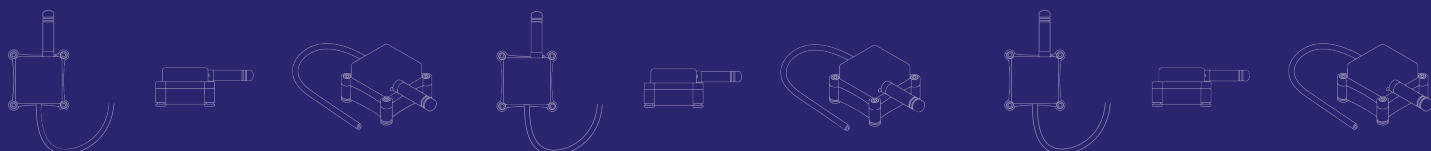
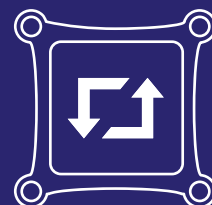




Process Loop Sensor

UIO-G4RL-PLS





Process Loop Sensor

UIO-G4RL-PLS

Ruggedised IoT Process Loop Sensor

The Urban.io Process Loop Sensor measures the current on a 4-20 mA industrial control loop or industrial sensor and reports the mA value as a percentage (%).

Used in conjunction with an Urban.io Gateway the Process Loop Sensor will read and transmit the percentage (%) to the Urban.io Cloud Platform on a near real-time basis, where it can be configured to translate the reading into a specific range value and displayed with custom units.

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.

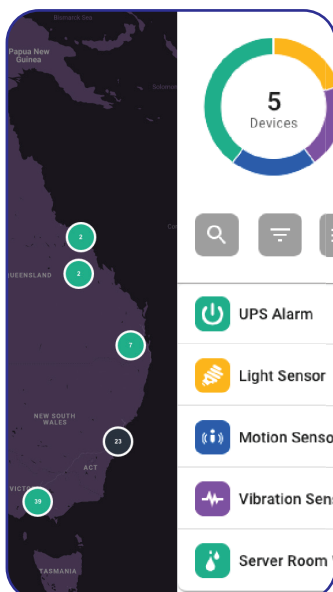
All recorded sensor data, historical summaries and alarms are made available for use within external software platforms via the IoT Data API.



Sensor Operation

The Urban.io Process Loop Sensor is wired in series with an existing 4-20mA sensor and “piggy-back” measures the mA value in that sensor loop. This allows the Process Loop Sensor to mimic and report the values being read by an isolated or remote industrial sensor that is not connected to a SCADA or analytics platform.

