

Appendix 4

Annexure E

1.0 Scope of Supply

This specification covers the design, manufacturing, inspection, testing and supply of Box for Three phase energy meter.

2.0 Codes & Standards

This equipment shall conform to this specification & latest revision of following codes with all amendments:

S.No	Title	Indian Standard
2.1	IS 13411	Glass reinforced polyester dough moulding compounds
2.2	IS 13410	Glass reinforced polyester sheet Moulding compounds (SMC) - Specification
2.3	Latest Edition	Indian Electricity Act, 2003- Latest Amendments.
2.4	----	Latest Amendments Of CBIP Publication 325
2.5	Latest Edition	Indian Electricity Act 1910
2.6	----	CEA Metering Regulation Latest Amendments
2.7	-----	CEA Regulation, Measures relating to Safety and Electric Supply- Latest Amendments
2.8	IS 14772	Enclosures for Electrical Installations
2.9	IS 15707	Testing, Evaluation, Installation And Maintenance Of Ac Electricity Meters — Code Of Practice
2.10	IS 8623 Pt-1	Specification for Low Voltage switch gear and control gear assemblies
2.11	IS 14772	General requirements for enclose for accessories for household and similar
2.12	IS 4249	Classification And Methods Of Tests For Non-Ignitable And Self-Extinguishing Properties Of Solid Electrical Insulating Materials
2.13	IS 4249	Classification and methods of test for non-ignitable and self extinguishing properties of solid electrical insulating materials
2.14	IS 8623	Specification for low voltage switch gear and control gear assemblies
2.15	IS 11731	Method of test for determination of flammability of solid electrical insulating material when exposed to an igniting source
2.16	IEC 62052-11	General requirements, tests and tests condition for metering equipment
2.17	IEC 61000-4-2	Electromagnetic compatibility



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3.0 Service Condition

The meter box to be supplied against this specification shall be suitable for satisfactory continuous operation under outdoor environment. Following are the climatic condition:

Sl.no	Parameters	Requirements
3.1	Peak ambient temp.	50°C
3.2	Min ambient temp. in shade	45°C
3.3	Max. average ambient temp in 24 hours period in shade	40°C
3.4	Min ambient temp.	0°C
3.5	Max. temp. attainable by an object exposed to sun	70°C
3.6	Max. relative humidity	95%
3.7	Average number of thunder storm days per annum	40
3.8	Average number of rainy storm days per annum	120
3.9	Average annual rainfall	1000mm
3.10	No of months of tropical monsoon condition	4 months
3.11	Max. wind pressure	150kg/m ²
3.12	Altitudes	Not exceeding 1000 mtrs
3.13	Pollution Level	As per IS (Highly polluted)- Dry

4.0 Constructional Requirement:

4.1	Box Type	a. The DT meter box shall be dust and vermin proof for housing DT meter of any make. b. Meter Box shall be hinge Type c. Box shall be suitable for make and type of meter mentioned in purchaser's requisition.
4.2	Dimension	As per meter
4.3	Top / Base Cover	a. SMC with grade S ₃ S having Improved chemical, thermal, electrical, mechanical, low shrink and flame retardant

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		<p>properties as per IS 13410</p> <p>b. SMC Top cover fitted with non – openable transparent polycarbonate window</p> <p>c. The top Cover and Base of the box shall be made of SMC.</p>
4.4	Flammability	<p>All parts of the meter box including cable glands, data downloading port covers etc shall be flame retardant with flammability level FV0 (as per IS 11731 Part 2) having good dielectric and mechanical strength.</p>
4.5	Fixing Arrangement	<p>a. The meter base support inside the box shall be raised by about 10mm for ease of wiring and should provide fixing arrangement for all makes of meters presently used by BSES.</p> <p>b. The box shall have concealed / internal hinges (minimum 2 no's) not visible or accessible from outside the box. All the hinges provided on the meter boxes shall be concealed and tamper proof. The box shall also have padlocking facility for consumer use. Minimum two number sealing's arrangement for BSES shall be provided on the meter box.</p> <p>c. Four (4) nos. fixing holes of 6 to 6.5 mm diameter at the back surface of box shall be provided to fix the same on flat wall or surface.</p> <p>d. For fixing of box on flat wall, 4 nos. 5 mm diameter. 40 mm long pan head self tapping SS screws and washers shall be provided by the supplier with every box. 4 no's plastic fixing plugs of 50mm length suitable for self tapping screws shall also be provided</p> <p>e. Four no's polycarbonate support grommet of one inch height shall be pre fixed on the four wall mounting holes of meter boxes in order to provide space between meter base</p>

