

# **SUPPLY CHAIN MANAGEMENT**

## **THIRUVANANTHAPURAM**

### **SPECIFICATION**

#### **SMC DTR Boxes**

<b>APPLICABLE TO KSEBL</b>	<b>Rev#0</b>	DOC. NO.: <b>SCM-SPEC/XD/DTR Box</b>
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#### **Technical Committee**

1. Chief Engineer- SCM
2. Deputy Chief Engineer -SCM
3. Executive Engineer TMR Thirumala
4. Executive Engineer TMR Pallom
5. Executive Engineer TMR Angamaly
6. Executive Engineer TMR Shoranur
7. Executive Engineer TMR Kannur
8. Executive Engineer(D)-O/o CE-SCM
9. Executive Engineer RITU Kochi



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Rev.#: 0

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#### (i) Document Approval & Control Status`

	Compiled by	Verified by	Approved by
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Position	Asst. Executive Engineer (O/o Chief Engineer, Supply Chain Management)	Executive Engineer(D) (O/o Chief Engineer, Supply Chain Management)	Chief Engineer (Supply Chain Management)
Date	10.12.2021	14.12.2021	16.12.2021
Signature	Sd/-	Sd/-	Sd/-

#### (ii) Amendments and History

<i>Sec. #</i>	<i>Rev. #</i>	<i>Date</i>	<i>History of Change</i>



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## 1. Purpose

Purpose of this document is to document updates & history, upkeep and publish the specifications related to **SMC DTR Box** in a professional manner.

## 2. Scope

The Scope of this document is to inform and alert all relevant stakeholders including KSEBL, Public, KSERC etc regarding the current specifications and historical changes adopted in specifications of **SMC DTR Box** used in field by KSEBL.

## 3. Responsibility

**Executive Engineer (D), Office of Chief Engineer, Supply Chain Management** shall compile and take necessary steps to publish the specification in KSEBL website and shall inform relevant stakeholders regarding updates and revisions.

## 4. Procedure For Revision

Modifications if any, in the technical Specification will be incorporated as **Revisions** . Any changes in values, minor corrections in pages, incorporation of small details etc. will be considered as Minor Modification. **The Revisions due to minor modifications will be assigned as Rev No. 0.1, 0.2 etc .**

A complete updation of the technical specification will be considered as Major modification. **The Revisions due to major modifications will be assigned as Rev No. 1.0, 2.0 etc .**

All the details regarding the revisions (both minor and major ) will be incorporated in “**(ii)-Amendments and history** “ above.

The concerned officers, in consultation with the Technical Committee will review and suggest changes required and the revision suggestion will be approved by **Chief Engineer- SCM**. Those who notice any discrepancy or have any suggestion regarding revision , may bring the matter to the attention of Chief Engineer -SCM in writing or through e-mail id: [cescm@kseb.in](mailto:cescm@kseb.in)



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### TECHNICAL SPECIFICATION OF SMC DTR METER BOX

- SCOPE:-** The scope of this specification is design manufacture, testing and supply of anticorrosive, dust proof, rust proof, shock proof, vermin and water proof, U.V stabilized and pilfer resistant outdoor SMC type DTR meter box including control fuses, internal wiring and fixing clamps. These boxes are to be suitably mounted on PSC poles at the Distribution transformers station.
- APPLICABLE STANDARDS:-** Enclosure- Material shall be thermosetting plastic ie. Glass reinforced polyester sheet moulding compound as per IS 13410/1992.
- COMPONENTS:-** The scope of supply comprises of the following:-

DTR meter Box made up of Glass reinforced Polyester Sheet Moulding Compound confirming to IS 13410 /1992, having **2.5mm thickness** with mounting arrangements for Meter, Modem, CTs and and with fuses for the potential terminals inside the box. Scope also includes supply of HRC control fuse units with 6 A HRC fuse (3 nos) and neutral link for meter and all internal wiring from CT to meter, potential wiring from fuse to meter and Modem properly routed through box using cable clamps/trays. **Modem and CTs are not under the scope of the supplier** but the supplier shall provide provision for fixing the same in the box. Suitable full round copper lugs are to provided for CT Terminals.

