

Datasheet

All-in-One LoRaWan Air Quality Sensor
Part Number: AEASHWAQx



1. Overview

AEASHWAQx is a family of integrated IAQ sensors. The selection of elements is customizable. A large selection is available ranging from CO₂, PM_{1.0}, PM_{2.5}, PM₁₀, H₂S (Hydrogen Sulfide), NH₃ (Ammonia) measurement, HCHO (formaldehyde), TVOC, SO₂, NO₂, temperature and humidity, etc. You are free to choose what to include in your custom-made IAQ sensor.

AEASHWAQx also has an optional display for easy and clear display of real time data.

The flexibility and convenience makes AEASHWAQx good for all scenarios ranging from airport, office, toilet, building automation, etc.

1.1 Features

- Support PM_{1.0}, PM_{2.5}, PM₁₀ measurement
- Support H₂S (Hydrogen Sulfide) measurement
- Support NH₃ (Ammonia) measurement
- Support HCHO (formaldehyde) measurement
- Support TVOC measurement
- Support CO₂ measurement
- Support temperature and humidity measurement
- Optional display for real time data display, content customizable depends on quantity



1.2 Specification

Item	Unit	Range	Resolution	Accuracy	Remark	Code
Temperature	°C	-40-80	0.1	±0.3	resistive	TH
Humidity	%RH	0-99.9	0.1	±3%@25°C (20%RH to 80%RH)	Semi-conductor	RH
CO2	ppm	400-5000	1	±(50+3%FS)	Electrochemical	C2
CO	ppm	0-500	0.5	±3%FS	Electrochemical	CO
CH4	ppm	0-10000	1	±10%FS	Semi-conductor	CH
O2	% VOL	0-30	0.1	±3%FS	Electrochemical	O2
HCHO	ppb	0-5000	1	±3%FS	Electrochemical	HC
TVOC	ppb	0-60000	1	±5%FS	Semi-conductor	TC
PM2.5	ug/m3	0-500	1	±10%@100 ~500ug/m³	laser scattering	P2
PM10	ug/m3	0-500	1	±10%@100 ~500ug/m³	laser scattering	P1
PM1.0	ug/m3	0-500	1	±10%@100 ~500ug/m³	laser scattering	P0
NH3	ppm	0-10 or 0-100	0.01ppm@10ppm 0.5ppm@100ppm	±3%FS	Electrochemical	NL
NH3 - high resolution	ppb	10-10000	1	±3%FS	Electrochemical	NH
H2S	ppm	0-10	0.01	±3%FS	Electrochemical	HL
H2S - high resolution	ppb	10-10000	1	±3%FS	Electrochemical	HH
O3	ppm	0-10	0.01	±3%FS	Electrochemical	O3
SO2	ppm	0-10	0.01	±3%FS	Electrochemical	S2
NO	ppm	0-50	0.5	±3%FS	Electrochemical	NO
NO2	ppm	0-10	0.01	±3%FS	Electrochemical	N2
CL2	Ppm	0-10 / 0-100 / 0-1000	0.01 / 0.1 / 1	±3%FS	Electrochemical	CL
Radon**	Bq/m³	0-1000	0.1	<±15%	Pulsed Ion Chamber	RA
Air pressure	Kpa	30-120	0.01	N/A	N/A	AP
Wind speed	m/s	0-30	0.1	±3%FS	N/A	WS
Wind direction	--	16 directions	1	N/A	N/A	WD
Noise	dB	30-130	0.1	±1	N/A	DB
Rainfall	mm/mm	0-30	0.2	N/A	N/A	RF
Benzene	ppm	0-10	0.01	N/A	Electrochemical	BN
Toluene	ppm	0-100	0.1	N/A	Electrochemical	TL
Acetaldehyde	ppm	0-100	0.2	N/A	Electrochemical	AC
Arcylonitrile	ppm	0-100	0.1	N/A	Electrochemical	AR
Naphthalene	ppm	0-100	0.1	N/A	Electrochemical	NA
Light Intensity	Lux	0-60000	1	±5%FS	Light	LU
Acetic Acid (CH3COOH)	ppm	0-10	0.01	0.05±0.03	Electrochemical	AA
Solar Radiation	W/m²	0-2000	1	±5	Thermoelectric	SR

Note: The life expectancy of electrochemical sensors, laser scattering sensors, RHT sensor are 2, 5, 10 years respectively. Depend on the onsite environment, the actual performance may vary.

