

# FCX – A SERIES DIFFERENTIAL PRESSURE TRANSMITTER

## DATA SHEET

FHC, FKC...2

The FCX –A differential pressure transmitter accurately measures differential pressure, liquid level or gauge pressure and transmits a proportional 4 to 20mA signal. The transmitter utilizes a unique micromachined capacitive silicon sensor with state-of-the-art microprocessor technology to provide exceptional performance and functionality.



## FEATURES

- High accuracy**  
0.1% accuracy for all calibrated spans is a standard feature for all DP models covering 0.1kPa(1m bar) draft range to 3000kPa(30 bar) high differential. Fuji's micro-capacitance silicon sensor assures this accuracy for all elevated or suppressed calibration ranges without additional adjustment.
- 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.
- Smart / Traditional convertible**  
Fuji micro-electronics manufacturing technology offers free selection of Smart / Traditional transmitters. A small plug-in communication module upgrades your model FHC to smart type model FKC, which has full remote communication capabilities. A Hand Held Communicator (HHC), model FXW can remotely display or reconfigure all transmitter parameters at any point on the loop without affecting the transmitter signal.
- Fuji/HART bilingual communication module**  
The communication module is "bilingual" to speak both Fuji proprietary protocol and HART. Any HART compatible devices can communicate with FCX-A/C series transmitters.
- Application flexibility**  
Example options that render the FCX –A suitable for almost any process applications includes.
  - Analog indicator at either the electronics side or terminal side
  - Full range of hazardous area approvals
  - Built-in RFI filter and lightning arrestor
  - 4  $\frac{1}{2}$  digits LCD meter
  - Stainless steel electronics housing
  - Wide selection of materials

## SPECIFICATIONS

### Functional specifications

**Type:**  
Model FHC: 4 to 20mA, Traditional type  
Model FKC: 4 to 20mA with digital signal, Smart type

**Service:** Liquid, gas, or vapour

**Static pressure, span, and range limit:**

Type	Static pressure [MPa] (bar)	Span limit [kPa] (m bar)			Range limit [kPa] (m bar)
		Min.		Max. FHC/FKC	
		FHC	FKC		
F□C□11	-0.1 to + 3.2 {-1 to + 32}	0.1 { 1 }	0.1 { 1 }	1 { 10 }	+/- 1 { +/- 10 }
F□C□22	-0.1 to + 10 {-1 to + 100}	0.6 { 6 }	0.1 { 1 }	6 { 60 }	+/- 6 { +/- 60 }
F□C□23	-0.1 to + 10 {-1 to + 100}	3.2 { 32 }	0.32 { 3.2 }	32 { 320 }	+/- 32 { +/- 320 }
F□C□24	-0.1 to + 10 {-1 to + 100}	6.4 { 64 }	0.64 { 6.4 }	64 { 640 }	+/- 64 { +/- 640 }
F□C□25	-0.1 to + 10 {-1 to + 100}	13 { 130 }	1.3 { 13 }	130 { 1300 }	+/- 130 { +/- 1300 }
F□C□26	-0.1 to + 10 {-1 to + 100}	50 { 500 }	5 { 50 }	500 { 5000 }	+/- 500 { +/- 5000 }
F□C□33	-0.1 to + 16 {-1 to + 160}	3.2 { 32 }	0.32 { 3.2 }	32 { 320 }	+/- 32 { +/- 320 }
F□C□34	-0.1 to + 16 {-1 to + 160}	6.4 { 64 }	0.64 { 6.4 }	64 { 640 }	+/- 64 { +/- 640 }
F□C□35	-0.1 to + 16 {-1 to + 160}	13 { 130 }	1.3 { 13 }	130 { 1300 }	+/- 130 { +/- 1300 }
F□C□36	-0.1 to + 16 {-1 to + 160}	50 { 500 }	5 { 50 }	500 { 5000 }	+/- 500 { +/- 5000 }
F□C□38	-0.1 to + 16 {-1 to + 160}	300 { 3000 }	30 { 300 }	3000 { 30000 }	+/- 3000 { +/- 30000 }
F□C□43	-0.1 to + 42 {-1 to + 420}	3.2 { 32 }	0.32 { 3.2 }	32 { 320 }	+/- 32 { +/- 320 }
F□C□44	-0.1 to + 42 {-1 to + 420}	6.4 { 64 }	0.64 { 6.4 }	64 { 640 }	+/- 64 { +/- 640 }
F□C□45	-0.1 to + 42 {-1 to + 420}	13 { 130 }	1.3 { 13 }	130 { 1300 }	+/- 130 { +/- 1300 }
F□C□46	-0.1 to + 42 {-1 to + 420}	50 { 500 }	5 { 50 }	500 { 5000 }	+/- 500 { +/- 5000 }
F□C□47	-0.1 to + 42 {-1 to + 420}	200 { 2000 }	20 { 200 }	2000 { 20000 }	+/- 2000 { +/- 20000 }

