

General Specifications

YTA70P Temperature Transmitter



GS 01C50C05-01EN

The YTA70P is a Panel mount type of temperature transmitter that accepts thermocouples, RTDs, ohms or DC millivolts input and converts it to a 4 to 20 mA DC signal for transmission. The YTA70P conforms to the standard DIN rail mounting. The YTA70P supports HART® communication protocol.

HART protocol revision is HART 7, and it features long tag number up to 32 characters, enhanced burst mode and event notification, and command aggregation function.



■ STANDARD SPECIFICATIONS

Accuracy

See Table 1.

Cold Junction Compensation Accuracy (For T/Cs only)

±1°C (±1.8°F)

Ambient Temperature Effects

See Table 1.

Power Supply Effects

±0.005% of FS per Volt

EMC Conformity

EN63126-1 ClassA, Table2 EN61326-2-3

EU RoHS Directive

Applicable standard: EN IEC 63000

Input Type, Span and Range

Selection from thermocouples (T/Cs), 2-, 3-, and 4-wire RTDs, ohms and DC millivolts. See Table 1.

Maximum Zero offset

±50% of selected maximum value

Input Resistance (for thermocouples, mV)

10 MΩ, or 3 kΩ at power-off

Input Lead Wire Resistance (for RTDs, ohms)

5 Ω per wire or lower (up to 50 Ω per wire is configurable with reduced measurement accuracy)

Sensor Burnout

High (NAMUR NE43 upscale), Low (NAMUR NE43 downscale) or value within 3.5 to 23 mA

Output

Two wire 4 to 20 mA DC

Response Time

1 to 60 seconds programmable

Ambient Temperature Limits

(Option code may affects limit)
-40 to 60°C (-40 to 140°F)

Ambient humidity limits

0% to 95% RH (non-condensation)

Isolation

Input/output isolated to 1500 V AC.

Supply & Load Requirements:

Voltage

8 to 35 V DC for operation
(8 to 30 V DC for Intrinsically safe type)
13.8 to 35 V DC for digital communication

Load Resistance

0 to (E-8)/0.0236 [Ω]
where E is power supply voltage.
250 to 600 Ω for digital communication

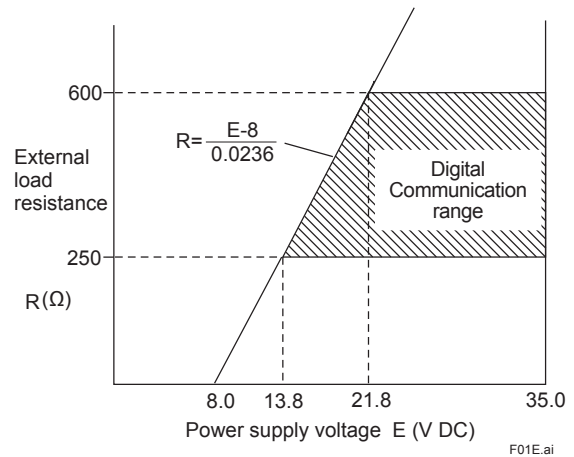


Figure 1. Relationship Between Power Supply Voltage and External Load Resistance

Enclosure Material

Polycarbonate

Mounting

DIN rail: DIN EN 60715 - 35 mm

Wire size

0.13...2.08 mm² / AWG26...14 stranded wire

Weight

150 g (0.33 lb)

