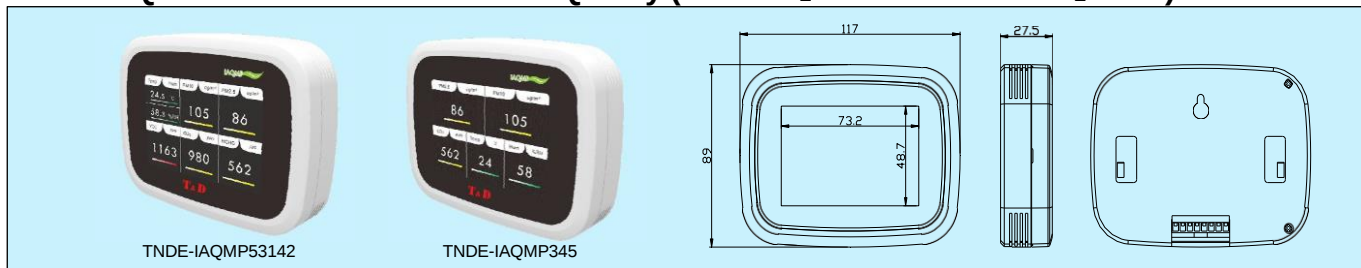


TNDE-IAQMP Color Screen Indoor Air Quality (VOC/CH₂O/PM2.5/PM10/CO₂/T/RH) Detector



Applications and features

- Simultaneously detect a variety of indoor ambient air quality parameters, including VOC, PM2.5, PM10, CH₂O, CO₂ and T/RH, up to 7 parameters
- State of art housing, use large-screen color TFT LCD to digital display all air quality real-time parameters and status parameters. All parameters can be flexibly set via RS485
- VOC: detect various contaminants (VOCs), including wood, paint and others produced by toluene, cigarette, ammonia odor, CO, alcohol, natural gas and even body smell. Low power consumption and good T/RH compensation for high accuracy
- CH₂O: good accuracy, fast response, excellent anti-interference, extremely low power consumption and good temperature and humidity characteristics, stable and reliable, no need for regular calibration
- PM2.5/PM10: detect the PM2.5 and PM10 concentration in the air with particle sizes 0.3~10µm. The sensor has good long-term stability, high consistency accuracy, real-time response and supports continuous service mode. MBTF is 3+ years for continuous service (service life can be 8-10 years in typical stable concentration change working conditions and auto(intermittent) work mode), free maintenance
- CO₂: detect the CO₂ concentration of the air with ABC (Automatic Baseline Correction) algorithm, accurate measurement and temperature compensation, good long-term stability and reliability, fast response
- T/RH: use high-precision digital temperature and humidity sensor, ensure good measurement
- Power and output have over voltage and reverse polarity protection, high reliability and anti-interference capability
- All electrical terminals are on the back, avoid any possible destroy to PCB when wiring

Specifications

VOC

Sensor: High performance metal oxide semiconductor sensor, min. 5~7 years life span

Range: 0(400) ~2000ppm equivalent CO₂

Accuracy: Typical consistency/accuracy $\pm 10\%$ FS@25°C

CH₂O

Sensor: High performance electrochemical sensor, >3 years life span

Range: 0~1000ppb

Accuracy: $\pm 10\%$ FS@25°C

PM2.5/PM10

Sensor: Laser particulate matter sensor, detected size 0.3~10 µm

Service Life: MBTF more than 3 years in continuous service mode, service life up to 8-10 years in auto (intermittent) service mode

Measuring range: >1000 µg/m³

Range: PM2.5: 0~500µg/m³, particle size 0.3~2.5µm

PM10: 0~600µg/m³, particle size 0.3~10µm

Accuracy: ± 10 µg/m³ @0~100µg/m³, $\pm 10\%$ reading

@100~500µg/m³@25°C/50%RH, see accuracy curve

Resolution: 1µg/m³

Response time: in continuous service mode, sample time<1s, general response time<10s

CO₂

Sensor: NDIR sensor, with ABC algorithm, >15 years life span

Accuracy: ± 50 ppm $\pm 5\%$ reading @10~40°C

Response time(T90): <120s (30cc/min, low airflow)

Drift: < ± 10 ppm/year

Range: 0~2000ppm (measurement range 400~2000ppm)