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  
F□C□38 and F□C□47: -0.5kgf/cm<sup>2</sup>  
Fluorinated fill sensor: 66kPa abs (500mmHg abs)  
at temperature below 80°C
- The maximum span of each sensor can be converted to different units using below factors.  
1MPa= 10<sup>3</sup>KPa=10bar=10.19716kgf/cm<sup>2</sup>=  
145.0377psi  
1kpa=10mbar=101.9716mmH<sub>2</sub>O=4.01463inH<sub>2</sub>O

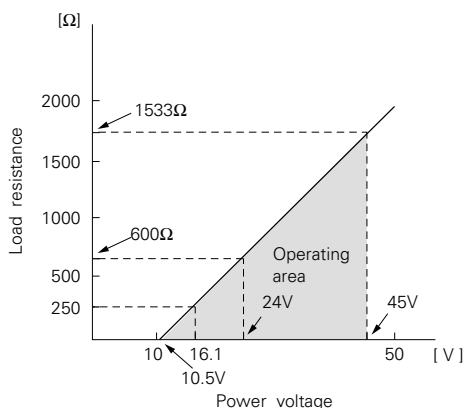
**Over range limit:** To maximum static pressure limit

**Output signal:**

- Model FHC: 4 to 20mA DC 2-wire, linear signal
- Model FKC: 4 to 20mA DC (linear or square root) 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 FXW, min. of 250Ω required.

**Hazardous locations:**

Authorities	Flameproof	Intrinsic safety	Type N Nonincendive
BASEEFA Factory Mutual	Ex ds IIC T5, T6 Class I II III Div. 1 Groups B thru. G	EEx ia IIC T4, T5 Class I II III Div. 1 Groups A thru. G	Ex N II T5 Class I II III Div. 2 Groups A thru. G
CSA	Class I II III Div. 1 Groups C thru. G	Class I II III Div. 1 Groups A thru. G	Class I II III Div. 2 Groups A thru. G
RIIS SAA	Ex ds IIB+H <sub>2</sub> T4 Ex d II C T5, T6 IP66/67	— Ex ia IIC T5, T6 IP66/67	— Ex n IIC T5, T6 IP66/67

**Zero/span adjustment:**

Model FHC: Zero is adjustable from the external adjustment screw.  
The adjustment screw can also function to adjust span when MODE SWITCH (located on the electronics unit) is in the span mode. INHIBIT mode to disable the adjustment screw is also available.

Model FKC: Zero and span are adjustable from the HHC. Zero is also adjustable externally from the adjustment screw.

**Damping:** Adjustable electrical damping.  
Model FHC: The time constant is adjustable to 0, 0.3, 1.2, 4.8, or 19.2 seconds.

Model FKC: The time constant is adjustable between 0 to 38.4 seconds. (4 steps)

**Zero elevation/suppression:**  
-100% to +100% of URL

**Normal/reverse action:**  
Model FHC: Selectable by moving a jumper pin located on the electronics unit.

Model FKC: Selectable from HHC

**Indication:** Analog indicator or 4 1/2 digit LCD meter, as specified.

**Burnout direction:** Output hold  
Output 21.6mA } selectable  
Output 3.8mA }

Model FHC: Unless otherwise specified, the burnout is in hold position.

Model FKC: Selectable from HHC

**Loop-check output:**  
Model FHC: Transmitter can output constant signal of 4mA, 12mA, or 20mA if MODE SWITCH is set to the loop check mode.

Model FKC: Transmitter can be configured to provide constant signal 3.8mA through 21.6mA by HHC.

**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 filled transmitters)

For explosionproof units (flameproof or intrinsic safety), ambient temperature must be within the limits specified in each standard.

Process: -40 to +120°C for silicone fill sensor  
-20 to +80°C for fluorinated oil fill sensor

Storage: -40 to +90°C

**Humidity limit:** 0 to 100% RH

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

Items	Display	Set
Tag No.	✓	✓
Model No.	✓	✓
Serial No.	✓	—
Engineering unit	✓	✓
Range limit	✓	—
Measuring range	✓	✓
Damping	✓	✓
Output mode	✓	✓
Burnout direction	✓	✓
Adjustment	✓	✓
Output adjust	—	✓
Data	✓	—
Self diagnoses	✓	—
Printer	—	—
External switch lock	✓	✓
Transmitter display(*)	✓	✓

Note: (\*) HHC's version must be more than 5.0 (or FXW□□□□1-□2), to use this function.

