

General Specifications

GS 01C27H01-01EN

EJX118B and EJX438B
Diaphragm Sealed
Differential Pressure and
Gauge Pressure Transmitters



Diaphragm seals are used to prevent process medium from entering directly into the pressure-sensing assembly of the differential pressure and pressure transmitters, they are connected to the transmitter using capillaries filled with fill fluid.

EJX118B Diaphragm Sealed Differential Pressure and EJX438B Diaphragm Sealed Gauge Pressure Transmitters can be used to measure liquid, gas, or steam flow, as well as liquid level, density and pressure.

EJX118B and EJX438B transmit not only process variables but also the setting parameters using wireless signal. In case of the battery powered type, the transmitters run on internal batteries, and the installation cost can be decreased since hard-wiring is not required. The communication protocol 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

Wireless Communication

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
Antenna: +2 dBi Omni directional
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
External Power Source:
Rated voltage: 10.5 to 30 V DC
Rated current: 36 mA

■ SPAN AND RANGE LIMITS

EJX118B

Measurement Span/Range	kPa	inH ₂ O/(D1)	mbar/(D3)	mmH ₂ O/(D4)	
M	Span	2 to 100	8 to 400	20 to 1000	200 to 10000
	Range	-100 to 100	-400 to 400	-1000 to 1000	-10000 to 10000
H	Span	10 to 500	40 to 2000	100 to 5000	0.1 to 5 kgf/cm ²
	Range	-500 to 500	-2000 to 2000	-5000 to 5000	-5 to 5 kgf/cm ²

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EJX438B

Measurement Span and Range	MPa	psi (D1)	bar (D2)	kgf/cm ² (D3)		
A*1	Span	0.035 to 3.5	5 to 500	0.35 to 35	0.35 to 35	
	Range	-0.1 to 3.5	-14.5 to 500	-1 to 35	-1 to 35	
B	Flush type*1	Span	0.16 to 16	23 to 2300	1.6 to 160	1.6 to 160
		Range	-0.1 to 16	-14.5 to 2300	-1 to 160	-1 to 160
	Extended type*1	Span	0.16 to 7	23 to 1000	1.6 to 70	1.6 to 70
		Range	-0.1 to 7	-14.5 to 1000	-1 to 70	-1 to 70

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*1: Measurement range is within the flange rating.

■ PERFORMANCE SPECIFICATIONS

Zero-based calibrated span, linear output, wetted parts material code SW for 3-inch flange flush type, fill fluid code B, capillary length of 5 m, and in the continuous measurement mode.

Specification Conformance

EJX series ensures specification conformance to at least $\pm 3\sigma$.

Reference Accuracy of Calibrated Span

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

EJX118B

Measurement span		H
Reference accuracy	X ≤ span	±0.15% of Span
	X > span	±(0.085+0.013 URL/span)% of Span
X		100 kPa (400 inH ₂ O)
URL (upper range limit)		500 kPa (2000 inH ₂ O)

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Measurement span		M
Reference accuracy	X ≤ span	±0.15% of Span
	X > span	±(0.02+0.013 URL/span)% of Span
X		10 kPa (40 inH ₂ O)
URL (upper range limit)		100 kPa (400 inH ₂ O)

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EJX438B

Measurement span		A	B
Reference accuracy	X ≤ span	±0.15% of Span	
	X > span	±(0.1+0.005 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)

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Square Root Output Accuracy (EJX118B)

The square root accuracy is a percent of flow span.

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

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

EJX118B

Capsule	Effect
M and H	±(0.25% Span +0.06% URL)

EJX438B

Capsule	Effect
A and B	±(0.5% Span +0.025% URL)

Static Pressure Effects per 0.69 MPa (100 psi) Change (EJX118B)

Span Effects : ±0.02% of span

Effect on Zero : ±0.014% of URL

Battery Characteristic

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 30 seconds update time or 5 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.

Response Time

EJX118B (Differential pressure)

M and H capsule: 260 ms (approximate value at normal temperature)

EJX438B

200 ms (approximate value at normal temperature)

When software damping is set to zero and including dead time of 100 msec (nominal)

Static Pressure Signal Range and Accuracy (EJX118B)

(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 : ±0.2% 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 atmospheric pressure.

■ **FUNCTIONAL SPECIFICATIONS**

Output

Wireless (ISA100.11a protocol) 2.4 GHz signal.
Output mode for EJX118B, linear or square root, is selectable.

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

The transmitter shifts to the continuous 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.

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."

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.

Battery Pack

2x primary lithium-thionyl chloride batteries with battery case (batteries sold separately)

Capillary Fill Fluid Density Compensation

Compensation of the zero shift by the ambient temperature effect on the capillary tube.

■ **NORMAL 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) LCD visible range
(Note: The ambient temperature limits must be within the fill fluid operating temperature range, see table 1.)

Process Temperature Limits

See table 1.

Ambient Humidity Limits

0 to 100% RH

Working Pressure Limits

See table 1.

For atmospheric pressure or below, see figure 1-1 and 1-2.

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

	Code	Process temperature*1	Ambient temperature*2	Working pressure	Specific gravity*3
Silicone oil (general use)	A	-10 to 250°C *4 (14 to 482°F)	-10 to 60°C (14 to 140°F)	2.7 kPa abs (0.38 psi abs) to flange rating pressure	1.07
Silicone oil (general use)	B	-30 to 180°C (-22 to 356°F)	-15 to 60°C (5 to 140°F)		0.94
Silicone oil (high temperature use)	C	10 to 310°C (50 to 590°F)	10 to 60°C (50 to 140°F)		1.09
Fluorinated oil (oil-prohibited use)	D	-20 to 120°C (-4 to 248°F)	-10 to 60°C (14 to 140°F)	51 kPa abs (7.4 psi abs) to flange rating pressure	1.90 to 1.92
Ethylene glycol (low temperature use)	E	-50 to 100°C (-58 to 212°F)	-40 to 60°C (-40 to 140°F)	100 kPa abs (atmospheric pressure) to flange pressure rating	1.90

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*1: See figure 1-1 and 1-2 'Working Pressure and Process Temperature.'

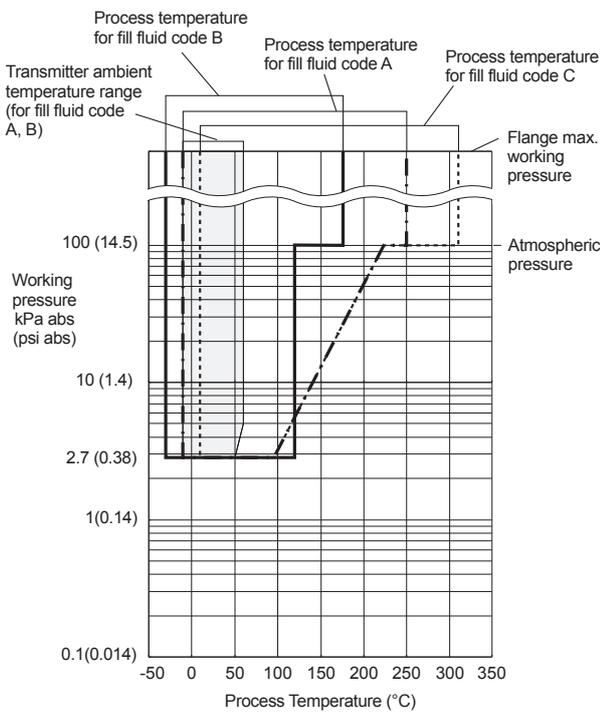
*2: This ambient temperature is the transmitter ambient temperature.

