Diaphragm seals are used to prevent process medium form entering directly into the pressure-sensing assembly of the differential pressure transmitter, they are connected to the transmitter using capillaries filled with fill fluid. Inner diaphragm type can be installed to small size range which is 1 inch, 3/4 inch or 1/2 inch. And the performance is the same as 2 inch, because it is used the diaphragm size same as 2 inch. EJA118E Diaphragm Sealed Differential Pressure Transmitters can be used to measure liquid, gas, or steam flow, as well as liquid level, density, and pressure. EJA118E outputs a 4 to 20 mA DC signal corresponding to the measured differential pressure. Its highly 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 diagnostics. FOUNDATION Fieldbus, PROFIBUS PA and 1 to 5 V DC with HART (Low Power) protocol types are also available.

### 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

<table>
<thead>
<tr>
<th>Measurement Span/Range</th>
<th>kPa</th>
<th>inH₂O(D1)</th>
<th>mbar(D3)</th>
<th>mmH₂O(D4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M Span</td>
<td>2.5 to 100</td>
<td>10 to 400</td>
<td>25 to 1000</td>
<td>25 to 10000</td>
</tr>
<tr>
<td>Range</td>
<td>-100 to 0</td>
<td>-400 to 0</td>
<td>-1000 to 0</td>
<td>-10000 to 0</td>
</tr>
<tr>
<td>H Span</td>
<td>25 to 500</td>
<td>100 to 2000</td>
<td>250 to 5000</td>
<td>0.25 to 5 kgf/cm²</td>
</tr>
<tr>
<td>Range</td>
<td>-500 to 500</td>
<td>-2000 to 2000</td>
<td>-5000 to 5000</td>
<td>0.25 to 5 kgf/cm²</td>
</tr>
</tbody>
</table>

#### PERFORMANCE SPECIFICATIONS

Zero-based calibrated span, linear output, wetted parts material code SC, fill fluid code B, and capillary length of 5 m.

For Fieldbus and PROFIBUS 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)

<table>
<thead>
<tr>
<th>Measurement span</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reference accuracy</td>
<td>±0.2% of Span</td>
</tr>
<tr>
<td>X ≤ span</td>
<td>±(0.15+0.01 URL/span)% of Span</td>
</tr>
<tr>
<td>X &gt; span</td>
<td>±0.2% of Span</td>
</tr>
<tr>
<td>URL (upper range limit)</td>
<td>±0.2% of Span</td>
</tr>
<tr>
<td>X</td>
<td>±0.2% of Span</td>
</tr>
<tr>
<td>H</td>
<td>±0.2% of Span</td>
</tr>
</tbody>
</table>

**Square Root Output Accuracy**

The square root accuracy is a percent of flow span.

<table>
<thead>
<tr>
<th>Output</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>50% or Greater</td>
<td>Same as reference accuracy</td>
</tr>
<tr>
<td>50% to Dropout point</td>
<td>Reference accuracy × 50</td>
</tr>
</tbody>
</table>

**Ambient Temperature Effects per 50°C (122°F) Change**

<table>
<thead>
<tr>
<th>Capsule</th>
<th>M and H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zero shift</td>
<td>±(0.2+0.7× X/ A)%</td>
</tr>
<tr>
<td>Total shift</td>
<td>±(1.4× X/ A)%</td>
</tr>
</tbody>
</table>

'A’ is the highest value among the absolute values of lower range value (LRV) and upper range value (URV), and the span value in calibration range.

---

**General Specifications**

**EJA118E/Z**

Diaphragm Sealed Differential Pressure Transmitter

((Inner Diaphragm type))

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

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16th Edition Mar. 2020
Static Pressure Effects per 0.69 MPa (100 psi) Change
Span Effects
M and H capsules
±0.02% of span
Effect on Zero
M and H capsules
±0.014% of URL
Power Supply Effects (Output signal code D and J)
±0.005% per Volt (from 21.6 to 32 V DC, 350 Ω)
Response Time (Differential pressure) ”○”
M and H capsule: 200 ms (approximate value at normal temperature)
When software 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 static 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). *
Maximum Working Pressure (MWP) is within flange rating pressure.
Accuracy
Absolute Pressure
1 MPa 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 atmospheric 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 conform to NAMUR NE43 can be preset 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

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 unavailable 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.

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 range-setting 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 and J)
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.

Self Diagnostics
CPU failure, hardware failure, configuration error, process alarm for differential pressure, static pressure or 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.

Capillary Fill Fluid Density Compensation (Output signal code D, J and Q)
Compensation of the zero shift by the ambient temperature effect on the capillary tube.

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 01C2SA05-01EN or TI 01C2SA05-21EN 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/)
NORM AL OPERATING CONDITION

(Optional features or approval codes may affect limits.)

Ambient Temperature Limits
–40 to 60°C (–40 to 140°F)
–30 to 60°C (–22 to 140°F) with LCD display
(Note: The ambient temperature limits must be within the fill fluid operating temperature range, see table 1.)

Table 1. Process temperature, Ambient temperature, and Working pressure

<table>
<thead>
<tr>
<th>Code</th>
<th>Process temperature*1</th>
<th>Ambient temperature*2</th>
<th>Working pressure</th>
<th>Specific gravity*3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silicone oil (general use) A</td>
<td>–10 to 250°C (14 to 482°F)</td>
<td>–10 to 60°C (14 to 140°F)</td>
<td>2.7 kPa abs (0.38 psi abs) to flange rating pressure</td>
<td>1.07</td>
</tr>
<tr>
<td>Silicone oil (general use) B</td>
<td>–30 to 180°C (–22 to 360°F)</td>
<td>–15 to 60°C (5 to 140°F)</td>
<td>0.94</td>
<td></td>
</tr>
<tr>
<td>Fluorinated oil (oil-prohibited use) D</td>
<td>–20 to 120°C (–4 to 248°F)</td>
<td>–10 to 60°C (14 to 140°F)</td>
<td>51 kPa abs (7.4 psi abs) to flange rating pressure</td>
<td>1.90 to 1.92</td>
</tr>
<tr>
<td>Ethylene glycol (low temperature use) E</td>
<td>–50 to 100°C (–58 to 212°F)</td>
<td>–40 to 60°C (–4 to 140°F)</td>
<td>100 kPa abs (atmospheric pressure) to flange pressure rating</td>
<td>1.09</td>
</tr>
<tr>
<td>Silicone oil (high temp. and high vacuum use) 1</td>
<td>–10 to 250°C (14 to 482°F)</td>
<td>–10 to 50°C (14 to 122°F)</td>
<td>0.013 kPa abs (0.0019 psi abs) to flange pressure rating</td>
<td>1.07</td>
</tr>
<tr>
<td>Silicone oil (high vacuum use) 4</td>
<td>–10 to 100°C (14 to 212°F)</td>
<td>–10 to 50°C (14 to 122°F)</td>
<td>1.07</td>
<td></td>
</tr>
</tbody>
</table>

