Sontay®

Four Elms Road - Edenbridge
Kent - TN8 6AB - UK

GS-PM-S
Space Mounted PM2.5, Humidity & Temp. Sensor

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Features and Benefits

- Real time indoor PM2.5 via optical IR LED
- Compensating automatic re-calibration
- Humidity & temperature measurement
- Backlit 6 level LCD to indicate PM2.5 concentration levels
- Modbus RTU output

Technical Overview

The GS-PM-S is for PM2.5, humidity and temperature measurement., they can be monitored via the Modbus RTU output or via the 6-colour LCD. The PM2.5 display reading is an average value of PM2 updated hourly, humidity & temperature measurements are real time. PM2.5 is sensed via a laser particle sensor, light scattering method, making these suitable for homes, offices, small ventilation systems etc.

Using unique technology of compensating method, and up to nine calibration points, to guarantee GS-PM-S measurements accuracy in different environments.

Product Codes

GS-PM-S   Space PM2.5, Humidity & Temperature transmitter

Specification

Outputs	Modbus RTU 38400 baud rate
Power Supply	24Vac/dc ±10%
Current consumption	1.2W (1200mA)
Warm up time	60 seconds
Electrical connections	Rising cage to suit 0.2 to 1.5mm²
Output ranges:	
PM2.5	0 to 600µg/m³
Humidity	0 to 100%RH
Temperature	-20 to +50°C
Accuracy:	
PM2.5	±10µg/m + 10% of reading @ 15-35°C, 20-80%RH
Humidity	<±3%RH (20-80%RH)
Temperature	<±0.5°C @ 25°C
Operational life PM2.5	>5 years*
LCD back light levels	See next page
Environmental:	
Temperature	0 to 60°C
Humidity	5 to 95% non-condensing
Housing:	
Material	PC/ABS
Dimensions	85 x 130 x 36.5mm
Protection	IP30
Conformity	EMC, CE & UKCA Marked
Country of origin	China

* Avoid dust and bright lights

CE UKCA

LCD Back Light Indication

| PM2.5 24h Avg Concentration µg/m³	Effects on Health
0 to 35	Good air quality, almost no air pollution
36 to 75	Acceptable air quality, some pollutants may have a weak effect on health of sensitive people
76 to 115	Symptoms of susceptible people are mild sharpened & healthy people start a symptom of irritation
116 to 150	Further aggravated symptoms of venerable groups, it may have an impact on healthy peoples heart, lungs and respiratory systems
151 to 250	Symptoms of venerable groups are further aggravated. Healthy people generally start to appear to have symptoms
>251	Exercise tolerance of heathy people is reduced with noticeable symptoms and some symptoms appear ahead of time

Installation

Antistatic precautions must be observed when handling these sensors. The PCB contains circuitry that can be damaged by static discharge.

1. Select a location on a wall of the controlled space which will give a representative sample of the prevailing room condition. Avoid sitting the sensor in direct sunlight, beside windows, on an outside wall or near heat sources. An idea mounting height is 1.5m from the floor.

2. Separate the cover from the base by carefully inserting a screw driver at the bottom of the housing and twist.
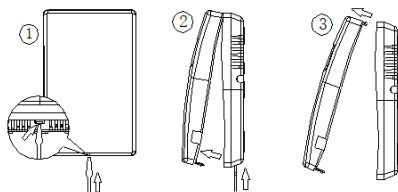

3. Using the base as a template mark the hole centres and fix to the wall with suitable screws.

4. Feed cable through the hole in the base plate of the housing, terminate the cores at the terminal block (see Electrical Connections). Leave some slack inside the unit as required.

7. Replace the housing to the base plate and tighten the tamperproof screw (if required) through the lug at the bottom of the base plate.
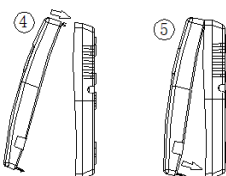
8. Before powering the sensor, ensure that the supply voltage is within the specified tolerances

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Electrical Connections
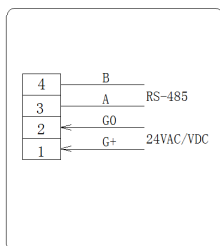
Operation

After the power is switched on the LCD screen will carry out a self check, all characters are displayed on the screen with the green backlight. This operation takes 10 seconds.

