

DOCUMENT NO.: KP1/13D/4/1/TSP/14/003



Kenya Power

MULTIFUNCTIONAL ELECTRICAL TESTER CALIBRATOR- SPECIFICATION

A Document of the Kenya Power & Lighting Co. Plc
June 2022

TITLE:
**MULTIFUNCTIONAL
ELECTRICAL TESTER
CALIBRATOR- SPECIFICATION**

Doc. No.	KP1/13D/4/1/TSP/14/003
Issue No.	2
Revision No.	1
Date of Issue	2022-06-09
Page 1 of 16	

TABLE OF CONTENTS

0.1 CIRCULATION LIST	2
0.2 AMENDMENT RECORD.....	3
FOREWORD	4
1. SCOPE.....	5
2. NORMATIVE REFERENCES	5
3. DEFINITIONS AND ABBREVIATIONS.....	6
3.1. ABBREVIATIONS	6
3.2. DEFINITIONS	6
4. REQUIREMENTS.....	6
4.1. SERVICE CONDITIONS	6
4.2. DESIGN AND CONSTRUCTION.....	7
4.3. FUNCTIONS.....	8
4.4. HARDWARE AND SOFTWARE.....	9
5. TESTS REQUIREMENTS.....	11
6. MARKING AND PACKING	11
6.1. MARKING	11
6.2. PACKING	11
APPENDICES	12
A: TESTS AND INSPECTION (Normative).....	12
B: QUALITY MANAGEMENT SYSTEM (Normative)	12
C: DOCUMENTATION AND TRAINING (Normative).....	13
D: GUARANTEED TECHNICAL PARTICULARS (Normative)	15

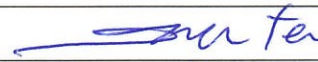
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Date: 2022-06-09

Date: 2022-06-09



TITLE:
**MULTIFUNCTIONAL
ELECTRICAL TESTER
CALIBRATOR- SPECIFICATION**

Doc. No.	KP1/13D/4/1/TSP/14/003
Issue No.	2
Revision No.	1
Date of Issue	2022-06-09
Page 2 of 16	

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?FolderId=23)

REVISION OF KPLC STANDARDS

In order 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.

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Users are reminded that by virtue of section 25 of the Copyright Act, 2001 (Revised 2014) 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 retrieval system by any means without prior permission from the Managing Director & CEO, KPLC.

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Date: 2022-06-09	Date: 2022-06-09

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ELECTRICAL TESTER
CALIBRATOR- SPECIFICATION**

Doc. No.	KP1/13D/4/1/TSP/14/003
Issue No.	2
Revision No.	1
Date of Issue	2022-06-09
Page 3 of 16	

0.2 AMENDMENT RECORD

Rev No.	Date	Description of Change	Prepared by
0	03/08/2016	New issue	Margret Kanini
0	15/02/2017	Cancels and replaces KP1/10A.2B/3/4-03 dated 2016-08-03 and any other previous revision.	Nancy Wairimu
1	09/06/2022	Added more references in the reference list to include recent Standards that specifies data transfer protocol for ports and interfaces -IEC 62680-1-2:2021, IEC 62477-1-2:2022, ISO/IEC 24786:2009, ISO/IEC 14776-251:2014	Eng. Benson Dianga
1	09/06/2022	Updated the reference for current ISO certification: ISO 9001:2015	
1	09/06/2022	Modified Clause 4.2.3 to expand scope of calibrator applications for required coverage.	
1	09/06/2022	Modified Clause 4.2.8 that describes GPIB/IEEE 488 port to specify that it should be a female port.	
1	09/06/2022	Inserted new clause (Clause 4.2.9) to specify a Standard Chassis Ground Port for reference bonding when connected to other measuring and display equipment.	
1	09/06/2022	Expanded the clause 4.4.1 for laptop computer, Specifying latest version, with more interface communications options, modes and channels.	

