

**DATA SHEET**

**FKC, FDC...5**

The FCX-AII differential pressure (flow) transmitter accurately measures differential pressure, liquid level, gauge pressure or flow rate 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**

- High accuracy up to ±0.04%**  
 0.065% accuracy as standard, 0.04% accuracy as option.  
 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.
- 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.
- Application flexibility**  
 Various options that render the FCX-AII suitable for almost any process applications include.
  - 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
- Programmable output Linearization Function**  
 In addition to Linear and Square Root, output signal can be freely programmable.  
 (Up to 14 compensated points at approximation.)
- Burnout current flexibility (Under Scale: 3.2 to 4.0mA, Over Scale: 20.0 to 22.5mA)**  
 Burnout signal level is adjustable using Model FXW Hand Held Communicator (HHC) to comply with NAMUR NE43.
- 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:**

**FKC:** Smart, 4 to 20mA DC + Fuji/Hart™ digital signal  
**FDC:** FOUNDATION™ Fieldbus and Profibus™

**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.	
□11	-0.1 to +0.2 {-1 to +20}	0.1 {1}	1 {10}	±1 {±10}
FKC□22	-0.1 to +10 {-1 to +100}	0.1 {1}	6 {60}	±6 {±60}
FKC□23	-0.1 to +10 {-1 to +100}	0.32 {3.2}	32 {320}	±32 {±320}
FKC□25	-0.1 to +10 {-1 to +100}	1.3 {13}	130 {1300}	±130 {±1300}
FKC□26	-0.1 to +10 {-1 to +100}	5 {50}	500 {5000}	±500 {±5000}
FKC□33	-0.1 to +16 {-1 to +160}	0.32 {3.2}	32 {320}	±32 {±320}
FKC□35	-0.1 to +16 {-1 to +160}	1.3 {13}	130 {1300}	±130 {±1300}
FKC□36	-0.1 to +16 {-1 to +160}	5 {50}	500 {5000}	±500 {±5000}
FKC□38	-0.1 to +16 {-1 to +160}	30 {300}	3000 {30000}	±3000 {±30000}
FKC□43	-0.1 to +42 {-1 to +420}	0.32 {3.2}	32 {320}	±32 {±320}
FKC□45	-0.1 to +42 {-1 to +420}	1.3 {13}	130 {1300}	±130 {±1300}
FKC□46	-0.1 to +42 {-1 to +420}	5 {50}	500 {5000}	±500 {±5000}
FKC□48	-0.1 to +30 {-1 to +300}	30 {300}	3000 {30000}	±3000 {±30000}
FKC□49	-0.1 to +30 {-1 to +300}	500 {5000}	20000 {200000}	{+20000,-10000} {+200000,-100000}

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

**Over range limit:**

To maximum static pressure limit

**Output signal:**

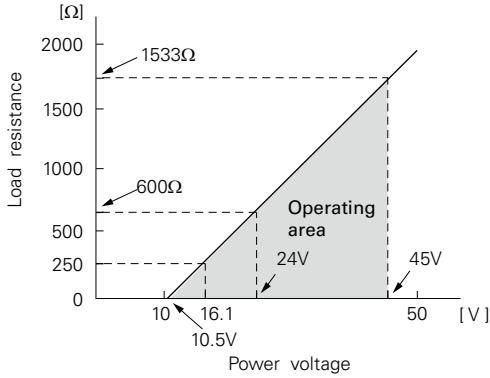
4 to 20mA DC (linear or square root) with digital signal superimposed on the 4 to 20mA signal

**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<sup>(1)</sup> (Model: FXW), min. of 250Ω required.

**Hazardous locations:**

Authorities	Intrinsic safety																		
ATEX (pending)	Ex II 1 GD Ex ia IIC T5 Tamb = -40°C to +50°C Ex ia IIC T4 Tamb = -40°C to +70°C  Entity Parameters: Ui=28V, Ii=93.3mA, Pi=0.66W, Ci=25.18nF (Without Arrester), Ci=35.98nF (With Arrester), Li=0.694mH																		
Factory Mutual (pending)	Class I II III Div.1 Groups A, B, C, D, E, F, G T4 Entity Type 4X  <table border="1"> <thead> <tr> <th>Model code</th> <th>13th digit</th> <th>Tamb</th> </tr> </thead> <tbody> <tr> <td>A,B,C,D,J</td> <td>Y,G,N</td> <td>-40°C to +85°C</td> </tr> <tr> <td>L,P,M,1,2,3</td> <td>Y,G,N</td> <td>-20°C to +80°C</td> </tr> <tr> <td>Q,S,N,4,5,6</td> <td>Y,G,N</td> <td>-20°C to +60°C</td> </tr> <tr> <td>E,F,G,H,K</td> <td>Y,G,N</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=35.98nF, Li=0.694mH	Model code	13th digit	Tamb	A,B,C,D,J	Y,G,N	-40°C to +85°C	L,P,M,1,2,3	Y,G,N	-20°C to +80°C	Q,S,N,4,5,6	Y,G,N	-20°C to +60°C	E,F,G,H,K	Y,G,N	-40°C to +60°C	-	W,A,D	-10°C to +60°C
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L,P,M,1,2,3	Y,G,N	-20°C to +80°C																	
Q,S,N,4,5,6	Y,G,N	-20°C to +60°C																	
E,F,G,H,K	Y,G,N	-40°C to +60°C																	
-	W,A,D	-10°C to +60°C																	
CSA (pending)	Class I Div.1 Groups A, B, C, D Class II Div.1 Groups E, F, G Class III Div.1 Temp Code T5 Tamb max = +50°C Temp Code T4 Tamb max = +70°C Entity Parameters: Vmax=28V, Imax=93mA, Ci=25.18nF (Without Arrester), Ci=35.98nF (With Arrester), Li=0.694mH																		
TIIS (pending)	Ex ia IIC T4 Tamb max = +60°C Entity Parameters: Ui=28V, Ii=94.3mA, Pi=0.66W, Ci=38.4nF, Li=0.694mH																		
IECEX Scheme (pending)	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, Ii=93.3mA, Pi=0.66W, Ci=35.98nF, Li=0.694mH																		
NEPSI (pending)	Ex ia IIC T4 Ex d IIB+H <sub>2</sub> T6 / Ex ia IIC T4  <table border="1"> <thead> <tr> <th>Model code</th> <th>13th digit</th> <th>Tamb</th> </tr> </thead> <tbody> <tr> <td>A,B,D,J</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,K</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: Ui=42.4V, Ii=113mA, Pi=1W, Ci=35.98nF, Li=0.694mH	Model code	13th digit	Tamb	A,B,D,J	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,K	Y,G,H,J,S,T,K	-40°C to +60°C	-	W,A,D	-10°C to +60°C
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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,K	Y,G,H,J,S,T,K	-40°C to +60°C																	
-	W,A,D	-10°C to +60°C																	

