

The model EJ430 Gauge Pressure Transmitter can be used to measure gas, liquid, or steam pressure. It outputs a 4 to 20 mA DC signal corresponding to the measured gauge pressure.

The model EJ430 transmitter also features remote setup and monitoring through communications with the BRAIN TERMINAL, CENTUM-CS/XL system, etc.

## ■ STANDARD SPECIFICATIONS

### Measurement Ranges:

Capsule	Measurement Span	Measurement Range	Maximum Overpressure
A	0.03 to 3 MPa {0.3 to 30 kgf/cm <sup>2</sup> }	-0.1 to 3 MPa {-1 to 30 kgf/cm <sup>2</sup> }	4.5 MPa {45 kgf/cm <sup>2</sup> }
B	0.14 to 14 MPa {1.4 to 140 kgf/cm <sup>2</sup> }	-0.1 to 14 MPa {-1 to 140 kgf/cm <sup>2</sup> }	21 MPa {210 kgf/cm <sup>2</sup> }
H	14 to 700 kPa {0.14 to 7 kgf/cm <sup>2</sup> }	-100 to 700 kPa {-1 to 7 kgf/cm <sup>2</sup> }	21 MPa {210 kgf/cm <sup>2</sup> }
V	0.14 to 13.7 MPa {1.4 to 140 kgf/cm <sup>2</sup> }	-0.1 to 13.7 MPa {-1 to 140 kgf/cm <sup>2</sup> }	21 MPa {210 kgf/cm <sup>2</sup> }

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Note: See "Model and Suffix Codes" for available combination of Capsule code and Wetted parts material code.

### Output Signal:

4 to 20 mA DC, 2-wire system

### Failure Alarm:

Output status at CPU failure;

Up-scale: 110%, 21.6 mA DC or more (fixed)

Output status at Hardware error;

Up-scale: 110%, 21.6 mA DC (standard)

Down-scale: -2.5%, 3.6 mA DC

### Conditions of Communication Line:

Power supply voltage;

18 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 polyethylene-insulated PVC-sheathed control (CEV) cables are used.

Load capacitance; 0.22μF \* or less

Load inductance; 3.3 mH \* or less

Spacing from power line; 15 cm or more

\* For general type and flameproof type

### Accuracy:

See Table 1 and Figure 3.



### 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)

### Ambient Temperature Effect:

See Table 1.

### 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, NEMA4

### Explosion-protected Construction:

See 'Optional Specifications.'

### Electrical Connection:

See 'Model and Suffix Codes.'

### Process Connection:

See 'Model and Suffix Codes.'

**Wetted Parts Material:**

Diaphragm, cover flange, process connector, and ver plug;  
See 'Model and Suffix Codes.'  
Capsule gaskets; Teflon-coated JIS SUS 316L  
Process connector gasket; PTFE (Teflon).

**Flange Bolts and Nuts Material:**

See 'Model and Suffix Codes.'

**Amplifier Housing:**

Cast aluminum alloy.

**Painting:**

Polyurethane resin baked finish.  
For case; frosty white (Munsell 2.5Y8.4/1.2)  
For cover; 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	A	B
Time Constant (sec)	Approx. 0.3	Approx. 0.3

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**EMC Conformity Standards:**  **N200**  
AS/NZS CISPR11

**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 SUS 304.

**Weight:**

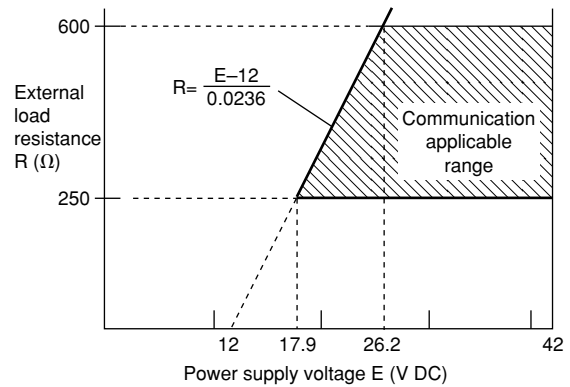
6.8 kg (15.0 lb) (with mounting bracket)

**<Settings when Shipped>**

Tag Number	As specified in order*1
Output Mode	'Linear'
Display Mode	'Linear'
Operation Mode	'Normal' unless otherwise specified in order
Damping Time Constant	'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 (Only one unit unit can be specified.)

