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Kenya Power

ASSORTED TOOLS AND EQUIPMENT FOR CUSTOMER SERVICE TEAMS -SPECIFICATION

A Document of the Kenya Power & Lighting Co. Ltd

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0.1 Circulation List

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1	Standard Manager
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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.

0.2 Amendment Record

Rev No.	Date	Description of Change	Prepared by (Name & Signature)	Approved by (Name & Signature)
0	January 2017	New Issue	Peter Wanyonyi Eng. Margret Kanini Eng. Rosemary Oduor	Eng. Peter Mwichigi
1	2020-01-17	i. Changed document number from TSP/IM & DSM 2017-01 to KP1/6C/4/1/TSP/09/108 ii. Edited to new format	Nancy Wairimu	Dr. Eng. Peter Kimemia
2	2023-10-13	i. Included continuity test ranges, adjustable buzzer, open circuit voltage, short circuit current and test current on load in table 1 ii. Updated the GTP	Nancy Wairimu	Dr. Eng. Peter Kimemia

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FOREWORD

This Specification has been prepared by the Standards Department in collaboration with Customer Service Division, both of The Kenya Power and Lighting Company Limited (KPLC) and it lays down requirements for assorted handheld tools and equipment. It is intended for use by KPLC in purchasing the assorted handheld tools and equipment.

The Specification stipulates the minimum requirements for assorted handheld tools and equipment acceptable for use in the company and it shall be the responsibility of the suppliers & manufacturer to ensure adequacy of the design, good workmanship and good engineering practice in the manufacture of the accessories for KPLC.

It shall be the responsibility of the manufacturer to ensure adequacy of the design and good engineering practice in the manufacture of the indoor pad mounted automatic load transfer switch for KPLC. The manufacturer shall also submit information, which confirms satisfactory service experience with products, which fall within the scope of this specification.

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

Name	Divisions
Peter Wanyonyi	Commercial Services & Sales
Joan Waweru	Network Management
Nancy Wairimu Mungai	IESR

1.0. SCOPE

1.1 This specification is for assorted handheld tools and equipment for use by customer service field teams.

1.2 The specification covers the following handheld tools and equipment:

1) Digital Clamp On Meter
2) Digital Clamp on Ammeter
3) Phase Sequence Device
4) Light meters
5) Insulation Tester
6) Non-contact AC voltage Detector/Finder
7) Earth Loop Impedance Tester
8) TRMS power meters
9) Portable ultrasonic flow meters
10) Precision aiming infrared thermometer
11) Electronic Combustion Analyzer
12) Ultrasonic Leak Detector
13) Air Flow Meters
14) Optical Tachometer
15) Digital Humidity Meter
16) Pair of Electrician Pliers
17) Pair of Long Nose Pliers
18) Side Cutting Pliers
19) Wire Stripping Pliers
20) Professional Heavy duty 8-piece screw driver set
21) Mains Neon Tester Screw Driver
22) Set of Allen Keys (Metric Hex Key Sets)
23) Adjustable Spanner 8"
24) Professional Hacksaw Frames
25) Replacement 400mm Hacksaw Blades
26) Retractable Knife (with 10 replacement knives)
27) Steel Trunking Hole cutter (Electricians hole saw kit)
28) Steel Trunking Hole Cutter (Sheet Metal Punch)
29) Cordless Drill/Driver Machine
30) Power Drilling Machines
31) Drill Bits – 10 Piece set sizes from 1mm – 10 mm (In 1mm increments)

Note: *The quantities shall be as per the schedule of requirements in the tender.*

1.3 The specification also covers requirements, inspection and tests of the handheld tools and equipment and their accessories as well as schedule of Guaranteed Technical Particulars.

2.0. NORMATIVE REFERENCES

The following standards contains provision, which through reference in this text constitute provisions of this specification. For dated edition, the edition will apply, for undated edition the latest edition of this document applies:

IEC 61010: Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General requirements; --Part 2-033: Particular requirements for hand-held multimeters and other meters, for domestic and professional use, capable of measuring mains voltage,

IEC 61557: Electrical safety in low voltage distribution systems up to 1 000 V a.c. and 1 500 V d.c - Equipment for testing, measuring or monitoring of protective measures -- Part 1: General requirements; -- Part 2: Insulation resistance; -- Part 3: Loop impedance; Part 4: Resistance of earth connection and equipotential bonding; -- Part 5: Resistance to earth; --Part 6: Effectiveness of residual current devices (RCD) in TT, TN and IT systems -- Part 7: Phase sequence; -- Part 10: Combined measuring equipment for testing,measuring or monitoring of protective measures

IEC 61243-3; Live working – Voltage detectors – Part 3 : Two Pole Low voltage type.

