Wireless Thermocouple Sensor

Wireless Thermocouple Sensor
R718CX Data Sheet

Wireless Sensor Network Based on LoRa Technology

R718CX

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Wireless Thermocouple Sensor

General Description

This equipment is used to detect temperature of the object and medium which thermocouple is contacted. It uses SX1276 wireless communication module.

R718CX can be connected according to requirements: type T (R718CT), type K thermocouple (R718CK), type N thermocouple (R718CN), type R thermocouple (R718CR) and display the collected data in the gateway.

Principle of Operation

The thermocouple is processed by the ADS1118 chip ADC for ADC sample conversion, and the ADS1118 communicates with the module via SPI.

Main Characteristics

- Apply SX1276 wireless communication module

- 2 ER14505 batteries AA SIZE (3.6V / section) parallel power supply

- Main body protection grade IP65/IP67. External thermocouple sensor protection grade: type T thermocouple IP65; type K thermocouple IP60; type N thermocouple IP60; type R thermocouple IP60

- The base carrying a magnet can be attached to a ferrous object

Example Applications

• Temperature measuring equipment
• Thermal system equipment

Features of NETVOX Sensors

•LoRaWAN™ Class A compatible
•Frequency Hopping Spread Spectrum (FHSS)
•Improved interference immunity
•Improved power management for longer battery life
•Encrypt-RF™ Security (Diffie-Hellman Key Exchange + AES-128 CBC for sensor data messages)
•Battery Life[2]:
    Please refer to web: http://www.netvox.com.tw/electric/electric_calc.html
    At this website, users can find battery life time for varier models at different configurations
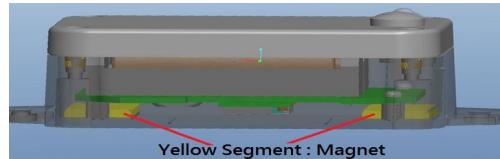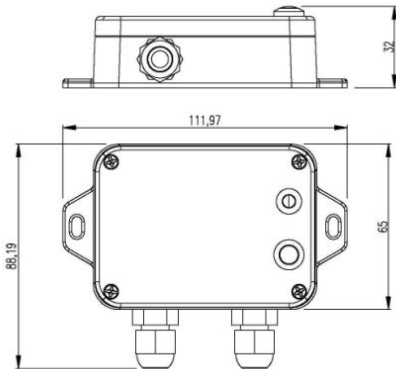 - Over-the-air updates (future)
•Third-Party online wireless sensor monitoring and notification system to configure sensors, view data and set alerts via SMS text and email (optional)
•Available third-party platform: Actility/ThingPark, TTN, MyDevices/Cayenne
•R718X series carry magnets which can be attached to ferromagnetic materials and objects

*1. Actual range may vary depending on environment
*2. Battery life is determined by sensor reporting frequency and other variables

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Technical Specifications

Yellow Segment : Magnet

(Unit. mm)

Electric

Input Power	2 x 3.6V ER14505 AA lithium batteries (3.6V2400mah/section）
Battery Life	5 years (Conditions: ambient temperature 25 °C, 15 min heartbeats, txpower = 20dBm, LoRa spreading factor SF = 10)
Sleeping Mode	34uA
Wake up Mode	6.3mA@3.3V
Transmitting current (max)	120mA/3.3V
Receiving current (max)	11mA @3.3V
Battery Measurement Accuracy	±0.1V

* Specific electrical characteristics may vary depending on the power supply voltage.

Thermocouple characteristics

Measurement accuracy	Measurement error which the wire causes : ≦ 2℃
	Thermocouple basic error limit: Type T thermocouple: -40~125℃ +-0.5℃ Type K thermocouple: -40~375℃ +-1.5℃ Type N thermocouple: -40~375°C +-1.5°C; 375~800°C +-0.4%t (t is temperature) Type R thermocouple: 0~1100℃ +-1℃
Thermocouple Wire Length	1 meter

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Frequency

TX Power	19dBm±1dBm
Rx Sensitivity	-136dBm (LoRa，Spreading Factor=12, Bit Rate=293bps) -121dBm (FSK,Frequency deviation=5kHz, Bit Rate=1.2kbps)
Antenna Type	Build-in antenna
Communication Range	Up to10 km, the actual transmission distance depends on the environment,
Data Transfer Rate	0.3kbps～50kbps
Spread Technique	LoRa/FSK
Available Frequency	EU863-870, US902-928, AU915-928, KR920-923, AS923, CN470-510 Configured before shipment

Physical

Dimension	Main Body: L:112mm*W:88.19mm*H:32mm
Weight	141g
Environment Temperature Range	-20℃ ～ 55℃
Environment Humidity Range	<90% RH (No condensation)
Storage Temperature	-40℃ ～ 85℃

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