

SPECIFICATIONS: Pressure Transmitters & Manifolds

1. SMART ABSOLUTE & GAUGE PRESSURE TRANSMITTERS		
Sl.No	Parameters	Specification
1	Item	SMART Pressure Transmitters
2	Type, Measurement Range, Fluid medium and Maximum Allowable Working Pressure	As per Table 1
3	Maximum Turndown Ratio	100:1
4	Output	Two wire 4-20 mA with superimposed Digital communication with HART protocol.
5	Power Supply	12 to 30 V DC.
6	Local Indication	Minimum 4½ digits LCD - Local Alpha Numeric Digital display in Engineering units.
7	Safety Integrity Level Standard (SIL)	Safety Instrumented System Certification as per IEC 61508 standard, SIL 2 or above.
8	Zero & Span Adjustments	Zero and Span are to be adjusted from the Handheld HART Communicator
9	Failure mode alarms	High alarm ≥ 21.0 mA Low Alarm ≤ 3.6 mA
10	Accuracy @ TD 8:1 for URL < 200 Bar and @ TD 2.5:1 for URL > 200 Bar	$\leq \pm 0.06\%$ of Calibrated span (including the effect of Terminal - Based linearity, hysteresis & repeatability)
11	Ambient Temperature Effect for 28°C variation @ TD 8:1 for URL < 300 Bar and @ TD 2.5:1 for URL > 300 Bar	$\leq \pm 0.4$ % span
12	Stability	$\leq \pm 0.2$ % of URL for 10 years
13	Power Supply Effect	$\leq \pm 0.005$ % of Calibrated Span per Volt.
14	Over Pressure limit	Over pressure limit of selected transmitters shall be 1.5 times of URL
15	Nominal Operating Temperature	0 - 80°C

16	Response time	≤ 100 millisecond
17	Wetted Material	As per Table 1
18	Fill Fluid	As per Table 1
19	Transient Protection	As per IEEE C62.41.2, IEC61000-4-4& IEC61000-4-5.
20	Drain / vent port	Not required.
21	Electrical Connection	½ " - 14 NPT (F) with SS plug for dust proof.
22	Transmitter Process connection	½ " - 14 NPT (F) or suitable for the quoted manifold
23	Housing Material	Polyurethane covered aluminium with ½"-14 NPT conduit entry.
24	External Grounding screw assembly on transmitter body	Required
25	Mounting Bracket	Stainless Steel Bracket with SS fasteners, bolts, nuts, washers and U-clamps suitable for 2 inch pipe mounting.
26	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.
27	Ingress Protection	IP65/66/67
28	Manifold	2 Valve manifold. Catalogue indicating the part number shall be submitted

2. 2VALVE MANIFOLD

1	Type	:	2 valve manifold
2	Material	:	316 SS
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	:	400 bar for pressure transmitters up to 250bar 680 bar for pressure transmitters of range from 250-500bar

8	Operating Temperature	:	0 to 100 Deg C
9	Hydro Testing at factory	:	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.

3. SMART DIFFERENTIAL PRESSURE TRANSMITTER

Sl.No	Parameters	Specification
1	Type	SMART Differential Pressure Transmitter
2	Measurement Range, Fluid medium and Maximum Allowable Working Pressure	As per Table 1
4	Turndown Ratio	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	Minimum 4 ½ digit LCD- Local Alpha Numeric Digital display in Engineering unit.
9	Safety Integrity Level Standard (SIL)	Safety Instrumented System Certification as per IEC 61508 standard, SIL 2 or above.
10	Zero & Span Adjustments	Zero and Span are to be adjusted from the Handheld HART Communicator
11	Failure mode alarms	High alarm \geq 21.0 mA
		Low Alarm \leq 3.6 mA
12	Reference Accuracy @ TD 5:1	$\leq \pm 0.04\%$ Span for URL above 100 mbar $\leq \pm 0.05\%$ span for URL below 100 mbar (including the effect of Terminal - based linearity, hysteresis & repeatability).

