



**PRE-QUALIFICATION CRITERIA (PQC)**  
**for Precharge Resistor for Hotel Load Converter**  
**GROUP: TRACTION ENGINEERING**

Ref.: HLC/PQC/PR

Rev. No.: 00

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**1. Pre-qualification Criteria**

- 1.1 The bidder should be manufacturer/supplier of compact power resistors 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:**

- 3.1 Purchase-cum-Technical Specification No.: PS/445/2757, Rev. 00 for Precharge Resistor for Hotel Load Converter.

Rev.            00

Approved by:

Venkateshalu K

Prepared by:

Girish Chand

Department:

Traction Engg.

Date:

22.02.2022



**PURCHASE SPECIFICATION**

P. S. No.: PS/445/2757

Rev. No.: 00

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Group: Traction Engineering

**Purchase specification for Pre-charge Resistor for Hotel Load Converter**

Code No.: TI0668085436

**Purchase specification for Pre-charge Resistor  
for Hotel Load Converter**

**Revision History**

| Rev. No. | Date       | Nature of Issue | Reasons | Prepared By  | Approved By    |
|----------|------------|-----------------|---------|--------------|----------------|
| 00       | 22.02.2022 | First issue     |         | Girish Chand | Venkateshalu K |

Revision 00

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Venkateshalu K

Prepared by:

Girish Chand

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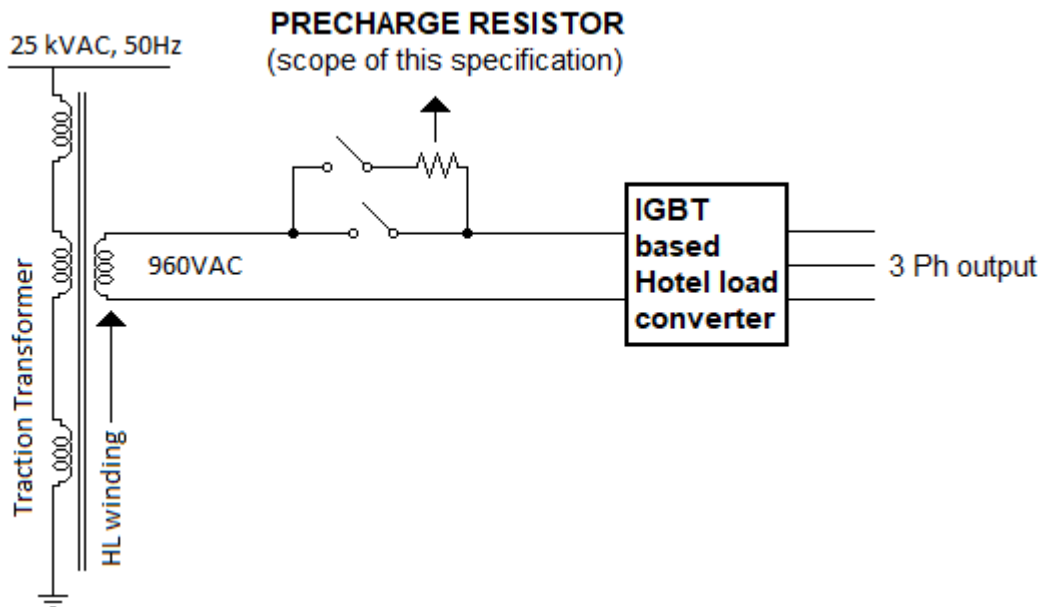
**Purchase specification for Pre-charge Resistor for Hotel Load Converter**

**1. Introduction**


AC pre-charging resistor for use in Hotel Load Converter (HLC). HLCs are mounted in WAP7 locomotives of Indian Railways.

**2. Function**

Precharge resistor limits the flow of current on closing of pre-charging contactor. In approx. 1 sec the capacitor bank charges up and the ac line contactor closes bypassing the charging contactor and resistor. In case of short circuit/ fault condition the resistor will carry the specified load current for about five seconds, the time the protection circuit takes to identify the short circuit condition and to disengage the contactor and resistor.



