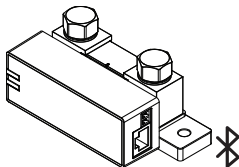




A MISSION CRITICAL ELECTRONICS BRAND



XanLink™ Battery Monitor User Guide

XanLink

(PN: 854-2032)

XanLink RV-C

(PN: 854-2033)

XanLink NMEA2K

(PN: 854-2034)



HAZARD OF FIRE, ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

This XanLink™ Battery Monitor User Guide is in addition to, and incorporates by reference, the relevant product manuals for each product in the power system. After reviewing this guide you must read the relevant product manuals. Unless specified, information on safety, specifications, installation, and operation is as shown in the primary documentation received with the product. Ensure you are familiar with that information before proceeding.

Failure to follow these instructions will result in death or serious injury.

Exclusion for Documentation

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NOTE: Visit <http://www.xantrex.com>, click Products, select a Product category, select a Product, and search the Product Documents panel for a translation of the English guide, if available.

Contact Information

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Web: <http://www.xantrex.com>

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FCC / ISED Information to the User

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

NOTE: 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 / ISED Canada ICES-003 Rules. These limits are designed to provide reasonable protection against harmful interference in a residential environment. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

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

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

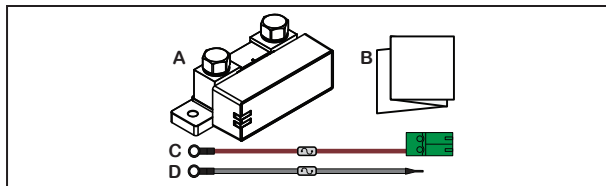
Introduction

The XanLink™ Battery Monitor enables precise tracking of battery performance and simplifies energy management via smartphones and multiplex systems. With Bluetooth connectivity, it delivers real-time updates on critical battery metrics—including state of charge (SOC), remaining runtime, and performance history—directly to your smart phone. It uses RV-C and NMEA 2000 communication protocols to seamlessly integrate with multiplex systems, displaying battery data directly on the onboard control panel. Compatible with 12V, 24V, 36V, and 48V battery systems, XanLink supports a wide range of battery types, including sealed lead-acid, gel, flooded, and lithium batteries. It can measure up to 500A of charge and discharge currents, combining low power consumption with robust safety features.

Designed with an intuitive user interface, the XanLink is easy to install and operate, even in challenging environments. Whether monitoring a single battery or managing a complex system with multiple power sources, the XanLink provides the insights and control needed to optimize battery health and overall system performance.

What's in the box

- A XanLink
- B Quickstart guide
- C Main battery sensing cable
- D Starting battery sensing cable





Features





- **Versatile Battery Compatibility:** Suitable for sealed lead-acid, AGM, gel, flooded (open), and lithium batteries, supporting 12V, 24V, 36V, and 48V systems.
- **High-Precision Monitoring:** Utilizes advanced current sampling technology to measure up to 500A charge and discharge currents with high precision.
- **Advanced SOC Algorithm:** Tracks battery state of charge (SOC), estimates remaining runtime, and calculates cycle count for comprehensive battery health management.
- **Customizable Capacity Settings:** Allows easy configuration of battery capacity to match your specific system requirements.
- **RV-C Communication:** Supports RV-C for advanced networking and system integration with multiplex systems.
- **vNMEA 2000 Communication Interface:** Provides a built-in Micro-C connector for seamless integration with NMEA 2000-compatible systems
- **Bluetooth Connectivity:** Enables real-time monitoring of operating status and battery parameters without the need for additional hardware or an external dongle.
- **Integrated Alarm System:** Provides configurable alerts via Xantrex App for low SOC, high and low voltage, and overcurrent conditions, enhancing system protection.
- **Firmware Update via Bluetooth:** Enables firmware updates directly through Bluetooth, providing a convenient, wireless solution for keeping your XanLink up-to-date.
- **Comprehensive Battery Health Monitoring:** Monitors key battery parameters in real-time, including state-of-charge (SOC), voltage, current, temperature, charging and discharging. Tracks lifetime metrics such as charge cycles, deep discharge, and energy consumption.

- **Battery Performance History:** Stores and provides access to historical battery data, including charging and discharging time durations, minimum and maximum battery voltage, charged and discharged amp-hours (Ah), charged and discharged power (kWh), and minimum and maximum starter battery voltage.
- **Configurable Alarm System:** Provides configurable alarms for critical conditions, including low state of charge (SOC) alarm, overcurrent alarm, high and low voltage alarm, high starter battery voltage alarm , and low starter battery voltage alarm.

