THE KENYA POWER AND LIGHTING CO. LTD.

SPECIFICATION

for

LOW VOLTAGE SERVICE TURRET

REVISION RECORD

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FOREWORD

This specification has been prepared by the Research & Development Department on behalf of the Technical Committee of The Kenya Power and Lighting Company Limited (KPLC) and it lays down requirements for Low Voltage Service Turret. It has been approved by the Technical Committee for use by KPLC in purchasing the equipment.

It shall be the responsibility of the Manufacturer to ensure adequacy of the design and good engineering practice in the manufacture of the Low Voltage Service Turrets for KPLC.

1. SCOPE

This specification is for Low Voltage Fused Service Turret in heavy duty hot dip galvanised steel cabinet, finished in epoxy paint and supplied with holding root for outdoor use in three phase low voltage distribution system.

2. REFERENCES

The following documents were referred to during the preparation of this specification. In case of conflict, the provisions of this specification shall take precedence.

IEC 60439-5: Low-voltage switchgear and controlgear assemblies- Part 5: Particular requirements for assemblies intended to be installed outdoors in public places – cable distribution cabinets (CDCs) for power distribution in networks.

IEC 60529: Degrees of protection provided by enclosures.

ISO 1461: Specification for hot dip galvanized coatings on iron and steel articles.

BS 381C: Specification for colours for identification, coding and special purposes.

BS 1361: Specification for cartridge fuses for a.c. circuits in domestic and similar premises.

3. TERMS AND DEFINITIONS

For the purpose of this specification, definitions given in the reference standards shall apply.

4. REQUIREMENTS

4.1 Service Conditions

4.1.1 Operating Conditions

The Service Turret shall be suitable for continuous operation outdoors in tropical areas at altitudes of up to 2200m above sea level, humidities of up to 90%, average ambient temperature of +30°C with a minimum of -1°C and a maximum of +40°C, in direct sunlight, heavy saline conditions along the coast and isokeraunic levels of 180 thunderstorm days per year

4.1.2 System Characteristics

The Service Turret shall be suitable for use in a 4-wire distribution system operating at voltages not exceeding 600/1000V 50Hz.

4.2 Design and Construction

4.2.1 The Service Turret shall be designed and constructed in accordance with IEC 60439-5 and the requirements of this specification.

4.2.2 The Service Turret shall be stationary and suitable for outdoor installation in places which are exposed to the public, but where only authorised persons have access to their use.

4.2.3 The Service Turret shall be fused and shall be safe for use in public three-phase systems. The rated current shall be carried without the temperature rise of the individual parts exceeding the limits specified in IEC 60439-5.

4.2.4 The Service Turret shall be manufactured from heavy duty hot dip galvanized steel of thickness not less than 2mm. Alternatively, the Service Turrets shall be finished in epoxy powder electrostatic oven cured paint. The final colour shall be Dark Admiralty Grey Colour No. 632 as per BS 381C and **paint thickness shall be not less than 75 micro-mm anywhere on the panels (including the sharp edges).**

4.2.5 The top cover of the Service Turret shall have inclined surface(s) to avoid accumulation of rain water. It shall have a canopy over the door.

4.2.6 All ferrous parts of the Service Turret shall be heavy duty hot-dip galvanized. Terminals shall be of high conductivity and corrosion resistant material.

4.2.7 The Service Turret shall be equipped with insulated busbar, neutral and earthing busbars and terminals for incoming cables and outgoing cables. The neutral and earth shall have a bolted link.

4.2.8 The busbars shall be hard drawn high conductivity copper, shrouded and staggered providing IP 2X to the operator. The insulating materials used shall have resistance to thermal stress and flame retardant properties as per IEC 60439-5.

4.2.9 The Service Turret shall be suitable for one incoming cable from source and several outgoing cables to consumers, all bottom entry/exit. It shall have provision for looping to another Service Turret.

4.2.10 The Service Turret shall have 18 No. single phase circuits of 100 Amps rating (outgoing circuits in a 6 x 3 - phase configuration) with cut-outs arranged to allow for the replacement of fuses in safety. The cut-outs shall be complete with fuse links and shall be in accordance with BS 1361 Type IIa.