Authorities	Type n Nonincendive																		
ATEX (pending)	Ex II 3 GD Ex nL IIC T5 Tamb = -40°C to +50°C Ex nL IIC T4 Tamb = -40°C to +70°C Specific Parameters: Model without arrester: Ui=42.4V, Ii=113mA, Pi=1W, Ci=25.18nF, Li=0.694mH Model with arrester: Ui=32V, Ii=113mA, Pi=1W, Ci=35.98nF, Li=0.694mH  Ex nA IIC T5 Tamb = -40°C to +50°C Ex nA IIC T4 Tamb = -40°C to +70°C Specific Parameters: Model without arrester: Umax=42.4V, Imax=113mA, Pmax=1W Model with arrester: Umax=32V, Imax=113mA, Pmax=1W																		
Factory Mutual (pending)	Class I II III Div.2 Groups A, B, C, D, F, G T4 Entity Type 4X  <table border="1"> <thead> <tr> <th>Model code</th> <th>13th digit</th> <th>Tamb</th> </tr> </thead> <tbody> <tr> <td>A,B,C,D,J</td> <td>Y,G,N</td> <td>-40°C to +85°C</td> </tr> <tr> <td>L,P,M,1,2,3</td> <td>Y,G,N</td> <td>-20°C to +80°C</td> </tr> <tr> <td>Q,S,N,4,5,6</td> <td>Y,G,N</td> <td>-20°C to +60°C</td> </tr> <tr> <td>E,F,G,H,K</td> <td>Y,G,N</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	13th digit	Tamb	A,B,C,D,J	Y,G,N	-40°C to +85°C	L,P,M,1,2,3	Y,G,N	-20°C to +80°C	Q,S,N,4,5,6	Y,G,N	-20°C to +60°C	E,F,G,H,K	Y,G,N	-40°C to +60°C	-	W,A,D	-10°C to +60°C
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L,P,M,1,2,3	Y,G,N	-20°C to +80°C																	
Q,S,N,4,5,6	Y,G,N	-20°C to +60°C																	
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CSA (pending)	Class I Div.2 Groups A, B, C, D Class II Div.2 Groups E, F, G Class III Div.2 Temp Code T5 Tamb max = +50°C Temp Code T4 Tamb max = +70°C Entity Parameters: Vmax=28V, Ci=25.18nF (Without Arrester), Ci=35.98nF (With Arrester), Li=0.694mH																		
Authorities	Flameproof																		
ATEX (pending)	Ex II 2 GD Ex d IIC T6 IP66/67 T85°C Tamb = -40°C to +65°C Ex d IIC T5 IP66/67 T100°C Tamb = -40°C to +85°C																		
Factory Mutual (pending)	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 <sub>2</sub> T4 Tamb max = +60°C Maximum process temp. = +120°C																		
IECEX Scheme (pending)	Ex d IIC T5 IP66/67 Tamb = -40°C to +85°C Ex d IIC T6 IP66/67 Tamb = -40°C to +65°C																		
NEPSI	Ex d IIB+H <sub>2</sub> T6 Tamb = -40°C to +60°C																		

**Zero/span adjustment:**

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

**Damping:**

Adjustable from HHC or local adjustment unit with LCD display.  
The time constant is adjustable between 0 to 32 seconds.

**Zero elevation/suppression:**

-100% to +100% of URL

**Normal/reverse action:**

Selectable from HHC<sup>(1)</sup>

**Indication:**

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

**Burnout direction:** Selectable from HHC<sup>(1)</sup>

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

"Output Hold":

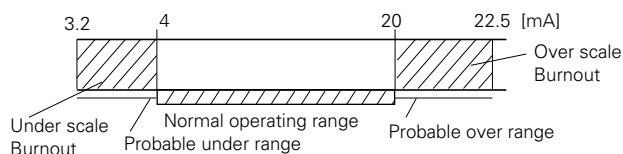
Output signal is hold as the value just before failure happens.

"Output Overscale":

Adjustable within the range 20.0mA to 22.5mA from HHC<sup>(1)</sup>

"Output Underscale":

Adjustable within the range 3.2mA to 4.0mA from HHC<sup>(1)</sup>



Output limits conforming to NAMUR NE43 by order.

**Loop-check output:**

Transmitter can be configured to provide constant signal 3.2mA through 22.5mA by HHC<sup>(1)</sup>.

**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:**

With HHC<sup>(1)</sup> (Model FXW, consult Data Sheet No. EDS8-47), following items can be remotely displayed or configured.

