TEKTELIC Communications Inc.
7657 10th Street NE Calgary, Alberta
Canada, T2E 8X2

ROBIN

OUTDOOR PANIC BUTTON

User Guide

Document Number:	T0006940	
Document Version:	1.0	
Product Names and T-Codes:	ROBIN Panic Button (Outdoor)	T0007125 – Belt-Clip
Release Date:	August 18, 2025	

TEKTELIC Communications Inc.
7657 10th Street NE
Calgary, AB, Canada T2E 8X2
Phone: (403) 338-6900

Contents

1 Product Description

1.1 Overview

The ROBIN is an outdoor panic button that uses Bluetooth Low-Energy (BLE) technology. It uses periodic BLE scanning to gather data from nearby BLE devices, figuring out its location or acting as a broadcasting BLE device itself. ROBIN is also equipped with a panic button which can be used to place the device in emergency mode for more frequent location updates.

ROBIN is connected via LoRaWAN, enabling seamless transmission and reception across various global frequency bands AS923, AU915, EU868, IN865, KR920, RU864, and US915.

For more detail about the functional operation, configuration options, and software behavior, please consult the Technical Reference Manual (TRM) document.

Table 1-1 presents all ROBIN supported functionality.

Table 1-1: ROBIN Functionality

Functionality	ROBIN (Belt-Clip)
Module Product T-Code	T0007125
Supported Operating Environment	Outdoor (IP67)
Battery Size	C-cell LTC
Battery Gauge	✓
BLE Rx	✓
BLE Tx	✓
Magnetic Sensor	✓
Accelerometer	✓
LEDs	✓
Reset Button	✓
Function Button	✓
Vibration	✓
Buzzer	✓

The enclosure and external interfacing layouts are shown in Figure 1-1.

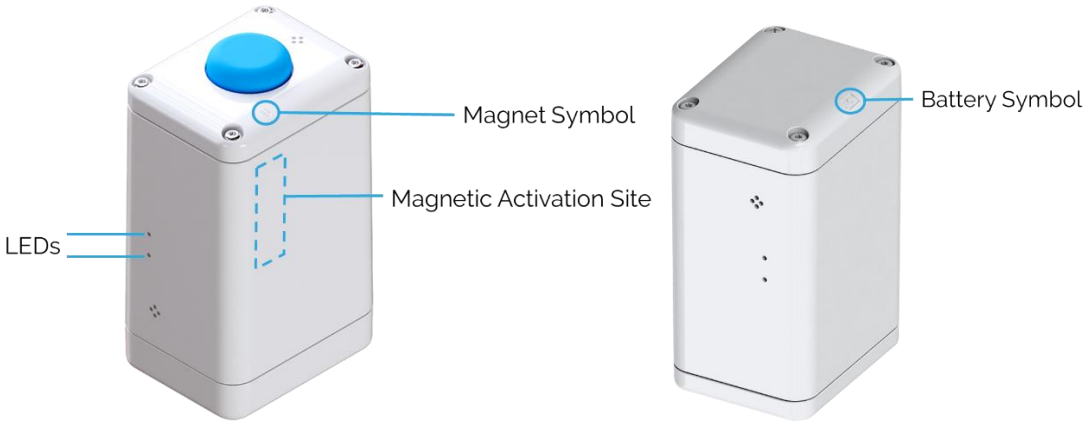

Figure 1-1: ROBIN Enclosure and External Interfacing

1.2 Specifications

ROBIN specifications are listed in Table 1-2.

Table 1-2: ROBIN Specifications.

Parameter	Specification
Environmental Rating	IP67
Enclosures and Mounting	Custom design by TEKTELIC
Operating Temperature	-20°C to 85°C
Storage Temperature for Optimal Battery Life	-40°C to 50°C
Operating Relative Humidity	5% - 95% Non-condensing
Storage Relative Humidity	5% - 95% Non-condensing
Dimensions	65 mm x 43 mm x 36 mm
Weight	63.5 g enclosure + 56.5 g battery = 120 g total (without bracket)
Power Source	Battery-powered: 1x C-cell LTC (3.6 V)
Network technology/Frequency band	LoRaWAN in the following Global ISM bands: AS923, AU915, EU868, IN865, KR920, RU864, US915
Air Interface	LoRa, BLE
Maximum Tx Power	15 dBm (AS923, KR920, EU868) 22 dBm (AU915, IN865, US915)
Sensing Elements	BLE transceiver, accelerometer, MCU temperature, magnetic hall-effect sensor, battery gauge
Bluetooth Compatibility	BLE based on Bluetooth 5.3
LoRa RF Sensitivity	Up to -137 dBm (SF12, 125 kHz BW)
BLE Sensitivity (0.1% BER)	125 kbps: -103 dBm 500 kbps: -98 dBm 2 Mbps: -91 dBm

Parameter	Specification
Accelerometer Sensitivity	Sample rate: 1, 10, 25, 50, 100, 200, 400 Hz Measurement range: ±2, ±4, ±8, ±16 *g* Precision: 16, 32, 64, 192 m*g*
Function Button	Panic status, BLE scan, user-configurable function
User Feedback	Buzzer and vibration motor
LEDs	Green: Joining the network activity and LoRa Rx activity Red: LoRa Tx activity
Battery Gauge Features	Measures remaining capacity [%] and remaining lifetime [days]
Battery Lifetime	15+ years[1] 4.5 years[2] in Beacon mode

[1] With default settings operating at DR2. Applicable to NA region only.
[2] With default settings and no event-based reports, operating at DR2. Applicable to NA region only.

