

# General Specifications

## EJA115 Low Flow Transmitter

**DP** *harp*

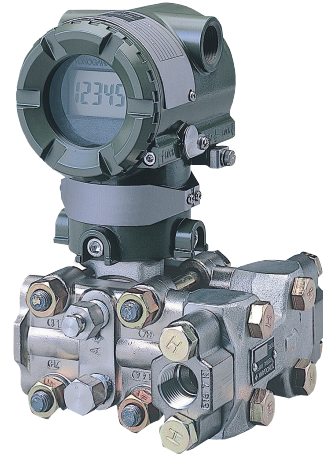
GS 01C22K01-00EN

[Style: S3]

The model EJA115 Low Flow Transmitter is a flowmeter comprised of a differential pressure transmitter 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.

The orifice is available in six types with a bore ranging from 0.508 mm to 6.350 mm. The combination of the bore selection with the differential pressure measurement span variation of the differential pressure transmitter enables a wide range of very small flow measurement.

The model EJA115 also features remote setup and monitoring through communications with the model BT200/100 BRAIN TERMINAL, CENTUM CS/XL system etc.



### ■ STANDARD SPECIFICATIONS

Refer to GS 01C22T02-00EN for FOUNDATION Fieldbus communication type and GS 01C22T03-00EN for PROFIBUS PA communication type marked with “◇”.

#### Measurement Ranges:

| Capsule | Differential Pressure Span                          | Water Equivalent Flow l/min | Air Equivalent Flow NI/min |
|---------|---|-----------------------------|----------------------------|
| L       | 1 to 10 kPa<br>{100 to 1000 mmH <sub>2</sub> O}     | 0.016 to 7.2                | 0.44 to 198                |
| M       | 2 to 100 kPa<br>{200 to 10000 mmH <sub>2</sub> O}   | 0.022 to 23.0               | 0.63 to 635                |
| H       | 20 to 210 kPa<br>{2000 to 21000 mmH <sub>2</sub> O} | 0.07 to 33.0                | 2.0 to 910                 |

#### Output Signal “◇”:

4 to 20 mA DC, 2-wire system with digital communication

#### Failure Alarm:

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  
-2.5%, 3.6 mA DC or less (Optional code /F1)  
Note: Applicable for Output signal code D and E

#### Supply Voltage “◇”:

10.5 to 42 V DC for general use and flameproof type  
10.5 to 32 V DC for lightning protector (Optional code /A)  
10.5 to 30 V DC for intrinsically safe, Type n, nonincendive, or non-sparking type  
10.5 to 28 V DC for TIIS intrinsically safe type

#### Conditions of Communication Line “◇”:

Power supply voltage; 16.4 to 42 V DC  
Load resistance; See Figure 1.  
Note: In case of an intrinsically safe transmitter, external load resistance includes safety barrier resistance.

#### Communication distance;

2 km, when CEV polyethylene-insulated PVC-sheathed control cables are used.

Note: Communication distance varies depends on kind of cable.

#### Load capacitance; 0.22 μF or less.

Load inductance; 3.3 mH or less.

Spacing from power line; 15 cm or more.

Input impedance of receiver connected receiving resistance;

10 kΩ or more at 2.4 kHz

(See Optional Specifications for Intrinsically safe type)

#### Accuracy:

±5 % of span

#### Ambient Temperature Limits:

-40 to 85 °C (-40 to 185 °F)(general-use type)

-30 to 80 °C (-22 to 176 °F)(with integral indicator)

(See 'Optional Specifications' for Explosion-protected types)

#### Process Temperature Limits:

-40 to 120 °C (-40 to 248 °F) (general use type)

(See 'Optional Specifications' for Explosion-protected types)

#### Ambient Humidity Limits:

5 to 100 % R.H. (at 40 °C)

#### Working Pressure Limits:

2.7 kPa abs {20 mmHg abs} to maximum working pressure (See 'Model and Suffix Codes').

For atmospheric pressure or below, see Figure 2.

#### Power Supply Effect “◇”:

±0.005 %/V (21.6 to 32 V DC, 350 Ω)

#### Mounting:

2-inch pipe mounting.

#### Mounting Position Effect:

390 Pa {40 mmH<sub>2</sub>O}/90 °.

No effect for displacement parallel to diaphragm.

These errors can be corrected by the zero adjustment.

**Degrees of Protection:**

IP67, Type 4X

**Explosion-protected Construction:**

See 'Optional Specification.'

**Electrical Connection:**

See 'Model and Suffix Codes.'

**Process Connections:**

See 'Model and Suffix Codes.'

**Wetted Parts Material:**

Diaphragm, cover flange, process connector, vent plug, manifold and orifice; See 'Model and Suffix Codes.'

Capsule gaskets; Teflon-coated JIS SUS316L. Process connector gasket; PTFE (Teflon)

**Flange Bolts and Nuts Material:**

See 'Model and Suffix Codes.'

