

LoRaWAN Temperature Sensor

Intelligent industrial wireless sensor
for remote monitoring in hazardous environments

PATENTED DESIGN



Specifications

| | |
|---------------------------------|---|
| Measuring option | Resistance temperature detector (RTD) Nickel-alloy thermocouple (Type K) |
| Measuring ranges | -40 °C ... 650 °C / -40 °F ... 1200 °F |
| Accuracy ¹ | PT100 class A ±(0.15 + 0.002 × t) °C Type K class 1 ±1.5 °C or 0.4% of reading |
| Immersion tube, diameter | Ø6 mm or Ø5 mm |
| Immersion tube, length | Min. 100 mm (4 in) - Max. 1000 mm (40 in) |
| Process connections | In-line spring loaded Surface mounted Pipe pressure mounted |

Environment

| | |
|--|------------------------------------|
| Operating temperature | -40 ... +72 °C / -40 ... +161.6 °F |
| Storage temperature (recommended) | +25 °C / 77 °F |
| Protection rating | IP65/67 |
| Vibration | 20 g, 5 ... 2000 Hz, X/Y/Z |
| Endurance @ 25 °C / 77 °F | >10 millions FS cycles |
| Shock | 50 g / 11 ms - 100 g / 6 ms |
| Humidity | 0 to 100% non-condensing |

Material

| | |
|-----------------------|---|
| Wetted part | Stainless steel 316L |
| Housing option | Aluminum powder coated light weight 1.0 Kg Stainless steel 316L 1.5 Kg |
| Antenna | Reinforced anti-static polymer (ESD protection and UV stabilized) |

Performance features

- Compact, robust and weather-proof
- Quick and cost-effective installation
- Wide temperature ranges and mounting options
- Cortex® 150 Mhz - M4 for analytics at edge
- LoRaWAN global frequency plans
- End-to-End Security: Inc. 128-bit AES encryption + MFA
- Bluetooth® 5 low energy
- Ultra-low power up to 10 years battery life ²
- Intrinsically safe design for hazardous area (Zone 0/1)

Applications

- Safety Monitoring
- Cold Chain
- Process Control
- ATEX Surveillance
- Chemical Processes
- Storage Safety
- Industrial Regulation
- Boiler Monitoring

Communication

| | |
|-----------------------------------|---|
| Bluetooth® 5 | Bluetooth |
| Operating OS | Android 11 and greater or IOS 12 and greater |
| Beacon mode | Available for live pulling data |
| Class | LoRaWAN A – lowest power bi-directional |
| Range | Up to 10 km |
| Baud rate range | From 0.3 kbps to 50 kbps |
| Adaptative data rate (ADR) | Available |
| Interference immunity | Very high |
| Mode | OTAA with external Join Server |
| Update rate ² | 100 frames / per day (default) |
| Frequency plans | Please see page 4 for options |
| RF Power | Max. 14 dBm ERP |
| Security | Dedicated trusted secure element AES 128 bits encryption Roaming activation via HSM |
| Antenna | Omni-directional multiband |

Battery

| | |
|---|---------------------------------|
| Format | Field replaceable D-size format |
| Type | Primary Li-MnO2 |
| Nominal capacity @ 20 °C / 68 °F | 12.4 Ah |
| Nominal voltage @ 20 °C / 68 °F | 3.0 V |
| Storage temperature | +25 °C/77°F recommended |

Approvals

| | |
|-------------------|---|
| Conformity | RoHS directive 2011/65/EU - RED directive 2014/53/EU ATEX directive 2014/34/EU - PED directive 2014/68/EU IEC61010-1:2020 + A1:2016 |
| Safety | ATEX II 1 GD, ATEX I M1, Ex ia I Ma, UKCA IECEX Ex ia IIC T4 Ga, Ex ia IIIB T135 °C Da Class I/II/III Groups ABCDEFG T4 |

¹ Including linearity, hysteresis and repeatability. Linearity calculated as best straight line through zero.

