

User Guide

Sentrius™ RS26x

Version 2.1

Revision History

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1 About this Guide

This document provides a guide on how to configure the **Sentrius™ RS26x [A]** sensors to suit the intended application. It covers all **Sentrius™ RS26x** functionality, including Bluetooth and LoRa configuration in detail, as well as setting up the sensor on a LoRa Network Server (LNS).

In order to comply with the LoRaWAN spec **[B] [C]**, Ezurio offers different versions of the **Sentrius™** Sensor. Regions supported include Europe (EU) and North America (US). Regional configuration is fixed during manufacture and cannot be modified by the end user.

Section **12** should be referred to for a complete hierarchy of the RS26x product family.

1.1 Nomenclature

References to device parameters appear in ***bold italicized font***. References to device parameter values appear in ***'quoted bold italicized font'***.

A full description of the device parameters and LoRa protocol can be found in **[H]**.

2 Introduction

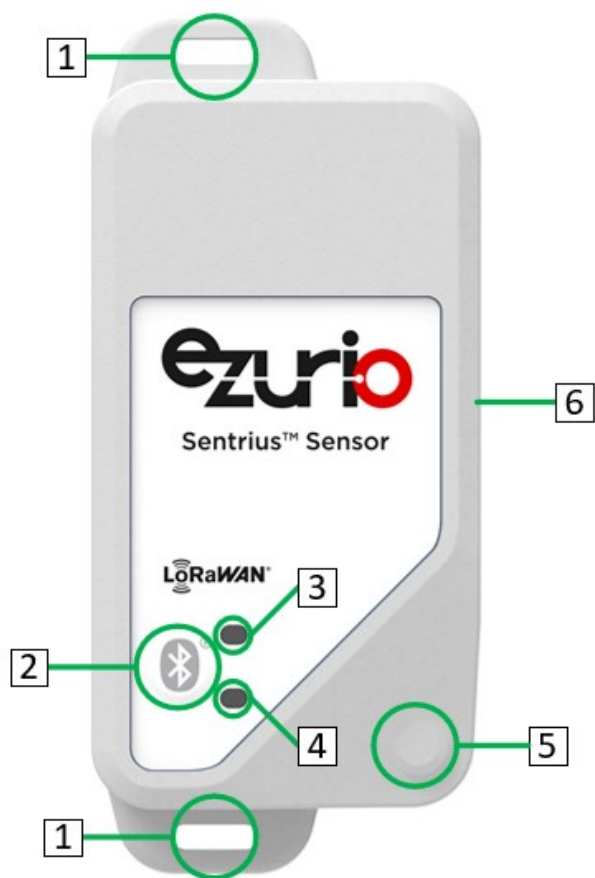
2.1 Product Overview

The **Sentrius™ RS26x** LoRa-Enabled sensor from Ezurio is the ultimate in secure, scalable, robust LoRa solutions for end-to-end control of your private LoRaWAN network. Based on the **Semtech SX1261 / SX1262 chipset**, it offers **long range up to ten miles**, perfect for highly scalable, flexible IoT networks.

The **Sentrius™ RS26x** incorporates a LoRaWAN v1.0.4 compliant LoRaWAN implementation for uplink of sensor data and a BLE v5.4 compliant implementation for local configuration and firmware update.

The **Sentrius™ RS26x** sensor works with **Sentrius™ RG1xx** gateways **[D]** for simple out-of-the-box integration and is compatible with third-party and LoRa network servers.

A front view of the device, with product feature details, is shown in **Figure 1**.



1. **Mounting Holes:** These are used to fix the sensor in position in the user installation. Refer to sections 4.2 and 4.3 for mounting instructions and guidance.

2. **Pushbutton:** This is a multi-function push-button. Refer to section 5.1 for details of its usage.

3. **Bluetooth LED:** This LED is used to indicate the BLE status of the device. Refer to section 5.2 for further details.

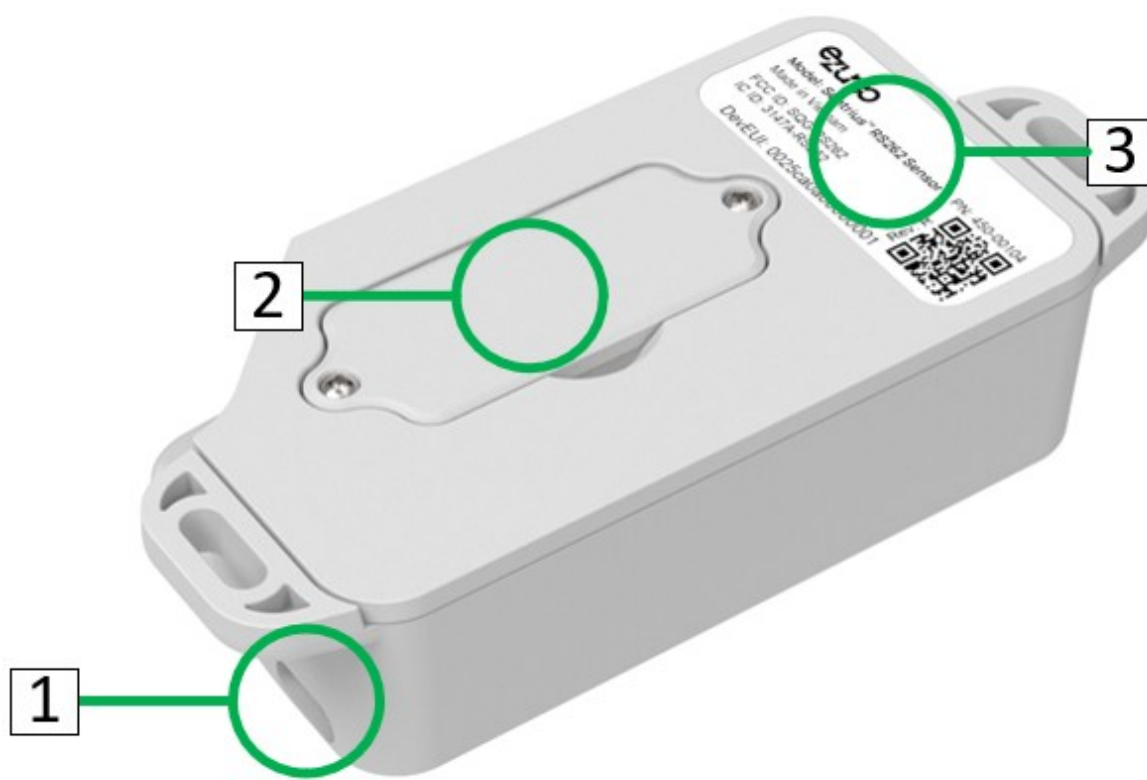
4. **Heartbeat LED:** This LED is used to indicate the device status. Refer to section 5.3 for further details.

5. **Temperature Sensor:** Only available for the Internal Sensor variant.

6. **Housing:** The IP67 rated Housing encloses the device electronics and battery.

Figure 1: RS26x front view

A rear view of the device, with product feature details, is shown in **Figure 2**.



- 1. USB-C Connector:**
Available for External Sensor devices only for connection of the external sensor.
- 2. Battery Compartment Lid:**
Allows replacement of the device battery following removal. Refer to section [3.3](#) for further details.
- 3. Product Label:**
Includes details of the device part number and LoRaWAN DevEUI. The QR code includes the same information.

Figure 2: RS26x rear view

Note: The USB-C connector on the RS26x is not a standard USB-C port. It is a custom interface designed specifically for Ezurio's external sensors and is electrically incompatible with standard USB-C devices such as laptops or phone chargers. Connecting standard USB-C devices may result in malfunction or damage to either device.

Note: When an external sensor is not connected to the USB-C Connector, the provided dust cap must be kept in place to maintain the device ingress protection.

Note: The USB-C Connector allows connection of external sensors in either orientation.

2.2 Specifications

Product specifications are detailed in the device Product Brief [\[E\]](#).

2.3 Architecture Overview

The major pieces of a LoRa network are shown in **Figure 3**. The RS26x sensor is an End Node in the diagram below. The RS26x requires the other components in the diagram below to operate.

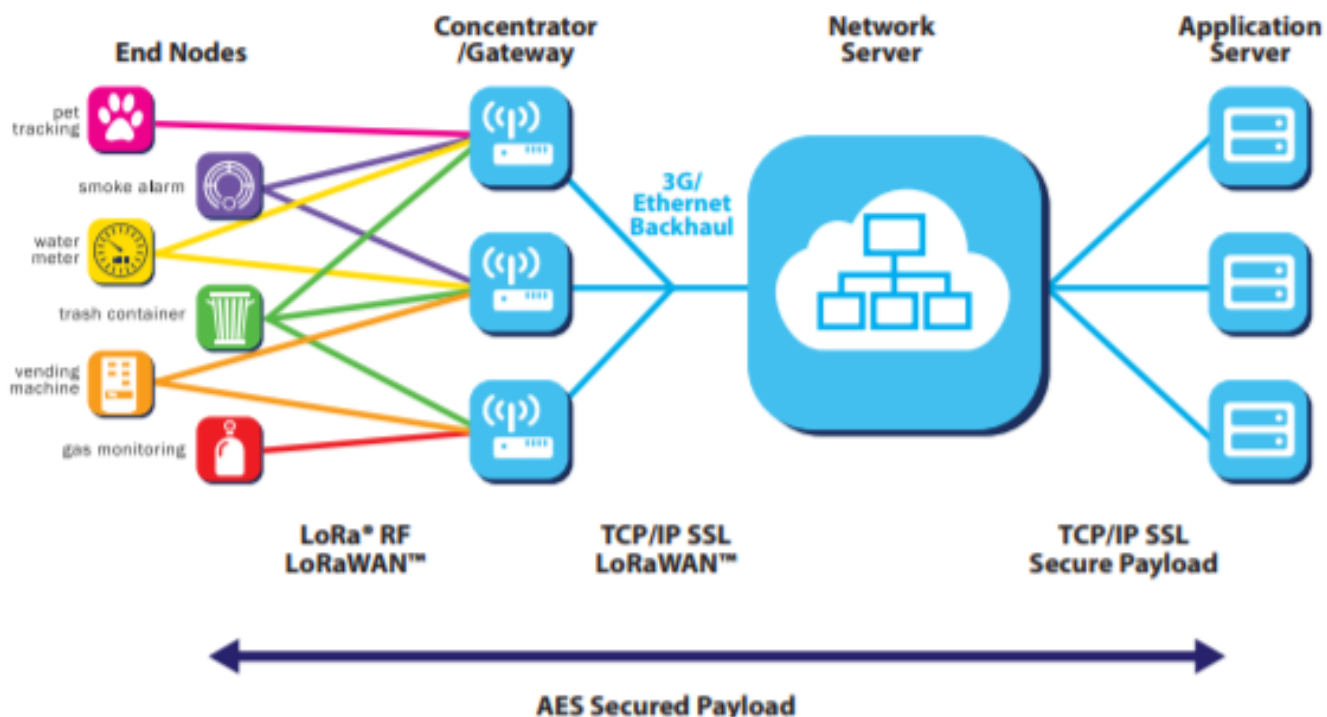


Figure 3: LoRa Architecture

3 Powering Up the Sensor

Note: The Sentrius™ sensor has no power switch. Inserting the battery powers up the device.

3.1 Unboxing

The RS26x ships from the factory in a low-power state. It is set into normal operation by depressing the push button for at least one second then releasing.

3.2 Battery Type

The Sentrius™ sensor is designed for use with primary **CR123A** lithium cells. The device ships with an Energizer CR123A battery fitted as standard [K].

3.3 Battery Replacement

The Sentrius RS26x battery is replaced by removing the Battery Compartment Lid, as shown in **Figure 4**.



Figure 4: RS26x battery replacement

Note: Battery orientation should be confirmed to match that shown in **Figure 4**. Guard rails in the battery compartment protect from mis-orientation of the battery.

Note: The battery compartment lid must be replaced and screwed in place following battery replacement to ensure the device ingress protection is maintained.

Note: During replacement of the Battery Compartment Lid, pressure should be applied to its center and screw tightening alternated. Torque of 45cNm +/- 5cNm is recommended.

4 Intended Use and Installation

The following provides guidance on RS26x Intended Use and Installation.

4.1 Intended Use

The RS26x is intended for indoor use for infrequent, periodic uplink of sensor measurement data to a remote system.

4.2 Installation

For optimal LoRa performance, sufficient clearance must be ensured for the RS26x LoRa antenna. This is located towards the top of the device. If being mounted in an enclosed metal space, mounting at the center of the space, rather than the top, is recommended, as shown in **Figure 5**.

Mounting the device in the corner of such a space will negatively affect the device LoRa performance due to fewer paths being available for the LoRa signal. Should the device need to be installed in the corner of an enclosed metal space, it is recommended to install it upside down to present less obstructions to the LoRa signal.



Figure 5: RS26x antenna clearance

As much mounting height as possible should be availed of during installation. Close proximity to the installation area surface will result in LoRa signal reflection, which again will impact performance.

A **distance of at least 5 meters** should be ensured between the device and the nearest LoRa gateway. Mounting within this distance will result in excessive signal strength from the device to the gateway, affecting LoRa signal integrity.

The dimensions of the device and locations of mounting points are shown in Figure 6.

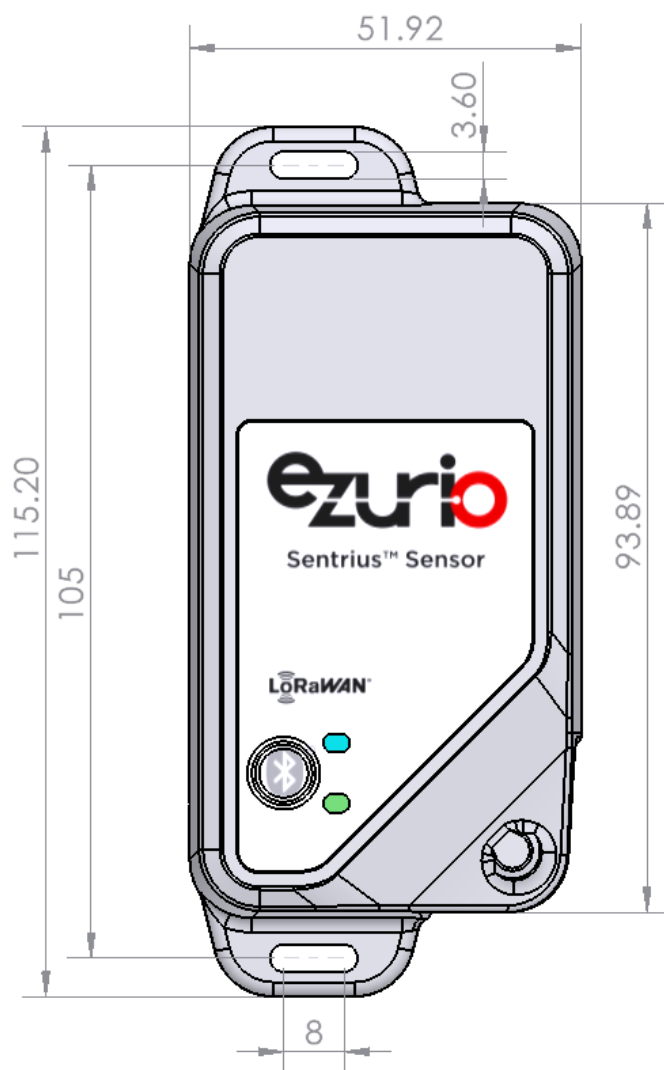


Figure 6: RS26x dimensions and mounting points

4.3 Magnetic Mount Clip

To simplify installation of the device, Ezurio offer a Magnetic Mount Clip [J] as an orderable accessory. This is shown in Figure 7.



Figure 7: RS26x Magnetic Mount Clip

This allows screwless installation of the device, with retaining clips being used to hold the device in place, as shown in Figure 8. Magnets in the clip hold the assembly in place on a magnetic metal surface.



Figure 8: Attaching the RS26x to the Magnetic Mount Clip

5 Sensor Front Panel

The device includes a pair of LEDs for status indications and a Pushbutton for triggering device actions. These are described as follows.

5.1 Pushbutton

The front panel Pushbutton allows one of three device actions to be performed, depending upon the length of time the button is depressed for then released. These are described in [Table 1](#).

Action	Pushbutton time to activate (s)	Details
Dynamic Uplink	< 1	This is only available when a connection to an LNS is available. Upon triggering, a single sensor measurement is performed and the result is sent as a LoRa uplink message.
Start BLE Advertising	> 1 < 10	The device will begin BLE advertisements, allowing connection to a BLE device. The advertising period expires after 30s if no BLE connection is made.
Reboot Device	> 10	The device performs a software reset. If previously in a connection with an LNS, the device will restart its join mechanism. If in a BLE connection, advertising must first be restarted using the Pushbutton before another BLE connection can be established.

Table 1: Pushbutton operation

5.2 Bluetooth LED

The Bluetooth LED is a single color blue LED. It is used to indicate BLE activity. Possible behaviors are described in [Table 2](#).

Flash Period (s)	Flash Duration (ms)	Details
-	-	BLE is inactive.
1	20	BLE advertisements are in progress and the device can accept BLE connections.
10	20	A BLE connection has been established with the device.

Table 2: Bluetooth LED flash codes

5.3 Heartbeat LED

The Heartbeat LED is a bi-color green and red LED. It is used to indicate device status conditions with possible behaviors described in [Table 3](#).

Flash Period (s)	Flash Duration (ms)	Color	Details
Configurable by <i>Heartbeat LED Flash Period</i> parameter	20	Red	The device is trying to establish a LoRaWAN connection.
Configurable by <i>Heartbeat LED Flash Period</i> parameter	20	Green	The device has established a LoRaWAN connection.
1	100	Red	Connectivity with the device sensor has failed.
1	20	Red	The device battery is at a critical low level and should be replaced.

Table 3: Heartbeat LED flash codes

6 Sensor Backlog

This section describes the RS26x sensor measurement data Backlog mechanism.

6.1 Overview

The RS26x incorporates a Backlog mechanism used to store details of each sensor measurement performed by the device. Each Backlog entry consists of the sensor measurement, the timestamp the Backlog entry was created, a status bit, and an ascending identifier for the Backlog entry.

The status bit is used to indicate the status of each Backlog entry to the LNS. This can indicate one of the following statuses.

- **Queued** – This indicates that the Backlog entry has yet to be forwarded successfully to the LNS.
- **Published** – A Published status indicates that the Backlog entry has successfully been forwarded to the LNS.

Backlog entries are stored in a set of 7 files, with each file containing measurement data for a 24-hour period. Each file can contain up to 2880 entries. This is to support a minimum **Read Period** of 30s. Upon reaching the 24-hour period, the next Backlog file is then used to store the successive 24-hour period of entries.

In total, with the minimum supported **Read Period** of 30s, 20,160 Backlog entries are supported.