*1: See figure 1-1, 1-2, 1-3, and 1-4 ‘Working Pressure and Process Temperature.’
*2: This ambient temperature is the transmitter ambient temperature.
*3: Approximate values at a temperature of 25°C (77°F)

Note: The differential pressure transmitter should be installed at least 600 mm below the high pressure (HP) process connection. However, this value (600 mm) may be affected by ambient temperature, operating pressure, fill fluid or material of the wetted diaphragm.
Contact YOKOGAWA when the transmitter can not be installed at least 600 mm below the HP process connection.
**Figure 1-3. Working Pressure and Process Temperature (Fill fluid: silicone oil for high temp. and high vacuum use)**

- Temperature range for fill fluid code 1:
  - Process temperature
  - Flange max. working pressure
  - Atmospheric pressure

- Working pressure kPa abs (psi abs):
  - 100 (14.5)
  - 10 (1.4)
  - 2.7 (0.38)
  - 1 (0.14)
  - 0.1 (0.014)
  - 0.013 (0.0019)
  - 0.01 (0.0014)

- Transmitter ambient temperature range:
  - -50 to 350°C

**Figure 1-4. Working Pressure and Process Temperature (Fill fluid: silicone oil for high temp. and high vacuum use)**

- Temperature range for fill fluid code 4:
  - Process temperature
  - Flange max. working pressure
  - Atmospheric pressure

- Working pressure kPa abs (psi abs):
  - 100 (14.5)
  - 10 (1.4)
  - 2.7 (0.38)
  - 1 (0.14)
  - 0.1 (0.014)
  - 0.013 (0.0019)
  - 0.01 (0.0014)

**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 550 Ω 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.

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, Table 2
- EN 61326-2-3
- EN 61326-2-5 (for fieldbus)

European Pressure Equipment Directive 2014/68/EU

- Sound Engineering Practice
- EU RoHS Directive
  - EN 50581

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

Process connections
See the following table.

<table>
<thead>
<tr>
<th>Process connection style</th>
<th>Size</th>
<th>Flange</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adapter connection type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/2-inch</td>
<td></td>
<td>JIS 10K, 20K, 40K</td>
</tr>
<tr>
<td>3/4-inch</td>
<td></td>
<td>ANSI Class 150, 300, 600</td>
</tr>
<tr>
<td>1-inch</td>
<td></td>
<td>JPI Class 150, 300, 600</td>
</tr>
<tr>
<td>Flange connection type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/2-inch</td>
<td></td>
<td>JIS 10K, 20K, 40K</td>
</tr>
<tr>
<td>3/4-inch</td>
<td></td>
<td>ANSI Class 150, 300, 600</td>
</tr>
<tr>
<td>1-inch</td>
<td></td>
<td>JPI Class 150, 300, 600</td>
</tr>
</tbody>
</table>

Gasket Contact Surface
See the following table.

<table>
<thead>
<tr>
<th>Gasket contact surface</th>
<th>JIS/JPI</th>
<th>ANSI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetted parts material code</td>
<td>SA, SD</td>
<td>WA, WD</td>
</tr>
<tr>
<td>Gasket contact Surface</td>
<td>Serration*</td>
<td>—</td>
</tr>
<tr>
<td>Flat (No serration)</td>
<td>•</td>
<td>•</td>
</tr>
</tbody>
</table>

*1: ANSI B16.5

Electrical Connections
See “MODEL AND SUFFIX CODES.”

Transmitter Mounting
2-inch pipe mounting

Wetted Parts Material

- Diaphragm seal
  - Diaphragm and other wetted parts;
  - Refer to “MODEL AND SUFFIX CODES.”
- Vent / drain plugs
  - 316 SST

Flange Material

- Refer to “MODEL AND SUFFIX CODES.”
  (It means the material of adapter or pipe with flange.)

Gasket for transmitter side

- 316L SST with PTFE Teflon coating

Non-wetted Parts Material

- Transmitter body section:
  - Cover flange
    - ASTM CF-8M
  - Cover flange 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

Diaphragm seal section:

- Capillary tube
  - 316 SST
- Protection tube
  - 304 SST PVC-sheathed
  - (Max. operating temperature of PVC, 100°C (212°F))

Fill fluid

See table 1.

In case of Adapter connection type

- Stud bolt... B7
- Nut ............ 304 SST

Weight

- Inner diaphragm, adapter connection type: 8.8 kg (19.4 lbs)
- (1/2-inch ANSI Class150 flange, capillary length 5 m; without integral indicator and mounting bracket.)
- Add 1.5kg (3.3lb) for Amplifier housing code 2.
MODEL AND SUFFIX CODES

Instruction

The model and suffix codes for EJA118E consist of two parts; a transmitter body section (I) and a diaphragm seal section (II). This specification sheet introduces these two parts separately. The transmitter body section is shown in one table, and the diaphragm seal section specifications are listed according to the process connection style. First select the model and suffix codes of transmitter body section and then continue on one of the diaphragm seal section.

EJA118E – [Transmitter body section] – [Diaphragm seal section]

See Page 7

Inner diaphragm,
Adapter connection type • • • See Page 8
Inner diaphragm,
Flange connection type • • • See Page 9
# I. Transmitter body section

