

Revised Common technical specifications for 200 kVA/ 500 kVA L.T. Distribution Box (Metal Made)with ACB.

1.0 Scope

This specification covers design, manufacturing, factory testing and supply of LT. Distribution Boxes with ACBs to MGVC/UGVC/DGVC/PGVC's regional/Divisional Stores for protection and control of 200 kVA / 500 kVA transformers and low tension lines.

1.1 The distribution box shall comprise of:

- 1) Suitable enclosures fabricated from M.S. steel sheet
- 2) ACB's as per IS/IEC: 60947 (P.1,2 & 3) of 2004, 2003 & 1999 respectively with latest amendment/revision if any applicable on the date of inviting tender for incoming and outgoing circuit and F.B.A. of switchgears and control gear conforming to IS/IEC 61439-PART I & II:2011 with latest amendment/revision if any applicable on the date of inviting tender.

2.0 General requirements

2.1 Purpose

The L.T. Distribution Boxes should be designed to have maximum utilization of transformer capacity and well equipped adequate protection to transformer against overload and short circuit and minimum interruptions in power supply.

2.2 Service Conditions

Unless otherwise stated, the distribution boxes shall be suitable for outdoor use under following conditions.

Sr No	Particular	Condition
I	Temperature	
I-a	Maximum ambient air temperature	50° C
I-b	Maximum daily average ambient air temperature	35° C
I-c	Maximum yearly average ambient air temperature	30° C
I-d	Minimum ambient air temperature	00° C
II	Altitude	Not exceeding 1000 meters.
III	Relative Humidity <i>N.B.: Even on sea-shore side having heavy pollution, the box shall function satisfactorily.</i>	This does not exceed 50% at maximum temperature of 40° C and 90% at 20° C. Care shall be taken for moderate condensation which may occasionally occur due to variation in temperature.
IV	Mode of installation	The boxes are normally to be mounted on either plinth near the transformer or on M.S. channels fixed between two PSC / Girder poles with suitable nut bolts.

2.3 System details and requirements

The distribution boxes are meant for control and protection of transformer with relevant parameters as under:

Sr No	Particular	Conditions 200 kVA	Conditions 500 kVA
I	KVA Rating	200 kVA	500 kVA
II	Voltage	415 Volts	415 Volts
III	Frequency	50 Hz	50 Hz
IV	Phase & Neutral Three phases with neutral solidly earthed.		
V	Approximate full load current transformer to be protected	267 Amps	677 Amps
VI	Incoming circuit	1	1
VII	Number of outgoing circuit	3	4
VIII	Rated current of DB (Min)	300 Amps	750 Amps
IX	Rated short time withstand current of Distribution Box	12 KA for 1 sec. as per IS/IEC 61439-PART I & II:2011with latest amendment/revision (which includes phase bus bar & neutral bus bar)	35 KA for 1 sec. as per IS/IEC 61439-PART I & II:2011with latest amendment/revision (Which includes phase bus bar & neutral bus bar.)

3.0 Detailed specifications

The specification is subdivided into three parts as under:

1. Enclosures
2. Bus bar and connections
3. Components of circuits

3.1 Enclosures:

- 3.1.1 The box shall be fabricated from fresh M.S. Sheet having minimum thickness of 2.0 mm confirming to IS:1730 of 1989 with latest amendments and confirming to IS:2062/1992 with latest amendments/revision.
- 3.1.2 The box shall be robust in construction to withstand the outdoor weather, wear and tear. It shall be able to provide the degree of protection IP-43 in accordance with IS/IEC: 60947 Part-1,2,3 of 2004, 2003 & 1999 respectively with latest amendment/revision.
- 3.1.3 The box shall be fabricated by folding same M.S. Steel sheet to minimize welded joints. All the joints of the box shall be overlapped to minimum 10 mm and properly welded at not more than 100 mm intervals with minimum 10 mm continuous welded portion. There shall not be any gap between the jointing surface edges and no filler material shall be applied at the joints. The joints shall be such that no water can enter the box from any joints.
- 3.1.4 The box shall have minimum two & three compartments for 200 & 500 KVA respectively. The box shall have doors on both the sides of each compartment to facilitate easy operation and maintenance of ACBs installed in the box. Total 4(200 kVA) / 6(500kVA) Nos. doors are to be provided. Each door shall open horizontally. Each door shall be fitted with 3 Nos. hinges provided inside and the hinges shall be strong enough to withstand the weight of the door. The hinges shall be of such construction that each door can be swung open by not less than 90 Deg. but not more than 120 Deg. Suitable stiffener in a form of channel 50 x 10 mm prepared from same size of M.S. sheet be provided inside each door at the center for the full height for adequate strength. The hinges shall not be visible from outside.

