiple ISO industry standards including ISO15693, ISO14443(A/B) and ISO18092 ECMA-340 (NFC).

### Batch Data Collection

Removable high capacity Micro SD data card and real time clock for extended batch data collection with time stamp independent of the host connection.

# Specifications

## Physical and Environmental Characteristics

Dimensions (LxWxH):	10.2 cm x 5.5 cm x 5.6 cm.
Weight (inc battery):	157 g / 5.5 oz.
User input:	Two Trigger buttons.
User feedback:	Speaker, vibration motor, three LEDs.
Power:	Removable, rechargeable 3.7 volt Lithium Polymer 1200 mAh battery pack, 4.5 watt hrs.
Minimum operating time <sup>1</sup> :	Light use <sup>2</sup> : 10 hrs Moderate use <sup>3</sup> : 6.5 hrs Heavy use <sup>4</sup> : 3 hrs
Enclosure materials:	Polycarbonate.

## Performance Characteristics

Communication protocols:	TSL <sup>®</sup> ASCII 2.0 parameterised command set.
Memory:	Supports up to 32 GB Micro SD/SDHC card.
Compatible Host devices ( <i>Bluetooth</i> <sup>®</sup> ):	Any <i>Bluetooth</i> <sup>®</sup> Host <sup>5</sup> supporting the Serial Port Profile (SPP) or Human Interface Device (HID) profile (Android, iOS, Linux, Mac, Windows). <a href="#">Comparison of <i>Bluetooth</i><sup>®</sup> modes for TSL<sup>®</sup> UHF Readers.</a>
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 at -20 to +60°C (-4°F to 140°F). Less than 3 months at -20°C to +45°C (-4°F to 113°F). Less than 1 year at -20°C to +30°C (-4°F to 86°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.
Construction:	RoHS compliant.

## RFID Performance

Frequency Range:	125/134.2 kHz (LF) / 13.56 MHz (HF).
Read Distance <sup>6</sup> :	LF and HF: Up to 100 mm / 4" (dependent on transponder type).
RF Transmission Speed:	HF Air: up to 848 kbit/s.

Standards supported:	ISO14443A, ISO14443B, ISO18092 ECMA-340 (NFC), ISO15693 plus many 125 kHz, 134.2 kHz standards.
Supported Transponders 13.56 MHz :	<b>ISO14443A:</b> LEGIC Advant <sup>11</sup> , MIFARE Classic EV1 <sup>21</sup> , MIFARE Classic, MIFARE Mini, MIFARE DESFire EV1, MIFARE DESFire EV2 <sup>21</sup> , MIFARE DESFire Light <sup>21</sup> , MIFARE Plus S, X, MIFARE Pro X <sup>4</sup> , MIFARE Smart MX <sup>4</sup> , MIFARE Ultralight, MIFARE Ultralight C, MIFARE Ultralight EV1, NTAG2xx, PayPass <sup>41</sup> , SLE44R35, SLE66Rxx (my-d move) <sup>41</sup> , Topaz  <b>ISO14443B:</b> Calypso <sup>41</sup> , Calypso Innovatron protocol <sup>41</sup> , CEPAS <sup>41</sup> , HID iCLASS <sup>11</sup> , Moneo <sup>41</sup> , Pico Pass <sup>51</sup> , SRI4K, SRIX4K, SRI512, SRT512  <b>ISO18092 ECMA-340:</b> NFC Forum Tag 1-5, NFC Peer-to-Peer, Sony FeliCa <sup>41</sup> , NFC Active and passive communication mode  <b>ISO15693:</b> EM4x33 <sup>41</sup> , EM4x35 <sup>41</sup> , HID iCLASS <sup>11</sup> , HID iCLASS SE/SR <sup>11</sup> , iCODE SLI, LEGIC Advant <sup>11</sup> , M24LR16/64, MB89R118/119, SRF55Vxx (my-d vicinity) <sup>41</sup> , Tag-it, PicoPass <sup>51</sup>
Supported Transponders 125 kHz:	AWID, Cardax, CASI-RUSCO, Deister <sup>41</sup> , EM4100, 4102, 4200 <sup>41</sup> , EM4050, 4150, 4450, 4550, EM4305 <sup>101</sup> , EM4105, HITAG 1 <sup>111</sup> , HITAG 2 <sup>111</sup> , HITAG S <sup>111</sup> , ICT <sup>101</sup> , IDTECK, Isonas <sup>101</sup> , Keri, Miro, Nedap <sup>41</sup> , Pyramid, Q5, T5557, T5567, T5577, TITAN (EM4050), UNIQUE
PI options only - Additional Supported Transponders:	Cotag, G-Prox <sup>41</sup> , HID DuoProx II, HID ISO Prox II, HID Micro Prox, HID ProxKey III, HID Prox, HID Prox II, Indala, ioProx, Nexwatch, HID iCLASS, HID iCLASS SE/SR/Elite, HID iCLASS SEOS (Facility Code/PAC) <sup>121</sup>

<sup>11</sup>UID only <sup>21</sup>r/w enhanced security features on request <sup>31</sup>n preparation <sup>41</sup>r/w in direct chip command mode <sup>51</sup>UID only, read/ write on request <sup>61</sup>UID + r/w public area <sup>41</sup>Hash value only <sup>91</sup>Only emulation of 4100, 4102 <sup>101</sup>On request <sup>111</sup>Without encryption <sup>121</sup>r/w on request

## Barcode Scanning

Optional 2D Barcode Engine:	Optional TSL <sup>®</sup> 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 <sup>7</sup> :	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

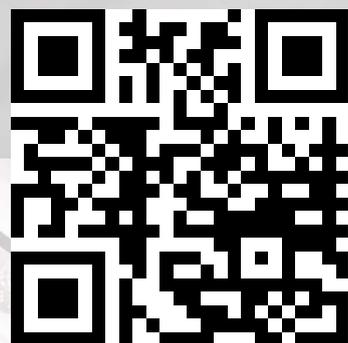
## Communication

<i>Bluetooth</i> <sup>®</sup> :	<i>Bluetooth</i> <sup>®</sup> Version 4.2.
<i>Bluetooth</i> <sup>®</sup> Frequency Range:	2.4 - 2.4835 GHz.
<i>Bluetooth</i> <sup>®</sup> Profiles:	SPP Profile, HID Profile, Apple iAP2, <i>Bluetooth</i> <sup>®</sup> Low Energy.
<i>Bluetooth</i> <sup>®</sup> Range <sup>8</sup> :	Up to 100m.
<i>Bluetooth</i> <sup>®</sup> Pairing:	Simple Secure Pairing, NFC OOB Pairing.

## Peripherals and Accessories

External interface:	MicroUSB connector 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.
Optional accessories:	2136 4-Slot Desktop Battery Charger. 2112 Docking Cradle (Coming Soon).

- <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: Single HF or LF Transponder Scan every 120s. Idle Time: 120s
- <sup>3</sup> Moderate Use: Single HF or LF Transponder Scan every 20s. Idle Time: 20s
- <sup>4</sup> Heavy Use: Single HF or LF Transponder Scan every 2s. Idle Time: 2s
- <sup>5</sup> Compatible *Bluetooth*<sup>®</sup> stack required in the Host device
- <sup>8</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



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