Product model: HT219M Temperature Transmitter Module

Manufacturer: Nanjing Hangjia Electronic Technology Co., LTD.

Product category: Temperature transmitter Module

**Application**: receive RTD o TC signal, output 4~20mA, voltage, RS485 or HART signal

Overview

HT219M on-site display isolated temperature transmitter is used for the input of resistance temperature detector (RTD) signal and thermocouple (TC) signal and for two-wire or three-wire analog signal output (4–20mA). It is configured by the RS485 (MODBUS RTU protocol) or the HART protocol.

Features

◆ Input signal supports 2 RTDs, 10 thermocouples.
◆ Input signal is fully switchable.
◆ 4~20mA output, RS485, HART optional
◆ Thermocouple cold end compensation
◆ Response time≤700mS
◆ Input and output isolation, good anti-interference effect
◆ Cast aluminum housing, protection class IP65.
◆ Available in one-piece and split housings

Model

HT219M-☐-☐-☐

Installation Type:
A: Integrated
B: Split

Electrical Connector:
R: external thread G1/2
G: external thread M20×1.5
A: external thread 1/2NPT
R1: metallic external thread G1/2
G1: metallic external thread M20×1.5
A1: metallic external thread 1/2NPT

Communication Mode:
00: No communication
01: RS485 communication
02: HART communication
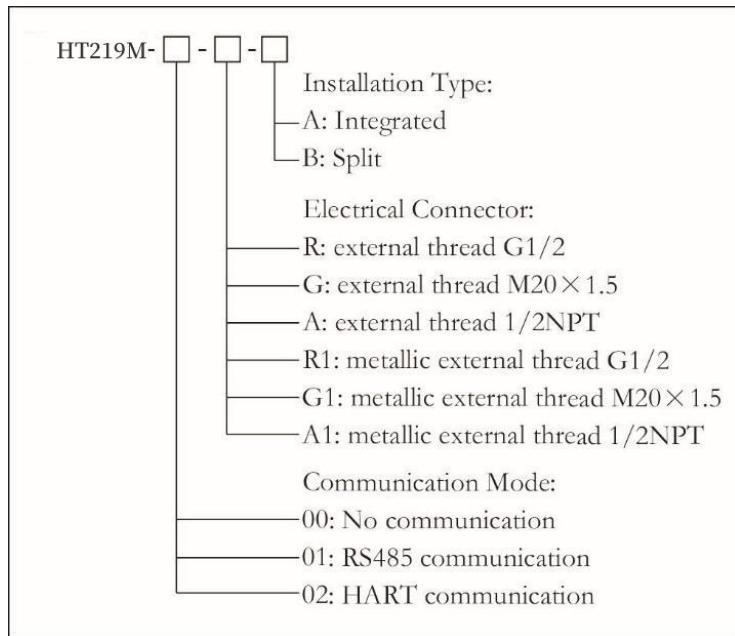
Structure Drawings (Unit: mm)