** Radon sensor requires special housing.

The ChinoINT IAQ family is desinged for easy sensor head replacement. ChinoINT provide calibration and replacement services. Please contact us for further details.

Working Voltage	12 / 24V DC
Dimension	110*110*37mm (customizable)
Working Temperature	-10°C - 60°C
Communication	LoRaWan / RS485 / 4-20mA / 0-10V
Reporting Interval	10 - 65534 s, default 60s custom-option: 1 min to 24 hours, 10s step
Coverage Area	Up to 1000 sq ft (depends on site environment)



1.3 Order Information & Common Models

AEASHWAQ is the part number of the family.

To distinguish between RS485 and LoRaWan sensors, please follow the following coding.

AEASHWAQ0 - refers to LoRaWan sensors.

AEASHWAQR - refers to RS485 sensors.

AEASHWAQG - refers to 4G sensors.

AEASHWAQA - refers to 4-20mA sensors.

AEASHWAQV - refers to 0-10V sensors.

As the family is flexible in including different sensors into one integrated products

Below table shows some common models of the family.

Part Number	°C	RH	CO2	HCHO	TVOC	NH3	H2S	PM	O3	NO2	CO	SO2	CL2
AEASHWAQ0100													
AEASHWAQ0101													
AEASHWAQ0102													
AEASHWAQ0103													
AEASHWAQ0104													
AEASHWAQ0105													
AEASHWAQ0106													
AEASHWAQ0107													
AEASHWAQ010A						HR	HR						
AEASHWAQ010B													
AEASHWAQ010C													

The AEASHWAQx family is flexible enough to custom-made to include different sensor elements.

Those not included in the above table such as O3, NO, CO, etc can be added to the sensor.

To custom made with mix and match sensors, keep in mind for the following part number guide. The custom-made sensors starts with the family name (AEASHWAQ) followed by protocol code, and then different code names found in section 1.2.

For example, to order a high resolution H2S sensor, the part number is AEASHWAQ0HH.

As another example, to order a sensor with RHT, PM2.5, CL2 and TVOC, the part number is AEASHWAQ0THRHP2CLTC.

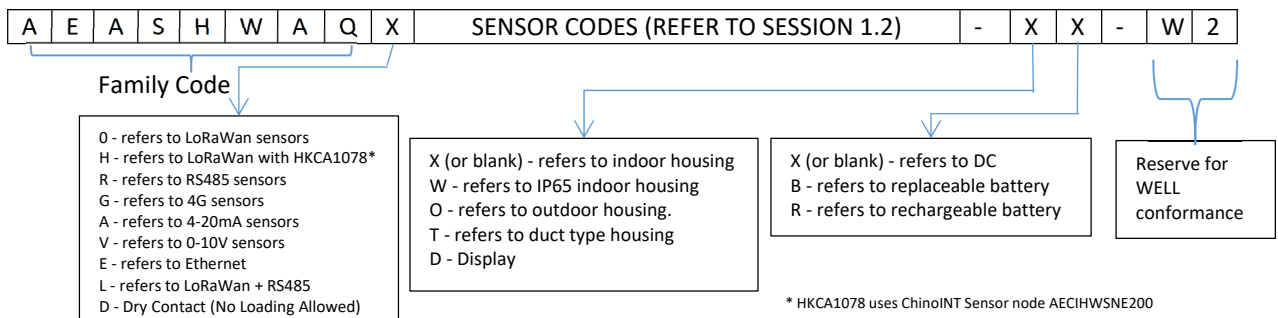
If special housing is required, please specify the housing type at the end of the part number. Taking

the above sensor AEASHWAQ0THRHP2CLTC as an example,

AEASHWAQ0THRHP2CLTC - refers to ordinary indoor housing.