### EJA118E - Symmetry - Symmetry - Symmetry - Symmetry

<table>
<thead>
<tr>
<th>Model</th>
<th>Suffix codes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EJA118E</td>
<td>-</td>
<td>Diaphragm sealed differential pressure transmitter</td>
</tr>
<tr>
<td>Output signal</td>
<td>-D</td>
<td>4 to 20 mA DC with digital communication (BRAIN protocol)</td>
</tr>
<tr>
<td></td>
<td>-J</td>
<td>4 to 20 mA DC with digital communication (HART 5/HART 7 protocol)*1</td>
</tr>
<tr>
<td></td>
<td>-F</td>
<td>Digital communication (FOUNDATION Fieldbus protocol, refer to GS 01C31T02-01EN)</td>
</tr>
<tr>
<td></td>
<td>-G</td>
<td>Digital communication (PROFIBUS PA protocol, refer to GS 01C31T04-01EN)</td>
</tr>
<tr>
<td></td>
<td>-Q</td>
<td>Low Power, 1 to 5 V DC with digital communication (HART 7 protocol)*7</td>
</tr>
<tr>
<td>Measurement span (capsule)</td>
<td>M</td>
<td>2.5 to 100 kPa (10 to 400 inH₂O)</td>
</tr>
<tr>
<td></td>
<td>H</td>
<td>25 to 500 kPa (100 to 2000 inH₂O)</td>
</tr>
<tr>
<td>Coverflange bolts and nuts material</td>
<td>J</td>
<td>B7 carbon steel</td>
</tr>
<tr>
<td></td>
<td>G</td>
<td>316L SST</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>660 SST</td>
</tr>
<tr>
<td>Installation</td>
<td>-9</td>
<td>Horizontal piping type and left side high pressure</td>
</tr>
<tr>
<td>Amplifier housing</td>
<td>1</td>
<td>Cast aluminum alloy</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Cast aluminum alloy with corrosion resistance properties*2</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>ASTM CF-8M Stainless Steel*3</td>
</tr>
<tr>
<td>Electrical connection</td>
<td>0</td>
<td>G 1/2 female, one electrical connection without blind plugs</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>1/2 NPT female, two electrical connections without blind plugs</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>M20 female, two electrical connections without blind plugs</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>G 1/2 female, two electrical connections with a blind plug*4</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>1/2 NPT female, two electrical connections with a blind plug*4</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>M20 female, two electrical connections with a blind plug*4</td>
</tr>
<tr>
<td></td>
<td>A</td>
<td>G1/2 female, two electrical connections and a 316 SST blind plug</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>1/2 NPT female, two electrical connections and a 316 SST blind plug</td>
</tr>
<tr>
<td></td>
<td>D</td>
<td>M20 female, two electrical connections and a 316 SST blind plug</td>
</tr>
<tr>
<td>Integral Indicator</td>
<td>D</td>
<td>Digital indicator*5</td>
</tr>
<tr>
<td></td>
<td>E</td>
<td>Digital indicator with the range setting switch (push button)*6</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>None</td>
</tr>
<tr>
<td>Mounting bracket</td>
<td>B</td>
<td>304 SST 2-inch pipe mounting, flat type (for horizontal piping)</td>
</tr>
<tr>
<td></td>
<td>J</td>
<td>316 SST 2-inch pipe mounting, flat type (for horizontal piping)</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>None</td>
</tr>
</tbody>
</table>

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

*1: HART 5 or HART 7 is selectable. Specify upon ordering.
*2: Not applicable for electrical connection code 0, 5, 7, 9 and A.
*3: Not applicable for electrical connection code 0, 5, 7 and 9.
*4: Material of a blind plug; aluminum alloy for code 0, 5, 7, and 9.
*5: Not applicable for output signal code G.
*6: Not applicable for output signal code F.
*7: As CE marking is still pending, not applicable for those countries which require CE marking.
II. Diaphragm seal section (Inner Diaphragm, Adapter connection type)

<table>
<thead>
<tr>
<th>Model</th>
<th>Suffix codes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EJA118E</td>
<td>-</td>
<td>Transmitter body section (I)</td>
</tr>
<tr>
<td></td>
<td>A</td>
<td>Inner Diaphragm, Adapter connection type</td>
</tr>
</tbody>
</table>

### Flange rating

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>ANSI class 150</td>
<td>P1</td>
<td>JPI class 150</td>
</tr>
<tr>
<td>A2</td>
<td>ANSI class 300</td>
<td>P2</td>
<td>JPI class 300</td>
</tr>
<tr>
<td>A4</td>
<td>ANSI class 600 8</td>
<td>P4</td>
<td>JPI class 600 8</td>
</tr>
</tbody>
</table>

### Process connection size

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>1/2 inch (15 mm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>3/4 inch (20 mm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1 inch (25 mm)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Flange material

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>316L SST (Adapter material)</td>
</tr>
</tbody>
</table>

### Gasket contact surface

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Serration (for ANSI flange only)</td>
</tr>
<tr>
<td>2</td>
<td>Flat (no serration)</td>
</tr>
</tbody>
</table>

### Wetted parts material

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>SA</td>
<td>316L SST</td>
<td>316 SST (include Adapter)</td>
</tr>
<tr>
<td>WA</td>
<td>Hastelloy C-276</td>
<td>316 SST (include Adapter)</td>
</tr>
</tbody>
</table>

### Flushing connection ring

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>None</td>
</tr>
</tbody>
</table>

**Fill fluid**

- For general use (silicone oil) -10 to 250°C -10 to 60°C
- For general use (silicone oil) -30 to 180°C -15 to 60°C
- For oil-prohibited use (fluorinated oil) -20 to 120°C -10 to 60°C
- For low temperature use (ethylene glycol) -50 to 100°C -40 to 60°C
- High temp. and high vacuum use (Silicone oil) -10 to 250°C -10 to 50°C
- High vacuum use (Silicone oil) -10 to 100°C -10 to 50°C

### Capillary connection

- Back of diaphragm seal unit

### Capillary treatment

- Bundled capillary (1 m separated)
- Standard

### Capillary length

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1 m</td>
<td>6</td>
<td>6 m</td>
</tr>
<tr>
<td>2</td>
<td>2 m</td>
<td>7</td>
<td>7 m</td>
</tr>
<tr>
<td>3</td>
<td>3 m</td>
<td>8</td>
<td>8 m</td>
</tr>
<tr>
<td>4</td>
<td>4 m</td>
<td>9</td>
<td>9 m</td>
</tr>
<tr>
<td>5</td>
<td>5 m</td>
<td>A</td>
<td>10 m</td>
</tr>
</tbody>
</table>

### Option codes and Tokuchu code

- Optional specification and /Z

---

*1: See table 3 ‘Gasket contact surface’ on page 5.

*2: Even in case where fill fluid code D (fluorinated oil) is selected, if degrease cleansing treatment or both degrease cleansing and dehydrating treatment for the wetted parts is required, specify option code K1 or K5.

*3: 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.

*4: Forged version of the material may be used.

*5: Hastelloy C-276 or N10276.

*6: In case where fill fluid code D (fluorinated oil) is selected, if degrease cleansing treatment or both degrease cleansing and dehydrating treatment for the wetted parts is required, specify option code K1 or K5.

*7: In case where flange rating code A4 (ANSI class 600) or P4 (JPI class 600) is selected, it must be selected optional code /HP (High pressure-proof structure).

