General Specifications

EJA440E
Gauge Pressure Transmitter

DPharp EJA™

GS 01C31E02-01EN [Style: S2]

The high performance gauge pressure transmitter EJA440E features single crystal silicon resonant sensor and is suitable to measure liquid, gas, or steam pressure. The EJA440E outputs a 4 to 20 mA DC signal corresponding to the measured pressure. It also features quick response, remote setup and monitoring via BRAIN or HART communications and self-diagnostics. FOUNDATION Fieldbus, PROFIBUS PA and 1 to 5 V DC with HART (Low Power) protocol types are also available.

EJA-E series models in their standard configuration, with the exception of the Fieldbus, PROFIBUS and Low Power types, are certified as complying with SIL 2 for safety requirement.



■ STANDARD SPECIFICATIONS

Refer to GS 01C31T02-01EN for Fieldbus communication type and GS 01C31T04-01EN for PROFIBUS PA communication type for the items marked with "◊."

□ SPAN AND RANGE LIMITS

Measurement Span/Range		MPa	psi (/D1)	bar (/D3)	kgf/cm² (/D4)
C	Span	5 to 32	720 to 4500	50 to 320	50 to 320
	Range	−0.1 to 32	−14.5 to 4500	−1 to 320	−1 to 320
D	Span	5 to 50	720 to 7200	50 to 500	50 to 500
	Range	−0.1 to 50	−14.5 to 7200	−1 to 500	−1 to 500

□ PERFORMANCE SPECIFICATIONS

Zero-based calibrated span, linear output, wetted parts material code 'S' and silicone oil, unless otherwise mentioned.
For Fieldbus and PROFIBUS PA communication types, use calibrated range instead of span in the following specifications.

Specification Conformance
EJA-E series ensures specification conformance to at least ±3σ.

Reference Accuracy of Calibrated Span
(includes the effects of terminal-based linearity, hysteresis, and repeatability)

Measurement span		C
Reference accuracy	X ≤ span	±0.055% of Span
	X > span	±(0.015+0.01 URL/span)% of Span
X		8 MPa (1160 psi)
URL (upper range limit)		32 MPa (4500 psi)

Measurement span		D
Reference accuracy	X ≤ span	±0.055% of Span
	X > span	±(0.015+0.0064 URL/span)% of Span
X		8 MPa (1160 psi)
URL (upper range limit)		50 MPa (7200 psi)

Ambient Temperature Effects per 28°C (50°F) Change

Capsule	Effect
C	±(0.084% Span + 0.035% URL)
D	±(0.084% Span + 0.035% URL)

Stability (All normal operating condition)
±0.1% of URL per 10 years

Power Supply Effects(Output signal code D and J)
±0.005 % per Volt (from 21.6 to 32 V DC, 350Ω)

Vibration Effects
Amplifier housing code 1 and 3:
Less than 0.1% of URL when tested per the requirements of IEC60770-1 field or pipeline with high vibration level (10-60 Hz, 0.21 mm displacement/60-2000 Hz 3 g)
Amplifier housing code 2:
Less than ±0.1% of URL when tested per the requirements of IEC60770-1 field with general application or pipeline with low vibration level (10-60 Hz 0.15mm displacement /60-500 Hz 2g)

Mounting Position Effects
Rotation in diaphragm plane has no effect. Tilting up to 90 degree will cause zero shift up to 0.4 kPa (1.6 inH$_2$O) which can be corrected by the zero adjustment.

Response Time (All capsules) "◊"
90 ms
When software damping is set to zero and including dead time of 45 ms (nominal)

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□ FUNCTIONAL SPECIFICATIONS

Output "◊"

For 4 to 20 mA HART / BRAIN (Output signal code D and J)

Two wire 4 to 20 mA DC output with digital communications, linear or square root programmable. BRAIN or HART FSK protocol are superimposed on the 4 to 20 mA signal.
Output range: 3.6 mA to 21.6 mA
Output limits conforming to NAMUR NE43 can be pre-set by option code C2 or C3.

For 1 to 5 V HART (Output signal code Q)

Three or four wire low power 1 to 5 V DC output with HART, linear or square root programmable. HART protocol are superimposed on the 1 to 5 V DC signal.
Output range: 0.9 V to 5.4 V DC

Failure Alarm

For 4 to 20 mA HART / BRAIN (Output signal code D and J)

Output status at CPU failure and hardware error;
Up-scale: 110%, 21.6 mA DC or more (standard)
Down-scale: −5%, 3.2 mA DC or less

For 1 to 5 V HART (Output signal code Q)

Analog output status at CPU failure and hardware error;
Up-scale: 110%, 5.4 V DC or more (standard)
Down-scale: −5%, 0.8 V DC or less

Damping Time Constant (1st order)

Amplifier's damping time constant is adjustable from 0.00 to 100.00 s by software and added to response time.

Note: For BRAIN protocol type, when the software damping is set to less than 0.5 s, communication may occasionally be unavailble during the operation, especially while output changes dynamically. The default setting of damping ensures stable communication.

Update Period "◊"

Pressure: 45 ms

Zero Adjustment Limits

Zero can be fully elevated or suppressed, within the lower and upper range limits of the capsule.

External Zero Adjustment

External zero is continuously adjustable with 0.01% incremental resolution of span. Re-range can be done locally using the digital indicator with rangesetting switch.

Integral Indicator (LCD display) "◊"

5-digit numerical display, 6-digit unit display and bar graph.
The indicator is configurable to display one or up to three of the following variables periodically.; pressure in %, scaled pressure, measured pressure. See also "Factory Setting".

Local Parameter Setting (Output signal code D, J and Q)

Parameter configuration by the external zero adjustment screw and push button (Integral indicator code E) offers easy and quick setup for parameters of Loop test, Tag number, Unit, LRV, URV, Damping, Output mode (linear/square root), Display out 1, and Re-range by applying actual pressure (LRV/URV) and Device Information.

Burst Pressure Limits

132 MPa (19100 psi)

Self Diagnostics

CPU failure, hardware failure, configuration error, and over-range error for pressure and capsule temperature.
User-configurable process high/low alarm for pressure is also available.

Signal Characterizer (Output signal code D, J and Q)

User-configurable 10-segment signal characterizer for 4 to 20 mA output.

