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

SPARROW

ASSET TRACKER

User Guide

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1 Product Description

1.1 Overview

SPARROW device provides reliable asset tracking by utilizing periodic BLE scanning to collect data from nearby BLE peripherals to determine device location, or to act as a broadcasting BLE peripheral beacon.

SPARROW is connected via LoRaWAN, enabling seamless transmission and reception across various global frequency bands EU868, US915, AU915, AS923-1,-2,-3,-4, IN865, KR920.

This document provides comprehensive descriptions of SPARROW, along with detailed guidance on their hardware capabilities. For insights into the functional operation and software behavior of each variant, please consult the Technical Reference Manual (TRM) document.

Table 1-1 presents all SPARROW supported functions as well as enclosure and mounting options.

Table 1-1: SPARROW Functionality

Functionality	SPARROW
Module Product T-Code	T0007128
Supported Operating Environment	Indoor (IP30)
Battery Size	1x AA-cell
Battery Gauge	✓
BLE Rx	✓
BLE Tx	✓
Magnetic Sensor	✓
Accelerometer	✓
Function Button	✓
Reset Button	✓
LEDs	✓

Table 1-2: SPARROW HW Models

Description	Product Model	Order Code	Region	Product PCBA Code
SPARROW Enterprise Asset Tracker	T0007128	BLETNEU868	EU868	T0008265
SPARROW Enterprise Asset Tracker	T0007128	BLETNUS915	US915	T0008265
SPARROW Enterprise Asset Tracker	T0007128	BLETNAU915	AU915	T0008265
SPARROW Enterprise Asset Tracker	T0007128	BLETNAS9231	AS923	T0008265

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

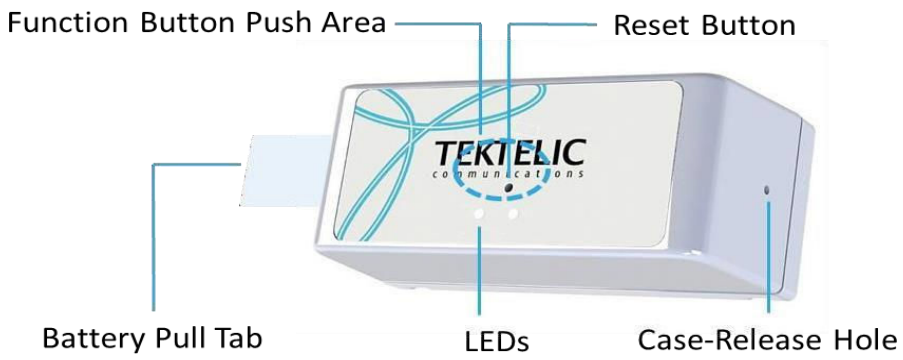

Figure 1-1: SPARROW Enclosures and External Interfacing

1.2 Specifications

SPARROW specifications are listed in Table 1-3. The main sensing functions are described in the following subsections.

Table 1-3: SPARROW Specifications

Parameter	Specification
Environmental Rating	IP30
Enclosures and Mounting	Custom design by TEKTELIC
Operating Temperature	-40°C to 70°C
Storage Temperature for Optimal Battery Life	-5° to 45°C
Operating Relative Humidity	5% - 95% non-condensing
Storage Relative Humidity	5% - 95% non-condensing
Dimensions	65 mm x 24.5 mm x 26 mm
Weight	28.3 g enclosure + 17.5 g battery = 45.8 g total
Power Source	Battery-powered: 1x AA-cell LTC (3.6 V)
Network technology/Frequency band	LoRaWAN in the following Global ISM bands: EU868, US915, AU915, AS923-1,-2,-3,-4, IN865, KR920
Air Interface	LoRa, BLE
Maximum Tx Power	15 dBm (AS923, KR920, EU868) 22 dBm (AU915, IN865, US915)
Sensing Elements	BLE transceiver, Accelerometer, MCU temperature transducer, 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
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	User-configurable function

User Feedback	Buzzer and vibration motor
LEDs	Green: Joining the network and LoRa Rx Red: LoRa Tx
Battery Gauge Features	Remaining battery capacity and remaining battery lifetime
Battery Lifetime	5 years[1] in Tracker mode 16 months[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 AA-cell LTC (3.6 V) 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 Network Server Quick Start Guide you get in the box with the device (also available online in the *Knowledge Base*).