When the 7-day duration is reached and all files are full, the data from the first file then starts to be over-written, as shown in **Figure 9**. In event of Backlog entries with a status of Queued being over-written, the device Backlog Wraparound Status bit is sent in uplinked LoRa messages.



Figure 9: RS26x Backlog file rotation

6.2 Parameters governing the operation of the Backlog

The following parameters determine the behavior of the device Backlog.

- **Read Period** – This is the time in seconds after which a sensor measurement is performed.
- **Confirmed Packets** – When disabled, no acknowledgement is requested from the LNS following a LoRa uplink from the device. It is not possible to determine if the uplink actually reached the LNS in this case, only that the LoRa radio successfully processed the request to send the uplink. For this reason, when the **Confirmed Packets** parameter is set to **'Unconfirmed'**, following confirmation from the device LoRa radio that the packet was sent, the Backlog entry status bit is set immediately to Published.

When the **Confirmed Packets** parameter is set to **'Confirmed'**, the device LoRa radio must successfully process the uplink message, and an acknowledgement must be received from the LNS. If both conditions are not met, the Backlog entry status is set as Queued, indicating the entry has yet to be forwarded to the LNS.

- **Reading Aggregate Count** – This setting determines how many Aggregate measurements are performed, or how many measurements an Average measurement consists of.
- **Aggregation Mode** – The **Aggregation Mode** parameter can be set to one of the following values with each altering the Backlog behavior.
 - **'Aggregation'** – When set to **'Aggregation'**, a Backlog entry is created for each sensor measurement, but an uplink only performed when the count of measurements defined by the Reading Aggregate Count parameter is reached.

- **'Averaging'** – When set to **'Averaging'**, a running average of the count of sensor measurements defined by the **Reading Aggregate Count** is maintained. When the count of measurements defined by the **Reading Aggregate Count** parameter is reached, a Backlog entry is created and an uplink performed.
- **'None'** – When set to **'None'**, a Backlog entry is created for each measurement, and an uplink performed following each measurement.

6.3 Backlog operation for Aggregation Mode configured as 'None'

Operation of the Backlog when **Aggregation Mode** is set to **'None'** and no Queued Backlog entries are available is shown in Figure 10.

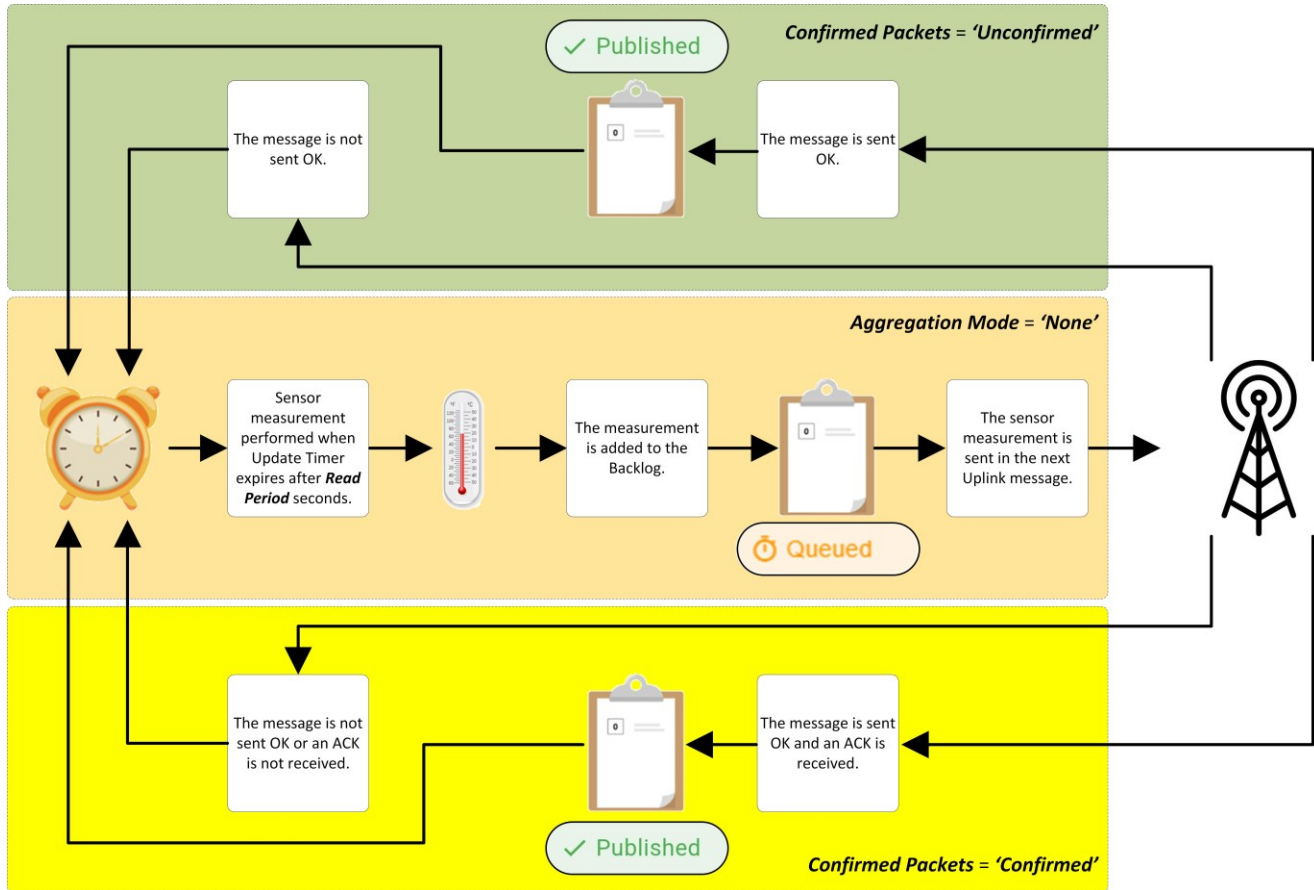


Figure 10: Backlog operation when Aggregation Mode is set to 'None' and no Queued Backlog entries available

Figure 11 shows the behavior when entries are available in the Backlog with a status of Queued. These are added to uplink messages to the LoRa payload limit as defined in [B] and the LoRaWAN data rate currently in use.

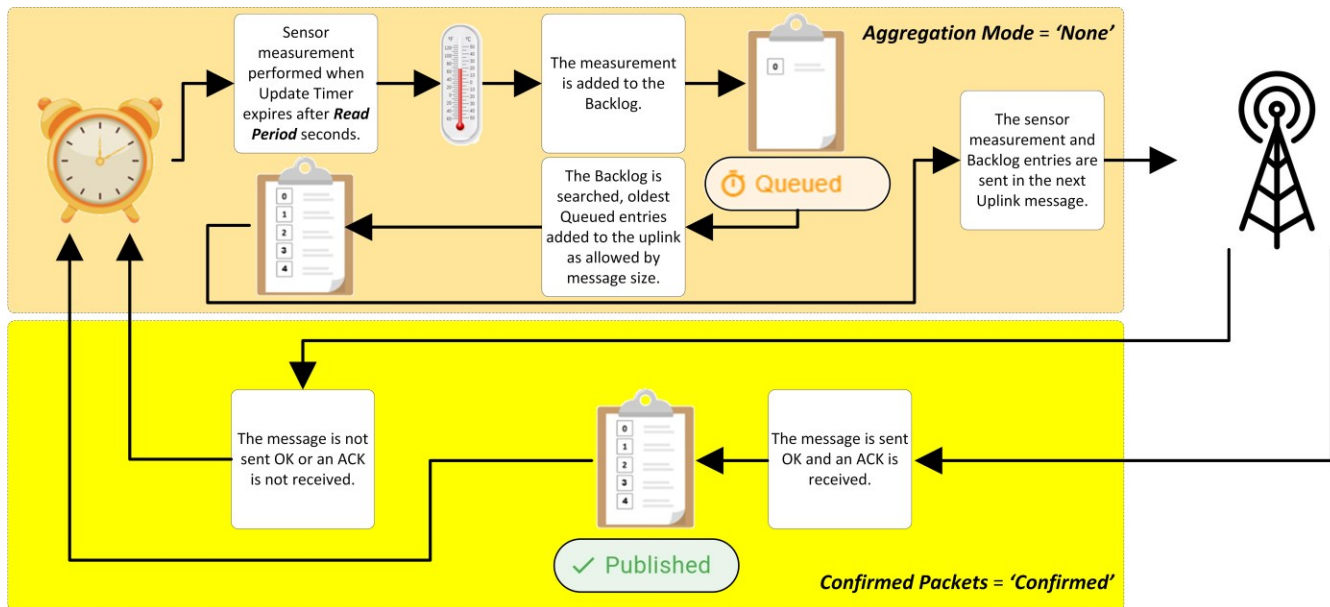


Figure 11: Backlog operation when Aggregation Mode is set to 'None' and Queued Backlog entries available

6.4 Backlog operation for Aggregation Mode configured as 'Averaging'

Operation of the Backlog when **Aggregation Mode** is set to '**Averaging**' and no Queued Backlog entries are available is shown in Figure 12.

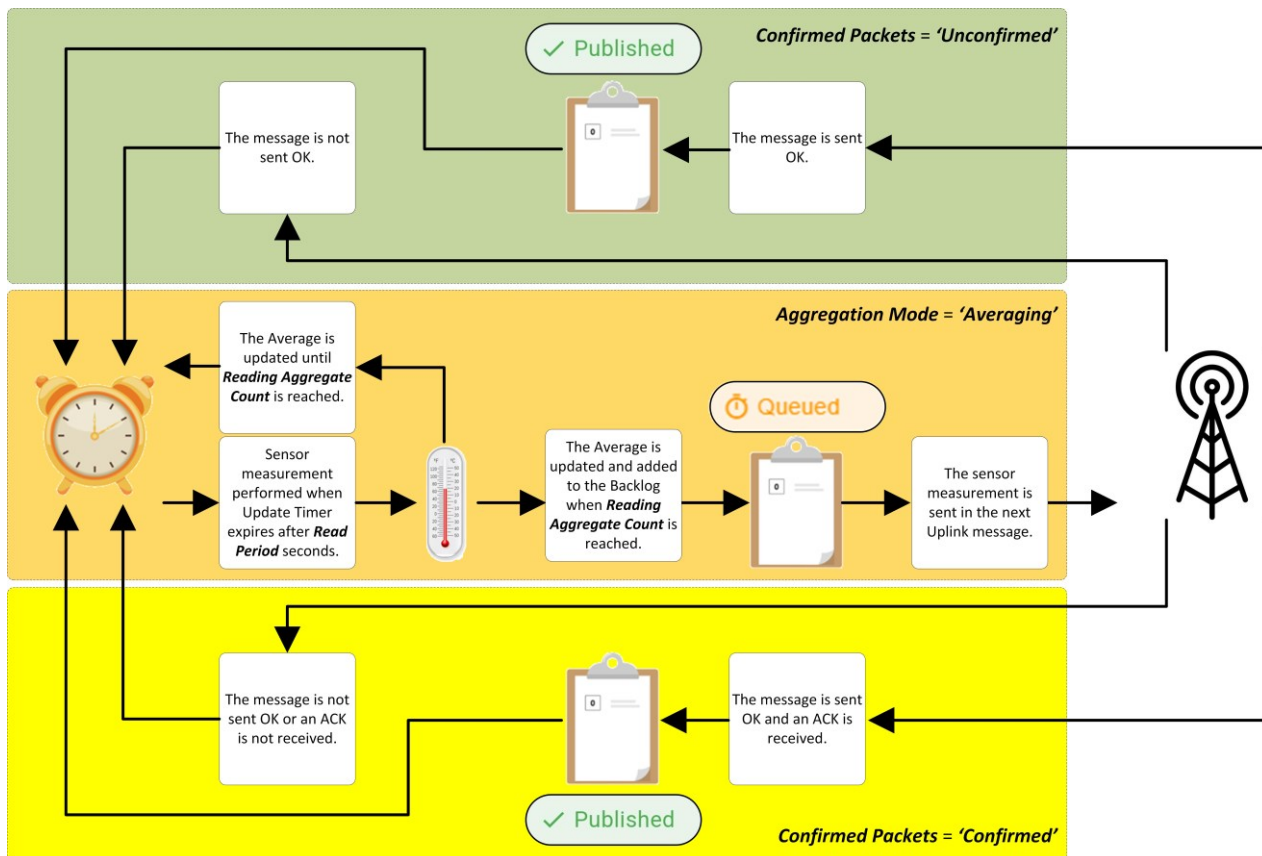


Figure 12: Backlog operation when Aggregation Mode is set to 'Averaging' and no Queued Backlog entries available

Figure 13 shows the behavior when entries are available in the Backlog with a status of Queued. These are added to uplink messages to the LoRa payload limit as defined in [B] and the LoRaWAN data rate currently in use.

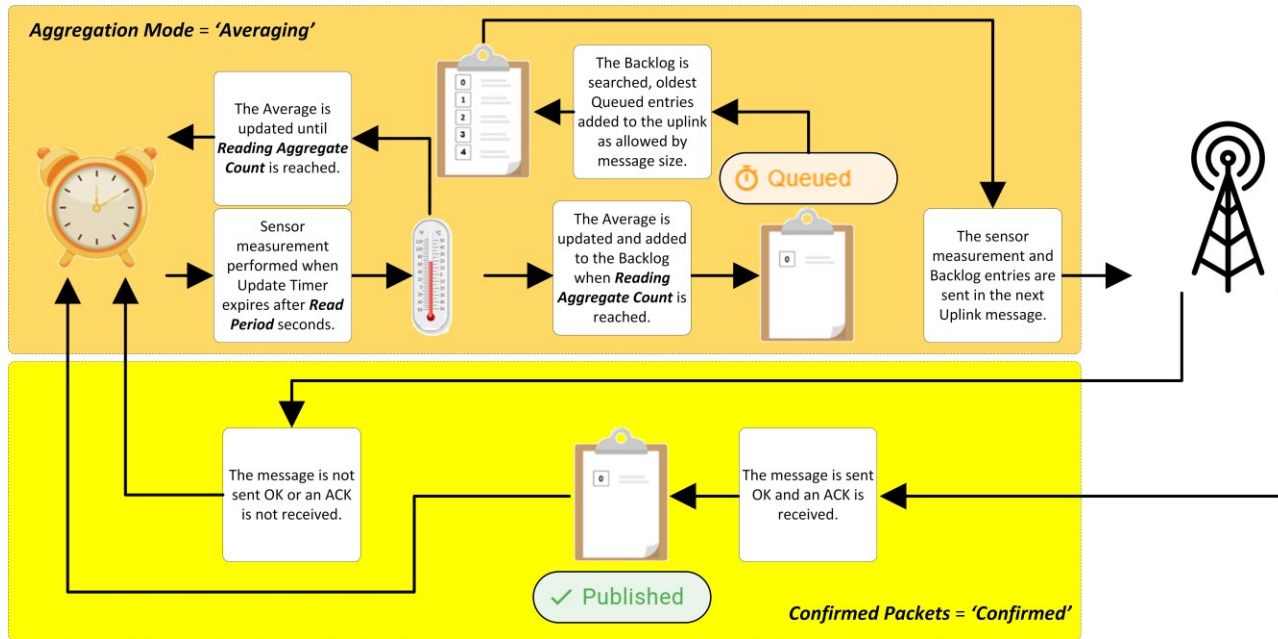


Figure 13: Backlog operation when Aggregation Mode is set to 'Averaging' and Queued Backlog entries available

6.5 Backlog operation for Aggregation Mode configured to 'Aggregation'

Operation of the Backlog when **Aggregation Mode** is set to 'Averaging' and no Queued Backlog entries are available is shown in Figure 14.

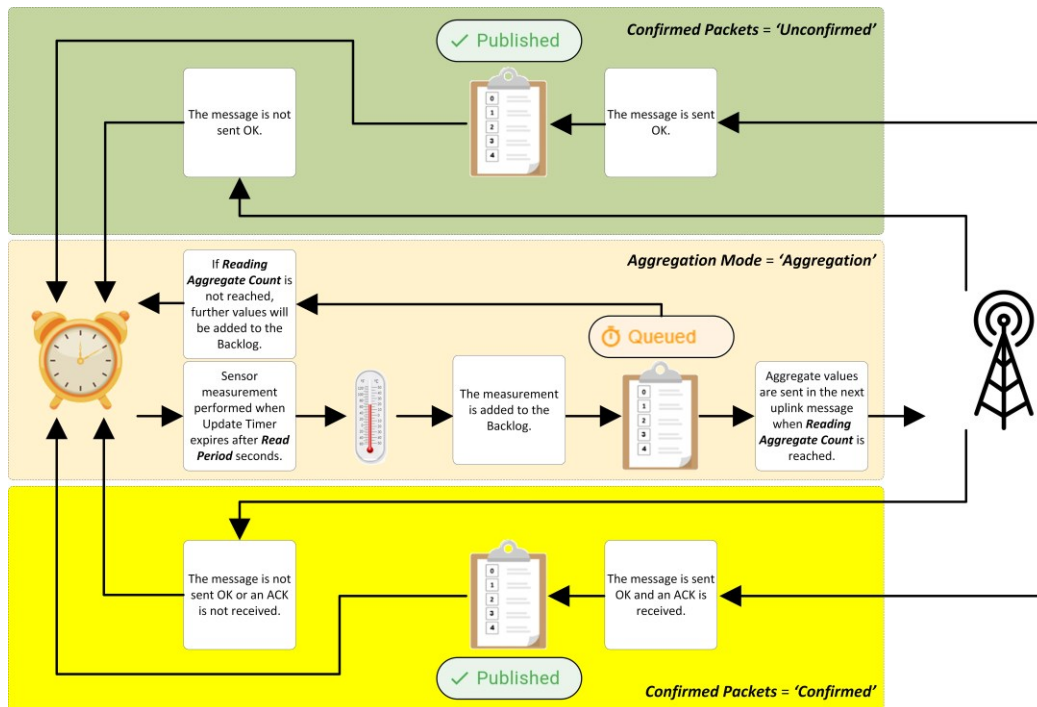


Figure 14: Backlog operation when Aggregation Mode is set to 'Aggregation' and no Queued Backlog entries available

Figure 15 shows the behavior when entries are available in the Backlog with a status of Queued. These are added to uplink messages to the LoRa payload limit as defined in [B] and the LoRaWAN data rate currently in use.