Issued by: Head of Section, Standards Development

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Signed: 

Signed: 

Date: 2022-06-09

Date: 2022-06-09



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ELECTRICAL TESTER
CALIBRATOR- SPECIFICATION**

Doc. No.	KP1/13D/4/1/TSP/14/003
Issue No.	2
Revision No.	1
Date of Issue	2022-06-09
Page 4 of 16	

FOREWORD

This specification has been prepared by the Standards Department in collaboration with Demand Side Management and Metering Department both of The Kenya Power and Lighting Company Plc (KPLC) and it lays down requirements for Multifunctional Electrical Tester Calibrator.

The Multifunctional Electrical Tester Calibrator is intended for use by Demand Side Management and Metering Departments for verifying and calibrating a wide range of electrical test tools and equipment, both analogue and digital, including; Multimeters, Insulation resistance High Potential (HIPOT) instruments & Equipment, Very Low Frequency (VLF) test Instruments & Equipment, Leakage current testers, Continuity Testers and Earth (ground) resistance testers, Loop/line impedance testers, ground bond testers, Residual-Current Device (RCD) or Ground Fault Current Interrupter (GFCI) Testers.

The specification was prepared to establish and promote uniform requirements for Multifunctional Electrical Tester Calibrator to be used at Kenya Power and Lighting Company Plc.



The Specification has been revised by a team comprising personnel from Network Management and Standards to update some of the features required in a standard testing and calibrating instrument.

This specification stipulates the minimum requirements for Multifunctional Electrical Tester Calibrator acceptable for use in the company and it shall be the responsibility of the suppliers and manufacturer to ensure that the offered design is of the highest quality and guarantees excellent service to KPLC, and ensure good workmanship and good engineering practice in the manufacture of the Multifunctional Electrical Tester Calibrator for KPLC.

Users of Kenya Power specifications are responsible for their correct interpretation and application.

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

Name	Division
Richard Kioko	Network Management
Peter Waweru	Network Management
Benson Dianga	IESR

Issued by: Head of Section, Standards Development	Authorized by: Head of Department, Standards
Signed: 	Signed: 
Date: 2022-06-09	Date: 2022-06-09

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**MULTIFUNCTIONAL
ELECTRICAL TESTER
CALIBRATOR- SPECIFICATION**

Doc. No.	KP1/13D/4/1/TSP/14/003
Issue No.	2
Revision No.	1
Date of Issue	2022-06-09
Page 5 of 16	

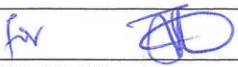

1. SCOPE

- 1.1. This specification is for Multifunctional Electrical Tester Calibrator for use by the company's Demand Side Management and Metering Department and Network Management's Live Line Equipment Laboratory.
- 1.2. The specification covers requirements, design, inspection and tests and schedule of Guaranteed Technical Particulars of Multifunctional Electrical Tester Calibrator.

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 will apply; for undated editions the latest edition of the referenced document shall apply.

- IEC 60529: Degrees of protection provided by enclosures (IP code)
- IEC 61010-1: Safety Requirements for Electrical equipment for measurement, control and laboratory use- Part 1: General Requirements
- IEC 60815: Selection and dimensioning of high voltage insulators intended for use in polluted conditions –Part 1: Definitions, information and general principles
- IEC 61326: Electrical equipment for measurement, control and laboratory use - EMC requirements.
- IEC 62680-1-2:2021: Universal serial bus interfaces for data and power - Part 1-2: Common components - USB Power Delivery specification
- IEC 62477-1:2022: Safety requirements for power electronic converter systems and equipment - Part 1: General
- ISO 9001: 2015: Quality Management systems – Requirements
- ISO 14001: Environmental Management Systems - Requirements for guidance of use.
- ISO/IEC 17025: General Requirements for the competence of testing and calibration laboratories

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CALIBRATOR- SPECIFICATION**

Doc. No.	KP1/13D/4/1/TSP/14/003
Issue No.	2
Revision No.	1
Date of Issue	2022-06-09
Page 6 of 16	

ISO/IEC 24786:2009: Information technology — User interfaces — Accessible user interface for accessibility settings

ISO/IEC 14776-251:2014: Information technology — Small computer system interface (SCSI) — Part 251: USB attached SCSI (UAS)

3. DEFINITIONS AND ABBREVIATIONS

For the purpose of this specification the definitions and abbreviations given in the reference standards shall apply together with the following:

3.1. ABBREVIATIONS

KPLC- The Kenya Power and Lighting Company Plc (Kenya Power)

ISO – International Organization for Standardization.

