



# IOT FACTORY



## IOT Sensors & Gateways

IOT Platform

Business Solutions

Hardware Distribution

## CATALOG OVERVIEW

IOT Factory is an exclusive LORAWAN-NBIOT-M2M IOT Sensors and Gateway distributor, providing an extensive range of battery-operated sensors for Smart Building, Smart Metering and Location Tracking.

### — Smart Metering



Pulse Counter



Pulse Counter + outputs



RS232 Converter



RS485 Converter



External Temp Sensor



4-20 mA Converter



Water Leakage



Water Meter



Sensor Hub



MBUS Converter



Fuel Level sensor



Level Sensor (Pressure)



Temperature Datalogger



NB-IOT Pulse Counter



NB-IOT 4-20 mA

### — Smart Building



All-in-One home sensor



Movement Detection



Door / Window sensor



Accelerometer sensor



Smoke sensor

### — GPS Trackers



GPS Tracker



ConstruTAG Q2-2020



Cow Tracker Q2-2020



CO2-Light-Noise-  
Temperature-Humidity

### — LORAWAN Gateways



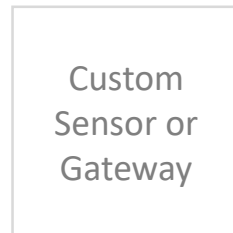
Gateway Ethernet



Gateway Ethernet-3G-GPS



LoRaWAN Network Tester



Custom  
Sensor or  
Gateway

We build your custom sensors !

Pulse counter and dry input (security) sensor. Built-in battery, with up to 10 years of autonomy, built-in antenna, 4 pulse /dry inputs.



#### Use Cases:

- Utilities metering (like water, electricity, heat) with Pulse Output
- Connect any equipment with Active Pulse Output or Dry Output
- Counting.

The Pulse Counter LORAWAN is a general purpose sensor with 4 digital inputs, each of which can be configured as Dry-Input or Pulse Input.

In Pulse count mode, the Pulse Counter counts electrical pulses at a maximum frequency of 200 Hz. It is possible to configure the frequency of collection and the transmission frequency of the counters independently. Configurable data collection between 5 minutes and 24 hours. Sending of data configurable between 5 minutes and 24 hours. The Pulse Counter supports the "Open Collector" circuit type.

In Dry-Input mode, the Pulse Counter generates a LORAWAN message when the circuit is opened or closed (or in both cases). The Pulse Counter also transmits the ambient temperature and its battery level.

The sensor configuration is via a USB connection via a free PC application. Either by LORAWAN message downlink.

| MEASUREMENTS  |               |
|---------------|---------------|
| Pulse Counter | Digital Input |
| Time          | Temperature   |
|               | Battery       |

| INPUTS / OUTPUTS            |                      |
|-----------------------------|----------------------|
| Input Pulse Channels        | Up to 4              |
| Maximum Input Frequency     | 200 Hz               |
| Security / Dry inputs       | Up to 4              |
| Built-in Temperature Sensor | Yes. 1-2 °C Accuracy |
| Internal Data Storage       | 200 packets          |

| CONFIGURATION           |   |
|-------------------------|---|
| Methods                 | USB/PC Program or OTA (downlink msg)  |
| LORAWAN Configurations  | Frequencies<br>16 Channels frequency plan<br>Confirmed Uplink msgs<br>ADR – Adaptive Data Rate<br>RX1 Offset<br>Join accept delay<br>Uplink number of transmissions<br>TX power<br>TX Data-rate   |
| Specific Configurations | Input 1: Pulse / Guard (open, short, both)<br>Input 2: Pulse / Guard (open, short, both)<br>Input 3: Pulse / Guard (open, short, both)<br>Input 4: Pulse / Guard (open, short, both)<br>Collection period: 5,15, 30, 60min. 6, 12, 24h<br>Transmission period: 5,15, 30, 60min. 6, 12,24h |

| LORAWAN CHARACTERISTICS      |                          |
|------------------------------|--------------------------|
| LORAWAN Class                | Class A                  |
|                              | ADR - Adaptive Data Rate |
|                              | Confirmed packets Yes/No |
|                              | 16 LORAWAN Channels      |
| Sensitivity                  | -138 dBm                 |
| Default Transmitter power    | 25 mW (Configurable)     |
| Maximum Transmission Power   | 100 mW                   |
| Urban Radio Coverage         | Up to 5 km               |
| Line of Sight Radio Coverage | Up to 15 km              |
| Activation                   | OTAA, ABP                |
| LORAWAN Frequencies          | EU868, US915, AU923 MHz  |

| TECHNICAL CHARACTERISTICS |   |
|---------------------------|---|
| Operating Temperatures    | -40 / +85 °C                              |
| Antenna                   | Built-in. -138 dBm                        |
| Built-in Battery          | 3.400 mAh                                 |
| Battery Life              | 80.000 data Transmission. Up to 10 years. |

| CASING                    |   |
|---------------------------|---|
| Housing Dimensions        | 95 x 50 x 45 mm   |
| Ingress Protection Rating | IP65. Outdoor.  |
| Mounting                  | Clamp fastening to the support, DIN-rail, wall-mounting |



Pulse counter and dry input and outputs (digital) sensor. Built-in battery, with up to 10 years of autonomy, built-in antenna, 4 pulse /dry inputs.



#### Use Cases:

- Utilities metering (like water, electricity, heat) with Pulse Output
- Connect any equipment with Active Pulse Output or Dry Output
- Counting.

The Pulse Counter LORAWAN is a general purpose sensor with 4 digital inputs, each of which can be configured as Dry-Input or Pulse Input.

In Pulse count mode, the Pulse Counter counts electrical pulses at a maximum frequency of 200 Hz. It is possible to configure the frequency of collection and the transmission frequency of the counters independently. Configurable data collection between 5 minutes and 24 hours. Sending of data configurable between 5 minutes and 24 hours. The Pulse Counter supports the "Open Collector" circuit type.

In Dry-Input mode, the Pulse Counter generates a LORAWAN message when the circuit is opened or closed (or in both cases).

The Pulse Counter also transmits the ambient temperature and its battery level.

Digital outputs: 2 digital outputs can be activated through LORAWAN downlink messages. LORAWAN Class C must be activated (requires external power supply – no battery operated)

The sensor configuration is via a USB connection via a free PC application. Either by LORAWAN message downlink.

| MEASUREMENTS  |                |
|---------------|----------------|
| Pulse Counter | Digital Input  |
|               | Digital Output |
| Time          | Temperature    |
|               | Battery        |

| INPUTS / OUTPUTS            |                      |
|-----------------------------|----------------------|
| Input Pulse Channels        | Up to 4              |
| Maximum Input Frequency     | 200 Hz               |
| Security / Dry inputs       | Up to 4              |
| Dry/Digital outputs         | 2                    |
| Built-in Temperature Sensor | Yes. 1-2 °C Accuracy |
| Internal Data Storage       | 200 packets          |

| CONFIGURATION           |   |
|-------------------------|---|
| Methods                 | USB/PC Program or OTA (downlink msg)  |
| LORAWAN Configurations  | Frequencies<br>16 Channels frequency plan<br>Confirmed Uplink msgs<br>ADR – Adaptive Data Rate<br>RX1 Offset<br>Join accept delay<br>Uplink number of transmissions<br>TX power<br>TX Data-rate   |
| Specific Configurations | Input 1: Pulse / Guard (open, short, both)<br>Input 2: Pulse / Guard (open, short, both)<br>Input 3: Pulse / Guard (open, short, both)<br>Input 4: Pulse / Guard (open, short, both)<br>Collection period: 5,15, 30, 60min. 6, 12, 24h<br>Transmission period: 5,15, 30, 60min. 6, 12,24h |

| LORAWAN CHARACTERISTICS      |                          |
|------------------------------|--------------------------|
| LORAWAN Class                | Class A, C               |
|                              | ADR - Adaptive Data Rate |
|                              | Confirmed packets Yes/No |
|                              | 16 LORAWAN Channels      |
| Sensitivity                  | -138 dBm                 |
| Default Transmitter power    | 25 mW (Configurable)     |
| Maximum Transmission Power   | 100 mW                   |
| Urban Radio Coverage         | Up to 5 km               |
| Line of Sight Radio Coverage | Up to 15 km              |
| Activation                   | OTAA, ABP                |
| LORAWAN Frequencies          | EU868, US915, AU923 MHz  |

| TECHNICAL CHARACTERISTICS |   |
|---------------------------|---|
| Operating Temperatures    | -40 / +85 °C                              |
| Antenna                   | Built-in. -138 dBm                        |
| Built-in Battery          | 3.400 mAh. Ext: 5V                        |
| Battery Life              | 80.000 data Transmission. Up to 10 years. |

| CASING                    |   |
|---------------------------|---|
| Housing Dimensions        | 95 x 50 x 45 mm   |
| Ingress Protection Rating | IP65. Outdoor.  |
| Mounting                  | Clamp fastening to the support, DIN-rail, wall-mounting |

RS-232 to LoRaWAN converter, Pulse counter and Security sensor. All Combined. Two pulse inputs, each of them can be configured as security/digital input. External power supply. Operation in transparent mode LoRaWAN <-> RS-232



#### Use Cases:

- Any industrial equipment with RS232 interface
- Utilities metering (like water, electricity, heat) with Pulse Output
- Connect any equipment with Active Pulse Output or Dry Output

The RS232 to LORAWAN converter allows the transparent transmission of RS232 frames. These frames are stored in transmitted at regular intervals. If the frame is larger than the LoRaWAN frame, the data is transmitted in several separate packets. It actually acts as a "Transparent" modem working in LORAWAN Class C mode (external electricity powered). The LORAWAN converter transfers this serial command to the connected Meter/Machine. If an answer is received, the Converter sends it back as one/multiple LORAWAN uplink messages. It is also possible to program an RS232 command in the converter, that will be executed at regular intervals, while the answer will be forwarded to the LORAWAN Network.

In Pulse count mode, the Pulse Counter counts electrical pulses at a maximum frequency of 200 Hz. It is possible to configure the frequency of data transmission frequency of the counters independently, between 5 minutes and 24 hours. The Pulse Counter supports the "Open Collector" circuit type.

In Dry-Input mode, the Pulse Counter generates a LORAWAN message when the circuit is opened or closed (or in both cases). The Pulse Counter also transmits the ambient temperature and its battery level.

The sensor configuration is via a USB connection via a free PC configuration application. Either by LORAWAN message downlink.

| MEASUREMENTS |               |               |
|--------------|---------------|---------------|
| RS232        | Pulse Counter | Digital Input |
| Time         | Temperature   | Battery       |

| INPUTS / OUTPUTS            |                      |
|-----------------------------|----------------------|
| RS232 Interface             | 1                    |
| Input Pulse Channels        | Up to 2              |
| Maximum Input Frequency     | 200 Hz               |
| Security / Dry inputs       | Up to 2              |
| Built-in Temperature Sensor | Yes. 1-2 °C Accuracy |
| Internal Data Storage       | 200 packets          |

| CONFIGURATION           |  |
|-------------------------|--|
| Methods                 | USB/PC Program or OTA (downlink msg)   |
| LORAWAN Configurations  | Frequencies<br>16 Channels frequency plan<br>Confirmed Uplink msgs<br>ADR – Adaptive Data Rate<br>RX1 Offset<br>Join accept delay<br>Uplink number of transmissions<br>TX power<br>TX Data-rate  |
| Specific Configurations | Speed bitrate, Data bit: 7/8 & Parity, Stop bits<br>Answer timeout<br>Input 1: Pulse / Guard (open, short, both)<br>Input 2: Pulse / Guard (open, short, both)<br>Transmission period: 5,15, 30, 60min. 6, 12,24h<br>RS232 command to execute at regular intervals |

| LORAWAN CHARACTERISTICS      |                          |
|------------------------------|--------------------------|
| LORAWAN Class                | Class C                  |
|                              | ADR - Adaptive Data Rate |
|                              | Confirmed packets Yes/No |
|                              | 16 LORAWAN Channels      |
| Sensitivity                  | -138 dBm                 |
| Default Transmitter power    | 25 mW (Configurable)     |
| Maximum Transmission Power   | 100 mW                   |
| Urban Radio Coverage         | Up to 5 km               |
| Line of Sight Radio Coverage | Up to 15 km              |
| Activation                   | OTAA, ABP                |
| LORAWAN Frequencies          | EU868, US915, AU923 MHz  |

| TECHNICAL CHARACTERISTICS |                    |
|---------------------------|--------------------|
| Operating Temperatures    | -40 / +85 °C       |
| Antenna                   | Built-in. -138 dBm |
| Power                     | Ext: 8-36V         |

| CASING                    |   |
|---------------------------|---|
| Housing Dimensions        | 95 x 50 x 45 mm   |
| Ingress Protection Rating | IP65. Outdoor.  |
| Mounting                  | Clamp fastening to the support, DIN-rail, wall-mounting |

RS-485 to LoRaWAN converter, pulse counter and safety sensor. All combined. Two pulse inputs, each of which can be configured as a safety / digital input. External power supply. RS485 transmitter to LORAWAN.



#### Use Cases:

- Any industrial equipment with RS485 interface (up to 6 connected)
- Utilities metering (like water, electricity, heat) with Pulse Output
- Connect any equipment with Active Pulse Output or Dry Output

The RS485 to LORAWAN converter allows the transparent transmission of RS485 frames. These frames are stored in transmitted at regular intervals. If the frame is larger than the LoRaWAN frame, the data is transmitted in several separate packets. It actually acts as a "Transparent" modem working in LORAWAN Class C mode (external electricity powered). The LORAWAN converter transfers this serial command to the connected Meter/Machine. If an answer is received, the Converter sends it back as one/multiple LORAWAN uplink messages.