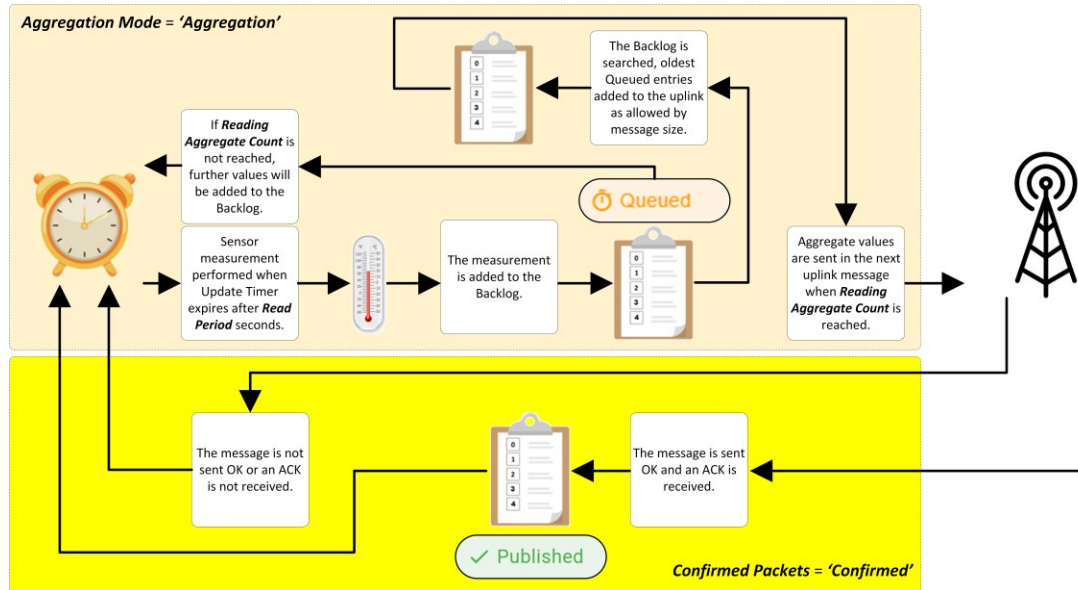


Figure 15: Backlog operation when Aggregation Mode is set to 'Aggregation' and Queued Backlog entries available

Note: If the initial Queued Aggregate Backlog entry is too long, the last Aggregate reading and timestamp are added to the uplink.

Note: If successive Queued Aggregate Backlog entries cannot be added due to payload length restrictions, the entry is not added and the Bandwidth Limitation status bit is set.

7 Setting up RS26x

This section describes configuration of the device using the BLE interface. More limited configuration of the device is possible using the LoRaWAN interface, this is fully described in [H].

The RS26x is based on Ezurio's Canvas Software Suite [F]. An RS26x specific applet in conjunction with Canvas' XBit application is used for device configuration. Mobile and desktop versions of the XBit app are available at [G]. For mobile devices, the XBit application can also be downloaded via the platform app store.

Once XBit has been installed on the chosen platform, the RS26x specific applet is available from the XBit homepage.

A complete list of the configurable device parameters and their purpose is available at [H].

Note: While Xbit is available for desktop use, it requires additional hardware — a BL654 dongle with special firmware. This guide focuses on the **Canvas Xbit Mobile** app, which does not need extra hardware. For more information on the desktop version, refer to [I].

7.1 Starting the RS26x Sensor Applet

The XBit Home Page is shown in Figure 16. The RS26x Sensor Applet is started by clicking on the Launch button associated with the RS26x Sensor Applet.

Note: Xbit can be updated to the latest available version by clicking the Update button to the top right at any stage.

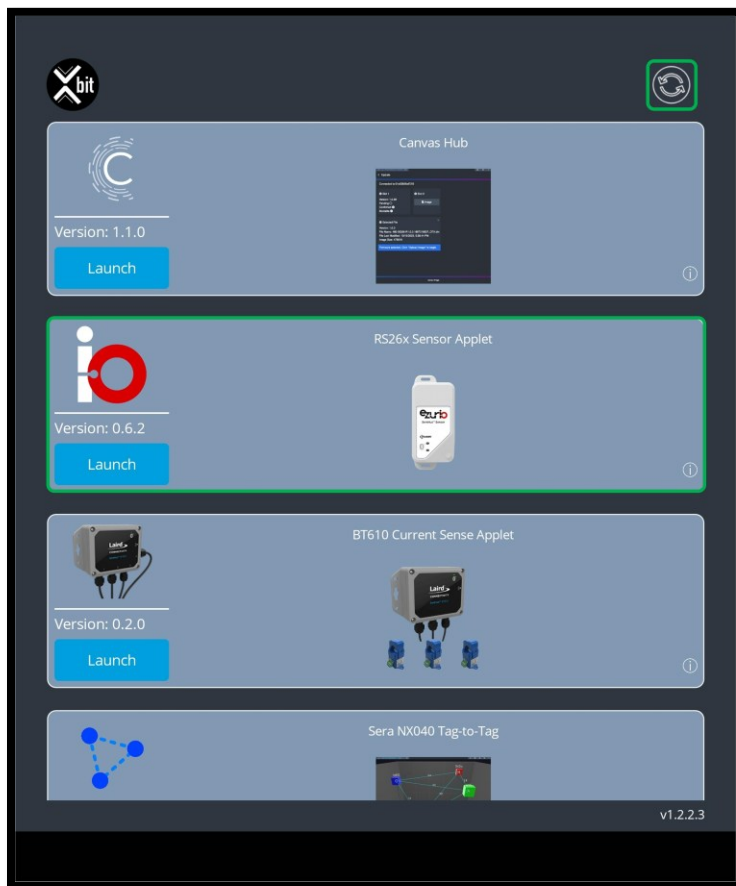
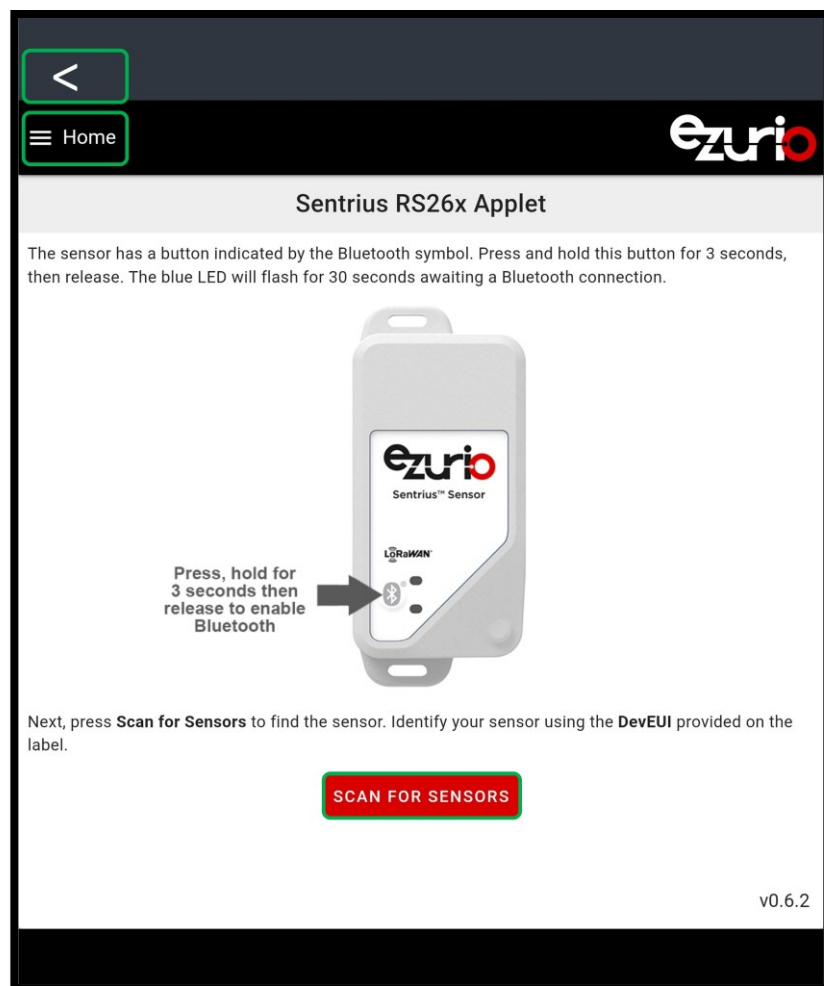


Figure 16: XBit Home Page

The RS26x Sensor Applet opening page and features are shown in Figure 17.



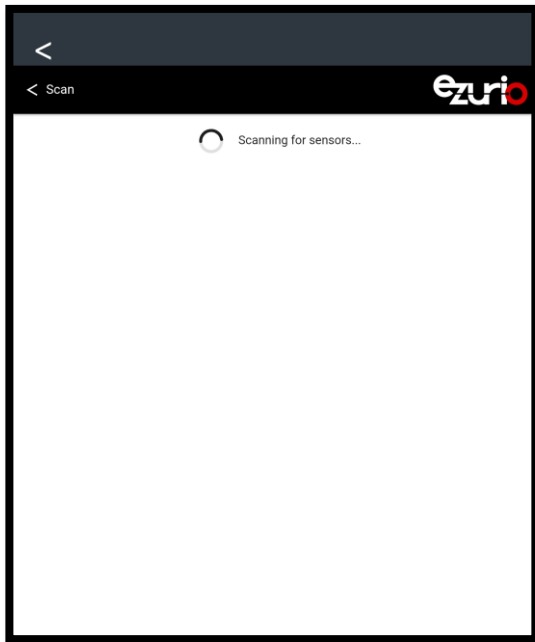
- The **Back** (<) button to the top left can be used to return to the XBit Home Page at any time.
- The **Home** button is used to display License and version information.
- The **Scan for Sensors** button is used to establish a connection to an RS26x device.

Figure 17: RS26x Sensor Applet Home Page

7.2 Connecting to a device

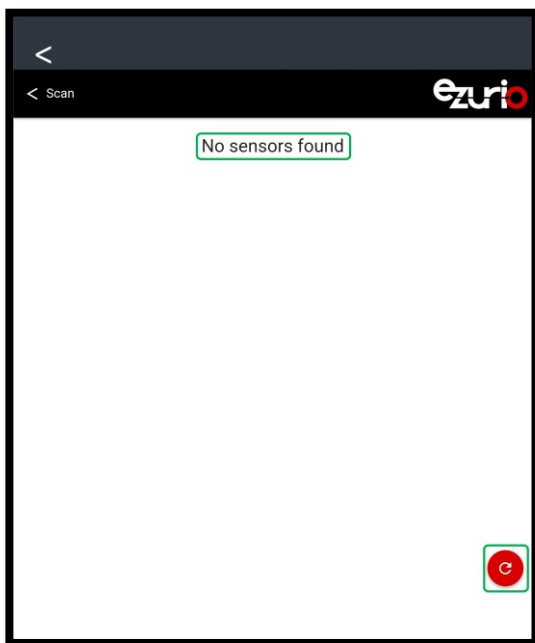
Clicking the Scan for Devices button will start the RS26x Sensor Applet scanning for RS26x devices within the vicinity. Scanning in progress is indicated as shown in [Figure 18](#).

Note: Prior to starting the scan, the device intended for configuration should be advertising for connection. [Section 5.1](#) should be referred to for the steps required.



If no devices are found, this is indicated as shown in [Figure 19](#). The scan can be restarted by clicking the button to the bottom right of the page.

Figure 18: RS26x Sensor Applet BLE scanning in progress



The process of clicking the Refresh button to restart scanning can be repeated to attempt establishing a connection to a device.

Figure 19: RS26x Sensor Applet indicating no devices found

Upon detection of devices available for connection, the Scan page is updated as shown in Figure 20. The device *DevEUI* and *Friendly Name* are used to indicate each device detected. Clicking the Connect button will establish a connection to the device and open the device Home Page.

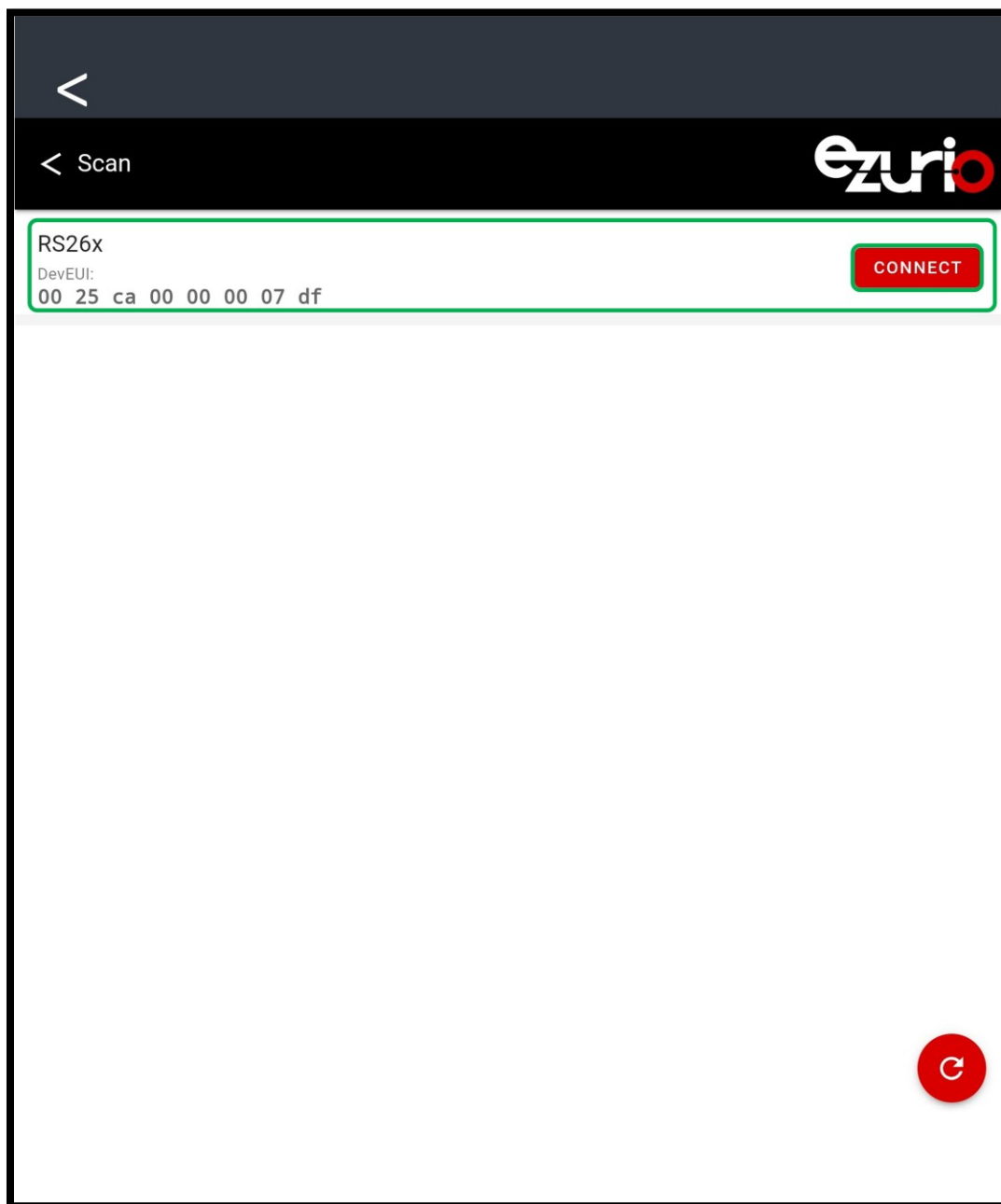


Figure 20: RS26x Sensor Applet displaying devices available for connection

7.3 Device Home Page

The device Home Page and features are shown in Figure 21.

