

# Indoor Ambience Monitoring Sensor

Featuring LoRaWAN®

## AM319

# Milesight



## ◆ Introduction

AM319 is a compact indoor ambience monitoring sensor for measurement of temperature, humidity, light, CO<sub>2</sub> concentration, HCHO/O<sub>3</sub> 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<sub>2</sub>, 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

## ◆ Specifications

Model	AM319		
PN	O <sub>3</sub>	HCHO-IR	HCHO-IR-W
<b>Wireless Transmission</b>			
Technology	LoRaWAN <sup>®</sup>		
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		
<b>Sensors</b>			
<b>Temperature</b>			
Operating Principle	Digital CMOSens <sup>®</sup> technology (MEMS)		
Range	-20°C~60°C		
Accuracy <sup>[1]</sup>	Typ. ±0.3°C (-20°C ~ 0°C), ± 0.2°C (0°C ~ 60°C)		
Resolution	0.1°C		
<b>Humidity</b>			
Operating Principle	Digital CMOSens <sup>®</sup> technology (MEMS)		
Range	0% ~ 100% RH		
Accuracy <sup>[2][3]</sup>	Typ. ± 2% RH (25°C)		
Resolution	0.5% RH		
<b>Motion</b>			
Operating Principle	Passive infrared (PIR)		
Detection Range	80 ° Horizontal, 55 ° Vertical, Maximum 5m		
Status	Vacant/Occupied		
<b>Light</b>			
Operating Principle	Photodiode		
Range	0-60000 Lux (Determine as 6 levels, 0-5)		
<b>TVOC</b>			
Operating Principle	MOX (MEMS)		
Report Mode <sup>[4]</sup>	IAQ Rating or Concentration Value		
IAQ Rating	Range: 1.00 - 5.00		
	Accuracy: ±1		
	Resolution: 0.01		



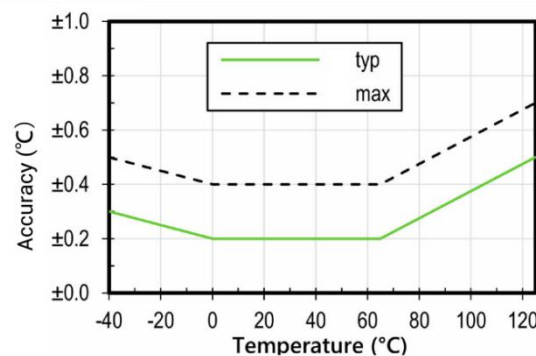
Concentration	Range: 0 - 2000 $\mu\text{g}/\text{m}^3$ Accuracy: 20 $\mu\text{g}/\text{m}^3 \pm 15\%$ of readings (1 - 500 $\mu\text{g}/\text{m}^3$ ) Resolution: 1 $\mu\text{g}/\text{m}^3$	
<b>Barometric Pressure</b>		
Operating Principle	Piezoresistive absolute pressure sensor (MEMS)	
Range	260 - 1260 hPa	
Accuracy	$\pm 0.5$ hPa	
Resolution	0.1 hPa	
<b>Carbon Dioxide (CO<sub>2</sub>)</b>		
Operating Principle	Photoacoustic	
Range	400 ~ 2000 ppm	
Accuracy	$\pm (50 \text{ ppm} + 5 \% \text{ of reading}) (-10^\circ\text{C} \sim 60^\circ\text{C})$	
Resolution	1 ppm	
<b>Particulate Matter</b>		
Laser Scattering	Laser Scattering	
Range	0 ~ 1000 $\mu\text{g}/\text{m}^3$	
Accuracy	PM2.5&PM10: 0~100( $\pm 10\mu\text{g}/\text{m}^3$ ), 100~1000( $\pm 10 \%$ ) (-10°C~ 60°C)	PM2.5: 0~100 ( $\pm 5\mu\text{g}/\text{m}^3$ ), 100~1000( $\pm 10 \%$ ) (-10°C~ 60°C)
Resolution	1 $\mu\text{g}/\text{m}^3$	
<b>Formaldehyde (HCHO)<sup>[5]</sup></b>		
Operating Principle	Electrochemical	
Range <sup>[6]</sup>	0 ~ 1.25 $\text{mg}/\text{m}^3$	0 ~ 1ppm
Accuracy	/ $\pm 10 \%$	
Resolution	0.01 $\text{mg}/\text{m}^3$	0.001 ppm
Working Life	6 Years	
<b>Ozone (O<sub>3</sub>)<sup>[5]</sup></b>		
Operating Principle	Electrochemical	/
Range	0 ~ 10 ppm	
Accuracy	$\pm 5 \%$ FS	
Resolution	0.01 ppm	
Working Life	2 Years	
<b>Other Interfaces</b>		
Display	4.2-inch Black & White E-Ink Screen	