In Pulse count mode, the Pulse Counter counts electrical pulses at a maximum frequency of 200 Hz. It is possible to configure the frequency of data transmission frequency of the counters independently, between 5 minutes and 24 hours. The Pulse Counter supports the "Open Collector" circuit type.

In Dry-Input mode, the Pulse Counter generates a LORAWAN message when the circuit is opened or closed (or in both cases). The Pulse Counter also transmits the ambient temperature and its battery level.

The sensor configuration is via a USB connection via a free PC application. Either by LORAWAN downlink message.

| MEASUREMENTS |               |               |
|--------------|---------------|---------------|
| RS485        | Pulse Counter | Digital Input |
| Time         | Temperature   | Battery       |

| INPUTS / OUTPUTS            |                                      |
|-----------------------------|--------------------------------------|
| RS485 Interface             | 1 – connect up to 6 RS485 appliances |
| Input Pulse Channels        | Up to 2                              |
| Maximum Input Frequency     | 200 Hz                               |
| Security / Dry inputs       | Up to 2                              |
| Built-in Temperature Sensor | Yes. 1-2 °C Accuracy                 |
| Internal Data Storage       | 200 packets                          |

| CONFIGURATION           |   |
|-------------------------|---|
| Methods                 | USB/PC Program or OTA (downlink msg)  |
| LORAWAN Configurations  | Frequencies<br>16 Channels frequency plan<br>Confirmed Uplink msgs<br>ADR – Adaptive Data Rate<br>RX1 Offset<br>Join accept delay<br>Uplink number of transmissions<br>TX power<br>TX Data-rate                       |
| Specific Configurations | Speed bitrate<br>Data bit: 7/8 & Parity<br>Stop bits<br>Answer timeout<br>Input 1: Pulse / Guard (open, short, both)<br>Input 2: Pulse / Guard (open, short, both)<br>Transmission period: 5,15, 30, 60min. 6, 12,24h |

| LORAWAN CHARACTERISTICS      |                          |
|------------------------------|--------------------------|
| LORAWAN Class                | Class C                  |
|                              | ADR - Adaptive Data Rate |
|                              | Confirmed packets Yes/No |
|                              | 16 LORAWAN Channels      |
| Sensitivity                  | -138 dBm                 |
| Default Transmitter power    | 25 mW (Configurable)     |
| Maximum Transmission Power   | 100 mW                   |
| Urban Radio Coverage         | Up to 5 km               |
| Line of Sight Radio Coverage | Up to 15 km              |
| Activation                   | OTAA, ABP                |
| LORAWAN Frequencies          | EU868, US915, AU923 MHz  |

| TECHNICAL CHARACTERISTICS |                    |
|---------------------------|--------------------|
| Operating Temperatures    | -40 / +85 °C       |
| Antenna                   | Built-in. -138 dBm |
| Power                     | Ext: 8-36V         |

| CASING                    |   |
|---------------------------|---|
| Housing Dimensions        | 95 x 50 x 45 mm   |
| Ingress Protection Rating | IP65. Outdoor.  |
| Mounting                  | Clamp fastening to the support, DIN-rail, wall-mounting |

LORAWAN Sensor / datalogger for industrial temperature application: fridges, piping, industrial premises, with configurable high and low temperature thresholds.

#### Use Cases:

- Industrial Temperature monitoring



Le capteur de Température industriel LORAWAN permet la mesure précise de la température, au travers d'une sonde déportée. Il permet la configuration de seuils (température minimale et maximale) permet la génération d'une alarme en cas de dépassement. Les fréquences de mesure (lorsque la température est dans les seuils ou hors des seuils définis) et de transmission sont configurables.

La précision de la mesure est de 0,5°C ou 1°C, selon la plage de mesure, et permet une mesure entre -55°C et +100°C.

Le capteur de température est dispose également d'un entrée digitale (dry input), de 2 capteurs halls (pour détecter le déplacement du capteur), et d'un capteur de détection d'ouverture du boîtier.

The sensor configuration is via a USB connection via a free PC application. Either by LORAWAN message downlink.

| MEASUREMENTS  |               |
|---------------|---------------|
| Temperature   | Digital Input |
| Time          | Battery       |
| Removal Alert | Open Alert    |

| INPUTS / OUTPUTS      |  |
|-----------------------|--|
| Temperature sensor    | 1<br>±0.5 °C in range -10...+40 °C<br>±1 °C in range -55...+100 °C |
| Dry Input             | 1  |
| Hall Sensors          | 2  |
| Tamper State          | 1  |
| Internal Data Storage | 200 packets  |

| CONFIGURATION           |  |
|-------------------------|--|
| Methods                 | USB/PC Program or OTA (downlink msg)   |
| LORAWAN Configurations  | Frequencies<br>16 Channels frequency plan<br>Confirmed Uplink msgs<br>ADR – Adaptive Data Rate<br>RX1 Offset<br>Join accept delay<br>Uplink number of transmissions<br>TX power<br>TX Data-rate  |
| Specific Configurations | Input 1: Alert when open, short, both<br>Min & Max temperature thresholds<br>Collection period: 5, 15, 30, 60min. 6, 12, 24h<br>Collection period when outside thresholds<br>Transmission period: 5, 15, 30, 60min. 6, 12, 24h<br>Temperature Threshold alerting |

| LORAWAN CHARACTERISTICS      |                          |
|------------------------------|--------------------------|
| LORAWAN Class                | Class A                  |
|                              | ADR - Adaptive Data Rate |
|                              | Confirmed packets Yes/No |
|                              | 16 LORAWAN Channels      |
| Sensitivity                  | -138 dBm                 |
| Default Transmitter power    | 25 mW (Configurable)     |
| Maximum Transmission Power   | 100 mW                   |
| Urban Radio Coverage         | Up to 5 km               |
| Line of Sight Radio Coverage | Up to 15 km              |
| Activation                   | OTAA, ABP                |
| LORAWAN Frequencies          | EU868, US915, AU923 MHz  |

| TECHNICAL CHARACTERISTICS |  |
|---------------------------|--|
| Operating Temperatures    | -40 / +85 °C                                 |
| Antenna                   | Built-in. -138 dBm                           |
| Built-in Battery          | 3.400 mAh. Ext: 8-36V                        |
| Battery Life              | 80.000 data Transmission.<br>Up to 10 years. |

| CASING                    |   |
|---------------------------|---|
| Housing Dimensions        | 95 x 50 x 45 mm   |
| Ingress Protection Rating | IP65. Outdoor.  |
| Mounting                  | Clamp fastening to the support, DIN-rail, wall-mounting |

Temperature datalogger allowing the precise measurement of 2 temperatures (ambient and via a temperature probe), internal storage and LORAWAN transmission.

#### Use Cases:

- Logistics
- Cold Chain monitoring
- Temperature monitoring



This LORAWAN temperature Datalogger allows the precise measurement of 2 temperatures (ambient and via an external temperature probe), internal storage and LORAWAN transmission.

The LORAWAN Thermologger is equipped with 2 thermistors. The first probe is fixed, attached to the sensor, while the second is remote (cable with a length of 1 meter). This datalogger allows the combined measurement of the ambient temperature, and of the temperature at a particular place (food, solid, liquid, gas).

This LORAWAN thermologger has an internal memory allowing the storage of 1300 temperature measurement points. These temperature measurements are transmitted to a remote application, when a stable LORAWAN network is detected. This datalogger is therefore ideal in the field of logistics and transport, for monitoring temperature changes (FMCG, drugs, ...). Particularly in the field of cold chain control.

This temperature datalogger is configured via a PC application and a USB cable, or by LORAWAN downlink message..

| MEASUREMENTS    |             |      |         |        |
|-----------------|-------------|------|---------|--------|
| Ext Temperature | Temperature | Time | Battery | Tamper |

| INPUTS / OUTPUTS       |  |
|------------------------|--|
| Built-in Thermistor    | -55..+100°C (accuracy +/- 1 °C)<br>-10.. +40°C (accuracy +/- 0,5 °C) |
| Ext. Temperature Probe | -55..+100°C (accuracy +/- 1 °C)<br>-10.. +40°C (accuracy +/- 0,5 °C) |
| Tamper                 | Open / Close Device sensor   |
| Internal Memory        | 1.300 measures.  |

| CONFIGURATION           |   |
|-------------------------|---|
| Methods                 | USB/PC Program or OTA (downlink msg)  |
| LORAWAN Configurations  | Frequencies<br>16 Channels frequency plan<br>Confirmed Uplink msgs<br>ADR – Adaptive Data Rate<br>RX1 Offset<br>Join accept delay<br>Uplink number of transmissions<br>TX power<br>TX Data-rate |
| Specific Configurations | Data Collection: 5,15, 30, 60min. 6, 12, 24h<br>Data Transmission: 5,15, 30, 60min. 6, 12, 24h<br>Tamper state (open/close)   |

| LORAWAN CHARACTERISTICS      |                          |
|------------------------------|--------------------------|
| LORAWAN Class                | Class A                  |
|                              | ADR - Adaptive Data Rate |
|                              | Confirmed packets Yes/No |
|                              | 16 LORAWAN Channels      |
| Sensitivity                  | -138 dBm                 |
| Default Transmitter power    | 25 mW (Configurable)     |
| Maximum Transmission Power   | 100 mW                   |
| Urban Radio Coverage         | Up to 5 km               |
| Line of Sight Radio Coverage | Up to 15 km              |
| Activation                   | OTAA, ABP                |
| LORAWAN Frequencies          | EU868, US915, AU923 MHz  |

| TECHNICAL CHARACTERISTICS |                             |
|---------------------------|-----------------------------|
| Operating Temperatures    | -40 / +85 °C                |
| Antenna                   | Built-in. -138 dBm          |
| Battery Pack              | 6.400 mAh                   |
| Battery Life              | > 80.000 data transmissions |
| Temperature probe         | MFP-1. 30 cm length         |

| CASING                    |                 |
|---------------------------|-----------------|
| Housing Dimensions        | 95 x 75 x 40 mm |
| Ingress Protection Rating | IP67. Outdoor.  |
| Mounting                  | Straps.         |



Converter designed for reading data from sensor probes with 4-20 mA 2-wire interface. Store and Forward reading at custom time intervals.



#### Use Cases:

- LORAWAN transmission for 4-20 mA sensor probe (2-wire)
- Need to battery-operated sensor probes.

The 4..20mA to LORAWAN converter allows the transmission of any analog signal respecting the 4..20 mA current loop standard. This converter makes it possible to connect any sensor or actuator, through a pair of electrical conductors in which circulates a current whose intensity is proportional to the signal to be transmitted.

The 4-20 mA current loop is the most widely used principle in the industry because it allows linear representation of the signal to be measured. The intensity of the current is directly proportional to the intensity of the signal to be transmitted. The benefits are many. On the one hand, the current loop has the advantage, compared to the voltage loop, of not being affected by line losses. So we get better accuracy.

stainless steel construction

| MEASUREMENTS |               |                |
|--------------|---------------|----------------|
| Level        | Digital Input | Digital Output |
| Time         | Temperature   | Battery        |

| INPUTS / OUTPUTS            |                      |
|-----------------------------|----------------------|
| 4-20 mA (2-wire) interface  | 1                    |
| Accuracy of Measurement     | +/- 1,2 %            |
| 4-20 mA supplied power      | 24 V                 |
| Security / Dry inputs       | 2                    |
| Security / Dry output       | 2                    |
| Built-in Temperature Sensor | Yes. 1-2 °C Accuracy |

| CONFIGURATION           |   |
|-------------------------|---|
| Methods                 | USB/PC Program or OTA (downlink msg)  |
| LORAWAN Configurations  | Frequencies<br>16 Channels frequency plan<br>Confirmed Uplink msgs<br>ADR – Adaptive Data Rate<br>RX1 Offset<br>Join accept delay<br>Uplink number of transmissions<br>TX power<br>TX Data-rate       |
| Specific Configurations | Sensor Probe startup time in seconds<br>Input 1: open, short, both<br>Input 2: open, short, both<br>Collection period: 5,15, 30, 60min. 6, 12, 24h<br>Transmission period: 5,15, 30, 60min. 6, 12,24h |

| LORAWAN CHARACTERISTICS      |                          |
|------------------------------|--------------------------|
| LORAWAN Class                | Class A, Class C         |
|                              | ADR - Adaptive Data Rate |
|                              | Confirmed packets Yes/No |
|                              | 16 LORAWAN Channels      |
| Sensitivity                  | -138 dBm                 |
| Default Transmitter power    | 25 mW (Configurable)     |
| Maximum Transmission Power   | 100 mW                   |
| Urban Radio Coverage         | Up to 5 km               |
| Line of Sight Radio Coverage | Up to 15 km              |
| Activation                   | OTAA, ABP                |
| LORAWAN Frequencies          | EU868, US915, AU923 MHz  |

| TECHNICAL CHARACTERISTICS |                                 |
|---------------------------|---------------------------------|
| Operating Temperatures    | -40 / +85 °C                    |
| Antenna                   | SMA. -138 dBm.                  |
| Built-in Battery          | 6.400 mAh. Or Ext 10..36V       |
| Battery Life              | Up to 10 years. Min 20.000 msg. |

| CASING                    |   |
|---------------------------|---|
| Housing Dimensions        | 95 x 80 x 65 mm   |
| Ingress Protection Rating | IP65. Outdoor.  |
| Mounting                  | Clamp fastening to the support, DIN-rail, wall-mounting |

Electronic water meter for measuring the flow of cold or hot water, with accumulation and transmission of readings using the LORAWAN network. Electronic anti-magnetic seal and digital display.