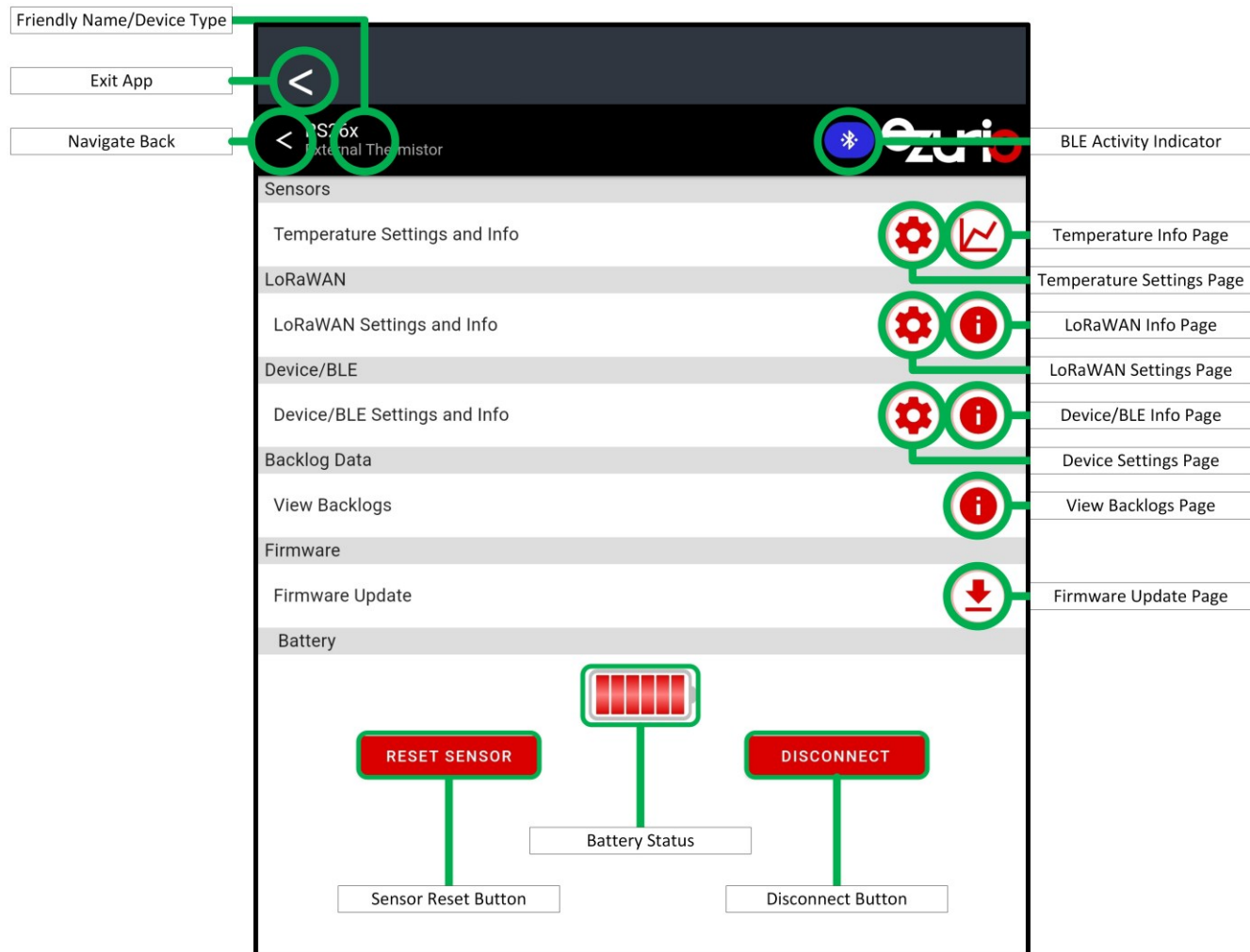


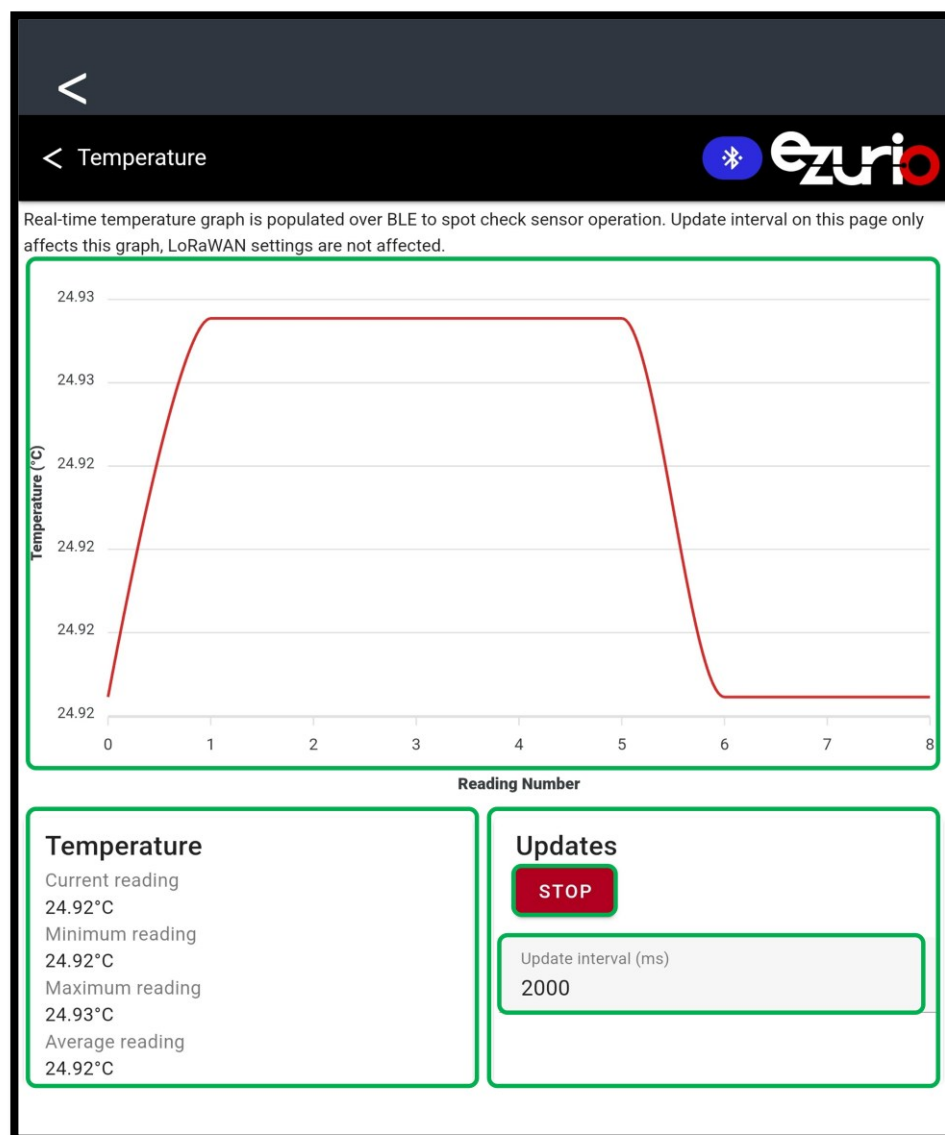
Figure 21: RS26x Sensor Applet Device Home page

The features are described as follows.

- **Friendly Name/Device Type:** The device Friendly Name parameter and its fixed sensor type details are shown here for identification purposes.
- **Exit App:** The RS26x Sensor Applet can be exited at any time by clicking this button.
- **Navigate Back:** This button is available for all RS26x Sensor Applet pages. It is used to navigate back to the previous page.
- **BLE Activity Indicator:** This is used to indicate when BLE communications with the device are taking place.
- **Temperature Info Page:** This page is used to view live temperature values read from the device.
- **Temperature Settings Page:** This page is used to configure device parameters related to the device temperature measurements.
- **LoRaWAN Info Page:** This page is used to view read-only parameter data related to the device LoRaWAN connection.
- **LoRaWAN Settings Page:** This page is used to configure device LoRaWAN parameters.
- **Device/BLE Info Page:** This page is used to view read-only parameter data related to the device and the BLE connection.
- **Device Settings Page:** This page is used to configure parameters related to the device.
- **View Backlogs Page:** This page is used to view backlog data stored in the device.
- **Firmware Update Page:** This page is used to update the device core and application firmware.
- **Sensor Reset Button:** A device reset can be performed using this button. This will break the BLE connection.
- **Battery Status:** The device battery status is indicated here.
- **Disconnect Button:** The BLE connection can be ended by clicking this button.

7.4 Temperature Info Page

The Temperature Info page is shown in Figure 22.



- Live readings are displayed in the graph area.
- A summary of readings is displayed in the Temperature area.
- Updates can be stopped and started using the button in the Updates pane.
- The frequency of updates can be adjusted in milliseconds using the Update Interval entry field in the Updates pane.

Figure 22: Temperature Info page

7.5 Temperature Settings Page

The Temperature Settings page is shown in Figure 23.

The screenshot shows the 'Sensor Settings' page in the Ezurio mobile application. The page has a dark header with a back arrow, the text 'Sensor Settings', and the Ezurio logo. Below the header, there are three settings sections, each with a 'SAVE' button:

- Read Period:** A text input field showing '300' with 'Seconds' written above it.
- Aggregation Mode:** A dropdown menu showing 'None' with 'Sensor reading aggregation mode' written above it.
- Reading Aggregate Count:** A text input field showing '2' with 'Readings' written above it.

At the bottom of the page, there is an 'Advanced' section with a green border and a dropdown arrow.

- The **Read Period** determines the frequency of sensor reads and subsequent uplinks using the LoRaWAN connection.
- **Aggregation Mode** can be set to '**Aggregation**', where a number of readings are performed and sent in one LoRaWAN uplink, or '**Averaging**', where sensor readings are averaged and sent in one LoRaWAN uplink, or '**None**', where single sensor readings are sent in each device uplink.
- **Reading Aggregate Count** is used to determine how many readings an Aggregated or Averaged LoRaWAN uplink is comprised of.
- The **Advanced** drop-down is used only for External Thermistor devices and is described in the next section.

When any of the parameters are changed, the corresponding Save button must be clicked to apply the changes in the device.

Figure 23: Temperature Settings page

7.5.1 Advanced Temperature Settings drop-down

The content of the Advanced Temperature Settings drop-down menu is shown in Figure 24.

The screenshot shows the 'Advanced' settings page in the ezurio app. At the top, there is a back arrow and the text 'Sensor Settings'. The 'Advanced' section is expanded, showing three settings for the Steinhart-Hart equation coefficients. Each setting has a text input field and a red 'SAVE' button.

Setting	Value
Ext. Thermistor S-H Coefficient A	0.00115000
Ext. Thermistor S-H Coefficient B	0.000229000
Ext. Thermistor S-H Coefficient C	0.000000112

The coefficients used in the Steinhart-Hart thermistor temperature equation associated with the thermistor connected to the device can be adjusted here.

- **Ext. Thermistor S-H Coefficient A** is the A coefficient used in the Steinhart-Hart equation
- **Ext. Thermistor S-H Coefficient B** is the B coefficient used in the Steinhart-Hart equation
- **Ext. Thermistor S-H Coefficient C** is the C coefficient used in the Steinhart-Hart equation

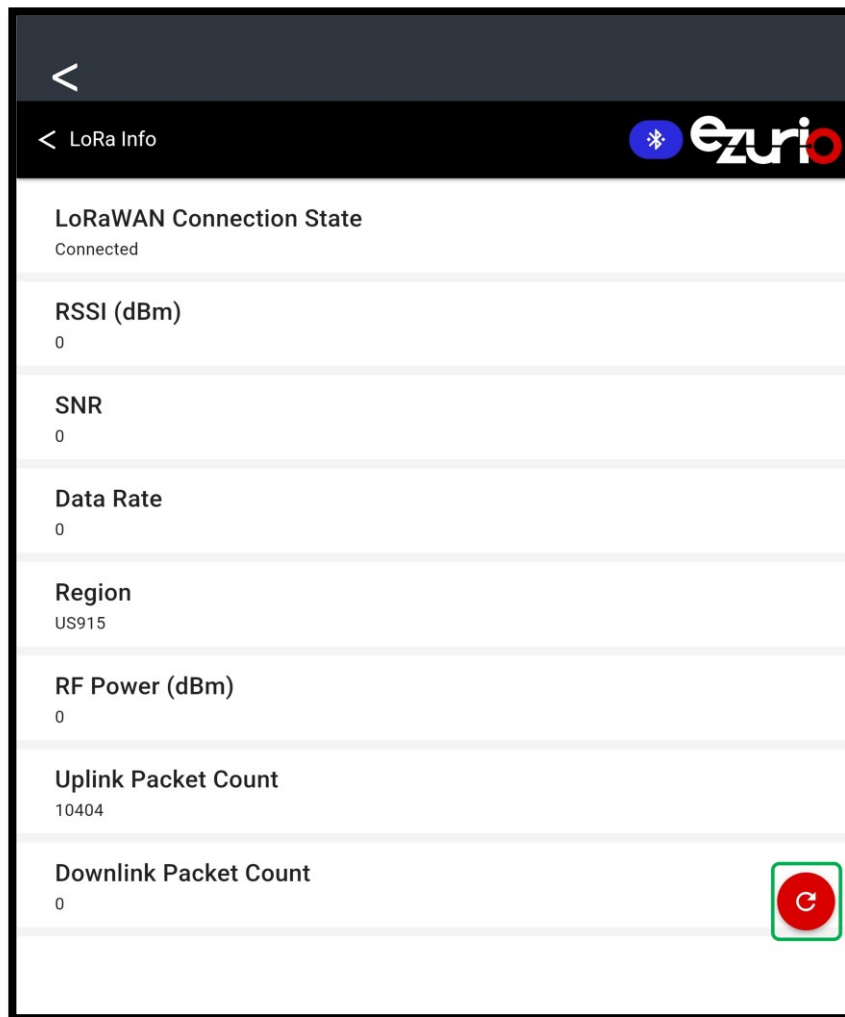
Figure 24: Advanced Temperature Settings drop-down

Note: The default values are tuned to the thermistor supplied with the device and do not need to be adjusted if this is the thermistor in use.

Note: If the values are inadvertently changed, the device can be restored to its factory settings using the Factory Reset function as described in section 7.11.

7.6 LoRaWAN Info Page

The LoRaWAN Info page is shown in [Figure 25](#).



- **LoRaWAN Connection State** is used to indicate if the device is connected to an LNS.
- **RSSI (dBm)** indicates the RSSI for the last received LoRaWAN packet.
- **SNR** indicates the SNR for the last received LoRaWAN packet.
- **Data Rate** indicates the current LoRaWAN data rate being used for LoRaWAN uplinks.
- **Region** indicates the configured device Region. This is fixed during manufacture and not configurable.
- **RF Power (dBm)** indicates the current transmit power being used for LoRaWAN uplinks.
- **Uplink Packet Count** indicates the number of LoRaWAN uplinks performed during the current Join session.
- **Downlink Packet Count** indicates the number of LoRaWAN downlinks received during the current Join session.

The LoRaWAN Info page can be refreshed at any stage by clicking the Refresh button to the bottom right of the page.

Figure 25: LoRaWAN Info page

7.7 LoRaWAN Settings Page

The LoRaWAN Settings page is shown in Figure 26.

The screenshot shows the 'LoRa Settings' page with the following sections and fields:

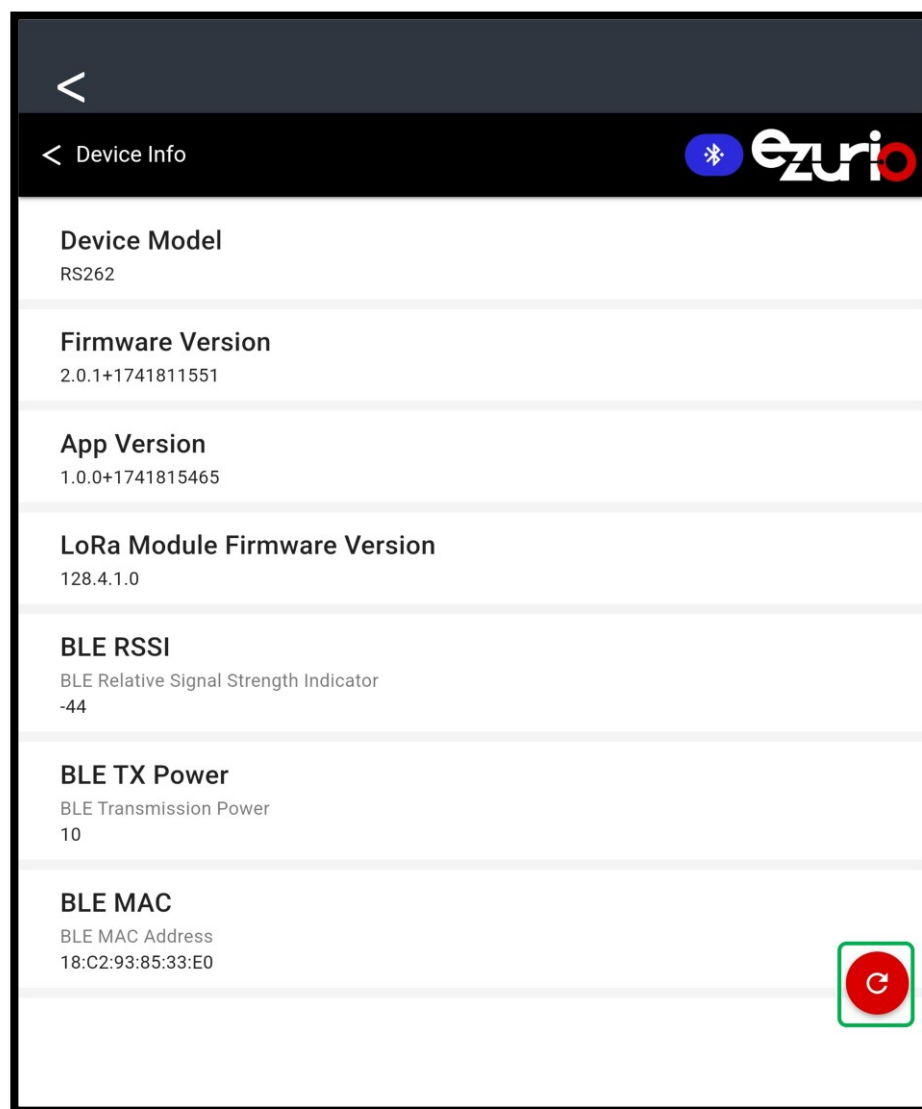
- Channel Mask:** A dropdown menu showing 'Sub-band 2' and a 'SAVE' button.
- Operating Mode:** A dropdown menu showing 'Ezurio-rs26x' and a red 'SAVE' button.
- Confirmed Packets:** A checkbox labeled 'Enable confirmed LoRaWAN packets' which is checked, and a red 'SAVE' button. Below it is a 'Retries' field with the value '3'.
- Network Time:** A dropdown menu showing 'Automatic' and a red 'SAVE' button.
- DevEUI:** A text field containing '0025CA0000005A8B' and a red 'SAVE' button.
- AppEUI:** A text field containing 'ECC07A0000000009' and a red 'SAVE' button.
- AppKey:** A text field with a placeholder 'Application Key', a lock icon, and a grey 'SAVE' button.
- Region:** A dropdown menu showing 'EU868' and a grey 'SAVE' button.
- Max TX Power:** A text field with the value '-1' and a red 'SAVE' button.
- Advanced:** A section header with a downward arrow.

- The **Channel Mask** applies to AU915 and US915 devices only. It determines the group of 8 channels the device will use for its LoRaWAN connection.
- The **Operating Mode** determines the protocol used by the device for LoRaWAN messages. At present only Ezurio-RS26x is supported, this is fully described in [H].
- Confirmed Packets can be enabled and disabled using the **Enable confirmed LoRaWAN Packets** checkbox.
- The number of retries that will be performed following no acknowledgement from the LNS is configured using the **Confirmed Packets Retries** entry field. Note this setting only applies to devices where Confirmed Packets are enabled.
- The **Network Time** can be configured to 'Automatic', where it is requested from the LNS, or 'Manual', where it is configured manually for the device. If set to Manual, a **UTC Seconds** entry field is displayed where the Network Time can be entered in UNIX epoch format.
- The **DevEUI** is the currently configured device DevEUI.
- The **AppEUI** is the currently configured device AppEUI.
- The **AppKey** is the currently configured device AppKey. Note this cannot be read except whilst being configured.
- The **Max TX Power** field can be used to limit the maximum transmit power of the device. For installations with close proximity to the gateway, this can be used to prolong battery life, particularly where frequent joins are expected. Setting this value to -1 disables the parameter.
- The **Advanced** drop-down is currently unused.

Figure 26: LoRaWAN Settings page

7.8 Device/BLE Info page

The Device/BLE Info page is shown in Figure 27.



- The **Device Model** field indicates the device type currently connected to.
- The **Firmware Version** field indicates the version of the Core firmware image.
- The **App Version** field indicates the version of the App firmware image.
- The **LoRa Module Firmware Version** field indicates the version of the RM126x LoRa module firmware.
- **BLE RSSI** indicates the current RSSI of the BLE connection.
- **BLE TX Power** indicates the BLE transmit power currently being used.
- The **BLE MAC Address** field shows the BLE Address of the RS26x device connected to.

Dynamic values can be updated at any time by clicking the Refresh button to the bottom right of the page.

Figure 27: Device/BLE info page

7.9 Device Settings page

The Device Settings page is shown in Figure 28.

- **Friendly Name** is a textual name assigned to the device for identification purposes.
- **Heartbeat LED Flash Period** is used to determine the Period of Heartbeat LED flashes for LoRaWAN status indication. Setting this value to 0 disables the Heartbeat LED LoRaWAN status indications.
- **Battery Voltage Threshold - Good** is the threshold in millivolts above which a 'Good' battery status is indicated.
- **Battery Voltage Threshold - Bad** is the threshold in millivolts below which a 'Bad' battery status is indicated.
- **Battery Voltage Threshold - Critical** is the threshold in millivolts below which a 'Critical' battery status is indicated.
- The **Advanced** drop-down is currently unused.