IEC 61326: Electrical equipment for measurement, control and laboratory use - EMC requirements.

ISO 5743: Pliers and nippers – General Technical Requirements

ISO 5744: Pliers and nippers – Methods of tests

IEC 60900: Live working – Hand tools for use upto 1000V AC and 1500V DC

IEC 60529: Degrees of protection provided by enclosures (IP Code)

ISO 9001:2015: Quality Management System

3.0. TERMS AND DEFINITIONS

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

Tool – A device or implement that facilitates work.

Equipment-A machine needed for a particular job.

4.0. REQUIREMENTS

4.1. SERVICE CONDITIONS

The equipment and tools shall be tropicalized, designed and constructed for continuous outdoor operation in tropical areas and harsh climatic conditions including areas exposed to;

a) Sea spray (along the coast),
b) Humidity of up to 95% and
c) Average ambient temperature of +30ºC with a minimum of -1ºC and a maximum of +40ºC.

4.2. SPECIFIC REQUIREMENTS

4.2.1. Digital Clamp on Meter

The Digital Clamp on Meter shall comply with all the requirements of KPLC specification no. KP1/6C/4/1/TSP/09/058.

4.2.2. Digital Multimeter

The Digital Multimeter shall comply with all the requirements of KPLC specification no. KP1/6C/4/1/TSP/09/058.

4.2.3. Phase Sequence Device / Phase Rotation Tester

The Phase Sequence Device (Phase rotation tester) shall comply with all the requirements of KPLC specification no. KP1/6C/4/1/TSP/09/058.

4.2.4. Digital Light meter / Lux meter

The Digital Light meter (Lux Meter) shall comply with all the requirements of KPLC specification no. KP1/6C/4/1/TSP/09/099.

4.2.5. Insulation Tester

4.2.5.1. The Insulation tester shall be designed, manufactured and tested in accordance with IEC 61557: Part 1 & 2 standard requirements.

4.2.5.2. The technical parameters shall be as per table 1 below:

Table 1: Technical Parameters of an Insulation Tester

No.	Parameter	Requirement
1	Voltage Measurement range	0V-1000V AC/DC.
2	Insulation resistance range	Up-to 2TΩ
3	Frequency Range	40HZ to 80HZ
4	Nominal test voltages	250V, 500V and 1000V.
5	Continuity Test ranges	0.01 – 400 Ω
6	Adjustable buzzer	20Ω
7	Open circuit voltage	5V ± 1 V
8	Short circuit current	1.5mA
9	Test current on load	1mA at minimum
10	Accuracy	±3 % ± 2 digits up to 10MΩ
11	Battery	Rechargeable Battery
12	Display	LCD with Backlight for both display and range selection
13	Degree of Ingress Protection	IP67
14	Features	i. Combined analogue and dual digital display ii. Insulation measurements with auto discharge function iii. Safety interlock iv. Live voltage warning v. Lock button during measurement vi. Auto power off capability vii. Continuity buzzer viii. Continuity check ix. Overload protection. x. Capability to download data to a PC. xi. Hands free use

No.	Parameter	Requirement
15	Accessories	i. Colour coded Test leads ii. AC charger iii. IP 67 hard carrying case iv. Software for data download v. User Manual and brochures

4.2.5.3. The unit shall be capable of live circuit detection and inhibit the test if the initial terminal voltage is more than 40V.

4.2.5.4. Each unit shall comply with IEC 61010-1, 600V, CAT IV safety standards.

4.2.5.5. The unit shall absorb any external physical shocks as per IEC 61010-1 standards.

4.2.5.6. Each unit shall have electromagnetic compatibility as per EN 61326-1 standards.

4.2.5.7. Each unit shall have a calibration certificate.

4.2.5.8. The units shall be manufactured in an ISO 9001:2015 certified facility.

4.2.5.9. The tenderer shall submit one sample on request.

4.2.5.10. Each unit shall have a minimum warranty 24 months from the date it is delivered in KPLC stores. All units with defects due to faulty workmanship shall be replaced at supplier's cost.

4.2.6. Non-contact AC voltage Detector/Finder

4.2.6.1. The non-contact voltage finder shall be capable of detecting voltage near cables, socket outlets, switches, switch boards and junction boxes without making any contact.

