

LEVEL TRANSMITTER

DATA SHEET

FKE...4

The FCX-AII level transmitter accurately measures liquid level and transmits a proportional 4 to 20mA signal. The transmitter utilizes a unique micromachined capacitance silicon sensor with state-of-the-art microprocessor technology to provide exceptional performance and functionality.

FEATURES

1. High accuracy

0.2% accuracy for all calibrated spans is a standard feature for all models covering 0.32kPa {3.2mbar} range to 500kPa {5bar} high differential pressure range. 0.1% accuracy is available as option. Fuji's micro-capacitance silicon sensor assures this accuracy for all elevated or suppressed calibration ranges without additional adjustment.

2. Minimum environmental influence

The "Advanced Floating Cell" design which protects the pressure sensor against changes in temperature, static pressure, and overpressure substantially reduces total measurement error in actual field applications.

3. Fuji/HART® bilingual communications protocol and FOUNDATION™ fieldbus and Profibus™ compatibility

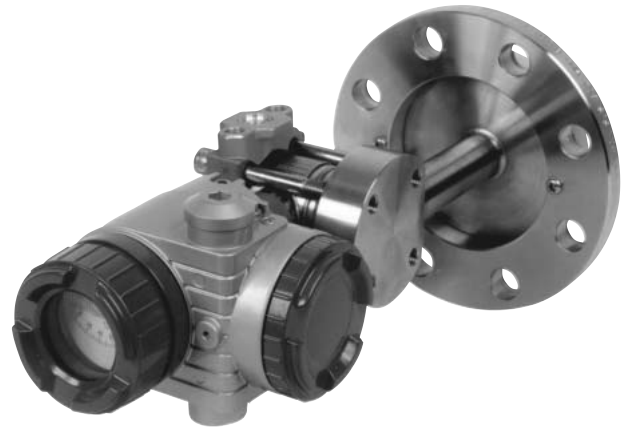
FCX-AII series transmitter offers bilingual communications to speak both Fuji proprietary protocol and HART®. Any HART® compatible devices can communicate with FCX-AII.

Further, by upgrading electronics FOUNDATION™ fieldbus and Profibus™ are also available.

4. Application flexibility

Various options that render the FCX-AII suitable for almost any process applications include:

- Analog indicator at either the electronics side or terminal side
- Full range of hazardous area approvals
- Built-in RFI filter and lightning arrester
- 5-digit LCD meter with engineering unit
- Stainless steel electronics housing
- Wide selection of materials
- High temperature, high vacuum service.



5. Programmable output Linearization Function

Output signal can be freely programmable. (Up to 14 compensated points at approximation.)

6. Burnout current flexibility (Under Scale: 3.2 to 3.8mA, Over Scale: 20.8 to 21.6mA)

Burnout signal level is adjustable using Model FXW Hand Held Communicator (HHC) to comply with NAMUR NE43.

7. Dry calibration without reference pressure

Thanks to the best combination of unique construction of mechanical parts (Sensor unit) and high performance electronics circuit (Electronics unit), reliability of dry calibration without reference pressure is at equal level as wet calibration.

SPECIFICATIONS

Functional specifications

Service: Liquid, gas, or vapour
Static pressure, span, and range limit:

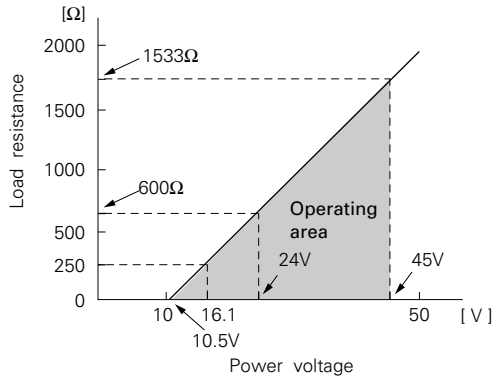
Type	Static pressure	Span limit [kPa] {m bar}		Range limit [kPa] {m bar}
		Min.	Max.	
FKE□□3	Up to flange rating	0.32	32	+/- 32
FKE□□5		{3.2}	{320}	{ +/- 320}
FKE□□6		{13}	{1300}	{ +/- 1300}
		5	500	+/- 500
		{50}	{5000}	{ +/- 5000}

Remark: To minimize environmental influence, span should be greater than 1/40 of the max. span in most applications.

- Lower limit of static pressure (vacuum limit) ;
 Silicone fill sensor: See Fig.1
 Fluorinated fill sensor: 66kPa abs (500mmHg abs) at temperature below 60 °C.
- The maximum span of each sensor can be converted to different units using factors as below.
 $1\text{MPa}=10^3\text{kPa}=10\text{bar}=10.19716\text{kgf/cm}^2=145.0377\text{psi}$
 $1\text{kPa}=10\text{mbar}=101.9716\text{mmH}_2\text{O}=4.01463\text{inH}_2\text{O}$

Overrange limit: To maximum static pressure limit
Output signal: 4 to 20mA DC with digital signal superimposed on the 4 to 20mA signal
Power supply: Transmitter operates on 10.5V to 45V DC at transmitter terminals.
 10.5V to 32V DC for the units with optional arrester.

Load limitations: see figure below



Note: For communication with HHC⁽¹⁾ (Model: FXW), min. of 250Ω required.