- 3.1.5** Each door shall be kept closed by 2 Nos. of threaded knobs provided on the right sides of the door (one at top and one at bottom). Suitable circlips are to be provided on each knob to avoid loss of the knob in the field. Further, each door shall have one handle at the center. It shall have a hole to match with the hole provided on angular bracket on fixed frame of the hole in the handle. However, padlocks are not included in the scope of supply of Distribution Boxes. One universal type lock arrangement (as in OCB/Control Panel) on each door is required to be provided on each compartment in addition to this.
- 3.1.6** The setting of the door shall be made groove type by bending single sheet such that no water can enter the box in rainy seasons. Further, a rubber lining of not less than 3 mm thickness shall be provided in the seating of the door to make a close fit and to act as dust, vermin and waterproof. The rubber lining shall be fixed in such a manner that it shall remain in its position throughout the life of the box.
- 3.1.7** The roof of the box shall be given a slope of 10 to 15 Deg. to drain the rainy water easily.
- 3.1.8** **Four Nos. louvers** for ventilation shall be provided on each side plates of the box (Two at top and the Two at bottom of side plates) for heat dissipation and to ensure that the temperature inside the box is not substantially different from that of the surrounding atmosphere.
The ventilation shall be covered with perforated M.S. sheet of thickness 0.5 mm with frame welded inside the box for preventing dust and insects getting inside the box.
- 3.1.9** The overall dimensions of the box shall be such that the box shall withstand the temperature rise test as per Annexure A, sr.no3 of this specification.
Minimum clearance between phases and neutral and between phases/neutral and earth shall be as per requirements as per IS/IEC: 60947 (P.1-2) with latest amendment/revision suitable spacing for termination connection for maintenance to be provided.
The temperature rise shall be within the limit specified in relevant IS for ACB and Bus Bars etc.
- 3.1.10** Enameled danger notice plate as per IS: 2551/1982 with latest amendment/revision of size 200 x 150 mm shall be riveted in pilfer proof manner on front and rear cover of the box as shown in the drawing.
- 3.1.11** Aluminum name plate stating following details duly etched shall be riveted on
- (A) Inner side of the door.**
 - i) Name of manufacturer/trade name
 - ii) Order Number and Date
 - iii) Serial Number of the box
 - iv) kVA Rating and Voltage
 - v) Date of dispatch
 - vi) Type, viz. kVA Distribution Box with ACBs.
 - vii) Property of "Madhya Gujarat Vij Company Ltd."
 - viii) Month & Year of manufacture
 - (B)** Suitable pocket to be provided on inner side of central door technically literature of Box - ACB and Relays etc.
- 3.1.12** **Earthing Terminals**
One M.S. Zinc electroplated Earthing bolt of size 12 mm x 50 mm shall be welded on each side of the box (as shown in the drawing). Two Nos. of 2 mm thick M.S. Zinc electroplated washers and one spring washer along with M12

size M.S. electroplated nut shall be provided on each Earthling terminal. Suitable irremovable Earthling symbol shall also to be provided.

3.1.13a The folded mounting base channels should be provided of suitable size to withstand load of box and proper elliptical holes shall be given in the channel for mounting purpose on plinth/fabricates structure.

3.1.13b Two Nos. of lifting eye bolts M-12 size to be provided on top at two sides - reinforcement of - angle in center throughout the width under roof at sided. Nut to be welded. Suitable washer to be provided and welded so that no entry of water is there from eye bolt portion.

3.1.14 One 3 mm thick M.S. detachable plate, which can be fixed with base plate by bolt nuts, shall be provided at bottom side of each compartment. Knockout type holes of sufficient size and quantity may be provided in each detachable plate for providing entry of incoming and outgoing PVC cables.