AEASHWAQ0THRHP2CLTC-O - refers to outdoor housing.

AEASHWAQ0THRHP2CLTC-T - refers to duct type housing.

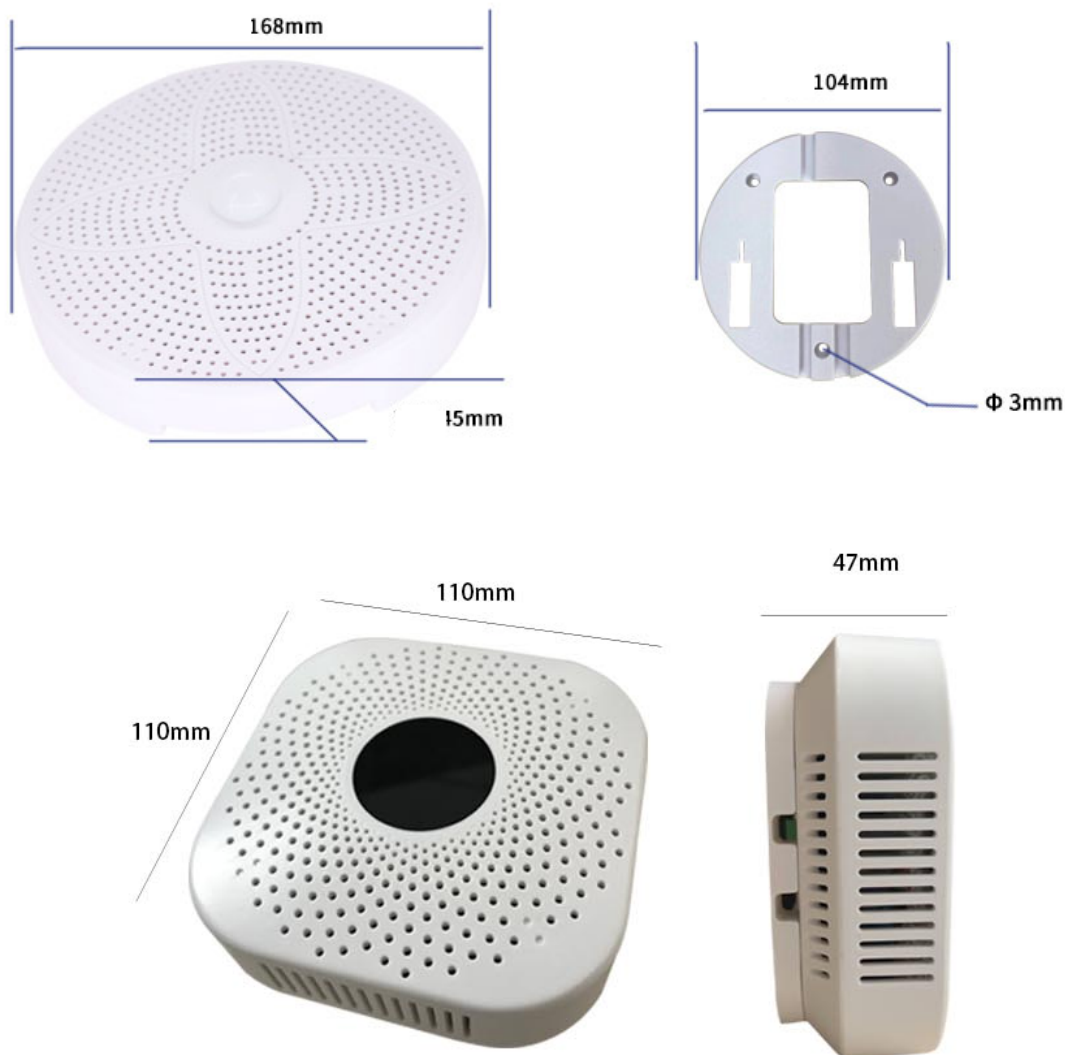


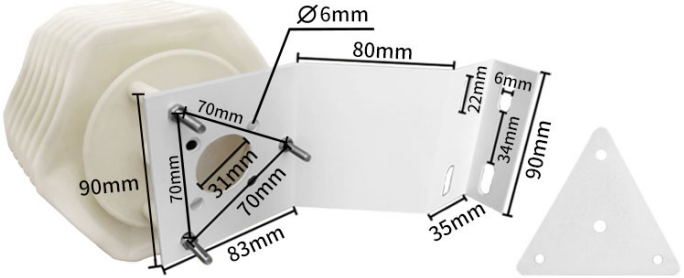
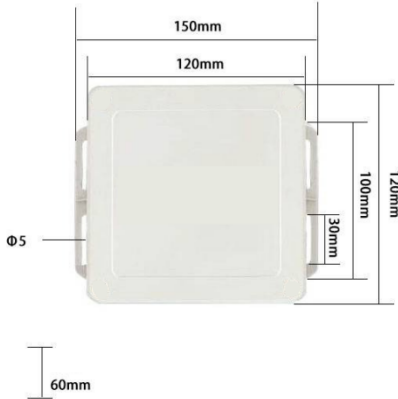
1.4 Dimension

The common models of the family utilizes the housing shown below, as illustration only. Showing on the right is an extended design for some models, such as analog output 0-10V, 4-20mA.



To accommodate to different needs and sensors, the follow optional housing can be employed.



Outdoor Housing	
Duct Type Housing	
IP65 indoor housing Dimension	
Rainfall Bucket	



