

Dual PT100 Temperature Transmitter to RS485 Interface Platinum Resistance Module Platinum Resistance Sensor



Features:

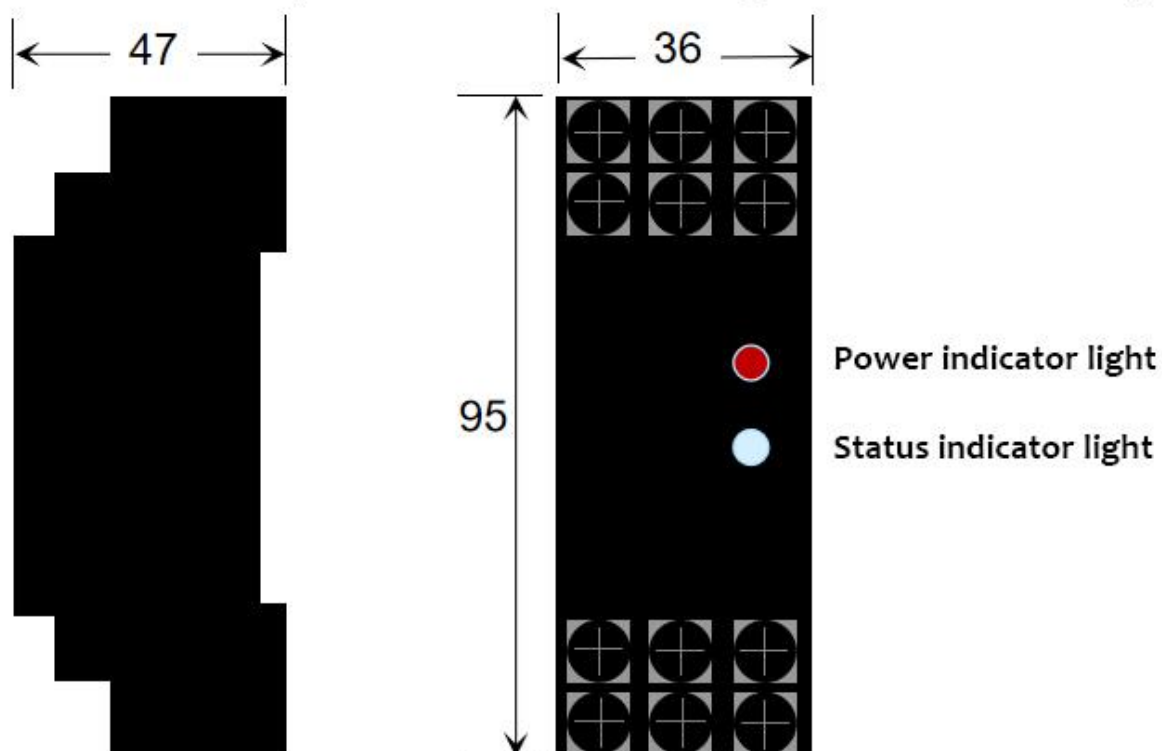
- PT100 to RS-485
- Measuring range-199~650°C
- MODBUS RTU protocol
- DC7-30V wide voltage power supply, 5V power supply
- Imported high-precision 18-bit AD chip
- Sensor disconnection detection
- Protection against reverse connection, surge, overcurrent, etc.
- Standard 35mm guide rail installation

Application Areas:

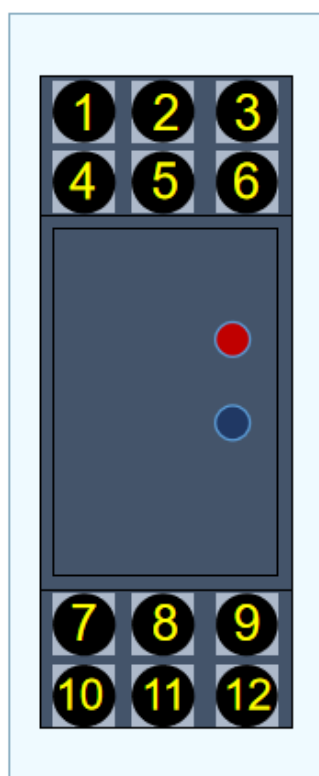
Agricultural research, food, medicine, chemical industry, meteorology, environmental protection, laboratory



Mechanical dimensions (dual-channel PT100 temperature transmitter)



Pin number	Identifier	Wiring instructions
1	RT1+	3-wire PT100 sensor: 2 wires of the same color are connected to Dual-channel PT100 temperature transmitter wiring instructions RT- respectively, and the other wire is connected to RT+
2	RT1-	
3	RT1-	
4	RT2+	2-wire PT100 sensor: connect RT+ and RT- respectively. At the same time, the two RT- wires of the transmitter need to be short-circuited.
5	RT2-	
6	RT2-	
7	Power supply positive	Positive power supply input, DC7~30V
8	Negative power supply	Negative pole of power supply input
9	5V	5V power supply input; when V+ is input, 5V can be output externally.



