



## Product: 3166 Rugged UHF Reader



### Latest Hardware Advances

The new 3166 RAIN® RFID UHF Reader boasts TSL's latest hardware innovations and performance improvements, in a more efficient reader with an all-day battery life.

Using the latest generation of Impinj silicon, read rates have been boosted up to 1200 tags per second. Multiple tag operations per tag are possible during an inventory scan - read multiple areas of each tag, or write to or even lock the tag. On reader de-duplication prevents overwhelming the connected host with information.

Support has been added for passive sensor transponders (temperature, strain, humidity, acceleration) from HID and others - contact TSL for information regarding how to utilise these sensor transponders.

Designed to read and write to EPC Class 1 Gen 2 and EPC Class 1 Gen 2V2 tags, the 3166 can also be configured with class leading high performance 2D data scanning to bring unparalleled data collection capabilities to any host it is connected to.

### Single Point Charge Solution

The 3166 Docking Station allows charging of both the 3166 RAIN® RFID UHF Reader and a smartphone or handheld terminal attached via an ePop-Loq® mount. The unique design can accommodate a wide range of devices from many handheld and smartphone manufacturers. The 3166 Reader boasts a faster ePop-Loq mode than previous TSL readers to accommodate higher tag throughput.

### Tough Impact Resistant Housing

The 3166 Reader from TSL provides high performance UHF RFID reading and writing in an incredibly tough and rugged form factor. The reader

is highly resistant to water, dust and mechanical trauma. A high capacity battery provides non-stop operation of the reader over the full working day.

### Platform Independence

Use existing Bluetooth® wireless technology enabled host devices including Enterprise Handhelds, Consumer Phones, Tablets and PC's - the 3166 will bring high performance RFID and 2D scanning to all these devices running a wide range of Operating Systems.

In addition to Bluetooth Classic, Bluetooth Low-Energy provides a modern, secure link to even more devices.

Extensive software support is available for a wide range of platforms including code samples, demonstration applications and source code.

### Batch Mode

Transponder EPC readings can optionally be recorded on the embedded storage, meaning that the 3166 RAIN® RFID UHF Reader can be used independently of a host device. The 3166 can store up to 500 million\* transponder EPCs - date and time stamped by the on-board Real Time Clock.

### Backwards compatible

The 3166 Rugged Bluetooth® RAIN® RFID UHF Reader is designed to work with existing apps built with TSL SDKs, but with improved performance. TSL's latest ASCII protocol provides the developer with a powerful set of commands that carry out multiple actions locally within the reader. This approach enables multiple tag operations to be executed using simple pre-configured commands which speeds up integration of the reader into applications.

### Features:

#### Faster tag read rate

Gathers RFID data at a blistering pace - up to 1200 tags per second

#### Longer Operating Times

Up to 34% increase in battery life compared to the previous generation 2166 Reader

#### Multiple RF Profiles

- high sensitivity
- maximum read rate
- dynamic switching between modes

#### ETSI Upper Band Option

#### Bulk encoding feature

#### Bluetooth® improvements

- Bluetooth Classic speed boost (iOS - 2x speed improvement)
- BLE (Bluetooth Low Energy) enabled - no need for MFI (Apple) app registration
- Independent battery status and device information service

#### Hardware and OS Independence

Operates with Android, iOS, Linux, Mac and Windows.

#### High Performance Barcode Scanning

An optional barcode engine can be specified to provide 1D and 2D barcode data capture





## 3166 SPECIFICATIONS

### Physical and Environmental Characteristics

Dimensions:	178 x 105 x 172 mm (LxWxH).
Weight:	865 g / 30.5 oz (including battery).
User input:	Single stage trigger.
User feedback:	Speaker, vibration motor, LEDs.
Power:	Rechargeable Lithium Ion removable battery pack (10.8V, 3.35Ah, 36.2Wh).
Minimum operating time <sup>1</sup> :	Light use <sup>2</sup> : 33.5 hrs Moderate use <sup>3</sup> : 21.5 hrs Heavy use <sup>4</sup> : 12 hrs <sup>5</sup>
Input Rating:	15.0Vdc, 4.34A.
Enclosure materials:	Polycarbonate and TPU.

### Performance Characteristics

RFID engine:	TSL <sup>®</sup> custom module with embedded Impinj E710.
Communication protocols:	TSL <sup>®</sup> ASCII 2.0 parameterised command set.
Memory:	Embedded 32GB* storage memory - store up to 500 million date and time stamped EPCs
Compatible Host devices (Bluetooth <sup>®</sup> ):	Any Bluetooth <sup>®</sup> Host <sup>6</sup> supporting the Serial Port Profile (SPP) or Human Interface Device (HID) profile (Android, iOS, Linux, Mac, Windows). <a href="#">Comparison of Bluetooth<sup>®</sup> modes for TSL<sup>®</sup> UHF Readers.</a>
Compatible Host devices (USB):	Any USB host with USB CDC support (Windows, Linux, Mac, Android).

### Environmental

Operating Temp.:	-20°C to 55°C (-4°F to 131°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 +20°C (-4°F to 68°F).
Humidity:	5% to 85% non-condensing.
Drop Spec:	1.8m.
Tumble:	1500 0.5 metre tumbles at room temperature (3,000 cycles).
Environmental Sealing:	IP67.
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 Gen2 and EPC Class 1 Gen2v2
Nominal read range <sup>7</sup> :	Up to 9 m (29.5 ft).
Nominal write range <sup>7</sup> :	Up to 4 m (13.1 ft).
Field:	110-degree forward facing (approx.) measured from front of device.
Antenna:	Circularly Polarised.

Frequency Range:	EU: 865-868MHz, 916-919MHz US: 902-928MHz
Maximum Output Power:	Up to 30 dBm (region dependent) + 4.0 dBIC Antenna.

### 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>8</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

Bluetooth <sup>®</sup> :	Bluetooth <sup>®</sup> v4.2 compliant (v5.1 compatible)
Bluetooth GATT Services:	<ul style="list-style-type: none"> <li>• Device Information Service</li> <li>• Battery Service</li> <li>• HID over GATT</li> <li>• Serial over GATT (TSL)</li> </ul>
Bluetooth Frequency Range:	2.4 - 2.4835 GHz.
Bluetooth Profiles:	SPP Profile, HID Profile, Apple iAP2, Bluetooth Low Energy.
Bluetooth Range <sup>9</sup> :	Up to 100m.
Bluetooth Pairing:	Simple Secure Pairing, NFC OOB Pairing.
Direct USB	Connection via ePop-Loq <sup>®</sup> 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 50s of every 60s

<sup>5</sup> When operating in the "Eco" battery saver mode.

<sup>6</sup> Compatible Bluetooth<sup>®</sup> stack required in the Host device

<sup>7</sup> Tag Read/Write performance is dependant on tag type, items tagged, number of tags in the field and other radio and environmental factors

<sup>8</sup> Artificial lighting can affect scanning performance

<sup>9</sup> Open field