Note:

HHC's version must be higher than 6.0  
(or FXW □□□□1-□3), for FCX-ALL

For supporting "Saturate current", "Write protect", and "History", HHC's version 6.3 or higher is necessary.

Items	Fuji Protocol with FXW		Hart Protocol	
	Display	Set	Display	Set
Tag No.	√	√	√	√
Model No.	√	√	—	—
Serial No. & Software Version	√	—	√	—
Engineering unit	√	√	√	√
Range limit	√	—	√	—
Measuring range	√	√	√	√
Damping	√	√	√	√
Output mode	Linear	√	√	√
	Square root	√	√	√
Burnout direction	√	√	√	√
Calibration	√	√	√	√
Output adjust	—	√	—	√
Data	√	—	√	—
Self diagnoses	√	—	√	—
Printer (In case of FXW with printer option)	√	—	—	—
External switch lock	√	√	√	√
Transmitter display	√	√	√	√
Linearize*	√	√	—	—
Rerange	√	√	√	√
Saturate current	√	√	√	√
Write protect	√	√	√	√
History	— Calibration history	√	√	√
	— Ambient temperature history	√	—	√

**\*Local configurator with LCD display (option):**

Local configurator with 3 push button and LCD display can support all items (Fuji Protocol list) except "Linearize" function.

**Programmable output linearization function:**

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

**Fieldbus units:**

Digital signal  
Transmission technique: according to IEC61158-2  
Power supply: 9VDC...32VDC  
Base current: 16±2mA  
Transmission rate: 31,25 kbits/sec  
Profibus-PA: DPV1 version 3.0  
Fieldbus Foundation: FF-890/891

(Note) (1) HHC: Hand Held Communicator

**Performance specifications for linear output**

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

**Accuracy rating:**

(including linearity, hysteresis, and repeatability)

**Max span above 32kPa model:**

For spans greater than 1/10 of URL:  
±0.065% of span or ±0.04% of span

For spans below 1/10 of URL:

$$\pm \left( 0.015 + 0.05 \frac{0.1 \times \text{URL}}{\text{Span}} \right) \% \text{ of span}$$

**Max span 1kPa, 6kPa model:**

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

For spans below 1/10 of URL:

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

**Stability:**

±0.1% of upper range limit (URL) for 10 years for 6th digit code 3, 5, 6, 8 and 9.

**Temperature effect:**

Effects per 28°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} "2"/6kPa {60mbar}	$\pm \left( 0.125 + 0.1 \frac{\text{URL}}{\text{Span}} \right) \%$	$\pm \left( 0.15 + 0.1 \frac{\text{URL}}{\text{Span}} \right) \%$
"3"/32kPa {320mbar} "5"/130kPa {1300mbar} "6"/500kPa {5000mbar} "8"/3000 kPa {30000mbar} "9"/20000kPa {200000mbar}	$\pm \left( 0.075 + 0.0125 \frac{\text{URL}}{\text{Span}} \right) \%$	$\pm \left( 0.095 + 0.0125 \frac{\text{URL}}{\text{Span}} \right) \%$

**Static pressure effect:**

Static pressure code (5th digit in Code symbols)	Zero shift (% of URL)
"1" / 1kPa {10m bar} sensor "2" / 6kPa {60 m bar} sensor	±0.2% / 0.2MPa {2bar} ±0.2% / 3.2MPa {32bar}
"2" "3" "4"	±0.035% / 6.9MPa {69bar}

**Overrange effect:**

Static pressure code (5th digit in Code symbols)	Zero shift (% of URL)
"1" / 1kPa {10m bar} sensor "2" / 6kPa {60m bar} sensor	±0.3% / 0.2MPa {2bar} ±0.1% / 3.2MPa {32bar}
"2" "3" "3" "4"	±0.1% / 10MPa {100bar} ±0.1% / 16MPa {160bar} FKC□3 5,6,8 ±0.15% / 16MPa {160bar} FKC□33 ±0.25% / 42MPa {420 bar}

**Performance specifications for square root output**

**Accuracy rating:**

Output	Span	
	over 0.1 × URL	below 0.1 × URL
50 to 100%	±0.065 %	±(0.015+0.05 × 0.1 × URL/Span)%
20 to 50%	±0.163 %	±2.5 × (0.015+0.05 × 0.1 × URL/Span)%
10 to 20%	±0.325 %	±5 × (0.015+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:**

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

Range code	Shift at 20% output point
"1" and "2"	$\pm \left( 0.375 + 0.25 \frac{\text{URL}}{\text{Span}} \right) \% / 28^\circ\text{C}$
"3" through "9"	$\pm \left( 0.24 + 0.03125 \frac{\text{URL}}{\text{Span}} \right) \% / 28^\circ\text{C}$

**Low flow cut-off:**

Customer configurable for any point between 0 to 20% of output

**Supply voltage effect:**

Less than 0.005% of calibrated span per 1V

**Update rate:**

60 msec

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

Range code (6th digit in code symbols)	Time constant (at 23°C)	Dead time
"1"	0.33 s	0.12 s
"2"	0.3 s	
"3"	0.12 s	
"5" through "8"	0.08 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.

**Dielectric strength:**

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

**Insulation resistance:**

More than 100MΩ at 500V DC.

**Internal resistance for external field indicator:**

12Ω max. (connected to test terminal CK+ and CK-)

## Physical specifications

### Electrical connections:

1/2-14 NPT, Pg13.5 or M20×1.5

### Process connections:

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

Meets DIN 19213.

option: 1/2NPT for oval flanges

### Process-wetted parts material:

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

Notes: \*(1) ASTM CF8M

Remark:

Sensor gasket : Viton o-ring or PTFE square section gasketAvailability 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 finished with polyester coating (standard), or 316 stainless steel, as specified.

