FUJI ELECTRIC

FCX

FCX – AX SERIES DIFFERENTIAL PRESSURE TRANSMITTER

DATA SHEET FHC, FKC···3

The FCX – AX 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 capacitance silicon sensor with state-of-the-art microprocessor technology to provide exceptional performance and functionality.

FEATURES

1. High accuracy
   0.07% 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.
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. Replaceable Communication Module
   Fuji micro-electronics manufacturing technology offers replaceable communication module that makes FCX – AX transmitter very unique in design. In case of change in communication protocol, all that needs to be done is just to replace the module and the transmitter gets upgraded to the new version.
4. 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 – AX series transmitters.
5. Application flexibility
   Various options that render the FCX – AX 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
   - $4\frac{1}{2}$-digits LCD meter
   - Stainless steel electronics housing
   - Wide selection of materials
6. Programmable output Linearization Function
   In addition to Linear and Square Root, output signal can be freely programmable.
   (Up to 14 compensated points at approximation.)
   (Available for amplifier unit from version 24 and FXW(HHC) version 5.3.)
7. 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.
   (Available for amplifier unit from version 24 and FXW(HHC) version 5.3.)
8. 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

Type:
Model FHC: 4 to 20mA
Model FKC: 4 to 20mA with digital signal

Service: Liquid, gas, or vapour

Static pressure, span, and range limit:

Type	Static pressure [MPa] {bar}	Span limit [kPa] {m bar} Min. FHC	Span limit [kPa] {m bar} Min. FKC	Span limit [kPa] {m bar} Max. FHC/FKC	Range limit [kPa] {m bar}
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□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□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□48	–0.1 to + 42 {–1 to + 420}	300 { 3000}	30 { 300}	3000 { 30000}	+/– 3000 {+/– 30000}

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

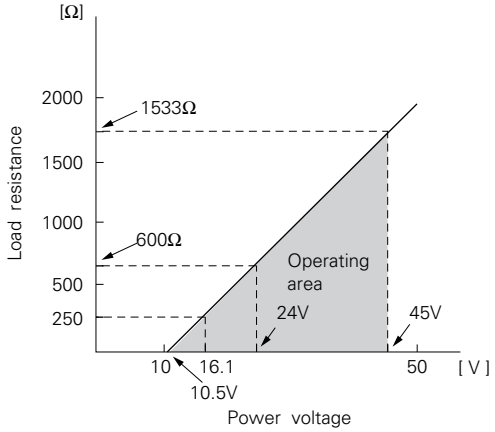
– Lower limit of static pressure (vacuum limit) ;
  Silicone fill sensor: See Fig. 1
  F□C□38 and F□C□48: –0.5kgf/cm²
  Fluorinated fill sensor: 66kPa abs (500mmHg abs) at temperature below 80°C
– The maximum span of each sensor can be converted to different units using below factors.
  1MPa= 10^3KPa=10bar=10.19716kgf/cm²= 145.0377psi
  1kpa=10mbar=101.9716mmH_2O=4.01463inH_2O

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 HHC (Model: FXW), min. of 250Ω required.

Hazardous locations: (Approval pending)

Authorities	Flameproof	Intrinsic safety	Type N Nonincendive
BASEEFA	Ex ds IIC T5, T6	EEx ia IIC T4, T5	Ex N II T5
Factory Mutual	Class I II III Div. 1 Groups B thru. G	Class I II III Div. 1 Groups A thru. F	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	Ex ds IIB+H_2 T4	—	—
SAA	Ex d II C T5, T6 IP 66/67	Ex ia II C T5, T6 IP 66/67	Ex n II C T5, T6 IP 66/67

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

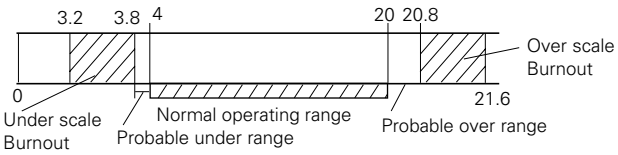
Indication: Analog indicator or $4\frac{1}{2}$-digit LCD meter, as specified.