3.1.15 The box shall be supplied with following size compressive ring type PVC glands.

Capacity of Box	Cable Size	Nos. of cables	Nos. of glands
200 kVA	Incoming: 3.5 Core X 150mm ²	2	2
	Outgoing: 3.5 Core X 150 mm ²	3	3
500 kVA	Incoming: 3.5 Core X 150mm ²	4	4
	Outgoing: 3.5 Core X 150 mm ²	4	4

3.2 Bus bar and connections:-

3.2.1 EC Grade aluminum Bus Bar should be provided in the box for inter connection with incoming and outgoing circuit. The current density of aluminum bus bar should not be more than 1A/mm² at any point of Bus Bar. The Bus Bar shall be in one piece only.

3.2.2 All Bus Bars and links shall be properly drilled, debarred and bolted with bimetallic washers 1 mm thick to minimize heating of joints.

3.2.3 All Bus Bar and jumpers used for inter connections should be insulated with heat shrinkable PVC sleeve having color Red, Yellow, Blue & Black to withstand high voltage.

3.2.4 The incoming and outgoing terminals connections of ACBs should be provided with suitable size of aluminum lugs with bimetallic washers.

3.2.5 In all connections of bus bar with ACBs tightening bolts, nuts, spring washers shall be of M.S. Zinc electroplated and of suitable size to have firm connections.

3.2.6 Bimetallic washers of 1 mm thickness shall be provided at the contact places wherever applicable.

3.2.7 Safety Arrangements

3.2.7.1 Neutral bus bar

The neutral bus with 6 (200 kVA) / 8 (500 kVA) nos. holes of 10 mm dia. of aluminum having size equivalent to half the cross sectional area of main bus bar, should be provided throughout the length of Distribution Box and shall withstand short time withstand current as per IS / IEC 61439-1/2011 with latest amendment/revision if any.

3.2.7.2 Live parts should be shrouded by hylam sheet of minimum 3 mm thickness to avoid accidental touching while in operation. The sheet should be firmly fixed, additional suitable to be provided, if required.

3.2.7.3 Anodized aluminum operating instructions in “GUJARATI language” shall be fixed inside the door. The letter should be cleared legible and readable. The letters of the instructions should be of sufficient size to read with normal eye.

3.2.8 Surface treatments:-

A	All metal work shall undergo chemical/mechanical cleaning process before receiving two coats of primer (red oxide) and two coats of final paint.
B	Electrostatic painting and oven drying will be preferred.
C	Final paint shade from inside and outside shall be dark admiralty gray as per Code No.632 of IS-5/78 with latest amendment/revision.
D	All other metal parts used in the distribution box shall be treated as under: Bus bar and connections: Coat of insulating materials.

3.3 Components of circuits:

3.3.1.1 Incoming circuits & Outgoing circuits - 200 kVA / 500 kVA Box rating

	Particular	Box capacity kVA	Incoming Circuits	Outgoing Circuits
1	Rating of ACB	200	400 Amps, 415V, 50 Hz	2 Nos. 200 Amps. 415V, 50 Hz 1 No. 100Amps., 415V, 50Hz
		500	800/1000 Amps, 415V, 50 Hz	200 Amps. 415V, 50 Hz
2	Numbers of circuits	200	One (1)	Three (3) Nos.
		500	One (1)	Four (4) Nos
3	Nominal setting of ACB thermal overload release	200	300 Amps	200 Amps ACB to be set at 115 Amps 100 Amps ACB to be set at 70 Amps
		500	730 Amps	200 Amp. ACB to be set at 180 Amp.
4	Electromagnetic short circuit release	200 & 500	To be fixed at 4 times	To be fixed at 4 times
5	Nos. of Poles		3	3
6	Utilization category		B	B
7A	Minimum short circuit breaking capacity at 415V	200	12 kA	12 kA
		500	35 kA	35 kA
7B	Short time withstand capacity	200	12 kA for 1 second	12 kA for 1 second
		500	35 kA for 1 second	35 kA for 1 second
8	Power factor of short circuit	200 &	As per table II of IS/IEC: 60947 (P-2)	As per table II of IS/IEC: 60947 (P-2)

		500	with latest amendment/revision	with latest amendment/ revision
9	Mechanism		Manual independent quick make quick break	Manual independent quick make quick break
10	Standard		IS/IEC: 60947 (Part 1 & 2) with latest amendment/revision.	IS/IEC: 60947(Part 1 & 2) with latest amendment/revision.