---

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.
## II. Diaphragm seal section (Inner Diaphragm, Flange connection type)

### EJA118E - [Model Suffix codes]

#### Description
- Transmitter body section (I)
- Inner Diaphragm, Flange connection type

<table>
<thead>
<tr>
<th>Process connection size (Process flange size)</th>
<th>Flange rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>J1: JIS 10K</td>
</tr>
<tr>
<td>7</td>
<td>J2: JIS 20K</td>
</tr>
<tr>
<td>1</td>
<td>J3: JIS 40K</td>
</tr>
<tr>
<td></td>
<td>J4: ANSI class 150</td>
</tr>
<tr>
<td></td>
<td>A1: ANSI class 150</td>
</tr>
<tr>
<td></td>
<td>A2: ANSI class 300</td>
</tr>
<tr>
<td></td>
<td>A3: ANSI class 600</td>
</tr>
<tr>
<td></td>
<td>P1: JPI class 150</td>
</tr>
<tr>
<td></td>
<td>P2: JPI class 300</td>
</tr>
<tr>
<td></td>
<td>P3: JPI class 600</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flange material*3</th>
<th>SD: 316L SST</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>WD: 316 SST</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gasket contact surface*1</th>
<th>1: Serration (for ANSI flange only)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2: Flat (no serration)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Wetted parts material*3</th>
<th>SD: 316L SST</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>WD: 316 SST</td>
</tr>
</tbody>
</table>

| Flushing connection ring | 0: None |

| Extension | 0: None |

<table>
<thead>
<tr>
<th>Fill fluid</th>
<th>[Process temperature]</th>
<th>[Ambient temperature]</th>
</tr>
</thead>
<tbody>
<tr>
<td>-A</td>
<td>For general use (silicone oil)</td>
<td>-10 to 250°C</td>
</tr>
<tr>
<td>-B</td>
<td>For general use (silicone oil)</td>
<td>-30 to 180°C</td>
</tr>
<tr>
<td>-D</td>
<td>For oil-prohibited use (fluorinated oil)</td>
<td>-20 to 120°C</td>
</tr>
<tr>
<td>-E</td>
<td>For low temperature use (ethylene glycol)</td>
<td>-50 to 100°C</td>
</tr>
<tr>
<td>-1</td>
<td>High temp. and high vacuum use (Silicone oil)</td>
<td>-10 to 250°C</td>
</tr>
<tr>
<td>-4</td>
<td>High vacuum use (Silicone oil)</td>
<td>-10 to 100°C</td>
</tr>
</tbody>
</table>

| Capillary connection | B: Back of diaphragm seal unit |

<table>
<thead>
<tr>
<th>Capillary treatment*6</th>
<th>1: Bundled capillary (1 m separated)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2: Standard</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Capillary length*7</th>
<th>1: 1 m*6</th>
<th>2: 2 m</th>
<th>3: 3 m</th>
<th>4: 4 m</th>
<th>5: 5 m</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6: 6 m</td>
<td>7: 7 m</td>
<td>8: 8 m</td>
<td>9: 9 m</td>
<td>A: 10 m</td>
</tr>
</tbody>
</table>

### Option codes and Tokuchu code

- The "►" marks indicate the most typical selection for each specification. Example: EJA118E-DMSCG-912EN-DA16D2SD00-BB15/□ Z
- *1: See table 3 ‘Gasket contact surface’ on page 5.
- *2: Even in case where fill fluid code D (fluorinated oil) is selected, if degrease cleansing treatment or both degrease cleansing and dehydrating treatment for the wetted parts is required, specify option code K1 or K5.
- *3: 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.
- *4: Forged version of the material may be used.
- *5: Hastelloy C-276 or N10276.
- *6: In case where capillary length code 1 (1 m) is selected, capillary treatment must be selected code 2 (None).
- *7: In case of wetted parts material code WD (Hastelloy C), specify capillary length from 1 to 5m.
- *8: In case where flange rating code A4 (ANSI class 600) or P4 (JPI class 600) is selected, it must be selected optional code /HP (High pressure-proof structure).

