General Specifications

EJA115E
Low Flow Transmitter

DPharp EJA™

GS 01C31K01-01EN [Style: S2]

The low flow transmitter EJA115E is a differential pressure transmitter assembled with an integral orifice and excellent for very low flow measurement. It outputs a 4 to 20 mA DC signal corresponding to the measured flow. Its accurate and stable sensor can also measure the static pressure which can be shown on the integral indicator or remotely monitored via BRAIN or HART communications. Other key features include quick response, remote set-up using 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

Capsule	Differential Pressure Span	Water Equivalent Flow l/min	Air Equivalent Flow Nl/min
F	1 to 5 kPa (100 to 500 mmH2O)	0.016 to 5.0	0.44 to 140
M	2 to 100 kPa (200 to 10000 mmH2O)	0.022 to 23.0	0.63 to 635
H	20 to 210 kPa (2000 to 21000 mmH2O)	0.07 to 33.0	2.0 to 910

□ PERFORMANCE SPECIFICATIONS

[Integral Orifice]
Accuracy±5% of span
Refer to TI 01C20K00-01E for conditions.
[Differential Pressure Transmitter]
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 terminal-based linearity, hysteresis, and repeatability)

Measurement span		F
Reference accuracy	X ≤ span	±0.055% of Span
	X > span	±(0.005+0.02 URL/span)% of Span
X		2 kPa (8 inH2O)
URL (upper range limit)		5 kPa (20 inH2O)

Measurement span		M
Reference accuracy	X ≤ span	±0.055% of Span
	X > span	±(0.005+0.0025 URL/span)% of Span
X		5 kPa (20 inH2O)
URL (upper range limit)		100 kPa (400 inH2O)

Measurement span		H
Reference accuracy	X ≤ span	±0.055% of Span
	X > span	±(0.005+0.01 URL/span)% of Span
X		100 kPa (400 inH2O)
URL (upper range limit)		500 kPa (2000 inH2O)

YOKOGAWA
Yokogawa Electric Corporation
2-9-32, Nakacho, Musashino-shi, Tokyo, 180-8750 Japan
Tel.: 81-422-52-5690 Fax.: 81-422-52-2018

GS 01C31K01-01EN
©Copyright June 2012
23rd Edition Jun. 2026

Square Root Output Accuracy
The square root accuracy is a percent of flow span.

Output	Accuracy
50% or Greater	Same as reference accuracy
50% to Dropout point	Reference accuracy × 50 / Square root output (%)

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

Capsule	Effect
F	±(0.08% Span+0.18% URL)
M	±(0.07% Span+0.02% URL)
H	±(0.07% Span+0.015% URL)

Static Pressure Effects per 6.9 MPa (1000 psi) Change

Span Effects

Capsule	Effect
F, M, H	±0.1% of span

Effect on Zero

Capsule	Effect
F	±(0.04% Span+0.208% URL)
M, H	±0.028% URL

Overpressure Effects
Overpressure condition: up to maximum working pressure
M and H capsules
±0.03% of URL

Stability (All normal operating condition, including overpressure effects)
M and H capsules
±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_2O) which can be corrected by the zero adjustment.

Response Time (Differential pressure) "◊"
M and H capsules: 90 ms
F capsule: 150 ms
When amplifier damping is set to zero and including dead time of 45 ms (nominal)

Static Pressure Signal Range and Accuracy (For monitoring via communication or on indicator. Includes terminal-based linearity, hysteresis, and repeatability)

Range
Upper Range Value and Lower Range Value of the statice pressure can be set in the range between 0 and Maximum Working Pressure(MWP). The upper range value must be greater than the lower range value. Minimum setting span is 0.5 MPa(73 psi). Measuring either the pressure of high pressure side or low pressure side is user-selectable.

Accuracy
Absolute Pressure
1MPa or higher: ±0.5% of span
Less than 1 MPa: ±0.5%×(1 MPa/span) of span
Gauge Pressure Reference
Gauge pressure reference is 1013 hPa (1 atm)
Note: Gauge pressure variable is based on the above fixed reference and thus subject to be affected by the change of atomospheric pressure.