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		and wall. f. Cable entry shall be bottom type and suitable for 01no's 10Cx2.5sqmm PVC insulated cable. Cable gland shall be Nylon66 shall be provided at cable entry (Cable Dia / Gland size to be mentioned) g. Cable entry must be at the bottom diagonal ends of the meter box. Appropriate clearance shall be provided between the cable entry and position of meter terminals for proper cable bending and connection. h. Meter Box accessories shall be adequately protected against rust, dust, water and corrosion from inside and outside
4.6	Earthing	a. Earthing bolt of M6 with nut and washer shall be provided on left side of the body of meter box. b. The arrangement shall be such that one earth point shall be available for customer and external earthing provided by BSES can be terminated. c. Necessary symbol shall be provided for earth terminal.
4.7	Screws	All the screws and washers shall be SS or zinc passivated.
4.8	Downloading arrangement	Downloading arrangement shall be required on the top cover of the box. It shall be round type hole as per meter optical port type and space with cover shall be required downloading with external device
4.9	Optical cord space for meter downloading (from cover side)-	Round type hole space with cover shall be required downloading with external device
4.10	Separation (Back side of box)	Four numbers pillars shall be required for the purpose of separation between box and wall



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4.11	Degree Of Protection	IP55
4.12	Danger Plate, BSES Insignia, customer care number & Name Plate	Embossed/Screen Printed
4.13	Total weight of the box with accessories	To be specified for each type of box

5.0 Quality Assurance, Inspection and Testing

5.1	Vendor's Quality Plan (QP)	To be submitted for Purchaser's approval.
5.2	Sampling Method	Sampling Method for quality checks shall be as per relevant IS/IEC guidelines and Purchaser's prior approval shall be taken for the same.
5.3	Inspection	<p>Manufacturer shall intimate the manufacturing schedule in advance. The manufacturer shall give minimum 15 days advance notice about readiness of material at their works. The material shall be inspected for conformity with BSES specification before the same is accepted.</p> <p>a. Inspection shall be conducted at manufacturing unit of bidder only.</p> <p>b. All the relevant documents with respect to proof of factory ownership shall be reviewed and verified by BSES at any stage of contract.</p> <p>i. Bidder is liable to meet BSES requirement on document verification.</p> <p>ii. BSES reserves the right to impose contractual action on bidder in case of any discrepancy (if found) of above</p>



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		documents verification at any stage of contract.
5.4	Inspection Hold- Points	To be mutually identified, agreed and approved in Quality Plan.
5.5	Type Tests	<p>a. Supplier needs to carry out the type test in event of order without any commercial implication</p> <p>b. Type Test as per IS 13410 with latest amendments for SMC Box Enclosure</p> <p>c. The box shall be of type tested as per 14772 along with following additional tests:</p> <ul style="list-style-type: none">i. Visual examination- As Per GTP/ approved drawingii. Verification of dimensions & Marking -As Per GTP/ approved drawingiii. Test for Self Extinguishing Properties- IS:4249 Clause 3.5.1iv. Flammability Test -IS:11731 Part 2v. U V Resistance Test -Din 53387vi. Verification of Dielectric Properties at 5 KV -IS8623 <p>d. Type test conducted from CPRI/ ERDA/ CIPET for required tests will be treated as valid.</p> <p>e. Type test certificate should be submitted along with offer for scrutiny.</p> <p>f. Any other component supplied in addition to box shall also be type tested as per IS /IEC if applicable.</p> <p>g. Type test report shall not be older than 5 years from the date of tender submission.</p> <p>h. Bidder shall carried out type tests as per IS 14772 along with tests mentioned above on 01 no sample randomly selected by BSES representative from lot offered for inspection in the event of order once in a PO.</p> <p>i. In case the bidder is not in a position to furnish test</p>



