



**PRE-QUALIFICATION CRITERIA (PQC)**  
**for Voltage Sensor (2000VDC) for Hotel Load Converter**  
**GROUP: TRACTION ENGINEERING**

Ref.: 445/PQC/VS2000

Rev. No.: 00

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**1. Pre-qualification Criteria**

- 1.1 The bidder should be manufacturer/supplier of voltage sensors for use in rolling stock application (locomotive/EMU/Metro) in India or abroad.
- 1.2 The bidder should be an "Approved" vendor of RDSO/CLW/Indian Railways. If not, the bidder shall approach and submit its credentials to RDSO/CLW/Indian railways and obtain approval within a period of one month from the date of tender opening. The approval shall be for usage of offered item in Hotel Load Converter project. If approval is not received within this period, BHEL shall treat the offer as "Not meeting Pre-qualification criteria" and offer shall be rejected.  
*Extension beyond one month will not be given for whatsoever reason.*
- 1.3 It is preferred that the bidder is the manufacturer of this item. If the bidder is importing the item, then minimum value addition in India shall be 20%. Bidder to confirm this in the offer. Value addition less than 20% is not acceptable.
- 1.4 Bidder should possess valid type test report for the item not older than five years, conducted at an accredited laboratory as per standards mentioned in the specification at the time of bid submission.

**2. Documents to be submitted:**

- 2.1 Proof of manufacture/supply of the item for rolling stock application (locomotive/EMU/Metro) in India or abroad directly or through any agency.
- 2.2 Copy of type test report.
- 2.3 Clause by clause compliance to technical specification as mentioned in clause no. 3.1.

**3. Reference documents:**

Purchase-cum-Technical Specification No.: PS/445/2761, Rev. 00 for Voltage Sensor 2000VDC for Hotel Load Converter.

Rev.            00

Approved by:

Venkateshalu K

Prepared by:

Girish Chand

Department:

Traction Engg.

Date:

03.03.2022



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BHEL ELECTRONICS DIVISION  
PES-TRACTION ENGG  
VOLTAGE SENSOR 2000VDC FOR HLC

PS/445/2761

REV. No. 00

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Purchase Specification for  
Voltage sensor 2000VDC for Hotel Load Converter

REVISION HISTORY SHEET

Rev. No.	DATE	Nature of Change	Reason	Prepared	Checked	Approved
00	03.03.2022	FIRST ISSUE	-	SRM	KLN	VK

REVISION: 00    03.03.2022

Prepared

SACHIN R M

Checked

LAKSHMI  
NARAYANA  
KATHARI

Approved

VENKATESHALU  
K



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**BHEL ELECTRONICS DIVISION  
PES-TRACTION ENGG  
VOLTAGE SENSOR 2000VDC FOR HLC**

**PS/445/2761**

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### 1. INTRODUCTION

The AC Voltage sensor proposed to be procured against this specification is intended to be used in the Hotel Load Converters (HLC). The HLCs are used in IR (Indian Railways) and mounted inside WAP7 locomotives.

The sensor shall be of traction grade and shall have high immunity against ambient electric and magnetic fields with proper insulation between primary, secondary and control supplies.

### 2. FUNCTION

The voltage sensor proposed in this specification is used to measure DC link voltage of Hotel Load Converter.

### 3. POWER SUPPLY

Power supply of +/-15V DC, for powering the sensor shall be provided from the interface card present in the HLC.

### 4. TECHNICAL DETAILS

Max Voltage ( $V_{PN}$ )	: 2000 V rms
Secondary current (at $V_{PN}$ )	: 50 mA rms
Supply voltage	: $\pm 15V$ (tolerance $\pm 5\%$ )
Error (as % of $V_{PN}$ )	: $\leq \pm 1$ at $25^\circ C$ $\leq \pm 1.7$ at range of $-40^\circ C$ to $85^\circ C$
Measuring resistance (Minimum)	: $0\Omega$
Measuring resistance (Maximum)	: $\geq 100\Omega$
Maximum operating temperature	: $85^\circ C$



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**BHEL ELECTRONICS DIVISION  
PES-TRACTION ENGG  
VOLTAGE SENSOR 2000VDC FOR HLC**

