General Specifications

GS 01C27B01-01EN

EJX110B, EJX310B, and EJX430B Differential Pressure and Pressure Transmitters

DPharp EJX™

ISA100 Wireless COMPLIANT

The high performance differential pressure and pressure transmitters EJX110B, EJX310B, and EJX430B feature single crystal silicon resonant sensor and are suitable to measure liquid, gas, or steam flow as well as liquid level, density, and pressure. These transmitters transmit not only process variables but also the setting parameters using wireless signal. The transmitters run on internal batteries, and the installation cost can be decreased since hard-wiring is not required. The communication is compliant with ISA100.11a protocol specifications.

■ FEATURES

- **Long Life Battery Design**

  Ultra low current consumption design using two high capacity lithium-thionyl chloride batteries provide wireless operation for years.

- **Security Assured Wireless Network Joining**

  Infrared communication between the devices for wireless network configuration and parameter setting.

- **Quick Update Time**

  Selectable from 0.5 second to 60 minutes for measured process value to publish wirelessly.

■ STANDARD SPECIFICATIONS

■ WIRELESS SPECIFICATIONS

Communication protocol: ISA100.11a protocol
Data rate: 250 kbps
Frequency: 2400 - 2483.5 MHz license free ISM band
Radio security: AES 128 bit codified
RF Transmitter power: Max. 11.6 dBm (fixed)
Antenna: +2 dBi Omni directional monopole type
For amplifier housing code 8 and 9, separately sold remote antenna and antenna cables can be used.

■ POWER SUPPLY SPECIFICATIONS

Battery:
Use the dedicated battery pack.
Rated voltage: 7.2 V
Rated capacity: 19 Ah

■ SPAN AND RANGE LIMITS

EJX110B

Measurement Span/Range		kPa	inH_2O(/D1)	mbar(/D3)	mmH_2O(/D4)
F*	Span	0.1 to 5	0.4 to 20	1 to 50	10 to 500
	Range	-5 to 5	-20 to 20	-50 to 50	-500 to 500
L*	Span	0.1 to 10	0.4 to 40	1 to 100	10 to 1000
	Range	-10 to 10	-40 to 40	-100 to 100	-1000 to 1000
M	Span	0.5 to 100	2 to 400	5 to 1000	50 to 10000
	Range	-100 to 100	-400 to 400	-1000 to 1000	-10000 to 10000
H	Span	2.5 to 500	10 to 2000	25 to 5000	0.025 to 5 kgf/cm^2
	Range	-500 to 500	-2000 to 2000	-5000 to 5000	-5 to 5 kgf/cm^2
V	Span	0.07 to 14 MPa	10 to 2000 psi	0.7 to 140 bar	0.7 to 140 kgf/cm^2
	Range	-0.5 to 14 MPa	-71 to 2000 psi	-5 to 140 bar	-5 to 140 kgf/cm^2

*: F capsule is applicable for wetted parts material code S.
L capsule is applicable for wetted parts material code other than S.

EJX310B

Measurement Span/Range		kPa abs	psi abs(/D1)	mbar abs (/D3)	mmHg abs (/D4)
L	Span	0.5 to 10	0.15 to 2.95 inHg	5 to 100	3.8 to 75
	Range	0 to 10	0 to 2.95 inHg	0 to 100	0 to 75
M	Span	1.3 to 130	0.39 to 38 inHg	13 to 1300	9.8 to 970
	Range	0 to 130	0 to 38 inHg	0 to 1300	0 to 970
A	Span	0.0175 to 3.5 MPa	2.5 to 500	0.175 to 35 bar	0.175 to 35 kgf/cm^2
	Range	0 to 3.5 MPa	0 to 500	0 to 35 bar	0 to 35 kgf/cm^2
B	Span	0.08 to 16 MPa	12 to 2300	0.8 to 160 bar	0.8 to 160 kgf/cm^2
	Range	0 to 16 MPa	0 to 2300	0 to 160 bar	0 to 160 kgf/cm^2

YOKOGAWA

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EJX430B

Measurement Span/Range		MPa	psi(/D1)	bar(/D3)	kgf/cm^2(/D4)
H	Span	2.5 to 500 kPa	10 to 2000 inH$_2$O	0.025 to 5	0.025 to 5
	Range	-100 to 500 kPa	-400 to 2000 inH$_2$O	-1 to 5	-1 to 5
A	Span	0.0175 to 3.5	2.5 to 500	0.175 to 35	0.175 to 35
	Range	-0.1 to 3.5	-14.5 to 500	-1 to 35	-1 to 35
B	Span	0.08 to 16	12 to 2300	0.8 to 160	0.8 to 160
	Range	-0.1 to 16	-14.5 to 2300	-1 to 160	-1 to 160

■ PERFORMANCE SPECIFICATIONS

Zero-based calibrated span, linear output, wetted parts material code S and silicone oil, in the continuous measurement mode unless otherwise mentioned.

Specification Conformance

EJX series ensures specification conformance to at least ±3σ.

Reference Accuracy of Calibrated Span

(includes terminal-based linearity, hysteresis, and repeatability)

EJX110B

Measurement span		F
Reference accuracy	X ≤ span	±0.04% of Span
	X > span	±(0.015+0.01 URL/span)% of Span
X		2 kPa (8 inH$_2$O)
URL (upper range limit)		5 kPa (20 inH$_2$O)

Measurement span		M
Reference accuracy	X ≤ span	±0.04% of Span
	X > span	±(0.002+0.0019 URL/span)% of Span
X		5 kPa (20 inH$_2$O)
URL (upper range limit)		100 kPa (400 inH$_2$O)

Measurement span		H
Reference accuracy	X ≤ span	±0.04% of Span
	X > span	±(0.005+0.0049 URL/span)% of Span
X		70 kPa (280 inH$_2$O)
URL (upper range limit)		500 kPa (2000 inH$_2$O)

Measurement span		V
Reference accuracy	X ≤ span	±0.04% of Span
	X > span	±(0.005+0.00125 URL/span)% of Span
X		500 kPa (2000 inH$_2$O)
URL (upper range limit)		14 MPa (2000 psi)

EJX310B

Measurement span		L
Reference accuracy	X ≤ span	0.075% of Span
	X > span	(0.02+0.03 URL/span)% of Span
X		5.4 kPa abs (1.6 inHg abs)
URL (upper range limit)		10 kPa abs (2.95 inHg abs)

Measurement span		M
Reference accuracy	X ≤ span	±0.04% of Span
	X > span	±(0.01+0.005 URL/span)% of Span
X		21.4 kPa abs (6.3 inHg abs)
URL (upper range limit)		130 kPa abs (38.4 inHg abs)

Measurement span		A	B
Reference accuracy	X ≤ span	±0.04% of Span	
	X > span	±(0.005+0.0035 URL/span)% of Span	
X		0.35 MPa abs (50 psia)	1.6 MPa abs (230 psia)
URL (upper range limit)		3.5 MPa abs (500 psia)	16 MPa abs (2300 psia)

EJX430B

Measurement span		H
Reference accuracy	X ≤ span	±0.04% of Span
	X > span	±(0.005+0.0049 URL/span)% of Span
X		70 kPa (280 inH$_2$O)
URL (upper range limit)		500 kPa (2000 inH$_2$O)

Measurement span		A	B
Reference accuracy	X ≤ span	±0.04% of Span	
	X > span	±(0.005+0.0035 URL/span)% of Span	
X		0.35 MPa (50 psi)	1.6 MPa (230 psi)
URL (upper range limit)		3.5 MPa (500 psi)	16 MPa (2300 psi)

Square Root Output Accuracy (EJX110B)

The square root accuracy is a percent of flow span.

Output	Accuracy
50% or Greater	Same as reference accuracy
50% to Dropout point	$\frac{\text{Reference accuracy} \times 50}{\text{Square root output (\%)}}$

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

EJX110B

Capsule	Effect
F	±(0.055% Span+0.18% URL)
M	±(0.04% Span+0.009% URL)
H, V	±(0.04% Span+0.0125% URL)

EJX310B

Capsule	Effect
L	±(0.1% Span+0.35% URL)
M	±(0.04% Span+0.035% URL)
A, B	±(0.04% Span+0.012% URL)

EJX430B

Capsule	Effect
H	±(0.04% Span+0.0125% URL)
A, B	±(0.04% Span+0.009% URL)

- **Total Probable Error (EJX110B M capsule)**
  ±0.12% of Span @1:1 to 5:1 Rangedown

Total probable error, known as a measure of the total performance of the transmitters under the condition of fixed line presurre.

$$\text{Total Probable Error} = \pm \sqrt{E_1^2 + E_2^2 + E_3^2}$$

E1: Reference Accuracy of Calibrated Span
E2: Ambient Temperature Effects per 28°C change
E3: Static Span Effects per 6.9 MPa change

- **Total Accuracy (EJX110B M capsule)**
  ±0.12% of Span @1:1 Rangedown
  ±0.25% of Span @5:1 Rangedown

Total accuracy is a comprehensive measure of transmitter total performance, covering all major factors in actual installation, that cause errors in measurement.
As a standard measure, YOKOGAWA uses this to evaluate transmitter performance.

$$\text{Total Accuracy} = \pm \sqrt{E_1^2 + E_2^2 + (E_3 + E_4)^2 + E_5^2}$$

E1: Reference Accuracy of Calibrated Span
E2: Ambient Temperature Effects per 28°C change
E3: Static Span Effects per 6.9 MPa change
E4: Static Zero Effects per 6.9 MPa change
E5: Overpressure Effects upto overpressure 25 MPa

Not only a day-to-day changes in temperature can affect the measurement and lead to unnoticed errors; fluctuaion of line pressure, incorrect operation of three/five valve manifold leading to over-pressure events, and other phenomena can have the similar result. Total Accuracy factors in such changes and errors and provides much comprehensive and practical determination of how a transmitter will perform under actual plant operation.

