

THE KENYA POWER AND LIGHTING CO. LTD.

SPECIFICATION FOR POLE MOUNTED METER BOXES

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POLE MOUNTED METER BOXES

0 FOREWORD

- 0.1 This standard specification has been prepared by Meter Central Laboratory. It lays down specification for Transformer metering meter boxes which are to be mounted on the pole and outdoors.
- 0.2 This specification is intended for guidance of manufacturers and contractors and shall form the basis of procurement and installation of meter boxes for applications stated herein. It does not include provision of contract.

1. SCOPE

- (i) This specification is for the design and manufacture of meter boxes and covers for three phase meters

2. SERVICE CONDITIONS

2.1 Operating conditions

The meter boxes shall be suitable for safe operation in tropical climate with the following atmospheric conditions.

- (a) 2200m above mean sea level.
- (b) Temperature: +40°C maximum and -1°C minimum, averaging +30°C
- (c) Humidity: 30% to 90%, with an average of 70%. (Note that Coastal areas have heavily polluting saline atmosphere and high humidity while inland areas have relatively clean air and low humidity.)
- (d) Pollution: Design pollution level to be taken as "Heavy". Corrosion protection should take this into account.

2.2 System characteristics:

The meter boxes are intended to be operated on 415 V for three phase system with protective multiple earthing (PME).

2.3 Operating height

The meter boxes for pole mounted meters is to be mounted vertically on the pole. It shall be therefore suitable for mounting and operation on outdoor where raindrops shall impinge upon it.

3. ENCLOSURE PROTECTION

- 3.1 The degree of protection of the enclosure shall be at least IP54 when the top cover is securely closed and sealed.

4. RATINGS

- 4.1 The discrete Three -phase meter board shall be rated at 100 A, 415V.

5. DESIGN PHILOSOPHY

The design of the meter boxes are based on the following principles for optimum utilisation:

5.1 Flat metal plate

For safety and ease of use, the meter boxes shall be provided with flat metal plate to mount the meter. The metal plate shall be of minimum thickness of 1.5mm made of mild steel.

5.2 Preferred cable entry & exit gland

- (a) It shall be preferred that the meter boxes to have two (4) cable entry provisions. The provisions shall be all at the bottom of the meter box. Each hole shall have rubber seal sufficient to make the box permanently weather-proof and be able to accommodate 10mm² insulated copper wire.

5.3 Design and details of the meter boxes.

- (a) The meter box shall be able to house two ordinary three phase meters (approx dimensions 400 mm (Height) x 400 mm (width) x 160 mm (Depth) and should be made of hard plastic.
- (b) 2No. Brackets/straps 800mm long, 18mm wide and 0.75mm thick for each box (fig 4) at top and bottom rear side of the box to secure the box on the pole. The Brackets/ straps shall be made of stainless steel
- (c) The Brackets/ straps shall have a provision for fastening and un-fastening so as to enable strapping of the box to various sizes of poles.
- (d) Where the fastening and un-fastening of the bracket/ straps is to be performed by special tool other than market size spanners, the fastening tool shall be provided.
- (e) Steel mounting bars as per fig 3 of equal length as the width of the box
- (f) Flat metal plate firmly positioned with screws to make them removable for drilling spaced 25mm from the base.
- (g) 2x10mm bolt, 60mm long and size 17 head with a lock nut. (fig 1)

6. CONSTRUCTION

6.1 Construction details and sizes shall be as detailed in the respective clauses.

7. MATERIAL

7.1 The material shall be hard plastic, made to a weather proof finish.

8. SAFETY AND SECURITY

The meter board shall have provision for earthing for the metallic plate provided, to ensure safety of personnel coming into contact with it.

9. PARTICULAR REQUIREMENTS

9.1 Particular requirements for the pole mounted Meter box.

9.1.1. Construction

9.1.1. The box

- (i) The meter box shall be suitable to house two three phase meters. The diameter holes for cable entry gland shall be 20mm and shall be four in number.
- (ii) The meter box door shall be hinged on one side and also lockable by two knobs with sealing provisions and shall provide a comprehensive protection of the meter from any substantial drops of water.
- (iii) The meter box door shall be fully openable to facilitate connection of the cables to the meter.