Burnout direction: If self-diagnostic detect transmitter failure, the analog signal will be driven to either "Output Hold", "Output Overscale" or "Output Underscale" modes.
- Model FHC: Unless otherwise specified in the order, the transmitter will be shipped in "Output Hold" mode.
  (Output signal just before failure happens is maintained.)
- Model FKC: Selectable from HHC

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

"Output Overscale":
Approx. 21.6mA
(Adjustable within the range 20.8mA to 21.6mA from HHC)

"Output Underscale":
Approx. 3.8mA
(Adjustable within the range 3.2mA to 3.8mA 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)
–15 to +85°C for 5th digit code "4" and 6 digit code "8".
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.	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	v
Burnout direction	v	v
Adjustment	v	v
Output adjust	—	v
Data	v	—
Self diagnoses	v	—
Printer	—	—
External switch lock	v	v
Transmitter display(*)	v	v
Linearise (**)	v	v
Rerange (**)	v	v

Notes: (*) HHC's version must be more than 5.0 (or FXW □□□□1–□2), to use this function.
(**) HHC's version must be more than 5.3, and Amplifier unit version 24.

Programmable output linearization function:
In smart version, output signal can be characterized with "14 points linear approximation function" from HHC.

Performance specifications for linear output

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

Max span above 32kPa model:
For spans greater than 1/10 of URL: ±0.07% of span
For spans below 1/10 of URL (Model FKC only):

$$\pm\left(0.02+0.05\,\frac{0.1\times \mathrm{URL}}{\mathrm{Span}}\right)\%\ \text{of span}$$

Max span 1kPa, 6kPa model:
For spans greater than 1/10 of URL: ±0.1% of span
For spans below 1/10 of URL (Model FKC only):

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

Linearity: 0.05% of calibrated span

Stability: ±0.1% of upper range limit (URL) for 24 months

Temperature effect:
Effects per 55°C change between the limits of – 40°C and +85°C

Range code (6th digit in Code symbols)	Zero shift	Total effect
"1"/1kPa {10mbar} max. span "2"/6kPa {60mbar} max. span	$\pm\left(0.125+0.1\,\frac{\mathrm{URL}}{\mathrm{Span}}\right)$%/28°C	$\pm\left(0.15+0.1\,\frac{\mathrm{URL}}{\mathrm{Span}}\right)$%/28°C
"3"/32kPa {320mbar} max. span "4"/64kPa {640mbar} max. span "5"/130kPa {1300mbar} max. span "6"/500kPa {5000mbar} max. span "8"/3000kPa {30000mbar} max. span	$\pm\left(0.1+0.025\,\frac{\mathrm{URL}}{\mathrm{Span}}\right)$%/28°C	$\pm\left(0.125+0.025\,\frac{\mathrm{URL}}{\mathrm{Span}}\right)$%/28°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	±0.1% / 1MPa{10bar}	–0.2% /3.2MPa{32bar}
"2" /6kPa {60 m bar} sensor	±0.1% / 3.2MPa{32bar}	–0.2% /3.2MPa{32bar}
"2" "3" "4"	±0.05%/10MPa{100bar}	–0.2%/10MPa{100bar}

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	±0.3% / 1MPa	{10bar }
"2" / 6kPa {60m bar} sensor	±0.3% / 3.2MPa	{32bar }
"2"	±0.1% /10MPa	{100bar } (*1)
"3"	±0.1% /16MPa	{160bar } (*1)
"4"	±0.17% /42MPa	{420 bar} (*1)

Double the effects for material code (7th digit in Code symbols) "H", "M", "T", "B", "L" and "U".
Note: (*1) In case of 6th code "5".

