nano sensorics

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“FridgeSave” sensor

The **FridgeSave** is advanced technology indoor sensor applied for the full sensing of the status and health of the refrigeration system. FridgeSave is enclosed in industrial box and is designed to DIN rail or magnet mounted. FridgeSave 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, and RMS current value. The data transmitted from the sensor is based on Class A LoRaWAN® wireless network.

Applications

- Monitoring of the refrigeration system health / maintenance;
- Pumping fluid flow status;
- Food industry;
- Indoor environment measuring;
- Industrial factories.

Product features

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

Sensing characteristics	
Temperature	-40 to 105 °C
Temperature Accuracy	Max '+/-0.8°C@ -40— -10°C Max '+/-0.4°C@ -10°C—105°C
Electrical current RMS	1 phase, non – intrusive, clamp on.
Sensing cable length	Temperature- 2m, CT clamp on-1m. Other lengths are optional
Mechanical specification	
Weight	200 g without battery, 248 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 (3.6V2400mAh/section)
Expected Battery Life	<10 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
Wireless specification	
Wireless Technology	LoRaWAN® 1.0.3

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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 Optional: US902 – 928, EU863 – 870, AU915 – 928, EU433, RU864, 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) -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
RMS current value	1	One byte integer value
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: