General Specifications

YTA70P
Temperature Transmitter

YTA Series

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
CE: EN61326-1, EN61326-2-3, EN 55011
KC: Korea Electromagnetic Conformity standard. Class A
RCM: EN61326-1, EN 55011

EU RoHS Directive
Applicable standard: EN 50581

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

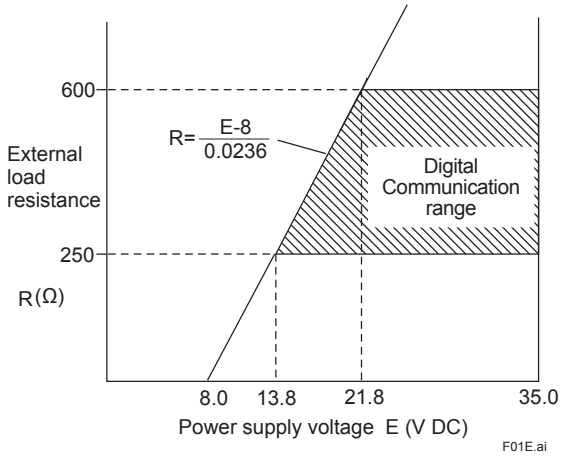


Figure 1. Relationship Between Power Supply Voltage and External Load Resistance

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**	ATEX, FM, IECEx, and CSA Intrinsically safe Approval ATEX Intrinsically safe Approval Applicable Standards: EN 60079-0:2012+A11:2013, EN 60079-11:2012 Certificate: DEKRA 14ATEX0106 X II 1 G Ex ia IIC T5 Ga Degree of protection: IP20 Amb. Temp.: –40 to 60°C II 1 D Ex ia IIIC Da Degree of protection: IP6X Amb. Temp.: –40 to 85°C Supply and output circuit:Ui=30V, Ii=120mA, Pi=0.84W, Ci=1nF, Li=10µH Sensor circuit: Uo=9.6V, Io=28mA, Po=67.2mW, Co=3.5µF, Lo=35mH 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 IECEx Intrinsically safe Approval Applicable Standards: IEC 60079-0: 2011, IEC 60079-11:2011, IEC 60079-26:2006 Certificate: IECEx DEK 14.0058X Ex ia IIC T5 Ga Enclosure: IP20 Amb. Temp.: –40 to 60°C Ex ia IIIC Da Enclosure: IP6X Amb. Temp.: –40 to 85°C Supply and output circuit:Ui=30V, Ii=120mA, Pi=0.84W, Ci=1nF, Li=10µH Sensor circuit: Uo=9.6V, Io=28mA, Po=67.2mW, Co=3.5µF, Lo=35mH CSA Intrinsically safe Approval Certificate: 70009864 Applicable Standards: CAN/CSA-C22.2 No.0-10, CSA Std C22.2 No.142-M1987 (R2009), CSA Std C22.2 No.157-92 (R2012) CAN/CSA-C22.2 No.60079-0:11, CAN/CSA- C22.2 E60079-11:11, 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

