	<b>PRODUCT STANDARD</b> <b>HYDRO PROJECTS ENGINEERING</b>	44154159053
		Rev. 01
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<b><u>PURCHASE SPECIFICATION OF</u></b> <b><u>PRESSURE TRANSMITTERS</u></b>		

**1. DESCRIPTION:**

Pressure Transmitters are provided for indication of air/ oil/ water pressure. It also converts the pressure signal into corresponding electrical signal of 4 to 20 mA which can be transmitted to SCADA.

**2. APPLICATION:**

This pressure transmitter shall be used for measuring the oil / water / air pipeline pressure, provide the local indication of the same and transmits the signal in terms of 4-20 mA DC to SCADA system.


**3. SCOPE OF SUPPLY:**

Sr. No.	Item Description	Remarks
1	Pressure Transmitter	For Quantities, Range of pressure transmitter, please refer Annexure-A of specification 44154159053

**4. SPECIFICATIONS:****4.1) GENERAL:**

SL. No.	PARAMETERS	DESCRIPTION
1.	Pressure transmitter	Gauge type
2.	Material of wetted parts	Metallic separating diaphragm / diaphragm hastelloy / SS
3.	Pressure transmission	Silicon Oil FLUID
4.	Operating principle	Capacitance / Silicon / Resonant / Piezo resistive

Rev. No.	Date of Rev.	Remarks	Approved by			
01	21.07.21	Cl. No. 4.2.12,13 updated.	-sd- P K Bhatane DGM-HPE		-sd- Daniel Hansdak DGM-HPE	
Prep.	Dalpat Borana (Dalpat Borana)		Prepared by  -sd- Dalpat Borana Dy. Mgr.-HPE	Checked by		Date of issue (Rev 00) 24.08.18
Checked	Vishal Namdeo (Vishal Namdeo)			-sd- Vishal Namdeo Mgr.-HPE	-sd- Amit Pandey DGM-HPE	
Approved	Amit Pandey (Amit Pandey)					


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<b><u>PURCHASE SPECIFICATION OF</u></b> <b><u>PRESSURE TRANSMITTERS</u></b>		

#### 4.2) TECHNICAL DETAILS OF PRESSURE TRANSMITTER:

SL. No.	PARAMETERS	DESCRIPTION
1.	Type	Smart type
2.	Application media	Turbine Oil/Water/Air
3.	Voltage	24 V DC
4.	Polarity / connection	Protected against wrong connection
5.	Output	2 wire system, 4 – 20 mA DC, Suitable for Electrical Load of minimum 500 ohm
6.	Display	Four digit SIDE DISPLAY (LCD), having integrated diagnostics cum calibration push button to change configuration at site
7.	Calibration range and display units	Kg/Cm <sup>2</sup>
8.	Adjustment range	Push buttons / Push Keys should be provided on the pressure transmitter for changing the configurations at site. Following parameter of the pressure transmitter should be able change from the push buttons / push keys without any external device. a) Zero and Span range setting.
9.	Process connection	½" NPT (F)
10.	Process connection material	Stainless steel
11.	Electronic Housing material	Aluminium alloy with glass window for display indicator
12.	Mounting position	Mounted vertically on pipeline and the display should be on sideways with respect to this mounted condition.
13.	Accuracy	± 0.1 % of the span

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Prep.	Dalpat Borana		Prepared by  -sd- Dalpat Borana Dy. Mgr.-HPE	Checked by		Date of issue (Rev 00) 24.08.18
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Approved	Amit Pandey					



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<b><u>PURCHASE SPECIFICATION OF</u></b> <b><u>PRESSURE TRANSMITTERS</u></b>		

14.	Non conformity of characteristics	Zero-point adjustment
15.	Protection	IP 65 / IP67 / NEMA4X
16.	Process temperature limit	-10 TO 70°C
17.	Ambient temperature range	-10 TO 60°C
18.	Electrical connection / Cable entry	Suitable for connecting 3 core cable of 2.5 sq.mm. with cable gland
19.	Test pressure	150% of Measuring Range
20.	Mounting accessories	Suitable mounting bracket, bolts for pressure transmitter
21.	Other requirement	Pressure Transmitters shall be capable of withstanding Surge Pressure.

#### **5. DOCUMENTS TO BE FURNISHED:**

##### **Along with the offer:**

- Catalogues giving all the technical particulars with model code and O & M manual of the pressure transmitter.
- List of deviations, if any. Otherwise, it shall be understood that the vendor is meeting all the requirements specified by us.

Vendor to note that if above documents are not furnished along with the offer; the offer shall be liable for outright rejection.

##### **After placement of order:**

- Supplier has to submit the drawing / catalog showing over all dimensions, mounting details, constructional details and data sheet of pressure transmitters for our approval within 4 weeks of PO. Revised drawing / datasheet should be submitted within one week after the receipt of our comments.  
Manufacturing action shall only be started after approval of drawing and datasheet.
- Supplier has to submit QAP for pressure transmitters for our approval.

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Prep.	Dalpat Borana (Dalpat Borana)		Prepared by  -sd- Dalpat Borana Dy. Mgr.-HPE	Checked by		Date of issue (Rev 00) 24.08.18
Checked	Vishal Namdeo (Vishal Namdeo)			-sd- Vishal Namdeo Mgr.-HPE	-sd- Amit Pandey DGM-HPE	
Approved	Amit Pandey (Amit Pandey)					

**At the time of supply:**

- (a) 2 copies of test certificates / Calibration certificate and guarantee certificates to BHEL items. 1 copy of the above documents shall be put inside the case/ package.
- (b) Shipping / packing lists of the pressure transmitters.

