

DOCUMENT NO: KP1/6C/4/1/TSP/11/010



Kenya Power

**LOW VOLTAGE MINIATURE CIRCUIT BREAKERS (MCB) -
SPECIFICATION**

A Document of the Kenya Power & Lighting Company Plc
June 2020



TITLE:
**LOW VOLTAGE MINIATURE
 CIRCUIT BREAKERS (MCB) -
 SPECIFICATION**

Doc. No.	KP1/6C/4/1/TSP/11/010
Issue No.	1
Revision No.	1
Date of Issue	2020-06-16
Page 2 of 18	

Table of Contents

0.1 CIRCULATION LIST	3
0.2 AMENDMENT RECORD	4
FOREWORD	5
1. SCOPE.....	6
2. NORMATIVE REFERENCES	6
3. DEFINITIONS	6
4. REQUIREMENTS	7
4.1. Service conditions	7
4.2. GENERAL REQUIREMENTS.....	7
4.2.1. Design and construction	7
4.2.2. Power System parameters.....	9
4.2.3. Mounting	9
4.2.4. Housing	9
4.2.5. Dimensions.....	9
4.2.6. Terminals.....	9
4.2.7. Markings.....	10
4.2.8. Tamper Evidence.....	10
4.2.9. Neutral Link	11
4.2.10. Motor Starting	11
4.2.11. Tripping Mechanism:	11
APPENDICES.....	12
APPENDIX A: Tests and Inspection (Normative)	12
APPENDIX B: Inspection at Delivery Point	13
APPENDIX C: Warranty	13
APPENDIX D: Qualification of the Manufacturer (Normative)	13
APPENDIX E: Documentation (Normative)	14
APPENDIX F: Guaranteed Technical Particulars	15

Issued by: Head of Section, Standards Development

Authorized by: Head of Department, Standards

Signed:

Signed:

Date: 2020-06-16

Date: 2020-06-16



TITLE:
**LOW VOLTAGE MINIATURE
CIRCUIT BREAKERS (MCB) -
SPECIFICATION**

Doc. No.	KP1/6C/4/1/TSP/11/010
Issue No.	1
Revision No.	1
Date of Issue	2020-06-16
Page 3 of 18	

0.1 CIRCULATION LIST

COPY NO.	COPY HOLDER
1	Manager, Standards
2	Electronic copy (pdf) on Kenya Power server (http://172.16.1.40/dms/browse.php?fFolderId=23)

REVISION OF KPLC STANDARDS

To keep abreast of progress in the industry, KPLC Standards shall be regularly reviewed. Suggestions for improvements to approved standards, addressed to the Manager, Standards Department, are welcome.

© Kenya Power & Lighting Company Plc

Users are reminded that by Section 25 of the Copyright Act, 2001 (Revised 2009) Cap 130 of the Laws of Kenya, copyright subsists in all KPLC Standards and except as provided under Section 26 of this Act, no KPLC Standard produced by KPLC may be reproduced, stored in a retrieval system by any means without prior permission from the Managing Director & CEO, KPLC.


Issued by: Head of Section, Standards Development	Authorized by: Head of Department, Standards
Signed:	Signed:
Date: 2020-06-16	Date: 2020-06-16



TITLE:
**LOW VOLTAGE MINIATURE
 CIRCUIT BREAKERS (MCB) -
 SPECIFICATION**

Doc. No.	KP1/6C/4/1/TSP/11/010
Issue No.	1
Revision No.	1
Date of Issue	2020-06-16
Page 4 of 18	

0.2 AMENDMENT RECORD

Rev No.	Date (YYYY-MM-DD)	Description of Change	Prepared by (Name & Signature)	Approved by (Name & Signature)
Issue1 Rev 0	2018-06-14	NEW ISSUE	Eng. Stephen Nguli Eng. Raphael Ndolo	Dr. Eng. Peter Kimemia
Issue1 Rev 1	2020-06-16	i. Changed the specification code from TSP/011/002 to TSP/11/010 ii. Replaces <i>TSP/11/010</i> <i>Issue 1 Rev 0</i> dated 2014- 10-18	Rotich Benard	Dr. Eng. Peter Kimemia 

