User Guide

Introduction

The carbon dioxide sensor is an industrial-grade sensor with high integration. The data is sent from the internal chip of the probe to the computer through the modbus-RS485 interface, and multiple probes can be connected to the bus network to realize real-time monitoring of multiple field environments. It has super stability and anti-interference ability, strong product protection performance and first grade lightning protection, which can be used in agricultural industry and other occasions.

Use Case Scenarios

It is widely used in agricultural greenhouses, intelligent buildings, workshops, warehouses, pharmacies, libraries, museums, laboratories, offices, ventilation ducts and other places where carbon dioxide concentration needs to be monitored.

Features

- High precision, wide range, good consistency.
- Standard audio interface design, easy to plug.
- Super stability and anti-interference.
- The product has strong protective performance and first grade lightning protection.

Specification

Specifications			
Model	UB-CO2-P1	UB-CO2-P2	UB-CO2-P3
Measuring Range	CO2: 400~10000ppm (Max: 0~40000ppm) Temperature: -40~70℃ Humidity: 0~100%RH	CO2: 400~2000ppm (Max: 0~40000ppm) Temperature: -10~60℃ Humidity: 0~100%RH	CO2: 400~2500ppm (Max: 400~10000ppm)
Measuring Accuracy	CO2: ±(30ppm+3%) (@400~10000ppm) Temperature: ±(0.4℃+1%) (@0~50℃) Humidity: ±3%RH(@25℃, 0~100%RH)	CO2: ±(50ppm+5%) (@400-2000ppm) Temperature: ±0.8℃(@15~35℃), ±1.5℃(@-10~60℃) Humidity: ±6%RH(@15~35℃, 20~65%RH), ±9%RH(@-10~60℃, 0~100%RH)	CO2: ±(40ppm+3%) (@400-2500ppm)
Power Supply	DC 5/12V	DC 5/12V	DC 5/12V
Max Current	267mA(@5V), 86mA(@12V)	260mA(@5V), 125mA(@12V)	498mA(@5V), 194mA(@12V)
Connector	Audio		
Dimensions	65*46*29mm		
Cable Length	3m		
Communication Protocol	RS485 Modbus RTU Protocol		
RS485 Address	0x61		
Baud Rate	1200 bit/s, 2400 bit/s, 4800 bit/s, 9600 bit/s, 19200 bit/s (default)		

Wiring Instruction

Communication protocols

1. Communication basic parameters

Communication Basic Parameter	
Coding System	8–bit binary
Data Bit	8 bits
Parity Checking Bit	none
Stop Bit	1 bit
Error Checking	CRC Check
Baud Rate	1200 bit/s, 2400 bit/s, 4800 bit/s, 9600 bit/s, 19200 bit/s (default)

2. Data Frame Format

The Modbus-RTU communication protocol is used in the following format:

- Initial structure ≥ 4 bytes in time.
- Address code: 1 byte, default 0x61.
- Function code: 1 byte, support function code 0x03 (read only) and 0x06 (read/write).
- Data area: N bytes, 16-bit data, high byte comes first.
- Error check: 16-bit CRC code.
- End structure ≥ 4 bytes of time.

Request					
Slave Address	Function Code	Register Address	No. of Registers	CRC LSB	CRC MSB
1 byte	1 byte	2 bytes	2 bytes	1 byte	1 byte

Response							
Slave Address	Function Code	No. of Bytes	Content 1	Content 1	...	Content n	CRC
1 byte	1 byte	1 byte	2 bytes	2 bytes	...	2 bytes	2 bytes

3. Register Address

Register Address				
Address	Content	Register Length	Function Code	Description of definitions
0x0028	CO2	2	03	IEEE 754 floating point
0x0032	Temperature	2	03	IEEE 754 floating point
0x0036	Humidity	2	03	IEEE 754 floating point
0x0064	Address	1	03/06	1 ~ 255 (UB-CO2-P1 unsupported)
0x0065	Baud Rate	1	03/06	5:4800, 6:9600, 7:14400, 8:19200, 9:38400, 10:115200