Bolts and nuts:

Cr-Mo alloy (standard), 316 stainless steel for static pressure if 100 bar max. otherwise SS630 or SS660 for static pressure > 100 bar.

Fill fluid:

Silicone oil (standard) or fluorinated oil

Mounting bracket:

304 stainless steel

### Environmental protection:

IEC IP67 and NEMA 6/6P

### Mounting:

Without mounting bracket : direct mounting on manifold (optional)

With optional mounting bracket : for 50mm (2") pipe or direct wall mounting.

### Mass{weight}:

Transmitter approximately 3.1 to 3.6kg without options.

Add; 0.5kg for mounting bracket

4.5kg for stainless steel housing (option)

## Optional features

### Indicator:

A plug-in analog indicator (2.5% accuracy).

An optional 5-digit LCD meter with engine-ring unit is also available.

### Local configurator with LCD display:

An optional 5 digits LCD meter with 3 push buttons can support items as using communication with HHC <sup>(1)</sup>.

### 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 bound any parts comply with NACE MR-01-75. 630/304 or 660/660 stain-less steel bolts and nuts comply with NACE.

### Optional tag plate:

An extra stainless steel tag with customer tag data is wired to the transmitter.

### Vacuum service:

Special silicone oil and filling procedure are applied.

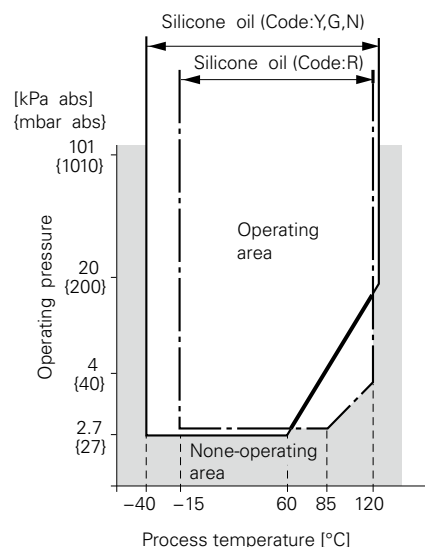


Fig. 1 Relation between process temperature and operating pressure

## ACCESSORIES

### Oval flanges:

Converts process connection to 1/2-14 NPT in 316L stainless steel.

### Manifolds:

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

### Hand-held communicator:

(FXW model, refer to Data Sheet N° EDS 8-47)

CODE SYMBOLS

																DESCRIPTION					
																Type					
																Smart, 4-20 mAdc + Fuji/Hart™ digital signal					
																Fieldbus Foundation™ & Profibus™					
																Connections					
																Process connections	Oval flange connection	Electrical connection			
M																(*10)	1/4-18 NPT	M10	M 20 x 1,5		
N																(*10)	1/4-18 NPT	M10	Pg 13,5		
P																(*10)	1/4-18 NPT	M10	1/2-14 NPT		
R																(*9)	1/4-18 NPT	7/16-20 UNF	M 20 x 1,5		
T																(*9)	1/4-18 NPT	7/16-20 UNF	1/2-14 NPT		
V																(*1)	1/4-18 NPT	M10 or M12 (*1)	Pg 13,5		
W																(*1)	1/4-18 NPT	M10 or M12 (*1)	M 20 x 1,5		
X																(*9)	1/4-18 NPT	7/16-20 UNF	Pg 13,5		
																Range & wetted parts material					
																Static pressure limits	Spans (*2)	Process - cover LP & HP - side	Measuring diaphragm	Wetted cell body	
1	1	V														(*3)	-1 to	10/100	316L SS	316L SS	316 SS
1	1	W															20 bar	mm WC	316L SS	Hast C	316 SS
1	1	J																	316L SS	Gold coat	316 SS
1	1	H																	316L SS	Hast. C	Hast. C lining
2	2	V															-1 to	10/600	316L SS	316L SS	316 SS
2	2	W															100 bar	mm WC	316L SS	Hast C	316 SS
2	2	J																	316L SS	Gold coat	316 SS
2	2	H																	316L SS	Hast. C	Hast. C lining
3	3	V															-1 to	32	316L SS	316L SS	316 SS
3	3	W															160 bar (*3)	/3200	316L SS	Hast C	316 SS
3	3	H																mm WC	316L SS	Hast. C	Hast. C lining
3	3	M																	316L SS	Monel	Monel lining
3	3	J														(*4)			316L SS	Gold coat	316 SS
3	3	T																	316L SS	Tantalum	Tantalum lining
3	5	V																	316L SS	316L SS	316 SS
3	5	W																	316L SS	Hast C	316 SS
3	5	H																0,13	316L SS	Hast. C	Hast. C lining
3	5	M																/13	316L SS	Monel	Monel lining
3	5	J														(*4)		m WC	316L SS	Gold coat	316 SS
3	5	T																	316L SS	Tantalum	Tantalum lining
3	6	V																	316L SS	316L SS	316 SS
3	6	W																	316L SS	Hast C	316 SS
3	6	H																0,5/50	316L SS	Hast. C	Hast. C lining
3	6	J														(*4)			316L SS	Gold coat	316 SS
3	6	M																m WC	316L SS	Monel	Monel lining
3	6	T																	316L SS	Tantalum	Tantalum lining
3	8	V																3/300 m WC	316L SS	316L SS	316 SS
3	8	W																	316L SS	Hast C	316 SS
3	8	J														(*4)			316L SS	Gold coat	316 SS
4	3	V														(*12)	-1 to	32/3200	316L SS	316L SS	316 SS
4	3	W																mm WC	316L SS	Hast C	316 SS
4	3	H														(*12)			316L SS	Hast. C	Hast. C lining
4	3	M														(*12)			316L SS	Monel	Monel lining
4	3	J														(*4, *12)			316L SS	Gold coat	316 SS
4	5	V														(*12)			316L SS	316L SS	316 SS
4	5	W															420		316L SS	Hast C	316 SS
4	5	H														(*12)		0,13/13	316L SS	Hast. C	Hast. C lining
4	5	M														(*12)		m WC	316L SS	Monel	Monel lining
4	5	J														(*4, *12)			316L SS	Gold coat	316 SS
4	6	V														(*12)			316L SS	316L SS	316 SS
4	6	W															bar		316L SS	Hast C	316 SS
4	6	H														(*12)		0,5/50	316L SS	Hast. C	Hast. C lining
4	6	M														(*12)			316L SS	Monel	Monel lining
4	6	J														(*4, *12)		m WC	316L SS	Gold coat	Monel lining
4	8	V														(*12)	-1 to 300 bar	3/300 m WC	316L SS	316L SS	316 SS
4	8	W																	316L SS	Hast C	316 SS
4	8	J														(*4, *12)			316L SS	Gold coat	316 SS
4	9	V															-1 to 300 bar	20/2000 m WC	316L SS	316L SS	316 SS
4	9	W																	316L SS	Hast C	316 SS
4	9	J														(*4, *12)			316L SS	Gold coat	316 SS