□ 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)
Analog 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 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 amplifier 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 "◊"
Differential pressure: 45 ms
Static pressure: 360 ms

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

All Rights Reserved. Copyright © 2012, Yokogawa Electric Corporation

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, optional) "◊"
5-digit numerical display, 6-digit unit display and bar graph.
The indicator is configurable to display one or up to four of the following variables periodically.;
Measured differential pressure, differential pressure in %, scaled differential pressure, measured static 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
(Differential pressure transmitter part)
69 MPa (10,000 psi)

Self Diagnostics
CPU failure, hardware failure, configuration error, and over-range error for differential pressure, static pressure and capsule temperature.
User-configurable process high/low alarm for differential pressure and static 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

Working Pressure Limits (Silicone oil)

Maximum Pressure Limits
All capsules 16 MPa (2300 psi)

Minimum Pressure Limit
See graph below

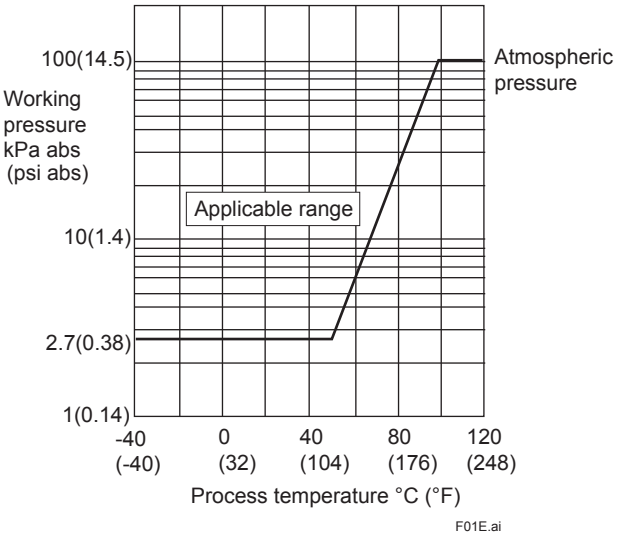


Figure 1. Working Pressure and Process Temperature

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.

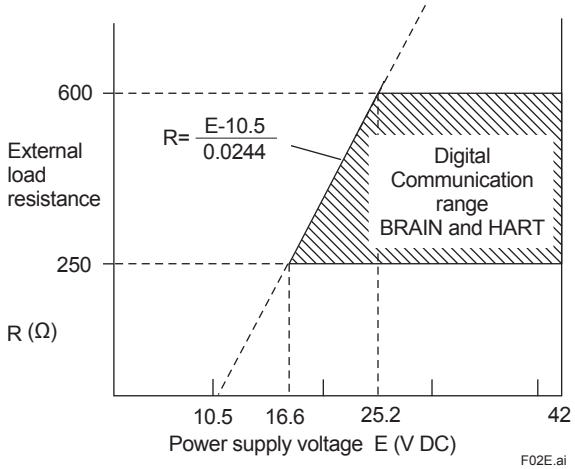


Figure 2. Relationship Between Power Supply Voltage and External Load Resistance (Output signal code D and J)

All Rights Reserved. Copyright © 2012, Yokogawa Electric Corporation

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.
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 (for all capsules)

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

□ PHYSICAL SPECIFICATIONS

Wetted Parts Materials

Diaphragm, cover flange, process connector, capsule gasket, vent/drain plug, manifold, orifice, spacer, and orifice gasket

Refer to "MODEL AND SUFFIX CODES."

Process connector gasket

PTFE Teflon
Fluorinated rubber for option code N2 and N3

Non-wetted Parts Materials

Bolting

B7 carbon steel or 316L 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]
4.5 kg (9.9 lb) for measurement span code M and H without integral indicator and mounting bracket.
5.4 kg (11.9 lb) for measurement span code F without integral indicator and mounting bracket.
Add 1.5 kg (3.3 lb) for Amplifier housing code 2.