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| Revision | 00 | Approved by:   |  |            |
|          |    | Venkateshalu K |  |            |
|          |    | Prepared by:   | Issued by:   | Date:      |
|          |    | Girish Chand   | Traction Engg.   | 22.02.2022 |



A4-12

**PURCHASE SPECIFICATION**

Group: Traction Engineering

P. S. No.: PS/445/2757

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**Purchase specification for Pre-charge Resistor for Hotel Load Converter****3. Specifications****3.1 Electrical Characteristics:**

|    | Parameter   | Value  |
|----|---|--|
| 1. | Resistance  | 38 Ohms $\pm$ 20%                                  |
| 2. | Inductance  | < 1 mH   |
| 3. | Maximum AC voltage  | 1500VAC RMS  |
| 4. | Maximum charge current  | 80A RMS  |
| 5. | Capacitor to be charged   | 5200 $\mu$ F                                       |
| 6. | Maximum energy in case of short circuit                             | 10 kJ 0.5 sec short circuit time                   |
| 7. | Total energy to be handled by the resistor                          | 20 kJ 2 times a short circuit without cooling time |
| 8. | Dielectric test voltage between terminals and earth, ground or case | 2500 V rms 50Hz/60s acc. IEC60077                  |

**3.2 Mechanical Characteristics:**

|    | Parameter                         | Value           |
|----|-----------------------------------|-----------------|
| 1. | Shock and Vibrations (IEC-61373): | Cat.1 - Class B |

**3.3 Environmental Conditions:**

|    | Parameter   | Value          |
|----|---|----------------|
| 1. | Stock Temperature Range:                              | -50°C to +85°C |
| 2. | Operational Temperature Range:                        | -40°C to +75°C |
| 3. | Pollution Degree - Overvoltage Category (EN 50124-1): | PD3 / OV3      |
| 4. | Max Altitude without Performance Derating [m]:        | 1500           |

**3.4 Applicable standards:**

|   |            |   |
|---|------------|---|
| 1 | IEC 60077  | Railway applications – Electric equipment for rolling stock   |
| 2 | EN 50124-1 | Railway applications – Insulation coordination – Part 1: Basic requirements – Clearances and creepage distances for all electrical and electronic equipment |
| 3 | IEC 61373  | Railway applications – Rolling stock equipment – Shock and vibration tests  |