Issued by: Head of Section, Standards Development

Signed: 

Date: 2020-06-16

Authorized by: Head of Department, Standards

Signed: 

Date: 2020-06-16



TITLE:
**LOW VOLTAGE MINIATURE
CIRCUIT BREAKERS (MCB) -
SPECIFICATION**

Doc. No.	KP1/6C/4/1/TSP/11/010
Issue No.	1
Revision No.	1
Date of Issue	2020-06-16
Page 5 of 18	

FOREWORD

This standard specification has been prepared by the Standards Department of Kenya Power and lays down the specification for Low Voltage Miniature Circuit Breakers (MCBs). The MCBs are meant for use in low voltage protection and metering networks. It is intended for use by KPLC in purchasing of low voltage miniature circuit breakers.

It shall be the responsibility of the supplier to ensure adequacy of the design and good engineering practice in the manufacture of the low voltage miniature circuit breakers for KPLC. The manufacturer shall exhibit good workmanship and good engineering practice in the manufacture of the low voltage miniature circuit breakers for KPLC.

The supplier shall submit information which confirms the manufacturer's satisfactory service experience with products which fall within the scope of this specification.

Users of this KPLC specification are responsible for their correct interpretation and application.

The following are members of the team that developed this specification:

Name	Department
Eng. Stephen Nguli	Standards
Eng. Raphael Ndolo	Standards
Rotich Benard	Standards

Issued by: Head of Section, Standards Development

Authorized by: Head of Department, Standards

Signed: 

Signed: 

Date: 2020-06-16

Date: 2020-06-16



TITLE: LOW VOLTAGE MINIATURE CIRCUIT BREAKERS (MCB) - SPECIFICATION	Doc. No.	KP1/6C/4/1/TSP/11/010
	Issue No.	1
	Revision No.	1
	Date of Issue	2020-06-16
	Page 6 of 18	

1. SCOPE

This specification covers both moulded case and industrial class low voltage circuit breakers of the moulded case type, particularly intended for general application in the protection of low voltage a.c. reticulation networks and systems, including, but not restricted to meter boards and distribution kiosks. The circuit breakers covered by this specification are rated at and intended for application on 50Hz reticulation systems having rated voltages up to and including 230 volts single-phase and 230/400 volts three-phase four-wire.

This specification is for temperature-stable, low voltage miniature circuit breakers of tripping characteristics **Type B, C or D** intended for use as protection devices in standard applications in the residential and non-residential sector. It covers the following categories of miniature circuit breakers:

- a) Two-wire 230V single phase with neutral model
- b) Three or Four-wire 400V three-phase with neutral model

This specification stipulates the minimum requirements for the low voltage miniature circuit breakers acceptable for use in the company and it shall be the responsibility of the supplier and manufacturer to ensure that the offered design is of the highest quality and guarantees excellent service to KPLC.

2. NORMATIVE REFERENCES

The following standards contain provisions which through reference in this text constitute provisions of this specification. For dated editions, the cited edition shall apply; for undated editions, the latest edition of the referenced document shall apply.

For this specification, the definitions and abbreviations given in the reference standards shall apply.

- IEC/EN 60898-1: MCBs for building installations and similar purposes AC Systems
- IEC/EN 60898-2: MCBs for building installations and similar purposes for AC and DC systems
- IEC 60947-2: Low-Voltage Switchgear – Circuit Breakers
- IEC 60529: Degrees of protection provide by enclosures (IP code)
- IEC 60947-1: Low-voltage switchgear and controlgear - Part 1: General rules

3. DEFINITIONS

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

Issued by: Head of Section, Standards Development	Authorized by: Head of Department, Standards
Signed:	Signed:
Date: 2020-06-16	Date: 2020-06-16



TITLE:
**LOW VOLTAGE MINIATURE
CIRCUIT BREAKERS (MCB) -
SPECIFICATION**

Doc. No.	KP1/6C/4/1/TSP/11/010
Issue No.	1
Revision No.	1
Date of Issue	2020-06-16
Page 7 of 18	