USB - Universal Serial Bus

LAN -Local Area Network

RS 232 – Standard for serial communication transmission of data

GPIOB – General Purpose Interface Bus

3.2. DEFINITIONS

Residual Current Devices (RCD)- Equipment used to prevent current finding alternative paths to ground in the event of faulty appliances

Loop Resistance Tester- Equipment used to test the resistance in the wires/loop between the source and the return.

4. REQUIREMENTS

4.1. SERVICE CONDITIONS

- 4.1.1 The Multifunctional Electrical Tester Calibrator shall be suitable for use outdoors in tropical areas and harsh climatic conditions including areas exposed to:

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Signed:	Signed:
Date: 2022-05-27	Date: 2022-05-27

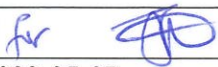

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**MULTIFUNCTIONAL
ELECTRICAL TESTER
CALIBRATOR- SPECIFICATION**

Doc. No.	KP1/13D/4/1/TSP/14/003
Issue No.	2
Revision No.	1
Date of Issue	2022-06-09
Page 7 of 16	

- 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
- d) Pollution: Design pollution level to be taken as “Heavy” (Pollution level III) for inland and “Very Heavy” (Pollution level IV) for coastal applications in accordance with IEC 60815.

4.2. DESIGN AND CONSTRUCTION

- 4.2.1. The Multifunctional Electrical Tester Calibrator shall have the Width less than 460mm, Height less than 450mm and Depth less than 150mm.
- 4.2.2. The Multifunctional Electrical Tester Calibrator shall be easy to use using front panel keypad.
- 4.2.3. The Multifunctional Electrical Tester Calibrator shall calibrate wide range of test Equipment, both analogue and digital including Multimeters, Insulation resistance High Potential (HIPOT) instruments & Equipment, Very Low Frequency (VLF) test Instruments & Equipment, Leakage current testers, Continuity Testers and Earth (ground) resistance testers, Loop/line impedance testers, ground bond testers, Residual-Current Device (RCD) or Ground Fault Current Interrupter (GFCI) Testers.
- 4.2.4. The Multifunctional Electrical Tester Calibrator shall have individual Function Keys on the keypad for selection of individual tests the Multifunctional Electrical Tester Calibrator will be capable of carrying out.
- 4.2.5. The input and output terminal configuration shall be designed to enable simple connection to a full range of instrumentation.
- 4.2.6. All outputs shall be isolated when not in use, with an LED indicator showing the active Input/ output terminal(s).
- 4.2.7. The Multifunctional Electrical Tester Calibrator shall have a hard mounting kit with stands on the bottom
- 4.2.8. The Multifunctional Electrical Tester Calibrator shall have standard interfaces: RS 232, USB 3.0 port, LAN port and GPIB(female)/ IEEE 488 port.
- 4.2.9. The Multifunctional Electrical Tester Calibrator shall have standard a chassis ground binding port

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Signed: 	Signed: 
Date: 2022-05-27	Date: 2022-05-27

4.2.10. The Multifunctional Electrical Tester Calibrator shall not weigh more than 20kg without accessories.

4.2.11. The power supply of the multifunctional Electrical Tester Calibrator shall have the following characteristics:

- a) Line voltage of $230 \pm 10\%$, 50Hz nominal frequency
- b) Line frequency of 45 Hz to 55Hz
- c) Maximum power consumption shall not exceed 300VA
- d) Power cord shall be fused 220/240V, 13 A
- e) A current circuit breaker with over current protection.

