

# Wireless Multi-Sensor Device

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Wireless Sensor Network Based on LoRa Technology



**RA08BxxS**



**RA08Bxx**

## RA08Bxx(S) Series Data Sheet

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## Wireless Multi-Sensor Device

### Introduction

RA08Bxx(S) series is an indoor sensor for temperature, humidity, TVOC, illuminance, air pressure, PIR, CO<sub>2</sub>, NH<sub>3</sub>, and H<sub>2</sub>S detection. In addition to RA08Bxx, we also have the RA08BxxS series. With an e-paper display, users can enjoy better and more convenient experiences through an easy and quick check of data.

RA08Bxx(S) series could transmit data to the server and connect to the programmable alarm system based on the LoRa long-distance transmission technology. Looking for a device that has multiple functions, accurate measurement results, and a user-friendly E-ink display? RA08Bxx(S) series can satisfy all your needs.

### RA08Bxx(S) Series

Sensor Model	Temperature & Humidity	TVOC	Light	Air Pressure	PIR	CO <sub>2</sub>	NH <sub>3</sub> & H <sub>2</sub> S
RA08B01(S)	•	•	•	•	•	•	
RA08B02(S)	•	•			•	•	
RA08B03(S)	•	•	•	•	•	•	•
RA08B04(S)	•				•	•	•

### Features

- SX1262 wireless communication module.
- Powered by ER14505 batteries
- Compatible with LoRaWAN™ Class A device
- Frequency hopping spread spectrum
- Support third-party platforms: Actility/ThingPark, TTN, MyDevices/Cayenne
- Low-power design for longer battery life

Note: Please refer to [http://www.netvox.com.tw/electric/electric\\_calc.html](http://www.netvox.com.tw/electric/electric_calc.html) for battery life calculation and other detailed information.

Wireless Multi-Sensor Device

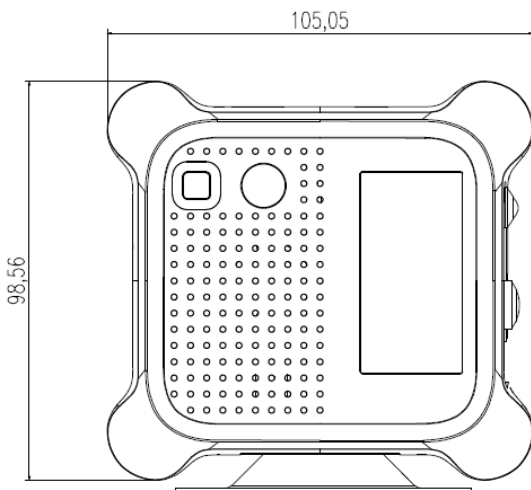
Applications

- Mansion
- Office building
- Hotel or apartment
- School, mall, and supermarket
- Smoking room, process plant, and museum

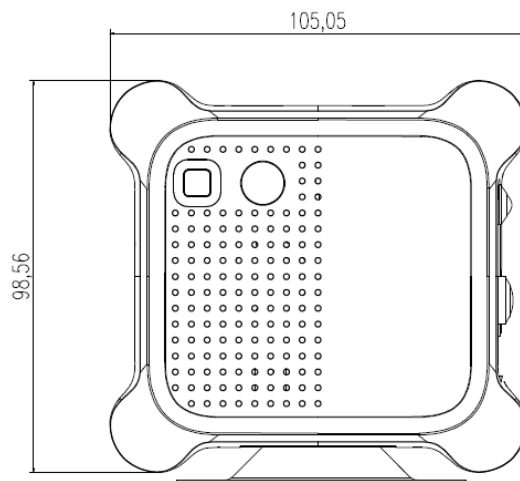
- Smart toilet\*
- Odor detection\*
- Wastewater treatment and waste incineration\*
- Device integration for Smart odor eliminator\*

Note: The above applications are for the devices with NH<sub>3</sub> and H<sub>2</sub>S sensor only.

