Air-Quality Detection module

(Model ZP16-A)

Manual

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Statement

Thanks for purchasing our product. In order to let customers use it better and reduce the faults caused by misuse, please read the manual carefully and operate it correctly in accordance with the instructions. If users disobey the terms or remove, disassemble, change the components inside of the sensor, we shall not be responsible for the loss.

The specific such as color, appearance, sizes &etc., please in kind prevail.

We are devoting ourselves to products development and technical innovation, so we reserve the right to improve the products without notice. Please confirm it is the valid version before using this manual. At the same time, users' comments on optimized using way are welcome.

Please keep the manual properly, in order to get help if you have questions during the usage in the future.

Zhengzhou Winsen Electronics Technology CO., LTD.

Air-Quality Detection Module

Product Description

The ZP16 air quality module uses an advanced chip thick film semiconductor gas sensitive element. The module has good sensitivity to volatile organic gases such as formaldehyde, benzene, carbon monoxide, ammonia, hydrogen, alcohol and smoke of cigarette, essence & etc. The module has been aging, debugged, adjusted and calibrated. So it has good consistency and high sensitivity.

Features

High sensitivity, Excellent long-term stability, Low power consumption, Long life, Calibrated before shipment, Convenient use

Application

Air cleaner, fresh-air system, intelligent integrated ceiling, air quality detector, ventilator, air-condition.

Technical Index

Table1.

Model No.	ZP16-A
Detection Gas	formaldehyde, benzene, carbon monoxide, hydrogen, alcohol, ammonia, smoke of cigarette, essence &etc.
Physical Interface	XH2.54-4P terminal sockets
Measurement range	VOC:0-2.000mg/m3 CO2:350-2000ppm CH2O:0-1.000mg/m3
Working Voltage	5.0±0.2V DC(No voltage reverse connect protection)
Output	UART(5V)
Working Current	≤60mA
Warm-up Time	3minutes
Operating Temperature	0～50℃
Operating Humidity	≤95％RH
Storage Temperature	－20～60℃
Storage Humidity	≤60％RH
Size	24×20×15mm（L×W×H）

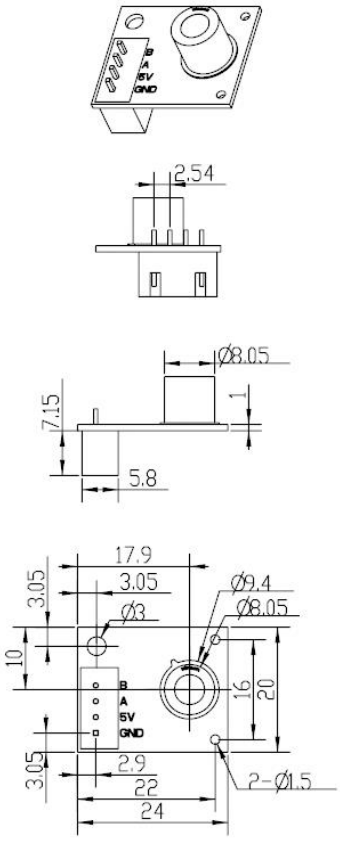

Fig1: Module structure diagram (module size tolerance ±0.2mm)

Weight	≤20g
sensitivity degradation	⩽1%/year

Pin Definition

Table2

Name	Function
GND	Input power -
5V	Input power +
A	UART(TX) 0-5V Output
B	UART(RX) 0-5V Input

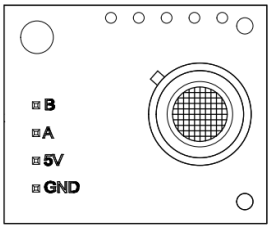

Fig2. Module Pin Diagram

Communication Protocol

1. Serial communication settings

Table3.

Baud rate	9600
Date byte	8byte
Stop byte	1byte
Check byte	No

2. Communication command

Module sends the concentration value every 1s interval, data format under active upload mode is as following:

Table4.

Byte0	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7	Byte8
Start byte	Start byte	VOC High	VOC Low	CH2O High	CH2O Low	CO2 High	CO2 Low	Checksum
0X2C	0XE4	0X00	0X4C	0X00	0X17	0X01	0XAA	0X1E

Note:

Gas concentration = HIGH byte of gas concentration* 256 + LOW byte of gas concentration.

For example: 2C E4 00 4C 00 17 01 AA 1E (It is necessary to convert hexadecimal to decimal before calculating.)

VOC concentration value: (Byte2*256+ Byte3)*0.001=(0*256+76) *0.001=0.076, concentration=0.076MG/M3

CH2O concentration value: (Byte4*256+ Byte5)=(0*256+23) *0.001=0.023, concentration=0.023MG/M3

CO2 concentration value: =(Byte6*256+ Byte7)=(1*256+170)=426, concentration=426PPM

3. Checksum calculation

Checksum = uint_8(Byte0+Byte2+·····+Byte7)

Example: 2C E4 00 4C 00 17 01 AA 1E

Checksum = uint_8(2C+E4+00+4C+00+17+01+AA)=1E

Cautions

1. Please do not put the module in organic solvent (include silica gel and other cementing compound), painting, medicament, oils and fuels, high concentration gas etc.
2. Please do not impact or vibrate the module seriously.
3. Please warm up for 5 min before first using.
4. Please do not use the module related with personal safety.
5. Please do not install the module in the severe convection environment.
6. Please do not put in the module in high concentration organic gas for long time.
7. Please do power supply strictly according to specification. If the voltage exceeds 5.5V, the module will be irreversibly damaged.

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