

Technical Specification for 100/5A, 200/5A & 400/5A LTCT Meter Boxes

CONTENTS

1. SCOPE
2. APPLICABLE STANDARDS
3. CLIMATIC CONDITIONS OF INSTALLATION
4. GENERAL TECHNICAL REQUIREMENTS
5. GENERAL CONSTRUCTION
6. NAME PLATE AND MARKING
7. TESTS
8. TYPE TEST CERTIFICATES
9. PRE-DISPATCH INSPECTION
10. INSPECTION AFTER RECEIPT AT STORES
11. GUARANTEE
12. PACKING
13. SAMPLE
14. TRAINING
15. QUALITY CONTROL
16. MINIMUM TESTING FACILITIES
17. MANUFACTURING ACTIVITIES
18. SPARES, ACCESSORIES AND TOOLS
19. DRAWINGS AND DOCUMENTS
20. GUARANTEED TECHNICAL PARTICULARS
21. SCHEDULE OF DEVIATIONS

1.	SCOPE	<p>This specification covers the technical requirements of design, manufacturing, testing at manufacturer's works ,packing, forwarding, supply and unloading at store/site of Three phase four Wire, 100/5A, 200/5A and 400/5A all types of LTCT Meter Boxes along with respective resin cast CT with bar primary, complete with all accessories for efficient and trouble free operation.</p> <p>It is not the intent to specify completely herein all the details of tech design and construction of material. However, the material shall conform in all respects to high standards of engineering, design and workmanship and shall be capable of performing in continuous commercial operation in manner acceptable to the TPXODL, who will interpret the meanings of drawings and specification and shall have the power to reject any work or material which, in his judgment is not in accordance therewith. The offered material shall be complete with all components necessary for their effective and trouble free operation. Such components shall be deemed to be within the scope of Bidder's supply irrespective of whether those are specifically brought out in this specification and/or the commercial order or not.</p> <p>The parameters defined in the specification shall be common for both the LTCT Non-smart Meter Box and LTCT Smart Meter Box, unless stated separately.</p>	
2.	APPLICABLE STANDARDS	<p>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 conform to the regulations of the local statutory authorities.</p>	
		IS: 14772-2000	General requirements for enclosure for accessories for household and similar fixed electrical installations-Specification.
		IS: 8623(Part 1)-1993	Specification for low-voltage switchgear and control gear assemblies: Part 1 for type tested and partially type tested assemblies.
		IS: 11731(Part II)-1992	Methods of test for determination of Flammability of solid electrical insulating materials when exposed to an igniting source
		IS 4249-1967	Specification for classification and method of test for non-ignitable and self-extinguishing properties of solid electrical insulating materials.
		IS 8828-1996	Electrical Accessories- Circuit Breakers for Over Current Protection for Household and Similar Installations
		IS 5133(Part II)-1969	Specification for boxes for the enclosure of electrical accessories
		IS 2500(Part 1)-2000	Sampling procedure for inspection by attributes part 1 sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection
		IS 16227 (part1-5)	Specification of current transformer
		UL 746-C	Polymeric Materials in Electrical equipment
		IS 6746	Specifications for Unsaturated Polyester Resin Systems
		IS 10192	Synthetic resin bonded glass-fibre sheets for electrical purpose.
		IS 7078 (1973)	Plastics used in instrument industry

3.	CLIMATIC CONDITIONS OF INSTALLATION	1.Maximum altitude above sea level 1,000m 2.Maximum ambient air temperature 70°C 3.Maximum daily average ambient air temperature 45°C 4.Minimum ambient air temperature -10°C 5.Maximum relative humidity 95% 6.Average number of thunderstorm days per annum (isokeraunic level) 70 7.Average number of rainy days per annum 120 8.Average annual rainfall 150cm 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) 11 .Wind velocity: 300 km/hr, 200 km/hr and 160 km/hr. environmentally, some of the regions, where the work will take place includes coastal areas, subject to high relative humidity, which can give rise to condensation. Onshore winds will frequently be salt laden. On occasions, the combination of salt and condensation may create pollution conditions for outdoor insulators. Some places are in heavily industrial polluted areas. Therefore, outdoor material and equipment shall be designed and protected for use in exposed, heavily polluted, salty, corrosive and humid coastal atmosphere. The design of equipment and accessories shall be suitable to withstand seismic forces corresponding to an acceleration of 0.1g.		