MODEL AND SUFFIX CODES

Model	Suffix Codes	Descriptions																												
YTA70P	Temperature Transmitter (Panel Mount Type)																												
Output Signal	-J	4 to 20 mA DC with digital communication (HART 7 protocol)																												
–	A	Always A																												
Optional Specifications	/V2S*1	<p>ATEX, FM, IECEx, and CSA Intrinsically safe Approval ATEX Intrinsically safe Approval Applicable Standards: EN IEC 60079-0, EN 60079-11 Certificate: DEKRA 14ATEX0106 X II 1 G Ex ia IIC T6...T4 Ga II 2 D Ex ia IIIC Db Amb. temp.: For EPL Ga: The relation between ambient temperature range and temperature class:</p> <table border="1"> <thead> <tr> <th rowspan="2">Temperature Class</th> <th>Pi= 0.84W</th> <th>Pi= 0.75W</th> </tr> <tr> <th>Ambient temperature range</th> <th>Ambient temperature range</th> </tr> </thead> <tbody> <tr> <td>T6</td> <td>-40°C to +40°C</td> <td>-40°C to +45°C</td> </tr> <tr> <td>T5</td> <td>-40°C to +55°C</td> <td>-40°C to +60°C</td> </tr> <tr> <td>T4</td> <td>-40°C to +85°C</td> <td>-40°C to +85°C</td> </tr> </tbody> </table> <p>For EPL Db: The surface temperature of the outer enclosure is + 20 K above the ambient temperature, determined without a dust layer. Ambient temperature range: -40 to 85°C Supply and output circuit:Ui=30V, Ii=120mA, Pi=0.84W or 0.75W, Ci=1nF, Li=0μH Sensor circuit: Uo=9.6V, Io=28mA, Po=67.2mW, Co=3.5μF, Lo=35mH</p> <p>FM Intrinsically safe Approval Applicable Standards: Class 3600, Class 3610, Class 3611, Class 3810, ANSI/ISA-60079-0, ANSI/ISA-60079-11 Intrinsically Safe for Class I, Division 1, Groups A, B, C & D Class I, Zone 0, AEx ia, Group IIC, T6 Amb. Temp.: -40 to 60°C Entity Parameters: V Max=30V, I Max=120mA, Pi=0.84W, Ci=1nF, Li=10μH Vt=9.6V, It=28mA, Po=67.2mW, Ca=3.5μF, La=35mH</p> <p>IECEx Intrinsically safe Approval Applicable Standards: IEC 60079-0, IEC 60079-11 Certificate: IECEx DEK 14.0058X Ex ia IIC T6...T4 Ga Ex ia IIIC Db Amb. temp.: For EPL Ga: The relation between ambient temperature range and temperature class:</p> <table