kahan controls
HVAC - R Controls & Technologies

KC-WC2

WALL-MOUNTED CARBON DIOXIDE TRANSMITTER

OPERATION MANUAL

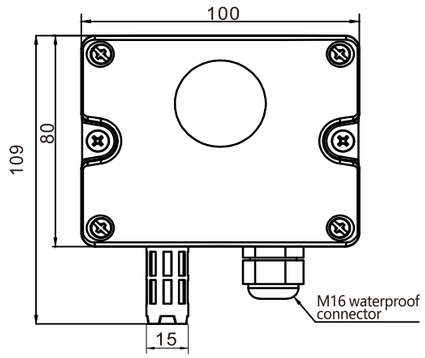


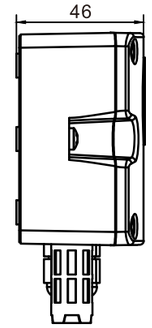
TECHNICAL PARAMETERS

Sensor	Dual-channel infrared carbon dioxide sensor		
Sensor Life	> 5 Years		
Range	0～2000ppm、0～5000ppm、0～10000ppm		
Accuracy	±(40+3%Fs)ppm @25℃		
Preheating Time	2min(available)-10min(maximum accuracy)		
Response Time	T90<120s		
Output signal	4～20mA&0～10V	4～20mA&0～5V	RS485
Power Supply Voltage	15～36VDC / 24VAC±20%		10～36VDC / 24VAC±20%
Work Environment	-10～50℃&0～90%RH (no condensation)		
Storage Environment	-20～60℃&0～90%RH (no condensation)		
Net Weight	I&V:166.9g RS485:168.7g		
Levels of Protection	IP65		
Case Material	Shell :PC; Probe case :PE		

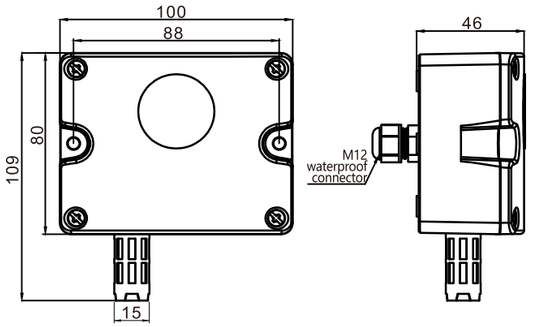
Note: When uses RS485 output and its power supply is AC, it need be isolated AC power supply !

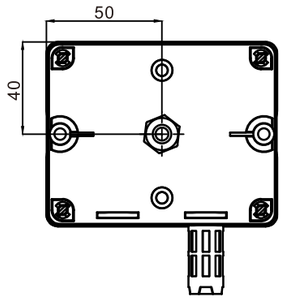
OVERALL DIMENSIONS (mm)





Side Outlet Model Dimension

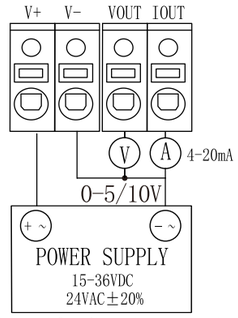




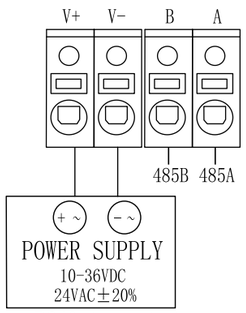
Rear Outlet Model Dimension

WIRING INSTRUCTIONS

Selection terminal outlet:



Current & voltage type output

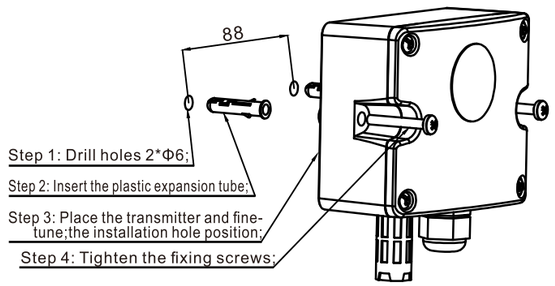


RS485 type output

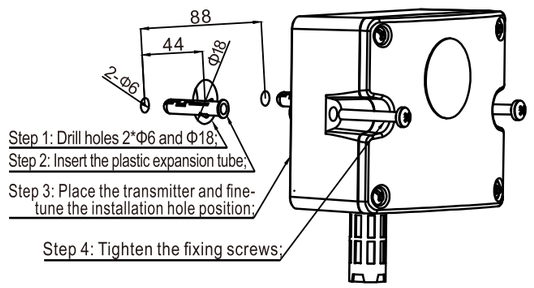
Selection direct outlet:

Harness color	Current & voltage type output	Rs485 type output
Red	V+	V+
Black	V-	V-
White	Iout	B
Green	Vout	A

INSTALLATION INSTRUCTIONS



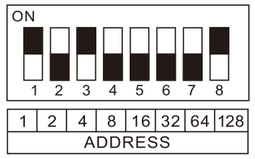
Side Outlet Model Installation



Rear Outlet Model Installation

OUTPUT INSTRUCTIONS

1. ADDRESS DIALING (RS485 output only)



Dial to the ON side, then add the subscript ADDRESS bar number accordingly.
As shown in the figure, the address is:
1+4+128=133, corresponding to 0x85 (hexadecimal)
Communication Protocol (at 485 output)