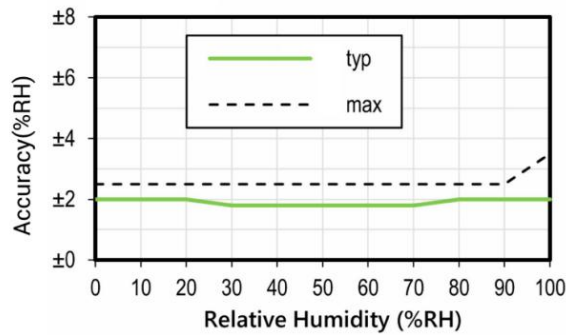
Button	1 × Power Button + 1 × Reset Button	
LED & Buzzer	1 × Traffic Light Status & Alarm Indicator + 1 × Buzzer	
USB	1 × Type-C Port for Power Supply, Configuration or Console	
<b>Software</b>		
Power On/Off	<ol style="list-style-type: none"> <li>1. Mobile App via NFC</li> <li>2. PC software via NFC or USB Type-C port</li> <li>3. Power Button</li> </ol>	
Configuration	<ol style="list-style-type: none"> <li>1. Mobile App via NFC</li> <li>2. PC software via NFC or USB Type-C port</li> <li>3. Downlink</li> </ol>	
Advanced Features	Calibration, Threshold Alarm, Data Storage (18,000 entries), Data Retrievability, Data Retransmission, Smart Screen Mode, Button Lock	
<b>Physical Characteristics</b>		
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	
<b>Approvals</b>		
Regulatory	CE, CE (RED), FCC, ISED	CE, CE (RED), FCC, ISED, WELL
Environmental	RoHS	

**Note:**

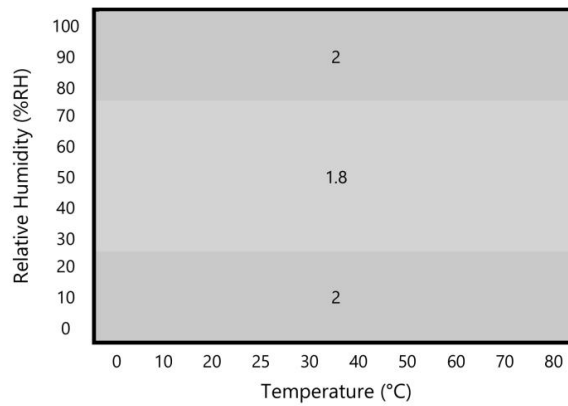
1. Accuracy corresponding to the temperature:



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 <sup>3</sup> )	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)

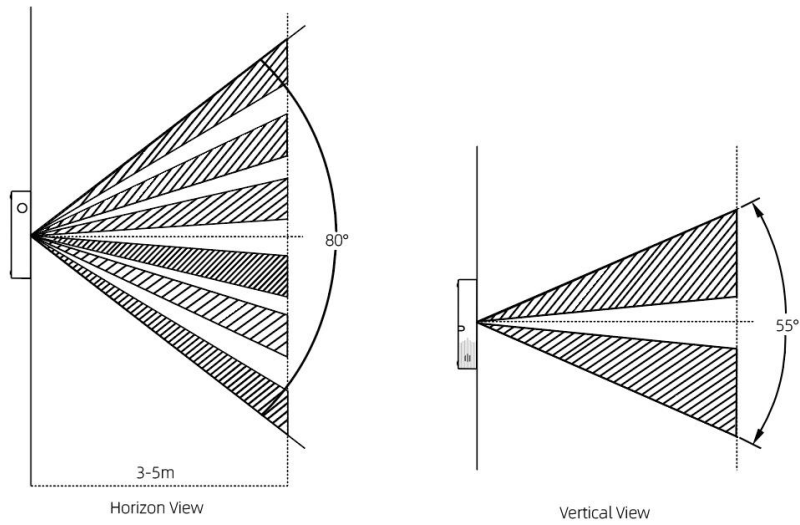
5. HCHO or O<sub>3</sub> sensor is alternative option and both support replacement.

6. For HCHO at 760 mmHg and 20 °C, 1 ppm = 1.25 mg/m<sup>3</sup>.

## ◆ Ordering Information

Model	PN	Description
AM319	HCHO-IR	Temperature, Humidity, Light, Motion, CO <sub>2</sub> , TVOC, Pressure, PM2.5, <b>PM10, HCHO</b>
	HCHO-IR-W	Temperature, Humidity, Light, Motion, CO <sub>2</sub> , TVOC, Pressure, PM2.5, <b>HCHO</b>
	O <sub>3</sub>	Temperature, Humidity, Light, Motion, CO <sub>2</sub> , TVOC, Pressure, PM2.5, <b>PM10, O<sub>3</sub></b>

### ◆ PIR Area



### ◆ Dimensions (mm)

