General Specifications

YTA710
Temperature Transmitter

YTA Series

GS 01C50G01-01EN

The YTA710 is the highly accurate temperature transmitter that accepts Thermocouple, RTD, ohms or DC millivolts inputs and converts it to a 4 to 20 mA DC or Fieldbus signal for transmission.

The YTA710 supports HART, BRAIN and FOUNDATION fieldbus communication protocols.
HART and BRAIN types are certified as complying with SIL 2 for safety requirement.

■ FEATURES

High reliability
Dual-compartment housing realizes high resistance capability to harsh environments.

Variety of sensor inputs
The type of sensor input is user-selectable from thermocouples (T/C), RTDs, ohms, or DC millivolts.

Digital communication
HART protocol revision is 7 and FOUNDATION fieldbus. The instrument configuration can be changed by the user with using the Fieldmate or Handheld terminal.

Local Parameter Setting
Parameter configuration by the push button offers easy and quick setup for parameters.

Self-diagnostics function
Continuous self-diagnostics capability ensures longterm performance and lower cost of ownership.

Dual universal inputs
Dual input can accept two thermocouple, RTD, ohm or DC millivolt inputs. Differential or average temperature measurement is selectable. The sensor backup function for automatically switches-over from the primary to the backup upon sensor failure.

■ STANDARD SPECIFICATIONS

■ PERFORMANCE SPECIFICATIONS

Accuracy
HART and BRAIN communication type:
A/D accuracy/span + D/A accuracy
(See Table 1 on page 4.)
Fieldbus communication type:
A/D accuracy (See Table 1 on page 4.)

Cold Junction Compensation Accuracy (T/C)
$\pm(0.32°C + 0.003 \times |Tterm – 23°C|)$
Tterm means the terminal temperature ($–40°C \le$ Tterm $\le 85°C$).

Ambient Temperature Effect (per 10°C change)
See Table 2 on page 5.

Stability
RTD: ±0.1% of reading or ±0.1°C per 2 years, whichever is greater at 23±2°C.
T/C: ±0.1% of reading or ±0.1°C per year, whichever is greater at 23±2°C.

5 Year Stability
RTD: ±0.2% of reading or ±0.2°C, whichever is greater at 23±2°C.
T/C: ±0.4% of reading or ±0.4°C, whichever is greater at 23±2°C.

Vibration Effect
The YTA710 are tested to the following specifications with no effect on performance per IEC 60770-1
10 to 60 Hz 0.21 mm peak displacement
60 to 2000 Hz 3g

Power Supply Effect (HART and BRAIN type)
±0.005% of calibrated span per volt

YOKOGAWA ◆

■ FUNCTIONAL SPECIFICATIONS

Input Signals
Input number: single and dual input
Input type is selectable: Thermocouples, 2-, 3-, and 4-wire RTDs, ohms and DC millivolts.
See Table 1. on page 4.

Input Signal Source Resistance (for T/C, mV)
1 kΩ or lower

Input Lead Wire Resistance (for RTD, ohm)
10 Ω per wire or lower

Span & Range Limits
See Table 1. on page 4.

Output signals

Two wire 4 to 20 mA DC type
Output range: 3.68 to 20.8 mA
HART or BRAIN protocol is superimposed on the 4 to 20 mA signal. Any single value among followings can be selected as the analog output signal.
Sensor 1, Terminal Temperature.
Dual input type, same as above plus;
Sensor 2, Average, and Differential Temperature. Also, up to three of the above values can be displayed on LCD display or read via communication.

Fieldbus type
Output signal based on FOUNDATION fieldbus communication protocol.

Isolation
Input/Output/GND isolated to 500V DC
Except lightning protector option.

Manual Test Output Function
The output value can be set manually.

Sensor Burnout (HART and BRAIN type)
High (21.6 mA DC) or Low (3.6 mA DC), user selectable.

Output in Transmitter Failure (HART and BRAIN type)
Down-scale: –5%, 3.2 mA DC or less , sensor burnout –2.5%, 3.6 mA (Optional code C1)
Down-scale: –5%, 3.2 mA DC or less (Optional code C2)
Up-scale: 110%, 21.6 mA DC or more (Standard or Optional code C3)

Update Time (HART and BRAIN type)
Approximately 0.5 seconds for a single sensor (0.8 second for dual sensors) at damping time 0

Turn-on Time (HART and BRAIN type)
Approximately 6 seconds for a single sensor (7 seconds for dual sensors)

Damping Time Constant
Selectable from 0 to 100 seconds

Self-Diagnostics
Self-diagnostic function based on the NAMUR NE107 standard detects failures in the hardware, configuration and communications.

Sensor-Diagnostics
Sensor failure: Detect the disconnection of sensor.
Sensor short: Detect the short circuit of the sensor.
Sensor Corrosion: Measure the loop resistance.
Sensor line information: Measure the line resistance.
Sensor drift: Detect the difference between sensor1 and sensor2.
Temperature Cycle Diagnostics: Count the number of temperature fluctuations.

Fieldbus functions (Fieldbus type)
Functional specifications for Fieldbus communication conform to the standard specifications (H1) of FOUNDATION Fieldbus.

Function Block (Fieldbus type)

Resource block
The resource block contains physical transmitter information.

Transducer block
The transducer block contains the actual measurement data and information about sensor type and configuration and diagnostics.

LCD display block
The LCD display block is used to configure the local display, if an LCD display is being used.

Analog input (AI)
Four independent AI blocks can be selected.

Digital input (DI)
Four DI function blocks can be used as a limit switch for those temperature.

Other function block
As other Function blocks, Arithmetic (AR), Signal Characterizer (SC), Input Selector (IS), and two PID function blocks are available.

Function block	Execution time (ms)
AI	30
DI	30
SC	30
IS	30
AR	30
PID	45

Link master function
This function enables backup of network manager and local control only by field devices.

Alarm function
Fieldbus models securely support various alarm functions, such as High/Low alarm, notice of block error, etc. based on FOUNDATION fieldbus specifications.

Software download function
This function permits to update YTA software via a FOUNDATION fieldbus.
Based on Foundation fieldbus specifications (FF883)
Download class: Class 1

EMC Conformity Standards
EN61326-1 Class A, Table2
EN61326-2-3
EN61326-2-5 (for fieldbus type)

SIL Certification (HART type)
Hart type certified in compliance with IEC 61508: 2010.
Functional Safety of Electrical/electronic/ Programmable electronic related systems;
SIL 2 capability for single transmitter use
SIL 3 capability for dual transmitter use

Safety Requirement Standards
EN61010-1, C22.2 No.61010-1
• Installation category: I
  (Anticipated transient overvoltage 330 V)
• Pollution degree: 2
• Indoor/Outdoor use
EN61010-2-030, C22.2 No.61010-2-030
• Measurement category: O (Other)
  (Measurement Input voltage: 150mVdc max)
EU RoHS Directive
Applicable standard: EN 50581

■ NORMAL OPERATING CONDITION

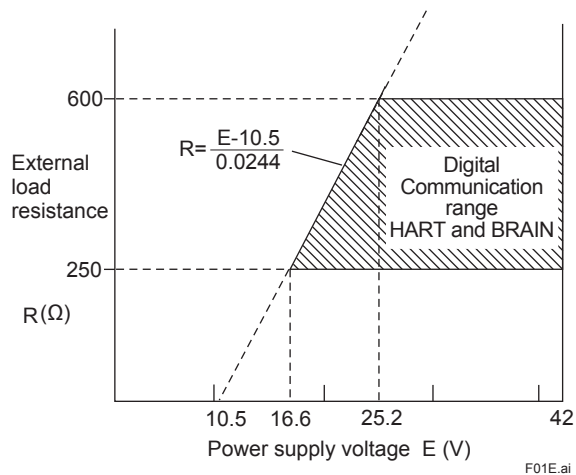(Optional features or approval codes may affect limits.)
Ambient Temperature Limits
–40 to 85°C (–40 to 185°F)
–30 to 80°C (–22 to 176°F) (with indicator model)
Ambient Humidity Limits
0 to 100% RH at 40°C (104°F)
Supply Voltage Requirements
HART and BRAIN type
10.5 to 42 V DC for general use and flameproof type
10.5 to 32 V DC for lightning protector (option code /A)
10.5 to 30 V DC for intrinsically safe and
non-incendive type
Minimum voltage limited at 16.6 V DC for digital communications HART
With 24 V DC supply, up to a 550Ω load can be used. See graph below.

$$R = \frac{E-10.5}{0.0244}$$

Digital Communication range HART and BRAIN

External load resistance

R(Ω)

600
250
10.5 16.6 25.2 42
Power supply voltage E (V)

F01E.ai

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

Fieldbus type
9 to 32V DC for general use, flameproof type, and non-incendive type
9 to 30 V DC for intrinsically safe type
9 to 17.5 V DC for FISCO field device
Communication Requirements
Supply Voltage: 9 to 32 V DC
Current Draw:
Steady state: 15 mA (max)
Software download state: 24 mA (max)

Communication Requirements (BRAIN type)
Communication Distance
Up to 2 km (1.25 miles) when using CEV polyethylene-insulated PVC-sheathed cables. Communication distance varies depending on type of cable used.
Load Capacitance
0.22 µF or less
Load Inductance
3.3 mH or less
Input Impedance of communicating device
10 kΩ or more at 2.4 kHz.
Load Requirements (HART and BRAIN type)
0 to 1290Ω for operation
250 to 600Ω for digital communication

■ PHYSICAL SPECIFICATIONS

Enclosure
Material & coating
• Low copper cast aluminum alloy
  [for aluminum housing]
    Urethane-cured polyester powder coating
    Mint-green paint (Munsell 5.6BG 3.3/2.9 or its equivalent)
  [for option code /P□ or /X2]
    Epoxy and polyurethane resin solvent coating
• ASTM CF-8M Stainless steel
Degrees of protection
IP66/IP67, TYPE 4X
Name plate and tag
316 SST
Mounting
Optional mounting brackets can be used either for two-inch pipe or flat panel mounting.
Terminal screws
M4 screws
Integral Indicator (with indicator model)
5-digit numerical display, 6-digit unit display and bar graph.
Local Parameter Setting (with indicator model)
Parameter configuration by the push button offers easy and quick setup for parameters.
Accessible parameters are different with each output cord.
Weight
Aluminum housing:
1.3 kg (2.9 lb) without integral indicator and mounting
Integral indicator: 0.2 kg (0.4 lb)
Bracket for horizontal pipe: 0.3 kg
Bracket for vertical pipe: 1.0 kg
Stainless housing:
3.1 kg (6.8 lb) without integral indicator and mounting
Integral indicator: 0.3 kg (0.7 lb)
Connections
Refer to "MODEL AND SUFFIX CODE."

Table 1.   Sensor type, measurement range, and accuracy

Sensor Type		Standard	Measurement Range		Minimum Span	A/D Accuracy		D/A Accuracy
			°C	°F		°C	°F	
T/C	B	IEC60584	100 to 300 300 to 1820	212 to 572 572 to 3308	25°C (45°F)	±3.0 ±0.75	±5.4 ±1.35	±0.02% of span
	E		-200 to -50 -50 to 1000	-328 to -58 -58 to 1832		±0.35 ±0.16	±0.63 ±0.29	
	J		-200 to -50 -50 to 1200	-328 to -58 -58 to 2192		±0.25 ±0.20	±0.45 ±0.36	
	K		-200 to -50 -50 to 1372	-328 to -58 -58 to 2501		±0.5 ±0.25	±0.9 ±0.45	
	N		-200 to -50 -50 to 1300	-328 to -58 -58 to 2372		±0.4 ±0.35	±0.72 ±0.63	
	R		-50 to 0 0 to 600 600 to 1768	-58 to 32 32 to 1112 1112 to 3214		±1.0 ±0.6 ±0.4	±1.8 ±1.08 ±0.72	
	S		-50 to 0 0 to 600 600 to 1768	-58 to 32 32 to 1112 1112 to 3214		±1.0 ±0.5 ±0.4	±1.8 ±0.9 ±0.72	
	T		-200 to -50 -50 to 400	-328 to -58 -58 to 752		±0.25 ±0.14	±0.45 ±0.25	
	C		0 to 400 400 to 1400 1400 to 2000 2000 to 2300	32 to 752 752 to 2552 2552 to 3632 3632 to 4172		±0.7 ±0.5 ±0.7 ±0.9	±1.26 ±0.9 ±1.26 ±1.62	
	W3	ASTM E988	0 to 400 400 to 1400 1400 to 2000 2000 to 2300	32 to 752 752 to 2552 2552 to 3632 3632 to 4172		±0.8 ±0.5 ±0.6 ±0.9	±1.44 ±0.9 ±1.08 ±1.62	
	L	DIN43710	-200 to -50 -50 to 900	-328 to -58 -58 to 1652		±0.3 ±0.2	±0.54 ±0.36	
	U		-200 to -50 -50 to 600	-328 to -58 -58 to 1112		±0.35 ±0.25	±0.63 ±0.45	
RTD	Pt100	IEC60751	-200 to 850	-328 to 1562	10°C (18°F)	±0.1	±0.18	
	Pt200		-200 to 850	-328 to 1562		±0.22	±0.40	
	Pt500		-200 to 850	-328 to 1562		±0.14	±0.25	
	Pt1000		-200 to 300	-328 to 572		±0.1	±0.18	
	JPt100	—	-200 to 500	-328 to 932		±0.1	±0.18	
	Cu10	SAMA RC21-4	-70 to 150	-94 to 302		±1.0	±1.8	
	Ni120	—	-70 to 320	-94 to 608		±0.08	±0.15	
mV		—	-10 to 120 [mV]		3 mV	±0.012 [mV]		
ohm		—	0 to 2000 [Ω]		20 Ω	±0.35 [Ω]		

Note 1: Total Accuracy = (A/D Accuracy / Span + D/A Accuracy).
For Fieldbus type, accuracy = A/D Accuracy.
For T/C input, add Cold Junction Compensation Error to the total accuracy.
Example: when selecting Pt100 with measurement range of 0 to 200 °C
0.1°C / 200°C×100% of span +0.02% of span = 0.07% of span
Note 2: T/C C type is same as W5 (ASTM E988).

Table 2.   Temperature coefficient

Sensor Type		Temperature Coefficient
Thermocouples E, J, K, N, T, L, U		0.08°C + 0.02% of abs.reading
Thermocouples R, S, W3, C		0.25°C + 0.02% of abs.reading
Thermocouple B	100°C ≤ Reading < 300°C	1°C + 0.02% of abs.reading
	300°C ≤ Reading	0.5°C + 0.02% of abs.reading
RTD		0.08°C + 0.02% of abs.reading
mV		0.002 mV + 0.02% of abs.reading
ohm		0.1 Ω + 0.02% of reading

Note1: The "abs.reading" for thermocouples and RTD means the absolute value of the reading in °C.
Example of "abs.reading"
When the temperature value is 250 Kelvin, "abs.reading" is 23.15.
|250−273.15|= 23.15
Note2: Ambient Temperature Effect per 10 °C change is ±0.1% or ±(temperature coefficient/span), whichever is greater.
Example of Ambient Temperature Effect
Conditions:
  1) Input Sensor: Pt100
  2) Calibration Range: −100 to 100°C
  3) Reading value: −50°C
Ambient Temperature Effect per 10°C
  Temperature Coefficient/Span=(0.08°C+0.02/100×|−50°C|)/{100°C−(−100°C)}= 0.00045 → 0.045%
  Therefore, Ambient Temperature Effect is ±0.1%/10°C
Note3: See also Table 3 for R1 option.

■ MODEL AND SUFFIX CODES

Model	Suffix Codes							Description
YTA710	. . . .							Temperature Transmitter
Output signal	-D. . . . . -J. . . . . -F.							4 to 20 mA DC with digital communication BRAIN protocol 4 to 20 mA DC with digital communication HART protocol Digital communication (FOUNDATION Fieldbus protocol)
—		A						Always A
Sensor input			1 . . . . 2					Single Double
Housing code				A . . . . C				Aluminum Stainless
Electrical connection					0 . . . . 2 . . . . 4			G1/2 female 1/2 NPT female M20 female
Integral indicator						D . . . . N		Digital indicator with Local Operating Switch None
Mounting bracket							B . . . . . . D . . . . . . J . . . . . . K . . . . . . N	SUS304 stainless steel 2-inch horizontal pipe mounting bracket [1] SUS304 stainless steel 2-inch vertical pipe mounting bracket SUS316 stainless steel 2-inch horizontal pipe mounting bracket [1] SUS316 stainless steel 2-inch vertical pipe mounting bracket None
Option codes							/□	Optional specification

*1:   For flat-panel mounting, please prepare bolts and nuts.

■ OPTIONAL SPECIFICATION

Item	Description			Code
Lightning protector *4	Allowable current: Max. 6000A(8×20μs), repeating 1000A(8×20μs), 100 times			**A**
Painting*1*6	Color and coating change Amplifier cover only*3	Color: Munsell code N1.5 Black Coating: High anti-corrosion coating		**P1**
		Color: Munsell code 7.5BG4/1.5, Jade green Coating: High anti-corrosion coating		**P2**
		Color: Metallic silver Coating: High anti-corrosion coating		**P7**
	Color and coating change Amplifier and terminal Covers*3	Color: Munsell code 7.5 R4/14, Red Coating: High anti-corrosion coating		**PR**
	Coating change	High anti-corrosion coating		**X2**
Output signal low-side in transmitter failure*2	Output signal Low-side: –5%, 3.2 mA DC or less. Sensor burnout is also set to 'Low': –2.5%, 3.6 mA DC.			**C1**
NAMUR NE43 compliant*2	Output signal limits: 3.8 mA to 20.5 mA	Failure alarm down-scale: output status at CPU failure and hardware error is –5%, 3.2 mA or less. Sensor burnout is also set to Low: –2.5%, 3.6 mA DC.		**C2**
		Failure alarm up-scale: output status at CPU failure and hardware error is 110%, 21.6 mA or more. In this case Sensor burnout is High: 110%, 21.6 mA DC.		**C3**
Data configuration*9	Description into "Descriptor" parameter of HART protocol (max. 16 characters)			**CA**
Wired tag plate	SUS316 stainless steel tag plate wired onto transmitter			**N4**
Sensor matching	RTD sensor matching function			**CM1**
Attached flameproof packing adapter*5*7	Electrical connection G1/2 female Applicable cable: O.D.8.0 to 12 mm		2pc.	**V52**
EAC approval and Russian pattern approval marking*8*10	EAC approval and Russian pattern approval marking			**VR**
EAC approval marking without Russian pattern approval marking*8*10	EAC approval marking without Russian pattern approval marking			**VE**
High ambient-temp characteristic type	Refer to Table 3 Temperature coefficient			**R1**

Note: The indication of the nameplate shows an initial shipment state.
*1: Not applicable for Stainless housing.
*2: Not applicable for Fieldbus type.
*3: Except for Amplifier and terminal cover, color and coating are general specification.
*4: Lightning protector (surge absorber) can be remove from, or added to the equipment.
*5: Combination with other Explosion protected other than TIIS flameproof is not possible.
*6: The combination of X2 and P□ is not possible.
*7: Applicable for Electrical Connection code 4. (The thread of connection between YTA and CABLE GLAND is M20, and the thread of connection between CABLE GLAND and CABLE is G1/2.)
*8: Not applicable for BRAIN type.
*9: Applicable for only HART type.
*10: Combination with other Explosion protected other than EAC Explosion-proof type is not applicable.

Table 3. Temperature coefficient (R1 option)

Sensor Type		Input Range °C	A/D Coefficient	D/A Coefficient
T/C	B	100 to 300 300 to 1000 1000 to 1820	±(0.586°C - 0.1433% of reading) ±(0.187°C - 0.0103% of reading) ±(0.038°C + 0.0046% of reading)	±{0.0088% of span + 0.007% of(reading − LRV)}
	E	-200 to 0 0 to 1000	±(0.007°C + 0.0158% of abs.reading) ±(0.007°C + 0.0065% of reading)	
	J	-200 to 0 0 to 1200	±(0.009°C + 0.0172% of abs.reading) ±(0.009°C + 0.0065% of reading)	
	K	-200 to 0 0 to 1372	±(0.011°C + 0.0218% of abs.reading) ±(0.011°C + 0.0078% of reading)	
	N	-200 to 0 0 to 1300	±(0.017°C + 0.0265% of abs.reading) ±(0.017°C + 0.0063% of reading)	
	R	-50 to 0 0 to 200 200 to 1768	±(0.088°C + 0.1273% of abs.reading) ±(0.088°C - 0.0142% of reading) ±(0.048°C + 0.0058% of reading)	
	S	-50 to 0 0 to 200 200 to 1768	±(0.088°C + 0.0517% of abs.reading) ±(0.088°C - 0.0106% of reading) ±(0.054°C + 0.0063% of reading)	
	T	-200 to 0 0 to 400	±(0.011°C + 0.0195% of abs.reading) ±(0.011°C + 0.0044% of reading)	
	C	0 to 1400 1400 to 2315	±(0.034°C + 0.0069% of reading) ±(-0.157°C + 0.0205% of reading)	
	W3	0 to 1400 1400 to 2315	±(0.044°C + 0.0053% of reading) ±(-0.214°C + 0.0237% of reading)	
	L	-200 to 0 0 to 900	±(0.009°C + 0.0117% of abs.reading) ±(0.009°C + 0.0052% of reading)	
	U	-200 to 0 0 to 400	±(0.011°C + 0.0148% of abs.reading) ±(0.011°C + 0.0046% of reading)	
RTD	Pt100	-200 to 850	±(0.015°C + 0.005% of reading)	
	Pt200	-200 to 850	±(0.023°C + 0.012% of reading)	
	Pt500	-200 to 850	±(0.015°C + 0.005% of reading)	
	Pt1000	-200 to 300	±(0.015°C + 0.005% of reading)	
	JPt100	-200 to 500	±(0.015°C + 0.005% of reading)	
	Cu10	-70 to 150	±(0.320°C + 0.120% of reading)	
	Ni120	-70 to 320	±(0.010°C + 0.005% of reading)	
mV		-10 to 120 [mV]	±(0.441uV + 0.0065% of abs.reading)	
ohm		0 to 2000 [Ω]	±(0.040Ω + 0.0088% of reading)	

Note: Temperature Effect = A/D coeffieicnt + D/A coefficient (The data in the table is the coeffcient per 10°C change.)
Example 1; Pt100Ω, 0 to 200°C calibration range, 50°C reading
    (0.015°C + 50°C × 0.005%) + [200°C × 0.0088% + (50 - 0) × 0.007%]
    = (0.015°C + 0.0025°C) + (0.0176°C + 0.0035°C)
    = ± 0.0386°C [per 10°C change]
Example 2; T T/C, -100 to 100°C calibration range, -50°C reading
    (0.011°C + | -50°C | × 0.0195%) + {200°C × 0.0088% + [-50 - (-100)] × 0.007%}
    = (0.011°C + 0.00975°C) + (0.0176°C + 0.0035°C)
    = ± 0.04185°C [per 10°C change].

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■ OPTIONAL SPECIFICATION (For Explosion Protected type)

Item	Description	Code
ATEX	[4-20mA & Fieldbus: Flameproof and dust ignition proof approval] Applicable Standard: EN 60079-0:2012+A11:2013, EN 60079-1:2014, EN 60079-31:2014 Certificate: KEMA 07ATEX0130 II 2 G Ex db IIC T6/T5 Gb, II 2 D Ex tb IIIC T70°C/T90°C Db Ambient Temperature for Gas Atmospheres: –40 to 75°C for T6, –40 to 80°C for T5 Ambient Temperature for Dust Atmospheres: –30 to 65°C for T70°C, –30 to 80°C for T90°C Enclosure: IP66/IP67 Electrical Connection: 1/2 NPT female and M20 female*1	**KF2**

	4-20mA:
	[Intrinsically safe ia approval]
	Applicable Standard: EN 60079-0:2012+A11:2013, EN 60079-11:2012
	Certificate No. FM16ATEX0019X
	II 1 G Ex ia IIC T5…T4 Ga
	Ambient Temperature: –40 to 70°C for T4, –40 to 50°C for T5
	Enclosure: IP66/IP67
	Electrical parameters:
	    Supply/Output circuit: Terminals: +, –
	    Ui=30V, Ii=200mA, Pi=1.0W, Ci=22nF, Li=0mH
	    Sensor circuit: Terminals: 1, 2, 3, 4, 5
	    Uo=6V, Io=90mA, Po=135mW, Co=10µF, Lo=3.9mH
	Dielectric strength: 500 V a.c.r.m.s.,1 min (Without /A)
	[Intrinsically safe ic]
	Applicable Standard: EN 60079-0:2012+A11:2013, EN 60079-11:2012
	Certificate: Not Applicable as per Annex VIII to ATEX 2014/34/EU
	II 3 G Ex ic IIC T5...T4 Gc
	Ambient Temperature: –30 to 70°C for T4, –30 to 50°C for T5
	Enclosure: IP66/IP67
	Overvoltage category: I
	Electrical parameters:
	    Supply/Output circuit: Terminals: +, –
	    Ui=32V, Ci=2.2nF, Li=0mH
	    Sensor circuit: Terminals: 1, 2, 3, 4, 5
	    Uo=6V, Io=90mA, Po=135mW, Co=10µF, Lo=3.9mH
	Dielectric strength: 500 V a.c.r.m.s.,1 min (Without /A)
	[Flameproof and Dust Ignition Proof Approval]
	    Same as KF2
		KU2

	Fieldbus:
	[Intrinsically safe ia approval]
	Applicable Standard: EN 60079-0:2012+A11:2013, EN 60079-11:2012
	Certificate No. FM16ATEX0019X
	II 1 G Ex ia IIC T4 Ga
	Ambient Temperature: –55 to 60°C
	Enclosure: IP66/IP67
	Electrical parameters:
	    Supply/Output circuit: Terminals: +, –
	    FISCO field device or
	    Ui=30V, Ii=300mA, Pi=1.2W, Ci=2.2nF, Li=0mH
	    Sensor circuit: Terminals: 1, 2, 3, 4, 5
	    Uo=6V, Io=90mA, Po=135mW, Co=10µF, Lo=3.9mH
	Dielectric strength: 500 V a.c.r.m.s.,1 min (Without /A)
	[Intrinsically safe ic]
	Applicable Standard: EN 60079-0:2012+A11:2013, EN 60079-11:2012
	Certificate: Not Applicable as per Annex VIII to ATEX 2014/34/EU
	II 3 G Ex ic IIC T4 Gc
	Ambient Temperature: –30 to 70°C
	Enclosure: IP66/IP67
	Electrical parameters:
	    Supply/Output circuit: Terminals: +, –
	    FISCO field device or
	    Ui=32V, Ci=2.2nF, Li=0mH
	    Sensor circuit: Terminals: 1, 2, 3, 4, 5
	    Uo=6V, Io=90mA, Po=135mW, Co=10µF, Lo=3.9mH
	Dielectric strength: 500 V a.c.r.m.s.,1 min (Without /A)
	[Flameproof and Dust Ignition Proof Approval]
	    Same as KF2
		KU25

Item	Description	Code
IECEx	[4-20mA & Fieldbus: Flameproof and dust ignition proof approval] Applicable standard: IEC 60079-0:2011, IEC 60079-1:2014, IEC 60079-31:2013 Certificate: IECEx KEM 07.0044 Ex db IIC T6/T5 Gb, Ex tb IIIC T70°C/T90°C Db Ambient Temperature for Gas Atmospheres: –40 to 75°C (–40 to 167°F) for T6, –40 to 80°C (–40 to 176°F) for T5 Ambient Temperature for Dust Atmospheres: –30 to 65°C (–22 to 149°F) for T70°C, –30 to 80°C (–22 to 176°F) for T90°C Enclosure: IP66/IP67 Electrical Connection: 1/2 NPT female and M20 female[*1]	SF2
	4-20mA: [Intrinsically safe ia, ic pproval] Applicable Standard: IEC 60079-0:2011, IEC 60079-11:2011 Certificate No. IECEx FMG 16.0014X Ex ia IIC T5…T4 Ga Ex ic IIC T5...T4 Gc Ambient Temperature: –40 to 70°C for T4, –40 to 50°C for T5(Ex ia) Ambient Temperature: –30 to 70°C for T4, –30 to 50°C for T5(Ex ic) Enclosure: IP66/IP67 Over voltage category: I Electrical parameters (Ex ia) Supply/Output circuit: Terminal: +, – U_i=30V, I_i=200mA, P_i=1.0W, C_i=22nF, L_i=0mH Sensor circuit: Terminals: 1, 2, 3, 4, 5 U_o=6V, I_o=90mA, P_o=135mW, C_o=10μF, L_o=3.9mH Electrical parameters (Ex ic) Supply/Output circuit: Terminal: +, – U_i=30V, C_i=22nF, L_i=0mH Sensor circuit: Terminals: 1, 2, 3, 4, 5 U_o=6V, I_o=90mA, P_o=135mW, C_o=10μF, L_o=3.9mH Dielectric strength: 500 V a.c.r.m.s.,1 min (Without /A) [Flameproof and Dust Ignition Proof Approval] Same as SF2	SU2
	Fieldbus: [Intrinsically safe ia approval] Applicable Standard: IEC 60079-0: 2011, IEC 60079-11: 2011 Certificate No. IECEx FMG 16.0014X Ex ia IIC T4 Ga Ex ic IIC T4 Gc Ambient Temperature: –55 to 60°C (Ex ia) Ambient Temperature: –30 to 70°C (Ex ic) Enclosure: IP66/IP67 Overvoltage category: I Electrical parameters (Ex ia) Supply/Output circuit: Terminals: +, – FISCO field device or U_i=30V, I_i=300mA, P_i=1.2W, C_i=2.2nF, L_i=0mH Sensor circuit: Terminals: 1, 2, 3, 4, 5 U_o=6V, I_o=90mA, P_o=135mW, C_o=10μF, L_o=3.9mH Electrical parameters (Ex ic) Supply/Output circuit: Terminals: +, – FISCO field device or U_i=32V, C_i=2.2nF, L_i=0mH Sensor circuit:Terminals: 1, 2, 3, 4, 5 U_o=6V, I_o=90mA, P_o=135mW, C_o=10μF, L_o=3.9mH Dielectric strength: 500 V a.c.r.m.s.,1 min (Without /A) [Flameproof and Dust Ignition Proof Approval] Same as SF2	SU25

Item	Description	Code

FM (US)	[4-20mA & Fieldbus: Explosionproof approval]
	  Applicable standard: FM Class 3600: 2011, FM Class 3615: 2006, FM Class 3810: 2005,
	  NEMA250: 2014
	  Class I, Division 1, Groups A, B, C and D.;
	  Class II/III, Division 1, Groups E, F and G.
	  "FACTORY SEALD, CONDUIT SEAL NOT REQUIRED."
	  Enclosure Ratings: TYPE 4X
	  Temperature Class: T6
	  Ambient Temperature: –40 to 60°C (–40 to 140°F)
	  Electrical Connection: 1/2NPT female[2]
		FF1