#### Use Cases:

- Smart Building
- Smart Industries
- Smart Agriculture

This water meter, 15mm or 20mm in diameter, is available for cold water or hot water. It allows the measurement of water consumption at regular intervals, and the transmission of data via the LORAWAN data network (public or private). It is supplied with a digital display, and offers an electronic protection against electromagnetic fraud.

The water meter allows reading and sending data at different frequencies. It is possible to store locally up to 200 measure of consumption.

| MEASUREMENTS |             |
|--------------|-------------|
| Water Volume | Fraud Alert |
| Time         | Temperature |
|              | Battery     |

| INPUTS / OUTPUTS         |                              |
|--------------------------|------------------------------|
| Operating water pressure | up to 1MPa                   |
| Display                  | Electronic                   |
| Internal Memory          | 200 undelivered messages     |
| Fraud Detection          | Electronic antimagnetic seal |
|                          |                              |
|                          |                              |

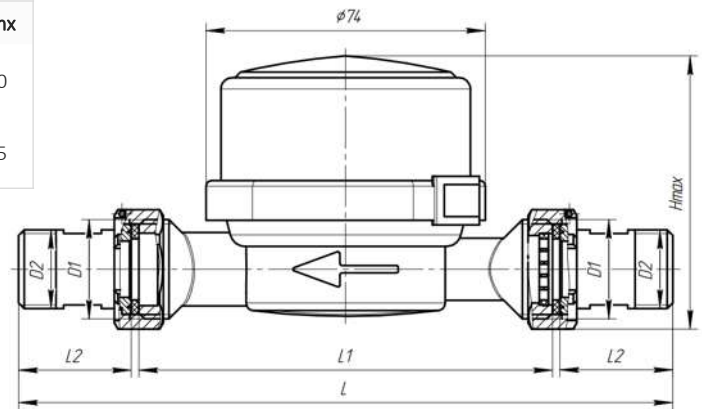
| CONFIGURATION           |   |
|-------------------------|---|
| Methods                 | Infrared (Optoport), LORAWAN Downlink   |
| LORAWAN Configurations  | Frequencies<br>16 Channels frequency plan<br>Confirmed Uplink msgs<br>ADR – Adaptive Data Rate<br>RX1 Offset<br>Join accept delay<br>Uplink number of transmissions<br>TX power<br>TX Data-rate |
| Specific Configurations | Data Collection: 1, 6, 12, 24 hours<br>Data Transmission: 1, 6, 12, 24 hours<br>Timezone.   |

| LORAWAN CHARACTERISTICS      |                          |
|------------------------------|--------------------------|
| LORAWAN Class                | Class A                  |
|                              | ADR - Adaptive Data Rate |
|                              | Confirmed packets Yes/No |
|                              | 16 LORAWAN Channels      |
| Sensitivity                  | -138 dBm                 |
| Default Transmitter power    | 25 mW (Configurable)     |
| Maximum Transmission Power   | 100 mW                   |
| Urban Radio Coverage         | Up to 5 km               |
| Line of Sight Radio Coverage | Up to 15 km              |
| Activation                   | OTAA, ABP                |
| LORAWAN Frequencies          | EU868, US915, AU923 MHz  |

| TECHNICAL CHARACTERISTICS |                    |
|---------------------------|--------------------|
| Operating Temperatures    | +5 / +50 °C        |
| Antenna                   | Internal. -138 dBm |
| Replaceable Battery Pack  | 3.400 mAh          |
| Battery Life              | Up to 10 years.    |

| CASING                    |                  |
|---------------------------|------------------|
| Housing Dimensions        | 172 x 70 x 30 mm |
| Ingress Protection Rating | IP54. Indoor.    |
| Mounting                  | 15mm, 20mm       |

| Meter model               | D1   | D2   | L   | L1 | L2 | Hmx |
|---------------------------|------|------|-----|----|----|-----|
| SHVE15 – cold water meter | G3/4 | G1/2 | 172 | 11 | 30 | 70  |
| SGVE15 – hot water meter  |      |      | 166 | 0  | 27 |     |
| SHVE20 – cold water meter | G1   | G3/4 | 208 | 13 | 38 | 75  |
| SGVE20 – hot water meter  |      |      | 192 | 0  | 30 |     |



| Parameter  | SHVE15   |  | SGVE15             |  | SHVE20          |  | SGVE20          |  | Units                           |                |
|--|--|--|--------------------|--|-----------------|--|-----------------|--|---------------------------------|----------------|
| Type of meter  | Electronic water meter with built in radio-module.                           |  |                    |  |                 |  |                 |  |                                 |                |
| Accuracy class (MID)                                 | 2  |  |                    |  |                 |  |                 |  |                                 |                |
| Mechanical class                                     | M2   |  |                    |  |                 |  |                 |  |                                 |                |
| Lenght   | 110  |  |                    |  | 130             |  |                 |  | mm                              |                |
| Environmental class                                  | Fulfils OIML R49 class B and O (building/outdoor)                            |  |                    |  |                 |  |                 |  |                                 |                |
| IP protection class                                  | IP-54  |  |                    |  |                 |  |                 |  |                                 |                |
| Flow profile sensitivity class                       | U0/D0  |  |                    |  |                 |  |                 |  |                                 |                |
| Electromagnetic class                                | E2   |  |                    |  |                 |  |                 |  |                                 |                |
| Installation orientation                             | All installation positions (vertical, horizontal, rising pipe, down pipe)    |  |                    |  |                 |  |                 |  |                                 |                |
| Optical output                                       | IR emitter   |  |                    |  |                 |  |                 |  |                                 |                |
| Price of one pulse on optical output                 | 0.1  |  |                    |  |                 |  |                 |  |                                 |                |
| Nominal diameter DN                                  | 15   |  |                    |  | 20              |  |                 |  | mm                              |                |
| Permanent flowrate Q <sub>3</sub>                    | 1.6  |  |                    |  | 2.5             |  |                 |  | m <sup>3</sup> /h               |                |
| Minimum flowrate Q <sub>1</sub>                      | H-0.016 V-0.032*   |  | H-0.016 V-0.032*   |  | H-0.025 V-0.05* |  | H-0.025 V-0.05* |  | m <sup>3</sup> /h               |                |
| Transitional flowrate Q <sub>2</sub>                 | H-0.0256 V-0.0512*   |  | H-0.0256 V-0.0512* |  | H-0.04 V-0.08*  |  | H-0.04 V-0.08*  |  | m <sup>3</sup> /h               |                |
| Overload flowrate Q <sub>4</sub>                     | 2  |  |                    |  | 3.1             |  |                 |  | m <sup>3</sup> /h               |                |
| Ratio Q <sub>3</sub> / Q <sub>1</sub>                | H-100 V-50*  |  | H-100 V-50*        |  | H-100 V-50*     |  | H-100 V-50*     |  | Q <sub>3</sub> / Q <sub>1</sub> |                |
| Ratio Q2/Q1  | 1,6  |  |                    |  |                 |  |                 |  |                                 | Q2/Q1          |
| Maximum working pressure                             | 1.0/10/MAP10   |  |                    |  |                 |  |                 |  |                                 | MPa/bar/MAP    |
| Pressure loss  | Δp 63  |  |                    |  |                 |  |                 |  |                                 |                |
| Indication range of a water meter                    | 0 - 99999,9999   |  |                    |  |                 |  |                 |  |                                 | m <sup>3</sup> |
| Scale interval (resolution of the indicating device) | 0.0001m3   |  |                    |  |                 |  |                 |  |                                 | m <sup>3</sup> |
| Meter temperature class                              | T50  |  | T90                |  | T50             |  | T90             |  |                                 |                |
| Ambient temperature                                  | +5...+65   |  |                    |  |                 |  |                 |  |                                 | °C             |
| Reverse flow measuring                               | Not designed to measure reverse flow   |  |                    |  |                 |  |                 |  |                                 |                |
| Power supply   | Internal non replaceable battery   |  |                    |  |                 |  |                 |  |                                 |                |
| Battery voltage                                      | 3.6  |  |                    |  |                 |  |                 |  |                                 | V              |
| Battery capacity                                     | 3400   |  |                    |  |                 |  |                 |  |                                 | mAh            |
| Battery type   | LiSOCl2  |  |                    |  |                 |  |                 |  |                                 |                |
| Battery life   | from 7 to 10   |  |                    |  |                 |  |                 |  |                                 | years          |
| Communication  | LoRaWAN  |  |                    |  |                 |  |                 |  |                                 |                |
| LoRaWAN Device Class                                 | A  |  |                    |  |                 |  |                 |  |                                 |                |
| RF Tx power  | Up to +20  |  |                    |  |                 |  |                 |  |                                 | dBm            |
| RF Rx sensitivity                                    | -138   |  |                    |  |                 |  |                 |  |                                 | dBm            |
| RF frequency range                                   | 864 - 915  |  |                    |  |                 |  |                 |  |                                 | MHz            |
| RF antenna type                                      | Embedded PCB antenna   |  |                    |  |                 |  |                 |  |                                 |                |
| Communication range (rural)                          | up to 10   |  |                    |  |                 |  |                 |  |                                 | km             |
| Communication range (urban)                          | up to 5  |  |                    |  |                 |  |                 |  |                                 | km             |
| LoRaWAN channels                                     | up to 16   |  |                    |  |                 |  |                 |  |                                 |                |
| LoRaWAN regions                                      | EU868, RU868, IN865, AS923, AU915, KR920, US915, KZ865, custom (EU868 based) |  |                    |  |                 |  |                 |  |                                 |                |
| Embedded packet queue depth                          | 200 readings   |  |                    |  |                 |  |                 |  |                                 |                |
| Readings collection period                           | 1, 6, 12, 24   |  |                    |  |                 |  |                 |  |                                 | hours          |
| Readings transmission period                         | 1, 6, 12, 24   |  |                    |  |                 |  |                 |  |                                 | hours          |

The values, marked "\*" is given for different from horizontal installations.

Universal NB-IOT - LORAWAN modem for data capture and transfer: Analog and digital inputs, Pulse Counters, 1-Wire, RS485, ModBus



#### Use Cases:

- Any data acquisition / measurement involving Digital, Analog, MODBUS RTU (RS485) or 1 –Wire interface

The Sensor Hub is a data concentrator from probes, sensors or facilities connected via different protocols. RS485, MODBUS RTU, 1-Wire, or simply via Analog or Digital inputs. It allows you to configure the frequency at which data is read, and stored locally, and the frequency at which data is transmitted to your application, either as an uplink LORAWAN message, or using the NB-IOT (LTE) network, as JSON documents sent in MQTT (TCP).

A PC configuration program, connected to the Sensor Hub via a micro-USB port, allows the configuration of the Digital Inputs (Pulse or Dry inputs), the 1-Wire or MODBUS connector (reading of up to 10 registers: Coil Status, Discreet input, Holding or Input registers. The Data Collection and Data Transmission frequencies, 2 independent parameters, may be specified as well: 5,15, 30, 60min. 6, 12, 24h.

The Sensor Hub may be operated in LORAWAN or NB-IOT transmission mode. [Here below the LORAWAN Specifications.](#)

| MEASUREMENTS  |               |              |        |        |
|---------------|---------------|--------------|--------|--------|
| Pulse Counter | Digital Input | Analog Input | 1-Wire | MODBUS |
| Time          | Temperature   | Battery      |        |        |

| INPUTS / OUTPUTS            |                                       |
|-----------------------------|---------------------------------------|
| Input Pulse Channels        | Up to 2                               |
| Maximum Input Frequency     | 200 Hz                                |
| Security / Dry inputs       | Up to 2                               |
| Analog Inputs               | 2 (0-21V)                             |
| 1-Wire or MODBUS RTU        | 10 1-WIRE or MODBUS connected devices |
| Built-in Temperature Sensor | Yes. 1-2 °C Accuracy                  |

| CONFIGURATION           |   |
|-------------------------|---|
| Methods                 | USB/PC Program  |
| LORAWAN Configurations  | Frequencies<br>16 Channels frequency plan<br>Confirmed Uplink msgs<br>ADR – Adaptive Data Rate<br>RX1 Offset<br>Join accept delay<br>Uplink number of transmissions<br>TX power<br>TX Data-rate   |
| Specific Configurations | Input 1: Pulse / Guard (open, short, both)<br>Input 2: Pulse / Guard (open, short, both)<br>1-wire or RS485 (MODBUS)<br>Collection period: 5,15, 30, 60min. 6, 12, 24h<br>Transmission period: 5,15, 30, 60min. 6, 12,24h<br>10 MDBUS registers address + Type: Coil Status, Discreet input, Holding or Input registers |

| LORAWAN CHARACTERISTICS      |                          |
|------------------------------|--------------------------|
| LORAWAN Class                | Class A                  |
|                              | ADR - Adaptive Data Rate |
|                              | Confirmed packets Yes/No |
|                              | 16 LORAWAN Channels      |
| Sensitivity                  | -138 dBm                 |
| Default Transmitter power    | 25 mW (Configurable)     |
| Maximum Transmission Power   | 100 mW                   |
| Urban Radio Coverage         | Up to 5 km               |
| Line of Sight Radio Coverage | Up to 15 km              |
| Activation                   | OTAA, ABP                |
| LORAWAN Frequencies          | EU868, US915, AU923 MHz  |

| TECHNICAL CHARACTERISTICS |  |
|---------------------------|--|
| Operating Temperatures    | -40 / +85 °C   |
| Antenna                   | External. -138 dBm                                     |
| Replaceable Battery Pack  | 6.400 mAh / 12.800 mAh.<br>Or External power: 4,5-55 V |
| Battery Life              | Up to 10 years.  |

| CASING                    |                 |
|---------------------------|-----------------|
| Housing Dimensions        | 95 x 95 x 50 mm |
| Ingress Protection Rating | IP65. Outdoor.  |
| Mounting                  |                 |

M-BUS <-> LoRaWAN converter, security sensor and control device. Connect up to 10 metering devices to this converter ! Two security/digital inputs, two open-drain outputs. Powered by the built-in battery or external power supply.



