

REQUEST FOR QUOTATION

	BHARAT HEAVY ELECTRICALS LIMITED Electronics Division PB No. 2606, Mysore Road Bangalore - 560026 INDIA	RFQ NUMBER: AKSPROP059 RFQ DATE : 06.10.2023	Due Date/Day: 20.10.2023 FRI Time : 13:00 HRS
MMI:PU:RF:003		(for all correspondence) Purchase Executive : ABHISHEK Phone : 26998102 Fax : 00918026989215 E-mail: singh.abhishek@bhel.in	
(address for communication) :			

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	TI0668104376 RESISTOR RPH 100 22 OHM 100W 5% * HSN/SAC : 8538 RESISTOR RPH 100 22 OHM 100W 5% As per Specification PS4452710 Rev No.00	1,500	NO	1,500	

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.

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

For and On behalf of BHEL.

ABHISHEK
Control Equipment

1 OF 1



PREQUALIFICATION CRITERIA (PQC)
FOR THICK FILM RESISTOR
GROUP: TRACTION ENGINEERING

Ref: 445/PQC_TFR/22

Rev. No.: 01

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1.0 PRE QUALIFICATION CRITERIA (PQC)

1. The Bidder should be Supplier of Thick film resistors for Traction equipment for rolling stock applications.
2. BHEL shall approach and submit credentials/details furnished by vendor with their offers to customer and await customer's decision for a maximum of one month from the date of tender opening. If approval is not received within the above period, BHEL shall treat the offer as "Not meeting" Pre-qualification criteria and offer shall be rejected.
3. 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 shall be 20%. Bidder to confirm this in the offer. Value addition less than 20% is not acceptable.

2.0 DOCUMENTS SUBMISSION

1. Bidder to submit clause by clause compliance to complete technical specification (Technical specification no. PS4452710 Rev. No.00, dated 29.01.2021) along with copy of type test report.
2. Should possess a valid type test report, not older than five years, conducted as per relevant standards mentioned in the specification with respect to time during the bid submission.
3. Proof of supply of Thick film resistors or similar resistors used in traction applications directly or through any agency to Indian Railways during the last 5 years to be submitted.
4. For the vendors already qualified and added in the source list, the above points (point no. 2 & 3) are not applicable.

3.0 REFERENCE DOCUMENTS

- a) Purchase Specification No PS4452710, Rev. No. 00 for Thick film resistor.

REVISION 01

APPROVED

AGOSH CHANDRAN R S

PREPARED

L SUNITHA

ISSUED

TRACTION ENGG

DATE

04.08.2022



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PURCHASE SPECIFICATION

GROUP: TRACTION ENGINEERING

P.S NO. : PS/445/2710

REV. NO: 00

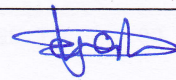
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REVISION HISTORY SHEET

REV. NO.	DATE	NATURE OF CHANGE	REASONS	PREPARED BY	APPROVED BY
00	29.01.21	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: 01.01.2021

APPROVED BY: 

PREPARED BY:

ISSUED BY

DATE

Sadat U K

TE

29.01.2021



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PURCHASE SPECIFICATION
GROUP: TRACTION ENGINEERING

P.S NO. : PS/445/2710

REV. NO: 00

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SPECIFICATION FOR
THICK FILM RESISTOR



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PURCHASE SPECIFICATION

GROUP: TRACTION ENGINEERING

P.S NO. : PS/445/2710

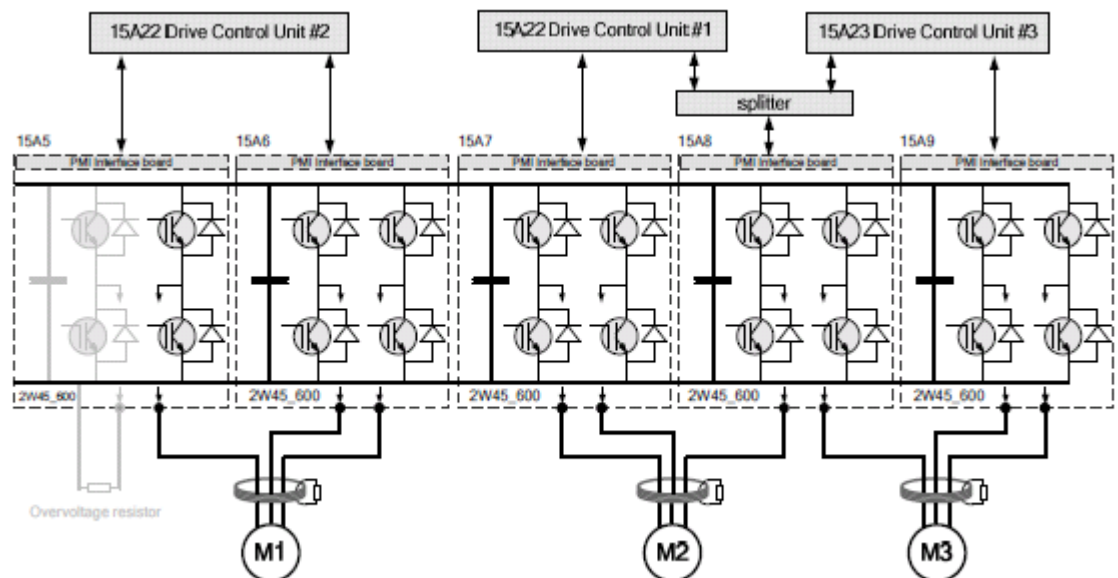
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1.0 INTRODUCTION:

The Traction converter employs a common mode filter to suppress the Electro Magnetic interference at the output of the 3ph Inverter. The Thick Film Resistor will act as the damping resistor element in the common mode filter.

2.0 FUNCTION:



The damping resistor will absorb the high frequency components in the inverter output generated as a result of IGBT switching. A ferrite core assembly is provided at the output of the auxiliary inverter which will trap the high frequencies which are dissipated by the damping resistor.



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PURCHASE SPECIFICATION
GROUP: TRACTION ENGINEERING

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3.0 CHARACTERISTICS

SI No	Characteristic	Value	Unit
1	Rated Power @ 25°C	100	W
2	Inductance	<0.1	uH
3	Ohmic Value	22	Ω
4	Tolerance	5	%
5	Maximum working voltage	1900	Vdc
6	Dielectric Strength	5000	Vrms,1 min, 1mA max
7	Thermal Resistance Rth (j-c)	0.55	°C/W
8	Insulation Resistance	>1000	GΩ
9	Temperature coefficient	150	±ppm/°C
10	Temperature range	-55 to +125	°C

4.0 MECHANICAL SPECIFICATION

The resistor should have insulated case conforming to UL94-V0 with V type terminal connection. There are 4 mounting holes of 4.2mm hole diameter as detailed in section 5.

SI No	Characteristic	Description
1	Technology	Thick Film
2	Resistive Element	Cermet
3	Substrate	Alumina on Metallic base of nickel coated aluminium
4	End Connection	V connections : Screws M4 x 6



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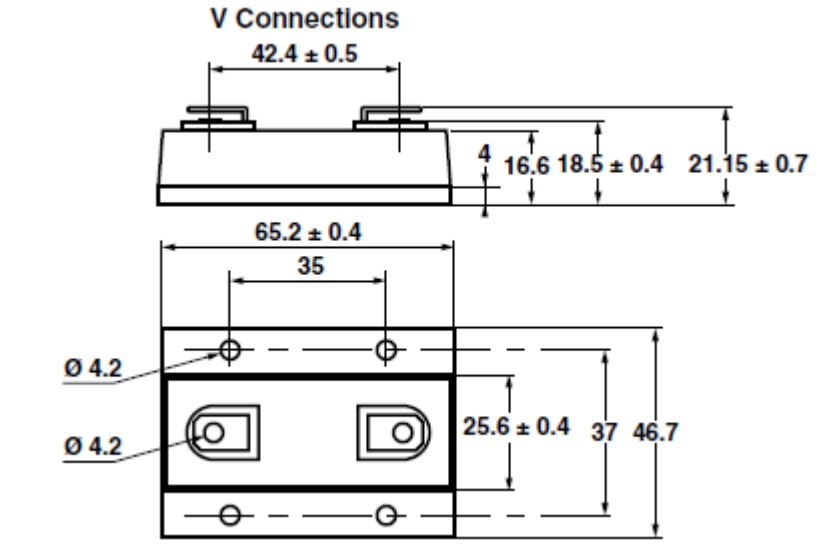
PURCHASE SPECIFICATION
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5.0 MECHANICAL DIMENSION



The dimensions are for reference purpose only and other dimensions are also considered within the space available in the panel.

6.0 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.

7.0 APPLICABLE NORMATIVE STANDARD

The offered system shall generally conform to the following normative standards

- | | |
|------------|--|
| IEC 60529 | for IP68 protection |
| EN 50121-2 | EMC: Emissions to external environments |
| IEC60077 | Rules for equipment for onboard rail vehicles |
| IEC-61373 | Electric Railway Equipment-Rolling Stock-Shock & Vibrations Requirements |
| IEC 60322 | Rules for Ohmic Resistors |