Hazardous locations:

Authorities	Flameproof
ATEX	Ex II 2 GD EEx d IIC T6 IP66/67 T85°C Tamb = -40°C to +65°C EEx d IIC T5 IP66/67 T100°C Tamb = -40°C to +85°C
Factory Mutual	Class I Div.1 Groups B, C, D T6 Type 4X Class II III Div.1 Groups E, F, G T6 Type 4X Tamb max = +60°C
CSA	Class I Div.1 Groups C, D Class II Div.1 Groups E, F, G Class III Div.1 Note) "Seal Not Required" enclosure is allowed.
TIIS	Ex do IIB+H ₂ T4 Tamb max = +55°C Maximum process temp. = +120°C
IECEx Scheme /SAA	Ex d IIC T5 IP66/67 pending Tamb = -40°C to +85°C Ex d IIC T6 IP66/67 pending Tamb = -40°C to +65°C

Authorities	Intrinsic safety																					
ATEX	Ex II 1 GD EEx ia IIC T5 Tamb = -40°C to +40°C EEx ia IIC T4 Tamb = -40°C to +80°C Entity Parameters: Ui=28V, li=93.3mA, Pi=0.66W, Ci=27nF (Without Arrester), Ci=34.2nF (With Arrester), Li=1.134mH																					
Factory Mutual	Class I II III Div.1 Groups A, B, C, D, E, F, G T4 Entity Type 4X <table border="1" style="margin-left: 20px;"> <thead> <tr> <th colspan="2">Model code</th> <th>Tamb</th> </tr> <tr> <th>9th digit</th> <th>13th digit</th> <th></th> </tr> </thead> <tbody> <tr> <td>A,B,D</td> <td>Y,G,H,J,S,T,K</td> <td>-40°C to +85°C</td> </tr> <tr> <td>L,P,1,2</td> <td>Y,G,H,J,S,T,K</td> <td>-20°C to +80°C</td> </tr> <tr> <td>Q,S,4,5</td> <td>Y,G,H,J,S,T,K</td> <td>-20°C to +60°C</td> </tr> <tr> <td>E,F,H</td> <td>Y,G,H,J,S,T,K</td> <td>-40°C to +60°C</td> </tr> <tr> <td>-</td> <td>W,A,D</td> <td>-10°C to +60°C</td> </tr> </tbody> </table> Entity Parameters: Vmax=42.4V, Imax=113mA, Pi=1W, Ci=34.2nF, Li=1.134mH	Model code		Tamb	9th digit	13th digit		A,B,D	Y,G,H,J,S,T,K	-40°C to +85°C	L,P,1,2	Y,G,H,J,S,T,K	-20°C to +80°C	Q,S,4,5	Y,G,H,J,S,T,K	-20°C to +60°C	E,F,H	Y,G,H,J,S,T,K	-40°C to +60°C	-	W,A,D	-10°C to +60°C
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E,F,H	Y,G,H,J,S,T,K	-40°C to +60°C																				
-	W,A,D	-10°C to +60°C																				
CSA	Class I Div.1 Groups A, B, C, D Class II Div.1 Groups E, F, G Class III Div.1 Temp Code T4 Tamb max = +40°C Temp Code T3C Tamb max = +85°C Entity Parameters: Vmax=28V, Imax=93mA, Ci=27nF (Without Arrester), Ci=34.2nF (With Arrester), Li=1.4mH																					
TIIS	Ex ia IIC T4 Tamb max = +60°C Entity Parameters: Ui=28V, li=94.3mA, Pi=0.66W, Ci=32.6nF, Li=1.134mH																					
IECEx Scheme /SAA	Ex ia IIC T4 IP66/67 Tamb = -40°C to +70°C Ex ia IIC T5 IP66/67 Tamb = -40°C to +50°C Entity Parameters: Ui=28V, li=93.3mA, Pi=0.66W, Ci=0.033μF, Li=1.034mH																					

Authorities	Type n Nonincendive																					
ATEX	Ex II 3 GD EEx nL IIC T5 Tamb = -40°C to +40°C EEx nL IIC T4 Tamb = -40°C to +80°C Specific Parameters: Model without arrester: Ui=42.4V, Ii=113mA, Pi=1W, Ci=27nF, Li=1.134mH Model with arrester: Ui=32V, Ii=113mA, Pi=1W, Ci=34.2nF, Li=1.134mH EEx nAL IIC T5 Tamb = -40°C to +40°C EEx nAL IIC T4 Tamb = -40°C to +80°C Specific Parameters: Model without arrester: Umax=42.4V, Imax=113mA, Pmax=1W Model with arrester: Umax=32V, Imax=113mA, Pmax=1W																					
Factory Mutual	Class I II III Div.2 Groups A, B, C, D, F, G T4 Entity Type 4X <table border="1"> <thead> <tr> <th colspan="2">Model code</th> <th>Tamb</th> </tr> <tr> <th>9th digit</th> <th>13th digit</th> <th></th> </tr> </thead> <tbody> <tr> <td>A,B,D</td> <td>Y,G,H,J,S,T,K</td> <td>-40°C to +85°C</td> </tr> <tr> <td>L,P,1,2</td> <td>Y,G,H,J,S,T,K</td> <td>-20°C to +80°C</td> </tr> <tr> <td>Q,S,4,5</td> <td>Y,G,H,J,S,T,K</td> <td>-20°C to +60°C</td> </tr> <tr> <td>E,F,H</td> <td>Y,G,H,J,S,T,K</td> <td>-40°C to +60°C</td> </tr> <tr> <td>-</td> <td>W,A,D</td> <td>-10°C to +60°C</td> </tr> </tbody> </table>	Model code		Tamb	9th digit	13th digit		A,B,D	Y,G,H,J,S,T,K	-40°C to +85°C	L,P,1,2	Y,G,H,J,S,T,K	-20°C to +80°C	Q,S,4,5	Y,G,H,J,S,T,K	-20°C to +60°C	E,F,H	Y,G,H,J,S,T,K	-40°C to +60°C	-	W,A,D	-10°C to +60°C
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E,F,H	Y,G,H,J,S,T,K	-40°C to +60°C																				
-	W,A,D	-10°C to +60°C																				
CSA	Class I Div.2 Groups A, B, C, D Class II Div.2 Groups E, F, G Class III Div.2 Temp Code T4 Tamb max = +40°C Temp Code T3C Tamb max = +85°C Entity Parameters: Vmax=28V, Ci=27nF (Without Arrester), Ci=34.2nF (With Arrester), Li=1.4mH																					
TIIS	-																					
IECEX Scheme /SAA	-																					

Zero/span adjustment:

Zero and span are adjustable from the HHC⁽¹⁾. Zero and span are also adjustable externally from the adjustment screw (Span adjustment is not available with 9th digit code "L, P, Q, S").

