

Scope of Enquiry
Item Name: Pressure Transmitters
Project: Mahan 2x 800MW Project

E-bids on GeM are invited from bidders for the supply of **Pressure Transmitters for Mahan Project: 2x 800 MW Project**, as per requirement mentioned below:

Applicable DRG: 41337666101 REV: 10 with BHEL SPEC: ST48010 REV: 05

Sl. No.	Material Code & Item Description	Total Quantity (No.)	Lot No.	LOT Quantity (No.)	Date for Supply Completion
1	W97372652367 PRESSURE TRANSMITTER 0-400 BAR	13	1	6	04.07.2025
			2	6	04.11.2025
			3	1	04.11.2025
2	W97372652383 PRESSURE TRANSMITTER 0 TO 110 BAR	3	1	1	04.07.2025
			2	1	04.11.2025
			3	1	04.11.2025
3	W97372652146 PRESSURE TRANSMITTER 0-80BAR	21	1	10	04.07.2025
			2	10	04.11.2025
			3	1	04.11.2025
4	W97372652170 PRESSURE TRANSMITTER 0-16BAR AS PER DRG. NO.-41337666101	7	1	3	04.07.2025
			2	3	04.11.2025
			3	1	04.11.2025
5	W97372652375 PRESSURE TRANSMITTERS FOR STEAM TURBINE, PRESSURE TRANSMITTER (-)1 TO 399 BAR	7	1	3	04.07.2025
			2	3	04.11.2025
			3	1	04.11.2025
6	W97372652219 PRESSURE TRANSMITTER, -1 TO +79BAR	9	1	4	04.07.2025
			2	4	04.11.2025
			3	1	04.11.2025
7	W97372652391 PRESS. TRANSMITTER, -1 TO +50BAR	5	1	2	04.07.2025
			2	2	04.11.2025
			3	1	04.11.2025
8	W97372652340 PRESSURE TRANSMITTER (-1)TO (+39)BAR	3	1	1	04.07.2025
			2	1	04.11.2025
			3	1	04.11.2025
9	W97372652359 PRESSURE TRANSMITTERS FOR STEAM TURBINE, PRESSURE TRANSMITTER (-1) TO (+19) BAR	5	1	2	04.07.2025
			2	2	04.11.2025
			3	1	04.11.2025

10	W97372652332 PRESSURE TRANSMITTERS FOR STEAM TURBINE, PRESSURE TRANSMITTER (-1)TO (+9)BAR	3	1	1	04.07.2025
			2	1	04.11.2025
			3	1	04.11.2025
11	W97372652324 PRESSURE TRANSMITTER (-1) TO (+3) BAR	3	1	1	04.07.2025
			2	1	04.11.2025
			3	1	04.11.2025
12	W97372652260 PRESS.TRANSMITTER, 0-10BAR (ABS)	7	1	3	04.07.2025
			2	3	04.11.2025
			3	1	04.11.2025
13	W97372652278 PRESS.TRANSMITTER,0-1.3BAR, ABS	25	1	12	04.07.2025
			2	12	04.11.2025
			3	1	04.11.2025
14	W97372651360 FLOW TRANSMITTER,0-1800 MBAR (DIFFERENTIAL PRESSURE TRANSMITTER)	13	1	6	04.07.2025
			2	6	04.11.2025
			3	1	04.11.2025
15	W97372652251 DIFF. PRESS.TRANSMITTER, -10 TO +90 MBAR	5	1	2	04.07.2025
			2	2	04.11.2025
			3	1	04.11.2025
16	W90313376050 HAND HELD COMMUNICATOR (FOR SMART PRESSURE TRANSMITTERS) DRG: 41337622101 REV: 01,	2	1	1	04.07.2025
			2	1	04.11.2025

Application: PTs/DPTs/Flow Transmitter are required for thermal power plant.

EARNEST MONEY: Zero/ NIL

Buyers Specific Terms & Conditions**Item Name: Pressure Transmitters****Project: Mahan 2x 800MW Project**

Sl. No.	Terms	Description	Your confirmation
1.	Confirmation to compliance of General terms and conditions on GeM 4.0 (Version 1.14)	General terms and conditions on GeM 4.0 (Version 1.14) or subsequent rules/policies issued by GeM shall be applicable. Please confirm.	
2.	Public Procurement (Preference to Make in India)	For this procurement, the local content to categorize, a supplier as a Class-I local supplier/ Class-II local Supplier/Non-Local supplier and purchase preference to Class-I local supplier, is as defined in Public Procurement (Preference to Make in India), PPP-MII Order No. P-45021/ 2/ 2017-PP (BE-II) dtd. 04/06/2020 issued by DPIIT. In case of subsequent Orders issued by the respective Nodal Ministry, changing the definition of local content for the items of the NIT, the same shall be applicable even if issued after issue of this NIT, but before opening of Part-II bids against this NIT. Vendor to submit tender specific self-certificate in line with PPP-MII Order No. P-45021/ 2/ 2017-PP (BE-II) dtd. 04/06/2020 clearly indicating percentage of local content. Please Confirm	
3.	Pre-Qualification Requirements	The Pre-Qualification Requirements have been compiled and placed at ANNEXURE-1. All the bidders should ensure submission of complete details and documents as called for in these requirements. The Offers submitted by the bidders would be scrutinized with respect to Pre-Qualification Requirements first. Techno-Commercial offer of only those bidders shall be evaluated who meet the Pre-Qualification Requirements. Please submit sufficient credentials against PQR documents. (Annex-1)	
4.	Special Instruction of Technical requirement	Test and Guarantee certificates are required to be submitted. Please confirm Please confirm that Specification No. ST48010 rev-05 & DRG NO. 41337666101 rev-10, DRG NO. 41337622101 rev-01 for HHC shall be followed for concerned items of the enquiry. DRG NO. CIEPTE2 is to be followed for KKS TAG details and addendum (specific technical requirement over and above specification ST48010). Datasheet of each item is required for BHEL/customer approval. Type test certificate of each model required after placement of PO. Please confirm to provide. Please note that all items are to be procured from same vendor. vendor to provide operation & maintenance (O & M) manual along with supplies and 1 copy along with soft copy of O & M manual to be sent to BHEL Haridwar. Please confirm. All accessories should be in assembled condition including plug and socket connector, before dispatch of the items. Please confirm. All instruments shall be calibrated as per BHEL range of measurement before dispatch. Please confirm. Items against Lot-3 of each material code are spare items. These spare items are to be packed together in separate green coloured box. Items shall be dispatched in suitable "steel boxes" or "wooden boxes with steel strips fixed around the box", or "any other suitable packaging", which can withstand transit movement, local environment and moisture/ water.	

		In addition to packing instructions given in spec. No. ST48010 (cl. No. 13), spec no. ST33002 Rev-02 (cl. No. 3.1 A & B) should be followed for packing of all items.	
5.	Quality Requirements	For indigenous supply: Inspection by BHEL nominated inspection agency "QUEST" as per BHEL SQP "QA/BE/QP/902, REV. 12". Vendor has to endorse the Q.P (enclosed with item catalogues). For Hand Held Communicator (Material Code: W90313376050): T.C./C.CO.C. is required as per ordering document.	
		For Foreign vendors: Testing and certification is required as per ordering drawing and specification. For Hand Held Communicator (Material Code: W90313376050): T.C./C.CO.C. is required as per ordering document.	
		Please confirm to comply above quality requirement.	
		THE TECHNICAL PARAMETERS IN ADDENDUM SUPERCEDES THE VALUES IN TECHNICAL SPECIFICATION AS ACCEPTANCE NORMS IN QUALITY PLAN. VENDOR TO CONFIRM FOR VISUAL AND FUNCTIONAL INSPECTION W.R.T. TECHNICAL PARAMETERS AS AGREED TECHNICALLY.	
6.	Price basis	Prices should be quoted on F.O.R. Destination basis up to Mahan Project including of freight, packing & forwarding charges, GST etc. Please mention here the applicable GST rate included in the prices quoted by you. Prices shall remain firm and fixed during entire execution of project. Please confirm.	
7.	Customer approval Condition	Please note that procurement shall be done only from the vendors, approved by end customer i.e. ADANI Mahan Project. BHEL will share successful vendor name and credentials to customer for approval before price bid opening and Part-2 will be opened for customer approved vendor only. VENDORS TO PROVIDE THEIR CREDENTIALS FOR ADANI CUSTOMER APPROVAL AS PROFILE, PAST EXPERIENCE PO, PERFORMANCE CERTIFICATE ETC.	
8.	Transit Insurance	Transit insurance shall be arranged by BHEL and not to be included in the prices.	
9.	Evaluation criteria & Currency	Evaluation will be done on the basis of total landed cost to BHEL, with cost involved for delivery up to Mahan project site (considering material cost, taxes & duties, Freight, etc.). The evaluation currency for this tender shall be INR.	
10.	Payment Terms	Payments shall be made to the Seller within 90 days of issue of consignee receipt-cum-acceptance certificate (CRAC) and on-line submission of bills. For Micro/ small & Medium (covered under MSME Act), payment will be made within 45 days & 60 days respectively after issue of consignee receipt-cum-acceptance certificate (CRAC) and on-line submission of bills.	
11.	MDCC clause	Material shall be dispatched only after issue of material dispatch clearance certificate (MDCC) by BHEL. All test certificates and relevant documents are to be sent to BHEL before dispatch of material for issue of MDCC, which will be issued after review of test certificates etc. MDCC will be issued within 07 days of receipt of these documents once found complete in all respects. In case of any delay on account of BHEL in issuing MDCC, delivery shall be extended by no. of days in excess of 7 days taken by BHEL in issuing MDCC and delays shall be dealt on merit basis. Material is to be dispatched within 07 days of receipt of MDCC from BHEL without waiting for PO amendment.	
		1. GR/LR ALONG WITH E-WAY BILL, PPACKING LIST IS REQUIRED FOR BILLING. DOCUMENTS (ORIGINAL GR/LR, PACKING LIST, TEST CERTIFICATES) ARE REQUIRED IN ORIGINAL WITH INVOICE AFTER DISPATCH TO BHEL OFFICE HARIDWAR.	

		2. MATERIAL IS TO BE DESPATCHED ON DOOR DELIVERY BASIS	
12.	Document submission for approval from BHEL/customer	Drawings/Data sheets/Documents/Type Test etc. as called for in the specifications shall be submitted for approval to BHEL for BHEL/customer approval within 30 days of purchase order. Any delay in delivery on account of late submission of drawings/data sheets/QAP/documents shall be to vendors account. BHEL will arrange the approval of the drawings/data sheets/ documents within 30 days of their receipt provided those are complete in all respect. Delays in approval shall be dealt on merit basis.	
13.	HSN Code of Material	8 Digit HSN code may please be mentioned in Your offer. _____	
14.	Guarantee	Kindly confirm that all equipment shall be guaranteed for trouble free performance for 24 months from the date of shipment or 12 months from the date of commissioning, whichever is earlier. Buyer to submit guarantee certificate mentioning above guarantee period. Please note that offers with guarantee period lesser than above mentioned guarantee period may result in rejection of the offer.	
15.	Manufacturing clearance	In case of ordering, vendor has to take manufacturing clearance from BHEL before starting manufacturing of material. No manufacturing is to be started without getting clearance from BHEL. Kindly confirm.	
16.	Delivery Period	Kindly quote your minimum delivery period in no. of weeks/months from the date of issue manufacturing clearance. -----	
17.	Liquidated Damages	If the Seller/Service Provider fails to deliver any or all of the Goods/Services within the original/re-fixed delivery period(s) specified in the contract, the Buyer will be entitled to deduct/recover the Liquidated Damages for the delay, unless covered under Force Majeure conditions aforesaid, @ 0.5% of the contract value of delayed quantity (Lot wise) per week or part of the week of delayed period as pre-estimated damages not exceeding 10% of the contract value of delayed quantity without any controversy/dispute of any sort whatsoever. The date of LR (Lorry Receipt) would be treated as the date of delivery for penalty purposes.	
18.	Arbitration:	In case of any dispute arising out of as in connection with this contract, the same shall be referred to arbitration under Arbitration & Conciliation Act 1996 of a sole arbitrator who shall be appointed by mutual consent of the parties. The seat & venue of arbitration shall be Haridwar. The proceedings shall be conducted in English. The Governing law of contract shall be the substantive law of India.	
19.	Risk Purchase:	In case of abnormal delays (beyond the maximum late delivery period as per Penalty clause) in supplies /defective supplies or non-fulfillment of any other terms and conditions given in Purchase Order, BHEL may cancel the Purchase Order in full or part thereof, and may also make the purchase of such material from elsewhere /alternative source at the risk and cost of the supplier. BHEL will take all reasonable steps to get the material from alternate source at optimum cost. If bidder does not agree to the above Risk Purchase Clause, BHEL reserves the right to reject the offer. In case for compelling reasons BHEL accepts the offer without acceptance of this clause by the bidder and in the eventuality of Risk Purchase, appropriate action will be taken as per BHEL extant rules. This will be without prejudice to any other right of BHEL under the contract.	
20.	Firm prices	Price will remain firm and fixed during entire execution of tender/supply.	
21.	Bidder contact details	1. Name _____ Contact _____ Email _____ 2. Name _____ Contact _____ Email _____	