## Performance specifications

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

For spans greater than 1/10 of URL:  $\pm 0.1\%$  of span

For spans below 1/10 of URL (Model FKC only):

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

Option 0.075%

**Linearity:** 0.05% of calibrated span

**Stability:**  $\pm 0.1\%$  of upper range limit (URL) for 24 months

**Temperature effect:**  
Effects per 55°C change between the limits of  $-40^\circ\text{C}$  and  $+85^\circ\text{C}$

Range code (6th digit in Code symbols)	Zero shift	Total effect
"1"/1kPa {10mbar} max. span "2"/6kPa {60mbar} max. span	$\pm \left( 0.25 + 0.2 \frac{\text{URL}}{\text{Span}} \right) \% / 55^\circ\text{C}$	$\pm \left( 0.3 + 0.2 \frac{\text{URL}}{\text{Span}} \right) \% / 55^\circ\text{C}$
"3"/32kPa {320mbar} max. span "4"/64kPa {640mbar} max. span "5"/130kPa {1300mbar} max. span "6"/500kPa {5000mbar} max. span "7"/2000kPa {20000mbar} max. span "8"/3000kPa {30000mbar} max. span	$\pm \left( 0.2 + 0.05 \frac{\text{URL}}{\text{Span}} \right) \% / 55^\circ\text{C}$	$\pm \left( 0.25 + 0.05 \frac{\text{URL}}{\text{Span}} \right) \% / 55^\circ\text{C}$

Double the effects for material code (7th digit in Code symbols) "H", "M", "T", "B", "L" and "U".

**Static pressure effect:**

Static pressure code (5th digit in Code symbols)	Zero shift (% of URL)	Span shift (% of calibrated span)
"1" /1kPa {10m bar} sensor "2" /6kPa {60 m bar} sensor	$\pm 0.2\% / 1\text{MPa} (10\text{bar})$ $\pm 0.2\% / 3.2\text{MPa} (32\text{bar})$	$-0.2\% / 3.2\text{MPa} (32\text{bar})$ $-0.2\% / 3.2\text{MPa} (32\text{bar})$
"2" "3" "4"	$\pm 0.1\% / 10\text{MPa} (100\text{bar})$	$-0.2\% / 10\text{MPa} (100\text{bar})$

Double the Zero shift for material code (7th digit in Code symbols) "H", "M", "T", "B", "L" and "U".

**Overrange effect:**

Static pressure code (5th digit in Code symbols)	Zero shift (% of URL)
"1" /1kPa {10m bar} sensor "2" /6kPa {60m bar} sensor	$\pm 0.3\% / 1\text{MPa} \{10\text{bar}\}$ $\pm 0.3\% / 3.2\text{MPa} \{32\text{bar}\}$
"2" "3" "4"	$\pm 0.3\% / 10\text{MPa} \{100\text{bar}\}$ $\pm 0.3\% / 16\text{MPa} \{160\text{bar}\}$ $\pm 0.5\% / 42\text{MPa} \{420\text{bar}\}$

Double the effects for material code (7th digit in Code symbols) "H", "M", "T", "B", "L" and "U".

**Supply voltage effect:**

Less than 0.05% of calibrated span per 10V

**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)

**Step response:** (without electrical damping)

Range code	Time constant	Dead time
"1"	0.8 s	approx. 0.3 s
"2"	0.5 s	
"3"	0.3 s	
"4" through "8"	0.2 s	

**Mounting position effect:**

Zero shift, less than 0.12kPa {1.2m bar} for a  $10^\circ$  tilt in any plane.

No effect on span.

This error can be corrected by adjusting Zero. (Double the effect for fluorinated fill sensors)

**Dielectric strength:**

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

**Insulation resistance:**

More than 100M $\Omega$  at 500V DC.

**Turn-on time:** 4 sec.

**Internal resistance for external field indicator:** 12 $\Omega$  or less.

**Performance specifications for square root output:** (Model FKC only)

**Accuracy rating:**

Output	Span	
	over 0.1 $\times$ URL	below 0.1 $\times$ URL
50 to 100%	$\pm 0.1\%$	$\pm (0.05 + 0.05 \times 0.1 \times \text{URL}/\text{Span})\%$
20 to 50%	$\pm 0.25\%$	$\pm 2.5 \times (0.05 + 0.05 \times 0.1 \times \text{URL}/\text{Span})\%$
10 to 20%	$\pm 0.5\%$	$\pm 5 \times (0.05 + 0.05 \times 0.1 \times \text{URL}/\text{Span})\%$

**Temperature effect:**

effect per 55°C change between the limits of  $-40^\circ\text{C}$  and  $+85^\circ\text{C}$

Range code	Shift at 20% output point
"1" and "2"	$\pm \left( 0.6 + 0.5 \frac{\text{URL}}{\text{Span}} \right) \% / 55^\circ\text{C}$
"3" through "8"	$\pm \left( 0.5 + 0.125 \frac{\text{URL}}{\text{Span}} \right) \% / 55^\circ\text{C}$

**Low flow cut-off:** Customer configurable for any point between 7 to 20% of output

## Physical specifications

**Electrical connections:**

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

**Process connections:**

1/4-18 NPT or Rc1/4 on 54mm centers, as specified.