border="1"> <thead> <tr> <th rowspan="2">Temperature Class</th> <th>Pi= 0.84W</th> <th>Pi= 0.75W</th> </tr> <tr> <th>Ambient temperature range</th> <th>Ambient temperature range</th> </tr> </thead> <tbody> <tr> <td>T6</td> <td>-40°C to +40°C</td> <td>-40°C to +45°C</td> </tr> <tr> <td>T5</td> <td>-40°C to +55°C</td> <td>-40°C to +60°C</td> </tr> <tr> <td>T4</td> <td>-40°C to +85°C</td> <td>-40°C to +85°C</td> </tr> </tbody> </table> <p>For EPL Db: The surface temperature of the outer enclosure is + 20 K above the ambient temperature, determined without a dust layer. Ambient temperature range: -40 to 85°C Supply and output circuit:Ui=30V, Ii=120mA, Pi=0.84W or 0.75W, Ci=1nF, Li=0μH Sensor circuit: Uo=9.6V, Io=28mA, Po=67.2mW, Co=3.5μF, Lo=35mH</p> <p>CSA Intrinsically safe Approval Certificate: 70009864 Applicable Standards: CAN/CSA-C22.2 No.0-10, CSA Std C22.2 No.142, CSA Std C22.2 No.157 CAN/CSA-C22.2 No.60079-0, CAN/CSA- C22.2 E60079-11, Class I, Division 1, Groups A, B, C & D, Ex ia IIC, Ga UL Std No. 913 Ed. 8 , UL Std No. 916 Ed. 4, UL 60079-0 Ed 5, UL Std No. 60079-11 Ed. 6 Class I, Division 1, Groups A, B, C & D Class I, Zone 0, AEx ia IIC, Ga Temperature Class: T6 Amb. Temp.: -40 to 60°C Input entity parameters: Ui (Vmax)=30V, Ii (I max)=120mA, Pi=0.84W, Ci=1nF, Li=10μH Output entity parameters: Uo (Uoc)=9.6V, Io (Isc)=28mA, Po (Pmax)=67.2mW, Co (Ca)=3.5μF, Lo (La)=35mH</p>	Temperature Class	Pi= 0.84W	Pi= 0.75W	Ambient temperature range	Ambient temperature range	T6	-40°C to +40°C	-40°C to +45°C	T5	-40°C to +55°C	-40°C to +60°C	T4	-40°C to +85°C	-40°C to +85°C	Temperature Class	Pi= 0.84W	Pi= 0.75W	Ambient temperature range	Ambient temperature range	T6	-40°C to +40°C	-40°C to +45°C	T5	-40°C to +55°C	-40°C to +60°C	T4	-40°C to +85°C	-40°C to +85°C
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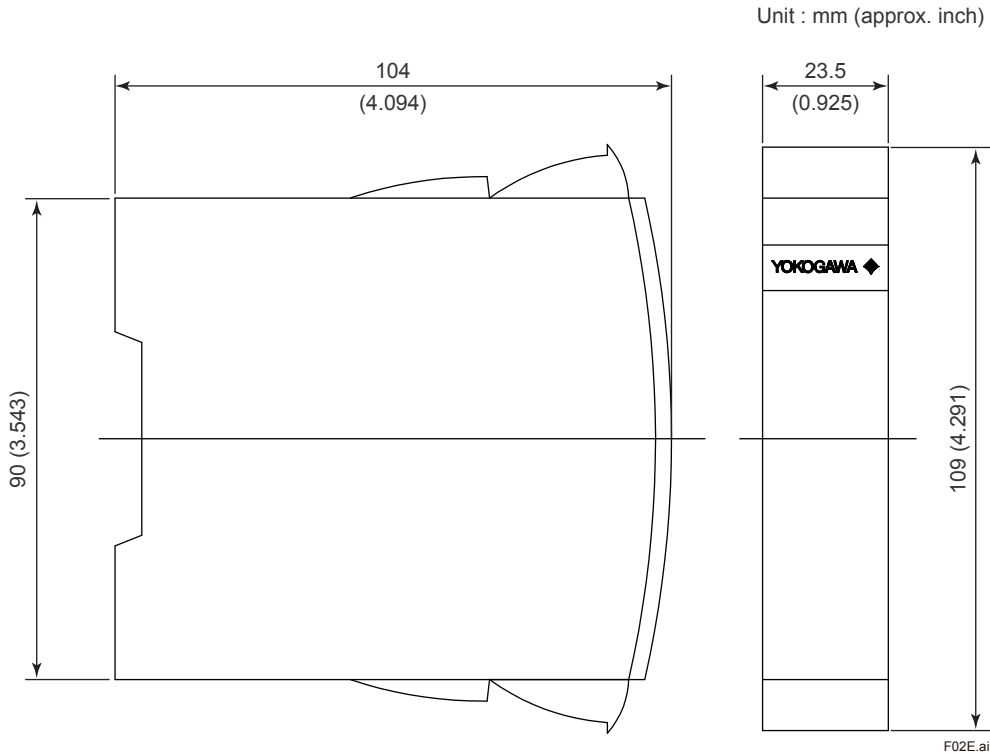
*1: Even if the option code is the same, the explosion-proof specifications (Ex marking, Amb.temp., etc.) are different, so please check the specifications when ordering.