2.4 Activation

The sensor is shipped in a secured enclosure with the battery preinstalled in a state of DEEP SLEEP.

To activate the device:

1. Remove the Battery pull tab.
2. Sensor activation will be displayed by LEDs turning on.
3. Once activated, the sensor will automatically begin the join process.

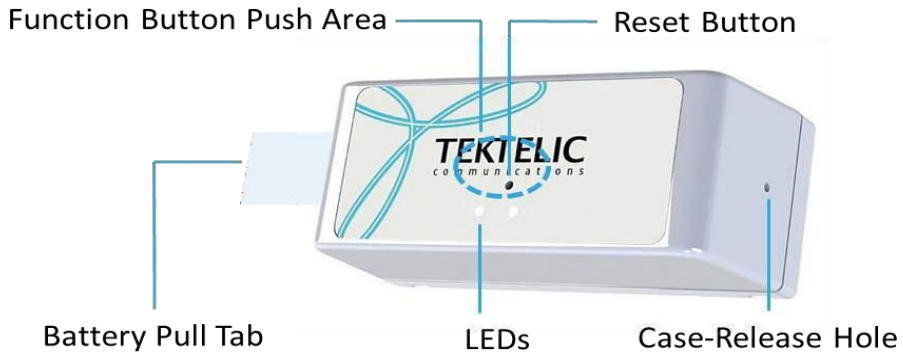

Figure 2-1: SPARROW Enclosure and External Interfacing

2.5 Default Configuration

Table 2-1 lists the default reporting behavior of the SPARROW. Reporting behavior can be changed from default through OTA DL commands (see how to do it in Section 4).

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 MOTION State	1 minute	Disabled
BLE Location Update in STATIONARY State	1 hour	Disabled
Acceleration Vector	Disabled	Disabled
MCU Temperature	Disabled	Disabled

2.6 Reconfiguration

SPARROW 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

There is a mounting hole on each corner on the bottom side of the enclosure (see Figure 2-2).

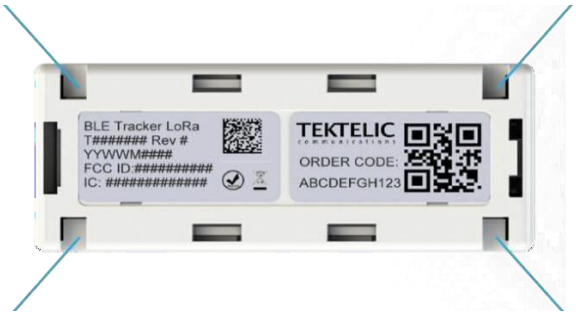

Figure 2-2: The Mounting Hole Locations on the Bottom of the Tracker

These mounting holes can be used to fasten the enclosure to a solid surface, cable, etc. The mounting holes are slots so the device can be secured with ropes, zip ties, or hooks depending on the user's needs. If using cables or zip ties, they can be threaded through both slots on either side of the enclosure as shown in Figure 2-3. The recommended zip tie width is 3 mm. Mounting fasteners are not provided.