*3: Approximate values at a temperature of 25°C (77°F)

*4: In case of wetted parts material code TW (Tantalum), process temperature limit is up to 200°C (392°F).

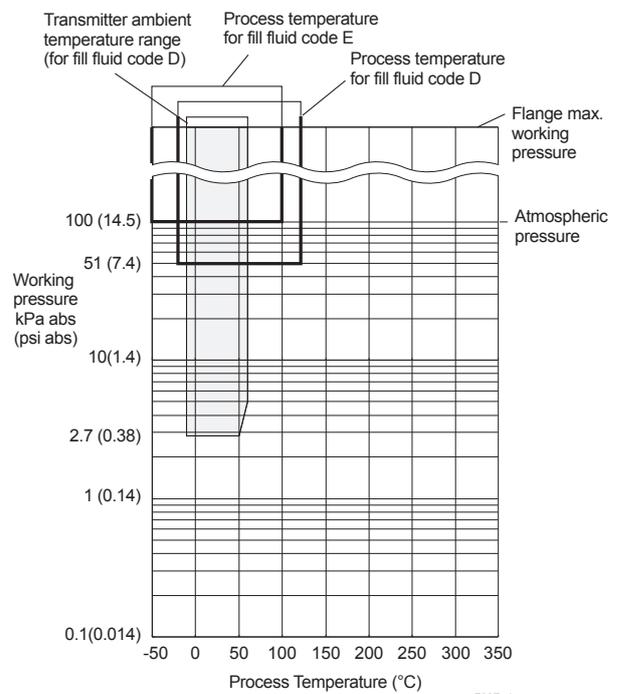
Note: The differential pressure transmitter should be installed at least 600 mm below the high pressure (HP) process connection. However, this value (600 mm) may be affected by ambient temperature, operating pressure, fill fluid or material of the wetted diaphragm.

Contact YOKOGAWA when the transmitter can not be installed at least 600 mm below the HP process connection.



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Figure 1-1. Working Pressure and Process Temperature (Fill fluid : silicone oil for general and high temperature use)



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Figure 1-2. Working Pressure and Process Temperature (Fill fluid : fluorinated oil for oil-prohibited use and ethylene glycol for low temperature use)

■ REGULATORY COMPLIANCE STATEMENTS

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

- * Please confirm that an installation region fulfills an applicable standard. If additional regulatory information and approvals are required, contact a Yokogawa representative.

EMC Conformity Standards

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

Radio Equipment Directive (RE)

EN 300 328, EN 301 489-1, EN 301 489-17, EN61010-1, EN61010-2-030, EN62311

- Indoor/Outdoor use

European Pressure Equipment Directive 2014/68/EU

Sound Engineering Practice

EU RoHS Directive

EN IEC 63000

Safety Requirement Standards

EN61010-1, EN61010-2-030

- Installation category: I (Anticipated transient overvoltage 330 V)
- Pollution degree: 2
- Indoor/Outdoor use

Regulation Conformity of the Wireless Module

- FCC Approval
- ISED Approval

■ PHYSICAL SPECIFICATIONS

Process connections

See the following table.

Table 2. Flange size and rating

Process connection style	Size	Flange
Flush type	3-inch 2-inch 1½-inch*1	JIS 10K, 20K, 40K, 63K*2 ANSI Class 150, 300, 600 JPI Class 150, 300, 600 DIN PN10/16, 25/40, 64
Extended type	4-inch 3-inch	JIS 10K, 20K, 40K*2 ANSI Class 150, 300 JPI Class 150, 300 DIN PN10/16, 25/40
Combination type (Extended and Flush)*3	High pressure side: 4-inch Low pressure side: 3-inch	JIS 10K, 20K ANSI Class 150, 300 JPI Class 150, 300 DIN PN10/16, 25/40

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- *1: Flushing connection rings are always attached.
- *2: Applicable for EJX438B only.
- *3: Applicable for EJX118B only.

Gasket Contact Surface

See the following table.

Table 3. Gasket contact surface

Flange	JIS/JPI/DIN	ANSI			
		SW, SE, SY	HW, TW, UW	SW, SE, SY	HW, TW, UW
Wetted parts material code	SW, SE, SY	HW, TW, UW	SW, SE, SY	HW, TW, UW	SW, SE, SY
Gasket contact Surface	Serration*1	—	—	●	—
	Flat (No serration)	●	●	●	●

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- : Applicable, —: Not applicable
- *1: ANSI B16.5

Electrical Connections

See "MODEL AND SPECIFICATIONS."

Transmitter Mounting

2-inch pipe mounting

Wetted Parts Material

Diaphragm seal

Diaphragm and other wetted parts;
Refer to "MODEL AND SUFFIX CODES."

Flushing connection ring (optional)

Ring and Vent / Drain plugs;
Refer to "MODEL AND SUFFIX CODES."
(Spiral) gasket for transmitter side
316 SST (Hoop), PTFE Teflon (Filler)

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

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

Name plate and tag

316 SST tag plate wired onto transmitter

Diaphragm seal section:

Process Flange

JIS S25C, 304 SST, or 316 SST

Capillary tube

316 SST

Protection tube

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

Fill fluid

See table 1.

Weight

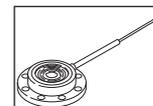
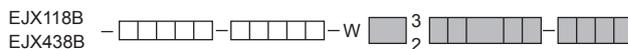
EJX118B

Flush type: 18.2 kg (40.1 lbs)*
(3-inch ANSI Class150 flange, capillary length 5 m)
Extended type: 23.8 kg (52.5 lbs)*
(4-inch ANSI Class150 flange, extension length (X₂)=100 mm, capillary length 5 m)
Combination type: 21.0 kg (46.3 lbs)*
(4-inch and 3-inch ANSI Class150 flange, extension length (X₂)=100 mm, capillary length 5 m)

- * The weight does not include that of battery pack, integral indicator, mounting bracket, and process connector.
Add 0.3 kg for the external powered type.

