



TITLE:

**SPECIFICATION FOR LV  
DISTRIBUTION FUSE  
PANEL 1600A**

Doc. No.

KPLC1/3CB/TSP/11/042

Issue No.

1

Revision No.

0

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**0.1 Circulation List**

COPY NO.	COPY HOLDER
1	Research & Development Manager
2	Procurement Manager
3	Stores & Transport Manager
4	Design & Construction Manager
5	Operations & Maintenance Manager
6	Deputy Manager, Technical Audit

**0.2 Amendment Record**

Rev No.	Date (YYYY-MM-DD)	Description of Change	Prepared by (Name & Signature)	Approved by (Name & Signature)

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### FOREWORD

This specification has been prepared by the Research and Development Department of The Kenya Power and it lays down requirements for 6-way 1600A Low Voltage Distribution Fuse Panel (also referred to as Distribution Pillar). It is intended for use by Kenya Power in purchasing the items.

It shall be the responsibility of the manufacturer to ensure adequacy of the design and good engineering practice in the manufacture of the 6-way 1600A Low Voltage Distribution Pillar for Kenya Power. The manufacturer shall also submit information which confirms satisfactory service experience with products which fall within the scope of this specification.

It is expected that suppliers will provide energy efficient standard design that will provide high level of efficiency and significant initial cost saving.

The low voltage distribution fuse pillar will be for use in outdoor or indoor application as specified in the tender

### 1. SCOPE

This specification is for 6-way 1600A Distribution Fuse Panel for use in a 4-wire distribution system operating at voltages not exceeding 600/1000V, 50Hz.

### 2. REFERENCES

The following standards contain provisions which, through reference in this text, constitute provisions of this specification. Unless otherwise stated, the latest edition of the referenced document (including any amendments) applies.

IEC 60439-5: Low-voltage switchgear and controlgear assemblies- Part 5: Particular requirements for assemblies intended to be installed

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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.

KS 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

### 3. TERMS AND DEFINITIONS

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

### 4. REQUIREMENTS

#### 4.1 Service Conditions

##### 4.1.1 Operating Conditions

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The Distribution Fuse Panel shall be suitable for continuous operation indoors/outdoors in tropical areas at altitudes of up to 2200m above sea level, humidity 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 Distribution Fuse Panel 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 Distribution Fuse Panel shall be designed and constructed to the requirements of IEC 60439 and this specification.

4.2.2 The Distribution Fuse Panel shall be all insulated stationary type suitable for indoor installation.

4.2.3 The Distribution Fuse Panel shall be manufactured with a minimum of 2.0mm galvatite steel and shall have hinged double doors with three point barlock and provision for padlock. The final colour shall be Dark Admiralty Grey Colour No. 632 as per BS 381C. The paint thickness shall not be less than 85µm anywhere on the panels (including the sharp edges).

4.2.4 The Distribution Fuse Panel shall be supplied complete fitted with:

- 1600A bus bars, electro tinned hard drawn high conductivity copper.
- Maximum Demand Indicator (MDI)/Ammeter of accuracy at least  $\pm 2.5\%$ .

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- c) Voltmeter and selector switch for phase to phase and phase to neutral voltmeter readings. The voltmeter accuracy shall be at least  $\pm 1.5\%$ .
- d) One incomer and six outgoing fused circuits (each three phase).
- e) 1600A, 3 phase, 4-wire off load isolating switch unit with bolted links on phases and neutral.
- f) Three current transformers ratio 1600/800/5, class 1.0 10VA.
- g) Provision for seven single core 630mm<sup>2</sup> PVC SWA PVC incoming aluminium incoming cable connections and 6No. outgoing cable connections each 300 sq.mm PVC SWA PVC 4/C Aluminium, all wired for bottom entry. Terminations shall be easily accessible, of high conductivity and corrosion resistant material and shall be clamp type.
- h) Six No. 600A 3 phase 4-wire fuse units with moulded shrouded through grip handles for HRC type fuses of 92 mm centers and solid neutral connection. The fuse holder shall be withdrawable type, arranged and replaced without the use of tools.
- i) Bolted removable neutral earth links.
- j) M12 Brass earth stud.
- k) Phase barriers shall be provided to prevent insertion of fuse links between contacts of different phases. The barrier shall be of material, which does not readily support combustion.
- l) Insulated front screens shall be provided and the busbars shall be situated such that contact cannot be made with them during normal operation.
- m) Interior light controlled by door operated switch.
- n) 13A 3-pin switch socket outlet with plug (square pins).
- o) As a minimum, insulated cutouts each for voltmeter, panel lighting and socket outlet.
- p) Circuit identification/labelling facility.
- q) Ventilation louvres with anti-vermin baffles.

