Indoor Ambience Monitoring Sensor

Featuring LoRaWAN®

AM319

Introduction

AM319 is a compact indoor ambience monitoring sensor for measurement of temperature, humidity, light, CO_2 concentration, HCHO/O_3 level, TVOC, barometric pressure, PM2.5, PM10 and motion. The data will be shown on the E-ink screen in real-time, which helps to measure the indoor environment and comfort.

Sensor data is transmitted using LoRaWAN® technology. Combining Milesight LoRaWAN® gateway and Milesight Development Platform solution, users can manage all sensor data remotely.

AM319 can be used in offices, stores, classrooms, hospitals, etc.

Features

- Integrated with multiple sensors like humidity, temperature, CO_2, light, barometric pressure, PM2.5, PM10, etc.
- Multiple display modes and clear emoticon to easily understand the comfort levels via screen
- Support DC power supply
- Equipped with traffic light indicator and buzzer to indicate device status and threshold alarms
- Store locally historical records and support retransmission to prevent data loss
- Compliant with standard LoRaWAN® gateways and network servers
- Quick and easy management with Milesight IoT Cloud and Milesight Development Platform

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◆ Specifications

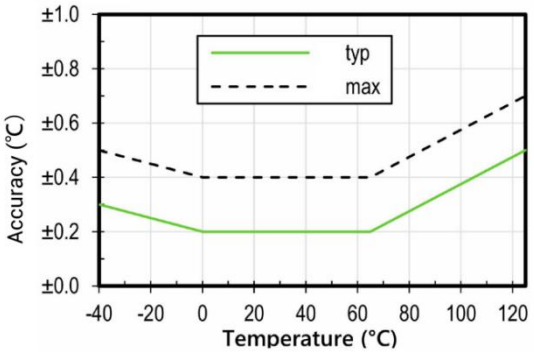
Model	**AM319**		
PN	**O_3**	**HCHO-IR**	**HCHO-IR-W**
Wireless Transmission			
Technology	LoRaWAN®		
Antenna	Internal Antennas		
Frequency	CN470/RU864/IN865/EU868/US915/AU915/KR920/AS923-1&2&3&4		
Tx Power	16dBm(868MHz)/22dBm(915MHz)/19dBm(470MHz)		
Sensitivity	-137dBm @300bps		
Work Mode	OTAA/ABP Class C		
Sensors			
Temperature			
Operating Principle	Digital CMOSens® technology (MEMS)		
Range	-20°C~60°C		
Accuracy[1]	Typ. ±0.3°C (-20°C ~ 0°C), ± 0.2°C (0°C ~ 60°C)		
Resolution	0.1°C		
Humidity			
Operating Principle	Digital CMOSens® technology (MEMS)		
Range	0% ~ 100% RH		
Accuracy[2][3]	Typ. ± 2% RH (25°C)		
Resolution	0.5% RH		
Motion			
Operating Principle	Passive infrared (PIR)		
Detection Range	80 ° Horizontal, 55 ° Vertical, Maximum 5m		
Status	Vacant/Occupied		
Light			
Operating Principle	Photodiode		
Range	0-60000 Lux (Determine as 6 levels, 0-5)		
TVOC			
Operating Principle	MOX (MEMS)		
Report Mode[4]	IAQ Rating or Concentration Value		
IAQ Rating	Range: 1.00 - 5.00 Accuracy: ±1 Resolution: 0.01		

Concentration	Range: 0 - 2000 μg/m³ Accuracy: 20 μg/m³ ±15% of readings (1 - 500 μg/m³) Resolution: 1 μg/m³	
Barometric Pressure		
Operating Principle	Piezoresistive absolute pressure sensor (MEMS)	
Range	260 - 1260 hPa	
Accuracy	±0.5 hPa	
Resolution	0.1 hPa	
Carbon Dioxide (CO_2)		
Operating Principle	Photoacoustic	
Range	400 ~ 2000 ppm	
Accuracy	± (50 ppm + 5 % of reading) (-10°C~ 60°C)	
Resolution	1 ppm	
Particulate Matter		
Laser Scattering	Laser Scattering	
Range	0 ~ 1000 μg/m³	
Accuracy	PM2.5&PM10: 0~100(±10μg/m³), 100~1000(±10 %) (-10°C~ 60°C)	PM2.5: 0~100 (±5μg/m³), 100~1000(±10 %) (-10°C~ 60°C)
Resolution	1 μg/m³	
Formaldehyde (HCHO)[5]		
Operating Principle	/	Electrochemical
Range[6]		0 ~ 1.25 mg/m³ / 0 ~ 1ppm
Accuracy		±10 %
Resolution		0.01 mg/m³ / 0.001 ppm
Working Life		6 Years
Ozone (O_3)[5]		
Operating Principle	Electrochemical	/
Range	0 ~ 10 ppm	
Accuracy	±5 % FS	
Resolution	0.01 ppm	
Working Life	2 Years	
Other Interfaces		
Display	4.2-inch Black & White E-Ink Screen	

