
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 thermocouple (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 IP67;

Type K thermocouple IP60;

Type N thermocouple IP60;

Type R thermocouple IP60

- The base is attached with a magnet that can be attached to a ferromagnetic material object
- Thermocouple detection

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Features of NETVOX Sensors

- LoRaWAN™ Class A compatible
- Frequency Hopping Spread Spectrum (FHSS)
- 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
- Improved power management for longer battery life
- Battery Life:
 - 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

*1. Actual range may vary depending on environment

*2. Battery life is determined by sensor reporting frequency and other variables

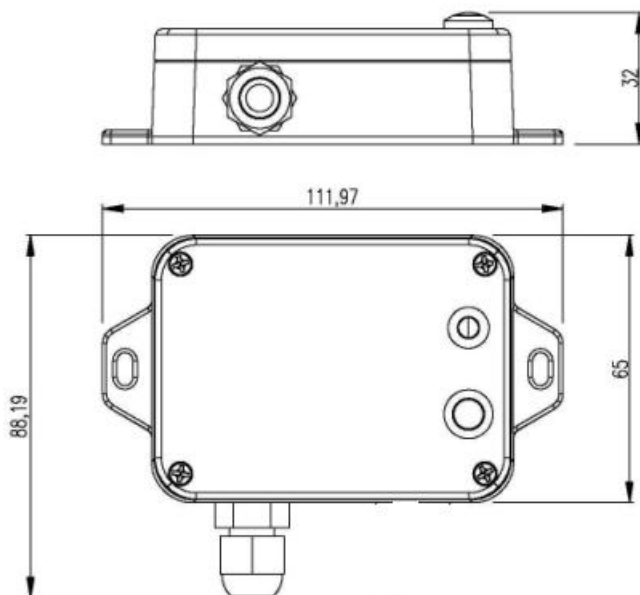
Example Applications

Temperature measuring equipment

Thermal system equipment

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Technical Specifications



(Unit. mm)

Electric

R718CX

Input Power	2 x 3.6V ER14505 AA lithium batteries (3.6V2400mah/section)
Operating Voltage	DC 3.1V~3.65V
Battery Life	4.8 years (Conditions: ambient temperature 25 °C, 15 min report once, txpower = 20dBm, LoRa spreading factor SF = 10)
Standby Current	34uA
Wakeup Current	7.33mA (Typical value) Wakeup current range 0.8mA-20 mA * When not transmitting /receiving LoRa data)
Low Battery Voltage Threshold	3.2V
Battery Measurement Accuracy	±0.1V

Module-R100H

Wake-up Current	0.8mA - 8mA@3.3V
RF Receiving Current (max)	11mA/3.3V
RF Transmitting Current (max)	120mA/3.3V

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

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Thermocouple characteristics

Measurement Accuracy	Measurement error which the wire causes : $\leq 2^{\circ}\text{C}$
	Thermocouple basic error limit:
	Type T thermocouple: $-40\sim 125^{\circ}\text{C} \pm 0.5^{\circ}\text{C}$
	Type K thermocouple: $-40\sim 375^{\circ}\text{C} \pm 1.5^{\circ}\text{C}$
	Type N thermocouple: $-40\sim 375^{\circ}\text{C} \pm 1.5^{\circ}\text{C}$ $375\sim 800^{\circ}\text{C} \pm 1.5^{\circ}\text{C} \pm 0.4\% t$ (t is temperature)
Type R thermocouple: $0\sim 1100^{\circ}\text{C} \pm 1^{\circ}\text{C}$	
Thermocouple Wire Length	1 meter

Frequency

Frequency Range	863MHz-928MHz 470MHz-510MHz
TX Power	US915 20dbm ; AS923 16dbm ; AU915 20dbm ; CN470 19.15dbm ; EU868 16dbm ; KR920 14dbm ; IN865 20dbm ;
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 to 10 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

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Physical

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