	4-20mA:
	[Intrinsically safe approval/non-incendive approval]
	  Applicable standard: FM Class 3600:2011, FM Class 3610:2015, FM Class 3611:2004,
	  FM Class 3810:2005, ANSI/ISA-60079-0:2013, ANSI/ISA-60079-11:2014, NEMA 250:2003,
	  ANSI/IEC 60529:2004
	  Intrinsically safe for
	  Class I, II, III Division 1, Groups A, B, C, D, E, F, G, T5…T4
	  Class I Zone 0 AEx ia IIC T5…T4
	  Non-incendive for
	  Class I, II, Division 2, Groups A, B, C, D, F, G, T5…T4
	  Class III, Division 1 T5…T4
	  Class I Zone 2 Group IIC T5…T4
	  Ambient Temperature: –40 to 70°C for T4, –40 to 50°C for T5
	  Enclosure Type 4X, IP66/IP67
	  Electrical parameters:
	  Intrinsically safe for
	    Supply/Output circuit: Terminals: +, –
	    U_i=30V, I_i=200mA, P_i=1.0W, C_i=22nF, L_i=0mH
	    Sensor circuit: Terminals: 1, 2, 3, 4, 5
	    U_o=6V, I_o=90mA, P_o=135mW, C_o=10μF, L_o=3.9mH
	  Non-incendive for
	    Supply/Output circuit: Terminals: +, –
	    U_i=30V, C_i=22nF, L_i=0mH
	    Sensor circuit:Terminals: 1, 2, 3, 4, 5
	    U_o=6V, I_o=90mA, P_o=135mW, C_o=10μF, L_o=3.9mH
	  Dielectric strength: 500 V a.c.r.m.s.,1 min (Without /A)
	[Explosionproof approval]
	  Same as FF1
		FU1

	Fieldbus:
	[Intrinsically safe approval/non-incendive approval]
	  Applicable standard: FM Class 3600:2011, FM Class 3610:2015, FM Class 3611:2004,
	  FM Class 3810:2005, ANSI/ISA-60079-0:2013, ANSI/ISA-60079-11:2014, NEMA 250:2003,
	  ANSI/IEC 60529:2004
	  Intrinsically safe for
	  Class I, II, III Division 1, Groups A, B, C, D, E, F, G T4
	  Class I Zone 0 AEx ia IIC T4
	  Non-incendive for
	  Class I, II, Division 2, Groups A, B, C, D, F, G T4
	  Class III, Division 1 T4 Class I Zone 2 Group IIC T4
	  Ambient Temperature: –55 to 60°C
	  Enclosure Type 4X, IP66/IP67
	  Electrical parameters:
	  Intrinsically safe for
	    Supply/Output circuit: Terminals: +, –
	    FISCO field device or
	    U_i=30V, I_i=300mA, P_i=1.2W, C_i=2.2nF, L_i=0mH
	    Sensor circuit: Terminals: 1, 2, 3, 4, 5
	    U_o=6V, I_o=90mA, P_o=135mW, C_o=10μF, L_o=3.9mH
	  Non-incendive for
	    Supply/Output circuit: Terminals: +, –
	    U_i=32V, C_i=2.2nF, L_i=0mH
	    Sensor circuit: Terminals: 1, 2, 3, 4, 5
	    U_o=6V, I_o=90mA, P_o=135mW, C_o=10μF, L_o=3.9mH
	  Dielectric strength: 500 V a.c.r.m.s.,1 min (Without /A)
	[Explosionproof approval]
	  Same as FF1
		FU15

Item	Description	Code
CSA[*3][*6] FM (Canada)[*4][*6]	[4-20mA & Fieldbus: Explosionproof approval] 　Applicable standard: C22.2 No. 0-10, C22.2 No. 0.4-04, C22.2 No. 25-M1966, C22.2 No. 30-M1986, 　C22.2 No. 94-M1991, C22.2 No. 142-M1987, C22.2 No. 157-92, C22.2 No. 213-M1987, 　C22.2 No.61010-1-12, C22.2 No. 61010-2-030-12 　Class I, Groups B, C and D, 　Class II, Groups E, F and G, 　Class III. 　For Class I, Division2 Groups ABCD Locations "FACTORY SEALED, CONDUIT SEAL NOT REQUIRED" 　Enclosure TYPE 4X 　Temperature Class: T6 　Ambient Temperature: –40 to 60°C 　Electrical Connection: 1/2 NPT female[*2]	**CF1**
	4-20mA: [Intrinsically safe approval/non-incendive approval] 　Applicable standard: CAN/CSA-C22.2 No. 94.2-07, C22.2 No.213:1987, 　CAN /CSA-C22.2 No. 60079-0:11, CAN/CSA-C22.2 No. 60079-11:14, 　CAN/CSA-C22.2 No. 60529:05, CAN/CSA-C22.2 No. 61010-1-12, 　CAN/CSA-C22.2 No. 61010-2-030-12 　Intrinsically safe for 　Class I, II, III, Division 1, Groups A, B, C, D, E, F, G, T5…T4 　Ex ia IIC T5…T4 Ga 　Non-incendive for 　Class I, II, Division 2, Groups A, B, C, D, F, G T5…T4 　Class III Division 1 T5…T4 　Ambient Temperature: –40 to 70°C for T4, –40 to 50°C for T5 　Enclosure Type: 4X, IP66/IP67 　Electrical parameters: 　Intrinsically safe for 　　Supply/Output circuit: Terminals: +, – 　　U_i=30V, I_i=200mA, P_i=1.0W, C_i=22nF, L_i=0mH 　　Sensor circuit: Terminals: 1, 2, 3, 4, 5 　　U_o=6V, I_o=90mA, P_o=135mW, C_o=10μF, L_o=3.9mH 　Non-incendive for 　　Supply/Output circuit: Terminals: +, – 　　U_i=30V, C_i=22nF, L_i=0mH 　　Sensor circuit: Terminals: 1, 2, 3, 4, 5 　　U_o=6V, I_o=90mA, P_o=135mW, C_o=10μF, L_o=3.9mH 　Dielectric strength: 500 V a.c.r.m.s.,1 min (Without /A) [Explosionproof approval] 　Same as CF1	**CU1**
	Fieldbus: [Intrinsically safe approval/non-incendive approval] 　Applicable standard: CAN/CSA-C22.2 No. 94.2-07, C22.2 No.213:1987, 　CAN /CSA-C22.2 No. 60079-0:11, CAN/CSA-C22.2 No. 60079-11:14, 　CAN/CSA-C22.2 No. 60529:05, CAN/CSA-C22.2 No. 61010-1-12, 　CAN/CSA-C22.2 No. 61010-2-030-12 　Intrinsically safe for 　Class I, II, III, Division 1, Groups A, B, C, D, E, F, G T4 　Ex ia IIC T4 Ga 　Non-incendive for 　Class I, II, Division 2, Groups A, B, C, D, F, G T4 　Class III Division 1 T4 　Ambient Temperature: –55 to 60°C 　Enclosure Type: 4X, IP66/IP67 　Electrical parameters: 　Intrinsically safe for 　　Supply/Output circuit: Terminals: +, – 　　FISCO field device or 　　U_i=30V, I_i=300mA, P_i=1.2W, C_i=2.2nF, L_i=0mH 　　Sensor circuit: Terminals: 1, 2, 3, 4, 5 　　U_o=6V, I_o=90mA, P_o=135mW, C_o=10μF, L_o=3.9mH 　Non-incendive for 　　Supply/Output circuit: Terminals: +, – 　　U_i=30V, I_i=300mA, P_i=1.2W, C_i=2.2nF, L_i=0mH 　　Sensor circuit: Terminals: 1, 2, 3, 4, 5 　　U_o=6V, I_o=90mA, P_o=135mW, C_o=10μF, L_o=3.9mH 　Dielectric strength: 500 V a.c.r.m.s.,1 min (Without /A) [Explosionproof approval] 　Same as CF1	**CU15**

