**Overview :**

The SM300D2 seven-in-one sensor module is a cost-effective digital serial output sensor module. It uses both RS485 data bus and UART serial port TTL level output modes, collecting CO2, formaldehyde, TVOC, laser PM2.5, PM10, temperature , Humidity in one. It can carry out real-time comprehensive detection of the environment in which it is located, and has good stability.

**Features :**

● Simultaneous output of carbon dioxide, formaldehyde, TVOC, PM2.5, PM10, temperature, humidity seven sets of data

● High sensitivity and stable data

● At the same time, it adopts two output modes of RS485 bus and UART TTL level, which is convenient for customers to choose and use independently.

● The temperature is accurate to 0.1 ℃, and the humidity is accurate to 0.1% RH

● Automatically output these seven sets of monitoring data via RS485 interface every second

● With power supply anti-reverse protection function

**Application :**

● Hotel room air quality monitoring

● Environmental monitoring of agricultural greenhouses and outdoor breeding sites

● Fresh air ventilation system

● Air purifier, air conditioner

● Air quality monitoring equipment

● Kitchen and bathroom ventilation control system

● Smart home equipment

**Specifications :**

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **resolution** | **range** | **accuracy** |
| eCO2 |  | 400ppm～5000ppm  | ±50ppm |
| eCH2O | 1ug/m3 | 1ug～1000ug |  |
| TVOC | 1ug/m3 | 0ug～2000ug |  |
| PM2.5 | 0.8ug/m3 | 5ug～1000ug | ±10% |
| PM10 |  | 5ug～1000ug | ±10% |
| Temperature | 0.01℃ | -40℃～125℃ | ±0.5℃ |
| Humidity | 0.04% | 0～100% | ±3%RH |
| Physical interface | ZH1.5-4 |
| Output Data | UART-RS485  |
| Operating Voltage | 5.0±0.2VDC |
| Working current | ≤60mA |
| Preheat time | 2 min |
| Operating temperature | 0℃～50℃ |
| Working humidity | ≤95％RH |
| Dimensions | 55.8\*50\*19.5mm（L×W×H） |
| Service life | 5 years (in the air) |

**RS485 interface definition :**

|  |  |  |
| --- | --- | --- |
| **Interface** | **Name** | **Function:** |
| 1 | 5V | Connect to power supply 5V |
| 2 | B | RS485 data port D- / B |
| 3 | A | RS485 data port D + / A |
| 4 | GND | Power ground |

**UART interface definition :**

|  |  |  |
| --- | --- | --- |
| **Interface** | **Name** | **Function:** |
| 1 | 5V | Connect to power supply 5V |
| 2 | TXD | UART data output pin |
| 3 | N/A | null |
| 4 | GND | Power ground |

**Letter of Agreement :**

Baud rate: 9600bps

Data bits: 8 bits

Stop bit: 1 bit

Check digit: None

**Serial Data Stream Format :**

|  |  |
| --- | --- |
| **byte** | **Explanation** |
| **B1** | Fixed value 3Ch |
| **B2** | Fixed value 02h |
| **B3** | eCO2 high byte |
| **B4** | eCO2 low byte |
| **B5** | eCH2O high byte |
| **B6** | eCH2O low byte |
| **B7** | TVOC high byte |
| **B8** | TVOC low byte |
| **B9** | PM2.5 high byte |
| **B10** | PM2.5 low byte |
| **B11** | PM10 high byte |
| **B12** | PM10 low byte |
| **B13** | Temperature integer part |
| **B14** | Decimal part of Temperature |
| **B15** | Humidity integer part |
| **B16** | Humidity fractional part |
| **B17** | Checksum |

Temperature is accurate to 0.1 ℃, humidity is accurate to 0.1%

**Sample Data :**

For example, if the value read is 3C 02 08 FC 00 79 01 D7 00 13 00 22 1B 03 30 02 18, the following result is obtained:

|  |  |
| --- | --- |
| Checksum | B17=unit\_8(3Ch+02h+08h+0FCh+00h+79h+01h+D7h+00h+13h+00h+22h+1Bh+03h+30h+02h)=18h |
| CO2 | B3\*256+B4=08h\*256+0FCh=2300ppm |
| eCO2 | B5\*256+B6=00h\*256+79h=121ug/m3 |
| TVOC | B7\*256+B8=01h\*256+0D7h=471ug/m3 |
| PM2.5 | B9\*256+B10=00h\*256+13h=19ug/m3 |
| PM10 | B11\*256+B12=00h\*256+22h=34ug/m3 |
| Temperature integer | B13=1Bh=27℃ |
| Decimal temperature | B14\*0.1=03h\*0.1=0.3℃ |
| Humidity integer | B15=30h=48%RH |
| Humidity decimal | B16\*0.1=02h\*0.1=0.2%RH |

**Note:**

The CO2 value and CH2O value output by the module are the equivalent values ​​of TVOC. Please pay attention when buying and using.

**Package Included:**

1 x SM300D2 7-in-1 Sensor Module

1 x Display Board

2 x Connect Cable