4.	GENERAL TECHNICAL REQUIREMENTS	S. No.	Parameters	TPXODL Requirements (100/5A, 200/5A and 400/5A)
		A.	For Polycarbonate enclosure	
		1.	Application	Outdoor
		2.	Degree of protection	IP 55
		3.	Flammability requirement	FV0
		4.	Grade of material	Virgin Polycarbonate with fire retardant, Self-extinguishing, UV stabilized and anti-oxidation properties
		5.	Gasket material	EPDM rubber (ethylene propylene diene monomer)
		6.	Material a) Base : b) Cover :	a) Virgin Polycarbonate equivalent to Lexan 943 A or Makrolon 6457/6557, transparent b) Polycarbonate equivalent to Lexan 943 A or Makrolon 6457/6557, clear transparent For 400/5A LTCT Meter box: SMC/ Virgin Polycarbonate equivalent to Lexan 943A (subject to prior sample approval)
		7.	Thickness of box	3 mm (min.)
		8.	Material withstand temperature	125 deg. C +/- 2 deg. C
		9.	Dielectric withstand for the box	5 kV for 1 minute
		10.	Dimensions	For LTCT Smart Meter Boxes: 100/5A and 200/5A: Length- 350mm±2%, Depth- 260 ± 2% mm and Breadth- 700 ±2% mm 400/5A: Length- 860mm+2%, Depth- 270 ± 2% mm and Breadth- 450 ±2% mm

		11.	Cable entry/exit gland size (diameter)	For 100/5A: The SGG brass gland shall be suitable for 4Cx95 sq. mm cable. For 200/5A: The SGG brass gland shall be suitable for 4Cx150 sq. mm cable. For 400/5A: The SGG brass gland shall be suitable for 4Cx300 sq. mm cable. 2mm SS plate should be provided on the base of Meter Box to support Gland and cable Single Compression Brass Gland designed for single armoured cable entry and compression.
		B. For Current Transformers		
		1.	Rated voltage	415 V
		2.	System frequency	50 Hz
		3.	Transformation ratio	100/5A, 200/5A, 400/5 A
		4.	Current Density (Maximum)	1.6 Amp/sq.mm
		5.	Accuracy Class	0.5S
		6.	Rated Burden	5 VA
		7.	Instrument security factor (max.)	5
		8.	Short Time withstand current	5 kA for 1 sec
		9.	Rated dynamic peak current	12.5 kA for 1 sec
		10.	Power frequency dry withstand voltage (kV rms)	3.0 kV
		11.	Temperature rise	Maximum permissible temperature rise above ambient temp at 200% load not exceeding 110 deg. C
		12.	Insulation level and type	0.66 kV / 3 kV , Class B
		13.	Pin-configuration	For LTCT Smart Meter Boxes: 100/5A and 200/5A: 12-pin zigzag (dimension should be as per the meter sample provided by TPCODL) 400/5A: 12-pin zigzag (dimension should be as per the meter sample provided by TPCODL) The Sample meter shall be provided in the event of order for terminal arrangement alignment . A prototype sample to be submitted.
		14.	Bus-bar material	Tinned Copper
		15.	Resin material	Epoxy resin
		16.	Bus-bar size	100/5A: 20mmX5mm (100 sq. mm min). 200/5A: 25mmX8mm (200 sq. mm min). 400/5A: 40mmX8mm (320 sq. mm min). All bus-bars shall have extended length of 50 mm at top, above box and 70 mm at lower end, below box.