4. REQUIREMENTS

4.1. Service conditions

The low voltage miniature circuit breakers shall be suitable for continuous outdoor operation in tropical areas and harsh climatic conditions including areas exposed to:

- a) Altitudes of up to 2200m above sea level
- b) Humidity of up to 95%
- c) Average ambient temperature of +30°C with a minimum of -1°C and a maximum of +40°C, in direct sunlight,
- d) *Isokeraunic* levels of up to 180 thunderstorm days per year.
- e) Pollution (IEC 60947-1)-Very Heavy: class IV

4.2. GENERAL REQUIREMENTS

4.2.1. Design and construction

- 4.2.1.1. The MCB shall be designed and constructed in compliance with requirements of IEC 60898-1 and IEC 60947-2 standards.
- 4.2.1.2. The MCB shall be maintenance-free, manufactured for control and protection against overloads and short circuits of electrical wiring for domestic /residential installations and similar premises designed for use by uninstructed persons.
- 4.2.1.3. The MCB shall be so designed and constructed that, in normal use their performance is reliable and without danger to the user and the surroundings.
- 4.2.1.4. The MCB is to be used in a single- or three-phase supply network, with a phase and neutral wire (L-N), configuration. The Neutral conductor has multiple earthing. The Neutral is also solidly earthed at the source Distribution Transformer.
- 4.2.1.5. The MCB shall have provision for manual operation by hand to the closed position and to the open position.
- 4.2.1.6. The MCB manual operating means shall have an “up-down” movement, when the circuit breaker is mounted as in normal use. The circuit breaker contacts shall be closed by the up movement.
- 4.2.1.7. The Open position of the circuit breaker shall be indicated by the symbol “O-OFF” and the closed position by the symbol “I-ON”. The Operating means shall be used to indicate the

Issued by: Head of Section, Standards Development

Authorized by: Head of Department, Standards

Signed:

Signed:

Date: 2020-06-16

Date: 2020-06-16



TITLE:
**LOW VOLTAGE MINIATURE
 CIRCUIT BREAKERS (MCB) -
 SPECIFICATION**

Doc. No.	KP1/6C/4/1/TSP/11/010
Issue No.	1
Revision No.	1
Date of Issue	2020-06-16
Page 8 of 18	

position of the circuit breaker contacts. In addition to the marking, red identification shall be used for switch position ON and green identification for switch position OFF.

- 4.2.1.8. The MCB shall be so constructed that the moving contacts can come to rest only in the Closed Position or in the Open position, even when the actuator(handle) is released in an intermediate position.
- 4.2.1.9. The Supply and the Load terminals shall be marked appropriately in accordance with IEC 60898 standard.
- 4.2.1.10. Connections whether electrical or mechanical shall withstand the mechanical stresses occurring in normal use.
- 4.2.1.11. The maximum temperature rise shall not exceed the values stated in IEC 60898, when the circuit breaker is carrying its rated current in the conditions specified in the standard.
- 4.2.1.12. The MCB shall be equipped with an overcurrent release as well as an overload release.
- 4.2.1.13. Technical parameters of the MCB shall be as per table 1 below:

Table 1: Technical Parameters of MCB

Parameter Description	Unit	Value		
Rated Voltage	V	230/400		
Rated current	A	6,10,16,20,32,40, 63		
Power frequency withstand Voltage	kVrms	4		
Impulse withstand Voltage	kVpk	6		
No. of poles		230V (1- Ph)	400V (3-Ph)	
		1P+N	3P+N	
Tripping Characteristic type		Type B	Type C	Type D
Instantaneous Tripping range according to IEC/EN 60898-1		3-5x I _n	5-10x I _n	10-20xI _n I _n
Rated breaking capacity	kA	6	6	10
Energy Limitation Class		3	3	3
Mounting		DIN rail (DIN EN50052)		
Mechanical Endurance	cycles	20,000		
Electrical Endurance	cycles	10,000		
Conductor Size	mm ²	Up to 25		
Degree of protection	IP	55		

