INTELLIGENT
CONTROL ®

ZHT0020

Product Instructions

Chengdu Zongheng Intelligence Control Technology Co., Ltd.
Document Version V1.0

Table of Contents

1. Function introduction

1.1. Features

◆DC10~30V wide voltage;

◆Power consumption: 0.4W

◆Dual watchdogs, stable operation without downtime for 24 hours;

◆Support RS485 communication;

◆Communication baud rate: 2400; 4800; 9600; (default 4800 for appearance)

◆Communication protocol: Support Modbus RTU protocol;

◆ 01-FF device addresses can be set, 5-digit address dial switch can set 1-30 address codes;

1.2. Product Features

◆2 analog inputs;

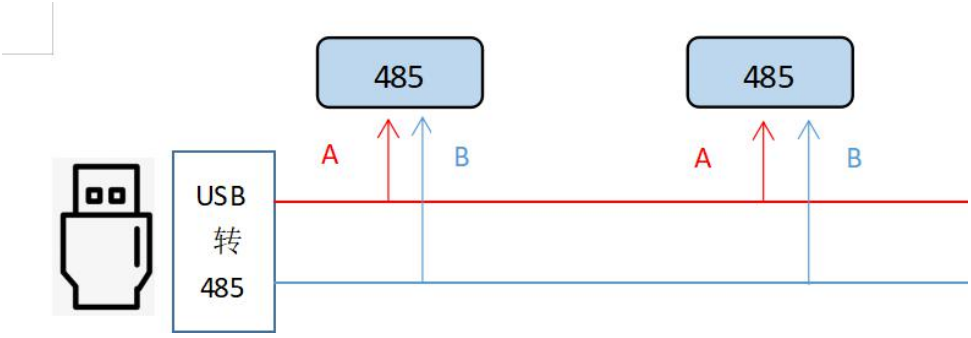
◆Support standard Modbus RTU protocol;

1.3. Parameter introduction

parameter	Description
Durability	100,000 times
Rated voltage	DC10-30V
Indicator light	Status Indicator
temperature range	Industrial grade, -40℃~60℃
size	50mm*96mm*31mm
Default communication format	4800, 1, 8, none
Data interface	RS485
Baud rate	2400; 4800; 9600;

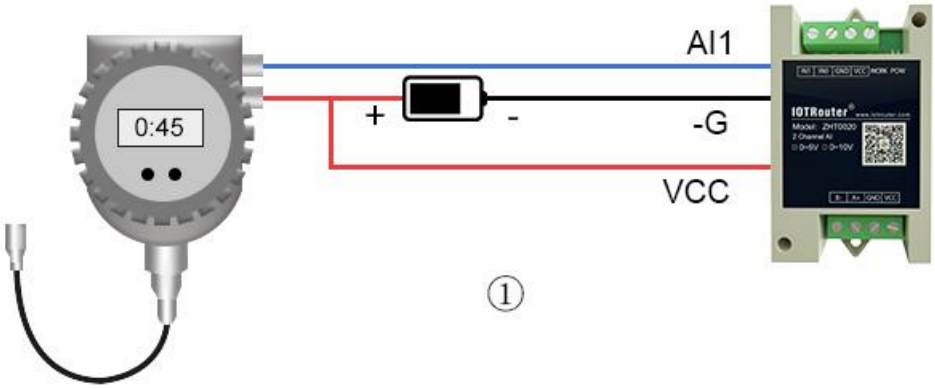
1.4. RS485 Communication Wiring

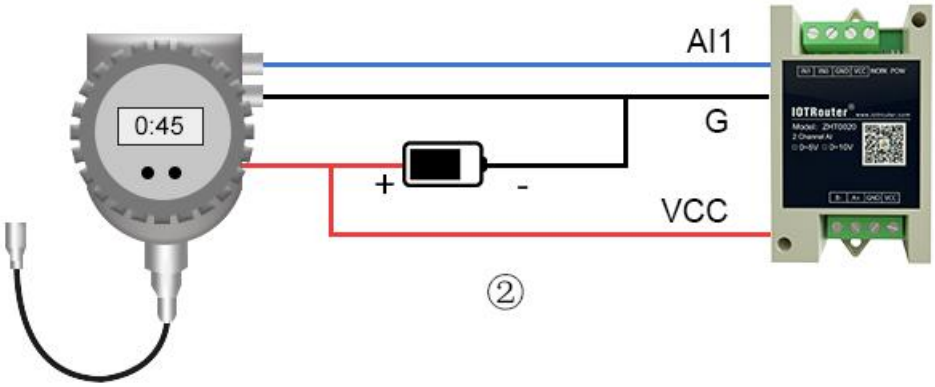
ZHT0020 contains 1 485 interface, multiple devices can be cascaded through the 485 bus. Each module can set the address, the address is from 1-FF. The longest communication distance of the 485 bus is 1200 meters, and the communication distance can be increased through the 485 relay according to the actual application environment.

