

SECTION-III**TECHNICAL SPECIFICATION OF POLYCARBONATE METER BOX FOR SINGLE PHASE METER (PUSH FIT TYPE) UNDER TN-2641.****1. Scope:**

The meter box shall be intended to house one number single phase electronics energy meter. The meter box complies with IS: 14772:2000 with latest amendment.

2. Requirement :

The requirement of Polycarbonate Meter Box For Single Phase Meter (Push Fit Type) is 2,50,000 Nos. This quantity is tentative which may be increased or decreased at the time of placement of order

3. Material:

The meter box shall be made of polycarbonate material (Cover & Base– Transparent)

Which compiles following properties:

Meter box shall be weather proof, capable to withstanding temperatures of boiling water for 5 minutes continuously without distortion or softening. It shall withstand Glow wire test at 650 ° C as per IS : 11000. HDT of Polycarbonate material shall be minimum 120 ° C (at 1.8 M Pa ° C),

4. Construction:

- The meter box shall have roof tapering down for easy flow of rainwater.
- The thickness of the box shall be minimum 2.0 mm on all sides.
- The overall dimensions of the box shall be such that a minimum 20 mm clearance from left, right side and top, 10 mm from front and back side & 40 mm from meter terminals and bottom side shall be maintain in between meter and box surface.
- The box cover should be push to fit type, 4 Nos. push to fit snap should be provided.
- Soft rubber gasket shall be provided all around the periphery of box for protection against ingress of dust and water inside the box.
- Meter Box should comply with IP - 54. Type test report should be enclosed along with offer.
- All metallic parts would be well protected against corrosion.
- Two nos. latches should provide to hold the base with cover along with provision of sealing arrangement.

5.0 Colour:

The front cover and base of meter box should be made of transparent Polycarbonate material.

6.0 Box Mounting:

Box shall have minimum 3 nos. holes of 6 mm diameter for fixing the meter box on wall / wooden board.

7.0 Cable Entry:

Suitable circular holes shall be provided at the box, each on both side (right and left) at the lower side of the box for inlet and outlet cables with glands suitable for accommodating cable of 18- 22 mm diameter, two nos. engineering plastic cable gland shall be provide for cable incoming & outgoing.

8.0 Name plate:

Printed name plate shall have details of Purchase order No. & Date. Bidder may provide required details on front cover of the box.
Name of Manufacturer & danger sign shall be engraved/ embossed.

9.0 a) Dimensions

The meter box shall be suitable to house meters with maximum outer dimensions of Three Phase moulded meters are as under :-

S.No.	Overall height	Breadth	Depth
1.	max. 210 mm	max. 140 mm	max. 90 mm

The size of meter cup-board (length, breadth and height) shall be such that there should be a minimum of 20 mm clearance on all sides from the meter sides except the bottom side (which should be minimum 40 mm from the lower edge of terminal block) and 10 mm clearance on front and 10mm clearance from back of the meter. These meter boxes should be capable of housing meters of various makes like M/s Avon, M/s. Himachal, M/s. HPL Electric & Power Ltd, M/s. Genus Infrastructure Ltd, M/s. Genus Innovation Ltd, M/s. Linkwell Telesystems Pvt Ltd. M/s. Larsen & Toubro, M/s. Landis & Gyr Ltd, M/s. Secure Meters, etc.

b) Tolerance

The tolerance of meter box(es) shall be to a maximum of +/- 2 % on the overall dimensions.

10.0 Sample

The successful bidder shall furnish one Pre-Commencement sample of meter box (cup board) to the Superintending Engineer (MM-II), Jaipur Discom, Jaipur for our approval after placement of Purchase Order. The manufacturer shall start production only after obtaining approval of Pre-Commencement sample from SE(MM-II). The sample approval shall be only for physical, dimensional and operational purpose only. The meter box shall be suitable to comply with the requirement of all tests.