		17.	Colour code of CT	100/5A: Blue (Pantone 2727C) 200/5A: Green (Pantone 2427C) 400/5A: Brick red

		<table> <tr> <th colspan="3">C. For PVC Caps (8 Nos each box)</th></tr> <tr> <td>1.</td><td>Material</td><td>PVC compound Black (FR Grade).</td></tr> <tr> <td>2.</td><td>Color</td><td>Black</td></tr> <tr> <td>3.</td><td>Thickness</td><td>1.4 mm (+1.0mm)</td></tr> <tr> <td>4.</td><td>Heat Stability</td><td>Material shall be tested at 90°C for 24 hrs. and no cracking, melting and defect should be observed</td></tr> <tr> <td>5.</td><td>Tensile strength</td><td>Min. 7.0 MPa</td></tr> <tr> <td>6.</td><td>Elongation</td><td>Min. 400%</td></tr> <tr> <td>7.</td><td>Dielectric strength</td><td>5 kV/mm</td></tr> <tr> <td>8.</td><td>Shore Hardness (Shore-A)</td><td>55 +/-5</td></tr> <tr> <td>9.</td><td>Viscosity</td><td>20-22 cP (centi Poise)</td></tr> <tr> <td>10.</td><td>Specific Gravity</td><td>1.12- 1.25 gm/cc</td></tr> </table>	C. For PVC Caps (8 Nos each box)			1.	Material	PVC compound Black (FR Grade).	2.	Color	Black	3.	Thickness	1.4 mm (+1.0mm)	4.	Heat Stability	Material shall be tested at 90°C for 24 hrs. and no cracking, melting and defect should be observed	5.	Tensile strength	Min. 7.0 MPa	6.	Elongation	Min. 400%	7.	Dielectric strength	5 kV/mm	8.	Shore Hardness (Shore-A)	55 +/-5	9.	Viscosity	20-22 cP (centi Poise)	10.	Specific Gravity	1.12- 1.25 gm/cc
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5.	GENERAL CONSTRUCTION																																		
	5.1 Enclosure	<p>The LTCT meter box shall be weather proof, tamper proof and shall be made of Injection moulded reinforce virgin polycarbonate material with FV0 fire retardant, self-extinguishing, UV stabilization and Anti oxidation properties. Base and cover both shall be completely transparent, made of virgin polycarbonate material (for 100/5 Amps and 200/5 Amps LTCT meter box, and white cream color in case of SMC material (only for 400/5 Amps, subject to sample approval). The material for base and cover shall be Lexan 943 A or Makrolon 6457/6557 with 3 mm thickness.</p> <p>The box shall be of adequate strength, unbreakable and shall be made in two pieces (case and cover). The Enclosure shall be provided with IP55 degree of protection. Base shall have U groove all around to accommodate 'O' ring/gasket provided all around at the cover. Cover shall be placed on base and fixed by means of sealable bolts at all the corners and middle. Suitable rubber gasket (EPDM rubber - ethylene propylene diene monomer) of round shape (properly provided throughout the periphery) all around the base shall be provided for protection. The box shall be provided with suitable overlap between base and cover. Base shall be provided with meter mounting arrangement along with 3 numbers GI strips suitably made into a channel and fixed horizontally for supporting all the components inside the box. The meter shall be mounted on CT base such that there is a clearance of 50 mm between the meter box and top of the meter. A minimum clearance of 50 mm (between meter and the box) shall be maintained on both sides.</p> <p>The Resin casting arrangement should be such that the CT should not come out from the meter box; necessary locking arrangement and anti-tamper features should be provided. The CT should have manufacturer code & ratio embossed on CT body.</p> <p>The design of the LTCT box shall be such as to facilitate easy wiring and access to the meter terminals. The cable entry shall be from bottom of the box and further connected to the primary of the CT (Copper Bars) with suitable size single compression SGG brass gland as approved by the Purchaser (as per technical specification ENG-LV-3006)</p> <p>For 100/5A- The SGG brass gland shall be suitable for 4Cx95 sq. mm cable.For 200/5A- The SGG brass gland shall be suitable for 4Cx150 sq. mm cable.For 400/5A- The SGG brass gland shall be suitable for 4Cx300 sq. mm cable.</p>																																	

		<p>A. For LTCT Smart Meter Boxes:</p> <p>The overall dimension of the LTCT smart meter box shall be as below: For 100/5A, 200/5A- Length- 700mm\pm2%, Depth- 260 \pm 2% mm and Breadth-350 \pm2% mm and the same shall be approved by the Purchaser. For 400/5A- Length- 860mm\pm2%, Depth- 270 \pm 2% mm and Breadth- 450 \pm2%mm and the same shall be approved by the Purchaser. Note: the Dimension should be confirmed during GTP</p>