Meets DIN 19213.

**Process-wetted parts material:**

Material code (7th digit in Code symbols)	Process cover	Diaphragm	Wetted sensor body	Vent/drain
V	316 stainless steel(*1)	316L stainless steel	316 stainless steel	316 stainless steel
H	316 stainless steel(*1)	Hastelloy-C	Hastelloy-C lining	316 stainless steel
M	316 stainless steel(*1)	Monel	Monel lining	316 stainless steel
T	316 stainless steel(*1)	Tantalum	Tantalum lining	316 stainless steel
B	Hastelloy-C lining	Hastelloy-C	Hastelloy-C lining	Hastelloy-C
L	Monel lining	Monel	Monel lining	Monel
U	Tantalum lining	Tantalum	Tantalum lining	Tantalum

Notes: (\*1) SCS14 per JIS G 5121

Remark: Sensor O-rings: Viton and teflon selectable. Availability of above material design depends on ranges and static pressure. Refer to "Code symbols".

**Non-wetted parts material:**

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

Bolts and nuts: Cr-Mo alloy (standard), 304 stainless steel (for static pressure code "1", "2", and "3" only), or 630 stainless steel (for static pressure code "3" and "4" only). Static pressure rating for code "3" with 304 stainless steel bolts is degraded to 10MPa.

Fill fluid: Silicone oil (standard) or fluorinated oil (Daifloil)

Mounting bracket: Carbon steel with epoxy coating or 304 stainless steel, as specified

**Environmental protection:**

IEC IP67 and NEMA 4X

**Mounting:** On 60.5mm(JIS 50A) pipe using mounting bracket, direct wall mounting, or direct process mounting.

**Mass{weight}:** Transmitter approximately 4.4kg without options.

Add; 0.5kg for mounting bracket  
0.8kg for indicator option  
4.5kg for stainless steel housing option

**Optional features**

**Indicator:** A plug-in analog indicator (1.5% accuracy) can be housed in the electronics compartment or in the terminal box of the housing.

An optional 4 1/2 digits LCD meter is also available.

**Arrester:** A built-in arrester protects the electronics from lightning surges.

Lightning surge immunity:  
4kV (1.2 x 50µs)

**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:** The fill fluid is fluorinated oil.

**Degreasing:** Process-wetted parts are cleaned, but the fill fluid is standard silicone oil. Not for use on oxygen or chlorine measurement.

**NACE specification:**

Metallic materials for all pressure boundary parts comply with NACE MR-01-75. ASTM B7M or L7M bolts and 2HM nuts (Class II) are available.

Static pressure rating for code "3" (16 MPa) is degraded to 10MPa.

**Vacuum service:** Special silicone oil and filling procedure are applied.

See figure x 1.

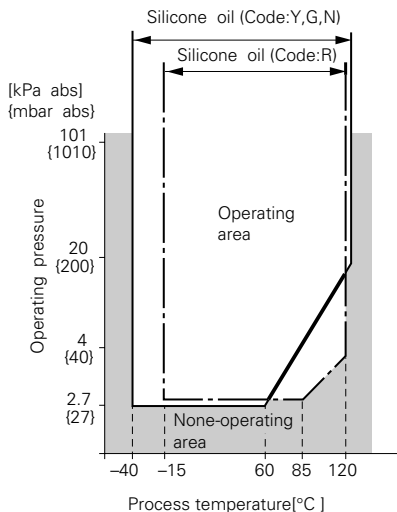


Fig. 1 Relation between process temperature and operating pressure

**Customer tag:** A 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.

**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.

**Equalizing valves:**

(Model FFN, refer to Data Sheet No. EDS6-10)

Available in CS or in 316 stainless steel and in pressure rating 16MPa or 42MPa.

**Hand-held communicator:**

(Model FXW, refer to Data Sheet No. EDS 8-47)

**Communication module: (standard for model FKC)**

When using this module for model FHC, remote setting function becomes available.

Remark: When the communication module is connected, the operation mode of external zero/span adjustable screw is changed to zero adjustment.

