

Indoor PM2.5 Indicator

—Professional design and high quality

Model: G03-PM2.5-B340H

Indoor PM2.5

Particulate matter (PM) is a particle pollution, which is produced in a great number of ways that can be classified into either mechanical or chemical processes. Traditionally, the environmental sciences have divided particles into two main groups PM10 and PM2.5. PM10 is particles between 2.5 and 10 microns (micrometers) in diameter (a human hair is about 60 micron in diameter). PM2.5 is particles smaller than 2.5 microns. PM2.5 and PM10 have different material compositions and can come from different places. The smaller the particle the longer it can remain suspended in the air before settling. PM2.5 can stay in the air from hours to weeks and travel very long distances because it is smaller and lighter.

PM2.5 can get down into the deepest (alveolar) portions of the lungs when gas exchange occurs between the air and your blood stream. These are the most dangerous particles because the alveolar portion of the lungs has no efficient means of removing them and if the particles are water soluble, they can pass into the blood stream within minutes. If they are not water soluble, they remain in the alveolar portion of the lungs for a long time. When the small particles go deeply into the lungs and become trapped this can result in lung disease, emphysema and/or lung cancer in some cases.

The main effects associated with exposure to particulate matter may include: premature mortality, aggravation of respiratory and cardiovascular disease (indicated by increased hospital admissions and emergency room visits, school absences, loss of work days, and restricted activity days) aggravated asthma, acute respiratory symptoms, chronic bronchitis, decreased lung function and increased myocardial infarction.

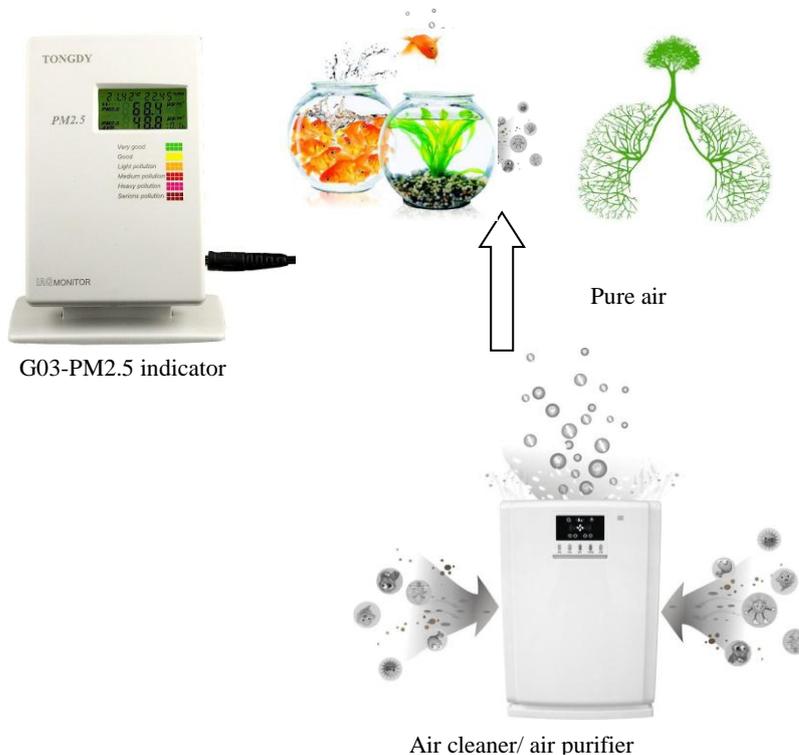
There are many varieties of particulate pollutants in our homes and offices. Ones from outside include industrial sources, construction sites, combustion sources, pollen, and numerous others. Particles are also generated by all kinds of normal indoor activity ranging from cooking, walking across the carpet, your pets, sofa or beds, air conditioners etc. Any movement or vibration can create airborne particles!