Dimensions

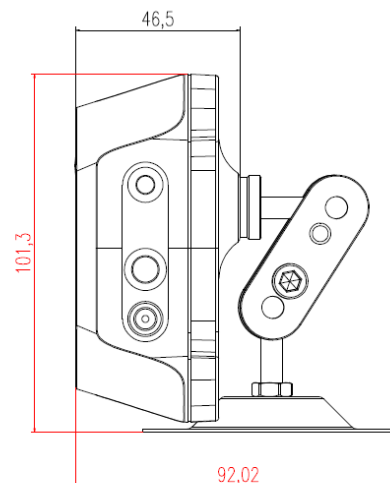


**RA08BxxS**  
(with e-paper display)



**RA08Bxx**

Dimensions:  
105.05 mm x 98.56 mm x 46.5 mm



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**Wireless Multi-Sensor Device**


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## Electrical Specifications

Input Power	4 ER14505 AA size lithium batteries (3.6V 2400mAh for each one)
Low Battery Voltage Threshold	3.2V
Standby Current	100uA
Battery Measurement Accuracy	±0.1V

Note: Electrical specifications may vary depending on the power supply voltage.

## Module-R109H

Receiving Current (max)	11mA @3.3V
Transmitting Current (max)	120mA @3.3V

## Temperature/Humidity Sensor

Temperature Measurement Range	0°C to 50°C
Humidity Measurement Range	0%RH to 100%RH

## TVOC Sensor (optional)

TVOC Range	0 ppb to 1000000 ppb
Communication Protocol	I <sup>2</sup> C

## Illuminance Sensor (optional)

Illuminance Range	0.01 lux to 157K lux
Communication Protocol	I <sup>2</sup> C

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**Wireless Multi-Sensor Device**


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**Air Pressure Sensor** (optional)

Measurement Range	300hPa to 1100hPa
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**PIR sensor**

Standby Current	10uA
Detection Angle	80° horizontally; 90° vertically
Detection Distance	0m to 2.5m

**CO<sub>2</sub> Sensor**

Operating Current	Sleeping mode < 30uA; Peak Current < 80mA
Range & Accuracy	400 to 5000 ppm ±(50ppm ±3% of reading) 5001 to 10000ppm ± 10% of reading
Communication Protocol	UART / I <sup>2</sup> C
Operating Temperature	0 to 50°C
Operating Humidity	0%RH to 85%RH (No condensation)

**NH<sub>3</sub> and H<sub>2</sub>S Sensor** (optional)

Dimensions	26mm x 26mm x 9.7mm
Operating Current	9.5mA@5VDC
Operating Voltage	3.3 to 5.5V DC
Range	NH <sub>3</sub> : 0 to 10ppm; H <sub>2</sub> S : 0 to 5ppm
Resolution	NH <sub>3</sub> : 0.01ppm; H <sub>2</sub> S: 0.01ppm
Accuracy	± 5% F.S
Standby Current	0.85mA@5VDC
Communication Protocol	UART / I <sup>2</sup> C

**Wireless Multi-Sensor Device**

Operating Temperature	-20 to 50°C Note: <b>Sensor works better in the range of 0 to 30°C.</b> Operating below or over 0 to 30°C may have slight errors while detection.
Operating Humidity	15%RH to 85%RH (No condensation)
Lifespan	3 years

**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	-123dBm (Frequency deviation=5kHz, Bit Rate=1.2kb/s)
Antenna Type	Helical antenna
Communication Range	10km (line of sight) Note: The actual communication distance may vary depending on the environment.
Data Transfer Rate	LoRaWan: 0.3kbps to 50kbps; FSK: 0.6 to 300kbps
Modulation Method	LoRa / FSK Note: One modulation method is required.
Available LoRaWAN Frequency Plans	EU863-870, US902-928, AU915-928, KR920-923, AS923-1, AS923-2, AS923-3, IN865-867, CN470-510 Note: optional, to be done in the factory configuration

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**Physical Properties**

Main Body Operating Temperature	0°C to 50°C
Environment Humidity Range	<90%RH (No condensation)
Storage Temperature	-40°C to 85°C