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.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factory Mutual (FM)</td>
<td><strong>FM Explosionproof Approval</strong>&lt;sup&gt;1&lt;/sup&gt;  &lt;br&gt;Applicable Standard: FM3600, FM3615, FM3810, NEMA 250, ANSI/UL 61010-1, ANSI/UL 61010-2-30  &lt;br&gt;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)  &lt;br&gt;“FACTORY SEALED, CONDUIT SEAL NOT REQUIRED.”  &lt;br&gt;Temperature class: T5, Amb. Temp.: –40 to 60°C (–40 to 140°F)</td>
<td>FF1</td>
</tr>
<tr>
<td></td>
<td><strong>FM Intrinsically safe Approval</strong>&lt;sup&gt;1&lt;/sup&gt;&lt;sup&gt;3&lt;/sup&gt;  &lt;br&gt;Applicable Standard: FM 3600, FM 3610, FM 3611, FM 3810, ANSI/ISA-60079-0, ANSI/ISA-60079-11, ANSI/ISA-61010-1, NEMA 250  &lt;br&gt;Intrinsically Safe for Class I, Division 1, Groups A, B, C &amp; D, Class II, Division 1, Groups E, F &amp; G and Class III, Division 1, Class I, Zone 0, in Hazardous Locations, AEx ia IIC  &lt;br&gt;Nonincendive for Class I, Division 2, Groups A, B, C &amp; D, Class II, Division 2, Groups F &amp; G, Class I, Zone 2, Group IIC, in Hazardous Locations  &lt;br&gt;Enclosure: Type 4X, Temp. Class: T4, Amb. Temp.: –60 to 60°C (–75 to 140°F)  &lt;br&gt;Intrinsically Safe Apparatus Parameters  &lt;br&gt;[Groups A, B, C, D, E, F and G] V&lt;sub&gt;max&lt;/sub&gt;=30 V, I&lt;sub&gt;max&lt;/sub&gt;=200 mA, P&lt;sub&gt;max&lt;/sub&gt;=1 W, C&lt;sub&gt;i&lt;/sub&gt;=6 nF, L&lt;sub&gt;i&lt;/sub&gt;=0 µH  &lt;br&gt;[Groups C, D, E, F and G] V&lt;sub&gt;max&lt;/sub&gt;=30 V, I&lt;sub&gt;max&lt;/sub&gt;=225 mA, P&lt;sub&gt;max&lt;/sub&gt;=1 W, C&lt;sub&gt;i&lt;/sub&gt;=8 nF, L&lt;sub&gt;i&lt;/sub&gt;=0 µH</td>
<td>FS1</td>
</tr>
<tr>
<td></td>
<td><strong>ATEX Intrinsically safe Approval</strong>&lt;sup&gt;1&lt;/sup&gt;&lt;sup&gt;3&lt;/sup&gt;  &lt;br&gt;Applicable Standard: EN 60079-0, EN 60079-11  &lt;br&gt;Certificate: DEKRA 11ATEX2228 X  &lt;br&gt;II 1G, 2D Ex ia IIC T4 Ga, Ex ia IIC T85°C T100°C T120°C Db  &lt;br&gt;Degree of protection: IP66/IP67  &lt;br&gt;Amb. Temp. (Tamb) for EPL Ga: –50 to 60°C (–58 to 140°F)  &lt;br&gt;Maximum Process Temp. (Tp) for EPL Ga: 120°C  &lt;br&gt;Electrical data: U&lt;sub&gt;i&lt;/sub&gt;=30 V, I&lt;sub&gt;i&lt;/sub&gt;=200 mA, P&lt;sub&gt;i&lt;/sub&gt;=0.9 W, C&lt;sub&gt;i&lt;/sub&gt;=27.6 nF, L&lt;sub&gt;i&lt;/sub&gt;=0 µH  &lt;br&gt;Amb. Temp. for EPL Db: –30 to 60°C&lt;sup&gt;2&lt;/sup&gt;  &lt;br&gt;Max. surface Temp. for EPL Db: T85°C (Tp: 80°C), T100°C (Tp: 100°C), T120°C (Tp: 120°C)</td>
<td>KS21</td>
</tr>
<tr>
<td></td>
<td>Combined KF22, KS21 and ATEX Intrinsically safe Ex ic&lt;sup&gt;1&lt;/sup&gt;&lt;sup&gt;3&lt;/sup&gt;  &lt;br&gt;[ATEX Intrinsically safe Ex ic]  &lt;br&gt;Applicable Standard: EN 60079-0, EN 60079-11  &lt;br&gt;II 3G Ex ic IIC T4 Gc, Amb. Temp.: –30 to 60°C (–22 to 140°F)&lt;sup&gt;2&lt;/sup&gt;  &lt;br&gt;U&lt;sub&gt;i&lt;/sub&gt;=30 V, C&lt;sub&gt;i&lt;/sub&gt;=27.6 nF, L&lt;sub&gt;i&lt;/sub&gt;=0 µH</td>
<td>KU22</td>
</tr>
<tr>
<td>Item</td>
<td>Description</td>
<td>Code</td>
</tr>
<tr>
<td>---------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>------</td>
</tr>
</tbody>
</table>
| **Canadian Standards Association (CSA)**                           | **CSA Explosionproof Approval**<sup>1</sup>  
Certificate: 2014354  
Explosion-proof for Class I, Groups B, C and D.  
Dustignition-proof for Class II/III, Groups E, F and G.  
When installed in Division 2, “SEAL NOT REQUIRED” Enclosure: Type 4X, Temp. Code: T6...T4  
Ex d IIC T6...T4 Enclosure: IP66/IP67  
Max. Process Temp.: T4;120°C(248°F), T5;100°C(212°F), T6; 85°C(185°F)  
Amb. Temp.: –50 to 75°C(–58 to 167°F) for T4, –50 to 80°C(–58 to 176°F) for T5, –50 to 75°C(–58 to 167°F) for T6  
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 | CF1  
*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. |
| **CSA Intrinsically safe Approval**<sup>1</sup>**3**  
Certificate: 1606623  
[For Division System]  
Applicable Standard: C22.2 No.0, C22.2 No.94, C22.2 No.157, C22.2 No.213, C22.2 No.61010-1, 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 1, 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)  
Electrical Parameters: [Intrinsically Safe] Vmax=30V, Imax=200mA, Pmax=0.9W, Ci=10nF, Li=0 µH  
[Nonincendive] Vmax=30V, Imax=200mA, Pmax=0.9W, 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  
*1: Applicable for Electrical connection code 2, 4, 7, 9, C and D.  
*3: Not applicable for output signal code Q. |
| **IECEX**                                                          | **IECEX Flameproof Approval**<sup>1</sup>  
Certificate: IEC Ex DEK 11.0081X  
Applicable Standard: IEC 60079-0, IEC 60079-1  
Flameproof for Zone 1, Ex d IIC T6...T4  
Enclosure: IP66/IP67  
Max. Process Temp.: T4;120°C(248°F), T5;100°C(212°F), T6; 85°C(185°F)  
Amb. Temp.: –50 to 75°C(–58 to 167°F) for T4, –50 to 80°C(–58 to 176°F) for T5, –50 to 75°C(–58 to 167°F) for T6  
Electrical Parameters: [Ex ia] Ui=30 V, li=200 mA, Pi=0.9 W, Ci=27.8 nF, Li=0 µH  
[Ex nL] Ui=30 V, Ci=27.8 nF, 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 | SF2  
*1: Applicable for Electrical connection code 2, 4, 7, 9, C and D.  
*3: Not applicable for output signal code Q. |
| **IECEX Intrinsically safe and Flameproof Approval**<sup>1</sup>**3**  
Intrinsically safe Ex ia  
Certificate: IEC Ex DEK 13.0061X  
Applicable Standard: IEC 60079-0, IEC 60079-1  
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=30 V, li=200 mA, Pi=0.9 W, Ci=27.8 nF, Li=0 µH  
Intrinsically safe Ex ic  
Certificate: IEC Ex DEK 13.0061X  
Applicable Standard: IEC 60079-0, IEC 60079-1  
Ex ic IIC T4 Gi Enclosure: IP66  
Amb. Temp.: –30 to 60°C(–22 to 140°F), Max. Process Temp.: 120 °C(248 °F)  
Electrical Parameters: Ui=30 V, Ci=27.8 nF, Li=0 µH  
Flameproof  
Certificate: IEC Ex CSA 07.0006  
Applicable Standard: IEC 60079-0, IEC 60079-1  
Flameproof for Zone 1, Ex d IIC T6...T4  
Enclosure: IP66/IP67  
Max. Process Temp.: T4;120°C(248°F), T5;100°C(212°F), T6; 85°C(185°F)  
Amb. Temp.: –50 to 75°C(–58 to 167°F) for T4, –50 to 80°C(–58 to 176°F) for T5, –50 to 75°C(–58 to 167°F) for T6 | SU21  
*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. |
# OPTIONAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Painting</strong></td>
<td><strong>Color change</strong></td>
<td>P</td>
</tr>
<tr>
<td></td>
<td>Amplifier cover only¹</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Amplifier cover and terminal cover, Munsell 7.5 R4/14</td>
<td>PR</td>
</tr>
<tr>
<td><strong>Coating change</strong></td>
<td>Anti-corrosion coating²</td>
<td>X2</td>
</tr>
<tr>
<td><strong>316 SST exterior parts</strong></td>
<td>316 SST zero-adjustment screw and setscrews³</td>
<td>HC</td>
</tr>
<tr>
<td><strong>Fluoro-rubber O-ring</strong></td>
<td>All O-rings of amplifier housing. Lower limit of ambient temperature: −15°C (5°F)</td>
<td>HE</td>
</tr>
<tr>
<td><strong>Lightning protector</strong></td>
<td>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</td>
<td>A</td>
</tr>
<tr>
<td><strong>Oil-prohibited use</strong></td>
<td>Degrease cleansing treatment</td>
<td>K1</td>
</tr>
<tr>
<td><strong>Oil-prohibited use with dehydrating treatment</strong></td>
<td>Degrease cleansing treatment and dehydrating treatment</td>
<td>K5</td>
</tr>
<tr>
<td><strong>Calibration units</strong></td>
<td>P calibration (psi unit)</td>
<td>D1</td>
</tr>
<tr>
<td></td>
<td>bar calibration (bar unit)</td>
<td>D3</td>
</tr>
<tr>
<td></td>
<td>M calibration (kgf/cm² unit)</td>
<td>D4</td>
</tr>
<tr>
<td><strong>Operating temperature correction</strong></td>
<td>Adjusting range: 80°C to Maximum temperature of specified fill fluid</td>
<td>R</td>
</tr>
<tr>
<td><strong>Capillary without PVC sheaths</strong></td>
<td>When ambient temperature exceeds 100°C, or use of PVC is prohibited</td>
<td>V</td>
</tr>
<tr>
<td><strong>Output limits and failure operation</strong></td>
<td>Failure alarm down-scale: Output status at CPU failure and hardware error is −5%, 3.2 mA DC or less for 4 to 20 mA output type, and −5%, 0.8V DC or less for 1 to 5 V output type.</td>
<td>C1</td>
</tr>
<tr>
<td></td>
<td>NAMUR NE43 Compliant failure alarm up-scale: Output status at CPU failure and hardware error is −5%, 3.2 mA DC or less.</td>
<td>C2</td>
</tr>
<tr>
<td></td>
<td>Failure alarm up-scale: Output status at CPU failure and hardware error is 110%, 21.6 mA or more.</td>
<td>C3</td>
</tr>
<tr>
<td><strong>Gold-plated diaphragm</strong></td>
<td>Inside of isolating diaphragms (fill fluid side) are gold plated, effective for hydrogen permeation.</td>
<td>A1</td>
</tr>
<tr>
<td><strong>Wired tag plate</strong></td>
<td>316 SST tag plate wired onto transmitter (Tag No.: Maximum. 16 characters.)</td>
<td>N4</td>
</tr>
<tr>
<td><strong>Data configuration at factory</strong></td>
<td>Data configuration for HART communication type</td>
<td>CA</td>
</tr>
<tr>
<td></td>
<td>Data configuration for BRAIN communication type</td>
<td>CB</td>
</tr>
<tr>
<td><strong>Material certificate</strong></td>
<td>Adapter (Flange), Block</td>
<td>M2A</td>
</tr>
<tr>
<td></td>
<td>Adapter (Flange), Block, Bolt for Block, Stud bolt and nut, Bolt and nut for cover flange</td>
<td>M8A</td>
</tr>
<tr>
<td></td>
<td>Flange, Base, Block, Pipe</td>
<td>M2D</td>
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<td></td>
<td>Flange, Base, Block, Pipe, Bolt for block, Bolt and nut for cover flange</td>
<td>M8D</td>
</tr>
<tr>
<td><strong>Pressure test/Leak test Certificate</strong></td>
<td>(Flange rating)</td>
<td>T51</td>
</tr>
<tr>
<td></td>
<td>(Test pressure)</td>
<td>T54</td>
</tr>
<tr>
<td></td>
<td>JIS 10K</td>
<td>2 MPa (290 psi)</td>
</tr>
<tr>
<td></td>
<td>JIS 20K</td>
<td>5 MPa (720 psi)</td>
</tr>
<tr>
<td></td>
<td>JIS 40K</td>
<td>10 MPa (1450 psi)</td>
</tr>
<tr>
<td></td>
<td>ANSI/JPI Class 150</td>
<td>3 MPa (430 psi)</td>
</tr>
<tr>
<td></td>
<td>ANSI/JPI Class 300</td>
<td>8 MPa (1160 psi)</td>
</tr>
<tr>
<td></td>
<td>ANSI/JPI Class 600</td>
<td>16 MPa (2300 psi)</td>
</tr>
<tr>
<td><strong>Long Vent</strong></td>
<td>For inner diaphragm use only. Total length: 119 mm (standard: 34 mm); Total length when combining with option code K1, K2, K5, and K6: 130 mm. Material: 316 SST</td>
<td>U2</td>
</tr>
<tr>
<td><strong>High pressure-proof structure</strong></td>
<td>High pressure-proof structure for ANSI/JPI class 600 flange.</td>
<td>HP</td>
</tr>
<tr>
<td><strong>Parameter list</strong></td>
<td>List of setting and adjustment parameters</td>
<td>YP</td>
</tr>
</tbody>
</table>