Pre-Qualification Requirement (PQR)

PQR Clause No.	<u>Description of PQR Clause</u>	Vendor Assurance with Supporting Documents															
1	Bidder shall be the manufacturer or authorized supplier of OEM of pressure transmitters. Accordingly, any legal document or Letter of authorization shall be submitted respectively in support of this.																
2	<p>Bidder must have successfully supplied at least 100 or more pressure transmitters in last 5 years from date of enquiry. Bidder needs to furnish un-priced copy of purchase order (PO) in support of above and furnish data in following format.</p> <table border="1" data-bbox="272 611 1328 793"> <thead> <tr> <th data-bbox="272 611 431 716">(Project/ Customer Name)</th> <th data-bbox="431 611 610 716">PO ref no. & date</th> <th data-bbox="610 611 800 716">(Pressure Transmitter range)</th> <th data-bbox="800 611 932 716">Qty</th> <th data-bbox="932 611 1328 716">Contact details of customer (email and/or phone number, etc.)</th> </tr> </thead> <tbody> <tr> <td data-bbox="272 716 431 751"></td> <td data-bbox="431 716 610 751"></td> <td data-bbox="610 716 800 751"></td> <td data-bbox="800 716 932 751"></td> <td data-bbox="932 716 1328 751"></td> </tr> <tr> <td data-bbox="272 751 431 793"></td> <td data-bbox="431 751 610 793"></td> <td data-bbox="610 751 800 793"></td> <td data-bbox="800 751 932 793"></td> <td data-bbox="932 751 1328 793"></td> </tr> </tbody> </table>	(Project/ Customer Name)	PO ref no. & date	(Pressure Transmitter range)	Qty	Contact details of customer (email and/or phone number, etc.)											
(Project/ Customer Name)	PO ref no. & date	(Pressure Transmitter range)	Qty	Contact details of customer (email and/or phone number, etc.)													
3	Bidder to confirm that offered model of transmitters have been successfully operational in Power plants/ refineries/ etc. at least two projects. Bidder to submit Purchase Order and supporting document (performance certificate) for the same. The supporting documents shall not be older than 5 years from date of enquiry.																
4.	Bidders who are supplying offered PT/DPT to BHEL Haridwar for the first time, will be required to submit Type test at the time of technical evaluation. Bidder to confirm.																
5	<p>General technical requirements shall be as below. Bidder to confirm against each point: -</p> <p><u>TECHNICAL REQUIREMENTS: -</u></p> <ul style="list-style-type: none"> a) Type of transmitter : SMART microprocessor based ,2 Wire 24V DC,+/-10% b) Sensor type : Capacitance/Inductive/Silicone resonance or any other proven principal. c) Output signal range : 4-20m ADC with digital communication (HART protocol) d) Accuracy : 0.065% of calibrated span e) Response time : <100 mSec f) Housing : Cast aluminium stoving enamel painted, weather proof g) Protection : IP67 h) Local indication : Required i) Diagnostics : Self Indicating feature j) Wetted parts : SS316 k) Electrical connection : 3 pin plug in connector l) Process connection : G ½ “ Male (bottom entry) 																
6	Bidders to provide catalogue of offered items in support of technical specification.																

7	Bidders will be required to submit Type test reports at the time of technical evaluation. Bidder to confirm	
8	Bidder will be required to submit certification for SIL2, as applicable at the time of technical evaluation. Bidder to confirm.	
9	Note: Bidder to confirm specific compliance wherever asked. BHEL reserves the right to verify information submitted by bidder. In case the information is found false/ incorrect/ incomplete, the offer shall be rejected.	

SPECIAL NOTE FOR BIDDERS:

Following documents are an integral part of this tender enquiry and endorsed copies of these documents (duly signed and stamped on each page, as a token of acceptance) are to be uploaded along with offer on GeM procurement portal.

1. Please submit signed & Stamped copy (each page) of duly filled of confirmation column of “Buyers Specific Terms & Conditions (Annexure-A)” and its clause wise supporting documents where required.
2. Please submit signed & stamped copy (each page) of PQR documents with proper filled information and related supporting documents as mentioned in PQR (Annex-1).
3. Please submit endorse quality plan given as QA/BE/QP/902, REV. 12
4. Please submit MSE certificate (if have). Self-declaration of MII class certificate



BHARAT HEAVY ELECTRICALS LIMITED, HARIDWAR

Control & Instrumentation Engineering (CIE)

PRE-QUALIFICATION REQUIREMENT

Pressure Transmitters (Gauge PT/DPT/Abs PT) Specification: ST48010

Date: 23.02.24

Doc. No.:

CIE/PT/PQR/20233850 R0

A. Indent No.: 20233850

B. Application: Pressure Transmitters (Gauge PT/DPT/Abs PT) are required for various pressure measurements in thermal power plant.

Sr. No.	PRE-QUALIFICATION REQUIREMENTS	VENDOR RESPONSE										
1.	Bidder shall be the manufacturer or authorized supplier of OEM of Pressure Transmitters. Accordingly, any legal document or Letter of authorization shall be submitted respectively in support of this.											
2.	Bidder must have successfully supplied at least 100 or more pressure transmitters in last 5 years from date of enquiry. Bidder needs to furnish un-priced copy of purchase order (PO) in support of above and furnish data in following format. <table border="1"><thead><tr><th>(Project/ Customer Name)</th><th>PO ref no. & date</th><th>(Pressure Transmitter range)</th><th>Qty</th><th>Contact details of customer (email and/or phone number, etc.)</th></tr></thead><tbody><tr><td></td><td></td><td></td><td></td><td></td></tr></tbody></table>	(Project/ Customer Name)	PO ref no. & date	(Pressure Transmitter range)	Qty	Contact details of customer (email and/or phone number, etc.)						
(Project/ Customer Name)	PO ref no. & date	(Pressure Transmitter range)	Qty	Contact details of customer (email and/or phone number, etc.)								
3.	Bidder to confirm that offered model of transmitters have been successfully operational in Power plants/refineries/etc for at least 1 year, in at least two projects. Bidder to submit Unpriced PO copies and supporting document (performance certificate) in support of same. The supporting documents shall not be older than 5 years from date of enquiry.											
4.	Bidders who are supplying offered model to BHEL Haridwar for the first time will have to provide extended warranty of 2 years over and above specification requirement. Bidder to confirm.											
5.	General technical requirements shall be as below. Bidder to confirm against each point: - <u>TECHNICAL REQUIREMENTS: -</u> a) Type of transmitter : SMART microprocessor based ,2 Wire 24V DC,+/-10% b) Sensor type principle : Capacitance/Inductive/Silicone resonance or any other proven c) Output signal range : 4-20mA DC with digital communication (HART protocol) d) Accuracy : 0.065% of calibrated span e) Response time : <100 mSec f) Protection : IP67 g) Local indication : Required h) Diagnostics : Self Indicating feature i) Wetted parts : SS316 j) Electrical connection : 3 pin plug in connector k) Process connection : G ½" Male (bottom entry)											
6.	Bidder to provide catalogue of offered items in support of technical specification.											
7.	Bidders will be required to submit Type test reports at the time of technical evaluation. Bidder to confirm.											
8.	Bidders will be required to submit certification for SIL2, as applicable at the time of technical evaluation. Bidder to confirm.											

Note: Bidder to confirm specific compliance wherever asked. BHEL reserves the right to verify information submitted by Bidder. In case the information is found false/ incorrect/ incomplete, the offer shall be rejected.

21/2/24
Saswati Srivastava
(AGM/CIE)

Mayuri Katiyar
(Mgr/CIE)

दिनांक एवं हस्ताक्षर
SIGN & DATE



उत्पाद मानक

ST 48010
पृष्ठ 8 का 1
Page 1 of 8

PRODUCT STANDARD

सामग्री सूची संख्या को
INVENTORY NO.

**PRESSURE/DIFFERENTIAL PRESSURE TRANSMITTER/
TRANSMITTER FOR FLOW
(SMART TYPE)**

1.0 SCOPE:

This specification covers the technical requirements of Electronic Pressure Transmitter used for gauge pressure, absolute pressure, differential pressure and flow measurements. The transmitter shall be complete with sensing element, amplifier etc. To suit the input pressure, output signal range, power supply and other technical requirements.

1.1 APPLICATION:

It shall be suitable for power plant applications for steam water and oil services. The transmitter shall be of proven performance & highest reliability.

1.2 DESIGNATION:

A pressure transmitter to this standard of range 0-025 Kg/Cm2 and size no. 005 shall be designated as follows :

On Drawing

- i) Drg. No. Column : ST 48010.007
- ii) Description Column : Press. Transmitter 0-025 Kg/Cm2
- iii) Material Specification column : ST 48010
- iv) Material Code column : W97372651069

For placing Purchase Indents:

- i) Pressure transmitter 0-025 Kg/Cm2. ST 48010.005

2.0 COMPLIANCE WITH NATIONAL STANDARD:

There is no Indian standard on the above subject. However assistance has been taken from BS6447 and data sheets of various Manufacturers.

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स्वत्वाधिकार एवं गोपनीय
इस दस्तावेज में दी गई सूचना भारत भारती इलेक्ट्रिकल्स को सम्पत्ति है इसका प्रयोग एवं प्रसारण केवल के निदेशों के बिना ही नहीं किया जायेगा, जो कि कंपनी के हित में हस्ताक्षरक को नुकसान उत्पन्न करेगा

हस्ताक्षर एवं दिनांक
SIGN & DATE

सामग्री सूची संख्या
INVENTORY NO.

TSX	D.L.OBEROI	<i>[Signature]</i>	22/8/2003	नाम NAME	दिनांक एवं हस्ताक्षर SIGNATURE & DATE
QAX	S.K.ARORA	<i>[Signature]</i>	21/8/03	अनुवादक TRANSLATED BY	
MEMBER P.Sc.	N.R.DEX	<i>[Signature]</i>	21/8/03	निर्माणकर्ता WORKED BY	S.K. SHARMA <i>[Signature]</i> 21/8/03
				जांचकर्ता CHECKED BY	K.B. BATRA <i>[Signature]</i> 21.8.03
सहमत विभाग AGREED DEPTT.	नाम NAME	दिनांक एवं हस्ताक्षर DATE & SIGNATURE	पर्यवेक्षणकर्ता SUPERVISED BY		
	GRIJ LAL RAM	29/03/22	स्वीकृति APPROVED :	<i>[Signature]</i> (B.K. BHALLA)	GR 3.50
REV.NO. 05	RAJ NISHU OPTA	20/08/22	निर्माण PREPARED : STE	जारी ISSUED : TSX	दिनांक DATE : 20.8.88

CHANGE ADVICE NO.- TSX(CIE)-22-120



उत्पाद मानक

ST 48010

PRODUCT STANDARD

पृष्ठ 8 का 2

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दिनांक एवं हस्ताक्षर
SIGN & DATE

SUPERSEDES
INVENTORY NO.