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"	1.25 s	approx. 0.3 s
"2"	0.85 s	
"3"	0.45 s	
"4" through "8"	0.2 s	

Mounting position effect:
Zero shift, less than 0.12kPa {1.2m bar} for a 10° 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 100MΩ at 500V DC.

Turn-on time: 4 sec.

Internal resistance for external field indicator:
12Ω or less

Performance specifications for square root output
(Model FKC only)

Accuracy rating:

Output	Span	
	over 0.1 × URL	below 0.1 × URL
50 to 100%	±0.07 %	±(0.02+0.05 × 0.1 × URL/Span)%
20 to 50%	±0.175 %	±2.5 × (0.02+0.05 × 0.1 × URL/Span)%
10 to 20%	±0.35 %	±5 × (0.02+0.05 × 0.1 × URL/Span)%

Max span 1kPa, 6kPa model:

Output	Accuracy
50 to 100%	±0.1 %
20 to 50%	±0.25%
10 to 20%	±0.5 %

Temperature effect:
effect per 55°C change between the limits of −40°C and +85°C

Range code	Shift at 20% output point
"1" and "2"	$\pm\left(0.3+0.25\ \frac{\text{URL}}{\text{Span}}\right)$ %/28°C
"3" through "8"	$\pm\left(0.25+0.0625\ \frac{\text{URL}}{\text{Span}}\right)$ %/28°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 × 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 U	Monel lining Tantalum lining	Monel Tantalum	Monel lining Tantalum lining	Monel 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 polyester coating, or 316 stainless steel (SCS14 per JIS G5124), 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 $4\frac{1}{2}$ digits LCD meter is also available.

Arrester: A built-in arrester protects the electronics from lightning surges.
Lightning surge immunity:
4KV (1.2 × 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 below figure.

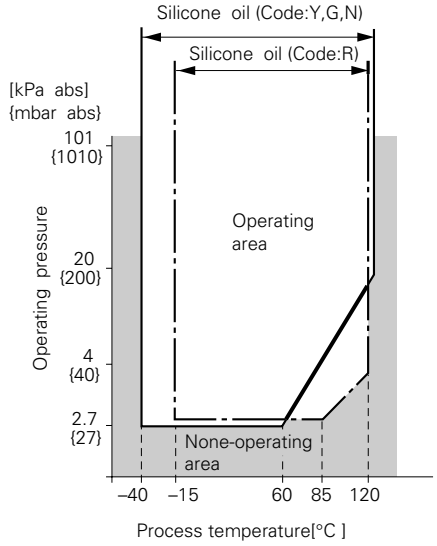


Fig. 1 Relation between process temperature and operating pressure

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)
By adding communication module, remote setting functions becomes available for model FHC.
Remark: When the communication module is connected, the operation mode of external zero/span adjustable screw is limited to zero adjustment only.