A count down will begin on the display self-check.

This last for 50 seconds, the count down time and LCD colour will change, 49-40s yellow, 39-30s orange, 29-20s red, 19-10s purple and maroon from 9-0s.

When this is completed the LCD will start to show measurements.

The six colour LCD indicates six concentration levels corresponding average PM2.5 levels, see table on previous page. These are in accordance of WHO transmission period target.

Setting IP Address Manually

The default address is 1.

You can adjust this either via the Modbus network, or manually.

1.   Press and hold red push putton located at the top of the PCB in the centre for 5 seconds.

2.   The address value will then be shown on the display and blinks (this is at the bottom of the display).

3.   Press the red button again to select an address between 1 and 247.

4.   When you have made your address selection wait for 5 seconds.

5.   The display will return to normal and the address is saved.

Modbus Parameters

Mode:	RTU	
Baud rate:	1-4800 / 2-2960 / 3-14400 / 4-19200 / 5-384000 (default, 5-38400)	
Start bits:	1	
Data bits:	8	
Stop bits:	1 / 2	(default, 2)
Parity:	None / Odd / Even	(default, none)
Modbus address:	1 to 247	(default, 1)

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Register Map
Support Function: 3 4 6 16

Starting Register Decimal

	Data Description	Function	Read/Write	Length	Format	Valid Response	Default
2	PM2.5 5 minutes average measurement	4	R	2	Float	2~800 µg/m³	
4	Temperature measurement	4	R	2	Float	-20.0~50.0°C	
6	Humidity measurement	4	R	2	Float	0.1~100.0%RH	
8	PM2.5 1 hour average measurement	4	R	2	Float	2~800 µg/m³	
0	Modbus Address	3/6	R/W	1	UINT16	1~247	1
1	Modbus Baud Rate	3/6	R/W	1	UINT16	1-4800bps 2-9600bps 3-14400bps 4-19200bps 5-38400bps	5
2	Modbus Parity Bit and Stop Bit	3/6	R/W	1	UINT16	1-None 1Stop Bit; 2-None 2Stop Bit; 3-Odd 1Stop Bit; 4-Even 1Stop Bit	2
3	Sensor Warmup Time	3/6	R/W	1	UINT16	1~600 Second	60
4	The short time length setting value of PM2.5 average value	3/6	R/W	1	UINT16	5~600 Second	300
5	The long time length setting value of PM2.5 average value	3/6	R/W	1	UINT16	1~24 hour	1
6	Temp. Adjust Setpoint	3/16	R/W	2	Float	-5.0~5.0°C	0.0
8	Hum. Adjust Setpoint	3/16	R/W	2	Float	-10.0~10.0 RH%	
10	Touch key switch (Only Infrared remote version)	3/6	R/W	1	UINT16	Air Purifier No.1 control setpoint 35µg/m³ No.2 Control setpoint 55µg/m³ No.3 Control setpoint 75µg/m³ Turn on Turn off	4
11	Air purifier No.1 control setpoint (Only Infrared remote version)	3/6	R/W	1	UINT16	1~800µg/m³	35
12	Air purifier No.2 control setpoint (Only Infrared remote version)	3/6	R/W	1	UINT16	1~800µg/m³	55
13	Air purifier No.3 control setpoint (Only Infrared remote version)	3/6	R/W	1	UINT16	1~800µg/m³	75
14	Control offset setpoint (Only Infrared remote version)	3/6	R/W	1	UINT16	0.1~10	5
15	Green<->Yellow setpoint	3/6	R/W	1	UINT16	1~800µg/m³	35
16	Yellow<->Orange setpoint	3/6	R/W	1	UINT16	1~800µg/m³	75
17	Orange<->Red setpoint	3/6	R/W	1	UINT16	1~800µg/m³	115
18	Red<->Purple setpoint	3/6	R/W	1	UINT16	1~800µg/m³	150
19	Brown <-> Purple setpoint	3/6	R/W	1	UINT16	1~800µg/m³	250

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