BSES

TECHNICAL SPECIFICATION

OF

MINIATURE CIRCUIT BREAKER (MCB) WITH ENCLOSURE

Specification no – BSES-TS-152-MCB-R0

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1.0 Scope of supply

Design, Manufacture, Testing at manufacturers works before dispatch, Packing, Material Delivery at BSES Stores and submission of documents to purchaser

2.0 Codes & standards

The equipment shall conform to the specification and latest revision of all of the following standards with latest amendments –

Sl No	Standard no	Title
2.1	IS/IEC 60947-2	Low-Voltage Switchgear and Control gear Part 2 - Circuit-Breakers

3.0 Service condition

MCB shall be designed to work for following conditions –

3.1	Supply voltage	3 phase – neutral, AC 415 volt
3.2	Supply frequency	50 Hz
3.3	Location	Indoor
3.4	Pollution	High corrosive dust
3.5	Humidity	90% maximum
3.6	Ambient temperature	Average 45^0 C, Maximum 50^0 C

4.0 Guaranteed Technical Particulars of MCB & Enclosure

Sl No	BSES Requirement		Vendor Data
4.1	**MCB Design Particulars**		
4.1.1	Offered MCB Make & Model	Vendor to specify	
4.1.2	Current Rating at 40 Deg C	63 A with following configuration a. Single Pole b. Two Pole c. Three Pole d. Four Pole	
4.1.3	Rated Voltage	240 V for single Phase & 415V for Three Phase system	
4.1.4	Rated Frequency	50 Hz	
4.1.5	Protection Classification	In Multi-pole MCB, protection shall be provided in all poles including	

Sl No	BSES Requirement		Vendor Data
		neutral pole	
4.1.6	Method of cable Connection	Screw – in Type, suitable for Aluminum conductor	
4.1.7	Installation Position	Vertically mounted in Enclosure	
4.1.8	Rated insulation voltage at 50 Hz	1000 V	
4.1.9	Rated impulse withstand voltage	6kV	
4.1.10	Short circuit breaking current capacity (Icu)	10 kA	
4.1.11	Service Short circuit capacity (Ics)	10 kA	
4.1.12	Rated short term withstand current for 1 sec at rated voltage (Icw)	10 kA	
4.1.13	Selectivity Category	Selectivity Category A as per IS/IEC 60947-2	
4.1.14	Electrical protection	Overcurrent	
4.1.15	BIS certification & CML No.	To be marked on MCB	
4.1.16	MCB position indication - ON / OFF	Required	
4.1.17	Marking on each MCB	As per IS/IEC 60947-2	
		'BSES' mark with indelible ink	
		Month & year of manufacture, P.O. no.	
4.1.18	MCB terminals suitable for cable size	Suitable for min. 25 sq mm Aluminum conductor	
4.1.19	MCB terminals	Silver plated copper, finger touch proof	
4.1.20	MCB mounting	On surface as well as DIN rail, Vertical	
4.1.21	MCB ingress protection	IP20 minimum	
4.1.22	Line load reversibility	Required	
4.1.23	Guaranteed Number of Electrical operations	Vendor to specify	
4.1.24	Guaranteed Number of Mechanical operations	Vendor to specify	
4.2	**MCB enclosure box Design Particulars**		
4.2.1	Enclosure Material	S3S grade of SMC as per IS 13410 with flammability level FV0 (as per IS 11731 Part 2)	
4.2.2	MCB Mounting provision in	On surface as well as DIN rail,	

Sl No	BSES Requirement		Vendor Data
	enclosure	Vertical	
4.2.3	Provision of Cable Entry	Both incoming and outgoing cables shall enter in enclosure from bottom only.	
4.2.4	Enclosure Dimensional clearances	Most Compact enclosure dimension shall be preferred.	
A	Cable Entry gland plate to MCB Lower Terminal Distance	60 mm minimum	
B	MCB upper terminal to enclosure top wall	60 mm minimum	
C	MCB to enclosure side wall-Right side	60 mm minimum	
D	MCB to enclosure side wall-Left side	15 mm	
4.2.5	Enclosure overall Dimensions		
A	Length	Vendor to specify	
B	Width	Vendor to specify	
C	Depth	Vendor to specify	
D	Base thickness	3 mm (min)	
E	Cover thickness	2 mm (min)	
4.2.6	Overall weight of enclosure including MCB	Vendor to specify	
4.2.7	GI Gland Plate	Required, 2 mm thickness	
4.2.8	Gland	Two nos. of Elbow shaped glands made out of Polyamide nylon-66 suitable for incoming & outgoing aluminium armoured cable shall be provided on both cable entries in the box.	
4.2.9	Degree of ingress protection	IP55 for MCB enclose box	
4.2.10	MCB Position Indication and Operation feasibility when enclosure is closed & sealed	Required by Transparent Polycarbonate flap, screwed on enclosure cover - for Operation of MCB - for MCB Position indication	
4.2.11	Enclosure sealing provision	With 2 no's U - flange with sealing provision	
4.2.12	Enclosure mounting provision	4 no's M6 size fasteners to be provided with enclosure for mounting	
4.2.13	Base-cover fixing arrangement	The box shall have concealed / internal hinges (minimum 2 no's) not visible or accessible from outside the box.	
4.2.14	Sample submission	Sample of all type of offered MCB with enclosure shall be submitted during Technical Bid evaluation	