3.3.2 The breaker should have maximum tripping time of 200ms in the event of short circuit. The breaker should be easily maintainable and compact in constructions. They shall be either front or side operated.

3.3.3 Time current characteristics

Time current characteristics of ACBs shall be verified for minimum multiples of normal current settings given as under: 1.05, 1.20, 1.30, 1.40, 2.5, 4.0

The manufacturer shall submit “time current characteristics curve” showing above setting of current.

3.3.4 Marking of ACB

The name plate stating following details duly etched shall be firmly fixed in irremovable manner on the front side of each ACB. Similar name plate should also be firmly fixed on outside the door nearby where sign of incoming & outgoing feeders are provided.

I	Capacity of ACB in Amp. Volt/frequency	II	Name of manufacturer and trade mark
III	Serial number of the ACB	IV	Rated short circuit breaking capacity
V	Type of release	VI	Property of MGVCCL

3.3.5 The following technical data be furnished for ACB, breakers with offer.

I	Make	II	Type
III	Rated voltage in “Volts”	IV	Continuous current carrying capacity in “Amps”
V	Rupturing capacity in “kA”	VI	Percentage overload release range from ____to ____%
VII	Details of type tests as per IS/IEC: 60947 with latest amendment/revision		

4.0 Test & Test facilities:

4.1 Type Test & Type Test Certificate:

4.1.1 Type tests reports not more than seven years old from the date of tender from Government approved and NABL approved laboratories such as CPRI, Bangalore, Bhopal, ERDA, Baroda, etc. to be furnished with all certified attested drawing to prove that the equipment offered meet the requirement of the specification and relevant IS. All the type tests on ACB, including verification of time current characteristics and complete box are required to be carried out as per IS/IEC: 60947 (P.1&3) and IS/IEC: 61439(P.1&2) amended up to date respectively.

4.1.2 All the necessary Type Tests will have to be carried out before submission of the tender and to be submitted along with the Technical Bid. The type test which are more than Seven (07) years old will not be considered (except otherwise specifically mentioned in the Guaranteed Technical Particulars i.e. GTP's) and such tenders will be rejected.

4.1.3 The complete distribution box with ACBs in their respective position should be tested for fault withstand level of 12 kA (200 kVA) / 35 kA (500kVA) for one

second. The testing should include the phase Bus Bar as well as neutral Bus bars also as per IS/IEC 61439-PART I & II:2011 with latest amendment/revision if any on the date of inviting tender. This type test report along with attested drawing is to be submitted along with offer. No provisional type test certificate shall be entertained.

- 4.1.4 Offers either without type test certificate or with incomplete and provisional type test certificate shall not be considered.

4.2.1 Acceptance Tests:

Following tests shall be carried out as acceptance test while inspecting the lot of materials offered as per Annexure 'B':

A	Visual inspection	B	Verification of dimensions and clearance
C	Verification of fittings	D	High voltage withstand test as per IS/IEC:61439 table no. 8
E	Insulation resistance with 2500V Megger	F	Earth continuity checking test
G	Mechanical operation 5 Nos. ON/OFF for all ACBs	H	Verification of trappings (Time current characteristics)
I	Temperature rise test on one sample only		

- 4.2.2 The samples to be taken for tests shall be 2% of the total quantity of the offered lot, selected randomly by the inspector of company. They should be subjected to acceptance tests mentioned in the above clause. In case of bought out item like ACBs etc., the same have to be either tested at the firm's works or at the works of the original manufacturer. In case the testing facilities are not available either at firm's works or at manufacturer's works, then the samples are to be tested at Government recognized laboratory having NABL Accreditation Certificate. However, all such testing are to be carried out in presence of the inspector of company and the testing charges shall be borne by the firm only. However, temperature rise that shall be taken on one number randomly selected sample from the each lot offered for inspection.

- 4.2.3 In case of inspection/testing of loose ACBs at the manufacturer's works for acceptance test, following shall be the sampling criteria:
Incoming & Outgoing ACBs 2% of the offered lot or minimum 1 complete set of one Distribution Box.

- 4.2.4 The firm has to submit list of testing equipment's/instruments, stating make, date of last calibration along with certificates etc. to the inspecting officer of the company.

