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1. SCOPE

This Specification covers the design, manufacture, testing at works and supply of L.T Distribution Boxes made out of GI for controlling the L.T. feeders from the L.T. side of Distribution for Feeders. The system shall be A.C. 1 phase, 2 wires, 250 V, 50 HZ with effectively grounded neutral.

2. APPLICABLE STANDARDS

The equipment covered by this specification shall unless otherwise stated, be designed, manufactured and tested in accordance with the latest editions of the following Indian, International standards and shall confirm to the regulations of the local authorities.

S.NO	Indian Standard	Title
1	IS 5039	Specification for distribution pillars below 1000V AC
2	IS :13947/1993 (Part 3)	Specification for Isolator (Switch Disconnecter)
3	IS: 8623/1993 (amended up to date)	Specification for enclosure Box & for degree of protection provided by enclosures of electrical equipment.
4	IS: 4237/1982 IS: 8623/1993 (amended up to date)	Specification for general requirement of L.T. switchgears.
5	IS 4759: 1996	Hot-Dip Zinc Coating On Structural Steel and Other Allied Product
6	IS 2705	Current Transformer
7	IS 2086	Fuse

3. CLIMATIC CONDITIONS OF THE INSTALLATION:

1	Maximum ambient temperature	50 deg C
2	Max. Daily average ambient temp	35 deg C
3	Min Ambient Temperature	0 deg C
4	Maximum Humidity	95%
5	Average Annual Rainfall	150cm
6	Average No. of rainy days per annum	120
7	Altitude above MSL not exceeding	1000m
8	Wind Pressure	300 Km/hr
9	Earthquakes of an intensity in horizontal direction	equivalent to seismic acceleration of 0.3g
10	Earthquakes of an intensity in vertical direction	equivalent to seismic acceleration of 0.15g (g being acceleration due to gravity)

TPCODL/TPWODL/TPNODL/TPSODL service area has heavy saline conditions along the coast and High cyclonic Intensity winds with speed upto 300 Kmph. The atmosphere is generally laden with mild acid and dust in suspension during the dry months and is subjected to fog in cold months.

4. GENERAL TECHNICAL REQUIREMENTS

Standard General Arrangement of KIT-KAT Fuse (Base & Carrier) for single phase LTDB

GUARANTEED TECHNICAL PARTICULARS FOR SINGLE PHASE LTDB 16 KVA AND 25KVA DISTRIBUTION TRANSFORMER

Sr	PARTICULARS	Requirement As per TP Odisha DISCOM	
1	Material of LTDB	GI Sheet (220 GSM) with Powder Coated Preferred make for GI sheet- SAIL, JINDAL, TATA, RINL Thickness of Powder Coating: min 60 microns	
2	Color of Box	RAL 7032 as per IS 5 (Min 70 micron)	
3	Dimension of Box (Height X Width X Depth)	(500 X 450 X 270) mm (However dimension to be specified by the bidder as per type test reports and finalized during technical evaluation)	
4	THICKNESS OF BOX		
i	Load Bearing Size	3.0 mm (Min.)	
ii	Non Load Bearing size	2.0 mm (Min.)	
iii.	Door Arrangement	To be provided	
5	Aluminum Busbar Size	25 X 6	
6	Degree of protection	IP 55	
7	Hinge	2 Nos Bush Pin type Hinges	
8	Rubber Gasket	4 mm self-adhesive rubber gasket	
9	Incoming arrangement	For 16 kVA 63 A	For 25 kVA 100 A
		Make of Kit-Kat Fuse - LK, Havells, HPL, C&S and other equivalent make complying IS needs with prior approval is mandatory to start manufacturing process. a) Extended terminal in both the sides of KITKAT fuse with bus post insulator shall be provided for cable termination. The height of insulator to be such that the phase cable does not hinder access to the neutral busbar. b) One side of extended terminal of kit-kat fuse shall be connected with the busbar extension ensuring equal cross-section of both busbar and the extended terminal of kit-kat fuse. c) Another end of extended terminal of kit-kat fuse shall be with lugs for cable termination.	