## **6. TEST CERTIFICATES:**

- (a) Calibration certificates issued by an ISO 17025 accredited certified Lab / Test cum calibration certificate from the manufacturer for each pressure transmitters are required.

## 7. INSPECTION & TESTING:

Functional test of pressure transmitters is to be carried out and certificate for the same to be furnished.

**8. GUARANTEE:**

The item must be guaranteed for trouble free operation, good workmanship for a period of 18 months from the date of dispatch.

**9. PACKAGING:**

A suitable cap shall protect the inlet and screwed connection. Each pressure transmitter shall be packed in individual carton with silica gel, adequate cushioning material and waterproof cover to avoid the movement of the internals and ensure that the instrument is capable of withstanding the transit conditions without damages.

\*\_\*\_\*\_\*\_\*\_\*\_\*\_\*\_\*\_\*\_\*

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01	21.07.21	Cl. No. 4.2.12,13 updated.	-sd- P K Bhatane DGM-HPE			-sd- Daniel Hansdak DGM-HPE
Prep.	<i>Gurjit (Dalpat Borana)</i>		Prepared by  -sd- Dalpat Borana Dy. Mgr.-HPE	Checked by		Date of issue (Rev 00) 24.08.18
Checked	<i>Vishal Namdeo</i>					
Approved	<i>Amit Pandey</i>			-sd- Vishal Namdeo Mgr.-HPE	-sd- Amit Pandey DGM-HPE	



**BHARAT HEAVY ELECTRICALS LIMITED, BHOPAL**  
**HYDRO PROJECTS ENGINEERING**

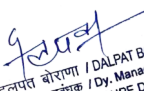
**ANNEXURE-A to**  
**Specification No.**  
**44154159053**

Item Description: **PRESSURE TRANSMITTERS**

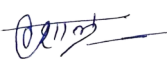
Project: **KALWAKURTHY LIS-I, UNIT-3**

PI No.: **241515354 DTD. 15-01-2022**

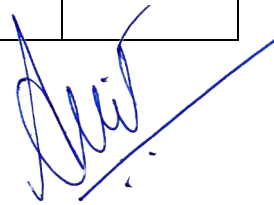
Item No. of P.I.	Material Code	Pressure Transmitters Range	Quantity	Remarks
1.	HT4315397008	Pressure Transmitters (Range 0-70 Kg/Cm <sup>2</sup> )	4 Nos.	-
2.	HT4315397016	Pressure Transmitters (Range 0-25 Kg/Cm <sup>2</sup> )	7 Nos.	-
3.	HT4315397024	Pressure Transmitters (Range 0-16 Kg/Cm <sup>2</sup> )	3 Nos.	-
4.	HT4315397032	Pressure Transmitters (Range -1 to +5 Kg/Cm <sup>2</sup> )	2 Nos.	-
<b>TOTAL QUANTITY</b>			<b>16 Nos.</b>	

  
 दलपत बोरणा / DALPAT BORANA  
 उप प्रबंधक / Dy. Manager  
 एच.पी.ई. विभाग / HPE Division  
 बी.एच.ई.एल., भोपाल / BHEL, Bhopal

**Prepared By**


  
 विशाल कुमार नामदेव / V.K. NAMDEO  
 वरिष्ठ प्रबंधक / Senior Manager  
 एच.पी.ई. विभाग / HPE Division  
 बी.एच.ई.एल., भोपाल / BHEL, Bhopal

**Checked By**

  
 अमित पाण्डेय / AMIT PANDEY  
 उप महाप्रबंधक / Dy. General Manager  
 एच.पी.ई. विभाग / HPE Division  
 बी.एच.ई.एल., भोपाल / BHEL, BHOPAL

**Approved By**

649159/2022/HEP-HPE41500

MANUFACTURER'S Logo		MANUFACTURER'S Name and Address		SAMPLE QUALITY ASSURANCE PLAN			Project : PO /Indent No:				
				Item : Pressure Transmitters		QP No. : QA/HPE/241515354/001 Rev.No. : 00 Date : 17-01-2022 page : 01 OF 01					
				SUB-System: Governing system							
SL NO	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT / ACCEPTANCE NORM	FORMAT OF RECORD	AGENCY		REMARKS	
1.	2.	3.	4.	5.	6.	7.	8.	1	2	10.	
1	PRESSURE TRANSMITTERS	CALIBRATION CERTIFICATE	Major	Performance	100%	-Technical Specification - Approved Drawings & -Approved Data Sheet	TC	P	W	TC	
				<b>LEGEND:</b> 1: MANUFACTURER/SUB-SUPPLIER 2: BHEL/ NOMINATED INSPECTION AGENCY P: PERFORM W: WITNESS AND V: VERIFICATION RR – REVIEW OF RECORD IR – INTERNAL RECORD JIR – JOINT INSPECTION REPORT							
QA-HYDRO		ENGINEERING- HPE									
(PREPARED & REVIEWED)						Accepted by (Vendor' QC representative)					

**NOTE : VENDOR HAS TO SUBMIT THE MANUFACTURER'S QUALITY ASSURANCE PLAN INLINE WITH BHEL SAMPLE QUALITY PLAN AFTER PLACEMENT OF PO FOR APPROVAL.**