Static Pressure Effects per 6.9 MPa (1000 psi) Change (EJX110B)

Span Effects
F, M, H, and V capsules
±0.075% of span

Effect on Zero

Capsule	Effect
F	±0.1% URL
M	±0.02% URL
H, V	±0.028% URL

Overpressure Effects (EJX110B)
Overpressure condition: up to maximum working pressure
M, H, and V capsules
±0.03% of URL

Stability (All normal operating condition, including overpressure effects)
EJX110B (M, H, and V capsules) and EJX430B
±0.1% of URL per 10 years

Battery Pack
Battery pack with long life lithium-thionyl chloride batteries. With the intrinsically safe type, the battery pack is replaceable in hazardous area.
Typical battery life is 10 years at 60 seconds update time or 4 years at 10 seconds update time in the following conditions.*

- Ambient temperature: 23±2°C
- Device role: IO mode
- LCD display: off

* Environmental condition such as vibration may affect the battery life.

Vibration Effects
Less than 0.1% of URL when tested per the requirements of IEC60770-1 field or pipeline with high vibration level (10-60 Hz, 0.21 mm peak to peak displacement/60-2000 Hz 3 g)

Mounting Position Effects

EJX110B and EJX430B
Rotation in diaphragm plane has no effect. Tilting up to 90 degree will cause zero shift up to 0.4 kPa (1.6 inH_2O) which can be corrected by the zero adjustment.

EJX310B
Tilting up to 90 degree will cause zero shift up to 0.5 kPa (2.0 inH_2O) which can be corrected by the zero adjustment.

Response Time

EJX110B (Differential pressure)
150 ms for Wetted Parts material code S except for Measurement span code F. 210 ms for Wetted Parts Material Code H, M, T, A, D, and B or Measurement span code F.

EJX310B
150 ms

EJX430B
150 ms
210 ms for H capsule with Wetted Parts Material Code H, M, T, A, D, and B.
Includes dead time of 100 ms (nominal)

Static Pressure Signal Range and Accuracy (EJX110B)
(Includes terminal-based linearity, hysteresis, and repeatability)

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

Accuracy
Absolute Pressure
1 MPa or higher: ±0.2% of span
Less than 1 MPa: ±0.2%×(1 MPa/span) of span
Gauge Pressure Reference
Gauge pressure reference is 1013 hPa (1 atm)
Note : Gauge pressure variable is based on the above fixed reference and thus subject to be affected by the change of atomospheric pressure.

Minimum Pressure at Calibration* (EJX310B)
L capsule: 130 Pa abs (1 mmHg abs)
M, A, and B capsules: 2.7 kPa abs (20 mmHg abs)
* If one or two of the calibration points are smaller than the above value, the above pressure is used for testing.
In case all of the calibration points are greater than the limit, only the pressure of upper range value (URV) is applied for testing.
Specifying option code /S1 with M or A capsule will lower the limit to 130 Pa abs.
/S1 is recommended for M capsule when the specified upper range value (URV) is not exceeding 3.4 kPa abs.

■ FUNCTIONAL SPECIFICATIONS

Output
Wireless (ISA100.11a protocol) 2.4 GHz signal.
Output mode, linear or square root, is selectable (EJX110B).

Update Time

Measurement mode	Differential pressure	Pressure
Continuous	100 ms	100 ms
Intermittent	0.5 to 3600 s selectable	0.5 to 3600 s selectable

For amplifier housing code 7:
The transmitter shifts to the countinuous mode when the update time is set to 1 second.
Minimum update time is 1 second.
For amplifier housing code 8 and 9:
The transmitter shifts to the countinuous mode when the update time is set to 0.5 second.

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

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

Integral Indicator (LCD display)
5-digit numerical display, 6-digit unit display and bar graph.
The indicator is configurable to display one or up to three of the following variables periodically.; Differential pressure, static pressure, temperature.
See also “Factory Setting.”

Burst Pressure Limits
69 MPa (10,000 psi) for wetted parts material S except for Measurement span F.
47 MPa (6,800 psi) for wetted parts material other than S or Measurement span F.

Self Diagnostics
Capsule failure, amplifier failure, configuration error, battery alarm, wireless communication alarm and over-range error for process variables.

Software Download Function
Software download function permits to update wireless field device software via ISA100.11a wireless communication.

Power Supply
2x primary lithium-thionyl chloride batteries
With battery case (batteries sold separately)

■ NORMAL OPERATING CONDITION

(Optional features or approval codes may affect limits.)

Ambient Temperature Limits
-40 to 85°C (-40 to 185°F)
-30 to 80°C (-22 to 176°F) LCD visible range

Process Temperature Limits
-40 to 120°C (-40 to 248°F)
– Except EJX310B L capsule
-40 to 100°C (-40 to 212°F)
– EJX310B L capsule

Ambient Humidity Limits
0 to 100% RH

Working Pressure Limits (Silicone oil)

Maximum Pressure Limits

EJX110B

Capsule	Pressure
F, L	16 MPa (2300 psi)
M, H, V	25 MPa (3600 psi)*

* 16 MPa for wetted parts material code H, M, T, A, D, and B.

EJX310B

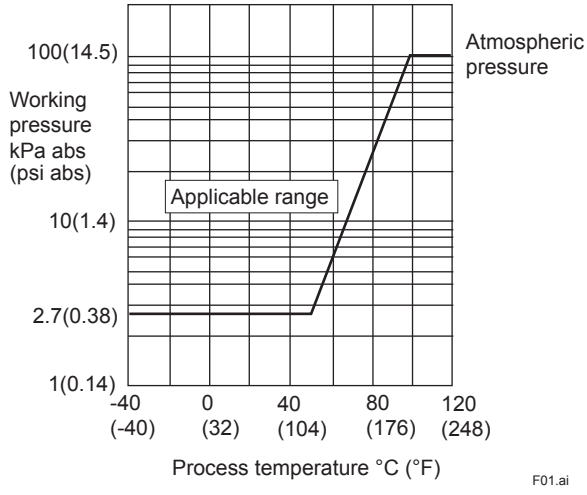
Capsule	Pressure
L	10 kPa abs (2.95 inHg abs)
M	130 kPa abs (38 inHg abs)
A	3.5 MPa abs (500 psia)
B	16 MPa abs (2300 psia)

EJX430B

Capsule	Pressure
H	500 kPa (2000 inH_2O)
A	3.5 MPa (500 psi)
B	16 MPa (2300 psi)

Minimum Pressure Limit
See graph below

EJX110B and EJX430B



F01.ai

EJX310B

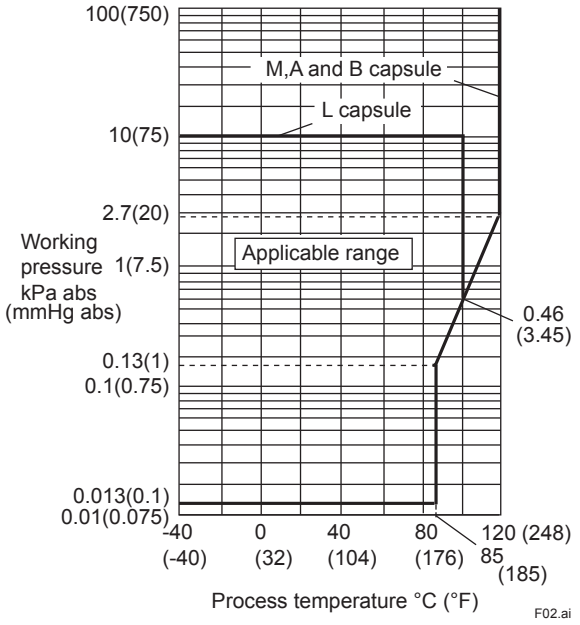


Figure 1. Working Pressure and Process Temperature

Maximum Over Pressure

EJX310B

Capsule	Pressure
L, M	500 kPa abs (72 psia)
A	16 MPa abs (2300 psia)
B	25 MPa abs (3600 psia)

EJX430B

Capsule	Pressure
H, A	16 MPa (2300 psi)
B	25 MPa (3600 psi)*

* 24 MPa for wetted parts material H, M, T, A, D, and B.

■ REGULATORY COMPLIANCE STATEMENTS

This device contains the wireless module. The wireless module satisfies the following standards.

* Please confirm that a installation region fulfills a standards, require additional regulatory information and approvals, contact to Yokogawa Electric Corporation.