II. Diaphragm seal section (Flush type)

- Precess connection size: 3-inch (80 mm) / 2-inch (50 mm)



Model	Suffix codes	Description	EJX118B	EJX438B
EJX118B EJX438B	- [] [] [] [] - [] [] [] []	Transmitter body section (I)		
Process connection style	-W	Flush type		
Flange rating	J1 J2 J4 J6 A1 A2 A4 D2 D4 D5	JIS 10K JIS 20K JIS 40K JIS 63K ANSI class 150 ANSI class 300 ANSI class 600 DIN PN10/16 DIN PN25/40 DIN PN64		
		P1 JPI class 150 P2 JPI class 300 P4 JPI class 600		
Process connection size (Process flange size)	3 2	3-inch (80 mm) 2-inch (50 mm)		
Flange material	A ▶ B C	JIS S25C 304 SST ^{*11} 316 SST ^{*11}		
Gasket contact surface ^{*1}	1 2	Serration (for ANSI flange with wetted parts material SW only) Flat (no serration)		
Wetted parts material ^{*10}	SW HW TW UW	[Diaphragm] 316L SST Hastelloy C-276 ^{*9#} Tantalum ^{*7} Titanium	[Others] 316L SST Hastelloy C-276 ^{*9#} Tantalum ^{*7} Titanium	
Flushing connection ring ^{*2}	▶ 0 1 2 A B	[Ring] None Straight type Straight type Straight type Straight type	[Vent/Drain plugs] — R 1/4 connections ^{*8} 1/4 NPT connections R 1/4 connections ^{*8} 1/4 NPT connections	[Material] — 316 SST # 316 SST # 316 SST # 316 SST #
Extension	0	None		
Fill fluid	▶ -A -B -C -D -E	For general use (silicone oil) ^{*3} For general use (silicone oil) For high temperature use (silicone oil) ^{*4 *7} For oil-prohibited use (fluorinated oil) ^{*5} For low temperature use (ethylene glycol)	[Process temp.] [Ambient temp.] -10 to 250°C -10 to 60°C -30 to 180°C -15 to 60°C 10 to 310°C 10 to 60°C -20 to 120°C -10 to 60°C -50 to 100°C -40 to 60°C	
Capillary connection	A 2	Side of diaphragm seal unit Always 2		
Capillary length ^{*6}	1 2 3 4 5 6 7 8 9 A	1 m 2 m 3 m 4 m 5 m	6 m 7 m 8 m 9 m 10 m	
Option codes		/□ Optional specification		

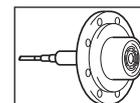
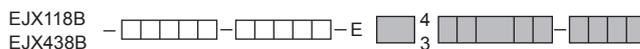
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The "▶" marks indicate the most typical selection for each specification. Example: EJX118B-LMSCG-98JDN-WA13B1SW00-BA25/□
EJX438B-LASCG-98JDN-WA13B1SW00-BA25/□

- *1: See table 3 'Gasket contact surface.'
- *2: When specified flushing connection ring code 1, 2, A, or B, exclusive gasket is provided for transmitter side.
- *3: In case of wetted parts material code TW (Tantalum), the process temperature limit is -10 to 200°C.
- *4: Wetted parts material code TW (Tantalum) cannot be applied.
- *5: 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.
- *6: In case of wetted parts material code HW (Hastelloy C), TW (Tantalum), and UW (Titanium) for 2-inch pressure flange, specify capillary length from 1 to 5 m.
- *7: Not applicable for flashing connection ring code 1 and 2.
- *8: Not applicable for gasket contact surface code 1.
- *9: Hastelloy C-276 or N10276.
- *10: ⚠ 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.
- *11: Forged version of the material may be used. 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.

II. Diaphragm seal section (Extended type)

- Process connection size: 4-inch (100 mm) / 3-inch (80 mm)



Model	Suffix codes	Description	EJX118B	EJX438B
EJX118B EJX438B	-□□□□□-□□□□□	Transmitter body section (I)	○	○
Process connection style	-E	Extended type	○	○
Flange rating	J1 J2 J4 A1 A2 P1 P2 D2 D4	JIS 10K JIS 20K JIS 40K ANSI class 150 ANSI class 300 JPI class 150 JPI class 300 DIN PN10/16 DIN PN25/40	○ ○ - ○ ○ ○ ○ ○ ○	○ ○ ○ ○ ○ ○ ○ ○ ○
Process connection size (Process flange size)	4 3	4-inch (100 mm) 3-inch (80 mm)	○ ○	○ ○
Flange material	▶ A B C	JIS S25C 304 SST*5 316 SST*5	○ ○ ○	○ ○ ○
Gasket contact surface*1	1 2	Serration (for ANSI flange only) Flat (no serration)	○ ○	○ ○
Wetted parts material*4	SE	[Diaphragm] 316L SST [Pipe] 316 SST [Others] 316 SST	○	○
Flushing connection ring	0	None	○	○
Extension	1 2 3 4 5 6	Length (X2) = 50 mm Length (X2) = 50 mm Length (X2) = 100 mm Length (X2) = 100 mm Length (X2) = 150 mm Length (X2) = 150 mm	- ○ - ○ - ○	- ○ - ○ - ○
Fill fluid	▶ -A -B -C -D -E	For general use (silicone oil) For general use (silicone oil) For high temperature use (silicone oil) For oil-prohibited use (fluorinated oil)*2 For low temperature use (ethylene glycol)	[Process temp.] -10 to 250°C -30 to 180°C 10 to 310°C -20 to 120°C -50 to 100°C	[Ambient temp.] -10 to 60°C -15 to 60°C 10 to 60°C -10 to 60°C -40 to 60°C
Capillary connection	B	Back of diaphragm seal unit	○	○
—	2	Always 2	○	○
Capillary length*3	1 2 3 4 5	1 m 2 m 3 m 4 m 5 m	6 7 8 9 A	6 m 7 m 8 m 9 m 10 m
Option codes		/□ Optional specification		

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The “▶” marks indicate the most typical selection for each specification. Example: EJX118B-LMSCG-98JDN-EA14B1SE02-BB25/□
EJX438B-LASCG-98JDN-EA14B1SE01-BB25/□

- *1: See table 3 ‘Gasket contact surface.’
- *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: The specified capillary length includes the extension length (X₂) and the flange thickness (t).
- *4: △ 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.
- *5: Forged version of the material may be used.

■ OPTIONAL SPECIFICATIONS (For Explosion Protected type)

Please select appropriate equipment in accordance with the laws and regulations of the relevant country/region, when it is used in a location where explosive atmospheres may be present.

