

ZD 401 Atmospheric Monitoring Module

Key Features:

- Low-Power Consumption
- High Sensitivity
- Anti-Interference
- High-Precision
- Provide Uart And Analog Voltage Signal Output Methods

Typical Applications:

- Urban Pipe Gallery
- Petrochemical Industry
- Industrial Environment
- Environmental Protection Field

Product Introduction:

This product is used for atmospheric environment detection and can replace the conventional electrochemical market Atmospheric detection module. Widely used in chemical plants, schools, and special fields Equal trace atmospheric concentration detection. Each module has a UART interface, available to be calibrated separately.



Technical Specifications:

Project	Parameter
Measuring Gas:	CO, SO2, O3, NO2, etc
Measuring Range:	See Table 3 for details
Service Voltage:	DC 3.5—7.0V
Working Current:	< 6mA
Output Mode:	UART output / TTL level, 3.3V compatible with 5V
ENVIRONMENTAL:	
Operating Temperature:	-40°C to +50°C
Operating Humidity:	15% -90% RH (no-condensation)
LIFETIME:	
Recommended Storage Temp:	-20-55°C / 15-90% RH (no condensation)
Expected Operating Life:	For 24 months in the air
Size:	
Size:	Ø23.5*24.6mm

Table 1: Performance Parameters

Product Dimensions:

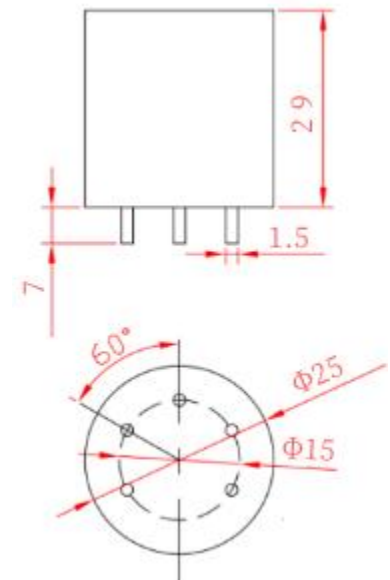


Figure 1: Unit: mm

Pin Definition:

GND	Power anode
VIN	Power positive pole
VO	Sensor original signal voltage
RX	String mouth input
TX	Serial port output

Table 2: Pipe pin definition

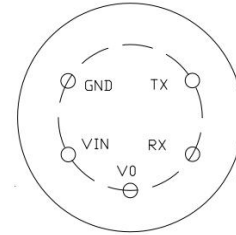


Figure 2: Pipe pin definition

Routine Detection Range and Signal Output (customizable)

Gas Type	CO	NO2	SO2	O3
Detection Zone	10PPM	1PPM	1PPM	1PPM
Resolution Ratio	≤10ppb	≤10ppb	≤10ppb	≤10ppb
Response Time (T90)	≤30S	≤60S	≤30S	≤60S

Table 3: Detection of gases

Communication Protocol

1. General Settings

Baud rate	9600
data bit	Eight
stop bit	One
check bit	not have

2. Communication Mode

Communication mode defaults to automatic upload mode, sending concentration value approximately every 1 second.

	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
receive	start bit	order	Sensor concentration value		Gas code	The decimal point	Raw signal AD value		Calibration value
	0xFF	0x86	high-order	low-order	--	--	--	--	7A
EXP.	FF 86 00 00 00 00 00 00 7A (concentration value = 0)								

Gas concentration = (high * 256 + low) * resolution

Note: If decimal place is 0, resolution is 1; if decimal place is 1, resolution is 0.1; if decimal place is 2, resolution is 0.01.

0x78--Modify sensor communication mode (Communication mode: 0x03 Active upload, 0x04 Question and answer style)

	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
Receive	Start Bit	Order	Return the calibration	--	--	--	--	--	Calibration value
	0xFF	0x78	Success: 1 Failure: 0	0	0	0	0	0	0x87 0x88
	EXP. FF 78 01 00 00 00 00 00 87								
	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
Receive	start bit	order	Return the calibration	--	--	--	--	--	Calibration value
	0xFF	0x78	Success: 1 Failure: 0	0	0	0	0	0	0x87 0x88
	EXP. FF 78 01 00 00 00 00 00 87								

If you need to switch to the active mode, send FF 01 78 03 00 00 00 00 84.

0x86 Read the sensor concentration

1	0x86	Read the sensor concentration							
	Byte0	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte 7	Byte8
Transmit By Radio	Start Bit	Address	Order	--	--	--	--	--	Calibration Value
	0xFF	0x01	0x86	0	0	0	0	0	0x79
	EXP. FF 01 86 00 00 00 00 00 79								
	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
Receive	Start Bit	Order	Sensor Concentration Value		Gas Code	Decimal Digits	Raw Signal Ad Value		Calibration Value
	0xFF	0x86	High-Order	Low-Order	--	--	--	--	7A

3. Gas Code Description

Gas code	0x02	0x03	0x04	0x05	0x06	0x08	0x17	0x2A	0x2B
Gas type	NH3	H2S	CO	O2	H2	C2H4	HCHO	O3	SO2
Gas code	0x2C	0x2E	0x2F	0x31	0x33	0x34	0x3B	0x45	0x46
Gas type	NO2	HCl	HCN	Cl2	HF	VOC	C2H3Cl	PH3	STINK

4. Check-Sum Calculation

Checksum (Byte 8) = (take reverse (Byte 1 + Byte 2 + Byte 3 + Byte 4 + Byte 5 + Byte 6 + Byte 7)) + 1

Matters Need Attention:

- 1.This product belongs to electronic products, it is recommended to wear anti-static equipment during operation;
- 2.If stored for a long time, it is recommended to recalibrate when used again;
- 3.Prohibit unplugging sensors and changing components on the module;
- 4.Avoid contact with organic solvents, paints, high concentration gases, etc.
- 5.The module should be kept away from heat sources, avoid direct sunlight and other heat radiation.