**Amplifier Housing:**

Cast aluminum alloy or JIS SCS14A stainless steel (optional)

**Painting:**

Polyurethane resin backed finish  
Deep sea moss green (Munsell 0.6GY3.1/2.0)

**Integral Indicator:**

LCD digital indicator (optional)

**Damping Time Constant:**

(Sum of time constants for amplifier assembly and capsule assembly)

Amplifier assembly time constant;  
Can be set in 9 increments from 0.2 to 64 sec.  
Capsule assembly time constant;

| Capsule             | L           | M           | H           |
|---------------------|-------------|-------------|-------------|
| Time Constant (sec) | Approx. 0.4 | Approx. 0.3 | Approx. 0.3 |

**External Zero Adjustment "◇":**

Continuously Adjustable Resolution; 0.01 % of span

**Zero Adjustment Limits:**

Zero can be fully elevated or suppressed as long as low and high range values are within the measurement range limits of the capsule.

**Tag Plate:**

JIS SUS304 or SUS316

**Weight:**

5.6 kg (12.4 lb) without integral indicator and mounting bracket.  
Add 1.4 kg (3.1 lb) for JIS SCS14A stainless steel amplifier housing.

**EMC Conformity Standards "◇":**

EN61326-1 Class A, Table2 (For use in industrial locations)  
EN61326-2-3

**European Pressure Equipment Directive 97/23/EC:**

Sound Engineering Practice

**Safety Requirement Standards:**

- EN61010-1
- Altitude of installation site: Max. 2,000 m above sea level
- Installation category: I
- Pollution degree: 2
- Indoor/Outdoor use

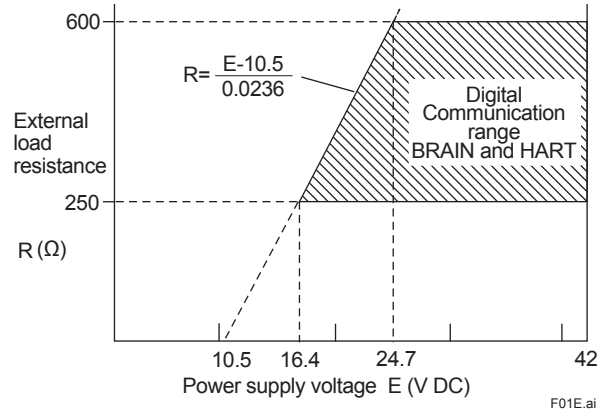


Figure 1. Relationship Between Power Supply Voltage and External Load Resistance

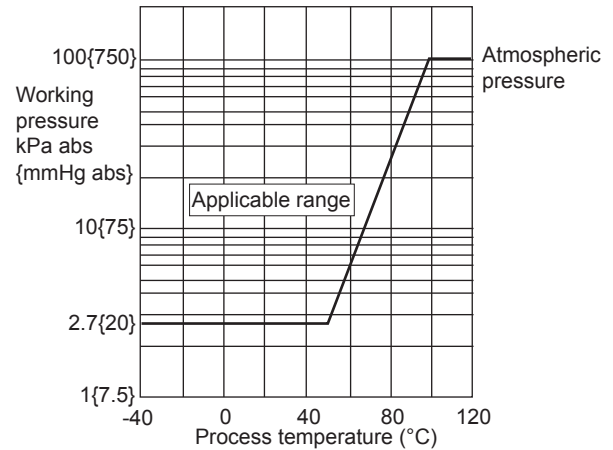


Figure 2. Working Pressure and Process Temperature

**<Measurement Range (Approximate Value)>**

|  | Orifice Bore (mm) | L Capsule      | M Capsule      | H Capsule     |
|--|-------------------|----------------|----------------|---------------|
| Water Equivalent Maximum Flow Range<br>l/min | 0.508             | 0.016 to 0.049 | 0.022 to 0.157 | 0.07 to 0.225 |
|  | 0.864             | 0.046 to 0.145 | 0.066 to 0.46  | 0.21 to 0.67  |
|  | 1.511             | 0.134 to 0.42  | 0.19 to 1.35   | 0.60 to 1.93  |
|  | 2.527             | 0.36 to 1.15   | 0.52 to 3.6    | 1.65 to 5.2   |
|  | 4.039             | 0.92 to 2.9    | 1.3 to 9.2     | 4.1 to 13.0   |
|  | 6.350             | 2.3 to 7.2     | 3.3 to 23      | 10 to 33      |
| Air Equivalent Maximum Flow Range<br>Nl/min  | 0.508             | 0.44 to 1.40   | 0.63 to 4.4    | 1.98 to 6.4   |
|  | 0.864             | 1.30 to 4.10   | 1.85 to 12.9   | 5.8 to 18.5   |
|  | 1.511             | 3.7 to 11.7    | 5.3 to 37      | 16.7 to 54    |
|  | 2.527             | 10.3 to 32     | 14.6 to 105    | 47 to 150     |
|  | 4.039             | 25 to 79       | 36 to 255      | 113 to 370    |
|  | 6.350             | 63 to 198      | 89 to 630      | 280 to 910    |

