

1. Specification of Smart Differential Pressure Transmitter

1	Type	Smart Differential Pressure Transmitter
2	Measurement Range	As per Table 1. Max URL of transmitter should be <4 times the span specified in table 1 for each transmitter
3	Service Medium	As per Table 2
4	Desirable Turndown Ratio (TD)	100:1
5	Output	Two wire 4–20 mA with superimposed digital communication HART protocol.
6	Power Supply	12 to 30 V DC
7	Local Indication	min4½ digits LCD – Local Alpha Numeric Digital display in Engineering units
8	Hazardous Area Certification	Both intrinsically safe and explosion proof suitable for use in Hydrogen atmosphere.(CENLEC / CSA / FM / ATEX or any equivalent approval).
9	Safety Integrity Level Standard (SIL)	Safety Instrumented System Certification as per IEC 61508 standard, SIL 2 and above.
10	Zero & Span Adjustments	Zero and Span are to be adjusted from the Handheld HART Communicator.
11	Failure mode alarms	High alarm ≥ 21.0 mA Low Alarm ≤ 3.6 mA
12	Accuracy (including the effect of Terminal – Based linearity, hysteresis & repeatability)	≤ 0.08 % of span
13	Ambient Temperature Effect per 28°C	within ± 0.4 % span

14	Stability	within ± 0.2 % of URL for 10 years
15	Power Supply Effect	$\leq \pm 0.005$ % of span per volt
16	Static Pressure effect	Span error: $\leq \pm 0.2$ % of span /70 bar for URL below 100 mbar Span error: $\leq \pm 0.45$ % of span /70 bar for URL above 100 mbar.
17	Over Pressure limit	1.25 times of URL (Upper range Limit).
18	Nominal Operating Temperature	15°C to 70°C
19	Response time	≤ 300 milliseconds
20	Wetted Material	As per Table 1
21	Fill Fluid	As per table 2
22	Transient Protection	As per IEEE C62.41, category B – 3kA Crest (8/20microseconds) Applicable standards: IEC61000-4-4, IEC61000-4-5.
23	Drain vent port	Not required.
24	Electrical Connection	$\frac{1}{2}$ " – 14 NPT (F) with SS plug.
25	Transmitter Process connection	$\frac{1}{2}$ " – 14 NPT (F) or suitable for the quoted manifold
26	Housing Material	Polyurethane covered aluminium
27	External Grounding screw assembly on transmitter body	Required
28	Mounting Bracket	Stainless Steel Bracket with SS fasteners, bolts, nuts, washers and U-clamps suitable for 2-inch pipe mounting.

29	Calibration	Calibration shall be carried out at room temperature in 5 steps ascending and 5 steps descending. Calibration certificate is to be provided. Calibration shall be traceable to National Standards.
30	Manifold	5 valve manifolds to be provided as per Specification given in the next subheading

Table - 1 Range, Medium & Quantity for Differential pressure transmitter

Sl.No.	Item	Range	Medium	Quantity
1	Differential Pressure Transmitter with 5-way valve manifold	0 to 0.11MPa	LH2/GH2 (Liquid or gas Hydrogen)	1
			TOTAL	1

Table -2 wetted material & fill fluid

Sl. No.	Medium	Fill fluid	Diaphragm material	Flange & Adapter material	O-Ring Material	Special Cleaning	Electrical Housing	Calibration fluid
1	GH2/LH2	Inert Fill(Krytox)	Gold plated 316L SS	316 SS	PTFE	Oxygen Cleaning	Certified for EEx ia IIC , T6	GN2

2. Specification of 5 Valve Manifold:

1. Type : 5 valve (isolation (2), drain (2) and equaliser (1) valves) manifold
2. Material : 316SS
3. Packing material : PTFE
4. Seat type : Integral
5. Instrument Connection : Suitable for quoted transmitter interface
6. Process connection : ½ inch-14 NPTF
7. Maximum Operating Pressure : 680 bar
8. Operating Temperature : 15 to 50°C
9. Hydro Testing : To be carried out at 1.5 times the maximum operating pressure for all the manifolds and certificate to be provided
10. Material Test certificate : To be provided
11. Mounting Bolts : To be supplied with SS material.