2 Installation

2.1 Included Product and Installation Material

The following items are shipped with each sensor:

- 1x sensor inside an enclosure with a 3.6 V C-cell LTC battery installed.
- 1x corresponding sensor Quick Start Guide.

NOTE: To ensure safe installation and maintenance, please read Section 7.2.

2.2 Unpacking and Inspection

The following should be considered during the unpacking of a new sensor.

1. Inspect the shipping carton and report any significant damage to TEKTELIC.
2. Unpacking should be conducted in a clean and dry location.
3. Do not discard the shipping box or inserts as they will be required if a unit is returned for repair or re-configuration.

2.3 Commissioning

Each sensor has a set of commissioning information that must be entered into the network server for the sensor to be able to join the network and begin normal operation once activated. For instructions on how to do this please refer to the Quick Start Guide (available online on the Knowledge Hub).

You can find the commissioning keys inside the box. If you don't have the box, please raise a ticket in our support portal and provide the T-Code and serial number on the tag on the device.

Figure 2-1: Commissioning Keys

2.4 Activation

ROBIN is shipped with the battery preinstalled in a state of DEEP SLEEP.

NOTE: To activate the device, you will need a magnet which is not provided with the device. Suggested magnet: Sintered Ferrite Magnet, Br = 3800-3900 Gauss, Grade 5 = Grade Y30, or Grade 8 = GradeY30h-1.

To activate/reset the device:

1. Place the magnet for **3 to 10 seconds** at the magnetic activation site as shown in Figure 2-2 below.
2. Sensor activation will be displayed by **GREEN** and **RED** LEDs turning on.
3. Once activated, the sensor will automatically begin the join process.

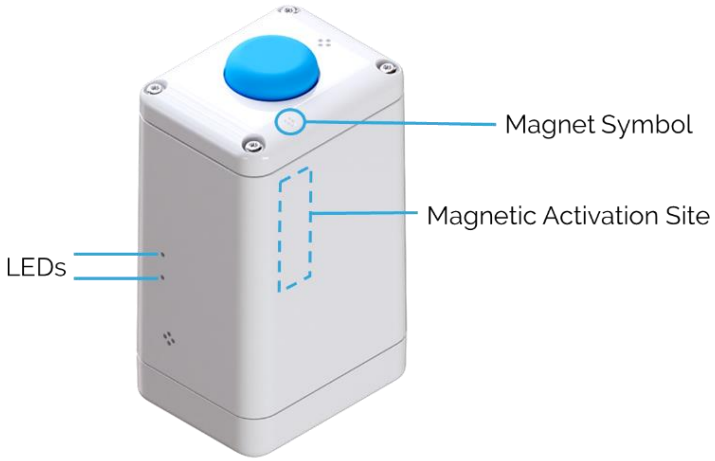

Figure 2-2: Robin Enclosures and External Interfacing

To return to DEEP SLEEP there are two options:

1. Send the DEEP SLEEP command in a downlink on port 99 (see the TRM for more details).
2. Apply the magnet for **3-10 seconds** while the device is in state of network join (process is indicated by **GREEN** LED active blinking).

2.5 Default Configuration

Table 2-1 lists the default reporting behaviour of the ROBIN, that can be changed from default through OTA DL commands (for more information please see Section **Error! Reference source not found.**).

Table 2-1: Default Reporting Periods

Reported Data	Default Reporting Period, Tracker Mode	Default Reporting Period, Beacon Mode

Battery Capacity	24 hours	24 hours
BLE Location Update in PANIC State	1 minute	Disabled
BLE Location Update in NORMAL State	1 hour	Disabled
Acceleration Vector	Disabled	Disabled
MCU Temperature	Disabled	Disabled

2.6 Reconfiguration

ROBIN supports a full range of OTA configuration options. Specific technical details are available in the corresponding TRM documents. All configuration commands need to be sent OTA during the sensor's DL Rx windows.

2.7 Mounting

ROBIN is available with a belt-clip for mounting, to use, simply slide the clip over a belt.

2.8 Battery Replacement

The battery cover is marked with a battery symbol and uses Phillips Head H1 screws. This cover needs to be removed to replace the battery.

1. Remove the battery cover by unscrewing the 4x Phillips head screws using a size #1 Phillips head screwdriver (see Figure 2-3).

Figure 2-3: Removing the Battery Cover Screws

2. Remove the used battery and replace it with a new 3.6V XENO XL-145F battery **ONLY**. When inserting the new battery, insert the negative terminal side first. The battery contact on the battery cover is the positive contact and is marked with a plus-sign (**+**) as shown in Figure 2-4.

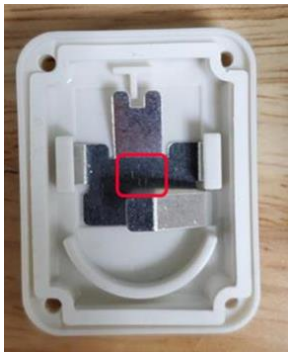

Figure 2-4: Polarity Marker and Battery Insertion

3. Before reattaching the battery cover, ensure the proper orientation of the cover by placing the battery symbol next to the mounting feature.as seen in Figure 2-5.