¹: Not applicable for amplifier housing code 2 and 3.
²: Not applicable with color change option. Not applicable for amplifier housing code 2.
³: Not applicable for amplifier housing code 2.
⁴: The specification is included in amplifier housing code 2.
⁵: Specify the process operating temperature for zero correction. Example: Zero correction by process temperature 90°C.
⁶: Applicable for output signal code D and J. The hardware error indicates faulty amplifier or capsule.
⁷: Also see ‘Ordering Information.’
⁸: The unit on the certificate is always MPa regardless of selection of option code D1, D3, and D4.
⁹: Dry nitrogen gas is used for oil-prohibited use (option code K1 and K5).
¹⁰: In case where flange rating code A4 (ANSI class 600) or P4 (JPI class 600) is selected, optional code /HP (High pressure-proof structure) must be selected.
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.
### DIMENSIONS

#### Transmitter body section

Unit: mm (Approx.: inch)

- **External indicator conduit connection (optional)**
- **Conduit connection**
- **Integral indicator (optional)**
- **Zero adjustment**
- **Ground terminal**
- **High pressure side**
- **Low pressure side**
- **Mounting bracket (flat-type, optional)**
- **2-inch pipe (O.D. 60.5 mm)**

*1: 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 ①
- Terminal ②
- Terminal ③