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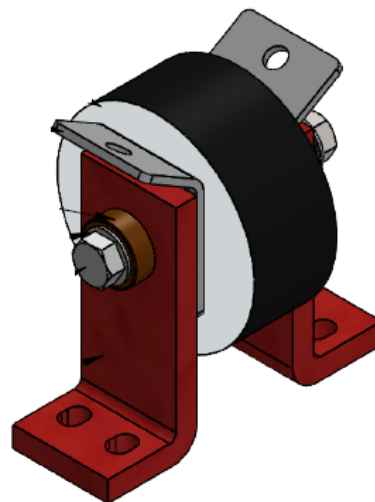
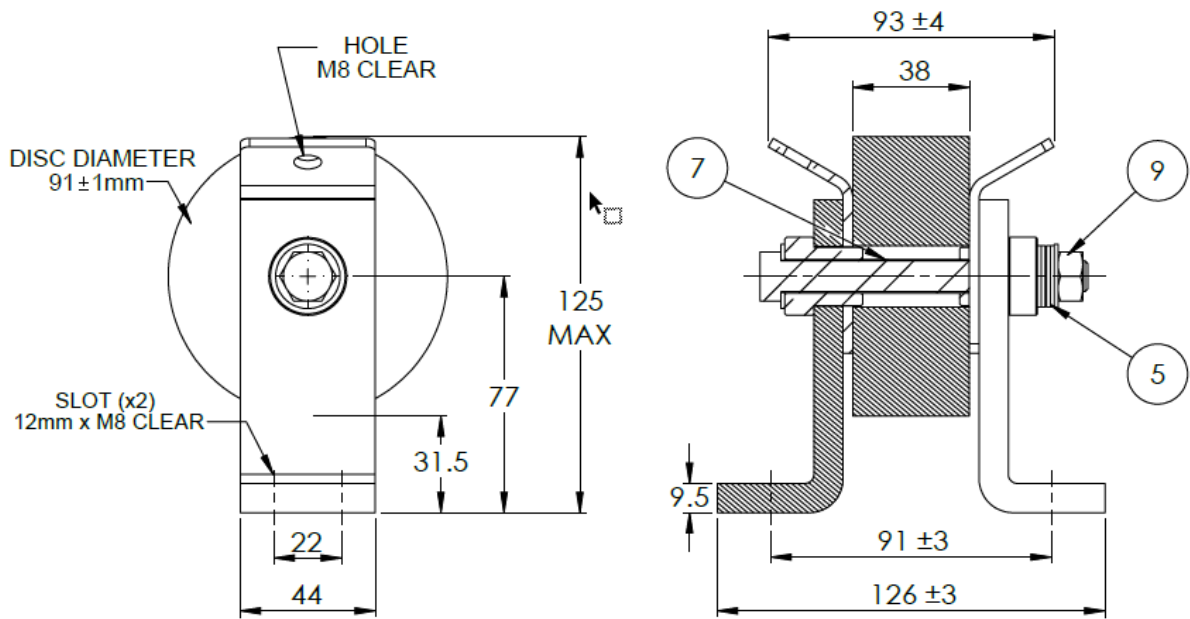
**Purchase specification for Pre-charge Resistor for Hotel Load Converter**

**4. Tests and Inspection**

The type test reports from an accredited laboratory to be provided along with the technical offer. For series supplies, routine test reports to be provided.

**5. Mechanical Dimensions**

The mounting footprint of the contactor shall match as shown in the below figure. If not, suitable adaptor plate should be provided along with the contactor. Overall dimensions shall be as close as possible to the one shown below:



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Venkateshalu K *Venkateshalu*

Prepared by:  
Girish Chand *Girish*

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# PURCHASE SPECIFICATION

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## Purchase specification for Pre-charge Resistor for Hotel Load Converter

### 6. Documentation


Following documents to be submitted along with the technical offer.

1. Datasheet including OGA of the offered contactor
2. 3-D model in .stp/.igs format to check for fitment inside BHEL panel
3. Type test report

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|          |    | Girish Chand   | Traction Engg.   | 22.02.2022 |

## REQUEST FOR QUOTATION - ONLINE BIDDING

|  |   |                                  |  |
|--|---|----------------------------------|--|
|  | <b>BHARAT HEAVY ELECTRICALS LIMITED</b><br>Electronics Division<br>PB No. 2606, Mysore Road Bangalore - 560026<br>INDIA | RFQ NUMBER:<br><b>AKSE000611</b> | Due Date/Day: 08.03.2022 TUE<br>Time : 13:00 HRS |
| MMI:PU:RF:003  |   | RFQ DATE :<br>22.02.2022         |  |

|   |   |
|---|---|
| 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)<br>Purchase Executive : ABHISHEK<br>Phone : 26998102<br>Fax : 00918026989215<br>E-mail: singh.abhishek@bhel.in |
|---|---|

| Sl No. | Description  | Qty | Unit | Delivery qty | Delivery Date  |
|--------|--|-----|------|--------------|--|
| 1      | TI0668085436 PRE CHARGING RESISTOR<br>* HSN/SAC : 8532<br>Test Certificate<br>Pre-charge resistor for power electronics application.<br>Resistance: 38 Ohms;<br>Max. voltage: 1200VAC;<br><span style="background-color: black; color: black;">[REDACTED]</span> | 72  | NO   | 72           | <span style="background-color: black; color: black;">[REDACTED]</span> |

Total Number of Items - 1

---

1.  
2.

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