Item	Description	Code
Factory Mutual (FM)	FM Intrinsically safe Approval Applicable Standard: Class 3600, Class 3610, Class 3611, Class 3810, ANSI/UL-60079-0, ANSI/UL-60079-11, 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: Type 4X, Temp. Class: T4, Amb. Temp.: -50 to 70°C (-58 to 158°F)	FS17*1
ATEX	ATEX Intrinsically safe Approval Applicable Standard: EN IEC 60079-0, EN 60079-11, EN60079-28 Certificate: KEMA 10ATEX0164 X II 1 G Ex ia op is IIC T4 Ga Degree of protection: IP66/IP67 Process temperature: -50 °C ≤ Tp ≤ +120 °C (-58 °F ≤ Tp ≤ +248°F) Ambient temperature: -50 °C ≤ Ta ≤ +70 °C (-58 °F ≤ Ta ≤ +158 °F)	KS27*1
Canadian Standards Association (CSA)	CSA Intrinsically safe Approval No. CSA10CA2325443X Applicable standard: CAN/CSA-C22.2 No.94, C22.2 No.213, CAN/CSA-C22.2 No.61010-1, CAN/CSA-C22.2 No.60079-0, CAN/CSA-C22.2 No.60079-11, CAN/CSA-C22.2 No.60529 Ex ia IIC T4 Ga 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: IP66/IP67 and Type 4X Temperature Code: T4 Maximum Process Temp.(Tp): 120°C (248°F) Amb. Temp.(Tamb): -0 to 70°C (-8 to 158°F)	CS17*1
IECEX	IECEX Intrinsically safe Approval Applicable Standard: IEC60079-0, IEC60079-11, IEC 60079-28 Certificate: IECEX KEM 10.0074 X Ex ia op is IIC T4 Ga Enclosure: IP66/IP67 Process temperature: -50 °C ≤ Tp ≤ +120 °C (-58 °F ≤ Tp ≤ +248°F) Ambient temperature: -50 °C ≤ Ta ≤ +70 °C (-58 °F ≤ Ta ≤ +158 °F)	SS27*1

*1: Only applicable for selecting Electrical connection code J.

■ OPTIONAL SPECIFICATIONS

Item		Description	Code		
Painting	Color change	Amplifier cover only	P□		
	Coating change	Anti-corrosion coating *1	X2		
Oil-prohibited use		Degrease cleansing treatment	K1		
Oil-prohibited use with dehydrating treatment		Degrease cleansing treatment and dehydrating treatment	K5		
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	
Teflon film *2 *7		Diaphragm protection from sticky process fluid by FEP Teflon film attached with fluorinated oil. Operation range: 20 to 150°C, 0 to 2 MPa (Not applicable for vacuum service).	TF1		
Operating temperature correction *4		Adjusting range: 80°C to Maximum temperature of specified fill fluid	R		
Capillary without PVC sheaths		When ambient temperature exceeds 100°C, or use of PVC is prohibited	V		
Gold-plated diaphragm *5		Inside of isolating diaphragms (fill fluid side) are gold plated, effective for hydrogen permeation.	A1		
Material certificate		Process flange, Block	For Flush type		
		Process flange, Block, Ring *6		M2W	
		Process flange, Block, Pipe, Base	For Extended type		
		High Pressure side: Process flange, Block, Pipe, Base *12 Low Pressure side: Process flange, Block		M5W	
Pressure test/ Leak test Certificate *11	EJX118B	(Flange rating)	(Test pressure)		
		JIS 10K	2 MPa (290 psi)	T51	
		JIS 20K	5 MPa (720 psi)	T54	
		JIS 40K *8	10 MPa (1450 psi)	T57	
		ANSI/JPI Class 150	3 MPa (430 psi)	T52	
		ANSI/JPI Class 300 *8	8 MPa (1160 psi)	T56	
		ANSI/JPI Class 300 *9	7 MPa (1000 psi)	T55	
	ANSI/JPI Class 600 *8	16 MPa (2300 psi)	T58		
	EJX438B	For A-Capsule	JIS 10K	2 MPa (290 psi)	T51
			JIS 20K, 40K, 63K	3.5 MPa (500 psi)	T53
			ANSI/JPI Class 150	3 MPa (430 psi)	T52
			ANSI/JPI Class 300, 600	3.5 MPa (500 psi)	T53
		For B-Capsule	JIS 10K	2 MPa (290 psi)	T51
			JIS 20K	5 MPa (720 psi)	T54
			JIS 40K *8	10 MPa (1450 psi)	T57
			JIS 40K *9	7 MPa (1000 psi)	T55
			JIS 63K *8	16 MPa (2300 psi)	T58
			ANSI/JPI Class 150	3 MPa (435 psi)	T52
			ANSI/JPI Class 300 *8	8 MPa (1160 psi)	T56
			ANSI/JPI Class 300 *9	7 MPa (1000 psi)	T55
ANSI/JPI Class 600 *8			16 MPa (2300 psi)	T58	
		Nitrogen (N ₂) Gas *10 Retention time: 10 minutes			

- *1: Not applicable with color change option.
- *2: Applicable for flush type (process connection style code **W**.)
- *3: The unit of MWP (Max. working pressure) on the name plate of a housing is the same unit as specified by option code **D1**, **D3**, and **D4**.
- *4: Specify the process operating temperature for zero correction. Example: Zero correction by process temperature 90°C.
- *5: Applicable for wetted parts material code **SW**, **SE**, **SY**, and **HW**.
- *6: Applicable for flushing connection ring code **1**, **2**, **3**, **4**, **A**, **B**, **C**, and **D**.
- *7: Applicable for flushing connection ring code **0**.
- *8: Applicable for flush type (process connection style code **W**.)
- *9: Applicable for extended type and Combination type (process connection style code **E** and **Y**.)
- *10: Pure nitrogen gas is used for oil-prohibited use (option code **K1** and **K5**.)
- *11: The unit on the certificate is always MPa regardless of selection of option code **D1**, **D3**, or **D4**. A flushing connection ring will not be applied when conducting the pressure test or leak test.
- *12: Applicable for model EJX118B.

■ OPTIONAL ACCESSORIES

Product	Part number	Specification
Battery pack assembly	F9915NQ*1	Battery case, Lithium-thionyl chloride batteries 2 pieces
Batteries*2	F9915NR	Lithium-thionyl chloride batteries, 2 pieces
Battery case	F9915NK*3	Battery case only
Remote antenna cable	F9915KU	3 m with mounting bracket
	F9915KV	13 m (3 m+10 m), with a surge protective device and mounting bracket
Antenna	F9915KW	2 dBi standard antenna
	F9915KY	6 dBi high gain antenna*4 *5

*1: If you need F9915MA, please purchase F9915NQ. F9915NQ is a set of F9915MA and instruction manual.

*2: Alternatively, Tadiran SL-2780/S, TL-5930/S or VITZROCELL SB-D02 batteries can be purchased from your local distributor.

*3: If you need F9915NS, please purchase F9915NK. F9915NK is a set of F9915NS and instruction manual.