EMC Conformity Standards

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

R&TTE Conformity Standards CE

ETSI EN 300 328, ETSI EN 301 489-17, EN61010-1, EN62311

• Indoor/Outdoor use

AT	BE	BG	CY	CZ	DK
EE	FI	FR	DE	GR	HU
IE	IT	LV	LT	LU	MT
NL	PL	PT	RO	SK	SI
ES	SE	GB	IS	LI	NO
CH					

European Pressure Equipment Directive 97/23/EC

Sound Engineering Practice (for all capsules)

With option code /PE3 (for EJX110B M, H, and V capsules and wetted parts material code S.)

CE 0038

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

Regulation Conformity of the Wireless Module

• FCC Approval
• IC Approval

■ PHYSICAL SPECIFICATIONS

Wetted Parts Materials

Diaphragm, Cover Flange, Process Connector, Capsule Gasket, and Vent/Drain Plug

Refer to “MODEL AND SUFFIX CODES.”

Process Connector Gasket

PTFE Teflon
Fluorinated rubber for option code N2 and N3

Non-wetted Parts Materials

Bolting

B7 carbon steel, 316L SST, or 660 SST

Housing

Low copper cast aluminum alloy with polyurethane, mint-green paint (Munsell 5.6BG 3.3/2.9 or its equivalent)

Degrees of Protection

IP66/IP67, NEMA4X

Cover O-rings

Buna-N

Name plate and tag

304 SST tag plate wired onto transmitter

Fill Fluid

Silicone, fluorinated oil (optional)

Weight

4.9 kg (10.8 lb) for wetted parts material code S except for Measurement span code F without battery pack, mounting bracket, and process connector.
5.8 kg (12.8 lb) for wetted parts material code other than S or Measurement span code F without battery pack, mounting bracket, and process connector.

Connections

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

< Related Instruments>

Field Wireless System: Refer to GS 01W01A01-01EN
Field Wireless Integrated Gateway YFGW710: Refer to GS 01W01F01-01EN
Field Wireless Management Station YFGW410: GS 01W02D01-01EN
Field Wireless Access Point YFGW510: GS 01W02E01-01EN
Field Wireless Media Converter YFGW610: GS 01W02D02-01EN

< Reference >

1. Teflon; Trademark of E.I. DuPont de Nemours & Co.
2. Hastelloy; Trademark of Haynes International Inc.

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■ MODEL AND SUFFIX CODES

Model EJX110B

Model	Suffix Codes	Description
EJX110B	. . . . .	Differential pressure transmitter
Output signal	**-L**	Wireless communication (ISA100.11a protocol)
Measurement span (capsule)	**F**	0.1 to 5 kPa (0.4 to 20 inH_2O) (For wetted parts material code S)
	L	0.1 to 10 kPa (0.4 to 40 inH_2O) (For wetted parts material code M, H, T, A , D and B)
	M	0.5 to 100 kPa (2 to 400 inH_2O)
	H	2.5 to 500 kPa (10 to 2000 inH_2O)
	V	0.07 to 14 MPa (10 to 2000 psi)
Wetted parts material *1	☐	Refer to "Wetted Parts Materials" Table.
Process connections	**0**	without process connector (Rc1/4 female on the cover flanges)
	1	with Rc1/4 female process connector
	2	with Rc1/2 female process connector
	3	with 1/4 NPT female process connector
	4	with 1/2 NPT female process connector
	► **5**	without process connector (1/4 NPT female on the cover flanges)
Bolts and nuts materia	**J**	B7 carbon steel
	G	316L SST
	C	660 SST
Installation	**-7**	Vertical piping, left side high pressure, and process connection downside
	► **-8**	Horizontal piping and right side high pressure
	-9	Horizontal piping and left side high pressure
	-B	Bottom Process Connection, left side high pressure*2
	-U	Universal flange*3
Amplifier housing	**7**	Cast aluminum alloy with integral antenna
	8	Cast aluminum alloy with detachable antenna (2 dBi)*5
	9	Cast aluminum alloy without antenna (N connector)*4*5
Electrical connection	**J**	No electrical connection, battery-powered type (battery case only; battery cells not included)
Integral indicator	**D**	Digital indicator
Mounting bracket	► **B**	304 SST 2-inch pipe mounting, flat type (for horizontal piping)
	D	304 SST 2-inch pipe mounting, L type (for vertical piping)
	K	316 SST 2-inch pipe mounting, L type (for vertical piping)
	M	316 SST 2-inch pipe mounting (for bottom process connection type)
	N	None
Optional codes		/☐ Optional specification

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

*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: Applicable for wetted parts material code S, except for Measurement span code F.

*3: Applicable for wetted parts material code S.

*4: Order the antenna separately from accessary option.

*5: Remote antenna cables can be attached. Order separately from accessary option.

Table. Wetted Parts Materials

Wetted parts material code	Cover flange and process connector	Capsule	Capsule gasket	Drain/Vent plug
S #	ASTM CF-8M *1	Hastelloy C-276 *2 (Diaphragm) F316L SST or 316L SST (Others)	Teflon-coated 316L SST	316 SST
H #	ASTM CF-8M *1	Hastelloy C-276 *2	PTFE Teflon	316 SST
M #	ASTM CF-8M *1	Monel	PTFE Teflon	316 SST
T	ASTM CF-8M *1	Tantalum	PTFE Teflon	316 SST
A #	Hastelloy C-276 equivalent *3	Hastelloy C-276 *2	PTFE Teflon	Hastelloy C-276 *2
D	Hastelloy C-276 equivalent *3	Tantalum	PTFE Teflon	Hastelloy C-276 *2
B #	Monel equivalent *4	Monel	PTFE Teflon	Monel

*1: Cast version of 316 SST. Equivalent to SCS14A.
*2: Hastelloy C-276 or ASTM N10276.
*3: Indicated material is equivalent to ASTM CW-12MW.
*4: Indicated material is equivalent to ASTM M35-2.
The '#'marks indicate the construction materials conform to NACE material recommendations per MR0175/ISO15156.
Please refer to the latest standards for details. Selected materials also conform to NACE MR0103.

Model EJX310B

Model	Suffix Codes	Description
EJX310B	. . . . .	Absolute pressure transmitter
Output signal	**-L**	Wireless communication (ISA100.11a protocol)
Measurement span (capsule)	**L**	0.5 to 10 kPa abs (0.15 to 2.95 inHg abs)
	M	1.3 to 130 kPa abs (0.39 to 38 inHg abs)
	A	0.0175 to 3.5 MPa abs (2.5 to 500 psia)
	B	0.08 to 16 MPa abs (12 to 2300 psia)
Wetted parts material *1	**S**	Refer to "Wetted Parts Materials" Table.
Process connections	**0**	without process connector (Rc1/4 female on the cover flanges)
	1	with Rc1/4 female process connector
	2	with Rc1/2 female process connector
	3	with 1/4 NPT female process connector
	4	with 1/2 NPT female process connector
►	**5**	without process connector (1/4 NPT female on the cover flanges)
Bolts and nuts materia	**J**	B7 carbon steel
	G	316L SST
	C	660 SST
Installation	**-3**	Vertical piping, right side high pressure, and process connection down side
	-7	Vertical piping, left side high pressure, and process connection down side
	-8	Horizontal piping and right side high pressure
►	**-9**	Horizontal piping and left side high pressure
	-B	Bottom Process Connection, left side high pressure
	-U	Universal flange
Amplifier housing	**7**	Cast aluminum alloy with integral antenna
	8	Cast aluminum alloy with detachable antenna (2 dBi)*3
	9	Cast aluminum alloy without antenna (N connector)*2*3
Electrical connection	**J**	No electrical connection, battery-powered type (battery case only; battery cells not included)
Integral indicator	**D**	Digital indicator
Mounting bracket	**B**	304 SST 2-inch pipe mounting, flat type (for horizontal piping)
►	**D**	304 SST 2-inch pipe mounting, L type (for vertical piping)
	K	316 SST 2-inch pipe mounting, L type (for vertical piping)
	M	316 SST 2-inch pipe mounting (for bottom process connection type)
	N	None
Optional codes		/☐ Optional specification

The "►" marks indicate the most typical selection for each specification.
*1: ⚠Users must consider the characteristics of selected wetted parts material and influence of process fluids. Specifying inappropriate materials has the potential to cause serious damage to human body and plant facilities resulted from an unexpected leak of the corrosive process fluids.
*2: Order the antenna separately from accessary option.
*3: Remote antenna cables can be attached. Order separately from accessary option.

Table. Wetted Parts Materials

Wetted parts material code	Cover flange and process connector	Capsule	Capsule gasket	Drain/Vent plug
S #	ASTM CF-8M *1	Hastelloy C-276 *2 (Diaphragm) 316L SST (Others)	Teflon-coated 316L SST	316 SST

*1: Cast version of 316 SST. Equivalent to SCS14A.
*2: Hastelloy C-276 or ASTM N10276.
The '#' marks indicate the construction materials conform to NACE material recommendations per MR0175/ISO15156.
Please refer to the latest standards for details. Selected materials also conform to NACE MR0103.