Figure 2-5: Proper Replacement Orientation of the Battery Cover

4. Reassemble the cover to the chassis by using the 4x Phillips head screws, using a #1 size screwdriver and up to 0.3 Nm of torque.

2.9 Reset Function

To physically reset ROBIN, perform same steps as to get in out of DEEP SLEEP state:

1. Place magnet against the enclosure at the magnetic activation site as in Figure 2-6.

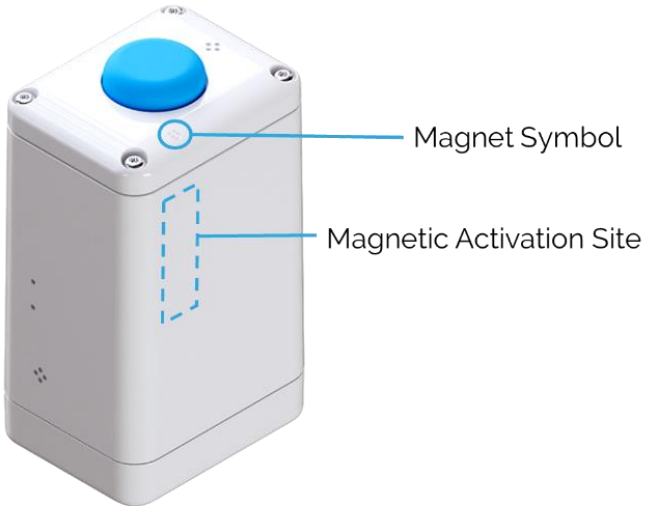

Figure 2-6: Magnetic Activation Site

2. Sustain magnet for **3 to 10 seconds**. Sensor activation will be displayed by **GREEN** and **RED** LEDs turning on (described in Section 2.10).
3. Once activated, the sensor will automatically begin the join process.

NOTE: Shutting down or resetting the sensor will cause all unsaved user configurations to be lost. Save the desired configuration to the sensor flash before powering off or resetting.

Alternatively, refer to Section 3.1 to learn how the function button can be used to perform a soft reset on the device.

2.10 LED Behaviour

The LEDs are normally off and the main patterns are summarized in Table 2-2. The detailed sequence and timings for each are described in the following subsections.

Table 2-2: LED Behavior

LED Pattern	Meaning
GREEN blinking rapidly and single **RED** flash every 10 s	JOIN mode; attempting to join the network
Single **RED** flash	UL sent
Single **GREEN** flash	DL received
3 quick **RED** flashes	Entering DEEP SLEEP
3 **RED** flashes for 0.5 seconds	Entering PANIC Mode
3 **GREEN** flashes for 0.2 seconds	Exiting PANIC Mode

3 Operation, Alarms, and Management

3.1 Function Button

ROBIN has an externally-accessible function button located on the bottom of the enclosure. The button is actuated by pressing and/or holding it. Different push patterns can cause different behavior, depending on user configuration. Refer to Table 3-1 for a summary of the function button behavior or to the TRM for a more detailed description.

Table 3-1: Function Button Behavior

Press Type	Default Function Button Pattern	Result
Data Press	Button is pressed **once** and released within **1 second**	• While in tracker mode: Perform and report a BLE scan, report the current device status • While in beacon mode: Report the current device status
Panic Press	Button is pressed and held for **4 seconds**	Device transitions from NORMAL state to PANIC state
Normal Press	Button is pressed and held for **5 seconds**	Device transitions from PANIC state to NORMAL state
Device Rest Press	Button is pressed and held for **8 seconds**	Device will perform a soft reset

3.2 Buzzer and Vibration Feedback

ROBIN is equipped with a buzzer and vibration motor. It provides audible and haptic feedback for the user when the device transitions between the NORMAL state and PANIC state. Refer to Table 3-2 for a summary of the buzzer and vibration motor behavior or to the TRM for a more detailed description.

Table 3-2: Buzzer and Vibration Motor Behavior

Buzzer and Vibration Motor Pattern	Meaning
ON for 500 ms, **OFF** for 1000 ms, three times	Entering PANIC Mode
ON for 200 ms, **OFF** for 200 ms, three times	Exiting PANIC Mode

3.3 Magnetic Sensor

ROBIN is equipped with a magnetic sensor included to address the following purposes:

1. To wake the device from DEEP SLEEP as described in Section 2.4.
2. To put the device to sleep.

3. To reset the device.
4. To force a LoRaWAN UpLink.

The position on the exterior of the enclosure on which the magnet must be placed on a Magnetic Activation Site to activate the reed switch is shown in Figure 3-1 below.