2.OUTPUT INSTRUCTIONS

2.1 Address Dialing (RS485 output only)

Communication default address: 0x01; port rate: 9600, data bit: 8, stop bit: 1, check: None, flow control: None

1)Read the holding register (function code 0x03), through which the host can read the slave register data and read one or more registers at the same time. Sequence format:

The host sends a read request sequence						
Slave Address	Function Code	Register start address	Number of Registers		CRC16	
01	03	00 02	00	01	25	CA
Slave Normal Response Sequence						
Slave Address	Function Code	Number of data bytes n	Data		CRC16	
01	03	02	01	F4	B8	53

2)Write single register (function code 0x06), the host can use this function to write data to the slave register, and can only operate on a single register. Sequence format:

The host sends a broadcast write register sequence						
Slave Address	Function Code	Register Base Address	Write Register Value		CRC16	
01	06	00 05	00	01	58	0B
Slave Normal Response Sequence						
Slave Address	Function Code	Register Base Address	Write Register Value		CRC16	
01	06	00 05	00	01	58	0B

3)Broadcast write register (function code 0x06), through which the host can write register data to all the slave on the bus, and the slave ID address is 0x00. The slave machine does not answer. Sequence format:

The host sends a broadcast write-register sequence						
Slave Address	Function Code	Register Base Address	Write Register Value		CRC16	
00	06	00 05	00	01	59	DA
Normal normal response sequence						
Slave Address	Function Code	Register Base Address	Write Register Value		CRC16	
01	06	00 05	00	01	58	0B

Note: In addition to clustering all servers on the bus, this function can directly modify the slave ID address without knowing the slave ID address, so use carefully to avoid all slave ID addresses on the bus are modified to the same address.

4)Register description

Register address	Content	Operate	Scope	Remarks
0x0002	CO2 concentration	read only	0~10000	/
0x0004	Baud rate	read-write	0~4	2 represents 4800 0/3 represents 9600 (default 0) 4 represents 19200
0x0005	Address	read-write	1~255	0x01 ~ 0xFF 0x00 can set the broadcast receiving address default: 0 x 01

2.2 Analog Output

Example 1, if the range is 5000ppm, the output type is 0~10V, and the output is 5V, the output concentration =5V / 10V * 5000ppm=2500ppm

Example 2, if the range is 5000ppm, 4-20 mA output and the output is 12 mA, the output concentration = ((12 mA-4 mA) / 16 mA) * 5000ppm=2500ppm

2.3 Zero Calibration

After the transmitter runs for a long time, the zero may drift, and the zero can be calibrated in the following method (in outdoor fresh air CO2 content is generally about 400ppm, which can be used as the reference):

Method 1 (when RS485 is the only output): Send the command:
First unlock: XX (first address) 80 00 01 FF FF CRC16 (zero calibration valid within 1 minute)
Then zero calibration: XX (first address) 80 00 14 01 90 CRC 16
Method 2: Long press the internal button of the transmitter for more than 6 seconds (stay away from breathing) and release when the light flashes.
Note: Before zero calibration, the transmitter should work continuously at 400ppm for more than 20 minutes, and after calibration and re-power on, the return value is about 400ppm.

3.PRECAUTIONS

●Before use, confirm whether the output voltage of power supply is correct, and check transmitter's positive and negative post wiring with corresponding power post, and the wiring of the output signal;
●Do not use in high dust density environment;
●When installing and using the product, avoid direct sunlight or direct contact with heat/cold sources;
●The product should be installed at least 20cm above the ground to prevent large dust particles and flocs near the surface from entering the sensor, causing sensor contamination and reduced accuracy.
● In the case of changes in the use environment and violent transportation, a longer running time is required to ensure its performance.

Q&A

Fault Phenomenon	Reason Analysis	Solution
When simulating the output, the transmitter has no output	1. The product is not fully powered; 2. Output wiring error	1. Provide correct supply power; 2. Re-wiring correctly according to the wiring diagram;
When use RS485 is output, communication is	1. The A and B communication lines are connected reversely ; 2. Address or port rate setting does not match; 3. Not communicating according to the communication protocol;	1. Check and connect it; 2. Check whether the communication test software is set correctly; check whether the product address and port rate are set to match; 3. Set up communication according to the communication protocol;

ORDER REF NO.

Code name and description			Remark
KC-WC2	Wall-mounted carbon dioxide transmitter		Model
	1	2000ppm	Range
	2	5000ppm	
	3	10000ppm	
	IV0	4～20mA&0～5V	Output
	IV1	4～20mA&0～10V	
	RS	RS485/Modbus	
		A Side outlet	Cable Outlet
		B Rear outlet	
		T Terminal outlet①	Outlet form
		D Direct outlet②	
KC-WC2 - 2 - IV1 - A - T			Selection Example

Note:
① The terminal outlet is the welding terminal on the internal circuit board, without wire factory;
② The direct outlet is the wire welded on the internal circuit board, the default 60cm outlet (other lengths of wires can be customized).