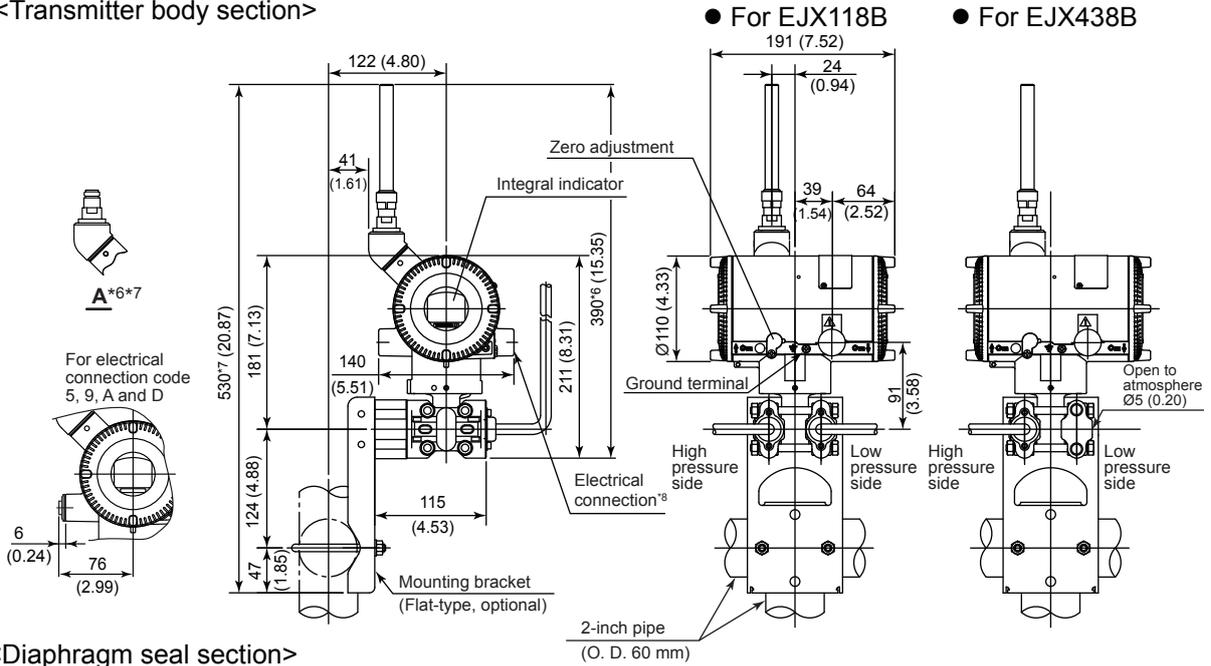
*4: Use of high gain antenna is limited by local regulation of radio and telecommunication law. Consult Yokogawa for details.

*5: F9915KY can not connect directly to the transmitter. Remote antenna cable is required to use F9915KY.

DIMENSIONS

<Transmitter body section>

Unit: mm (approx. inch)



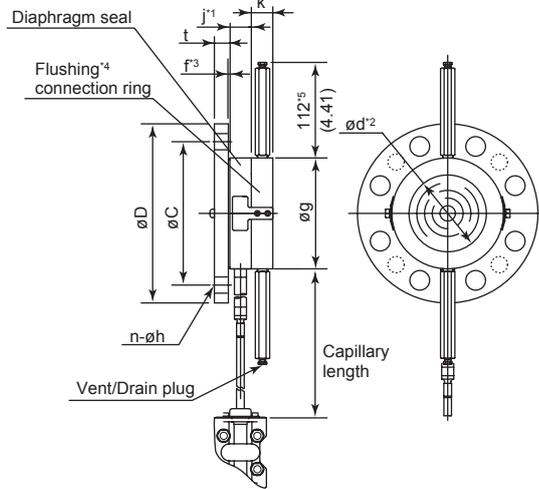
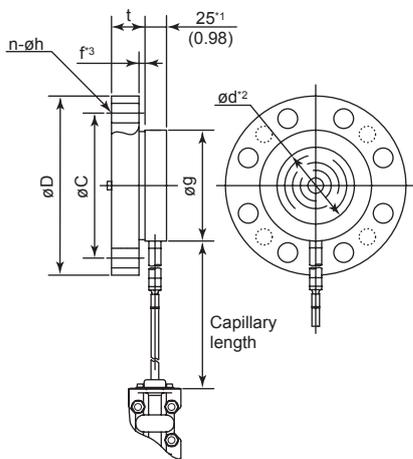
<Diaphragm seal section>

● Flush type

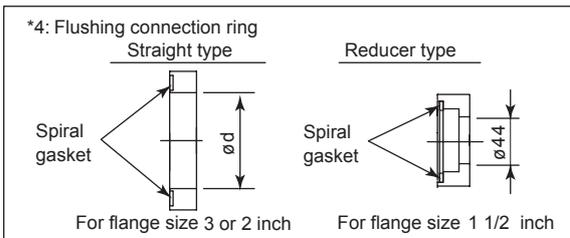
- ◆ No ring (Flushing connection ring code 0)

◆ With ring

- (EJX118B: Flushing connection ring code 1, 2, 3, and 4)
- (EJX438B: Flushing connection ring code A, B, C, and D)



*1: When wetted parts material code **UW** (titanium), value is 34 (1.34).
 *2: Indicates inside diameter of gasket contact surface
 *3: In case where process flange material is JIS S25C, value of f is 0.

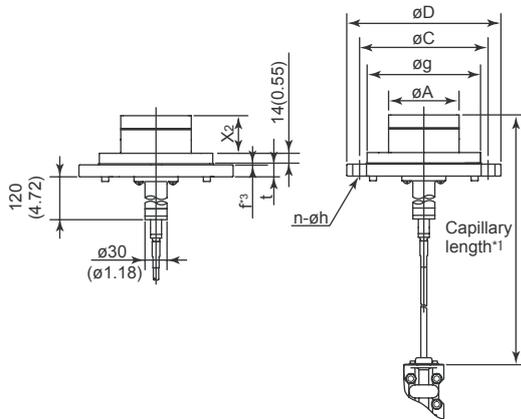


*4: Flushing connection ring
 *5: When option code **K1** or **K5** is selected, add 11 mm (0.28 inch).
 *6: When amplifier housing code 9 is selected, the value is 270 mm (10.63 inch). In this case, the figure is shown as A.
 *7: When amplifier housing code 9 is selected, the value is 410 mm (16.14 inch). In this case, the figure is shown as A.
 *8: Applicable for the external powered type.
 *9: When electrical connection code 7 or C is selected, a blind plug is protruded upto 8 mm from the electrical connection.