Sl No	BSES Requirement		Vendor Data
		along with bid. No deviation shall be acceptable in this regard.	
4.2.15	GTP & Drawing Submission	GTP & Drawing of all type of offered MCB & Enclosure shall be submitted separately for review during Technical evaluation	
4.2.16	Pollution Category as per IS/IEC 60947	Category 3	

5.0 Testing & inspection

MCB & Enclosure shall have following features –

5.1	Type test	Only type tested MCB & Enclosure shall be accepted
5.2	Type Tests reports as per IS/IEC-60947-2	To be submitted by vendor
	Test reports from CPRI/ ERDA or NABL accredited laboratory only acceptable	
5.3	Type test report validity	Type test report of MCB & Enclosure shall remain valid till there is no design change in the offered design
5.4	Inspection test witness by purchaser	On samples selected from lot
5.5	Acceptance & routine test	As per relevant IS /IEC on each lot
5.6	Inspection by Purchaser	On 15 days advance notice

6.0 Packing & delivery

MCB packing & delivery shall have following features –

6.1	Packing protection	Against shocks, vibration & corrosion
6.2	Packing identification labels as per IS/IEC 60947-2	To show purchaser name, P.O. number, Quantity of MCB,MCB type, Manufacturer serial number
6.3	Handling instruction	To be marked on packing boxes
6.4	Direct delivery from manufacturer to purchaser store to avoid transitional adulteration	Assurance scheme to be submitted by manufacturer

7.0 Documentation

Document/Drawing submission shall be as per the matrix given below:

a) All documents/drawings shall be provided in soft copy only.
b) Language of the documents shall be English only.
c) Incomplete submission shall be liable for rejection.
d) Document check sheet compliance shall be the first sheet for each submission stage i.e. Technical bid, Drawing Approval, Pre Dispatch, Pre closure.
e) No submission is acceptable without check list compliance.
f) Order of documents shall be strictly as per the check list.
g) Any drawing not included in the below table but necessary for detailed engineering shall be deemed to be included in bidder's scope.

S#	Description	Technical Bid	Drawing Approval	Pre-Dispatch	Pre-Closure
7.1	Tender No.	Required			
7.2	Communication Details				
7.2.1	Name of the Bidder	Required			
7.2.2	Name of Authorized contact person	Required			
7.2.3	Contact No. of Authorized contact person	Required			
7.2.4	E-mail id of Authorized contact person	Required			
7.3	Document Submission Format				
7.3.1	Index of documents with page numbers for each document	Required			
7.3.2	Separator with document description shall be provided before each document	Required			
7.4	Qualifying Requirement Compliance				
7.4.1	Summary of compliance of qualifying criteria in tabular	Required			

S#	Description	Technical Bid	Drawing Approval	Pre-Dispatch	Pre-Closure
	form along with summary of documentary proof provided				
7.4.2	Detailed Documents supporting compliance of qualifying criteria	Required			
7.5	Drawings/ Documents as per Technical Specification				
7.5.1	Signed copy of technical specification	Required			
7.5.2	Type Test reports of offered model/ type/ rating	Required	Required		
7.5.3	Deviation Sheet	Required	Required		
7.5.4	Detailed Drawings	Required	Required		
7.5.5	Other documents mentioned in technical specification	Required	Required		
7.5.6	Design Calculation		Required		
7.5.7	Manufacturer's Quality Assurance Plan		Required		
7.5.8	GTP & Drawing		Required		
7.5.9	Inspection Reports			Required	
7.5.10	As manufacturing Drawings			Required	
7.5.11	Operation and Maintenance Manual			Required	
7.5.12	As built Drawings				Required
7.6	Soft Copy of complete documentation as mentioned above	Required	Required	Required	Required