**< Settings When Shipped > “◇”**

|                                      |  |
|--------------------------------------|--|
| Tag Number                           | As specified in order *1   |
| Output Mode                          | 'Linear' unless otherwise specified in order   |
| Display Mode                         | 'Square root'  |
| Operation Mode                       | 'Normal' unless otherwise specified in order   |
| Damping Time Constant *2             | '2 sec.'   |
| Calibration Range Lower Range Value  | As specified in order  |
| Calibration Range Higher Range Value | As specified in order  |
| Calibration Range Units              | Selected from mmH <sub>2</sub> O, mmAq, mmWG, mmHg, Pa, hPa, kPa, MPa, mbar, bar, gf/cm <sup>2</sup> , kgf/cm <sup>2</sup> , inH <sub>2</sub> O, inHg, ftH <sub>2</sub> O, or psi.<br>(Only one unit can be specified) |

\*1: Up to 16 alphanumeric characters (including - and ·) will be entered in the amplifier memory.

\*2: If using square root output, set damping time constant to 2 sec. or more.

## MODEL AND SUFFIX CODES

| Model                      | Suffix Codes  | Description   |
|----------------------------|---|---|
| <b>EJA115</b>              | .....   | Low Flow transmitter  |
| Output Signal              | -D .....<br>-E .....<br>-F .....<br>-G .....  | 4 to 20 mA DC with digital communication (BRAIN protocol)<br>4 to 20 mA DC with digital communication (HART protocol, refer to GS 01C22T01-00EN)<br>Digital communication (FOUNDATION Fieldbus protocol, refer to GS 01C22T02-00EN)<br>Digital communication (PROFIBUS PA protocol, refer to GS 01C22T03-00EN)  |
| Measurement span (capsule) | L .....<br>M .....<br>H .....   | 1 to 10 kPa {100 to 1000 mmH <sub>2</sub> O}{4 to 40 inH <sub>2</sub> O}{10 to 100 mbar}<br>2 to 100 kPa {200 to 10000 mmH <sub>2</sub> O}{8 to 400 inH <sub>2</sub> O}{20 to 1000 mbar}<br>20 to 210 kPa {2000 to 21000 mmH <sub>2</sub> O}{80 to 830 inH <sub>2</sub> O}{200 to 2100 mbar}  |
| Wetted parts material *1   | S# .....  | [Body] JIS SCS14A *3      [Capsule] JIS SUS316L *2      [Orifice] JIS SUS316  |
| Process flange rating      | 2 .....<br>4 .....  | Rc1/2 female<br>1/2 NPT female  |
| —                          | 00 .....  | Always 00   |
| Bolts and nuts material    | A .....<br>B .....  | [Maximum working pressure]<br>(L capsule)      (M, H capsule)<br>JIS SCM435      3.5 MPa {35 kgf/cm <sup>2</sup> }      14 MPa {140 kgf/cm <sup>2</sup> }<br>JIS SUS630      3.5 MPa {35 kgf/cm <sup>2</sup> }      14 MPa {140 kgf/cm <sup>2</sup> }   |
| Installation               | -2 .....<br>-3 .....<br>-6 .....<br>-7 .....<br>-8 .....<br>-9 .....  | Vertical impulse piping type, right side high pressure, manifold upside *4<br>Vertical impulse piping type, right side high pressure, manifold downside *4<br>Vertical impulse piping type, left side high pressure, manifold upside *4<br>Vertical impulse piping type, left side high pressure, manifold downside *4<br>Horizontal impulse piping type, right side high pressure *5<br>Horizontal impulse piping type, left side high pressure *5   |
| Electrical connection      | 0 .....<br>2 .....<br>3 .....<br>4 .....<br>5 .....<br>7 .....<br>8 .....<br>9 .....<br>A .....<br>C .....<br>D ..... | G1/2 female, one electrical connection<br>1/2 NPT female, two electrical connections without blind plug<br>Pg 13.5 female, two electrical connections without blind plug<br>M20 female, two electrical connections without blind plug<br>G1/2 female, two electrical connections and a blind plug<br>1/2 NPT female, two electrical connections and a blind plug<br>Pg 13.5 female, two electrical connections and a blind plug<br>M20 female, two electrical connections and a blind plug<br>G1/2 female, two electrical connections and a SUS316 blind plug<br>1/2 NPT female, two electrical connections and a SUS316 blind plug<br>M20 female, two electrical connections and a SUS316 blind plug |
| Integral indicator         | D .....<br>E .....<br>N .....   | Digital indicator<br>Digital indicator with the range setting switch *6<br>(None)   |
| Mounting bracket           | A ....<br>B ....<br>J ....<br>C ....<br>D ....<br>K ....<br>N ....  | JIS SECC      2-inch pipe mounting (flat type)<br>JIS SUS304      2-inch pipe mounting (flat type)<br>JIS SUS316      2-inch pipe mounting (flat type)<br>JIS SECC      2-inch pipe mounting (L type)<br>JIS SUS304 or SCS13A      2-inch pipe mounting (L type)<br>JIS SUS316 or SCS14A      2-inch pipe mounting (L type)<br>(None)   |
| Optional codes             | /□  | Optional specification  |

