



FD-100 USER GUIDE



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EXTERNAL USE

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NOTICE

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Technical Support Site

If you encounter any issues with this software requirements document, contact your sales representative for additional assistance.

1 REVISION HISTORY

Rev. #	Description	Date
00	Initial Release	October 14, 2025
01	Removed Duplicate Section	October 20, 2025

2 ACRONYMS

BLE	Bluetooth Low Energy
FD	Flood Detector
FU	Floor Unit
LED	Light Emitting Diode
SU	Sensor Unit
WU	Wall Unit

3 ISCED NON-INTERFERENCE DISCLAIMER

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.

This device complies with the Canadian ICES-003 Class A specifications. CAN ICES-003(A) / NMB-003 (A).

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 exempt 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 numérique de la classe A est conforme à la norme NMB-003 du Canada.

4 FCC CLASS A COMPLIANCE STATEMENT

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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

Changes or modifications not expressly approved by Electronics4All Inc. could void the user's authority to operate the equipment.

5 RF EXPOSURE STATEMENT

This equipment complies with FCC and ISED RSS-102 radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. In order to avoid the possibility of exceeding the FCC and ISED RSS-102 radio frequency exposure limits, this equipment should be installed and operated with minimum distance 20 cm (7.8 inches) between the antenna and your body during normal operation. Users must follow the specific operating instructions for satisfying RF exposure compliance.

Cet équipement est conforme aux limites d'exposition aux rayonnements FCC et ISED CNR-102 établies pour un environnement non contrôlé. Cet émetteur ne doit pas être installé ou utilisé en conjonction avec une autre antenne ou un autre émetteur. Afin d'éviter la possibilité de dépasser les limites d'exposition aux radiofréquences FCC et ISED, cet équipement doit être installé et utilisé avec une distance minimale de 20 cm (7.8 pouces) entre l'antenne et votre corps pendant le fonctionnement normal. Les utilisateurs doivent suivre les instructions spécifiques d'utilisation pour respecter la conformité à l'exposition aux RF.

6 SAFETY INFORMATION

1. Operate the device only with the specified battery packs and accessories.
2. The device is intended for use only in a clean and dry indoor environment.
3. Always wear personal protective equipment appropriate to the environment where the device is installed and operated.
4. The device contains no user serviceable parts. Do not attempt to repair the device. See **10 CONTACT INFORMATION** for support or repair.

7 INSTALLATION

7.1 INTENDED USE

The device is intended to be installed and operated in an indoor industrial environment. The wireless system is Class A equipment and may cause radio interference in residential areas.

8 PRODUCT DISPOSAL

8.1 Batteries

The FD-100 Sensor Unit (SU) contains primary lithium battery. Do not dispose of spent batteries with general waste. Contact your local government for directions on the proper disposal methods.

8.2 Product

The device may be recycled by Electronics4All Inc. See the Contact Information section to recycle the FD-100 or any supplied accessories.

9 MAINTENANCE AND CLEANING

Clean the enclosure using a clean dry cloth.

10 CONTACT INFORMATION

Electronics4All Inc.
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1-613-595-0303

11 SYMBOLS



Certification mark indicating that the device has been evaluated against FCC part 15.



NRTL certification mark indicating that the device has been evaluated against IEC 61010-1.

12 FD-100



Figure 1 – FD-100 Sensor Unit



Figure 2 – FD-100 Floor Unit



Figure 3 – FD-100 Sensor Unit placed in the Wall Unit attached with Floor Unit and powered by an external battery pack

The FD-100 Flood Detector is a reliable, wireless water leak detection sensor designed to monitor and identify the presence of water within various areas of an industrial facility. This system provides critical protection for vital infrastructure and ensures operational safety by detecting potential leaks.

The FD-100 consists of one main unit – Sensor Unit (SU) and two accessories: the Wall Unit (WU) and the Floor Unit (FU).

The Sensor Unit (SU) is a versatile device which communicates wirelessly with a companion Gateway (supporting hundreds of sensors), using the BLE 5.0 protocol. The SU is designed to detect the presence of water in its environment, ensuring timely alerts for potential hazards. It is powered by a single 1500mAh Lithium Cylindrical CR123A cell, providing a compact and energy-efficient power solution designed to run for a minimum of 3 years before requiring battery maintenance.

The Wall Unit (WU) and the Floor Unit (FU) are accessories to the SU. Both WU and FU together facilitate the wall mounting of the SU at locations where the need arises for the SU to be mounted on the wall and not be left placed on the floor.