Issued by: Head of Section, Standards Development	Authorized by: Head of Department, Standards
Signed:	Signed:
Date: 2020-06-16	Date: 2020-06-16



TITLE:
**LOW VOLTAGE MINIATURE
CIRCUIT BREAKERS (MCB) -
SPECIFICATION**

Doc. No.	KP1/6C/4/1/TSP/11/010
Issue No.	1
Revision No.	1
Date of Issue	2020-06-16
Page 9 of 18	

4.2.1.14. The MCB shall have the following overload tripping characteristics:

(i) Non-tripping current, $I_{nt} = 1.13I_n$

(ii) Tripping current, $I_t = 1.45I_n$

4.2.2. Power System parameters

4.2.2.1. The MCB shall have a voltage rating of 230V, 50 Hz single-phase single-wire or two-wire and 400V, 50 HZ three-phase 3-wire/ 4-wire with a tolerance of $\pm 10\%$, fed from 11 kV or 33 kV step-down distribution transformers with earthed neutral points.

4.2.2.2. The MCB shall be suitable for operation at 230V and 400V, the current rating being chosen from the ranges indicated in the schedule of requirements.

4.2.3. Mounting

4.2.3.1. The MCB is intended to be used individually and shall be presented for surface mounting.

4.2.3.2. Suitable screws shall be supplied with the MCB. In separate cases, MCBs that are mountable on DIN rail may be requested and in such cases the supplier shall provide DIN compliant MCB's.

4.2.4. Housing

4.2.4.1. The insulating casing shall be of moulded insulating material possessing high thermal stability and good mechanical strength. This shall be UV protected and fire retardant.

4.2.4.2. The MCB shall not deform when kept in air maintained at 60°C for one hour. It shall afford protection to IEC 60529 for at least IP55, except for access associated with cable entry and fixing screws. The insulating material shall be pigmented grey (RAL7035) and the operating handle shall be red.

4.2.5. Dimensions

Generally compact design is called for to save on space, but the device shall be sturdy.

4.2.6. Terminals

4.2.6.1. The Connection terminals shall be screw terminals (captive screws) with washer or clamping plate or anti-spread device and shall be large enough to accommodate power supply cables as specified in table 1.

4.2.6.2. The terminals shall be designed to clamp solid conductors as well as rigid stranded conductors.

Issued by: Head of Section, Standards Development

Authorized by: Head of Department, Standards

Signed:

Signed:

Date: 2020-06-16

Date: 2020-06-16



TITLE:
**LOW VOLTAGE MINIATURE
CIRCUIT BREAKERS (MCB) -
SPECIFICATION**

Doc. No.	KP1/6C/4/1/TSP/11/010
Issue No.	1
Revision No.	1
Date of Issue	2020-06-16
Page 10 of 18	

- 4.2.6.3. The terminals shall be corrosion free under the climatic conditions stated in this specification.
- 4.2.6.4. Current carrying parts and connections including parts intended for protective conductors, if any shall be of either copper or an alloy containing at least 50% copper for parts worked cold or at least 50% copper for other parts or other metal or suitable coated metal with no less resistance to corrosion than copper and having mechanical properties no less suitable.
- 4.2.6.5. Terminals for external conductors shall be such that the conductors may be connected so as to ensure that necessary contact pressure is maintained permanently.
- 4.2.6.6. Terminals shall be so designed that they clamp the conductor without undue damage to the conductor.
- 4.2.6.7. Terminals shall be so designed that they clamp the conductor reliably between the surfaces. Once the conductor has been tightened the screw shall not become loose on its own.
- 4.2.6.8. The MCB shall be supplied complete with terminal connection screws.

4.2.7. Markings

The MCB shall have the following markings embossed, indented, or otherwise indelibly marked on it in the factory; the electrical rating markings shall remain visible when the circuit breaker is in its normal operating position:

- i. Name and registered trade mark of the manufacturer
- ii. Country of origin
- iii. Year of manufacture
- iv. Voltage rating (which shall be 230V or 400V)
- v. Current rating (which shall be within the range given in table 1)
- vi. Terminal identifications for both supply side and load side
- vii. The words “PROPERTY OF KPLC”, at least 4 mm high
- viii. Type / Tripping characteristics B, C or D as appropriate

4.2.8. Tamper Evidence

- 4.2.8.1. The terminals shall be concealed to discourage any attempts of tampering, and to reveal acts of bypassing of the device through external wiring.