4.3. FUNCTIONS

4.3.1. The Multifunctional Electrical Tester Calibrator shall perform a self-test on start up.

4.3.2. The Multifunctional Electrical Tester Calibrator shall be able to perform a self-internal zero calibration.

4.3.3. The Multifunctional Electrical Tester Calibrator shall provide reverse power protection, immediate output disconnection and fuse protection on all output functions.

4.3.4. All functions of the Multifunctional Electrical Tester Calibrator shall be controlled from the front panel or controlled remotely by a computer via the USB interface.

4.3.5. The Multifunctional Electrical Tester Calibrator shall have a Procedure Mode that guides operators step by step on the calibration process.

4.3.6. The Multifunctional Electrical Tester Calibrator shall have a working voltage (output voltage of the Utility under Test) ranging 250V - 15kV for Electrical Insulation Resistance measurements.

4.3.7. The Multifunctional Electrical Tester Calibrator shall have a working resistance (resistance measurements on the Utility under Test at all voltage ranges) ranging $10k\Omega$ - $1T\Omega$ ($1000G\Omega$) for Electrical Insulation Resistance measurements.

4.3.8. The Multifunctional Electrical Tester Calibrator shall have a working current (current supplied from the Utility under Test across all voltage ranges) ranging $0.5\mu A$ - 5A for Electrical Insulation Resistance measurements.

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Date: 2022-05-27

Authorized by: Head of Department, Standards

Signed:



Date: 2022-05-27

TITLE:
**MULTIFUNCTIONAL
ELECTRICAL TESTER
CALIBRATOR- SPECIFICATION**

Doc. No.	KP1/13D/4/1/TSP/14/003
Issue No.	2
Revision No.	1
Date of Issue	2022-06-09
Page 9 of 16	



- 4.3.9. The Multifunctional Electrical Tester Calibrator shall have a variable resistance output ranging 0.2Ω - 20.0Ω for Earth Continuity measurements
- 4.3.10. The Multifunctional Electrical Tester Calibrator shall have a fixed resistance output ranging 20Ω - $1k\Omega$ for Earth Continuity measurements
- 4.3.11. The Multifunctional Electrical Tester Calibrator shall have the ability to calibrate Residual Current Devices (RCD) to a test current ranging 0 - 3000mA, within a time of 0.5msec. - 5sec.
- 4.3.12. The Multifunctional Electrical Tester Calibrator shall have the ability to calibrate Loop Resistance Testers to a resistance ranging 0 - $1k\Omega$.
- 4.3.13. The Multifunctional Electrical Tester Calibrator shall have Absolute Uncertainty values provided for all Equipment ranges.
- 4.3.14. The Multifunctional Electrical Tester Calibrator shall be able to generate results certificate compliant with Quality System requirements (ISO 17025) and other International Quality Standards.

4.4. HARDWARE AND SOFTWARE

- 4.4.1. The Multifunctional Electrical Tester Calibrator shall be delivered with 2 laptops, pre-installed with the Multifunctional Electrical Tester Calibrator software, with minimum specification or most latest, as shown in table 1 below:

Table1: Specifications of the laptop

Description	Mandatory Minimum Requirements
Processor	Intel Core i7-5500 (2.60GHz 1600MHz 3MB, 8 Cores)
RAM	16GB DDR4-2133MHz SODIMM
Operating System	Windows 10 pro 64 bit
Optical Drive	Super Multi DVD-RW or DVD Recordable Burner
Hard Disk	1TB 7200 rpm Hard Drive
Display Panel	15.6" FHD LED Glossy (1920x1080) with integrated Webcam 720p camera
Graphics	Integrated Intel HD Graphics 520
Internal Audio	Integrated HD audio internal speaker (standard) or Stereo with Dolby Audio TM, 1xMic Headphones Combo
Communications	GPRS/ HSDPA Modem, Integrated Intel Gigabit Network Connection (10/100/1000 NIC)
Wireless	Intel 802.12 AC WLAN and Bluetooth(R)



Issued by: Head of Section, Standards Development	Authorized by: Head of Department, Standards
Signed: 	Signed: 
Date: 2022-05-27	Date: 2022-05-27