Connections

Refer to "MODEL AND SUFFIX CODES."
Process connection of cover flange: IEC61518

< 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 >

- DPharp EJA ; Registered trademark of Yokogawa Electric Corporation.
- FieldMate; Registered trademark of Yokogawa Electric Corporation.
- Teflon; Trademark of E.I. DuPont de Nemours & Co.
- 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.

Other company names and product names used in this material are registered trademarks or trademarks of their respective owners.

All Rights Reserved. Copyright © 2012, Yokogawa Electric Corporation

< Measurement Range (Approximate Value) >

	Orifice Bore (mm)	F Capsule	M Capsule	H Capsule
Water Equivalent Maximum Flow Range l/min	0.508	0.016 to 0.035	0.022 to 0.157	0.07 to 0.225
	0.864	0.046 to 0.102	0.066 to 0.46	0.21 to 0.67
	1.511	0.134 to 0.29	0.19 to 1.35	0.60 to 1.93
	2.527	0.36 to 0.80	0.52 to 3.6	1.65 to 5.2
	4.039	0.92 to 2.0	1.3 to 9.2	4.1 to 13.0
	6.350	2.3 to 5.0	3.3 to 23	10 to 33
Air Equivalent Maximum Flow Range Nl/min	0.508	0.44 to 0.981	0.63 to 4.4	1.98 to 6.4
	0.864	1.30 to 2.88	1.85 to 12.9	5.8 to 18.5
	1.511	3.7 to 8.22	5.3 to 37	16.7 to 54
	2.527	10.3 to 22	14.6 to 105	47 to 150
	4.039	25 to 55	36 to 255	113 to 370
	6.350	63 to 140	89 to 630	280 to 910

All Rights Reserved. Copyright © 2012, Yokogawa Electric Corporation

■ MODEL AND SUFFIX CODES

Model	Suffix Codes	Description
EJA115E	. . . . .	Low flow 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)	**F**	1 to 5 kPa (4 to 20 inH2O)
	M	2 to 100 kPa (8 to 400 inH2O)
	H	20 to 210 kPa (80 to 840 inH2O)
Wetted parts material *2	**S**	Cover flange and process connector: ASTM CF-8M # *3*10 Capsule: Hastelloy C-276 (Diaphragm) # *4 F316L SST, 316L SST (Others) # Capsule gasket: Teflon-coated 316L SST Vent/Drain plug: 316 SST # Orifice: 316 SST # Manifold: F316 SST # Spacer: 316 SST # Orifice gasket: PTFE
Process connections ►	**2**	Rc1/2 female
	4	1/2 NPT female
Bolts and nuts material	**J**	[For Cover flange] B7 / [For Process connector] B7 / [For Manifold] 316L SST
	G	[For Cover flange] 316L SST / [For Process connector] 316L SST / [For Manifold] 316L SST
Installation	**-2**	Vertical piping, right side high pressure, manifold upside
	-3	Vertical piping, right side high pressure, manifold downside
	-6	Vertical piping, left side high pressure, manifold upside
	-7	Vertical piping, left side high pressure, and manifold downside
	-8	Horizontal piping and right side high pressure
►	**-9**	Horizontal piping and left side high pressure
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 SUS316 blind plug
	C	1/2 NPT female, two electrical connections and a SUS316 blind plug
	D	M20 female, two electrical connections and a SUS316 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)*8
►	**N**	None
–	**-N**	Always -N
–	**00**	Always 00
–	**N**	Always N
–	**N**	Always N
–	**0** . . .	Always 0
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 the influence of process fluids. The use of inappropriate materials can result in the leakage of corrosive process fluids and cause injury to personnel and/or damage to plant facilities. It is also possible that the diaphragm itself can be damaged and that material from the broken diaphragm and the fill fluid can contaminate the user's process fluids.Be very careful with highly corrosive process fluids such as hydrochloric acid, sulfuric acid, hydrogen sulfide, sodium hypochlorite, and high-temperature steam (150°C [302°F] or above). Contact Yokogawa for detailed information of the wetted parts material.