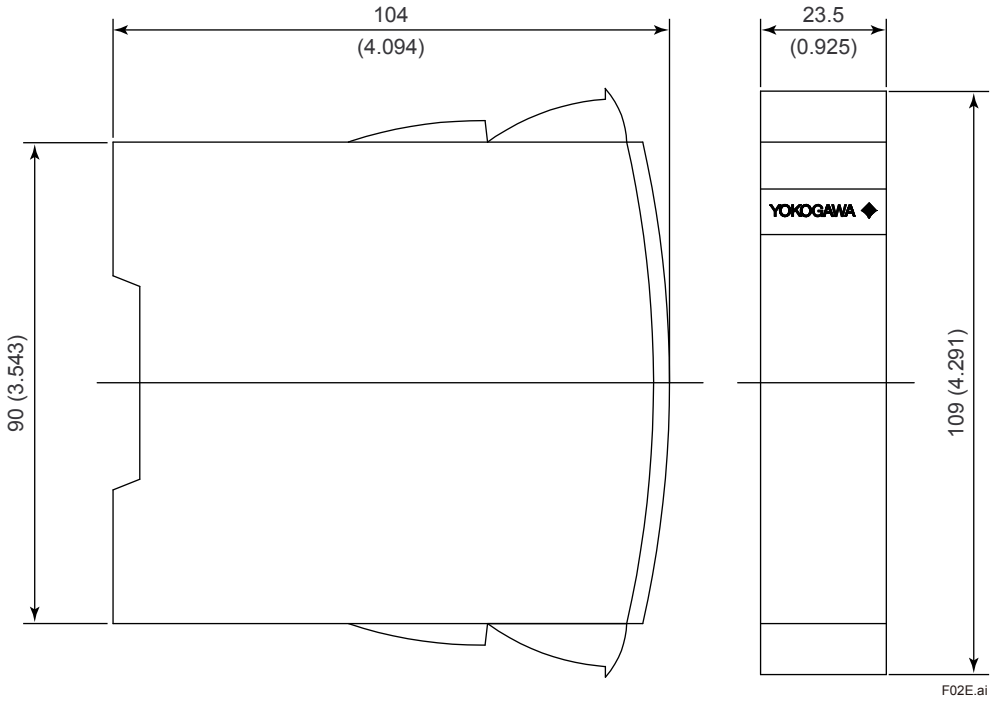
Table 1. Input type, range and accuracy

Sensor Type	Standard	Input range °C	Input range °F	Minimum Span °C	Minimum Span °F	Accuracy (value whichever is greater)	Temp. effects/10°C (value whichever is greater)
<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	IEC584	-100 to 1000	-148 to 1832	50	90	±0.1% of span or ±0.5°C	±0.05% of span or ±0.25°C
J	IEC584	-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	IEC584	-180 to 1372	-292 to 2502	50	90	±0.1% of span or ±0.5°C	±0.05% of span or ±0.25°C
N	IEC584	-180 to 1300	-292 to 2372	100	180	±0.1% of span or ±0.5°C	±0.05% of span or ±0.25°C
R	IEC584	-50 to 1760	-58 to 3200	200	360	±0.1% of span or ±1.0°C	±0.05% of span or ±1.0°C
S	IEC584	-50 to 1760	-58 to 3200	200	360	±0.1% of span or ±1.0°C	±0.05% of span or ±1.0°C
T	IEC584	-200 to 400	-328 to 752	50	90	±0.1% of span or ±0.5°C	±0.05% of span or ±0.25°C
L	DIN43710	-100 to 900	-148 to 1652	50	90	±0.1% of span or ±0.5°C	±0.05% of span or ±0.25°C
U	DIN43710	-200 to 600	-328 to 1112	75	135	±0.1% of span or ±0.5°C	±0.05% of span or ±0.25°C
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 E988-90	0 to 2300	32 to 4172	200	360	±0.1% of span or ±1.0°C	±0.05% of span or ±1.0°C
W5	ASTM E988-90	0 to 2300	32 to 4172	200	360	±0.1% of span or ±1.0°C	±0.05% of span or ±1.0°C
<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	±0.05% of span or ±0.05°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

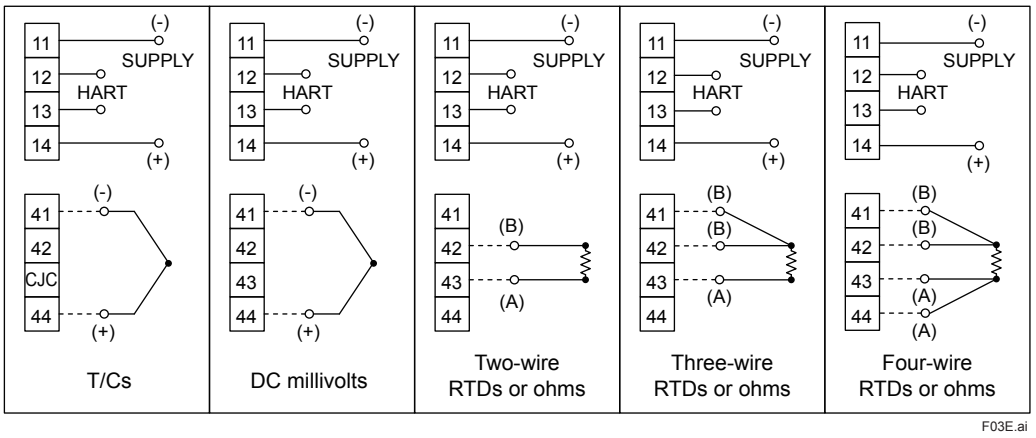
Note: In T/Cs type B , the minimum range value can be set from 0°C. However, the accuracy between 0 to 400°C is not specified.

■ DIMENSIONS

Unit : mm (approx. inch)



● Wiring Diagram



< Ordering Information >

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

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.