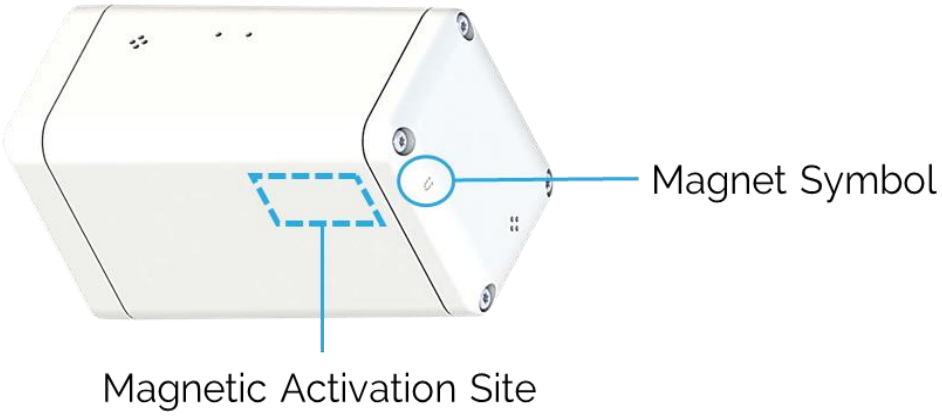

Figure 3-1: Magnetic Sensor

For more information on how to use the magnetic sensor, please refer to the TRM document.

3.4 Bluetooth Low-Energy (BLE) Transceiver

BLE operation is the main function of the ROBIN and forms the basis for asset tracking through TEKTELIC's LOCUS application. In LOCUS, asset localization works by analyzing the strength of Bluetooth signals between ROBIN and nearby beacons to estimate position with an accuracy of about 2–5 meters (see Section 5 for more details on LOCUS).

To support this, ROBIN can operate in two BLE modes:

- **Tracker Mode (default):** The device listens for nearby BLE devices, records their signal strength, and reports the data via LoRaWAN uplinks.
- **Beacon Mode:** The device broadcasts BLE advertisements so it can be detected by other scanners.

The device is LoRaWAN-backhauled, meaning all data is sent via LoRaWAN uplinks and device configuration can be updated via downlinks.

A summary of the two BLE modes is shown below.

Table 3-3: Summary of BLE Modes

Feature	Tracker Mode	Beacon Mode

BLE Direction	Receives only (Rx)	Transmits only (Tx)
Visibility to Other BLE Devices	Not visible to other devices	Visible to other devices
Purpose	Finds nearby BLE devices for location/asset tracking	Makes ROBIN discoverable to other devices
LoRaWAN Usage	BLE scan data, configuration, battery reports, MAC address	Configuration, battery reports, MAC address
Power Usage	Depends on scan duty cycle (higher duty cycle = more power)	Depends on advertising interval (shorter interval = more power)

3.4.1 Tracker Mode

In Tracker Mode, the BLE only receives (Rx) but doesn't broadcast, making it not visible to other BLE devices.

During each scan, the tracker finds nearby advertising BLE devices and saves their info (MAC address and signal strength) for later reporting in a LoRaWAN data report UL. This report usually happens right after the scan, but might wait due to LoRaWAN duty cycle limitations[3].

You can adjust how often reports happen and decide whether to scan for BLE when motion is detected or cleared via the Accelerometer Assist (which is on by default). Each BLE scan lasts for a set time, split into intervals for scanning on different BLE channels.

NOTE: By default, a BLE scan and report is conducted every 60 min in tracker mode.

In the scan interval, BLE scanning occurs only during the configurable scan window, which is a percentage of the total interval called duty cycle. A 100% duty cycle means continuous scanning throughout the interval, maximizing the chance of finding nearby BLE packets. Lowering the duty cycle reduces power usage but might miss some signals.

You can turn off BLE scanning completely in tracker mode, and it's passive, meaning the tracker only listens to beacons without sending requests for more info.

At the end of each scan duration, the tracker reports the amount of discovered BLE devices and their signal strengths over LoRaWAN.

You can set up to 4 ranges to filter discovered BLE devices by MAC address.

NOTE: The BLE and LoRa radio activity are mutually exclusive. If any LoRaWAN reporting is due at the same time as a BLE scan, the reporting will be done after the BLE scan is complete.

[3] If a new BLE scan occurs before the results of the previous scan have been sent, the old scan results will be discarded.

See the TRM for more details about tracker mode operation and configuration.

3.4.2 Beacon Mode

NOTE: tracker mode is default for sensor, so it must be switched into beacon mode.

In beacon mode, the BLE only transmits (Tx). It regularly sends out small packets of data called BLE advertisements, detectable by other ROBINs in tracker mode and any BLE-scanning device. You can adjust the transmission power level.

Once a device joins the LoRaWAN network, it starts broadcasting BLE advertisements continually in the background. The user can set the interval between these transmissions.

Each BLE advertisement consists of three separate packet transmissions, increasing the chance of detection by devices scanning on any of these channels.

The BLE advertising packet format supports three major BLE standards: iBeacon, Eddystone UID, and Eddystone TLM. By default, only iBeacon is enabled.

NOTE: BLE advertisement and LoRa radio transmission are mutually exclusive. If LoRaWAN reporting is due the BLE advertisements are paused while the LoRa activity is occurring.

See the TRM for more details about tracker mode operation and configuration.

3.5 MCU Temperature Transducer

ROBIN can measure and report the MCU temperature. This is a temperature measurement using a transducer located in the device microprocessor. When the temperature thresholds are enabled, the Tracker reports the temperature when it leaves the configured threshold window, and once again when the temperature re-enters the threshold window. The Threshold mode is compatible with periodic reporting of the temperature.

3.6 Accelerometer Transducer

ROBIN supports motion sensing through an integrated 3-axis accelerometer which can optionally be disabled. The main role of the accelerometer is to detect motion that can indicate a change in the sensor's status from stillness to mobility and back.