*3: Cast version of 316 SST. Equivalent to SCS14A.

*4: Hastelloy C-276 or ASTM N10276.

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

All Rights Reserved. Copyright © 2012, Yokogawa Electric Corporation

*8: Not applicable for output signal code G.
*9: Not applicable for output signal code F.
*10: 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**

All Rights Reserved. Copyright © 2012, Yokogawa Electric Corporation

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**

All Rights Reserved. Copyright © 2012, Yokogawa Electric Corporation

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.

All Rights Reserved. Copyright © 2012, Yokogawa Electric Corporation

■ 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 *3		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.) 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		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		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		Fluorinated 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
Gold-plated diaphragm		Surface of isolating diaphragms are gold plated, effective for hydrogen permeation. Overpressure effects for M and H capsules: ±0.06% of URL		A1
Plug option		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
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 *11	Failure alarm down-scale: Output status at CPU failure and hardware error is −5%, 3.2 mA DC or less.	C2
		NAMUR NE43 Compliant Output signal limits: 3.8 mA to 20.5 mA *11	Failure alarm up-scale: Output status at CPU failure and hardware error is 110%, 21.6 mA or more.	C3
Wired tag plate		316 SST tag plate wired onto transmitter (Tag No.: Maximum. 16 characters.)		N4
Data configuration at factory*7		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
Material certificate*8		Cover flange, Process connector, Manifold, Orifice, and Spacer		M12
		Cover flange, Process connector, Manifold, Orifice, Spacer, Bolt and nut for cover flange, bolt for process connector, Bolt for manifold, Diaphragm, Capsule body, Vent and Drain plug, Vent screw, Capsule gasket*14		MJ2
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*9		Test Pressure: 16 MPa (2300 psi)	Nitrogen Gas*10 Retention time: one minute	T12
Parameter list*12		List of setting and adjustment parameters		YP
Additional blind plug*15*16		Additional blind plug is attached to the conduit connection on both sides for storing transmitter		PP

All Rights Reserved. Copyright © 2012, Yokogawa Electric Corporation

*1: Not applicable with color change option.
*2: Not applicable for amplifier housing code 2 and 3.
*3: 316 or 316L SST. The specification is included in amplifier code 2.
*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 2, 3, 6, or 7) .
*6: Applicable for output signal codes D and J. The hardware error indicates faulty amplifier or capsule.
*7: Also see 'Ordering Information'.
*8: Material traceability certification, per EN 10204 3.1B.
*9: The unit on the certificate is always Pa unit regardless of selection of option code D1, D3 or D4.
*10: Dry nitrogen gas is used for oil-prohibited use (option codes K1, K2, K5, K6, K41, K42, K45, and K46).
*11: 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.
*12: Applicable for output signal code D and J.
*13: (Not used)
*14: Not applicable with plug option code UN.
*15: Not applicable for electrical connection codes 0, 2, and 4.
*16: 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.

All Rights Reserved. Copyright © 2012, Yokogawa Electric Corporation

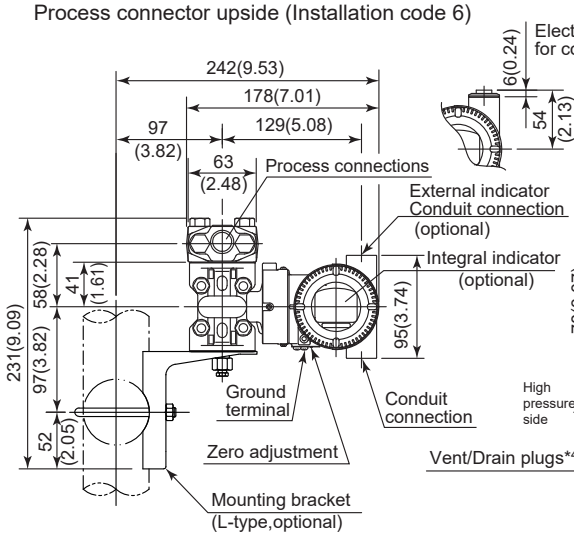
■ DIMENSIONS

Unit: mm (approx.inch)

