


REQUEST FOR QUOTATION

	BHARAT HEAVY ELECTRICALS LIMITED Electronics Division PB No. 2606, Mysore Road Bangalore - 560026 INDIA	RFQ NUMBER: AKSPROP094 RFQ DATE : 12.08.2024	Due Date/Day: 26.08.2024 MON Time : 13:00 HRS [REDACTED]
MMI:PU:RF:003			
(address for communication) :		(for all correspondence) Purchase Executive : ABHISHEK Phone : 26998102 Fax : 00918026989215 E-mail: singh.abhishek@bhel.in	

1)This RFQ is for entering into Rate contract (RC) with BHEL for the tendered item. Validity of the RC will be 1 year from the award of rate contract. Firm orders will be placed during the tenure of rate contract. Prices will remain firm till the validity of RC or till the completion of supplies against the Purchase Orders placed against this rate contract whichever is later. Please note that these quantities are projections based on the current business scenario and expected orders from customers. In the eventuality of business not coming through, BHEL is not obligated to exhaust the ordering of RC quantities.

2)Reverse Auction Clause: BHEL shall be resorting to Reverse Auction (RA) (Guidelines as available on www.bhel.com) for this tender. RA shall be conducted among all the techno-commercially qualified bidders. Price bids of all techno-commercially qualified bidders shall be opened and same shall be considered as initial bids of bidders in RA. In case any bidder(s) do(es) not participate in online Reverse Auction, their sealed envelope price bid along with applicable loading, if any, shall be considered for ranking.

Sl No.	Description	Qty	Unit	Delivery qty	Delivery Date
1	TI0668103833 VOLTAGE TRANSDUCER 2800V/50mA * HSN/SAC : 3921 [REDACTED] Inspection / Test Report VOLTAGE TRANSDUCER 2800V/50mA ± 15 to ± 24VDC [REDACTED] [REDACTED] As per Specification PS4452691 Rev 00	1,250	NO	1,250	[REDACTED]

Total Number of Items - 1

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NOTES:

- This RFQ is governed by:
 - INSTRUCTIONS TO BIDDERS/SELLERS and GENERAL CONDITIONS OF CONTRACT FOR PURCHASE available at <http://edn.bhel.com> (RFQ-PO Terms & Conditions)
 - Any other specific Terms and Conditions mentioned.
[REDACTED]
[REDACTED]

* The HSN/SAC no mentioned against the line items in the RFQ are indicative only.

For and On behalf of BHEL.

ABHISHEK
Control Equipment

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1. SCOPE

The Pre-Qualification Requirement document specifies the requirements to be met by the vendors (hereafter called Bidder) who wish to participate in the tender for supply of **Voltage transducer for rolling stock applications**.

This PQR should be read in conjunction with the Purchase Technical Specification **PS4452691 R00 dtd 27.11.2020**

2. CREDENTIAL

- a) The Bidder should be Manufacturer or authorized dealer / supplier of - **Voltage transducer** used in Rolling Stock applications. Documentary proof like relevant POs / invoice copies, valid authorization certificate etc shall be provided along with the offer.
- b) The Rolling Stock Applications under consideration shall include Locomotive, EMU, MEMU, Metro Trains, High Speed Trains, Train sets, Inspection Cars and Special Track Machines.
- c) For the vendors outside India, documentary proof for usage of the product in rolling stock applications shall be submitted. Acceptance of such certification shall be at BHEL's discretion.
- d) The Bidder should not be under the category of "hold" or "blacklisted" by any of the BHEL units/ any Govt of India PSU/ Govt of India/ statutory bodies of any state Govt as on date of bid submission. A declaration to this effect shall be submitted along with the offer.

3. QUALITY SYSTEM

- a) The manufacturer should have valid ISO 9001:2015 or latest certification covering the manufacturing and testing of the subject item
- b) The manufacturer should possess a clearly laid down quality Assurance Plan for the product covering the following aspects
Organization Chart, clearly indication the quality control set up
Qualification of key personnel and officials deployed in the quality control cell.
- c) Process Flow Chart indicating process of manufacture for an individual product or for a family of products, if the process is same.
- d) Quality Assurance System – Inspection and Testing plan to cover
 - Incoming material
 - Process control
 - Product control
 - System control
 - Testing facility
- e) Stage inspection details shall include the inspection procedure, inspection parameters, method of testing/ test procedure, sample sizes for destructive & non-destructive testing etc.
- f) Calibration scheme and status of calibration of test equipment
The process, testing and measuring equipment shall be duly calibrated by approved agency and the validity of calibration should be current.

4. GENERAL REQUIREMENTS

- a) It is preferred that the bidder is the manufacturer of this item. If the bidder is importing some portion of the components, then minimum value addition in India shall be 20%. Bidder to confirm this in the offer. Value addition less than 20% is not acceptable. A declaration to this effect shall be submitted along with the offer.
- b) The technical bid of bidders, which qualify technically but are not approved for the subject item by the Customer Approving Authority, shall be referred by BHEL to the customer Approving Authority for approval with intimation to the bidder. Consequent to the decision of Customer Approving Authority, the bidder shall be added to the vendor list of the subject item for future tenders. Concurrently BHEL shall consider placing developmental order on the bidder after accessing the capability of the bidder to manufacture / develop the subject item. However, BHEL shall treat the offer as “Not meeting” Pre-Qualification Criteria for the subject tender.
- c) The Customer Approving Authority shall be RDSO/CLW/BLW/PLW/ICF/RCF/MCF or any other agency as designated by the Customer.
- d) The bidder should possess a valid type test report, not older than five years, as per relevant standards mentioned in the specification with respect to time during the bid submission in case of catalog items. In case of custom made items, a bidder can submit the type test report of an item of similar or higher rating with a declaration for conducting the type test in case of award of order or developmental order. The bidder can also submit the test reports conducted in their own facility with the document of their lab accreditation. However, BHEL reserve it's right to insist on conducting the Type test again in a laboratory of it's choice.
- e) For the bid of vendors already qualified and appearing in BHEL's source list, the requirement of type test report and proof of supply shall not be applicable.