SIL Certification

EJA-E series transmitters except Fieldbus, PROFIBUS PA and 1-5V DC with HART (Low Power) communication types are certified in compliance with the following standards;
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.
Reliability Data different depending on hardware and software revision.
For details, refer to Functional Safety Data Sheet. (Document number: TI 01C25A05-01EN or TI 01C25A05-21EN for option code SLT)
The document can be downloaded from the website of Yokogawa.
(Website address: https://www.yokogawa.com/solutions/products-platforms/field-instruments/)

□ 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 LCD display

Process Temperature Limits

−40 to 120°C (−40 to 248°F)

Ambient Humidity Limits

0 to 100% RH

Maximum Over Pressure

Capsule	Pressure
C	48 MPa (6750 psi)
D	60 MPa (8700 psi)

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Working Pressure Limits (Silicone oil)

Maximum Pressure Limits

Capsule	Pressure
C	32 MPa (4500 psi)
D	50 MPa (7200 psi)

Minimum Pressure Limit

See graph below

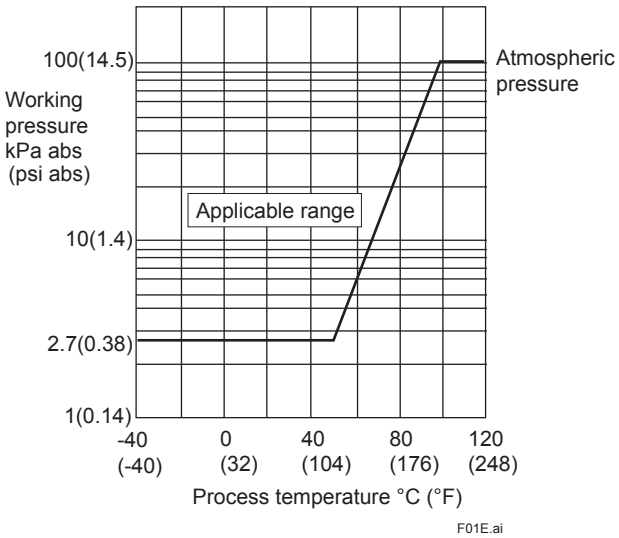


Figure 1. Working Pressure and Process Temperature

Supply & Load Requirements

(Output signal code D and J. Optional features or approval codes may affect electrical requirements.)

With 24 V DC supply, up to a 550Ω load can be used. See graph below.

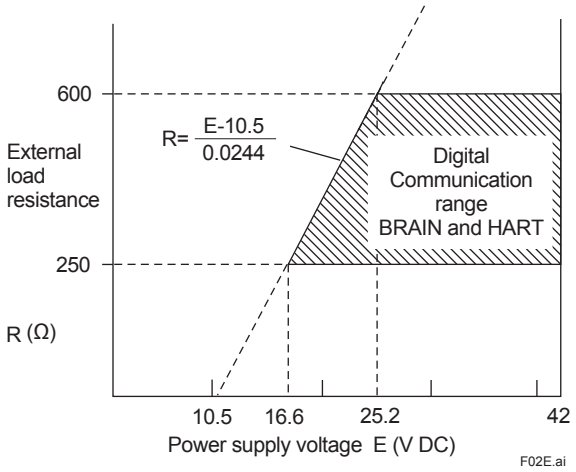


Figure 2. Relationship Between Power Supply Voltage and External Load Resistance (Output signal code D and J)

Supply Voltage "◊"

For 4 to 20 mA HART / BRAIN (Output signal code D and J)

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, type n, or non-incendive type.
Minimum voltage limited at 16.6 V DC for digital communications, BRAIN and HART

For 1 to 5 V HART (Output signal code Q)

Power supply :
9 to 28 V DC for general use and flame proof type.
Power Consumption :
0.96 mA to 3 mA, 27 mW

Load for 4 to 20 mA HART / BRAIN (Output signal code D and J)

0 to 1290Ω for operation
250 to 600Ω for digital communication

Output Load for 1 to 5 V HART (Output signal code Q)

1 MΩ or greater (meter input impedance)
Note that with three-wire connection, the cable length may affect the measurement accuracy of the output signal.

Communication Requirements "◊"

(Approval codes may affect electrical requirements.)

BRAIN

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.

EMC Conformity Standards

EN 61326-1 Class A, Table2
EN 61326-2-3
EN 61326-2-5 (for fieldbus)

European Pressure Equipment Directive 2014/68/EU

Sound Engineering Practice

With option code /PE3

Category III, Module H, Type of Equipment: Pressure Accessory-Vessel, Type of Fluid: Liquid and Gas, Group of Fluid: 1 and 2

EU RoHS Directive

EN IEC 63000

Safety Requirement Standards

EN 61010-1, C22.2 No.61010-1

- Installation category: I
  (Anticipated transient overvoltage 330 V)
- Pollution degree: 2
- Indoor/Outdoor use

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□ PHYSICAL SPECIFICATIONS

Wetted Parts Materials

Diaphragm, cover flange, process connector, capsule gasket, and vent/drain plug
Refer to "MODEL AND SUFFIX CODES."

Process connector gasket/O-ring
Fluorinated rubber (o-ring) for C capsule
Glass reinforced Teflon (gasket) for D capsule

Non-wetted Parts Materials

Bolting
B7 carbon steel, 316L SST or 660 SST

Housing
- Low copper cast aluminum alloy
- Low copper cast aluminum alloy with corrosion resistance properties (copper content ≤ 0.03%, iron content ≤ 0.15%) (optional)
- ASTM CF-8M Stainless steel (optional)

Coating of housing
[for aluminum housing]
Polyester resin 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

Degrees of protection
IP66/IP67, Type 4X

Cover O-rings
Buna-N, fluoro-rubber (optional)

Name plate and tag
316 SST

Fill fluid
Silicone, Fluorinated oil (optional)

Weight
[Installation code 7, 8 and 9]
4.9 kg(10.8 lb) without integral indicator, mounting bracket, and process connector.
Add 1.5 kg (3.3lb) for Amplifier housing code 2.