The “►” marks indicate the most typical selection for each specification. Example: EJA115-DMS400A-92NA/□

The “#” marks indicate the construction materials conform to NACE material recommendations per MR01-75. For the use of SUS316 material, there may be certain limitations for pressure and temperature. Please refer to NACE standards for details.

\*1: △ 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.

\*2: Diaphragm material is Hastelloy C-276 or ASTM N10276. Other capsule wetted parts materials are JIS SUSF316L, SUS316L or ASTM grade 316L.

\*3: Indicates material of cover flange and process connector. Material of manifold is JIS SUSF316. Material of vent plug is JIS SUS316 or ASTM grade 316.

\*4: If necessary, specify Mounting bracket code C, D or K.

\*5: If necessary, specify Mounting bracket code A, B or J.

\*6: Not applicable for Output signal code F and G.

**OPTIONAL SPECIFICATIONS (For Explosion Protected type “◇”)**

For FOUNDATION Fieldbus explosion protected type, see GS 01C22T02-00EN.

For PROFIBUS PA explosion protected type, see GS 01C22T03-00EN.

| Item                                 | Description  | Code |
|--------------------------------------|--|------|
| Factory Mutual (FM)                  | FM Explosionproof Approval *1 *3 *4<br>Applicable standard: FM3600, FM3615, FM3810, ANSI/NEMA250<br>Explosionproof for Class I, Division 1, Groups B, C and D<br>Dust-ignitionproof for Class II/III, Division 1, Groups E, F and G<br>Hazardous (classified) locations, indoors and outdoors (NEMA 4X)<br>Division 2, 'SEALS NOT REQUIRED',<br>Temp. Class: T6<br>Amb. Temp.: -40 to 60°C (-40 to 140°F)  | FF1  |
|                                      | FM Intrinsically safe Approval *1 *3 *4<br>Applicable standard: FM3600, FM3610, FM3611, FM3810, ANSI/NEMA250<br>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 Hazardous Locations.<br>Nonincendive for Class I, Division 2, Groups A, B, C & D, Class II, Division. 2, Groups E, F & G, and Class III, Division 1 Hazardous Locations.<br>Enclosure: "NEMA 4X", Temp. Class: T4, Amb. Temp.: -40 to 60°C (-40 to 140°F)<br>Intrinsically Safe Apparatus Parameters<br>[Groups A, B, C, D, E, F and G]<br>Vmax=30 V, Imax=165 mA, Pmax=0.9 W, Ci=22.5 nF, Li=730 μH<br>[Groups C, D, E, F and G]<br>Vmax=30 V, Imax=225 mA, Pmax=0.9 W, Ci=22.5 nF, Li=730 μH | FS1  |
|                                      | Combined FF1 and FS1 *1 *3 *4  | FU1  |
| Canadian Standards Association (CSA) | CSA Explosionproof Approval *1 *3 *4<br>Applicable standard: C22.2 No. 0, No. 0.4, No. 25, No. 30, No. 94, No. 142<br>Certificate: 1089598<br>Explosionproof for Class I, Division 1, Groups B, C and D<br>Dustignitionproof for Class II/III, Division 1, Groups E, F and G<br>Division2 'SEALS NOT REQUIRED', Temp. Class: T4, T5, T6 Encl Type 4x<br>Max. Process Temp.: T4; 120°C (248°F), T5; 100°C (212°F), T6; 85°C (185°F)<br>Amb. Temp.: -40 to 80°C (-40 to 176°F)<br>Process Sealing Certification<br>Dual Seal Certified by CSA to the requirement of ANSI/ISA 12.27.01<br>No additional sealing required.<br>Primary seal failure annunciation: at the zero adjustment screw  | CF1  |
|                                      | CSA Intrinsically safe Approval *1 *3 *4<br>Applicable standard: C22.2 No. 0, No. 0.4, No. 25, No. 30, No. 94, No. 142, No. 157, No. 213<br>Certificate: 1053843<br>Class I, Groups A, B, C and D Class II and III, Groups E, F and G<br>Encl Type 4x, Temp. Class: T4, Amb. Temp.: -40 to 60°C (-40 to 140°F)<br>Vmax=30 V, Imax=165 mA, Pmax=0.9 W, Ci=22.5 nF, Li=730 μH<br>Process Sealing Certification<br>Dual Seal Certified by CSA to the requirement of ANSI/ISA 12.27.01<br>No additional sealing required.<br>Primary seal failure annunciation: at the zero adjustment screw   | CS1  |
|                                      | Combined CF1 and CS1 *1 *3 *4  | CU1  |