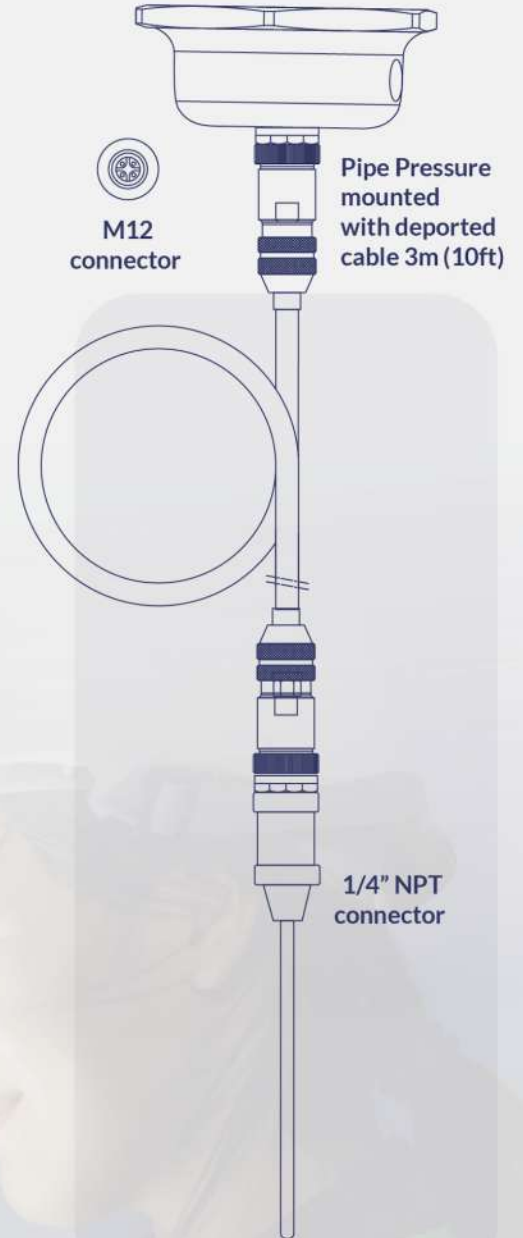
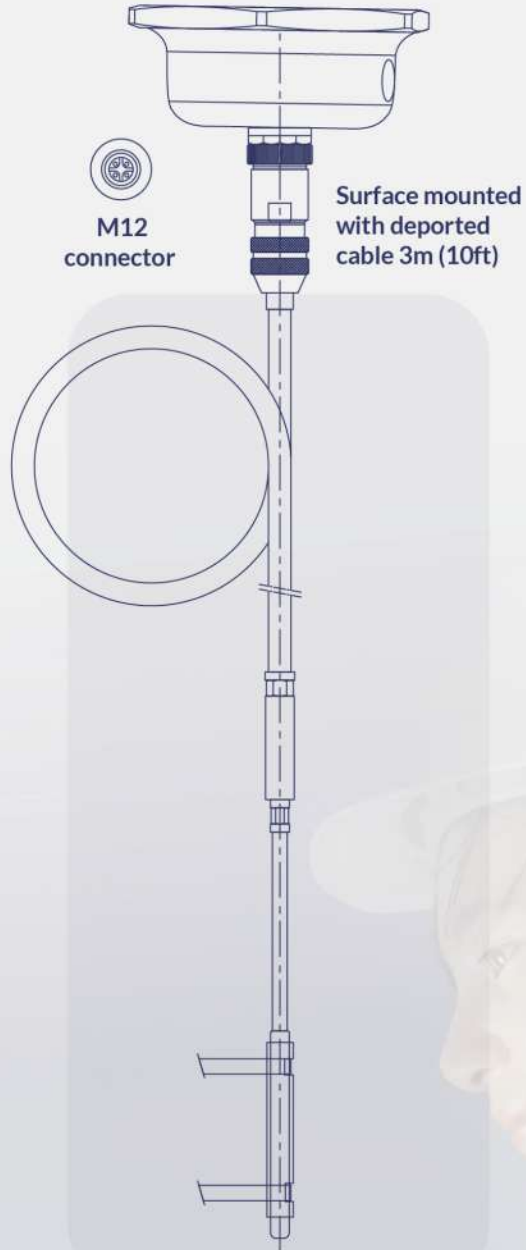
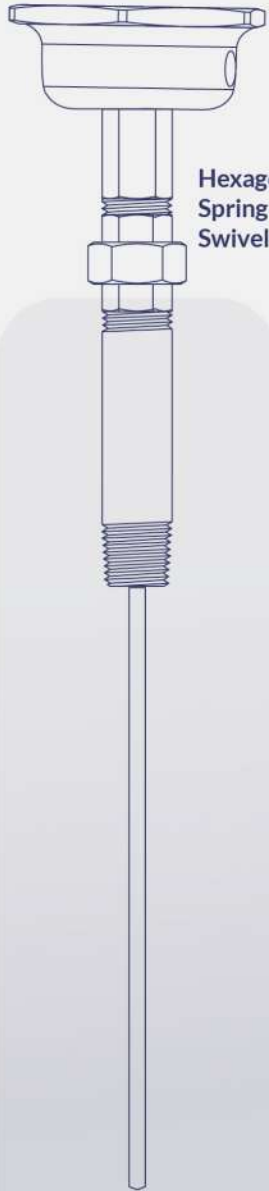
² Changing default parameters can impact the battery life.