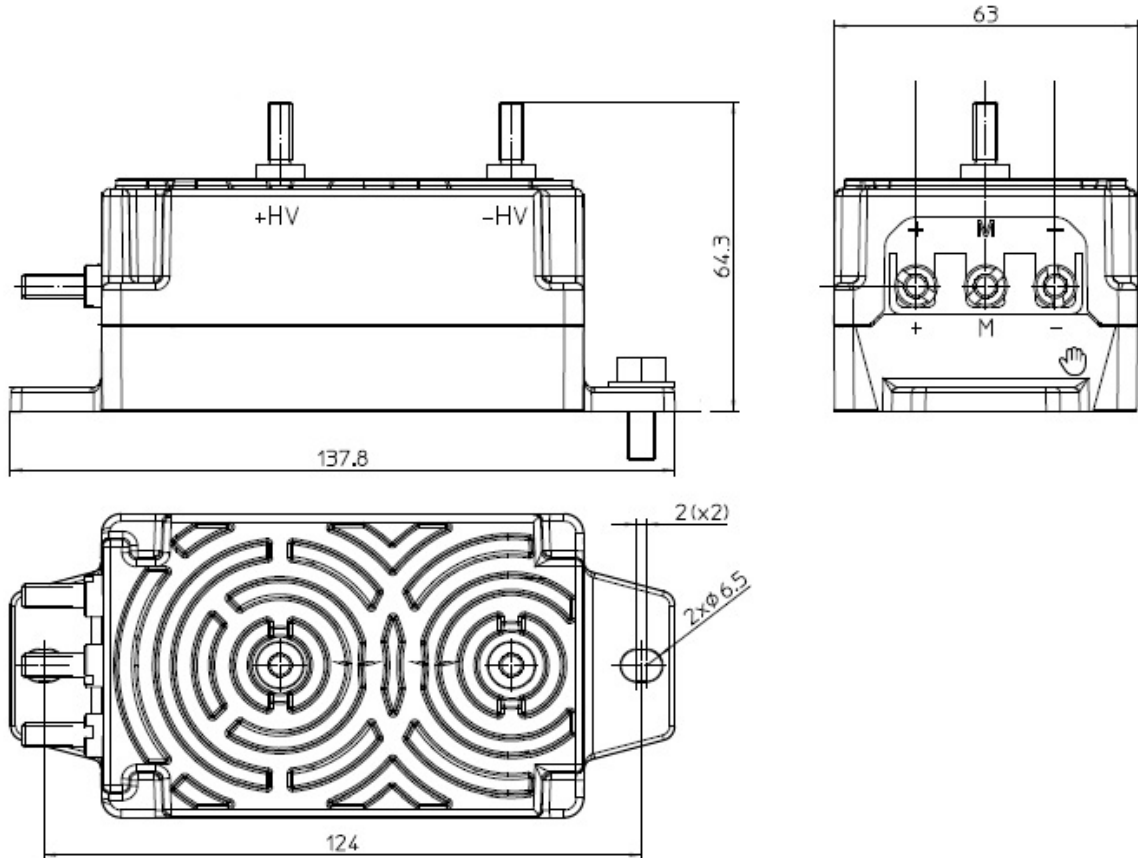
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**5. DIMENSIONAL REQUIREMENT:**

Mounting footprint and limiting dimensions shall be strictly as shown below. If mounting footprint differs, suitable adaptor plate/arrangement should be provided along with the equipment.



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**6. DOCUMENTATION**

The supplier has to provide the following documents:

1. Datasheet of the sensor
2. Type test reports
3. 3D model in .stp /.igs format

**7. APPLICABLE STANDARDS**

- EN 50155: Electronic equipment used in railway applications
- EN 50121-3-2: Electromagnetic compatibility of equipment installed on board of railway vehicles
- EN 50124-1: Insulation coordination
- IEC 61373: Railway applications – Rolling stock equipment- Shock and vibration tests  
-(Category 1- Class B equipment)

## REQUEST FOR QUOTATION - ONLINE BIDDING

	<b>BHARAT HEAVY ELECTRICALS LIMITED</b> Electronics Division PB No. 2606, Mysore Road Bangalore - 560026 INDIA	RFQ NUMBER: <b>AKSE000621</b>  RFQ DATE : 08.03.2022	Due Date/Day: 21.03.2022 MON Time : 13:00 HRS
MMI:PU:RF:003			

Please submit your lowest quotation subject to our terms and conditions attached for the material mentioned below. "Quotation to be submitted in E Procurement portal only"	(for all correspondence) Purchase Executive : ABHISHEK Phone : 26998102 Fax : 00918026989215 E-mail: singh.abhishek@bhel.in
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Sl No.	Description	Qty	Unit	Delivery qty	Delivery Date
1	TI0668110787 Voltg.Sensor for Traction Appln. 2000VDC * HSN/SAC : 3921 <div style="background-color: black; height: 15px; width: 350px; margin: 2px 0;"></div> <div style="background-color: black; height: 15px; width: 280px; margin: 2px 0;"></div> <div style="background-color: black; height: 15px; width: 340px; margin: 2px 0;"></div> <div style="background-color: black; height: 15px; width: 340px; margin: 2px 0;"></div> Primary Voltage (Nominal):2000VDC, Secondary Current (Nominal) : 50mA, Supply Voltage : +/- 15VDC,+/-5%, Ambient Temperature :-40 to + 85 Deg Centigrade, Conforming to Standard : EN50155, EN50124	72	NO	72	<div style="background-color: black; width: 100px; height: 15px;"></div>

Total Number of Items - 1

1.  
2.

**NOTES:**

1. This RFQ is governed by:
    - a) INSTRUCTIONS TO BIDDERS/SELLERS and GENERAL CONDITIONS OF CONTRACT FOR PURCHASE available at <http://edn.bhel.com> (**RFQ-PO Terms & Conditions**)
    - b) Any other specific Terms and Conditions mentioned. of offers are required to furnish authorization letter for the same.
  2. Tender Result can be viewed in the website.
- \* The HSN/SAC no mentioned against the line items in the RFQ are indicative only.

For and On behalf of BHEL.

ABHISHEK  
Control Equipment