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		<p>certificate of similar rating of offered item from CPRI/ERDA/ CIPET at the time of submission of bid, the bid may not be considered.</p> <p>j. Certificate wrt 'ROHS complaint' & 'Halogen Free material' from reputed third party lab</p>
5.6	Routine tests	<p>As per IS 14772</p> <p>Raw material certificates and Routine test certificates in accordance with relevant IS, shall be submitted during the inspection of lot.</p>
5.7	Acceptance Tests	<p>a. All acceptance tests mentioned in IS 14772 shall be carried out on samples randomly selected from lot offered for inspection along with following additional tests:</p> <ul style="list-style-type: none">i. Visual examination -As Per GTP/ approved drawing.ii. Verification of dimensions & Marking - As Per GTP/ approved drawing.iii. Verification of Dielectric Properties at 5 KV- IS:8623iv. Test for Self Extinguishing Properties- IS:4249 Clause- 3.5.1v. U V Resistance Test -Din 53387vi. Ingress Protection IP-55 <p>b. IS 2500 shall be referred for sampling. Destructive testing shall be carried out only on 02 nos samples randomly selected for offered lot by BSES representative.</p> <p>c. In case any test facility for acceptance testing is not available on bidder's manufacturing work, same shall be carried out in CPRI/ ERDA/ CIPET on sample randomly selected by BSES representative from lot offered for inspection without any price implication.</p>
5.8	Degree of Protection	<p>a. The meter box shall comply with the requirement of IP-55</p>



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		<p>& IS: 14772 & its latest version.</p> <p>b. The box has to be type tested for IP 55 protection as per relevant IS in the event of order from CPRI / ERDA for proof of design (on one sample of the P.O. quantity) without any price implication to BSES. Sample shall be randomly selected in event of order.</p>
5.9	Flammability Test	Flammability Test shall be carried out as per IS 11731 part 2 on sample randomly selected from BSES lot offered for inspection (01 no sample of the PO quantity) without any price implication to BSES from CPRI, ERDA or CIPET.

6.0 Packing, Marking, Shipping, Handling and Storage

6.1	Packing for accessories and spares	<p>a. The meter box shall be suitably packed in 3 ply corrugated boxes in order to avoid damage in transit, handling, storage and further transportation from store to field.</p> <p>b. Packing shall be individual of each box</p> <p>c. Group of boxes shall be packed in another box with following details-</p> <ul style="list-style-type: none">i. Name of the manufactureii. Qty of boxiii. Sap Codeiv. P.O number & Datev. Other Information
6.2	Marking and Serial No.	<p>Following details shall be embossed/laser printed (As required) on meter box</p> <ul style="list-style-type: none">a. BSES insignia shall be embossed on the base & cover of meter boxb. Serial number of digit size min 6mm, embossed or laser



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		<p>printed on base & cover of digit.</p> <p>c. Purchaser's P.O. no. and date on top cover of Box. Name of purchaser's on top cover of box.</p> <p>d. Name or trade mark of Seller on top cover of box. Any other detail required at the time of approval.</p> <p>e. Danger sign</p>
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7.0 Deviations

7.1	Deviations	<p>a. Deviations from this specification can be acceptable, only where the Seller has listed in his quotation the requirements he cannot, or does not, wish to comply with and which deviations the Buyer has agreed to in writing, before any order is placed.</p> <p>b. In the absence of any list of deviations from the Seller, it will be assumed by the Buyer that the Seller complies with the technical specification fully.</p>
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8.0 Drawing/ Document Submission