The accelerometer generates an acceleration alarm when a motion event is detected that may be reported OTA (user-configurable). An acceleration event report is based on exceeding a defined acceleration alarm threshold count in a defined alarm threshold period. These thresholds can be customized such that there will not be multiple reports for a single event. An alarm event can only be registered after a configurable grace period elapses since the last registered alarm event.

The accelerometer can also be polled periodically for its output acceleration vector for applications in which the sensor's orientation is of interest.

4 Configuring, Monitoring, and Integrating ROBIN

TEKTELIC offers several tools and resources to configure your ROBIN device, view its data, and integrate it with other platforms. The three main components are ATLAS, LeapX, and Data Converters.

4.1 ATLAS – Device Configuration and Data Viewing

ATLAS (www.atlas.tektelic.com) is TEKTELIC's web-based platform for configuring ROBIN devices and viewing device data. You can log in using:

- Offline Mode – Configure without a network connection.
- Network Server Credentials – Full access with your TEKTELIC Network Server account.

1) To use Offline Mode:

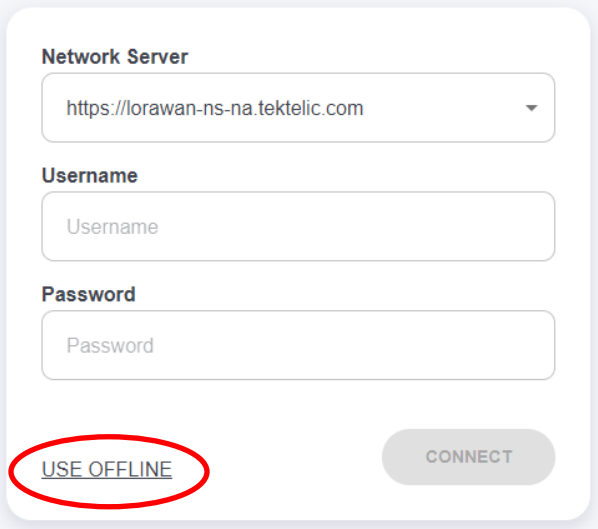

Figure 4-1: Login with Offline Mode

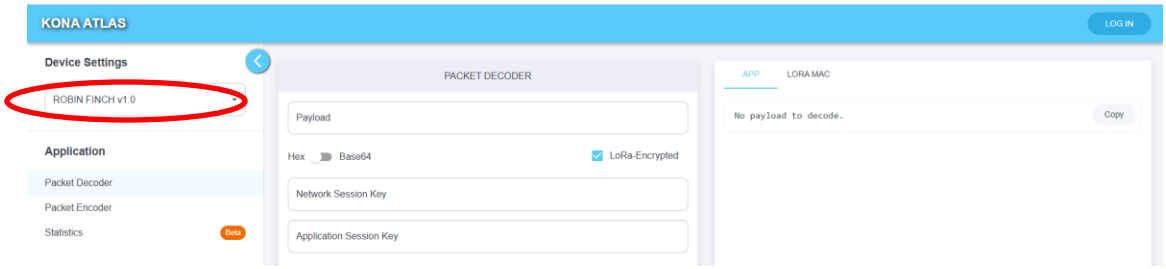

Figure 4-2: Select ROBIN Decoder

2) To use your TEKTELIC Network Server Credentials:

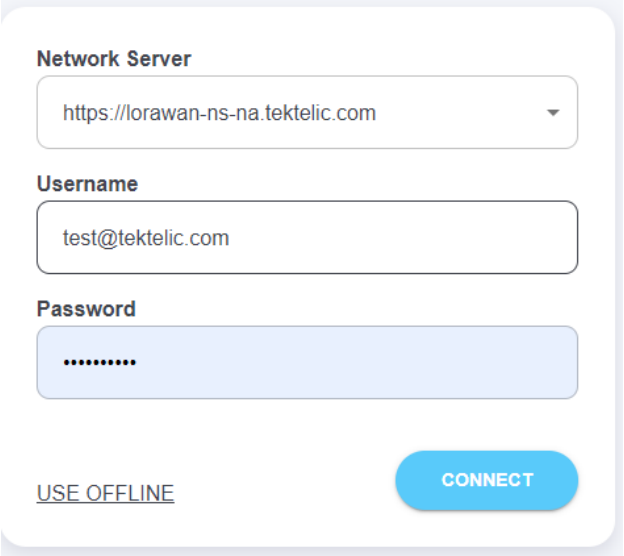

Figure 4-3: Login with Network Server Credentials

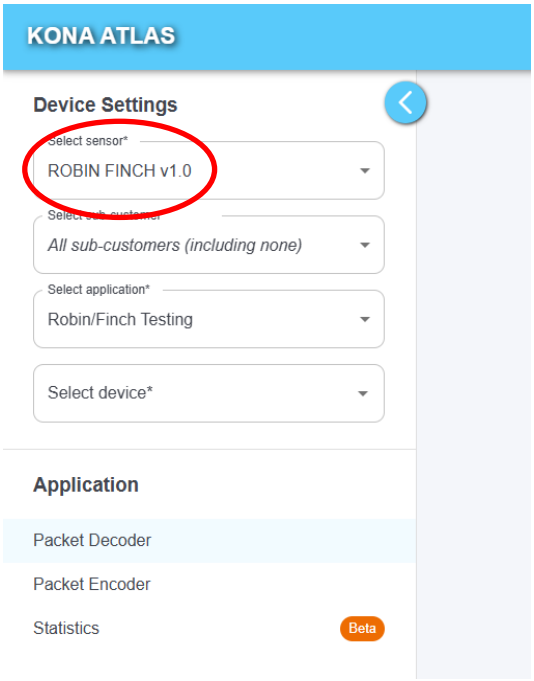

Figure 4-4: Select ROBIN Decoder, application and the device

ROBIN uses a “tick” system to control how often data is reported:

- Core Reporting Tick (seconds): The base interval for reporting. Example: 180 seconds = 1 tick every 3 minutes.

- Ticks per [Data Type] Report: The number of ticks before sending specific data. Example: If the Core Tick is 180s and Ticks per Battery Report is 4, battery data is sent every 12 minutes.

You can change these values in ATLAS by checking the relevant boxes, entering the new values, and clicking Send. See Table X for an example of how the tick system works.

Table 4-1: Tick Reporting Example

Setting	Value	Result
Core Reporting Tick	180 seconds	One tick occurs every 3 minutes
Ticks per MCU Temperature Report	1	Temperature reported every 1 x 180s = 3 minutes
Ticks per Battery Report	4	Battery reported every 4 x 180s = 12 minutes

For example, with ATLAS: check the box for Core report tick in seconds and Ticks per MCU Temperature report. Write the values shown in the Figure 4-5 and click send.

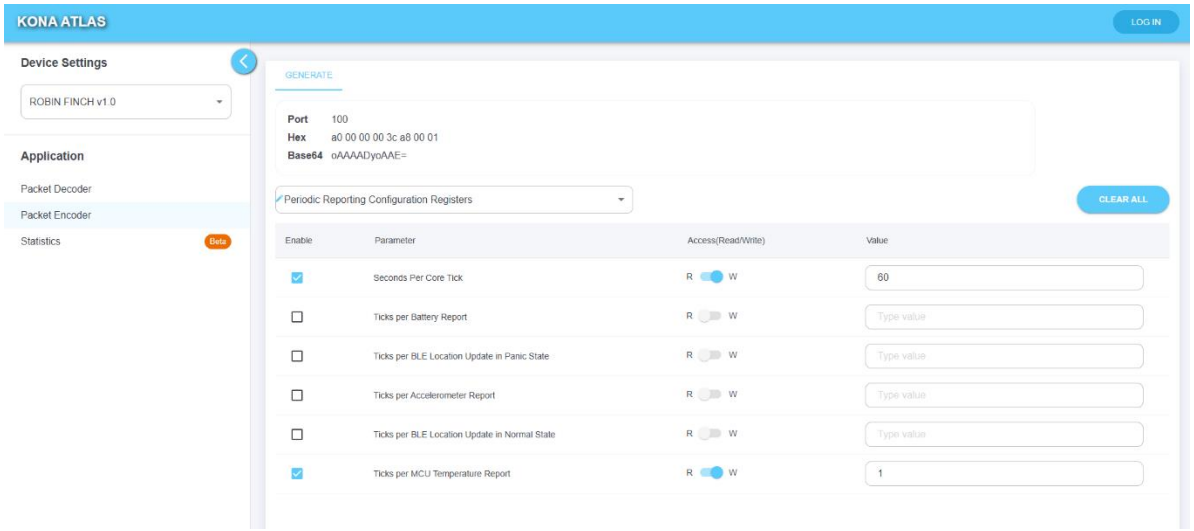

Figure 4-5: Device Configuration with ATLAS

For more information, please follow this link: https://knowledgehub.tektelic.com/kona-atlas

4.2 LeapX – Fast Device Activation and Data Viewing

LeapX is a mobile app for quick device activation. Scan your ROBIN's QR code to securely add it to your Network Server account. Once activated, the app displays live device data within seconds. Figure 4-6 below shows an example of a ROBIN device on LeapX.