Damping:

Adjustable from HHC or local adjustment unit with LCD display. The time constant is adjustable between 0.12 to 32 seconds.

Zero elevation/suppression:

- 100% to + 100% of URL

Normal/reverse action:

Selectable from HHC⁽¹⁾

Indication:

Analog indicator or 5-digit LCD meter, as specified.

Burnout direction: Selectable from HHC⁽¹⁾

If self-diagnostic detect transmitter failure, the analog signal will be driven to either "Output Hold", "Output Overscale" or "Output Underscale" modes.

"Output Hold":

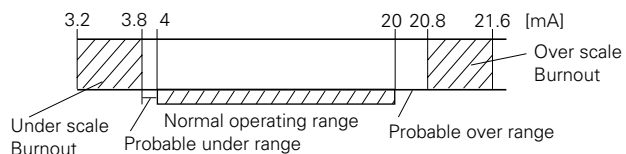
Output signal is hold as the value just before failure happens.

"Output Overscale":

Adjustable within the range 20.8mA to 21.6mA from HHC⁽¹⁾

"Output Underscale":

Adjustable within the range 3.2mA to 3.8mA from HHC⁽¹⁾



Loop-check output:

Transmitter can be configured to provide constant signal 3.8mA through 21.6mA by HHC⁽¹⁾.

Temperature limit:

Ambient: - 40 to + 85°C
 (- 20 to + 80°C for LCD indicator)
 (- 40 to + 60°C for arrester option)
 (- 10 to + 60°C for fluorinated oil fill transmitter)
 For explosionproof units (flameproof or intrinsic safety), ambient temperature must be within the limits specified in each standard.

Process:

	Code in the 13th digit of "Code symbols"	Process temperature	Lower limit of static press
Fluorinated oil	W, A and D	-20 to 120°C	Atmospheric pressure
Silicone oil	H	-15 to 250°C	2.7kPa abs (20.3mmHg abs)
	J	85 to 300°C	
	Y and G	-40 to 120°C	0.13kPa abs (0.98mmHg abs)
	S	-15 to 250°C	
	T	85 to 300°C	
	K	-15 to 150°C	

Low pressure side contact liquid temperature on transmitter of Code H, J, S, T is 120°C or lower. Low pressure side contact liquid temperature of Code K is 85°C or lower

Storage: - 40 to + 90°C

Humidity limit: 0 to 100% RH

Communication: With HHC⁽¹⁾ (Model FXW, consult Data Sheet No. EDS8-47), following information can be remotely displayed or reconfigured.

Note: HHC's version must be more than 6.0 (or FXW □□□□1-□3), for FCX-A II.

Items	Display	Set
Tag No.	v	v
Model No.	v	v
Serial No.	v	—
Engineering unit	v	v
Range limit	v	—
Measuring range	v	v
Damping	v	v
Output mode	v	—
Burnout direction	v	v
Calibration	v	v
Output adjust	—	v
Data	v	—
Self diagnoses	v	—
Printer	—	—
External switch lock	v	v
Transmitter display	v	v
Linearize	v	v
Rerange	v	v

(Note) (1) HHC: Hand Held Communicator

Programmable output linearization function:

Output signal can be characterized with "14 points linear approximation function" from HHC⁽¹⁾.

EMC Conformity: EN61326 CE

Performance specifications

Reference conditions, silicone oil fill, 316SS isolating diaphragms, 4-20 mA analog output in linear mode.

Accuracy rating: (including linearity, hysteresis, and repeatability)

(Standard)

For spans greater than 1/10 of URL: ±0.2% of span
For spans below 1/10 of URL:

$$\pm \left(0.1 + 0.1 \frac{0.1 \times \text{URL}}{\text{Span}} \right) \% \text{ of span}$$

(Option) (Code: 21th digit H, K)

For span greater than 1/10 of URL: 0.1% of span
For span below 1/10 of URL:

$$\pm \left(0.05 + 0.05 \frac{0.1 \times \text{URL}}{\text{Span}} \right) \% \text{ of span}$$

Stability: ±0.2% of upper range limit (URL) for 3 years.

Temperature effect:

Effects per 28°C change between the limits of - 40°C and + 85°C

(Standard) Zero shift: ±0.35% of URL

Total effect: ±0.5% of URL

(Option) (Code: 21th digit J, K)

Zero shift: ±0.3% of URL

Total effect: ±0.4% of URL

Static pressure effect:

Zero shift: ±0.2% of URL / 1MPa

Span shift: - 0.2% of calibrated span / 1MPa

Overrange effect: Zero shift; ±0.1% of URL for flange rating pressure

Supply voltage effect:

Less than 0.005% of calibrated span per 1V

RFI effect: Less than 0.2% of URL for the frequencies of 20 to 1000MHz and field strength 30 V/m when electronics covers on.