CODE SYMBOLS

1 2 3 4 5 6 7 8 | 3 | 9 10 11 12 13 | – | 14 15

	Description
	Type
FHC	4 to 20mA, Output type
FKC	4 to 20mA with digital signal, Output 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)(*!)	Pg 13.5
W	1/4-18NPT	M10 (or M12)(*!)	M20×1.5
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 {–1 to +32}	0.1/0.1…1/1 {1/1…10/10}	316 stainless steel	316L stainless steel	316 stainless steel
11H			316 stainless steel	Hast. C	Hast. C lining
22V	–0.1 to +10 {–1 to 100}	0.6/0.1…6/6 {6/1…60/60}	316 stainless steel	316L stainless steel	316 stainless steel
22H			316 stainless steel	Hast. C	Hast. C lining
33V	–0.1 to +16 {–1 to +160}	3.2/0.32…32/32 {32/3.2…320/320}	316 stainless steel	316L stainless steel	316 stainless steel
33H			316 stainless steel	Hast. C	Hast. C lining
33M			316 stainless steel	Monel	Monel lining
33T			316 stainless steel	Tantalum	Tantalum lining
35V		13/1.3…130/130 {130/13…1300/1300}	316 stainless steel	316L stainless steel	316 stainless steel
35H			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 {500/50…5000/5000}	316 stainless steel	316L stainless steel	316 stainless steel
36H			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 {3000/300…30000/30000}	316 stainless steel	316L stainless steel	316 stainless steel
43V	–0.1 to +42 {–1 to +420}	3.2/0.32…32/32 {32/3.2…320/320}	316 stainless steel	316L stainless steel	316 stainless steel
43H			316 stainless steel	Hast. C	Hast. C lining
43M			316 stainless steel	Monel	Monel lining
45V		13/1.3…130/130 {130/13…1300/1300}	316 stainless steel	316L stainless steel	316 stainless steel
45H			316 stainless steel	Hast. C	Hast. C lining
45M			316 stainless steel	Monel	Monel lining
46V		50/5…500/500 {500/50…5000/5000}	316 stainless steel	316L stainless steel	316 stainless steel
46H			316 stainless steel	Hast. C	Hast. C lining
46M			316 stainless steel	Monel	Monel lining
48V		300/30…3000/3000 {3000/300…30000/30000}	316 stainless steel	316L stainless steel	316 stainless steel
23B	–0.1 to +10 {–1 to+100}	3.2/0.32…32/32 {32/3.2…320/320}	Hast. C lining	Hast. C	Hast. C lining
23L			Monel lining	Monel	Monel lining
23U			Tantalum lining	Tantalum	Tantalum lining
25B		13/1.3…130/130 {130/13…1300/1300}	Hast. C lining	Hast. C	Hast. C lining
25L			Monel lining	Monel	Monel lining
25U			Tantalum lining	Tantalum	Tantalum lining
26B		50/5…500/500 {500/50…5000/5000}	Hast. C lining	Hast. C	Hast. C lining
26L			Monel lining	Monel	Monel lining
26U				Tantalum	

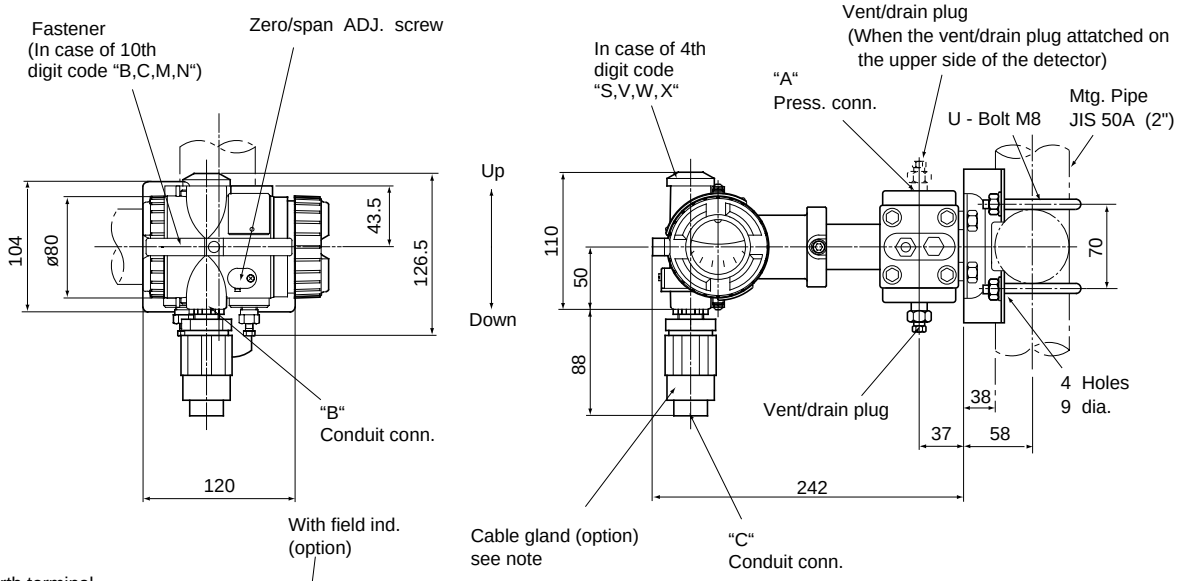
Notes: * (1) The thread is M12, if 42MPa {420bar} static pressure is specified.
(2) 100: 1 turn down is possible for model FKC, but should be used at the span greater than 1/40 of the maximum span for better performance.