सामग्री सूची संख्या को
अधिकारिण करता है

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स्वत्वाधिकार एवं गोपनीय
इस दस्तावेज में दी गई सूचना भारत भारती इलेक्ट्रिकल्स की संपत्ति है इसका प्रयोग एवं
अपव्यक्त रूप से किसी भी तरह प्रयोग, जो कि कंपनी के हित में स्वत्वाधिकार को न किया जाए ।

हस्ताक्षर एवं दिनांक
SIGN & DATE

सामग्री सूची संख्या
INVENTORY NO.

3.0 TECHNICAL REQUIREMENTS

3.1 MEASURING PRINCIPLE :

Variable capacitance or any other principle well proven for power plant application involving electromagnetic noise. Bidder shall furnish all details required to establish the provenness.

3.2 TYPE:

The Transmitter shall be intelligent (SMART) two-wire type. It shall have the capability of remote ranging and self-diagnostics and shall be able to communicate digitally with a higher order control system through suitable interfaces.

3.3 OUTPUT:

Linear 4-20mA D.C.with a superimposed digital signal. Digital signal shall be as per latest version of Highway Addressable Remote Transducer (HART) protocol. Digital communication with the transmitter shall in no way affect the analog output.

3.4 POWER SUPPLY:

Transmitter shall be capable of operation at a dc voltage from +15 to +30 Volt. Load-voltage curve shall be furnished along with the offer. Minimum load shall be 600 ohm at 24 V DC

3.5 FIELD COMMUNICATOR:

It shall be possible to diagnose, calibrate and adjust all transmitter parameters from a hand held field communicator and from a remote PC. The field communicator and the PC based configuration software shall be offered as an optional item. Field communicator shall be battery operated.

3.6 DIGITAL COMMUNICATION:

Necessary Protocol and configuration details shall be furnished by the supplier, if desired by BHEL, to establish a digital link with BHEL's DDC system/ PC based configuration station.

3.7 LOCAL ADJUSTMENTS:

Local span and zero adjustments shall also be provided. Which shall be lockable.

3.8 FLOW MEASUREMENT:

If the requirement of Flow Transmitter is specified in the enquiry, The output shall be Square root extracted.

3.9 LOCAL INDICATOR:

Transmitter shall have local digital indication

REV. NO. 05

निर्माणकर्ता WORKED BY	S.K. SHARMA		8.9.04
जांचकर्ता CHECKED BY	K.B. BATRA	Sd/-	8.9.04

P-5731



उत्पाद मानक

ST 48010

पृष्ठ 8 का 3

PRODUCT STANDARD

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दिनांक एवं हस्ताक्षर

SUPERSEDES INVENTORY NO.

सामग्री सूची संख्या को अधिकतम करता है

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स्वत्वाधिकार एवं गोपनीय

इस प्रलेख में दी गई सूचना भारत भारती इलेक्ट्रिकल्स की संपत्ति है इसका प्रकाश एवं आरक्षण इस से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक हो न किया जाए।

हस्ताक्षर एवं दिनांक SIGN & DATE

सामग्री सूची संख्या INVENTORY

REV. NO. 0

निर्माणकर्ता WORKED BY

S.K. SHARMA

S.K. Sharma
Sd/-

8.9.04

जांचकर्ता CHECKED BY

K.B. BATRA

Sd/-

8.9.04

4.0 PERFORMANCE SPECIFICATIONS:

4.1 ACCURACY: $\pm 0.075\%$ or better of calibrated span (inclusive of hysteresis, linearity & repeatability) at turn down ratio of 10:1 or less.
(For Absolute Pressure Range $\pm 0.1\%$ or Better)

4.2 ENVIROMENTAL CONDITIONS:

Ambient temp. : -20 to + 80° C.
Storage temp. : -20 to +80° C.
Humidity. : Continuous operation at RH of 95%.

4.3 DRIFT (LONG TERM): Less then $\pm 0.15\%$ of span in three years.
(For Absolute Pressure Range Less than $\pm 0.1\%$ of span in one year)

4.4 SUPPLY VOLTAGE EFFECT. : Less than 0.005 % per volt.

4.5 TEMPERATURE EFFECT. : Less than $\pm 0.05\%$ of span per 100° C.

4.6 ZERO ELEV.AND SUPPRESS: Anywhere within the range limits maintaining minimum allowable span.

4.7 TURN ON TIME: Max. 10 sec after power is applied to the transmitter.

4.8 DAMPING: Min 0-16 second, selectable in steps.

4.9 VIBRATION EFFECT: $\pm 0.2\%$ of span per g at 200 Hz in any axis.





4.10 RESPONSE TIME: Transmitter response time (63 % as per BS6447) shall be <150 ms.
This shall include the dead time. Response time for output to reach 1% of the final value shall also be informed by the supplier.

4.11 OVER RANGE PRESSURE: The Transmitter shall be capable of withstanding the over range pressure as given in BS 6447.

4.12 Transmitter shall be immune to interference from electromagnetic noise. When a 1V, 50 m Hz alternating voltage is superimposed on the o/p signal, the change in mean dc level of output current shall not exceed 0.1% of output span.

4.13 UPDATE TIME: Worst case output update time shall be 50 m sec.

4.14 MOUNTING POSITION EFFECT: Zero shift should be able to be calibrated out by zero adjustment.

दिनांक एवं हस्ताक्षर SIGN & DATE		उत्पाद मानक (हीप : हरिद्वार) PRODUCT STANDARD (HEEP: HARIDWAR)	ST48010 पृष्ठ 8 का 4 Page 4 Of 8		
SUPERSEDES INVENTORY	सामग्री सूची संख्या को अभिलेखित करना है	<p>5.0 PHYSICAL SPECIFICATIONS:</p> <p>5.1 HOUSING: Cast Aluminum Stoving enamel painted weather proof.</p> <p>5.2 PROTECTION CLASS: IP 67</p> <p>5.3 WETTED PARTS: SS 316</p> <p>5.4 PROCESS CONNECTION: G 1/2" Male. In case an adopter is used to provide G 1/2" connection, it shall be factory fitted on the Transmitter. (REF.FIG.-1,SH-8).</p> <p>5.5 FLANGE MATERIAL: SS (In case of DPT).</p> <p>5.6 ELECTRICAL CONNECTION: Three Pin Plug receptacle connector (Amphetrionics/Allied make Or equivalent). Male part of the connector will be fixed with the Transmitter.</p> <p>5.7 MOUNTING BRACKET: Transmitter shall be supplied with bracket for panel mounting along with Necessary fastners to mount the transmitter on the bracket. 04 Nos. mounting studs of size M10x70 With fine threads (material CS) shall be supplied for DPT and Flow transmitters only.</p> <p>6.0 TURN DOWN RATIO: Minimum turn down ratio shall be 100:1 (for absolute pressure range minimum turn down ratio shall be 25:1). By using turndown ratio of the Transmitter, minimum variety of models shall be selected to cover all the ranges mentioned in the enquiry. It may be noted that specified accuracy is to be maintained for the calibrated rated range in each case.</p> <p>7.0 IDENTIFICATION TAG: A blank stainless steel tag of size 60x20 mm shall be fastened with each Transmitter.</p> <p>8.0 TESTS: Following tests shall be carried out by the supplier on each transmitter.</p> <p>8.1 ROUTINE TESTS:</p> <ul style="list-style-type: none"> a) Visual and dimensional check. b) Pressure range versus output signal test. c) Accuracy test. d) Test for adjustability of range. e) Process and electrical connection. 			
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स्वत्साधिकार एवं गोपनीय इस प्रलेख में की गई सूचना भारत भारती उपकरणों लिमिटेड की संपत्ति है इसका प्रयोग एवं प्रकाशन अन्य से किसी भी तरह प्रयोग को बिना इसकी अनुमति के बिना न होना चाहिए					
दिनांक एवं हस्ताक्षर SIGN & DATE					
सामग्री सूची संख्या INVENTORY NO.	REV. NO. 05		निर्माणकर्ता WORKED BY	BRIJ LAL RAM 	06.04.16
P-5731			जांचकर्ता CHECKED BY	MAYURI 	06.04.16

सामग्री सूची संख्या को
 SUPERSEDES
 INVENTORY

8.2 TYPE TESTS:

IEC 60529

- a). Enclosure protection as per **A** or equivalent national Standard.
- b). Test for performance characteristics as per specified in clauses 4.3,4.4,4.5,4.9,4.10,4.11,4.12. Method of tests shall be carried out as per BS 6447.

9.0 TEST CERTIFICATES:

9.1 3 copies of the tests certificate shall be furnished along with each transmitter giving following details:

- i) Name of instrument.
- ii) Name of manufacturer.
- iii) Serial no of the instrument.
- iv) Date of testing.
- v) BHEL PO NO.
- vi) Results of tests detailed in clause 8.0.

9.2 Certificate of compliance to specification ST48010.

10.0 GUARANTEE :

A guarantee certificate of trouble free performance for 24 months from the date of shipment or 12 months from the date of commissioning, which ever is earlier, shall be furnished by the supplier.

11.0 DOCUMENTS:

Data sheet (Mentioning all the clauses 3.0 to 6.0) of offered transmitters shall be furnished by the bidder for BHEL/Owner's approval. Two copies of detail technical literatures, operation and maintenance manuals shall be furnished with the offer .

Complete technical literature is also to be furnished in "SOFT FORM" in a CDROM after placement of order.

12.0 DEVIATIONS:

Deviations from these specifications, if any, shall be clearly brought out in the offer.

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दिनांक एवं हस्ताक्षर
SIGN & DATE
 23/8/03


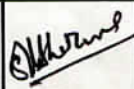
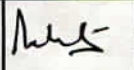
सामग्री सूची संख्या
INVENTORY NO.
 P-5731

REV. NO.
05

निर्माणकर्ता
WORKED BY
S.K. SHARMA

जांचकर्ता
CHECKED BY
K.B. BATRA

21/8/03
21-8-03

दिनांक एवं हस्ताक्षर SIGN & DATE		उत्पाद मानक PRODUCT STANDARD	ST 48010 पृष्ठ 8 का 6 Page 6 of 8		
सामग्री सूची संख्या को सुपरसेडस में दर्शाएं	<p>13.0 PACKING : Each instrument with dehydrating agent shall be sealed individually in a polythene sheet and packed in a thermo Cole box. Such boxes shall be packed in a carton or case with adequate cushioning material to withstand transit risks without damage.</p> <p>14.0 Supplier shall enclose the list of spare parts required for 3 years normal operation and quote for the same separately.</p> <p>15.0 QUALITY PLAN: Detail quality plan for the tests and checks to be carried out during material induction, manufacturing and at final stage shall be submitted in BHEL's Format along with in house standard procedures/ norms for BHEL's approval.</p> <p>16.0 MARKING : The following details shall be marked on the packing case. (a) Manufacturer's name or trademark. (b) B H E L order number. (c) BHEL standard NO. - ST48010.</p> <p>17.0 NAME PLATE: Each instrument shall have a name plate with the Following details marked on it : (a) Manufacturer's name or trademark. (b) Type of the Instrument. (c) Model Number of the Manufacturer. (d) Maximum Range. (e) Calibrated Span. (f) Accuracy.</p> <p>18.0 CROSS - REFERRED STANDARDS : (1) IEC 60529 (2) BS 6447</p>				
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	स्वत्वाधिकार एवं गोपनीय इस प्रलेख में दी गई सूचना भारत हेवी इलेक्ट्रिकल्स की संपत्ति है इसका प्रयोग एवं प्रसारण के बिना कभी भी सख्त प्रयोग, जो कि कंपनी के हित में स्वत्वाधिकार को नुकसान पहुंचाए बिना				
दिनांक एवं हस्ताक्षर SIGN & DATE 23/8/03					
सामग्री सूची संख्या INVENTORY NO. P-5731	REV. NO. 05		निर्माणकर्ता WORKED BY S.K. SHARMA		21/8/03
			जांचकर्ता CHECKED BY K.B. BATRA		21.8.03

सामग्री सूची संख्या को
SUPERSEDES
INVENTORY
संशोधित करना है

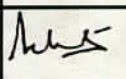
A. SIZE NO'S.

