Wireless Multifunctional CO2 Sensor

Wireless Sensor Network Based on LoRa Technology

R718UBD Series
Data Sheet

Wireless Multifunctional CO2 Sensor

Introduction

R718UBD series is a wireless communication device that can detect CO2 in the environment and can be combined with a variety of sensors. And transmits the detected data to other devices through the wireless network for display, which adopts the SX1276 wireless communication module.

Model Combination

R718UBD represents the basic function CO2 of DC power supply.

"1" represents temperature and humidity (TH)

"2" represents vibration

"3" represents air pressure

"5" represents light

"6" represents TVOC

"7" represents PM2.5/10

Model Combination	Product function
R718UBD	CO2
R718UBD1	CO2, TH
R718UBD12	CO2, TH, Vibration
R718UBD123	CO2, TH, Vibration, Air Pressure
R718UBD23	CO2, Vibration, Air Pressure
R718UBD25	CO2, Vibration, Light
R718UBD125	CO2, TH, Vibration, Light
R718UBD235	CO2, Vibration, Air Pressure, Light
R718UBD1235	CO2, TH, Vibration, Air Pressure, Light
R718UBD126	CO2, TH, Vibration, TVOC
R718UBD1236	CO2, TH, Vibration, Air Pressure, TVOC
R718UBD1256	CO2, TH, Vibration, Light, TVOC
R718UBD12356	CO2, TH, Vibration, Air Pressure, Light, TVOC
R718UBD127	CO2, TH, Vibration, PM2.5/10
R718UBD1237	CO2, TH, Vibration, Air Pressure, PM2.5/10

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| R718UBD12357	CO2, TH, Vibration, Air Pressure, Light, PM2.5/10
R718UBD1257	CO2, TH, Vibration, Light, PM2.5/10
R718UBD256	CO2, Vibration, Light, TVOC
R718UBD257	CO2, Vibration, Light, PM2.5/10
R718UBD236	CO2, Vibration, Air Pressure, TVOC
R718UBD237	CO2, Vibration, Air Pressure, PM2.5/10
R718UBD2356	CO2, Vibration, Air Pressure, Light, TVOC
R718UBD2357	CO2, Vibration, Air Pressure, Light, PM2.5/10

Features

- SX1276 wireless communication module

- DC 12V power supply

- CO2 detection

- Temperature and humidity sensor, vibration sensor, air pressure sensor, light sensor, TVOC and PM2.5/PM10 (see model combination for optional combination)

- IP rating: IP65

- Compatible with LoRaWAN™ Class A

- Frequency hopping spread spectrum (FHSS)

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

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

Applications

- Environmental detection

- Others

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Wireless Multifunctional CO2 Sensor

Dimensions
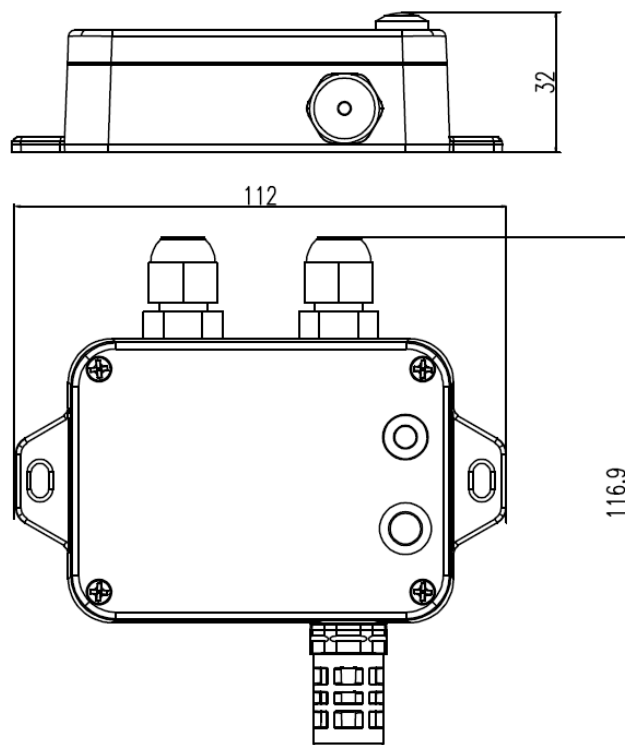
Electrical Specifications

Power Supply	DC 12V
Working Current	< 2W

Note: The specific working current will vary according to the type of sensor

CO2 Sensor

CO2 Range	400 to 5000 ppm extended range up to 10000ppm
Accuracy	±(50ppm ±3% of reading) Extended range: ±10% of reading
Communication Mode	UART

Note: Extended range accuracy is not calibrated or guaranteed, it is extrapolated from calibrated range.

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Temperature and Humidity Sensor (Optional)

Temperature Range	0°C to 50°C (Based on working scope of CO_2 sensor)
Temperature Accuracy	±1°C@25°C
Humidity Range	0%RH to 100%RH
Humidity Accuracy	±4%RH @25°C

Air Pressure Sensor (Optional)

Air Pressure Range	300hPa to 1100hPa
Air Pressure Accuracy	±1.5hPa (950 to 1050 hPa, 0 to 40 °C)

Light Sensor (Optional)

Illuminance Range	0.01 LUX to 157K LUX
Illuminance Accuracy	±10% (Test Condition: white LED light, 6500K, Ambient temperature) ±20% (In the sunlight)

Vibration Sensor

Sensor Type	Ball-type omnidirectional signal trigger switch
Insulation Resistance	>10 MΩ
Trigger Rate	100% (Amplitude > 1 mm, Frequency: > 20 Hz)
Trigger Frequency	> 50 Hz

TVOC Sensor (Optional)

Measuring Range	0 to 60000ppb
Display Resolution	1 ppb
Accuracy	8%FS (@C2H6O, 0.5 ppm, 25°C, 50%RH)
Communication Mode	RS485
Dimensions	85 mm* 110 mm* 44 mm

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Working Temperature	-40°C to 80°C
Working Humidity	0%RH to 95%RH (No condensation)
IP Rating	IP65

PM2.5/PM10 Sensor (Optional)

Measuring Range	PM2.5: 0 to 999 ug/m³ PM10: 0 to 1500 ug/m³
Consistency of PM2.5 and PM10 Mass Concentration	± 10% or ± 10ug, whichever is greater
Communication Mode	RS485
Dimensions	180 mm* 92 mm * 55 mm
Working Temperature	-20°C to 70°C
Working humidity	15% RH to 90% RH (relative humidity), Non condensing
Adapt Pressure	Air pressure ± 10%
IP Rating	IP67

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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 (Visible linear obstacle-free transmission distance, actual transmission distance depending on the environment.)
Data Transfer Rate	0.3kbps ~ 50kbps (LoRa) 1.2kbps ~ 300kbps (FSK)
Modulation	LoRa / FSK (Note: choose one of them)
Supportable LoRaWAN Frequency	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.)

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Physical Properties

Dimensions	112mm x 116.9mm x 32mm
Weight	Main body: <200g
Line Length	Adapter: 100cm PM2.5/PM10: 100cm TVOC: 50cm
Operating Temperature	0°C to 50 °C
Environment Humidity Range	<85 %RH (No condensation)
Storage Temperature	-40°C to 70 °C