Components

	<p>A Indicator lights</p> <p>B  Battery - negative (-) terminal</p> <p>C  Load - negative (-) terminal</p> <p>D 2-pin battery positive (+) terminal</p> <p>E RJ45 port for RS-485 communications</p> <p>F Flange with mounting holes</p>
	<p>G 2-pin connector</p> <p>H Starting battery pin terminal, 16AWG (unused)</p> <p>I Main battery pin terminal, 16AWG (used)</p>
	<p>J Main battery sensing cable (red)</p> <p>K Starting battery sensing cable (gray)</p>

Details

Indicator Lights		Blue ON	Connected to Xantrex App
		Flashing	Data transmission
		Off	Not connected to Xantrex App
	Run 	Green ON	Operating normally
		Red ON	Alert (see Xantrex App)
2-pin connector port		Main battery (+)	
		Starting battery (+)	
RJ45 connector pins	1	NC	
	2	NC	
	3	Ground	
	4	CAN_L	
	5	CAN_H	
	6	D-	
	7	D+	
	8	+5V	

Installation

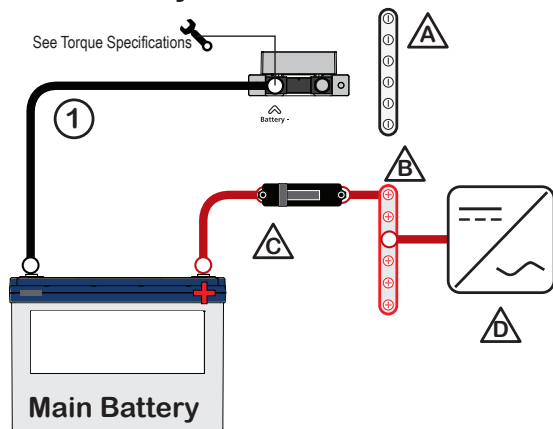
⚠ WARNING

HAZARD OF FIRE, ELECTRIC SHOCK, EXPLOSION, AND PERSONAL INJURY

- Do not allow the exposed metal part (negative terminal) to contact the battery's positive terminal, conductive materials, or earth ground.
- Do not touch the exposed metal. Hot surface up to 70°C.
- Install the unit in a well-ventilated area away from direct sunlight, high temperatures, and water intrusion.
- Mount the unit securely using appropriate screws to prevent movement or damage.
- Connect all wires according to the provided wiring diagram.
- Configure all necessary parameters using the Xantrex App after wiring to ensure proper operation.
- Follow national and local electrical codes for all wiring and installations.
- Use wires rated for the current, following the guideline of 5A per mm² or equivalent.
- Inspect the unit and connections for damage or wear before use.

Failure to follow these instructions can result in death or serious injury.

Main Battery



1: Connect a battery cable from the Main battery's negative(-) terminal to the XanLink's **Battery -** terminal.

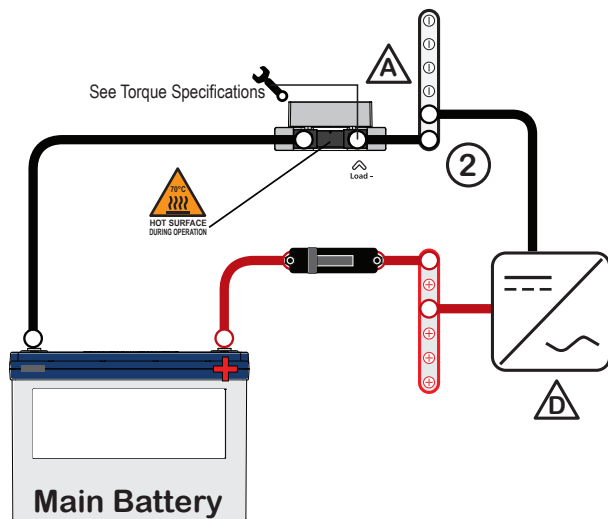
A: Charger/Load system negative (-) Busbar