DESC.	MEASURING RANGE KG/SQ.CM. OR BAR	SIZE NO. IN CASE OF KG/SQ.CM.	SIZE NO. IN CASE OF BAR
01. GAUGE PRESSURE	0-250	001	051
	0-200	002	052
	0-060	003	053
	0-040	004	054
	0-025	005	055
	0-016	006	056
	0-010	007	057
	0-006	008	058
	0-004	009	059
	(-1)-(0)	010	060
	(-1)-(+3)	011	061
	(-1)-(+9)	012	062
	(-0.3)-(-1)	013	063
	0-100	014	064
	0-070	015	065
	0-050	016	066
	(-1)-(+15)	017	067
	(-1)-(+1.5)	018	068
	0-090	019	069
	0-400	020	070
	(-1)-(+80)	021	071
	(-1)-(+30)	022	072
	(-1)-(+10)	023	073

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दिनांक एवं हस्ताक्षर
SIGN & DATE
 23/8/03

सामग्री सूची संख्या INVENTORY NO. P-5731	REV. NO. 05		निर्माणकर्ता WORKED BY S.K. SHARMA	 21/8/03
			जांचकर्ता CHECKED BY K.B. BATRA	 21.8.03

SUPERSEDES INVENTORY NO.	DESC.	MEASURING RANGE KG/SQ.CM. Or BAR	SIZE NO. IN CASE OF KG/SQ.CM.	SIZE NO. IN CASE OF BAR
	02. ABSOLUTE PRESSURE (PN-4)	0-0.6 Abs 0-0.4 Abs 0-1 Abs	041 042 043	091 092 093
	03. DIFFERENTIAL PRESSURE (PN-100)	0-1000 MMWC 0-100 M BAR	031 ---	--- 081
		(-100)-(+300) MMWC (-10)-(+30) M BAR	032 ---	--- 082
		(-100)-(+900) MMWC (-10)-(+90) M BAR	033 ---	--- 083
	04. FLOW (PN-100)	0-1 BAR 0-60 BAR 0-0.7 0-1.0	--- --- 101 102	084 085 111 112

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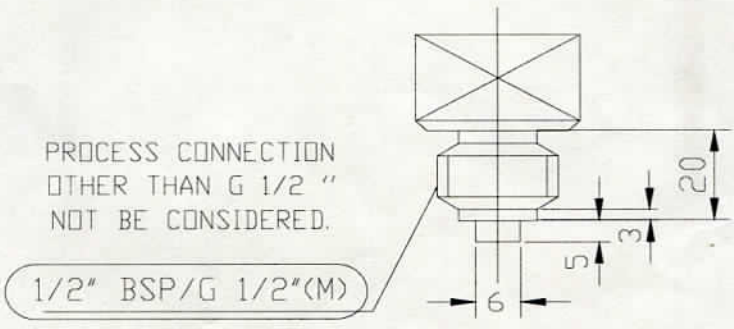


FIG -1

दिनांक एवं तिथि SIGN & DATE <i>(Signature)</i> 23/8/03	REV. NO. 05		निर्मागकर्ता WORKED BY S.K. SHARMA <i>(Signature)</i> 21/8/03	
सारणी सूची संख्या INVENTORY NO. P-5731			जांचकर्ता CHECKED BY K.B. BATRA <i>(Signature)</i> 21.8.03	

Addendum-Pressure Transmitters & Differential Pressure Transmitters

Mahan Project


Ref. Indent No.: 20233850

Specific technical requirements over & above specification ST48010:-

1. Accuracy shall be $\pm 0.065\%$ of calibrated span or better.
2. Response time shall be 100 msec or better.
3. Stability shall be as $\pm 0.15\%$ of span in 5 years or better.

ससवती शिवस्तवा
- 23/2/24
Saswati Srivastava
(AGM/CIE)

मयुरी कटियार
- 23/2/24
Mayuri Katiyar
(Mgr/CIE)

दिनांक एवं हस्ताक्षर SIGN & DATE		<h1 style="margin:0;">उत्पाद मानक (हीप : हरिद्वार)</h1> <h2 style="margin:0;">PRODUCT STANDARD (HEEP: HARIDWAR)</h2>	<h3 style="margin:0;">ST33002</h3> <p style="margin:0;">पृष्ठ 10 का 1 Page 1 of 10</p>
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SUPERSEDES INVENTORY NO.
 सामग्री सूची संख्या को प्रतिस्थापित करता है

BASED ON OWN EXPERIENCE

GENERAL AND SEAWORTHY PACKING INSTRUCTIONS FOR TURBINE INSTRUMENTATION EQUIPMENT & ACCESSORIES

1.0 SCOPE:

This instruction covers the packing instruction for the safe dispatch and delivery of turbine instrumentation equipment like Electronic modules/ components, Indicator, Recorders, Transmitter, gauges, switches and other allied items, control cabinets & desks, Fitting, mounting accessories, impulse pipe lines and other related equipment and accessories.

2.0 INTRODUCTION:

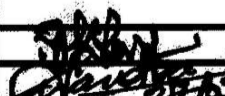
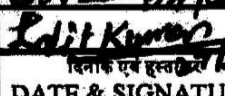
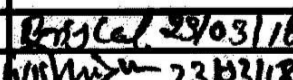

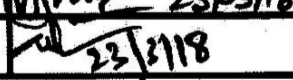

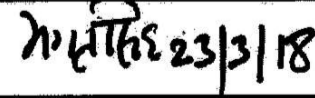
The Turbine instrumentation equipment, components, cabinets and other accessories are of precision storage and special packaging is necessary to ensure safe transit and delivery of these items at the sites. Packaging should be done to protect these sophisticated and precision items against damage by means of shocks and vibration during handling and transportation, moisture, dust and other adverse climatic and environmental conditions. This specification is arranged in section as below:




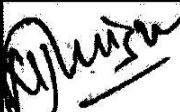
- **SECTION A:** General packaging instructions common for all categories of items.
- **SECTION B:** Electronic modules, instruments & allied items.
- **SECTION C:** Starter panels.
- **SECTION D:** Fitting, mounting accessories and
- **SECTION E:** Impulse pipes.



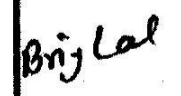
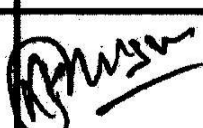
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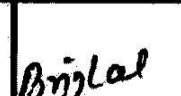
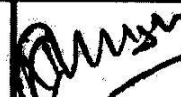
दिनांक एवं हस्ताक्षर
SIGN & DATE
 सामग्री सूची संख्या
INVENTORY NO.
 P-5284

				नाम NAME	दिनांक एवं हस्ताक्षर SIGNATURE & DATE
STE	D. K. RAY.		अनुवादक TRANSLATED BY		
QAX	S. Chandra		निर्माणकर्ता WORKED BY	BRIJ LAL RAM	 23/03/18
TSX	LALIT KUMAR		जांचकर्ता CHECKED BY	LAXMI KANT MISHRA	 23/03/18
सहमत विभाग AGREED DEPTT.	नाम NAME	दिनांक एवं हस्ताक्षर DATE & SIGNATURE	पर्यवेक्षणकर्ता SUPERVISED BY	VINOD KUMAR	 23/3/18
SUPERSEDES			स्वीकृति APPROVED :	B.S.RANA	 23/3/18
REV.NO.	02		निर्माण PREPARED :	C.I.E	Gr. NO. ST6.18
Dt.	15.03.18		जारी ISSUED :	TSX	दिनांक DATE :16.03.81
CHANGE ADVICE NO.	STE-18-02	15.03.18			

दिनांक एवं हस्ताक्षर SIGN & DATE		<h2 style="text-align: center;">उत्पाद मानक (हीप : हरिद्वार)</h2> <h3 style="text-align: center;">PRODUCT STANDARD (HEEP: HARIDWAR)</h3>	<h2 style="text-align: center;">ST33002</h2> <p style="text-align: center;">पृष्ठ 10 का 2 Page 2 of 10</p>				
SUPERSEDES INVENTORY संपूर्ण सूची संख्या को प्रतिस्थापित करता है	<p>3.0 <u>PACKAGING INSTRUCTIONS :</u></p> <p>3.1 (A) <u>GENERAL :</u></p> <ul style="list-style-type: none"> (i) The packaging should be done in a clean, dust free packing area/room. (ii) Wherever possible, the original packing materials like thermocol box/ chips, packing paper, board, cotton waste, rubberized coir, wood wool etc. should be used for packaging of these equipments etc. (iii) All the items should be thoroughly checked for any possible mechanical damage/ distortion/ dents and rust/ corrosion etc. Appropriate rectification measures should be taken to remove such defects and if required engineering division should be consulted. (iv) While packaging, all the items should be temporarily stored on raised wooden platform covered with clean parchment paper. (v) The repacking of all the bought out items must be done in the original way as they were received from the manufacturers/ suppliers. It must be ensured that the polythene bags are properly sealed, air tight and sufficient cushioning with rubberized coir or wood wool has been provided to various items and containers/ boxes. (vi) The packing box should be made water proof by putting a continuous barrier of water- proof bitumen paper/craft paper over the internal surfaces of the box to make it sufficiently impervious to water, and small silica gel bags suitably placed inside the packages. This can be done by using tar felt on the top of all the boxes. It should project by 50mm on all the sides and projected part should be nailed and overlap of the tar felt should be avoided. (vii) The packaging should be done in such a way that the individual instruments/ containers/ boxes do not have relative movement inside the packing. box during handling and transportation. Sufficient stiffness should be provided on the packing boxes to withstand mechanical shocks/ vibrations and other transit hazards. (viii) Wherever necessary, threaded/ machined portion should be coated with grease and wrapped with wax paper and tied with thread. Alternatively, threaded part may be wrapped with corrugated paper. 						
COPYRIGHT AND CONFIDENTIAL The information on this documents is the property of Bharat Heavy Electrical Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company		स्वत्वाधिकार एवं गोपनीय इस प्रलेख में दी गई सूचना भारत भारती उपकरणों के संपत्ति है। इसका प्रयोग एवं प्रसारण के बिना की जाये नहीं। इस प्रलेख के बिना किसी भी प्रकार से इसमें उल्लिखित नहीं किया जाये।					
दिनांक एवं हस्ताक्षर SIGN & DATE 		संपूर्ण सूची संख्या INVENTORY NO. P-5284	REV. NO. 02		निर्माणकर्ता WORKED BY BRIJ LAL RAM		23/03/18
		जांचकर्ता CHECKED BY LAXMIKANT MISHRA		23/03/18			