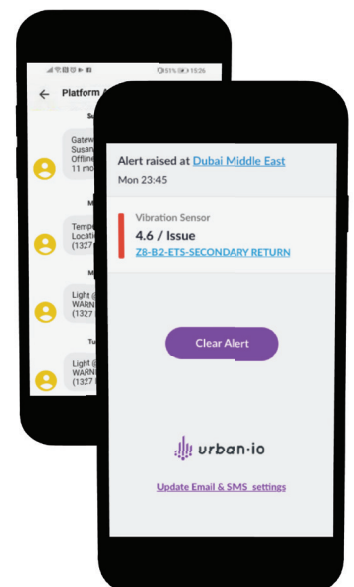
Cloud Reporting Platform



IoT API

```
ices": [
{
  "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

Process Loop Sensor / UIO-G4RL-PLS

Core Features

Primary Sensing Element:

- Internal shunt resistor
- 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: 1 Sample each 1 minute interval
- Data transmission frequency: 10 minute interval

Variants

Each sensor is packaged with three pluggable/snap-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

Remote monitoring of key utilities assets



Remote monitoring of isolated industrial sensors



Retrofit analysis of key industrial assets



Retrofit analysis of key manufacturing assets



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



Specifications

Process Loop Sensor / UI0-G4RL-PLS

Technical Specification

Maximum resolution over measured electrical range	65,535 detectable points
Shunt resistor	22 ohm
Maximum voltage drop	0.5 V at 20 mA
Maximum input voltage	3 V
Calibration / Drift	None
Accuracy	± 0.5%
Temperature range (limited by battery)	-20°C to 85°C

Data Sampling and Reporting Frequency Specification

Standard measurement reporting heartbeat	10 minutes
Standard measurement interval	10 seconds
High resolution measurement interval (magnet mode)	10 seconds
Priority event reporting	No
Priority events reported per heartbeat	NA

Power Specification

Supply Voltage	2.0 – 3.4 DVC replaceable CR2477 1AH lithium metal battery
Current consumption – sleep mode	6 uA
Current consumption – sensor active sampling mode	150 uA when active
Current consumption – radio RX mode	25 mA for 0.5 seconds
Current consumption – radio TX mode (max)	100 mA for 0.5 seconds

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



Specifications

Process Loop Sensor / UI0-G4RL-PLS

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

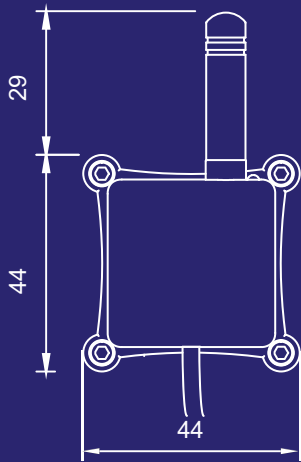
 Can be retrofit into any location in less than 10 minutes, with no special equipment required.



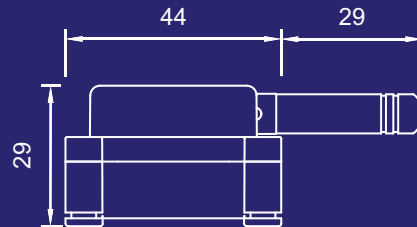
Dimensions and Mounting

Process Loop Sensor / UI0-G4RL-PLS

Top View



Side View



Dimensions

Length:
73 mm (with antenna)

Height:
29 mm

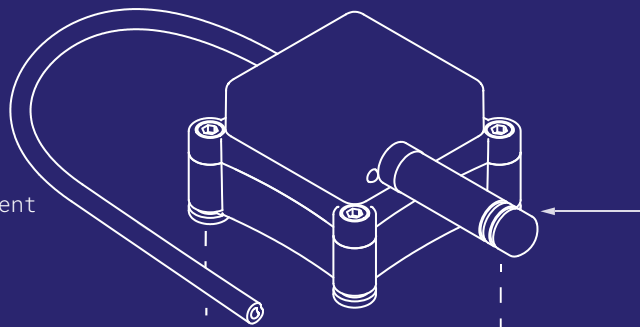
Width:
44 mm

Weight:
85 g

Mounting

Option: A

Magnetic Attachment

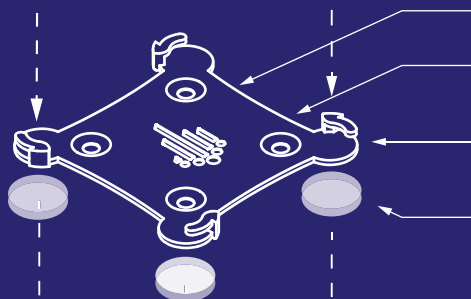


Magnetic feet snap to any metal surface

Option: B

Industrial Sensor Clip

SKU: UI0-G4RL-INC



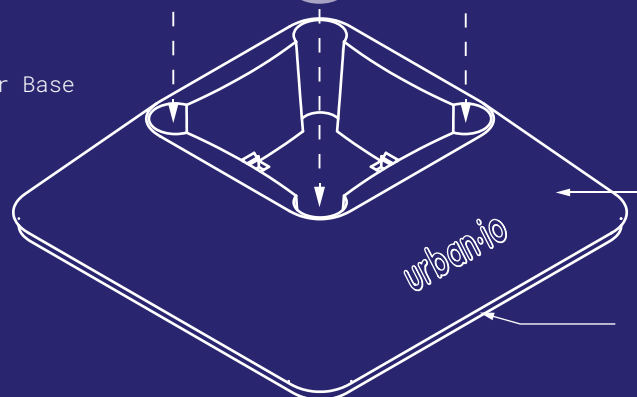
Option to 3M VHB stick Industrial Clip onto surface
Option to Tek Screw Clip into surface

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

Process Loop Sensor / UI0-G4RL-PLS

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

Process Loop Sensor / UIO-G4RL-PLS

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