13	Ambient Temperature effect for 28° C variation @ TD 5:1	≤±0.25%Span for URL above 100 mbar ≤± 0.75% for URL below 100 mbar
14	Stability	≤±0.2%URL for 5 years , for URL above 100 mbar ≤±0.2% URL for 1 year, for URL below 100 mar
15	Power Supply Effect	≤± 0.005 % of Calibrated Span per volt.
16	Mounting Position Effect	Zero shifts can be calibrated out.
17	Static Pressure effect	Span error: ≤ ± 0.25 % of span /70 bar for URL above 100 mbar. Span error: ≤1.25 %span/70 bar for URL below 100 mbar
18	Maximum Static pressure	As per Table 1
19	Over pressure limit	Over pressure limit of selected transmitters should be 1.25 times of URL (Upper range Limit) .
20	Nominal Operating Temperature	-40 to 80°C
21	Response time	≤ 100 ms
22	Wetted Material	As per Table 1
23	Fill Fluid	As per Table 1
24	Transient Protection	As per IEEE C62.41.2, IEC61000-4-4& IEC61000-4-5.
25	Drain / vent port	Not required.
26	Electrical Connection	½ " - 14 NPT (F) with SS plug for dust proof.
27	Transmitter Process Connection	½ " - 14 NPT (F) or suitable for the quoted manifold
28	Housing Material	Polyurethane covered aluminium with 1/2-14NPT Conduit entry.
29	External Grounding screw assembly on transmitter body	Required.
30	Mounting Bracket	Stainless Steel Bracket with SS fasteners, bolts, nuts, washers and U-clamps suitable for 2 inch pipe mounting.
31	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.

32	Ingress Protection	IP65/66/67
33	Manifold	5 Valve manifold. Catalogue indicating the part number shall be submitted

4.5 VALVE MANIFOLD

1	Type	:	5 valve 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	:	400 bar for pressure transmitters up to 250bar 680 bar for transmitters static pressure range from 250-500bar
8	Operating Temperature	:	0 to 100 ° C
9	Hydro Testing at factory	:	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.

Along with offer, the vendor shall supply the detailed catalogue and the selected model matrix for pressure transmitter and manifold. The dimensional drawing for manifold shall also be provided.

Sl.No	Type	Legend	Range (bar)	Medium	Fluid Temperature (K)	Fill Fluid
1	Absolute	PRO	(0-200)	GN ₂	280-350	Silicone oil
2	Absolute	PIL-H	(0-200)	GN ₂	280-350	Silicone oil
3	Absolute	TAP1	(0-200)	GN ₂	280-350	Silicone oil
4	Absolute	TAP2	(0-200)	LN ₂	77-350	Silicone oil
5	Absolute	PT-1	(0-10)	GN ₂	280-350	Silicone oil
6	Absolute	PGAT	(0-10)	GN ₂	280-350	Silicone oil
7	Absolute	PR	(0-2)	GN ₂	280-350	Silicone oil
8	Absolute	PUB	(0-25)	GN ₂	280-350	Silicone oil
9	Absolute	PNT	(0-50)	GN ₂	280-350	Silicone oil
10	Gauge	PGB	(0-600)	GN ₂	280-350	Silicone oil
11	Gauge	TAP3	(0-400)	G N ₂	280-350	Silicone oil
12	Gauge	TAP4	(0-10)	G N ₂	280-350	Silicone oil
13	Gauge	TAP5	(0-10)	GN ₂	280-350	Silicone oil
14	Gauge	PT	(0-10)	GN ₂	280-350	Silicone oil

LIST OF DIFFERENTIAL PRESSURE TRANSMITTER

Sl.No	Tag No.	Line Pressure (Bar)	Working range (Bar)
1	PDT-1	30	± 20
2	DOP	30	± 20
3	DP	30	± 2