दिनांक एवं तिथि SIGN & DATE		<h2 style="margin:0;">उत्पाद मानक (हीप : हरिद्वार)</h2> <h3 style="margin:0;">PRODUCT STANDARD (HEEP: HARIDWAR)</h3>	ST33002 पृष्ठ 10 का 3 Page 3 of 10		
SUPERSEDES INVENTORY	<p>3.2 (B) ELECTRONIC MODULES INSTRUMENTS AND ALLIED ITEMS:</p> <ul style="list-style-type: none"> (i) All the Electronic modules/instruments and accessories should bear respective tag numbers as indicated in the shipping list. (ii) Individual instruments like indicators, recorders, transmitters, gauges, switches, detectors and electronic modules/ components should be sealed air tight in polythene bags which should contain silica gel in small bags of cotton cloth. Also volatile corrosion inhibitor (VCI) powder on table can be put in the bags/boxes containing the instruments. (iii) After sealing in polythene bags these items should be packed in small sized boxes, preferably original ones, with sufficient thermocol chip/ molded thermocol box/ card board box as the case may be. These boxes should be packed with sticking cello tapes and cotton tapes. (iv) The outside of these smaller boxes should carry dispatch unit number, packing box number and the tag number of the instrument/ equipment as shown in the shipping list. (v) Number of such small sized boxes should be kept in bigger sized box/carbon and these boxes/cartons should be in turn securely placed in the packing box in such a way that no damaged occurs because of handling, shifting, lifting or transportation. (vi) Thermocouple and Resistance thermometer shall be packed in suitable sized wooden box with appropriate & sufficient cushioning materials. 				
स्वामिनी सूची संख्या को संश्लेषित करना है	<p>3.3 (C) CABINETS & STARTER PANELS :</p> <ul style="list-style-type: none"> (i) The cabinet or starter panels should be clamped securely and firmly to the base plate of packing box with suitable nuts & bolts. (ii) The cabinets or starter panels shall be sealed airtight with polythene bags and a cotton bag containing silica gel shall be place inside the cabinets. As the cabinets/ starter panels etc. contain small mechanical contacts so VCI paper can be wrapped all around and fixed with tape. (iii) Sufficient stiffness/braces with padded cushions should be provided to ensure rigid packing. 				
COPYRIGHT AND CONFIDENTIAL The information on this documents is the property of Bharat Heavy Electrical Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company	<p style="font-size: small;">स्वामिनी सूची संख्या को संश्लेषित करना है। इस प्रलेख में दी गई सूचना भारत हेवी एलेक्ट्रिकल्स लिमिटेड की संपत्ति है। इसका प्रयोग एवं प्रसारण स्वामिनी सूची संख्या को संश्लेषित करने के बिना न किया जाए।</p>				
दिनांक एवं तिथि SIGN & DATE					
स्वामिनी सूची संख्या INVENTORY NO.	REV. NO. 02		निर्माणकर्ता WORKED BY	BRIJ LAL RAM 	23/03/18
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दिनांक एवं हस्ताक्षर SIGN & DATE		<h2 style="margin: 0;">उत्पाद मानक (हीप : हरिद्वार)</h2> <h3 style="margin: 0;">PRODUCT STANDARD (HEEP: HARIDWAR)</h3>	ST33002 पृष्ठ 10 का 4 Page 4 of 10
नामची सूची संख्या को अधिकृत करता है	<p>3.4 (D) FITTINGS & MOUNTING ACCESSORIES ETC. :</p> <ul style="list-style-type: none"> (i) This category includes items like instrument valves, nipples, brackets, fasteners etc. (ii) Apply appropriate coating of grease on the threaded and machine portion and wrap the individual item with wax paper and tie with thread. <p>3.5 (E) IMPULSE PIPE LINES :</p> <ul style="list-style-type: none"> (i) Impulse pipe lines are to be closed at both the ends by rubber plugs/ Neoprene grommets to prevent the clogging of pipelines by foreign materials/ dust, wood powder etc. (ii) While packing these pipelines care should be taken that no heavy material is put on top of them. This is necessary to ensure protection against mechanical damage. (iii) All the impulse pipe lines in a packing box should be tied with steel wires in small groups of 10-15 pipe lines (iv) Due care should be taken so that loose item such as above do not collide with each other causing damage to thread /machined port. <p>4.0 SEA-WORTHY PACKING INSTRUCTIONS FOR EXPORT PROJECTS AND SEA COASTAL PROJECTS:</p> <p>4.1 GENERAL The standard covers guide lines for making Sea- worthy standard packing boxes to be used for transportation for export orders. Vendors shall be responsible for packing and shall meet the minimum requirements specified herein.</p> <p>4.2 SCOPE IN ADDITION TO CLAUSE NO. 1.0 AS ABOVE The procedure specifies minimum guidelines to be complied with for packing of electrical and electronic Components /Assemblies/Equipments. This specification shall be suitable for different handling operations and the adverse conditions during transportation and during indoor/outdoor storage for period of minimum two years.</p> <p>4.3 WOOD SPECIFICATION FOR PACKING The wood used for packing shall conform to specification ISPM NO. 15. (International Standards for Phytosanitary Measures).</p>		
नामची सूची संख्या INVENTORY NO. P-5284	COPYRIGHT AND CONFIDENTIAL The information on this documents is the property of Bharat Heavy Electrical Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company	स्वत्वाधिकार एवं गोपनीय इस प्रलेख में ही गई बुझना भारत हेवी इलेक्ट्रिकल लिमिटेड की सम्पत्ति है इसका प्रत्येक एवं अवलोकन इस से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हितकारक हो न किता (एच।)	दिनांक एवं हस्ताक्षर SIGN & DATE 27/3/18
REV. NO. 02	निर्माणकर्ता WORKED BY BRIJ LAL RAM <i>Brij Lal</i>	जांचकर्ता CHECKED BY LAXMIKANT MISHRA <i>Laxmikant</i>	28/03/18 28/03/18

दिनांक एवं प्रस्तावक SIGN & DATE		उत्पाद मानक (हीप : हरिद्वार) PRODUCT STANDARD (HEEP: HARIDWAR)	ST33002		
सुपरसेडस INVENTORY	सामग्री सूची संख्या को अधिकारित करता है		पृष्ठ 10 का 5 Page 5 of 10		
COPYRIGHT AND CONFIDENTIAL The information on this documents is the property of Bhanat Heavy Electrical Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company				4.4 REQUIREMENTS FOR PACKING CASE: <p>4.4.1 All equipment and materials shall be suitably coated wrapped, or covered and boxed or crated for export shipment so as to prevent damage during handling and storage at the Site. Cardboard containers (if any) shall be enclosed in a solid wooden container to avoid damage during transit.</p> <p>4.4.2 Equipment and process materials shall be packed and semi knocked down, to the extent possible, to facilitate handling and storage and to protect bearings and other machine surfaces from oxidation. Each container box, crate or bundle shall be reinforced with steel strapping, in such a manner that breaking of one strap will not cause complete failure of the packaging. The packing shall be of best standard to withstand rough handling and to provide suitable protection from tropical weather while in transit and while awaiting erection at the site.</p> <p>4.4.3 Waterproof paper and felt linings shall overlap at seams at least 15mm and the seams shall be secured together.</p> <p>4.4.4 Equipment and materials in wooden cases or crates shall be properly cushioned to withstand the abuse of handling, transportation and storage. Packing shall include preservatives suitable for tropical conditions. All machine surfaces and bearings shall be coated with oxidation preventative compounds. All parts subject to damage when in contact with water shall be coated with suitable grease and wrapped in heavy asphalt or tar impregnated paper.</p> <p>4.4.5 Fumigation of boxes including plywood/spacers shall be carried out as per ISPM 15 to make it pest free. All wood packing in each consignment shall be free from bark and all visible signs and fungal attack at the time of shipment.</p> <p>4.4.6 Components sub-assemblies and assemblies sensitive to climatic conditions shall be packed seal tight. All the openings of the sensitive components, sub-assemblies and assemblies shall be blanketed to prevent the ingress of dust and moisture. The components sub-assemblies and assemblies shall be completely covered with 2 layers of polyethylene sheet. Polyethylene sheet to be used shall be UV stabilized. All sharp corners and edges are to be protected by rubber mats to prevent damage the polyethylene sheet. Top surface of the case shall be free from dents to prevent rain water pockets.</p>	
स्वत्वाधिकार एवं गोपनीय इस प्रलेख में की गई सूचना भारत देश की एलेक्ट्रिकल एंड मशीनरी की सम्पत्ति है इसका प्रयोग एवं वितरण के बिना की जाये नहीं। जो कि कंपनी के हित में हानिकारक हो व विनाश करे।			दिनांक एवं प्रस्तावक SIGN & DATE 		
सामग्री सूची संख्या INVENTORY NO. P-5284	REV. NO. 02		निर्माणकर्ता WORKED BY BRIJ LAL RAM		23/03/18
			जांचकर्ता CHECKED BY LAXMIKANT MISHRA		28/03/18



उत्पाद मानक (हीप : हरिद्वार)

ST33002

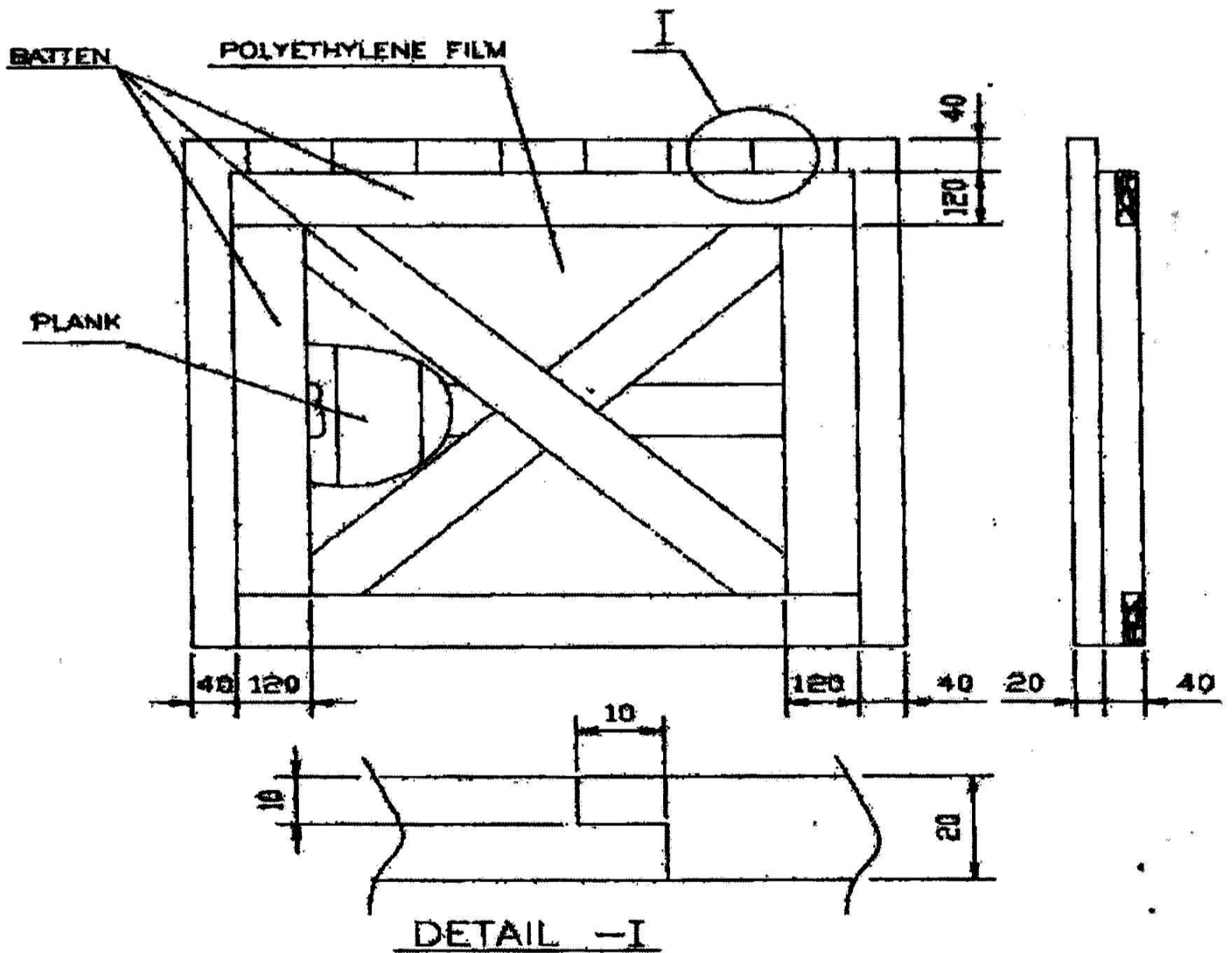
PRODUCT STANDARD (HEEP: HARIDWAR)

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4.4.7 The four sides shall be lined, from inside with multi-layered polyethylene sheet of at least 120 GSM and tacked at suitable places.

Whenever specified in addition to the polyethylene sheet the top cover will have a layer of bitumen felt over the cover. This should project about 100 - 250 mm on all sides shall be provided between frame and planks of the end and side shooK as shown in Fig. (For reference only.)