Issued by: Head of Section, Standards Development	Authorized by: Head of Department, Standards
Signed:	Signed:
Date: 2020-06-16	Date: 2020-06-16



TITLE:
**LOW VOLTAGE MINIATURE
CIRCUIT BREAKERS (MCB) -
SPECIFICATION**

Doc. No.	KP1/6C/4/1/TSP/11/010
Issue No.	1
Revision No.	1
Date of Issue	2020-06-16
Page 11 of 18	

4.2.8.2. A proven design of external sealing shall be used for this purpose, and shall form part of the device. A provision for terminal cover sealing shall be made.

4.2.9. Neutral Link

4.2.9.1. In these applications which conform to multiple protective earthing (PME), the star point of the distribution transformer is earthed and the neutral conductor of the distributor is also earthed at regular intervals.

4.2.9.2. The neutral conductor of the service cable is bonded at the meter board to the system earth-conductor. Where applicable, the neutral in the MCB shall therefore be a solid link rated slightly higher than the phase circuit.

4.2.9.3. The neutral link shall have two pinch screws at either end otherwise a proven cable connection design (with low probability of failure) must be demonstrated.

4.2.10. Motor Starting

4.2.10.1. The MCB shall be capable of passing a starting in-rush current of at least five times the full load current of a typical squirrel cage induction motor with the same rating as the circuit breaker. (A time-current plot of the two devices on the same scale shall be attached in evidence.)

4.2.11. Tripping Mechanism

4.2.11.1. The MCB shall have a trip-free mechanism and be capable of breaking the rated fault current and at the rated voltage without contact welding or weakening.

4.2.11.2. The MCB shall have an inbuilt Inrush delay to allow for motor/compressor start up and hence prevent false trips.

4.2.11.3. The MCB shall be of Type B, C or D according to the tender schedule requirement.

4.2.11.4. The speed at which they trip shall depend upon the level of overload and determined by the thermal device within the MCB. The MCB shall use a magnetic fault protection system, which trips the MCB within one tenth of a second when the overload reaches a set level.

Issued by: Head of Section, Standards Development

Signed:

Date: 2020-06-16

Authorized by: Head of Department, Standards

Signed:

Date: 2020-06-16



TITLE:
**LOW VOLTAGE MINIATURE
CIRCUIT BREAKERS (MCB) -
SPECIFICATION**

Doc. No.	KP1/6C/4/1/TSP/11/010
Issue No.	1
Revision No.	1
Date of Issue	2020-06-16
Page 12 of 18	

APPENDICES

APPENDIX A: Tests and Inspection (Normative)

- A.1. The MCBs shall be manufactured and tested in accordance with IEC/EN 60898-1 and the requirements of this specification. It shall be the responsibility of the manufacturer to perform or to have performed all the relevant tests. Routine tests shall be carried out on every MCB
- A.2. The test certificates shall be from an accredited reputable independent testing laboratory, acceptable to the purchaser. Proof of accreditation by a national/international authority shall be forwarded with the offer. Test reports shall be complete including all the pages as issued by the testing authority. Submission of only Parts of test reports shall not be acceptable.
- A.3. Copies of previous type test reports by the relevant International or National Testing/Standards Authority of the country of manufacture (or ISO/IEC 17025 or ILAC accredited independent laboratory) shall be submitted with the tender for evaluation (all in English Language). A copy of accreditation certificate for the laboratory shall also be submitted.
- A.4. Routine Tests:** The copies of Type Test Reports to be submitted with the tender shall include the following tests in accordance with IEC 60898-1:
- a) Indelibility of Marking
 - b) Reliability of Screws, Current carrying parts and connections
 - c) Reliability of terminals for external conductors
 - d) Protection against electric shock
 - e) Dielectric Properties
 - f) Temperature rise
 - g) Tripping Characteristic
 - h) Mechanical and Electrical endurance
 - i) Short-Circuit
 - j) Resistance to Mechanical shock and Impact
 - k) Resistance to heat
 - l) Resistance to abnormal heat and to fire
 - m) Resistance to rusting.
- A.5 **Routine test** reports for the MCB shall be submitted to KPLC for approval before shipment/delivery of the goods. Two (2) KPLC Engineers shall witness acceptance tests at the factory before shipment.