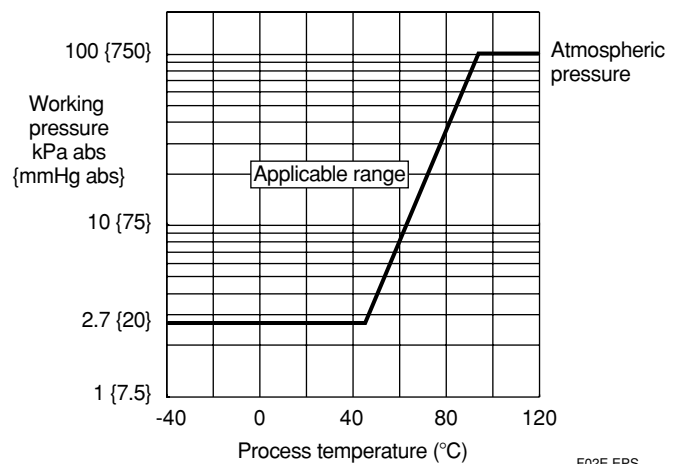
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\*1: Up to 16 alphanumeric characters (including - and ·) will be entered in the amplifier memory.



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



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**Figure 2. Working Pressure and Process Temperature**

**Table 1. Accuracy, Ambient Temperature Effect  
(As Percent of 'x')\*1**

Capsule		A, B	
Accuracy		$\pm 0.075\%$	For $x \geq \text{Pref}$
		$\pm (0.025 + 0.05 \times \frac{\text{Pref}}{x}) \%$	For $x < \text{Pref}$
Ambient temperature effect	Zero shift	$\pm (0.2 + 0.1 \times \frac{\text{Pref}}{x}) \%$ /50 °C change	
	Total shift *2	$\pm 0.4 \%$ /50 °C change	For $x \geq \text{Pref}$
		$\pm (0.25 + 0.15 \times \frac{\text{Pref}}{x}) \%$ /50 °C change	For $x < \text{Pref}$

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\*1: 'x' is the highest value among the absolute values of the lower range value (LRV) and higher range value (HRV), and the span value in a calibration range.

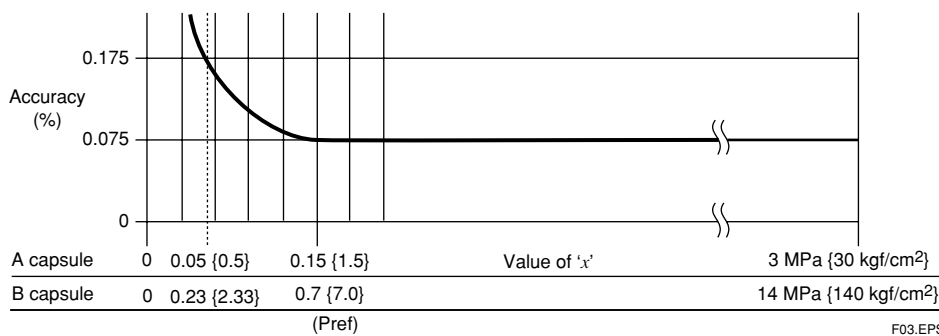
Percent of span = Percent of  $x \times \frac{x}{\text{span}}$

\*2: Combined zero and span shift.

**Table 2. Value of 'Pref'**

Capsule	Pref
A	0.15 MPa { 1.5 kgf/cm <sup>2</sup> }
B	0.7 MPa { 7 kgf/cm <sup>2</sup> }

