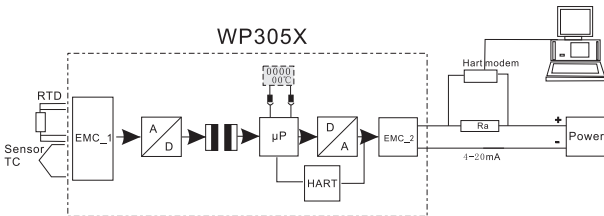


WP-305 series intelligent temperature transmitter round card

—WP-305A/B/C/D1, WP-305A/B/C/D2, WP-305A/B/C/D3
Working principle

The temperature of the industrial field can be inputted into WP-305X by thermal resistance or thermocouple transducer and then converted into the corresponding temperature measured value by microprocessor after “analog-digital conversion”. Then the microprocessor will transmit the measured value to the highlighted LCD real-time display and convert it to the corresponding 4-20mA current signal output according to the proportion through “digital-analog conversion”. The information of the transmitter (including the measured value and diagnostic messages etc.) can be read in real time by HART communication and the transmitter can be debugged.



Characteristics

- Accord with the standard industrial design specifications.
- The two-wire system transmitter, which is based on current loop power supply, can effectively reduce the wiring costs and power consumption and enhance the anti-interference ability.
- HART communication protocol.
- 4-20mA output.
- While connecting to the thermal resistance transducer, it has short-circuit and open-circuit monitoring function; while connecting to the thermocouple transducer, it has open-circuit monitoring function.
- By using the 3 built-in operating buttons together with the highlighted LCD display, the parameters of the transmitter can be set locally conveniently. In addition, the remote parameter configuration of the transmitter can be realized easily by HART modem.
- The rotatable LCD display enhances the flexibility of transmitter installation and displays the percentage of current measured value in the full scale, current measured value and its unit and the sensor type and the diagnostic messages of transmitter etc.
- Support all the transducers conforming to IEC751 and IEC584.

Application

- Metallurgical and steel industry
- Petrochemical industry
- Machine manufacturing industry
- Food and beverage industry
- Municipal water and sewage treatment industry
- Little textile/sugaring/papermaking/glass and other industries



Technical parameters

Input

Sensor type:

- WP-305A/B/C/D1: Pt100, Pt1000, Cu50, Cu100
- WP-305A/B/C/D2: S, R, B, K, N, E, J, T, WRe3-25
- WP-305A/B/C/D3: Pt100, Pt1000, Cu50, Cu100
S, R, B, K, N, E, J, T, WRe3-25

Accept the user's designation

Connection modes

- WP-305A/B/C/D1: A two/three/four-wire system thermal resistance transducer
- WP-305A/B/C/D2: A thermocouple transducer and a thermal resistance transducer (three-wire) can work as the cold junction compensation or set the fixed cold-junction temperature to compensate without connecting to the thermal resistance transducer, or use the built-in thermal resistance transducer of the transmitter to conduct cold junction compensation (The compensation precision will effect the final measurement accuracy.)
- WP-305A/B/C/D3: adopt the connection mode of WP-3051 or WP-3052 according to the needs.

Measurement range

Appendix 1: List for the inputted sensor types and accuracies

Response time

≤ 250ms with sensor short-circuit and open-circuit monitoring

Output

Two-wire system 4-20mA

HART

Load resistance Ra

$R_a \leq (U_s - 14.7V) / 0.024A$, U_s is the loop voltage

Sensor faults

Short circuit: accept the user's designation (3.5~3.75mA)

Open circuit: accept the user's designation (21~23mA)

System faults

Can be set as 3.2mA or 24mA

Measurement accuracy

Accuracy (Digital measurement accuracy)

See appendix 1: List for the inputted sensor types and accuracies

Analog output accuracy

0.025% full scale

Long term drift

The first year <0.035% full scale

Temperature effects

See appendix 2: Effects of ambient temperature

Rated operating conditions

Ambient temperature

-40~85℃ -20~60℃ (Intrinsic safety type)

Storage temperature

-40~85℃

Electromagnetic compatibility

GB/T 17626, Grade 3

Design

Shell

Plastic

Size

See the following figure

Connection of sensor

Display and control

Size of display

33×23mm

Display precision

5 digits

Unit (Switchable)

℃ or ℉

Settings

3 buttons of panel or HART handle and configuration software which is compatible with HART protocol

Power supply

Loop voltage 15~36V DC

Working current ≤3.2mA

Hardware and software requirements

If using PC, debug and configure the transmitter via HART.

Hardware

PC with RS232/USB interface

HART modem

Software

Testing software for WP intelligent temperature transmitter

Communication

HART connecting load

250~500Ω

Twin-core shield

≤3km

Multicore shield

≤1.5km

Protocol

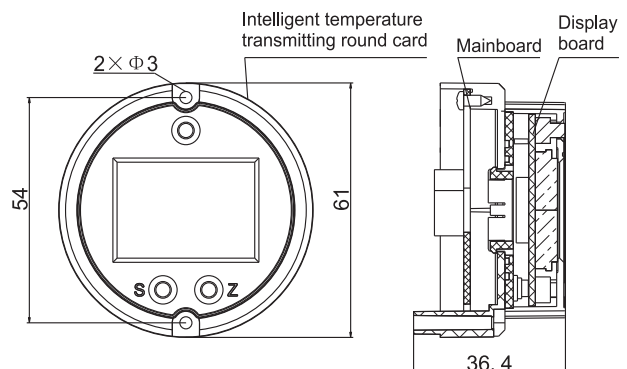
HART protocol 5.2

Default setting of transmitter

Damp

0.0S

Dimensional drawing for two-wire system HART intelligent round card



Type spectrum table for WP-305 intelligent temperature transmitter round card

Model	Product description
WP-305	Intelligent temperature transmitter round card
Code	Round card type
A	Two-wire system HART intelligent temperature transmitter round card
B	Two-wire system intelligent temperature transmitter round card
C	Rs485 intelligent temperature transmitter round card
D	Wireless intelligent temperature transmitter round card (including transmitting board)
Code	Sensor type
1	Thermal resistance (The corresponding codes of sensor model are 01~04, 14.)
2	Thermocouple (The corresponding codes of sensor model are 05~13, 14.)
3	Full input (thermal resistance or thermocouple, the corresponding codes of sensor model are 01~14.)
Code	Sensor model ^①
01	Pt100
02	Pt1000
03	Cu50
04	Cu100
05	B
06	E
07	J
08	K
09	N
10	R
11	S
12	T
13	WRe3-25
14	Designated by user
Code	Anti-explosion grade
S	Standard type
I	Intrinsic safety type Exia II CT6
Code	Range ^①
1	The default range: thermal resistance and full input model are Pt100:0~100℃; for thermocouple model, see (Appendix 1: List for the inputted sensor types and accuracies)
2	User-defined
Code	Range ability ^①
	Filled by the users (For example: -200℃~850℃), when the sensor model is designated by users, The writing form is: "Sensor model: range" For instance: Pt100: -200℃~850℃.
*If needing aluminium alloy installation shell, please specify separately.	
Example	
<p>1. WP-305A1-01S2(-200℃~850℃)</p> <p>It means the two-wire system HART intelligent temperature transmitting round card, with user-defined range -200℃~850℃. The matched sensor is thermal resistance transducer with range Pt100:-200℃~850℃ and anti-explosion grade is intrinsic safety type Exia II CT6.</p>	

*Note:

① WP-305 series has covered the sensors (model: 01~13). While the users designating the sensor type and range ability, it only directs at the default configuration when leaving the factory.