Connections
Refer to "MODEL AND SUFFIX CODES."
Process Connection of Cover Flange: IEC61518 (for C capsule)

< Related Instruments>
FieldMate Versatile Device Management Wizard: Refer to GS 01R01A01-01E.
BRAIN TERMINAL: Refer to GS 01C00A11-00E
Power Distributor: Refer to GS 01B04T01-02E or GS 01B04T02-02E

< Reference >
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- Hastelloy; Trademark of Haynes International Inc.
- HART®: Registered trademark of FieldComm Group.
- FOUNDATION Fieldbus; Trademark of FieldComm Group.
- PROFIBUS; Registered trademark of Profibus Nutzerorganisation e.v., Karlsruhe, Germany.

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■ MODEL AND SUFFIX CODES

Model	Suffix Codes	Description
EJA440E	. . . . .	Gauge pressure transmitter
Output signal	**-D**	4 to 20 mA DC with digital communication (BRAIN protocol)
	-J	4 to 20 mA DC with digital communication (HART 5/HART 7 protocol)*1
	-F	Digital communication (FOUNDATION Fieldbus protocol, refer to GS 01C31T02-01EN)
	-G	Digital communication (PROFIBUS PA protocol, refer to GS 01C31T04-01EN)
	-Q	Low Power, 1 to 5 V DC with digital communication (HART 7 protocol)
Measurement span (capsule)	**C**	5 to 32 MPa (720 to 4500 psi)
	D	5 to 50 MPa (720 to 7200 psi)
Wetted parts material *2	**S**	Refer to "Wetted Parts Material" Table below.
Process connections	**3**	with 1/4 NPT female process connector*3*4
	4	with 1/2 NPT female process connector*3*4
►	**5**	without process connector (1/4 NPT female on the cover flanges)*3
Bolts and nuts materia	**J**	B7 carbon steel
	G	316L SST
	C	660 SST
Installation	**-3**	Vertical piping, right side high pressure, and process connection down side
	-7	Vertical piping, left side high pressure, and process connection down side
	-8	Horizontal piping and right side high pressure
►	**-9**	Horizontal piping and left side high pressure
	-U	Universal flange
Amplifier housing ►	**1**	Cast aluminum alloy
	3	Cast aluminum alloy with corrosion resistance properties *5
	2	ASTM CF-8M stainless steel *6
Electrical connection	**0**	G1/2 female, one electrical connection without blind plugs
►	**2**	1/2 NPT female, two electrical connections without blind plugs
	4	M20 female, two electrical connections without blind plugs
	5	G1/2 female, two electrical connections and a blind plug *7
	7	1/2 NPT female, two electrical connections and a blind plug *7
	9	M20 female, two electrical connections and a blind plug *7
	A	G1/2 female, two electrical connections and a 316 SST blind plug
	C	1/2 NPT female, two electrical connections and a 316 SST blind plug
	D	M20 female, two electrical connections and a 316 SST blind plug
Integral indicator	**D**	Digital indicator *8
	E	Digital indicator with the range setting switch (push button) *9
►	**N**	(None)
Mounting bracket ►	**B**	304 SST 2-inch pipe mounting, flat type (for horizontal piping)
	D	304 SST 2-inch pipe mounting, L type (for vertical piping)
	J	316 SST 2-inch pipe mounting, flat type (for horizontal piping)
	K	316 SST 2-inch pipe mounting, L type (for vertical piping)
	P	316 SST 2-inch pipe mounting, position adjustable L type (for vertical piping)*10
	N	(None)
Optional Codes		☐/ Optional specification

The "►" marks indicate the most typical selection for each specification.

*1: HART 5 or HART 7 is selectable. Specify upon ordering.

*2: ⚠ Users must consider the characteristics of selected wetted parts material and influence of process fluids. Specifying inappropriate materials has the potential to cause serious damage to human body and plant facilities resulted from an unexpected leak of the corrosive process fluids.

*3: Specify the process connections code 3 or 4, when using the process connector for D capsule. Without the process connector, use the 1/4 NPT male piping to directly connect to the cover flange.

*4: Lower limit of ambient and process temperature is -15°C for capsule code C.

*5: Not applicable for electrical connection code 0, 5, 7, 9 and A.

*6: Not applicable for electrical connection code 0, 5, 7 and 9.

*7: Material of a blind plug; aluminum alloy for code 5 and 9, and SUS304 for code 7.

*8: Not applicable for output signal code G.

*9: Not applicable for output signal code F.

*10: For position adjustable bracket, refer to SD 01C25B14-01EN.

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Table. Wetted Parts Materials

Wetted parts material code	Cover flange	Process connector	Capsule	Capsule gasket	Vent/Drain plug
S #	F316 SST *3	ASTM CF-8M *1*3 (C-capsule) 316 SST *3 (D-capsule)	Hastelloy C-276 *2 (Diaphragm) F316L SST, 316L SST (Others)	Teflon-coated 316L SST	316 SST

*1: Cast version of 316 SST. Equivalent to SCS14A.
*2: Hastelloy C-276 or ASTM N10276.
*3: Intergranular corrosion test passed according to ASTM A262 Practice E.
The '#'marks indicate the construction materials conform to NACE material recommendations per MR0175/ISO 15156.
Please refer to the latest standards for details. Selected materials also conform to NACE MR0103.

■ OPTIONAL SPECIFICATIONS (For Explosion Protected type) "◊"

For other agency approvals and marine approvals, please refer to GS 01C25A20-01EN.

Please select appropriate equipment in accordance with the laws and regulations of the relevant country/region, when it is used in a location where explosive atmospheres may be present.