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**Figure 3. Accuracy**

**MODEL AND SUFFIX CODES**

Model	Suffix Codes	Description
<b>EJ430</b>	.....	Gauge pressure transmitter
Output signal	<b>-D</b> .....	4 to 20 mA DC with digital communication (BRAIN protocol)
Measurement span (capsule) *5	<b>A</b> .....	0.03 to 3 MPa {0.3 to 30 kgf/cm <sup>2</sup> }
	<b>B</b> .....	0.14 to 14 MPa {1.4 to 140 kgf/cm <sup>2</sup> }
	<b>H</b> .....	14 to 700 kPa {0.14 to 7 kgf/cm <sup>2</sup> }
	<b>V</b> .....	0.14 to 13.7 MPa {1.4 to 140 kgf/cm <sup>2</sup> }
Wetted parts material *6	<b>K</b> .....	[Body] JIS S25C *2 [Capsule] JIS SUSF 316L *1 [Vent plug] JIS SUS 316
	<b>S</b> .....	JIS SUS 316 *2 JIS SUSF 316L *1 JIS SUS 316
	<b>H</b> .....	SUS316 *2 Hastelloy C-276 *3*7 SUS316
	<b>T</b> .....	SUS316 *2 Tantalum *3 SUS316
	<b>M</b> .....	SUS316 *2 Monel *3 SUS316
Process connection	<b>1</b> .....	Rc1/4 female
	<b>2</b> .....	Rc1/2 female
	<b>3</b> .....	1/4NPT female
	<b>4</b> .....	1/2NPT female
Bolts and nuts material	<b>A</b> .....	[Maximum working pressure] JIS SCM435 3 MPa{30 kgf/cm <sup>2</sup> } (A capsule) 14 MPa{140 kgf/cm <sup>2</sup> }
	<b>B</b> .....	JIS SUS 630 3 MPa{30 kgf/cm <sup>2</sup> } (B capsule) 14 MPa{140 kgf/cm <sup>2</sup> }
Installation	<b>-0</b> .....	Vertical impulse piping type, left side terminal box, process connector upside
	<b>-1</b> .....	Vertical impulse piping type, left side terminal box, process connector downside
	<b>-2</b> .....	Vertical impulse piping type, right side terminal box, process connector upside
	<b>-3</b> .....	Vertical impulse piping type, right side terminal box, process connector downside
	<b>-4</b> .....	Horizontal impulse piping type, left side terminal box, *4
	<b>-5</b> .....	Horizontal impulse piping type, right side terminal box, *4
Electrical connection	<b>0</b> .....	G 1/2 female
	<b>1</b> .....	G 3/4 female
	<b>2</b> .....	1/2 NPT female
	<b>5</b> .....	G 1/2 female, with external indicator connection and a blind plug
	<b>6</b> .....	G 3/4 female, with external indicator connection and a blind plug
	<b>7</b> .....	1/2 NPT female, with external indicator connection and a blind plug
Integral indicator	<b>D</b> .....	Digital indicator
	<b>N</b> .....	(None)
Mounting bracket	<b>A</b> .....	JIS SECC 2-inch pipe mounting (flat type)
	<b>B</b> .....	JIS SUS 304 2-inch pipe mounting (flat type)
	<b>N</b> .....	(None)
Optional code	/□ Optional specification	


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The '☆' marks indicate the most typical selection for each specification. Example: EJ430-DAS4A-02NA/□

- \*1: JIS SUSF316L or ASTM grade F316L. Diaphragm material is Hastelloy C-276 or ASTM N10276. Indicated is other capsule wetted parts material.
- \*2: Indicates cover flange material for wetted side. Cover flange material open to atmosphere is shown as follows;

Installation code	0, 1, 2, and 3	4 and 5
Wetted parts material code		
K	S25C	S25C
S	SUS304	SUS316
H, T, and M	SUS316	SUS316

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- \*3: Indicates diaphragm and other capsule wetted parts material.
- \*4: Not available with integral indicator.
- \*5: For capsule code A and B, available Wetted parts material code is K or S. For capsule code H and V, available Wetted parts material code is H, T, or M.
- \*6:  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.
- \*7: Hastelloy C-276 or ASTM N10276.

