

U35 BTW 11

RFeyed Reader
Datasheet and user manual

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1 Document purpose

The RFeyeD reader is a customized RFID and barcode reader customized according to Smart Retail Operation (RFeyeD) EssilorLuxottica project based on Sensor ID RFID UHF Reader.

The purpose of this document is to explain the main specifications and functionalities of the RFeyeD reader and to explain how to use the main features of the device.

The device is fully controllable from remote using the dedicated middleware platform based on MQTT protocol and API REST.

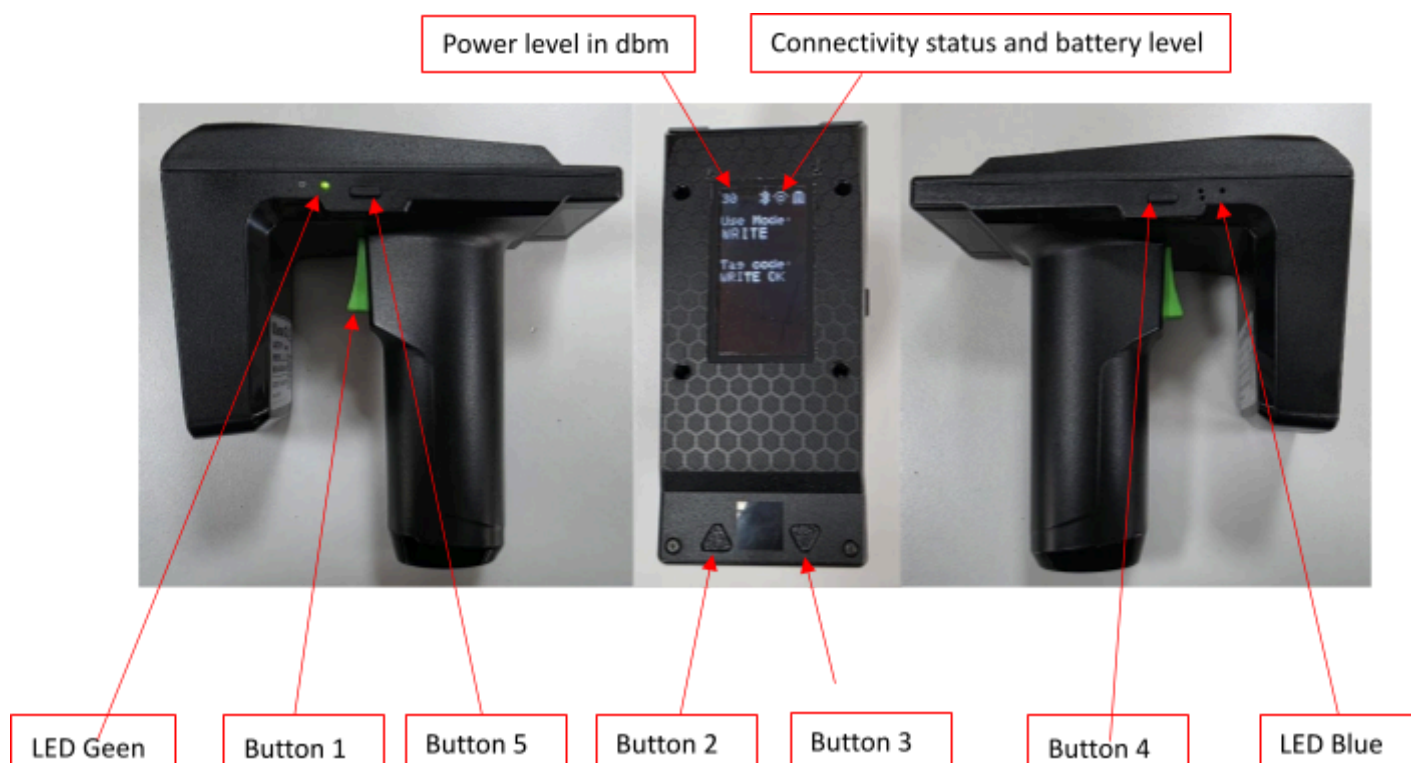
2 RFeyeD reader specifications

The device is an RFID UHF Bluetooth reader with this specifications:

- **Dimensions:** 151 x 150 x 72 mm
- **CPU:** Ultra low power microcontroller ARM Cortex M4 with 512 kB flash and 64 kB RAM
- **External flash memory:** 512 Mb
- **External eeprom memory:** 64 kB
- **RFID UHF Reader:** Caen RFID Lepton 7 module with these characteristics:
 - **Frequency EMEA:** 865.600÷867.600 MHz (ETSI EN 302 208 v. 3.4.1)
 - **Frequency USA:** 902÷928 MHz (FCC part 15.247)
 - **RFIF power:** Configurable from 3 dBm EIRP to 30 dBm EIRP
 - **Sensitivity:** -85 dBm – 10%PER @ 30 dBm output
- **Antenna:** 3.0 dBic
- **Barcode Reader:**
 - Image Sensor: 0.3M Pixels, 640 X 480 CMOS
 - Acquisition speed: 120fps
 - Field of View: Diagonal 52°, Horizontal 42°, Vertical 32°
 - Scan Precision: 2D ≥ 5mil, 1D ≥ 4mil
 - Scan Angle: Roll 360°, Pitch ± 55°, Skew ± 55°
 - Symbolologies : 1D: UPC-A, UPC-E, EAN-8, EAN-13, ISBN, Code 128, GS1 128, ISBT 128, Code 39, Code 93, Code 11, Interleaved 2 of 5, Industrial 2 of 5, Matrix 25, Standard 25, Codabar, MSI/MSI PLESSEY, GS1 DataBar etc
 - Illumination : White LED
 - Laser Aiming
- **Bluetooth Connectivity:**
 - 5.2 compliant;
 - Up to 19 dBm output power;
 - -94.1 dBm RX sensitivity;
- **WI-FI Connectivity:**
 - 802.11b/g/n
 - Bit rate: 802.11n up to 150 Mbps
 - A-MPDU and A-MSDU aggregation
 - 0.4 μs guard interval support
 - Center frequency range of operating channel: 2412 ~ 2484 MHz
- **Battery:** rechargeable LiPo 5200 mAh;
- **Display:** OLED 128x128
- **Interface:** 5 push buttons, 2 LEDs

The device has also 2 LED, 5 buttons and a sound buzzer to allow a simply user interface with this functionalities:

- **Led Green:** WIFI connected
- **Led Blue:** Bluetooth conneted
- **Button 1:** OK / activate reading
- **Button 2:** Menu up
- **Button 3:** Menu down
- **Button 4:** Power -
- **Button 5:** Power +



3 WI-FI Connection

Following the procedure to connect the reader to a pre-configured Wi-Fi network

1. Click simultaneously the Buttons 2 and 3, the SETUP menu will show
2. Navigate to the correct configuration using the button 2 or 3
3. Select the configuration using the button 1



4 Use Modes

Scrolling the menu with buttons 2 and 3 it's possible to select one of the following operating modes:

- *Scanning;*
- *Inventory;*
- *Find;*
- *Barcode;*
- *Radar;*
- *Write;*
- *Info;*

The operating modes are also selected by commands from the web app.

Please note that when there are stored tags in memory it's not possible to scroll the menu

4.1 Scanning mode

In this mode the device simply detects the EPC of a RFID tag and shows it on the display and sends it to the web app without any filter.

The scanning is enabled by holding the button 1.

4.2 Inventory mode

In this mode the device is used to scan and save in memory the Luxottica tags to make an inventory in the retail shop. The device uses an internal tag filtering to avoid the detection of tags other than Luxottica tags.

When the device detects a tag it adds the EPC code in the internal memory and increments the counter. An internal filtering feature avoids the multiple reading of the same tag.

The tags are automatically sent to the cloud web app using the WI-FI connection.