Model EJX430B

Model	Suffix Codes	Description
EJX430B	. . . . .	Gauge pressure transmitter
Output signal	**-L**	Wireless communication (ISA100.11a protocol)
Measurement span (capsule)	**H**.	2.5 to 500 kPa (10 to 2000 inH2O)
	A.	0.0175 to 3.5 MPa (2.5 to 500 psi)
	B.	0.08 to 16 MPa (12 to 2300 psi)
Wetted parts material *1	☐	Refer to "Wetted Parts Materials" Table.
Process connections	**0**	without process connector (Rc1/4 female on the cover flanges)
	1	with Rc1/4 female process connector
	2	with Rc1/2 female process connector
	3	with 1/4 NPT female process connector
	4	with 1/2 NPT female process connector
►	**5**	without process connector (1/4 NPT female on the cover flanges)
Bolts and nuts materia	**J**	B7 carbon steel
	G.	316L SST
	C.	660 SST
Installation	**-3**.	Vertical piping, right side high pressure, and process connection down side
	-7.	Vertical piping, left side high pressure, and process connection down side
	-8.	Horizontal piping and right side high pressure
►	**-9**.	Horizontal piping and left side high pressure
	-B	Bottom Process Connection, left side high pressure*2
	-U	Universal flange*2
Amplifier housing	**7**	Cast aluminum alloy with integral antenna
	8	Cast aluminum alloy with detachable antenna (2 dBi)*4
	9	Cast aluminum alloy without antenna (N connector)*3*4
Electrical connection	**J**	No electrical connection, battery-powered type (battery case only; battery cells not included)
Integral indicator	**D**.	Digital indicator
Mounting bracket ►	**B**.	304 SST 2-inch pipe mounting, flat type (for horizontal piping)
	D.	304 SST 2-inch pipe mounting, L type (for vertical piping)
	K.	316 SST 2-inch pipe mounting, L type (for vertical piping)
	M.	316 SST 2-inch pipe mounting (for bottom process connection type)
	N.	None
Optional Codes		/☐ Optional specification

The "►" marks indicate the most typical selection for each specification.
*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: Applicable for Wetted parts material code S.
*3: Order the antenna separately from accessary option.
*4: Remote antenna cables can be attached. Order separately from accessary option.

Table. Wetted Parts Materials

Wetted parts material code	Cover flange and process connector	Capsule	Capsule gasket	Drain/Vent plug
S #	ASTM CF-8M *1	Hastelloy C-276 *2 (Diaphragm) 316L SST (Others)	Teflon-coated 316L SST	316 SST
H #	ASTM CF-8M *1	Hastelloy C-276 *2	PTFE Teflon	316 SST
M #	ASTM CF-8M *1	Monel	PTFE Teflon	316 SST
T	ASTM CF-8M *1	Tantalum	PTFE Teflon	316 SST
A #	Hastelloy C-276 equivalent *3	Hastelloy C-276 *2	PTFE Teflon	Hastelloy C-276 *2
D	Hastelloy C-276 equivalent *3	Tantalum	PTFE Teflon	Hastelloy C-276 *2
B #	Monel equivalent *4	Monel	PTFE Teflon	Monel

*1: Cast version of 316 SST. Equivalent to SCS14A.
*2: Hastelloy C-276 or ASTM N10276.
*3: Indicated material is equivalent to ASTM CW-12MW.
*4: Indicated material is equivalent to ASTM M35-2.
The '#'marks indicate the construction materials conform to NACE material recommendations per MR0175/ISO15156.
Please refer to the latest standards for details. Selected materials also conform to NACE MR0103.

■ OPTIONAL SPECIFICATIONS (For Explosion Protected type)

Item	Description	Code
Factory Mutual (FM)	FM Intrinsically safe Approval*1 Applicable Standard: FM3600, FM3610, FM3611, FM3810, ANSI/NEMA 250 Intrinsically Safe for Class I, Division 1, Groups A, B, C & D, Class II, Division 1, Groups E, F & G and Class III, Division 1, Class I, Zone 0, in Hazardous Locations, AEx ia IIC Nonincendive for Class I, Division 2, Groups A, B, C & D, Class II, Division. 2, Groups F & G, and Class III, Division 1, Class I, Zone 2, Group IIC, in Hazardous Locations Enclosure: "NEMA 4X", Temp. Class: T4, Amb. Temp.: –50 to 70°C (–58 to 158°F)	**FS17**
ATEX	ATEX Intrinsically safe Approval Applicable Standard: EN60079-0, EN60079-11, EN60079-26 Certificate: KEMA 10ATEX0164 X II 1G Ex ia IIC T4 Ga Degree of protection: IP66/IP67 Maximum Process Temp.(Tp):120°C(248°F) Amb. Temp.(Tamb): –50 to 70°C (–58 to 158°F)	**KS27**
Canadian Standards Association (CSA)	CSA Intrinsically safe Approval*1 Certificate: 2325443 [For CSA C22.2] Applicable Standard: C22.2 No.0, C22.2 No.0.4, C22.2 No.25, C22.2 No.94, C22.2 No.157, C22.2 No.213, C22.2 No.61010-1 Intrinsically Safe for Class I, Division 1, Groups A, B, C & D, Class II, Division 1, Groups E, F & G, Class III, Division 1. Nonincendive for Class I, Division 2, Groups A, B, C & D, Class II, Division 2, Groups F & G, Class III, Division 1 Enclosure: Type 4X Temperature Code: T4 Ambient Temp.: –50 to 70°C (–58 to 158°F) [For CSA E60079] Applicable Standard: CAN/CSA E60079-0, CAN/CSA E60079-11, IEC60529 Ex ia IIC T4, Enclosure: IP66 and IP67 Maximum Process Temp.(Tp):120°C (248°F) Amb. Temp.(Tamb): –50 to 70°C (–58 to 158°F)	**CS17**
IECEx	IECEx Intrinsically safe Approval Applicable Standard: IEC60079-0:2011, IEC60079-11:2011, IEC60079-26:2006 Certificate: IECEx KEM 10.0074 X II 1G Ex ia IIC T4 Ga Enclosure: IP66/IP67 Maximum Process Temp.(Tp) :120°C(248°F) Amb. Temp.(Tamb): –50 to 70°C (–58 to 158°F)	**SS27**

*1: Applicable for amplifier housing code 7.

■ OPTIONAL SPECIFICATIONS

Item		Description		Code
Painting	Color change	Amplifier cover only		P□
	Coating change	Anti-corrosion coating *1		X2
Oil-prohibited use*2		Degrease cleansing treatment		K1
		Degrease cleansing treatment and with fluorinated oilfilled capsule. Operating temperature -20 to 80°C (-4 to 176°F)		K2
Oil-prohibited use with dehydrating treatment*2		Degrease cleansing treatment and dehydrating treatment		K5
		Degrease cleansing treatment and dehydrating treatment with fluorinated oilfilled capsule. Operating temperature -20 to 80°C (-4 to 176°F)		K6
Capsule fill fluid		Fluorinated oil filled in capsule Operating temperature -20 to 80°C (-4 to 176°F)		K3
Calibration units*3		P calibration (psi unit)	(See Table for Span and Range Limits.)	D1
		bar calibration (bar unit)		D3
		M calibration (kgf/cm^2 unit)		D4
Long vent*4		Total length: 119 mm (standard: 34 mm); Total length when combining with option code K1, K2, K5, and K6: 130 mm. Material: 316 SST		U1
Gold-plated capsule gasket*5		Gold-plated 316L SST capsule gasket. Without drain and vent plugs.		GS
Gold-plated diaphragm*6		Inside of isolating diaphragms (fill fluid side) are gold plated, effective for hydrogen permeation.		A1
130 Pa abs calibration*7		Minimum input puressure at calibration testing: 130 Pa abs (1 mmHg abs)		S1
Body option*8		Without drain and vent plugs.		N1
		N1 and Process connection, based on IEC61518 with female thread on both sides of cover flange, with blind kidney flanges on back.		N2
		N2 and Material certificate for cover flange, diaphragm, capsule body, and blind kidney flange.		N3
European Pressure Directive*9		PED 97/23/EC Category III, Module H, Type of Equipment: Pressure Accessory-Vessel, Type of Fluid: Liquid and Gas, Group of Fluid: 1 and 2.		PE3
Material certificate*10		Cover flange*11		M01
		Cover flange, Process connector*12		M11
Pressure test/ Leak test certificate		Test Pressure: 16 MPa (2300 psi)*13	Nitrogen(N_2) Gas*18 Retention time: one minute	T12
		Test Pressure: 25 MPa (3600 psi)*14		T13
		Test Pressure: 3.5 MPa (500 psi)*15		T01
		Test Pressure: 500 kPa (2000 inH_2O)*16		T11
		Test Pressure: 50 kPa (200 inH_2O)*17		T04

*1: Not applicable with color change option.
*2: Applicable for Wetted parts material code S, H, M, and T.
*3: The unit of MWP (Max. working pressure) on the name plate of the housing is the same unit as specified by Option code D1, D3, and D4.
*4: Applicable for vertical impulse piping type (Installation code 7) and Wetted parts material code S, H, M, and T.
*5: Applicable for wetted parts material code S; process connection code 0 and 5; and installation code 8 and 9. Not applicable for option code U1, N2, N3 and M11. No PTFE is used for wetted parts.
*6: Applicable for wetted parts material code S. Not applicable for measurement span code F. Overpressure effects for EJX110B M, H, and V capsules: ±0.06% of URL.
*7: Applicable only for EJX310B M and A capsules whose upper range value is set as smaller than 53.3 kPa abs.
*8: Applicable for Wetted parts material code S, H, M, and T; Process connection code 3, 4, and 5; Installation code 9; and Mounting bracket code N. Process connection faces on the other side of zero adjustment screw.
*9: Applicable for M, H and V capsules of EJX110B with wetted parts material code S.
*10: Material traceability certification, per EN 10204 3.1B.
*11: Applicable for Process connections code 0 and 5.
*12: Applicable for Process connections code 1, 2, 3, and 4.
*13: Applicable for Capsule code F of EJX110B, Capsule code B of EJX430B and EJX310B, and all the capsules of EJX110B with wetted parts maerial code H, M, T, A, D, and B.
*14: Applicable for Capsule code M, H, and V of EJX110B with wetted parts material code S.
*15: Applicable for Capsule code A of EJX430B and EJX310B.
*16: Applicable for Capsule code H of EJX430B.
*17: Applicable for Capsule code L and M of EJX310B.
*18: Pure nitrogen gas is used for oil-prohibited use (Option code K1, K2, K5, and K6).