When the SU is mounted on the wall, the Floor Unit (FU) functions as an extended sensor probe, such that the sensing pins of SU are elongated all the way to the floor. The Wall Unit (WU) serves as a mounting platform for the SU, allowing it to securely attach to the wall. In this configuration, the SU is designed to leverage power from the battery packs with specific specifications (discussed in Section 15 SERIAL INTERFACE and 16 BATTERY AND ITS INSTALLATION AND REPLACEMENT) installed in the WU.

13 COMPATIBLE GATEWAYS

The FD-100 is compatible with the following Gateways manufactured by Electronics4All Inc.

Part Number	Description
GTW-BL100	Wireless Bluetooth 5.0 Receiver, LAN TCP/IP Communication, Integrated Ambient Temperature and Humidity Sensor
GTW-200	Wireless Bluetooth 5.0 Receiver, 900 MHz LoRa WAN Long Range Repeater Network, LAN TCP/IP Communication, Ambient Temperature and Humidity Sensor, PoE Compatible
P-GTW-BL300	Wireless Bluetooth 5.0 Portable Datalogger, Android X-Lab Database Application, Adjustable Sensor Reporting Interval

14 USER INTERFACES



Figure 4- FD-100 User Interface

14.1 PUSH BUTTONS

A single push button is located on the top of the sensor. The push button is used for the following functions depending on the duration the push button is pressed:

Push Button Action	Function
Single Push and Hold for 500ms	Pushes the sensor in pairing mode.
Single Push and Hold for 6 seconds	Unpairs the sensor from the paired gateway and the same action is used to RESET the sensor.
Single Push and Release	Shows the device pairing status.
Two Consecutive Pushes	Enables/Disables UART used to communicate with the Sensor through Wall Unit through Battery Pack (if UART communication is supported by the Battery Pack).

14.2 LEDs

Two LEDs (Red, Green) are located on the top of the SU. The LEDs are used to indicate the status of various operations implemented by the user via Push Button.

Operation	LED Pattern
Device Reset	RED ON (1 second), RED OFF , GREEN ON (1 second), GREEN OFF (1 second), GREEN ON (1 second), GREEN OFF (1 second)
Pairing Status Check	RED ON (1 second), RED OFF : Not paired to Gateway GREEN ON (1 second), GREEN OFF : Paired to Gateway
Pairing	RED ON (1 second), RED OFF , GREEN ON (1 second), GREEN OFF : Successful pairing RED ON (1 second), RED OFF : Unsuccessful pairing
Unpairing	GREEN ON (1 second), GREEN OFF , RED (Fast Flashing) followed by the device reset LED sequence.
UART	UART ON: RED ON and GREEN ON (1 second), RED OFF and GREEN OFF UART OFF: Device Reset LED sequence
External Battery Pack Connection	On detect: 3 times alternate flashing of RED and GREEN LEDs @2Hz frequency On disconnect: 3 times alternate flashing of RED and GREEN LEDs @2Hz frequency
FAULT	RED linking @1Hz frequency

15 SERIAL INTERFACE

The FD-100 SU's Serial Interface can only be accessed via an external battery pack. The external battery pack that is attached to the Wall Unit (WU) must have a USB to UART Serial interface and support the following pinout:

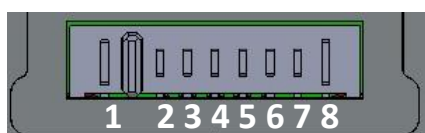


Figure 5 – Battery Connector Pinout

Pin Number	Name	Description
1	BAT+	Battery pack positive terminal (1.8VDC to 5VDC)
2	VIO	3.3 VDC voltage output designed to be used as a I/O voltage reference for the communication channels. Source impedance is 1.0 kΩ
3	ALERT	Active low digital output. Internally pulled up to VIO
4	SCL	I ² C serial clock input. Internally pulled up to VIO
5	SDA	I ² C serial data I/O. Internally pulled up to VIO
6	Tx	UART transmit channel (data output)
7	Rx	UART receive input (data input)
8	BAT-	Battery pack negative terminal

The FD-100 Sensor Unit's serial interface can provide access to various sensor parameters via a serial terminal. When mounted on the Wall Unit with the specific pinout supporting Battery Pack (via the USB to UART Interface of the battery pack), the sensor will enumerate as a Virtual Communications Port (VCP) and can be controlled using a serial terminal program.



Figure 6 – Wall Unit and Floor Unit

To enable serial communication, the USB cable must be connected between the installed battery pack and the host computer. On the FD-100 SU then push the Push Button consecutively for two times. The LEDs **RED** and **GREEN** should turn ON and then turn OFF after 1 second on successful enabling of the Serial Interface.

