


# REQUEST FOR QUOTATION

	<b>BHARAT HEAVY ELECTRICALS LIMITED</b> Electronics Division PB No. 2606, Mysore Road Bangalore - 560026 INDIA	<b>RFQ NUMBER:</b> AKSMEMU021  <b>RFQ DATE :</b> 17.02.2025	<b>Due Date/Day:</b> 03.03.2025 MON <b>Time :</b> 13:00 HRS <div style="background-color: black; width: 100px; height: 20px; margin: 5px 0;"></div> <div style="background-color: black; width: 100px; height: 20px; margin: 5px 0;"></div>
<b>MMI:PU:RF:003</b>		(address for communication) :	
(for all correspondence) <b>Purchase Executive : ABHISHEK</b> <b>Phone : 26998102</b> <b>Fax : 00918026989215</b> <b>E-mail: singh.abhishek@bhel.in</b>			

1) This RFQ is for entering into Rate contract 1 year.

2) Only Class-I and Class-II Local suppliers as per MII order dated 4.6.2020 are eligible to bid in this tender.

Sl No.	Description	Qty	Unit	Delivery qty	Delivery Date
1	TI0693079278 2CO-24VDC Relay Assembly * HSN/SAC : 7616 Doc No.- PS4452665 Rev - 02 Certificate Of Conformance Instantaneous Relay  Coil Voltage (nominal): 24VDC. No. of NO/NC Changeover Contacts: 2 nos. Continuous Contact Current Rating: Minimum 8Amp. Item should be suitable for Traction/Rolling Stock Application. Wire connection to Relay Socket: Spring Cage type only. (All Item to be supplied as Complete Assembly) As per Type-A of Purchase Specification PS4452665 Rev 2.0	510	NO	510	30.05.2025
2	TI0693079286 2CO-110VDC Relay Assembly * HSN/SAC : 7616 Doc No.- PS4452665 Rev - 02 Certificate Of Conformance "Instantaneous Relay  Coil Voltage (nominal): 110VDC. No. of NO/NC Changeover Contacts: 2 nos. Continuous Contact Current Rating: Minimum 8Amp. Item should be suitable for Traction/Rolling Stock Application. Wire connection to Relay Socket: Spring Cage type only. (All Item to be supplied as Complete Assembly) As per Type-B of Purchase Specification PS4452665	8,110	NO	8,110	30.05.2025

## 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 2

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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 1 year.  
 2) Only Class-I and Class-II Local suppliers as per MII order dated 4.6.2020 are eligible to bid in this tender.

SI No.	Description	Qty	Unit	Delivery qty	Delivery Date
	PS4452665 Rev 2.0"				
3	TI0693079294 4CO-110VDC Relay Assembly * HSN/SAC : 7616 Doc No.- PS4452665 Rev - 02 Certificate Of Conformance Instantaneous Relay  Coil Voltage (nominal): 110VDC. No. of NO/NC Changeover Contacts: 4 nos. Continuous Contact Current Rating: Minimum 10Amp. Item should be suitable for Traction/Rolling Stock Application. Wire connection to Relay Socket: Spring Cage type only. (All Item to be supplied as Complete Assembly) As per Type-C of Purchase Specification PS4452665 Rev 2.0	5,810	NO	5,810	30.05.2025

Total Number of Items - 3

- 1.
- 2.

## NOTES:

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ABHISHEK  
Control Equipment

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## **PRE-QUALIFICATION CRITERIA FOR RELAY IN ROLLING STOCK APPLICATION**

### **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 **Relay**. This PQR should be read in conjunction with the Purchase Technical Specification **PS4452665\_R02\_Relay**.

### **2. CREDENTIAL**

- a) The Bidder should be Manufacturer or Supplier / authorized dealer of Relay 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 to 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.



## **PRE-QUALIFICATION CRITERIA FOR RELAY IN ROLLING STOCK APPLICATION**

- d) Quality Assurance System – Inspection and Testing plan to cover**
  - a. Incoming material
  - b. Process control
  - c. Product control
  - d. System control
  - e. 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.



**PRE-QUALIFICATION CRITERIA FOR**  
**RELAY IN ROLLING STOCK APPLICATION**

- 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 catalogue 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 its 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 4.a
- e) Declaration for conducting Type Test as per clause 4.d



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**BHEL-ELECTRONICS  
DIVISION**

**TRACTION  
ENGINEERING**

**DOC. NO: PS4452665**

**REV. NO: 2.0**

**PAGE: 01 OF 09**



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# **Purchase Specification of Instantaneous Changeover Relays For EMU Projects (Rolling Stock Applications)**

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## **REVISION HISTORY**

Revision No.	Date	Remarks
0.0	12.10.2019	First Issue
1.0	31.10.2019	First revision
2.0	23.11.2023	Second Revision