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- r) One hole at each corner for floor fixing bolts (to be complete with bolts, all protected against corrosion).
- s) All the relevant accessories and fittings to achieve the performance requirements specified.

**4.2.5** The top cover of the Distribution Fuse Panel shall have inclined surface(s) to avoid Accumulation of rain water. It shall have a canopy over the door.

**4.2.6** The minimum degree of protection shall be IP53 for outdoor installation and IP32 for indoor installation (this is to be specified in the tender) in accordance with IEC 60259

### Rating & Sizes

Description	Requirement
Rated Voltage and Frequency	0.6/1kV 50Hz
Current Rating	1600A
Cable Size, incoming (source)	7x630mm <sup>2</sup> PVC/SWA/PVC S/C Aluminium
Cable Size, outgoing (load)	300mm <sup>2</sup> PVC/SWA/PVC 4/C Aluminium
Overall dimensions (approximate)	Width: 1400mm, Height: 1650mm, Depth: 450mm

### 5. TESTS AND INSPECTION

**5.1** The Distribution Fuse Panel shall be tested and inspected in accordance with the requirements of this specification and IEC 60439. It shall be the responsibility of the

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manufacturer to perform or to have performed the tests specified and whatever other tests normally performed at works.

**5.2** Copies of previous Test Certificates and Reports certified by the relevant International or National Testing/ Standards Authority of the country of manufacture or ISO/IEC 17025/ILAC accredited testing laboratory shall be submitted with the tender (including certificate of accreditation for laboratory) for the purpose of technical evaluation, all in English Language.

**5.3** Routine and sample test reports for the Distribution Fuse Panel to be supplied shall be submitted to Kenya Power for approval before shipment/delivery of the goods.

**5.4** On receipt of the Distribution Fuse Panel, Kenya Power will inspect them for acceptance at stores and may perform or have tests performed in order to verify compliance of the equipment with this specification.

The supplier shall replace without charge to Kenya Power, any equipment which upon examination, test or use fail to meet any or all of the requirements in this specification.

**6. MARKING, LABELLING AND PACKING**

**6.1** Installation instructions printed in English Language shall be submitted with the Equipment

**6.2** The Distribution Fuse Panel shall be packed in such a manner as to protect it from damage during transportation, handling & storage.

**6.3** The Distribution Fuse Panel shall have a nameplate of corrosion resistant material. The nameplate shall contain the following information engraved legibly and indelibly:

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- a) Manufacturer's name & Type No.
- b) Rated Voltage
- c) Rated Current
- d) The words "PROPERTY OF Kenya Power"
- e) Caution Notes (DANGER /HATAR I in the English Language)

**ANNEX A: Statement of Compliance and Technical Particulars** *(to be filled and signed by the manufacturer and submitted together with catalogues, brochures, drawings, technical data, customer sales records and certified copies of test certificates & reports*

Clause Number	Bidder's offer	Reference page on Manufacturer's catalogue, drawing, technical data or tests certificate/report to support the offer.
1		
2		
4.1.1		
4.1.2		
4.2.1		
4.2.2		
4.2.3		
4.2.4 (a) to (s)		
4.2.5		
4.2.6		
4.3		
5.1		
5.2		
5.3		
5.4		

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6.1		
6.2		
6.3		
List copies of drawings, catalogues, technical data, customers records & test reports submitted to support the offer		

**Note** - 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 submitted information conforms to the low voltage distribution fuse panel 1600A , being offered for this tender.

Signature.....

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

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