10	No of Outgoing feeder	Through Busbar, 2 Nos
11	Earthing Provision	2 Nos Bolt welded on both side of the box. Free from any painting & insulation. M8 X 40 mm
12	Bus bar Mounting insulator	DMC/Epoxy Resin Cast Bus Insulator
13	Gland	Yes, Upto 95 sqmm. It will be confirmed during detailed engineering from concerned DISCOMs.
14	Protection	through Kit-Kat fuse
15	Metering provision	NA
16	Gland plate thickness	3 MM
17	Knockout in gland plate	Yes required, the sizes of cable will be shared during detailed engineering.
18	Gland plate to busbar space	180 MM
19	Right side space	100 MM
20	Clearance Between Bus to Enclosure	70 MM
21	Neutral protection	Through Kit-Kat fuse
22	Locking Arrangement	Panel Lock Pad Lock Arrangement
23	Indication Lamp	Availability of Supply
24	Packing	3 Ply corrugated Box/ EP foam with shrink wrap

5. GENERAL CONSTRUCTIONS

Distribution Boxes shall have Kit-kat fuse (Base & Carrier) with necessary interconnecting Bus Bars. Enclosure shall be of GI sheet (220 GSM) with Powder Coated Preferred make for GI sheet- SAIL, JINDAL, TATA, RINL Thickness of Powder Coating: min 60 microns.

Note: Before starting Mass Production, Supplier has to fabricate one prototype and get it Inspected and Approved by TPCODL/TPWODL/TPNODL/TPSODL Engineering & Quality Department.

Each distribution box shall have 2 no. of Kit-Kat Fuse rating suitable for LTDB Box to protect outgoing circuits.

KIT-KAT Fuse:

KitKat Fuse of suitable capacity shall be provided to facilitate electrical breaking of the circuit. The bidder shall indicate in GTP, Make, Type, Fault Rating and capacity of interrupting devices

1. Rating of Incomer Kit-kat Fuse

DT RATING	Fuse Rating (Kit-kat Base & Carrier)	Fuse Rating (Kit-kat Base & Carrier)
16KVA	63 Amp	63 Amp
25KVA	100 Amp	100 Amp

2. The Bidder shall furnish detailed type test reports before or on due date & time of submission of tender. Kit-kat fuse to be provided in the Distribution Box.

Painting

All paint shall be applied on clean dry surfaces under suitable atmospheric conditions by seven tank process and powder coating. The overall paint thickness shall not be less than 70 microns.

The paint shall not scale off or crinkle or be removed by abrasion during normal handling.

The enclosure of the Panel shall be painted with shade light Grey, i.e. RAL 7032. The Panel should be painted with Anticorrosive paints. If any damage observed after delivery same need to be touch-up painted after delivery at site.

The paint should sustain for harsh environment & saline weather, Corrosion Protection for Panel entire life cycle (minimum 10 yrs).

6. MARKING

The LTDB box shall carry the following information contained in a label attached to it:

- Reference to the Standards.
- Manufacturer's name
- Year of manufacture.
- The following shall be embossed on the LTDB," PROPERTY OF TPCODL/TPWODL/TPNODL/TPSODL."
- Danger Name plates, Supply voltage-230 V (In Odia, Hindi and English as per IS 2551)
- Purchase Order number
- Warranty has to be marked on the nameplate of the enclosure with another warranty sticker (Metal Riveted) to be placed inside the enclosure with date and other details related to warranty.

7. TESTS

All routine, acceptance & type tests shall be carried out in accordance with the relevant IS/IEC. All Acceptance Tests shall be witnessed by the purchaser/his authorized representative. All the components shall also be type tested as per the relevant standards. Following tests shall be necessarily conducted on the LTDB components in additions to others specified in the IS/IEC Standards. All these Type Test should be conducted at CPRI/ERDA. Type Test report validity should not exceeded timespan as per CEA Latest Guidelines from the date of testing.