Drawing submission shall be as per the matrix given below. All documents/ drawing shall be provided on A4 sheet in soft copy with separators for each section. Language of the documents shall be English only. Deficient/ improper document/ drawing submission may liable for rejection

SL	Detail of Document	Bid	Approval	Pre Dispatch
1	Guaranteed Technical particulars (GTP)	Required	Required	
2	Deviation Sheet, if any	Required	Required	
3	GA / cross sectional drawing of Meter Box showing all the views / sections	Required	Required	
4	Samples of each type and rating offered.	2 no's	2 no's	



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5	Environment for testing sample meters with head end system to be install at BSES premises.	Required	Required	
6	Any accessories	Required	Required	
7	Manufacturer's quality assurance plan and certification for quality standards	Required	Required	
8	Type Test reports of offered model/ type/ rating	Required		
9	Complete product catalogue and user manual.	Required		
10	Customer Reference List	Required		
11	Recommended list of spare and accessories	Required		
12	Program for production and testing (A)		Required	Required
13	Detailed installation and commissioning instructions		Required	Required
14	As Built Drawing		Required	Required
15	Operation and maintenance Instruction as well as trouble shooting charts/ manuals		Required	Required
16	Inspection and test reports, carried out in manufacturer's works			Required
17	Routine Test certificates			Required
18	Test certificates of all bought out items			Required

9.0 Delivery

13.1	Delivery	Vendor shall dispatch the material, only after the Routine Tests/Final Acceptance Tests (FAT) of the material witnessed/waived by the Purchaser, and after receiving written Material Dispatch Clearance (MDC) from the Purchaser.
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Annexure A- Guaranteed Technical Particulars

Bidder shall furnish the GTP format with all details against each clause of this specification.

Bidder shall not change the format of GTP or clause description.

Bidder to submit duly filled GTP in hard copy format with company seal.

SL	Particulars	Requirement	Offered by the firm
1	Name of the firm and place of manufacturer.	As per the firm	
2	Type of box/model	Three Phase meter box	
3	Material used for cover	SMC	
4	Material used for base	SMC	
5	Dimension of box a. Length b. Width c. Depth	As per meter	

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SL	Particulars	Requirement	Offered by the firm
6	Thickness of Base (Gray) minimum	3mm±0.1mm	
7	Thickness of Cover (Transparent) minimum	2.5mm±0.1mm	
8	Pad locking arrangement provided	Required	
9	Two Nos. sealing arrangement at diagonal Opposite corner/ Side	Required	
10	Meter mounting arrangement	Suitable provision for meter mounting	
11	Superior Nylon 66 Glands	1 Nos. gland is required	
12	Downloading arrangement	From top cover of meter box (Round hole as per meter downloading arrangement)	
13	Rubber 'O' ring	1 Set	
14	Eye holes for fixing at base with	2 Nos.	



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SL	Particulars	Requirement	Offered by the firm
	pillar (Height of pillar-30mm)		
15	Round holes for fixing at base with pillar ((Height of pillar-30mm)	2 Nos.	
16	Earthing connections with symbol	1 Set	
17	Meter box mounting accessories	Four numbers Gully and screw shall be provided. Screw size shall be suitable for Box with pillar	
18	Same serial no. should be embossed on base and cover of box	Required	
19	Provision to make the meter immune to 35 KV spark device and high frequency electromagnetic pulse device upto 10 Ghz. (loop type) shields.	Required	

Note: Meter box shall be scrapped as per guideline of CEA letter CEA/DPD/CPCB/2016/1095-1132, dtd.:21/09/2016

Bidder / Vendor seal / signature -----



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Name of the bidder	
Address of the bidder	
Name of contact person	
Telephone number and email id	

Annexure - B- Recommended Accessories / Spares

SL	Description of spare part	Unit	Quantity
1		No	
2		No	
3			