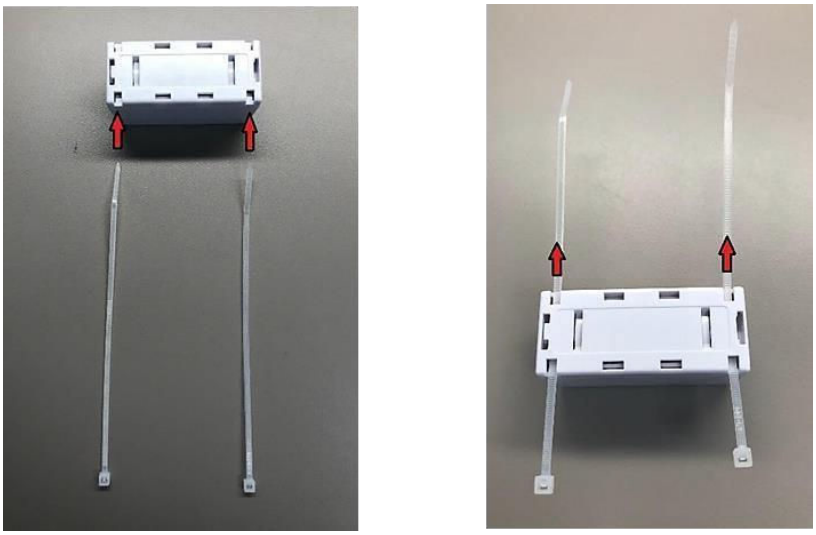

Figure 2-3: Threading Zip Ties Through the Mounting Holes to Fasten the Tracker

2.8 Battery Replacement

To replace the battery:

1. Insert the end of a paper clip or similarly thin object into the case-release hole on the right side of the Device (see Figure 2-4).

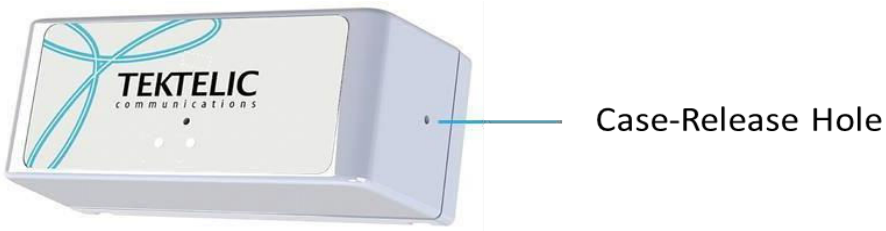

Figure 2-4: Removing the Battery Cover Screws

2. Push the paper clip straight in while simultaneously squeezing the middles of the sides of the enclosure. The top and bottom should unclip from each other and separate.
3. Remove the battery and replace with a new one as shown in Figure 2-5. Suggested replacement batteries are:
    - Saft SA LS14500
    - Tadiran SL-360/S

- Tadiran TL-4903/S
- Tadiran TL-5903/S
- Xeno Energy XL-060F STD

4. Replace the bottom enclosure piece by inserting the side with the long snap tab first, as shown in Figure 2-5. Push the other side of the bottom enclosure piece in until both the top and bottom fully snap together.

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

2.9 Reset Button

To physically reset SPARROW**:**

1. Push by a pin, such as a paper clip on a designated Reset Button as Figure 2-6.
2. Instant restart of the microprocessor will begin.
3. Once activated, the sensor will automatically begin the join process.

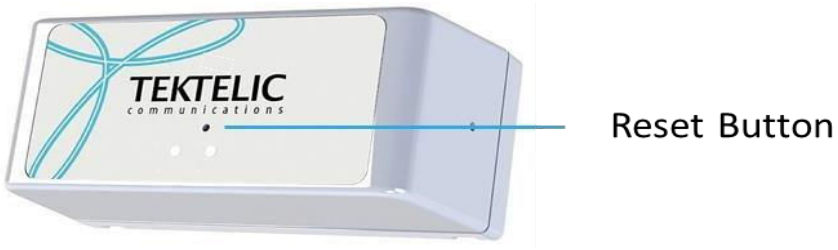

Figure 2-6: Reset Button

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

2.10 Function Button

There is an externally-accessible function button on the device as in Figure 2-7. The button should not be pushed hard. Pushing button will trigger the device to send BLE scan and report UL that will open receive windows to receive DL commands.

Figure 2-7: Function Button Push Area

The definition of when a push button event is registered is user configurable:

Table 2-2: Function Button Configuration

Configuration	Default Value	Possible Values
Button push time	1 second	1-15 seconds
Button push pattern	1 push	1-15 pushes, or press and hold
Uplink report type	BLE scan results (tracker mode) Battery report (beacon mode)	battery data, acceleration vector, MCU temperature, BLE scan results, or any combination of these

2.11 LED Behavior

The LEDs are normally off and the main patterns are summarized in Table 2-3. The detailed sequence and timings for each are described in the following subsections.

Table 2-3: Summary of LED Patterns

LED Pattern	Meaning
GREEN blinking rapidly and **RED** flashes	Join mode; attempting to join the network
Single **RED** flash	UL sent
3 quick **RED** flashes	Entering Deep Sleep
Single **GREEN** flash during normal operation	DL received

3 Sensing Functions

3.1 Bluetooth Low-Energy (BLE) Transceiver

BLE operation is the main function of the SPARROWs 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 SPARROW 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, SPARROW 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 3-1: 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 SPARROW 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)

3.1.1 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.

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

3.1.2 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 SPARROWs 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.

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

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.

3.2 MCU Temperature Transducer

SPARROW can measure and report the MCU temperature. This is a temperature measurement using a transducer located in the device microprocessor. It can only be reported periodically or if the function button is configured to do it (not configured by default).

3.3 Accelerometer Transducer

SPARROW 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 of 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 SPARROW

TEKTELIC offers several tools and resources to configure your SPARROW 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 SPARROW 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:

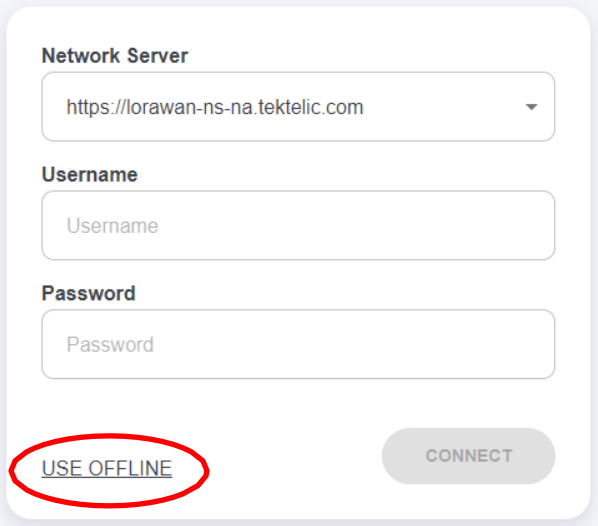

Figure 4-1: Login with Offline Mode

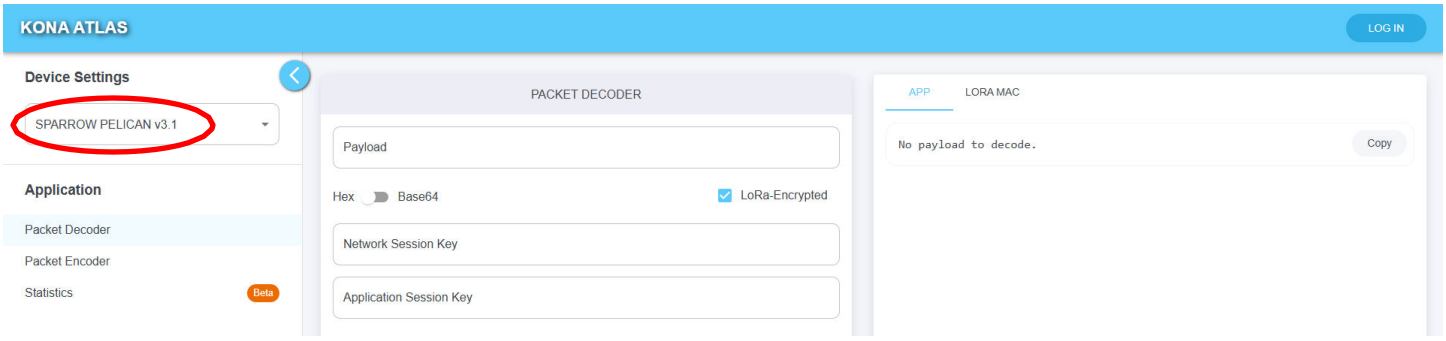

Figure 4-2: Select SPARROW Decoder

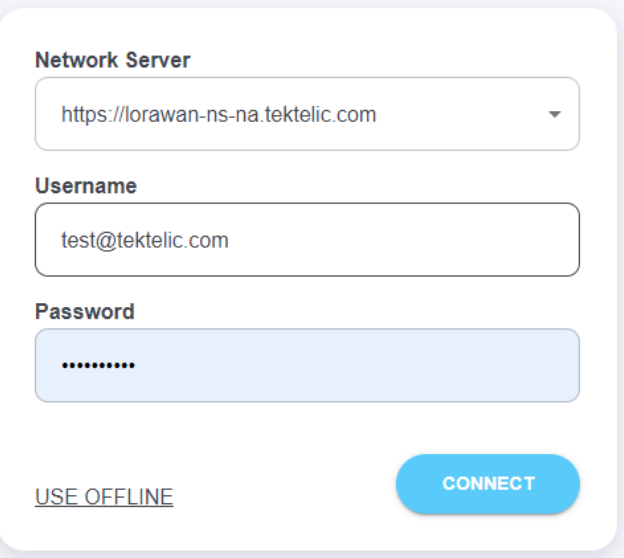

Figure 4-3: Login with Network Server Credentials

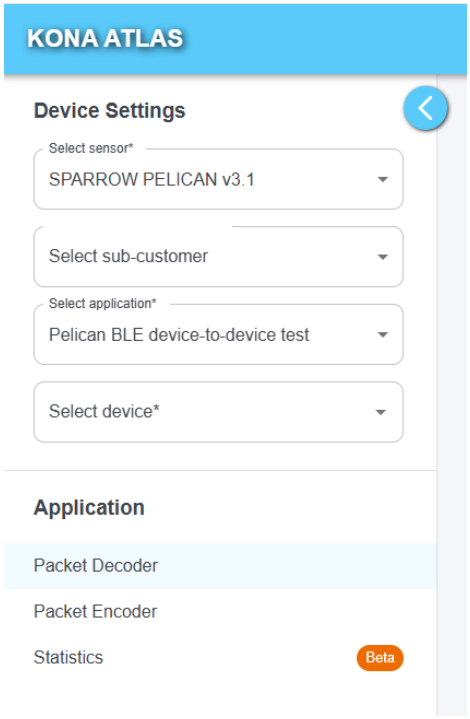

Figure 4-4: Select SPARROW Decoder, application, and device

SPARROW 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 4-1 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.