Issued by: Head of Section, Standards Development

Authorized by: Head of Department, Standards

Signed:

Signed:

Date: 2020-06-16

Date: 2020-06-16



TITLE:
**LOW VOLTAGE MINIATURE
CIRCUIT BREAKERS (MCB) -
SPECIFICATION**

Doc. No.	KP1/6C/4/1/TSP/11/010
Issue No.	1
Revision No.	1
Date of Issue	2020-06-16
Page 13 of 18	

APPENDIX B: Inspection at Delivery Point

- B.1. On receipt of the equipment, KPLC will inspect the MCB for acceptance at stores and may perform or have tests performed to verify compliance of the equipment with this specification.
- B.2. The supplier shall replace/rectify without charge to KPLC, any equipment which upon examination, test or use, fail to meet any or all the requirements in this specification.

APPENDIX C: Warranty

- C.1. The supplier/manufacture warrants the purchaser that all goods supplied under this contract shall have no defect arising from design, materials or workmanship.
- C.2. A warranty of 24 months from the date of delivery of the units to Kenya Power store shall be offered by the manufacturer for the MCB.

APPENDIX D: Qualification of the Manufacturer (Normative)

- D.1. The manufacturer whom shall be considered for tender award shall among other requirements outlined in the bidding fulfil the following requirements:
- D.2. **Quality Assurance:** The manufacturer shall possess a valid ISO 9001:2015 or later quality assurance certification for manufacture of MCBs and for the factory where the MCBs are to be manufactured. This shall cover the duration of manufacture and delivery of the MCBs. The bidder shall furnish a copy of the ISO certificate certified as a true copy of the original together with the tender bid.
- D.3. **Manufacturing Experience:** The manufacturer of the MCBs shall have minimum of 15 years' experience in the manufacture of the MCBs and the manufacturer must have sold at least 100,000 units to overseas customers in the last 5 years. Records of overseas sales with purchaser's name, year and quantity shall be furnished with the bid, as well as the email contact and day telephone number of the purchasers.

The manufacturer shall be required to submit evidence with relevant references of design, supply, installation, testing, training, and commissioning of similar MCBs.

D.4. Letters of Customer Satisfaction:

Letters of satisfaction from four (4) overseas customers for the particular MCBS offered in this tender shall be furnished with the bid. The letters of satisfaction shall bear the rubber stamp of the purchasing utilities and the name and signature of the author of the letter.

Issued by: Head of Section, Standards Development	Authorized by: Head of Department, Standards
Signed:	Signed:
Date: 2020-06-16	Date: 2020-06-16



TITLE:
**LOW VOLTAGE MINIATURE
 CIRCUIT BREAKERS (MCB) -
 SPECIFICATION**

Doc. No.	KP1/6C/4/1/TSP/11/010
Issue No.	1
Revision No.	1
Date of Issue	2020-06-16
Page 14 of 18	

APPENDIX E: Documentation (Normative)