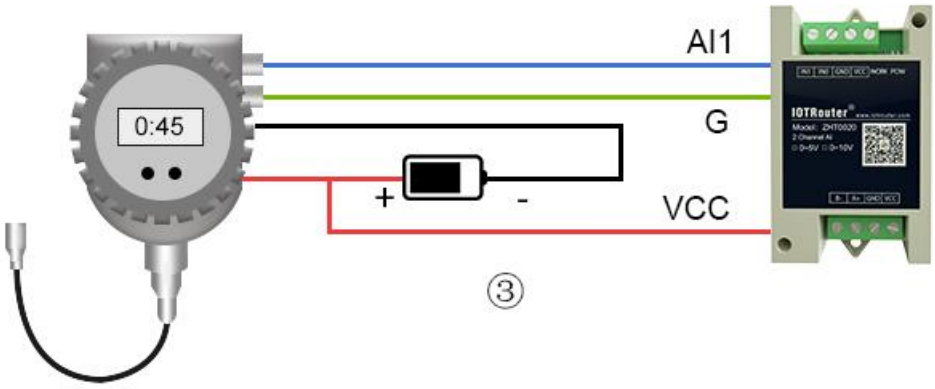


1. 4. Wiring instructions

ZHT0020 analog input supports 2-wire, 3-wire and 4-wire wiring;







2. Working Mode Functions and Settings

2. 1. Device Address

2.1.1. Device address introduction

The default device address of ZHT series is 1, and the device address is the DIP switch address;

2.1.2. Device address setting

The register of the address is 0x07D0
For example, set address 1 to address 2.
Read address request frame: 01 06 07 D0 00 02 08 86

address	Control code	Address register	new address	CRC check
01	06	07 D0	00 02	08 86

Set the address response frame:01 06 07 D0 00 02 08 86

address	Control code	Address register	new address	CRC check
01	06	07 D0	00 02	08 86

2.2. Setting the baud rate

The register of baud rate is 0x07D1;
For example, change the baud rate of the device with address 1 to 2400;
Set the baud rate request frame: 01 06 07 D1 00 00 D8 87

address	Control code	Baud rate register	Baud rate (00 is 2400, 01 is 4800, 02 is 9600)	CRC check
01	06	07 D1	00 00	D8 87

Set the baud rate response frame: 01 06 07 D1 00 00 D8 87

address	Control code	Baud rate register	Baud rate (00 is 2400, 01 is 4800, 02 is 9600)	CRC check
01	06	07 D1	00 00	D8 87

3. Description of communication protocol

Using Modbus-RTU communication protocol, the format is as follows:
Time for initial structure ≥ 4 bytes
Address code = 1 byte
Function code = 1 byte
Data area = N bytes
Error check = 16-bit CRC code
Time to end structure ≥ 4 bytes
Address code: the address of the transmitter, which is unique in the communication network (factory default 0x01).
Function code: the command function instruction issued by the host, this transmitter only uses function code 0x03 (read register number
according to).
Data area: The data area is the specific communication data, pay attention to the high byte of 16bits data first!
CRC code: two-byte check code.
Host query frame structure:

address code	function code	Register start address	Register length	Check code low bit	High bit of check code
1 byte	1 byte	2 bytes	2 bytes	1 byte	1 byte

Slave machine response frame structure:

address code	function code	Number of valid bytes	Data area	Second data area	Nth data area	Check code
1 byte	1 byte	1 byte	2 bytes	2 bytes	2 bytes	2 bytes

3.1 Analog Register Address

Register address	PLC or configuration address	content	operating
0000 H or 0040 H	40001 or 40065	The first analog value	Read only
0001 H or 0041 H	40002 or 40066	The second analog value	Read only

3.2 Communication protocol example and explanation

Read the 2-way analog value of the device address 0x01

Interrogation frame:

address code	function code	starting address	Data length	Check code low bit	High bit of check code
0x01	0x03	0x00 0x40	0x00 0x02	0xC5	0xDF

Interrogation frame

address code	function code	starting address	Data length	Check code low bit	High bit of check code
0x01	0x03	0x00 0x00	0x00 0x02	0xC4	0x0b

Reply frame (for example, read the first channel is 300, the second channel is 500)

address code	function code	Returns the number of valid bytes	Analog quantity 1	Analog quantity 2	Check code
0x01	0x03	0x04	0x01 0x2C	0x01 0xF4	0x3A 0x11

Analog quantity 1:01 2C converted to decimal is 300;

Analog quantity 2: 01 F4 converted to decimal is 500;

The corresponding relation of analog quantity is 0~5/10V, corresponding to 0~4096;

The corresponding relation of analog quantity is 4-20mA, corresponding to 655~3276;

3. Update history

date	update content	version
2021/2/5	Create a document	V1.0
2021/5/6	Modify 4-20mA correspondence	V1.1

4. Contact details

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