

General Specifications

YTA70 Temperature Transmitter



GS 01C50C03-00EN

The YTA70 is a head mount type of temperature transmitter that accepts thermocouple, RTD, ohms or DC millivolts input and converts it to a 4 to 20 mA DC signal for transmission. The YTA70 conforms to the standard DIN form B head mounting. The YTA70 supports HART® communication protocol.

HART protocol revision is selectable from HART 5 or HART 7, and HART 7 features long tag number up to 32 characters, enhanced burst mode and event notification, and command aggregation function.



■ STANDARD SPECIFICATIONS

Accuracy

See Table 1. on page 3.

Cold Junction Compensation Accuracy

(For T/C only)
±1°C (±1.8°F)

Ambient Temperature Effects

See Table 1. on page 3.

Power Supply Effects

±0.005% of FS per Volt

RFI Effects

Tested per EN 50 082-2, field intensity up to 10 V/m.

EMC Conformity CE

EN61326

Input Type, Span and Range

Selection from thermocouples (T/C), 2-, 3-, and 4-wire RTDs, ohms and DC millivolts.

See Table 1 on page 3.

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 RTD, ohm)

5 Ω per wire or lower

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

Sensor Burnout

High or Low

Output

Two wire 4 to 20 mA DC

Response Time

1 to 60 seconds programmable

Ambient Temperature Limits

(Option code may affect limit)

-40 to 85°C (-40 to 185°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 $(E-8)/0.023$ [Ω]
where E is power supply voltage.
250 to 600 Ω for digital communication

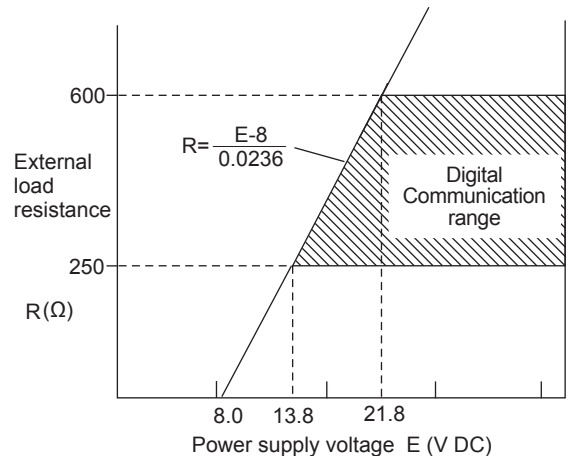


Figure 1. Relationship Between Power Supply Voltage and External Load Resistance

Enclosure:

Material

Polycarbonate

Color of the case

Red

Mounting

DIN form B head mounting

Terminals

M3 screws

Weight

50 g (0.11 lb)

■ MODEL AND SUFFIX CODES

Model	Suffix Codes	Descriptions
YTA70	Temperature Transmitter (Head Mount Type)
Output Signal	-E -J	4 to 20mA DC with digital communication (HART 5 protocol) 4 to 20 mA DC with digital communication (HART 5/HART 7 protocol)*1
Optional Specifications	/KS2	ATEX Intrinsically safe approval*2 Applicable standard: EN 60079-0: 2006, EN 60079-11: 2007, EN 60079-26: 2007, EN 61241-0: 2006, EN 61241-11: 2006 Certificate: KEMA 10 ATEX0027 II1G Ex ia IIC T4 or T6, II1D Ex iaD Amb. temp. for gas-proof T4: -40 to 85°C (-40 to 185°F), T6: -40 to 60°C (-40 to 140°F) Surface temp. for dust-proof: T4: T105°C amb. temp. -40 to 85°C (-40 to 185°F) T6: T85°C amb. temp. -40 to 60°C (-40 to 140°F) Supply/output circuit: Ui=30V, Ii=120mA, Pi=0.84W, Ci=1nF, Li=10μH Sensor circuit: Uo=9.6V, Io=28mA, Po=67mW, Co=3.5μF, Lo=35mH
	/DS2	FM intrinsically safe/Nonincendive and ATEX intrinsically safe approval combination*3 (For ATEX Intrinsically safe approval, see /KS2) [FM Intrinsically safe/Nonincendive approval] Applicable standard*4: FM 3600, FM 3610, FM 3611, FM 3810 Intrinsically safe for Class I, Division 1, Groups A, B, C, and D Supply: Vmax=30V, Imax=120mA, Pmax=0.84W, Ci=0μF, Li=10μH Nonincendive for Class I, Division 2, Groups A, B, C, D Hazardous (Classified) indoor/outdoor (TYPE 4) Locations Supply: Vmax=35V, Ci=0μF, Li=10μH Amb. temp.: T6 Ta=60°C, T4 Ta=85°C
	/SS2	IECEx intrinsically safe*5, FM intrinsically safe/Nonincendive, and ATEX intrinsically safe approval combination (For FM and ATEX intrinsically safe approval, see /KS2 and /DS2.) [IECEx intrinsically safe approval] Applicable standard: IEC 60079-0:2007-10, IEC 60079-11:2006, IEC 60079-26:2006, IEC 61241-11:2005 Certificate: IECEx KEM 10.0086 Ex ia IIC T4...T6 Ga, Ex ia IIIC T135°C...T80°C Da Amb. temp.: -40 to 85°C (-40 to 185°F) for T4, -40 to 45°C (-40 to 113°F) for T6 Supply/output circuit: Ui=30V, Ii=120mA, Pi=0.84W, Ci=1nF, Li=10μH Sensor circuit: Uo=9.6V, Io=28mA, Po=67mW, Co=3.5μF, Lo=35mH

*1: Output signal code J is HART 5 or HART 7 selectable model. Specify HART 5 or HART 7 when ordering.
(Output signal code J is recommended for HART communication.)