TITLE:
**MULTIFUNCTIONAL
ELECTRICAL TESTER
CALIBRATOR- SPECIFICATION**

Doc. No.	KP1/13D/4/1/TSP/14/003
Issue No.	2
Revision No.	1
Date of Issue	2022-06-09
Page 10 of 16	

Interfaces	VGA, MDP, 4-in-1 Card Reader, Smart Card Reader. RJ-45, Headphone and Microphone Jack, Mechanical Docking, 2 x USB 3.0, W/WAN SIM, Express Card Slot, 1 HDMI port, Bluetooth, Wi-Fi enabled
Pointing Devices	Touchpad with scroll zone, Two Pick Buttons or Pick Stick, Two Pick Buttons
Keyboard	Keyboard with Number Pad – English (Standard)
Mouse	External USB Mouse
Warranty	1 Year
Power	4-cell 41WHr Lithium-ion Battery; External AC adapter
Power Supply	230V AC, 50 Hz, British plugs
Carrying Case	Genuine Leather Carrying Case
Manufacturer's Authorization	Manufacturers Authorization Certificate/ Letter and for the models quoted, the principal (Manufacturer) MUST have an established regional office in Kenya.

- 4.4.2. The software shall have Procedure Wizards for creation of procedures for different test equipment.
- 4.4.3. The procedure wizards shall be easily programmable in the most basic form of HTML.
- 4.4.4. The Multifunctional Electrical Tester Calibrator shall have a software support which provides software upgrades and calibration.
- 4.4.5. The software shall be able to create and print certificates on plain paper.
- 4.4.6. The software shall be able to calculate and display the Guide to the Expression of Uncertainty in Measurement (GUM) Uncertainties and indicate equipment status, that is, PASS or FAIL, on the Results sheet and the Calibration Certificate.
- 4.4.7. The software shall be able to display on screen prompts of the procedure and measurement readings.
- 4.4.8. The Software shall be able to allow the user to customize their own logo on the Results sheet and the Calibration Certificate.
- 4.4.9. The Software shall allow for secure digital signing of results sheets and the Calibration Certificate.
- 4.4.10. The Software shall be able to save in Read Only format - the Results sheet and the Calibration Certificate in Excel and PDF format.
- 4.4.11. The Software shall be able to export the Results sheets and Calibration Certificates in Excel and PDF format.

Issued by: Head of Section, Standards Development	Authorized by: Head of Department, Standards
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Date: 2022-05-27	Date: 2022-05-27

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ELECTRICAL TESTER
CALIBRATOR- SPECIFICATION**

Doc. No.	KP1/13D/4/1/TSP/14/003
Issue No.	2
Revision No.	1
Date of Issue	2022-06-09
Page 11 of 16	

4.4.12. The software shall recall details and history of any equipment previously calibrated by the Multifunctional Electrical Tester Calibrator.

4.4.13. The Software shall generate barcode readable Calibration labels showing, at least, the Calibration Date, Calibration Due Date, Serial Number of equipment and any other information relevant to the Calibration that will fit on the label.

4.4.14. The Software shall be provided in executable format on a different media, as back up, for safe storage.

5. TESTS REQUIREMENTS

The Multifunctional Electrical Tester Calibrator shall be inspected and tested in accordance with the requirements of relevant standards and provision of this specification.

6. MARKING AND PACKING

6.1. MARKING



The following information shall be marked legibly and in a permanent manner on the Multifunctional Electrical Tester Calibrator:

- The manufacturer's name or trade mark;
- The type reference number / model number;
- Standard of manufacture;
- The serial number;
- Rating and accuracy class where applicable;
- The instructions for handling and use (in the English Language).
- The words "PROPERTY OF KENYA POWER AND LIGHTING COMPANY."

6.2. PACKING

6.2.1. The Multifunctional Electrical Tester Calibrator shall be packed in a hard transit case of IP 54 as per IEC 60259 so as to protect it from damage and entry of moisture during transportation, handling and storage. The transit case shall have wheels to enable movement.