10	OUT	Modify register 7 to control the output 5V voltage; the isolated version is used as the 485-line ground.
11	A/D+	RS-485 communication port
12	B/D-	RS-485 communication port

Specifications:

	Project	Index
1	Measuring Range	-199~650°C
2	Measurement Accuracy	±0.2°C
3	Resolution	0.1°C
4	Temperature Probe	2-wire and 3-wire PT100 (3-wire PT100 is recommended)
5	Operating Voltage	DC7~30V
6	Working Current	<50mA
7	Communication Baud Rate	2400~115200 N 1 (default 9600)
8	Data Validation	No parity, odd and even parity
9	Communication Interface	RS-485
10	Number of Nodes	Over 100
11	Contact Address	1-247 (default 100, universal address 249) Anti-
12	Protective Function	reverse connection, over-current, surge, watchdog
13	Storage Temperature	-40~80°C
14	Operating Temperature	-40~80°C
15	Installation Method	35mm guide rail (single-way, double-way), screw fixing (three-way)
16	Product Size	Single-channel white shell 95*25*41mm (LxWxH)
		Single-channel black shell 94*24*48mm (LxWxH)
		Dual channel 95*36*47mm (LxWxH)
		Three-way 82*50*32mm (LxWxH)

1 - Register Function Description:

Register	Function	(R/W) Read and Write	Type of Data
01	Temperature value 1 way	R	Signed 16-bit integer
02	Temperature value 2 way	R	Signed 16-bit integer
03	Temperature value 3 way	R	Signed 16-bit integer
04	Data check digit (default 0/no check)	R/W	unsigned 8-bit integer
05	Device address (default 0x64 /100)	R/W	unsigned 8-bit integer
06	Baud rate (default 0x03/9600)	R/W	unsigned 8-bit integer
07	5V output control (default 0x00 / no output) Note: only applicable	R/W	unsigned 8-bit integer

	to dual-channel conventional version		
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Tip: To communicate with PLC, the register address is +40001. For example, to read the temperature value of channel 1, you should read 40002.

2- Read PT100 temperature value 1 channel (register address 01):

Send Command: 64 03 00 01 00 01 DC 3F

Command Description	64	03	00	01	00	01	DC	3F
	Device address	Function code	Register starting address high	Register start starting address low	Number of reads high quantity	Read quantity low bit	CRC-H	CRC-L

Return Data: 64 03 02 01 0C F5 D9

Command Description	64	03	02	01	0C	F5	D9
	Device address	Function code	Number of data bytes	Temperature data high bit	Temperature data low bit	CRC-H	CRC-L

Temperature value conversion: 01 0C (signed integer -32768~32767, negative value is complementing)

converted to decimal 268, and then divided by 10, that is, the current detected temperature value is 26.8°C.

If the detection value fixed output is 19999, it means there is a disconnection or other abnormality in the PT100 wiring.

3- Read PT100 temperature value 2 channels (register address 02)

Send command: 64 03 00 02 00 01 2C 3F

Command Description	64	03	00	02	00	01	2C	3F
	Device address	Function code	Register starting address high	Register start starting address low	Number of reads high quantity	Read quantity low bit	CRC-H	CRC-L

Return Data: 64 03 02 01 0C F5 D9

Command Description	64	03	02	01	0C	F5	D9
	Device address	Function code	Number of data bytes	Temperature data high bit	Temperature data low bit	CRC-H	CRC-L

Temperature value conversion: 01 0C (signed integer -32768~32767, negative value is complement)

converted to decimal 268, and then divided by 10, that is, the current detected temperature value is 26.8°C.

If the detection value fixed output is 1999.9, it means there is a disconnection or other abnormality in the PT100 wiring.