(Classification: 2-abc: 0.2% span per SAMA PMC 33.1)

Update period: 120 msec *)

Step response: (without electrical damping)

Range code	Time constant *)	Dead time *)
"3"	0.55 s	0.2 s
"5" and "6"	0.3 s	

*) Faster response is available as option (maximum update rate : 25 times per second)

Mounting position effect:

Zero shift, less than 0.3kPa(3m bar) for a 10° tilt in any plane. (No extension)

No effect on span.

This error can be corrected by adjusting zero.

Dielectric strength:

500V AC, 50/60Hz 1 min., between circuit and earth.

Insulation resistance:

More than 100MΩ at 500V DC.

Turn-on time: 4 sec

Internal resistance for external field indicator:

12Ω or less

Physical specifications

Electrical connections:

G1/2, 1/2-14 NPT, Pg13.5, or M20 x 1.5 conduit, as specified.

And 1-conduit or 2-conduit, as specified.

Process connections:

LP side: 1/4-18 NPT or Rc1/4.

HP side: ANSI, DIN, or JIS raised face flange. See OUTLINE DIAGRAM for detailed dimensions.

Refer to "Code symbols"

Process-wetted parts material:

Material code (7th digit in "Code symbols")	LP side			HP side
	Process cover	Diaphragm	Wetted sensor body	Diaphragm & flange face
V	316 stainless (*1)	316L stainless	316 stainless	316L stainless
J	316 stainless (*1)	316L stainless	316 stainless	316L stainless steel +Au coating
C	316 stainless (*1)	316L stainless	316 stainless	Hastelloy-C
D	316 stainless (*1)	316L stainless	316 stainless	Monel
E	316 stainless (*1)	316L stainless	316 stainless	Tantalum
H	316 stainless (*1)	Hastelloy-C	Hastelloy-C lining	Hastelloy-C
M	316 stainless (*1)	Monel	Monel lining	Monel
T	316 stainless (*1)	Tantalum	Tantalum lining	Tantalum
B	Hastelloy-C	Hastelloy-C	Hastelloy-C lining	Hastelloy-C
L	Monel lining	Monel	Monel lining	Monel
U	Tantalum	Tantalum	Tantalum lining	Hastelloy-C
P	316 stainless (*1)	316L stainless	316 stainless	Tantalum
R	316 stainless (*1)	316L stainless	316 stainless	Zirconium

Note: (*1) SCS14A per JIS G 5121 (equivalent CF8M per ASTM A351/A351M)

Remark: Sensor O-rings: Viton O-ring and teflon gasket selectable.

Non-wetted parts material:

Electronics housing: Low copper die-cast aluminum alloy finished with epoxy/polyurethane double coating (standard), or 316 stainless steel (SCS14A per JIS G5121), as specified.

Bolts and nuts: Cr-Mo alloy (standard) or 304 stainless steel

Fill fluid: Silicone oil (standard) or fluorinated oil

Mounting flange: 304 stainless steel or Carbon steel, as specified

Environmental protection:

IEC IP67 and NEMA 6 / 6P

Flange mounting: See drawings

Mass{weight}: Transmitter approximately 13kg without options.

Add; 0.5kg for mounting bracket

0.8kg for indicator option

4.5kg for stainless steel housing option

1.0kg per 50mm extension of diaphragm

Optional features

- Indicator:** A plug-in analog indicator (2.5% accuracy) can be housed in the electronics compartment or in the terminal box of the housing.
An optional 5-digit LCD meter with engineering unit is also available.
- Local adjustment unit with LCD display:** An optional 5-digit LCD meter with Zero/ Span adjustment function, loop-check function and damping adjustment function, is available.
- Arrester:** A built-in arrester protects the electronics from lightning surges.
Lightning surge immunity:
4kV ($1.2 \times 50\mu\text{s}$)
- Oxygen service:** Special cleaning procedures are followed throughout the process to maintain all process wetted parts oil-free.
The fill fluid is fluorinated oil.
- Chlorine service:** Oil-free procedures as above. Includes fluorinated oil for fill.
- Degreasing:** Process-wetted parts are cleaned, but the fill fluid is standard silicone oil. Not for use on oxygen or chlorine measurement.
- Vacuum service:** Special silicone oil and filling procedure are applied. See Fig.1 and Fig.2
- Optional tag plate:** An extra stainless steel tag with customer tag data is wired to the transmitter.
- Coating of cell:** Cell's surface is finished with epoxy/polyurethane double coating.
Specify if environment is extremely corrosive.

