nano sensorics

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LoRaWAN

## Description

The PowerTempHu is advanced technology indoor sensor applied for the full sensing of the PVC and XLPE cable conductivity, as well temperature and humidity. PowerTempHu is enclosed in a room sensor box and is designed to be wall mounted. PowerTempHu is completely wireless and powered by 3.6V AA lithium batteries. The integrated advanced intelligent (AI) computational algorithm enables reliable capability of the measurement the magnitude of the temperature, humidity. The data transmitted from the sensor is based on Class A LoRaWAN® wireless network.

## Applications

- XLPE, PVC cable conductivity measurement in critical points of the cable line.
- Indoor environment measuring
- Industrial factories
- Industrial facilities

## Product features

- LoRaWAN communication
- Computational AI algorithm.
- Indoor temperature sensor
- Indoor humidity sensor
- Configuration over the air
- Robust enclosure
- Auto self-calibration

| | |
|---|---|
| **Sensing characteristics** | |
| Temperature | --40 to 85 °C |
| Temperature Accuracy | Max '+/-1°C@ -20— -10°C<br>Max '+/-0.4°C@ -10°C—85°C |
| Conductivity Accuracy | Max carrying current conductivity factor +- 0,5-1% |
| Carrying current conductivity factor | XLPE cables: from 1,2065 up to 0,3895 for the temperatures @ -15— 60°C<br>PVC cables: from 1,20 up to 0,475 for the temperatures @ -15— 80°C |
| Temperature sensing options | 1 phase, 3 phase; low, medium, high voltage busbar duct enclosure |
| Sensing cable length | Up to 1,5 m |
| **Mechanical specification** | |
| Weight | 120 g without battery, 170 g with battery |
| Dimensions | 121 x 62 x 26 mm |
| Enclosure | Plastic ASA+PC-FF |
| Storage Temperature | -40 to 85 °C |
| **Sensor Power Supply** | |
| Battery Type and voltage | 1x 3.6 V or 2x3.6 V AA Lithium Battery ER14505 AA lithium batteries (3.6V2700mAh/section) |
| Expected Battery Life | <13 years (Depending on configurations and environment) |
| **Sensor logging Function** | |
| Sampling Interval | Configurable via downlink, NFC configuration is optional |
| Data Upload Interval | Configurable via downlink, NFC configuration is optional |

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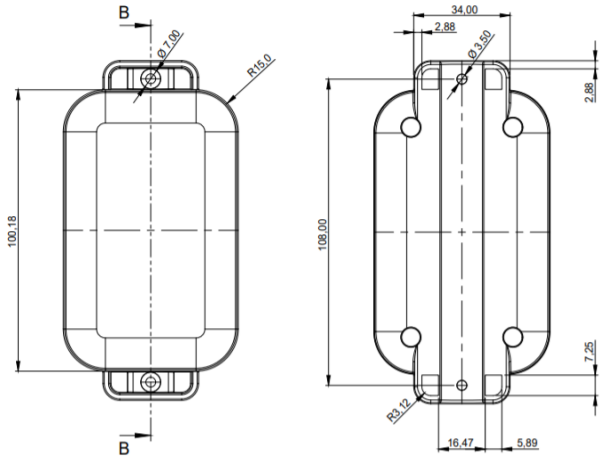
| Radio / Wireless specification | |
|---|---|
| Wireless Technology | LoRaWAN® 1.0.3 |
| Wireless Security | LoRaWAN® End-to-End encryption (AES) |
| LoRaWAN Device Type | Class A End-device |
| Supported LoRaWAN® features | OTAA, ABP, ADR, Adaptive Channel Setup |
| Supported LoRaWAN® regions | EU863 – 870<br>Optional: US902 – 928, EU863 – 870, AU915 – 928, EU433, IN865 |
| Link Budget | 137 dB (SF7) to 151 dB (SF12) |
| TX Power | 14dBm±1dBm (Region specific) |
| Rx Sensitivity | 132 dBm (LoRa, Spreading Factor=12, Bit Rate=293bps)<br>-118 dBm (FSK, Frequency deviation=5kHz, Bit Rate=1.2kbps) |
| Communication range | 10 km (line-of-sight, actual transmission distance depends on the environment) |

| Data sizes | | |
|---|---|---|
| Measurement | Data size | Elaboration |
| Temperature | 2 | MSB byte -128 to +128 C, LSB byte, value after decimal point 0 to 100 |
| PVC conductivity_Index | 2 | MSB byte represent before decimal point of factor,<br>LSB byte represents 4 digits after decimal point expressed as unsigned 2 byte value, first byte – integer factor, second byte – factor(four digits after decimal point). |
| XLPE conductivity_Index | 2 | MSB byte represent before decimal point of factor,<br>LSB byte represents 4 digits after decimal point expressed as unsigned 2 byte value, first byte – integer factor, second byte – factor(four digits after decimal point). |
| Humidity | 1 | One byte integer value (0 to 100%) |
| Battery | 2 | MSB byte represent Volts before decimal point , LSB byte represents two digits after decimal point expressed as unsigned 2 byte value, first byte – integer Volts, second byte – Volts (two digits after decimal point). |

**Sensor dimensions:**

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