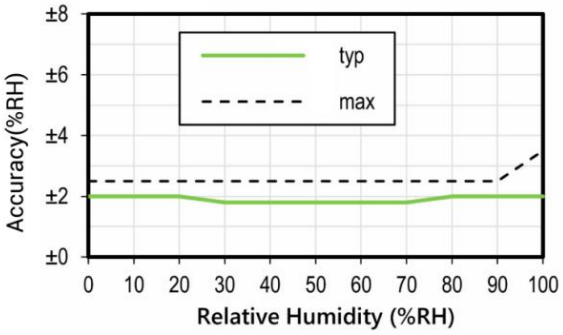
Button	1 × Power Button + 1 × Reset Button	
LED & Buzzer	1 × Traffic Light Status & Alarm Indicator + 1 × Buzzer	
USB	1 × Type-C Port for Power Supply, Configuration or Console	
Software		
Power On/Off	1. Mobile App via NFC 2. PC software via NFC or USB Type-C port 3. Power Button	
Configuration	1. Mobile App via NFC 2. PC software via NFC or USB Type-C port 3. Downlink	
Advanced Features	Calibration, Threshold Alarm, Data Storage (18,000 entries), Data Retrievability, Data Retransmission, Smart Screen Mode, Button Lock	
Physical Characteristics		
Power Supply	5V/1A by Type-C Port	
Operating Temperature	-20°C - 60°C (E-Ink Screen: 0°C - 40°C)	
Relative Humidity	10% - 90% (non-condensing)	
Ingress Protection	IP30	
Housing & Color	ABS (UL94 HB), White	
Weight	148g	
Dimension	100.8 × 114 × 22 mm (3.97 × 4.49 × 0.87 in)	
Installation	Wall Mounting via 3M Tape or Screws	
Approvals		
Regulatory	CE, CE (RED), FCC, ISED	CE, CE (RED), FCC, ISED, WELL
Environmental	RoHS	

Note:

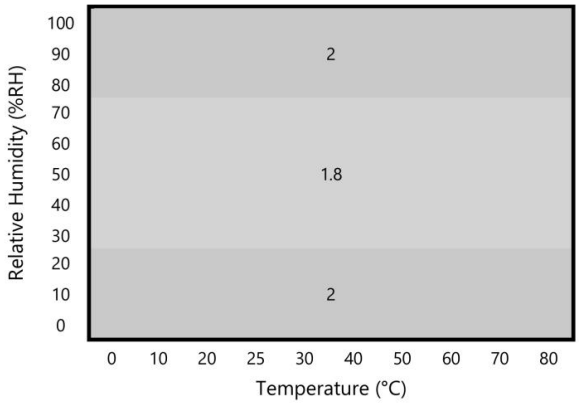
1. Accuracy corresponding to the temperature:



2. Accuracy corresponding to the relative humidity at 25°C:



3. Typical RH accuracy corresponding to the temperature:



4. Reference to IAQ rating guideline (conversion from mg/m3 to ppm by the factor is about 0.5):

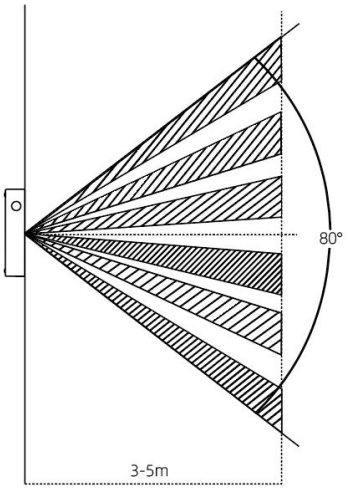
IAQ Rating	TVOC (mg/m^3)	Air Quality
≤1.99	<0.3	Very Good
2.00 to 2.99	0.3 to 1.0	Good
3.00 to 3.99	1.0 to 3.0	Medium (not recommended for exposure > 12 months)
4.00 to 4.99	3.0 to 10.0	Poor (not recommended for exposure > 1 months)
≥5.00	>10.0	Bad (not recommended)