- MOUNTING:-** Mounting arrangement for meter, Modem, antenna, CT's and Fuses for potential circuit are to be provided. Modem fixing plate shall be to the right side of the DTR Box. Size of the modem fixing plate shall be 18 cm X 12 cm. Modem fixing Plate base (C Clamp) height shall be 2.5 cm.

Pole mounting arrangement for Box, Danger Boards as per standards, provision for glanding of cables including glands etc. shall be provided. Placing of glands shall be towards the door.

The size of the Distribution box (minimum size **900x450x250** – all dimensions in mm) shall be suitably designed to house all the above components, maintaining required safety clearance. An additional hole of 1cm diameter shall be provided in the bottom side for antenna fixing. Handles for doors shall be provided.

- General Technical Particulars:-** The box shall be weather proof made out of Glass reinforced Polyester Sheet Moulded Compound as per IS 13410 /1992 with flame retardant properties. It shall be capable of withstanding temperatures of boiling water for 5 minutes continuously without distortion or softening. **The thickness of the box shall not be less than 2.5mm on all sides. The thickness of door shall not be less than 2.5mm and 3mm on the load bearing side.** The box shall have its roof tapering down to both sides for easy flow of water. The box should not melt if heated soldering iron is touched on box. The boxes shall generally comply with the provisions of IS:5133 and IEC 695.

The box shall have two separate compartments - the upper chamber is to house the DTR meter & modem with suitable mounting arrangements and the lower compartment to house the 3 Nos. ring type resin cast LT CTs and the 3 + 1 Nos. HRC fuse units of bakelite material with a neutral link. Door with hinges shall be provided both in the upper compartment and the lower compartment. The lower chamber shall be provided with enough numbers of holes of suitable dia, depending on the capacity of transformer, with cable glands (10,190 Nos. of boxes should have 38 mm dia cable glands and balance 1798 Nos. should have 65 mm dia cable glands) and with PVC check nuts of suitable sizes on either side for the incoming and outgoing cables of standard size. Also a hole of suitable diameter with cable gland and PVC check nuts of suitable sizes for providing potential supply to fuse units.

The base supports of the metering CTs and meter shall be raised by about 10mm in the box for ease of wiring. The dimensions of the box shall be such that there is a minimum clearance of 75 mm on all



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sides, 25 mm clearance on the front and 10 mm on the back of the meter when the meter is fixed in the box. The clearances in the CT chamber shall be as per IS standards. **SMC Sheet of 4mm thickness shall be provided for CT mounting.**

The box shall be of good workmanship.

Soft rubber gaskets shall be provided all around wherever required for protection against entry of dust and water. The box shall comply with **IP-33**.

**Colour:** Meter box shall be off white.

The contents of the box are as follows.