11.0 GUARANTEED TECHNICAL AND OTHER PARTICULARS:

The guaranteed technical and other particulars shall be given in the Performa as per Annexure-A. Any deviation from the specifications referred to above shall be supported by adequate justifications.

12.0 TYPE TESTS FOR BOXES:

The following tests are to be conducted on the box at any independent recognized testing laboratory / house whose calibration of testing instruments should have traceability to NABL/NPL/ or equivalent. The type tests should not be older than Three years from the date of opening of bid and test reports shall be carried out as per IS : 14772: 2000 with latest amendment

- i) Test of HDT minimum 120° C (at 1.8 MPa ° C),
- ii) Test for mechanical strength
- iii) Test for water absorption
- iv) Glow wire test at 650°C as per IS: 11000
- v) Material Identification test

13.0 ACCEPTANCE TEST

- i. Physical verification of dimensions of the box.
- ii. Compatibility of the box for housing the single phase meter, and ensuring ease of connecting and reading the meter.

14.0 ROUTINE TEST

The routine test certificates for the following shall be furnished for approval of the purchaser.

- i. Physical verification of dimensions of the box.
- ii. Compatibility of the box for housing the meter, and ensuring ease of connecting and reading the meter.

15. INSPECTION & TESTING :

The inspection and testing shall be carried out by the purchaser's representative as per provisions of relevant ISS, specification & GTP and shall be governed by clause No.1.27 entitled "inspection and Testing" of Schedule-2" General conditions of Contract" except mentioned hereunder.

- a) The supplier shall arrange fifteen days advance notice to enable the purchaser to depute the inspecting officer for conducting necessary testing at supplier's works. Any delay beyond fifteen days in arranging the inspection shall be to the purchaser's account.
- b) In case the manufacturer does not have adequate facilities for getting all the required tests conducted in his laboratory, the purchaser at his option may get these tests conducted in any reputed testing laboratory. All the expenses for such tests to be conducted outside shall be borne by the supplier.
- c) In case material/equipment is not found ready by the representative of the purchaser deputed for inspection to the extent of the quantity indicated in the inspection call with tolerance of (-) 10% or if the inspection is not got carried out by any reasons on account of the supplier the re-inspection charges shall be 7,500.00 for the supplier works located in Rajasthan and ` 15,000.00 for the supplier works located outside Rajasthan will become payable by the supplier on this account to the Accounts Officer (MM) JVVNL, Jaipur.

- d) The Routine/Acceptance tests shall be carried out as per relevant ISS and IEC (Latest Amended), P.O. and GTPs on each equipment at your works.
- e) The inspection may be carried out by the purchaser's representative at any stage of manufacture/before dispatch as per relevant standard. Inspection and acceptance of any material under the specification by the purchaser shall not relieve the bidder of his obligation of furnishing material in accordance with the specification & shall not prevent subsequent rejection if the material is found to be defective. The bidder shall keep the purchaser informed in advance, about manufacturing program so that arrangements can be made for inspection.
- f) Inspecting officer shall also verify the Guaranteed Technical particulars attached with the purchase order.

16. QUALITY ASSURANCE PLAN:

- 16.1 The Bidder hereunder shall invariably furnish following information along with his offer, failing which the offer shall be liable for rejection. Information shall be separately given for individual type of material offered.
 - i) Statement giving list of important raw materials, names of sub-suppliers for the raw material, list of standards according to which the raw materials are tested, list of tests normally carried out on raw materials in the presence of Bidder's representative, and copies of test certificates.
 - ii) Information and copies of test certificates as in (i) above in respect of bought out items.
 - iii) List of manufacturing facilities available.
 - iv) Level of automation achieved and list of areas where manual processing exists.
 - v) List of areas in manufacturing process, where stage inspections are normally carried out in quality control and details of such tests and inspections.
 - vi) Special features provided in the equipments to make it maintenance free.
 - vii) List of testing equipment available with the Bidder for final testing of equipment specified and test plant limitation, if any, vis-a-vis the type, special, acceptance and routine tests specified in the relevant standards. These limitations shall be very clearly brought out in schedule of deviations from specified test requirements.
- 16.2 The Supplier shall within 30 days of placement of order submit the following information to the Purchaser:-
 - i) List of raw material as well as bought out accessories and the names of sub-suppliers selected from those furnished along with the offer.
 - ii) Type test certificates of the raw material and bought out accessories.
 - iii) Quality Assurance Plan (QAP) with hold points for Purchaser's inspection. The QAP and Purchaser's hold points shall be discussed between the Purchaser and the Supplier before the QAP is finalized.