5. HCHO or O_3 sensor is alternative option and both support replacement.
6. For HCHO at 760 mmHg and 20 °C, 1 ppm = 1.25 mg/m^3.

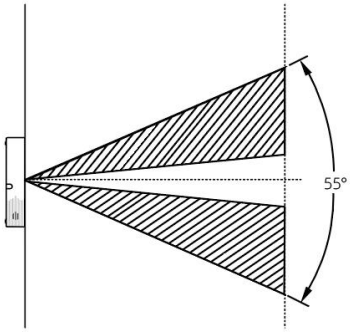
◆ Ordering Information

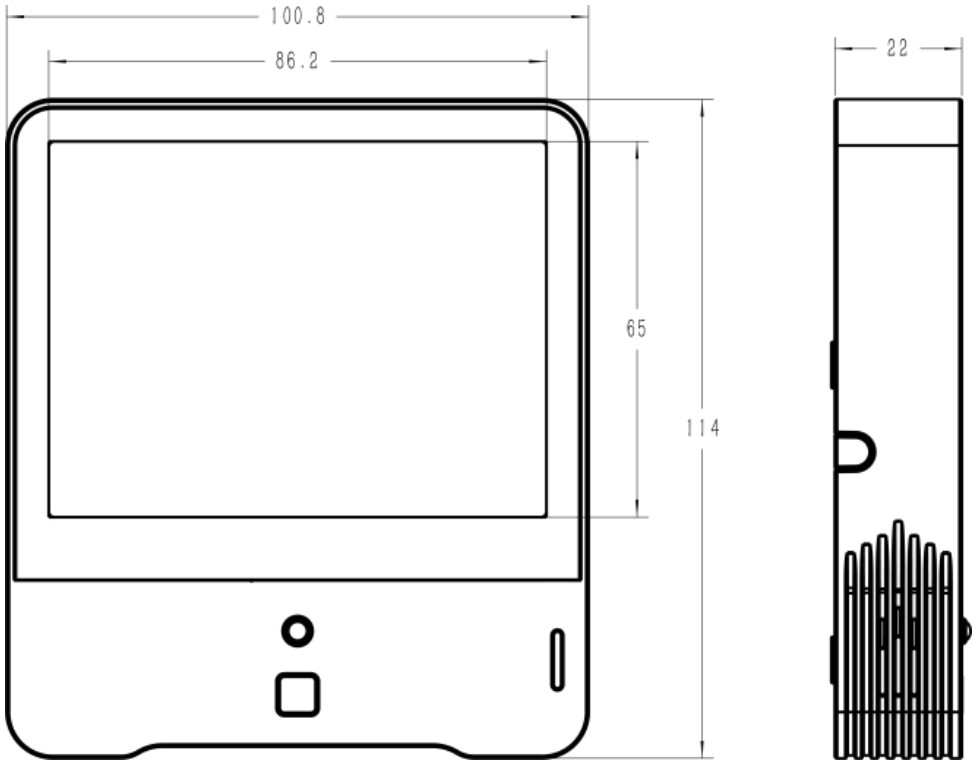
Model	PN	Description
AM319	HCHO-IR	Temperature, Humidity, Light, Motion, CO_2, TVOC, Pressure, PM2.5, PM10, HCHO
	HCHO-IR-W	Temperature, Humidity, Light, Motion, CO_2, TVOC, Pressure, PM2.5, HCHO
	O_3	Temperature, Humidity, Light, Motion, CO_2, TVOC, Pressure, PM2.5, PM10, O_3

◆ PIR Area



Horizon View



Vertical View

◆ Dimensions (mm)