	5.2 Current Transformer	<p>5.2.1 CTs shall be manufactured with high grade CRGO lamination. The current transformer shall be Resin Cast, Bus-bar Primary type. Three CTs for three phases and fourth CT for Neutral shall be casted as one unit. The resin cast CT unit shall have pin type secondary current terminals and potential terminal on which the meter shall be directly plugged, in such a way that after plug-in of the meter, the pin type terminals (CT secondary terminals / potential terminals) shall be accessible for connections. The suitable Pin type terminals for various type of meter shall be provided for plug in arrangement (the meter/ drawing shall be provided by Purchaser to the successful bidder).</p> <p>5.2.2 The primary of the CT side shall be in form of bar with no joints and secondary shall be of plug in pin type. The bus-bar shall be made of tinned copper whereas the pin shall be made of tinned brass with fine polish. For 100/5A- The bus-bar size shall be 20mmX5mm (100 sq. mm min). For 200/5A- The bus-bar size shall be 25mmX8mm (200 sq. mm min). For 400/5A- The bus-bar size shall be 40mmX8mm (320 sq. mm min). All bus-bars shall have extended length of 50 mm at top, above box and 70 mm at lower end, below box. The bus-bar shall be provided with single hole of dia. 8 mm at both ends for cable termination through suitable size lugs. The clear phase-phase spacing between bus-bar shall be 35 mm (min). The terminations of leads taken from CT shall be suitably brazed on CT end so as to avoid any loose contact. The secondary side PIN should have minimum 4 threads to ensure that sufficient mechanical strength to keep the PINs in its vertical position throughout the useful life of Meter Box</p> <p>5.2.3</p>
	5.3 PVC Caps	<p>5.3.1 PVC cap shall be used for covering the bare part of each bus-bar and termination of LTCT meter box.</p> <p>5.3.2 Cap shall be made of PVC compound (FR grade) through Dip molding process.</p> <p>5.3.3 Cap shall be made of FR grade and UV resistant material.</p> <p>5.3.4 Cap should have good finishing with no crack and air bubbles.</p>
		<p>5.3.5 Dimensions of Cap shall be as per drawing depicted in Annexure II.</p> <p>5.3.6 PVC caps shall be packed in poly bags/Boxes and shall also be labelled or marked to show the description of material, Manufactures name, Month & Year of manufacturing and quantity.</p>
	5.4 Mounting Arrangement	<p>The box shall be provided with three numbers SS channels of 2 mm thickness provided horizontally below the base and outside the box for fastening the box on the wall. Two mounting holes shall be provided on each channel. The fixation of CT in the box, should be such that it should not be removed without damage.</p>
	5.5 Earthing	<p>At bottom of the enclosure, an Electro Galvanized Earthing plate with minimum 1.2 mm thickness shall be provided with two numbers of earthing nut and bolt of suitable size of SS type for providing earth connection. The earth terminal shall be identified by means of the earthing symbol, marked in a legible and indelible manner on or adjacent the terminal.</p>

6.	NAME PLATE AND MARKING	The equipment shall be provided with durable and legible name plate, effectively secured against removal. Name plate shall be embossed with "RC/PO & RO No. with date" , "PROPERTY OF TPXODL" , "ITEM CODE NUMBER" , The name plate shall be indelibly and distinctly marked with all essential particulars as per the relevant standards along with the following information : a. Manufacturer's name b. Unique Serial number c. Month and Year of manufacture (MM/YYYY) d. Guarantee period e. Rated CT ratio, Accuracy Class & Burden f. No supply number : XXXX/XXXXXXXXXXXX (provide during GTP) g. Property of TPXODL h. Bar Code should be there which having Sr No & CT Ratio i. Meter Box Sr No should also be laser marked on the Meter Box Base																													
7.	TESTS	All routine, acceptance & type tests shall be carried out in accordance with the relevant IS/IEC. All routine & 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 LTCT meter box in addition to others specified in IS/IEC standards.																													