B: Charger/Load system positive (+) Busbar

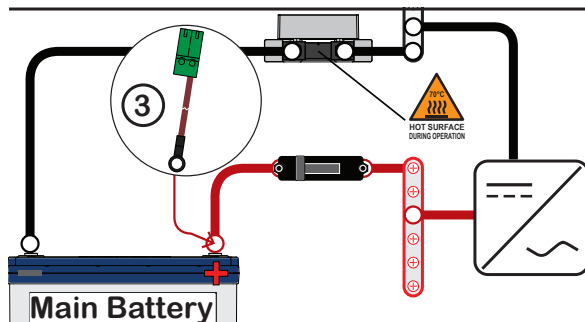
C: Battery cable with DC fuse and/or breaker

D: Charger/Load

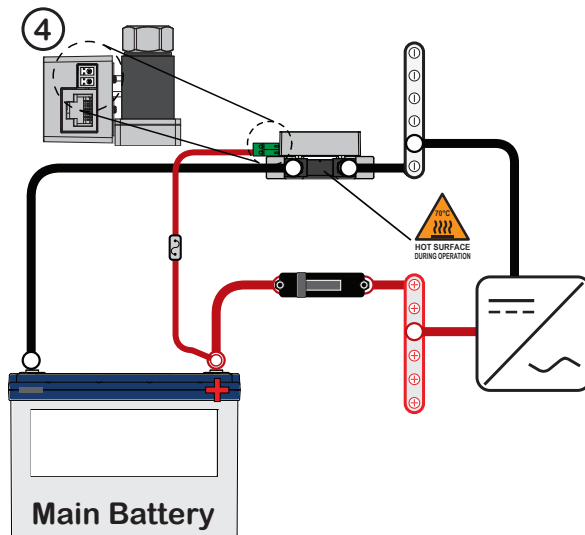
2: Connect the DC cables from XanLink's Load - terminal to **A** and from **A** to **D**.



 TORQUE Specifications	Nm	inch-lbs
M10 Bolt on XanLink	20 – 25	177 – 221
NOTE: For all other torque settings, see the battery manufacturer's torque specifications.		



3: Take the Main battery sensing cable (provided) and connect the ring terminal to the positive(+) terminal on the Main battery.



4: Connect the Main battery sensing cable connector to the XanLink's 2-pin port.

⚠ If you are setting up a starting battery, skip this step and continue to *Optional Installation - Starting Battery*.

Monitoring the Main Battery

The XanLink™ Battery Monitor enables real-time monitoring of the Main battery's performance, providing insights into the state of charge (SOC), real-time voltage and current, remaining usage time, capacity, protection alarms, and more.

Follow the steps below to set up and configure the monitoring system:

Connecting to the Xantrex App



1. Download and install the Xantrex App on your mobile device.
2. Pair XanLink with the Xantrex App via Bluetooth.
3. When prompted with a pairing request, enter the pairing code: "12345678".
4. Tap **Devices**, select the XanLink. The Status screen (shown on the right) appears.
5. Tap the **Settings** page.
6. If you have not done so already from the Quickstart Guide, configure the Main battery system parameters first. Proceed to *Configuring the Main Battery*.




Configuring the Main Battery

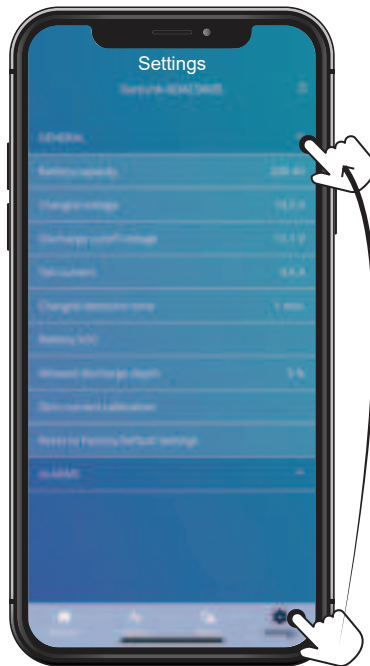
- Set the **Battery capacity**, **Charged voltage** , and **Discharge cut-off voltage** to match your installed battery's specifications using the table below.