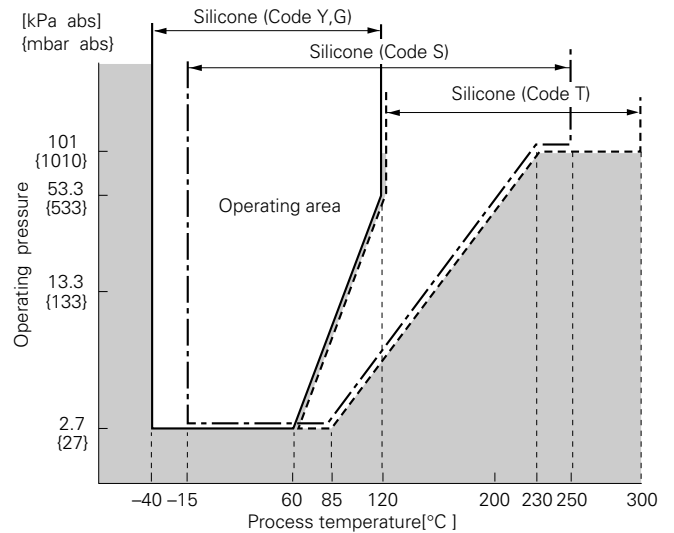


Fig. 1 Relation between process temperature and operating pressure

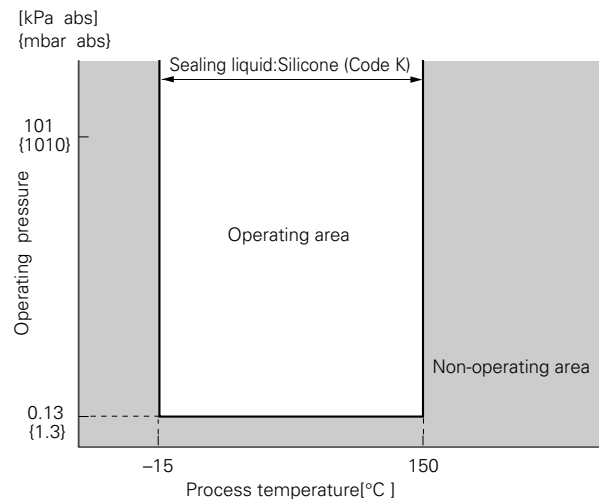


Fig. 2 Relation between process temperature and operating pressure

ACCESSORIES

- Oval flanges:** (Model FFP, refer to Data Sheet No. EDS6-10)
Converts process connection to 1/2-14 NPT or to Rc1/2; in carbon steel or in 316 stainless steel.
- Hand held communicator:** (Model FXW, refer to Data Sheet No. EDS 8-47)
- Z/S board:** Parts No.=ZZPFCX4-A070
When Z/S board is mounted on the FCX-AII amplifier unit, external adjustment screw will be available for zero and span adjustment.

The product conforms to the requirements of the Electromagnetic compatibility Directive 94/9/EC as detailed within the technical construction file number TN513035. The applicable standards used to demonstrate compliance are :

EMI (Emission) EN61326 : 1997
Class A (standard for Industrial Location)

Frequency range MHz	Limits	Reference standard
30 to 230	40dB (µV/m) quasi peak, measured at 10m distance	CISPR16-1 and CISPR16-2
230 to 1000	47dB (µV/m) quasi peak, measured at 10m distance	

EMI (Immunity) EN61326: 1997
Annex A (standard for Industrial Location)

Phenomenon	Test value	Basic standard	Performance criteria
Electrostatic discharge	4kV (Contact) 8kV (Air)	EN61000-4-2	B
Electromagnetic field	80 to 1000MHz 10V/m 80%AM (1kHz)	EN61000-4-3	A
Rated power frequency magnetic field	30A/m 50Hz	EN61000-4-8	A
Burst	2kV 5kHz	EN61000-4-4	B
Surge	1.2µs/50µs 1kV (Line to line) 2kV (Line to ground)	EN61000-4-5	B
Conducted RF	0.15 to 80MHz 3V 80%AM (1kHz)	EN61000-4-6	A

Note) Definition of performance criteria

- A: During testing, normal performance within the specification limits.**
- B: During testing, temporary degradation, or loss of function or performance which is self-recovering.**

ORDERING INFORMATION

When ordering this instrument, specify:

1. CODE SYMBOLS
2. Measuring range
3. Output orientation (burnout direction) when abnormality is occurred in the transmitter.
 Hold / Overscale (21.6mA) / Underscale (3.2mA).
 Unless otherwise specified, output hold function is supplied.
4. Indication method (indicated value and unit) in case of the actual scale (code D, H, P, S on 9th digit).
5. TAG No. (up to 26 alphanumerical characters), if required.

CODE SYMBOLS

Digit	Description	Note	Digit No. of code																		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	21			
4	<Connections>		F	K	E					4											
	Process connection	Oval flange screw	Conduit connection	} Combination with 12th digit code "C, E, P, Q" are not available.															A		
	Rc1/4	7/16-20UNF	G 1/2 (x1)																B		
	1/4-18NPT	7/16-20UNF	1/2-14NPT (x1)																C		
	1/4-18NPT	M10	Pg13.5 (x1)																D		
	1/4-18NPT	M10	M20x1.5 (x1)																E		
	1/4-18NPT	7/16-20UNF	Pg13.5 (x1)																S		
	Rc1/4	7/16-20UNF	G 1/2 (x2)																T		
	1/4-18NPT	7/16-20UNF	1/2-14NPT (x2)																V		
	1/4-18NPT	M10	Pg13.5 (x2)																W		
1/4-18NPT	M10	M20x1.5 (x2)																X			
1/4-18NPT	7/16-20UNF	Pg13.5 (x2)																			
5	<Mounting flange>																				
	Material	Size and rating																			
	304 stainless steel	JIS 10K 80A																	0		
		JIS 10K 100A																	1		
		JIS 30K 80A																	2		
		JIS 30K 100A																	3		
		ANSI/JPI 150LB 3"																	4		
		ANSI/JPI 150LB 4"																	5		
		ANSI/JPI 300LB 3"																	6		
		ANSI/JPI 300LB 4"																	7		
		DIN PN40 DN80																	8		
		DIN PN16 DN100																	9		
	Carbon steel	JIS 20K 80A																	M		
		ANSI/JPI 600LB 3B																	R		
		JIS 10K 80A																	A		
		JIS 10K 100A																	B		
		JIS 30K 80A																	C		
		JIS 30K 100A																	D		
		ANSI/JPI 150LB 3"																	E		
		ANSI/JPI 150LB 4"																	F		
ANSI/JPI 300LB 3"																	G				
ANSI/JPI 300LB 4"																	H				
316 stainless steel	DIN PN40 DN80																	J			
	DIN PN16 DN100		Note 1															K			
	JIS 10K 80A																	S			
	ANSI/JPI 150LB 3B																	T			
	ANSI/JPI 150LB 4B																	U			
	ANSI/JPI 300LB 3B																	V			
	ANSI/JPI 300LB 4B																	W			
	ANSI/JPI 600LB 3B																	X			
	6																				
		0.32 ---- 32																	3		
{3.2 ---- 320}																	5				
1.3 ---- 130																	6				
{13 ---- 1300}																					
5 ---- 500																					
{50 ---- 5000}																					
7	<Material>	LP side		HP side																	
	Process cover	Diaphragm	Wetted sensor body	Diaphragm and flange face																	
	316 stainless steel	316L stainless steel	316 stainless steel	316L stainless steel																	V
	316 stainless steel	316L stainless steel	316 stainless steel	Hastelloy-C																	C
	316 stainless steel	316L stainless steel	316 stainless steel	Monel																	D
	316 stainless steel	316L stainless steel	316 stainless steel	Tantalum																	E
	316 stainless steel	316L stainless steel	316 stainless steel	Diaphragm:																	J
				316L stainless steel																	
				+Au coating																	
				Flange face:																	
				316 stainless steel																	
	316 stainless steel	Hastelloy-C	Hastelloy-C lining	Hastelloy-C																	H
	316 stainless steel	Monel	Monel lining	Monel																	M
	316 stainless steel	Tantalum	Tantalum lining	Tantalum																	T
	Hastelloy-C lining	Hastelloy-C	Hastelloy-C lining	Hastelloy-C																	B
	Monel lining	Monel	Monel lining	Monel																	L
Tantalum lining	Tantalum	Tantalum lining	Tantalum																	U	
316 stainless steel	316L stainless steel	316 stainless steel	Titanium																	P	
316 stainless steel	316L stainless steel	316 stainless steel	Zirconium		Note 2, 3															R	