#### Use Cases:

- Utilities metering (like water, electricity, heat) with m-Bus interface
- Industrial equipment with M-BUS interface
- 2 open drain outputs to control devices, such as electric cranes, lighting, sirens and so on. And 2 security inputs.

The M-BUS to LoRaWAN converter is an IOT sensor that reads and transmits energy consumption data from energy meters (gas, electricity, heat, water) for Smart Metering projects. This converter allows a reading of 10 “utility counters” compatible with the European standard M-BUS (“Meter Bus”).

#### 2 Modes of operation:

- In transparent mode, the converter sends an M-BUS command to a counter and receives the response.
- In query mode, the converter generates requests autonomously. Already supported smart meters:
  - Heat meter «Teplouchet-1»
  - Heat meter «STE 21 «Berill»
  - Heat meter «Danfoss Sonometer 500»
  - Heat meter «ELF-M Teplovodomer»
  - Heat meter «WESER Heat Meter»
  - Heat meter «Kamstrup Multical 801»
  - Heat meter «Kamstrup Multical 402»

#### MEASUREMENTS

|      |               |                |
|------|---------------|----------------|
| MBUS | Digital Input | Digital Output |
| Time | Temperature   | Battery        |

#### INPUTS / OUTPUTS

|                             |                      |
|-----------------------------|----------------------|
| Mbus registers              | 10                   |
| Open-drain inputs           | 2                    |
| Open-drain outputs          | 2                    |
| Built-in Temperature Sensor | Yes. 1-2 °C Accuracy |
|                             |                      |
|                             |                      |

#### CONFIGURATION

|                         |  |
|-------------------------|--|
| Methods                 | USB/PC Program or OTA (downlink msg)   |
| LORAWAN Configurations  | Frequencies<br>16 Channels frequency plan<br>Confirmed Uplink msg<br>ADR – Adaptive Data Rate<br>RX1 Offset<br>Join accept delay<br>Uplink number of transmissions<br>TX power<br>TX Data-rate |
| Specific Configurations | Speed (bauds), mbus device type<br>Answer timeout (in ms)<br>10 mbus device addresses<br>Collection period: 5,15, 30, 60min. 6, 12, 24h<br>Transmission period: 5,15, 30, 60min. 6, 12,24h     |

#### LORAWAN CHARACTERISTICS

|                              |                          |
|------------------------------|--------------------------|
| LORAWAN Class                | Class A, Class C         |
|                              | ADR - Adaptive Data Rate |
|                              | Confirmed packets Yes/No |
|                              | 16 LORAWAN Channels      |
| Sensitivity                  | -138 dBm                 |
| Default Transmitter power    | 25 mW (Configurable)     |
| Maximum Transmission Power   | 100 mW                   |
| Urban Radio Coverage         | Up to 5 km               |
| Line of Sight Radio Coverage | Up to 15 km              |
| Activation                   | OTAA, ABP                |
| LORAWAN Frequencies          | EU868, US915, AU923 MHz  |

#### TECHNICAL CHARACTERISTICS

|                        |                                 |
|------------------------|---------------------------------|
| Operating Temperatures | -40 / +85 °C                    |
| Antenna                | SMA. -138 dBm.                  |
| Built-in Battery       | 6.400 mAh. Or Ext 10..36V       |
| Battery Life           | Up to 10 years. Min 20.000 msg. |

#### CASING

|                           |   |
|---------------------------|---|
| Housing Dimensions        | 95 x 80 x 65 mm   |
| Ingress Protection Rating | IP65. Outdoor.  |
| Mounting                  | Clamp fastening to the support, DIN-rail, wall-mounting |



The level measuring sensor, for fuel tanks, water or any other liquid tank, based on an ultrasonic measurement, running on battery up to 14 years.



#### Use Cases:

- Construction Sites, Building, Industrial sites
- Fuel Tank. Water Tank. Any liquid.
- Water Level (river, lake, dam...)

The water level or fuel level sensor is particularly suitable for outdoor or underground tanks. It allows the measurement of the liquid level, between the top of the tank and the level of water or fuel. The measurement is ultrasonic, and can raise a height between 12 cm and 4 meter. It is therefore easy to measure the volume of fuel, water or any other liquid present in a tank.

The water level or fuel level sensor allows the configuration of 3 thresholds to be notified of a level that has become too low or too high. It allows the configuration of the measurement frequency, and the frequency of data transmission through a LORAWAN network. This water level or fuel level sensor is autonomous. Its battery allows it to operate up to 14 years, by measuring the level four times a day, and by relaying information through the LORAWAN network.

Mounting the sensor on the tank is simple. Just screw it. By default, the water / fuel level sensor supports a standard 2 inch attachment tip. A multidimensional adapter is available as well. Like ultrasonic measurement in the form of a cone (30 degrees), it is also possible to place a waveguide, when the level sensor is placed too close to a wall.

| MEASUREMENTS |                 |         |  |
|--------------|-----------------|---------|--|
| Level        | Threshold Alert |         |  |
| Time         | Temperature     | Battery |  |

| INPUTS / OUTPUTS            |  |
|-----------------------------|--|
| Type of Measurement         | Ultrasonic. Range: >12 cm to < 400 cm.<br>Angle: 30°. Resolution: ±1cm; Accuracy: ±2cm |
| Built-in Temperature Sensor | Used to increase the ultrasonic measurement accuracy.                                  |
| Reading                     | Direct Reading or using a waveguide (PVC tube)   |

| CONFIGURATION           |  |
|-------------------------|--|
| Methods                 | OTA (downlink messages)  |
| LORAWAN Configurations  |  |
| Specific Configurations | Frequency of data acquisition.<br>Frequency of data transmission.<br>3 Low and High threshold Alert levels.<br>Direct ultrasonic measurement or through a waveguide. |

| LORAWAN CHARACTERISTICS      |                          |
|------------------------------|--------------------------|
| LORAWAN Class                | Class A                  |
|                              | ADR - Adaptive Data Rate |
| Transmitter power            | 25 mW (+14dBm)           |
| Urban Radio Coverage         | Up to 5 km               |
| Line of Sight Radio Coverage | Up to 15 km              |
| Activation                   | OTAA                     |
| LORAWAN Frequencies          | EU868 mHz.               |
|                              |                          |
|                              |                          |
|                              |                          |

| TECHNICAL CHARACTERISTICS |                          |
|---------------------------|--------------------------|
| Operating Temperatures    | -20 / +50 °C             |
| Antenna                   | Built-in.                |
| Battery Type              | 3.6V Li-SOCI2 Size 2/3AA |
| Battery Life              | Up to 14 years           |

| CASING                    |   |
|---------------------------|---|
| Housing Dimensions        | 109 x 109 x 126 mm  |
| Ingress Protection Rating | IP67. Outdoor.  |
| Mounting                  | Screwed on tank. Optional wave guide if sensor placed too close from borders. |

Pressure-based level sensor and LoRaWAN transmitter. High precision measurement with a fully-sealed submersible intelligent pressure sensor, providing digital temperature compensation and linearity correction.

## Use Cases:

- Water level measurement
- Fuel level measurement

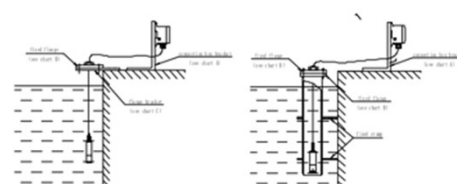


The level sensor (water, fuel) allows accurate measurement (1.3% accuracy) of a liquid height, thanks to a submerged pressure sensor. The standard height measured is from 0 to 6 meters, but it is possible to measure a height up to 200 meters.

The pressure sensor has temperature compensation and linearity correction mechanisms. It is made of stainless steel.

Level measurement and data transmission is done through the LoRaWAN network (public or private). It is possible to independently configure the data collection frequency and the data transmission frequency.

The level sensor operates on battery (up to 10 years), or on external power supply source. It also has digital inputs and outputs.



| MEASUREMENTS |               |                |
|--------------|---------------|----------------|
| 4-20 mA      | Digital Input | Digital Output |
| Time         | Temperature   | Battery        |

| INPUTS / OUTPUTS            |  |
|-----------------------------|--|
| Level Measurement           | 1  |
| Accuracy of Measurement     | +/- 1,3 %  |
| Measurement Principe        | Pressure. Digital temperature compensation and linearity correction. Standard height: up to 6m. Longer cables available in option. |
| Security / Dry inputs       | 2  |
| Security / Dry output       | 2  |
| Built-in Temperature Sensor | Outdoor Temp. Yes. 1-2 °C Accuracy   |

| CONFIGURATION           |   |
|-------------------------|---|
| Methods                 | USB/PC Program or OTA (downlink msg)  |
| LoRaWAN Configurations  | Frequencies<br>16 Channels frequency plan<br>Confirmed Uplink msgs<br>ADR – Adaptive Data Rate<br>RX1 Offset<br>Join accept delay<br>Uplink number of transmissions<br>TX power<br>TX Data-rate       |
| Specific Configurations | Sensor Probe startup time in seconds<br>Input 1: open, short, both<br>Input 2: open, short, both<br>Collection period: 5,15, 30, 60min. 6, 12, 24h<br>Transmission period: 5,15, 30, 60min. 6, 12,24h |

| LoRaWAN CHARACTERISTICS      |                          |
|------------------------------|--------------------------|
| LoRaWAN Class                | Class A, Class C         |
|                              | ADR - Adaptive Data Rate |
|                              | Confirmed packets Yes/No |
|                              | 16 LoRaWAN Channels      |
| Sensitivity                  | -138 dBm                 |
| Default Transmitter power    | 25 mW (Configurable)     |
| Maximum Transmission Power   | 100 mW                   |
| Urban Radio Coverage         | Up to 5 km               |
| Line of Sight Radio Coverage | Up to 15 km              |
| Activation                   | OTAA, ABP                |
| LoRaWAN Frequencies          | EU868, US915, AU923 MHz  |

| TECHNICAL CHARACTERISTICS |                                 |
|---------------------------|---------------------------------|
| Operating Temperatures    | -40 / +85 °C                    |
| Antenna                   | SMA. -138 dBm.                  |
| Built-in Battery          | 6.400 mAh. Or Ext 10..36V       |
| Battery Life              | Up to 10 years. Min 20.000 msg. |

| CASING                    |   |
|---------------------------|---|
| Housing Dimensions        | 95 x 80 x 65 mm   |
| Ingress Protection Rating | IP65. Outdoor.  |
| Mounting                  | Clamp fastening to the support, DIN-rail, wall-mounting |

Temperature and Humidity. Door and Window open/close detection. Accelerometer. All included in one LORAWAN Sensor.

#### Use Cases:

- Smart Home Smart Building
- Secure, Control Rooms or Building access
- Monitor the ambiance temperature / humidity



This four-in-one sensor is ideal for any smart home or smart building application. It combines the measurement of the temperature and the ambient humidity, makes it possible to be warned in case of opening, closing of door or a simple movement, or when the temperature or the humidity exceeds a predefined threshold.

It is possible to configure, independently, the data collection frequency (between 5 minutes and 24 hours) and the frequency of data transmission.

The configuration of this temperature sensor, the humidity detection or the open / close detection is done via a PC application provided or via a LORAWAN downlink message. Among the available configurations: possibility to be warned if a threshold of temperature or humidity is exceeded (too low, too high), or to be warned in case of opening or closing. Or when a door or window moves, thanks to the presence of an accelerometer.

| MEASUREMENTS |          |            |               |        |
|--------------|----------|------------|---------------|--------|
| Temperature  | Humidity | Open/Close | Movement      | Alerts |
| Time         | Battery  | Thresholds | Removal Alert |        |

| INPUTS / OUTPUTS       |  |
|------------------------|--|
| Temperature            | Yes  |
| Humidity               | Yes  |
| Open / Close Detection | 2 Hall Sensors. Open/Close & Removal   |
| Accelerometer          | Yes  |
| Other features         | Store and forward Measurements<br>Humidity / Temperature Low/High thresholds<br>LED: Open/Close/Transmission signal. |

| CONFIGURATION           |   |
|-------------------------|---|
| Methods                 | USB/PC Program or OTA (downlink msg)  |
| LORAWAN Configurations  | Frequencies<br>16 Channels frequency plan<br>Confirmed Uplink msgs<br>ADR – Adaptive Data Rate<br>RX1 Offset<br>Join accept delay<br>Uplink number of transmissions<br>TX power<br>TX Data-rate   |
| Specific Configurations | Collection period: 5,15, 30, 60min. 6, 12, 24h<br>Transmission period: 5,15, 30, 60min. 6, 12,24h<br>Collection period when thresholds triggered: 5,15, 30, 60min. 6, 12, 24h<br>Alerts when Open / Close / Both<br>Accelerometer sensitivity<br>Temperature/Humidity Low/High Thresholds |

| LORAWAN CHARACTERISTICS      |                          |
|------------------------------|--------------------------|
| LORAWAN Class                | Class A                  |
|                              | ADR - Adaptive Data Rate |
|                              | Confirmed packets Yes/No |
|                              | 16 LORAWAN Channels      |
| Sensitivity                  | -138 dBm                 |
| Default Transmitter power    | 25 mW (Configurable)     |
| Maximum Transmission Power   | 100 mW                   |
| Urban Radio Coverage         | Up to 5 km               |
| Line of Sight Radio Coverage | Up to 15 km              |
| Activation                   | OTAA, ABP                |
| LORAWAN Frequencies          | EU868, US915, AU923 MHz  |

| TECHNICAL CHARACTERISTICS |                       |
|---------------------------|-----------------------|
| Operating Temperatures    | -40 / +85 °C          |
| Antenna                   | Built-in. -138 dBm    |
| Replaceable Battery       | CR123A 3V - 1.400 mAh |
| Battery Life              | 15.000 data packets.  |

| CASING                    |                             |
|---------------------------|-----------------------------|
| Housing Dimensions        | 63x36x21mm + 36 x 21 x 15mm |
| Ingress Protection Rating | IP43. Indoor.               |
| Mounting                  | Adhesive, Glue. Screws.     |
| Colors                    | black, brown, white, grey   |

Motion sensor (PIR). Presence and Movement detection Sensor  
LoRaWAN – Detection of intrusion or presence in a room (office, housing, industrial building ...)