■ OPTIONAL ACCESSORIES

Product	Part number	Specification
Battery pack assembly	F9915NQ	Battery case, Lithium-thionyl chloride batteries 2 pieces
Batteries*1	F9915NR	Lithium-thionyl chloride batteries, 2 pieces
Battery case	F9915NK	Battery case only
Remote antenna cable	F9915KU	3 m with mounting bracket
	F9915KV	13 m (3 m+10 m), with arrester and mounting bracket
Antenna	F9915KW	2 dBi standard antenna
	F9915KX	0 dBi antenna
	F9915KY	6 dBi high gain antenna*2

*1: Alternatively, Tadiran SL-2780/S or TL-5930/S batteries can be purchased from your local distributer.
*2: Use of high gain antenna is limited by local regulation of radio and telecommunication law. Consult Yokogawa for details.
High gain antenna must be connected to the transmitter by using remote antenna cables.

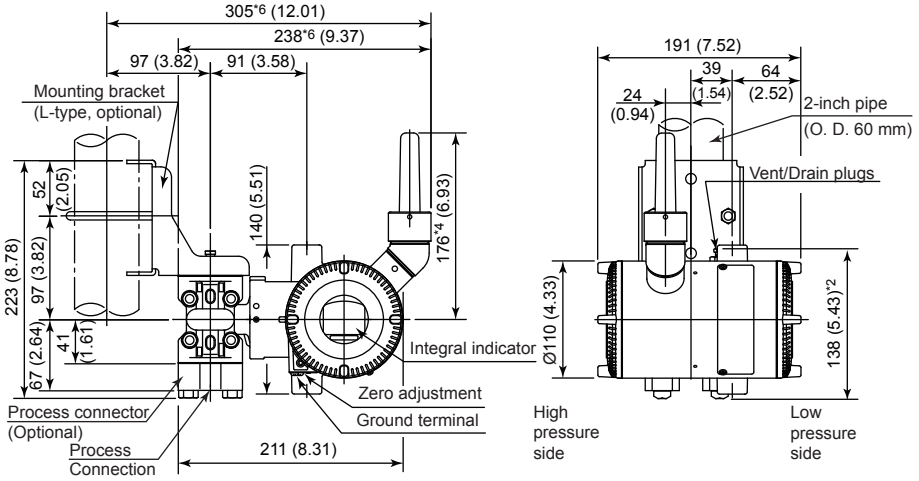
■ DIMENSIONS

Unit: mm (approx. inch)

[EJX110B]

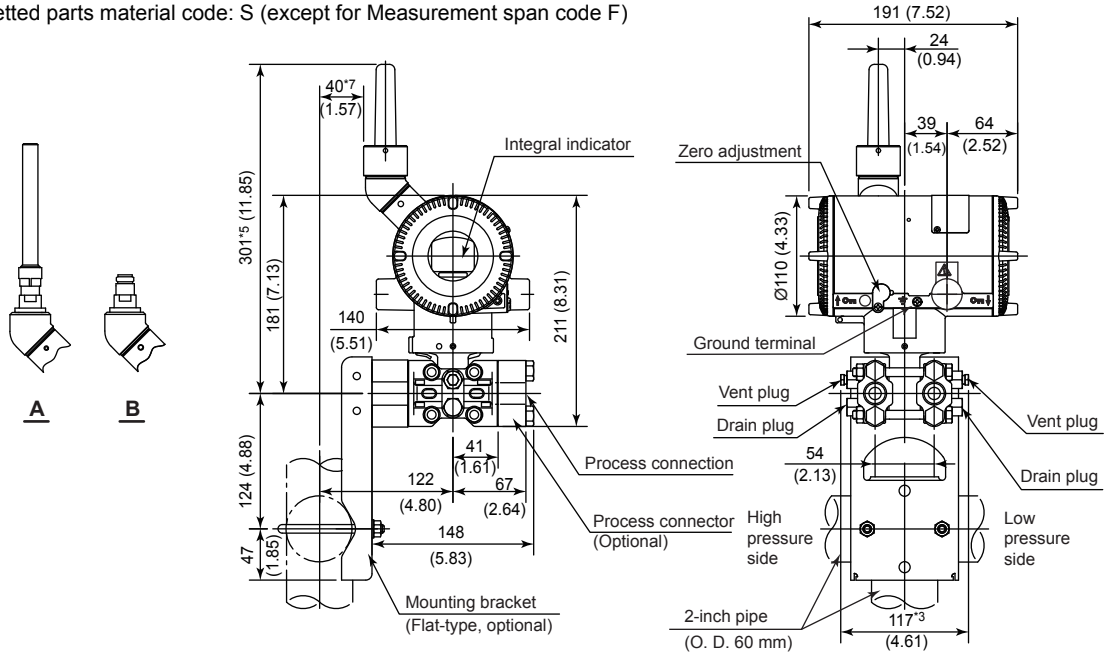
● Vertical impulse piping type (Installation code 7 and Amplifier housing code 7)

Wetted parts material code: S (except for Measurement span code F)



● Horizontal impulse piping type (Installation code 9 and Amplifier housing code 7) *1

Wetted parts material code: S (except for Measurement span code F)



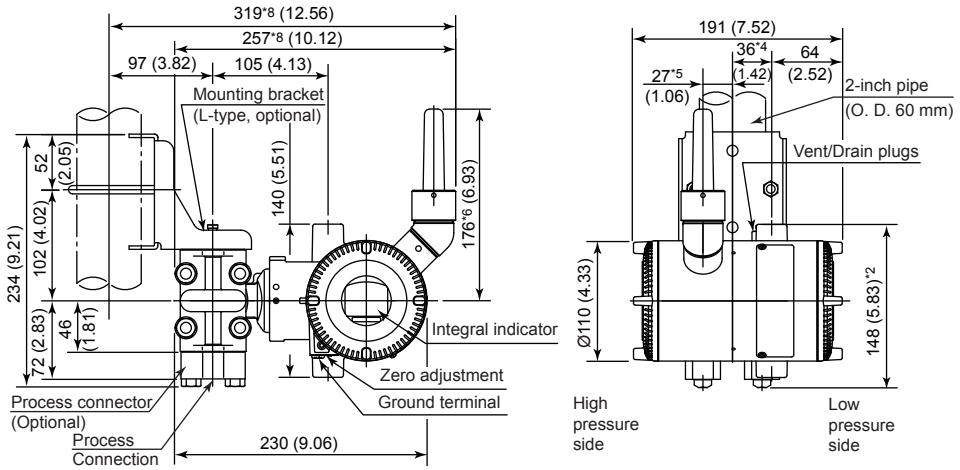
*1: When installation code 8 is selected, high and low pressure side on above figure are reversed. (i.e. High pressure side is on the right side.)
*2: When option code K1, K2, K5, or K6 is selected, add 15 mm (0.59 inch) to the value in the figure.
*3: When option code K1, K2, K5, or K6 is selected, add 30 mm (1.18 inch) to the value in the figure.
*4: When amplifier housing code 8 is selected, the value is 234 mm (9.21 inch). When amplifier housing code 9 is selected, the value is 114 mm (4.49 inch). In both cases, the figures are shown as A or B accordingly.
*5: When amplifier housing code 8 is selected, the value is 360 mm (14.17 inch). When amplifier housing code 9 is selected, the value is 240 mm (9.45 inch). In both cases, the figures are shown as A or B accordingly.
*6: When amplifier housing code 8 or 9 is selected, subtract 1 mm (0.04 inch) from the value.
*7: When amplifier housing code 8 or 9 is selected, add 1 mm (0.04 inch) to the value.