Integrated

135 / 100 / 46 / 132 / 77 / 118 / M20*1.5 / M27*2

Split

115 / 95 / 138 / 95 / φ8*4 / M20*1.5 / M20*1.5 / 96 / 62 / 77 / 68

Unit: mm
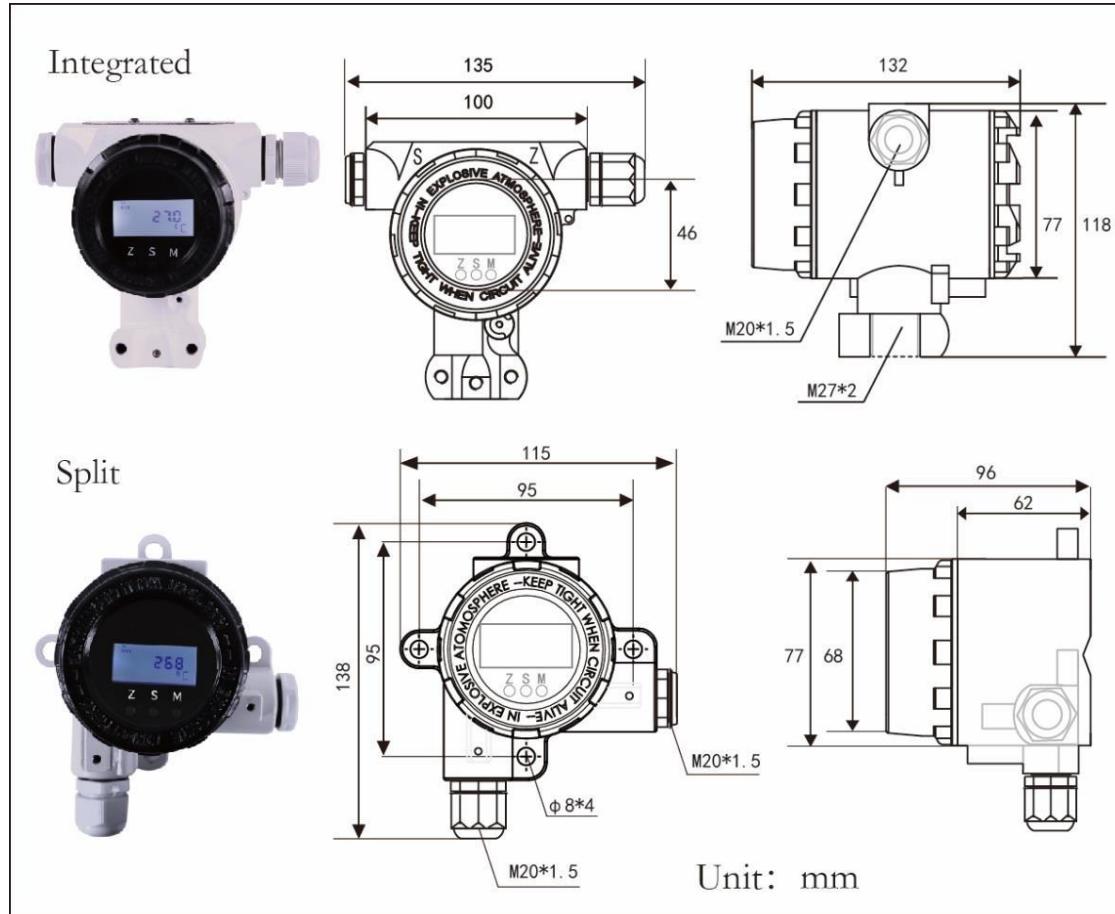
Wiring Diagram

Transmitter head part wiring description:

Disconnect the head part from the socket terminal and connect the cables according to the figure on the right.
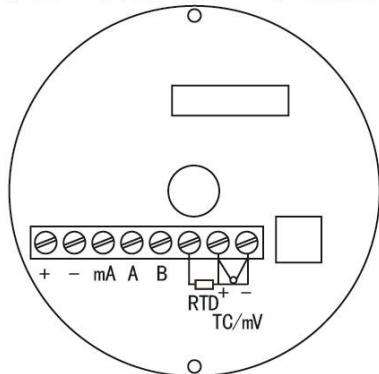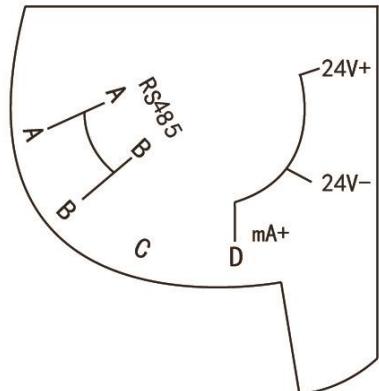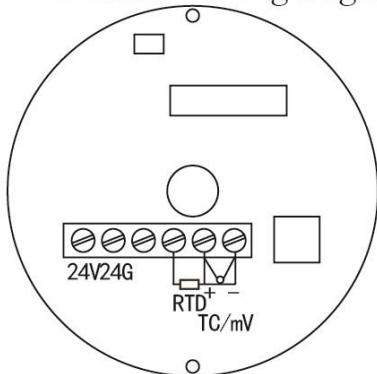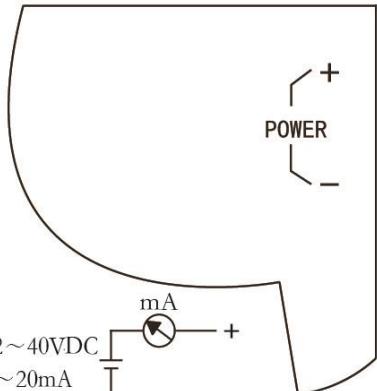
NOTE: No electrical output wiring diagram is available for the split temperature transmitter.