# CODE SYMBOLS

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15														
							2							
FHC		Description												
FKC		Type												
		4 to 20mA, Traditional type												
		4 to 20mA with digital signal, Smart type												
		Connections												
		Process connection				Oval flange screw				Conduit connection				
S		Rc1/4				7/16-20UNF				G 1/2				
T		1/4-18NPT				7/16-20UNF				1/2-14NPT				
V		1/4-18NPT				M10 (or M12)(*1)				Pg 13.5				
W		1/4-18NPT				M10 (or M12)(*1)				M20x1.5				
X		1/4-18NPT				7/16-20UNF				Pg 13.5				
		Span and materials												
		Static pressure [MPa] (bar)		Span limit (*2) FHC/FKC [kPa] (m bar)		Process cover		Diaphragm		Wetted cell body				
11V		-0.1 to +3.2		0.1/0.1...1/1		316 stainless steel		316L stainless steel		316 stainless steel				
11H		(-1 to +32)		{1/1...10/10}		316 stainless steel		Hast. C		Hast. C lining				
22V		-0.1 to +10		0.6/0.1...6/6		316 stainless steel		316L stainless steel		316 stainless steel				
22H		(-1 to 100)		{6/1...60/60}		316 stainless steel		Hast. C		Hast. C lining				
33V		-0.1 to +16		3.2/0.32...32/32		316 stainless steel		316L stainless steel		316 stainless steel				
33H		(-1 to +160)		{32/3.2...320/320}		316 stainless steel		Hast. C		Hast. C lining				
33M						316 stainless steel		Monel		Monel lining				
33T						316 stainless steel		Tantalum		Tantalum lining				
34V				6.4/0.64...64/64		316 stainless steel		316L stainless steel		316 stainless steel				
34H				{64/6.4...640/640}		316 stainless steel		Hast. C		Hast. C lining				
34M						316 stainless steel		Monel		Monel lining				
34T						316 stainless steel		Tantalum		Tantalum lining				
35V				13/1.3...130/130		316 stainless steel		316L stainless steel		316 stainless steel				
35H				{130/13...1300/1300}		316 stainless steel		Hast. C		Hast. C lining				
35M						316 stainless steel		Monel		Monel lining				
35T						316 stainless steel		Tantalum		Tantalum lining				
36V				50/5...500/500		316 stainless steel		316 stainless steel		316 stainless steel				
36H				{500/50...5000/5000}		316 stainless steel		Hast. C		Hast. C lining				
36M						316 stainless steel		Monel		Monel lining				
36T						316 stainless steel		Tantalum		Tantalum lining				
38V				300/30...3000/3000		316 stainless steel		316 stainless steel		316 stainless steel				
		-0.1 to +42		{3000/300...30000/30000}		316 stainless steel		316 stainless steel		316 stainless steel				
43V		-0.1 to +42		3.2/0.32...32/32		316 stainless steel		316L stainless steel		316 stainless steel				
43H		(-1 to +420)		{32/3.2...320/320}		316 stainless steel		Hast. C		Hast. C lining				
43M						316 stainless steel		Monel		Monel lining				
44V				6.4/0.64...64/64		316 stainless steel		316L stainless steel		316 stainless steel				
44H				{64/6.4...640/640}		316 stainless steel		Hast. C		Hast. C lining				
44M						316 stainless steel		Monel		Monel lining				
45V				13/1.3...130/130		316 stainless steel		316L stainless steel		316 stainless steel				
45H				{130/13...1300/1300}		316 stainless steel		Hast. C		Hast. C lining				
45M						316 stainless steel		Monel		Monel lining				
46V				50/5...500/500		316 stainless steel		316 stainless steel		316 stainless steel				
46H				{500/50...5000/5000}		316 stainless steel		Hast. C		Hast. C lining				
46M						316 stainless steel		Monel		Monel lining				
47V				200/20...2000/2000		316 stainless steel		316 stainless steel		316 stainless steel				
		-0.1 to +10		{2000/200...20000/20000}		316 stainless steel		316 stainless steel		316 stainless steel				
23B		-0.1 to +10		3.2/0.32...32/32		Hast. C lining		Hast. C		Hast. C lining				
23L		(-1 to +100)		{32/3.2...320/320}		Monel lining		Monel		Monel lining				
23U						Tantalum lining		Tantalum		Tantalum lining				
24B				6.4/0.64...64/64		Hast. C lining		Hast. C		Hast. C lining				
24L				{64/6.4...640/640}		Monel lining		Monel		Monel lining				
24U						Tantalum lining		Tantalum		Tantalum lining				
25B				13/1.3...130/130		Hast. C lining		Hast. C		Hast. C lining				
25L				{130/13...1300/1300}		Monel lining		Monel		Monel lining				
25U						Tantalum lining		Tantalum		Tantalum lining				
26B				50/5...500/500		Hast. C lining		Hast. C		Hast. C lining				
26L				{500/50...5000/5000}		Monel lining		Monel		Monel lining				
26U						Tantalum lining		Tantalum		Tantalum lining				