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----

DESCRIPTION																				
2	3	B													(*5)	0	32	Hast. C lining	Hast. C	Hast. C lining
2	3	L													(*5)		/3200	Monel lining	Monel	Monel lining
2	3	U													(*5)		mm WC	Tantalum lining	Tantalum	Tantalum lining
2	5	B													(*5)	to	0,13	Hast. C lining	Hast. C	Hast. C lining
2	5	L													(*5)		/13	Monel lining	Monel	Monel lining
2	5	U													(*5)		m WC	Tantalum lining	Tantalum	Tantalum lining
2	6	B													(*5)	bar	0,5	Hast. C lining	Hast. C	Hast. C lining
2	6	L													(*5)		/50	Monel lining	Monel	Monel lining
2	6	U													(*5)		m WC	Tantalum lining	Tantalum	Tantalum lining
8	1	H													(*6)	0	10/100 mmWC	PVDF Insert	Hast. C	Hast. C lining
8	2	H													(*6)	to	60/600 mmWC	PVDF Insert	Hast. C	Hast. C lining
8	3	H													(*6)	15	32	PVDF Insert	Hast. C	Hast. C lining
8	3	M													(*6)		/3200	PVDF Insert	Monel	Monel lining
8	3	T													(*6)	bar	mm WC	PVDF Insert	Tantalum	Tantalum lining
8	5	H													(*6)	0	0,13	PVDF Insert	Hast. C	Hast. C lining
8	5	M													(*6)	to	/13	PVDF Insert	Monel	Monel lining
8	5	T													(*6)		m WC	PVDF Insert	Tantalum	Tantalum lining
8	6	H													(*6)	bar	0,5	PVDF Insert	Hast. C	Hast. C lining
8	6	M													(*6)		/50	PVDF Insert	Monel	Monel lining
8	6	T													(*6)		m WC	PVDF Insert	Tantalum	Tantalum lining
9	1	H													(*6)	0	10/100 mmWC	PVDF Insert	316L SS	Hast. C lining
9	2	H													(*6)	to	10/600 mmWC	PVDF Insert	316L SS	Hast. C lining
9	3	H													(*6)	15	32	PVDF Insert	316L SS	Hast. C lining
9	3	M													(*6)		/3200	PVDF Insert	316L SS	Monel lining
9	3	T													(*6)	bar	mm WC	PVDF Insert	316L SS	Tantalum lining
9	5	H													(*6)	to	0,13	PVDF Insert	316L SS	Hast. C lining
9	5	M													(*6)		/13	PVDF Insert	316L SS	Monel lining
9	5	T													(*6)		m WC	PVDF Insert	316L SS	Tantalum lining
9	6	H													(*6)	bar	0,5	PVDF Insert	316L SS	Hast. C lining
9	6	M													(*6)		/50	PVDF Insert	316L SS	Monel lining
9	6	T													(*6)		m WC	PVDF Insert	316L SS	Tantalum lining

Indicator & Arrester																		
Indicator																		
Arrester																		
Initial setting																		
5	-	A														None	None	
5	-	B														Analog, 0-100% linear scale	None	
5	-	C														Analog, 0-100% √ scale	None	
5	-	D														Analog, Custom scale	None	4-20 mA DC
5	-	J														Analog, double scale	None	
5	-	E														None	Yes	+
5	-	F														Analog, 0-100% linear scale	Yes	
5	-	G														Analog, 0-100% √ scale	Yes	Hart®/Fuji
5	-	H														Analog, Custom scale	Yes	digital signal
5	-	K														Analog, double scale	Yes	"SMART"
5	-	1														Digital, 0-100%	None	
5	-	2														Digital, Custom scale	None	
5	-	3														Digital, 0-100% √ scale	None	
5	-	4														Digital, 0-100%	Yes	
5	-	5														Digital, Custom scale	Yes	
5	-	6														Digital, 0-100% √ scale	Yes	
Fieldbus Foundation™																		
5	-	A														None	No	Fieldbus Foundation™
5	-	E														None	Yes	Fieldbus Foundation™
5	-	P														Digital	No	Fieldbus Foundation™
5	-	S														Digital	Yes	Fieldbus Foundation™
Profibus																		
5	-	R														None	No	Profibus
5	-	T														None	Yes	Profibus
5	-	V														Digital	No	Profibus
5	-	W														Digital	Yes	Profibus