F04E.ai

Unit: mm (approx. inch)

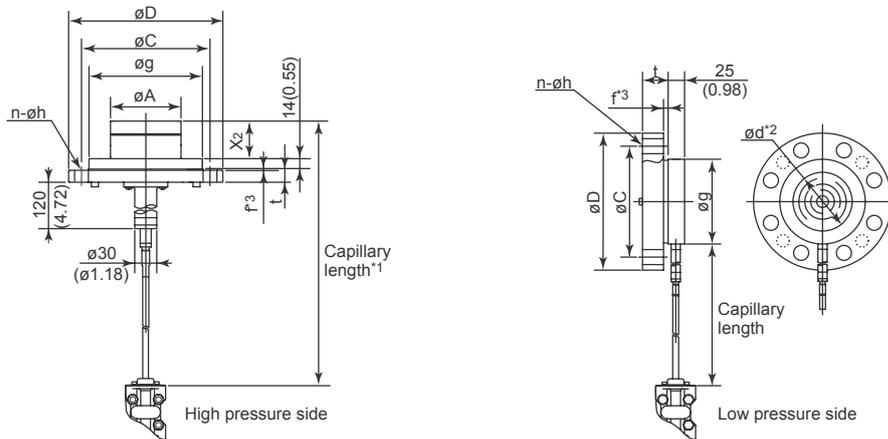
● Extended type



● Extension length (X₂)

Extension code	X ₂
2	50(1.97)
4	100(3.94)
6	150(5.91)

● Combination type for EJX118B



- *1: The specified capillary length includes the extension length (X₂) and the flange thickness (t).
- *2: Indicates inside diameter of gasket contact surface.
- *3: In case where process flange material is JIS S25C, value of f is 0.

F05E.ai

Unit: mm (Approx.: inch)

Process flange size: 4 inch (100 mm)

Code	Flange rating	øD	øC	øg	ød	t	f ³	Bolt holes		j	k	øA
								No.(n)	Dia.(øh)			
J1	JIS 10K	210 (8.27)	175 (6.89)	155 (6.10)	—	18 (0.71)	0	8	19 (0.75)	—	—	96±0.5 (3.78±0.02)
J2	JIS 20K	225 (8.86)	185 (7.28)	155 (6.10)	—	24 (0.94)	0	8	23 (0.91)	—	—	96±0.5 (3.78±0.02)
A1	ANSI class 150	228.6 (9.00)	190.5 (7.50)	155 (6.10)	—	23.9 (0.94)	1.6 (0.06)	8	19.1 (0.75)	—	—	96±0.5 (3.78±0.02)
A2	ANSI class 300	254 (10.00)	200.2 (7.88)	155 (6.10)	—	31.8 (1.25)	1.6 (0.06)	8	22.4 (0.88)	—	—	96±0.5 (3.78±0.02)
P1	JPI class 150	229 (9.02)	190.5 (7.50)	155 (6.10)	—	24 (0.94)	1.6 (0.06)	8	19 (0.75)	—	—	96±0.5 (3.78±0.02)
P2	JPI class 300	254 (10.0)	200.2 (7.88)	155 (6.10)	—	32 (1.26)	1.6 (0.06)	8	22 (0.87)	—	—	96±0.5 (3.78±0.02)
D2	DIN PN10/16	220 (8.66)	180 (7.09)	155 (6.10)	—	20 (0.79)	0	8	18 (0.71)	—	—	96±0.5 (3.78±0.02)
D4	DIN PN25/40	235 (9.25)	190 (7.48)	155 (6.10)	—	24 (0.94)	0	8	22 (0.87)	—	—	96±0.5 (3.78±0.02)

Process flange size: 3 inch (80 mm)

Code	Flange rating	øD	øC	øg	ød ²	t	f ³	Bolt holes		j ¹	k	øA
								No.(n)	Dia.(øh)			
J1	JIS 10K	185 (7.28)	150 (5.91)	130 (5.12)	90 (3.54)	18 (0.71)	0	8	19 (0.75)	25 (0.98)	27 (1.06)	71±0.5 (2.8±0.02)
J2	JIS 20K	200 (7.87)	160 (6.30)	130 (5.12)	90 (3.54)	22 (0.87)	0	8	23 (0.91)	25 (0.98)	27 (1.06)	71±0.5 (2.8±0.02)
J4	JIS 40K	210 (8.27)	170 (6.69)	130 (5.12)	90 (3.54)	32 (1.26)	0	8	23 (0.91)	25 (0.98)	27 (1.06)	—
A1	ANSI class 150	190.5 (7.50)	152.4 (6.00)	130 (5.12)	90 (3.54)	23.9 (0.94)	1.6 (0.06)	4	19.1 (0.75)	25 (0.98)	27 (1.06)	71±0.5 (2.8±0.02)
A2	ANSI class 300	209.6 (8.25)	168.1 (6.62)	130 (5.12)	90 (3.54)	28.5 (1.12)	1.6 (0.06)	8	22.4 (0.88)	25 (0.98)	27 (1.06)	71±0.5 (2.8±0.02)
A4	ANSI class 600	209.6 (8.25)	168.1 (6.62)	130 (5.12)	90 (3.54)	38.2 (1.50)	6.4 (0.25)	8	22.4 (0.88)	25 (0.98)	27 (1.06)	—
P1	JPI class 150	190 (7.48)	152.4 (6.00)	130 (5.12)	90 (3.54)	24 (0.94)	1.6 (0.06)	4	19 (0.75)	25 (0.98)	27 (1.06)	71±0.5 (2.8±0.02)
P2	JPI class 300	210 (8.27)	168.1 (6.61)	130 (5.12)	90 (3.54)	28.5 (1.12)	1.6 (0.06)	8	22 (0.87)	25 (0.98)	27 (1.06)	71±0.5 (2.8±0.02)
P4	JPI class 600	210 (8.27)	168.1 (6.61)	130 (5.12)	90 (3.54)	38.4 (1.51)	6.4 (0.25)	8	22 (0.87)	25 (0.98)	27 (1.06)	—
D2	DIN PN10/16	200 (7.87)	160 (6.30)	130 (5.12)	90 (3.54)	20 (0.79)	0	8	18 (0.71)	25 (0.98)	27 (1.06)	71±0.5 (2.8±0.02)
D4	DIN PN25/40	200 (7.87)	160 (6.30)	130 (5.12)	90 (3.54)	24 (0.94)	0	8	18 (0.71)	25 (0.98)	27 (1.06)	71±0.5 (2.8±0.02)
D5	DIN PN64	215 (8.46)	170 (6.69)	130 (5.12)	90 (3.54)	28 (1.10)	0	8	22 (0.87)	25 (0.98)	27 (1.06)	—

Process flange size: 2 inch (50 mm)