| Item                                   | Description  | Code       |
|--|--|------------|
| IECEX                                  | IECEX Intrinsically safe, type n and Flameproof Approval *3*4*9<br>Intrinsically safe and type n<br>Applicable Standard: IEC 60079-0:2004, IEC 60079-11:1999, IEC 60079-15:2005,<br>IEC 60079-26:2005<br>Certificate: IECEX KEM 06.0007X<br>Ex ia IIC T4, Ex nL IIC T4 Enclosure: IP67<br>Amb. Temp.: -40 to 60°C (-40 to 140°F), Max. Process Temp.: 120°C (248°F)<br>Electrical Parameters: [Ex ia] Ui=30 V, Ii=165 mA, Pi=0.9 W, Ci=22.5 nF, Li=730 µH<br>[Ex nL] Ui=30 V, Ci=22.5 nF, Li=730 µH<br><br>Flameproof<br>Applicable Standard: IEC 60079-0:2004, IEC60079-1:2003<br>Certificate: IECEX KEM 06.0005<br>Ex d IIC T6...T4 Enclosure: IP67<br>Max.Process Temp.: T4;120°C (248°F), T5;100°C (212°F), T6; 85°C (185°F)<br>Amb. Temp.: -40 to 75°C (-40 to 167°F) for T4, -40 to 80°C (-40 to 176°F) for T5,<br>-40 to 75°C (-40 to 167°F) for T6 | <b>SU2</b> |
| TIIS certification                     | TIIS Flameproof Approval, Ex do IIC T4X *3*5*7*8*10<br>Certificate: TC15296 (Without integral indicator), TC15297 (With integral indicator)<br>Amb. Temp.: -20 to 60°C, Process Temp.: -20 to 120°C  | <b>JF3</b> |
|  | TIIS Intrinsically safe Approval, Ex ia IIC T4 *6*8<br>Certificate: TC14632<br>Amb. Temp.: -20 to 60°C, Process Temp.: -20 to 120°C  | <b>JS3</b> |
| Attached flameproof packing adapter *5 | Electrical connection: G1/2 female<br>Applicable cable: O. D. 8 to 12 mm   | 1 pc.      |
|  |  | 2 pcs.     |
|  |  | <b>G11</b> |
|  |  | <b>G12</b> |

- \*1: Applicable for Electrical connection code 2, 7 and C (1/2 NPT female).
- \*2: (Not used)
- \*3: Applicable for Output signal code D and E. For intrinsically safe approval, use the safety barrier certified by the testing laboratories (BARD-400 is not applicable).
- \*4: Lower limit of ambient temperature is -15°C (5°F) when /HE is specified.
- \*5: If cable wiring is to be used to a TIIS flameproof type transmitter, add the YOKOGAWA-assured flameproof packing adapter.
- \*6: Applicable for Output signal code D. See <Safety Barrier for TIIS Intrinsically Safe Type>.
- \*7: In case that the ambient temperature exceeds 50°C or that the ambient temperature exceeds 45°C with the process temperature of 90°C or above, use heat-resistant cables with maximum allowable temperature of 75°C or above.
- \*8: TIIS (The Technology Institution of Industrial Safety) Certification is a new notation for the explosionproof approval in Japan instead of JIS.
- \*9: Applicable for Electrical connection code 2, 4, 7, C and D (1/2 NPT and M20 female).
- \*10: Not applicable for Electrical connection code A, C and D.