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6- Modify the data parity bit (register address 04):

Send command: 64 06 00 04 00 01 00 3E (modified to odd parity)

Command Description	64	06	00	04	00	01	00	3E
	Device address	function code	Register address high bit	Register address low bit	parameter high position	parameter low position	CRC-H	CRC-L

Return data: 64 06 00 04 00 01 00 3E

Command Description	64	06	00	04	00	01	00	3E
	Device address	function code	Register address high bit	Register address low bit	parameter high position	parameter low position	CRC-H	CRC-L

illustrate:

- ① The factory default value is 00, without verification.
- ② Change to 01 for odd parity.
- ③ Change to 02 for even parity.

00	01	02
No checksum	Odd parity	even parity

7- Modify the device address (register address 05)

Send Command: 64 06 00 05 00 01 51 FE (modify the device address from 100 to 1)

Command Description	64	06	00	05	00	01	51	FE
	Device address	function code	Register address high bit	Register address low bit	parameter high position	parameter low position	CRC-H	CRC-L

Return Data: 64 06 00 05 00 01 51 FE

Command Description	64	06	00	05	00	01	51	FE
	Device address	function code	Register address high bit	Register address low bit	parameter high position	parameter low position	CRC-H	CRC-L

illustrate:

- ① The default address is 100, which is 0x64

- ② The device address setting range is 1~247, of which 249 is the universal address.
- ③ After the device address is successfully set, there is no need to restart and it will take effect immediately.
- ④ When the device address is not clear, read the device address 249 directly. All functions are the same.

8- Modify the communication baud rate (register address 06):

Send command: 64 06 00 06 00 01 A1 FE (Change the baud rate to 2400)

Command Description	64	06	00	06	00	01	A1	FE
	Device address	function code	Register address high bit	Register address low bit	parameter high position	parameter low position	CRC-H	CRC-L

Return Data: 64 06 00 06 00 01 A1 FE

Command Description	64	06	00	06	00	01	A1	FE
	Device address	function code	Register address high bit	Register address low bit	parameter high position	parameter low position	CRC-H	CRC-L

illustrate:

- ① The factory default baud rate is 9600.
- ② After the baud rate is modified, there is no need to restart the device and it will take effect Immediately.
- ③ The default value of the register is 03. When configured with different parameters, refer to the following table corresponding to the baud rate.

01	02	03(Default)	04	05	06	07
2400	4800	9600	19200	38400	57600	115200

9- Control the OUT port to output 5V (register address 07)

Send command: 64 06 00 07 00 01 F0 3E (enable OUT port to output 5V)

Command Description	64	06	00	07	00	01	F0	3E
	Device address	function code	Register address high bit	Register address low bit	parameter high position	parameter low position	CRC-H	CRC-L

Return data: 64 06 00 04 00 01 00 3E

Command Description	64	06	00	04	00	01	00	3E
	Device address	function code	Register address high bit	Register address low bit	parameter high position	parameter low position	CRC-H	CRC-L

illustrate:

- ① Control the OUT-port output, which is only suitable for conventional dual-channel PT100 transmitters; the isolated-OUT port is the RS-485 signal ground.
- ② There is no output by default after power-on.
- ③ Can be used to drive 5V mechanical relays or solid-state relays, etc.
- ④ The load current should not exceed 300mA.

00 00	00 01
no output	Output 5V

Introduction to the use of host computer programs

STEP1 Select the port corresponding to 485 on the computer, which can be viewed through the computer device manager.

The screenshot shows the 'Communication parameter settings' panel on the left with fields for Port selection (COM1), baud rate (9600), Check Digit (No checksum), Device address (100), and register (1). The 'Open serial port' button is highlighted. In the center, three temperature channels (1, 2, and 3 way) all display -199.9 °C. On the right, the 'Transmitter parameter query and modification' panel shows fields for Device address, baud rate, and Check Digit, each with 'Read' and 'Revise' buttons. Below this is the '5V port output control' panel with 'output on' and 'output off' buttons.

If you need to modify the address, Baud rate or parity bit, Enter or select first, Then click the corresponding "Repair" "Change" button, in the status message The message displays "Operation successful" Description modification successful

STEP2 After clicking "Open Serial Port", the host computer program will query the temperature values of 3 channels at 1 second intervals.

Only suitable for dual-channel normal OUT port output 5V or stop output. standard version. control

Precautions:

1. If the data shows 1999.9, it means there is an abnormality in the sensor wiring. It is recommended to check the wiring instructions.
2. After the host computer program opens the serial port, no other operations are required and it will automatically query at intervals of about 1 second.
3. After the transmitter parameters, such as communication address, baud rate and check digit are modified, the communication parameters on the left side of the host computer must also be modified accordingly to continue communication. It may be necessary to close the serial port and reopen it.

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