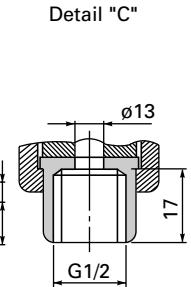
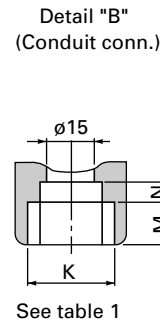
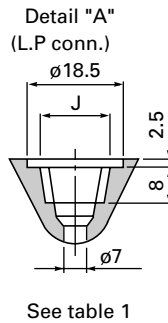
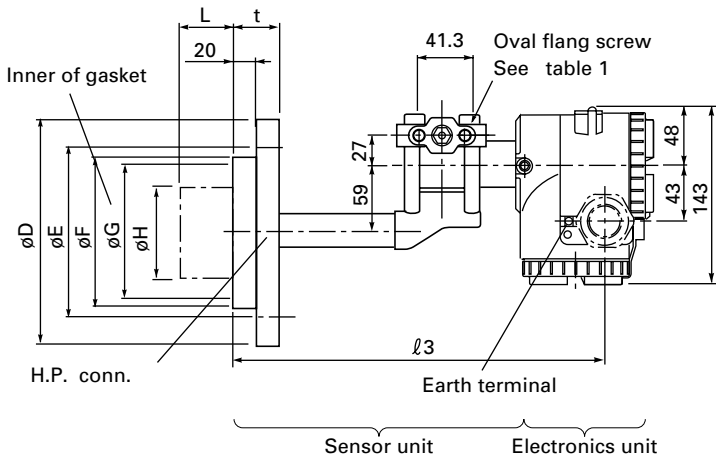
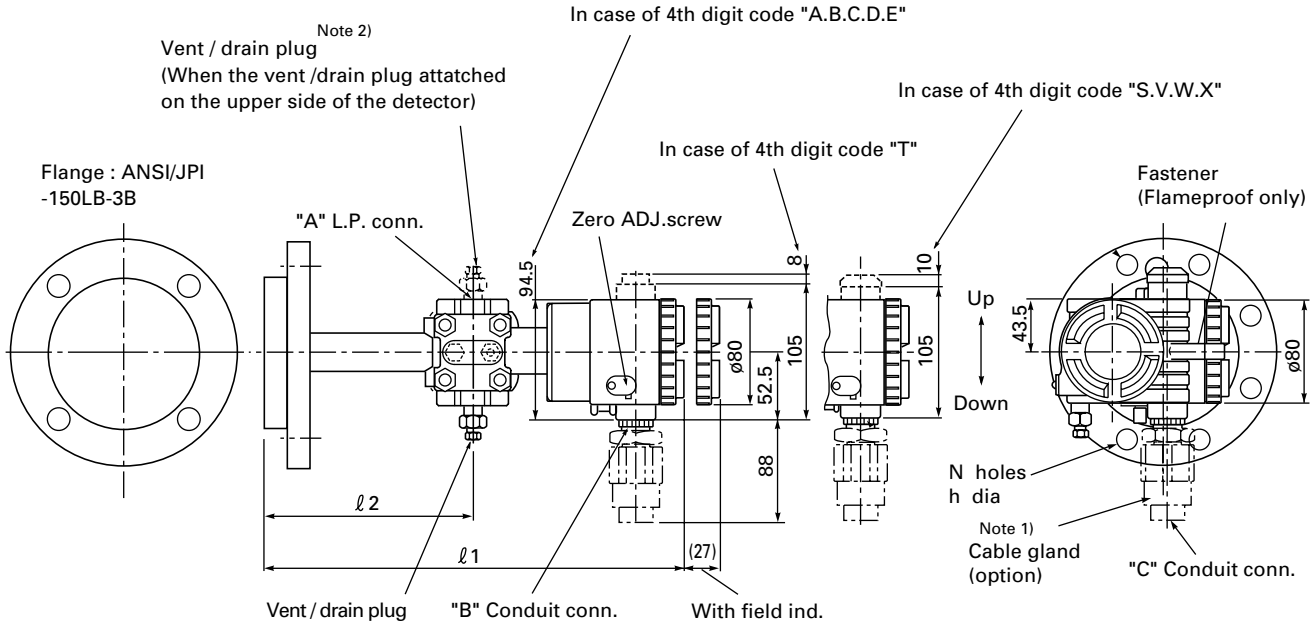
Note 1: (*1) 100: 1 turn down is possible, but should be used at a span greater than 1/40 of the maximum span for better performance.
 Note 2: (*2) Material Code R; 6th digit code "6" is not available.
 Note 3: (*3) 5th digit code "0, 2, 4, 6, 8, A, C, E, G, J" are available.