- E.1. The bidder shall submit its tender complete with technical documents required by Appendix F (Guaranteed Technical Particulars) for tender evaluation. The technical documents to be submitted (all in English language) for tender evaluation shall include the following:
- (i) Guaranteed Technical Particulars signed by the manufacturer;
 - (ii) Copies of the Manufacturer’s catalogues, brochures, and technical data sheets (including ratings) for MCBS, the complete assembled unit and layout drawings. Mechanical drawings on the design and construction of the MCBs shall also be submitted;
 - (iii) Sales records for the last five years and at least four customer reference letters;
 - (iv) Details of manufacturing capacity and the manufacturer’s experience;
 - (v) Copies of required type test reports by a third-party testing laboratory accredited to ISO/IEC 17025;
 - (vi) Copy of accreditation certificate to ISO/IEC 17025 for the third-party testing laboratory;
 - (vii) Manufacturers letter of authorization, ISO 9001:2015 certificate and other technical documents required in the tender.
- E.2. The successful bidder (supplier) shall submit the following documents/details to The Kenya Power & Lighting Company for approval before manufacture:
- (i) Fully filled clause by clause Guaranteed Technical Particulars (GTP) signed by the manufacturer;
 - (ii) Design drawings and technical details;
 - (iii) Quality assurance plan (QAP) that will be used to ensure that the design, material; workmanship, tests, service capability, maintenance and documentation will fulfil the requirements stated in the contract documents, standards, specifications and regulations. The QAP shall be based on and include relevant parts to fulfil the requirements of ISO 9001:2015;
 - (iv) Detailed test program to be used during factory testing;
 - (v) Marking details;
 - (vi) Packaging details (including packaging materials and marking and identification of batches). The MCBs shall be packaged for indoor storage in tropical conditions.
 - (vii) Manufacturer’s undertaking to ensure adequacy of the design, good engineering practice in the manufacture of the MCBs for KPLC.
- E.3. The supplier shall submit recommendations for use, care, storage and routine inspection/testing procedures, all in the English Language, during delivery of the MCB to KPLC stores.

Issued by: Head of Section, Standards Development	Authorized by: Head of Department, Standards
Signed:	Signed:
Date: 2020-06-16	Date: 2020-06-16



TITLE:
**LOW VOLTAGE MINIATURE
 CIRCUIT BREAKERS (MCB) -
 SPECIFICATION**

Doc. No.	KP1/6C/4/1/TSP/11/010
Issue No.	1
Revision No.	1
Date of Issue	2020-06-16
Page 15 of 18	

APPENDIX F: Guaranteed Technical Particulars (Normative)

Clause	Description	KPLC Requirement	Supplier's Details/ Response	Comment
	Manufacturer's name	state		
	Manufacturer's letter of Authorization.	Provide a copy		
	Type or designation number of MCB offered and applicable standard.	state		
2	Scope:			
3	Reference standards	state		
4.1	Service conditions	specify		
4.2	General Requirements			
4.2.1.1	Design and construction standard	state		
4.2.1.2	MCBs design nature and purpose of use	specify		
4.2.1.3	Reliability and performance criteria	specify		
4.2.1.4	Network configuration at point of use	state		
4.2.1.5	Provision for manual operation	specify		
4.2.1.6- 4.2.1.8	Mechanical indication for operation status of the MCB	Specify		
4.2.1.9	Labeling of source and load directions of the MCB	specify		
4.2.4.11	Provision of overload release facility	specify		
4.2.1.12	Rated voltage and tolerance	state		
	Rated current	State		
	Rated short circuit current	state		
	Power frequency withstand voltage	specify		
	Impulse withstand Voltage			
	No of poles	state		
	Characteristic type offered	state		
	Mechanical Endurance	state		
	Electrical Endurance	state		
	Degree of protection	state		
4.2.1.13	Rated tripping current (provide T-I curves)	specify		
4.2.2.1	Network configuration at point of use.	specify		
4.2.3.2	Mounting facility and mounting screws	specify		

Issued by: Head of Section, Standards Development	Authorized by: Head of Department, Standards
Signed:	Signed:
Date: 2020-06-16	Date: 2020-06-16



TITLE:
**LOW VOLTAGE MINIATURE
 CIRCUIT BREAKERS (MCB) -
 SPECIFICATION**

Doc. No.	KP1/6C/4/1/TSP/11/010
Issue No.	1
Revision No.	1
Date of Issue	2020-06-16
Page 16 of 18	