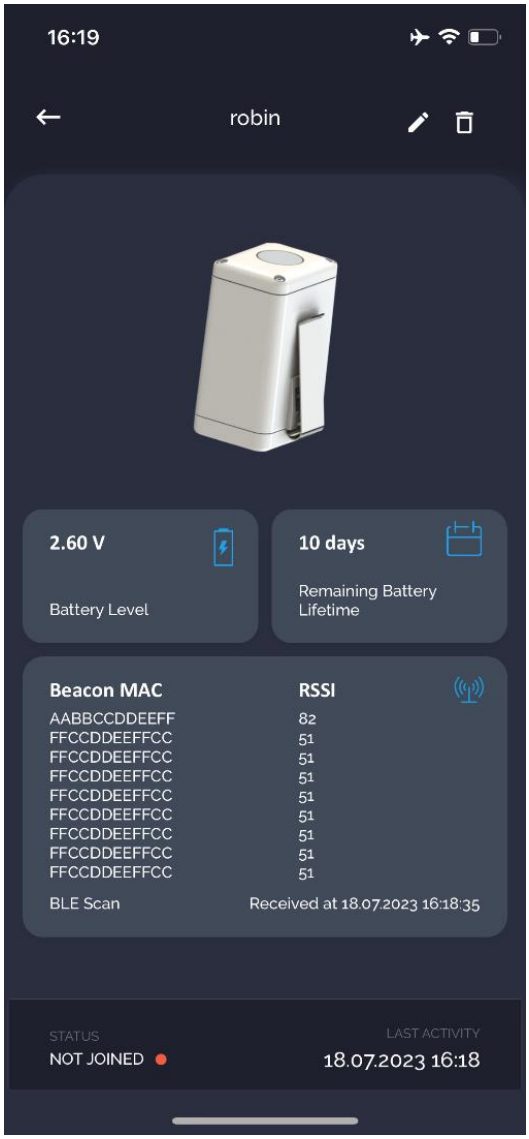

Figure 4-6: ROBIN Example on LeapX

For more details, see the LeapX Quick Start Guide.

4.3 Data Converters – Decoding and Integration

ROBIN reports its data as raw LoRaWAN payloads, which must be decoded into human-readable values (e.g., battery level, temperature, BLE device list). This decoding is handled by data converters.

TEKTELIC provides a library of converters for ROBIN and other TEKTELIC sensors:

- Repository: GitHub – TEKTELIC Data Converters

- Standard: All converters conforms to the LoRa Alliance Payload Codec Specification.

These converters can be used directly with supported network/application servers or as a reference for creating decoders on other platforms.

5 LOCUS Application

5.1 Description

LOCUS is an application to track and monitor all assets in your network, including indoor, outdoor, and hazardous location asset tracking. Assets can be tracked across entire campuses, multiple buildings, and floors. For more detail about LOCUS please visit the Knowledge Hub: LOCUS.

Application capabilities:

- Self managed floor plan/map loading
- User management – permission levels
- Geofencing & alerts
- API to customer database integration
- Support of multiple campuses, buildings & floors
- Device management/battery status
- Integrated to enterprise SAP

5.2 Operation principle

Asset localization works by measuring the strength of Bluetooth signals between the asset and nearby beacons. By comparing these signals, the system can estimate the tag's location with an accuracy of about 2-5 meters.