System Voltage	Lead-acid battery Charged Voltage	Lead-acid battery Discharge Cut-off Voltage	Lithium battery Charged Voltage	Lithium battery Discharge Cut-off Voltage
12V	13.2V	11.1V	13.2V	11.1V
24V	26.4V	22.2V	26.4V	22.2V
36V	39.6V	33.3V	39.6V	33.3V
48V	52.8V	44.4V	52.8V	44.4V

Parameter Configuration

Set these other parameters in the Xantrex App to optimize performance:

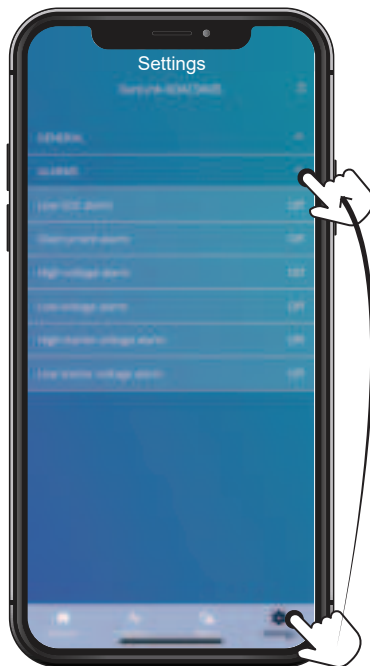
- **Battery capacity:** Input the actual capacity of the battery.
- **Charged voltage:** Set the upper voltage limit based on the battery type.
- **Discharge cutoff voltage:** Set the lower voltage limit based on the battery type.
- **Tail current:** Set the charging current threshold for 100% SOC detection (typically 4% of the battery capacity).
- **Charged detection time:** Specify the duration for confirming 100% SOC during charging (default is 1 minute).
- **Battery SOC:** If the SOC is known, manually input the current value for accurate monitoring. If not set, the monitor will update automatically using its internal algorithm.
- **Allowed discharge depth:** Define the SOC associated with the discharge cut-off voltage (default is 5%).
- **Zero current calibration:** ⚠ Use with care. Re-calibration is rarely needed. Disconnect the  Load - terminal and perform calibration to record the current value as zero.
- **Reset to Factory Default Settings:** Erase saved settings and restore all settings to factory default values.



Alarm Settings

Configure alarms to enhance battery protection and ensure system reliability:

- **Low SOC alarm:** Activates when SOC drops below the set value and clears when it recovers above the set threshold.
- **Overcurrent alarm:** Triggers when charge/discharge current exceeds the set value and clears when it falls back within limits.
- **High voltage alarm** (for the Main battery): Activates if voltage exceeds the set value and clears when voltage drops below the threshold.
- **Low voltage alarm** (for the Main battery): Triggers when voltage drops below the set value and clears when it recovers above the threshold.
- **High starter voltage alarm:** Turns on if the Starting battery voltage exceeds the set value and clears when it falls back.
- **Low starter voltage alarm:** Activates if the Starting battery voltage drops below the set value and clears when it rises above the threshold.



Analyzing Main Battery Data

The History tab under the Status screen displays historical battery data, helping you manage your battery and energy needs more effectively.

1. Tap **Status**.
2. Tap **History**.

History is divided into four sections.

- **Data Metrics:** You can choose different parameters to display and analyze. See *Chart Types*.
- **Range:** You can choose between the **last 7 days** or the **last 30 days** of accumulated data.
- **Chart** Displays the chart plotted according to the Data Metrics and Range.
- **Summary** Displays six data categories that sums up the following: Total discharged energy (in kWh and Ah), total charged energy (in kWh and Ah), total running days, total charge cycles, number of full discharges, and synchronizations.



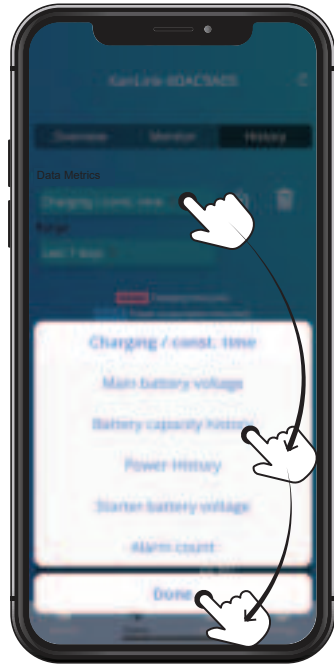
Chart Types

To plot and display a chart:

1. Tap the **Data Metrics** pulldown menu.
2. Tap your selected Data Metrics.
3. Tap **DONE**.

There are six chart types.

- **Charging versus consumption time:** Displays the balance between battery charging input and consumption over time to track energy usage efficiency.
- **Main battery voltage :** Provides a real-time view of the voltage level of the Main battery, indicating its charge status and overall health.
- **Battery capacity** (for the Main battery): Shows the remaining capacity of the battery in kWh, helping to monitor battery life and expected runtime.
- **Power History** (for the Main battery): Tracks power consumption and charging trends over a specific period, offering insights into usage patterns and energy management
- **Starter battery voltage:** Provides a real-time view of the voltage level of the Starting battery, indicating its charge status and overall health
- **Alarm count:** Records the number of alarms triggered due to system events, such as low voltage or over-temperature conditions, aiding in troubleshooting and maintenance.