Digit	Description	Note	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	21	← Digit No. of code
15	<Bolt/nut> (* 6) Cr-Mo alloy hexagon socket head cap screw/carbon steel nut Cr-Mo alloy hexagon bolt/nut 304 stainless steel bolt /304 stainless steel nut	Note 6	F	K	E					4									
21	<Other options> (* 7) High accuracy type Instruction manual attached Low temperature effect type Instruction manual attached H+J Instruction manual attached ----- Instruction manual unattached High accuracy type Instruction manual unattached Low temperature effect type Instruction manual unattached T+U Instruction manual unattached	Note 7																	
																			H J K L T U V

Note 6: (*6) In case of tropical use, select stainless bolts and nuts.
 Note 7: (*7) If other option is not necessary, 21st digit code is blank.
 In case of 21st digit code is blank, instruction manual attached.

OUTLINE DIAGRAM (Unit:mm)

< 7digit code : Without "B", "L" and "U" >



11TH DIGIT CODE	L (mm)	MASS APPROX. (kg)	l1	l2	l3
Y	0	9.5 ~ 13	333	160	296
A E	50	10 ~ 17	327	154	290
B F	100	10.5 ~ 17.5			
C G	150	11 ~ 18			
D H	200	11.5 ~ 18.5			

5th digit of the code symbols	øD	øE	øF	øG	øH	t	P	N-øh	Flange
0, A, S	185	150	126	100	73	38	116	8-19	JIS 10K 80A
M	200	160	126	100	73	42	116	8-23	JIS 20K 80A
2, C	210	170	126	100	73	48	116	8-23	JIS 30K 80A
1, B	210	175	151	103	96	38	141	8-19	JIS 10K 100A
3, D	240	195	151	103	96	52	141	8-25	JIS 30K 100A
4, E, T	191	152.5	126	100	73	44	116	4-20	ANSI 150LB 3B
6, G, V	210	168	126	100	73	49	116	8-23	ANSI 300LB 3B
R, X	210	168	126	100	73	52	116	8-23	ANSI 600LB 3B
5, F, U	229	190.5	151	103	96	44	141	8-20	ANSI 150LB 4B
7, H, W	254	200	151	103	96	52	141	8-23	ANSI 300LB 4B
8, J	200	160	126	100	73	44	116	8-18	DIN PN40 DN80
9, K	220	180	151	103	96	40	141	8-18	DIN PN16 DN100

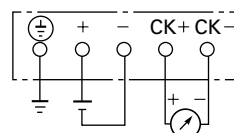
4th digit of the code symbols	Conduit conn.			Press.conn.	Oval flange screw
	K	M	N	J	
A, S	G1/2	17	8	Rc1/4	7/16-20UNF SCREW DEPTH15
B, T	1/2-14NPT	18	5	1/4-18NPT	7/16-20UNF SCREW DEPTH15
C, V	Pg13.5	8	4.5	1/4-18NPT	M10 SCREW DEPTH15
D, W	M20×1.5	16	5	1/4-18NPT	M10 SCREW DEPTH15
E, X	Pg13.5	8	4.5	1/4-18NPT	7/16-20UNF SCREW DEPTH15

