REQUEST FOR QUOTATION

MMI:PU:RF:003

BHARAT HEAVY ELECTRICALS LIMITED
Electronics Division
PB No. 2606, Mysore Road Bangalore - 560026
INDIA

RFQ NUMBER: AKSPROP101

RFQ DATE : 01.01.2025

Due Date/Day: 15.01.2025 WED
Time : 13:00 HRS
[redacted]

(address for communication) :

(for all correspondence)
Purchase Executive : ABHISHEK
Phone : 26998102
Fax : 00918026989215
E-mail: singh.abhishek@bhel.in

Sl No.	Description	Qty	Unit	Delivery qty	Delivery Date
1	TI0668103531 HIGH VOLTAGE INDICATOR 48-4300VAC/DC * HSN/SAC : 3921 HIGH VOLTAGE INDICATOR 48-4300VAC/DC,CABLE 2.35 MT as per Specification No: PS4452541 rev 00[redacted]	750	NO	750	30.04.2025

Total Number of Items - 1

1.
2.

[redacted]

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.
[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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Control Equipment

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 **High Voltage Indicator for rolling stock applications.**

This PQR should be read in conjunction with the Purchase Technical Specification **PS4452541 R00 dtd 21.12.2015.**

2. CREDENTIAL

a) The Bidder should be Manufacturer or authorized dealer / supplier of – **High voltage Indicator** 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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SPECIFICATION FOR HIGH VOLTAGE INDICATOR

Code No. TI0668103531

REVISION HISTORY SHEET

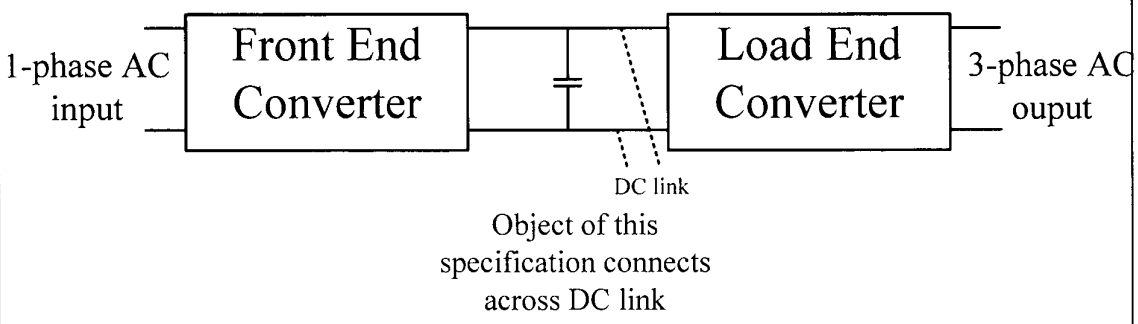
REV. NO.	DATE	NATURE OF CHANGE	REASONS	PREPARED BY	APPROVED BY
00	21.12.2015	FIRST ISSUE	—	B. Haribhushan	Shekar R.

REVISIONS	00	APPROVED BY		
		PREPARED BY	ISSUED BY TRACTION ENGG.	DATE 21.12.2015

SPECIFICATION FOR HIGH VOLTAGE INDICATOR

1.0 Functional requirements:

This document covers specification of a High voltage indicator, to be used at the DC link of an IGBT based converter. The indicator will be mounted in a cabinet/enclosure and will be used in traction applications for on board mounting. The block diagram is shown below.



2.0 APPLICATION : Indicating the DC voltage presence in traction equipment

3.0 TYPE : Dry Type, Air natural cooling

4.0 REFERANCE STANDARDS:

IEC 60571	Railway applications – Electronic equipment used on rolling stock
IEC 62498-1	Railway applications – Environmental conditions for equipment – Part 1: Equipment on board rolling stock

SPECIFICATION FOR HIGH VOLTAGE INDICATOR

5 .0 ENVIRONMENTAL CONDITIONS:

5.1 Ambient Temperature : 55°C

5.2 Maximum Temperature : 70°C (when locomotive standing dead under sun)
55°C (when locomotive working)
47°CNominal

5.3 Relative Humidity : Up to 95% relative humidity, any moisture condensation during operation shall not lead any damage or failure
Yearly average ≤ 75% Relative Humidity

5.4 Altitude : Up to 1200 m above mean sea level

5.5 Atmosphere during hot weather: Extremely dusty and desert terrain in certain areas. The dust concentration in air may reach a high value of 1.6mg/cub meter.

5.6 Air Pollution : The equipment shall be designed to work in coastal area in humidity and salt laden corrosive atmosphere. The maximum values will be as follows

(a) Maximum pH Value : 8.5
(b) Sulphate : 7mg/litre
(c) Maximum concentrate of chlorine:6mg/liter
(d) Maximum conductivity:230µSiemens/m