END SHOOK



निर्माणक
SIGN & DATE

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स्वाधिकार एवं गोपनीय
इस दस्तावेज में दी गई सूचना भारत हेवी इलेक्ट्रिकल्स लिमिटेड की संपत्ति है इसका प्रसार एवं प्रयोग के बिना की अनुमति के बिना न किया जाए।

निर्माणक
SIGN & DATE

सामग्री सूची संख्या
INVENTORY NO.

REV. NO. 02

निर्माणकर्ता
WORKED BY

BRIJ LAL RAM

Brij Lal

29/03/18

जांचकर्ता
CHECKED BY

LAXMIKANT MISHRA

Laxmikant

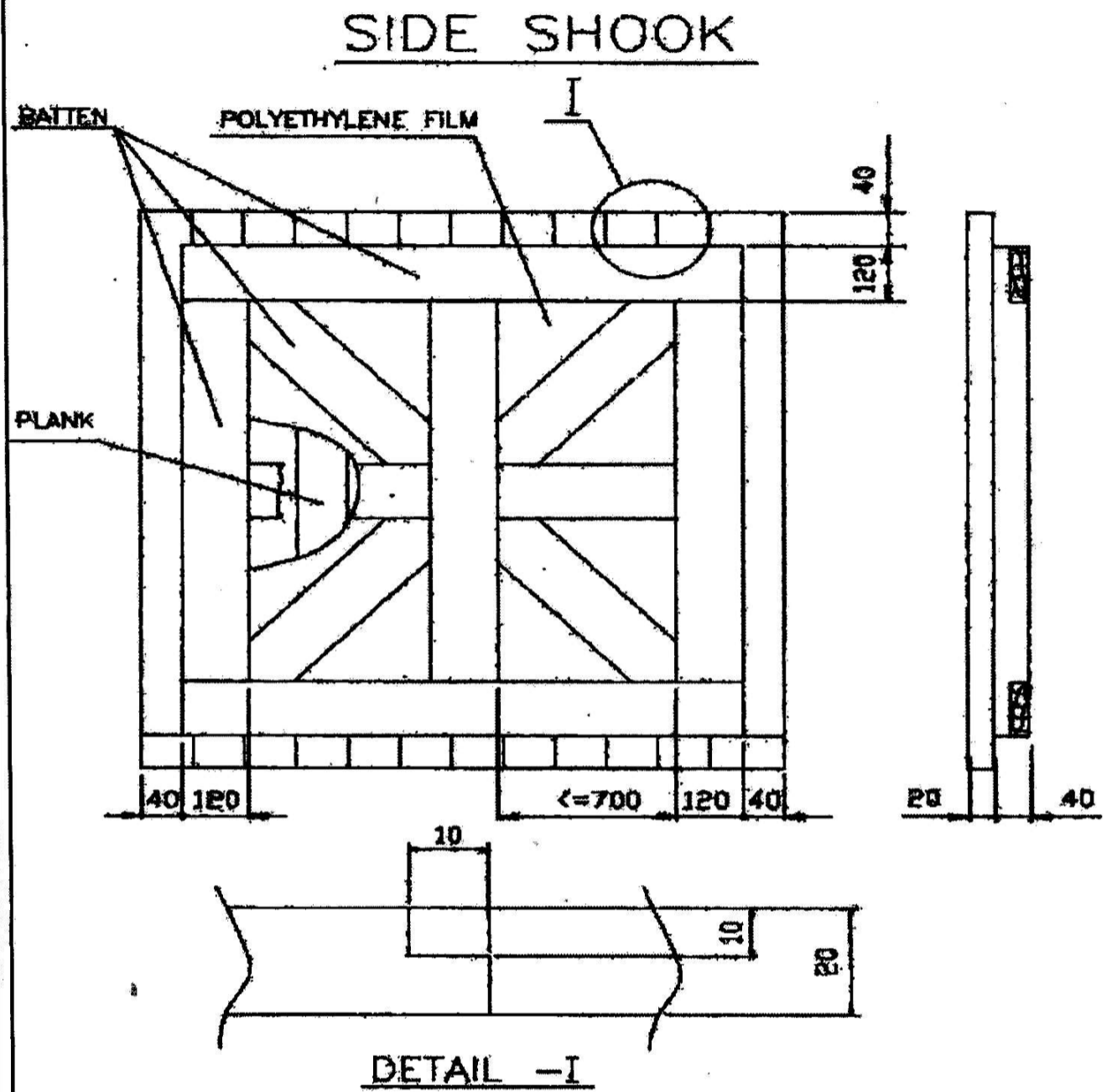
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 इस प्रलेख में दी गई सूचना भारत हेवी एलेक्ट्रिकल लिमिटेड की संपत्ति है इसका प्रत्येक एवं अव्यक्त रूप से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक हो न किता (हानि)



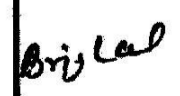
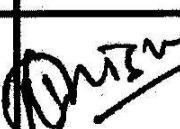
*** DIMENSIONS SHOWN IN ABOVE FIGGURE ARE INDICATIVE ONLY.**

It is preferable to have a single piece of the above multi-layered polyethylene sheet fixed on the four sides. In case jointing is unavoidable, it should be done by overlapping of approximately 100 mm.

Place the Components/cartons with corrosion inhibitors duly applied wherever necessary for place suitably, thin muslin cloths bags containing minimum 100 grams (approx.) of activated Blue Silica Gel as per IS 3401-1992/ BS 3482-1991 with standard particle size of 3 to 6 mesh (5.6 to 2.8mm), wherever necessary. Alternatively, VCI Powder as per IS 6263-1972/ IEC 68-2-30:1980 or Tablet may be used. Approximately 7 m3 VCI paper is necessary for 1 m3 of packed item. VCI Paper shall not be used for components made of aluminum, aluminum alloys, Zinc, Copper, Brass, cadmium & silver. VCI powder is sprinkled inside the piping components ends and shall be protected with end cover.

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SUPERSEDES INVENTORY शासकीय सूची संख्या को प्रतिस्थापित करता है	<p>All packages shall be covered on all sides with suitable GI sheets.</p> <p>4.4.8 Cover the whole equipment with polyethylene sheet of at least 120 GSM, on all sides preferably by a single piece.</p> <p>4.4.9 Silica gel is used for this purpose to protect the contents over sufficiently long time from corrosion. At the time of use, silica gel should be so dried that its color becomes dark blue. These shall be filled in small cotton bags. Before sealing the equipment, the silica gel bags should be kept inside the polyethylene film cover at different locations. The quantity of silica gel should not be less than 2.0 Kg per m³ volume of the packing box.</p> <p>4.4.10 Each case shall contain a packing list showing the detailed contents of the package. When any technical documents are supplied along with the shipment of materials no single package shall contain more than one set of such documents. Shipping papers shall clearly indicate in which packages the technical documents are contained.</p> <p>4.4.11 The case number shall be written in the form of a fraction, the numerator of which is the serial number of the case and the denominator the total number of case in which a complete unit of equipment is packed.</p> <p>4.4.12 Wherever necessary besides usual Inscriptions the cases shall bear special indication such as "Top", "Do not turn over", "Care", "Keep dry", etc., as well as indication of the center of gravity (with red vertical lines) and places for attaching slings (with chain marks). For all fragile equipment, unit should take special care to pack and label with additional markings such as "FRAGILE, HANDLE WITH CARE", "LIFTING POINTS", "THIS WAY UP", "DO NOT STACK" etc. to protect them from damage in transit.</p> <p>4.4.13 Completeness of Contents of each packing case: .</p> <p>Concerned CQA/Unit QC/Third Party Inspection Agency shall verify the completeness of contents of each package w.r.t. packing list both in terms of quality and quantity before authorizing dispatch of the consignment.</p> <p>Packing commensurate with international standards and accepted norms will be ensured by CQA/ Unit QC/Third Party Inspection Agency. Packing has to be sea-worthy and secure. As far as possible, the packing has to be rectangular in shape for optimum space utilization in the ship and economize on shipping costs. Projections on packages are prohibited.</p>				
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स्वत्वाधिकार एवं गोपनीय इस प्रलेख में दी गई सूचना भारत सूची एलेक्ट्रिकल लिमिटेड की संपत्ति है। इसका प्रलेख एवं कालवक रूप से किसी भी तथ्य प्रयोग, जो कि कंपनी के हित में हानिकारक हो सके, किया जाये।					
दिनांक एवं हस्ताक्षर SIGN & DATE 					
शासकीय सूची संख्या INVENTORY NO. P-5284	REV. NO. 02		निर्माणकर्ता WORKED BY BRIJ LAL RAM 	जांचकर्ता CHECKED BY LAXMIKANT MISHRA 	23/03/18 23/03/18

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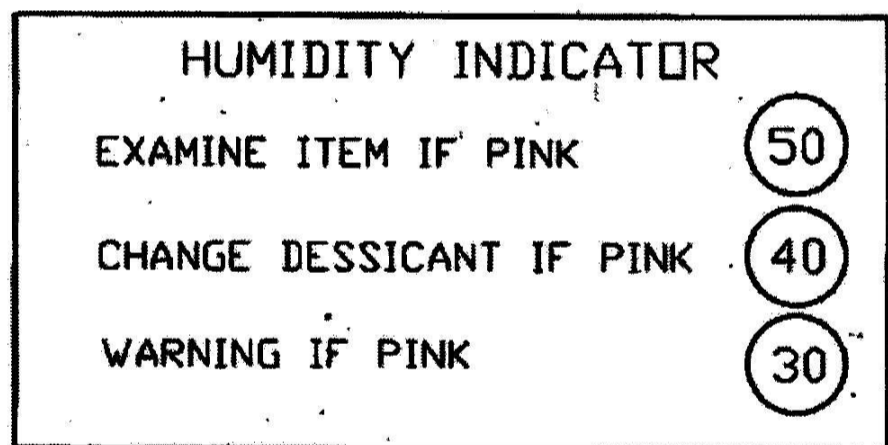
4.4.14 Completeness of Contents of each packing case:
 The packing list has to be checked and certified by the Inspection agency with due signatures. All packages shall be enclosed in suitable GI sheets on all sides. The top of box should be covered by GI sheet in single length & width.

No loose items Gunny bag packing is allowed for shipment.

4.4.15 Provision of Inspection Windows on Packages:
 Vendors should provide inspection window of size 6" x 4" (glass perplez) for customs examination for all packages (above 1.5 x 1.5 x 1.5 cum) involving panels of any kind. Care would be taken to ensure that all packages are properly sealed to avoid ingress of moisture, rodents etc. Packing slip folders shall be attached outside with each box.

4.4.16 Provision of Humidity Indicator:

- i. Humidity indicator must be provided in each packing boxes. Humidity indicator shall be placed behind inspection window or as far as practicable from the nearest unit of desiccant.
- ii. Use a three-spot paper card type 1x4 inches in size to show humidity with instruction as indicated in figure below. The spots indicate relative humidity of 50 percent, 40 percent and 30 percent, top to bottom, by changing color from blue to pink.



4.4.17 Marking for Safe Handling:
 To ensure safe handling, packing case shall be marked to show the following:


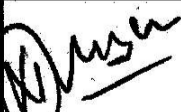
- i. Upright position.
- ii. Sling position and Centre of Gravity position.
- iii. Storage category.

Fragile components (to be marked properly with a clear warning for safe handling).