Item	Description	Code
NEPSI	4-20mA and Fieldbus: [Flameproof and Dust Ignition Proof Approval] 　Applicable Standard: GB3836.1-2010, GB3836.2-2010, GB12476.1-2013, GB12476.5-2013 　Certificate No. GYJ16.1396X 　Ex d IIC T6/T5 Gb, Ex tD A21 IP66/IP67 T70°C/T90°C 　Ambient Temperature for Gas Atmospheres: –40 to 75°C for T6, –40 to 80°C for T5 　Ambient Temperature for Dust Atmospheres: –30 to 65°C for T70°C, –30 to 80°C for T90°C 　Enclosure: IP66/IP67 　Electrical Connection: 1/2 NPT female and M20 female[*1]	**NF2**
	4-20mA: [Intrinsically safe approval] 　Applicable Standard: GB 3836.1-2010, GB 3836.4-2010 GB 3836.20-2010 　Certificate No. GYJ16.1423X 　Ex ia IIC T4/T5 Ga 　Ambient Temperature: –40 to 70°C for T4, –40 to 50°C for T5 　Enclosure: IP66/IP67 in accordance with only IEC 60529 　Entity Parameters: 　Supply/Output circuit: U_i=30V, I_i=200mA, P_i=1.0W, C_i=22nF, L_i=0mH 　Sensor circuit: U_o=6V, I_o=90mA, P_o=135mW, C_o=10µF, L_o=3.9mH 　Dielectric strength: 500 V a.c.r.m.s.,1 min 　[+, -, C, 1, 2, 3, 4, 5] to Earth terminal 　[+, -, C] to [1, 2, 3, 4, 5]	**NS2**
	Fieldbus: [Intrinsically safe approval] 　Applicable Standard: GB 3836.1-2010, GB 3836.4-2010, GB3836.20-2010 　Certificate No. GYJ16.1423X 　Ex ia IIC T4 Ga 　Ambient Temperature: –55 to 60°C for T4 　Enclosure: IP66/IP67 in accordance with only IEC 60529 　FISCO field device 　Entity Parameters: 　Supply/Output circuit: U_i=30V, I_i=300mA, P_i=1.2W, C_i=2.2nF, L_i=0mH 　Sensor circuit: U_o=6V, I_o=90mA, P_o=135mW, C_o=10µF, L_o=3.9mH 　Dielectric strength: 500 V a.c.r.m.s.,1 min 　[+, -, 1, 2, 3, 4, 5] to Earth terminal 　[+, -] to [1, 2, 3, 4, 5]	**NS25**

Item	Description	Code
INMETRO[6]	[4-20mA & Fieldbus: Flameproof and dust ignition proof approval] Applicable Standard: ABNT NBR IEC 60079-0:2013 Versão Corrigida 2: 2016, ABNT NBR IEC60079-1:2016, ABNT NBR IEC 60079-31:2014 Certificate: DEKRA 16.0009 Ex db IIC T6/T5 Gb, Ex tb IIIC T70°C/ 90°C Db Ambient Temperature for Gas: –40 to +75°C for T6, –40 to +80°C for T5 Ambient Temperature for Dust: –30 to +65°C for T70°C, –30 to +80°C for T90°C Enclosure: IP66/IP67 Electrical Connection: 1/2 NPT female and M20 female[1]	UF1

	4-20mA:
	[Intrinsically safe approval]
	Applicable Standard: ABNT NBR IEC 60079-0:2013 Versão Corrigida 2:2016,
	ABNT NBR IEC 60079-11:2013
	Certificate: ABNT 17.0001X
	Ex ia IIC T5...T4 Ga
	Ambient Temperature: –40 to 70 °C for T4, –40 to 50 °C for T5
	Enclosure: IP66/IP67
	Supply/Output circuit:
	  Ui=30V, Ii=200mA, Pi=1.0W, Ci=22nF, Li=0mH
	Sensor circuit:
	  Uo=6V, Io=90mA, Po=135mW, Co=10µF, Lo=3.9mH
	Dielectric strength: 500 V a.c.r.m.s.,1 min (Without /A)
		US1

	Fieldbus:
	[Intrinsically safe approval "ia"]
	Applicable Standard: ABNT NBR IEC 60079-0:2013 Versão Corrigida 2:2016,
	ABNT NBR IEC 60079-11:2013
	Certificate: ABNT 17.0001X
	Ex ia IIC T4 Ga
	Ambient Temperature: –55 to 60 °C
	Enclosure: IP66/IP67
	Supply/Output circuit:
	  FISCO field device and
	  Ui=30V, Ii=300mA, Pi=1.2W, Ci=2.2nF, Li=0mH
	Sensor circuit:
	  Uo=6V, Io=90mA, Po=135mW, Co=10µF, Lo=3.9mH
	Dielectric strength: 500 V a.c.r.m.s.,1 min (Without /A)
	[Intrinsically safe approval "ic"]
	Applicable Standard: ABNT NBR IEC 60079-0:2013 Versão Corrigida 2:2016,
	ABNT NBR IEC 60079-11:2013
	Certificate: ABNT 17.0001X
	Ex ic IIC T4 Gc
	Ambient Temperature: –30 to 70 °C
	Enclosure: IP66/IP67
	Overvoltage category: I
	Supply/Output circuit:
	  FISCO field device and
	  Ui=32V, Ci=2.2nF, Li=0mH
	Sensor circuit:
	  Uo=6V, Io=90mA, Po=135mW, Co=10µF, Lo=3.9mH
	Dielectric strength: 500 V a.c.r.m.s.,1 min (Without /A)
		US15

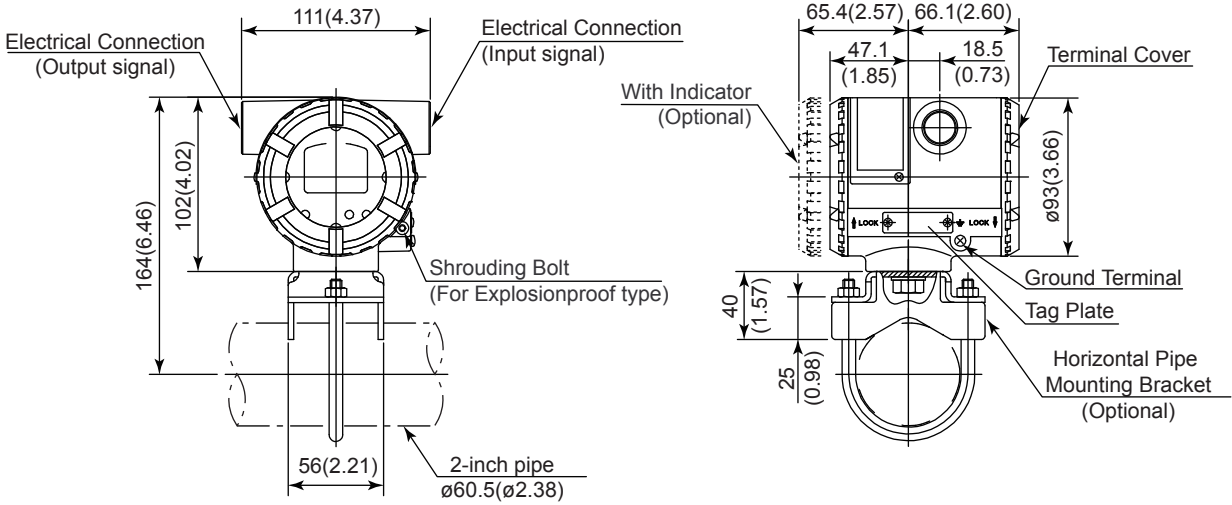| Item	Description	Code
KOSHA	[4-20mA & Fieldbus: Flameproof and dust ignition proof approval] Applicable Standard: Notice of Ministry of Labor No. 2016-54, harmorized with IEC 60079-0:2011, IEC 60079-1:2014, IEC 60079-31:2013 Certificate: 17-AV4BO-0457 (Flameproof) 17-AV4BO-0458 (Dust Ignition Proof) Ex d IIC T6/ T5, Ex tD A21 IP66/IP67 T70°C/ T90°C Ambient Temperature for Gas Atmospheres: –40 to 75°C for T6, –40 to 80°C for T5 Ambient Temperature for Dust Atmospheres: –30 to 65°C for T70°C, –30 to 80°C for T90°C Enclosure: IP66/IP67 Electrical Connection: 1/2 NPT female and M20 female[*1]	**PF2**
	4-20mA: [Intrinsically safe approval] Applicable Standard: Notice of Ministry of Labor No. 2016-54, harmorized with IEC 60079-0: 2011, IEC 60079-11: 2011 Certificate: 17-AV4BO-0459X Ex ia IIC T5…T4 Ambient Temperature: –40 to 70 °C for T4, –40 to 50 °C for T5 Enclosure: IP66/IP67 Supply/Output circuit: Terminals: +, – $Ui=30V$, $Ii=200mA$, $Pi=1.0W$, $Ci=22nF$, $Li=0mH$ Sensor circuit: Terminals: 1, 2, 3, 4, 5 $Uo=6V$, $Io=90mA$, $Po=135mW$, $Co=10\mu F$, $Lo=3.9mH$ Dielectric strength: 500 V a.c.r.m.s.,1 min (Without /A) Electrical Connection: 1/2 NPT female and M20 female[*1]	**PS2**
	Fieldbus: [Intrinsically safe approval] Applicable Standard: Notice of Ministry of Labor No. 2016-54, harmorized with IEC 60079-0: 2011, IEC 60079-11: 2011 Certificate: 17-AV4BO-0459X Ex ia IIC T4 Ambient Temperature: –55 to 60°C Enclosure: IP66/IP67 Supply/Output circuit: Terminals: +, – FISCO field device and $Ui=30V$, $Ii=300mA$, $Pi=1.2W$, $Ci=2.2nF$, $Li=0mH$ Sensor circuit: Terminals: 1, 2, 3, 4, 5 $Uo=6V$, $Io=90mA$, $Po=135mW$, $Co=10\mu F$, $Lo=3.9mH$ Dielectric strength: 500 V a.c.r.m.s.,1 min (Without /A) Electrical Connection: 1/2 NPT female and M20 female[*1]	**PS25**