Issued by:	Prepared by	Checked by	Date
Traction Engineering Department	 Pradeep Kumar	 S.B.Choudhary	23.11.2023

	<p style="text-align: center;"><b>PURCHASE SPECIFICATION OF INSTANTANEOUS CHANGEOVER RELAYS FOR EMU PROJECTS</b></p>	<p><b>DOCUMENT NO.</b> PS4452665 REV2.0</p>
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**Traction Engineering Department: Bharat Heavy Electricals Limited, Electronics Division, Bangalore**

	<p style="text-align: center;"><b>PURCHASE SPECIFICATION OF INSTANTANEOUS CHANGEOVER RELAYS FOR EMU PROJECTS</b></p>	<p><b>DOCUMENT NO.</b> PS4452665 REV2.0</p>
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## 1. SCOPE OF PURCHASE SPECIFICATION

This purchase specification is intended to specify the requirements of Electro-mechanical Instantaneous Changeover Relay Assembly (Relay along with socket/base & Retaining Clips), *henceforth will be abbreviated as **Relay** in this document, for Rolling Stocks Applications only.*

The requirement of Relays specified in this purchase specification will be used inside Control Panels of Rolling Stock Projects.

The vendor has to confirm in writing his complete compliance with this specification (where ever required the respective test certificate also to be provided) and associated techno commercial terms. If the vendor has any queries regarding specifications, it is his responsibility to get the same clarified from the purchaser before submitting the offer. If during approval stage any deficiency is found in the equipment offered, vendor has to provide the additional required components (if any) or make necessary modifications to comply with the specifications, without any cost and time implications to BHEL.

Vendors shall be fully responsible for the supplied item(s). The compliance to this specification does not absolve the vendor of his responsibility towards contractual obligations with regards to completeness, proper selection, satisfactory operation and maintenance.

Item supplied shall be of proven quality both with respect to design and materials. Prototype item of an experimental nature shall not be offered or supplied. The system shall have well proved system records. In the event of any conflict with the specifications, datasheets, related standards, codes etc. the vendor shall refer the matter to the purchaser for the clarification and only after obtaining the approval/concurrence from the Purchaser vendor should proceed with the manufacture/engineering and supply of the item in question.

2. **DEFINITION OF RELAY:** A relay is an electromagnetic switch operated by a relatively small electric current that can turn on or off a much larger electric current. When the current is switched off, the contacts open again, switching the circuit off. Relays control one electrical circuit by opening and closing contacts in another circuit. A relay is similar to a remote switch that uses an electromagnet to close a set of contact points.

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### 3. ITEMS COVERED IN THIS PURCHASE SPECIFICATION

TYPE No.	Brief Description	Material Code
<b>TYPE-A</b>	<p>Instantaneous Electro-Mechanical Relay with DIN-Rail Mountable Relay Socket (Base) and Retaining Clip (wherever required).</p> <p>Assembly of Relay with Socket &amp; retaining clip should be suitable for Traction/Rolling Stock Application and should meet IEC 61373 standard (resistance to shock &amp; vibration).</p> <p>Coil Voltage (nominal): 24VDC. (refer section 4a. for operating range)</p> <p>No. of NO/NC Changeover Contacts: 2 nos.</p> <p>Continuous Contact Current Rating for each changeover contact: Minimum 8Amp.</p> <p>Wire connection to Relay Socket: Spring Cage type only.</p> <p>(All Item to be supplied as Complete Assembly)</p>	<b>TI0693079278</b>

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		<p>REV2.0</p>

<p align="center"><b>TYPE-B</b></p>	<p>Instantaneous Electro-Mechanical Relay with DIN-Rail Mountable Relay Socket (Base) and Retaining Clip (wherever required).</p> <p>Assembly of Relay with Socket &amp; retaining clip should be suitable for Traction/Rolling Stock Application and should meet IEC 61373 standard (resistance to shock &amp; vibration).</p> <p>Coil Voltage (nominal): 110VDC. (refer section 4a. for operating range)</p> <p>No. of NO/NC Changeover Contacts: 2 nos.</p> <p>Continuous Contact Current Rating for each changeover contact: Minimum 8Amp.</p> <p>Wire connection to Relay Socket: Spring Cage type only.</p> <p>(All Item to be supplied as Complete Assembly)</p>	<p align="center"><b>TI0693079286</b></p>
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TYPE No.	Brief Description	Material Code
<b>TYPE-C</b>	<p>Instantaneous Electro-Mechanical Relay with DIN-Rail Mountable Relay Socket (Base) and Retaining Clip (wherever required).</p> <p>Assembly of Relay with Socket &amp; retaining clip should be suitable for Traction/Rolling Stock Application and should meet IEC 61373 standard (resistance to shock &amp; vibration).</p> <p>Coil Voltage (nominal): 110VDC. (refer section 4a. for operating range)</p> <p>No. of NO/NC Changeover Contacts: 4 nos.</p> <p>Continuous Contact Current Rating for each changeover contact: Minimum 10Amp.</p> <p>Wire connection to Relay Socket: Spring Cage type only.</p> <p>(All Item to be supplied as Complete Assembly)</p>	<b>TI0693079294</b>