TYPE TESTS

ON COMPLETE BOX:

- Temperature rise test: - The temperature rise test should be carried out as per IS: 8623 -1993.
- High voltage test shall be carried out as per IS:8623/ 1993 amended up to date.
- Degree of protection for IP-55 on complete box shall be carried out as per IS: 13947/1993 or the latest version thereof.

ON Kit-Kat Fuses (Base & Carrier):

Type Test for the tests (mechanical test) (As per IS 2086-1993)

- Visual examination.
- Dimensional check.
- Test for mechanical endurance
- Test for mechanical strength
- Test for Withdrawal force

Type Test for the tests (Electrical test) (As per IS 2086-1993)

- Test for temperature rise
- Insulation Resistance test
- High Voltage test

d) Test for breaking capacity

Type Test for proving material property (Electrical test) (As per IS 2086-1993)

- a) Test for water absorption (Non ceramic)
- b) Test on ceramic material.
- c) Ignition test

ACCEPTANCE TESTS

Following tests shall be carried out as per acceptance tests in addition to routine tests on one random sample of each rating out of the lot offered for inspection:

1. Temperature rise test on one sample of each rating. Temperature rise test will be carried out as per the procedure given below: For temperature rise test, a distribution box with all assembly of Fuse shall be kept in an enclosure such that the temperature outside the box shall be maintained at 50 ° C. 20% more current than transformer secondary capacity.

ROUTINE TESTS

1. Overall Dimensions Checking.
2. Insulation Resistance Tests.
3. High Voltage Test at 2500 V, 50 Hz AC for one minute.

On Kit-kat Fuse

1. Visual examination.
2. Dimensional check
3. Test for Mechanical endurance
4. Test for withdrawal force
5. Test for temp. rise
6. Insulation resistance test
7. High voltage test
8. Test for water absorption
9. Temp. Cycle test

8. TYPE TEST CERTIFICATES

The Bidder shall furnish the type test certificates of the LTDB for the tests as mentioned above as per the corresponding standards. All the tests shall be conducted at CPRI/ERDA as per the relevant standards. Type tests should have been conducted in certified Test laboratories during the period not exceeding timeline as per CEA guidelines from the date of opening the bid. In the event of any discrepancy in the test reports, i.e. any test report not acceptable, same shall be carried out without any cost implication to TPCODL/TPWODL/TPNODL/TPSODL

9. PRE DISPATCH INSPECTION

The Material shall be subject to inspection by a duly authorized representative of the TPCODL/TPWODL/TPNODL/TPSODL. Inspection may be made at any stage of manufacture at the discretion of the purchaser and the equipment, if found unsatisfactory as to workmanship or material, the same is liable to rejection. Bidder shall grant free access to the places of manufacture to TPCODL/TPWODL/TPNODL/TPSODL's representatives at all times when the work is in progress. Inspection by the TPCODL/TPWODL/TPNODL/TPSODL or its authorized representatives shall not relieve the bidder of his obligation of furnishing equipment in accordance with the specifications. Material shall be dispatched after specific MDCC (Material Dispatch Clearance Certificate) is issued by TPCODL/TPWODL/TPNODL/TPSODL.

Following documents shall be sent along with material

- a) Test reports
- b) MDCC issued by TPCODL/TPWODL/TPSODL/TPNODL

- c) Invoice in duplicate
- d) Packing list
- e) Drawings & catalogue
- f) Guarantee / Warrantee card
- g) Delivery Challan
- h) Other Documents (as applicable).

10. INSPECTION AFTER RECEIPT AT STORES

The material received at TPCODL/TPWODL/TPNODL/TPSODL store will be inspected for acceptance and shall be liable for rejection, if found different from the reports of the pre-dispatch inspection and one copy of the report shall be sent to Project Engineering department.

