REQUEST FOR QUOTATION

MMI:PU:RF:003

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

RFQ NUMBER: AKSPROP027

RFQ DATE : 05.09.2022

Due Date/Day: 19.09.2022 MON
Time : 13:00 HRS
[redacted]

(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)Package-wise evaluation is applicable for this tender i.e evaluation will be on Overall L1 basis and not item -wise.

3)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	TI0668104350 FUSEHOLDER SI DIN 110 630A * HSN/SAC : 8536 [redacted] FUSEHOLDER SI DIN 110 630A [redacted] As per Specification PS4452649 Rev No 00	750	NO	750	[redacted]
2	TI0668104368 Semiconductor Fuse, 315A * HSN/SAC : 8504 [redacted] Semiconductor Fuse 315A 1250V [redacted] As per Specification PS4452649 Rev No 00	750	NO	750	[redacted]

Total Number of Items - 2

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

1.0 PRE QUALIFICATION CRITERIA (PQC)

1. The Bidder should be Supplier of Semiconductor Fuses for rolling stock applications with working voltage greater than or equal to 1KV and rated current of 300A and higher.

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. PS4452649 Rev. No.00, dated 11.05.2019) 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 Semiconductor fuses of this rating or higher rating fuses 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 PS4452649, Rev. No. 00 for Semiconductor fuse and fuse holder.

REVISION 01	APPROVED AGOSH CHANDRAN R S		
	PREPARED L SUNITHA 01/09	ISSUED TRACTION ENGG	DATE 01.09.2022

A4 – 12	**PURCHASE SPECIFICATION FOR Semiconductor Fuse and Fuse Holder GROUP: TRACTION ENGINEERING**	P.S NO. : PS4452649 REV. NO: 00 PAGE 01 OF 06

REVISION HISTORY SHEET

REV. NO	DATE	NATURE OF CHANGE	REASONS	PREPARED BY	APPROVED BY
00	11.05.2019	FIRST ISSUE	--	VVNSSRM KRISHNA V	SHEKAR R

THIS DOCUMENT IS A SPECIFICATION CUM DATA SHEET. VENDOR TO GIVE 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: 11.05.2019**

APPROVED BY: R.SHEKAR

PREPARED BY:	ISSUED BY	DATE
VVNSSRM KRISHNA V	TRACTION ENGG	11.05.2019

SPECIFICATION FOR Semiconductor Fuse and Fuse Holder

Brief description

Auxiliary converter is connected to the secondary of the traction transformer through a fuse which protects the Auxiliary converter in case of faults. Simplified scheme of connection of Auxiliary converter is Fig 1. This document gives the specification of fuse and fuse holder used in the circuit.

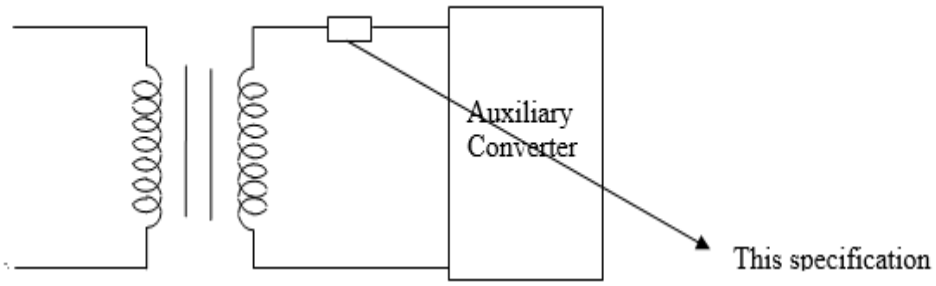


Figure 1: Simplified main power scheme

1. Detailed Specification

1. Electrical Parameters for Fuse

1.	**Ampere Rating**	**:**	**315 A**
2.	**Rated Voltage**	**:**	**1250 V**
3.	**Melting I^2T**	**:**	**<= 15000 A^2S**
4.	**Clearing I^2T**	**:**	**<=122000 A^2S**
5.	**Loss**	**:**	**75 Watt**
6.	**Type**	**:**	**DIN 110**

2. Electrical Parameters for Fuse Holder

1.	**Maximum Voltage**	**:**	**1400 V**
2.	**Rated Current**	**:**	**630 A**

3. Mechanical Requirements

1.	**Height**	**:**	**Refer to Fig-2**
2.	**Width**	**:**	**Refer to Fig-2**
3.	**Depth**	**:**	**Refer to Fig-2**
4.	**Fuse Connection Terminals**	**:**	**M10**
5.	**Fuse Base Mounting Terminals**	**:**	**M8**
6.	**Terminals**	**:**	**Tin platted copper**
7.	**Rating Plate/Marking**	**:**	**As Per Specification**
8.	**Vibration**	**:**	**Sinusoidal vibrations carried out at ambient temperature in three axes of the holder. Spectrum: 1st segment (2 to 16 Hz) constant displacement x = 5 mm peak. 2nd segment (16 to 250 Hz) constant acceleration = 5 g peak.**