#### Use Cases:

- Smart Home
- Smart Building

The LoRaWAN presence and motion sensor is the ideal complement to our Smart Building sensor range. It is equipped with a PIR sensor that switches between 2 modes. In “Guard” mode, it will generate an alert through the LORAWAN network. It will then go into Neutral mode for a configurable time, in order to no longer generate a new unwanted message. After this time, it automatically returns to “Guard” mode.

This sensor is equipped with an internal temperature sensor.

It is possible to configure, independently, the data collection frequency (between 5 minutes and 24 hours) and the frequency of data transmission.

The configuration of this sensor is done via a PC application provided or via a LORAWAN downlink message.

| MEASUREMENTS |         |
|--------------|---------|
| Motion Alert |         |
| Temperature  | Battery |

| INPUTS / OUTPUTS |   |
|------------------|---|
| PIR sensor       | Not less than 15m.<br>Angle: 6°.<br>Velocity: 0,3 .. 3 m/s<br>Resistance to light: 6500 Lux |
| Temperature      | Accuracy: +/- 1,5°C   |
|                  |   |
|                  |   |

| CONFIGURATION           |   |
|-------------------------|---|
| Methods                 | USB/PC Program or OTA (downlink msg)  |
| LORAWAN Configurations  | Frequencies<br>16 Channels frequency plan<br>Confirmed Uplink msgs<br>ADR – Adaptive Data Rate<br>RX1 Offset<br>Join accept delay<br>Uplink number of transmissions<br>TX power<br>TX Data-rate |
| Specific Configurations | Auto-guard timeout (1 .. 60 min)<br>Transmission period: 5,15, 30, 60min. 6, 12,24h   |

| LORAWAN CHARACTERISTICS      |                          |
|------------------------------|--------------------------|
| LORAWAN Class                | Class A                  |
|                              | ADR - Adaptive Data Rate |
|                              | Confirmed packets Yes/No |
|                              | 16 LORAWAN Channels      |
| Sensitivity                  | -138 dBm                 |
| Default Transmitter power    | 25 mW (Configurable)     |
| Maximum Transmission Power   | 100 mW                   |
| Urban Radio Coverage         | Up to 5 km               |
| Line of Sight Radio Coverage | Up to 15 km              |
| Activation                   | OTAA, ABP                |
| LORAWAN Frequencies          | EU868, US915, AU923 MHz  |

| TECHNICAL CHARACTERISTICS |                       |
|---------------------------|-----------------------|
| Operating Temperatures    | -40 / +70 °C          |
| Antenna                   | Built-in. -138 dBm    |
| Replaceable Battery       | CR123A 3V - 1.400 mAh |
| Battery Life              | 15.000 data packets   |

| CASING                    |                        |
|---------------------------|------------------------|
| Housing Dimensions        | 35x50x70mm             |
| Ingress Protection Rating | IP41. Indoor.          |
| Mounting                  | Adhesive, Glue. Screws |
| Colors                    | white                  |

LoRaWAN Door – Window opening and closing Detection Sensor, available in 4 colors, including an embedded Temperature sensor.

#### Use Cases:

- Smart Home
- Smart Building



The opening detection (or closing) sensor is the ideal LoRaWAN sensor to be notified when a door, window, cabinet ... is open or closed. This opening or closing sensor is autonomous and requires no connection to a power source (battery life up to 10 years, exchangeable battery), and communicates through a public or private LoRaWAN network.

It is configurable. It can be notified either of an opening or a closure. Or be warned in both cases (opening and closing). It is equipped with an internal temperature sensor, which also makes it possible to raise the ambient temperature. An additional Hall Sensor can notify you, in case the sensor is removed from its location.

It is available in several colors to fit the space in which this sensor is installed.

The configuration of this sensor is done via a PC application provided or via a LORAWAN downlink message.

| MEASUREMENTS |         |             |
|--------------|---------|-------------|
| Open/Close   | Removal |             |
| Time         | Battery | Temperature |

| INPUTS / OUTPUTS |                                 |
|------------------|---------------------------------|
| Hall Sensors     | 2                               |
| Temperature      | Yes. Accuracy: +/- 1,5 °C       |
| LEDs             | Open/Close/Transmission signal. |
|                  |                                 |
|                  |                                 |

| CONFIGURATION           |   |
|-------------------------|---|
| Methods                 | USB/PC Program or OTA (downlink msg)  |
| LORAWAN Configurations  | Frequencies<br>16 Channels frequency plan<br>Confirmed Uplink msgs<br>ADR – Adaptive Data Rate<br>RX1 Offset<br>Join accept delay<br>Uplink number of transmissions<br>TX power<br>TX Data-rate |
| Specific Configurations | Collection period: 5,15, 30, 60min. 6, 12, 24h<br>Transmission period: 5,15, 30, 60min. 6, 12,24h<br>Alerts on Open/ Close or Both for 2 Hall sensors.  |

| LORAWAN CHARACTERISTICS      |                          |
|------------------------------|--------------------------|
| LORAWAN Class                | Class A                  |
|                              | ADR - Adaptive Data Rate |
|                              | Confirmed packets Yes/No |
|                              | 16 LORAWAN Channels      |
| Sensitivity                  | -138 dBm                 |
| Default Transmitter power    | 25 mW (Configurable)     |
| Maximum Transmission Power   | 100 mW                   |
| Urban Radio Coverage         | Up to 5 km               |
| Line of Sight Radio Coverage | Up to 15 km              |
| Activation                   | OTAA, ABP                |
| LORAWAN Frequencies          | EU868, US915, AU923 MHz  |

| TECHNICAL CHARACTERISTICS |                       |
|---------------------------|-----------------------|
| Operating Temperatures    | -40 / +85 °C          |
| Antenna                   | Built-in. -138 dBm    |
| Replaceable Battery       | CR123A 3V - 1.400 mAh |
| Battery Life              | 15.000 data packets.  |

| CASING                    |                             |
|---------------------------|-----------------------------|
| Housing Dimensions        | 63x36x21mm + 36 x 21 x 15mm |
| Ingress Protection Rating | IP43. Indoor.               |
| Mounting                  | Adhesive, Glue. Screws.     |
| Colors                    | black, brown, white, grey   |



The sensor is triggered by shaking or moving due to the built-in accelerometer with three levels of sensitivity and sends an alarm signal to the LoRaWAN™ network.

#### Use Cases:

- Smart Home
- Smart Building



The accelerometer can detect the movement of an object (door, drawer, broken window ...) based on the configuration of a sensitivity level. This sensor sends back an alert message through a LORAWAN network. When detecting motion (or vibration), it will automatically turn off for a configurable period. This LORAWAN accelerometer also allows the vertical Tilt angle of the sensor to be sent regularly.

It is possible to configure, independently, the data collection frequency (between 5 minutes and 24 hours) and the frequency of data transmission.

It is available in several colors to fit the space in which this sensor is installed.

The configuration of this sensor is done via a PC application provided or via a LORAWAN downlink message.

| MEASUREMENTS |             |
|--------------|-------------|
| Movement     | Tilt Angle  |
| Time         | Battery     |
|              | Temperature |

| INPUTS / OUTPUTS |                           |
|------------------|---------------------------|
| Accelerometer    | 3 levels of sensitivity   |
| Temperature      | Yes. Accuracy: +/- 1,5 °C |
| Angle            | Vertical Tilt Angle.      |
| LEDs             | Transmission signal.      |
|                  |                           |

| CONFIGURATION           |   |
|-------------------------|---|
| Methods                 | USB/PC Program or OTA (downlink msg)  |
| LORAWAN Configurations  | Frequencies<br>16 Channels frequency plan<br>Confirmed Uplink msgs<br>ADR – Adaptive Data Rate<br>RX1 Offset<br>Join accept delay<br>Uplink number of transmissions<br>TX power<br>TX Data-rate |
| Specific Configurations | Collection period: 5,15, 30, 60min. 6, 12, 24h<br>Transmission period: 5,15, 30, 60min. 6, 12,24h<br>Accelerometer sensitivity level (3)  |

| LORAWAN CHARACTERISTICS      |                          |
|------------------------------|--------------------------|
| LORAWAN Class                | Class A                  |
|                              | ADR - Adaptive Data Rate |
|                              | Confirmed packets Yes/No |
|                              | 16 LORAWAN Channels      |
| Sensitivity                  | -138 dBm                 |
| Default Transmitter power    | 25 mW (Configurable)     |
| Maximum Transmission Power   | 100 mW                   |
| Urban Radio Coverage         | Up to 5 km               |
| Line of Sight Radio Coverage | Up to 15 km              |
| Activation                   | OTAA, ABP                |
| LORAWAN Frequencies          | EU868, US915, AU923 MHz  |

| TECHNICAL CHARACTERISTICS |                       |
|---------------------------|-----------------------|
| Operating Temperatures    | -40 / +85 °C          |
| Antenna                   | Built-in. -138 dBm    |
| Replaceable Battery       | CR123A 3V - 1.400 mAh |
| Battery Life              | 15.000 data packets.  |

| CASING                    |                           |
|---------------------------|---------------------------|
| Housing Dimensions        | 63x36x21mm                |
| Ingress Protection Rating | IP43. Indoor.             |
| Mounting                  | Adhesive, Glue. Screws.   |
| Colors                    | black, brown, white, grey |

The sensor is triggered by the presence of smoke and sends an alarm signal to the LoRaWAN™ network.



#### Use Cases:

- Smart Home
- Smart Building

The LoRaWAN Smoke Detection Sensor is the ideal complement to our Smart Building Sensor range. It is equipped with an electro-optical sensor for the detection of smoke. When smoke is detected in a room, it will generate a sound signal (85dB), a light alert and send an alert message through the LoRa data network.

This smoke sensor is ideally placed on the ceiling.

The configuration of this sensor is done via a PC application provided or via a LORAWAN downlink message.

| MEASUREMENTS |                     |
|--------------|---------------------|
| Smoke Alert  |                     |
| Time         | Battery Temperature |

| INPUTS / OUTPUTS |                             |
|------------------|-----------------------------|
| Smoke Detection  | electro-optical sensor      |
| Temperature      | Yes. Accuracy: +/- 1,5 °C   |
| LEDs             | Alert. Transmission signal. |
| Sound            | Not less than 85 dB @ 3m    |

| CONFIGURATION           |   |
|-------------------------|---|
| Methods                 | USB/PC Program or OTA (downlink msg)  |
| LORAWAN Configurations  | Frequencies<br>16 Channels frequency plan<br>Confirmed Uplink msgs<br>ADR – Adaptive Data Rate<br>RX1 Offset<br>Join accept delay<br>Uplink number of transmissions<br>TX power<br>TX Data-rate |
| Specific Configurations | PING Transmission period: 5,15, 30, 60min. 6, 12,24h  |

| LORAWAN CHARACTERISTICS      |                          |
|------------------------------|--------------------------|
| LORAWAN Class                | Class A                  |
|                              | ADR - Adaptive Data Rate |
|                              | Confirmed packets Yes/No |
|                              | 16 LORAWAN Channels      |
| Sensitivity                  | -138 dBm                 |
| Default Transmitter power    | 25 mW (Configurable)     |
| Maximum Transmission Power   | 100 mW                   |
| Urban Radio Coverage         | Up to 5 km               |
| Line of Sight Radio Coverage | Up to 15 km              |
| Activation                   | OTAA, ABP                |
| LORAWAN Frequencies          | EU868, US915, AU923 MHz  |

| TECHNICAL CHARACTERISTICS |                       |
|---------------------------|-----------------------|
| Operating Temperatures    | -10 / +55 °C          |
| Antenna                   | Built-in. -138 dBm    |
| Replaceable Battery       | CR123A 3V - 1.400 mAh |
| Battery Life              | 15.000 data packets.  |

| CASING                    |                         |
|---------------------------|-------------------------|
| Housing Dimensions        | 105x105x45mm            |
| Ingress Protection Rating | IP40. Indoor.           |
| Mounting                  | Adhesive, Glue. Screws. |
| Colors                    | White                   |

This LORAWAN sensor allows monitoring of the air quality, and more generally of the environment in which it is installed. CO<sub>2</sub>, Temperature, Humidity, Noise and Light.



#### Use Cases:

- Smart Home / Office
- Smart Building
- Smart Cities

This sensor measures the quality of your indoor environment. Ambient air quality, and indoor conditions (brightness, noise). It therefore makes it possible to monitor your living space, your work environment or public places (hospitals, schools, nurseries, etc.).

Concretely, the room sensor permanently measures 5 parameters: The temperature (in degrees Celcius ° C), the humidity (in%), the level of C<sub>2</sub> (in ppm), the sound level (in decibels - dB) and the brightness (in Lux - lx). For each of these parameters, you can define a minimum threshold and a maximum threshold, and be alerted in real time of an overshoot.

