

Technical Specifications for Meter Box

1.1 SCOPE

This specification covers the technical requirements of design, manufacture, testing at manufacturer's works, packing, forwarding, supply and unloading at store/site and performance of single phase meter box intended to contain one number single phase whole current energy meter complete with all accessories for trouble free and efficient operation.

The Meter box shall be pole-mounted.

1.2. APPLICABLE STANDARDS

The equipment covered by this specification shall unless otherwise stated, be designed, manufactured and tested in accordance with the latest edition of the following Indian/international standards and shall conform to the regulations of the local statutory authorities.

S. No.	Standard Name	Title
i.	IS:14772-2000	General requirements for Meter boxes for accessories for household and similar fixed electrical installations- specifications.
ii.	IS:11731(Part-II)-1992	Methods of test for determination of Flammability of solid electrical insulating material when exposed to an igniting source.
iii.	IS:4249-1967	Specification for classification and method of test for non- ignitable and self-extinguishing properties of solid electrical insulating materials.
iv.	IS:5133(Part-II)-1969	Specification for boxes far the Meter box of electrical accessories.
v.	IS:2500(Part-I)-2000	Sampling procedure for inspection by attributes part-I sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection.
vi.	UL 746-C	Polymeric Materials in Electrical equipment.

1.3. GENERAL TECHNICAL REQUIREMENTS

PROPERTIES OF PLASTIC MATERIAL

The plastic material, which is to be used by the bidder for these moulded Meter Box, must have the following properties:

S. No	Property	Units	Value
1.	Physical Water Absorption	%	Max. 0.35
2.	Thermal HDT	Deg. C	Min. 125.
3.	Flammability a) Rating b) Glow wire test @ 650 Deg. C		FV2 Passes
4.	Mechanical a) Tensile Strength b) Flexural strength c) Modulus of Elasticity d) Izod impact strength notched 23°C.	MPa Mpa Mpa KJ/Sq.m.	Min. 50 Min. 90 Min. 2000 Min 8

Technical Requirements

S. No.	Description	Requirement
i.	Application	Outdoor
ii.	Degree of protection	IP 55
iii.	Flammability requirement	FV2

iv.	Grade of material	Polycarbonate with fire retardant, Self- Extinguishing, UV stabilized and anti-oxidation properties having good dielectric and mechanical strength.
v.	Material	Meter box (base and Cover) shall be made of polycarbonate material which complies following properties; <ul style="list-style-type: none"> • Meter box shall be weather proof • Capable to withstanding temperatures of boiling water for 5 minutes continuously without distortion or softening. • It shall withstanding Glow-wire test at 650DC as per IS:14772.
	a) Base:	Polycarbonate with fire retardant, Self- Extinguishing, UV stabilized and anti-oxidation properties having good dielectric and mechanical strength. Opaque.
	b) Cover:	Polycarbonate with fire retardant, Self- Extinguishing, UV stabilized and anti-oxidation properties having good dielectric and mechanical strength. Transparent.
vi.	Material of the gasket	Rubber gasket
vii.	Material withstand	125°C ± 2 °C

1.4. GENERAL CONSTRUCTIONS:

- i. The meter box shall be weather proof, tamper proof and shall be made of Injection moulded polycarbonate material with self-extinguishing, UV stabilized, recyclable and Anti oxidation properties having good dielectric and mechanical strength. The box shall be of adequate strength, unbreakable and shall be made in two pieces (base and cover).The base shall be opaque whereas the cover shall be completely transparent.
- ii. The meter Box shall have roof tapering down to both the sides for easy flow of rainwater and shall have IP 55 degree of protection for affording protection against dust and water.
- iii. The thickness of the box shall not be less than 3.0 mm on the load bearing side and other sides, door and roof shall not be less than 2.5 mm.
- iv. The box shall be designed in such a way that there should be the following clearances between the meter and the Meter box:

S. No.	Parameter	Minimum Clearance
i.	Between Sides of the meter body and meter box (Excluding the flanges on the meter body for sealing screws.)	30 mm
ii.	Between the lower edge of the terminal block and the box	70 mm
iii.	Between the back of the meter and the meter box base	10 mm
iv.	Between the front of the meter and the meter box front	10 mm
v.	Between the top of the meter and the meter box cover	20 mm