The FD-100 serial communication settings are provided in the table to the right:

Baud Rate:	115200
Data Bits:	8
Parity:	None
Stop Bits:	1
Flow Control:	None

Press [ENTER] in the terminal window to display the command prompt. Typing HELP in the command prompt will display the available commands for the FD-100 SU for assistance on utilizing the available commands.

```
FD-100>
FD-100>HELP

----- command list -----
HELP          SINGLE_REPORT  FIRMWARE      RESET
```

Figure 7 – FD-100 Command Prompt

Two consecutives Push Button presses should disable the Serial Interface, and this is indicated by RESET LED sequence.

16 BATTERY AND ITS INSTALLATION AND REPLACEMENT

The FD-100 SU is powered from one (1) non-rechargeable CR123A Lithium / Manganese Dioxide (Li/MnO₂) cell - 1500mAh (3.0 VDC to 1.8 VDC).

Under normal operation, the internal battery should last for around 3 years using the default reporting interval of 5 minutes.

The batteries should be replaced once the voltage drops below 2.0 VDC.

If a sensor fails to broadcast, one of the LEDs no longer light when pressing the push button, or the sensor appears to continually reset, the CR-123A cell should be replaced.

The battery replacement procedure is as follows:

1. Unscrew the 3x TORX screws from the Sensor Unit as illustrated in the Figure 8. The screw accepts T10 Screw drive.



Figure 8 – FD-100 SU Bottom Enclosure

2. Lift the top housing. This shall expose the battery and the battery connector. The battery maybe replaced at this point.

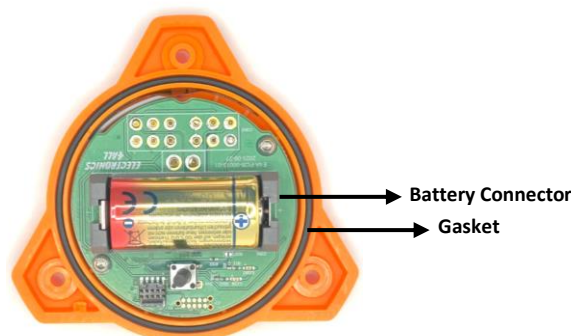


Figure 9 – FD-100 SU Battery Connector and Gasket

3. Before putting back the 3x TORX screws make sure that the gasket is intake, and it has not dislocated because of dismantling. Tighten the screws back with a controlled torque of 2.0 inch-lb

The external battery pack which can be used while the Sensor Unit is mounted on the WU can either be a primary (non-rechargeable) battery pack or a secondary (rechargeable) battery pack that provides 1.8VDC to 5VDC.

Installation of an external battery pack onto the Wall unit is straightforward. The battery pack is just required to slide in the Battery Compartment shown in the Figure 10. The battery pack should mate with the connector in the compartment very easily and an audible click will be heard.



Figure 10 – FD-100 Wall Unit External Battery Compartment



Figure 11 – FD-100 External Battery Pack Installation on the Wall Unit



Caution: In order to operate the FD-100 in a manner compliant to UL/CAN/CSA-C22.2 No. 61010-1, the FD-100 must be operated with a UL (Underwriters Laboratories) certified battery pack. Please contact Electronics4All Inc. for more information on how to acquire a UL Certified battery pack.

When an external battery pack connection/disconnection is detected the following LED sequence is observed on the mounted FD-100 SU:

3x Alternate flashing of **RED** and **GREEN** LEDs @2Hz frequency.

17 PAIRING

To enable sensor operation, the FD-100 Sensor Unit must first be paired with a Gateway.

17.1 PAIRING STATUS

To determine if the FD-100 SU has been paired with a Gateway, press and release the pushbutton.

If the **GREEN LED** turns on for 1 second, the wireless sensor is paired with a Gateway.

If the **RED LED** turns on for 1 second, the wireless sensor is not paired with a Gateway.



Figure 12- FD-100 Pairing Status

17.2 PAIRING A DEVICE TO A GATEWAY

1. Place the target Gateway in Pairing Mode. The **GREEN COM LED** on the Gateway will turn ON. Note that the procedure for placing the unit in pairing mode differs depending on the Gateway, so refer to the User Manual for the specific model.