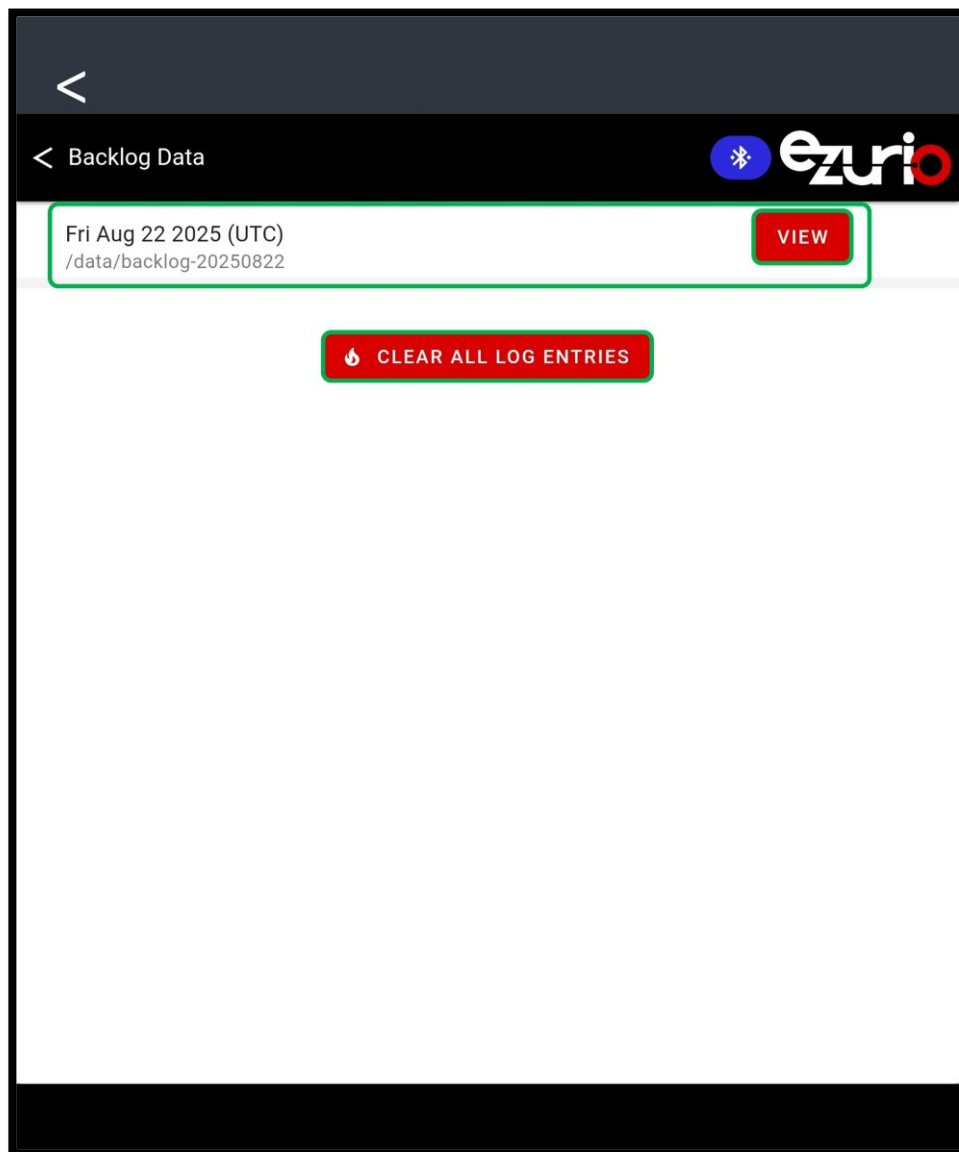
Figure 28: Device Settings page

Note: The default Battery Voltage Threshold values are tuned to the battery supplied with the device and do not need to be adjusted if this is the battery in use.

Note: If the values are inadvertently changed, the device can be restored to its factory settings using the Factory Reset function as described in section 7.11.

7.10 View Backlogs page

The View Backlogs page is shown in [Figure 29](#).



Backlog information is grouped into files, each can be viewed by clicking the associated **View** button.

All backlog data can be deleted by clicking the **Clear All Log Entries** button.

Refer to [Section 6](#) for further details of the device Backlog mechanism.

Figure 29: View Backlogs page

Clicking on the View button associated with a Backlog file downloads the file from the device and displays its content in graphical format as shown in Figure 30.

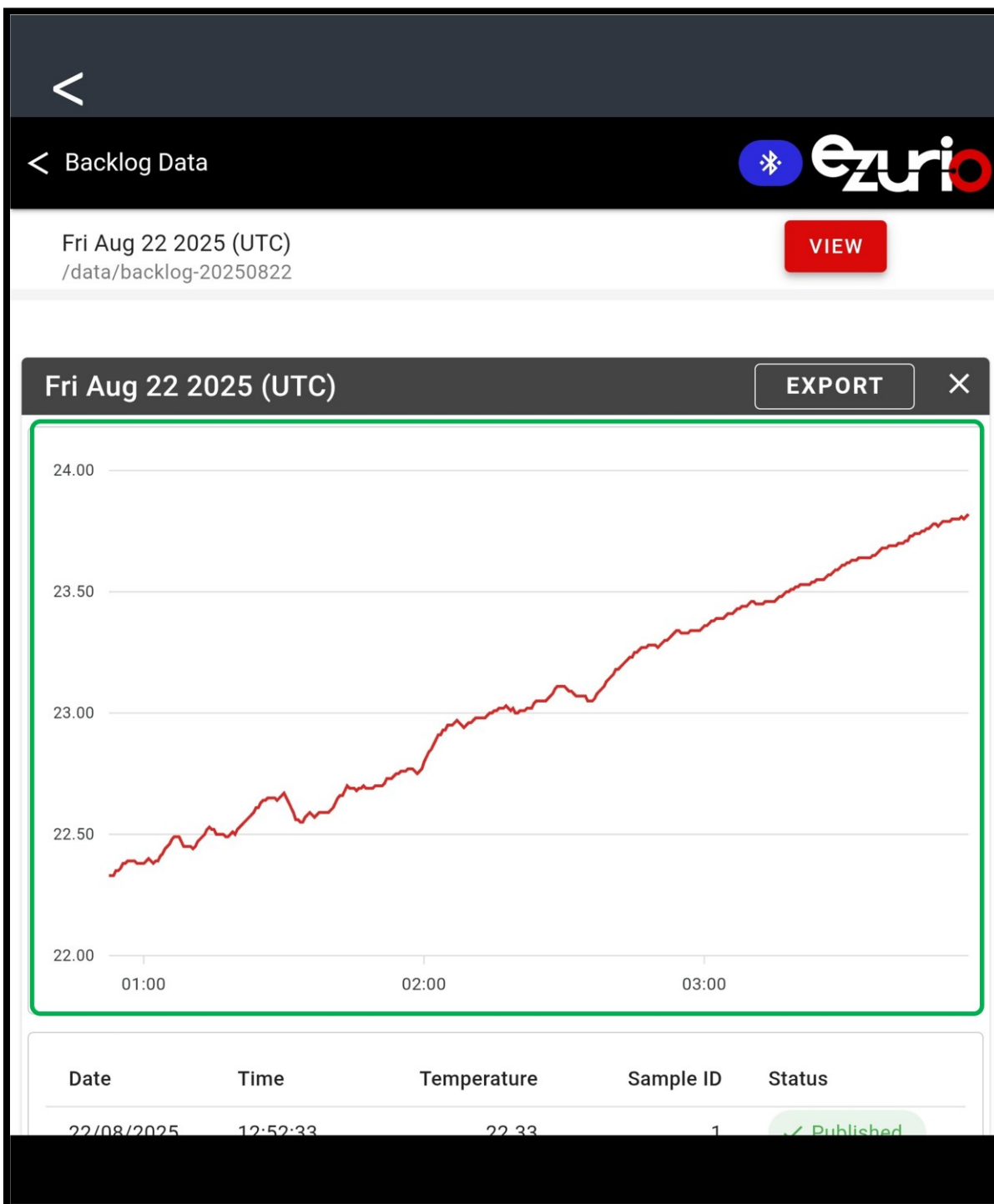


Figure 30: Backlog content graph

Under the graphical view of the Backlog file content, the status of each entry is displayed, as shown in [Figure 31](#). A status of Published indicates the backlog has been sent successfully to the LNS.

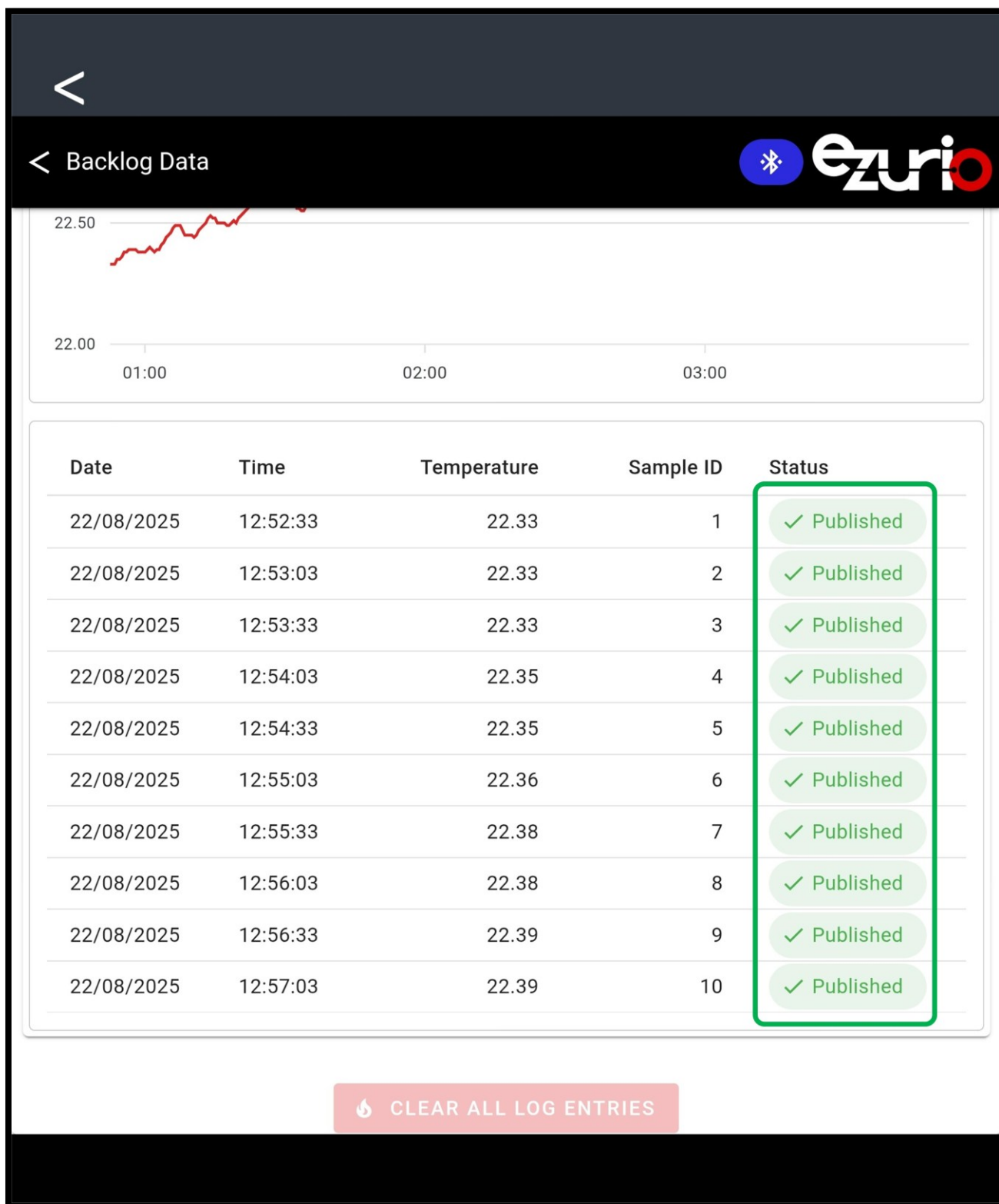
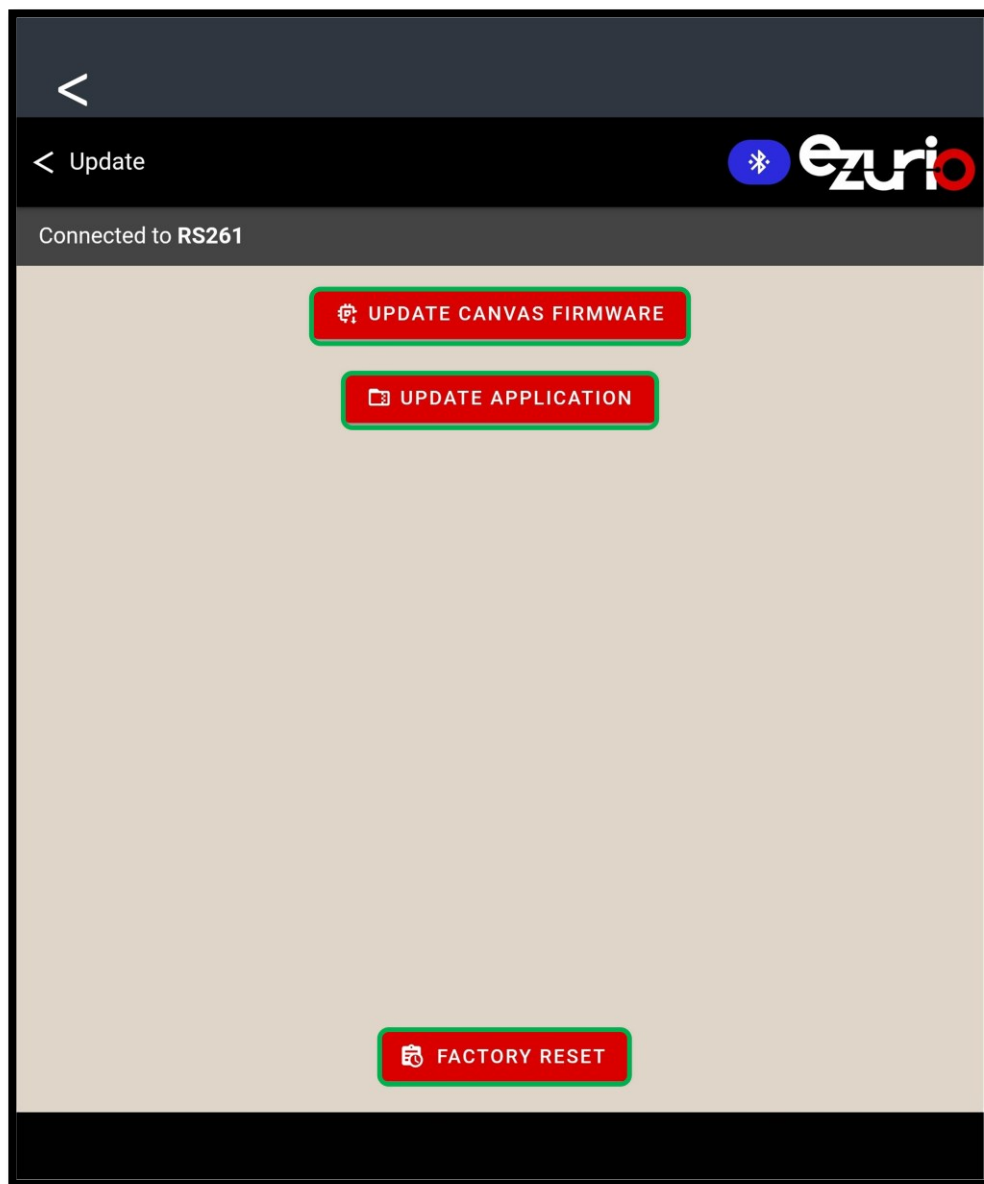


Figure 31: Backlog file entry status

7.11 Firmware Update page

The Firmware Update page is shown in Figure 32.



- The **Update Canvas Firmware** button is used to update the Canvas Core firmware image.
- The **Update Application** button is used to update the Canvas Application firmware image.
- Device parameters can be reset to factory settings using the Factory Reset button. Details of the affected parameters are listed in [H].

Figure 32: Firmware Update page

8 Firmware Update

This section describes update of the RS26x firmware using the RS26x Sensor applet. The device firmware consists of two images as follows.

- Canvas Firmware – This is the Ezurio Canvas Firmware core image that provides complex underlying functionality for the Application Script.
- Application Script – This is the Ezurio Canvas Firmware script that performs the application functionality.

The two firmware images work in conjunction to provide the RS26x functionality. Published updates to images should not be expected to occur simultaneously, rather releases may occur of only one of the images. In event of new Canvas Firmware and Application Script images, the Application Script should be updated first.

8.1 Canvas Firmware

The following describe management of Canvas Firmware images.

8.1.1 Updating

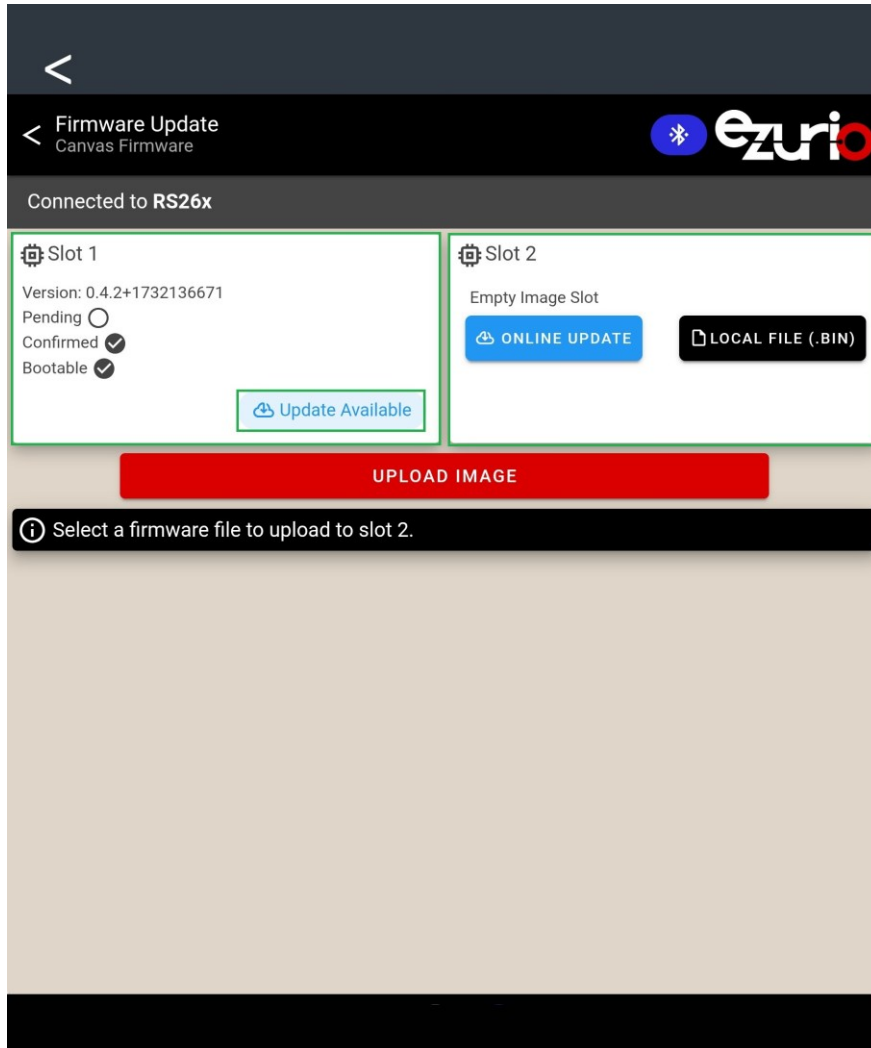


Figure 33: Canvas Firmware Update page

The Canvas Firmware Update page is shown in **Figure 33**. Page elements are described as follows.