4.2.5 Routine Tests:

The following Routine Tests shall be conducted by the manufacturer as per IS/IEC: 61439-I & II:2011 clause no. 11.2 to 11.10 on each lot and will keep record inform of register at manufacturer/Firm's works and will show to the inspector for checking purpose.

- (1) Degree of protection of enclosure
- (2) Clearance and creepage distances
- (3) Protection against electric shock and integrity of protective circuits

- (4) Incorporation of built-in components
- (5) Internal electric circuits and connections
- (6) Terminals for external conductors
- (7) Mechanical operation
- (8) Dielectric properties
- (9) Wiring operational performance & function
- (10) Calibration of releases

4.3 Drawing

Party should submit with the offer general arrangement drawing with dimension and equipment details, mentioning clearance, cable size, bus bar sizes etc.

Final drawings shall be submitted for approval before commencement of supply and before offering the prototype distribution box. The drawings shall show general arrangement of the box.

4.5 Prototype:

The successful tenderers shall have to offer 1 No. prototype box of each rating for carrying out the tests mentioned in clauses of Annexure: A either at the firm's works or at any Government recognized laboratory, if no adequate testing facilities are available at firm works, in presence of company's representatives. In case of bought out item like ACBs, the same have to be either tested at the firm's works or at the works of the original manufacturer or at Government recognized laboratory in case adequate testing facilities are not available at the firm's works or at the works of the original manufacturer. However, all the testing expenses for prototype sample shall have to be borne by the firm only. Only after successful passing of the prototype unit in all the tests and after obtaining the written approval from the competent authority of company for prototype box and drawings, the firm can commence bulk manufacturing of the ordered boxes.

Name of testes to be carried out on the prototype unit as per Annexure 'A'

4.6 Warranty

The suppliers shall have to offer at least three free of charge services of the boxes at site during the warranty period any replacement/repair will be done free of cost. If they fail to render the three services in warranty period, it will reflect performance record for future supply.

4.7 Although the samples selected at random by the company from the supplier's works passed the acceptance tests conducted and the lot accepted, the company reserves the right to test the boxes after receipt at destination by arranging the testing at MGVCL's approved laboratories.

However, in the event of samples failing in the tests or the materials otherwise found defective, the supplier shall replace such materials free of cost at the destination concerned on receipt of the intimation from the company.

5 Sample submission:-

The tenderer shall have to submit one sample of each offered rating L.T. Dist. Box fitted with all the accessories, like, isolator, ACB bus bar etc. as per the tender specification on or before the date of opening of tender. The tenders without sample or delayed sample will be out rightly rejected and offer will be considered neither for technical evaluation nor for price bid consideration.

This tender sample will be returned to those tenderer on whom order as not placed. The tender sample will be considered as a part of quantity ordered for a successful

tenderer on whom order is placed, and will be allowed to be dispatched with the last lot of supply. Any modification/rectification of defects etc. will also have to be carried out along with necessary testing on this sample box for all acceptance tests and after successful passing in all tests, it will be allowed to be dispatched at the destination, allotted by the company. Supplier has to carry out all modification/rectification as suggested by the company on the sample box at his cost without asking any extra charge from the company.

6. Guarantee:

The tenderer quoting other brand/make of ACB or any part provided in the L.T. distribution box and the complete L.T.D.B./Equipment supplied shall be guaranteed for a period of **36 months from the date of dispatch**

Bidder will have to submit guarantee certificate from their original principles manufacturer along with type test certificates and attested drawings of any Government approved laboratory. Provisional/incomplete type test certificate will not be considered. Along with type test certificate part has to submit certificate.

The stores / materials as above found defective or not meeting requirement of specifications within above guarantee period shall be replaced / repaired duly tested by the supplier free of cost within one month of receipt of intimation. If the defective stores / materials are not replaced/repared within the stipulated period as above, the company shall recover an equivalent amount plus 15% supervision charges from any of the bills of the supplier or from any amount lying with the company or will be attended by company at risk and cost of supplier/tenderer without prejudice to any other rights which the company / Purchaser may have under the contract. Not tendering the repair/replacement services under guarantee period will be liable to de-rank the tenderer for future tender.

7 Deviation from specifications:

No deviation from these specifications shall be permitted. Offers and prototype samples with deviations shall be rejected.

8 Factory inspection will be carried out to assess manufacturing capability availability of manufacturing and testing facilities etc. to be considered for evaluation of offer.

