

USER GUIDE FOR CDW-10A DUST PM1.0&PM2.5&PM10 SENSOR

CDW-21A-01-MN-10

SEP-2024

This document is applied for the following products

SKU	CDW	HW Ver.	1.0	FW Ver.	1.0
Item Code	CDW-21A	Dust Sensor, 4-20mA RS485 0-5V 0-10V Output, ABS, 0-1000ug/m3			

1. Introductions

CDW-21A Dust Sensor using laser scattering principle, detecting the existence of dust particle concentration in the air, the minimum can detect 1.0um particles, has a good consistency and stability. According to different usage environment, there are indoor type and outdoor type to select.



2. Specification

Item	Technical Specification
Sampling object	PM1.0, PM2.5, PM10 Concentration
Range	0-1000ug/m3
Accuracy	±3%FS@25°C
Supply	5VDC, 12-24VDC
Output	4-20mA, 0-5V, 0-10V, RS485
Power Consumption	<50mA@24V(4-20mA)
Warm Up Time	3min
Response Time	<90s
Temperature Drift	≤0.2%FS/°C
Stability	<±2%FS
Repeatability	<±1%FS
Operating Temperature	-20°C~+50°C@15-80%RH
Storage	-40-60°C@20%-90%RH
Shell material	ABS

3. Working Process

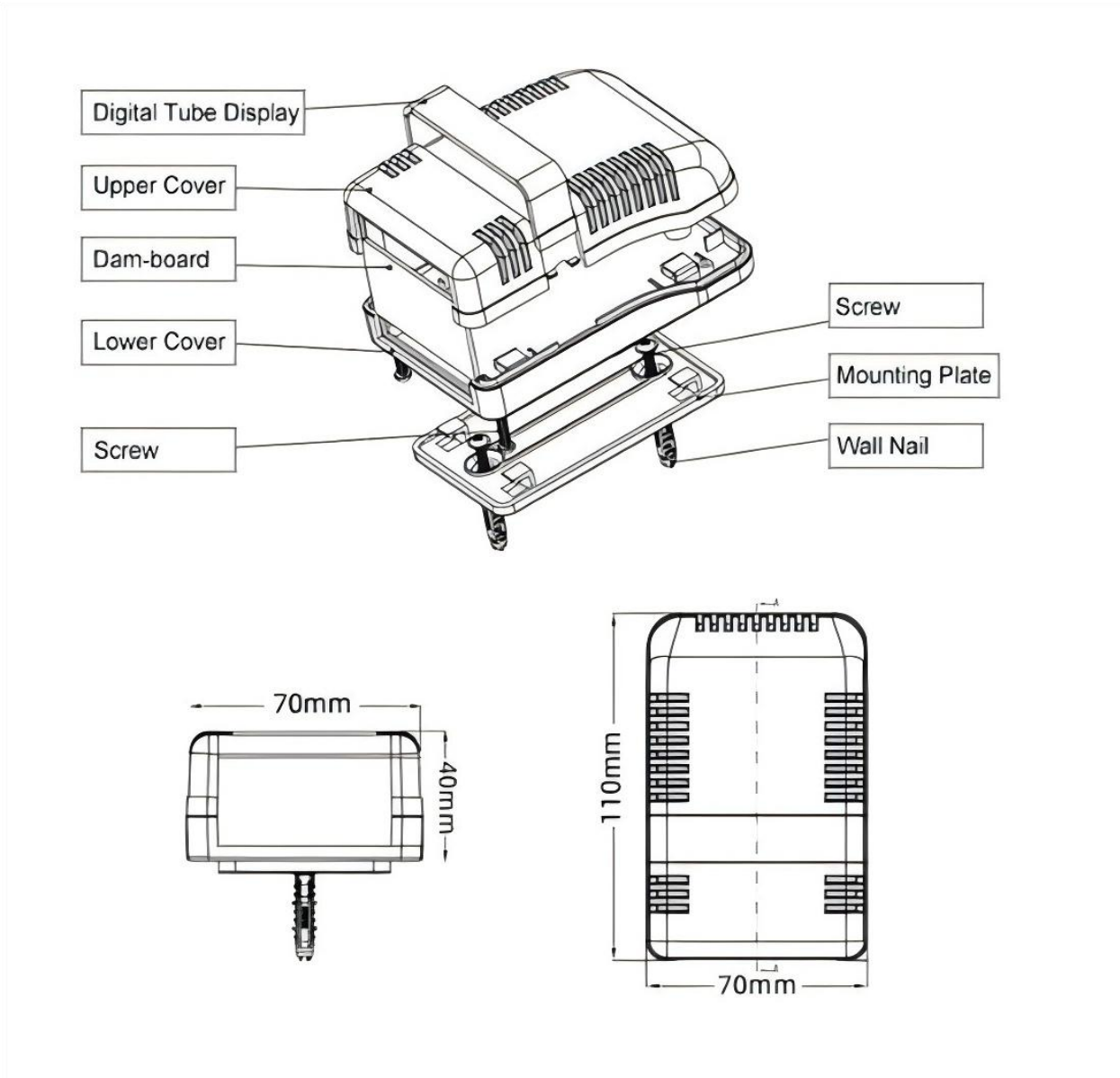
The working principle of the infrared dust sensor is to use the scattering principle of light to detect the dust concentration in the air. Specifically, it does this by emitting infrared light, and when dust particles in the air scatter with the infrared light, the receiver picks up the scattered light and converts it into an electrical signal. Through the analysis and processing of electrical signals, the concentration of dust in the air can be obtained.



4. Electrical Connections

Connector (cable)	Current /Voltage	RS485
Red	V+	V+
Black	V-	V-
Yellow	PM1.0	RS485A
Green/Yellow	PM2.5	RS485B
Brown	PM10	/

5. Dimensions&Installation



1. Install the product in stable environment area, avoid direct sunlight, away from windows air-conditioning, heating and other equipment. Otherwise it will cause atmospheric pressure measurement inaccuracies.

2. It is recommended to install in the cabinet open to the atmosphere, for example: instrument shelter

6. Communication Protocol (MODBUS)

Transmission mode: MODBUS-RTU, **Baud rate:** 9600bps, **Data bits:**8, **Stop bit:**1, **Check bit:**no

Slave address:the factory default is 01H (set according to the need,00H to FFH)

6.1 The 03H Function Code Example: Read The Dust Concentration

Host Scan Order(slave address:0x01)

01 03 00 00 00 02 C40B

Slave Response

01 03 04 00 3A 00 68 DBD0

PM2.5:(003A)H=(58)D=58ug/m3, PM10:(0068)H=(104)D=104ug/m3

PM1.0, PM2.5 & PM10 three in one

Host Scan Order(slave address:0x01)

01 03 00 00 00 03 05CB

Slave Response

01 03 06 00 30 00 3A 00 68 4092

PM1.0(0030)H=(48)D=48ug/m3, PM2.5:(003A)H=(58)D=58ug/m3, PM10:(0068)H=(104)D=104ug/m3,

6.2 The 06H Function Code Example: Modify the slave address

Host Scan Order (Changed the 02H to 01H):

02 06 00 30 00 01 4836

Slave Response:

02 06 00 30 00 01 4836

If you forget the original address, you should use the broadcast address(FEH) (ensure that no other devices on the bus at this time).

Note:

1. All underlined is fixed bit;
2. The last two bytes is CRC check command.

Note: This product has been tested and complies with European CE requirements for EMC directive.

7. Support contacts:



Complies with applicable CE directives.
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