Item	Description	Code
EAC[*6]	[4-20mA & Fieldbus: Flameproof and dust ignition proof approval] Applicable Standard: ГОСТ 31610.0-2014 ГОСТ IEC 60079-1-2013 ГОСТ IEC 60079-31-2013 Certificate: TC RU C-JP.ПБ98.B.00040 1Ex db IIC T6…T5 Gb, Ex tb IIIC T70 °C…T90 °C Db Ambient Temperature for Gas Atmospheres: –40 to 75°C for T6, –40 to 80°C for T5 Ambient Temperature for Dust Atmospheres: –30 to 65°C for T70°C, –30 to 80°C for T90°C Enclosure: IP66/IP67 Electrical Connection: 1/2 NPT female and M20 female[*1]	**GF1**[*5]
	4-20mA: [Intrinsically safe approval] Applicable Standard: ГОСТ 31610.0-2014 ГОСТ 31610.11-2014 Certificate: TC RU C-JP.ПБ98.B.00040 0Ex ia IIC T4…T5 Ga X Ambient Temperature: –40 to 70 °C for T4, –40 to 50 °C for T5 Enclosure: IP66/IP67 Supply/Output circuit: Terminals: +, – U_i=30V, I_i=200mA, P_i=1.0W, C_i=22nF, L_i=0mH Sensor circuit: Terminals: 1, 2, 3, 4, 5 U_o=6V, I_o=90mA, P_o=135mW, C_o=10µF, L_o=3.9mH Dielectric strength: 500 V a.c.r.m.s.,1 min (Without /A) Electrical Connection: 1/2 NPT female and M20 female[*1]	**GS1**[*5]
	Fieldbus: [Intrinsically safe approval] Applicable Standard: ГОСТ 31610.0-2014 ГОСТ 31610.11-2014 Certificate: TC RU C-JP.ПБ98.B.00040 0Ex ia IIC T4 Ga X Ambient Temperature: –55 to 60°C Enclosure: IP66/IP67 Supply/Output circuit: Terminals: +, – FISCO field device and U_i=30V, I_i=300mA, P_i=1.2W, C_i=2.2nF, L_i=0mH Sensor circuit: Terminals: 1, 2, 3, 4, 5 U_o=6V, I_o=90mA, P_o=135mW, C_o=10µF, L_o=3.9mH Dielectric strength: 500 V a.c.r.m.s.,1 min (Without /A) Electrical Connection: 1/2 NPT female and M20 female[*1]	**GS15**[*5]

*1: Applicable for Electrical Connection Code 2 and 4.
*2: Applicable for Electrical Connection Code 2.
*3: For Explosionproof approval.
*4: For Intrinsically safe approval/non-incendive approval.
*5: GF1, /GS1 and /GS15 shall be combined with either /VE or /VR.
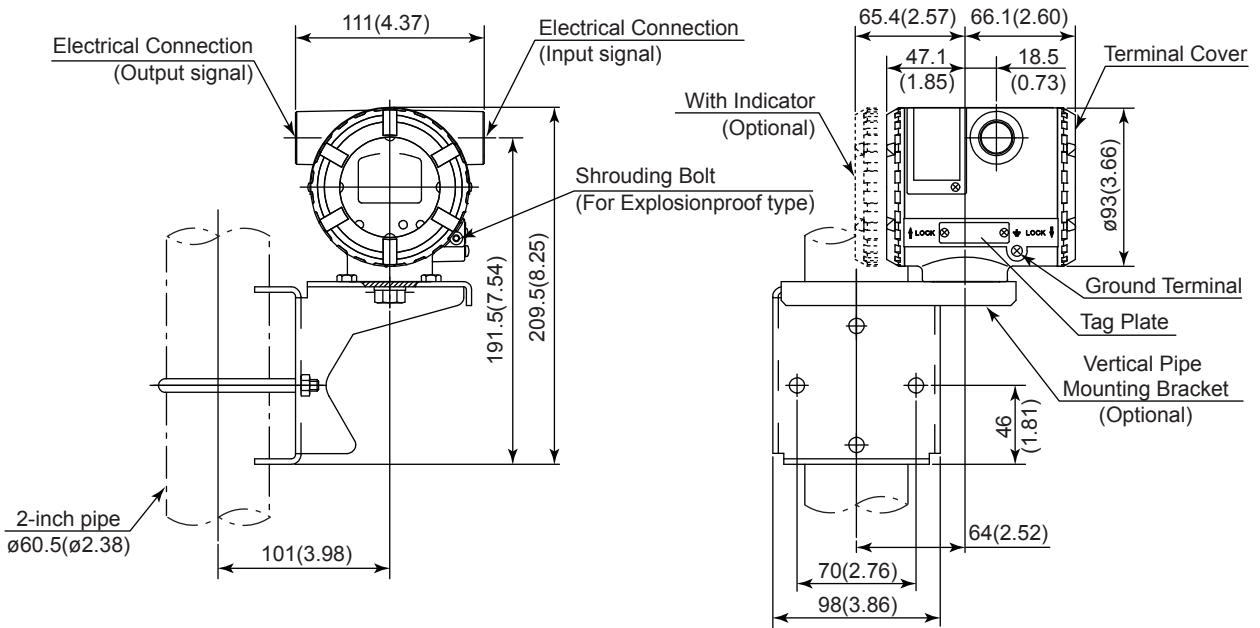*6: Not applicable for BRAIN type.