Temperature

Sensor: Digital temperature sensor

Measurement range: 0~50°C

Accuracy: typical $\pm 1.0^\circ\text{C}$ @10~40°C; $\pm 1.5^\circ\text{C}$ @10~40°C (With CO₂ detection)

Repeatability: 0.1°C

Response time: typical 10~30s (25°C, low airflow)

Drift: $\pm 0.04^\circ\text{C}$ /year

Relative Humidity

Sensor: Digital capacitance sensor

Range: 0~100%RH

Accuracy: $\pm 5\%$ RH ($\pm 2\%$ on request) @ 25°C/20~80%RH

Repeatability: 0.1%RH

Hysteresis: $\pm 1.0\%$ RH

Response time: typical 10s (25°C, low airflow)

Drift: $\pm 0.25\%$ RH/year

Power: 16~28VAC/16~35VDC

Output: RS485/Modbus, R/W enable, 9600 bps

Warm up time: 15 min

Working environment: 0~50°C, 0~95%RH (Non-cond.)

Storage temperature: -20~60°C

Housing: fire retardant PC (UL94V-0)

Protection: IP30 (IP66 on request)

Weight: 300g

Approval: CE

Models

Models	TNDE-IAQMP	X1	X2	X3	X4	X5	Color screen indoor air quality
Sensor code	Sensor codes are: 1:VOC; 2:CH ₂ O; 3:PM2.5/PM10; 4:CO ₂ ; 5:T/RH						

Instructions: min. 1 sensor, max. 5 sensors are needed. Codes X1-X5 correspond to any one of the codes 1-5, and can be combined in any order, represent the position on the LCD. But any code can only be applied one time. Examples: TNDE-IAQMP34, TNDE-IAQMP1345, TNDE-IAQMP2345, TNDE-IAQMP43125, etc. Pictures above are TNDE-IAQMP53142 and TNDE-IAQMP345. For more models with different LCD examples, please refer to the instruction manual.

Note:

1. VOC volatile organic compounds, include over a thousand kinds of component, are widely used in various industries and has great impact on human health, may affect liver, kidney, brain and nervous system, resulting in memory loss and other serious consequences, and even cause cancer.
2. The VOC sensor could detect varies of VOC components. VOC measurement range 0~1000ppb (isobutene), equivalent to 400~2000ppm of carbon dioxide.
3. The CH₂O sensor could detect only Formaldehyde of 0~1000ppb.
4. Exposed to 0.5~1.0 ppm VOC concentration environment have little impact on most people health; exposed to 1.0~10 ppm may have obvious irritation symptoms on human and cancer rates rise 50% to 90%; exposed to above 10 ppm may have serious impact on human health or life threatening.
5. China regulations specified the average 8 hours TVOC limit 0.50~0.60 mg/m³ (equivalent to about 500 ppb) and CH₂O limit 0.08~0.10 mg/m³ (equivalent to about 60~75 ppb).
6. VOC concentration guidelines and recommendations, mainly refer formaldehyde:

Source	Concentration	Associated Period of Exposure	Health Effect(s)
Based on sensory irritation			
California Environmental Protection Agency (EPA)	44 ppb	1 hour	Eye and airway irritation
Health Canada	100 ppb	1 hour	Eye irritation
National Institute for Occupational Safety and Health	100 ppb	15 minutes	
Occupational Safety and Health administration	750 ppb	8-hour PEL-TWA	Cancer and skin/eye/respiratory irritation
World Health Organization	81 ppb	30 minutes	Sensory irritation
World Health Organization	100 ppb	short-and long- term	Sensory irritation
Based on respiratory and asthma-like symptoms			
Agency for Toxic Substance and Disease Registry	40 ppb 30 ppb 8 ppb	Daily: 1-14 days 15-364 days > 1 year	Respiratory
California EPA	7 ppb 7 ppb	8-hour annual average	Respiratory symptoms Respiratory symptoms
Health Canada	40 ppb (target)	8 hours	Respiratory symptoms in children
Based on cancer risk			
National Institute for Occupational Safety and Health	16 ppb	8 hours	Nasal cancer
Occupational Safety and Health administration	750 ppb	8-hour PEL-TWA	Cancer and skin/eye/respiratory irritation
World Health Organization	100 ppb	Long-term	Nasal cancer

PM2.5/10 Typical Accuracy, Maximum Deviation (%):