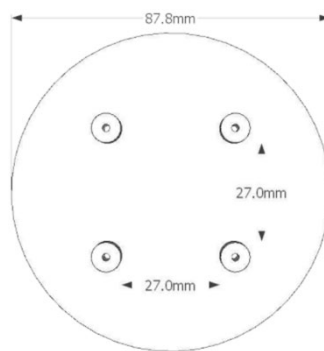
Radon Housing



Φ170mm x height 90mm

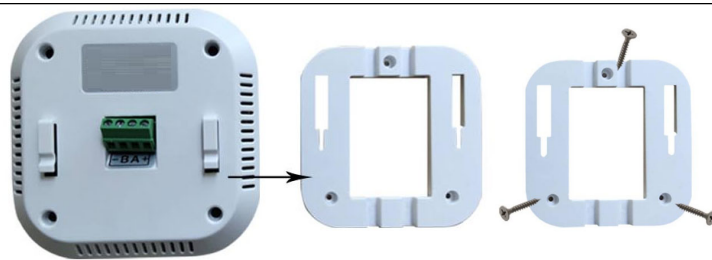
1.5 Installation

Installation for typical model

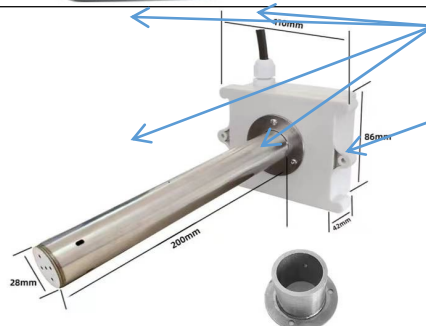


Screw Hole

Another Common model



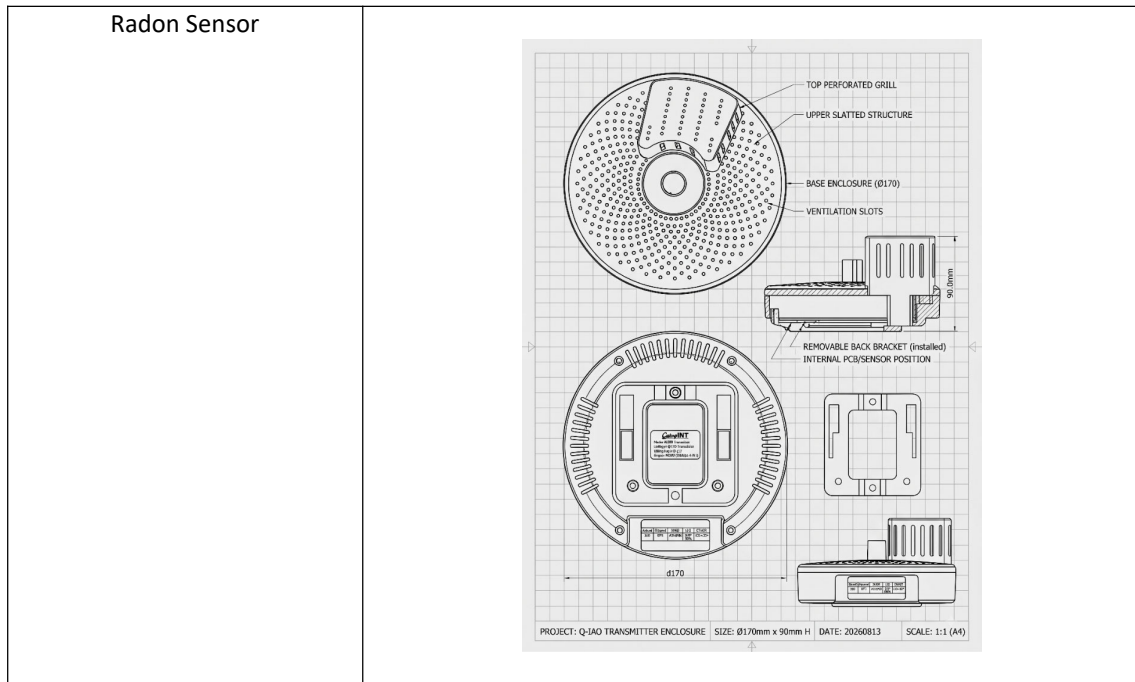
Duct Type



Screw Hole

Housing with Display



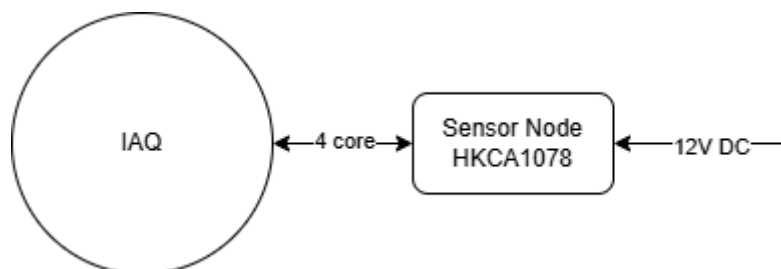


1.6 HKCA1078 Conformance

HKCA1078 conformance is achieved by adding the ChinoINT sensor node, AECIHWSNE2xx. The Sensor Node has been