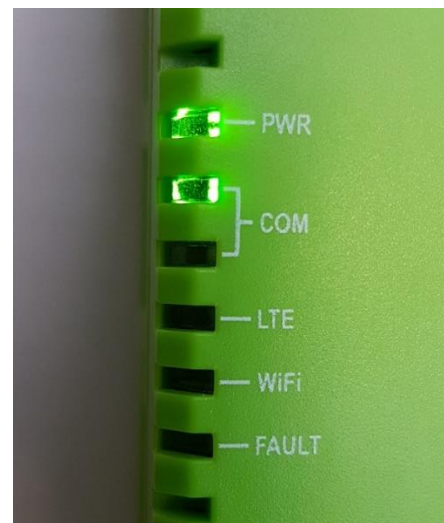


Figure 13 – Gateway GREEN COM LED ON during pairing

1. Press and hold the push button for 500ms on the FD-100 SU. The **RED LED** of the FD-100 SU will turn on for 1 second. Release the push button.

2. If pairing is successful, the **GREEN LED** on the FD-100 SU will then turn on for 1 second, and the **GREEN COM LED** on the Gateway will turn OFF.
3. If pairing was not successful, the **GREEN LED** on the FD-100 SU will not turn ON and the **GREEN COM LED** on the Gateway will remain ON. If this occurs, re-attempt step 1.

17.3 UNPAIRING A DEVICE TO A GATEWAY



Figure 14- FD-100 Unpairing

To unpair the FD-100 from the Gateway, press and hold the pushbutton. The moment the Push Button is pressed it will show the pairing status and as the sensor is paired with the gateway the LED sequence expected is - **GREEN ON** (1 second), **GREEN OFF**. After approximately 8 seconds of HOLD, the **RED LED** will start to flash rapidly. The pushbutton may then be released.

The FD-100 device is now no longer paired to the Gateway, and a RESET LED sequence will be observed.

18 MOUNTING

18.1 Mounting of SU on WU

The WU has a Kangaroo Pocket like design in which the Sensor Unit can be dropped in.

SU being symmetrical in the design, incorporates special ribs allowing the Sensor Unit placement only in one orientation, such that the Push Button and the LEDs are always accessible



Figure 15 – FD-100 SU mounted on the WU

18.2 Mounting of the WU on the Wall

The rear of the WU features a magnet-assisted mounting system. 4x Neodymium Magnets with the diameter of $\frac{3}{4}$ inch and a pull force of 20lbs are secured using machine screws on the rear housing. Using these magnets the Wall Unit can be mounted to metallic surfaces without requiring tools or additional hardware.



Figure 16 – FD-100 WU Magnet Mount

Figure 17 illustrates the mounting of the Sensor Unit on the Wall Unit, WU on a Metallic Fixture and the Floor Unit used to detect the presence of water on the floor.