- i. **Viewing window:** Viewing window made of a scratch and break resistant transparent clear polycarbonate material which shall not be discoloured with sunlight, shall be provided on the door for reading the meter without inconvenience. The minimum thickness of viewing window shall be 2mm. The window shall be properly fixed with meter box from inside. There should not be any ingress of moisture through this window into the box.
- ii. **Internal hinges:** A minimum of 2 numbers internal stainless steel hinges made of of each compartment, well protected against corrosion shall be provided. The hinges of the door should be concealed and they shall be fixed to the flanges provided to the base and cover of the box in such a manner that the door opens by a minimum of 120 degrees.
- iii. **Handle:** Suitable handle or knob shall be provided for opening of the box door.
- iv. **Earthing Bolt:** 8 mm dia GI bolt with 2 Nos. washers for earthing all metal parts used for fixing the meter shall be provided.
- v. **Fixing arrangement:** The meter base supports inside the box are raised by about 10 mm in the box for ease of wiring. While fixing, the meter screws should not protrude outside. The meter and CTs are to be installed in the box and the box in the assembled condition shall have provision to fix it to a PSC pole. **For fixing the box to PSC poles, GI plates on top and bottom of the box with suitable holes with bolt and nut to be provided.**
- vi. **Latch:** The door shall be provided with a GI latch or a 'U' clamp to secure it with the base of the box. The latch shall be of good quality to protect it from rusting and loosening with continued use.
- vii. **Printing:** Metallic label containing the letters "**KSEB LIMITED – UDAY Scheme**", **P.O. No. with date and Serial Number, Guarantee – 5 Years** shall be screen printed on the top cover of the box. The name of the manufacture shall be engraved on the bottom half of the box. A blank sticker shall also be fixed on the meter box for use of field staff to indicate service No. etc.
- viii. **Fixing arrangements:** The fixing arrangements shall not be complex and it shall be easily approachable for connections when the door is open.
- ix. **Wiring:** The CT secondary terminals, the potential terminals and power supply to modem with colour codes/ferrules shall be lugged with 4 sq. mm lug, CT secondary terminals shall be lugged with 4 sq. mm ring lug and the terminals are to be neatly tagged with suitable supports and brought to the upper chamber for connecting the same to the DTR meter. The control wires shall be dressed and routed properly using cable trays/ clamps to have an aesthetic look and also to maintain proper clearance. The power cable should be tied with clamp support to minimize the cable load on the meter box. 1100 V, 4 sq. mm multi-strand PVC insulated flexible copper wire shall be used for internal wiring.
- x. The size of holes for cable entry including potential terminals should be suitably decided and positioned in line with the CT internal area.



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6. **ADDITIONAL REQUIREMENTS:** The box should be Waterproof, suitable for outdoor use.
7. **INSPECTION:** The inspection may be carried out by the purchaser at any stage of manufacture. The manufacturer shall grant free access to the purchaser's representative at a reasonable time when the work is in progress. Inspection and acceptance of any equipment under this specification by the purchaser shall not relieve the supplier of his obligation of furnishing the equipment in accordance with the specification and shall not prevent subsequent rejection if the equipment is found to be defective.

The supplier shall keep the purchaser informed in advance, about the manufacturing programme so that arrangement can be made for inspection. The purchaser reserves the right to insist for witnessing the acceptance/routine testing of the bought out items. The supplier shall give 20 days advance intimation to enable the purchaser to depute his representative for witnessing the acceptance and routine tests.

**Sd/-**  
**Chief Engineer (SCM)**

**8. Technical Parameters for Distribution Transformer Meter Box**

1	Material used for the box	Thermosetting (Glass reinforced Polyester sheet moulding compound)
2	Grade of material	SMC -IS 13410-1992
3	Thickness of box & door	>= 2.5mm, >= 3 mm on load bearing sides.
4. Properties of material		
a	Heat deflection temperature	>180° C (Ref Std IS 13411)
b	Exposure to flame	Self extinguishing( Ref. Std IS 4249)
c	Melting point	Does not melt (Ref Std IS 13360)
5	Viewing window on front door	For meter only
a	Size of opening/viewing window	170x85x2 mm
6	Hinges	Stainless steel
7	Handle/Knob	For all compartments to be provided
8	Earthing arrangement	As per IS
9	Facility for padlock	To be provided
10	Sealing arrangement	To be provided
11	Inlet and outlet gasket	To be provided
12	Materials of gasket	Soft rubber
13	Meter mounting arrangement	Suitable for any make of meter
14	Colour of meter box	Off white
15	Cable entry	To be provided with glands
16	Construction	Suitable for outdoor use
17	Label	To be provided with Danger Board
18	Type	SMC DTR Box
19	Manufacturers type designation	Glass reinforced Plastic, Sheet moulding Compound as per IS 13410/1992





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20	Rated voltage	415 V
21	Dimension	Minimum size 900x450x250 mm
22	Guarantee	60 months from the date of acceptance by the consignee.

Sd/-  
**CHIEF ENGINEER (SCM)**