This LORAWAN sensor is configurable. In particular, you can configure the data measurement frequency, the transmission frequency, and the possibility of generating alerts.

There are many use cases: Monitoring of indoor air quality; Monitoring of working conditions in the office; Presence detection by sudden change of parameters (noise, light, CO<sub>2</sub>, etc.). It can be powered by battery, or via an external current source (12-24V).

| MEASUREMENTS    |                |       |             |          |
|-----------------|----------------|-------|-------------|----------|
| CO <sub>2</sub> | Light          | Noise | Temperature | Humidity |
| Tamper          | Position Angle | Time  |             |          |

| INPUTS / OUTPUTS |               |
|------------------|---------------|
| CO <sub>2</sub>  | 0..2000 ppm   |
| Temperature      | -10 ..+85 °C  |
| Humidity         | 0.. 80%       |
| Light            | 10..10.000 Lx |
| Sound            | 40..110 dB    |

| CONFIGURATION           |   |
|-------------------------|---|
| Methods                 | USB/PC Program or OTA (downlink msg)  |
| LORAWAN Configurations  | Frequencies<br>16 Channels frequency plan<br>Confirmed Uplink msgs<br>ADR – Adaptive Data Rate<br>RX1 Offset<br>Join accept delay<br>Uplink number of transmissions<br>TX power<br>TX Data-rate               |
| Specific Configurations | Collection period: 5,15, 30, 60min. 6, 12,24h<br>Transmission period: 5,15, 30, 60min. 6, 12,24h<br>High and Low thresholds for CO <sub>2</sub> , Temp, Hum, Noise and Light, with LORAWAN msg Alert trigger. |

| LORAWAN CHARACTERISTICS      |   |
|------------------------------|---|
| LORAWAN Class                | Class A                                 |
|                              | ADR - Adaptive Data Rate                |
|                              | Confirmed packets Yes/No                |
|                              | 16 LORAWAN Channels                     |
| Sensitivity                  | -138 dBm                                |
| Default Transmitter power    | 25 mW (Configurable)                    |
| Maximum Transmission Power   | 100 mW                                  |
| Urban Radio Coverage         | Up to 5 km                              |
| Line of Sight Radio Coverage | Up to 15 km                             |
| Activation                   | OTAA, ABP                               |
| LORAWAN Frequencies          | EU868 MHz, US915MHz, AS923MHz, AU915MHz |

| TECHNICAL CHARACTERISTICS |   |
|---------------------------|---|
| Operating Temperatures    | -10 / +85 °C                                      |
| Antenna                   | Built-in. -138 dBm                                |
| Replaceable Battery       | 2x CR123A 3V = 2.800 mAh or 12-24V external power |
| Battery Life              | 1-2 years   |

| CASING                    |                         |
|---------------------------|-------------------------|
| Housing Dimensions        | 105x105x45mm            |
| Ingress Protection Rating | IP40. Indoor.           |
| Mounting                  | Adhesive, Glue. Screws. |
| Colors                    | White                   |

LORAWAN GPS Tracker, battery powered, with an autonomy of 5-10 years, collecting GPS positions based on time and/or Accelerometer events.



#### Use Cases:

- Construction, Logistics
- Assets Tracking
- Containers Tracking

The LORAWAN GPS Tracker is the ideal GPS beacon for hardware geolocation without the need for an external power source.

This GPS tracker, resistant to bad weather (IP67) and external aggressions, is provided with magnets, which allows it to be installed very simply. The optimization of the software, linked to the use of an accelerometer and the transmission of data through the LORAWAN network, gives it a range of 5 to 10 years, depending on the configuration.

GPS tracker configurations include data collection frequency, data transmission frequency, static mode, and motion.

The GPS Tracker can also notify you of motion detection.

| MEASUREMENTS |             |          |              |
|--------------|-------------|----------|--------------|
| GPS location | Speed       | Movement | # Satellites |
| Time         | Temperature | Battery  |              |

| INPUTS / OUTPUTS            |                      |
|-----------------------------|----------------------|
| Geolocation                 | GPS - Glonass        |
| Accelerometer               | Movement detection.  |
| Built-in Temperature Sensor | Yes. 1-2 °C Accuracy |
|                             |                      |

| CONFIGURATION           |  |
|-------------------------|--|
| Methods                 | USB/PC Program or OTA (downlink msg)   |
| LORAWAN Configurations  | Frequencies<br>16 Channels frequency plan<br>Confirmed Uplink msgs<br>ADR – Adaptive Data Rate<br>RX1 Offset<br>Join accept delay<br>Uplink number of transmissions<br>TX power<br>TX Data-rate  |
| Specific Configurations | Data Collection (Static): 5,15, 30, 60min. 6, 12, 24h<br>Data Collection (Movement): 5,15, 30, 60min. 6, 12, 24h<br>Data Transmission (Static): 5,15, 30, 60min. 6, 12, 24h<br>Data Transmission (Movement): 5,15, 30, 60min. 6, 12, 24h<br>Alert when movement detected |

| LORAWAN CHARACTERISTICS      |                          |
|------------------------------|--------------------------|
| LORAWAN Class                | Class A                  |
|                              | ADR - Adaptive Data Rate |
|                              | Confirmed packets Yes/No |
|                              | 16 LORAWAN Channels      |
| Sensitivity                  | -138 dBm                 |
| Default Transmitter power    | 25 mW (Configurable)     |
| Maximum Transmission Power   | 100 mW                   |
| Urban Radio Coverage         | Up to 5 km               |
| Line of Sight Radio Coverage | Up to 15 km              |
| Activation                   | OTAA, ABP                |
| LORAWAN Frequencies          | EU868, US915, AU923 MHz  |

| TECHNICAL CHARACTERISTICS |                                 |
|---------------------------|---------------------------------|
| Operating Temperatures    | -40 / +70 °C                    |
| Antenna                   | Built-in. -138 dBm              |
| Battery Pack              | 6.400 mAh / 12.800 mAh          |
| Battery Life              | >5 years with 1 GPS data / hour |

| CASING                    |                   |
|---------------------------|-------------------|
| Housing Dimensions        | 95 x 75 x 40 mm   |
| Ingress Protection Rating | IP67. Outdoor.    |
| Mounting                  | Magnets / clamps. |

Activity and Geolocation LORAWAN Micro Tracker. Small in size, it allows real-time monitoring of activity and location, based on wifi hotspots and GNSS (GPS, Glonass).



#### Use Cases:

- Construction small equipment,
- Logistics parcels or Container tracking
- People geolocation
- Urban furniture

The LORAWAN Micro GPS Tracker has been designed to adapt to most localization and tracking needs for the use of small equipment in general.

This LORAWAN Micro GPS tracker allows on the one hand an outdoor location (via GPS), but also indoor via sniffing of WIFI networks. WIFI triangulation also reduces the energy consumption of this LORAWAN sensor. Defining known hotspots also makes it possible to detect whether the GPS tracker is currently in a known area.

The activity monitoring allows, thanks to an algorithm based on an accelerometer, to recover the activity level by period of time (configurable), and to produce a visualization of the activity in terms of intensity of use , by time slice.

The Micro Tracker GPS is also a Bluetooth Low Energy Beacon (BLE 5.0).

This activity and location tracker is configurable via a mobile application, or via LORAWAN downlink message. Its 2-3 year battery can be replaced. A latter release will include SigFox.

| MEASUREMENTS |               |                 |             |      |
|--------------|---------------|-----------------|-------------|------|
| GPS location | WIFI location | Motion Activity | Hall Sensor | Time |
| Battery      |               |                 |             |      |

| INPUTS / OUTPUTS     |  |
|----------------------|--|
| Geolocation          | GPS - Glonass                          |
| Accelerometer        | Activity measurement. Motion detection |
| Bluetooth Low Energy | Configuration & Beaconsing.            |
| Hall Sensor          | Pull-out detection                     |

| CONFIGURATION           |   |
|-------------------------|---|
| Methods                 | BLE/mobile app or OTA (downlink msg)  |
| LORAWAN Configurations  | Frequencies<br>16 Channels frequency plan<br>Confirmed Uplink msgs<br>ADR – Adaptive Data Rate<br>RX1 Offset<br>Join accept delay<br>TX Data-rate<br>LORAWAN time-sync intervals<br>LORAWAN keys for ABP - OTAA                                       |
| Specific Configurations | Known locations transmission frequency<br>Up to 3 known hotspot names.<br>Unknown locations transmission frequency<br>Activity Indicator measurement intervals (5, 10, 15, 30, 60 min)<br>Inactivity timeout.<br>GNSS on/off. Root and user password. |

| LORAWAN CHARACTERISTICS      |                                 |
|------------------------------|---------------------------------|
| LORAWAN Class                | Class A                         |
|                              | ADR - Adaptive Data Rate        |
|                              | Confirmed packets Yes/No        |
|                              | 16 LORAWAN Channels             |
| Sensitivity                  | -138 dBm                        |
| Default Transmitter power    | 25 mW (Configurable)            |
| Maximum Transmission Power   | 100 mW                          |
| Urban Radio Coverage         | Up to 5 km                      |
| Line of Sight Radio Coverage | Up to 15 km                     |
| Activation                   | OTAA, ABP                       |
| LORAWAN Frequencies          | EU868, US915, AU923 MHz, Custom |

| TECHNICAL CHARACTERISTICS |  |
|---------------------------|--|
| Operating Temperatures    | -40 / +85 °C                             |
| Antenna                   | Built-in. -138 dBm                       |
| Battery Pack              | ER14335 (1650 mAh). Replaceable.         |
| Battery Life              | Up to 3 years. Depends on configuration. |

| CASING                    |                    |
|---------------------------|--------------------|
| Housing Dimensions        | 54 x 35 x 23 mm    |
| Ingress Protection Rating | IP67. Outdoor.     |
| Mounting                  | Screws. Tape/Glue. |



Cow activity and location tracker, specifically designed for livestock management, allowing the location of each animal, and the detection of abnormal behavior.



#### Use Cases:

- Livestock / Cattle Management.
- Cow Location
- Cow Sickness and Pregnancy term detection

The LORAWAN Activity and Location tracker is specifically adapted for livestock. The case was designed to be attached to the cow's collar. It has an autonomy of one to two years, depending on the configuration, thanks to a set of interchangeable batteries.

The activity of the animal is measured by time interval (for example every 15 minutes - configurable), thanks to an optimized algorithm based on the analysis of data from a 3D accelerometer. It identifies activities such as rumination, walking, running, and even jumping detection. Analysis of these data allows the identification of cows with abnormal behavior, a sign of illness or imminent birth.

The location of the cow, based on a GPS, is reported at regular intervals.

This robust, waterproof tracker is highly configurable, via a mobile application connected via Bluetooth, or via LORAWAN downlink message.

| MEASUREMENTS |                 |      |         |
|--------------|-----------------|------|---------|
| GPS location | Motion Activity | Time | Battery |

| INPUTS / OUTPUTS     |   |
|----------------------|---|
| Geolocation          | GPS - Glonass                                     |
| Accelerometer        | 3D. Activity measurement. Motion & Jump detection |
| Bluetooth Low Energy | Configuration                                     |

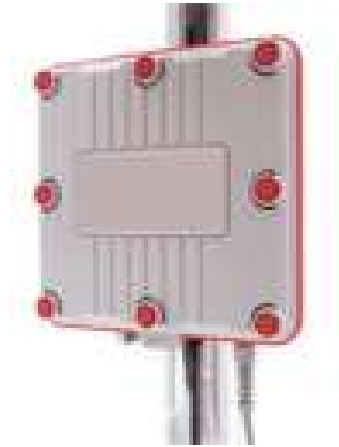
| CONFIGURATION           |   |
|-------------------------|---|
| Methods                 | BLE/mobile app or OTA (downlink msg)  |
| LORAWAN Configurations  | Frequencies<br>16 Channels frequency plan<br>Confirmed Uplink msgs<br>ADR – Adaptive Data Rate<br>RX1 Offset<br>Join accept delay<br>TX Data-rate<br>LORAWAN time-sync intervals<br>LORAWAN keys for ABP - OTAA |
| Specific Configurations | GPS Location interval<br>Jump detection<br>Activity Indicator measurement intervals (5, 10, 15, 30, 60 min)<br>Activity sensitivity (3D Accelerometer)<br>GNSS on/off. Root and user password.                  |

| LORAWAN CHARACTERISTICS      |                                 |
|------------------------------|---------------------------------|
| LORAWAN Class                | Class A                         |
|                              | ADR - Adaptive Data Rate        |
|                              | Confirmed packets Yes/No        |
|                              | 16 LORAWAN Channels             |
| Sensitivity                  | -138 dBm                        |
| Default Transmitter power    | 25 mW (Configurable)            |
| Maximum Transmission Power   | 100 mW                          |
| Urban Radio Coverage         | Up to 5 km                      |
| Line of Sight Radio Coverage | Up to 15 km                     |
| Activation                   | OTAA, ABP                       |
| LORAWAN Frequencies          | EU868, US915, AU923 MHz, Custom |

| TECHNICAL CHARACTERISTICS |  |
|---------------------------|--|
| Operating Temperatures    | -40 / +85 °C                             |
| Antenna                   | Built-in. -138 dBm                       |
| Battery Pack              | 2x CR123A (1500 mAh each). Replaceable.  |
| Battery Life              | Up to 3 years. Depends on configuration. |

| CASING                    |                           |
|---------------------------|---------------------------|
| Housing Dimensions        | 125 x 75 x 37 mm          |
| Ingress Protection Rating | IP67. Outdoor.            |
| Mounting                  | Standard Cow collar (4cm) |

LoRaWAN Gateway designed for the deployment of a private LoRa Network. Power over ethernet. Communication over Ethernet or 3G. Integrated GPS. Supplied with pre-installed Packet forwarder software.



