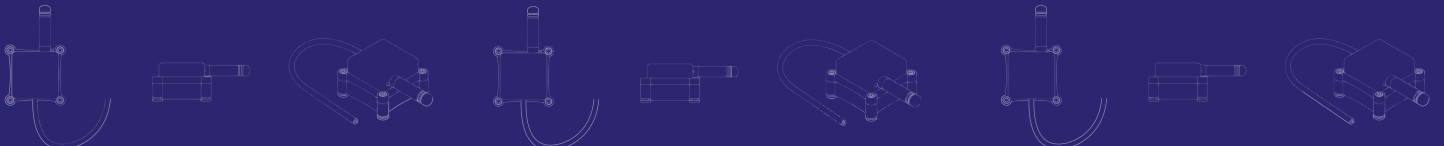




## Battery Test Sensor

UIO-G4AM-BTS





# Battery Test Sensor

UIO-G4AM-BTS

## Ruggedised IoT Battery Test Sensor

The Urban.io Battery Test Sensor reports on DC voltage between 0 and 30V, readings are taken every half a second and if the voltage drops below 9.5V a priority message is transmitted to the platform. If the voltage remains above 9.5V, a reading is taken and transmitted to the platform every 10 minutes.

Used in conjunction with an Urban.io IoT Gateway the Battery Test Sensor will read the DC voltage present across its two probes and transmit it to the Urban.io Cloud Platform on a near real-time basis.

Measured data is securely displayed within the Urban.io Cloud Platform for reporting purposes. Through the use of dynamic profiles, thresholds can be set for each sensor which can trigger alarms that can be sent via email or SMS.

All recorded sensor data, historical summaries and alarms are made available for use within external software platforms via the IoT Data API.



## Sensor Operation

The Urban.io Battery Test Sensor measures and reports on DC Voltage present between the two wires of its probe.

Cloud Reporting Platform



IoT API

```
devices": [
  {
    "id": 11,
    "position": "Office",
    "display_type": "temperature",
    "operator_id": 41,
    "order_by_status": false,
    "hardware_device_id": "device",
    "logical_datastreams": [
      {
        "id": 44,
        "display_type": "SENSOR_BA",
        "sensor_network": true,
        "measure": {
          "id": 1,
          "name": "Sensor Battery",
          "requires_multiplier": n
          "series_type": "continuo
```

Email/SMS Alerts



○ Can be retrofit into any location in less than 10 minutes, with no special equipment required.



# Features

Battery Test Sensor / UIO-G4AM-BTS

## Core Features

### Primary Sensing Element:

- 900mm cable with two wire interface

### Secondary Sensing Elements:

- Fault detection (loss of sensing element)
- IoT network connectivity (Signal to Noise levels "SNR")
- IoT device battery Level (% of remaining battery level)

### General Sensor Features:

- Gateway to sensor network range:
  - 500m non-line-of-sight
  - 5km line-of-sight
- Operating Temperature: -40° to 85°C
- Power Supply: 3.0 V CR2477 coin cell battery (replaceable)
- Battery life: 2 years under normal operation
- Reading frequency: Every 0.5 Seconds
- Data transmission frequency: 10 minute interval

## Variants

Each sensor is packaged with three screw-in antennas for use depending on the region you are deploying them into.

### 915 Band (915–925 MHz)

Suitable for South East Asia,  
Australia, North/South America

### 868 Band (863–870 MHz)

Suitable for Africa, Middle East, Europe

### 780 Band (779–787 MHz)

Suitable for China

## Example Applications

Sump Monitoring



Plumbing leak detection



Construction dewatering monitoring



Boat bilge monitoring



○ Can be retrofit into any location in less than 10 minutes, with no special equipment required.