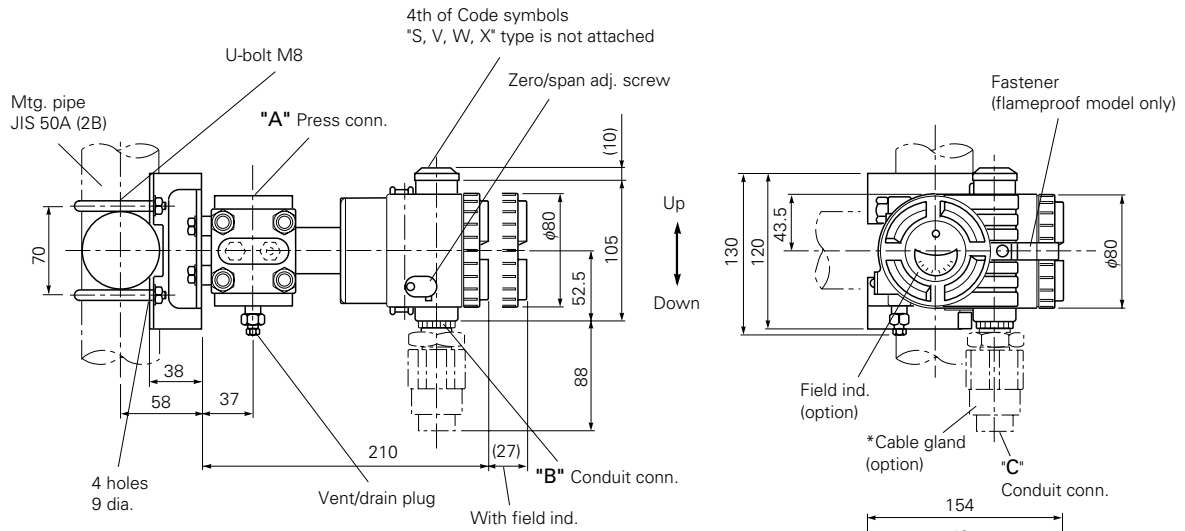
Notes: (\*1) The thread is M12, if 42MPa (420bar) static pressure is specified.  
 (\*2) 100: 1 turn down is possible for model FKC, but should be used at the span greater than 1/40 of the maximum span for better performance.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
F	H	C					2						-	
F	K	C					2						-	

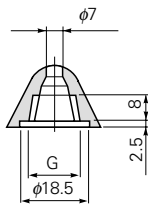
		Description	
<b>Indicator and arrester</b>			
	Indicator		Arrester
A	None		None
B	Analog, 0 to 100% linear scale		None
C	Analog, 0 to 100% sq. root scale		None
D	Analog, custom scale		None
J	Analog, double scale		None (*3)
E	None		Yes
F	Analog, 0 to 100% linear scale		Yes
G	Analog, 0 to 100% sq. root scale		Yes
H	Analog, custom scale		Yes
K	Analog, double scale		Yes (*3)
L	Digital, 0 to 100%		None
P	Digital, custom scale		None (Model FKC only) (*4)
M	Digital 0 to 100% square root		None
Q	Digital, 0 to 100%		Yes
S	Digital, custom scale		Yes (Model FKC only) (*4)
N	Digital 0 to 100% square root		Yes
<b>Approvals for hazardous locations</b>			
A	None (for ordinary locations)		
B	JIS, Flameproof (Conduit seal)		
C	JIS, Flameproof (Cable gland seal)		
D	FM, Flameproof (or explosionproof)		
E	CSA, Flameproof (or explosionproof)		
M	BASEEFA, Flameproof (Conduit seal)		
N	BASEEFA, Flameproof (Cable gland seal) (Conduit connection G 1/2 only)		
H	FM, Intrinsic safety and Nonincendive		
J	CSA, Intrinsic safety and Nonincendive		
K	CENELEC, Intrinsic safety		
P	CENELEC, Intrinsic safety and BASEEFA, Type N		
R	SAA, Flameproof (Conduit seal) (*5)		
T	SAA, Intrinsic safety (*5)		
Q	SAA, Type N (Non-sparking) (*5)		
<b>Side vent/ drain and mounting bracket</b>			
	Side vent/drain	Mounting bracket	
A	None	None	
B	None	Yes, carbon steel	} Specify "A", "B", or "C" for the 7th digit code "B", "L", or "U"
C	None	Yes, stainless steel	
D	Yes	None	
E	Yes	Yes, carbon steel	
F	Yes	Yes, stainless steel	
<b>Stainless steel parts</b>			
	Stainless steel tag plate	Stainless steel elec, housing	Coating of cell
Y	None	None	None
B	Yes	None	None
C	None	Yes	None
E	Yes	Yes	None
M	None	None	Yes
N	Yes	None	Yes
P	None	Yes	Yes
Q	Yes	Yes	Yes
<b>Special applications and fill fluid</b>			
	Treatment	Fill fluid	
Y	None (standard)	Silicone oil	
W	None (standard)	Fluorinated oil	
G	Degreasing	Silicone oil	
A	Oxygen service	Fluorinated oil (7th digit code, "V" only)	
D	Chlorine service	Fluorinated oil (7th digit code "H", "T", "B", "U")	
N	NACE specification	Silicone oil (Not available for 7th digit code "T", "U" and 15th digit code "A", "B")	
R	Vacuum service	Silicone oil for vacuum use	
<b>Sensor O-ring</b>			
A	Viton		
B	Teflon		
<b>Bolt/nut</b>			
A	Cr-Mo alloy hexagon socket head cap screw/carbon steel nut		
B	Cr-Mo alloy hexagon bolt/nut		
C	NACE bolt/nut (ASTM A193 B7M/A194 2HM) } (*6)		
D	NACE bolt/nut (ASTM A320 L7M/A194 2HM) } (*6)		
E	304 stainless steel/304 stainless steel } (*7)		
F	630 stainless steel/304 stainless steel } (*8) } (*9)		