	7.1 Type-tests	<table><tr><th colspan="3">For the Box:</th></tr><tr><th>S. No.</th><th>Tests/ Standard</th><th>Requirements</th></tr><tr><td>1</td><td>Protection against electric shock (IS : 14772 - 2000)</td><td>Enclosure shall be so designed that when they are mounted as for normal use, the live parts of any correctly installed accessories or any parts of these accessories which may become live due to a fault shall not be accessible.</td></tr><tr><td>2</td><td>Provision for earthing (IS : 14772-2000)</td><td>Enclosure shall be provided with a facility for permanent and reliable connection to earthing</td></tr><tr><td>3</td><td>Resistance to ageing, humid conditions, Ingress of solid objects and to harmful ingress of water (IS : 14772-2000)</td><td>Resistance to Ageing: Enclosure shall be kept in a heating cabinet with temp 70 ± 2 deg. C for 7 days as per IS. After completion of the test, the enclosure shall not show any cracks. Humid conditions: Enclosure shall be kept in a cabinet with humidity between 91 to 95 % for 7</td></tr><tr><td></td><td></td><td>days as per IS. After completion of the test, the enclosure shall not show any cracks. Resistance against ingress of solid objects and to harmful ingress of water: Enclosure shall be subjected to test for degree of protection (IP 55) as per IS 12063.</td></tr><tr><td>4</td><td>Mechanical strength/ Impact Resistance Test (IS : 14772-2000)/(UL : 746 C)</td><td>The sample shall be subjected to Impact resistance test as per the respective standards and shall not show occurrence of any of the following: 1. Making uninsulated live parts accessible to contact. 2. producing a condition that might affect the mechanical performances of the enclosure producing a condition that would increase the likelihood of an electric shock</td></tr><tr><td>5</td><td>Resistance to heat / Ball Pressure Test (IS : 14772-2000)</td><td>The test shall be made on a sample in a heating cabinet at a temp of 125 ±2 deg C for 1 per IS. After completion of test, the diameter of the impression caused by the ball shall be measured and should not exceed 2 mm.</td></tr><tr><td>6</td><td>Resistance to Abnormal heat and fire/ Glow wire test (IS : 14772-2000)</td><td>Parts of insulating materials which might be exposed to thermal stresses due to electric effects shall not be affected by abnormal heat and by fire. The compliance shall be checked by means of the glow wire test performed at 960 deg C, according to IS 11000(Part 2/sec 1) with no flame and glowing.</td></tr></table>			For the Box:			S. No.	Tests/ Standard	Requirements	1	Protection against electric shock (IS : 14772 - 2000)	Enclosure shall be so designed that when they are mounted as for normal use, the live parts of any correctly installed accessories or any parts of these accessories which may become live due to a fault shall not be accessible.	2	Provision for earthing (IS : 14772-2000)	Enclosure shall be provided with a facility for permanent and reliable connection to earthing	3	Resistance to ageing, humid conditions, Ingress of solid objects and to harmful ingress of water (IS : 14772-2000)	Resistance to Ageing: Enclosure shall be kept in a heating cabinet with temp 70 ± 2 deg. C for 7 days as per IS. After completion of the test, the enclosure shall not show any cracks. Humid conditions: Enclosure shall be kept in a cabinet with humidity between 91 to 95 % for 7			days as per IS. After completion of the test, the enclosure shall not show any cracks. Resistance against ingress of solid objects and to harmful ingress of water: Enclosure shall be subjected to test for degree of protection (IP 55) as per IS 12063.	4	Mechanical strength/ Impact Resistance Test (IS : 14772-2000)/(UL : 746 C)	The sample shall be subjected to Impact resistance test as per the respective standards and shall not show occurrence of any of the following: 1. Making uninsulated live parts accessible to contact. 2. producing a condition that might affect the mechanical performances of the enclosure producing a condition that would increase the likelihood of an electric shock	5	Resistance to heat / Ball Pressure Test (IS : 14772-2000)	The test shall be made on a sample in a heating cabinet at a temp of 125 ±2 deg C for 1 per IS. After completion of test, the diameter of the impression caused by the ball shall be measured and should not exceed 2 mm.	6	Resistance to Abnormal heat and fire/ Glow wire test (IS : 14772-2000)	Parts of insulating materials which might be exposed to thermal stresses due to electric effects shall not be affected by abnormal heat and by fire. The compliance shall be checked by means of the glow wire test performed at 960 deg C, according to IS 11000(Part 2/sec 1) with no flame and glowing.