**OPTIONAL SPECIFICATIONS**

Item		Description		Code
Painting	Color change	Amplifier cover only		<b>P□</b>
	Coating change	Epoxy resin-baked coating *8		<b>X1</b>
Lightning protector		Transmitter power supply voltage: 12.5 to 32 V DC Allowable current: Max. 6000 A (1×40 μs), Repeating 1000 A (1×40 μs) 100 times		<b>A</b>
Oil-prohibited use		Degrease Cleaning treatment	Cover flange material cannot be JIS S25C.	<b>K1</b>
		Degrease Cleaning treatment with fluorinated oil filled capsule. Operating temperature: -20 to 80 °C		<b>K2</b>
External steam tracing		Steam connection: Rc1/4 female *1 Maximum steam pressure: 300 kPa {3 kgf/cm <sup>2</sup> }	Transmitter ambient temperature and process temperature after steam tracing must be within limits specified in GS.	<b>H2</b>
Calibration units *2		P calibration (psi unit)	(See Table 3.)	<b>D1</b>
		bar calibration (bar unit)		<b>D3</b>
		M calibration (kgf/cm <sup>2</sup> unit)		<b>D4</b>
Sealing Treatment to JIS SUS 630 nuts		Sealant(liquid silicone rubber) is coated on JIS SUS630 cover flange mounting nuts against stress corrosion cracking.		<b>Y</b>
Long vent *3		Total length: 119 mm (standard: 39 mm); Total length when combining with Optional code K1 and K2: 130 mm. Material: SUS316.		<b>U</b>
CPU failure alarm down-scale *4		Output status at CPU failure and hardware error for -5%, 3.2 mA DC or less with attached user selectable high-low jumper switch.		<b>C1</b>
Gold-plate *5		Surface of isolating diaphragms are gold plated, effective for hydrogen permeation.		<b>A1</b>
Mill Certificate		Cover flange, Process connector		<b>M11</b>
Pressure test/Leak test Certificate *7		A capsule	3 MPa {30 kgf/cm <sup>2</sup> }	Nitrogen (N <sub>2</sub> ) Gas *6 Retention time: 10 minutes
		B capsule	14 MPa {140 kgf/cm <sup>2</sup> }	

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- \*1: If Process connector code 3 or 4 is specified the steam connection thread will be NPT.
- \*2: The unit of MWP (Max. working pressure) on name plates of a housing is same unit as specified by Optional code D1, D3, and D4.
- \*3: Applicable for vertical impulse piping type (Installation code 0, 1, 2, or 3).
- \*4: The direction of hardware error alarm is user selectable by BT200.
- \*5: Applicable for Wetted parts material code K and S.  
The diaphragm for atmospheric side is not gold-plated.
- \*6: Pure nitrogen gas is used for oil-prohibited use (Optional code K1 and K2)
- \*7: The unit on the certificate is always MPa regardless of selection of option code D1, D3, or D4.
- \*8: Not applicable for color change option.

**Table 3. Calibration Units**

Measurement Span and Range	Optional code			
	D1 (psi Unit)	D3 (bar Unit)	D4 (kgf/cm <sup>2</sup> Unit)	
A	Span	4.3 to 430 psi	0.3 to 30 bar	0.3 to 30 kgf/cm <sup>2</sup>
	Range	-15 to 430 psi	-1 to 30 bar	-1 to 30 kgf/cm <sup>2</sup>
B	Span	20 to 2000 psi	1.4 to 140 bar	1.4 to 140 kgf/cm <sup>2</sup>
	Range	-15 to 2000 psi	-1 to 140 bar	-1 to 140 kgf/cm <sup>2</sup>

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**OPTIONAL SPECIFICATIONS (For Explosion Protected types)**

Item	Description	Code
Explosionproof type	TIIS Flameproof Approval, Ex do IIC T4X *2 *3 *6 Amb. Temp. : -20 to 60 °C, Max. Process Temp. : 120 °C	<b>JF3</b>
	FM Explosionproof Approval Applicable standard: FM3600, FM3615, FM3810, NEMA 250, ANSI/NFPA 70 Class I, II and III, Division 1, Groups B, C, D, E, F and G. Outdoor hazardous locations (NEMA 4), Temperature class : T6 Electrical connection : 1/2 NPT female, Amb. Temp. : -40 to 60 °C	<b>FF1</b>
Intrinsically safe type	TIIS Intrinsically Safe Approval, i3aG4 *2 *5 *7 (Using Model BARD-800 safety barrier : Model BARD-400 can also be used.) Vm : 31.5 V DC, Im : 29.2 mA, Pm : 0.92 W, Load inductance : 1.0 mH or less, Load capacitance : 0.040 μF or less Amb. Temp. : -10 to 60 °C, Max. Process Temp. : 80 °C	<b>JS11</b>
	FM Intrinsically Safe Approval *4 Class I Division 1 groups A, B, C and D Class II Division 1 groups E, F and G, Class III Division 1 Vmax : 31.5 VDC Imax : 93 mA Pmax : 1.1 W Ci=2 nF Li=1.04 mH Temperature Class : T4 Outdoor hazardous locations (NEMA 4) Amb. Temp. : -20 to 60 °C	<b>FS1</b>
Attached flameproof packing adapter *1	Electrical connection : G1/2 female Applicable cable O.D. : 8 to 12 mm	1 pc. <b>G11</b>
		2 pcs. <b>G12</b>
	Electrical connection : G3/4 female Applicable cable O.D. : 10 to 16 mm	1 pc. <b>G21</b>
		2 pcs. <b>G22</b>