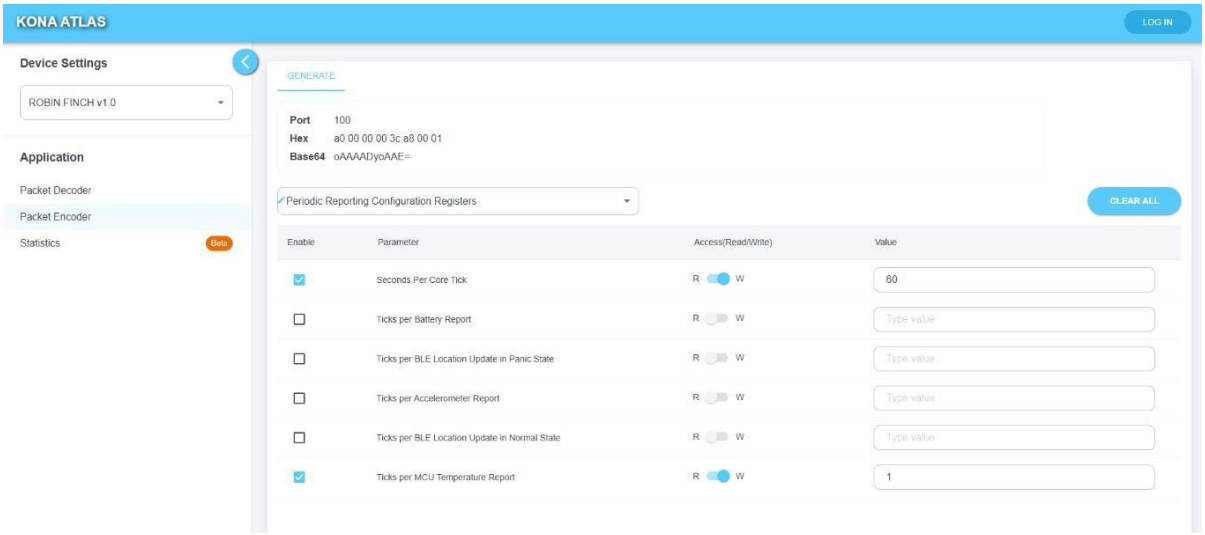

Figure 4-5: Device Configuration with ATLAS

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 SPARROW'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 SPARROW device on LeapX.

Figure 4-6: SPARROW Example on LeapX

For more details, see the LeapX Quick Start Guide.

4.3 Data Converters – Decoding and Integration

SPARROW 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 SPARROW and other TEKTELIC sensors:

- Repository: GitHub – TEKTELIC Data Converters

- Standard: All converters conform 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.

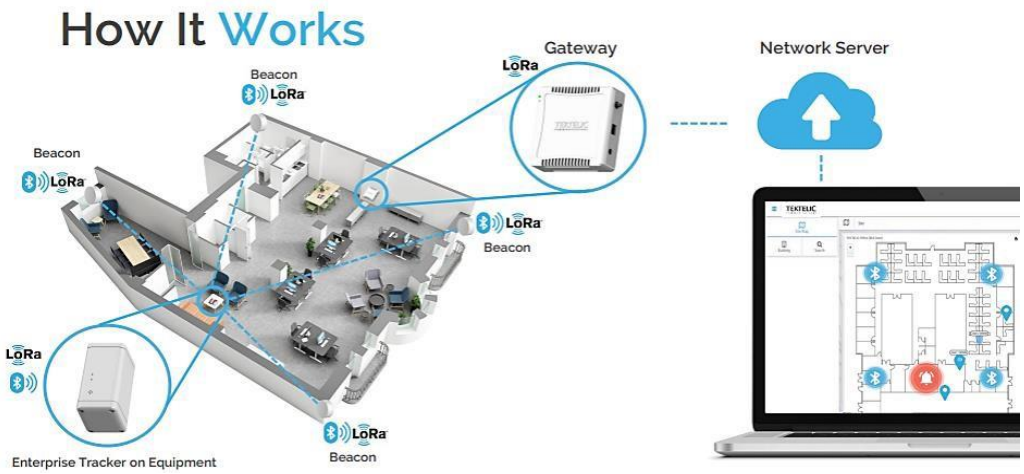

Figure 5-1: LOCUS Overview

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?	All TEKTELIC Sensor products run LoRaWAN 1.0.2
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.
What 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 Tcode 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.

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) [8]. 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 for all sensor variants:

- 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 AA-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 mix 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.**
  - **Do not mix or jumble batteries**

8 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	March 3, 2020	C. M.	• Initial draft based on Industrial • Tracker T0006279_UG v1.2 and • Home Sensor T0006338_UG v1.4. • Additional information taken from • BLE Tracker T0005946_TRM v0.4.
0.2	March 11, 2020	C. M.	• Minor corrections based on feedback. • Confirmed operational temperature range and battery life. • Corrected temperature transducer from battery gauge to MCU thermometer.
1.0	March 11, 2020	C. M.	• Confirmed upper operating temperature at 45°C.
1.1	April 6, 2020	C. K.	• Updates to compliance statement and IP change.
1.2	June 4, 2020	C. M.	• Updated default configuration info based on T0005946_TRM v0.10. • Changed function button and reset button info to reflect accurate button locations.
2	August 6, 2024	M. Y.	• User friendly format
2.1	October 30, 2025	A. K.	• Corrected Battery Life
2.2	May 12, 2026	A. K., E.T.	• Added Table 1-2 with Order Codes • Removed obsolete Model codes