

High Static (up to 1035 Bar)

## Differential Pressure (flow) Transmitter

Data Sheet

FKC

Solutions for specific customer applications:

Based on extensive experience of supplying transmitters for Oil & Gas application, Fuji Electric is proud to announce the release of its latest Differential Pressure as a direct response to our customer's requirement in high pressure applications that are traditionally found in Oil & Gas flow measurement.

The experience and technical capability that we built into the new transmitter enables it to measure differential pressures of 130mbar at static pressures of up to 1035 bar (15 000 Psi), typically found in top side and subsea applications.



### Measuring principle:

The transmitter utilizes a unique micromachined capacitive silicon sensor with state-of-the-art microprocessor technology to provide exceptional performance and functionality.

The silicone sensor is assembled floating in measuring cell neck, which allows extreme high line pressures and improves the static pressure characteristics.

### Robust construction:

The design is based on an all-welded construction, where the welded assembling of the process covers on the measuring cell replaces the gaskets.

Adapted SS 660 bolting and the specific process covers – NACE compatible – ensure the required mechanical strength to the assembly is certified according to a PED category IV module H1.

### Physical specifications:

**Process connections:**

1/4" NPT, autoclave 9/16 – UNF – 2B

**Wetted parts materials:**

Diaphragm SS 316L, Hast C 276,

Others: SS 316L, Hast C 276, Duplex, Inconel 625

**Non wetted parts:**

Electronics housing : Low copper die-cast aluminum alloy (standard), finished with epoxy / polyurethane double coating or SS316

Bolts/nuts: SS660

**Ambient temperature:**

0 to 85°C

**Process temperature:**

0 to 120 °C

**Remote seal designs:**

To avoid hydrate formation for subsea applications, remote seals can be assembled on the DP transmitter.

Possible process connections via remote seals according API, RTJ standards or according customer design.

## Performance specification:

### Accuracy rating:

(including linearity, hysteresis, and repeatability)

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

### Stability:

$\pm 0.1\%$  of upper range limit (URL) for 3 years

### Ambient temperature effect:

Zero:  $\pm (0.1 + 0.025 \times \text{URL}/\text{span})$  in % of URL /28°C

Total:  $\pm (0.125 + 0.025 \times \text{URL}/\text{span})$  in % of URL /28°C

Double the effects for diaphragm material code "H" (7th digit in codes symbols)

### Static pressure effect:

Zero :  $\pm 0.1\%$  of URL /10 MPa

### Span:

-0.6 % of span /10 MPa

Double the effects for diaphragm material code "H" (7th digit in codes symbols)

### 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 in place.

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

### 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 after installatrition.

### Vibration effect:

$< \pm 0.25\%$  of spans for spans greater than 1/10 of URL.

Frequency 10 to 150Hz, acceleration 39,2m/sec<sup>2</sup>

### Material fatigue:

Please consult Fuji Electric

### 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.

## Specifications in case of square root output :

### Accuracy rating:

#### Output

50 to 100% :  $\pm 0.1\%$  of span

20 to 50% :  $\pm 0.25\%$  of span

10 to 20% :  $\pm 0.5\%$  of span

### Ambient temperature effect:

Shift at 20% output point :  $\pm (0.3 + 0.25 \times \text{URL}/\text{span})$  in % of URL /28°C

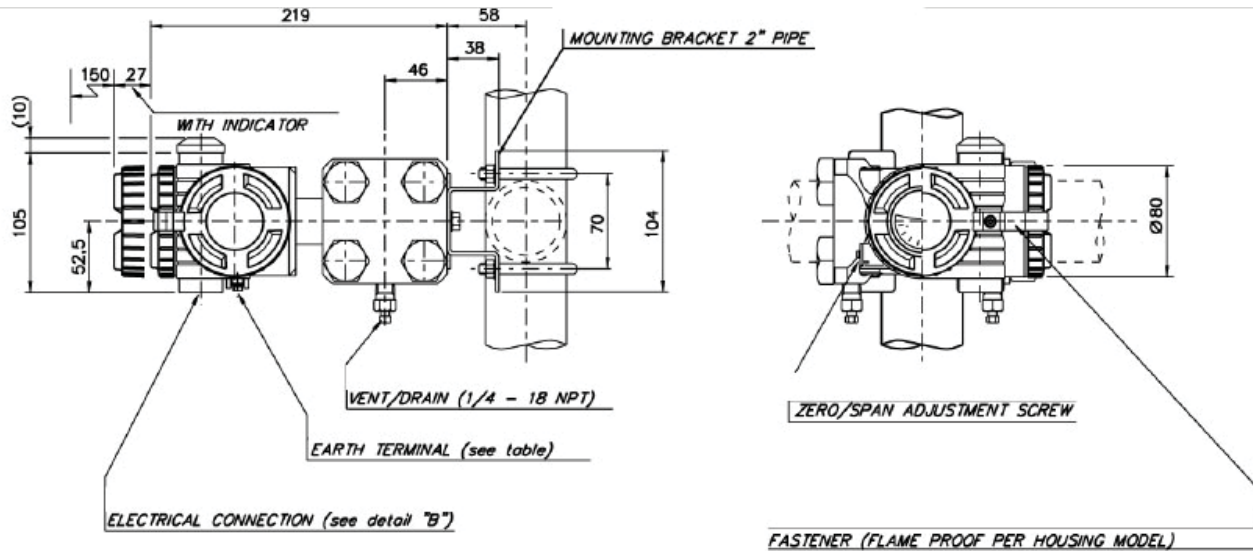
### Low flow cut-off:

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

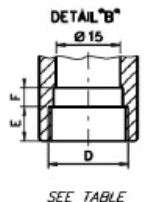
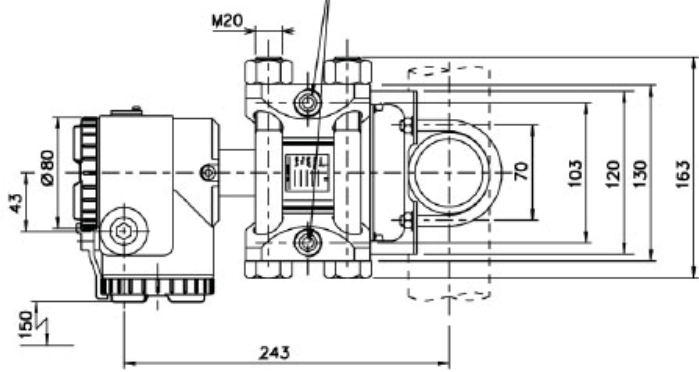
Code symbols:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	DESCRIPTION		
F	K	C					4	-		C			-	W	W	<b>Type</b>	
F	K	C														Smart, 4-20 mAdc + Fuji/Hart™ digital signal	
																<b>Process connection</b>	<b>Electrical connection</b>
			T													1/4"-18 NPT	1/2"-14 NPT
			W													1/4"-18 NPT	M 20 x 1,5
			*													Autoclave 9/16-UNF-2B	M 20 x 1,5 or 1/2"-14 NPT
																<b>Max working pressure (static pressure)</b>	<b>Test pressure</b>
				S												690 bar - M20 bolting	1030 bar
				T												860 bar - M20 bolting	1285 bar
				U												1035 bar - M20 bolting	1545 bar
																<b>Range</b>	
					3											Min/max range 0 - 130/ 0 - 320 mbar	
					5											Min/max range 0 - 130/ 0 - 1300 mbar	
					6											Min/max range 0 - 500/ 0 - 5000 mbar	
					8											Min/max range 0 - 3000/ 0 - 30000 mbar	
																<b>Wetted parts material</b>	
						V										All wetted parts SS316 (L)	
						H										Measuring cell wetted parts in Hast C 276 - process cover in SS316L	
																<b>Indicator</b>	
							4	-	A							No indicator	
							4	-	L							digital indicator, 0-100%	
							4	-	P							digital indicator, Custom scale	
																<b>Approvals for hazardous locations (consult FUJI for availability)</b>	
									A							none (standard)	
									X							Flameproof housing ATEX Ix II 2 GD - EEx d IIC T5/T6	
									K							Intrinsic Safety ATEX Ix II 1 GD - EEx ia IIC T4/T5	
									D							FM - Flameproof housing Class I, Division 1, Group B,C,D	
																Dust ignitionproof Class II/III, Division 1, Group E,F,G - (elec. conn. code "T" only)	
									E							CSA - Flameproof housing Class I, Group C,D - Class II, Group E,F,G	
																Class III - (electrical connection code "T" only)	
									H							FM - Intrinsic safety Class I, II, III, Division 1, Group A,B,C,D,E,F,G	
																Nonincentive Class I,II,III, Division 2, Group A,B,C,D,F,G	
									J							CSA - Intrinsic safety & Nonincentive Class I, Group A,B,C,D - Class II, Group E,F,G	
																Class III - Temp code T4 for all classes (electrical connection code "T" only)	
									M							Combined ATEX Ix II 2 GD - EEx d IIC T5/T6 & ATEX Ix II 1 GD - EEx ia IIC T4/T5	
																<b>Mounting bracket</b>	
									C							Included (SS)	
																<b>SS parts</b>	
																<b>SS tag plate</b>	<b>Housing</b>
											Y					No tag plate	Std aluminium electronics housing
											B					Tag plate	Std aluminium electronics housing
											C					No tag plate	SS 316 electronics housing
											E					Tag plate	SS 316 electronics housing
																<b>Fill fluid</b>	
											M					Specific oil fill for cell	
											P					Specific oil fill for cell & wetted parts and bolting in conformity with NACE	
																Welded process cover design	
																Process cover bolts/nuts in ASTM A 453 grade 660	

# Outline Specifications



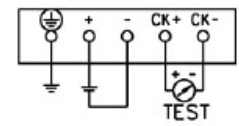
- PROCESS CONNECTIONS : 1/4 - 18 NPT (STANDARD)
- OR (OPTIONAL)
- 13/16-16 UN - FOR 9/16 MP AUTOCLAVE CONNECTIONS
  - 9/16-18 UNF - FOR 1/4 HP AUTOCLAVE CONNECTIONS
  - 9/16-18 UNF - FOR 3/8 MP AUTOCLAVE CONNECTIONS
  - 1/2 - 14 NPT
  - M16 x 1



CONDUIT CONN.			EARTH TERMINAL
D	E	F	
1/2-14NPT	16	5	N'B - 32UNC
Pg 13.5	B	4.5	M4
M20x1.5	16	5	M4

SEE TABLE

CONNECTION DIAGRAM



## Fuji Electric

Your distributor:  
**Coulton Instrumentation Ltd**  
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**Tel:** +44 1202 480 303  
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