Notes: (\*3) The scale is selectable "JIS and SI unit" or "Linear and sq. root" or "Linear and sq. root by 10".  
 (\*4) In case of FKC, specified the output mode linear or sq. root. Unless specified, the output mode is linear. In case of 9th digit code "P", "S" with FKC, specified the output indication. Unless specified, the indication is output mode.  
 (\*5) Available for 4th digit code "S", "T", "W".  
 (\*6) Static pressure should be -0.1 to +10MPa (-1 to +100bar).  
 (\*7) Available for 5th digit code "1", "2", "3". In case of stainless steel bolt with 5th digit code "3", static pressure should be -0.1 to +10MPa (-1 to + 100bar).  
 (\*8) Available for 5th digit code "3", "4".  
 (\*9) In case of tropical use, select a stainless bolts and nuts.

# OUTLINE DIAGRAM (Unit:mm)

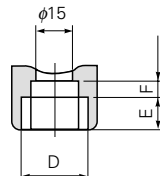


Details of "A"



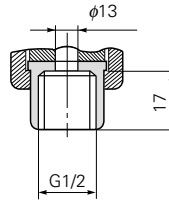
See table 1

Details of "B"



See table 1

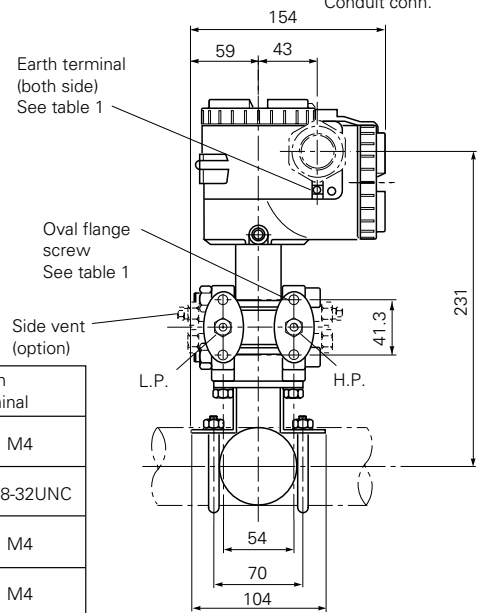
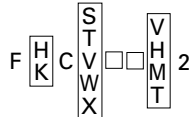
Details of "C"



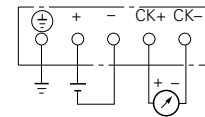
4th of Code symbols	Conduit conn.			Press. conn.	Oval flange screw	Earth terminal
	D	E	F			
S	G1/2	17	8	Rc1/4	7/16-20UNF screw depth 13	M4
T	1/2-14NPT	16	5	1/4-18NPT	7/16-20UNF screw depth 13	No. 8-32UNC
V	Pg13.5	8	4.5	1/4-18NPT	M10 or M12 screw depth 13	M4
W	M20x1.5	16	5	1/4-18NPT	M10 or M12 screw depth 13	M4
X	Pg13.5	8	4.5	1/4-18NPT	7/16-20UNF screw depth 13	M4

Table 1

Note \*: Cable gland is supplied in case of flameproof packing type.  
ø11 cable is suitable.