Technical Parameters

Input	
Input Signal	Resistance temperature detector (RTD) and thermocouple (TC)
Temperature Range of Cold Junction Compensation	-20~70℃
Compensation Precision	±1 ℃
Output	
Output Signal	4 – 20mA or 4 – 20mA adds the HART protocol
Load Resistance	RL≤(Ue- 12)/0.022
Output Current for Upper/Lower Limit Overflow Alarm	IH=21mA 、IL=3.8mA
Output Current for Input Break Alarm	Settable
Power Supply	
Power Supply Voltage	DC12~40V
Other Parameters	
Transmission Precision (20℃)	0. 1%FS
Thermal Drift	0.0075%FS/℃
Response Time	700ms reaching 90% of the final value
Environment Temperature	-20~70℃
Insulating Strength (between input and output)	1500 Vrms (1 min, no spark)
Insulation Resistance (between input and output)	≥ 100MΩ (500VDC)
Protection Class	IP65, anti-dust and anti-spray
Connection	M27×2 internal thread (integrated)
EMC	Comply with the industry equipment application requirements in GB/T18268 (IEC 61326- 1).

Input Type and Transmission Precision:

Model	Symbol	Signal Type	Measurement Range	Minimum Measurement Range	Conversion Accuracy (larger value)
Resistance temperature detector (RTD)	Pt100	Pt100	-199.9~ 850.0C	20℃	±0. 1%range Or±0.2℃
	CuS0	Cu50	-50.0~150.0℃	20℃	±0. 1%range Or±0.2℃
Thermocouple (TC)	rC-b	B	400~1800℃	500℃	±0. 1%range Or±1.5℃
	rC-E	E	- 100~1000℃	50℃	±0. 1%range Or±0.5℃
	rC-J	J	- 100~1200℃	50℃	±0. 1%range Or±0.5℃
	rC-K	K	- 180~1372℃	50℃	±0. 1%range Or±0.5℃
	rC-n	N	- 180~1300℃	50℃	±0. 1%range Or±0.5℃
	rC-r	R	-50~1768℃	500℃	±0. 1%range Or±1.5℃
	rC-S	S	-50~1768℃	500℃	±0. 1%range Or±1.5℃
	rC-t	T	-200~400℃	50℃	±0. 1%range Or±0.5℃

NOTE:

i. Environment temperature for measuring the above precision is 20℃±2℃.

ii. The output precision "%" is the allowance of the set range.

iii. When measuring the TC, the allowance of cold junction compensation should be considered. The internal allowance of cold junction compensation is smaller than or equal to ±1°C.

Operations

Button Descriptions

From the left to right, the buttons are the increase button, decrease button and set button respectively.

Increase button (Z)	Used for increasing or modifying the current flickering position. Press and hold the button to move the modification position to left.
Decrease button (S)	Used for decreasing or modifying the current flickering position. Press and hold the button to move the modification position to right.
Set button (M)	Used for switching among menu parameters. After modifying and saving the menu, press and hold the button to back to the measurement value screen.

Primary Menu Settings

In the working status, press the Set button to display parameters on the screen and then press the Increase or Decrease button to set the parameter.

Symbol	Parameter	Range	Description	Factory Default Value
Loct	Lock	0~10000	Electronic lock Lock=132: Enter the secondary menu.	132
dIS1	dIS1	0~2	Digital display for the middle row dIS1=0: measurement value dIS1=1: output current value dIS1=2: output percentage	0
dIS2	dIS2	0~2	dIS2=0: Only display the digital in the middle row. dIS2=1: Display the digital of the middle and bottom row. dIS2=2: display all	2

Secondary Menu Settings

In the working status, press the Set *button* to display parameters on the screen. When the Lock=132, press and hold the Set button for 3 seconds to enter the secondary menu, and then press the Increase or Decrease button to set the parameter.

