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**Wireless 2-Gang Thermocouple Sensor**

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# Wireless 2-Gang Thermocouple Sensor R718CX2 Data Sheet

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Wireless Sensor Network Based on LoRa Technology



**R718CX2**

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## Wireless 2-Gang Thermocouple Sensor

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### General Description

This equipment is used to detect temperature of the object and medium which thermocouple is contacted. It can be connected to two thermocouples for testing. It uses SX1276 wireless communication module. R718CX2 can be connected according to requirements: type K (R718CK2), type T thermocouple (R718CT2), type R thermocouple (R718CR2), type N thermocouple (R718CN2). The collected data is displayed 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 carries a magnet that can be attached to a ferrous object

### Example Applications

- Temperature Measuring Equipment
- Thermal System Equipment

### Features of NETVOX Sensors

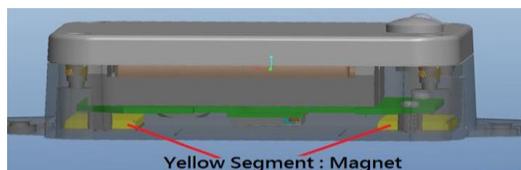
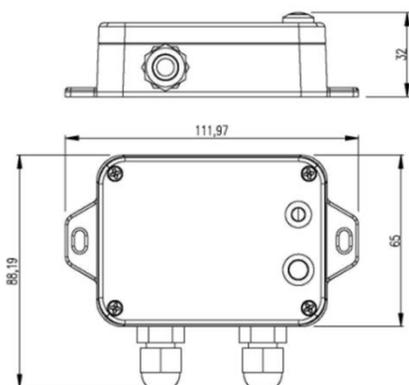
- LoRaWAN™ Class A compatible
- Frequency Hopping Spread Spectrum (FHSS)
- Improved interference immunity
- Improved power management for longer battery life
- Encrypt-RF™ Security (Diffie-Hellman Key Exchange + AES-128 CBC for sensor data messages)
- Battery Life\*2:
  - Please refer to web: [http://www.netvox.com.tw/electric/electric\\_calc.html](http://www.netvox.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.

# Wireless 2-Gang Thermocouple Sensor

## Technical Specifications



(Unit. mm)

## Electric

Input Power	2 x 3.6V ER14505 AA lithium batteries (3.6V 2400mah/section )
Battery Life	5 years (Conditions: ambient temperature 25 °C, 15 min heartbeats, txpower = 20dBm, LoRa spreading factor SF = 10)
Sleeping Mode	36uA
Wake up Mode	6.3mA@3.3V
Transmitting current (max)	120mA/3.3V
Receiving current (max)	11mA @3.3V
Low Voltage Threshold	3.2V
Battery Measurement Accuracy	±0.1V

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

## Thermocouple Characteristics

Measurement accuracy	Measurement error caused by the wire: $\leq 2^{\circ}\text{C}$
	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: $-40\sim 375^{\circ}\text{C} \pm 1.5^{\circ}\text{C}$ ; $375\sim 800^{\circ}\text{C} \pm 0.4\%t$ (t is temperature) Type R thermocouple: $0\sim 1100^{\circ}\text{C} \pm 1^{\circ}\text{C}$
Thermocouple Wire Length	1 meter

## Wireless 2-Gang Thermocouple Sensor

### 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 to 10km, 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°C ~ 55°C
Environment Humidity Range	<90% RH (No condensation)
Storage Temperature	-40°C ~ 85°C

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