- 16.3 The Supplier shall submit the routine test certificates of bought out items and raw material at the time of routine testing of the equipments.

17. PACKING & FORWARDING :

The Polycarbonate meter boxes shall be suitably packed in order to avoid damage during transit and handling.

18. PRICES:

The prices/ rates quoted shall be FIRM & strictly as per BOQ (Price Schedule-IV) enclosed with the tender documents clearly indicating Ex-works, Freight & Insurance and GST.

19. DELIVERY SCHEDULE

The delivery schedule of the material shall be quoted on Monthly basis to be indicated in Schedule-VIII, enclosed with the tender documents. The commencement period for supply shall be 30 days from the date of issue of purchase order. The supply shall be completed within 8 months from the date of issue of purchase order (including commencement period)

20. ADDITIONAL ORDER

Repeat orders for additional quantities, up to 50% of original ordered quantities, may be placed by the Nigam, on the same rates, terms and conditions given in the contract.

ANNEXURE-A**GUARANTEED TECHNICAL PARTICULARS FOR POLYCARBONATE
METER BOX FOR SINGLE PHASE METER (PUSH FIT TYPE) UNDER TN-2641**

Sr. No.	Characteristics	Bidders Particulars
1	Manufacturer's Name& address	
2	Type of Meter Box	Push fit type
3	Material used for Cover	Polycarbonate transparent
4	Material used for Base	Polycarbonate transparent
5	Dimensions of Box (LxWxH) for HPL/Genus/L&T/Secure/Landis+Gyr Make Meters	
6	Clearance from Meter Surface: a) Left, Right Side: 20 mm b) Bottom : 40 mm c) Front & Back : 10 mm d) Top : 20 mm	
7	Thickness of Meter Box	2 mm ± 0.2mm
8	Self locking male & female	4 Nos.
9	Material withstanding temperature -Glow wire test at 650 deg. C	
10	Sealing arrangement 2 Nos.	
11	Inlet & Outlets 2 Nos with cable gland	
12	Suitable for outdoor installation	IP 54

SCHEDULE-III-B**TECHNICAL SPECIFICATION FOR TAMPER EVIDENT TRANSPARENT POLY-CARBONATE SECURITY SEALS TO BE SUPPLIED ALONG WITH SINGLE PHASE METER BOXES AGAINST TN-2641**

The specification covers the supply of tamper evident poly-carbonate security seals (heat resistant) for sealing of Meter Box. These seals shall be used on meter boxes as per the specification.

The intent of the specification is the general guidelines to provide sealing arrangement, which can be easily justified in the court of law if violated without authority by the consumer.

The poly-carbonate seals shall conform to the Nigam's specification as under:

1. Material of Poly-carbonate Seals :

The raw material used for poly-carbonate seals shall be of M/s. Dow Caliber Ltd., Switzerland (Gade-201- 15), M/s. GE Plastic, Singapore (Grade 143-R), M/s. Dupont, Japan (Grade IV-20) or any other manufacturer having better properties as under :-

Sr. No.	Properties	Poly-carbonate
1.	Melting temperature	>140 ° C
2.	USE	Engineering
3.	Softness	Hard
4.	Durability	Weather effect resistance
5.	Transparency	Fully transparent (long time transparency) for female and transparent/ opaque for male portion.

