

# DRASHTA POWER CONSULTANTS PRIVATE LIMITED

# 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	26.02.2020	For Tender Purpose	BS	RD	AS
Rev.	Date	Description	Prepared	Reviewed	Released



	PRESSURE GUAGES										
UNIT	S: Flow: Liquid - TPH,	Gas/Steam - TPH, Pressure - Kg/cm <sup>2</sup>	Temp °C, Level / Length-mm,mmWC								
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17	Type Mounting Dial Size Dial Colour Case Material Bezel Ring Window Material Enclos VEGA II Enclosure Class Pressure Element Element Material Socket Material Accuracy Zero Adjustment Connection Connection Locatio Movement Material		18 Over Range Protection 19 Blowout Protection 20 Options 20 Syphon 30 C. Gauge Saver 31 C. Vaccum Protection 32 C. Vaccum Protection 33 C. Solid front 34 C. Solid front 35 C. Solid front 36 C. Solid front 36 C. Solid front 37 C. Solid front 38 C. Solid for Max. Range 38 C. Required 38 C. Refer Notes 38 C. All Gauges 39 C. All Gauges 30 C. All Gauges 31 C. All Gauges 32 C. All Gauges 33 C. All Gauges 39 C. All Gauges 30 C. All Gauges 31 C. All Gauges 32 C. All Gauges 32 C. All Gauges 33 C. All Gauges 34 C. All Gauges 35 C. All Gauges 36 C. All Gauges 37 C. All Gauges 38 C. All Gauges 39 C. All Gauges 30 C. All								

### NOTES:

- 1 Unit of pressure measurement shall be kg/cm2
- 2 Ranges shall be so specified that the gauge normally operates in the middle third of the scale and shall confirm to IS 3624 standard dials.
- 3 While selecting range if maximum service (design) is not within the range, Gauge saver shall be provided upto maximum service pressure or wherever max. pressure is more than 130% of range.
- 4 Snubber shall be provided on all gauges.
- 5 Gauges in vacuum service shall have overrange protection to full vacuum.
- 6 Gauge saver and snubber material shall be same as element material.
- 7 TAG no. to be printed on dial

8 There shall be pointer set stopper at zero marking

	Tag no.	RANGE	SERVICE		DE	SIGN		
S.No.		kg/cm <sup>2</sup>	Press Kg/cm2	Temp. °C	Press Kg/cm2	Temp. °C	SERVICE	REMARKS
1	PG 501	0 - 100	64	490	70.4	500	Steam	HP Steam Distribution Header
2	PG 502	0 - 15	7	172	7.7	182	Steam	LP Steam Distribution Header



	TEMPERATURE GAUGES - BIMETALLIC TYPE									
UNIT	UNITS: Flow: Liquid - TPH, Gas/Steam - TPH, Pressure - kg/cm², Temp °C, Level / Length - mm, mmWC									
	IEC60 GENERAL				FILLED SYS	STEM				
1	Type	: Bimetali	C	13	SAMA Class	: V b				
2	Well Reqd / Not reqd	: Require	d	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 w	ith 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 Protection	: 130% of the max. range.				
8	Connection Location	: Bottom								
9	Encl VEGA II	Weathe	rproof		THERMOW	ELL				
10	Enclosure Class	: NEMA -	4 / IP 65	20	Material	: SS304				
11	Accuracy	: ± 1% of	FSD	21	Construction	: Bar Stock Threaded				
12	Zero Adjustment	: Require	d			(Tapered>200 Deg C)				
13	Ambient Temp Compe	nsati : Require	d			: Otherwise take Straight				
				22	Process Connection	As per P&ID				
				23	Gauge Connection	: 1/2" NPT (F)				
				24	Options					
					a. Micrometer Screw re	quired on pointer.				

#### NOTES:

1 Operating Temp. shall be within 40 - 60% of selected range and range shall cover maximum Temperature

TW - Thermowell Length

TG - Temp. gauge lengthThermowell welding shall be as full penetration type.

- 3 For Line Sizes of 1" and below, expander of 4" shall be provided to install the thermowell
- 4 TAG no. to be printed on dial
- 5 TAG no. on packing box to be printed
- 6 For temp > 200 Deg C, thermowell shall be tapered, otherwise straight one to be considered.
- 7 Vendor to submit data sheets, Drawings and manuals for the Instruments being supplied.
- 8 Thermowell to be inserted at an 45 Deg Angle with an Immersion of 100 MM for the Pipe Size less than DN100
- 9 Thermowell Material to be impringed on the Thermowells
- 10 Element Length = Thermowell length + 50 mm for Temp < 200 Deg C , else TW + 100MM for Temp  $\geq$  200 Deg C Thermowell length L = L1 + L2 + L3 where
  - L1= Insertion Length
  - L2= Length for Process Connection
  - L3 = Insulation length required

S.No.	.No. TAG No. R	DANGE	RANGE	Press	Temp.		Leng	th in mn	1	LINE SIZE	SERVICE	REMARKS
0.140.	170 140.	KANGE	Kg/cm2	ပ္	L1	L2	L3	L (mm)	DN	CERVICE		
1	TG 501	0 - 600	67	490	64	40	175	279	250	Steam	Temp. Gauge at HP Process header Temp. Gauge at LP	
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 extenxion 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	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					