9 Testing and Manufacturing facilities

The tenderer must clearly indicate what testing facilities are available in the works of manufacturer and whether the facilities are adequate to carry out all Routine, and Acceptance Tests. These facilities should be available to company's Engineers, if deputed to carry out or witness the tests in the manufacturers to carry out the acceptance tests on the Box. All testing equipment shall be duly calibrated in Govt. / NABL approved laboratory.

9.1 Minimum manufacturing facility

The tender should have following minimum manufacturing facilities to prove his reliability as a manufacture of L.T. Distribution Boxes.

- I) Power operated shearing machine
- II) Power operated press brake
- III) Power operated power presses
- IV) Welding machines
- V) Air compressor with spray painting facilities.
- VI) 7 tank chemical & mechanical surface treatment process

- VII) Assembling tools and
- VIII) Drilling Machine (Hand & Table)
- IX) Grinder (for surface cleaning)

9.2 Minimum testing facility

The tender should have following minimum testing facilities to prove his reliability for supplying good quality manufacturer of L.T. Distribution Box.

1. Temperature controlled oven (for temperature rise test and MCCB testing):
2. Low voltage High current source.
3. H.V. Tester.
4. Megger
5. Contact resistance test
6. Measuring Instruments like Vernier caliper & Micrometer etc.
7. Test equipment related for checking of PH value of solutions utilized in seven tank surface treatment.

Annexure-A**200 KVA / 500 kVA L.T. distribution box with ACBs (Metal made)****Tests:**

Following tests shall be carried out on prototype sample & samples selected from offered lot.

Sr No	Test	Description
1	Visual Inspection	The box will be inspected visually for proper painting and other necessary requirement as per specification
2	Verification of dimensions and fittings:	Verification of dimensions, verification of fittings and accessories, clearance, creepage distances will be carried out as per technical specifications, relevant IS and drawings.
3	Verification of Temperature rise limits	Test carried out as per IS :61439 (Annexure D) Effective continuity between the expose conductive parts of the assembly and the protective circuit as per IS/IEC : 60947(part-II)
4	Verification of Dielectric properties with 2.5 KV test voltage of AC 2.5 KV RMS at 50 Hz will be applied for one minute as follows keeping all ACB closed:	1) Bus bars and ACBs: a) Between individual bus bars b) Between each BusBar and body (2) ACBs: a) Between incoming line terminals and outgoing line terminals, keeping ACBs open. There shall not be any puncture or flashover during his tests. Following these tests IR values shall be measured which shall not be less than 10 Mega ohm
5	Insulation resistance test:	The IR value shall be measured with megger of 2500 DC voltage between terminals as mentioned H.V. Test, IR value shall not be less than 10 Mega ohm.
6	Checking earth continuity:	The earth continuity shall be checked by Megger between earth terminals brought out on either side of distribution box
7	Tripping characteristics:	The test shall be carried out with multiplies of normal current as per Col.No.3.3.3 of this specification
8	Contact Resistance Test	Effective continuity between the expose conductive parts of the assembly and the protective circuit as per IS :61439 (Annexure D)