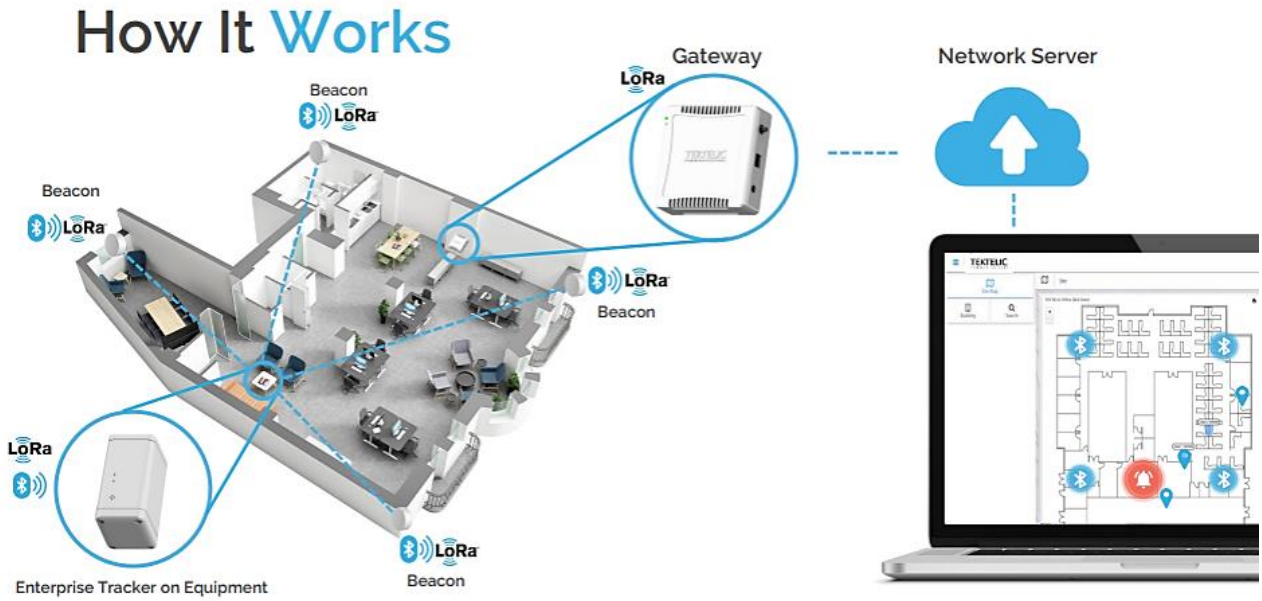

Figure 5-1: LOCUS Overview

6 Troubleshooting

Table 6-1: Troubleshooting Advice

Question	Answer
Why is the System LED rapidly blinking on my sensor?	While a sensor is not joined to a network it will continuously blink the System LED to indicate its unconnected status to the user. Ensure your LoRaWAN gateway is connected to your Network Server and verify the DevEUI, AppEUI and AppKey for the device.
Why does my LoRa LED blink periodically?	The LoRa LED indicates LoRa traffic being sent or received by the device. A short blink indicates the sensor has just transmitted, while a longer blink indicates the sensor has received a message.
How do I add my sensor to a Network Server?	Provisioning a sensor on a Network Server will vary based on your Network Server provider. An example of how to perform this on the TEKTELIC Network Server is available in your sensor's user manual. Most network server providers will require you to enter the DevEUI, AppEUI and AppKey of your device on their service.
What version of LoRaWAN do the sensors implement?	As of 2025, all newer TEKTELIC Sensor products support LoRaWAN 1.0.4. Sensors previous to 2025 may support 1.0.2. To learn which LoRaWAN version your sensor supports, please refer to the Command-and-Control section of the TRM.
The serial numbers on my case are different from the serial numbers on the circuit board. Did my order get mixed up?	All TEKTELIC products have multiple serial numbers so we can track the devices at each stage of production. It is normal that your sensor board and sensor assembly have different numbers.
Where can I find the commissioning values for my sensors? (DEVEUI, APPEUI and APPKEY)	We keep the commissioning values for each sensor secure on our own server. We send the commissioning values for each sensor sent with a shipment but if this was misplaced, please send the serial number the revision and the T-Code of the sensor and we can get the information for you.
Why is my sensor sending more packets than the Network Server receives?	This occurs when the channel plan does not reflect the number of channels accepted by the gateway. By default, all sensors come up in 64 channel mode which results in lost packets if a gateway with less than 64 channels is used. If you have an 8-channel gateway for example, ensure this is configured in the device settings in the Network Server. In the TEKTELIC NS under the "advanced network settings" tab change the configuration of the "default channel mask" to reflect the number of channels used by the gateway used.
Other	For further technical support please visit the TEKTELIC Knowledge Hub or if any malfunctions or mistakes occur, please contact your TEKTELIC local representative on the TEKTELIC Website.

7 Compliance Statements and Safety Precautions

7.1 Compliance Statements

Federal Communications Commission:

This device complies with Part 15 of the FCC Rules. Operation is subject to following 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.

To comply with FCC exposure limits for general population / uncontrolled exposure, this device should be installed at a distance of 20 cm from all persons and must not be co-located or operating in conjunction with any other transmitter.

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

Innovation, Science and Economic Development Canada (Industry Canada):

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s) [1]. Operation is subject to the following two conditions:

i. This device may not cause interference, and

ii. This device must accept any interference, including interference that may cause undesired operation of the device.

This device should be installed and operated with minimum distance 0.2 m from human body.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique 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'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Cet appareil doit être installé et utilise à une distance minimale de 0.2 m du corps humain.

California Proposition 65:

⚠ **WARNING:** This product can expose you to chemicals including lead, nickel, and carbon black, which are known to the State of California to cause cancer, birth defects or other reproductive harm. For more information, go to www.P65Warnings.ca.gov.

7.2 Safety Precautions

The following safety precautions should be observed:

- All installation practices must be in accordance with the local and national electrical codes.
- Replace only with approved batteries (see Section 2.8).
- The sensor contains a single LTC C-cell battery. When used correctly, lithium batteries provide a safe and dependable source of power. However, if they are misused or abused, leakage, venting, explosion, and/or fire can occur. The following are recommended safety precautions for battery usage.
  - **Keep batteries out of the reach of children.**
  - **Do not allow children to replace batteries without adult supervision.**
  - **Do not insert batteries in reverse.**
  - **Do not short-circuit batteries.**
  - **Do not charge batteries.**
  - **Do not force discharge batteries.**
  - **Do not leave discharged batteries in equipment.**
  - **Do not overheat batteries.**
  - **Do not weld or solder directly to batteries.**
  - **Do not open batteries.**
  - **Do not deform batteries.**
  - **Do not dispose of batteries in fire.**
  - **Do not expose contents to water.**
  - **Do not encapsulate and/or modify batteries.**
  - **Store unused batteries in their original packaging away from metal objects.**

List of Acronyms

BER ..... Bit Error Rate
BLE..... Bluetooth Low-Energy
CNR..... Cahiers des charges sur les Normes Radioélectriques (RSS)
DL ..... DownLink
EOS ..... End Of Service
EU ..... European Union
FCC..... Federal Communications Commission
FW ..... FirmWare
HW ..... HardWare
IoT ..... Internet of Things
IP ..... Ingress Protection
ISM ..... Industrial, Scientific, and Medical
LED ..... Light-Emitting Diode
LoRa ..... Long-Range
LoRaWAN..... Long-Range Wide-Area Network
LoS..... Line-of-Sight
LTC..... Lithium-Thionyl Chloride
MCU ..... MicroController Unit
NA ..... North America
NS ..... Network Server
OTA ..... Over The Air
PCB ..... Printed Circuit Board
PCBA..... Printed Circuit Board Assembly
Rev ..... Revision
RF ..... RadioFrequency
RSS..... Radio Standards Specifications (CNR)
RSSI ..... Received Signal Strength Indicator
Rx ..... Receive, receiver, etc.
SW..... SoftWare
TRM..... Technical Reference Manual
Tx..... Transmit, Transmitter, etc.
UG ..... User Guide
UL ..... UpLink
US ..... United States
v..... Version

Document Revision

Revision	Issue Date	Editor	Comments
0.1	July 1, 2024	Marharyta Yuzefovych	User-friendly format.
1.0	August 18, 2025	Emma Tholl	Systems review.