6.2.2. Where a tender has been awarded, packaging shall be done only after inspection and testing of the Multifunctional Electrical Tester Calibrator has been finalized. In the absence of this consent to package and shipment shall be granted, in writing by the Kenya Power and Lighting Company Plc.

Issued by: Head of Section, Standards Development	Authorized by: Head of Department, Standards
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Doc. No.	KP1/13D/4/1/TSP/14/003
Issue No.	2
Revision No.	1
Date of Issue	2022-06-09
Page 12 of 16	


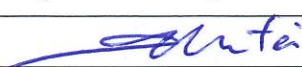
APPENDICES

A: TESTS AND INSPECTION (Normative)

- A.1 It shall be the responsibility of the supplier to test or to have all the relevant tests performed.
- A.2 Copies of Type Test Certificates and Type Test Reports issued by a third party testing laboratory that is accredited to ISO/IEC 17025 shall be submitted with the tender for the purpose of technical evaluation. A copy of the accreditation certificate for the testing laboratory shall also be submitted with the tender (all in English Language). Any translations of certificates and test reports into English language shall be signed and stamped by the Testing Authority.
- A.3 The Multifunctional Electrical Tester Calibrator shall be subject to acceptance tests at the manufacturer's works before dispatch. Acceptance tests shall be witnessed by two Engineers appointed by The Kenya Power and Lighting Company Limited (KPLC).
- A.4 The bidder shall provide current e-mail address, fax and telephone numbers and contact person at the Testing Laboratory where Type Tests and Special Tests were carried out.
- A.5 Test certificates and calibration certificates for the Multifunctional Electrical Tester Calibrator to be supplied shall be submitted to KPLC for approval before shipment/delivery of the equipment.
- A.6 On receipt of the Multifunctional Electrical Tester Calibrator, Kenya Power will inspect them and may perform or have performed any of the relevant tests in order to verify compliance with the specification. The supplier shall replace without charge to Kenya Power, Multifunctional Electrical Tester Calibrator which upon examination, test or use fail to meet any or all of the requirements in the specification.

B: QUALITY MANAGEMENT SYSTEM (Normative)

- B.1 The supplier shall submit a quality assurance plan (QAP) that will be used to ensure that the Multifunctional Electrical Tester Calibrator physical properties, tests and documentation, will fulfill the requirements stated in the contract documents, standards, specifications and regulations. The QAP shall be based on and include relevant parts to fulfill the requirements of ISO 9001:2015
- B.2 The Manufacturer's Declaration of Conformity to applicable standards and copies of quality management certifications including copy of valid and relevant ISO 9001:2015 certificate shall be submitted with the tender for evaluation.
- B.3 The bidder shall indicate the delivery time of the equipment, manufacturer's monthly & annual production capacity and experience in the production of the type and size of equipment being

Issued by: Head of Section, Standards Development	Authorized by: Head of Department, Standards
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Doc. No.	KP1/13D/4/1/TSP/14/003
Issue No.	2
Revision No.	1
Date of Issue	2022-06-09
Page 13 of 16	

offered. A detailed list & contact addresses (including e-mail) of the manufacturer's previous customers for similar type of the Multifunctional Electrical Tester Calibrator sold in the last five years as well as reference letters from at least four of the customers shall be submitted with the tender for evaluation.

C: DOCUMENTATION AND TRAINING (Normative)

C.1 The bidder shall submit its tender complete with technical documents for tender evaluation. The technical documents to be submitted (all in English language) for tender evaluation shall include the following:

- a) Fully filled clause by clause guaranteed technical particulars (GTP) stamped and signed by the manufacturer;
- b) Copies of the Manufacturer's catalogues, brochures, drawings giving all relevant dimensions, Wiring diagram / Schematic Diagram and technical data;
- c) Sales records for the last five years and at least four customer reference letters;
- d) Details of manufacturing capacity and the manufacturer's experience;
- e) Copies of required type test reports by a third party testing laboratory accredited to ISO/IEC 17025;
- f) Copy of accreditation certificate to ISO/IEC 17025 for the third party testing laboratory;
- g) Manufacturers letter of authorization, ISO 9001 certificate, ISO 14001, and other technical documents required in the tender.
- h) Manufacturer's warranty and guarantee; subject to minimum 18 months from date of delivery to KPLC stores
- i) Operational manual.
- j) Service manual.