#### **4. ELECTRICAL CHARACTERISTICS:**

Relays required in this purchase specification is Electro-mechanical relays in which a Voltage is applied across relay coil after which it becomes electro-magnet and pulls a plunger. There are various set of changeover contacts which changes it position from “NO” to “NC” (and vice-versa) instantaneously with the movement of plunger. Hence there are two parts inside any typical electro-mechanical instantaneous relays:

- (a) Coil
- (b) Contacts

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#### A. RELAY COIL CHARACTERISTICS

Operating Voltages	U(Nominal) = 24V DC for Type-A <b>= 110V DC for Type-B &amp; Type-C</b>  <i>Operating Range</i> U(min) = -25% of U(Nominal) U(max) = +20% of U(Nominal)
Withstand condition	Shock & Vibration (Compliant to IEC 61373 or EN61373)
Withstand atmosphere	Corrosive, humid and moist
Mounting mechanism	Suitable for DIN RAIL mounting.
Suitability	For rolling stock applications.
<b>Protection</b>	Diode/Varistor should be provided across the coil (for all relay types) for protection from Back EMF & Over-voltage.  <b>Diode/Varistor may be provided inside the relay socket or inside relay or as a separate attachment to be fixed to the socket. Assembly of Relay &amp; Socket should meet all the requirements of this specification.</b>

#### B. RELAY CONTACT CHARACTERISTICS

<b>Contact characteristics</b>	<b>TYPE-A &amp; B</b> (2 nos. of NO/NC Changeover contacts)	<b>TYPE-C</b> (4 nos. of NO/NC Changeover contacts)
Continuous current	Min. 8 Amp	Min. 10 Amp
Insulation between open contacts	2.0kv, 50Hz, 1 min.	2.0kv, 50Hz, 1 min.

#### C. MECHANICAL CHARACTERISTICS OF RELAY ASSEMBLY

Relay Assembly is including Relay fixed with Socket (Base) and retaining clip (wherever required). **Relay Socket should have Spring Cage Connection Only for wire termination and should be suitable for copper cable connection of conductor cross section 0.5 sq.mm to 2.5 sq.mm. (Provision should be available for connecting two wire in the same electrical point of the relay socket/base)**

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<b>Mechanical parameters</b>	<b>TYPE-A &amp; B</b> (2 nos. of NO/NC Changeover contacts)	<b>TYPE-C</b> (4 nos. of NO/NC Changeover contacts)
Mechanical life	Min. 6 million operations ( <b>Bidder has to give compliance certificate to this</b> )	
Mounting	On DIN rail 35 mm, acc. to EN 60715	
Maximum Dimension of the Relay Assembly (Relay fixed with socket and retaining clip* wherever required)	Max. Length: 120 mm Max. Width: 30 mm Max. Depth: 120 mm	Max. Length: 120 mm Max. Width: 60 mm Max. Depth: 120 mm

\* Retaining clips to be provided to meet the vibration standards of rolling stocks wherever required.

## 5. Environmental Conditions:

- a. **Relative Humidity:** > 90% saturation during rainy season.
- b. **Ambient Temperature:** -5°C to +55°C. Relay should work satisfactorily till +70°C.
- c. **Altitude:** Relay should work satisfactorily at any altitude between 0 and 1776m above mean sea level.

**Note:** Supplier to mandatorily provide conformance certificate (along with Technical Offer) of the offered items complying to the Environmental conditions as above.

## 6. WARRANTY

The material should be warranted against any defect arising out of the prescribed criterion for 18 months from the date of supply.

## 7. Documents to be provided along with technical offer:

Bidder is required to be provided following documents compulsorily along with the technical offer otherwise the offer is liable to be rejected:

- A. Compliance to the all the technical terms & conditions of this purchase specification.

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- B. Compliance to Mechanical Life of Relay as per Section 4(c): Bidder should give written compliance that the offered relay will satisfactorily for a minimum of 6 million operations.
- C. Compliance to Environmental Conditions as per Section-5.
- D. Offered Part nos. of all items (Relay, Spring Cage Socket, Retaining clip, etc.) against each Type (Type-A to C) along with datasheet and dimensional drawing.
- E. Type test certificate OR COC (Certificate of Compliance) of the offered items in compliance to IEC 61373 or EN61373 (resistance to shock & vibration).
- F. For Fire protection, the hazard level of item is to be HL3 as per EN 45545

\*\*\*End of the Document\*\*\*

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