F03.ai

Unit: mm (approx. inch)

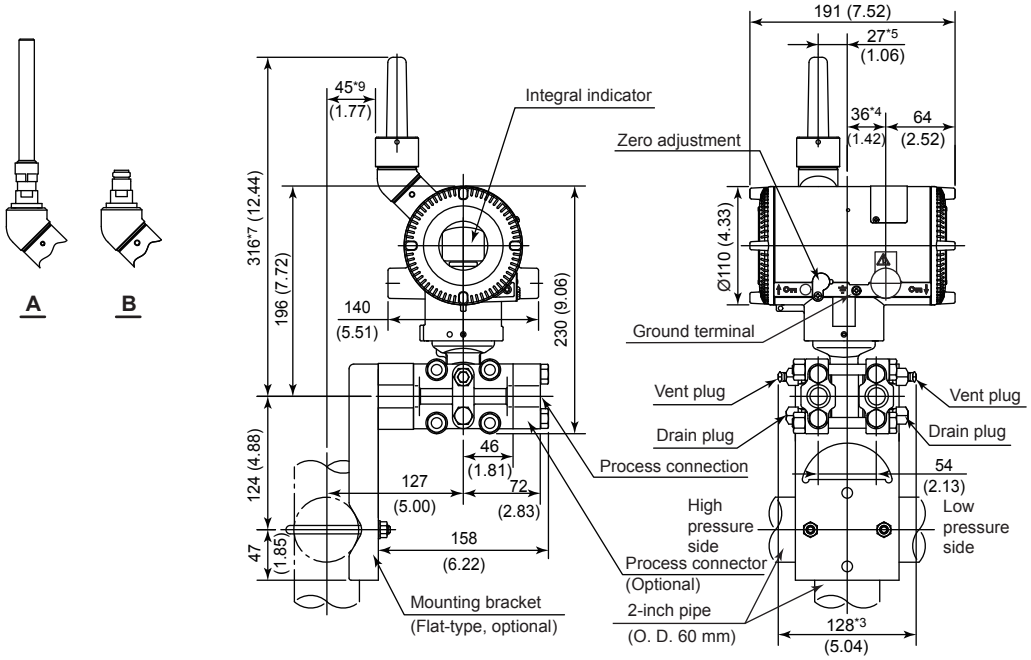
● Vertical impulse piping type (Installation code 7 and Amplifier housing code 7)

Wetted parts material code H, M, T, A, B, and D or Measurement span code F



● Horizontal impulse piping type (Installation code 9 and Amplifier housing code 7) *1

Wetted parts material code H, M, T, A, B, and D or Measurement span code F

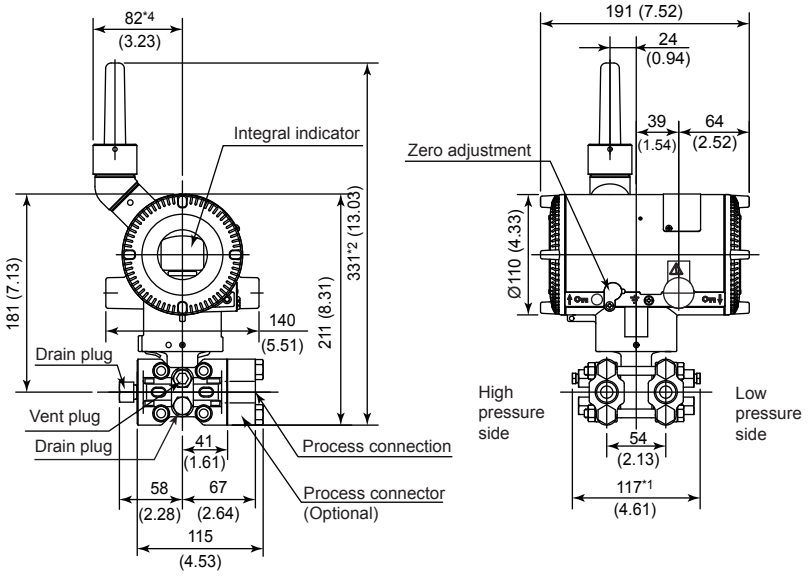


*1: When installation code 8 is selected, high and low pressure side on above figure are reversed. (i.e. High pressure side is on the right side.)
*2: When option code K1, K2, K5, or K6 is selected, add 15 mm (0.59 inch) to the value in the figure.
*3: When option code K1, K2, K5, or K6 is selected, add 30 mm (1.18 inch) to the value in the figure.
*4: 42 mm (1.65 inch) for right side high pressure.
*5: 21 mm (0.83 inch) for right side high pressure.
*6: When amplifier housing code 8 is selected, the value is 234 mm (9.21 inch). When amplifier housing code 9 is selected, the value is 114 mm (4.49 inch). In both cases, the figures are shown as A or B accordingly.
*7: When amplifier housing code 8 is selected, the value is 374 mm (14.72 inch). When amplifier housing code 9 is selected, the value is 254 mm (10.00 inch). In both cases, the figures are shown as A or B accordingly.
*8: When amplifier housing code 8 or 9 is selected, subtract 1 mm (0.04 inch) from the value.
*9: When amplifier housing code 8 or 9 is selected, add 1 mm (0.04 inch) to the value.

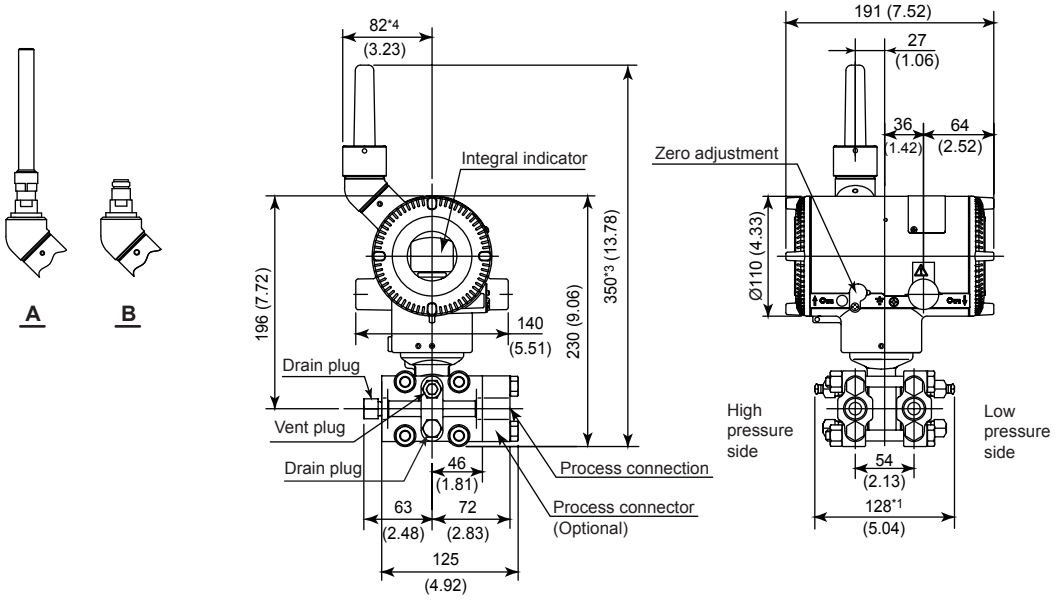
F04.ai

Unit: mm (approx. inch)

● Universal flange type (Installation code U and Amplifier housing code 7)
(except for Measurement span code F)



● Universal flange type (Installation code U and Amplifier housing code 7)
(Measurement span code F)

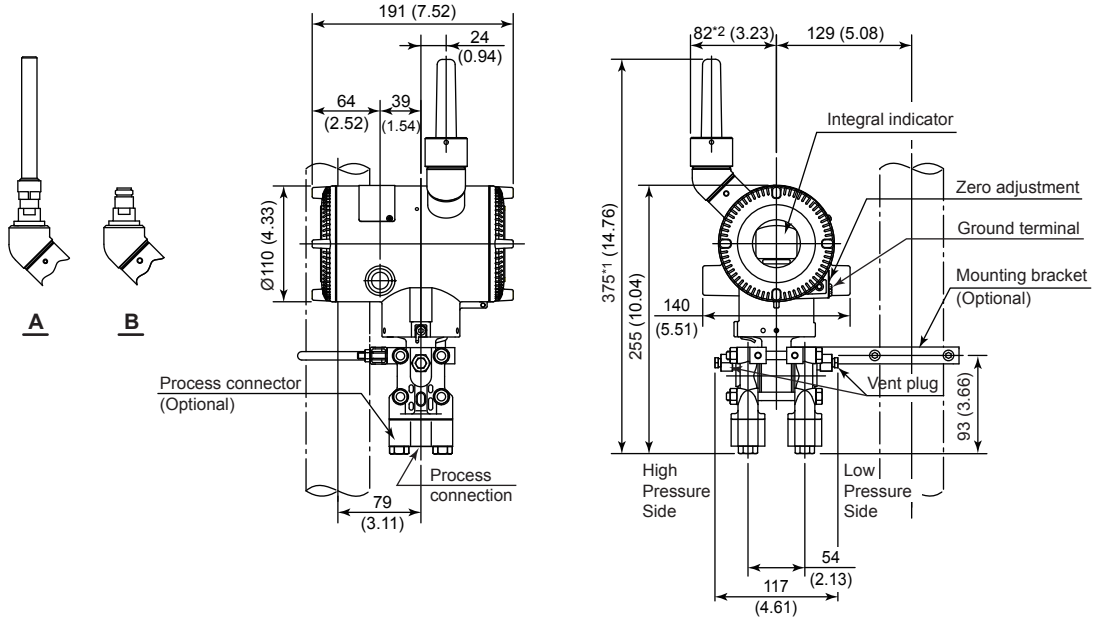


*1: When option code K1, K2, K5, or K6 is selected, add 30 mm (1.18 inch) to the value in the figure..
*2: When amplifier housing code 8 is selected, the value is 390 mm (15.35 inch). When amplifier housing code 9 is selected, the value is 270 mm (10.63 inch). In both cases, the figures are shown as A or B accordingly.
*3: When amplifier housing code 8 is selected, the value is 409 mm (16.10 inch). When amplifier housing code 9 is selected, the value is 289 mm (11.38 inch). In both cases, the figures are shown as A or B accordingly.
*4: When amplifier housing code 8 or 9 is selected, subtract 1 mm (0.04 inch) from the value.