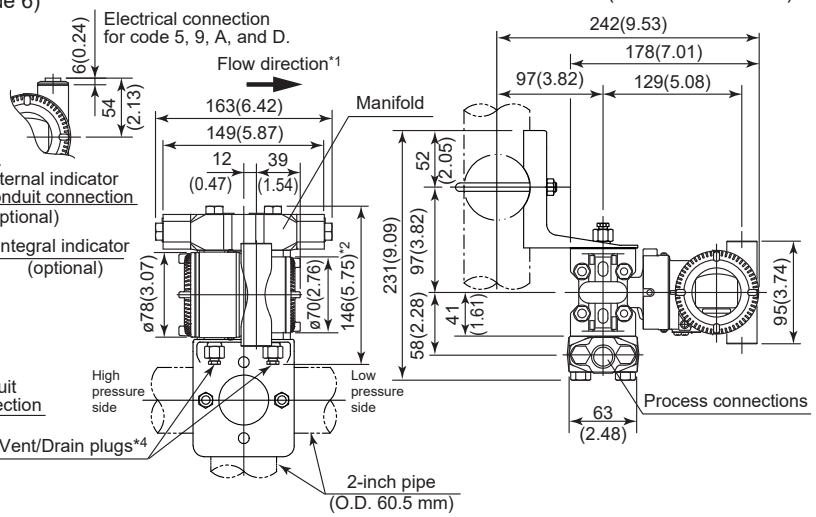
Measurement Span Code: M, H

● Vertical Impulse Piping Type

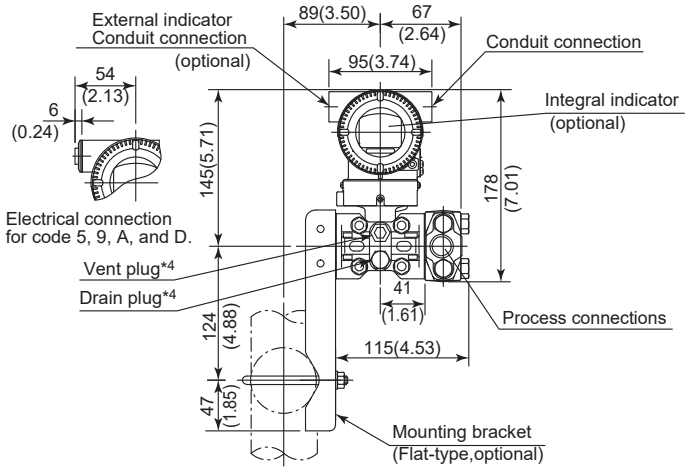
Process connector upside (Installation code 6)

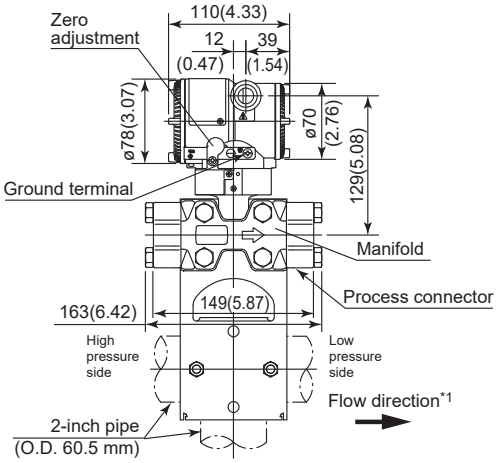


Process connector downside (Installation code 7)



● Horizontal Impulse Piping Type (Installation code 9)





*1: When Installation code 2, 3, or 8 is selected, the flow direction on above figure is reversed.
*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: 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.
*4: When option code UN is specified, Vent/Drain holes and plugs are not applicable.