**OPTIONAL SPECIFICATIONS**

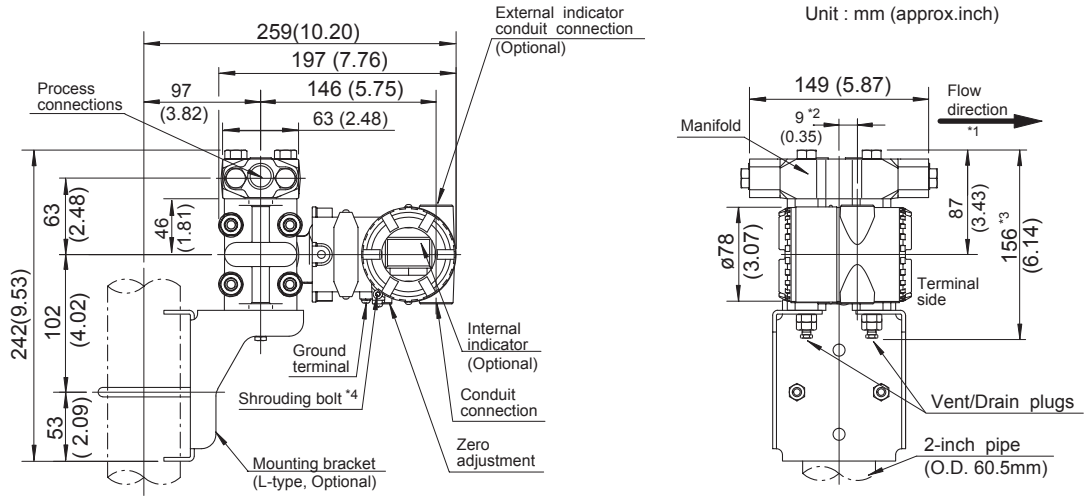
| Item  |  | Description  | Code  |    |
|---|--|--|---|----|
| Painting *10                                  | Color change                                       | Amplifier cover only   | P□  |    |
|   |  | Amplifier cover and terminal cover, Munsell 7.5 R4/14  | PR  |    |
|   | Coating change                                     | Epoxy resin-baked coating *12  | X1  |    |
| 316 SST exterior parts                        |  | Exterior parts on the amplifier housing (name plates, tag plate, zero-adjustment screw, stopper screw) will become 316 SST *13   | HC  |    |
| Fluoro-rubber O-ring                          |  | All O-rings of amplifier housing. Lower limit of ambient temperature: -15°C (5°F) *14  | HE  |    |
| Lightning protector                           |  | Transmitter power supply voltage: 10.5 to 32 V DC ( 10.5 to 28 V DC for TIIS intrinsically safe type, 10.5 to 30 V DC for intrinsically safe type other than TIIS, or 9 to 32 V DC for Fieldbus communicaiton type.)<br>Allowable current: Max. 6000 A ( 1×40 μs ), Repeating 1000 A ( 1×40 μs ) 100 times | A   |    |
| Oil-prohibited use                            |  | Degrease cleansing treatment   | K1  |    |
|   |  | Degrease cleansing treatment with fluorinated oilfilled capsule.<br>Operating temperature -20 to 80°C  | K2  |    |
| Oil-prohibited use with dehydrating treatment |  | Degrease cleansing and dehydrating treatment   | K5  |    |
|   |  | Degrease cleansing and dehydrating treatment with fluorinated oilfilled capsule.<br>Operating temperature -20 to 80°C  | K6  |    |
| Calibration units *1                          |  | P calibration (psi unit)   | D1  |    |
|   |  | bar calibration (bar unit)   | D3  |    |
|   |  | M calibration (kgf/cm <sup>2</sup> unit)   | D4  |    |
| Sealing treatment to JIS SUS630 nuts          |  | Sealant (liquid silicone rubber) is coated on JIS SUS630 cover flange mounting nuts against stress corrosion cracking.   | Y   |    |
| Long vent *2                                  |  | Total length: 119 mm (standard: 34 mm); Total length when combining with Optional code K1, K2, K5, and K6: 130 mm. Material: SUS316 or ASTM grade 316.   | U   |    |
| Fast response *8                              |  | Update time: 0.125 sec<br>Amplifier assembly damping time constant: 0.1 to 64 sec in 9 increments.<br>Response time (with min. damping time constant): max. 0.5 sec (for L capsule: max. 0.6 sec)  | F1  |    |
| Failure alarm down-scale *3                   |  | Output status at CPU failure and hardware error is -5%, 3.2 mA or less.  | C1  |    |
| NAMUR NE43 compliant *3 *9                    |  | Output signal limits:<br>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. | C2 |
|   |  |  | Failure alarm up-scale: output status at CPU failure and hardware error is 110%, 21.6 mA or more. | C3 |
| Data configuration at factory                 |  | Description into "Descriptor" parameter of HART protocol   | CA  |    |
| Stainless steel amplifier housing *4          |  | Amplifier housing material: JIS SCS14A stainless steel (equivalent to JIS SUS316 cast stainless steel or ASTM CF-8M)   | E1  |    |
| Gold-plate                                    |  | Surface of isolating diaphragms are gold plated, effective for hydrogen permeation.  | A1  |    |
| Wired tag plate                               |  | Stainless steel tag plate wired onto transmitter   | N4  |    |
| Mill Certificate                              |  | Cover flange, Process connector, Manifold, orifice, spacer   | M12   |    |
| Pressure test/<br>Leak test Certificate *11   | Test Pressure: 3.5 MPa{35 kgf/cm <sup>2</sup> } *5 | Nitrogen(N <sub>2</sub> ) Gas *7<br>Retention time: 10 minutes   | T01   |    |
|   | Test Pressure: 14 MPa{140 kgf/cm <sup>2</sup> } *6 |  | T02   |    |