Item	Description	Code
Factory Mutual (FM)	FM Explosionproof Approval *1 Applicable Standard: FM3600, FM3615, FM3810, NEMA 250, ANSI/UL 61010-1, ANSI/UL 61010-2-30 Explosionproof for Class I, Division 1, Groups B, C and D, Dust-ignitionproof for Class II/III, Division 1, Groups E, F and G, in Hazardous locations, indoors and outdoors (Enclosure: Type 4X) "FACTORY SEALED, CONDUIT SEAL NOT REQUIRED." Temperature class: T6, Amb. Temp.: –40 to 60°C (–40 to 140°F)	**FF1**
	FM Intrinsically safe Approval *1*3 Applicable Standard: FM 3600, FM 3610, FM 3611, FM 3810, ANSI/ISA-60079-0, ANSI/ISA-60079-11, ANSI/ISA-61010-1, NEMA 250 Intrinsically Safe for Class I, Division 1, Groups A, B, C & D, Class II, Division 1, Groups E, F & G and Class III, Division 1, Class I, Zone 0, in Hazardous Locations, AEx ia IIC Nonincendive for Class I, Division 2, Groups A, B, C & D, Class II, Division. 2, Groups F & G, Class I, Zone 2, Group IIC, in Hazardous Locations Enclosure: Type 4X, Temp. Class: T4, Amb. Temp.: –60 to 60°C (–75 to 140°F) Intrinsically Safe Apparatus Parameters [Groups A, B, C, D, E, F and G] Vmax=30 V, Imax=200 mA, Pmax=1 W, Ci=6 nF, Li=0 µH [Groups C, D, E, F and G] Vmax=30 V, Imax=225 mA, Pmax=1 W, Ci=6 nF, Li=0 µH	**FS1**
	Combined FF1 and FS1 *1*3	**FU1**
ATEX	ATEX Flameproof Approval *1 Applicable Standard: EN IEC 60079-0, EN 60079-1, EN 60079-31 Certificate: KEMA 07ATEX0109 X II 2 G Ex db IIC T6...T4 Gb, II 2 D Ex tb IIIC T85°C Db Degree of protection: IP66/IP67 Amb. Temp. (Tamb) for gas-proof : T4; –50 to 75°C (–58 to 167°F), T5; –50 to 80°C (–58 to 176°F), T6; –50 to 75°C (–58 to 167°F) Process Temp. for gas-proof (Tp): T4; –50 to 120°C (–58 to 248°F), T5; –50 to 100°C (–58 to 212°F), T6; –50 to 85°C (–58 to 185°F) Max. surface Temp. for dust-proof: T85°C (Tamb: –30 to 75°C, Tp: –30 to 85°C) *2	**KF22**
	ATEX Intrinsically safe Approval *1*3 Applicable Standard: EN IEC 60079-0, EN 60079-11 Certificate: DEKRA 11ATEX0228 X II 1 G Ex ia IIC T4 Ga, II 2 D Ex ia IIIC T85°C T100°C T120°C Db Degree of protection: IP66/IP67 Amb. Temp. (Tamb) for EPL Ga: –50 to 60°C (–58 to 140°F) Maximum Process Temp. (Tp) for EPL Ga:120°C Electrical data: Ui=30 V, Ii=200 mA, Pi=0.9 W, Ci=27.6 nF, Li=0 µH Amb. Temp. for EPL Db: –30 to 60°C *2 Max. surface Temp. for EPL Db: T85°C (Tp: 80°C), T100°C (Tp: 100°C), T120°C (Tp: 120°C)	**KS21**
	Multiple types of protection (KF22, KS21 or Intrinsically safe Ex ic) *1*3 Applicable Standard: EN IEC 60079-0, EN 60079-11 II 3 G Ex ic IIC T4 Gc, Amb. Temp.: –30 to 60°C (–22 to 140°F) *2 Ui=30 V, Ci=27.6 nF, Li=0 µH	**KU22**

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Item	Description	Code
Canadian Standards Association (CSA)	CSA Explosionproof Approval *1 Certificate: 2014354 Applicable Standard: C22.2 No. 25, C22.2 No. 30, C22.2 No. 94.2, C22.2 No.213 CAN/CSA-C22.2 No. 61010-1, CAN/CSA-C22.2 No. 61010-2-030, CAN/CSA-C22.2 No. 60079-0 CAN/CSA-C22.2 No. 60079-1, CAN/CSA-C22.2 No. 60529, ANSI/UL 122701 [For Explosion-proof] Class I, Groups B, C and D. Temperature Code: T6...T4 Process Temp.: T4; –50 to 120°C (–58 to 248°F), T5; –50 to 100°C (–58 to 212°F), T6; –50 to 85°C (–58 to 185°F) Amb.Temp.: T4; –50 to 75°C (–58 to 167°F), T5; –50 to 80°C (–58 to 176°F), T6; –50 to 75°C (–58 to 167°F) Enclosure: Type 4X [For Flameproof] Ex d IIC T6...T4 Process Temp.: T4; –50 to 120°C (–58 to 248°F), T5; –50 to 100°C (–58 to 212°F), T6; –50 to 85°C (–58 to 185°F) Amb.Temp.: T4; –50 to 75°C (–58 to 167°F), T5; –50 to 80°C (–58 to 176°F), T6; –50 to 75°C (–58 to 167°F) Enclosure: IP66/IP67 [For Dustignition-proof] Class II/III, Groups E, F and G. Temp. Code: T85°C T85°C (Tamb: –30* to 75°C, Tp: –30* to 85°C) *−15 °C (When fluorinated rubber O-ring is specified) Enclosure: Type 4X Process seal: Dual Seal with Annunciation No additional sealing required Primary seal failure annunciation: at the zero-adjustment screw.	**CF1**
	CSA Intrinsically safe Approval *1*3 Certificate: 1606623 [For Division System] Applicable Standard: CAN/CSA C22.2 No.0, CSA C22.2 No.94.2, CSA C22.2 No.213, CAN/CSA C22.2 No.61010-1, CAN/CSA C22.2 No.61010-2-030 Intrinsically Safe for Class I, Division 1, Groups A, B, C & D, Class II, Division 1, Groups E, F & G, Class III, Division 1, Nonincendive for Class I, Division 2, Groups A, B, C & D, Class II, Division 2, Groups F & G, Class III, Division 1 Enclosure: Type 4X, Temp. Code: T4 Amb. Temp.: –50 to 60°C(–58 to 140°F) *2 Electrical Parameters: [Intrinsically Safe] Vmax=30V, Imax=200mA, Pmax=0.9W, Ci=10nF, Li=0 µH [Nonincendive] Vmax=30V, Ci=10nF, Li=0 µH [For Zone System] Applicable Standard: CAN/CSA C22.2 No.60079-0, CAN/CSA C22.2 No.60079-11, CAN/CSA E60079-15, CAN/CSA C22.2 No.60529 Ex ia IIC T4, Ex nL IIC T4 Enclosure: IP66/IP67 Amb. Temp.: –50 to 60°C(–58 to 140°F) *2, Max. Process Temp.: 120°C(248°F) Electrical Parameters: [Ex ia] Ui=30V, Ii=200mA, Pi=0.9W, Ci=10nF, Li=0 µH [Ex nL] Ui=30V, Ci=10nF, Li=0 µH Process Sealing Certification Dual Seal Certified by CSA to the requirement of ANSI/ISA-12.27.01 No additional sealing required Primary seal failure annunciation: at the zero adjustment screw	**CS1**
	Combined CF1 and CS1 *1*3	**CU1**