F03E.ai

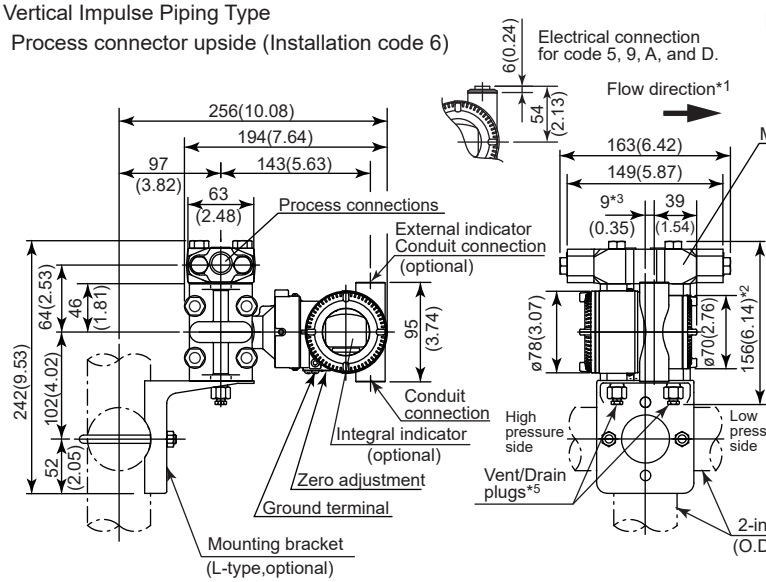
All Rights Reserved. Copyright © 2012, Yokogawa Electric Corporation

Unit: mm (approx.inch)

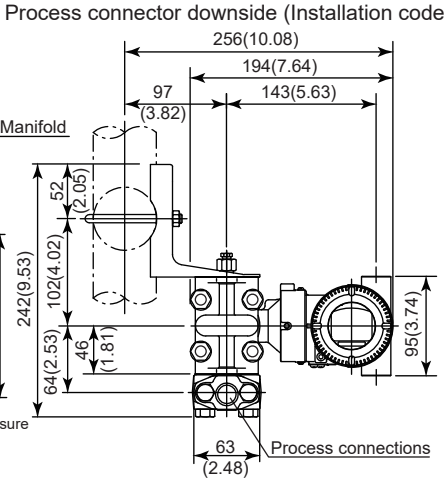
Measurement Span Code F

- Vertical Impulse Piping Type

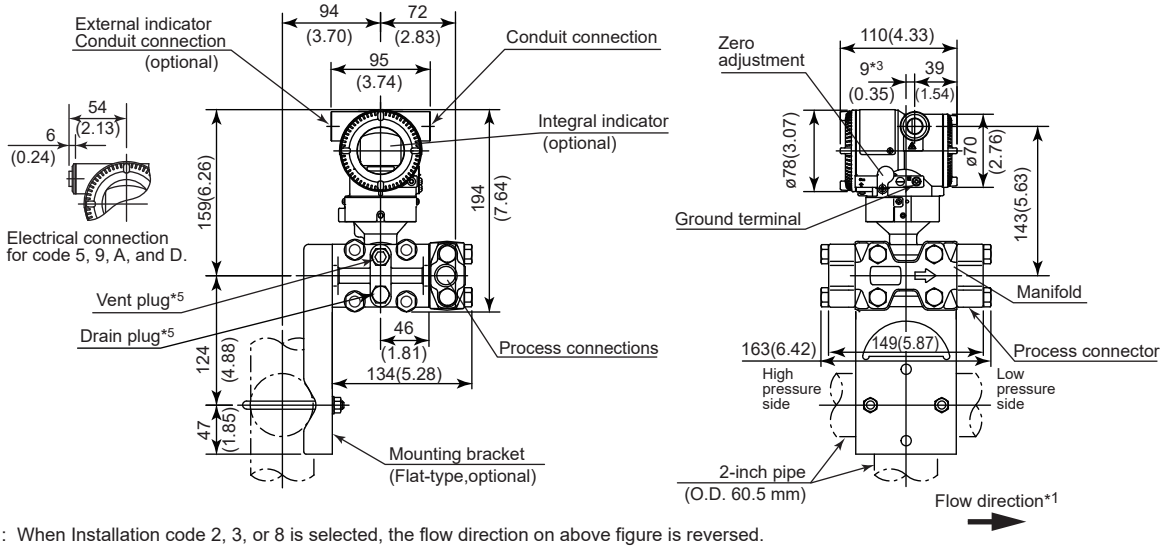
Process connector upside (Installation code 6)