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

| SUPPLY + | Power supply and output terminals |
| CHECK + | 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 + | Power supply terminals |
| VOUT + | 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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GS 01C31H01-11EN Nov. 20, 2019-00
### Diaphragm seal section

- **Adapter connection type**

---

**Process Flange Size: 1/2 inch (15mm)**

<table>
<thead>
<tr>
<th>Flange rating</th>
<th>ØD</th>
<th>ØC (%Ø)</th>
<th>g</th>
<th>T</th>
<th>f</th>
<th>m</th>
<th>n</th>
<th>S</th>
<th>L (Reference)</th>
</tr>
</thead>
<tbody>
<tr>
<td>JIS 10K</td>
<td>95(3.74)</td>
<td>70(2.76)</td>
<td>51(2.01)</td>
<td>52(2.05)</td>
<td>1(0.04)</td>
<td>72(2.83)</td>
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<td>M12 x 1.75</td>
<td>43(1.69)</td>
</tr>
<tr>
<td>JIS 20K</td>
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<td>70(2.76)</td>
<td>51(2.01)</td>
<td>52(2.05)</td>
<td>1(0.04)</td>
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<td>M12 x 1.75</td>
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<tr>
<td>JIS 40K</td>
<td>115(4.53)</td>
<td>80(3.15)</td>
<td>55(2.17)</td>
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<td>79.5(3.13)</td>
<td>4</td>
<td>M16 x 2.0</td>
<td>57(2.24)</td>
</tr>
<tr>
<td>ANSI class 150</td>
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<td>60(2.36)</td>
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<td>72(2.83)</td>
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<td>4</td>
<td>1/2-13UNC</td>
<td>59(2.32)</td>
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<td>72(2.83)</td>
<td>4</td>
<td>1/2-13UNC</td>
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<td>1/2-13UNC</td>
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<td>35(1.38)</td>
<td>62(2.44)</td>
<td>6(2.5)</td>
<td>72(2.83)</td>
<td>4</td>
<td>1/2-13UNC</td>
<td>59(2.32)</td>
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**Flanges Size: 3/4 inch (20mm)**

<table>
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<tr>
<th>Flange rating</th>
<th>ØD</th>
<th>ØC (%Ø)</th>
<th>g</th>
<th>T</th>
<th>f</th>
<th>m</th>
<th>n</th>
<th>S</th>
<th>L (Reference)</th>
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<tr>
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<td>100(3.94)</td>
<td>75(2.95)</td>
<td>56(2.20)</td>
<td>52(2.05)</td>
<td>1(0.04)</td>
<td>72(2.83)</td>
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<td>M12 x 1.75</td>
<td>43(1.69)</td>
</tr>
<tr>
<td>JIS 20K</td>
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<td>75(2.95)</td>
<td>56(2.20)</td>
<td>52(2.05)</td>
<td>1(0.04)</td>
<td>72(2.83)</td>
<td>4</td>
<td>M12 x 1.75</td>
<td>43(1.69)</td>
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<tr>
<td>JIS 40K</td>
<td>120(4.72)</td>
<td>85(3.35)</td>
<td>60(2.36)</td>
<td>52(2.05)</td>
<td>1(0.04)</td>
<td>82(3.23)</td>
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<td>52(2.05)</td>
<td>1(0.06)</td>
<td>72(2.83)</td>
<td>4</td>
<td>1/2-13UNC</td>
<td>44(1.73)</td>
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<tr>
<td>ANSI class 300</td>
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<td>82(3.23)</td>
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<td>72(2.83)</td>
<td>4</td>
<td>1/2-13UNC</td>
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<td>42(1.69)</td>
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<td>4</td>
<td>5/8-11UNC</td>
<td>67(2.64)</td>
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**Process Flange Size: 1 inch (25mm)**

<table>
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<th>Flange rating</th>
<th>ØD</th>
<th>ØC (%Ø)</th>
<th>g</th>
<th>T</th>
<th>f</th>
<th>m</th>
<th>n</th>
<th>S</th>
<th>L (Reference)</th>
</tr>
</thead>
<tbody>
<tr>
<td>JIS 10K</td>
<td>125(4.92)</td>
<td>90(3.54)</td>
<td>67(2.64)</td>
<td>52(2.05)</td>
<td>1(0.04)</td>
<td>84.5(3.33)</td>
<td>4</td>
<td>M16 x 2.0</td>
<td>57(2.24)</td>
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<tr>
<td>JIS 20K</td>
<td>125(4.92)</td>
<td>90(3.54)</td>
<td>67(2.64)</td>
<td>52(2.05)</td>
<td>1(0.04)</td>
<td>84.5(3.33)</td>
<td>4</td>
<td>M16 x 2.0</td>
<td>57(2.24)</td>
</tr>
<tr>
<td>JIS 40K</td>
<td>130(5.12)</td>
<td>95(3.74)</td>
<td>70(2.76)</td>
<td>52(2.05)</td>
<td>1(0.04)</td>
<td>87(3.43)</td>
<td>4</td>
<td>M16 x 2.0</td>
<td>57(2.24)</td>
</tr>
<tr>
<td>ANSI class 150</td>
<td>108(4.25)</td>
<td>79.3(3.12)</td>
<td>50(2.00)</td>
<td>52(2.05)</td>
<td>1(0.06)</td>
<td>76(2.99)</td>
<td>4</td>
<td>1/2-13UNC</td>
<td>44(1.73)</td>
</tr>
<tr>
<td>ANSI class 300</td>
<td>124(4.88)</td>
<td>88(3.50)</td>
<td>50(2.00)</td>
<td>52(2.05)</td>
<td>1(0.06)</td>
<td>84(3.31)</td>
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<td>51(2.01)</td>
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<td>88(3.50)</td>
<td>50(2.00)</td>
<td>62(2.44)</td>
<td>6(2.5)</td>
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<td>4</td>
<td>5/8-11UNC</td>
<td>67(2.64)</td>
</tr>
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<td>JPI class 150</td>
<td>108(4.25)</td>
<td>79.3(3.12)</td>
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<td>52(2.05)</td>
<td>1(0.06)</td>
<td>76(2.99)</td>
<td>4</td>
<td>1/2-13UNC</td>
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<td>124(4.88)</td>
<td>88(3.50)</td>
<td>50(2.00)</td>
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<td>5/8-11UNC</td>
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<td>JPI class 600</td>
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<td>88(3.50)</td>
<td>50(2.00)</td>
<td>62(2.44)</td>
<td>6(2.5)</td>
<td>84(3.31)</td>
<td>4</td>
<td>5/8-11UNC</td>
<td>67(2.64)</td>
</tr>
</tbody>
</table>

---

1: Stud bolts and nuts are attached for 2 x n pcs.