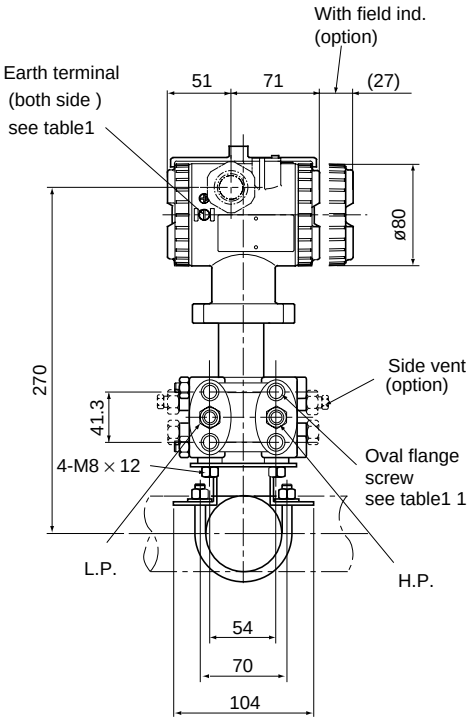
1	2	3	4	5	6	7	8	9	10	11	12	13		14	15
F	H	C					3						–		
F	K	C					3						–		

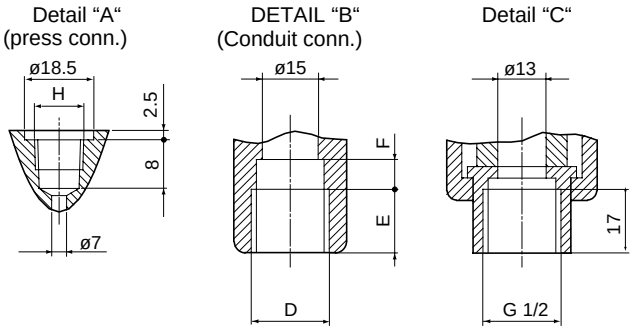
	Description
	Indicator and arrester
	Indicator — Arrester
A	None Available for 4th digit code "S") — None
B	Analog, 0 to 100% linear scale — None
C	Analog, 0 to 100% sq. root scale — None
D	Analog, custom scale — None
J	Analog, double scale — None (*6)
E	None — Yes
F	Analog, 0 to 100% linear scale — Yes
G	Analog, 0 to 100% sq. root scale — Yes
H	Analog, custom scale — Yes
K	Analog, double scale — Yes (*6)
L	Digital, 0 to 100% — None
P	Digital, custom scale — None (Model FKC only) (*7)
M	Digital 0 to 100% square root — None
Q	Digital, 0 to 100% — Yes
S	Digital, custom scale — Yes (Model FKC only) (*7)
N	Digital 0 to 100% square root — Yes
	Approvals for hazardous locations (Approval pending)
A	None (for ordinary locations)
B	JIS, Flameproof (Conduit seal) (Available for 4th digit code "S")
C	JIS, Flameproof (Cable gland seal) (Available for 4th digit code "S")
D	FM, Flameproof (or explosionproof) (Available for 4th digit code "T")
E	CSA, Flameproof (or explosionproof) (Available for 4th digit code "T")
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)(Available for 4th digit cord ("S,T,W)
T	SAA Intrinsic safety (Available for 4th digit cord ("S,T,W)
Q	SAA Type–N (non-sparking)(Available for 4th digit cord ("S,T,W)
	Side vent/ drain and mounting bracket
	Side vent/drain — Mounting bracket
A	None — None
B	None — Yes, carbon steel } Specify "A", "B", or "C" for the
C	None — Yes, stainless steel } 7th digit code "B", "L", or "U"
D	Yes — None
E	Yes — Yes, carbon steel
F	Yes — Yes, stainless steel
	Stainless steel parts
	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
	Special applications and fill fluid
	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 "W", "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
	Sensor O-ring
A	Viton
B	Teflon
	Bolt/nut
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) } (*3)
D	NACE bolt/nut (ASTM A320 L7M/A194 2HM) } (*3)
E	304 stainless steel/304 stainless steel } (*4) } (*8)
F	630 stainless steel/304 stainless steel } (*5) } (*8)