type approved by the Office of the Communications Authority (OFCA) with HKCA1078 awarded.

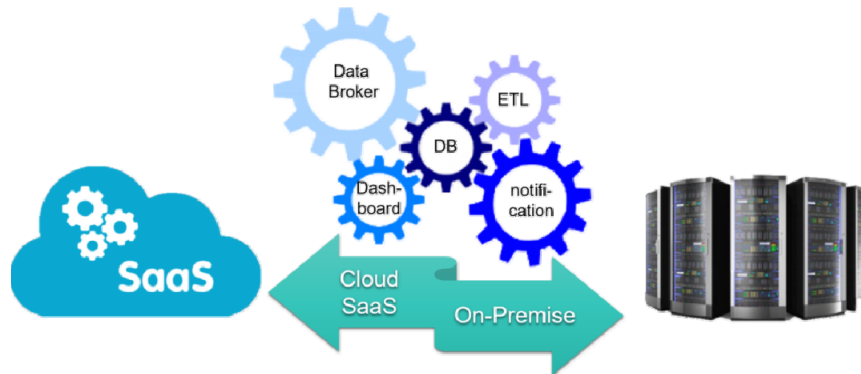
Dimension	83 x 58 x 33mm (Housing can be custom-made to fit application)
LoRaWan	1.0.2
Frequency Band	CN470/EU433/AS923 (Contact us for other frequencies)
Max Tx	+20 dBm
Rx sensitivity	-148 dBm
Antenna	Built-in
Sensor Protocol	RS485, UART, I2C, 4-20mA, 0-10V, GPIO x 5
Certification	FCC, HKCA1078
IP Rating	IP65
Power	12V DC

Shown below is the connection diagram for a typical setup.