2: When selecting “Capillary treatment code 1,” the capillaries are bundled at “A” while having 1m separated capillaries for remote seals.

3: In case of oil-prohibited use or oil-prohibited use with dehydrating treatment, 15mm added.

4: In case of oil-prohibited use or oil-prohibited use with dehydrating treatment, 11mm added.

5: This value is the same as flange standards. Actual value might be added 1mm(0.04inch) because the commercial gaskets can be used.
- Flange connection type

With Long Vent (Option: /U2)

*1: When selecting "Capillary treatment code 1," the capillaries are bundled at "A" while having 1m separated capillaries for remote seals.
*2: In case of oil-prohibited use or oil-prohibited use with dehydrating treatment, 15mm added.
*3: In case of oil-prohibited use or oil-prohibited use with dehydrating treatment, 11mm added.

Process Flange Size: 1/2 inch (15mm)

<table>
<thead>
<tr>
<th>Flange rating</th>
<th>ØD</th>
<th>ØC</th>
<th>øg</th>
<th>T</th>
<th>t</th>
<th>f</th>
<th>n</th>
<th>Øh</th>
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<tr>
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<td>95(3.74)</td>
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<td>15(0.59)</td>
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<td>51(2.01)</td>
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Process Flange Size: 3/4 inch (20mm)

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<th>ØC</th>
<th>øg</th>
<th>T</th>
<th>t</th>
<th>f</th>
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<th>Øh</th>
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<td>1(0.04)</td>
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<td>15(0.59)</td>
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<tr>
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<td>56(2.20)</td>
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<tr>
<td>JIS 40K</td>
<td>100(3.94)</td>
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<td>56(2.20)</td>
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<td>20(0.79)</td>
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<td>19(0.75)</td>
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<td>117(4.61)</td>
<td>82(3.23)</td>
<td>42.9(1.69)</td>
<td>42(1.65)</td>
<td>15(0.62)</td>
<td>1.6(0.06)</td>
<td>4</td>
<td>19(0.75)</td>
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<tr>
<td>JPI class 600</td>
<td>117(4.61)</td>
<td>82(3.23)</td>
<td>42.9(1.69)</td>
<td>57(2.24)</td>
<td>22(0.87)</td>
<td>6.4(0.25)</td>
<td>4</td>
<td>19(0.75)</td>
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</table>

Process Flange Size: 1 inch (25mm)

<table>
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<tr>
<th>Flange rating</th>
<th>ØD</th>
<th>ØC</th>
<th>øg</th>
<th>T</th>
<th>t</th>
<th>f</th>
<th>n</th>
<th>Øh</th>
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<td>125(4.92)</td>
<td>90(3.54)</td>
<td>67(2.64)</td>
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<td>14(0.55)</td>
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<td>90(3.54)</td>
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<td>42(1.65)</td>
<td>16(0.63)</td>
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<td>67(2.64)</td>
<td>42(1.65)</td>
<td>20(0.79)</td>
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<tr>
<td>ANSI class 150</td>
<td>124(4.88)</td>
<td>88.9(3.50)</td>
<td>50.8(2.00)</td>
<td>42(1.65)</td>
<td>14(0.56)</td>
<td>1(0.06)</td>
<td>4</td>
<td>15(0.75)</td>
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<tr>
<td>ANSI class 300</td>
<td>124(4.88)</td>
<td>88.9(3.50)</td>
<td>50.8(2.00)</td>
<td>42(1.65)</td>
<td>14(0.56)</td>
<td>1(0.06)</td>
<td>4</td>
<td>15(0.75)</td>
</tr>
<tr>
<td>ANSI class 600</td>
<td>124(4.88)</td>
<td>88.9(3.50)</td>
<td>50.8(2.00)</td>
<td>57(2.24)</td>
<td>24(0.95)</td>
<td>6.4(0.25)</td>
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<td>19(0.75)</td>
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<tr>
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<td>42(1.65)</td>
<td>14(0.56)</td>
<td>1(0.06)</td>
<td>4</td>
<td>16(0.63)</td>
</tr>
<tr>
<td>JPI class 300</td>
<td>124(4.88)</td>
<td>88.9(3.50)</td>
<td>50.8(2.00)</td>
<td>42(1.65)</td>
<td>17(0.69)</td>
<td>1.6(0.06)</td>
<td>4</td>
<td>19(0.75)</td>
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<tr>
<td>JPI class 600</td>
<td>124(4.88)</td>
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<td>24(0.95)</td>
<td>6.4(0.25)</td>
<td>4</td>
<td>19(0.75)</td>
</tr>
</tbody>
</table>
< 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 LRV as greater than 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 and display 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 or /CB will allow further configuration at factory. Following are configurable items and setting range.
   /CA : For HART communication type
   1) Descriptor(upto 16 characters)
   2) Message (upto 30 characters)
   3) Software damping (0.00 to 100.00 s)
   /CB : For BRAIN communication type
   1) Software damping (0.00 to 100.00 s)
9. Process fluid temperature for zero compensation
   (When /R is specified)

< Factory Setting >

<table>
<thead>
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<th>Tag Number</th>
<th>As specified in order</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software damping *1</td>
<td>'2.00 s' or as specified in order</td>
</tr>
<tr>
<td>Output mode</td>
<td>'Linear' unless otherwise specified in order</td>
</tr>
<tr>
<td>Calibration range lower range value</td>
<td>As specified in order</td>
</tr>
<tr>
<td>Calibration range upper range value</td>
<td>As specified in order</td>
</tr>
<tr>
<td>Calibration range units</td>
<td>Selected from mmH2O, mmH2O(68˚F), mmAg*, mmWG*, mmHg, Pa, hPa*, kPa, MPa, mbar, bar, ft/ft2, kgf/cm2, inH2O, inH2O(68˚F), inHg, ftH2O, ftH2O(68˚F) or psi. (Only one unit can be specified)</td>
</tr>
</tbody>
</table>

| Display setting | Designated differential pressure value specified in order. (% or user scaled value.) Display mode 'Linear' or 'Square root' is also as specified in order. |
| Static pressure display range | '0 to 25 MPa' for M and H capsule, absolute value. Measuring low pressure side. |

*1: To specify these items at factory, /CA or /CB option is required.
*2: Not available for HART protocol type.

< Material Cross Reference >

<table>
<thead>
<tr>
<th>ASTM</th>
<th>JIS</th>
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<tr>
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<td>316L</td>
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<td>B7</td>
<td>SNB7</td>
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<td>CF-8M</td>
<td>SC514A</td>
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</table>

<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.