- Slot 1 – This contains details of the Canvas Firmware image currently in use by the RS26x device.

Immediately after the Version details, three status bits are displayed. These indicate the status of the Canvas Firmware image.

- Pending – When set, this indicates that the image is in place, but awaiting Confirmation to indicate the image can be accepted for use.
- Confirmed – When set, this indicates the image has been Confirmed for use. This and the Pending status bit are mutually exclusive.
- Bootable – When set, this indicates the image has been validated correctly and can safely be used by the RS26x.

New revisions of the Canvas Firmware image are maintained and published remotely by Ezurio when available. If a newer version of the Canvas Firmware image is available, this is indicated by the 'Update Available' text in the Slot 1 group.

It is recommended to ensure the latest Canvas Firmware image is always in use to benefit from the latest features, bug fixes and performance improvements.

- Slot 2 – This contains details of the Canvas Firmware image that is available for updating the RS26x device to. Two buttons are available for selecting the source of the update image as follows.
 - Online Update – This will retrieve the latest published version of the Canvas Firmware.
 - Local File (.Bin) – For customization, debug and field trial purposes, bespoke Canvas Firmware images available on the local mobile device file system can be set as update images.
- The 'Upload Image' button is used to start the transfer of a Canvas Firmware image to the RS26x device following either the 'Online Update' being pressed, or the 'Local File (.Bin)' having been pressed and a file selected from the mobile device file system.

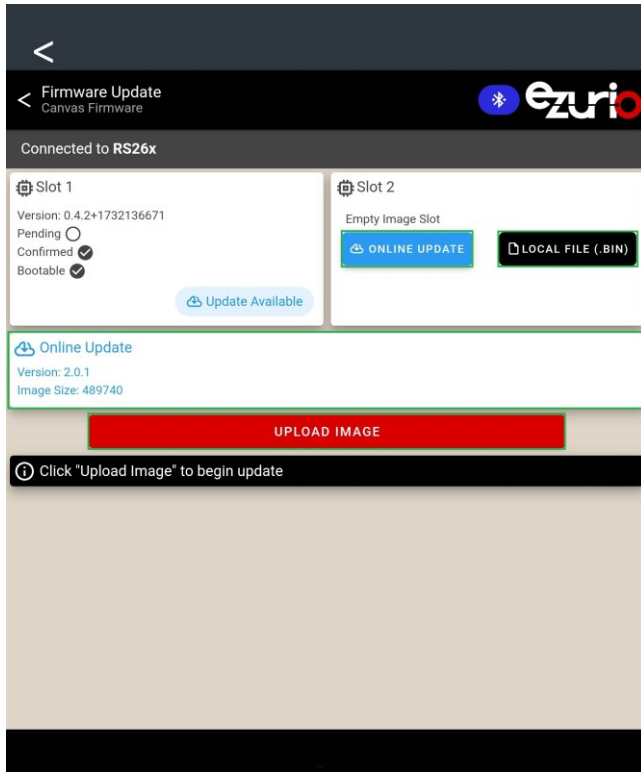


Figure 34: Selecting Online Update image

Details of the Canvas Firmware image selected for update are displayed under the 'Slot 1' and 'Slot 2' groups following selection of an image, as shown in **Figure 34**.

Transfer of the image to the RS26x device can then be started by clicking the 'Upload Image' button.

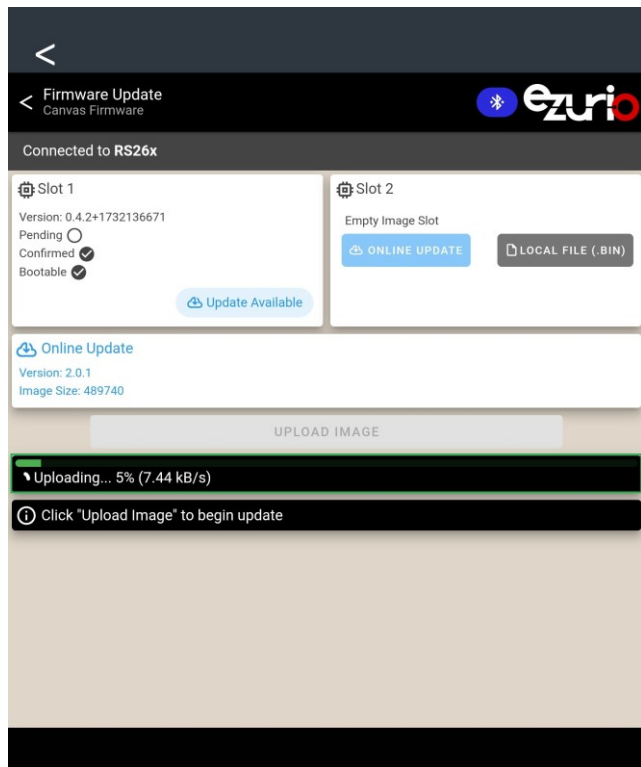


Figure 35: Online Update image transfer in progress

Progress of the image upload is then displayed as shown in **Figure 35**.

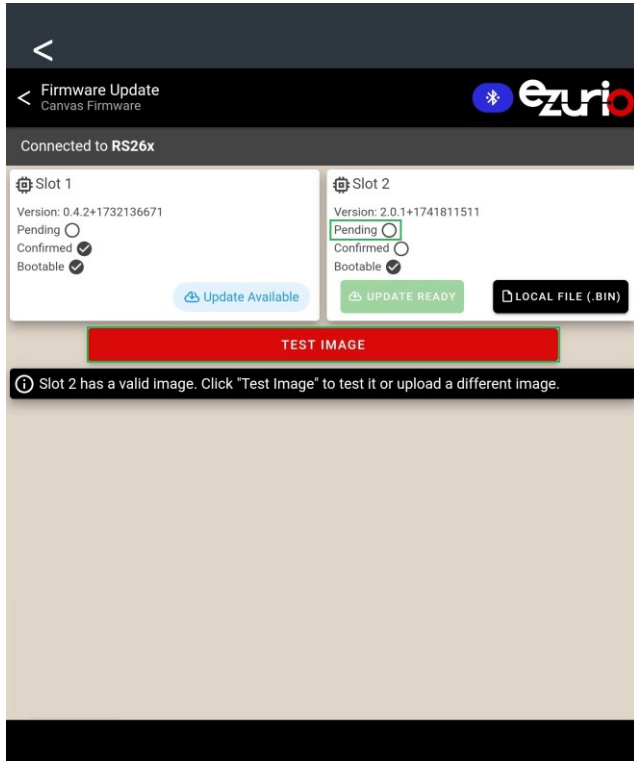


Figure 36: Test Image prompt following image upload

Following completion of the Canvas Firmware image upload, the 'Test Image' button appears, as shown in **Figure 36**. This allows the new image to be set as the active Canvas Firmware image for validation.

The 'Pending' status bit should be noted here. Prior to clicking the 'Test Image' button, this is unchecked.

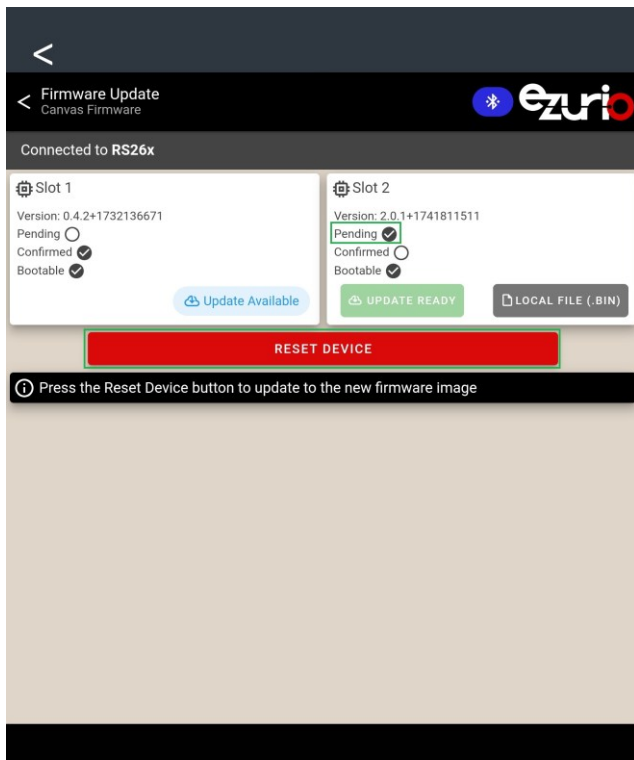


Figure 37: Reset Device prompt following Test Image confirmation

Having pressed the 'Test Image' button, the 'Pending' status bit is now set, as shown in **Figure 37**. This indicates that the new Canvas Firmware image will be set as the active Canvas Firmware image following the next power cycle of the device.

The 'Reset Device' button can then be clicked to perform the transition to the new Canvas Firmware image.

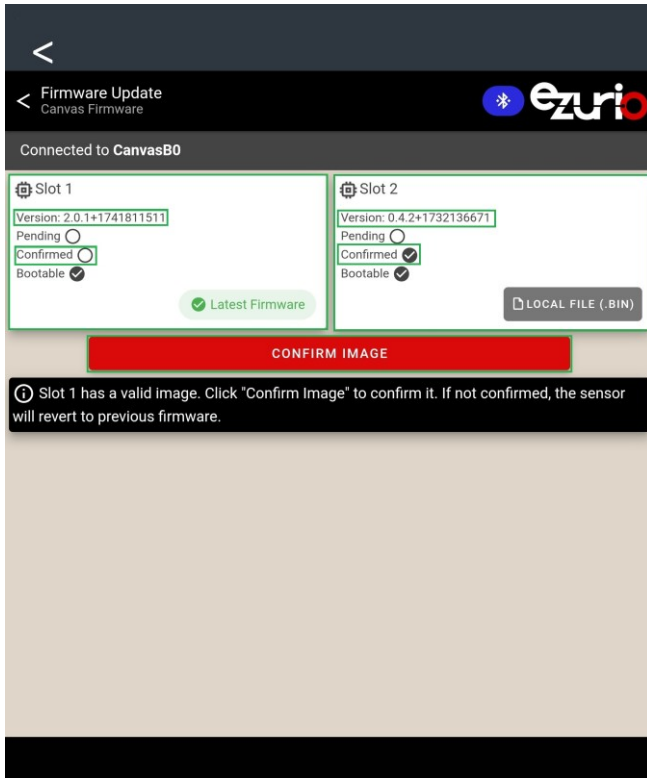


Figure 38: Image Confirmation prompt following device reset

Following reset of the RS26x, the 'Slot 1' and 'Slot 2' Canvas Firmware version details are swapped, as shown in **Figure 38**. This indicates the uploaded image has been set as the active image, and the image previously in use has been retained for restoration if required.

The state of the 'Confirmed' flag for the new and old Canvas Firmware images should be noted. The new image must be Confirmed to accept it as the active image. The image in 'Slot 2' that was previously in use is indicated as Confirmed because of its previously having been set as the active image.

The 'Confirm Image' button should be clicked to set the new Canvas Firmware image as the active image.

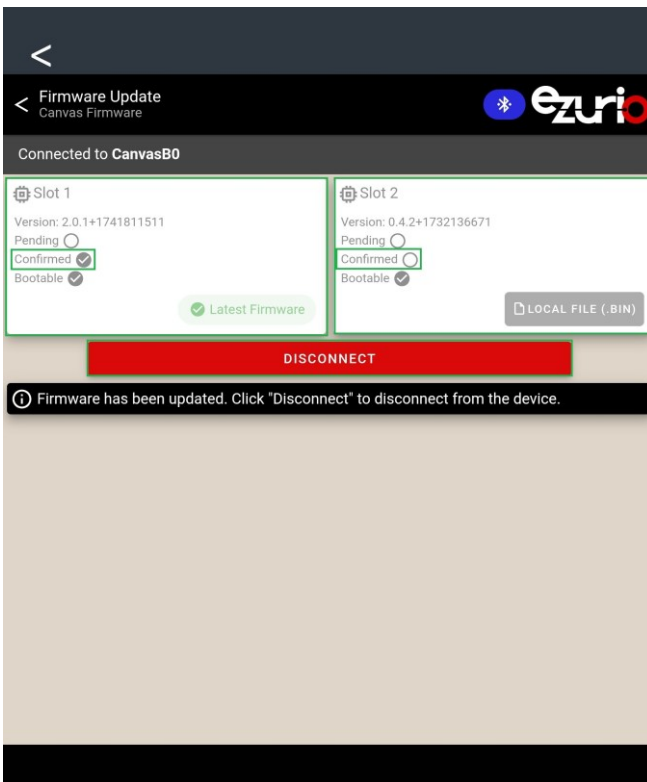


Figure 39: Disconnect prompt following Confirmation of new image

Following Confirmation of the new Canvas Firmware image, the Confirmed status of each image is reversed, as shown in **Figure 39**.

The 'Disconnect' button can now be clicked to restart the RS26x device with the new image.

8.1.2 Reverting

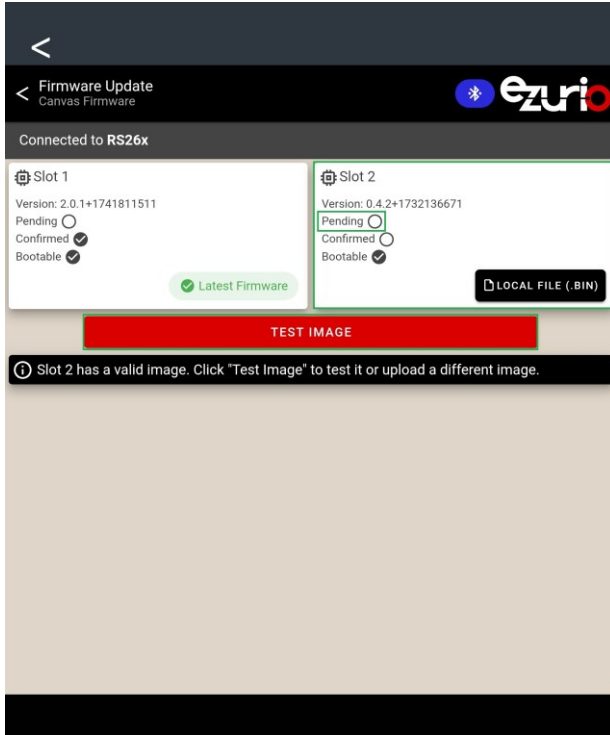


Figure 40: Test Image prompt to revert to previous image

The last Confirmed Canvas Firmware image is retained and can be reverted to if needed.

Figure 40 shows the prompt displayed when an image is available for reversion. Clicking the 'Test Image' button will make the previous image the active Canvas Firmware image.

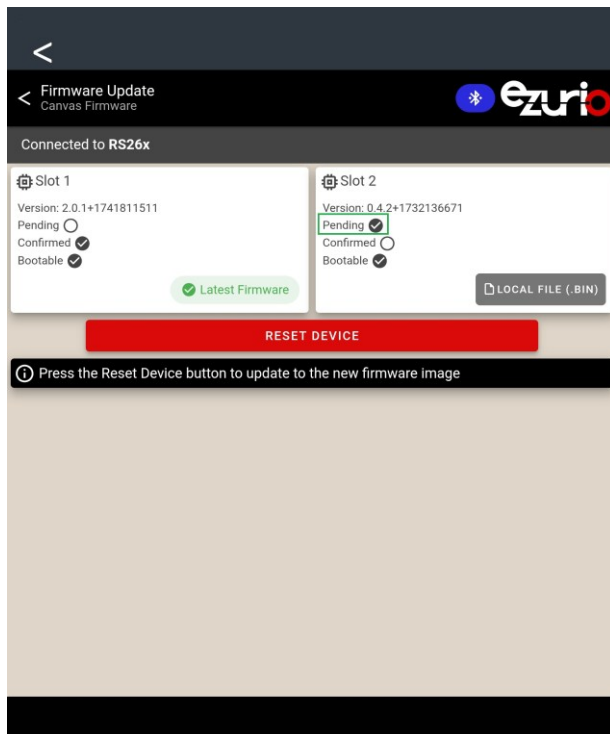


Figure 41: Reset Device prompt to revert to previous image

The previously Confirmed image status is set to Pending then the 'Reset Device' button clicked, as shown in Figure 41.

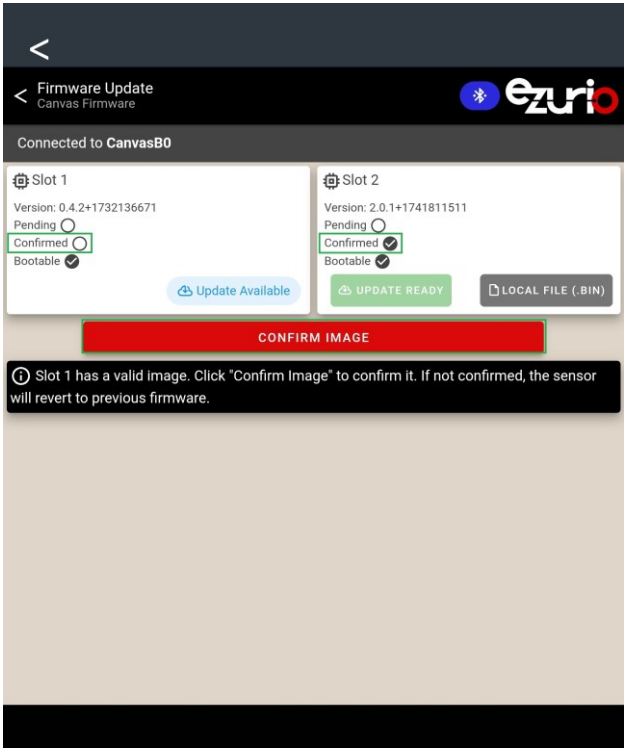


Figure 42: Confirm Image prompt to revert to previous image

The image is then set as the active image, but must be Confirmed to make the change permanent using the 'Confirm Image' button, as shown in **Figure 42**.