How to improve air quality in your home and office

- ❑ The first thing you need to do is monitoring your indoor air quality everyday. The monitoring information will let you evaluate the indoor air quality.
- ❑ The G03-PM2.5-B340H will let you know if the steps you are taking to improve your air quality are really working or not specially let you know if an \$500 air purifier works any better than a \$200 one. This will really help you to save money.

- ❑ The concentration of PM2.5 probably have much difference duo to the different purpose of the rooms. The most effective way to improve indoor air quality is, detecting each room and treatment of air purification for the important rooms, such as living room and bed rooms. G03-PM2.5 supply you a real time and accurate information, it can help you to be sharp-eyed and clearheaded.
- ❑ Please make sure the filters of indoor HVAC systems are clean, otherwise need to clean or replace filters. The unclean filter is one of sources of indoor particle pollution.
- ❑ Please notice it's very important for the quantity and location of air purifiers or air cleaners. Now you need the help of the real time monitor information of PM2.5 by G03-PM2.5.

The diagram of indoor air monitor and improvement



G03-PM2.5 Indoor Indicator

As for those air purifiers or air cleaners which built-in a PM2.5 detector, they typically display air quality as only “good”, “clean”, 1 or 3 LED’s or some other vague way which gives the user no real information. The built in inexpensive type air quality sensors and nonprofessional measurement methods are inaccurate, with a much drift up and down. Furthermore, they have the major limitation of only measuring the air quality close the air purifier or air cleaner such as within one meter. Of course that is where the air is going to be cleanest, but unless

you have the air purifier strapped around your neck it is not the air you are breathing. In fact these built in sensors are essentially a gimmick.

G03-PM2.5-B340H indicator is far different from those built in PM2.5 sensors!

■ Features of G03-PM2.5-B340H

- Built in professional laser duct sensor. Real-time monitor indoor PM2.5 concentration.
- Built in high accuracy temperature & RH sensor, monitor indoor air temperature & RH.
- Using our unique technology of compensating method, and up to nine calibration points, to guarantee G03-PM2.5-B340H measurements accuracy in different environments.
- LCD displays the real time measurement and moving average value of PM2, as well as real time temperature and RH measurements.
- Special design six backlit LCD for six levels of PM2.5, in straight and clear read.
- long-term security power supply: 5VDC with a power adaptor
- RS485 interface with Modbus protocol
- Users can know very well the indoor PM2.5 concentration, and can easily select a air purifier/air cleaner. Not only see a visible effective of indoor air clean but also have a reasonable use of an air cleaning device.



■ Model

G03-PM2.5-340H: PM2.5 Indicator with temperature & RH, 6 colors backlit LCD.
Modbus RS485 interface

■ Specifications

General Data	
Power supply	G03-PM2.5-340H: 24VAC/VDC
Work consumption	1.2W
Warm-up time	60s (first using or using again after a long-time power off)
Monitor parameters	PM2.5, air temperature, air relative humidity
LCD display	LCD six backlit, displays six levels of PM2.5 concentrations and one hour moving average value. Green: Top Quality- Grade I Yellow: Good Quality-Grade II Orange: mild level pollution -Grade III Red: medium level pollution Grade IV Purple: seriously level pollution Grade V Maroon: severe pollution - Grade VI
Installation	Wall mounting-G03-PM2.5-340H
Storage condition	0°C~60°C/ 5~95%RH



Dimensions	85mm×130mm×36.5mm	
Housing materials	PC+ABS materials	
Net weight	198g	
IP class	IP30	
Temperature and Humidity Parameters		
Temperature humidity sensor	Built-in high precision digital integrated temperature humidity sensor	
Temperature measuring range	-20℃~50℃	
Relative humidity measuring range	0~100%RH	
Display resolution	Temperature:0.01℃	Humidity:0.01%RH
Accuracy	Temperature:<±0.5℃ @30℃	Humidity:<±3.0%RH (20%~80%RH)
Stability	Temperature:<0.04℃ per year	Humidity:<0.5%RH per year
PM2.5 Parameters		
Built-in sensor	Laser dust sensor	
Measuring range	0~600 μg / m3	
Display resolution	0.1 μg / m3	
Measuring accuracy (1h average)	±10μg+10% of reading @ 20℃~35℃, 20%~80%RH	
Working life	>5 years (avoid to close lampblack, dust, great light)	
Stability	<10% measurement decline in five years	
RS485 interface	MODBUS protocol, 38400bps	