4.2.4.2	Material of housing and IP	specify		
4.2.5	Provide dimensions of the MCB	provide		
4.2.6.1	Type of connection terminal	specify		
4.2.6.3- 4.2.6.4	Material for terminal, and composition of elements	specify		
4.2.6.5- 4.2.6.8	Applicable conductors for use with MCB and contact pressure applied	specify		
4.2.6.10	Maximum operating temperature of the MCBs as per IEC 60898-1	state		
4.2.7	Specify the markings and method of marking on the MCB	Specify		
4.2.8.1- 4.2.8.2	Provision for external sealing of the MCB	specify		
4.2.9.1- 4.2.9.3	Provision of neutral link (if applicable)	state		
4.2.10	Capacity to pass starting in rush currents for motors/compressors	specify		
4.2.11.1	Trip mechanism for breaking rated current	specify		
4.2.11.3	Type of MCB	state		
4.2.11.4	Type of tripping mechanism as per clause 4.2.11.3 above			

Appendices

A	TESTS AND INSPECTION (NORMATIVE)	State		
A.1	Test standards	List		
A.2	Type test certificates submitted with tender for evaluation	List		
A.3	Test certificates submitted	List		
A.4	Copies of previous type test and routine test reports by the relevant independent /international testing laboratory submitted State/List	List		
A.5	Routine test to be witnessed at the factory by KPLC engineers	List		

Factory Acceptance Tests

	FAT to be conducted in the factory	State compliance		
	Sample size and sampling procedure	specify		

Issued by: Head of Section, Standards Development	Authorized by: Head of Department, Standards
Signed:	Signed:
Date: 2020-06-16	Date: 2020-06-16



TITLE:
**LOW VOLTAGE MINIATURE
 CIRCUIT BREAKERS (MCB) -
 SPECIFICATION**

Doc. No.	KP1/6C/4/1/TSP/11/010
Issue No.	1
Revision No.	1
Date of Issue	2020-06-16
Page 17 of 18	

B	Inspection at Delivery Point		
B1	Inspection of good at KPLC stores	State compliance	
B2	The supplier shall replace/rectify without charge to KPLC, any defective equipment	State compliance	
C	Warranty		
C1	Warranty that goods are new and without defects	provide	
C2	Warranty for MCBs	provide	
D	Quality Management System		
D1	QAP and ISO 9001:2008	provide	
D2	Copies of quality management certifications attached	State	
D3	Delivery time, Production capacity & experience of the manufacturer	State	
D4	Customer reference letters	List	
E	Technical documents to be submitted with tender documents		
E1	a) Fully-filled clause by clause Guaranteed Technical Particulars (GTPs)- Appendix D - stamped and signed by the manufacturer.	state	
	b) Copies of the Manufacturer's catalogues, brochures, drawings and technical data for the equipment;	state	
	c) Details of the manufacturer's experience; Sales records for the last five years and at least four customer reference letters.	state	
	d) Copies of previous test certificates and test reports.	state	
	e) Marking & Packaging details (including packaging materials).	State	
E2	Documents to be submitted Kenya Power for approval before manufacture/supply		

Issued by: Head of Section, Standards Development	Authorized by: Head of Department, Standards
Signed:	Signed:
Date: 2020-06-16	Date: 2020-06-16



Kenya Power

TITLE:
LOW VOLTAGE MINIATURE
CIRCUIT BREAKERS (MCB) -
SPECIFICATION

Doc. No.	KP1/6C/4/1/TSP/11/010
Issue No.	1
Revision No.	1
Date of Issue	2020-06-16
Page 18 of 18	

(i)	Fully filled clause by clause Guaranteed Technical Particulars (GTPs) stamped and signed by the manufacturer (these are not the ones submitted with the tender);	State		
(ii)	Technical details and drawings with details of MCBs to be manufactured for KPLC.	State		
(iii)	Quality assurance plan (QAP	State		
iv)	Manufactures undertaking for good engineering practice	provide		
vi)	Each package is supplied with detailed user's installation guide printed in English language	Specify		

** Words like 'agreed', 'confirmed', 'As per KPLC specifications', etc. shall not be accepted and shall be considered non-responsive.*

.....
Manufacturer's Name, Signature, Stamp and Date

Issued by: Head of Section, Standards Development	Authorized by: Head of Department, Standards
Signed:	Signed:
Date: 2020-06-16	Date: 2020-06-16