2. Colour of Seal :

The female portion of the Poly-carbonate Seal(s) shall be available in Clear / Red/ Blue / Yellow/ Green colour and should be transparent (see through) type, which shall give complete visualization of its fixing mechanism and shall show clear indication if tampered. Male body to be transparent/ opaque in colours of Clear / Red / Blue / Yellow/ Green colour i.e. variety of colours are available for colour coding.

3. Design and Construction of Seal :

- a) **Design** : The seal shall be anchor (Push Fit) type tamper evident with double locking or rotating type system. There shall not be any change in size, shape or design of the seal than the approved samples. If the seal is found different than the approved design / shape / size, the same shall be out rightly rejected.
- b) **Thickness** : The wall thickness of seal should be minimum 0.8 mm.
- c) **Serial No. of the Seal** : The serial number of the seals shall be same as the serial no. of the meter box with which it is supplied. The serial numbers shall be laser etched or embossed during moulding (it shall not be screen printed unless the printing is protected with additional tamper proof cover) in contrast colour on front side of capsule body. The Sr. No. shall also be laser etched / embossed on top of the male part / insert.
- d) **Monogram** : The seal shall have laser etched printing/embossed of monogram of JVVNL on front side and month and year of manufacturing in figure on the back side. The laser etched printing should be through complete thickness of polycarbonate.

4. General Construction :

The seal shall be capable to withstand temperature upto 140° C without any damage / deformation.

The seal shall be designed for a single use only and if tampered with the help of pliers, knife or any other sharp instruments, the seal shall be damaged and due to its transparent property, the sign of tampering shall be easily detected. Also once opened, it can not be re-used. The seal shall be made in such a way that, it can be easily locked with the help of finger and thumb pressing or rotating and no tools shall be required to close the seal in the laboratory or at site. Both the parts shall be designed in such a way that they can not be separated and the attachment shall be flexible and shall not break. After inserting the seal through female part, the cap of the male part shall be fitted in the female part in such a way that it should not leave any space to avoid insertion of any sharp tools for opening of seal body of the female part in hot or cold condition.

The seal shall have also the following features :-

- a) Tamper resistance and reliable.
- b) Environmentally safe as it does not contain any lead.
- c) Withstand long-term exposure to direct sunlight.
- d) Required no tools for installation.
- e) Transparent for easily viewing the seal No. & locking arrangement.
- f) Heat resistance.

5. Testing :

The seals shall be inspected / tested at the manufacture's works before dispatch in presence of authorized representative of purchaser for the following tests:

- i) **Physical Check-up :** The seals shall be subjected to visual check-up for verification of workmanship and other features as mentioned above including shape / design / dimensions as per approved drawing / samples.
- ii) **Boiling Water Test:** The seal when emerged in the boiling water for more than one hour there shall not be any affect on the seal and it shall remain intact condition i.e. the seal should not become soft, but instead should turn out to trail and easily break thus showing easily the tampering signs if it eventually happens. Even, with the help of any sharp instrument, pulling with plier i.e. by applying mechanical force, the male portion shall not come out from the female part (body seal). In case, it comes out, the same shall damage the seal, so that it can not be re-used.
- iii) **Pull Out Test:** After locking the seal, if the male part / insert is pulled with mechanical force with the help of plier or any other instrument, sharp instrument etc. at normal condition, the seal should not get unlocked without any damage and when such condition occurs, it should leave traces of tampering.
- iv) **Serial No. Verification test:** It shall be verified in random inspection that the Sr. No. of the meter and meter box seals are matching with the Sr. No. of the meters with which they are packed.

In short, if the seal is tested for any of the above tests, in no condition the male and female part shall be separated out without affecting / damaging the seal. In case, if they are separated, the seal shall have sufficient tamper evident.

6. **Sampling Criteria :**

For carrying out above acceptance tests at manufacturer's works minimum 5 samples shall be selected at random from the each offered lot.

The seals used in testing shall be destroyed in the presence of Nigam's Inspecting Officer.