F05-01.ai

Unit: mm (approx. inch)

● Bottom process connection type (Installation code B and Amplifier housing code 7)



*1: When amplifier housing code 8 is selected, the value is 434 mm (17.09 inch). When amplifier housing code 9 is selected, the value is 314 mm (12.36 inch). In both cases, the figures are shown as A or B accordingly.
*2: When amplifier housing code 8 or 9 is selected, subtract 1 mm (0.04 inch) from the value.

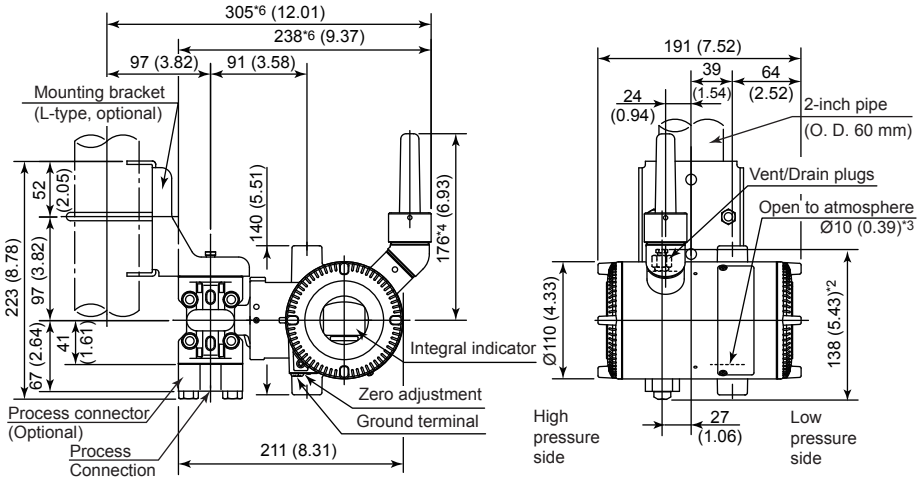
F05-02.ai

Unit: mm (approx. inch)

[EJX310B and EJX430B]

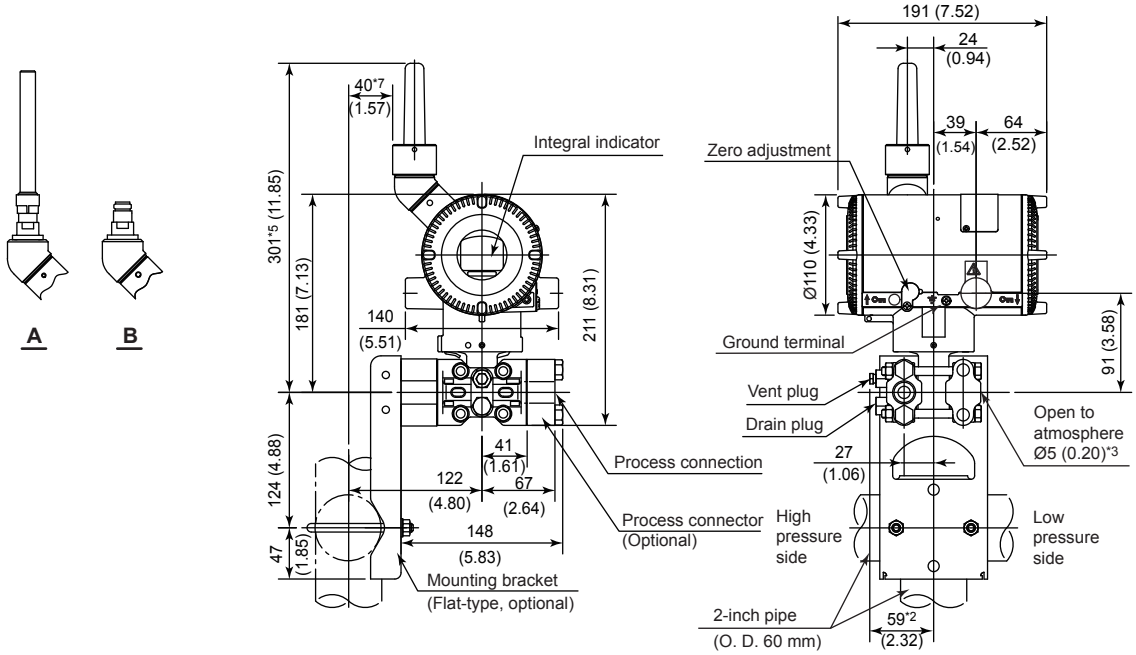
● Vertical impulse piping type (Installation code 7 and Amplifier housing code 7) *1

Wetted parts material code: S



● Horizontal impulse piping type (Installation code 9 and Amplifier housing code 7) *1

Wetted parts material code: S



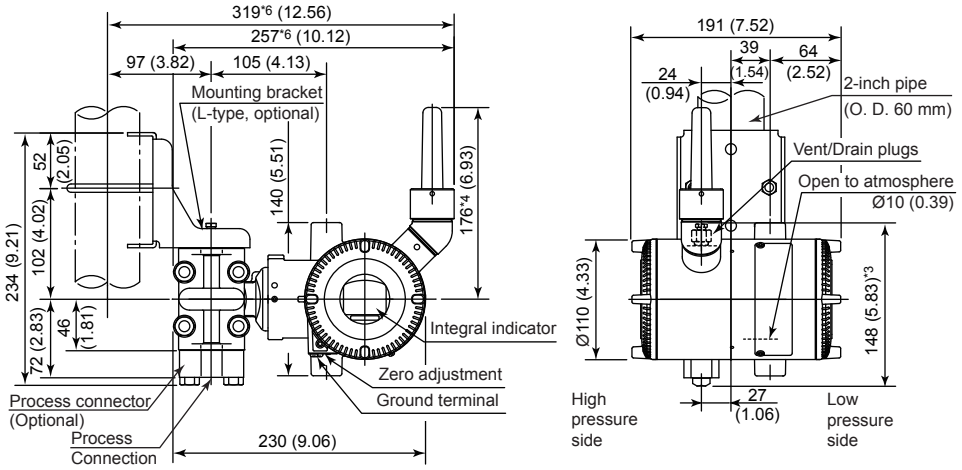
*1: When installation code 3 and 8 is selected, high and low pressure side on above figure are reversed.
(i.e. High pressure side is on the right side.)
*2: When option code K1, K2, K5, or K6 is selected, add 15 mm (0.59 inch) to the value in the figure.
*3: Applicable for EJX430B.
*4: When amplifier housing code 8 is selected, the value is 234 mm (9.21 inch). When amplifier housing code 9 is selected, the value is 114 mm (4.49 inch). In both cases, the figures are shown as A or B accordingly.
*5: When amplifier housing code 8 is selected, the value is 360 mm (14.17 inch). When amplifier housing code 9 is selected, the value is 240 mm (9.45 inch). In both cases, the figures are shown as A or B accordingly.
*6: When amplifier housing code 8 or 9 is selected, subtract 1 mm (0.04 inch) from the value.
*7: When amplifier housing code 8 or 9 is selected, add 1 mm (0.04 inch) to the value.