5.7 Climate : Tropical, Hot and humid Climate

6.0 ELECTRICAL REQUIREMENTS

6.1 Input voltage range : 40 V to 4000 V DC or 40 V_{rms} to 4000 V_{rms}

6.2 Flashing frequency at 1 – 4 kV : 2Hz +/- 10%

6.3 Input current : < 5mA

6.4 Operating temperature : -50°C to +70°C

SPECIFICATION FOR HIGH VOLTAGE INDICATOR

7.0 CONSTRUCTION

7.1 Housing:

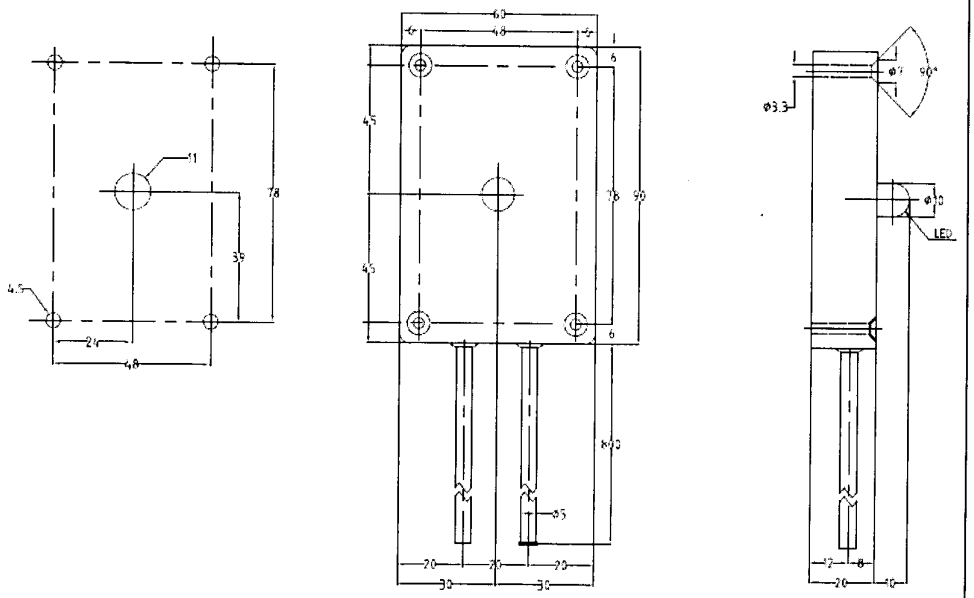
The PCB should be encapsulated in an housing made of Polyamide 6 with Glass reinforced material confirming to flame class V-0, as per the mechanical dimensions specified

7.2 Termination:

Termination should be done with electron beam irradiated cable of 3.6 kV class with 2.35 meter cable length (ex. Huber+Suhner AG Radox 9 GKW-AX)

8.0 MECHANICAL DIMENSION LIMITATION

The High voltage indicator dimensions (overall & mounting) shall not exceed the dimensions indicated in the below sketch. This sketch is given for guidance only for limiting dimensions



Supplier to prepare detailed drawing & submit to BHEL for approval before commencing manufacturing process

REVISIONS	00	APPROVED BY		
		PREPARED BY	ISSUED BY TRACTION ENGG.	DATE 21.12.2015

SPECIFICATION FOR HIGH VOLTAGE INDICATOR

9.0 TESTS TO BE CONDUCTED AT SUPPLIER'S WORKSPACE

High Voltage Indicator		
Name of the test	**Type test**	**Routine test**
Visual Inspection	Yes	Yes
Performance test	Yes	Yes
Hot operation test	Yes	No
Dielectric test	Yes	Yes
Electrical endurance test	Yes	No

9.1 Visual Inspection

Check of dimensions as per drawing.

9.2 Performance test

The Visual LED Indicator shall be checked at the minimum and maximum rated voltages (AC & DC) and the frequency of flashes noted to be within the specified limits.

9.3 Hot operation test

The test 9.2 shall be repeated at the maximum ambient temperature.

9.4 Dielectric test

A test voltage of 2 kV rms at power frequency for 1 minute shall be applied between the input terminals shorted and earth.

9.5 Electrical endurance test

The Visual LED Indicator shall be subject to the maximum rated voltage and kept on for 168 hours and test 9.2 shall be repeated at the end

10.0 TEST PROTOCOL

Supplier shall submit test protocol for Routine & Type tests along with techno-commercial offer. List of tests are as per clause 5.0 of this specification.

SPECIFICATION FOR HIGH VOLTAGE INDICATOR

11.0 DOCUMENTATION

11.1 Information required along with techno commercial offer without which offer is liable for rejection.

11.2 Supplier shall furnish clause wise confirmation/comments to the technical specification in the typical format given below. Deviation, if any, shall be clearly brought out indicating the clause number, original specification, deviation sought with proper technical backup (catalogue, technical brochure, international standards, calculations etc. If no deviations required, then supplier shall furnish certificate indicating "NO DEVIATION REQUESTED" and we comply fully with all the technical requirements of this specification no.

11.3 Supplier shall take a copy of this specification and sign on each page and submit the signed copy along with offer.

11.4 Supplier shall furnish winding material, winding resistance, winding cross section.

11.5 Supplier shall furnish the type of core used along with technical details of core.

11.6 Information required after the placement of order

11.7 Detailed dimensional drawing for BHEL approval

11.8 Test protocol for BHEL approval.

11.9 Information required along with material supply.

11.10 Two sets of Test certificates.

11.11 BHEL engineer witnessed Pre inspection report.

12.0 ACCEPTANCE

12.1 Dimensions as per approved drawing

12.2 Routine test certificate

12.3 Type test certificate

13.0 PRE-SHIPMENT INSPECTION

Pre-shipment inspection will be carried out by BHEL engineer as per the approved test protocol. BHEL engineers will witness Routine & Type tests before dispatch.

14.0 RATING PLATE DETAILS

14.1 BHEL Specification No.

14.2 Input voltage range

14.3 Serial number

14.4 Month & Year of Manufacture

14.5 Manufacturer Name