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दिनांक एवं हस्ताक्षर
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उत्पाद मानक (हीप : हरिद्वार)

ST33002

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INVENTORY

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अपडेट किया गया है

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इस दस्तावेज में की गई सूचना भारत भारती एलेक्ट्रिकल लिमिटेड की संपत्ति है। इसका प्रयोग एवं प्रसारण के बिना की संख्या को अपडेट किया गया है।

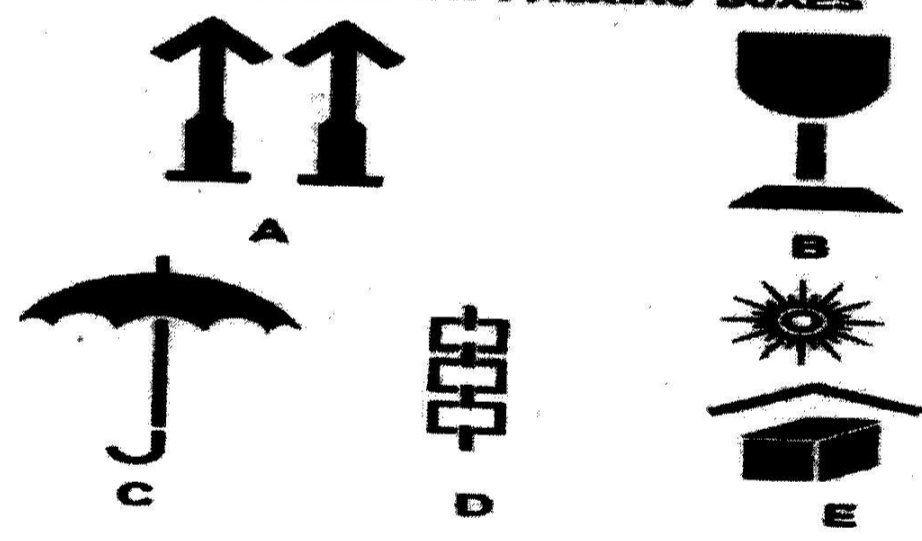
रिजर्व एवं स्टॉक
SIGN & DATE

- 4.4.18 Shipping Documentation including those covered by customs requirements:**
- i. Packing List (O&M manual to be listed in packing list, if sent along with consignment).
 - ii. Fumigation certificate for wooden boxes

4.4.19 THE FOLLOWING DETAILS ARE TO BE MARKED ON THE PACKING CASES:

- a) Address of consignee.
- b) Purchase Order No.
- c) Description of item or title of packing list.
- d) Case identification Number.
- e) Net Weight.
- f) Gross Weight.
- g) Dimensions of box
- h) Marking showing upright position.
- i) Marking showing umbrella (i.e. for machines/ components to be stored under covered storage).

MARKING ON PACKING BOXES



- A UPRIGHT**
- B FRAGILE**
- C PROTECTION FROM FALLING OR CONDENSING MOISTURE**
- D SLING POSITION**
- E PROTECTION FROM DIRECT RADIATION**

5.0 CROSS REFERED STANDARD:
IS 3401-1992, BS 3482-1991, IS 6263-1972 & IEC 68-2-30:1980.

सामग्री सूची संख्या INVENTORY NO. P-5284	REV. NO. 02	निर्माणकर्ता WORKED BY	BRIJ LAL RAM	<i>Brij Lal</i>	29/09/18
		जांचकर्ता CHECKED BY	LAXMIKANT MISHRA	<i>Laxmi Kant</i>	23/03/18

FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm) FORM DG 39(B)


REV	DATE	ALTERED	REV	DATE	ALTERED	J.S.B.	GMS No/GRSP No.	STATUS	
		CHECKED	01	20/9/06	CHECKED	S.K.S.	CBOM 31337622100	OF DRG	
			CHANGE NO.			AGREED	NAME	SIGN	DATE
			STE-06-F0218			DEPT.			
GRADE OF UNTOL.DIM.M/CGC/M/F.AA0230208				WELDING A/B/C/D AA0621104			GAS CUTTING-T3 AA0621101		

HAND HELD COMMUNICATOR

HAND HELD COMMUNICATOR SHALL BE COMPATIBLE TO THE SMART TYPE TRANSMITTER WITH HART PROTOCOL. IT SHALL BE POSSIBLE TO CONNECT THE HHC ANY WHERE IN THE TRANSMITTER LOOP FOR CARRYING OUT THE FUNCTIONS AS DIFINED BELOW. CONNECTION OF HHC SHALL NOT DISTURB THE 4-20 mA SIGNAL ANYWAY.

1. HHC SHALL BE UNIVERSAL TYPE WHICH CAN BE USED FOR ANY HART DEVICE AND APPROVED BY HART FOUNDATION. IT SHALL BE SUITABLE FOR LATEST VERSION OF HART PROTOCOL.
2. HHC SHALL BE ABLE TO PERFORM THE FOLLOWING MINIMAM FUNCTIONS.
 - DEVICE SET UP.
 - DIAGNOSTIC MESSAGE DISPLAY.
 - PROCESS VALUE DISPLAY.
 - CHANGE OF ENGINEERING UNITS.
 - LOOP TESTING.
 - RANGE TESTING.
3. POWER SOURCE : SUITABLE DC BATTERIES WITH CHARGER.
4. KEY BOARD : AN ALPHANUMERIC KEY BOARD CONTAINING ALL REQUIRED FUNCTION KEYS.
5. SUITABLE CONNECTORS AND CABLES SHALL BE SUPPLIED BY THE VENDER.
6. OPERATING TEMPERATURE RANGE : 0 to 50 Deg /C
7. STORAGE TEMPERATURE RANGE : 0 to 60 Deg /C
8. ACCESSORY: CARRYING CASE.
9. O & M MANUAL IN ENGLISH LANGUAGE TO BE FURNISHED WITH THE OFFER.

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S1-29738 INVENTORY No.	REF.DRG.No.	001	HAND HELD COMMUNICATOR	W90313376050	0	50
	REMARKS	ITEM No.	DESCRIPTION	MATERIAL CODE	UNIT	WT.
16/03/1999 SIGN & DATE	65	75	25 27 29	58 5932 3346	54 55 56 57 66	71
CARD TYPE 3	28	28	TYPE 1	28	CARD TYPE 2	
 BHARAT HEAVY ELECTRICALS LTD HARDWAR	NAME	SIGN	DATE	NO.		
	DRN	J. S. BHANDARI	-do-	15.02.1999	OF	
	CHD	S.CHANDRA	-do-	15.02.1999	VAR	
APD	A. ALI	-do-	08.03.1999	73	74	
DEPT. STE	SCALE	WEIGHT(Kg)	REF.TO ASSY.DRG.	ITEM No.	No OF	ITEMS
CODE 4011	N. T. S.	0.500	31337622100	15	75	77
TITLE	HAND HELD COMMUNICATOR			DRAWING No.		
				41337622101	22	23 24
				SHEET No. 01	No.OF SHEETS 01	

p'qama kaoNa p'xaopNa/FIRST ANGLE PROJECTION mm. / ALL DIMENSIONS ARE IN mm. (bal)

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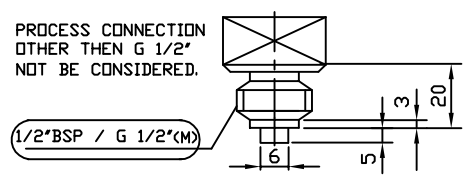
sva'vvaaiQakar evaM gaaopnalya [sa p'laok maom di ga] - salJcanaa Baart hoval [laoi@T/klisa ilaimaToD ki sampika ho . Isaka p'xyaxa yaa Ap'xyaxa \$p maom ikasal Bal trh p'yaaga nahim ikyaa jaee jaoo kmpnal ko int maom hainakr naoo .

REV. 10 DATE 01.05.21 ALTERED BY jaocaDkta-CHD MAYURI	REV. 09 DATE 28.08.19 ALTERED BY jaocaDkta-CHD MAYURI	sa'bal'Aoo'ema°/C.B.O.M. 31337666100	QBM 70 (P) STATUS OF DRG. U
VAR. NO. 33 NEW ADDED AS PER CHANGE NO. STE-21-F0098.		sa'bal'ivaBaaga AGREED DEPTT. naama/NAME	hstaxar/SIGN. idnaMk/DATE
VAR. NO. 31 & 32 NEW ADDED AND THIS DRG. SUPERSEDES UNDER THE SAME REV. NO. AS PER CHANGE NO. STE-19-F0262.		-----	-----
maSalinaMga 'ee0230208 ema MACHINING - AA0230208 m		vaOiiDMMGga 'ee0621104 kl EaoNal bal WELDING-CLASS 'B' OF AA0621104	gaOsa kiTMGga 'ee0621101 kl saarNal 3 GAS CUTTING-TABLE 3 OF AA0621101

TABLE-1

VAR.NO.	DESCRIPTION	SPEC.NO.	CODE NO	REMARK
00	PRESSURE TRANSMITTERS, 0-300 bar	ST48010	W97372652111	
01	PRESSURE TRANSMITTERS, 0-200 bar	ST48010	W97372652120	
02	PRESSURE TRANSMITTERS, 0-100 bar	ST48010	W97372652138	
03	PRESSURE TRANSMITTERS, 0-80 bar	ST48010	W97372652146 *	SIL2
04	PRESSURE TRANSMITTERS, 0-40 bar	ST48010	W97372652154	
05	PRESSURE TRANSMITTERS, 0-20 bar	ST48010	W97372652162	
06	PRESSURE TRANSMITTERS, 0-16 bar	ST48010	W97372652170	
07	PRESSURE TRANSMITTERS, 0-10 bar	ST48010	W97372652189	
08	PRESSURE TRANSMITTERS, 0-4 bar	ST48010	W97372652197	
09	PRESSURE TRANSMITTERS,(-1)-(+299)bar	ST48010	W97372652200	
10	PRESSURE TRANSMITTERS,(-1)-(+79) bar	ST48010	W97372652219	
11	PRESSURE TRANSMITTERS,(-1)-(+59) bar	ST48010	W97372652227	
12	PRESSURE TRANSMITTERS,(-1)-(+44) bar	ST48010	W97372652235	
13	DIFF. PRESS. TRANSMITTERS,(-5)-(+25) bar	ST48010	W97372652243	
14	DIFF. PRESS. TRANSMITTERS,(-10)-(+90)mbar	ST48010	W97372652251	
15	PRESSURE TRANSMITTERS, 0-10 bar(abs)	ST48010	W97372652260 *	SIL2
16	PRESSURE TRANSMITTERS, 0-1.3 bar(abs)	ST48010	W97372652278 *	SIL2
17	DIFF. PRESS. TRANSMITTERS, 0-100 mbar	ST48010	W97372652286	
18	PRESSURE TRANSMITTERS, 0-350 bar	ST48010	W97372652294	
19	PRESSURE TRANSMITTERS, 0-160 bar	ST48010	W97372652308	
20	PRESSURE TRANSMITTERS,(-1)-(+69) bar	ST48010	W97372652316	
21	FLOW TRANSMITTERS, 0-1800 mbar	ST48010	W97372651360 *	SIL2
22	PRESSURE TRANSMITTERS,(-1)-(+3) bar	ST48010	W97372652324	
23	PRESSURE TRANSMITTERS,(-1)-(+9) bar	ST48010	W97372652332	
24	PRESSURE TRANSMITTERS,(-1)-(+39) bar	ST48010	W97372652340	
25	PRESSURE TRANSMITTERS,(-1)-(+19) bar	ST48010	W97372652359	
26	PRESSURE TRANSMITTERS,0-400 bar	ST48010	W97372652367	
27	PRESSURE TRANSMITTERS,(-1)-(+399) bar	ST48010	W97372652375	
28	PRESSURE TRANSMITTERS,(-1)-(+50) bar	ST48010	W97372652391	
29	PRESSURE TRANSMITTERS,0-110 bar	ST48010	W97372652383	
30	PRESSURE TRANSMITTERS,(-15)-(0) mbar	ST48010	W97372652405	
31	PRESSURE TRANSMITTERS(-1)-(+109) bar	ST48010	W97372652413	
32	PRESSURE TRANSMITTERS,(-1)-(+349) bar	ST48010	W97372652421	
33	DIFF. PRESSURE TRANSMITTERS,0-2 bar	ST48010	W97372652430	

NOTE:-
 1 - THE MATERIAL CODES MARKED WITH * MUST HAVE SIL2-CERTIFICATION.
 2 - MEASURING RANGE SHALL BE IN 'BAR' UNIT.
 3 - SPECIFICATION NO. ST48010.
 4 - BHEL CODE NO. AS PER TABLE-1.



saamaga' salcal saM#yaa INVENTORY NO.
 hstaxar AaOr idnaMak/SIGN & DATE
 saMdBa-t AIBaklp saM#yaa REFERENCE DRG. NO.