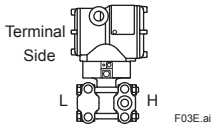
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Item	Description	Code
IECEx	IECEx Flameproof Approval *1 Applicable Standard: IEC 60079-0, IEC 60079-1, IEC 60079-31 Certificate: IECEx DEK 14.0046X Enclosure: IP66/IP67 Ex db IIC T6...T4 Gb, Ex tb IIIC T85°C Db Amb. Temp. (Tamb) for gas-proof : T4; –50 to 75°C (–58 to 167°F), T5; –50 to 80°C (–58 to 176°F), T6; –50 to 75°C (–58 to 167°F) Process Temp. for gas-proof (Tp): T4; –50 to 120°C (–58 to 248°F), T5; –50 to 100°C (–58 to 212°F), T6; –50 to 85°C (–58 to 185°F) Max. surface Temp. for dust-proof: T85°C (Tamb: –30 to 75°C, Tp: –30 to 85°C) *2	**SF22**
	IECEx Intrinsically safe and SF22 *1*3 Intrinsically safe Ex ia Certificate: IECEx DEK 11.0081X Applicable Standard: IEC 60079-0, IEC 60079-11 Ex ia IIC T4 Ga Enclosure: IP66/IP67 Amb. Temp.: –50 to 60°C (–58 to 140°F), Max. Process Temp.: 120°C (248°F) Electrical Parameters: Ui=30V, Ii=200mA, Pi=0.9W, Ci=27.6nF, Li=0 µH Intrinsically safe Ex ic Certificate: IECEx DEK 13.0061X Applicable Standard: IEC 60079-0, IEC 60079-11 Ex ic IIC T4 Gc IP code: IP66 Amb. Temp.: –30 to 60°C (–22 to 140°F) *2, Max. Process Temp.: 120°C (248°F) Electrical Parameters: Ui=30V,Ci=27.6 nF, Li=0 µH Flameproof Refer to SF22	**SU22**

*1: Applicable for Electrical connection code 2, 4, 7, 9, C and D.
*2: Lower limit of ambient temperature is –15°C (5°F) when /HE is specified.
*3: Not applicable for output signal code Q.

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■ OPTIONAL SPECIFICATIONS

Item		Description		Code
Painting	Color change	Amplifier cover only*2		P□
		Amplifier cover and terminal cover, Munsell 7.5 R4/14		PR
	Coating change	Anti-corrosion coating*1		X2
316 SST exterior parts		316 SST zero-adjustment screw and setscrews*10		HC
Fluoro-rubber O-ring		All O-rings of amplifier housing. Lower limit of ambient temperature: –15°C (5°F)		HE
Lightning protector		Transmitter power supply voltage: 10.5 to 32 V DC (10.5 to 30 V DC for intrinsically safe type, 9 to 32 V DC for Fieldbus communication type.) Allowable current: Max. 6000 A (1×40 µs), Repeating 1000 A (1×40 µs) 100 times Applicable Standards: IEC 61000-4-4, IEC 61000-4-5		A
Oil-prohibited use*3		Degrease cleansing treatment		K1
		Degrease cleansing treatment and fluorinated oilfilled capsule. Operating temperature −20 to 80°C (−4 to 176°F)		K2
		Degrease cleansing treatment	With certificates	K41
		Degrease cleansing treatment and fluorinated oilfilled capsule. Operating temperature −20 to 80°C (−4 to 176°F)	With certificates	K42
Oil-prohibited use with dehydrating treatment*3		Degrease cleansing and dehydrating treatment		K5
		Degrease cleansing and dehydrating treatment with fluorinated oilfilled capsule. Operating temperature −20 to 80°C (−4 to 176°F)		K6
		Degrease cleansing and dehydrating treatment	With certificates	K45
		Degrease cleansing and dehydrating treatment with fluorinated oilfilled capsule. Operating temperature −20 to 80°C (−4 to 176°F)	With certificates	K46
Capsule fill fluid		Flourinated oil filled in capsule Operating temperature −20 to 80°C (−4 to 176°F)		K3
Calibration units*4		P calibration (psi unit)	(See Table for Span and Range Limits.)	D1
		bar calibration (bar unit)	(See Table for Span and Range Limits.)	D3
		M calibration (kgf/cm^2 unit)	(See Table for Span and Range Limits.)	D4
Plug option*22*23		Long vent*5: Total length: 119 mm (standard: 34 mm); Total length when combining with optional code K1, K2, K5, and K6: 130 mm. Material: 316 SST U1.		U1
		Without vent and drain plugs		UN
Gold-plated capsule gasket *11		Gold-plated 316L SST capsule gasket. Without drain and vent plugs.		GS
Gold-plated diaphragm *20		Surface of isolating diaphragms are gold plated, effective for hydrogen permeation.	Gold plate thickness: 3 µm	A1
			Gold plate thickness: 10 µm	A2
Output limits and failure operation*6		Failure alarm down-scale : Output status at CPU failure and hardware error is −5%, 3.2mA DC or less for 4 to 20 mA output type, and −5%, 0.8V DC or less for 1 to 5 V output type.		C1
		NAMUR NE43 Compliant Output signal limits: 3.8 mA to 20.5 mA *19	Failure alarm down-scale: Output status at CPU failure and hardware error is −5%, 3.2 mA DC or less.	C2
			Failure alarm up-scale: Output status at CPU failure and hardware error is 110%, 21.6 mA or more.	C3
Body option*7  		Right side high pressure, without drain and vent plugs		N1
		N1 and Process connection, based on IEC61518 with female thread on both sides of cover flange, with blind kidney flanges on back. *8		N2
		N2, and Material certificate for cover flange, diaphragm, capsule body, and blind kidney flange *8		N3
Wired tag plate		316 SST tag plate wired onto transmitter (Tag No.: Maximum. 16 characters.)		N4
Data configuration at factory*9		Data configuration for HART communication type	Software damping, Descriptor, Message	CA
		Data configuration for BRAIN communication type	Software damping	CB
		Data configuration for HART communication type	Software damping, Descriptor, Message, External zero adjustment prohibition setting	CJ
		Data configuration for BRAIN communication type	Software damping, External zero adjustment prohibition setting	CK
European Pressure Equipment Directive*12		PED 2014/68/EU Category: III, Module: H, Type of Equipment: Pressure Accessory-Vessel, Type of Fluid: Liquid and Gas, Group of Fluid: 1 and 2		PE3