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SENSA.iO
INTELLIGENT SENSORS DRIVING CONNECTIVITY

Process Connections



SENSA.iO
INTELLIGENT SENSORS DRIVING CONNECTIVITY

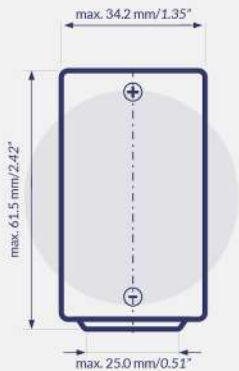
Scroll down for further information



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Battery characteristics : SAFT M 20 EX SV ³

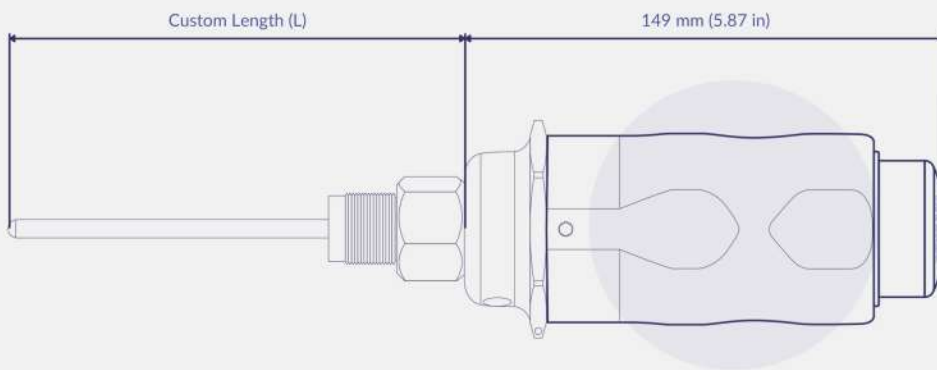


- Stainless steel container
- Hermetic glass-to-metal sealing
- Built-in safety vent
- Made in Germany
- ATEX and IECEX certified

| | |
|----------------|-------------------|
| Diameter (max) | 34.2 mm (1.35 in) |
| Height (max) | 61.5 mm (2.42 in) |
| Typical weight | 115 g |

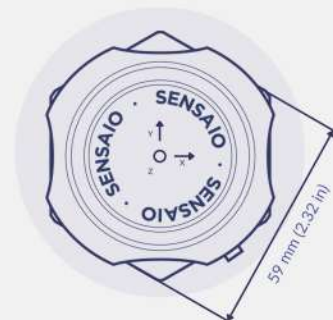
³ Only use the correct battery model for this device SAFT M 20 EX SV. There is a risk of damage if you replace the battery with an incorrect model. Restricted for transport (Class 9). Battery is sold separately