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	7.2 Routine Tests	<p>For Boxes :</p> <ol style="list-style-type: none"> Marking Visual Examination and Dimensions Protection against electric shock Provision for earthing. <p>For CT :</p> <ol style="list-style-type: none"> Verification of terminals marking and polarity. CT surface finish on both sides. power frequency dry withstand voltage test on primary windings power frequency dry withstand voltage test on secondary windings Over-voltage inter-turn test. Determination of errors or other characteristics according to the requirements of the appropriate designation or accuracy class. 																		

	7.3 Acceptance tests	<ol style="list-style-type: none"> 1. Markings, as per this technical specification 2. Visual Examination and Dimensions, as per this technical specification 3. Protection against electric shock, as per IS 14772: 2000 4. Provision for earthing, as per IS 14772: 2000 5. Resistance to Abnormal heat and fire/ Glow wire test @ 960°C 6. Test for self-extinguishing property as per clause 3.5.1 of IS 4249 7. Verification of Die-electric properties @ 5kV for 1 min. 8. CT accuracy test as per IS 16227 (Part 1&2) 9. Heat Stability: PVC Cap shall be tested at 90°C for 24 hrs. and no cracking, melting and defect should be observed
8.	TYPE-TEST CERTIFICATES	The bidder shall furnish the type test certificates for the tests as mentioned above as per the corresponding standards. All the tests shall be conducted at CPRI/ERDA/National Test House/EQDC/Third-party NABL accredited laboratory, as per the relevant standards. Type tests should have been conducted in certified Test laboratories during the period not exceeding 5 years 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 the Purchaser.
9.	PRE-DISPATCH INSPECTION	<p>The successful bidder shall submit two prototype samples (alongwith all asked type Test report which not older than 5years) for further testing and compliance as per specifications and getting approval before mass manufacturing. Equipment shall be subject to inspection by a duly authorized representative of the Purchaser. Inspection may be made at any stage of manufacture at the option 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 the Purchaser's representatives at all times when the work is in progress. Inspection by the Purchaser or it's authorized representatives shall not relieve the supplier of his obligation of furnishing equipment in accordance with the specifications. One copy of the report shall be sent to Plant Engineering Group. Material shall be dispatched after specific MDCC (Material Dispatch Clearance Certificate) is issued by the Purchaser.</p> <p>Following documents shall be sent along with material:</p> <ol style="list-style-type: none"> a) Test reports b) MDCC issued by Purchaser 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 Purchaser's store shall be inspected for acceptance and shall be liable for rejection, if found different from the reports of the pre-dispatch inspection.
11.	GUARANTEE	<p>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 60 months from the date of commissioning or 66 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 box fails within the guarantee period, the purchaser will immediately inform the bidder who shall take back the failed box within 15 days from the date of intimation at his own cost and replace/repair the box within forty five days of date of intimation with a roll over guarantee.</p> <p>The outage period i.e. period from the date of failure till unit is repaired/replaced shall not be counted for arriving at the guarantee period.</p> <p>Bidder shall further be responsible for 'free replacement' for another period of THREE years from the end of the guarantee period for any 'Latent Defects' if noticed and reported by the Purchaser.</p>

12.	PACKING	Bidder shall ensure that all the equipment covered under this specification shall be prepared for rail/road transport in a manner so as to protect the equipment from damage in transit. The material used for packing shall be environmentally friendly. Further, each LTCT Meter box must be dispatched with cable-ties holding the cover and base of the box together, at the 6 bolting positions. The nuts, washers and bolts must be SS type and provided inside the box in a paper/cardboard packet. 8 Nos of SS Nut, Bolts & Spring Washers suitable for cable size as mentioned in specification to be provided alongwith each Meter Box to fix the I/c & O/g Cable.