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Item	Description		Code
Material certificate*13	Cover flange *14		**M01**
	Cover flange, Process connector *15		**M11**
	Cover flange, Diaphragm, Capsule body*14*27		**MA1**
	Cover flange, Process connector, Diaphragm, Capsule body*15*24		**MC1**
	Cover flange, Bolt and Nut for cover flange, Diaphragm, Capsule body, Vent and Drain plug, Vent screw, Capsule gasket*14*21*22		**MG1**
	Cover flange, Process connector, Bolt and nut for cover flange, Bolt for process connector, Diaphragm, Capsule body, Vent and Drain plug, Vent screw, Capsule gasket*15*21*22		**MH1**
Calibration certificate	Text, Traceability		**L4**
	Text, Traceability, Primary standards list		**L5**
	Text, Traceability, Primary standards list, Calibration equipment list		**L6**
	Text, Traceability, Primary standards list, Calibration equipment list, Calibration equipment certificate		**L9**
Pressure test/ Leak test certificate*16	Test Pressure: 32 MPa (4500 psi)*8	Nitrogen Gas or Water*18 Retention time: one minute	**T09**
	Test Pressure: 50 MPa (7200 psi)*17		**T08**
Parameter list*25	List of setting and adjustment parameters		**YP**
Bug screen	A bug screen is installed to the process connection port of the low side cover flange		**BS**
Additional blind plug*28*29	Additional blind plug is attached to the conduit connection on both sides for storing transmitter		**PP**

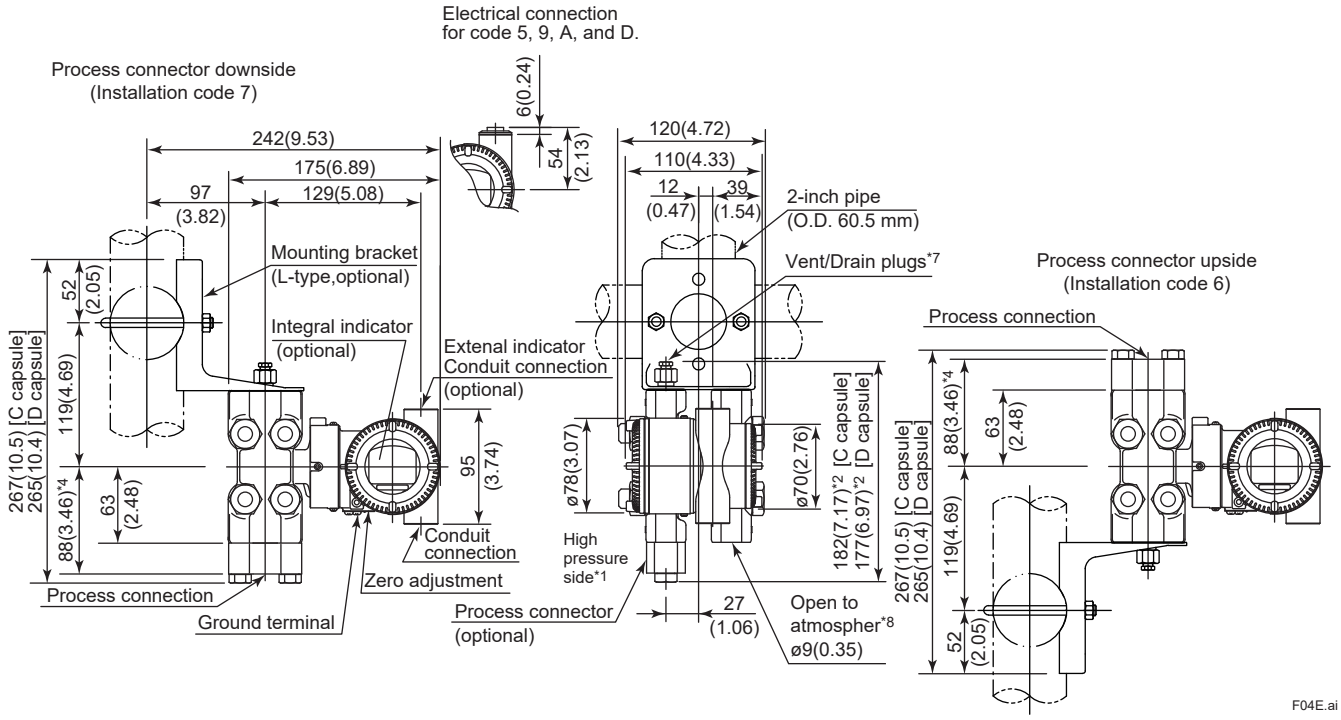
*1: Not applicable with color change option.
*2: Not applicable for amplifier housing code 2 and 3.
*3: Applicable for wetted parts material code S.
*4: The unit of MWP (Max. working pressure) on the name plate of a housing is the same unit as specified by option codes D1, D3, and D4.
*5: Applicable for vertical impulse piping type (installation code 3 or 7) and wetted parts material code S.
*6: Applicable for output signal codes D and J. The hardware error indicates faulty amplifier or capsule.
*7: Applicable for wetted parts material code S; process connection codes 3, 4, and 5; installation code 9; and mounting bracket code N. Process connection faces on the other side of zero adjustment screw.
*8: Not applicable for capsule code D.
*9: Also see 'Ordering Information'.
*10: 316 or 316L SST. The specification is included in amplifier code 2.
*11: Applicable for wetted parts material code S; process connection code 5; and installation code 8 and 9. Not applicable for option code U1, N2, N3 and M11. No PTFE is used for wetted parts.
*12: If compliance with category III is needed, specify this option code.
*13: Material traceability certification, per EN 10204 3.1B.
*14: Applicable for process connections code 5.
*15: Applicable for process connections code 3, and 4.
*16: The unit on the certificate is always Pa unit regardless of selection of option code D1, D3 or D4.
*17: Not applicable for capsule code C.
*18: Dry nitrogen gas or pure water is used for oil-prohibited use (option codes K1, K2, K5, K6, K41, K42, K45, and K46).
*19: The 1 to 5 V voltage output corresponding to 4 to 20 mA current output is applied to output signal code Q which is non-compliant to NAMUR NE43.
*20: /A2 is not applicable with FM approval.
*21: Not applicable with plug option code UN.
*22: Not applicable with option code N1, N2, N3 and GS.
*23: Not applicable for installation code -U.
*24: Applicable for option code UN and N1.
*25: Applicable for output signal code D and J.
*26: (Not used)
*27: Applicable for option code UN, N1, and GS.
*28: Not applicable for electrical connection codes 0, 2, and 4.
*29: When combined with electrical connection code 7 or C and explosion protection options (FF1, FU1, FU14, KF22, KU22, KU24, CF1, CU1, SF22, SU22, SU34, V1U1, NF21, PF23, UF1, GF12, GU12, GU14, BF21, BU21), the blind plug is shipped as an accessory.