## Use Cases:

- Private LORAWAN Networks

The LORA Gateway (Station de Base) is designed to deploy a private LoRaWAN network in the 863-870 MHz frequency band. This Gateway is powered and communicates with the server via Ethernet, or with a 3G SIM CARD. Integrated GPS. Linux operating system. The Base Station is supplied with the preinstalled Semtech Packet Forwarder software.

| MEASUREMENTS |          |
|--------------|----------|
| Uplink       | Downlink |
| Time         | GPS      |

| INPUTS / OUTPUTS |   |
|------------------|---|
| Ethernet         | 1 |
| 3G               | 1 |
| GPS              | 1 |

| CONFIGURATION          |  |
|------------------------|--|
| Methods                | Mini USB or Ethernet   |
| LORAWAN Configurations | Gateway ID<br>LORAWAN Network Server IP + port<br>Keep alive interval<br>Start interval<br>Push timeout<br>Frequency channels<br>GPS on/off<br>3G on/off |

| LORAWAN CHARACTERISTICS      |                          |
|------------------------------|--------------------------|
| Frequencies                  | 863-870 MHz              |
|                              | 915 Mhz, 923 MHz         |
| Power Output                 | Max 500 mW (27 dBm)      |
| Urban Radio Coverage         | Up to 5 km               |
| Line of Sight Radio Coverage | Up to 15 km              |
| Operating System             | Linux                    |
| LORAWAN                      | Semtech Packet Forwarder |

| TECHNICAL CHARACTERISTICS |  |
|---------------------------|--|
| Operating Temperatures    | -40 / +70 °C   |
| Antenna                   | External. N-Type female.                                   |
| Power                     | Passive POE 4,5(+) 7,8(-)15W.<br>Or Ext 12 -48 V. min 20W. |
| SIM Card                  | Micro SIM.   |
| SD Card Reader            | Available.   |

| CASING                    |                   |
|---------------------------|-------------------|
| Housing Dimensions        | 190 x 183 x 75 mm |
| Ingress Protection Rating | IP67. Outdoor.    |
| Mounting                  | Mast support.     |

The LoRaWAN® network tester can operate in stand-alone mode for several hours thanks to the built-in battery.

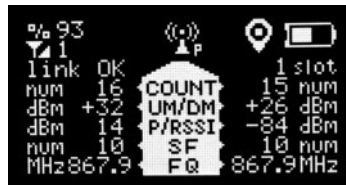


#### Use Cases:

- Setup and Monitoring of LORAWAN Networks

The LoRaWAN Network Tester sends a special signal to the LoRaWAN® network, to which the network informs it of the number of gateways that received this signal and the quality of the signal. This data tester is displayed each time you press the button.

The LORAWAN network tester can obtain satellite coordinates. When this function is activated, the tester continuously updates its coordinates and sends them with the standard packet to the LoRaWAN® network. The device can be used to test standard LoRaWAN® networks when deployed and configured. The tester helps decide the best placement of the gateways and terminals relative to each other.



#### MEASUREMENTS

|            |          |          |            |             |
|------------|----------|----------|------------|-------------|
| # Gateways | Uplink   | Downlink | SNR / RSSI | Frequency   |
| Time       | Location | Battery  | SF         | Temperature |

#### INPUTS / OUTPUTS

|                    |   |
|--------------------|---|
| Location           | GPS / Glonass   |
| Uplink Message     | Field Test data displayed on the OLED screen, And sent as an uplink LORAWAN message |
| Automatic / Manual | Manual Test, or automated, at time intervals from 30 seconds to 24 hours            |
| Security           | PIN code access.  |

#### CONFIGURATION

|                         |   |
|-------------------------|---|
| Methods                 | Micro-USB, 5V, 500 mA   |
| LORAWAN Configurations  | Frequencies<br>16 Channels frequency plan<br>Confirmed Uplink msgs<br>ADR – Adaptive Data Rate<br>RX1 Offset<br>Join accept delay<br>Uplink number of transmissions<br>TX power<br>TX Data-rate |
| Specific Configurations |   |

#### LORAWAN CHARACTERISTICS

|                              |                          |
|------------------------------|--------------------------|
| LORAWAN Class                | Class A                  |
|                              | ADR - Adaptive Data Rate |
|                              | Confirmed packets Yes/No |
|                              | 16 LORAWAN Channels      |
| Sensitivity                  | -138 dBm                 |
| Default Transmitter power    | 25 mW (Configurable)     |
| Maximum Transmission Power   | 100 mW                   |
| Urban Radio Coverage         | Up to 5 km               |
| Line of Sight Radio Coverage | Up to 15 km              |
| Activation                   | OTAA, ABP                |
| LORAWAN Frequencies          | EU868 MHz                |

#### TECHNICAL CHARACTERISTICS

|                        |  |
|------------------------|--|
| Operating Temperatures | -40 / +85 °C                             |
| Antenna                | Built-in. -138 dBm                       |
| Built-in Battery       | Rechargeable (USB). 550 mAh              |
| Battery Life           | 16 hours without GPS<br>7 hours with GPS |

#### CASING

|                           |                 |
|---------------------------|-----------------|
| Housing Dimensions        | 90 x 52 x 31 mm |
| Ingress Protection Rating | IP64. Outdoor.  |
| Display                   | OLED. 1,3"      |

Universal NB-IOT - LORAWAN modem for data capture and transfer: Analog and digital inputs, Pulse Counters, 1-Wire, RS485, ModBus

#### Use Cases:

- Any data acquisition / measurement involving Digital, Analog, MODBUS RTU (RS485) or 1 –Wire interface



The Sensor Hub is a data concentrator from probes, sensors or facilities connected via different protocols. RS485, MODBUS RTU, 1-Wire, or simply via Analog or Digital inputs. It allows you to configure the frequency at which data is read, and stored locally, and the frequency at which data is transmitted to your application, either as an uplink LORAWAN message, or using the NB-IOT (LTE) network, as JSON documents sent in MQTT (TCP).

A PC configuration program, connected to the Sensor Hub via a micro-USB port, allows the configuration of the Digital Inputs (Pulse or Dry inputs), the 1-Wire or MODBUS connector (reading of up to 10 registers: Coil Status, Discreet input, Holding or Input registers. The Data Collection and Data Transmission frequencies, 2 independent parameters, may be specified as well: 5,15, 30, 60min. 6, 12, 24h.

The Sensor Hub may be operated in LORAWAN or NB-IOT transmission mode. **Here below the NB-IOT Specifications**

| MEASUREMENTS  |               |              |        |        |
|---------------|---------------|--------------|--------|--------|
| Pulse Counter | Digital Input | Analog Input | 1-Wire | MODBUS |
| Time          | Temperature   | Battery      |        |        |

| INPUTS / OUTPUTS            |                                       |
|-----------------------------|---------------------------------------|
| Input Pulse Channels        | Up to 2                               |
| Maximum Input Frequency     | 200 Hz                                |
| Security / Dry inputs       | Up to 2                               |
| Analog Inputs               | 2 (0-21V)                             |
| 1-Wire or MODBUS RTU        | 10 1-WIRE or MODBUS connected devices |
| Built-in Temperature Sensor | Yes. 1-2 °C Accuracy                  |

| CONFIGURATION           |  |
|-------------------------|--|
| Methods                 | USB/PC Program   |
| NB-IOT Configurations   | LTE Frequency bands: 1, 3, 5, 8, 20, 28<br>APN, APN User and APN Password.<br>IPv4 or IPv6<br>MQTT Broker IP address<br>MQTT Broker port<br>MQTT topic name<br>MQTT client name<br>MQTT user and password  |
| Specific Configurations | Input 1: Pulse / Guard (open, short, both)<br>Input 2: Pulse / Guard (open, short, both)<br>1-wire or RS485 (MODBUS)<br>Collection period: 5,15, 30, 60min. 6, 12, 24h<br>Transmission period: 5,15, 30, 60min. 6, 12,24h<br>10 MDBUS registers address + Type: Coil<br>Status, Discreet input, Holding or Input registers |

| NB-IOT CHARACTERISTICS |             |
|------------------------|-------------|
| Cellular Standard      | LTE Cat NB1 |
| Protocol               | TCP (MQTT)  |
| SIM Format             | Micro-SIM   |
|                        |             |
|                        |             |
|                        |             |
|                        |             |
|                        |             |
|                        |             |
|                        |             |
|                        |             |

| TECHNICAL CHARACTERISTICS |  |
|---------------------------|--|
| Operating Temperatures    | -40 / +85 °C   |
| Antenna                   | External. Included.                                    |
| Replaceable Battery Pack  | 6.400 mAh / 12.800 mAh.<br>Or External power: 4,5-55 V |
| Battery Life              | Up to 3 years.   |

| CASING                    |                 |
|---------------------------|-----------------|
| Housing Dimensions        | 95 x 95 x 50 mm |
| Ingress Protection Rating | IP65. Outdoor.  |
| Mounting                  |                 |

NB-IoT Pulse counter with external antenna (built-in battery, with up to 2 years of autonomy, 4 pulse inputs).



#### Use Cases:

- Utilities metering (like water, electricity, heat) with Pulse Output
- Connect any equipment with Active Pulse Output or Dry Output Counting.

Pulse counter is designed for counting the incoming pulses at 4 independent inputs, with subsequent accumulation and transfer of this information to the NB-IoT network. It has an external NB-IoT antenna and a degree of enclosure protection IP65. The pulse counter can be used for any utilities' meters and industrial equipment with pulse output like a herkon or an open-drain output.

Additionally, Pulse Counter has an in-built Hall sensor and 2 guard inputs, for connection of security sensors, leakage sensors or similar.

Equipment with NAMUR pulse output is NOT supported.

A PC configuration program, connected to the Pulse counter via a micro-USB port, allows the alarm configuration of security inputs. Data collection and data transmission frequencies may be specified as 2 independent parameters. Data collection has the internal clock time stamp. Data are transferred through MQTT.

| MEASUREMENTS  |                |
|---------------|----------------|
| Pulse Counter | Digital Inputs |
| Battery       | Temperature    |
| Time          | Hall Sensor    |

| INPUTS / OUTPUTS            |                      |
|-----------------------------|----------------------|
| Input Pulse Channels        | 4                    |
| Maximum Input Frequency     | 200 Hz               |
| Security / Dry inputs       | 2                    |
| Unsent packages storage     | Up to 100 000        |
| Built-in Hall sensor        | Yes                  |
| Built-in Temperature Sensor | Yes. 1-2 °C Accuracy |

| CONFIGURATION           |   |
|-------------------------|---|
| Methods                 | USB/PC Program  |
| NB-IoT Configurations   | LTE Frequency bands: 1, 3, 5, 8, 20, 28<br>APN, APN User and APN Password.<br>IPv4 or IPv6<br>MQTT Broker IP address<br>MQTT Broker port<br>MQTT topic name<br>MQTT client name<br>MQTT user and password |
| Specific Configurations | Security Inputs: open, short, both<br>Collection period: 5, 15, 30, 60min. 6, 12, 24h<br>Transmission period: 5, 15, 30, 60min. 6, 12, 24h  |

| NB-IOT CHARACTERISTICS |             |
|------------------------|-------------|
| Cellular Standard      | LTE Cat NB1 |
| Protocol               | TCP (MQTT)  |
| SIM Format             | Micro-SIM   |
|                        |             |
|                        |             |
|                        |             |
|                        |             |
|                        |             |
|                        |             |
|                        |             |

| TECHNICAL CHARACTERISTICS |  |
|---------------------------|--|
| Operating Temperatures    | -40 / +85 °C                                   |
| Antenna                   | External. Included.                            |
| Replaceable Battery Pack  | 6.400 mAh. Or external 2 ...<br>3.6 V          |
| Battery Life              | Up to 2 years with one<br>transmission per day |

| CASING                    |                 |
|---------------------------|-----------------|
| Housing Dimensions        | 95 x 95 x 50 mm |
| Ingress Protection Rating | IP65. Outdoor.  |
| Mounting                  |                 |



NB-IOT Sensor with multiple analog and digital inputs support: 4-20mA, analog input, digital inputs. And a 1-Wire interface.

#### Use Cases:

- As a modem for industrial sensors supporting the 4-20 mA standard



The 4..20mA to NB-IOT converter allows the transmission of any analog signal respecting the 4..20 mA current loop standard. This converter makes it possible to connect any sensor or actuator, through a pair of electrical conductors in which circulates a current whose intensity is proportional to the signal to be transmitted.

The 4-20 mA current loop is the most widely used principle in the industry because it allows linear representation of the signal to be measured. The intensity of the current is directly proportional to the intensity of the signal to be transmitted. The benefits are many. On the one hand, the current loop has the advantage, compared to the voltage loop, of not being affected by line losses. So we get better accuracy.

This NBIOT converter also has an analog input, 2 digital inputs, a 1-wire interface to connect 10 compatible probes and a hall sensor.

A PC configuration program, connected to the Pulse counter via a micro-USB port, allows the configuration of security inputs and 4-20 mA interface. Data collection and data transmission frequencies may be specified as 2 independent parameters. Data collection has the internal clock time stamp.