4.3 Find mode

In this mode the device is used to find tags on the field. This command is used at the end of an inventory session if some tags are missing and user wants to find them in a second session.

The tags to find are stored in memory via the dedicated REST API. After sending all the tag to the device, the user can activate the scanning by holding the button 1.

The display will show the number of tags to find and the number of tag found.

The found tags are automatically sent to the cloud web app using the WI-FI connection.



4.4 Barcode mode

In this mode the device detects the Barcode or QR code, shows it on the display and sends it to the web app without any filter.

The scanning is enabled by holding the button 1.

4.5 Radar mode

This mode is used to find one tag that is missed. When this mode is active the display shows the writing “SIGNAL” in the upper side.

The device uses the value of RSSI that is a measure of the signal intensity received from the tag to give an indication of the tag distance.

The value of the RSSI is showed on the display in real time and, in addition, the buzzer makes different sounds based on the value of RSSI.

4.6 Write mode

This mode is used to encode the EPC of a tag.

When a write command is received from the cloud platform, the device goes in this mode and the epc to encode is shown on the display. Selecting the button 1 the reader encodes the tag that is found in the field.

At the end of the operation the message “write ok” is written on the screen.



Please note that during this phase the power is automatically put at 5 dbm to be sure that the encoded tag is the one selected by the user

4.7 INFO mode

This mode is used to read the following reader informations:

- Dev ID: serial number of the device used by the web app to address the device
- MAC addr: WI-FI MAC address of the device
- FW Rev: Firmware version



5 Warranty conditions

5.1 *Warranty period*

The U35BTW11 device is covered by the manufacturer's commercial warranty for a period of **12 (twelve) months** from the delivery date as documented by the sales invoice.

The warranty covers the main device, rechargeable battery, and all included accessories (USB cable, wrist strap) for the entire period of **12 months**.

5.2 *Warranty coverage*

The warranty covers defects in materials and workmanship that occur during normal use of the device according to the technical specifications provided by the manufacturer.

5.2.1 Covered services

- Repair or replacement of defective components
- Hardware malfunctions not attributable to customer
- Defects in the RFID module, Barcode Module, Bluetooth system, or Wi-Fi module
- Display or button operation issues
- Rechargeable battery defects within the 12-month warranty period

5.3 *Warranty exclusions*

The warranty does not cover the following cases:

1. **Damage from improper use:** use not in accordance with user manual instructions, exposure to extreme environmental conditions (temperature, humidity), accidental drops, impacts, or mechanical stress
2. **Liquid damage:** water or other liquid infiltration (the device is not certified as waterproof)
3. **Unauthorized modifications:** opening the device, tampering, repairs performed by unauthorized personnel, installation of unofficial firmware
4. **Damage from exceptional events:** lightning, fire, flooding, extraordinary natural phenomena

5.4 Warranty procedure

5.4.1 Warranty activation

To take advantage of the warranty, the customer must:

- Open a Return Merchandise Authorization (RMA) request through the dedicated portal at <http://support.sensorid.it/accounts/login/>
- Wait for RMA approval from the administrator before shipping
- Note the RMA code automatically assigned by the system (example: COD_000XX)

5.4.2 Service Methods

Once the warranty claim has been verified, Sensor ID S.r.l. may, at its discretion:

- Repair the device at an authorized service center
- Replace the device with an identical or equivalent product (new or refurbished)
- Issue a partial or full refund of the purchase price

5.4.3 Service Time Frames

Sensor ID S.r.l. commits to providing an initial response within **5 business days** from receipt of the request. The repair or replacement time is estimated at **15-30 business days**, except for force majeure or temporary component unavailability.

5.4.4 Shipping address

Once RMA approval has been obtained, the device must be shipped to the following operational address:

Sensor ID S.r.l.

Via G. Mucciardi N.5
86020 Campochiaro (CB)
Italy

IMPORTANT: The shipment must display the RMA identification code automatically assigned by the system (example: COD_000XX). Shipments without an RMA code or with an unapproved RMA will not be accepted.