11. GUARANTEE

Bidder shall stand guarantee towards design, materials, workmanship & quality of process/ manufacturing of items under the contract for due and intended performance of the same, as an integrated product delivered under this contract. In the event any defect is found by the Purchaser up to a period of 54 months from the date of commissioning or 60 months from the date of last supplies made under the contract, whichever is earlier. Bidder shall be liable to undertake to replace/rectify such defects at his own costs. within mutually agreed timeframe, and to the entire satisfaction of the Purchaser, failing which the Purchaser will be at liberty to get it replaced/rectified at Bidder's risks and costs and recover all such expenses plus the Purchaser's own charges (@ 20% of expenses incurred), from the Bidder or from the "Security cum Performance Deposit" as the case may be. In case of any issue in LTDB and its components within the guarantee period the purchaser will immediately inform the Bidder who shall take back the LTDB components within 15 days from the date of intimation at his own cost and replace / repair the faulty component within forty-five days of date of intimation with a roll over replaced shall not be counted for arriving at the guarantee period.

12. PACKING

Supplier shall ensure that all the equipment covered under this specification shall be prepared for rail/road transport and be packed in such a manner so as to protect the equipment from damage in transit. The material used for packing shall be environmentally friendly.

13. TENDER SAMPLE

Not Applicable

14. QUALITY CONTROL

The bidder shall submit with the offer Quality Assurance Plan indicating the various stages of inspection, the tests and checks which will be carried out on the material of construction, components during manufacture and bought out items and fully assembled component and equipment after finishing. As part of the plan, a schedule for stage and final inspection within the parameters of the delivery schedule shall be furnished. The Purchaser's engineer or its nominated representative shall have free access to the manufacturer's/sub-supplier's works to carry out inspections. The bidder shall ensure that the material supplied is as per the Guaranteed Technical Particulars as specified in the specifications.

15. MINIMUM TESTING FACILITIES

Bidder shall have adequate in-house testing facilities for carrying out all routine tests & acceptance tests as per relevant International / Indian standards.

16. MANUFACTURING ACTIVITIES

The successful bidder will have to submit the bar chart for various manufacturing activities clearly elaborating each stage, with quantity. This bar chart should be in line with the Quality assurance plan submitted with the offer. This bar chart will have to be submitted within 15 days from the release of the order.

17. SPARES, ACCESSORIES AND TOOLS

Bidder shall provide a list of recommended spares with quantity and unit prices for 5 years of operation after commissioning. The Purchaser may order all or any of the spare parts listed at the time of contract award and the spare parts so ordered shall be supplied as part of the definite works. The Purchaser may order additional spares at any

time during the contract period at the rates stated in the Contract Document.

Bidder shall give an assurance that spare parts and consumable items will continue to be available through the life of the equipment which shall be 25 years minimum. However, the Purchaser shall be given a minimum of 12 months' notice in the event that the Bidder or any sub-vendor plans to discontinue manufacture of any component used in this equipment. Any spare apparatus, parts or tools shall be subject to the same specification, tests and conditions as similar material supplied under the Contract. They shall be strictly interchangeable and suitable for use in place of the corresponding parts supplied with the plant and must be suitably marked and numbered for identification.

18. DRAWINGS AND DOCUMENTS

Following documents shall be prepared based on TPCODL/TPWODL/TPNODL/TPSODL specifications and statutory requirements with complete BOM and shall be submitted with the bid:

- Completely filled in Technical Particulars.
- General description of the equipment and all components including brochures.
- Type test Certificates
- Experience List/Performance Certificates from end users.

After the approval of the contract, four (4) copies of the drawings, drawn to scale, describing the equipment in detail shall be forwarded for approval and shall subsequently provide four (4) complete sets of final drawings, one of which shall be auto positive suitable for reproduction, before the dispatch of the equipment. Soft copy of all the drawing, GTP, test certificates shall be submitted after the final approval of the same to the purchaser

Following Drawings/Documents shall be submitted after the award of the contract

S. No	Description	For Approval	For Review Information	Final Submission
1	Technical Parameters	√		√
2	Manual/Catalogues/Auto cad drawings for all components.		√	
3	Technical details and test certificates.		√	√
4	Installation Instructions		√	√
5	Transport/shipping dimension drawing		√	√
6	QA & QC Plan	√	√	√
7	Routine, Acceptance and Type test Certificates	√	√	√

All the Documents and Drawings shall be in English Language.