	Baart hoval [laoi@T/klisa ilaimaToD, ranalpur, hirWar BHARAT HEAVY ELECTRICALS LIMITED, RANIPUR, HARDWAR		inama-Nakta-DRG. SSTEJSB	hstaxar/SIGN SSTEJSB	idnaMak/DATE 02/04/2011	vaorenT saM#yaa No. of Var.
	ivaBaaga DEPTT. STE KUT/CODE 4011	maap/SCALE N.T.S.	Baar ik'ga'a° WEIGHT (KG) 8.5	naama/NAME SSTEVK	hstaxar/SIGN SSTEVK	idnaMak/DATE 16/04/2011
			saMdBa-REFER TO ASSLY. DRG.	hstaxar/SIGN ASTEKBB	idnaMak/DATE 27/04/2011	
alYa-k/TITLE PRESSURE TRANSMITTERS			AIBaklp saM#yaa/DRAWING NO. 41337666101			
			pRYz saM#yaa/Sheets No. 7			pRYz saM#yaa/No. of Sheets 23 24

MAHAN 2X800MW (LIST OF PT/DPT/HHC)						
Sl. No.	MATERIAL CODE	Type	RANGE	KKS TAG	MAIN QUANTITY PER UNIT	MANDATORY SPARE QUANTITY
1	W97372652367	PT	0-400 bar	MAA12CP021	6	1
				LBA11CP004		
				LBA11CP005		
				LBA12CP004		
				LBA12CP005		
				MAA14CP021		
2	W97372652383	PT	0-110 bar	LBQ90CP001	1	1
3	W97372652146	PT	0-80 bar	LBB11CP004	10	1
				LBB11CP005		
				LBB12CP004		
				LBB12CP005		
				LBB21CP001		
				LBB21CP002		
				LBB21CP003		
				LBB22CP001		
				LBB22CP002		
				LBB22CP003		
				4		
LBG30CP012						
QFB01CP001						
5	W97372652375	PT	-1 TO 399 bar	MAA50CP001	3	1
				MAA50CP002		
				MAA50CP003		
6	W97372652219	PT	-1 TO 79 bar	LBC10CP001	4	1
				LBC10CP002		
				LBC10CP003		
				MAB50CP001		
7	W97372652391	PT	-1 TO 50 bar	MAN52CP011	2	1
				MAN55CP011		
8	W97372652340	PT	-1 TO 39 bar	LBQ70CP001	1	1
9	W97372652359	PT	-1 TO 19 bar	LBQ60CP001	2	1
				LBS50CP001		
10	W97372652332	PT	-1 TO 9 bar	LBS40CP001	1	1
11	W97372652324	PT	-1 TO 3 bar	LBS30CP001	1	1
12	W97372652260	Abs PT	0-10 abs	MAC11CP001	3	1
				MAC11CP002		
				MAC11CP003		

13	W97372652278	Abs PT	0-1.3 barabs	MAG10CP002	12	1
				MAG10CP003		
				MAG10CP004		
				MAG10CP012		
				MAG10CP013		
				MAG10CP014		
				MAG20CP002		
				MAG20CP003		
				MAG20CP004		
				MAG20CP012		
				MAG20CP013		
				MAG20CP014		
14	W97372651360	Flow Transmitter	0-1800 mbar	MAN53CF001	6	1
				MAN53CF002		
				MAN53CF003		
				MAN56CF001		
				MAN56CF002		
				MAN56CF003		
15	W97372652251	DPT	-10 TO 90 mbar	MAW20CP001	2	1
				MAW20CP002		
16	W90313376050	HAND HELD COMMUNICATOR	-	-	1	-
NOTE: TAG PLATES SHOULD BE PUNCHED WITH THE KKS TAG GIVEN IN THE LIST. THE TAG NAME SHOULD BE INDELIABLE. TAG PLATE TO BE TIED ON THE TRANSMITTER WITH THE HELP OF A WIRE.						

-sd-
Saswati Srivastava
AGM/CIE

-sd-
Mayuri Katiyar
Mgr/CIE

MANUFACTURER'S NAME AND ADDRESS		STANDARD QUALITY PLAN					TO BE FILLED BY BHEL		TO BE FILLED BY BHEL			
BHEL	VENDOR'S NAME	ITEM	Pressure/ Differential Pressure/ Flow Transmitter			QP NO.	QA/BE/QP/902					
					REV.	12						
		DRG. NO.	AS PER PO									
		REV	AS per PO									
		SPEC.	AS per PO									
	REV	AS per PO				Page 1 of 3						
SL. NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS	AGENCY			REMARKS
1	2	3	4	5	6	7	8	9	D	10		11

1.00	RAW MATERIAL											
1.01	Diaphragm, Sensing, Housing & Process Connections (As applicable)	Grade of Material	Major	Chemical	1 Sample / lot	Ordering specn./ BHEL Appd Data Sheet	Ordering specn./ BHEL Appd Data Sheet	COC	√	P	V	-
1.02	Flange & Wetting Part (As applicable)	Grade of Material	Major	Chemical	1 Sample / lot	Ordering specn./ BHEL Appd Data Sheet	Ordering specn./ BHEL Appd Data Sheet	COC	√	P	V	-
1.03	Electronic & Other Components (As applicable)	Visual, Make, Range, Type / Model No., Sl. No. & Electric Connection (Plug & Socket Type)	Major	Visual	100%	Ordering specn. / Vendor STD	Ordering specn. / Vendor STD	Internal records	-	P	V	-
2.00	IN-PROCESS INSPECTION											
2.01		Soundness of fitting, Connection & Terminal Marking	Major	Visual	100%	Ordering specn./ BHEL Appd Data Sheet	Ordering specn./ BHEL Appd Data Sheet	Internal records	-	P	-	-
2.02		Insulation Resistance & Dielectric strength	Major	Electrical	100%	Ordering specn./ BHEL Appd Data Sheet	Ordering specn./ BHEL Appd Data Sheet	Internal records	-	P	-	-
3.00	TYPE TESTS											
4.00	ROUTINE TESTS											
4.01		Visual (Input / Output Range, Make, Rating, Type / Model No./ Sl No.) & Dimensions	Major	Visual / Measurement	100%	Ordering specn./ BHEL Appd Data Sheet	Ordering specn./ BHEL Appd Data Sheet	Test Report*	√	P	W	-

MANUFACTURER/SUBCONTRACTOR	LEGEND: ! RECORDS IDENTIFIED WITH 'TICK' SHALL BE ESSENTIALLY INCLUDED BY CONTRACTOR IN QA DOCUMENTATION. M: MANUFACTURER / SUBCONTRACTOR B: BHEL / NOM. INSPECTION AGENCY N: CUSTOMER INDICATE 'P' PERFORM 'W' WITNESS AND 'V' VERIFICATION ALL 'W' INDICATED IN COLUMN 'N' SHALL BE 'CHP' OF CUSTOMER	FOR CUSTOMER USE
		APPROVED BY

MANUFACTURER'S NAME AND ADDRESS		STANDARD QUALITY PLAN					TO BE FILLED BY BHEL		TO BE FILLED BY BHEL			
BHEL	VENDOR'S NAME	ITEM	Pressure/ Differential Pressure/ Flow Transmitter			QP NO.	QA/BE/QP/902					
					REV.	12						
		DRG. NO.	AS PER PO									
		REV	AS per PO									
		SPEC.	AS per PO									
		REV	AS per PO									
						Page 2 of 3						
SL. NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS	AGENCY			REMARKS
									M	B	N	
1	2	3	4	5	6	7	8	9	D	10		11

4.02		Mechanical Process Connections & Electrical Connections	Major	Visual / Measurement	100%	Ordering specn./ BHEL Appd Data Sheet	Ordering specn./ BHEL Appd Data Sheet	Test Report*	√	P	W	-	
4.03		Accuracy / Calibration Repeatability	Major	Electrical	100%	Ordering specn./ BHEL Appd Data Sheet	Ordering specn./ BHEL Appd Data Sheet	Test Report*	√	P	W	-	
4.04		Span and Zero Adjustability / Adjustability of Range	Major	Physical	100%	Ordering specn./ BHEL Appd Data Sheet	Ordering specn./ BHEL Appd Data Sheet	Test Report*	√	P	W	-	
4.06		Over Pressure Limit & Pressure Range versus Output Signal Test.	Major	Pressure	100%	Ordering specn./ BHEL Appd Data Sheet	Ordering specn./ BHEL Appd Data Sheet	Test Report*	√	P	W	-	
4.07		Power Supply Voltage Effect (As Applicable)	Major	Electrical	100%	Ordering specn./ BHEL Appd Data Sheet	Ordering specn./ BHEL Appd Data Sheet	Test Report*	√	P	W	-	
4.08		Insulation Resistance (If Applicable)	Major	Electrical	100%	Ordering specn./ BHEL Appd Data Sheet	Ordering specn./ BHEL Appd Data Sheet	Test Report*	√	P	W	-	
4.09	Completeness of TCs, COCs, & Inspection Reports		Major	Physical	100%	Ordering specn./ BHEL Appd Data Sheet	Ordering specn./ BHEL Appd Data Sheet	Documents	√	P	V	-	
5.00	IDENTIFICATION / MARKING & PACKING												
5.01		Identification Marking / Firmness of Tagging of Each Instrument	Major	Visual	100%	Ordering specn./ BHEL Appd Data Sheet	Ordering specn./ BHEL Appd Data Sheet	Internal Records		P	W	-	

MANUFACTURER/SUBCONTRACTOR	LEGEND: ! RECORDS IDENTIFIED WITH 'TICK' SHALL BE ESSENTIALLY INCLUDED BY CONTRACTOR IN QA DOCUMENTATION. M: MANUFACTURER / SUBCONTRACTOR B: BHEL / NOM. INSPECTION AGENCY N: CUSTOMER INDICATE 'P' PERFORM 'W' WITNESS AND 'V' VERIFICATION ALL 'W' INDICATED IN COLUMN 'N' SHALL BE 'CHP' OF CUSTOMER	FOR CUSTOMER USE	
			APPROVED BY

MANUFACTURER'S NAME AND ADDRESS		STANDARD QUALITY PLAN					TO BE FILLED BY BHEL		TO BE FILLED BY BHEL			
BHEL	VENDOR'S NAME	ITEM	Pressure/ Differential Pressure/ Flow Transmitter			QP NO.	QA/BE/QP/902					
					REV.	12						
		DRG. NO.	AS PER PO									
		REV	AS per PO									
		SPEC.	AS per PO									
	REV	AS per PO			Page 3 of 3							
SL. NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS	AGENCY			REMARKS
									M	B	N	
1	2	3	4	5	6	7	8	9	D	10		11

5.02		Soundness of Packing Against Transit Damage	Major	Physical	100%	Ordering Specn./ BHEL Appd Data Sheet/ Vendor's STD	Ordering specn./ BHEL Appd Data Sheet	Internal Records		P	-	-	
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Note:

1. Type tests clearance from BHEL Engineering to be verified by inspection engineer during inspection at vendor's works.
2. Manufacturer to maintain calibrated instruments having better accuracy than the item under the test. Inspection engineer shall check the same.
3. Witness by inspection agency to be random 10% of each material code(minimum 1 pieces per material code) from each lot. However vendor to carry out 100% tests internally and tests report shall be reviewed by inspection engineer during inspection at Vendor's works.
4. For material code having applicable spec ST48010, Transmitter shall be supplied with bracket for panel mounting along with necessary fasteners as per cl. no.-5.7 of BHEL spec. ST48010.

		LEGEND: ! RECORDS IDENTIFIED WITH 'TICK' SHALL BE ESSENTIALLY INCLUDED BY CONTRACTOR IN QA DOCUMENTATION. M: MANUFACTURER / SUBCONTRACTOR B: BHEL / NOM. INSPECTION AGENCY N: CUSTOMER INDICATE 'P' PERFORM 'W' WITNESS AND 'V' VERIFICATION ALL 'W' INDICATED IN COLUMN 'N' SHALL BE 'CHP' OF CUSTOMER	FOR CUSTOMER USE	
MANUFACTURER/SUBCONTRACTOR				APPROVED BY