# Specifications

Battery Test Sensor / UI0-G4AM-BTS

## Technical Specification

Maximum resolution over measured electrical range	<b>255 (8 bit left aligned)</b>
Maximum input voltage	<b>-0 V to +30 V</b>
Calibration / Drift	<b>None</b>
Accuracy	<b>± 3%</b>
Temperature range (limited by battery)	<b>-20°C to 85°C</b>

## Data Sampling and Reporting Frequency Specification

Standard reporting interval	<b>10 minutes</b>
Standard measurement interval	<b>0.5 seconds</b>
Priority event reporting	<b>Yes</b>
Priority event trigger	<b>Measured voltage &lt; 9.5 V DC</b>
Priority events reported per heartbeat	<b>NA</b>

## Power Specification

Supply Voltage	<b>2.0 – 3.4 V DC</b> replaceable CR2477 1AH lithium metal battery
Current consumption – sleep mode	<b>9 uA</b>
Current consumption – sensor active sampling mode	<b>12 uA (avg)</b>
Current consumption – radio RX mode	<b>25 mA for 0.5 seconds</b>
Current consumption – radio TX mode (max)	<b>100 mA for 0.5 seconds</b>



# Specifications

Battery Test Sensor / UI0-G4AM-BTS

## Environment Specification

Enclosure rating	IP67
Operating temperature electronic circuit board	-40°C to +85°C
Operating temperature CR2477 coin cell battery	-40°C to +85°C

## Network Specification

Radio modulation	LoRa
Radio protocol	Urban.io IoT Generation 4.x
Frequency bands	780 MHz, 868 MHz, 915 MHz, 4th configurable
Frequency accuracy	±30kHz (±30ppm max)

### 915 MHz Band

Maximum output power	+17 dBm
Default channel low, channel high	923.3 MHz, 925.1 MHz
Default bandwidth	500 kHz

### 868 MHz Band

Maximum output power	+17 dBm @ 869.5, +12 dBm others
Default channel low, channel high	868.1 MHz, 869.5 MHz
Default bandwidth	125 kHz

### 780 MHz Band

Maximum output power	+17 dBm
Default channel low, channel high	779.9 MHz, 783.0 MHz
Default bandwidth	250 kHz

## Security Specification

Sensor data encryption	AES 128-Bit
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## Certifications

CE	EN 301 489-x (EMC), EN60950 (safety)
FCC	CFR47, Part 15 for 915 MHz



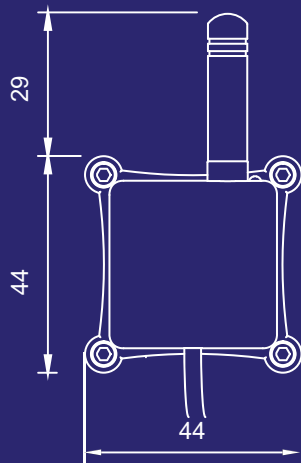
Can be retrofit into any location in less than 10 minutes, with no special equipment required.



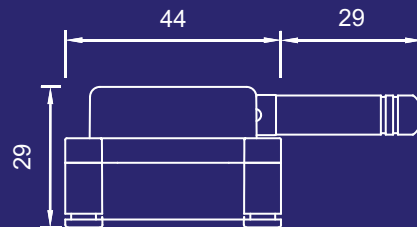
# Dimensions and Mounting

Battery Test Sensor / UI0-G4AM-BTS

## Top View



## Side View



## Dimensions

### Length:

73 mm (with antenna)

### Height:

29 mm

### Width:

44 mm

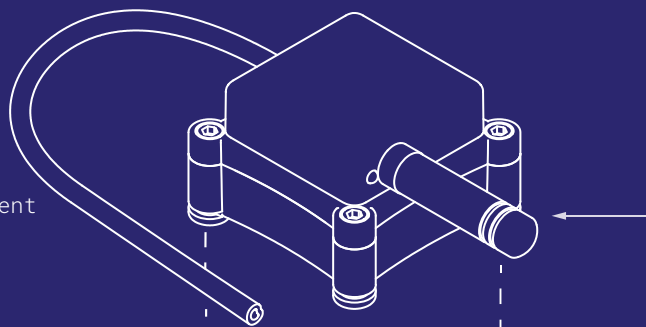
### Weight:

85 g

## Mounting

### Option: A

Magnetic Attachment

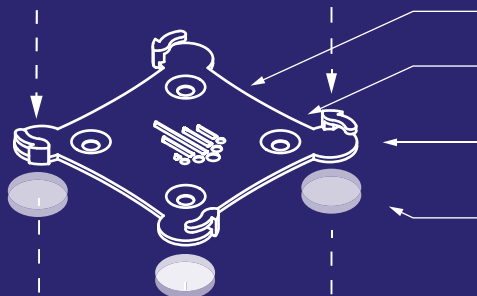


Magnetic feet snap to any metal surface

### Option: B

Industrial Sensor Clip

SKU: UI0-G4RL-INC



Option to 3M VHB stick Industrial Clip onto surface

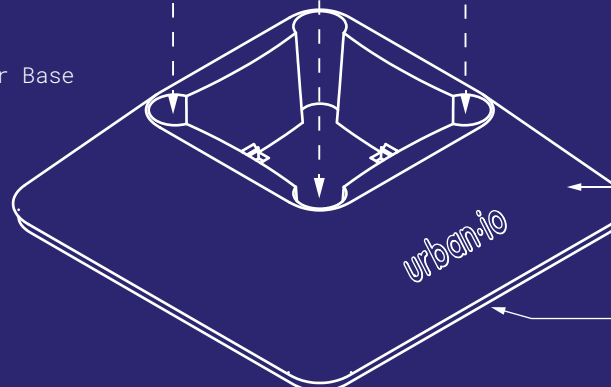
Option to Tek Screw Clip into surface

Magnetic feet snap and twist click into Industrial Clip mount

### Option: C

Architectural Sensor Base

SKU: UI0-G4RL-BAS



Option to 3M VHB feet pads to stick Industrial Clip onto curved surface

Snug fit into recess magnetic feet snap onto metal base of Architectural Mount

3M VHB stick Architectural Mount onto any flat surface

○ Can be retrofit into any location in less than 10 minutes, with no special equipment required.



## Positioning & Usage

Battery Test Sensor / UI0-G4AM-BTS

### Correct Positioning

This product is designed for usage with an Urban.io IoT Gateway. In ideal conditions with correct orientation of sensors and gateway antennas the following ranges can be achieved.

**Up to 5km line-of-sight** where there are no obstructions between the gateway and the sensor and they are placed on the same horizontal plane.

**500m non-line-of-sight** in an enclosed space where there are one or more obstructions (objects, walls, buildings) between the gateway and the sensor and it is placed on the same horizontal plane.

Where the sensors and gateways are placed in an enclosed space, the range can vary significantly. In addition incorrect antenna orientation, placement on different vertical planes, interruptions by walls, doors, boxes, ducts, pipes, machinery or any other large dense physical objects can affect the range even further. It is advised to avoid installation inside metal containers or behind metal objects.

### Correct Usage

This product is designed for application in normal indoor and certain outdoor environments. The gateway housing is IP65 rated and as such is designed to be water and dust resistant as well as generally resistant to direct sunlight. However the 240v Power Adapter is not rated for outdoor usage.

Please avoid the following:

- Environments where there is extreme heat (above +60°C) or cold (below -20°C)
- Environments where there is corrosive gas or fluids
- Environments which cause intermittent connectivity between gateway and sensors; this increases the frequency that sensors will scan for available networks and cause batteries to drain prematurely

### Certifications





# Connecting IoT Data to External Software Platforms

Battery Test Sensor / UIO-G4AM-BTS

Urban.io proactively supports the interfacing of IoT sensor data with all industry leading Asset Management, Field Force and Work Management, Data Analytics and Machine Learning Platforms.

We provide the following Public APIs as well as pre-built API Adapters for the following Enterprise IoT Systems:

## Public APIs



Rest Web Services



MQTT

## API Adapters



AWS IoT Core



IBM Watson IoT



Azure IoT Hub

If you wish to interface our IoT device data with a platform not on this list please contact [enquiries@urban.io](mailto:enquiries@urban.io)