UBIBOT CO2 Probe Concentration Measuring and Monitoring User Guide

UBIBOT CO2 Probe Concentration Measuring and Monitoring

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Product Introduction

The carbon dioxide probe is an industrial-grade probe 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. In addition, the probe can also be directly connected to the power supply to display the measurement data through the LCD screen. The probe is designed with waterproof and breathable film, with the highest waterproof level up to IP65. 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.

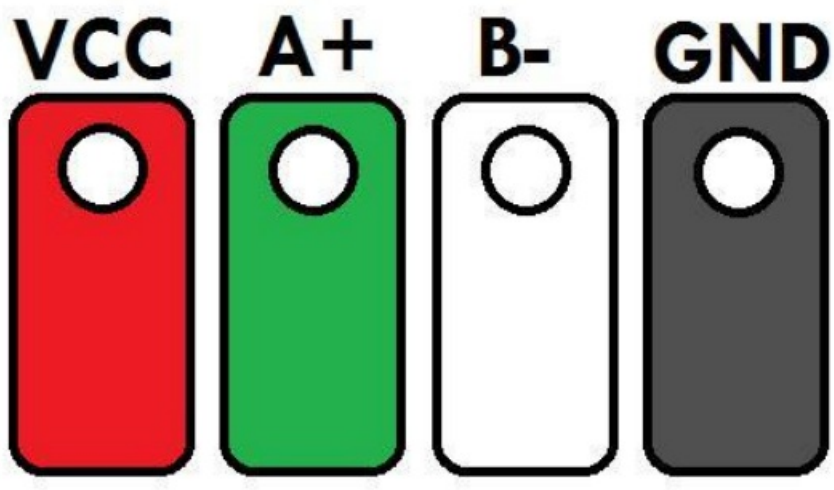
Features

1. RS485 interface communication distance up to 1200 meters.
2. High precision, wide range, good consistency.
3. Standard audio interface design, easy to plug.
4. Super stability and anti-interference.
5. Standard MODBUS RTU protocol.
6. Able to accurately measure CO2 concentration.
7. The product has strong protective performance and first grade lightning protection.

Product Specifications

Specifications	
Model	UB-CO2-P1
Working Voltage	DC5V
Measuring Range	0~10000ppm
Measuring Accuracy	**CO2:** ± (30ppm+3%) Accuracy(max) 0.1ppm
Output Interface	RS485
Communication Protocol	MODBUS RTU
Communication Address	0x61
Baud Rate	1200 bit/s,2400 bit/s, 4800 bit/s, 9600 bit/s, 19200 bit/s(optional)
Standby Current	20mA
Interface Type	Audio Interface
Dimensions	65*46*29mm
Cable Length	3m

Wiring Instruction



Communication Protocol

1. All communication circuits shall follow the master/slave mode. In this way, data can be transferred between one primary station (e.g., PC) and multiple sub-stations.No communication should start from a substation.
2. The information transmission mode is asynchronous, byte format is 1 start bit, 8 data bits, and 1 stop bit, no check.

3. Compliance with MODUBS RTU protocol standards.
4. The default baud rate is 9600 and the address is 0x61.

   *** This protocol is a master slave protocol. There is one master station and several slave stations on a bus. The communication parameters between each station must be consistent, including baud rate, data bits, check bit check method and stop bits. The address of each slave station must be different, otherwise the slave station response may conflict.**

Query Message from Master (Read)							
Address	Function Code (Read)	Starting Address Hi	Starting Address Lo	No.of Registers Hi	No.of Registers Lo	CRC16 LSB	CRC16 MSB
0x61	0x03	RegAddr_H	RegAddr_L	Data_H	Data_L	CRC16_L	CRC16_H
Response Message from Slave							
Address	Function Code (Read)	Byte Count	Data1 MSB	Data1 LSB	Data2 MSB	Data2 LSB	…	CRC16 LSB	CRC16 MSB
0x61	0x03	BytesLenth	Data1_H	Data1_L	Data2_H	Data2_L	…	CRC16_L	CRC16_H