Downloading Data Sets

Each Chart type can be downloaded in *.csv format and stored in your smart device's file system.

1. Tap the **File download** icon. A copy of the file will be saved in your smart device's storage under an internal file folder called Xantrex App.
2. Tap **OK**.

You can also delete the file that corresponds to a Chart type in order to start fresh or to free up storage.

- Tap the garbage icon to delete a Chart type data file.

 Deleted files cannot be recovered.



Optional Installation

Starting Battery

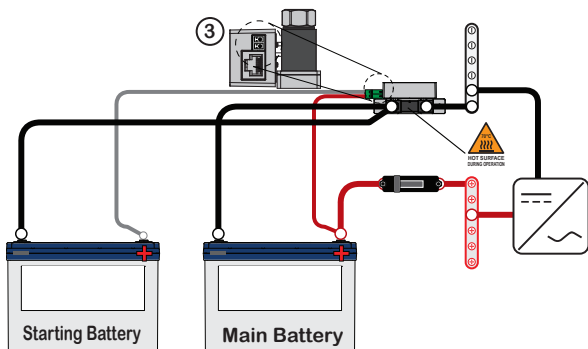
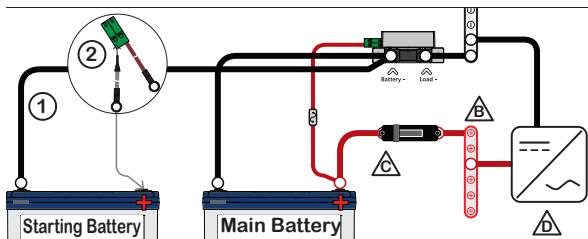
⚠ These steps are applicable only if you have a Starting battery setup.

1: Connect a battery cable from the Starting battery's negative(-) terminal to the XanLink's **Battery -** terminal.

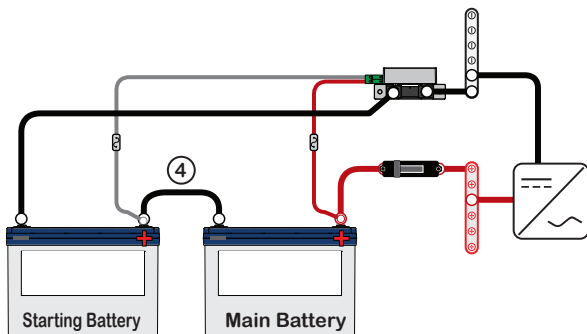
2: Connect the Starting battery sensing cable (16AWG) to the left side terminal of the 2-pin connector (of the Main battery sensing cable).

Connect the ring terminal end to the positive(+) terminal on the Starting battery.

3: Connect the 2-pin connector to the XanLink's 2-pin port.



Optional Battery Connection



4: Connect a battery cable to the negative (-) terminal of the Main battery and the positive (+) terminal of the Starting battery.

Monitoring the Main Battery and Starting Battery

This application expands the functionality of the XanLink by adding starting battery voltage monitoring alongside Main battery monitoring.


Wiring Instructions

Follow the instructions on *Optional Installation - Starting Battery*.

Parameter Configuration

Use the Xantrex App to configure the necessary settings for both the Main and Starting batteries, following the steps outlined in *Connecting to the Xantrex App on page 11*.

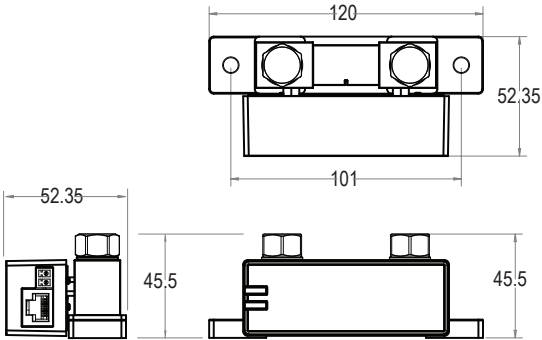
FAQ

<p>XanLink's indicator light does not turn on. What should I check?</p>	<p>Verify that the positive and negative terminals of the battery and DC system are connected correctly.</p> <p> Ensure the Battery - terminal on the XanLink is securely connected to the battery's positive terminal.</p>
<p>Why is the state of charge (SOC) reading inaccurate or deviates significantly?</p>	<p>Check that XanLink's parameter settings are configured correctly.</p> <p>Ensure the system has undergone a full charge-to-discharge cycle, down to the discharge cut-off voltage, to allow accurate SOC calibration.</p>
<p>Why does the remaining usage time vary greatly?</p>	<p>Confirm that parameters, such as the discharge depth, are correctly configured in the XanLink.</p>
<p>Why is the SOC reading for a lithium battery inaccurate?</p>	<p>Check if the lithium battery has an internal Battery Management System (BMS) with charge and discharge protection features.</p>
<p>When fully charged, why does the battery's remaining capacity differ from its nominal capacity?</p>	<p>This may be due to the charging/discharging characteristics of the battery, natural capacity attenuation, or other factors. The XanLink's self-learning algorithm updates capacity estimates based on these conditions over time.</p>

Specifications

NOTE: Specifications are subject to change without prior notice.

Feature	XanLink™ Battery Monitor
Product Numbers	XanLink (PN: 854-2032), XanLink RV-C (PN: 854-2033), XanLink NMEA2K (PN: 854-2034)
Supported Battery Types	sealed lead-acid, gel, flooded, and lithium batteries
Supply Voltage	6.5 to 60 V _{DC}
Current	500A
DC System Voltage	12 24 36 48 V
Battery Capacity	1 to 9999 Ah
Static Power	≤15mA
RS-485	9600 bps, 8, 1, None, the default baud rate 9600 bps
Bluetooth	Built-in Bluetooth: Supports Xantrex App data interaction and over-the-air (OTA) firmware upgrades
CAN	RV-C and NMEA2000 protocols
Ingress Protection	IP21 (PNs: 854-2032, 854-2033) IP67 (PN: 854-2034)
Operating Temperature	-35 to 65 °C

Dimensions (in mm)	 <p>Technical drawings of the device showing dimensions in millimeters:</p> <ul style="list-style-type: none"> Top view: Overall width 120 mm, overall height 52.35 mm, internal width 101 mm. Side view: Overall height 45.5 mm. Front view: Overall width 52.35 mm, overall height 45.5 mm.
Weight	0.35 kg
Safety	Regulation (EU) 2023/988
EMI/EMC	FCC Part 15, subpart B, Class B ISED Canada ICES-003 Class B Directive 2014/30/EU

FCC Warning Statement

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 a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:-

- Reorient or relocate the receiving antenna.

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

FCC Radiation Exposure Statement

The antennas used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located for operating in conjunction with any other antenna or transmitter.

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.
- (2) This device must accept any interference received, including interference that may cause undesired operation.

IC Warning

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

- (1) This device may not cause interference.
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

This device complies with Canadian ICES-003 and RSS-247.

Radiation Exposure: This equipment complies with Canada radiation exposure limits set forth for an uncontrolled environment.

IC Radiation Exposure Statement

The antennas used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located for operating in conjunction with any other antenna or transmitter.

Avertissement IC

Cet appareil contient des émetteurs/récepteurs exemptés de licence qui sont conformes aux RSS exemptés de licence d'innovation, sciences et développement économique Canada. Le fonctionnement est soumis aux deux conditions suivantes:

- (1) ce dispositif ne peut pas causer d'interférence.
- (2) ce dispositif doit accepter toute interférence, y compris l'interférence qui peut causer un fonctionnement indésirable du dispositif.

Selon la réglementation d'Industrie Canada, cet émetteur radio ne peut fonctionner qu'en utilisant une antenne type et gain maximum (ou inférieur) approuvés pour Industrie Canada par l'émetteur. Réduire brouillage radioélectrique potentiel avec d'autres utilisateurs, le type d'antenne et son gain doivent être choisis que la puissance isotrope rayonnante équivalente (e.i.r.p.) n'est pas supérieure à celle nécessaire pour communication réussie. Cet appareil est conforme aux normes canadiennes ICES-003 et RSS-247.

Exposition aux radiations: Cet équipement est conforme à la réglementation canadienne sur les radiations. limites d'exposition établies pour un environnement non contrôlé.

Déclaration d'exposition aux radiations IC

Les antennes utilisées pour cet émetteur doivent être installées de manière à assurer une distance de séparation d'au moins 20 cm au moins de toute personne et ne doivent pas être co-localisés pour fonctionner en conjonction avec autre antenne ou émetteur.