Process connector downside (Installation code 7)



- Horizontal Impulse Piping Type (Installation code 9)

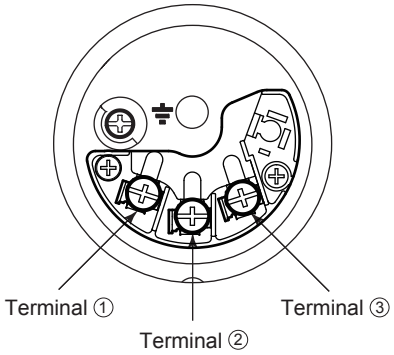


*1: When Installation code 2, 3, or 8 is selected, the flow direction on above figure is reversed.
(i.e. the arrow faces to the left [◀])
*2: When Option code K1, K2, K5, K6, K41, K42, K45, or K46 is selected, add 15 mm (0.59 inch) to the value in the figure.
*3: 15 mm(0.59 inch) when Installation code 2, 3 or 8 is selected.
*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.
*5: When option code UN is specified, Vent/Drain holes and plugs are not applicable.

F04E.ai

All Rights Reserved. Copyright © 2012, Yokogawa Electric Corporation

● 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.

F05E.ai

Table 1. Calibration Units

Measurement Span and Range		Optional Code		
		D1 (psi Unit)	D3 (bar Unit)	D4 (kgf/cm^2 Unit)
F	Span	4 to 20 inH_2O	10 to 50 mbar	100 to 500 mmH_2O
	Range	0 to 20 inH_2O	0 to 50 mbar	0 to 500 mmH_2O
M	Span	8 to 400 inH_2O	20 to 1000 mbar	200 to 10000 mmH_2O
	Range	0 to 400 inH_2O	0 to 1000 mbar	0 to 10000 mmH_2O
H	Span	80 to 830 inH_2O	200 to 2100 mbar	2000 to 21000 mmH_2O
	Range	0 to 830 inH_2O	0 to 2100 mbar	0 to 21000 mmH_2O

All Rights Reserved. Copyright © 2012, Yokogawa Electric Corporation

< 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). When square root output mode is specified, LRV must be "0 (zero) ".
   2) Specify only one unit from the table, 'Factory setting.'
3. Select linear or square root for output mode.
   Note: If not specified, the instrument is shipped set for linear mode.
4. Display scale and units (for transmitters equipped with the integral indicator only)
   Specify either 0 to 100 % or '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. Unit display consists of 6-digit, therefore, if the specified scaling unit excluding '/' is longer than 6-characters , the first 6 characters will be displayed on the unit display.
5. HART PROTOCOL
   When output signal code is "J", specify the HART protocol revision "5" or "7".
6. 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.
7. 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.
8. 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)
9. Necessary data for orifice calculations (integral orifice flow specifications), or required values for orifice bore and differential pressure range. Refer to TI 01C20K00-01E for details.

< Factory Setting > "◊"

Tag number	As specified in order
Software damping *1	'2.00 s' or as specified in order
Output mode	'Linear' unless otherwise specified in order
Display mode	'Square root'
Calibration range lower range value	As specified in order
Calibration range upper range value	As specified in order
Calibration range unit	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 differential pressure value specified in order. (% or user scaled value.)
Static pressure display range	0 to 16 MPa, absolute value. Measuring high pressure side.

*1: To specify these items 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.

All Rights Reserved. Copyright © 2012, Yokogawa Electric Corporation
Subject to change without notice.