Table 1

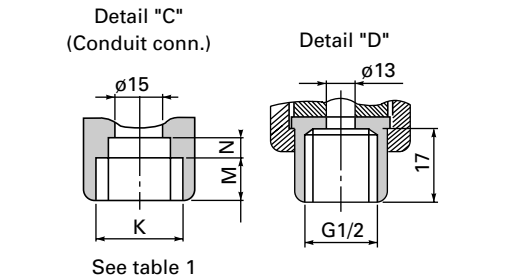
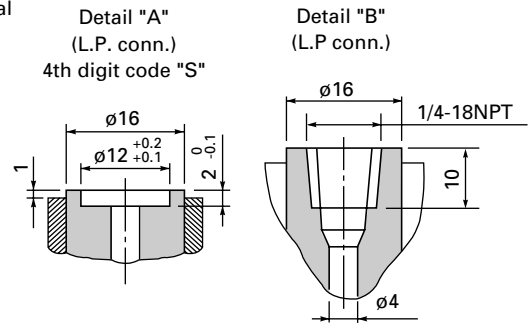
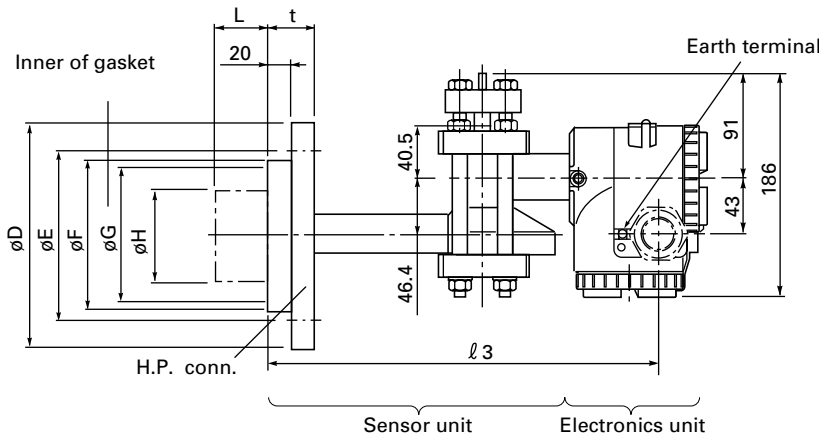
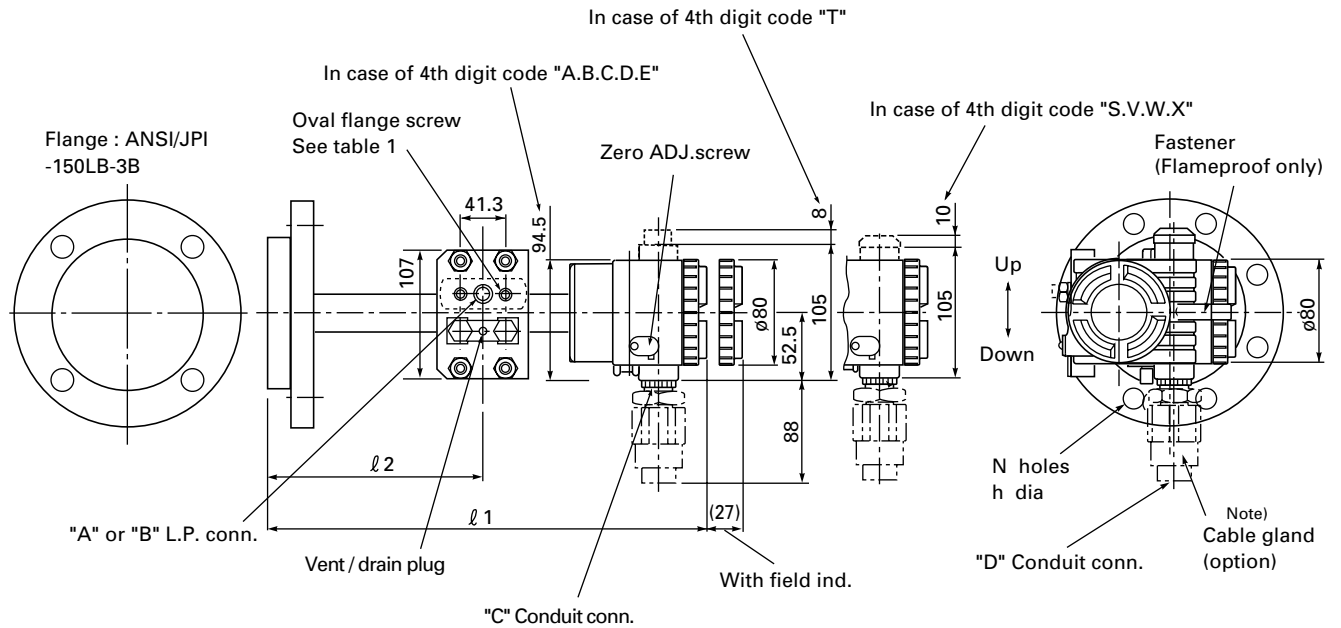
Note 1) Cable gland is supplied in case of flameproof packing type. ø11 cable is suitable.

Note 2) The pressure connector is located on the down side surface of the detector, when the vent/drainplug is attached on the upper side of the detector (when the 21th digit of the code symbols: c, e or d).

CONNECTION DIAGRAM

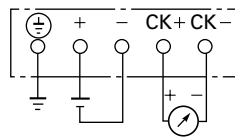


< 7th digit code : "B", "L" or "U" >



11th digit code	L (mm)	Mass apprx. (kg)	l1	l2	l3
Y	0	11.5 ~ 15	323	150	286
A	50	12 ~ 19	317	144	290
B	100	12.5 ~ 19.5			
C	150	13 ~ 20			
D	200	13.5 ~ 20.5			

CONNECTION DIAGRAM



5th digit of the code symbols	øD	øE	øF	øG	øH	t	P	N-øh	Flange
0, A, S	185	150	126	100	73	38	116	8-19	JIS 10K 80A
M	200	160	126	100	73	42	116	8-23	JIS 20K 80A
2, C	210	170	126	100	73	48	116	8-23	JIS 30K 80A
1, B	210	175	151	103	96	38	141	8-19	JIS 10K 100A
3, D	240	195	151	103	96	52	141	8-25	JIS 30K 100A
4, E, T	191	152.5	126	100	73	44	116	4-20	ANSI 150LB 3B
6, G, V	210	168	126	100	73	49	116	8-23	ANSI 300LB 3B
R, X	210	168	126	100	73	52	116	8-23	ANSI 600LB 3B
5, F, U	229	190.5	151	103	96	44	141	8-20	ANSI 150LB 4B
7, H, W	254	200	151	103	96	52	141	8-23	ANSI 300LB 4B
8, J	200	160	126	100	73	44	116	8-18	DIN PN40 DN80
9, K	220	180	151	103	96	40	141	8-18	DIN PN16 DN100

4th digit of the code symbols	Conduit conn.			Oval flange screw
	K	M	N	
A, S	G1/2	17	8	7/16-20UNF Screw depth 10
B, T	1/2-14NPT	16	5	7/16-20UNF Screw depth 10
C, V	Pg13.5	8	4.5	M10 Screw depth 10
D, W	M20×1.5	16	5	M10 Screw depth 10
E, X	Pg13.5	8	4.5	7/16-20UNF Screw depth 10

Table 1

Note) Cable gland is supplied in case of flameproof packing type.
ø11 cable is suitable.

⚠ Caution on Safety

*Before using this product, be sure to read its instruction manual in advance.

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