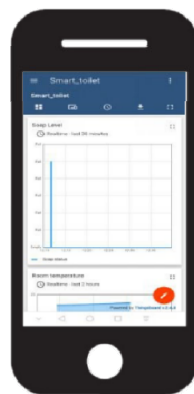


1.7 Software Platform

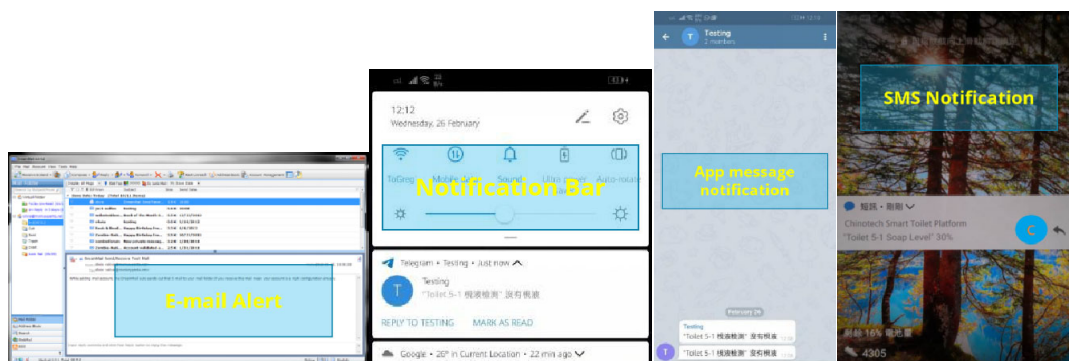
The Software Platform consists of Data Broker, ETL tool, Database, Dashboard and notification modules. For easy deployment, both Cloud SaaS and on-premise version is available.



Clean and clear dashboarding, with analytic ability, is one of the key element in an IoT system. The Smart Software platform provides easy to use dashboard, with multi-layer user account settings. GUI Maintenance Portal is provided with the platform. Both desktop and mobile version (Android and IOS) are available.