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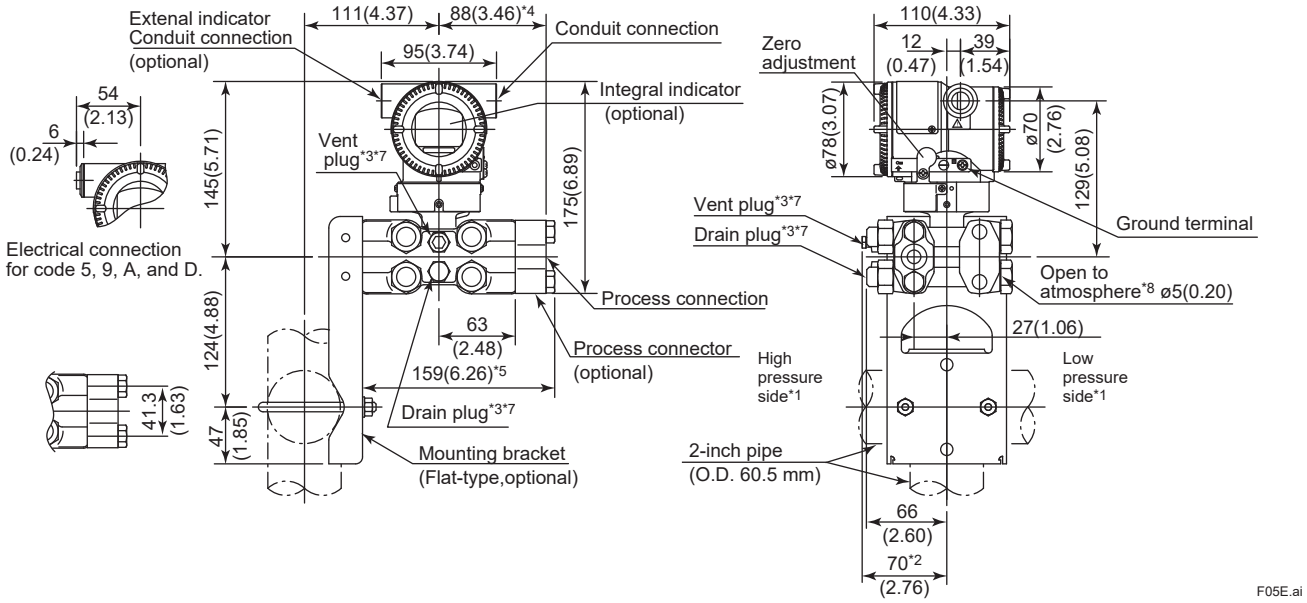
■ DIMENSIONS

Unit: mm (approx.inch)

● Vertical Impulse Piping Type



● Horizontal Impulse Piping Type (Installation code 9)