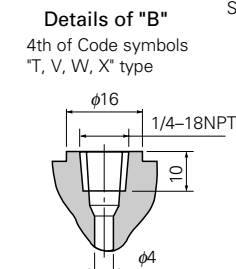
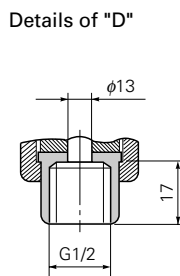
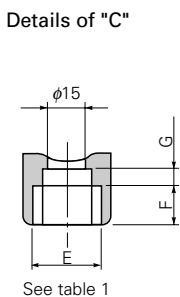
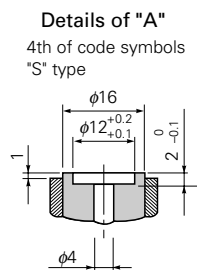
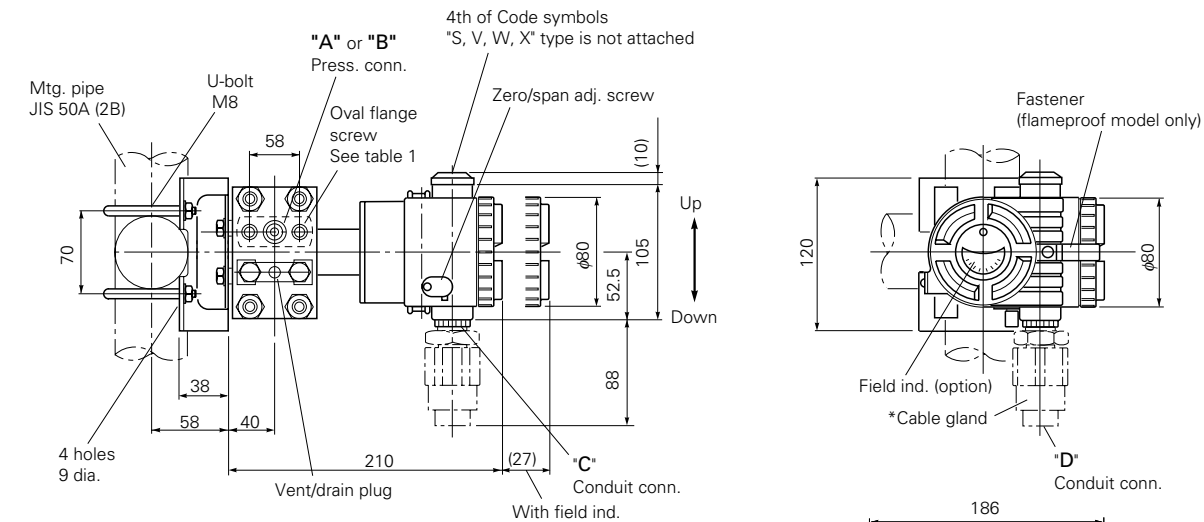
CONNECTION DIAGRAM



## ORDERING INFORMATION

When ordering this instrument, specify:

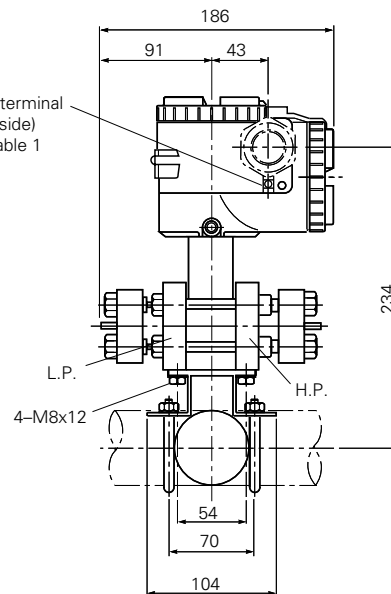
1. CODE SYMBOLS
2. Measuring range
3. Output orientation (burnout direction) when abnormality is occurred in the transmitter.  
(Unless otherwise specified, output hold function is supplied).
4. Output mode in case of FKC (linear or square root output).  
(Unless otherwise specified, output mode is linear).
5. Indication method (indicated value and unit) in case of the digital indicator/actual scale (codes P and S on 9th digit) when FKC is in the square root output mode.  
(Unless otherwise specified, the indication is square root 0 to 100%).
6. TAG No. (up to 26 alphanumerical characters), if required.



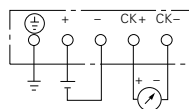
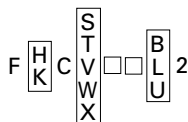
4th of Code symbols	Conduit conn.			Oval flange screw	Earth terminal
	E	F	G		
S	G1/2	17	8	7/16-20UNF screw depth 13	M4
T	1/2-14NPT	16	5	7/16-20UNF screw depth 13	No. 8-32UNC
V	Pg13.5	8	4.5	M10 screw depth 13	M4
W	M20x1.5	16	5	M10 screw depth 13	M4
X	Pg13.5	8	4.5	7/16-20UNF screw depth 13	M4

Table 1

Note \*: Cable gland is supplied in case of flameproof packing type. ø11 cable is suitable.



CONNECTION DIAGRAM



The product conforms to the requirements of the Electromagnetic compatibility Directive 89/336/EEC as detailed within the technical construction file number TN510412.

The applicable standards used to demonstrate compliance are :-

EMI (Emission) EN 50081-1 :-1992

Test item	Frequency ranme	Basic standard
Applicable Electromagnetic Radiation Disturbance	30-1000MHz	EN55022 Class B

EMS (Immunity) EN 50082-1 :-1992

No.	Test item	Test specification	Basic standard	Performance criteria
1	Electrostatic discharge	8kV (Air)	IEC 801-2 : 1984	B
2	Radio-frequency electromagnetic field.	27-500MHz 3V/m (Unmodulated)	IEC 801-3 : 1984	A
3	Fast transients common mode	0.5kV, 5/50(Tr/Th)ns 5kHz Rep.	IEC 801-4 : 1988	B

"LVD - The transmitter is not covered by the requirements of the LVD standard."

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