Table 1. Input type, range and accuracy

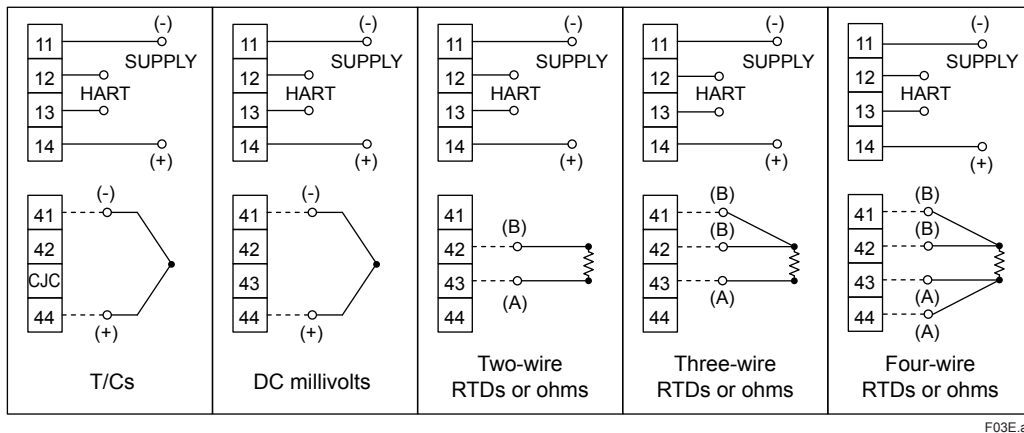
Sensor Type	Standard	Input range		Minimum Span		Accuracy (value whichever is greater)	Temp. effects/10°C (value whichever is greater)	
		°C	°F	°C	°F			
<T/Cs>								
B	IEC584	400 to 1820	752 to 3308	200	360	±0.1% of span or ±1.0°C	±0.05% of span or ±1.0°C	
E		-100 to 1000	-148 to 1832	50	90			
J		-100 to 1200	-148 to 2192	50	90	±0.1% of span or ±0.5°C	±0.05% of span or ±0.25°C	
K		-180 to 1372	-292 to 2502	50	90			
N		-180 to 1300	-292 to 2372	100	180	±0.1% of span or ±1.0°C	±0.05% of span or ±1.0°C	
R		-50 to 1760	-58 to 3200	200	360			
S		-50 to 1760	-58 to 3200	200	360	±0.1% of span or ±0.5°C	±0.05% of span or ±0.25°C	
T		-200 to 400	-328 to 752	50	90			
L		DIN43710	-100 to 900	-148 to 1652	50	90	±0.1% of span or ±1.0°C	±0.05% of span or ±1.0°C
U			-200 to 600	-328 to 1112	75	135		
Lr	GOST 3044-84	-200 to 800	-328 to 1472	50	90	±0.1% of span or ±1.0°C	±0.05% of span or ±1.0°C	
W3	ASTM	0 to 2300	32 to 4172	200	360			
W5	E988-90	0 to 2300	32 to 4172	200	360			
<RTDs>								
Pt100	IEC751	-200 to 850	-328 to 1562	10	18	±0.1% of span or ±0.1°C	±0.05% of span or ±0.05°C	
Ni100	DIN43760	-60 to 250	-76 to 482	10	18			±0.1% of span or ±0.2°C
DC millivolts [mV]		-800 to 800 [mV]		2.5 [mV]		±0.1% of span or ±0.01mV	±0.05% of span or ±5µV	
Resistance [Ω]		0 to 7000 [Ω]		25 [Ω]		±0.1% of span or ±0.1Ω	±0.05% of span or ±0.05Ω	

Note: In T/Cs type B, the minimum range value can be set from 0°C. However, the accuracy between 0 to 400°C is not specified.

■ DIMENSIONS



● Wiring Diagram



< Ordering Information >

Specify Model, suffix, and optional specification codes when ordering. If necessary, also specify the followings;

1. Sensor type. For RTDs and ohms input, specify the number of wire together.
2. Calibration range and unit.
3. Sensor Burnout: High or Low
4. Response time: An integral number from 1 to 60.

Model YTA70P will be shipped with the following settings from the factory if not specified upon ordering;

- Sensor type: Pt100, 3-wire
- Range: 0 to 100 °C
- Sensor Burnout: High
- Response time: 1 s

These setting contents are listed in a main body label.

< Reference >

HART; Trademark of the HART Communication Foundation.