2. Standards

Standard	Description
EN50125-1	Environmental conditions
EN50124-1	Railway applications Isolation co-ordination, Basic requirements.
IEC60077	Electric equipment for rolling stock
IEC61287	Power converters
IEC61376	Creepage and clearance
IEC61373	Shock and vibration test

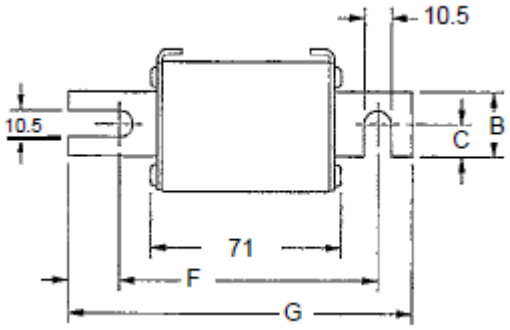
3. Ambient conditions / operating conditions

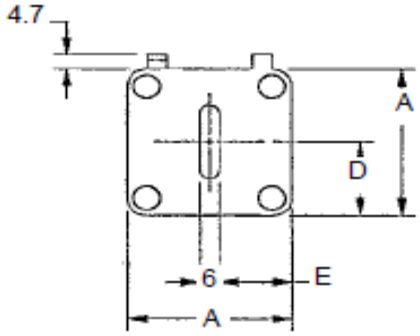
Description	Value	Unit	Notes
Operation	-25..+75	°C	
Temperature distribution over the year	+75	°C	10 days/year
	+65	°C	20 days/year
	+55	°C	90 days/year
	+40	°C	100 days/year
	< +40	°C	130 days/year
Storage	-25..+70	°C	
Average year temperature	+ 40	°C	
Relative humidity	< 95	%	During app 3 - 4 months (rainy season) per year frequent condensation can occur
Altitude	<1200	m	
Pollution levels			
Operation in coastal areas			
Maximum PH	8.5		of water damp
Max. concentration of sulphate	7	mg/litre	of water damp
Max. concentration of chlorine	6	mg/litre	of water damp
Maximum conductivity	130	µS/cm	of water damp
Operation in desert terrain			
Dust content in air	1.6	mg/m3	

4. Reliability, availability, maintainability and safety

Description	Value	Unit	Notes
Design life	30	years	Expected lifetime: 30 x 8640 = 260000 hours
Failure rate	50	FIT	
Maintenance			To be defined by supplier
Safety			The risk of explosion due to over voltage, ageing, loss or other reasons should be minimized

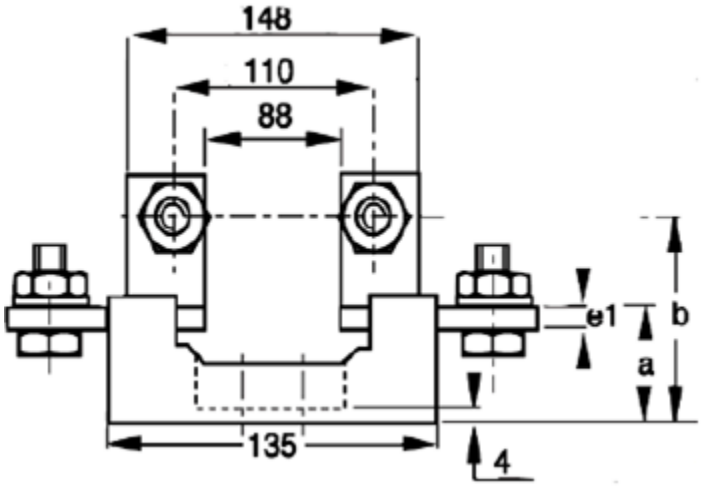
5. Dimensional details





Marking	Dimensions in mm
A	60
B	32
C	16
D	32
E	27
F	100.4
G	133.4

Fuse



Marking	Dimensions in mm
a	40
e1	5
b	68

Fuse Holder

Fig 2: Typical Dimensional Drawing

Note: The dimensions shown above are typical values, suppliers need to submit the detailed drawings showing the mounting dimensions in the technical offer

6. Testing

All the tests to be performed on prototype as per IEC 60269-4

7. Rating plate

The following information shall be given on the rating plate of each Fuse unit:

1. Manufacturer
2. Identification number and manufacturing date
3. Rated Current = A
4. Rated Voltage = V

8. Documentation

1. Dimensional Drawing
2. Type test Procedure, Type test Report
3. Routine test Procedure, Routine test Report
4. Datasheet

9. Acceptance

1. Type test report
2. Visual Inspection
3. Equipment shall be packed in a manner suitable for delivery and storage at the appointed delivery address. Transport packaging will provide adequate protection against accidental damage during normal handling.