Annexure-B**200 kVA / 500 kVA L.T. distribution box with ACBs (Metal made)**

1	Acceptance Test: The acceptance tests mentioned in Col.No.4.2.1 i.e. (a), (b), (c), (d), (e), (f), (h), (i) shall be carried out as per Annexure : “A”.
	Mechanical operation: All ACBs shall be operated off the load for 10 Nos. of ON/OFF operation offer which it shall remain in healthy state
2	Routine Tests: The following routine tests shall be conducted by the manufacturer on each box:
	A Test to prove satisfactory mechanical operation of ACBs
	B Visual examination and verification of dimensions and for all boxes including that of components and accessories provided, workmanship, painting etc.
	C Insulation resistance (test Megger)
	D Dielectric test on each box, including ACBs.
3	E Calibration of releases
	Sample submission: The tenderer shall have to submit one sample of L.T. Distribution Box fitted with all the accessories like ACB, Bus Bar etc. as per tender specification on or before the date of opening of tender. The tender/offer without sample or delayed submission of sample will be out rightly rejected and offer will not be considered neither for technical evaluation nor for price bid consideration.
4	The tender sample will be returned back to those tenderer on whom order is not placed. The tender sample will be considered as a part of quantity ordered for a successful tenderer on whom order is placed and will be allowed to be dispatched with a last lot of supply. Any modification/rectification of defects etc. will be also have to be carried along with necessary testing on this sample box for all the acceptance tests and after successful passing in all the tests, it will be allowed to be dispatched at the destination allotted by the company. Supplier has to carry out all modification/rectification as suggested by the company on the sample box at his cost without asking any extra charge from the company.
	Backup guarantee The tenderer quoting other brand/make of ACB or any part provided in the L.T. distribution box and the complete L.T.D.B./Equipment supplied shall be guaranteed for a period of 36 Months from the date of dispatch , and will have to submit guarantee certificate from the original/principal manufacturer for any replacement/maintenance required at the later stage after same is installed in the field. This back-up guarantee shall be minimum 3 years from the date of dispatch f LT Distribution Box at consignee/Regional Store. This replacement/maintenance should be done by the supplier free of cost within guarantee period, offer without back-up guarantee period, offer without back-up guarantee is liable to be rejected. Party will have to submit type test certificate along with attested drawings of any Government approved laboratory. Provisional/incomplete type test certificate will not be considered. Along with type test certificate, party has to submit certificate from laboratory where type tested that laboratory is Government approved laboratory and sufficient test facility is available for each test to be carried out.

Guaranteed Technical Particulars

Technical information and guaranteed technical information for supply of 200 kVA / 500 kVA Distribution Boxes with ACBs.

Part-A

Bidder has to confirm following important requirements:

Sr No	Particulars		Confirmation Yes/No
A	Complete Box		
	1	200 kVA / 500 kVA L.T. Distribution Box shall be supplied as per Specification Clause No.3.0	
2	Distribution Box shall withstand rated short time current for 1 second as per IS/IEC 61439-part I&II:2011with latest amendment/revision if any (Including phase bus bar & neutral Bus Bar) 12KA for 200 KVA & 35KA for 500 KVA LTDB.		
B	Air circuit breakers		
	1	1 No. Circuit for incoming & 3 Nos. circuit for outgoing	200 kVA Box
		1 No. Circuit for incoming & 4 Nos. circuit for outgoing for	500 kVA Box
	2	(i) 400 Amps ACB for incoming circuit (ii) 2 Nos.of 200 Amps. ACB and 1 No. of 100 Amp. ACB for outgoing circuit ACB as per IS/IEC: 60947 (P.I & II) is to be provided in box	200 kVA Box
		800/1000 Amps ACB for incoming and 4 Nos. 200 Amps. ACB. ACB for outgoing circuit as per IS/IEC: 60947 (P.I & II) is to be provided in box	500 kVA Box
	3	Nominal setting of ACB release thermal overload	
		i) 400 Amp. ACB is to be set at 300 Amp	200 kVA Box
		ii) 200Amp. ACB are to be set at 115 Amp& 100 Amp. ACB to be set at 70 Amp.	
		i) 800 / 1000Amp. ACB is to be set at 730 Amp.	500 kVA Box
		ii) 200 Amp. ACBs are to be set at 180 Amp.	
4	Electromagnetic short circuit release is to be fixed at 4 times.		
5	3Nos. of Pole		
6	Utilization category shall be 'B' as per IS/IEC: 60947		
7	Minimum short circuit breaking capacity of ACB is 12 KA at 415 Volt.		200 kVA Box
	Minimum short circuit breaking capacity of ACB is 35 KA at 415 Volt.		500 kVA Box
8	Power Factor of short circuit test of ACB as per IS/IEC: 60947		
9	Mechanism manual independent quick make quick break		
1	Maximum tripping time at the event of short circuit is 200 milliseconds		200 kVA Box
0	Maximum tripping time at the event of short circuit is 200 milliseconds		500 kVA Box

Part-B**Bidder has to furnish below details about materials**

Sr No	Particulars	ACB's
1	Make / Trade Mark of ACB	
2	Name and Full address of Supplier	
3	Basic Rating in Amp.	
4	Rated voltage in volts.	
5	Continuous current carrying in Amps.	
6	Rupturing capacity in KA & category	
7	Percentage over load carrying capacity	
8	Size of main bus bar.	
9	Size of Neutral Bus Bar and current density	
10	Current density of Bus Bar	
11	Overall dimensions of Box in mm L X B X H	