7. **Guarantee :**

The seals shall be guaranteed for a minimum period of five years. In case, if any defect in design and manufacturing is noticed within the guarantee period, the seals of same serial number shall be replaced free of cost within one month. The defective seal found in the field viz. STORES/FIELD OFFICERS shall be collected by the supplier at their risk and cost and shall be destroyed at their works.

8. **Patent :**

The seals shall be **preferably** patented. Copy of patent should be submitted along with the offer. However, the successful bidder(s) may submit copy of patent within 30 days from the award of letter of intent but in any case before commencement of supply.

In case the seals are not patented, the seal design should be substantially original and useful only with the design of the meter box supplied. The purpose is that it should not be possible to mix and match seals (with same numbers) from various suppliers without visible evidence.

9. SANCTITY AND LIABILITY OF SUPPLIER:

It is utmost important that the supplier shall ensure, in case the seal manufacturer is different from meter box manufacturer, that it is not possible for the seal supplier to supply to consumers seals of same serial numbers and design with or without his knowledge. Any information leading to any such misappropriation by the supplier or by the seal manufacturer, the successful bidder shall be made liable to this and shall result in immediate debar of the supplies with all three Discoms of Rajasthan, all pending dues will be withheld and all bank guarantees shall be encashed, with immediate effect. Further, the Discoms may decide to pursue a criminal case against the supplier.

10. Packing and Forwarding :

The bidder shall be responsible for suitable packing of seals and seals for the meter box shall be packed in each meter box.

11. SAMPLES :

The samples of seal shall be submitted along with the meter box samples before commencement of supplies as per specification, for purchaser's approval. No supply should be made unless the sample is approved by the purchaser.

12. Quality of Supplies:

All materials supplied shall generally as per specification laid down and in strict accordance with and as per the approved standard samples.

13. GUARANTEED TECHNICAL PARTICULARS

The tenderer shall furnish all the necessary information as desired in the schedule of GTP appended at Annexure-III-B. If the tenderer desire to furnish any other information in addition to the details as asked for the same may be furnished against the last item of this schedule.

SCHEDULE—III-B

**GUARANTEED TECHNICAL PARTICULARS FOR TAMPER EVIDENT TRANSPARENT
POLYCARBONATE SECURITY SEALS (HEAT RESISTANT) TO BE USED AS BODY SEAL OF SINGLE
PHASE METER BOX AGAINST TN-2641**

S. NO.	PARTICULARS	TO BE FURNISHED BY BIDDER
1	NAME & ADDRESS OF MANUFACTURER.	
2	WORK'S ADDRESS	
3	TYPE /MATERIAL OF SEALS	
4	MELTING TEMPERATURE	
5	WITHSTAND TEMPERATURE	
6	STANDARDS TO WHICH MATERIAL OF SEALS/POLYCARBONATE CONFIRMS:	
7	STANDARDS TO WHICH MATERIAL OF NON-CORROSIVE, NON-MAGNETIC SEAL WIRE CONFIRMS	
8	COLOUR OF SEALS	
9	WHETHER SEALS WITHSTAND FOLLOWING TESTS SATISFACTORILY.	
i)	PHYSICAL CHECK UP	
ii)	BOILING WATER TEST FOR 2 HOURS	
iii)	PULLED OUT TEST AS PER SPECS.	
iv)	SEAL WIRE	
v)	Sr, NO. VERIFICATION TEST.	
10	WHETHER SEALS HAVE FACILITY TO PRINT MONOGRAM/NAME OF COMPANY	
11	IF YES, TYPE OF PRINT (LASER ETCHED/EMBOSSING) GIVE DETAILS	
12	WHETHER SEALS ARE PROVIDED WITH INTERNAL ANCHOR-LOCKING SYSTEM.	
13	WHETHER INTERNAL ANCHOR LOCKING SYSTEM IS IR-REVERSIBLE AND TAMPER EVIDENT IN CASE EFFORTS ARE MADE TO TAMPER/BREAK.	
14	WHETHER PROPERTIES OF MATERIAL ARE AS PER SPECIFICATION CL. 1. OF SPECIFICATION .	