4.2.11 The cut-out fuses and holder shall be withdrawable cartridge type and shall be arranged and replaced without the use of tools. Provision shall be given for sealing the fuse carrier (holder) to the fuse base by use of a wire seal.

4.2.12 The Service Turret shall incorporate circuit identification/labelling facility. The base plate shall have knockout points for incoming/outgoing cable and eighteen 16-25mm² outgoing cables.

4.2.13 The Service Turret shall be well ventilated, vermin proof and with angle iron support at base for grouting on plinth block or foundation. The size of the angle iron support shall be at least 50 x 50 x 6mm and the ventilation shall comprise of Zinc Gauze ventilation screens.

4.2.14 The Service Turret shall be provided with hinged door, able to be opened through half turn, of hexagonal key in two safety locks. The two safety locks shall be evenly located on the door and shall have identical keys.

4.2.15 The **minimum degree of protection** shall be IP33 in accordance with IEC 60529.

4.3 Rating and Sizes

Description		**Requirement**
Rated Voltage		0.6/1kV
Frequency		50Hz
Current Rating		600A
Maximum Cable Size, incoming (source)		300mm² PVC/SWA/PVC 4C Aluminium
Maximum Cable Size, outgoing (load)		25mm² PVC/SWA/PVC 4C Aluminium
Dimensions	Cabinet Size	Width: 600mm, Depth: 325mm, Height: 965mm
	Base (Root)	250mm

4.4 Marking and Packing

4.4.1 The Service Turret shall be packed in such a manner as to protect it from damage during transportation and storage.

4.4.2 The Service Turret shall have a nameplate of corrosion resistant material. The nameplate shall contain the following information engraved legibly and indelibly:

a) Manufacturer's name
b) Rated Voltage
c) Rated Current
d) The words "PROPERTY OF KPLC"
e) Caution Notes (in the English Language)

5. TESTS AND INSPECTION

5.1 The Service Turret shall be tested and inspected in accordance with the requirements of this specification and IEC 60439-5. It shall be the responsibility of the manufacturer to perform or to have performed the tests specified and whatever other tests normally performed at works.

5.2 Certified true copies of previous Test Reports from an ISO/IEC 17025 accredited Laboratory recognized by the International Laboratory Accreditation Co-operation (ILAC) shall be submitted with the tender for the purpose of technical evaluation, all in the English Language. The test reports shall include type tests as per IEC 60439-5. For offers from local manufacturers of Service Turrets, a detailed test report in accordance with IEC 60439-5 and this specifications obtained from Kenya Bureau of Standards shall suffice.

6. TECHNICAL DOCUMENTATION

6.1 The Manufacturer shall submit a clause by clause statement of compliance with these specifications (in accordance with Appendix A) together with copies of the manufacturer's catalogues, brochures, technical data, drawings and copies of previous test reports clearly marked to support each clause, all in the English Language for evaluation. The manufacturer's type reference/ designation and technical particulars of the item offered shall be submitted.

6.2 Technical details and drawings for the Service Turret to be supplied shall be submitted to KPLC for approval before manufacture commences.

6.3 Complete test reports for the Service Turret shall be submitted to KPLC for approval before shipment/delivery. The test reports shall be from an ISO/IEC 17025 accredited Laboratory recognized by the International Laboratory Accreditation Co-operation (ILAC).

6.4 Experience of Manufacturer

6.4.1 A detailed list & contact addresses of previous major customers (utilities) in the past three years shall be submitted with the tender for evaluation.

6.4.2 The manufacturer shall have at least five years experience in the manufacture of the Electricity Distribution Panel and Service Turret. Documentary evidence shall be submitted to support this.

END

APPENDIX A: **Statement of Compliance** *(to be filled and signed by the Manufacturer for all clauses and submitted for tender evaluation)*

Clause Number	Bidder's offer	Reference page on Manufacturer's catalogue, drawing, technical data or tests certificate to support the offer.

NB: - *This schedule does not in any way substitute for detailed information required elsewhere in the specification.*

Manufacturer's Declaration: I .....on behalf of..... declare that the above specifications matrix conforms to a typical tender item type ..... as clearly marked in the attached technical brochures & drawings, and being offered for this tender.

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