- \*1: The unit of MWP (Max. working pressure) on the name plate of a housing is the same unit as specified by Option code D1, D3, and D4.
- \*2: Applicable for vertical impulse piping type (Installation code 2, 3, 6, or 7).
- \*3: Applicable for Output signal code D and E. The hardware error indicates faulty amplifier or capsule.  
When combining with Option code F1, output status for down-scale is -2.5%, 3.6 mA DC or less.
- \*4: Applicable for Electrical connection code 2, 3, 4, A, C and D. Not applicable for Option code P□, X1, and JF3.
- \*5: Applicable for Capsule code L.
- \*6: Applicable for Capsule code M and H.
- \*7: Pure nitrogen gas is used for oil-prohibited use (Option code K1, K2, K5, and K6).
- \*8: Applicable for Output signal code D and E. Write protection switch is attached for Output code E. Not applicable for Integral indicator code E.
- \*9: Not applicable for Option code C1.
- \*10: Standard polyurethan painting can be used in acid atmosphere, whereas the epoxy resin-baked coating (Option code X1) can be used in alkaline atmosphere. Anti-corrosion coating, the combination of polyurethan and epoxy resin-baked coating, is available by special order as sea water, alkaline, and acid resistant.
- \*11: The unit on the certificate is always MPa regardless of selection of option code D1, D3, or D4.
- \*12: Not applicable for color change option.
- \*13: 316 or 316L SST. The specification is included in option code /E1. Not applicable with option code /JF3.
- \*14: Not applicable with option code /JF3.

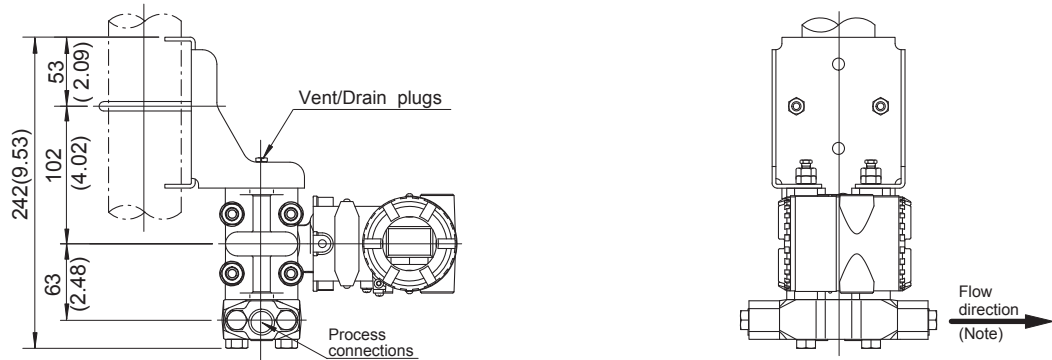
## DIMENSIONS

### Vertical Impulse Piping Type

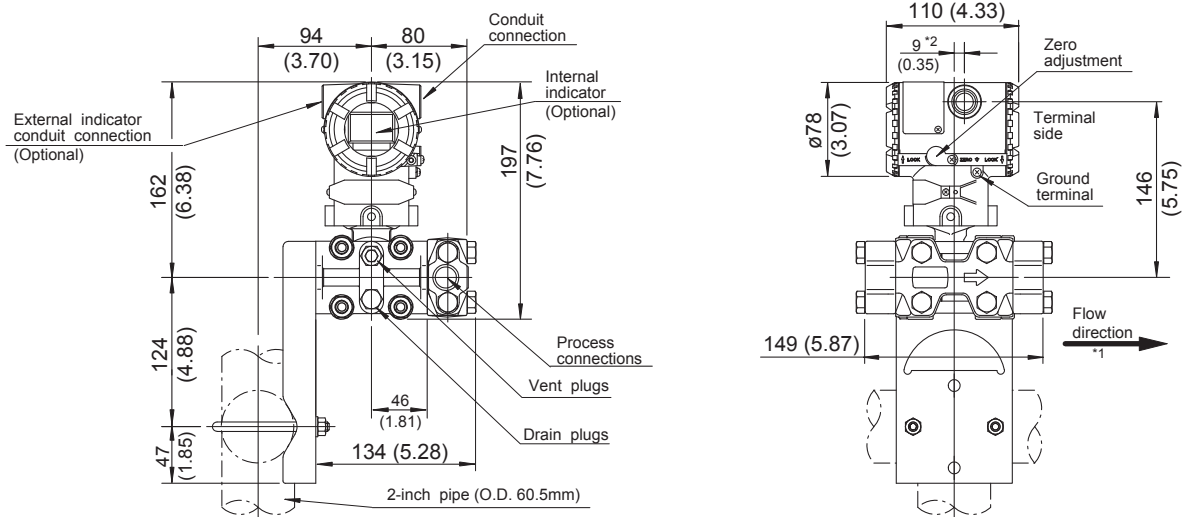
#### Manifold upside (INSTALLATION CODE '6')