Dimensions

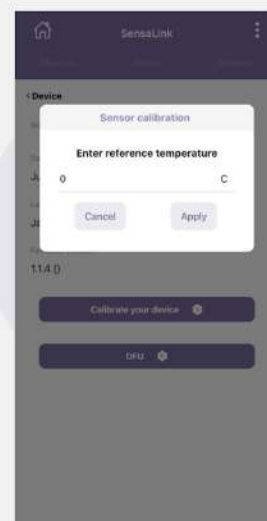
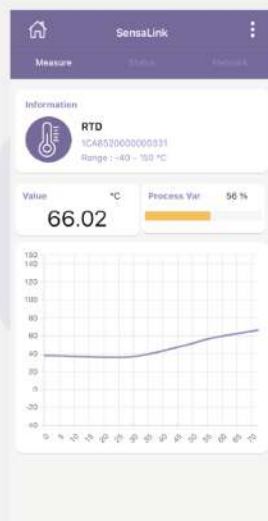
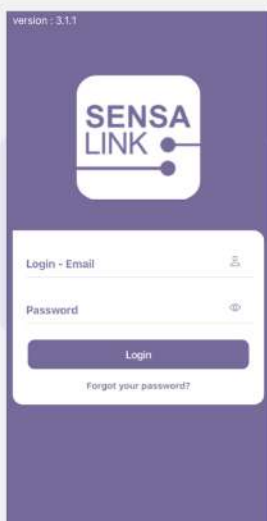


Tool kit

- Flat spanner 59 mm
- Allen key 2.5 mm
- Max torque 50 Nm




Sensalink



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Ordering details / part number creation chart

| | | | | | | | | | | |
|---|----------------|---------------------|----------------|---------------------|----------------|---------------------|----------------|---|----------|----------|
| SENSA. | | TEMP | XXX | X | X | X | X | X | X | X |
| Model | | TEMP | | | | | | | | |
| Temperature sensor | | TEMP | | | | | | | | |
| Type | | | | | | | | | | |
| Resistance temperature detector (RTD) | | | RTD | | | | | | | |
| Nickel-alloy thermocouple (K) | | | TCK | | | | | | | |
| Measurement range | | | | | | | | | | |
| -40 / 150 °C | | | | 1 | | | | | | |
| -40 / 250 °C | | | | 2 | | | | | | |
| -40 / 450 °C | | | | 3 | | | | | | |
| -40 / 650 °C (only Type k) | | | | 4 | | | | | | |
| Process connection | | | | | | | | | | |
| Thermowell mounted spring loader ½" NPT | | | | | 1 | | | | | |
| Surface mounted with deported cable 3 m (10 ft) | | | | | 2 | | | | | |
| Pipe pressure mounted with deported cable 3 m (10 ft) – ¼" NPT max pressure 1,000 bar | | | | | 3 | | | | | |
| Probe length | | | | | | | | | | |
| 150 mm (6 in) | | | | | | 1 | | | | |
| 300 mm (12 in) | | | | | | 2 | | | | |
| Housing material | | | | | | | | | | |
| Aluminium powder coated L | | | | | | | | L | | |
| Stainless steel 316L (mandatory for mining) | | | | | | | | H | | |
| Safety standard | | | | | | | | | | |
| ATEX/IECEX/UKCA (gas/dust) | | | | | | | | | 1 | |
| HAZLOC NEC USA | | | | | | | | | 2 | |
| ATEX/IECEX/UKCA (mining) | | | | | | | | | 3 | |
| INMETRO | | | | | | | | | 4 | |
| HAZLOC/CSA Canada | | | | | | | | | 5 | |
| Frequency plan | | | | | | | | | | |
| Channel plan | ID plan | Channel plan | ID plan | Channel plan | ID plan | Channel plan | ID plan |  | | |
| EU863-870 | 1 | AS923-1 | 7 | KR920-923 | 10 | AS923-4 | 13 | | | |
| US902-928 | 2 | AS923-2 | 8 | IN865-867 | 11 | | | | | |
| AU915-928 | 5 | AS923-3 | 9 | RU864-870 | 12 | | | | | |
| | | | | | | | | | | |
| Options* | | | | | | | | | | |
| Null | | | | | | | | | | N |
| Hydrogen | | | | | | | | | | H |

Special conditions

The unit must be mounted with sufficient thermal insulation between the process and the main housing of the device such that thermal backflow from the process does not cause the temperature of the enclosure to exceed the maximum specified ambient temperature. This can be achieved, for example, with suitable heat insulation or a neck tube of suitable length.

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