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- \*1: If cable wiring is to be used to a TIIS flameproof transmitter, do not fail to add the YOKOGAWA-assured flameproof packing adapter.
- \*2: TIIS (The Technology Institution of Industrial Safety) Certification is a new notation for the explosionproof approval in Japan instead of JIS.
- \*3: In case the ambient temperature exceeds 50°C, use heat-resistant cables with maximum allowable temperature of 75°C or above.
- \*4: Model BARD-800 is not applicable.
- \*5: The communication distance is about 800 m when using polyethylene-insulated PVC sheathed control (CEV) cables.
- \*6: See certificate list of TIIS flameproof approval below.

		Without integral indicator	With integral indicator
Wetted parts material code	K, S	TC13812	TC13813
	T, M, H	TC13810	TC13811

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- \*7: See certificate list of TIIS intrinsically safe approval below.

	Connection to BARD-800	Connection to BARD-400
Without lightning protector (option code /A)	T56212	T54512
With lightning protector (option code /A)	T56213	

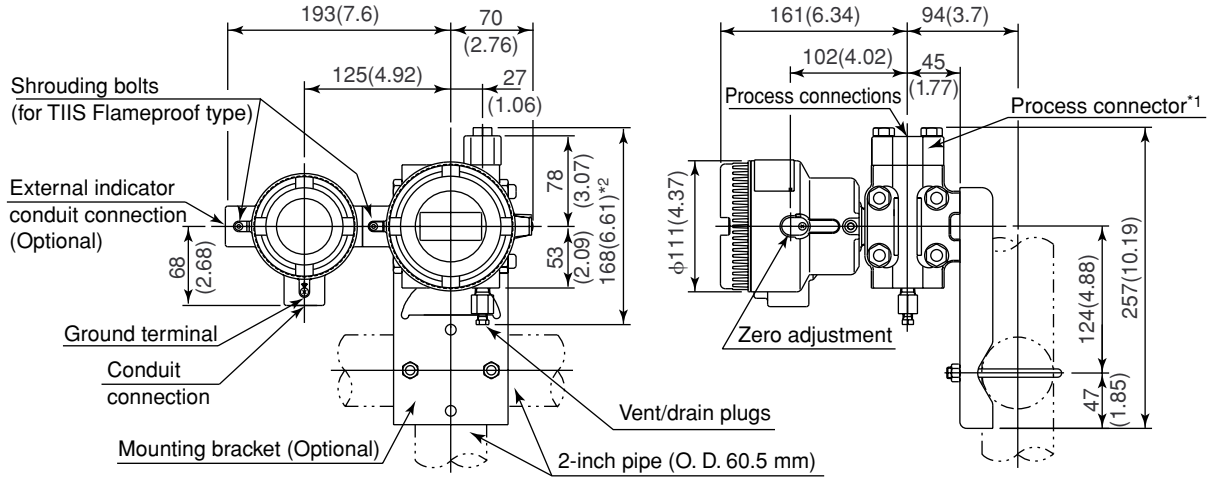
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### DIMENSIONS