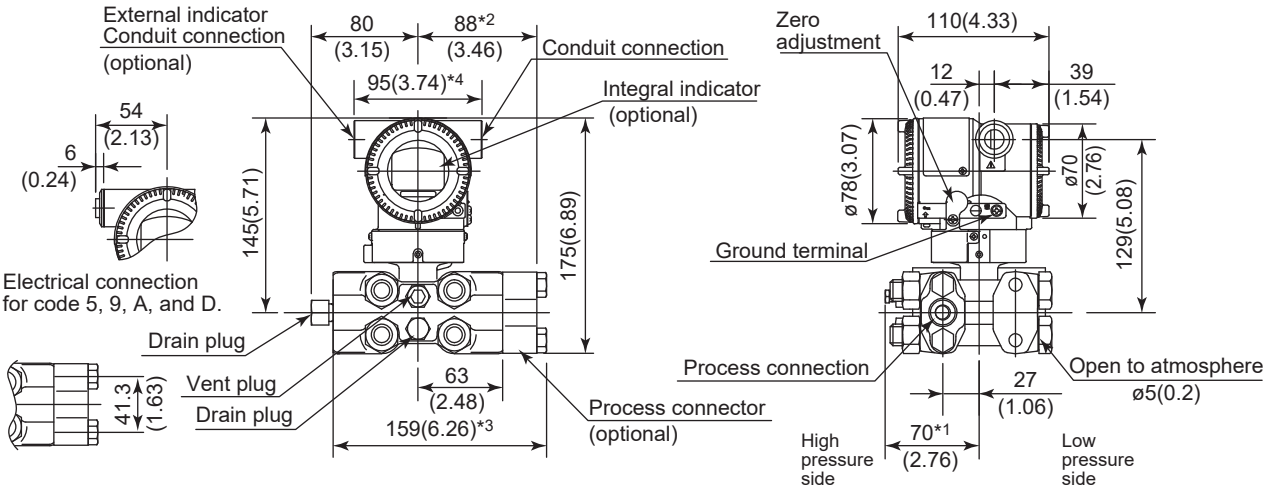


*1: When Installation code 2, 3, or 8 is selected, high and low pressure side on the above figure are reversed. (i.e. High pressure side is on the right side.)
*2: When Option code K1, K2, K5, K6, K41, K42, K45, or K46 is selected, add 15 mm (0.59 inch) to the value in the figure.
*3: Not available when Option code GS is specified.
*4: 87 mm(3.43 inch) for capsule code D.
*5: 157 mm(6.18 inch) for capsule code D.
*6: When electrical connection code 7 or C is selected, a blind plug is protruded up to 8 mm (0.31 inch) from the conduit connection.
*7: When option code UN is specified, Vent/Drain holes and plugs are not applicable.
*8: When option code BS is selected, The hole open to atmosphere on the cover flange of low pressure side is threaded and a bug screen is attached in it.

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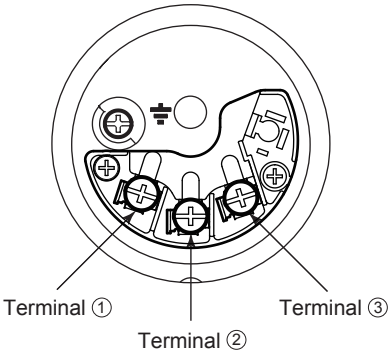
Unit: mm (approx.inch)

● Universal Flange (Installation code U)



*1: When Option code K1, K2, K5, K6, K41, K42, K45, or K46 is selected, add 15 mm (0.59 inch) to the value.
*2: 87(3.43) for D capsule.
*3: 157(6.18) for D capsule.
*4: When electrical connection code 7 or C is selected, a blind plug is protruded up to 8 mm (0.31 inch) from the conduit connection.

● Terminal Configuration



● Terminal Wiring for 4 to 20 mA output, FOUNDATION Fieldbus and PROFIBUS PA communication types

SUPPLY	+ −	① ② Power supply and output terminals
CHECK	+ −	③ ② External indicator (ammeter) terminals*1*2
		Ground terminal

*1: When using an external indicator or check meter, the internal resistance must be 10 Ω or less.
*2: Not available for FOUNDATION Fieldbus and PROFIBUS PA communication types.

● Terminal Wiring for 1 to 5 V output

SUPPLY	+ −	① ② Power supply terminals
VOUT	+ −	③ ② 1 to 5 V DC with HART communication terminals
		Ground terminal

Three or four wire connection. For four wire connection, both supply and signal lines use SUPPLY - terminal.

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< Ordering Information > "◊"
Specify the following when ordering

1. Model, suffix codes, and option codes
2. Calibration range and units
   1) Calibration range can be specified with range value specifications up to 5 digits (excluding any decimal point) for low or high range limits within the range of -32000 to 32000. When reverse range is designated, specify Lower Range Value(LRV) as greater than Upper Range Value(URV.)
   2) Specify only one unit from the table, 'Factory Settings' when shipped.'
3. Display scale and units (for transmitters equipped with integral indicator only)
   Specify either 0 to 100 % or engineering unit scale and 'Range and Unit' for engineering units scale: Scale range can be specified with range limit specifications up to 5 digits (excluding any decimal point) for low or high range limits within the range of -32000 to 32000. The unit display consists of 6-digit, therefore, if the specified unit is longer than 7 characters excluding '/', the first 6 characters will be displayed on the unit display.
4. HART PROTOCOL
   When output signal code is "J", specify the HART protocol revision "5" or "7".
5. TAG NO (if required)
   Specified characters (up to 16 characters for BRAIN, 22 characters for HART, or 16 characters for /N4 tag) are engraved on the stainless steel tag plate fixed on the housing.
6. SOFTWARE TAG (for HART only. if required)
   Specified characters (up to 32 characters) are set as "Tag" (the first 8 characters) and "Long tag"*1 (32 characters) in the amplifier memory. Use alphanumeric capital letters.
   When the "SOFTWARE TAG" is not specified, specified "TAG NO" is set as "Tag" (the first 8 characters) and "Long tag"*1 (22 characters) in the amplifier memory.
   *1: applicable only when HART 7 is selected.
7. Other factory configurations (if required) Specifying option code **/CA**, **/CB**, **/CJ**, or **/CK** will allow further configuration at factory. Following are configurable items and setting range.
   [/CA, /CJ : For HART communication type]
   1) Descriptor (up to 16 characters)
   2) Message (up to 30 characters)
   3) Software damping in second (0.00 to 100.00)
   [/CB, /CK : For BRAIN communication type]
   1) Software damping in second (0.00 to 100.00)

< Factory Setting > "◊"

Tag number	As specified in order
Software damping *1	'2.00 s' or as specified in order
Calibration range lower range value	As specified in order
Calibration range upper range value	As specified in order
Calibration range units	Selected from mmH_2O, mmH_2O(68°F), mmAq*2, mmWG*2, mmHg, Pa, hPa*2, kPa, MPa, mbar, bar, gf/cm^2, kgf/cm^2, inH_2O, inH_2O(68°F), inHg, ftH_2O, ftH_2O(68°F) or psi. (Only one unit can be specified)
Display setting	Designated value specified in order. (%, or user scaled value.)

*1: To specify this item at factory, option code **/CA**, **/CB**, **/CJ**, or **/CK** is required.
*2: Not available for HART protocol type.

< Material Cross Reference >

ASTM	JIS
316	SUS316
F316	SUSF316
316L	SUS316L
F316L	SUSF316L
304	SUS304
F304	SUSF304
660	SUH660
B7	SNB7
CF-8M	SCS14A

<Information on EU WEEE Directive>
EU WEEE (Waste Electrical and Electronic Equipment) Directive is only valid in the EU.

This instrument is intended to be sold and used only as a part of equipment which is excluded from WEEE Directive, such as large-scale stationary industrial tools, a large-scale fixed installation and so on, and, therefore, subjected to the exclusion from the scope of the WEEE Directive. The instrument should be disposed of in accordance with local and national legislation/regulations.

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