#### MEASUREMENTS

|         |                |               |
|---------|----------------|---------------|
| 4-20 mA | Digital Inputs | Analog Inputs |
| Battery | Temperature    | Time          |
|         |                | Hall Sensor   |

#### INPUTS / OUTPUTS

|                             |                      |
|-----------------------------|----------------------|
| 4-20 mA current loop        | 1                    |
| Analog Input                | 1 (0-3V)             |
| Security / Dry inputs       | 2                    |
| Built-in Hall sensor        | Yes                  |
| Unsent packages storage     | Up to 100 000        |
| Built-in Temperature Sensor | Yes. 1-2 °C Accuracy |

#### CONFIGURATION

|                         |  |
|-------------------------|--|
| Methods                 | USB/PC Program   |
| NB-IOT Configurations   | LTE Frequency bands: 1, 3, 5, 8, 20, 28<br>APN, APN User and APN Password.<br>IPv4 or IPv6<br>MQTT Broker IP address<br>MQTT Broker port<br>MQTT topic name<br>MQTT client name<br>MQTT user and password    |
| Specific Configurations | Security Inputs: open, short, both<br>Current loop: low and high. + Startup time<br>Hall Sensor on/off.<br>Collection period: 5,15, 30, 60min. 6, 12, 24h<br>Transmission period: 5,15, 30, 60min. 6, 12,24h |

#### NB-IOT CHARACTERISTICS

|                   |             |
|-------------------|-------------|
| Cellular Standard | LTE Cat NB1 |
| Protocol          | TCP (MQTT)  |
| SIM Format        | Micro-SIM   |
|                   |             |
|                   |             |
|                   |             |
|                   |             |
|                   |             |
|                   |             |
|                   |             |
|                   |             |

#### TECHNICAL CHARACTERISTICS

|                          |                                     |
|--------------------------|-------------------------------------|
| Operating Temperatures   | -40 / +85 °C                        |
| Antenna                  | External. Included.                 |
| Replaceable Battery Pack | 6.400 mAh                           |
| Battery Life             | 1 ear with one transmission per day |

#### CASING

|                           |                 |
|---------------------------|-----------------|
| Housing Dimensions        | 95 x 95 x 50 mm |
| Ingress Protection Rating | IP65. Outdoor.  |
| Mounting                  |                 |

Cow activity and location tracker, specifically designed for livestock management, allowing the location of each animal, and the detection of abnormal behavior.



#### Use Cases:

- Livestock / Cattle Management.
- Cow Location
- Cow Sickness and Pregnancy term detection

The NB-IOT Activity and Location tracker is specifically adapted for livestock. The case was designed to be attached to the cow's collar. It has an autonomy of one to two years, depending on the configuration, thanks to a set of interchangeable batteries.

The activity of the animal is measured by time interval (for example every 15 minutes - configurable), thanks to an optimized algorithm based on the analysis of data from a 3D accelerometer. It identifies activities such as rumination, walking, running, and even jumping detection. Analysis of these data allows the identification of cows with abnormal behavior, a sign of illness or imminent birth.

The location of the cow, based on a GPS, is reported at regular intervals.

This robust, waterproof tracker is highly configurable, via a mobile application connected via Bluetooth.

#### MEASUREMENTS

|              |                 |      |         |
|--------------|-----------------|------|---------|
| GPS location | Motion Activity | Time | Battery |
|--------------|-----------------|------|---------|

#### INPUTS / OUTPUTS

|                      |   |
|----------------------|---|
| Geolocation          | GPS - Glonass                                     |
| Accelerometer        | 3D. Activity measurement. Motion & Jump detection |
| Bluetooth Low Energy | Configuration                                     |

#### CONFIGURATION

|                         |   |
|-------------------------|---|
| Methods                 | BLE/mobile app.   |
| NB-IOT Configurations   | LTE Frequency bands: 1, 3, 5, 8, 20, 28<br>APN, APN User and APN Password.<br>IPv4 or IPv6<br>MQTT Broker IP address<br>MQTT Broker port<br>MQTT topic name<br>MQTT client name<br>MQTT user and password |
| Specific Configurations | GPS Location interval<br>Jump detection<br>Activity Indicator measurement intervals (5, 10, 15, 30, 60 min)<br>Activity (3D Accelerometer) sensitivity.<br>GNSS on/off. Root and user password.           |

#### NB-IOT CHARACTERISTICS

|                   |             |
|-------------------|-------------|
| Cellular Standard | LTE Cat NB1 |
| Protocol          | TCP (MQTT)  |
| SIM Format        | Micro-SIM   |

#### TECHNICAL CHARACTERISTICS

|                        |  |
|------------------------|--|
| Operating Temperatures | -40 / +85 °C                             |
| Antenna                | Built-in. -138 dBm                       |
| Battery Pack           | 3x CR123A (1500 mAh each). Replaceable.  |
| Battery Life           | Up to 2 years. Depends on configuration. |

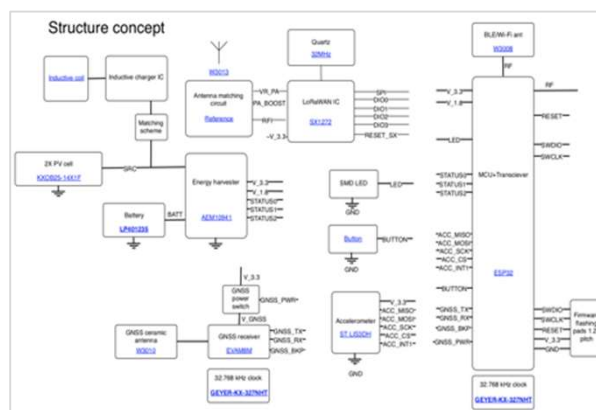
#### CASING

|                           |                           |
|---------------------------|---------------------------|
| Housing Dimensions        | 125 x 75 x 37 mm          |
| Ingress Protection Rating | IP67. Outdoor.            |
| Mounting                  | Standard Cow collar (4cm) |

Custom IOT Sensor or Gateway Hardware, Firmware and Enclosure development, based on proven re-usable components / patterns.

#### Use Cases:

- Any business need where off-the-shelf sensors are not available
- Reduce prices for high volumes
- Custom enclosures to match specific constraints



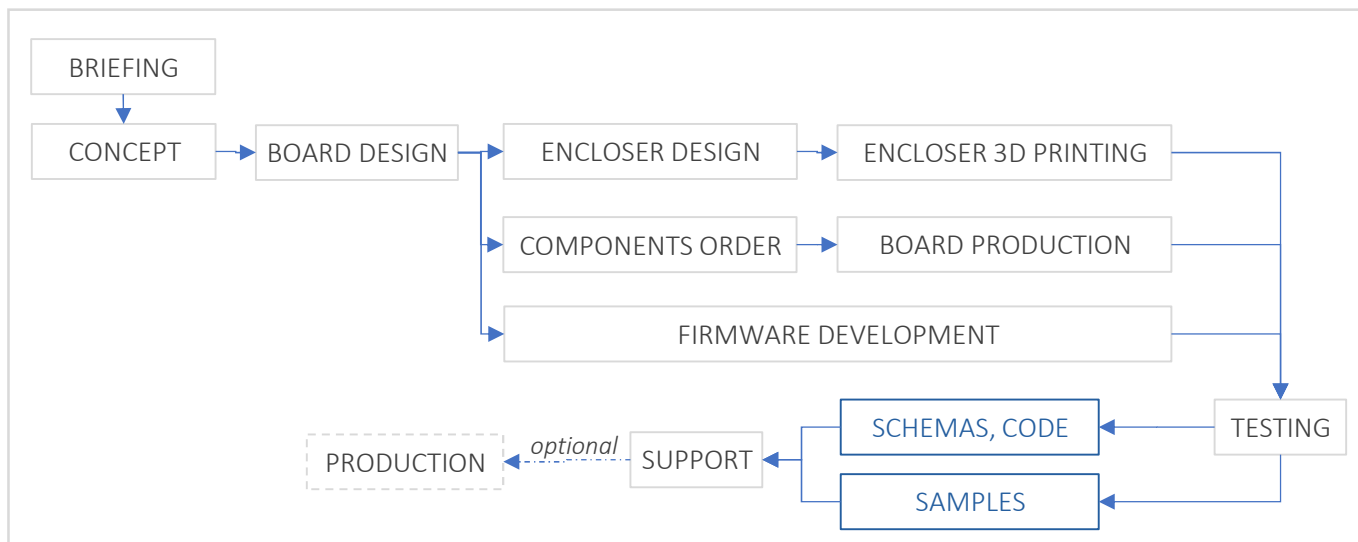
IOT Factory offers unique expertise and methodology for the development of your IOT hardware and software projects.

#### EXPERTISE

|        |         |           |        |         |       |        |
|--------|---------|-----------|--------|---------|-------|--------|
| M2M    | LORAWAN | ETHERNET  | I/O    | M-BUS   | RS232 | RS485  |
| NB-IOT | WIFI    | BLUETOOTH | MODBUS | 4-20 mA | GPS   | CANBUS |
|        |         |           | JAGA   | ...     | ...   | ...    |

We develop and maintain a reference architecture and libraries for firmware development, in order to offer rapid and robust firmware implementations for your sensors and gateways.

#### METHODOLOGY



#### REFERENCES

We are working on several projects including:

- Street Light Controller (LORAWAN – multi-cast)
- Pets Tracker (LORAWAN) – Solar Panel and Inductive Charging
- Cow Activity Tracker (LORAWAN, NB-IOT, SigFox)
- Waste Sensor (LORAWAN, Ultrasounds)
- Small Assets Tracker (LORAWAN, GPS, BLE, WIFI)
- Manhole Cover

## WEIGHTS & SIZES

|                                     |   | Weight                  |               | Dimensions  |                          |
|-------------------------------------|---|-------------------------|---------------|-------------|--------------------------|
|                                     |   | Net                     | With box      | Net         | With Box                 |
| SI-11                               | LoRa Pulse Counter                              | 0,082                   | 0,095         | 95x50x45    | 95x50x45                 |
| SI-12                               | Pulse Counter with Open-Drain Outputs           | 0,083                   | 0,095         | 95x50x45    | 95x50x45                 |
| SI-13-RS232                         | RS232 to LoRaWAN Converter                      | 0,06                    | 0,07          | 95x50x45    | 95x50x45                 |
| SI-13-RS485                         | RS485 to LoRaWAN Converter                      | 0,06                    | 0,074         | 95x50x45    | 95x50x45                 |
| SI-22                               | Pulse Counter with Open-Drain Outputs + Antenna | 0,094                   | 0,158         | 80x60x30    | 140x80x50                |
| TP11                                | 4-20 mA <-> LoRaWAN converter                   | 0,204                   | 0,284         | 95x80x65    | 95x80x65                 |
| M-BUS-1                             | M-BUS to LoRa Converter 1                       | 0,204                   | 0,282         | 95x80x65    | 95x80x65                 |
| M-BUS-2                             | M-BUS to LoRa Converter 2                       | 0,204                   | 0,279         | 102x95x28   | 140x80x85                |
| TD-11                               | External Temperature Sensor                     | 0,083                   | 0,119         | 95x50x45    | 95x50x45                 |
| MC-0101                             | Door and window sensor                          | 0,037                   | 0,058         | 80x40x25    | 80x40x25                 |
| AS-0101                             | Acceleration sensor                             | 0,037                   | 0,044         | 80x40x25    | 80x40x25                 |
| MS-0101                             | Motion sensor                                   | 0,057                   | 0,076         | 36x50x70    | 36x50x70                 |
| SS-0101                             | Smoke Sensor                                    | 0,207                   | 0,207         | 105x105x45  | 130x115x58               |
| HS-0101                             | Temp-Humidity-Opening-Accelerometer             | 0,037                   | 0,058         | 80x40x25    | 80x40x25                 |
| DP-1                                | Water leakage sensor(accessory)                 | 0,019                   | 0,028         | 80x40x25    | 80x40x25                 |
| WM-15                               | Water meter 15mm                                | 0,5                     | 0,512         | 130x80x80   | 130x80x80                |
| WM-20                               | Water meter 20mm                                | 0,5                     | 0,512         | 130x80x80   | 130x80x80                |
| LM-1                                | LORAWAN GPS Tracker IP67                        | 0,268                   | 0,285         | 140x80x50   | 140x80x50                |
| SH2                                 | NB-IOT / LORAWAN Sensor Hub                     | 0,195                   | 0,47          | 95x95x50    | 165x118x57               |
| FS-1                                | Ultrasonic Fuel Level Sensor LORAWAN            | 0,22                    | 0,3           | 109x109x126 |                          |
| FS-1                                | Level Sensor LORAWAN (Pressure)                 | 0,204 + Cable (min 1kg) | 0,284 + cable | 95x80x65    | 95x80x65 + 6 METER CABLE |
| TS-12                               | LORAWAN Network Tester                          | 0,075                   | 0,085         | 90x52x31    | 90x52x31                 |
| UM-0101                             | CO2, Temp, Humidity, Noise, Light LORAWAN       |                         |               |             |                          |
| NB-11                               | NB-IOT Pulse                                    | 0,195                   | 0,47          | 95x95x50    | 165x118x57               |
| NB-12                               | NB-IOT 4-20 mA                                  | 0,195                   | 0,47          | 95x95x50    | 165x118x57               |
| NB-13                               | NB-IOT RS232 - RS485                            | 0,195                   | 0,47          | 95x95x50    | 165x118x57               |
| NB-14                               | NB-IOT Resistance                               | 0,195                   | 0,47          | 95x95x50    | 165x118x57               |
| <b>LORAWAN BASE STATIONS (IP67)</b> |   |                         |               |             |                          |
| BS-1                                | LoRaWAN BaseStation-Ethernet                    | 1,181                   | 1,181         | 190x183x75  |                          |
| BS-2                                | LoRaWAN BaseStation-3G-GPS                      | 1,181                   | 1,181         | 190x183x75  |                          |
| ANT868                              | LORAWAN Antenna                                 | 0,352                   | 0,689         | 850x50x50   | 850x50x50                |





# IOT FACTORY



[www.iotfactory.eu](http://www.iotfactory.eu)

IOT Platform

Business Solutions

Hardware Distribution