Wireless Tilt Angle
and Temperature Sensor

Wireless Sensor Network Based on LoRa Technology

R718EA Data Sheet

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Introduction

R718EA has a built-in tilt sensor and connects with an external NTC thermistor. When the device detects the tilt which is compared with the reference angle, it will report the tilt angle. It will transmit the detected data to other devices via the network for display. The external NTC thermistor can detect the surface temperature of object. The device is compatible with the LoRaWAN protocol. It integrates a chip module that conforms to LoRaWAN wireless protocol, and joins the gateway to display the collected data.

Main Characteristic

• Apply SX1276 wireless communication module

• 2 ER14505 battery AA Size (3.6V / section) in parallel power supply

• Built-in tilt measurement chip

• The base is attached with a magnet that can be attached to a ferromagnetic material object

• Protection level IP65/IP67 (optional)

• Frequency Hopping Spread Spectrum (FHSS)

• Improved power management for longer battery life

• Configuring parameters via third-party software platforms, and reading the data and setting alarms via SMS text and email (optional)

• Applicable to the third-party platforms: Actility/ ThingPark, TTN, MyDevices/Cayenne

• Battery Life*2:

  Please refer to web: http://www.netvox.com.tw/electric/electric_calc.html

 At this website, users can find battery lifetime for various models at different configurations.

*1. Actual range may vary depending on environment.

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

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Application

• Pillars, telephone poles, and other applications, such as tilt sensing, angle detection,

   and direction identification, etc.

• Industrial equipment

• Temperature measurement system

• Other

Dimension
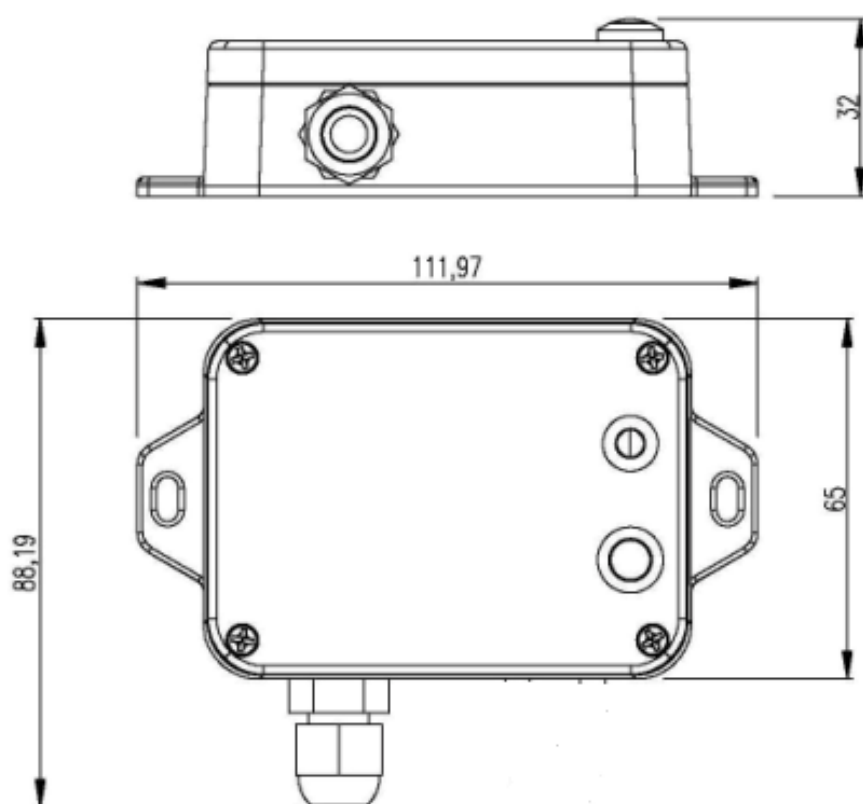
Wireless Tilt Angle and Temperature Sensor

Electric

Power Supply	2 ER14505 lithium batteries (3.6 V, 2400mAh / section) in parallel
Battery Life	Battery life: 4 years (condition: Ambient temperature 25 ℃, report once every 60mins, txpower = 20dBm, LoRa spreading factor SF = 10)
Standby Current	80uA
Device Wakeup Current	8.68mA (Typical value) Wakeup current range 0.8mA-20 mA (* When not transmitting /receiving LoRa data)
Module Wakeup Current	(0.8mA-8mA) @ 3.3V
Battery Low Voltage Threshold	3.2V
RF Receiving Current	11 mA @ 3.3V
RF Emission Current	120 mA @ 3 .3 V
Battery Measurement Accuracy	± 0.1V

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

Tilt Sensor

Tilt Angle Measurement Range	±90°
Tilt Angle Resolution	1°
Angle Accuracy	±3°
Preset Sampling Rate	Stationary State: 8Hz Angle Changing: 12.5Hz

NTC Thermistor

Temperature Measurement Range	-40℃ to 120℃
25 Degree Resistance Value	10k (Typical value)
B Value B25/50	3950k
Temperature Measurement Accuracy	±3℃

Frequency

Frequency Range	863MHz-928MHz 470MHz-510MHz
TX Power	US915 20dbm AS923 16dbm AU915 20dbm CN470 19.15dbm EU868 16dbm KR920 14dbm IN865 20dbm
Receiving Sensitivity	-136 dBm (LoRa, Spreading Factor = 12, Bit Rate = 293bps) -121 dBm (FSK, Frequency deviation = 5kHz, Bit Rate = 1.2kbps)
Antenna Type	Built-in antenna
Communication Distance	10 km (The actual transmission distance depends on the environment.)
Data Transfer Rate	0.3kbps～50kbps(LoRa) 1.2kbps～300kbps(FSK)
Modulation Method	LoRa / FSK (Note: choose one of them)
Supportable LoRaWAN Band	EU863-870,US902-928,AU915-928,KR920-923,AS923-1, AS923-2,AS923-3,IN865-867,CN470-510 (Note: The frequency band is optional and needs to be configured before shipment.)

Physical

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