Figure 17 – FD-100 wall mounting

19 DIMESNIIONS

19.1 FD-100 Sensor Unit Dimensions

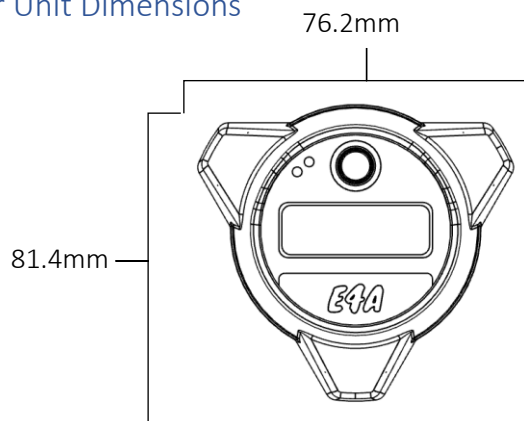


Figure 18 - FD-100 SU Top View

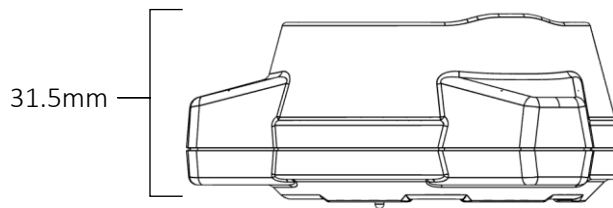


Figure 19 - FD-100 SU Side View

19.2 FD-100 Wall Unit Dimensions

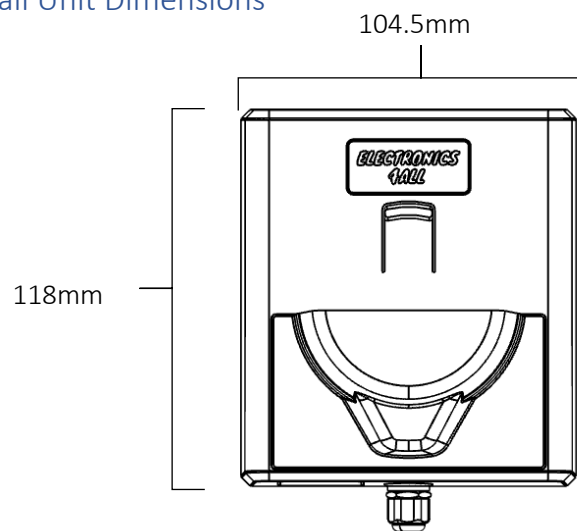


Figure 20 - FD-100 WU Front View

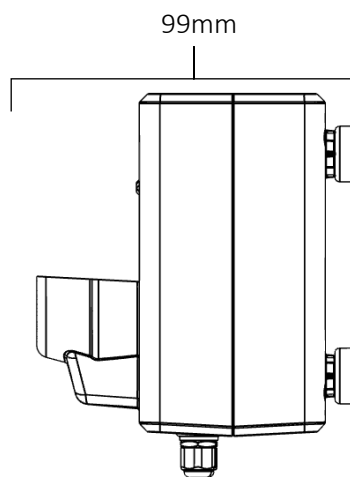


Figure 21 - FD-100 WU Side View

19.3 FD-100 Floor Unit Dimensions

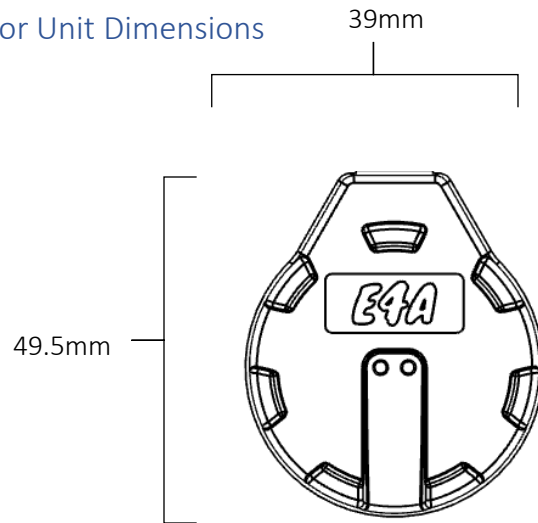


Figure 22 - FD-100 FU Top View

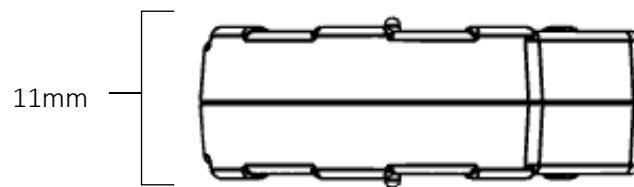


Figure 23 - FD-100 FU Side View

20 SPECIFICATIONS

20.1 Certifications (PENDING)

FCC ID	2AXVKFD100
Industry Canada Certification Number	26661-FD100
Safety	UL/CAN/CSA-C22.2 No. 61010-1-12

20.2 Bluetooth

Protocol	5.0 Low Energy
Frequency Range	2404 MHz to 2480 MHz
Channels	0 -39
Communication Range to Gateway	200 m Line of Sight

20.3 Power

Battery Type	1 × CR123A 1500 mAh Li/MnO ² Non- Rechargeable Cell
External Battery Pack Type	Primary (Non-Rechargeable) and Secondary (Rechargeable) battery packs providing 1.8VDC to 5VDC via the specific mating connector for the connector (with the specific pinout) described in Section 16 of this document.

20.4 Sensor Unit Specifications:

Specification	Value
Weight	~87g
Ingress Protection	IP65
Material	Plastic enclosure–Flame retardant Polycarbonate/ABS blend
Battery Life	~3 years (estimated) with 5-minute reporting interval
Mounting Features	3x threaded inserts for TORX head screws
Environment Resistance	-20°C to +65°C (TA)
Color	Orange
Power Consumption	20-25 µA w/ 5-minute reporting interval for the sensor

20.5 Wall Unit Specifications:

Specification	Value
Weight	~352g without external battery pack
Ingress Protection	NA
Material	Plastic enclosure – Flame retardant Polycarbonate/ABS blend
Battery Life of Sensor Unit	~3+ years (depending on the capacity of the external battery pack)
Mounting Features	4x Neodymium magnets for Wall Mount
Environment Resistance	-20°C to +65°C (TA)
Color	Grey
Power Consumption	NA

20.6 Floor Unit Specifications:

Specification	Value
Weight	~62g without the 1.5m extending cable that connects Floor Unit with the Wall Unit
Ingress Protection	IP65
Material	Plastic enclosure – Flame retardant Polycarbonate/ABS blend
Battery Life	NA
Mounting Features	NA
Environment Resistance	NA
Color	Orange
Power Consumption	NA