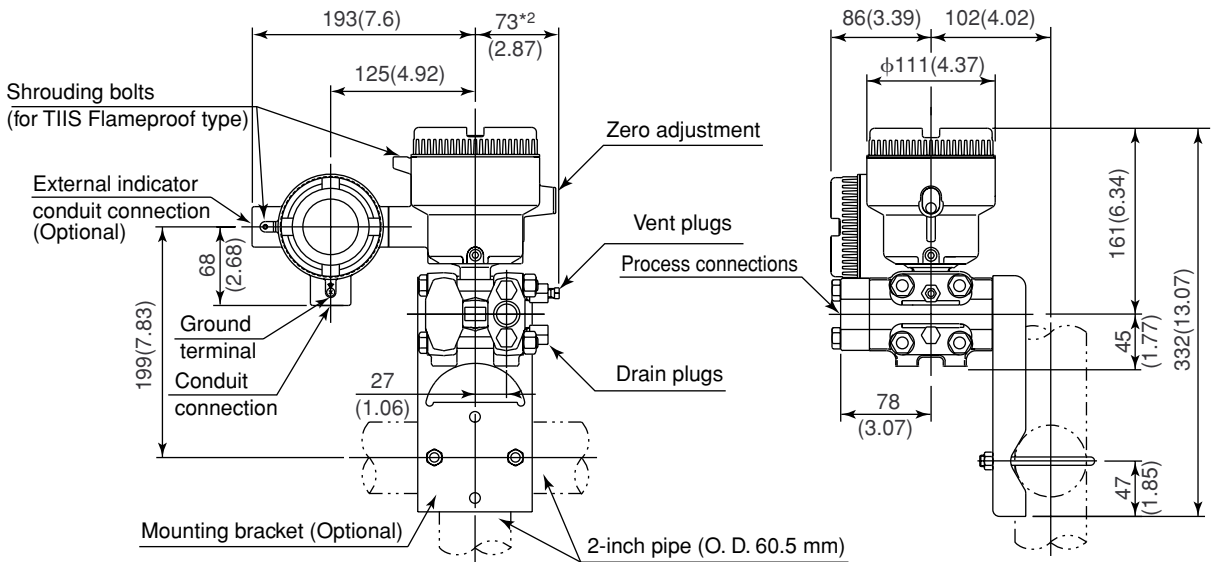
#### ● Model EJ430 (Capsule Codes A and B)

Unit: mm  
(approx. inch)

#### ● Vertical Impulse Piping Type



#### ● Horizontal Impulse Piping Type



\*1: When Installation code 1 is selected, the positions of process connectors and vent/drain plugs on above figure are reversed. (i.e. the process connectors are at the downside)

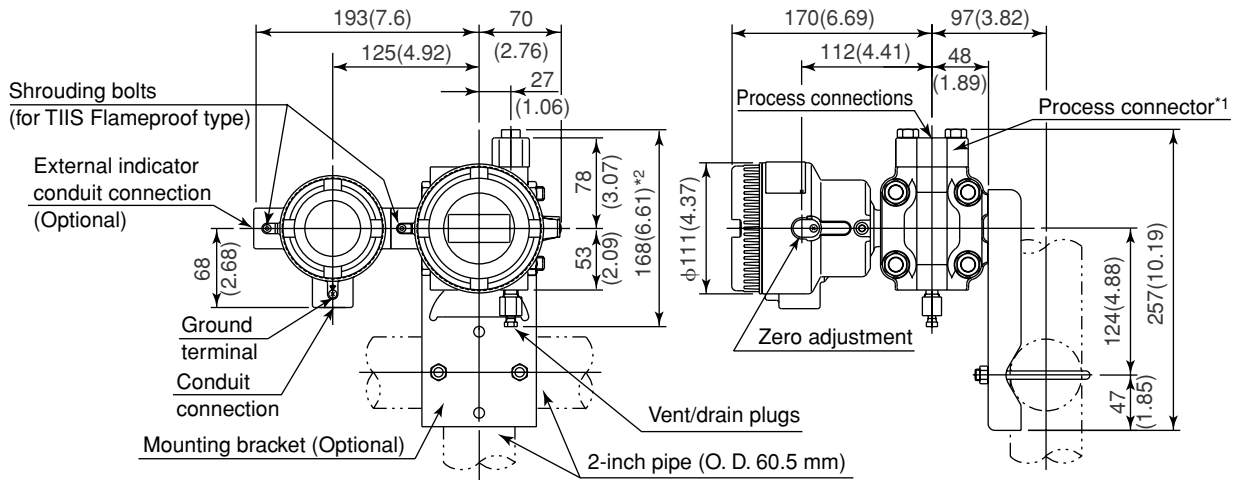
\*2: When Optional code K1 or K2 is selected, add 10 mm(0.39 inch) to the value in the figure.