Notes: (*3) Static pressure should be –0.1 to +10MPa{–1 to +100bar}.
(*4) 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}.
(*5) Available for 5th digit code "3", "4".
(*6) The scale is selectable "JIS and SI unit" or "Linear and sq. root" or "Linear and sq. root by 10".
(*7) Incase 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.
(*8) In case of tropical use, select a stainless bolts and nuts.

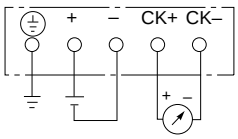
OUTLINE DIAGRAM (Unit:mm)







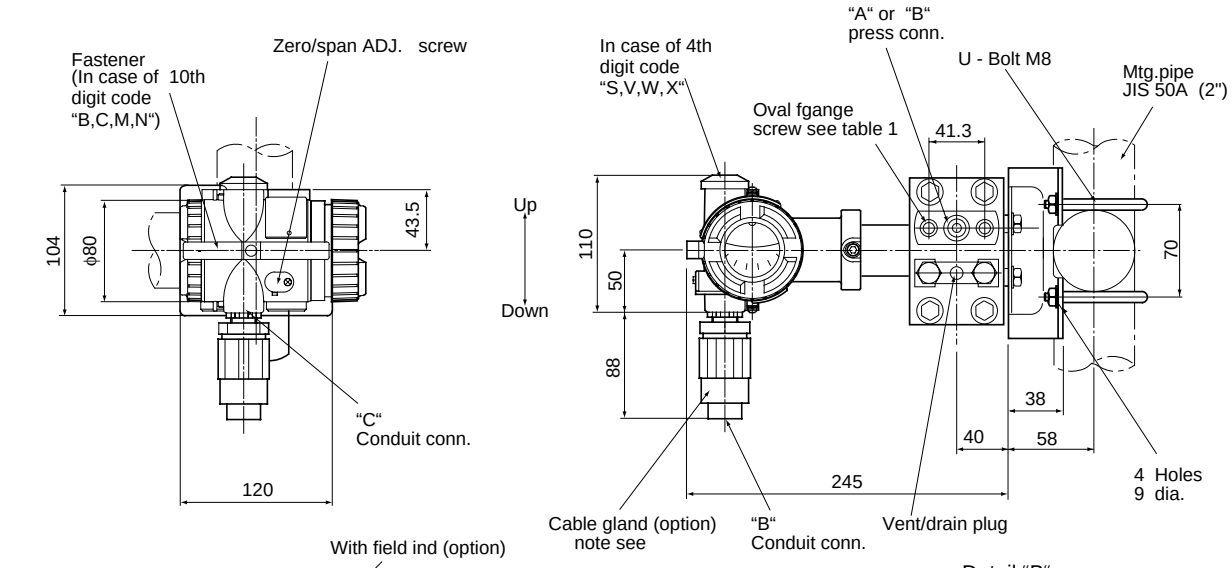
CONNECTION DIAGRAM

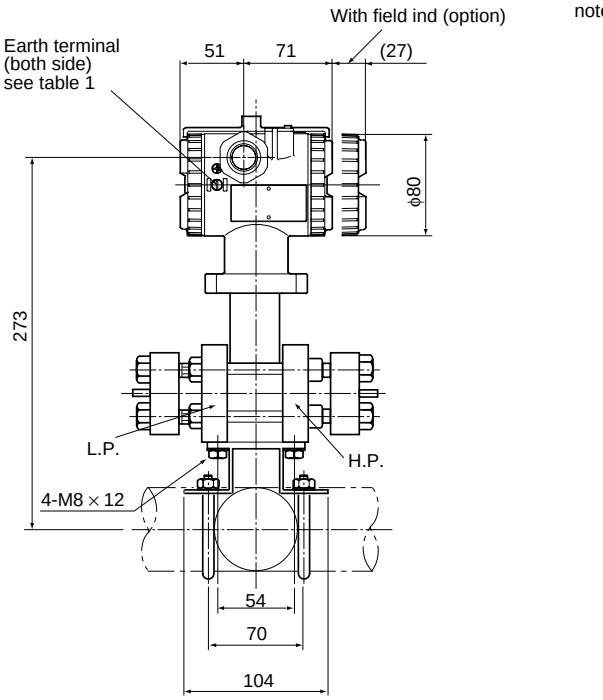


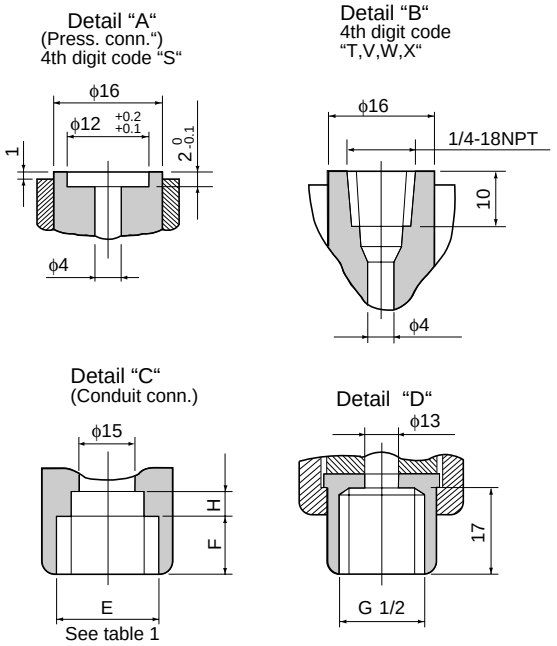
4th digit code	Conduit conn.			Press. Conn.	Ovale frange screw	Earth Terminal
	D	E	F	H		
S	G1/2	17	8	Rc1/4	7/16–20UNF Screw depth 13	M4
T	1/2–14NPT	16	5	1/4-18NPT	7/16–20UNF Screw depth 13	No.8–32UNC
V	Pg13.5	8	4.5	1/4-18NPT	M10 or M12 Screw depth 13	M4
W	M20x1.5	16	5	1/4-18NPT	M10 or M12 Screw depth 13	M4
X	Pg13.5	8	4.5	1/4-18NPT	7/16–20UNF Screw depth 13	M4

Note1) : Cable gand is supplied in case of flamproof packing type.
ø11 cable is suitable.

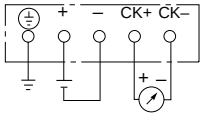
F [H K] C [S T V W X] □□ [W V H M T] 3







CONNECTION DIAGRAM



F [H K] C [S T V W X] 2 [ ] [B L U] 3

Note) : Cable gland is supplied in case of flameproof packing type.
ϕ11 cable is suitable.

4th digit code	Conduit conn.			Oval flange screw	Earth terminal
	E	F	H		
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	M20 × 1.5	16	5	M10 Screw depth 13	M4
X	Pg13.5	8	4.5	7/16–20UNF Screw depth 13	M4

Table 1

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) EN50081-1 : 1992

Test item	Frequency range	Basic standard
Applicable Electro-magnetic Radiation Disturbance	30-1000MHz	EN55022 Class B

EMS (Immunity) EN50082-1 : 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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Printed in Japan