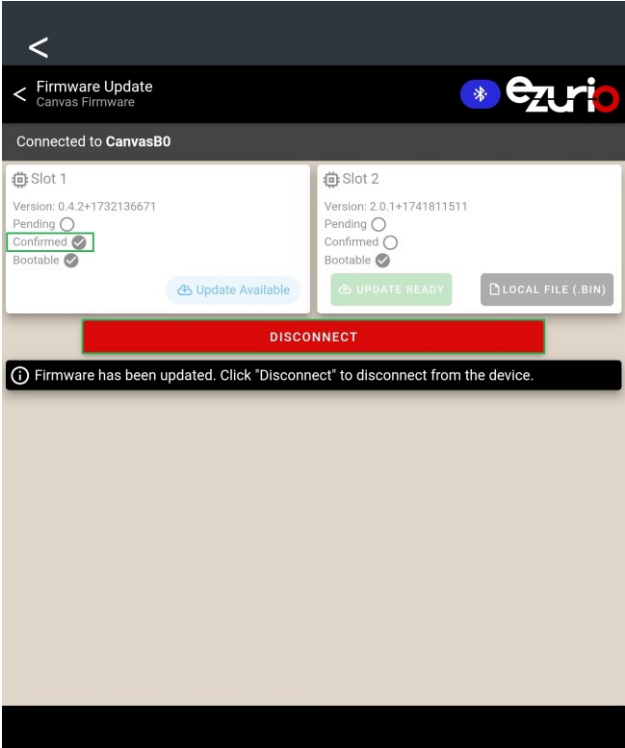


Figure 43: Canvas Firmware image reversion complete

Following Confirmation of the image, the 'Disconnect' button, as shown in **Figure 43**, is clicked to complete reversion to the previous Canvas Firmware image.

8.2 Application Script

The following describes Application Script management.

8.2.1 Updating

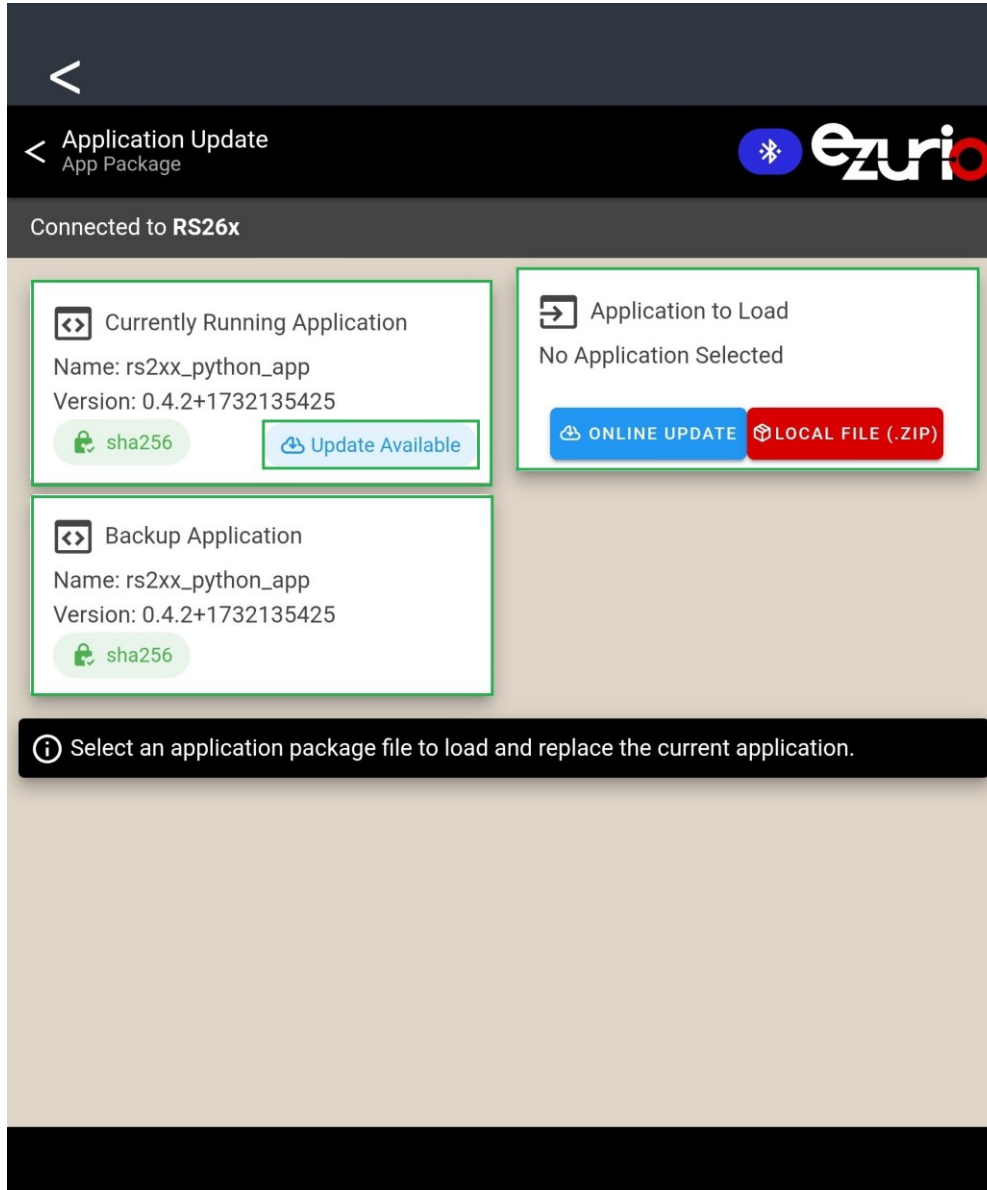


Figure 44: Application Update page

The Application Update page is shown in **Figure 44**. Page elements are described as follows.

- **Currently Running Application** – This contains the details of the Application Script currently in use.

New revisions of the Application Script are maintained and published remotely by Ezurio. If a newer version of the Application Script is available, this is indicated by the 'Update Graphic' text in the Currently Running Application group box.

It is recommended to ensure the latest Application Script image is always in use to benefit from the latest features, bug fixes and performance improvements.

- **Backup Application** – This contains details of the last used Application Script. For a new device, this contains the same version information as displayed in the Currently Running Application group box.
- **Application to Load** – This contains two options as follows.
 - **Online Update** – This button is used to start an update to the latest Application Script version published by Ezurio.
 - **Local File (.zip)** – For customization, debug and field trial purposes, bespoke Application Script images available on the local mobile device file system can be set as Application Script update images.

Pressing either of these buttons will start an Application Script update.

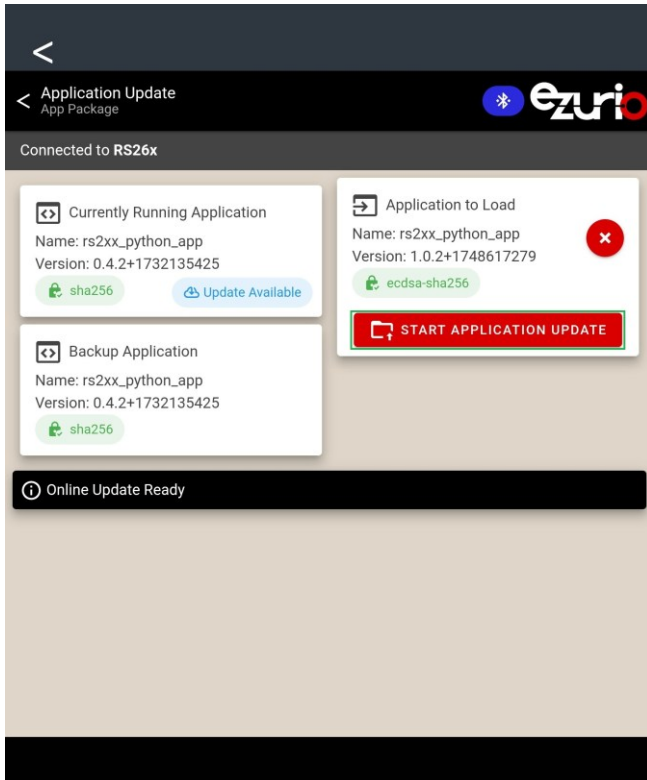


Figure 45: Online Update selected

Figure 45 shows the updated page appearance following the 'Online Update' button having been clicked. The newly displayed 'Start Application Update' button is clicked to proceed with the Application Script update.

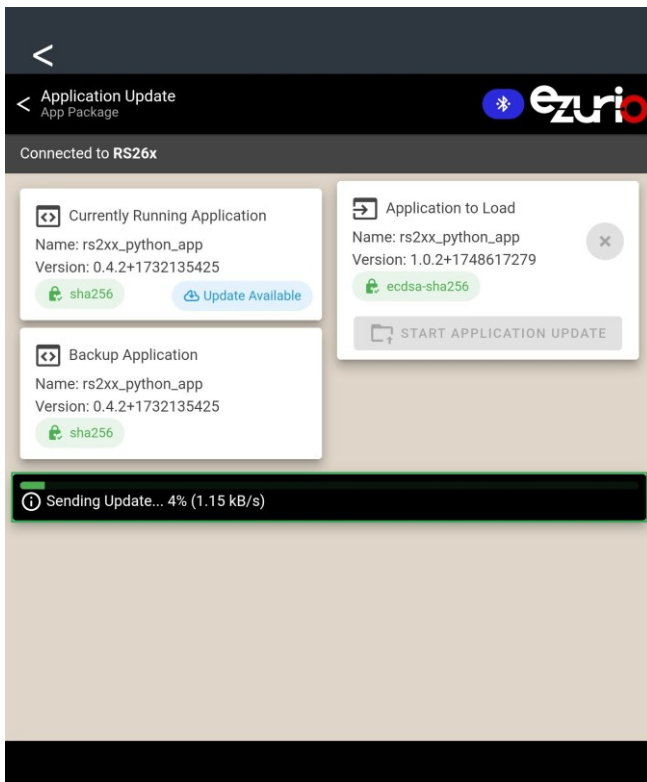


Figure 46: Application Script update in progress

Update progress is indicated as shown in Figure 46.

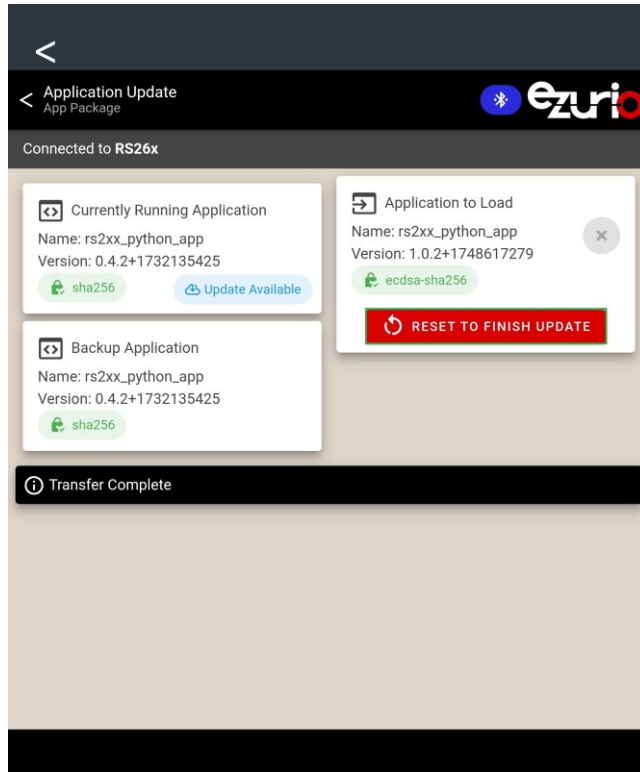


Figure 47: Finalizing an Application Script update

Upon completion of the transfer, the newly displayed 'Reset to Finish Update' button, as shown in **Figure 47**, is clicked to finalize the update.

At least 30s should be allowed before attempting to reconnect to the RS26x.

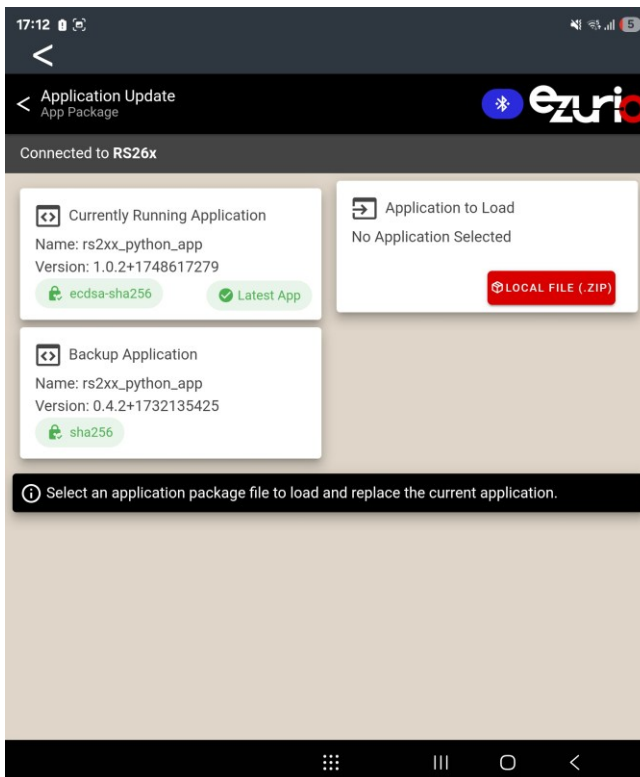


Figure 48: Updated Application Update page

Following reconnection to the RS26x, the Application Update page appears as shown in **Figure 48**.

The Currently Running Application group has been updated to the details of the updated Application Script and the Backup Application with the details of the last Application Script in use.

No 'Online Update' button is visible in the Application to Load group box due to no later update being available.

9 LoRa Considerations

The following should be revised to optimize device LoRaWAN performance and device battery life.

9.1 Definitions

Knowledge of the following terms is important for this section:

- **Uplink/Upstream** – Transmissions originating from the sensor and received by the LoRa Network Server via the LoRa Gateway.
- **Downlink/Downstream** – Transmissions originating from the LoRa Network Server and received by the sensor via the LoRa Gateway.

9.2 Data Rate, Sensor Performance, and Tradeoffs

9.2.1 Range

As the data rate decreases, the RF range increases.

9.2.2 Battery Life

As the data rate decreases, each packet takes longer to transmit which decreases battery life. A comprehensive Battery Life calculator for the RS26x is available [M] to determine the impact of the Data Rate in use, in addition to other LoRa and configuration parameters.

9.2.3 Bandwidth

As the data rate decreases, it takes longer to transmit a packet, decreasing available bandwidth on the network and increasing the probability of RF collisions or interference.

9.2.4 EU Considerations

In the EU, many bands are highly restricted regarding how much airtime a device can use. For example, some bands allow only a 0.1% duty cycle, although in most use cases the channels set in the sensor are in a 1% band. The duty cycle is the transmit time of the device relative to the non-transmit time. If a device transmits a packet that was one second long, it could not transmit for another 1000 seconds ($1/1000 = 0.1\%$) (1000 seconds is over 15 minutes) in a 0.1% band.

Remember to take LoRa gateway duty cycle restrictions into consideration, regarding the number of sensors at certain data rates that a gateway can support, if confirmed packets are configured.

Plan carefully to ensure that a device does not exceed this duty cycle limitation, including possible retries. The LoRa stack running inside the sensor monitors the duty cycle of the device and does not allow a device to transmit if it exceeds the allowable duty cycle.

9.3 MAC Commands and the LoRa Standard

Configuration of the LoRa parameters is handled by the LoRa stack contained within the RS26x firmware. Any changes to this configuration are handled automatically by the stack or via a downlink MAC command from the network server.

9.3.1 902-928 MHz US and Canada

On power up, the **Sentrius™** sensor starts transmitting Join Requests alternately on a random 125-kHz channel at data rate 0 in the selected sub-band and then a random 500-kHz channel at data rate 6. It continues this sequence until the sensor joins the network.

9.3.2 863-870 MHz EU

On power up, the **Sentrius™** sensor starts transmitting Join Requests at data rate 5, reducing the data rate by one each attempt until it reaches data rate 0. If data rate 0 fails, the sequence repeats until the sensor joins the network.

9.3.3 915-928 MHz AS

On power up, the **Sentrius™** sensor starts transmitting Join Requests at data rate 5, reducing the data rate by one each attempt until it reaches data rate 2. If data rate 2 fails, the sequence repeats until the sensor joins the network.

9.3.4 915-928 MHz AU

On power up, the **Sentrius™** sensor starts transmitting Join Requests alternately on a random 125-kHz channel at data rate 2 in the selected sub-band and then a random 500-kHz channel at data rate 6. It continues this sequence until the sensor joins the network.

9.3.5 Data Rate Control

The LoRa specification defines the commands necessary to manage the sensor data rate in response to changing RF conditions.

Information transferred between the LoRa stack contained within the RS26x and the LoRa Network automatically adjusts the system data rate to optimize communication reliability and power consumption.

10 Connecting to a LoRa Network Server

The exact steps needed to connect to a LoRa network server vary by network provider, however in all cases, the following three described LoRa keys below must be known by the external LoRa network server.

10.1 AppEUI (Join EUI)

The AppEUI is an 8-byte ID used to uniquely identify your application and/or installation. For example, imagine you are installing the **Sentrius™** sensor in a store chain. You could use a specific AppEUI to identify a specific store or perhaps the entire chain of stores.

Note: Previously called the AppEUI, LoRaWAN providers also call the AppEUI, the **JoinEUI**. The terms are interchangeable.

10.1.1 Default AppEUI

The default AppEUI is 0xec,0xc0,0x7a,0x00,0x00,0x00,0x00,0x09, **ecc07a0000000009**, and it is set in the device by Ezurio at the time of manufacturing.

10.1.2 Reading or Changing the AppEUI

The AppEUI can be read or changed via the **Sentrius™** XBit mobile application. The number is generated by the end-user, so any number can be used. **Please note that the AppEUI selected should follow the IEEE numbering structure as suggested by LoRa Alliance.**

10.2 DevEUI

The DevEUI is an 8-byte ID used to uniquely identify your device. It is assigned and set in the device by Ezurio at the time of manufacturing.

10.2.1 Reading the DevEUI Back Label

The DevEUI is printed on the back label of the sensor as highlighted in red in **Figure 49**.

10.2.1.1 Barcode

The DevEUI is also accessible via the barcode on the back label where the last comma separated value is the DevEUI.

Example Readout:

450-00133,1,0213117,0025ca0a00000001

Note: The sensor labels may change at any time.

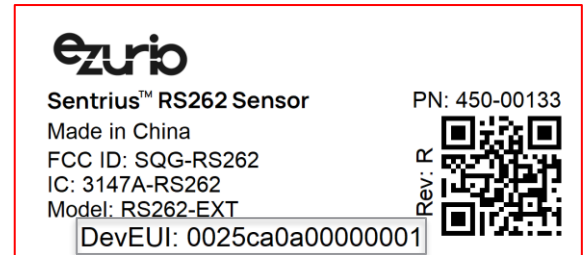


Figure 49: Back Sensor label

10.2.1.2 Reading or Changing the DevEUI via Mobile App

Normally, there is no need to change the DevEUI. However, if necessary, it can be read or changed via the **Sentrius™** XBit mobile application. Because the IEEE governs the generation of the number, you must be familiar with these standards in order to change the DevEUI.

10.3 AppKey

The AppKey is a 16-byte security key assigned to the device. Ezurio assigns and sets it in the device at the time of manufacturing.

10.3.1 Reading the AppKey

10.3.1.1 Removeable Label

The AppKey is coded on a **removeable** label that is attached to the device when it is shipped (Figure 50).

