CWT CO2 sensor (RS485 type) manual

Product description

The transmitter is widely used in agricultural greenhouses, flower cultivation and other occasions that require CO2, illuminance, temperature and humidity monitoring. The input power supply, the sensor probe and the signal output in the sensor are completely isolated. Safe and reliable, beautiful appearance, easy installation.

Features This product uses a high-sensitivity gas detection probe with stable signal and high accuracy. It has the characteristics of wide measurement range, good linearity, convenient use, easy installation, and long transmission distance. It is suitable for indoor and outdoor use. The IPV65 shell is fully waterproof and can be used in various harsh environments.

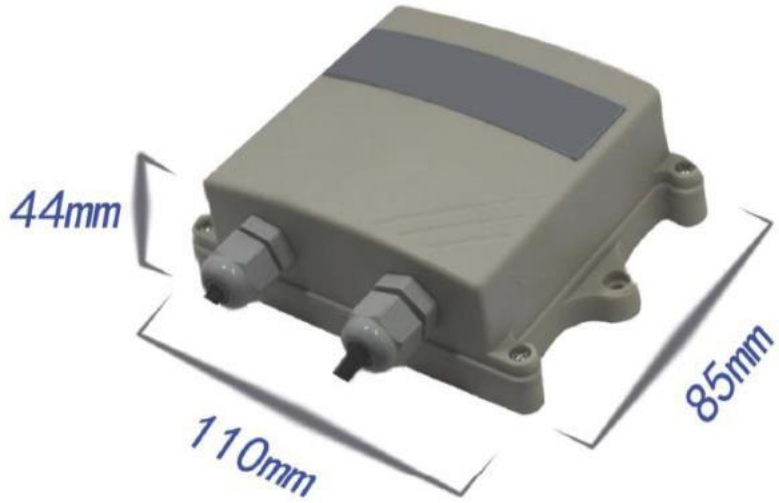
Parameters measuring

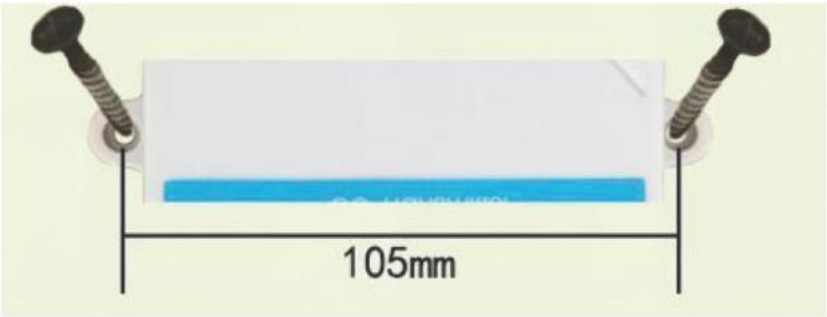
CO2	• Measuring range: 0-5000ppm • Accuracy: ±(40ppm+ 3%F·S) (25℃) • Long-term stability: <2%F·S • Non-linearity: <1%F·S • Data update time: 2s • Response time: less than 90S at 90% step change
Temperature	• Measuring range: -40℃-80℃ • Accuracy: ±5℃ (25℃) • Long-term stability: ≤0.1%℃/y • Response time: ≤15s
Humidity	• Measuring range: 0-100%RH • Accuracy: 2% within 0-50%, 3% within 50-100% • Long-term stability: ≤1%RH/y • Response time: ≤4s

Basic parameters

Power supply	DC10-30V
Max Power consumption	0.3W@24V DC
Average current	<85mA
preheating time	2min (available), 10min (maximum precision)
Temperature influence	self-contained temperature compensation
Operating environment	-10~50℃/ 0-80%RH (No condensation)
Overall dimensions	110×85×44mm

Size





Wiring

Cable color	description
Brown	Power + (DC5-30V)
black	Power -
yellow	RS485 A+
blue	RS485 B-

RS485 communication

Default parameters: 4800,n,8,1

Default device address is 1

Modbus RTU protocol

Read status registers, read function code: 0x30					
Register address (Hex)	PLC Address (decimal)	meaning	Number of bytes	content	remark
0000	40001	Humidity	2	0.1%RH	read
0001	40002	Temperature	2	0.1℃	read
0002	40003	CO2	2	1ppm	read
0033	40052	Temperature calibration value	2	0.1	read / write
0038	40057	Humidity calibration value	2	0.1	read / write
003D	40062	CO2 calibration value	2	1ppm	read / write
Parameters registers, read function code: 0x30 (0x40), write function code: 0x60					
07D0	42001	Slave ID	2		1-254
07D1	42002	baud rate	2		0: 2400 1: 4800 2: 9600 Default 4800

E.g., read CO2:

Master sends

Address	Function Code	Start Address (Hi)	Start Address (Lo)	Number of Points (Hi)	Number of Points (Lo)	Error Check (Lo)	Error Check (Hi)
0x01	0x03	0x00	0x02	0x00	0x01	0x25	0xCA

Sensor responds:

Address	Function Code	Number of byte	CO2 value	Error Check (Lo)	Error Check (Hi)
0x01	0x03	0x02	0x0B 0xB8	0xBF	0x06

CO2: BB8 H= 3000 => CO2 = 3000ppm

E.g., read Humidity, temperature, CO2 together:
Master sends

Address	Function Code	Start Address (Hi)	Start Address (Lo)	Number of Points (Hi)	Number of Points (Lo)	Error Check (Lo)	Error Check (Hi)
0x01	0x03	0x00	0x00	0x00	0x03	0x05	0xCB

Sensor responds:

Address	Function Code	Number of byte	humidity value	temperature value	CO2 value	Error Check (Lo)	Error Check (Hi)
0x01	0x03	0x06	0x01 0x67	0xFF 0xB5	0x0B 0xB8	0x33	0xDC

Temperature calculates:
When temperature less than 0, value will be responded in complement
Temperature: FF85 H= -75=> temperature= -7.5℃
Humidity: 167 H= 359 => humidity= 35.9%
CO2: BB8 H= 3000 => CO2 = 3000ppm

Set slave ID

E.g., set slave ID=2, Master sends

Address	Function Code	Start Address (Hi)	Start Address (Lo)	ID	Error Check (Lo)	Error Check (Hi)
0x01	0x06	0x07	0xD0	0x00 0x02	0x08	0x86

Sensor responds:

Address	Function Code	Start Address (Hi)	Start Address (Lo)	ID	Error Check (Lo)	Error Check (Hi)
0x01	0x06	0x07	0xD0	0x00 0x02	0x08	0x86

Set baud rate

E.g., set baud rate to 9600, Master sends

Address	Function Code	Start Address (Hi)	Start Address (Lo)	command	Error Check (Lo)	Error Check (Hi)
0x01	0x06	0x07	0xD1	0x00 0x02	0x59	0x46

Sensor responds:

Address	Function Code	Start Address (Hi)	Start Address (Lo)	command	Error Check (Lo)	Error Check (Hi)
0x01	0x06	0x07	0xD1	0x00 0x02	0x59	0x46

Enquiry slave ID

Master sends

Address	Function Code	Start Address (Hi)	Start Address (Lo)	Number of Points (Hi)	Number of Points (Lo)	Error Check (Lo)	Error Check (Hi)
0xFF	0x03	0x07	0xD0	0x00	0x01	0x91	0x59

Sensor responds:

Address	Function Code	Number of Points	address	Error Check (Lo)	Error Check (Hi)
0xFF	0x03	0x02	0x00 0x01	0x50	0x50