9.1.2. Construction

The meter box shall be made from the following materials:

- (i) Hard plastic
- (ii) Meter box door shall be of the same material as the base and shall have a window, made of clear plastic running across the entire width at the top of the door to facilitate reading of the meter.
- (iii) Thickness, in millimetres, of the various components shall be as indicated in the following table

Table - 1

meter box	Tolerance	Body	Top cover
Body and top cover	$\pm 0.5\text{mm}$	5 mm	5 mm

9.1.3 Instructions and markings

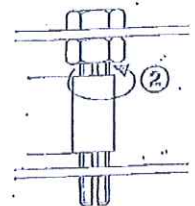
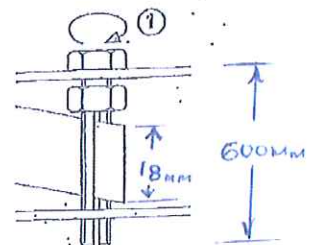
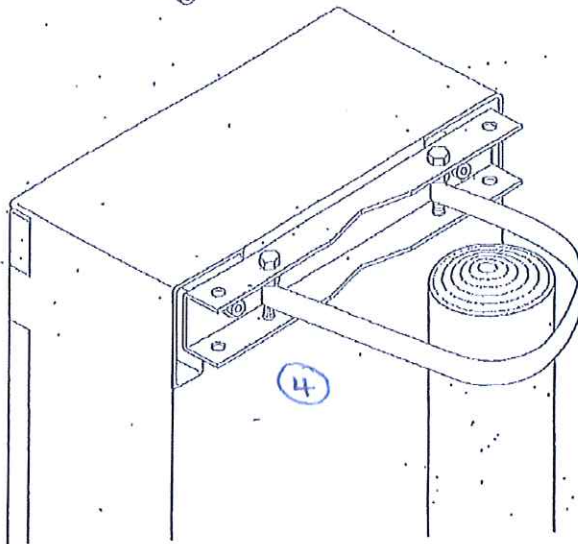
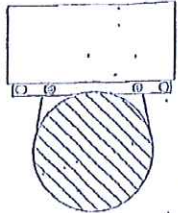
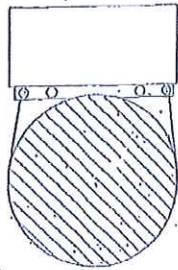
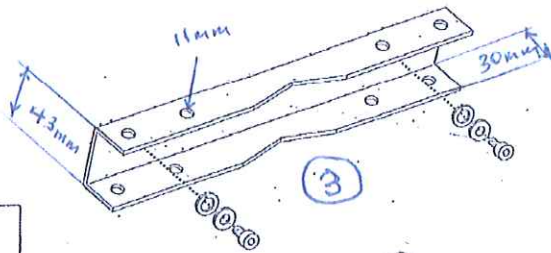
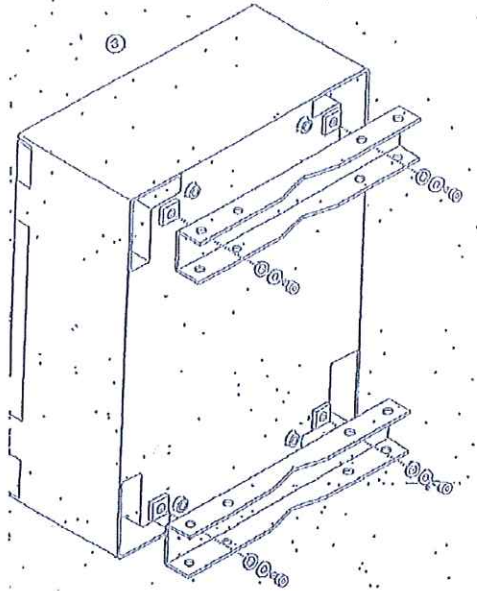
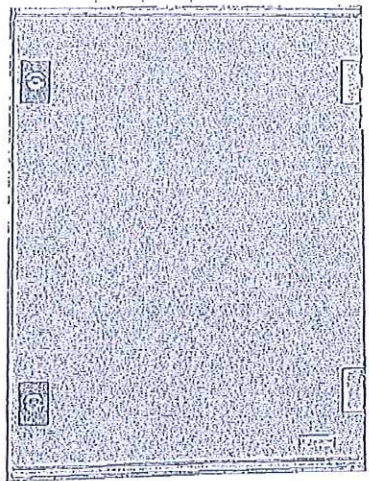
The door shall be marked legibly and indelibly with the following information:

- a) Name or trade mark of the manufacturer
- b) Country of origin
- c) HATARI! / DANGER! Warning of Electrical Hazard with standard symbol.
- d) Property of KP & L Co. Ltd.
- e) Ring Fencing

9.1.4 Relevant technical details, schematic drawings, operational and service manuals shall be submitted to support the tender and shall be clearly marked to indicate the type/ model of the meter box being offered.

9.1.5 The Tenderer shall submit a clause-by-clause statement of compliance with these specifications in the format seen in Appendix A. In case of deviations the affected requirements shall be indicated.

9.1.6 The tenderer shall show proof, by means of appropriate sample to be submitted during valuation.



Appendix A. SPECIFICATION FOR THE POLE MOUNTED METER BOXES

CLAUSE	KPLC EQUIREMENT	MANUFACTURER'S COMPLIANCE/REMARKS	REFERENCE PAGE IN THE SUBMITTED DOCUMENTS
2.1(a)	Altitude: 0 to 2200 metres above mean sea level		
(b)	Temp: +40°C max and -1°C min, average +30°C		
(c)	Humidity: 30-90%, average 70%		
(d)	Pollution: Design pollution level to be taken as "Heavy". Corrosion protection should take this into account.		
2.2	The meter boxes are intended to be operated on 415V for three phase supply		
2.3	The meter box for pole mounted meters is to be mounted vertically on the pole. It shall be therefore suitable for mounting and operation on outdoor where raindrops shall impinge upon it.		
3.1	Enclosure protection: IP54		
4.1	Rated at 100A,415V		
5.1	1.5mm thick Flat metal plate: firmly positioned with screws to make them removable for drilling. Spaced 25mm from base.		
5.2(a)	Cable entry gland: rubber seal sufficient to accommodate securely 10mm ² -insulated cable.		
5.3(a)	Meter board dimensions... house 2 Three phase meter board measure: 400 mm (Height) x 400 mm (width) x 160 mm Depth, internal dimensions (cover included).		
(b)	2No stainless steel Brackets/straps 800mm long, 18mm wide and 0.75mm thick for each box. Fig 4 at top and bottom rear side of box to secure the meter box on the pole.		
(c)	Brackets/ Straps with provision for fastening & un-fastening		
(d)	Special provided or use of market size spanners		
(e)	Steel mounting bars of equal length		
7.1	Material: hard plastic of 5mm thickness made to a weather proof finish.		
8.1	Safety: Earthing provision for the metallic steel plate		
9.1.1 (i)	Construction - box: Diameter holes: 20, 4 numbers		
(ii)	Hinged door/lockable by two knobs and openable with sealing provisions.		
(iii)	The meter board door shall be fully openable.		
9.1.2	Construction - Materials		
(i)	Hard plastic		
(ii)	Clear plastic window for reading meter		

(iii)	Thickness as per table 1		
9.1.3 (i)	Name or trademark of the manufacturer.		
(b)	Country of origin		
(c)	HATARI! / DANGER! Warning		
(d)	Property of KP & L Co. Ltd.		
9.1.4	Relevant technical details, schematic drawings, operational and service manuals		
9.1.5	Clause-by-clause statement of compliance.		
9.1.6	Sample box provided		

NOTES:

1. The boxes should be supplied, complete, with the rubber seals fitted on the cable entry holes at the bottom of the box.
2. Dimensions of box given are the minimum dimensions for compliance. Offers for boxes with dimensions which are not more than 25% of the original size will be considered.

I**on behalf**

Declare that the above specifications matrix conforms to a typical tender meter, type.....

Being offered for this tender.

Signature.....

Date.....Stamp/Seal.....