*2: For output signal code J, applicable standard and marking of equipment are as follows.
Applicable standard: EN 60079-0: 2009, EN 60079-11: 2007, EN 60079-26: 2007, EN 61241-11: 2006
II 1 G Ex ia IIC T6 or T4 Ga, II 1 D Ex ia IIIC Da, I M 1 Ex ia I Ma

*3: Option code /DS2 is applicable for output signal code -E.

*4: For output signal code J, applicable standard is as follows.
Applicable standard: Class 3600, Class 3610, Class 3611, Class 3810, ANSI/ISA-60079-0, and ANSI/ISA-60079-11

*5: For output signal code J, applicable marking of equipment is as follows.
Ex ia IIC T6 ... T4 Ga, Ex ia IIIC Da, Ex ia I Ma

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/C>								
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			
<RTD>								
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			
DC Voltage [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/C type B for output signal code J, the minimum range value can be set from 0. However, the accuracy between 0 to 400 is not specified.

□ Selection guide for HART 5 and HART 7

Select HART 5 or HART 7 according to Table 2.

Table 2. Selection guide for HART 5 and HART 7

Output signal code	Specified item when ordering "HART protocol revision"	HART protocol revision	Selection guide		Note
			Requirement for HART 7 function	Other conditions	
-E	Not Available	HART 5	NO	Not available to switch to HART 7 protocol after delivery.	*
-J	Specify '5'			Available to switch to HART 7 protocol after delivery by user-configuration.	**
		Specify '7'	HART 7	YES In this case, be sure to confirm that HART configuration tool supports HART 7 by Table 3.	Available to switch to HART 5 protocol after delivery by user-configuration.

*: This code will be unified to the new code "-J". Therefore the code "-J" is recommended for HART communication type.

** : Indicate the most typical selection for HART communication. Select this when HART 7 functionality is not required. In case of selecting HART 7 without conforming to Table 3, communication will not be available.

□ HART protocol revision and communication

Protocol revision supported by HART configuration tool must be the same or higher than that of the device.

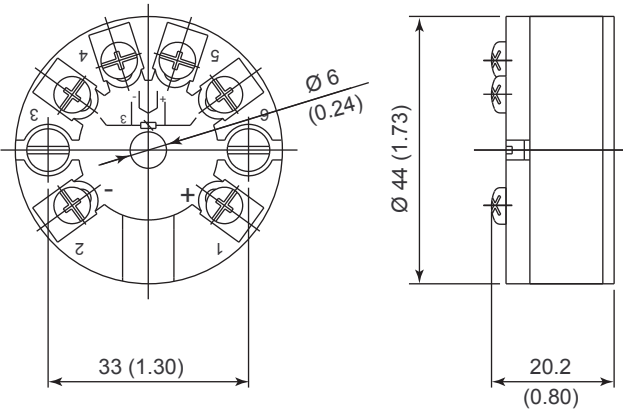
HART 7 communication is supported by FieldMate R2.02 or later.

Table 3. HART protocol revision and communication

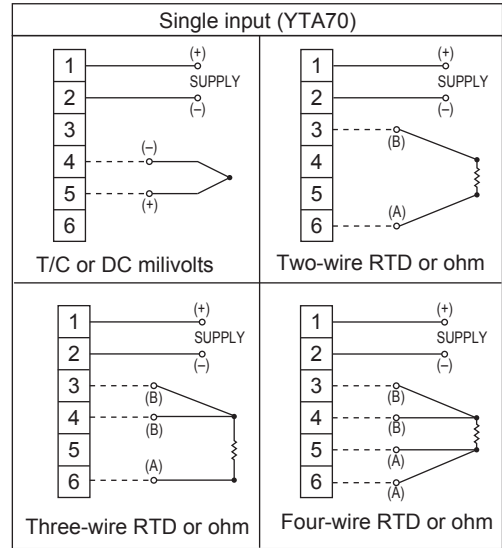
		Protocol revision supported by HART configuration tool	
		HART 5	HART 7
Protocol revision of YTA70	HART 5	Communication Available	Communication Available
	HART 7	Communication Not Available	Communication Available

■ DIMENSIONS

Unit : mm (approx. inch)



● Sensor Connections



F02E.ai

< Ordering Information >

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

1. Sensor type. For RTD and ohm 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.
5. HART protocol: When output signal code is "J", specify the HART protocol revision "5" or "7".

Model YTA70 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

< Reference >

HART; Trademark of the HART Communication Foundation.