Multi-functional sensor

User Manual

KCMAQS-T3/T7

Safety instructions

- Before installation, please read user manual carefully and observe relevant standards, directives, regulations and instructions.
- Electrical equipment must be installed and programmed by qualified technicians only.
- This device is manufactured according to the relevant technical specifications and have CE.
- For more information of this product, please contact the technical engineer of manufacturer.
- Users are not permitted to alter and maintain the product without the authorization of manufacturer.
- Failure to observe the instructions may cause damage to the device and result in fire or other hazards.

Product Overview

The KCMAQS - T3/T7 multi-functional sensor can detect temperature, humidity, PM2.5 concentration, PM1.0 concentration, PM10 concentration, TVOC, and carbon dioxide concentration. It can be installed on the wall or ceiling.
The temperature and humidity sensor has a rapid response and high measurement accuracy. The PM2.5 sensor is a digital general particulate matter sensor based on the laser scattering principle. It can continuously collect and calculate the number of suspended particulate matters of different particle sizes in a unit volume of air, that is, the particulate matter concentration distribution. Then it can convert this into mass concentration and output it through a general digital interface.

Product Features

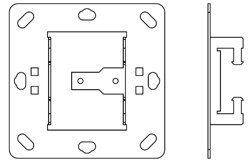
- It is powered by DC 24V.
- It can detect temperature, humidity, PM2.5, PM1.0, PM10, carbon dioxide, and TVOC.
- It is installed using a standard 86 - type back box.
- It is calibrated by professional instruments.
- It uses the standard Modbus RTU communication protocol.
- Temperature measurement range: -40°C to 85°C.
- Humidity measurement range: 0% to 100%.
- PM2.5 concentration measurement range: 0 to 1000.
- PM1.0 concentration measurement range: 0 to 1000.
- PM10 concentration measurement range: 0 to 1000.
- Carbon dioxide concentration measurement range: 400 to 60000.
- TVOC measurement range: 0 to 60000.
- It collects and calculates suspended particulate matter (PM2.5) based on the laser scattering principle.
- The temperature - humidity sensor and the PM2.5 sensor are independent sensors, providing higher accuracy.

DIP switch setting

Device Address	Dip Switch Setting	Hardware Address	Dial Code Setting
1	0000	9	1000
2	0001	10	1001
3	0010	11	1010
4	0011	12	1011
5	0100	13	1100
6	0101	14	1101
7	0110	15	1110
8	0111	16	1111

Installation instructions

1、Fix the mounting iron plate of the multi-functional transmitter in an 86-type back box or ceiling suspension. If it's not possible to install the back box on - site, the opening size should be 34mm in width and 46mm in height.
2、After connecting the 24V DC transformer and the data communication cable to the transmitter, simply snap the sensor into the mounting iron plate.



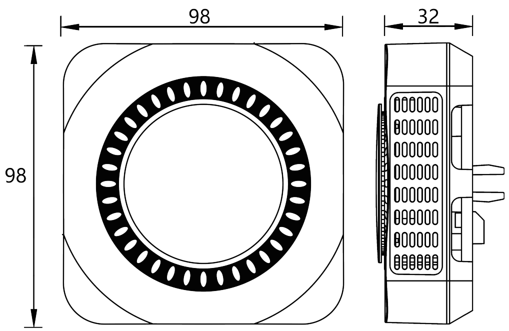
Communication protocol

Serial Port Parameters				
Baud rate: 9600 Data bits: 8 Parity bit: NoneStop bit: 1 ID: Default is 1 and can be set by dip switch. Serial port instruction interval: > 50 ms				
Function	Register	Function code	KCMAQS-T3	KCMAQS-T7
CO2	40001	03	×	✓
TV0C	40002		×	✓
Temperature value	40003		✓	✓
Humidity value	40004		✓	✓
PM2.5	40011		✓	✓
PM1.0	40012		×	✓
PM10	40013		×	✓

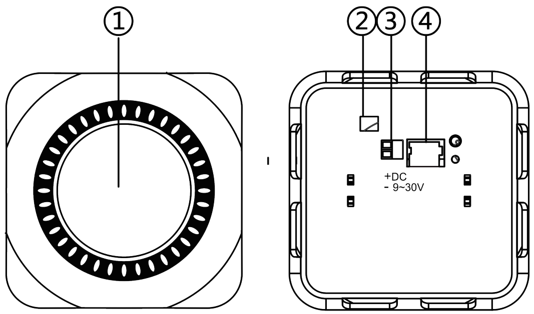
Product parameters

Parameters \ Types	KCMAQS-Tx
Power	
Power Supply	DC 24V
Transmission Media	
Transmission Media	RS485
Product Info	
Dimensions	W:98mm × H:98mm × T:32mm
Type of protection	IP20
Installation method	standard 86-type back box
Opening size	W:34mm × H:46mm
Detection range	
PM2.5ug/m³	0~1000
Temperature	-40℃~85℃
Humidity	0~100
Detection accuracy	
PM2.5	±10%
Temperature	±0.5
Humidity	±2%

Product dimensions



Operating instructions



1) Sensor
2) DIP switch for address setting
3) Power supply: DC 24V
4) RS485 communication terminal

Communication example

- The format of the query command is as follows:

Device address (1 byte) + Function code (1 byte) + Starting address (2 bytes) + Number of data items (2 bytes) + Check code (2 bytes)

- The format of the return value is as follows:

Device address (1 byte) + Function code (1 byte) + Number of data items (1 byte) + Data 1 (2 bytes) + Data n (2 bytes) + …… + Data n (2 bytes) + Check code (2 bytes)
The following examples are based on the transmitter No. 1:

- Query the temperature value: 01 03 00 02 00 01 25 CA
- Return the temperature of 23°C: 01 03 02 00 E6 39 CE
- Query the humidity value: 01 03 00 03 00 01 74 0A
- Return the humidity of 40%: 01 03 02 01 90 B9 B8
- Query the PM2.5 concentration: 01 03 00 0A 00 01 A4 08
- Return the PM2.5 concentration of 80: 01 03 02 00 50 B8 78
- Continuously query the temperature value, humidity value, and PM2.5 concentration:
  01 03 00 02 00 09 24 0C
- Return the temperature of 25°C, the humidity of 50%, and the PM2.5 concentration of 120:
  01 03 12 00 FA 01 F4 00 00 00 00 00 00 00 00 00
  00 00 00 00 78 1C E0

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