Code	Flange rating	øD	øC	øg	ød ²	t	f ³	Bolt holes		j	k
								No.(n)	Dia.(øh)		
J1	JIS 10K	155 (6.10)	120 (4.72)	100 (3.94)	61 (2.40)	16 (0.63)	0	4	19 (0.75)	25 (0.98)	27 (1.06)
J2	JIS 20K	155 (6.10)	120 (4.72)	100 (3.94)	61 (2.40)	18 (0.71)	0	8	19 (0.75)	25 (0.98)	27 (1.06)
J4	JIS 40K	165 (6.50)	130 (5.12)	100 (3.94)	61 (2.40)	26 (1.02)	0	8	19 (0.75)	25 (0.98)	27 (1.06)
A1	ANSI class 150	152.4 (6.00)	120.7 (4.75)	100 (3.94)	61 (2.40)	19.1 (0.75)	1.6 (0.06)	4	19.1 (0.75)	25 (0.98)	27 (1.06)
A2	ANSI class 300	165.1 (6.50)	127.0 (5.00)	100 (3.94)	61 (2.40)	22.4 (0.88)	1.6 (0.06)	8	19.1 (0.75)	25 (0.98)	27 (1.06)
A4	ANSI class 600	165.1 (6.50)	127.0 (5.00)	100 (3.94)	61 (2.40)	31.8 (1.25)	6.4 (0.25)	8	19.1 (0.75)	25 (0.98)	27 (1.06)
P1	JPI class 150	152 (5.98)	120.6 (4.75)	100 (3.94)	61 (2.40)	19.5 (0.77)	1.6 (0.06)	4	19 (0.75)	25 (0.98)	27 (1.06)
P2	JPI class 300	165 (6.50)	127.0 (5.00)	100 (3.94)	61 (2.40)	22.4 (0.88)	1.6 (0.06)	8	19 (0.75)	25 (0.98)	27 (1.06)
P4	JPI class 600	165 (6.50)	127.0 (5.00)	100 (3.94)	61 (2.40)	31.9 (1.26)	6.4 (0.25)	8	19 (0.75)	25 (0.98)	27 (1.06)
D2	DIN PN10/16	165 (6.50)	125 (4.92)	100 (3.94)	61 (2.40)	18 (0.71)	0	4	18 (0.71)	25 (0.98)	27 (1.06)
D4	DIN PN25/40	165 (6.50)	125 (4.92)	100 (3.94)	61 (2.40)	20 (0.79)	0	4	18 (0.71)	25 (0.98)	27 (1.06)
D5	DIN PN64	180 (7.09)	135 (5.31)	100 (3.94)	61 (2.40)	26 (1.02)	0	4	22 (0.87)	25 (0.98)	27 (1.06)

Process flange size: 1 1/2 inch (40 mm)

Code	Flange rating	øD	øC	øg	ød ²	t	f ³	Bolt holes		j	k
								No.(n)	Dia.(øh)		
J1	JIS 10K	140 (5.51)	105 (4.13)	86 (3.39)	44 (1.73)	16 (0.63)	0	4	19 (0.75)	27 (1.06)	30 (1.18)
J2	JIS 20K	140 (5.51)	105 (4.13)	86 (3.39)	44 (1.73)	18 (0.71)	0	4	19 (0.75)	27 (1.06)	30 (1.18)
J4	JIS 40K	160 (6.30)	120 (4.72)	86 (3.39)	44 (1.73)	24 (0.94)	0	4	23 (0.91)	27 (1.06)	30 (1.18)
A1	ANSI class 150	127 (5.00)	98.6 (3.88)	86 (3.39)	44 (1.73)	17.5 (0.69)	1.6 (0.06)	4	15.9 (0.63)	27 (1.06)	30 (1.18)
A2	ANSI class 300	155.4 (6.12)	114.3 (4.50)	86 (3.39)	44 (1.73)	20.6 (0.81)	1.6 (0.06)	4	22.4 (0.88)	27 (1.06)	30 (1.18)
A4	ANSI class 600	155.4 (6.12)	114.3 (4.50)	86 (3.39)	44 (1.73)	28.8 (1.13)	6.4 (0.25)	4	22.4 (0.88)	27 (1.06)	30 (1.18)
P1	JPI class 150	127 (5.00)	98.6 (3.88)	86 (3.39)	44 (1.73)	17.6 (0.69)	1.6 (0.06)	4	16 (0.63)	27 (1.06)	30 (1.18)
P2	JPI class 300	155 (6.10)	114.3 (4.50)	86 (3.39)	44 (1.73)	20.6 (0.81)	1.6 (0.06)	4	22 (0.87)	27 (1.06)	30 (1.18)
P4	JPI class 600	155 (6.10)	114.3 (4.50)	86 (3.39)	44 (1.73)	28.9 (1.14)	6.4 (0.25)	4	22 (0.87)	27 (1.06)	30 (1.18)

- *1: When wetted parts material code **UW** (titanium) is selected, value is 34 (1.34).
- *2: Indicates inside diameter of gasket contact surface.
- *3: In case where process flange material is JIS S25C, value of f is 0.

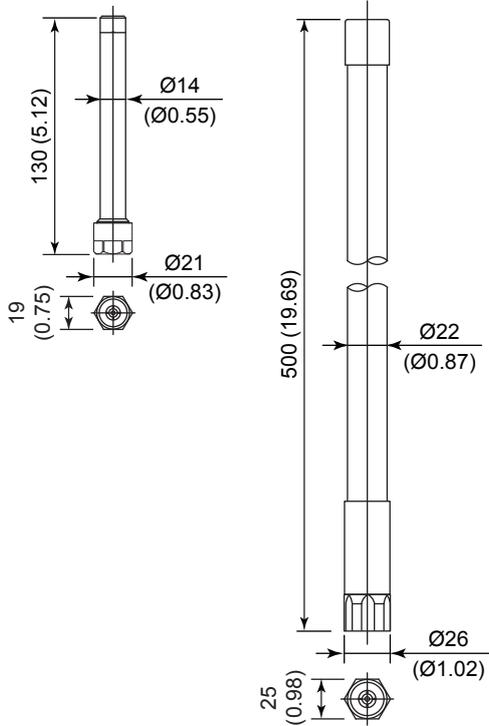
T14E.ai

● Antenna/Cable

Unit: mm (approx. inch)