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	DESCRIPTION
																<b>Approvals for hazardous locations (consult FUJI for availability)</b>
A																None (standard)
X																Flameproof housing ATEX $\text{Ex}$ II 2 GD - Ex d IIC T5/T6 (code 4 = "M, P, R, T" & "W" only)
K															(*14)	Intrinsic Safety ATEX $\text{Ex}$ II 1 GD - Ex ia IIC T4/T5
D															(*11)	FM - Flameproof housing Class I, Division 1, Groups B,C,D; T6
E																Dust ignitionproof Class II/III, Division 1, Groups E,F,G; T6; Type 4x - (code 4 = "P" & "T" only)
H																CSA - Flameproof housing Class I, Groups C,D - Class II, Group E,F,G Class III - (code 4 = "P" & "T" only)
J																FM - Intrinsic safety Class I, II, III, Division 1, Group A,B,C,D,E,F,G; T4
P																Non-Incendive Class I,II,III, Division 2, Groups A,B,C,D,F,G; T4; Type 4x
Q																CSA - Intrinsic safety & Non-Incendive Class I, Groups A,B,C,D - Class II, Groups E,F,G - Class III
R																Type n ATEX $\text{Ex}$ II 3 GD - Ex nA / Ex nL IIC T4/T5
T																IECEx Type n
L																IECEx Flameproof housing Ex d IIC T5/T6 (code 4 = "M, P, R, T" & "W" only)
M																IECEx Intrinsic safety Ex ia T4/T5
N																Combined CSA approval for flameproof and intrinsic safety (code 4 = "P" & "T" only)
V																Combined ATEX approval for flameproof and intrinsic safety (code 4 = "M, P, R, T" & "W" only)
																Combined IECEx approval for flameproof and intrinsic safety (code 4 = "M, P, R, T" & "W" only)
																Combined FM approval for flameproof and intrinsic safety (code 4 = "P" & "T" only)
																<b>Fieldbus Foundation™ &amp; Profibus™</b>
A																None (standard)
X																Flameproof housing ATEX $\text{Ex}$ II 2 GD - Ex d IIC T5/T6
K															(*14)	Intrinsic Safety ATEX $\text{Ex}$ II 1 GD - Ex ia IIC T4
4																ATEX - FISCO $\text{Ex}$ II 1 GD - Ex ia IIC T4
																<b>Side vent/drain &amp; mounting bracket</b>
																Side Vent/drain
																Mounting bracket
A																None
C																None
D																Yes, SS
F																Yes, SS
																<b>SS parts</b>
																SS tag plate
																SS housing
Y																None
B																Yes
C																None
E																None
																Yes
																<b>Special applications &amp; fill fluid</b>
																Treatment
																Fill fluid
Y																None (std)
W																Silicone oil
G																None (std)
A																Fluorinated oil
D																Degreasing
N																Silicone oil
R																Oxygen service
																Fluorinated oil (only w/digit7=V )
																Chlorine service
																Fluorinated oil (only w/digit 7=H,T,B,U)
															(*8)	NACE
																Silicone oil
																Vacuum service
																Silicone oil
																<b>Process cover gasket</b>
- A																Viton
- C																PTFE square section gasket in SS flange (FEF design)
- D															(*6)	PTFE square section gasket in PVDF insert
																<b>Bolts/screws material</b>
A																Carbon steel Cr-Mo (standard) M10
U															(*3)	SS 316/316 (bolt/nuts) M10
F																SS 630/304 (bolt/nuts) M10
V															(*12)	Carbon steel Cr-Mo (standard) M12 for static pressure > 160 bar
X															(*12)	SS 630/304 (bolt/nuts) M12 for static pressure > 160 bar
W															(*12,14)	SS 660/660 (bolt/nuts) M12 for static pressure > 160 bar
																<b>Special options or design</b>
															(*7)	- * special, no code available

Notes\*:

- \*1 The thread is M12, if static pressure 420 bar
- \*2 Turn down of 100 : 1 is possible, but it should be used at a span greater than 1/40 of the maximum span for better performance.
- \*3 Max. static pressure 100 bar for SS 316 bolts/nuts; for static pressure > 100 bar, please specify : SS 630 or SS 660 bolts
- \*4 Gold coating on wetted measuring cell parts for Hydrogen service - Hydroseal version - gold/ceramic coating is available upon request.
- \*5 Process cover with lining has only side vent-drain facility
- \*6 Process cover with PVDF insert with 1/2-18 NPT side process connection/no vent drain, other upon request - square section PTFE gasket
- \*7 When no code can be found in the current code symbols, place \* in concerned code digit(s) & add \* in 16 th digit
- \*8 Our stainless steel bolts/nuts in SS630 and SS660 are in conformity with the NACE requirements and must be used for NACE service
- \*9 For the static pressure option 420 bar and process cover gasket PTFE please use only code "R","T" or "X"
- \*10 Process connection compatible with "Coplanar™" design
- \*11 Code "D & V" FM approval only possible with electrical connection 1/2" NPT.
- \*12 - M12 bolting has to be used for static pressure > 160 bar
- \*13 - Arrestor option is not compatible with ATEX FISCO approval - concerns digit 9 codes "E,S,V and W"
- \*14 For FKC transmitter, please use approval ATEX  $\text{Ex}$  II 1 GD - EEx ia IIC T4/T5 and for FDC transmitter ATEX  $\text{Ex}$  II 1 GD - EEx ia IIC T4
- \*15 SS660 bolts/nuts have to be used for oil & gas applications



## 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 / Underscale  
Unless otherwise specified, output hold function is supplied.
4. Output mode (linear or square root output)  
Unless otherwise specified, output mode is linear.
5. Indication method (indicated value and unit) in case of the actual scale (code D, H, P, S on 9th digit).
6. Tag No. (up to 20 alphanumerical characters), if required.