Query Message from Master (Write)							
Address	Function Code (Write)	Starting Address Hi	Starting Address Lo	No.of Registers Hi	No.of Registers Lo	CRC16 LSB	CRC16 MSB
0x61	0x06	RegAddr_H	RegAddr_L	Data_H	Data_L	CRC16_L	CRC16_H
Response Message from Slave							
Address	Function Code (Write)	Starting Address Hi	Starting Address Lo	No.of Registers Hi	No.of Registers Lo	CRC16 LSB	CRC16 MSB
0x61	0x06	RegAddr_H	RegAddr_L	Data_H	Data_L	CRC16_L	CRC16_H

Example

1. Modify baud rate

Query Message from Master (Write)							
Address	Function Code (Write)	Starting Address Hi	Starting Address Lo	No.of Registers Hi	No.of Registers Lo	CRC16 LSB	CRC16 MSB
0x61	0x06	0x00	0x65	0x00	0x03	0xD0	0x74
Response Message from Slave							
Address	Function Code (Write)	Starting Address Hi	Starting Address Lo	No.of Registers Hi	No.of Registers Lo	CRC16 LSB	CRC16 MSB
0x61	0x06	0x00	0x65	0x00	0x03	0xD0	0x74

0x0000 : 1200bps, 0x0001 : 2400bps, 0x0002: 4800bps, 0x0003: 9600bps, 0x0004: 19200bps,
2. Read status register

Query Message from Master (Read)							
Address	Function Code (Read)	Starting Address Hi	Starting Address Lo	No.of Registers Hi	No.of Registers Lo	CRC16 LSB	CRC16 MSB
0x61	0x03	0x00	0x27	0x00	0x01	0x3D	0xA1
Response Message from Slave							
Address	Function Code (Read)	Byte Count	Data1 MSB		Data1 LSB	CRC16 LSB	CRC16 MSB
0x61	0x03	0x02	0x00		0x01	0x8C	0xDD

00 : Status register not ready
01 : Status register ready
3. Read version number

Query Message from Master (Read)							
Address	Function Code (Read)	Starting Address Hi	Starting Address Lo	No.of Registers Hi	No.of Registers Lo	CRC16 LSB	CRC16 MSB
0x61	0x03	0x00	0x88	0x00	0x01	0x0D	0x80
Response Message from Slave							
Address	Function Code (Read)	Byte Count	Data1 MSB		Data1 LSB	CRC16 LSB	CRC16 MSB
0x61	0x03	0x02	0x01		0x02	0xB8	0x1D

4. Read data

Query Message from Master (Read)							
Address	Function Code (Read)	Starting Address Hi	Starting Address Lo	No.of Registers Hi	No.of Registers Lo	CRC16 LSB	CRC16 MSB
0x61	0x03	0x00	0x28	0x00	0x06	0x4C	0x60

Response Message from Slave (CO2: 439ppm, Temperature: 27.2℃, Humidity: 48.8%)									
Address	Function Code (Read)	Byte Count	CO2_Hi MSB	CO2_Hi LSB	CO2_Lo MSB	CO2_Lo LSB	Temp_Hi MSB	Temp_Hi LSB	Temp_Lo MSB
0x61	0x03	0x0C	0x43	0xDB	0x8C	0x2E	0x41	0xD9	0xE7
Temp_Lo LSB	Hum_Hi MSB	Hum_Hi LSB	Hum_Lo MSB	Hum_Lo LSB	CRC16 LSB	CRC16 MSB			
0x2E	0x42	0x43	0x3A	0x1B	0x50	0x07			

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Documents / Resources

	UBIBOT CO2 Probe Concentration Measuring and Monitoring [pdf] User Guide CO2 Probe Concentration Measuring and Monitoring, CO2 Probe, Concentration Measuring and Monitoring, Measuring and Monitoring, Monitoring

References

- **User Manual**