5. DOCUMENTATION TO BE SUBMITTED ALONG WITH OFFER

- a) Documentary proof for experience as per clause 2.a
- b) Clause by Clause compliance to the technical specification
- c) Declaration regarding status as per clause 2.d
- d) Declaration on MII (Make in India) as per clause 3.a
- e) Declaration for conducting Type Test as per clause 3.d



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PURCHASE SPECIFICATION
GROUP: TRACTION ENGINEERING

P.S NO. : PS/445/2691

REV. NO: 00

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REVISION HISTORY SHEET

REV. NO.	DATE	NATURE OF CHANGE	REASONS	PREPARED BY	APPROVED BY
00	27.11.20	FIRST ISSUE	--	--	--

THIS DOCUMENT IS A SPECIFICATION CUM DATA SHEET. VENDOR TO FILL UP ALL CONFIRMATIONS AND DATA AS REQUIRED AND SUBMIT THE SAME TO BHEL / EDN, BANGALORE. ANY DEVIATIONS TO THIS DOCUMENT TO BE BROUGHT OUT CLEARLY BY VENDOR.

REVISIONS 00 DT: 27.11.2020

APPROVED BY:

PREPARED BY:

Agosh Chandran R S
Manager/Traction Engg

ISSUED BY

TE

DATE

27.11.2020



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PURCHASE SPECIFICATION
GROUP: TRACTION ENGINEERING

P.S NO. : PS/445/2691

REV. NO: 00

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SPECIFICATION FOR
VOLTAGE TRANSDUCER



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PURCHASE SPECIFICATION

GROUP: TRACTION ENGINEERING

P.S NO. : PS/445/2691

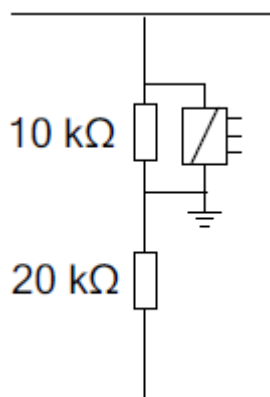
REV. NO: 00

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1.0 INTRODUCTION:

The traction converter employs an earth fault detection circuit for detecting earth faults in DC and AC. It consists of a resistor divider network and a **Voltage Transducer**. The **Voltage Transducer** is an Electronic Sensor of DC voltage with a galvanic isolation between the primary and secondary circuits. A positive differential voltage at the primary should result in a positive output current from the Measurement terminal.

2.0 FUNCTION:



The asymmetrical voltage divider network is used for detecting earth faults. The measurement of **Voltage Transducer** is continuously compared with the DC link voltage to detect any earth fault in the DC link or in the Motor/Transformer connections.

3.0 PROTECTIONS

The electronic circuits should be properly coated and should be housed in a self-extinguishing plastic case conforming to UL94-V0. The Earth Fault Transducer should be protected against polarity reversal of Power Supply, Short Circuits in the measuring circuit and sudden opening of the measuring circuit. The Earth Fault Transducer should have high immunity to external interferences and low temperature drift considering the very harsh operating environment in an Electric locomotive.



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PURCHASE SPECIFICATION
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4.0 CHARACTERISTICS

SI No	Characteristic	Value	Unit
1	Nominal Primary Voltage, U_{PN}	2800	V
2	Measuring Range, $U_{P \max}$	± 4200	V
3	Max Measuring Resistance	133	Ω , @ $U_{P \max} / \pm 24 (\pm 5\%)$
4	Min Measuring Resistance	0	Ω , @ $U_{PN} / \pm 24 (\pm 5\%)$
5	Secondary current at U_{PN}	50	mA
6	Accuracy at U_{PN}	± 1.5	%, -25 to +70°C
7	Accuracy at U_{PN}	± 1.7	%, -40 to +85°C
8	Offset Current	± 50	μA
9	Linearity Error	± 0.1	%, over ± 4200 range
10	Bandwidth	0...12 (-3 db)	kHz
11	Supply Voltage	$\pm 24 (\pm 5\%)$	V d.c
12	Operating Temperature	-40 to +85	°C
13	Storage & Staring Temperature	-50 to +90	°C

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5.0 INSPECTION

The type test reports from a NABL accredited laboratory to be provided along with the technical offer. For series supplies, Routine test reports are to be provided.

6.0 APPLICABLE NORMATIVE STANDARD

The offered system shall generally conform to the following normative standards

- IEC 60529 for IP68 protection
- EN 50155 Railway applications electronics equipment used on rolling stock
- EN 50121-2 EMC: Emissions to external environments
- IEC60077 Rules for equipment for onboard rail vehicles
- IEC 60571 Rules for electronic equipment onboard rail vehicles
- IEC-61373 Electric Railway Equipment-Rolling Stock-Shock & Vibrations Requirements