Symbol	Parameter	Range	Description	Factory Default Value
P_n	Pn	Refer to the Input Type Table.	Sensor type	Pt100
Unit		°C, F, R, K,	Temperature unit: °C: Celsius temperature	
dP	dP	0~2	Decimal Place dP=0: No decimal place. dP=1: The decimal point is in the tens. dP=2: The decimal point is in the hundreds.	1
FK	FK	0.0~5.0	Damping coefficient	0
PL	PL	0~1000	Lower range limit	0
PH	PH	0~1000	Upper range limit	1000
oFEt	oFEt	- 100~100	Measurement value offset	0
CJC	CJC	-50~50	Modification of cold junction temperature	0
ARm	ARm	3.8~21.0	Alarm output value	21.0
dir	Dir	0~1	Current output direction diR=0: output 4 – 20mA diR=1: output 20 – 4mA	0
Addr	Addr	1~247	Communication stack number (248 is the fixed stack number.)	1
bAUd	Baud	1200,2400,4800,9600,19200	Baud rate	9600
bitS	Bits	8N1, 8N2, 8O1, 8O2, 8E1, 8E2	Communication status bits	8N1

Instrument Communication Settings

This instrument can communicate to the master. The master can achieve the parameter setting, data capture and remote monitoring for this slave.

Technical Indications:

Communication Mode:

    Serial communications: RS485 and RS232.

    Baud rate: 1200 – 19200bps

    Data format: One start bit, eight data bits and one stop bit.

Refer to the following table for detailed parameters.

No.	Parameter Name	Communication Address	Type	Value Range	Remark
1	Software version	0	R		
2	Internally reserved				
3	Internally reserved				
4	Measurement value (16 digits, including symbols)	5	R		One decimal place
5	Current value (16 digits, including symbols); Wrote as the fixed current output.	6	R/W	3.800~21.000	Three decimal place
6	Output percentage (16 digits, including symbols)	7	R		One decimal place
7	Cold junction temperature (16 digits, including symbols)	8	R		One decimal place
8	Temperature sensor type	9	R/W	0～9	Table 1
9	Lower range limit of temperature	10	R/W		One decimal place
10	Upper range limit or temperature	11	R/W		One decimal place
11	Offset value	12	R/W	- 100.00~100.00	Two decimal place
12	Temperature unit	13	R/W	32～37	Table 2
13	Damping time	14	R/W	0.0~5.0	One decimal place
14	Current output direction	15	R/W	0～1	
15	Content displayed on the main digital	16	R/W	0～2	
16	Displayed content	17	R/W	0～2	
17	Decimal Place	18	R/W	0～2	
18	Current zero adjustment	19	R/W	3.800~21.000	Three decimal place
19	Current full adjustment	20	R/W	3.800~21.000	Three decimal place
20	Modification of cold junction temperature	21	R/W	-50.0~50.0	One decimal place

21	Alarm output value	22	R/W	3.8~21.000	Three decimal place
22	Electronic lock	23	R/W	0~10000	

Register Address Table Description

   i.   All data should be the integers with symbols (two bytes).

  ii.   In the communication transmission, all data with decimal points should be replaced by the integer. For example, use 1000 to replace 1.000 or use 279 to replace 27.9 (omitting the decimal point)

 iii.   During the transmitting, all data in the register should be the hexadecimal numbers, and the high byte shall be transmitted first, then the low byte. For example, when transmitting 279, transmit 01H first, and then 23H.

 iv.   Measurement value reading. For example, if the measurement value is 124, the input signal is a RTD or TC and the decimal point is in the tens, the value read is 12.4

Table 1			**Table2**	
0	Cu50		32	℃
1	PT100		33	F
2	B		34	R
3	E		35	K
4	J		36	Ohm
5	K		37	mV
6	N			
7	R			
8	S			
9	T			

Certification Information

Factory certification	
Certification organization	CQM
Quality management system	ISO 9001:2015
Certification scope	Research, development and manufacture of pressure transmitter and temperature transmitter
Certificate No.	00223Q21711R1S