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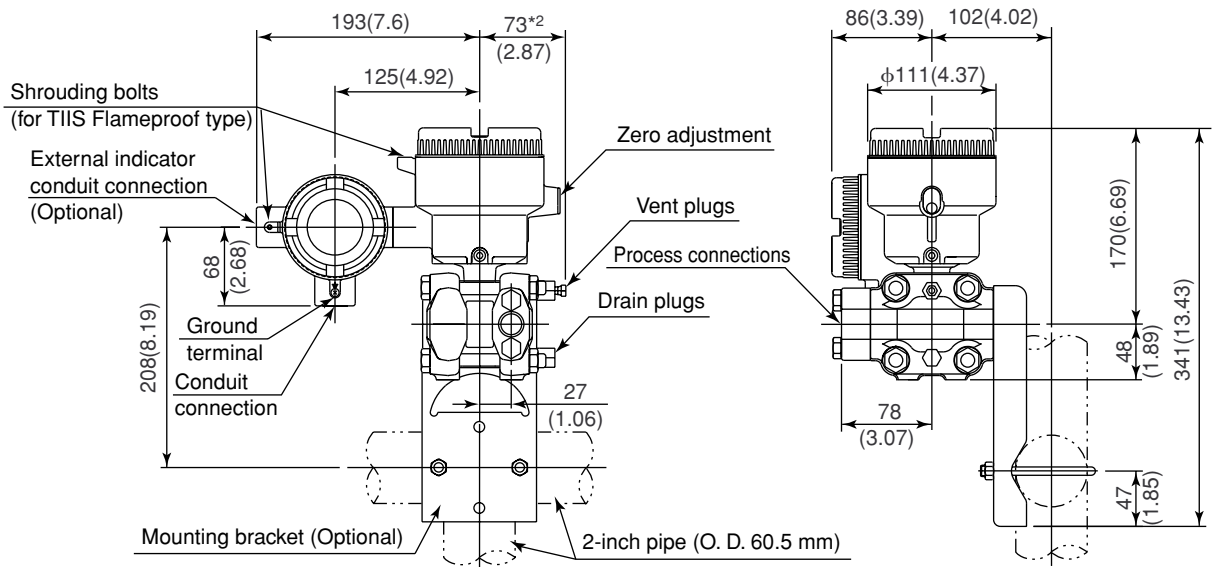
● Model EJ430 (Capsule Codes H and V)

Unit: mm  
(approx. inch)

● Vertical Impulse Piping Type



● Horizontal Impulse Piping Type



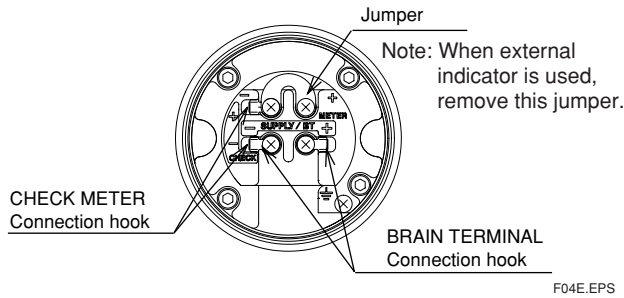
\*1: When Installation code 1 is selected, the positions of process connectors and vent/drain plugs on above figure are reversed. (i.e. the process connectors are at the downside)

\*2: When Optional code K1 or K2 is selected, add 10 mm(0.39 inch) to the value in the figure.

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● Terminal Configuration



● Terminal Wiring

SUPPLY/BT	+ -	Power supply and output terminal
METER	+ -	External indicator (ammeter) terminal
		Ground terminal

Note: When using an external indicator, the internal resistance must be 10Ω or less. T12E.EPS

<Ordering Information>

Specify the Following when Ordering

1. Model, suffix codes, and optional 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.
  - 2) Specify only one unit from the table, 'Settings when shipped.'
3. Select normal or reverse for operation mode
 

Note: if not specified, the instrument is shipped in normal operation mode.
4. 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.
5. Tag Number. (if required)

<Related Instruments>

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

<Reference>

1. JIS SUS 316L stainless steel; Equivalent to AISI 316L.
2. JIS SUS 316 stainless steel; Equivalent to AISI 316.
3. JIS SUS 304 stainless steel; Equivalent to AISI 304.
4. JIS S25C carbon steel; Equivalent to AISI 1025.
5. Teflon; Trademark of E.I. DuPont de Nemours & Company (USA) for polytetrafluoroethylene.
6. JIS SCM435 chrome molybdenum steel; Equivalent to AISI 4137.
7. JIS SUS 630 stainless steel; Equivalent to ASTM 630.
8. Hastelloy C-276; Trademark of Union Carbide Corporation (USA) for nickel-molybdenum alloy.
9. JIS SCS 14A stainless steel: Equivalent JIS SUS 316 cast stainless steel or ASTM CF-8M.
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