13.	SAMPLE	<p>1. Tender Sample:</p> <p>Bidders are required to manufacture two sample boxes as per the TPXODL specification and submit the sample boxes along with the bid for further testing and approval of samples</p> <p>Address of Dispatch: Meter Testing Lab, Address will be provide during GTP time</p> <p>2. Pre-manufacturing Sample:</p> <p>The successful bidder shall submit two prototype samples of meter box at Meter Testing Lab, at location informed by TPXODL during submission time, for further testing and compliance as per specifications and get approval before mass manufacturing.</p>
14.	TRAINING	NA
15.	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.
16.	MINIMUM TESTING FACILITIES	Bidder shall have adequate in house testing facilities for carrying out all routine tests, acceptance tests as per Indian/International standards. CT testing facility equipment's should be Accredited from NABL and all other testing equipment's calibrated and traceable to NPL.
17.	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 along with GTP & Drawing.
18.	SPARES, ACCESSORIES AND TOOLS	NA.
19.	DRAWINGS AND DOCUMENTS	<p>Following drawings and documents shall be prepared based on Purchaser specifications and statutory requirements and shall be submitted with the bid :</p> <ol style="list-style-type: none"> Completely filled in General Technical Particulars General description of the equipment and all components including brochures General arrangement and pin configuration at CT for meter box Experience List Type test certificates Sample as applicable <p>After the award of the contract, soft copies of following GTP & drawings, describing the equipment in detail shall be forwarded for approval:</p>

		<table border="1"> <thead> <tr> <th>S. No.</th> <th>Description</th> <th>For Approval</th> <th>For Review Information</th> <th>Final Submission</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Technical Parameters</td> <td>✓</td> <td></td> <td>✓</td> </tr> <tr> <td>2</td> <td>GA Drawing of meter box, CT & PVC Cap</td> <td>✓</td> <td></td> <td>✓</td> </tr> <tr> <td>3</td> <td>Installation Instruction</td> <td></td> <td></td> <td>✓</td> </tr> <tr> <td>4</td> <td>Manual/Catalogues</td> <td></td> <td>✓</td> <td></td> </tr> <tr> <td>5</td> <td>Transport/ Shipping dimension drawing</td> <td></td> <td>✓</td> <td>✓</td> </tr> <tr> <td>6</td> <td>QA & QC Plan</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> <tr> <td>7</td> <td>Test Certificates</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> </tbody> </table> <p>Bidder shall subsequently provide soft copy of all the drawings, GTP and data-sheet of virgin polycarbonate material for the final approval of TPXODL, before mass manufacturing. All the documents & drawings shall be in English language.</p>	S. No.	Description	For Approval	For Review Information	Final Submission	1	Technical Parameters	✓		✓	2	GA Drawing of meter box, CT & PVC Cap	✓		✓	3	Installation Instruction			✓	4	Manual/Catalogues		✓		5	Transport/ Shipping dimension drawing		✓	✓	6	QA & QC Plan	✓	✓	✓	7	Test Certificates	✓	✓	✓
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20.	SCHEDULE OF DEVIATIONS	<p align="center"><u>(TO BE ENCLOSED WITH THE BID)</u></p> <p>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:</p> <table border="1"> <thead> <tr> <th>S. No.</th> <th>Clause No.</th> <th>Details of deviation with justifications</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table> <p>We confirm that there are no deviations apart from those detailed above Seal of the Company</p> <p align="right">Signature :</p> <p align="right">Designation :</p>	S. No.	Clause No.	Details of deviation with justifications																																					
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