F06.ai

Unit: mm (approx. inch)

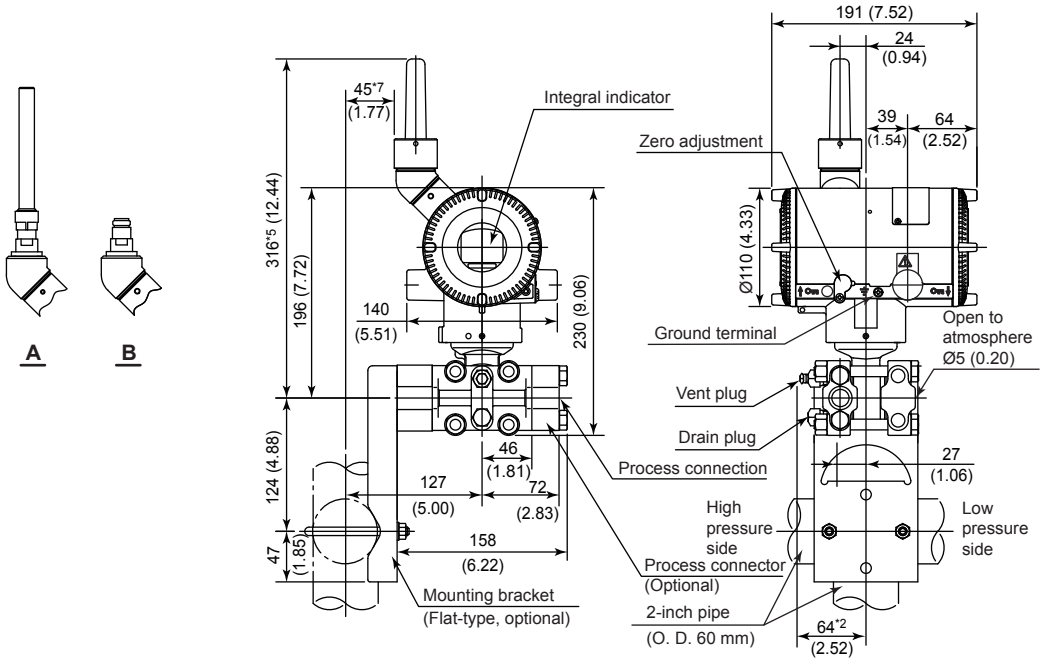
● Vertical impulse piping type (Installation code 7 and Amplifier housing code 7) *1

Wetted parts material code: H, M, T, A, B, and D*3



● Horizontal impulse piping type (Installation code 9 and Amplifier housing code 7) *1

Wetted parts material code: H, M, T, A, B, and D*3

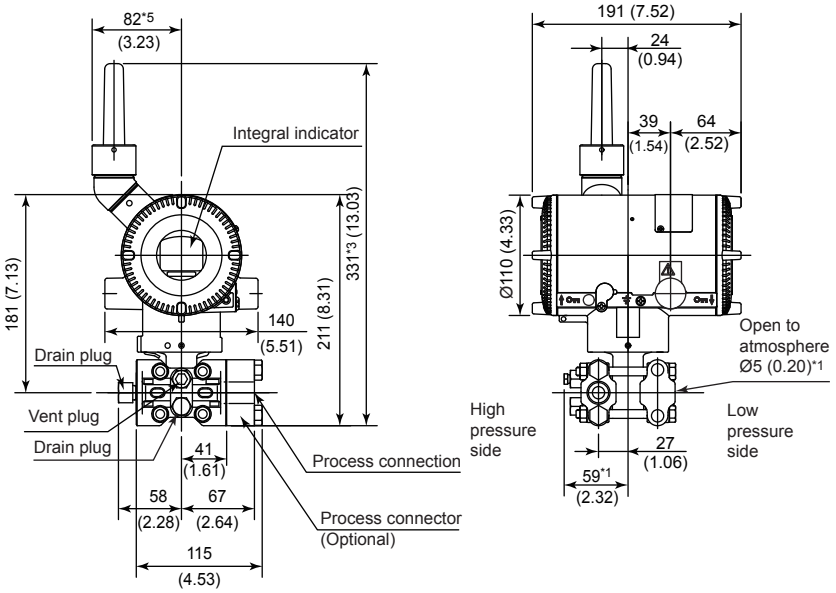


*1: When installation code 3 and 8 is selected, high and low pressure side on above figure are reversed. (i.e. High pressure side is on the right side.)
*2: When option code K1, K2, K5, or K6 is selected, add 15 mm (0.59 inch) to the value in the figure.
*3: Applicable for EJX430B.
*4: When amplifier housing code 8 is selected, the value is 234 mm (9.21 inch). When amplifier housing code 9 is selected, the value is 114 mm (4.49 inch). In both cases, the figures are shown as A or B accordingly.
*5: When amplifier housing code 8 is selected, the value is 374 mm (14.72 inch). When amplifier housing code 9 is selected, the value is 254 mm (10.00 inch). In both cases, the figures are shown as A or B accordingly.
*6: When amplifier housing code 8 or 9 is selected, subtract 1 mm (0.04 inch) from the value.
*7: When amplifier housing code 8 or 9 is selected, add 1 mm (0.04 inch) to the value.

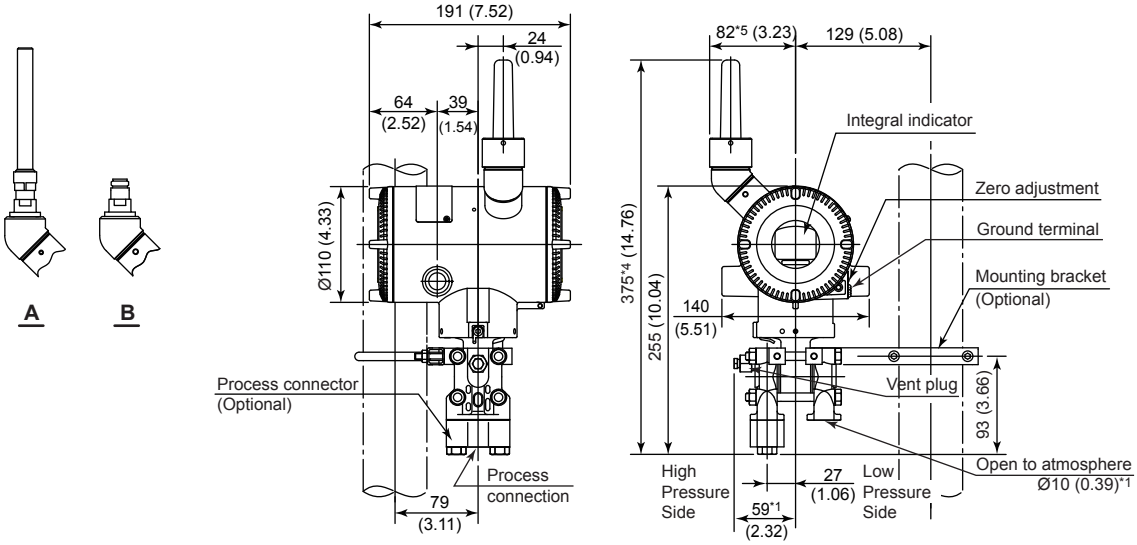
F07.ai

Unit: mm (approx. inch)

● Universal flange type (Installation code U and Amplifier housing code 7)



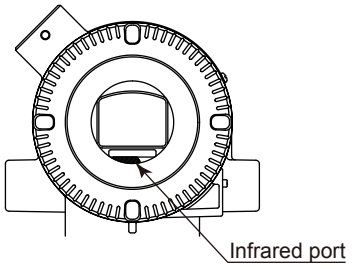
● Bottom process connection type (Installation code B and Amplifier housing code 7)



*1: Applicable for EJX430B.
*2: When option code K1, K2, K5, or K6 is selected, add 15 mm (0.59 inch) to the value in the figure.
*3: When amplifier housing code 8 is selected, the value is 390 mm (15.35 inch). When amplifier housing code 9 is selected, the value is 270 mm (10.63 inch). In both cases, the figures are shown as A or B accordingly.
*4: When amplifier housing code 8 is selected, the value is 434 mm (17.09 inch). When amplifier housing code 9 is selected, the value is 314 mm (12.36 inch). In both cases, the figures are shown as A or B accordingly.
*5: When amplifier housing code 8 or 9 is selected, subtract 1 mm (0.04 inch) from the value.

F08.ai

● Infrared Configuration



< 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 for low or high range limits within the range of -32000 to 32000. When reverse range is designated, specify Lower Range Value(LRV) as greater than Upper Range Value(URV). When square root output mode in EJX110B 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.*1
   Note: If not specified, the instrument is shipped set for linear mode.
4. Display scale and units
   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 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. Tag Number (if required)
   Specify Tag number (up to 16 letters) to be engraved on the tag plate. The specified letters are written on TAG_Name(16 letters) in the amplifier memory.
6. Software tag
   Specify this software tag when tag number which is different from the tag number specified in the “TAG NUMBER” is required. The tag number specified in “SOFTWARE TAG” will be entered on “TAG” (up to 16 letters) in the amplifier memory.

*1: For EJX110B only.

< Factory Setting >

Tag number	As specified in order
Output mode	‘Linear’ unless otherwise specified in order
Calibration range lower range value	As specified in order
Calibration range upper range value	As specified in order
Calibration range unit	Selected from the followings. Only one unit can be specified. [Differential/gauge pressure transmitter] mmH_2O, mmH_2O(68°F), mmAq, mmWG, mmHg, Pa, hPa, kPa, MPa, mbar, bar, gf/cm^2, kgf/cm^2, inH_2O, inH_2O(68°F), inHg, ftH_2O, ftH_2O(68°F) or psi. [Absolute pressure transmitter] torr, Pa abs, hPa abs, kPa abs, MPa abs, mbar abs, bar abs, mmH_2O abs, mmH_2O abs(68°F), mmHg abs, gf/cm^2 abs, kgf/cm^2 abs, inH_2O abs, inH_2O abs(68°F), inHg abs, ftH_2O abs, ftH_2O abs(68°F), atm, or psia.
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*1	'0 to 25 MPa' for M and H capsule with wetted parts material S, and, '0 to 16 MPa' for L capsule with wetted parts material S and all capsules with wetted parts material other than S, absolute value. Measuring high pressure side.

*1: For EJX110B only.