Instruction Manuals: Bidder shall furnish two (2) soft copies (CD) and four (4) hard copies of nicely bound manual (in English Language) covering erection and maintenance instructions and all relevant information pertaining to the main equipment as well as auxiliary devices.

19. GUARANTEED TECHNICAL PARTICULARS

GUARANTEED TECHNICAL PARTICULARS FOR SINGLE PHASE LTDB 16 KVA AND 25KVA DISTRIBUTION TRANSFORMER

Sr	PARTICULARS	Requirement As per TP Odisha DISCOM
1	Material of LTDB	
2	Color of Box	
3	Dimension of Box (Height X Width X Depth)	

4	THICKNESS OF BOX	
I	Load Bearing Size	
li	Non Load Bearing size	
5	Aluminum Busbar Size	
6	Degree of protection	
7	Hinge	
8	Rubber Gasket	
9	Incoming arrangement	
		d)
10	No of Outgoing feeder	
11	Earthing Provision	
12	Bus bar Mounting insulator	
13	Gland	
14	Protection	
15	Metering provision	
16	Gland plate thickness	
17	Knockout in gland plate	
18	Gland plate to busbar space	
19	Right side space	
20	Clearance between Busbar to Encloser	
21	Neutral protection	
22	Locking Arrangement	

23	Indication Lamp	
24	Packing	

20.

SCHEDULE OF DEVIATIONS
(TO BE ENCLOSED WITH TECHNICAL BID)

All deviations from this specification shall be set out by the Bidders, clause by Clause in this schedule. Unless specifically mentioned in this Schedule, the tender shall be deemed to confirm the purchaser's specifications:

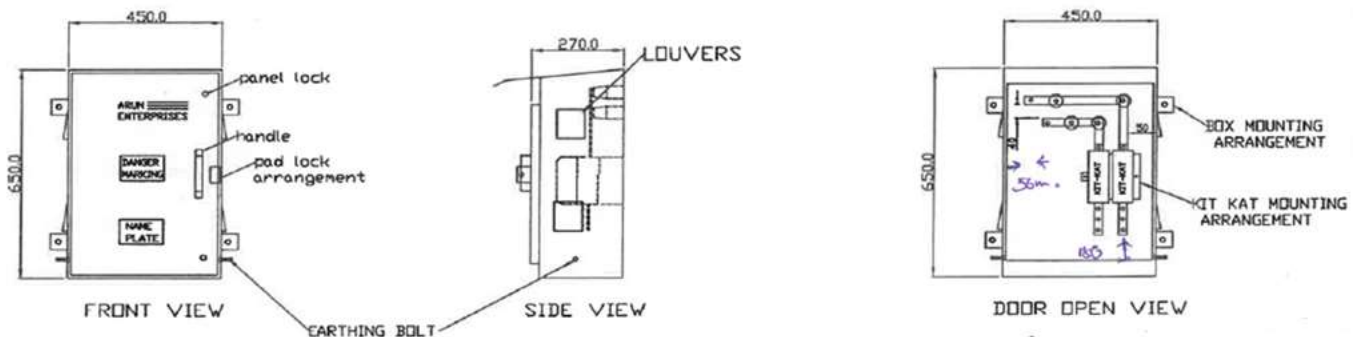
S. No	Clause No.	Details of deviation with justifications

We confirm that there are no deviations apart from those detailed above.

Seal of the Company:

Signature

Designation



22. INDICATIVE DRAWING (Subject to change as per manufacturers design while maintaining required clearances and relevant Specification) Only for Dimensions.