The product conforms to the requirements of the Electro-magnetic compatibility Directive 89/336/EEC as detailed within the technical construction file number TN513035. The applicable standards used to demonstrate compliance are :

### EMI (Emission) EN61326 : 1997

Class A (std for Industrial Location)

Frequency range MHz	Limits	Reference Standard
3 to 230	40dB ( $\mu\text{V}/\text{m}$ ) quasi peak measured at 10m distance	CISPR16-1 and CISPR16-2
230 to 1000	47dB ( $\mu\text{V}/\text{m}$ ) quasi peak, measured at 10m distance	

#### 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.

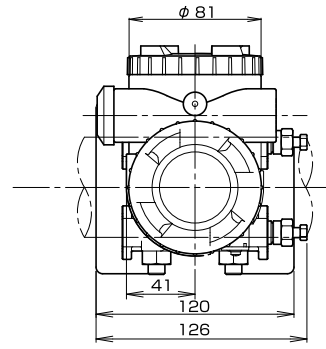
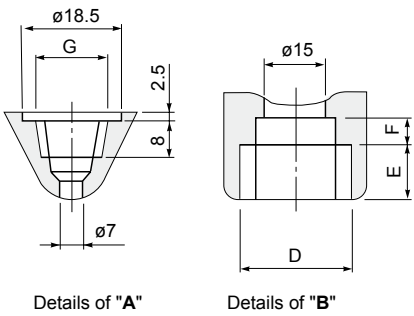
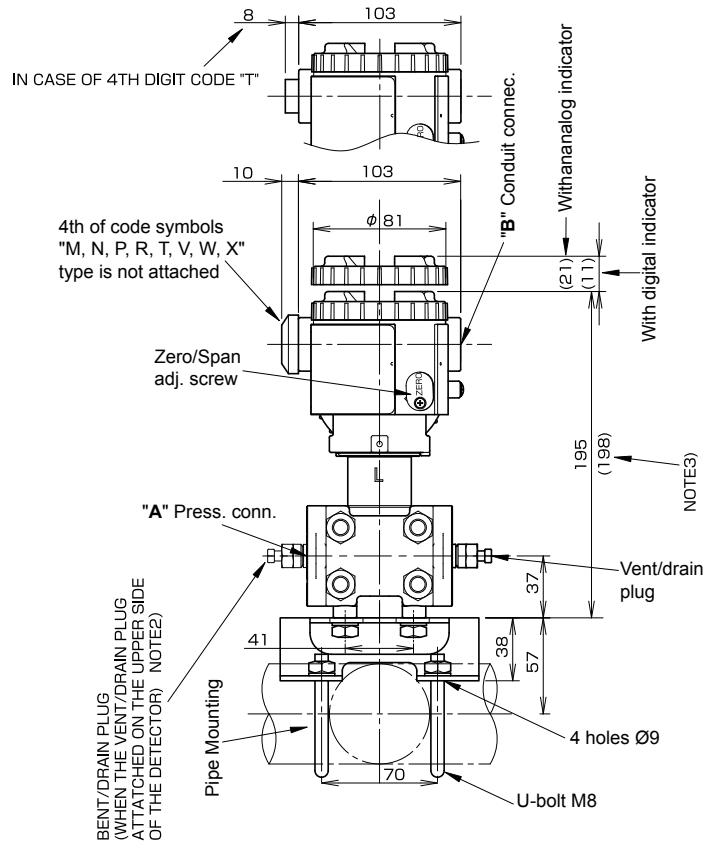
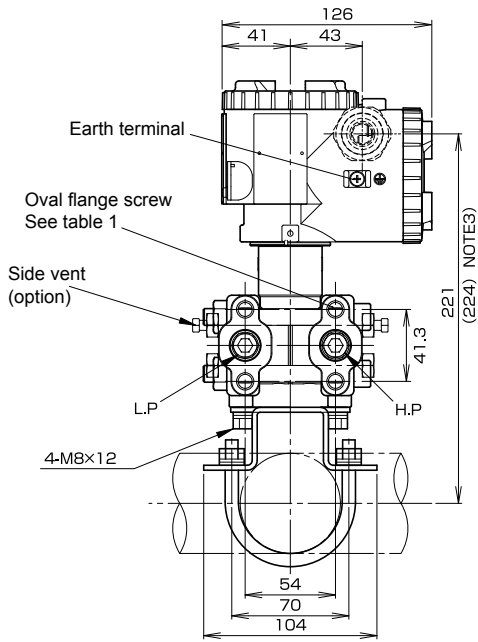
### EMS (Immunity) EN61326 : 1997

Annex A (standard for Industrial Location)

Phenomenon	Test value	Basic Standard	Performance criteria
Electrostatic discharge	4kV (Contact) 8kV (Air)	IEC61000-4-2	B
Electromagnetic field	80 to 1000MHz 10V/m 80%AM (1kHz)	IEC61000-4-3	A
Rated power frequency magnetic field	30A/m 50Hz	IEC61000-4-8	A
Burst	2kV 5kHz	IEC61000-4-4	B
Surge	1.2 $\mu\text{s}/50\mu\text{s}$ 1kV (Line to line) 2kV (line to ground)	IEC61000-4-5	B
Conducted RF	0.15 to 80MHz 3V , 80%AM (1kHz)	IEC61000-4-6	A

OUTLINE DIAGRAM (Unit:mm)

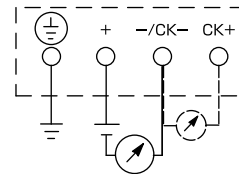
<7th digit code : V, H, M, T>



4th digit of the code symbols	Conduit conn.			Press. conn.	Oval frange screw
	D	E	F	G	
R	M20x1.5	16	5	1/4-14NPT	7/16-20UNF
T	1/2-14NPT	16	5	1/4-14NPT	7/16-20UNF
V	Pg13.5	8	4.5	1/4-14NPT	M10 or M12
W	M20x1.5	16	5	1/4-14NPT	M10 or M12
X	Pg13.5	8	4.5	1/4-14NPT	7/16-20UNF