#### Manifold downside (INSTALLATION CODE '7')



### Horizontal Impulse Piping Type ( INSTALLATION CODE '9' )

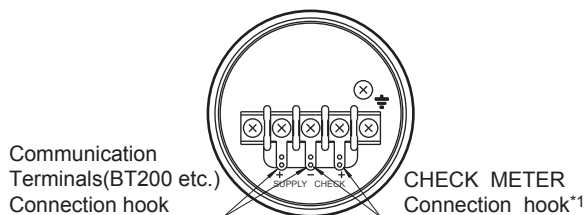


- \*1: When Installation code 2, 3, or 8 is selected, flow direction arrow mark on above figure are reversed. (i.e. Flow direction is on the left side.)
- \*2: 15mm (0.59 inch) for right side high pressure (Installation code 2, 3, or 8).
- \*3: When Optional code K1, K2, K5, or K6 is selected, add 15 mm(0.59 inch) to the value in the figure.
- \*4: Applicable only for ATEX, IECEx, and TIIS Flameproof type.

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• Terminal Configuration



• Terminal Wiring

|        |        |   |
|--------|--------|---|
| SUPPLY | +<br>- | Power supply and output terminal        |
| CHECK  | +<br>- | External indicator (ammeter) terminal*1 |
|        |        | Ground terminal                         |

\*1: When using an external indicator or a check meter, the internal resistance must be 10Ω or less. Not available for Fieldbus communication (Output signal code F and G).

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Table 1. Calibration Unit

| Measurement Span and Range |       | Optional Code                |                  |                                  |
|----------------------------|-------|------------------------------|------------------|----------------------------------|
|                            |       | D1 ( psi Unit )              | D3 ( bar Unit )  | D4 ( kgf/cm <sup>2</sup> Unit )  |
| L                          | Span  | 2 to 40 inH <sub>2</sub> O   | 5 to 100 mbar    | 50 to 1000 mmH <sub>2</sub> O    |
|                            | Range | 0 to 40 inH <sub>2</sub> O   | 0 to 100 mbar    | 0 to 1000 mmH <sub>2</sub> O     |
| M                          | Span  | 8 to 400 inH <sub>2</sub> O  | 20 to 1000 mbar  | 200 to 10000 mmH <sub>2</sub> O  |
|                            | Range | 0 to 400 inH <sub>2</sub> O  | 0 to 1000 mbar   | 0 to 10000 mmH <sub>2</sub> O    |
| H                          | Span  | 80 to 830 inH <sub>2</sub> O | 200 to 2100 mbar | 2000 to 21000 mmH <sub>2</sub> O |
|                            | Range | 0 to 830 inH <sub>2</sub> O  | 0 to 2100 mbar   | 0 to 21000 mmH <sub>2</sub> O    |

< Ordering Information > “◇”

Specify the following when ordering

- Model, suffix codes, and optional codes
- Calibration range and units:
  - 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.
  - Specify only one unit from the table, 'Settings when shipped.'
- Select linear or square root for output mode and display mode.  
Note: If not specified, the instrument is shipped set for linear mode.
- Select normal or reverse for operation mode  
Note: If not specified, the instrument is shipped in normal operation mode.
- 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 -19999 to 19999.
- Tag Number (if required)
- 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.

< Related Instruments > “◇”

Power Distributor: Refer to GS 01B04T01-02E or GS 01B04T02-02E  
BRAIN TERMINAL: Refer to GS 01C00A11-00E

< Safety Barrier for TIIS Intrinsically Safe Type >

| Supplier | Type     | Model                  |
|----------|----------|------------------------|
| MTL      | Isolator | MTL3046B               |
|          |          | MTL4041B               |
| P+F      | Isolator | KFD2-STC3-Ex 1         |
|          |          | KFD2-STV3-Ex 1-1, 2, 3 |

Note: Requirements of capacitance and inductance for cable wiring.  
 $C_w \leq C_o - 11$ [nF]  
 $L_w \leq L_o - 730$ [μH]  
 (Co: Max. external capacitance)  
 (Lo: Max. external inductance)

< Reference >

- JIS SUS316L stainless steel; Equivalent to AISI 316L.
- JIS SUS316 stainless steel; Equivalent to AISI 316.
- JIS SUS304 stainless steel; Equivalent to AISI 304.
- JIS S25C carbon steel; Equivalent to AISI 1025.
- JIS SECC Carbon steel.
- Teflon; Trademark of E.I. DuPont de Nemours & Co.
- JIS SCM435 chrome molybdenum steel; Equivalent to AISI 4137.
- JIS SUS630 stainless steel; Equivalent to ASTM 630.
- Hastelloy; Trademark of Haynes International Inc.
- JIS SCS14A stainless steel; Equivalent to JIS SUS316 cast stainless steel or ASTM CF-8M.
- HART; Trademark of the HART Communication Foundation.
- FOUNDATION; Trademark of Fieldbus Foundation.
- 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.

CE marking is not applied to the product from the end of February 2016.