□ Non-directional antenna

- Gain: 2 dBi • Gain: 6 dBi
- Part number: F9915KW Part number: F9915KY

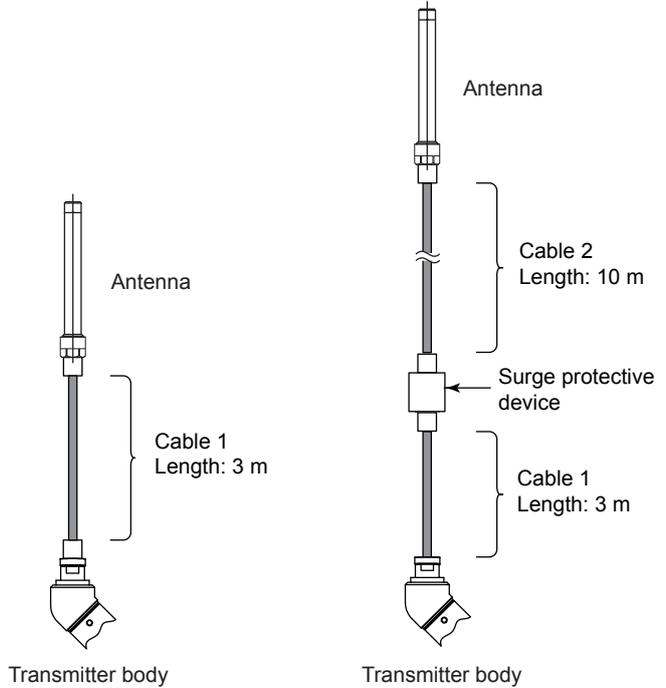


□ Antenna cable

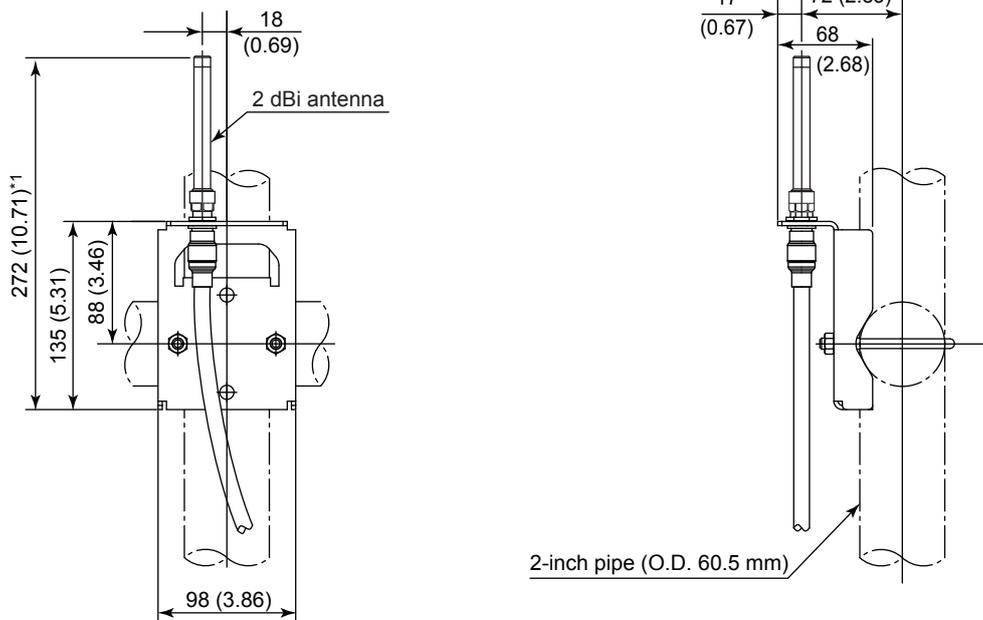
- Sheath diameter: 11.2 mm

<Without a surge protective device> <With a surge protective device>

Part number: F9915KU Part number: F9915KV



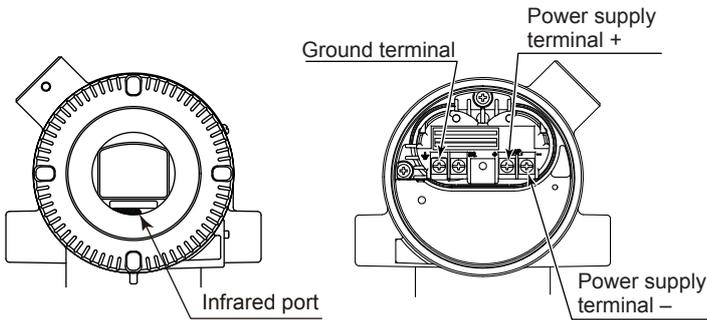
● Antenna mounting bracket



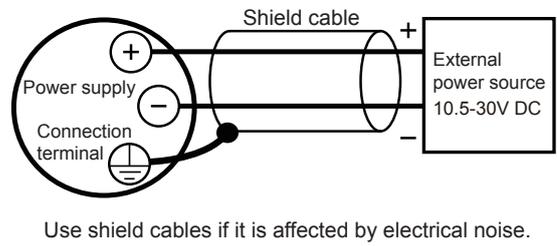
*1: When 6 dBi antenna is selected, the value is 642 mm (25.28 inch).

F06E.ai

- Infrared Configuration
- Terminal Configuration for the External Powered type



- Terminal Wiring Example for the External Power Source Terminal



F07E.ai

< Ordering Information >

Specify the following when ordering

1. Model, suffix codes, and option codes
2. Calibration range and unit
 - 1) Range
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 EJX118B is specified, LRV must be "0 (zero)".
 - 2) Unit
Specify only one unit from Table A.

Table A. Available Range Unit

EJX118B, EJX438B	mmH ₂ O, mmHg, Pa, kPa, MPa, mbar, bar, gf/cm ² , kgf/cm ² , inH ₂ O, inHg, ftH ₂ O, ftH ₂ O (68°F) or psi.
-----------------------------	---

3. Output mode
For choices, refer to Table B.
- For EJX118B, select Linear or Square root. Specify the same mode as that of "Display mode".
- For EJX438B, select Linear.
4. Display setting (SCALE)
 - 1) Display scale and unit
Specify either "0 to 100 %" or "Desired Range and Unit" for engineering unit scale:
- When "Desired Range and Unit" is specified, 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. When Square root Output mode in EJX118B is specified, LRV must be "0 (zero)".
 - 2) Display mode
For choices, refer to Table B.
- For EJX118B, select either Linear or Square root. Specify the same mode as that of Display mode.
- For EJX438B, select Linear.

Table B. Output mode and display mode

Output mode / Display mode	LINEAR	SQUARE ROOT
LINEAR	●	—
SQUARE ROOT	—	●: EJX118B —: EJX438B

●: Applicable, —: Not applicable

5. Tag Number (if required)
Engraving on the tag plate can be specified by a combination of uppercase letters, lowercase letters, numbers, "-" (hyphen), "_" (underscore)". Factory setting is blank unless otherwise specified. The specified letters are written on TAG_Name (16 letters) in the amplifier memory.

6. Software tag (if required)
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_NAME" (up to 16 letters) in the amplifier memory.
7. Network ID (if required)
Specify the number from 2 to 65535. When not specified, it will use 1 as the default.
8. Other Items related with options
 - 1) When option code /R is selected; [COMPENSATION TEMPERATURE]
Specify the process operating temperature for the compensation of zero shift by fill fluid density change. The specified value must be within the range from 80 degC to a maximum temperature applicable for the fill fluid. When combined with option code TF1, the value is limited to 150 degC. Note that the unit for this value is degC. Specifying of unit is unnecessary.

< Factory Setting >

Tag No.	Blank unless otherwise specified in order
Software tag	Blank unless otherwise specified in order
Network ID	'1' unless otherwise specified in order.
Static pressure display range (For EJX118B only)	'0 to 25 MPa' for M and H capsule, absolute value. Measuring low pressure side.

< Reference >

1. *DPHarp EJX*™ is a registered trademark of Yokogawa Electric Corporation.
 2. Teflon; Trademark of E.I. DuPont de Nemours & Co.
 3. Hastelloy; Trademark of Haynes International Inc.
- Other company names and product names used in this material are registered trademarks or trademarks of their respective owners.

< 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.