TABLE 1

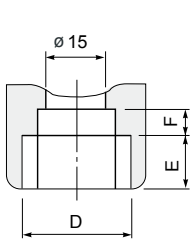
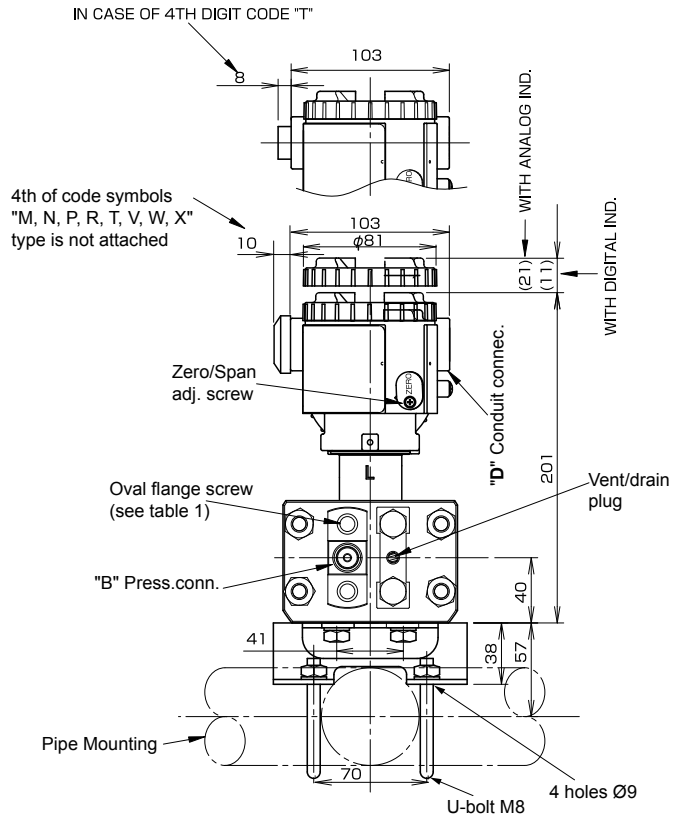
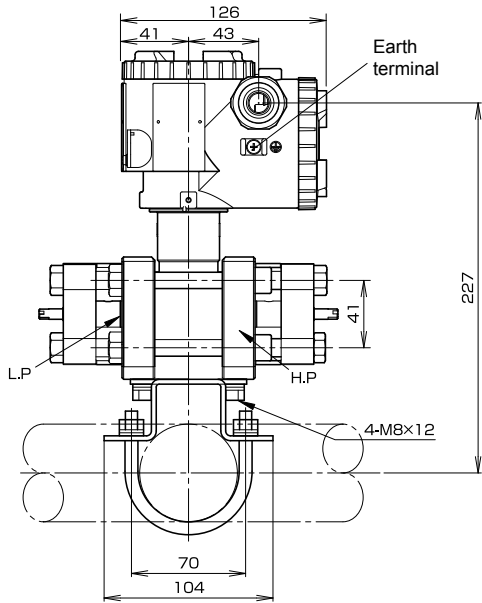
CONNECTION DIAGRAM



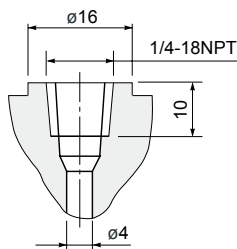
NOTE1) IN CASE OF 10TH CODE "C", φ11 CABLE IS SUITBLE.  
 NOTE2) THE PRESSURE CONNECTOR IS LOCATED ON THE DOWN SIDE SURFACE OF THE DETECTOR, WHEN THE VENT/DRAINPLUG IS ATTACHED ON THE UPPER SIDE OF THE DETECTOR (WHEN THE 21TH DIGIT OF THE CODE SYMBOLS : C).  
 NOTE3) WHEN THE 5TH DIGIT OF THE CODE SYMBOLS "1,2,4" or THE 7TH DIGIT OF THE CODE SYMBOLS "C,H,M,T"

# OUTLINE DIAGRAM (Unit:mm)

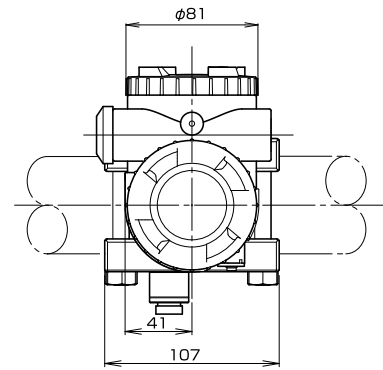
<7th digit code : B, L, U>



Details of "C"



Details of "B"

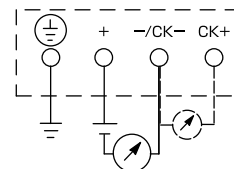


4th digit of the code symbols	Conduit conn.			Press. conn.	Oval frange screw
	D	E	F	G	
R	M20x1.5	16	5	1/4-14NPT	7/16-20UNF
T	1/2-14NPT	16	5	1/4-14NPT	7/16-20UNF
V	Pg13.5	8	4.5	1/4-14NPT	M10 or M12
W	M20x1.5	16	5	1/4-14NPT	M10 or M12
X	Pg13.5	8	4.5	1/4-14NPT	7/16-20UNF

TABLE 1

NOTE1) IN CASE OF 10TH CODE "C",  $\phi 11$  CABLE IS SUITBLE.

## CONNECTION DIAGRAM



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