■ DIMENSIONS

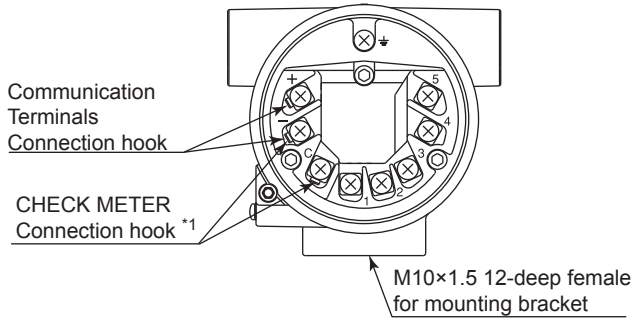Unit: mm (Approx. inch)

● **2-inch horizontal pipe mounting**

Electrical Connection (Output signal)
111(4.37)
Electrical Connection (Input signal)
102(4.02)
164(6.46)
Shrouding Bolt (For Explosionproof type)
56(2.21)
2-inch pipe ø60.5(ø2.38)

65.4(2.57) 66.1(2.60)
47.1 (1.85) 18.5 (0.73)
Terminal Cover
With Indicator (Optional)
ø93(3.66)
Ground Terminal
Tag Plate
Horizontal Pipe Mounting Bracket (Optional)
40 (1.57)
25 (0.98)

● **2-inch vertical pipe mounting**

Electrical Connection (Output signal)
111(4.37)
Electrical Connection (Input signal)
Shrouding Bolt (For Explosionproof type)
191.5(7.54)
209.5(8.25)
2-inch pipe ø60.5(ø2.38)
101(3.98)

65.4(2.57) 66.1(2.60)
47.1 (1.85) 18.5 (0.73)
Terminal Cover
With Indicator (Optional)
ø93(3.66)
Ground Terminal
Tag Plate
Vertical Pipe Mounting Bracket (Optional)
46 (1.81)
64(2.52)
70(2.76)
98(3.86)

F02E.ai

● **Terminals**

Communication
Terminals
Connection hook

CHECK METER
Connection hook *1

M10×1.5 12-deep female
for mounting bracket

Terminal Configuration

$\pm$	Power supply and output terminal
$\overline{C}$	External indicator (ammeter) termial *1
$\pm$	Ground terminal

*1 : When using an external indicator or a check meter,
the internal resistance must be 10Ω or less.
The hook is not available for Fieldbus
communication type.

F03E.ai

● **Input Wiring**
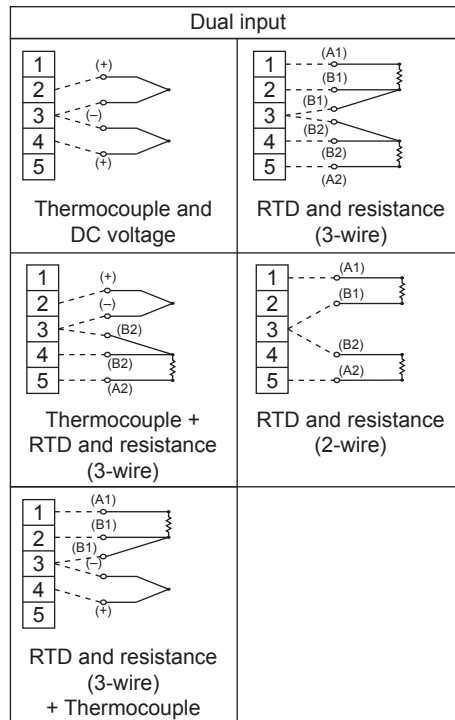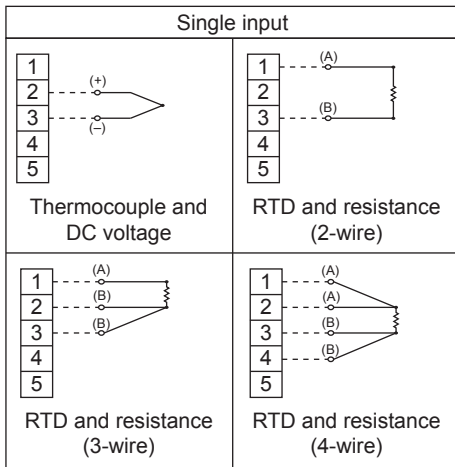
F04E.ai

< Ordering Information >

Specify the following when ordering Model, suffix codes, and optional codes.

If not specified, the instrument is shipped with the settings shown in Table A and B. Specify the following when necessary.

4-20mA type (HART and BRAIN type)

1. Sensor type.
   For RTD and resistance input, specify the number of wire as well. (Example: Pt100 3-wire system) For sensor input code-2, specify the type for two inputs. In this case, PV (Sensor1 value) and SV (Sensor2 value) are alternately displayed on the integral indicator with sensor back up DISABLE.
2. Calibration range and unit
   1) Calibration range can be specified within the measurement range shown in Table 1. Also, set the upper limit is larger than the lower limit.
   2) Specify one range from °C, K, °F or °R for temperature input. It is not necessary to specify the unit of mV and ohm inputs, for these units automatically will be mV or Ω.
3. Tag Number (if required)
   Specify Tag number (up to 16 Characters) to be engraved on the tag plate. The specified letters are written on Tag (16 Characters) in the amplifier memory.
4. Software tag (HART type)
   Specified characters (up to 32 characters) are set as "Tag" (the first 8 characters) and "Long tag (32 characters) in the amplifier memory. Use alphanumeric capital letters. When the "SOFTWARE TAG" is not specified, "TAG NO" is set as "Tag" (the first 8 characters) and "Long tag" (32 characters) in the amplifier memory.
5. Other factory configurations (HART type)
   Specifying option code CA will allow further configuration at factory.
   Descriptor (up to 16 characters)
6. Sensor back up
   Select 'DISABLE' or 'ENABLE'.

Fieldbus type

1. Sensor type.
   For RTD and resistance input, specify the number of wire as well. For sensor input code-2, specify the type for two inputs. (Example: Pt100 3-wire system) In this case, AI1 (Sensor1) value and AI2 (Sensor2) value are alternately displayed on the integral indicator with sensor back up DISABLE.
2. Calibration range (XD_SCALE)
   For sensor input code-2, specify the range for two inputs.
3. Units of calibration range:
   Specify only one unit from the table, 'Settings when shipped.' For sensor input code-2, specify the unit for two inputs.
4. Output mode (L_TYPE)
   Select 'Direct' or 'Indirect .'
5. Output scale (OUT_SCALE)
   For sensor input code-2, specify the scale for two inputs.
6. Output scale unit
   Specify only one unit from the table, 'Settings when shipped.' For sensor input code-2, specify the unit for two inputs.
7. Tag Number
   Specify Tag number (up to 16 Characters) to be engraved on the tag plate.
8. Software Tag (PD_TAG)
   Specify software tag (up to 32 Characters) to be written on the amplifier memory.
9. Node Address
10. Operation Functional Class
    Select 'BASIC' or 'LINK MASTER'.
11. Sensor back up
    Select 'DISABLE' or 'ENABLE'.

< Factory Setting >

Table A. 4-20mA type (HART and BRAIN type)

Input sensor type [1]	"Pt100" or as specified in order
Wire connection (For RTD) [1]	"3-wire system" or as specified in order
Calibration range	"0 to 100" or as specified in order
Calibration unit (TC and RTD)	"°C" or as specified in order
Sensor burnout [2]	High (110%, 21.6 mA DC)
Output in Transmitter failure [2]	High (110%, 21.6 mA DC or more)
Sensor backup	'DISABLE' or as specified
Tag No.	"Blank" or as specified in order

[1]: For sensor input code-2, sensor 2 is set in nonconnection.
[2]: Except when Optional code C1 or C2 is specified.

Table B. Fieldbus type

Input sensor type [1]	"Pt100" or as specified in order
Wire connection (For RTD) [1]	"3-wire system" or as specified in order
Calibration range [1]	"0 to 100" or as specified in order
Calibration unit (TC and RTD)	"°C" or as specified in order
Output Scale [1]	"0 to 100%"
Output mode	"Direct"
Node Address (in hexadecimal)	'0xF3' unless otherwise specified in order
Operation functional Class	'BASIC', or as specified in order
Sensor backup [2]	'DISABLE' or as specified in order
Tag Number (Tag plate)	"Blank" or as specified in order
Software Tag (PD_TAG)	'TT1001' unless otherwise specified in order.

[1]: For sensor input code-2, sensor 2 is set in nonconnection.
[2]: Channel settings of AI function blocks depend on sensor backup setting.
   Disable: AI1= Sensor1,
             AI2= If Sensor2 type is specified then Sensor2 else Terminal temperature
   Enable: AI1= Backup temperature,
             AI2= Terminal temperature