C.2 The successful bidder (supplier) shall submit the following documents/details to The Kenya Power & Lighting Company for approval before manufacture(All in English Language):

- a) Fully filled clause by clause guaranteed technical particulars (GTP) stamped and signed by the manufacturer;

Issued by: Head of Section, Standards Development	Authorized by: Head of Department, Standards
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Doc. No.	KP1/13D/4/1/TSP/14/003
Issue No.	2
Revision No.	1
Date of Issue	2022-06-09
Page 14 of 16	

- b) Design Drawings with details of the Multifunctional Electrical Tester Calibrator to be manufactured for KPLC.
- c) Product manuals, operation manuals and brochures,
- d) Quality assurance plan (QAP) that will be used to ensure that the design, material; workmanship, tests, service capability, maintenance and documentation will fulfill the requirements stated in the contract documents, standards, specifications and regulations. The QAP shall be based on and include relevant parts to fulfill the requirements of ISO 9001.
- e) Detailed test program to be used during factory testing;
- f) Marking details and method to be used in marking the Multifunctional Electrical Tester Calibrator;
- g) All documentation necessary for safety of the equipment.
- h) Packaging details (including packaging materials).

C.3. After delivery of the Multifunctional Electrical Tester Calibrator to KPLC, the manufacturer shall conduct training at its cost for at least 3 days for twenty people in Nairobi, Kenya. The training shall cover and not be limited to:

- a) Equipment features and operation,
- b) Equipment metrology,
- c) Equipment installation,
- d) Equipment software,
- e) Equipment configuration and data downloading and saving, etc.

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Date: 2022-05-27	Date: 2022-05-27

D: GUARANTEED TECHNICAL PARTICULARS (Normative)

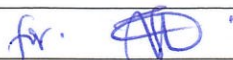
To be filled and signed by the Manufacturer and submitted together with relevant copies of the Manufacturer's catalogues, brochures, drawings, technical data, sales records for previous five years, four customer reference letters, details of suppliers' capacity and experience; and copies of complete type test certificates and test reports for tender evaluation, all in English Language)

Tender No.

Bidder's name and Address.....

Clause number		Bidder's offer
	Manufacturer's Name and address	Specify
	Country of Manufacture	Specify
	Name and model Number	Specify
1.	Scope	State
2.	Normative References	State
3.	Definitions and Abbreviations	State
4.	Requirements	
4.1	Service Conditions	State
4.2	Design and construction	
4.2.1	Dimensions	Specify
4.2.2	Shall be easy to use using front panel keypad	Specify
4.2.3	Shall calibrate wide range of test Equipment, both analogue and digital	Specify
4.2.4	Shall have individual Function Keys on the keypad for selection of individual tests it is able to carry out	State compliance
4.2.5	The input and output terminal configuration shall be designed to enable simple connection to a full range of instrumentation	Specify
4.2.6	All outputs shall be isolated when not in use, with an LED indicator showing the active Input/ output terminal(s)	Specify
4.2.7	Shall have a hard mounting kit with stands on the bottom	Specify
4.2.8	Standard interface, RS 232, USB 3.0, LAN and GPIB/ IEEE 488 port	Specify
4.2.9	Standard chassis ground binding port	Specify
4.2.10	Calibration due date message on the display shall be deactivated	Specify
4.2.11	Weight	Specify
4.2.12	Power supply characteristics	Specify
	Line voltage	
	Line frequency	
	Maximum power consumption	
	Fused power cord characteristics	

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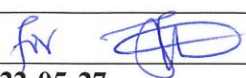

Signed: 

Date: 2022-05-27

TITLE:
**MULTIFUNCTIONAL
ELECTRICAL TESTER
CALIBRATOR- SPECIFICATION**

Doc. No.	KP1/13D/4/1/TSP/14/003
Issue No.	2
Revision No.	1
Date of Issue	2022-06-09
Page 16 of 16	

