

**PS FOR INSTRUMENTS****PROJECT:****4.5MW WHRB CPP****CUSTOMER****Rohan Dyes & Intermediates Ltd****MAKE:****Transmitters- ABB/Siemens/Emerson****Pressure Gauges- GIC/Wika****Temperature Gauges- GIC/Wika****Pressure Switches- Switzer****Instrument Cable- Udey Pyro/KEI/Thermopad/TC Communication****RTD- GIC/MASIBUS/TECHNO****Thermocouples- GIC/MASIBUS/TECHNO**

R0	26.02.2021	For Tender Purpose	BS	RD	AS
Rev.	Date	Description	Prepared	Reviewed	Released

[illegible]

**TEMPERATURE GAUGES - BIMETALLIC TYPE**

**UNITS:** Flow : Liquid - TPH, Gas/Steam - TPH, Pressure - kg/cm<sup>2</sup>, Temp. - °C, Level / Length - mm, mmWC

IEC60 GENERAL				FILLED SYSTEM			
1	Type	:	Bimetalic	13	SAMA Class	:	V b
2	Well Req'd / Not req'd	:	Required	14	Bulb Type	:	Ajustable to Union
3	Mounting	:	Local	15	Bulb Material	:	SS 316
4	Dial Size	:	150 mm	16	Bulb Union Threaded	:	1/2" NPT (F)
5	Dial Colour	:	White with Black marking	17	Bulb Dia. suitable to	:	Thermowell
6	Case Material	:	SS	18	Capillary Material	:	SS 304
7	Window Material	:	Shatter Proof Glass	19	Overrange Protector	:	130% of the max. range.
8	Connection Location	:	Bottom	<b>THERMOWELL</b>			
9	Encl VEGA II	:	Weatherproof	20	Material	:	SS304
10	Enclosure Class	:	NEMA - 4 / IP 65	21	Construction	:	Bar Stock Threaded (Tapered>200 Deg C) : Otherwise take Straight
11	Accuracy	:	± 1% of FSD	22	Process Connection	:	As per P&ID
12	Zero Adjustment	:	Required	23	Gauge Connection	:	1/2" NPT (F)
13	Ambient Temp Compensati	:	Required	24	Options	:	a. Micrometer Screw required on pointer.

**NOTES :**

- Operating Temp. shall be within 40 - 60% of selected range and range shall cover maximum Temperature  
TW - Thermowell Length  
TG - Temp. gauge length
- Thermowell welding shall be as full penetration type.
- For Line Sizes of 1" and below, expander of 4" shall be provided to install the thermowell
- TAG no. to be printed on dial
- TAG no. on packing box to be printed
- For temp > 200 Deg C, thermowell shall be tapered, otherwise straight one to be considered.
- Vendor to submit data sheets, Drawings and manuals for the Instruments being supplied.
- Thermowell to be inserted at an 45 Deg Angle with an Immersion of 100 MM for the Pipe Size less than DN100
- Thermowell Material to be imprinted on the Thermowells
- Element Length = Thermowell length + 50 mm for Temp < 200 Deg C , else TW + 100MM for Temp ≥ 200 Deg C  
Thermowell length L = L1 + L2 + L3 where  
L1= Insertion Length  
L2= Length for Process Connection  
L3 = Insulation length required

S.No	TAG No.	RANGE	Press	Temp. °C	Length in mm				LINE SIZE DN	SERVICE	REMARKS
			Kg/cm <sup>2</sup>		L1	L2	L3	L (mm)			
1	TG 501	0 - 600	67	490	64	40	175	279	250	Steam	Temp. Gauge at HP Process header
2	TG 502	0 - 300	6	172	64	40	50	154	250	Steam	Temp. Gauge at LP Process header
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Applicable Standards		
Sr. No.	Description	Codes/Norms/Standards
1	For Terminal Blocks	IEC60947-7-1
2	For Cable tray System	IS9537,IS3837,IS2667
3	Material of Cable Trays	IS9537,IS3837,IS2667
4	For all wires & cables	IS:7098,IS: 1554,IS10810
5	For multi core cable	IS:7098,IS: 1554,IS10810
6	For single pair thermocouple extension cable	ANSI MC 96.1
7	Color coding of conductors	IS7098,IS1554,IS10810
8	For pull boxes & Junction boxes	IS3837,IS2667
9	For grounding conductor	IS3043
10	Instrument Specification	VEGA II
11	Temperature Test,Quality Requirement	IEC60068-2-1,IEC60068-2-2,IEC60068-2-14
12	Instrument & apparatus for temperature measurement	Cargill India Pvt Ltd
13	Temperature Measurement by electrical resistance thermometers	IS:2806
14	Thermometer-element-Platinum resistance	IS:2848/DIN 43760
15	Instrument & apparatus for pressure measurement	ASME PTC 19.2(1964)
16	Bourdon type pressure and vacuum gauges	IS: 3624/1996
17	Safety requirements for electrical & electronic measuring & controlling instrumentation	ANSI C 39.5/1974
18	Compatibility of analog signals for electronic industrial process instruments	ISA-S50.1:ANSI MC 12.1/1975
19	Dynamic response testing of process control instrumentation	ANSI MC 4.1(1975)-ISA-S26(1968)
20	Classification of hazardous area	NEMA Article 500,Volume-6,1978
21	Electrical Instrumentation in hazardous dust location	ISA-RP 12.11
22	Intrinsically safe apparatus	NFPA Article 493 Volume-4,1978
23	Seamless Carbon Steel Pipe for Instrument Tubing	ASTM-A-106
24	Material for socket weld fittings	ASTM-A-105
25	Dimension of fittings	ANSI-B16.11
26	Nomenclature for instrument tube fittings	ISA-RP 42.1/1982
27	Seamless Stainless Steel Tubes for Instrument Tubing	ASTM A-312 TP 304
28	Alloy steel pipe for Instrument Tubing	ASTM A 335 Gr. P22
29	Color coding of single or multi pair cables	IPCEA S-61-402