IMPORTANT! It is the user's responsibility to keep track of the assigned AppKey and to keep it secure.

IMPORTANT! The removeable label must be removed prior to device installation.

10.3.1.2 Barcode

The AppKey is accessible via the barcode printed on this removeable label.



Figure 50: JoinEUI / AppKey removeable label

10.3.1.3 Reading or Changing the AppKey

Normally, there is no need to change the AppKey. However, it can be changed via the **Sentrius™** XBit mobile application if necessary.

Note: This key is write-only as there is a security risk in making it readable via the mobile application.

11 Regulatory

Note: For complete regulatory information, refer to [o] for the RS261 and [P] for the RS262. Both are available under the Certification section at [A].

The RS26x holds current certifications shown in Table 4.

Country/Region	Regulatory Id
Canada (ISED) – RS262 only	3147A-RS262
EU – RS261 only	N/A
USA (FCC) – RS262 only	SQG-RS262

Table 4: RS26x certification ids

11.1 FCC Regulatory

Model	US/FCC (15.247)
RS262-INT	SQG-RS262
RS262-EXT	

Table 5: RS262 FCC Id

11.1.1 FCC Documentation Requirements

Federal Communication Commission Interference Statement

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 an 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 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.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

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.

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment can be installed and operated at a distance of 8 cm between the radiator and your body.

11.2 ISED (Canada) Regulatory

Model	Canada/ISED (RSS-247)
RS262-INT	3147A-RS262
RS262-EXT	

Table 6: RS262 ISED ID

11.2.1 ISED (Canada) Statement

The end user manual shall include all required regulatory information/warning as shown in this manual.

This device complies with Industry Canada's license-exempt RSSs. Operation is subject to the following two conditions:

1. This device may not cause interference; and
2. This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

- 1. l'appareil ne doit pas produire de brouillage;*
- 2. l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.*

Radiation Exposure Statement

This equipment complies with Canada radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 8 cm between the radiator & your body.

Déclaration d'exposition aux radiations:

Cet équipement est conforme Canada limites d'exposition aux radiations dans un environnement non contrôlé. Cet équipement doit être installé et utilisé à distance minimum de 8 cm entre le radiateur et votre corps.

12 Variants & Ordering Information

This section provides a breakdown of the product structure of the RS26x family of sensors.

12.1 Product hierarchy

The RS26x product hierarchy is shown in Figure 51.

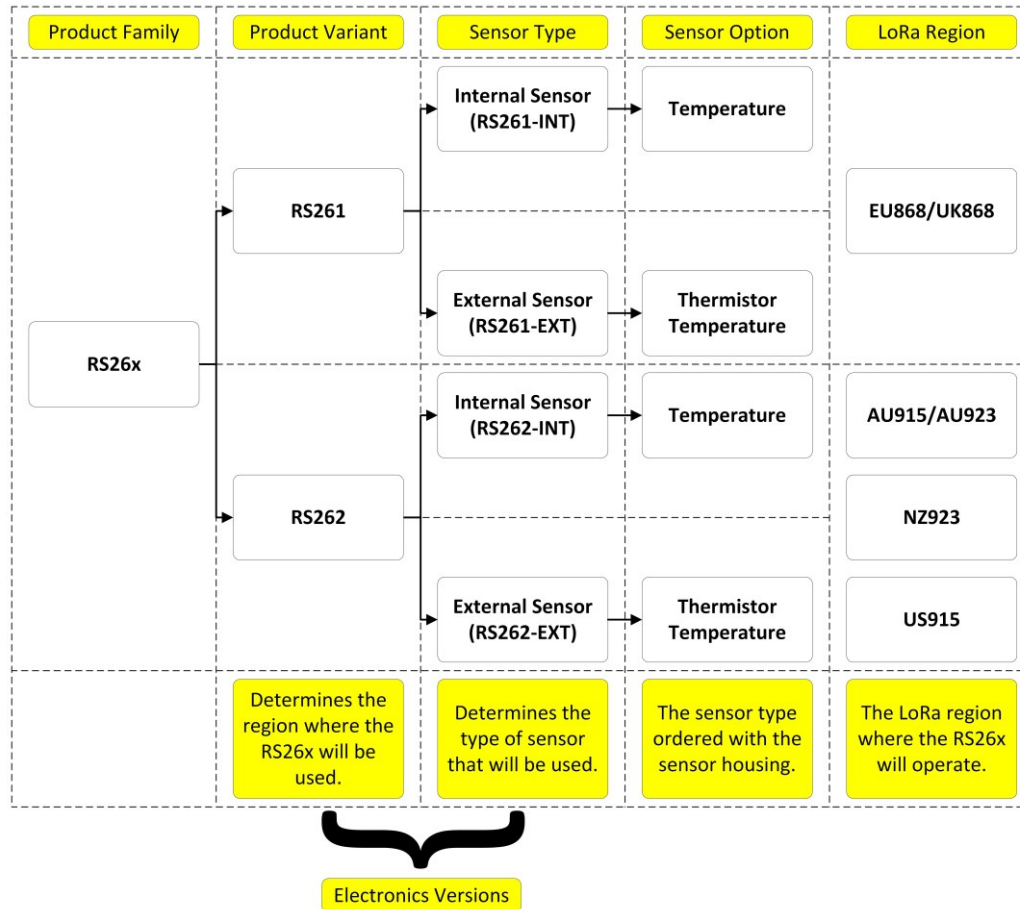


Figure 51: RS26x product family hierarchy

Hierarchy elements are described as follows.

- **Product Family:** RS26x is used to refer to the product family holistically. When used throughout this guide, associated details apply to all underlying variants.
- **Product Variant:** The RS26x is available in two variants as follows.
 - The RS261 incorporates an Ezurio RM1261 LoRa module [N] and is intended for use within LoRa regions with a maximum transmit power of 13dBm (EU/UK).
 - The RS262 incorporates an Ezurio RM1262 LoRa module [N] and is intended for use within LoRa regions with a maximum transmit power of 22dBm (AU, NZ, US).
- **Sensor Type:** The RS261 and RS262 support the following sensor placements.
 - **Internal Sensor:** Internal Sensor types incorporate the product sensing element within the sensor housing. Temperature is currently the only supported option.
 - **External Sensor:** External Sensor types include a USB-C connector for connection of the sensing element. External Sensor type housings are typically used where the measurand exceeds the operating conditions of the RS26x electronics (e.g. freezers, ovens). A measurement point may also be too confined for local situation of the Internal Sensor housing. The electronics within the External Sensor variant can be used with any external sensor probe orderable from Ezurio.
- **Sensor Option:** This is specified during ordering time, available options are currently as follows.
 - **Internal Sensor:** The Internal Sensor Product Variant incorporates a Sensiron STS40 temperature sensor [L].

- **External Sensor:** The External Sensor Product Variant is currently orderable with a Thermistor Temperature probe. This offers a temperature range of -40 to 125C.
- **LoRa Region:** To maintain compliance with local regulatory restrictions, the intended operating region of the RS26x must be specified at ordering time.

12.2 Internal Sensor

As shown in **Figure 52**, Internal Sensor type RS26x models are orderable in RS261 and RS262 variants, dependent upon the LoRa region where the product is intended to operate. Electronics differ only by virtue of the incorporated RM126x LoRa module **[N]**.



Figure 52: RS26x Internal Sensor Housing

RS261 Internal Sensors are identified as RS261-INT in the Model field on the product label.

The label for the EU/UK version is shown in **Figure 53**.

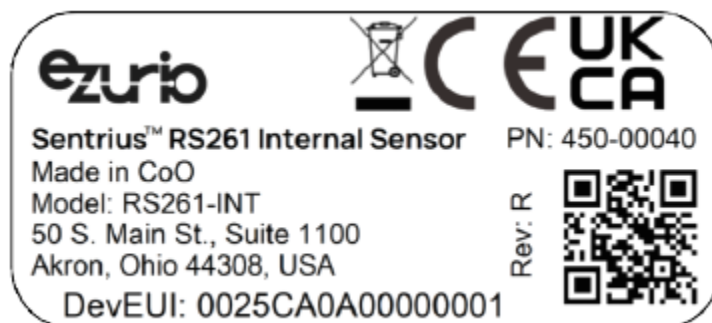


Figure 53: RS261 Internal Sensor EU/UK label

RS262 Internal Sensors are identified as RS262-INT in the Model field on the product label.

The label for the North America version is shown in **Figure 54**.

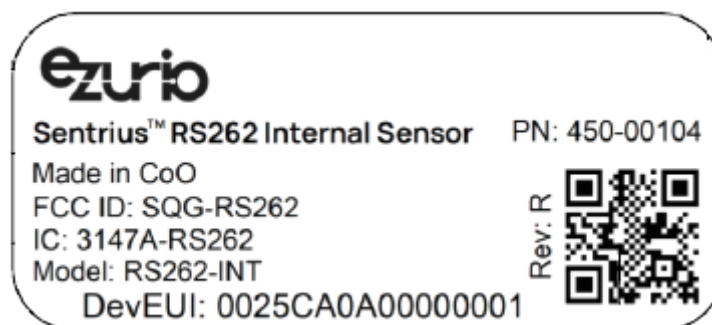


Figure 54: RS262 Internal Sensor North America label

The label for the Australia version is shown in **Figure 55**.

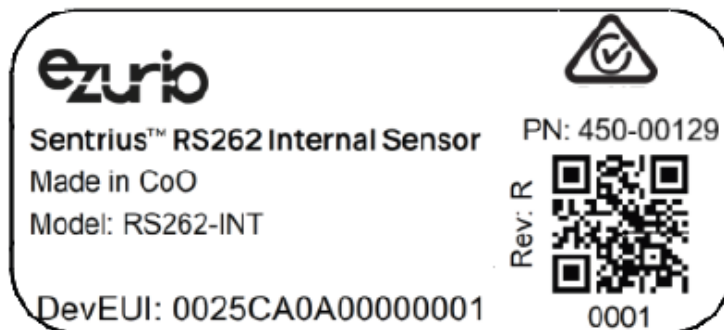


Figure 55: RS262 Internal Sensor Australia label

The label for the New Zealand version is shown in **Figure 56**.

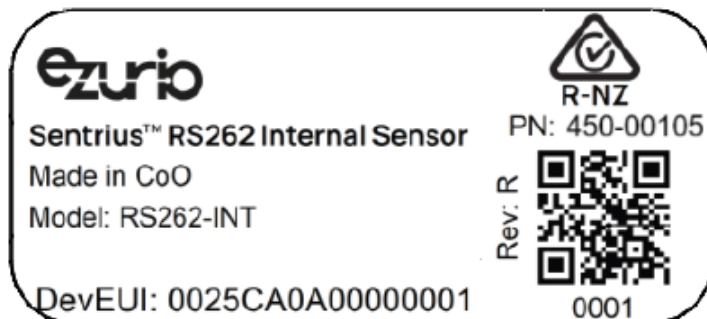


Figure 56: RS262 Internal Sensor New Zealand label

12.3 External Sensor

As shown in Figure 57, External Sensor type RS26x models are orderable in RS261 and RS262 variants, dependent upon the LoRa region where the product is intended to operate. Electronics differ only by virtue of the incorporated RM126x module [N].

External Sensor type RS26x devices can be distinguished from Internal Sensor type devices by the inclusion of the USB-C port and associated aperture in the External Sensor type housing. Electronically, the Internal and External Sensor types differ by inclusion of the USB-C port and supporting electronics in the External Sensor type version.



Figure 57: RS26x External Sensor housing

RS261 External Sensors are identified as RS261-EXT in the Model field on the product label.

The label for the EU/UK version is shown in Figure 58.

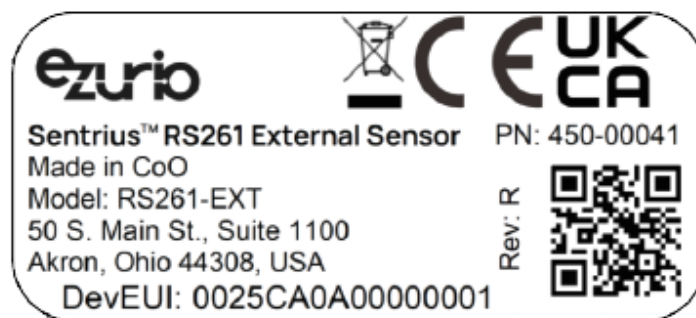


Figure 58: RS261 External Sensor EU/UK label

RS262 External Sensors are identified as RS262-EXT in the Model field on the product label.

The label for the North America version is shown in Figure 59.

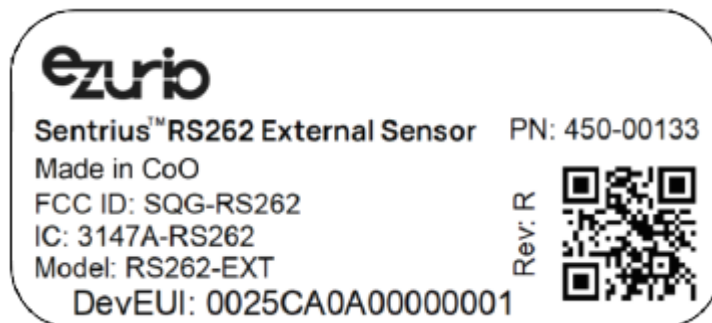


Figure 59: RS262 External Sensor North America label

The label for the Australia version is shown in Figure 60.

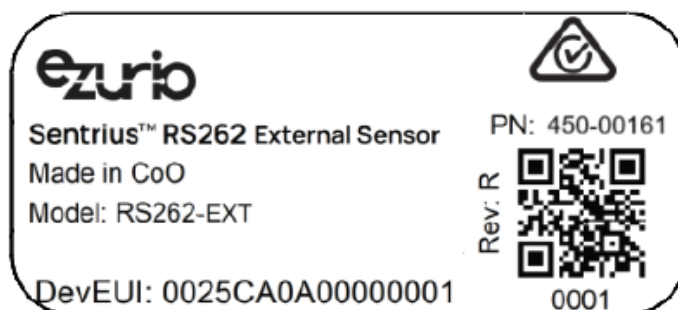


Figure 60: RS262 External Sensor Australia label

The label for the New Zealand version is shown in Figure 61.

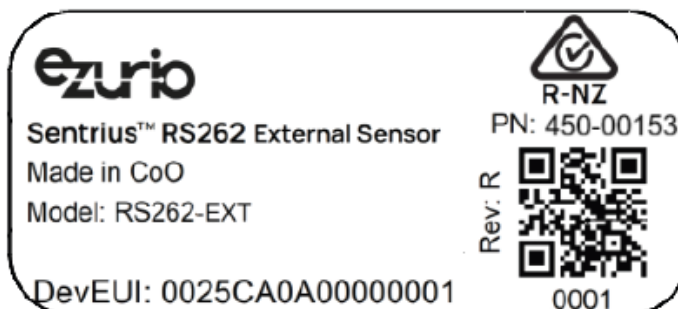


Figure 61: RS262 External Sensor New Zealand label

12.4 Orderable Part Numbers

Orderable RS26x part numbers are shown in Table 7.

Part	Description
450-00040-K1	Sentrius™ RS261 – LoRaWAN / BLE Internal Sensor (RS261-INT), Temperature, Europe / UK (Single)
450-00041-K1	Sentrius™ RS261 – LoRaWAN / BLE External Sensor (RS261-EXT), Thermistor Temperature, Europe / UK (Single)
450-00129-K1	Sentrius™ RS262 – LoRaWAN / BLE Internal Sensor (RS262-INT), Temperature, Australia (Single)
450-00161-K1	Sentrius™ RS262 – LoRaWAN / BLE External Sensor (RS262-EXT), Thermistor Temperature, Australia (Single)
450-00105-K1	Sentrius™ RS262 – LoRaWAN / BLE Internal Sensor (RS262-INT), Temperature, New Zealand (Single)
450-00153-K1	Sentrius™ RS262 – LoRaWAN / BLE External Sensor (RS262-EXT), Thermistor Temperature, New Zealand (Single)

Part	Description
450-00104-K1	Sentrius™ RS262 – LoRaWAN / BLE Internal Sensor (RS262-INT), Temperature, North America (Single)
450-00133-K1	Sentrius™ RS262 – LoRaWAN / BLE External Sensor (RS262-EXT), Thermistor Temperature, North America (Single)

Table 7: Top level kit and associated sensor part numbers

13 Definitions, Abbreviations and Acronyms

Term	Definition
BLE	Bluetooth Low Energy.
LNS	LoRa Network Server.

14 References

Ref	Details
[A]	Ezurio RS26x Home Page https://www.ezurio.com/iot-devices/lorawan-iot-devices/rs26x-sensor
[B]	LoRa Regional Parameters RP2-1.0.3 https://lora-alliance.org/wp-content/uploads/2021/05/RP002-1.0.3-FINAL-1.pdf
[C]	LoRaWAN L2 1.0.4 Specification https://lora-alliance.org/wp-content/uploads/2021/11/LoRaWAN-Link-Layer-Specification-v1.0.4.pdf
[D]	Ezurio RG1xx Home Page https://www.ezurio.com/iot-devices/lorawan-iot-devices/sentrius-rg1xx-lorawan-gateway-wi-fi-ethernet-optional-lte-us-only
[E]	RS26x Product Brief https://www.ezurio.com/documentation/product-brief-rs26x-sensor
[F]	Canvas Software Suite https://www.ezurio.com/canvas/software-suite
[G]	Canvas XBit Software Resources https://github.com/Ezurio/Canvas_Xbit_Desktop
[H]	RS26x LoRa Protocol https://www.ezurio.com/documentation/application-note-lora-protocol-rs26x-series
[I]	Canvas XBit Desktop Setup Guide https://github.com/Ezurio/Canvas_Xbit_Desktop/doc/XBit_for_Desktop_Setup_Guide.docx
[J]	RS26x Magnetic Mount Clip https://www.ezurio.com/part/450-00232b
[K]	Energizer CR123A battery datasheet https://data.energizer.com/pdfs/123.pdf
[L]	Sensirion STS40-CD1B-R3 datasheet https://sensirion.com/resource/datasheet/sts4x
[M]	RS26x Battery Life Calculator https://www.ezurio.com/resources/calculators/rs261-and-rs262-battery-life
[N]	Ezurio RM126x Home Page https://www.ezurio.com/wireless-modules/lorawan-modules-solutions/rm126x-ultra-low-power-lorawan-a-b-c-module
[O]	Regulatory Information Guide – RS261 Sensor https://www.ezurio.com/documentation/regulatory-information-guide-rs261-sensor
[P]	Regulatory Information Guide – RS262 Sensor https://www.ezurio.com/documentation/regulatory-information-guide-rs262-sensor

15 Additional Information

Please contact your local sales representative or our support team for further assistance:

Headquarters	Ezurio 50 S. Main St. Suite 1100 Akron, OH 44308 USA
Website	http://www.ezurio.com
Technical Support	http://www.ezurio.com/resources/support
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