- v. The meter base supports inside the box should have adequate strong enough moulded supports within the block to avoid damage during tightening of screws and raised by about 10 mm in the box for ease of wiring. While fixing, the meter screws should not protrude outside.
- vi. The design of the meter box shall be such that it may facilitate easy wiring and access to the meter terminals. Suitable circular holes shall be provided at the bottom of the cupboard for inlet & outlet cables with glands of size 15/16mm suitable for 2 core armored aluminum cable(s) up to 6 Sq.mm made of engineering plastic for the cable securely fixed to the bottom of the meter box on both sides by chuck-nuts. A suitable arrangement like clamping nut may be provided with the gland so that opening diameter can be reduced to the size of cable.

- vii. The box cover shall be fixed to the base through two number hinges (approx. length 30 - 60 mm). The arrangement for hinges shall be provided on the side of the base and shall be such that it may avoid unauthorized access to inside of the box. Hinges should be outside and enclosed by polycarbonate material and once the box is closed and sealed, hinges should not be approachable. Box cover shall be openable by more than 90 degrees.
- viii. For holding and sealing the box, two U-shaped latches shall be provided. The latch shall be GI sheet with minimum thickness 2 mm, to secure it with the base of the box. The latch shall be provided along with suitable clamp assembly in base as well as cover, such that these are fully covered by the latch after closing. The clamp along with the latch shall have a sealing hole such as to provide a through sealing arrangement in the assembly.
- ix. For fixing the box to flat wall or wooden board 4Nos. holes (2Nos. key holes at top) of minimum 6 mm dia. shall be provided at the four corners of the meter box. For fixing of Box on flat wall, 4 Nos. 5mm diameter 40mm long, pan head self- tapping screws and washers shall be provided by the supplier with every Box. 4 Nos. plastic fixing plugs of 50mm length suitable for self-tapping screws shall also be provided.
- x. The meter is to be installed in the Meter Box and the Meter Box in assembled condition shall have provision to fix it to a pole or on wall.
- xi. A provision in form of depression should be provided on the meter box cover to download the meter data from the meter using the CMRI probe without opening the meter box cover. This shall be provided in such a way that the optical probe of the CMRI cable can be placed on top of the meter box cover in a suitable depression in the meter box cover, which is aligned suitably with the meter optical port. The meter box cover shall have provision of sealing this depression. The depression so provided should be covered so that there is no physical access to the meter optical port while using this depression.
- xii. Suitable rubber gasket of round shape all around the cover along its periphery shall be provided for protection.
- xiii. After closing and sealing the meter box, it should not be possible to allow entry of any sharp object even forcefully inside the box without breaking base/cover.
- xiv. Suitable overlapping (approx. 10 mm) shall be provided between base and cover to avoid access to the meter or its accessories inside the meter box by any means after sealing the box.
- xv. The tolerance permissible in overall dimension of Meter Box shall be $\pm 2\%$.

Meter Body Material :

Base body and top cover shall be made of UV stabilized, unbreakable high grade flame retardant insulating material of good dielectric and mechanical strength with FV2/V2 in-flammability level.

Terminal Block:

- a) The terminal block shall be moulded type made of non-hygroscopic, flame-retardant material having good dielectric and mechanical strength.
- b) The moulded terminal block shall be made from best quality phenol formaldehyde/Poly carbonate conforming to IS:13779-1999 (latest amended) having adequate insulating properties and mechanical strength with brass inserts for connecting terminals.
- c) The terminal block should satisfy all the conditions specified in IS:13779 and IEC 62052 - 11. The material of the terminal block should fulfil the requirement of following tests:
 - The flame retardant rating of V0 as per UL 94 testing.
 - The glow wire test for temperature of 960OC. as per IS:11000 (Part 2/Sec.1) or IEC 60695-2-1.
 - Heat deflection temperature (HDT) test of 135OC. as per ISO 75 or ASTM D-648
 - Ball pressure test at 125OC. as per IEC 60335-1.

Other details remains the same as mentioned in the original tender.