Comparison of similar indoor PM2.5 indicators

	Item	G03-PM2.5	A Company's	B Company's	C Company's
Sensors	Light source	Continuous emission IR LED light source	Continuous IR LED light source	Continuous IR LED light source	Pulse modulated IR LED light source
	Receiving sensor	The photoelectric triode, with optical spectrum filter to reduce the influence from stray light	Photodiode without spectral filtering	Photodiode,without spectral filtering	Photodiode,without spectral filtering
	Power supply	Voltage regulator control (5V ~ 3.3V) free from disturbances	5V direct input. It's easily influenced by outside power ripples.	5V direct input. It's easily influenced by outside power ripples.	5V direct input. It's easily influenced by outside power ripples.
	Air flow	Forms natural upward air flow by heating resistances	Forms natural upward air flow by heating resistances	Forms natural upward air flow by heating resistances	Forms air flow by a electric fan. Not easy to control the stability of air flow



	Linear power noise	Good stability. Output linear power to the LED and image sensor through a voltage stabilizer to reduce noise	Unstable. Without the voltage stabilizer, easily influenced by power ripples noise and motor noise.	Unstable. Without the voltage stabilizer, easily influenced by power ripples noise and motor noise.	Unstable. Without the voltage stabilizer, easily influenced by power ripples noise and motor noise.
	Sensitivity control (offset and amplifier gain)	MICOM automatically adjust gain with zero shift. Good SNR (signal-to-noise ratio)	Manually adjust variable resistances with difficult control.	Manually adjust variable resistances with difficult control.	
PM2.5 Monitors	Temperature and humidity detection	Digital high accuracy sensor	Non	Non	Ordinary accuracy sensor
	LCD	Six-color	Single color	Single color	Single color
	PM2.5 measuring accuracy guarantee	Built-in temperature and humidity compensation algorithm and 10 calibration points	Non	Non	Non

LCD backlit color indicates PM2.5 concentration

Air Quality Levels			PM2.5 24h Average Concentration	Effects on Health
Color	PM2.5 Level	Air Type	$\mu\text{g}/\text{m}^3$	
Green	Level I	Very good	0-35	Good air quality, almost no air pollution
Yellow	Level II	Good	36-75	Acceptable air quality, but some pollutants may has a weak effect on health of a handful of high sensitive people.
Orange	Level III	Light pollution	76-115	The symptom of susceptible people are mild sharpened and healthy people come on an symptom of irritation.
Red	Level IV	medium pollution	116-150	Further aggravate symptoms of vulnerable groups, it may has an impact on healthy people heart, lungs and respiratory system.
Purple	Level V	heavy pollution	151-250	Symptoms of vulnerable groups are further aggravated. Healthy people generally appear symptoms
Maroon	Level VI	Serious pollution	>251	The exercise tolerance of healthy people is reduced with noticeable symptoms, and some symptoms appear ahead of time.



Different indoor air detectors for different applications

- **G03-PM2.5 Indicator:** To detect indoor PM2.5 pollution
- **G01-CO2 Monitor:** To detect and alarm indoor carbon dioxide
- **G02-VOC Monitor:** To detect VOC's such as benzene, formaldehyde, ammonia, alcohol, cigarettes etc. It's used in newly constructed or newly decorated rooms with some new furniture.
- **Other ozone and VOS's +CO2 monitors and controllers**

More information please contact with our sales.