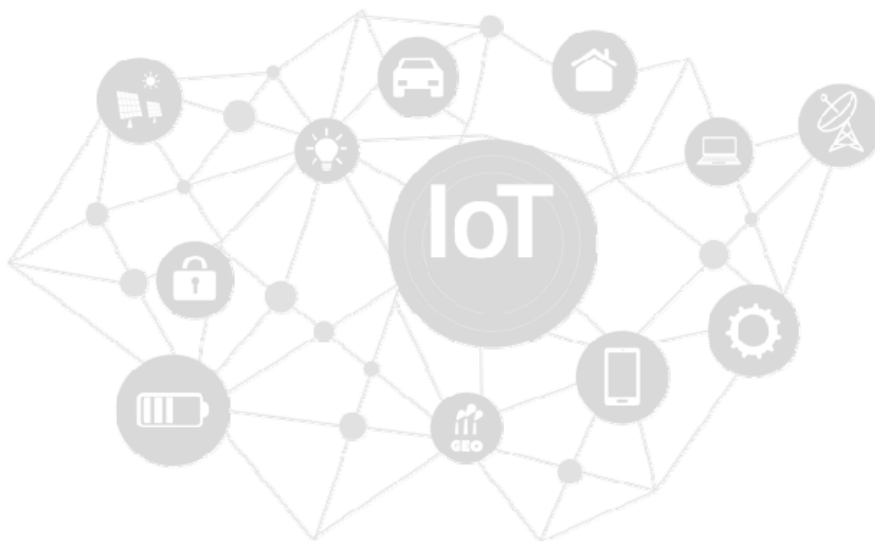
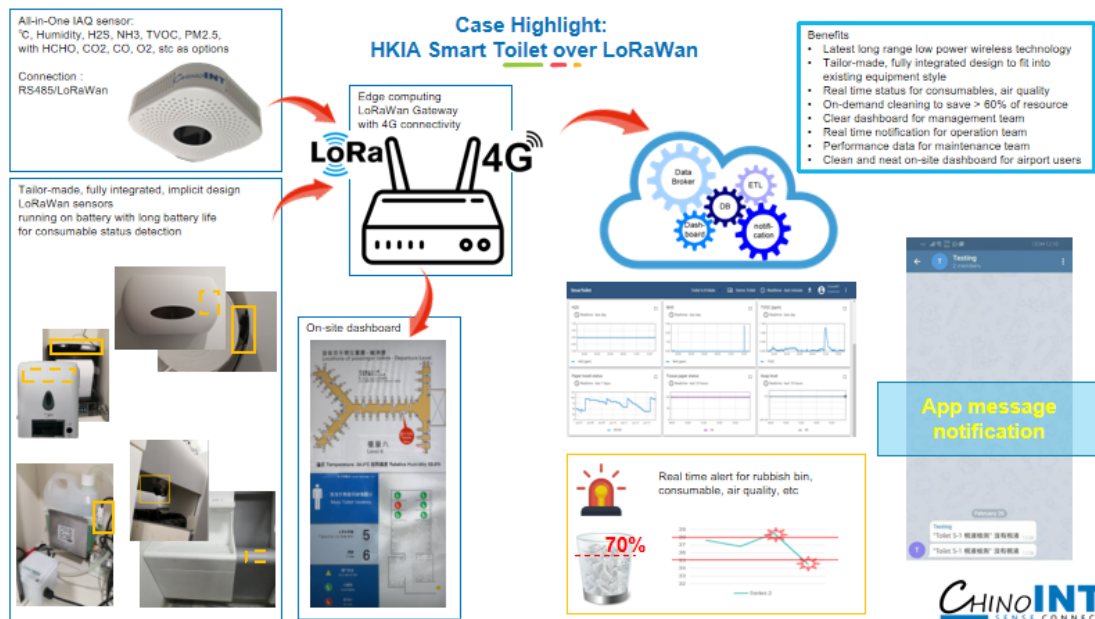
Notification is one of the crucial feature for Smart systems. Notification can be done through app, notification bar alert, SMS and through e-mail. App message notification can be configured as group alert, and individual alert.



1.8 Reference

ChinoINT IAQ has been widely deployed in governmental buildings, public places and commercial buildings. These include the Hong Kong International Airport, universities in Hong Kong, Switch Rooms in governmental buildings and commercial estates.

Below is one classic example for the reference.



2. Warning

Assumes no liability for any damage resulting from the use of this product. CHINOTECH INTERNATIONAL LIMITED reserves the right to change this data sheet at any time without notice. The information furnished by ChinoINT is believed to be accurate and reliable. However, no responsibility is assumed by ChinoINT for its use, not for any infringements of patents or other rights of third parties resulting from its use.

3. Product Warranty and Customer support

ChinoINT warrants all products free from defects in material and workmanship for a period of one year from the date of shipping. During the warranty period, we will, at our position, either repair or replace any product that proves to be defective. To report any defect, please inquiry sales@chinoint.com

Unauthorized opening and improper repairs on the device may result in substantial damage to equipment or endanger the user. The product described in this documentation may be operated only by personnel qualified. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products. Always disconnect the power plug before you open the device.

Please have the model, serial number and a detailed problem description available when you call. If the problem concerns a particular reading, please have all meter readings available.

This warranty does not apply to defects resulting from unauthorized modification, misuse. If you install or exchange system expansion and damage your device, the warranty becomes void.

4. Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