		A current circuit breaker with over current protection	
4.3	Functions		
4.3.1	Shall perform a self-test on start up		Specify
4.3.2	Shall be able to perform a self-internal zero calibration		Specify
4.3.3	Shall provide reverse power protection, immediate output disconnection and fuse protection on all output functions		Specify
4.3.4	All functions shall be controlled from the front panel or controlled remotely by a computer over the USB interface		Specify
4.3.5	Shall have a Procedure Mode that guides operators step by step on the calibration process.		Specify
4.3.6	Working voltage for electrical insulation resistance measurements		Specify
4.3.7	Working resistance for electrical insulation resistance measurements		Specify
4.3.8	Working Current for electrical insulation resistance measurements		Specify
4.3.9	Variable resistance output range for Earth Continuity measurements		Specify
4.3.10	Fixed resistance output range for Earth Continuity measurements		Specify
4.3.11	Shall have the ability to calibrate Residual Current Devices (RCD) to a test current ranging 0 - 3000mA, within a time of 0.5msec. – 5sec.		Specify
4.3.12	shall have the ability to calibrate Loop Resistance Testers to a resistance ranging 0 - 1kΩ.		Specify
4.3.13	Absolute Uncertainty values for all Equipment ranges.		Specify
4.3.14	Shall be able to generate results certificate compliant with Quality System requirements (ISO 17025) and other International Quality Standards.		Specify
4.4	Hardware and software		
4.4.1	Laptop specifications		Specify
4.4.2	The software shall have Procedure Wizards for creation of procedures for different test equipment		Specify
4.4.3	The procedure wizards shall be easily programmable in the most basic form of HTML		Specify
4.4.4	Shall have a software support which provides software upgrades and calibration.		Specify
4.4.5	The software shall be able to create and print certificates on plain paper		Specify
4.4.6	The software shall be able to calculate and display the Guide to the Expression of Uncertainty in Measurement (GUM) Uncertainties and indicate equipment status, that is, PASS or FAIL, on the Results sheet and the Calibration Certificate		Specify
4.4.7	The software shall be able to display on screen prompts of the procedure and measurement readings		Specify
4.4.8	The Software shall be able to allow the user to customize their own logo on the Results sheet and the Calibration Certificate		Specify



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Page 17 of 16	

4.4.9	The software shall allow for secure digital signing of results sheets and the Calibration Certificate.	Specify
4.4.10	The software shall be able to save in Read Only format - the Results sheet and the Calibration Certificate in Excel and PDF format	Specify
4.4.11	The software shall be able to export the Results sheets and Calibration Certificates in Excel and PDF format.	Specify
4.4.12	The software shall recall details and history of any equipment previously calibrated	Specify
4.4.13	The software shall generate barcode readable Calibration labels	Specify
4.4.14	The software shall be provided in executable format on a different media, as back up, for safe storage.	Specify
5	Test Requirements	Specify
6	Marking and Packing	
6.1	Marking	Specify
6.2	Packing	Specify
A	Test and inspection	
A.1	Responsibility of carrying out tests	State
A.2	Copies of Type Test Reports submitted with tender	Provide
A.3	Acceptance tests at the manufacturers works	State compliance
A.4	Contacts of testing laboratory	Provide
A.5	Test certificates and calibration certificates to be submitted by supplier to KPLC for approval before supply/delivery	Provide
A.6	Inspection at the stores and replacement of rejected items	State compliance
B	Quality Management System	
B.1	Quality Assurance Plan	Provide
B.2	Copy of ISO 9001:2015 Certificate	Provide
B.3	Manufacturer's experience	Provide
	Manufacturing Capacity (units per month)	
	List of previous customers	
	Customer reference letters	
C	Documentation and training	
C.1	Documents submitted with tender	Provide
C.2	Documents to be submitted by supplier to KPLC for approval before manufacture	Provide
C.3	Training	State compliance
	Statement of compliance to specification (indicate deviations if any & supporting documents)	State compliance

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

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