5.5 Shipping costs

Shipping costs for returning the device to the service center are **borne by the customer**. The manufacturer will bear the costs of returning the repaired or replaced device

5.6 Limitation of liability

Sensor ID S.r.l. shall not be liable for:

- Loss of data stored on the device
- Indirect, incidental, or consequential damages arising from the use or inability to use the device
- Business interruptions or economic losses
- Loss of profits or lost earning

5.7 Contractual Nature

This warranty is a commercial contractual warranty offered by Sensor ID S.r.l. within the framework of business-to-business (B2B) commercial relationships. The conditions established herein are an integral part of the supply contract and are freely agreed between the parties in compliance with applicable commercial law.

6 Safety Warnings

SAFETY AND THAT OF OTHERS IS PARAMOUNT

This manual and the appliance itself provide important safety warnings, to be read and always observed.

All safety warnings give specific details of the potential danger/warning present and indicate how to reduce risk of injury, damage resulting from improper use of the appliance.

Carefully observe the following instructions:

- Installation and maintenance must be carried out by a qualified technician, in compliance with the manufacturer's instructions and local safety regulations.

Do not repair or replace any part of the appliance unless specifically stated in the user manual.

. The electrical components must not be accessible to the user.

- Do not touch the appliance with any wet part of the body.
- The appliance is not intended for use by persons (including children) with any physical, sensory, or mental impairment, or without experience and knowledge of the appliance, unless supervised or previously instructed in its use by those responsible for their safety.
- Do not repair or replace any part of the appliance unless specifically indicated in the manual.

All other maintenance services must be carried out by a specialised technician.

- Children must be supervised to ensure they do not play with the appliance.
- The manufacturer rejects all responsibilities for any damage caused by improper use or wrong settings.

"WARNING: Do not expose the device to temperatures above 60 °C".

"WARNING: do not expose the device to low pressures at high altitude".

"WARNING: battery is not replaceable by the end user. Do not try to replace the battery".

"WARNING: do not throw the device into the fire or a hot oven, do not crush or cut it, risk an explosion".

"WARNING: do not leave the device in an extremely hot environment, risk of explosion or leakage of flammable gas or liquid".

"WARNING: do not expose the device to extremely low pressures, risk of explosion or leakage of flammable gas or liquid".

"Only use a compatible charger"

Indicate not to exceed 35 degrees ambient temperature in case of prolonged use of the device.

7 GENERAL RECOMMENDATIONS

Before use

Remove cardboard protection pieces, protective film, and adhesive labels from accessories.

Check the appliance for any transport damage.

During use

To avoid any damage do not place any weights on the appliance.

Do not expose the appliance to atmospheric agents.

Scrapping of appliances

- For further information on the treatment, recovery, and recycling of this electrical appliances, contact your competent local authority, the collection service for household waste or the store where you purchased the appliance.

KEEP THIS BOOKLET FOR FUTURE CONSULTATION.

8 Federal Communications Commission (FCC)

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device model U35 BTW 11 contains FCC ID: 2AVDNU35BTW11 , FCC ID: UVECAENRFID034, FCC ID: 2AC7Z-ESP32WROOM32E

8.1 Part 15.19

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

8.2 Part 15.21

Any changes or modifications to this equipment not expressly approved by Sensor ID may cause harmful interference and void the user's authority to operate this equipment.

8.3 Part 15.105

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

—Reorient or relocate the receiving antenna.

- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

8.4 RF Radiation Exposure statement

This product complies with FCC radiation exposure limits for portable devices as specified in FCC rules and meets the FCC radio frequency (RF) exposure requirements for portable use.

This radio transmitter has been approved to operate with the integrated antenna(s) only. The use of any other antenna or modifications to the antenna system is strictly prohibited. Unauthorized antennas, modifications, or attachments could void the user's authority to operate this equipment.

This device and its antenna(s) must not be co-located or operated in conjunction with any other antenna or transmitter except in accordance with FCC multi-transmitter product procedures.