4.2.6.2. The technical parameters of non-contact voltage finder shall be as per table 2 below:

Table 2: Technical Particulars of a non-contact voltage finder

No.	Parameter	Requirement
1	Voltage Range	200V to 1000V AC/DC.
2	Frequency Range	50HZ to 60HZ
3	Battery type	Alkaline batteries
4	Display	LCD with backlight
5	Features	i. Auto power off to conserve energy ii. emit audible and well as visual signal when AC voltage is detected
6	Accessories	i. User Manual and brochures

4.2.6.3. The detector shall meet the IEC 61010-1 safety standards.

4.2.6.4. The unit shall meet the electromagnetic compatibility IEC 61326-1 standard requirements.

4.2.6.5. Each unit shall have a calibration certificate.

4.2.6.6. The units shall be manufactured in an ISO 9001:2015 certified facility.

4.2.6.7. The tenderer shall submit one sample on request.

4.2.6.8. Each unit shall have a minimum warranty 24 months from the date it is delivered in KPLC stores. All units with defects due to faulty workmanship shall be replaced at supplier's cost.

4.2.7. Earth Loop Impedance Tester

4.2.7.1. The Earth Loop Impedance Tester shall be designed, manufactured and tested in accordance with IEC 61557: Part 1 & 3 standard requirements.

4.2.7.2. The tester shall be capable of two wire loop testing.

4.2.7.3. The technical parameters of an earth loop impedance tester shall be as per table 3 below:

Table 3: Technical parameters of an Earth Loop Impedance

No.	Parameter	Requirement
1	Accuracy	± 2%.
2	Frequency range	30HZ to 90Hz
3	Voltage range	50V-440V
4	Display	LCD with backlight
5	Battery	Rechargeable battery capable of at least 1500 consecutive tests before recharge.
6	Degree of Ingress Protection	IP 54
7	Features	i. Auto shut off capability ii. Capability to download test results to a personal computer iii. Indicators to show correct wiring status iv. Automatic lock out in case the test resistor overheats
8	Accessories	i. Colour coded test leads ii. A carrying case iii. Software to download results iv. User manuals and brochures

4.2.7.4. The detector shall meet the IEC 61010-1 safety standards.

4.2.7.5. The unit shall meet the electromagnetic compatibility IEC 61326-1 standard requirements.

4.2.7.6. Each unit shall have a calibration certificate.

4.2.7.7. The units shall be manufactured in an ISO 9001:2015 certified facility.

4.2.7.8. The tenderer shall submit one sample on request.

4.2.7.9. Each unit shall have a minimum warranty 24 months from the date it is delivered in KPLC stores. All units with defects due to faulty workmanship shall be replaced at supplier's cost.

4.2.8. TRMS power meters

4.2.8.1. The TRMS Power Meter shall be designed, manufactured and tested in accordance with IEC 61557: Part 1 & 10 standard requirements.

4.2.8.2. The unit shall be able to measure Arms, Vrms, Power Factor, Kilowatt, Kilovolt, Amperes, and reactive power, harmonic order Percentage, Total Harmonic Distortion and Frequency.

4.2.8.3. The technical particulars of a TRMS power meter shall be as per table 4 below:

Table 4: Technical Particulars of a TRMS power meter

No.	Parameter	Requirement
1	AC Voltage range	Up to 1000V
2	AC Current range	Up to 600A with an option of up to 10000A with clamp on current probe
3	Degrees of Ingress protection	IP 67
4	Display	LCD display with back light
5	Battery	rechargeable battery with a battery life of 50 hours continuous use
6	Feature	Capability to display multiple measurements for easy reading A continuity buzzer Low battery charger indicator Auto shut off capability

No.	Parameter	Requirement
7	Accessories	i. Test leads ii. RS-232C cable iii. software for communicating with a personal computer running on windows platform iv. A carrying case v. User manual and brochures

4.2.8.4. The unit shall meet the IEC 61010-1000V CAT IV safety requirements.

4.2.8.5. The unit shall meet the electromagnetic compatibility IEC 61326-1 standard requirements.

4.2.8.6. Each unit shall have a calibration certificate.

4.2.8.7. The units shall be manufactured in an ISO 9001:2015 certified facility.

4.2.8.8. The tenderer shall submit one sample on request.

4.2.8.9. Each unit shall have a minimum warranty 24 months from the date it is delivered in KPLC stores. All units with defects due to faulty workmanship shall be replaced at supplier's cost.

4.2.9. Portable ultrasonic flow meters

4.2.9.1. The device must have the capability to measure flow independent of fluid conductivity 93/68/EEC on electromagnetic compatibility.

4.2.9.2. The technical particulars of portable ultrasonic flow meters shall be as per table 5:

Table 5: Technical Particulars of Portable Ultrasonic flow meters

No.	Parameters	Requirements
1	Operating temperatures	-40F to +212F (-40^{0}C to 100^{0}C)
2	Range of pipe sizes	1.0"-200" (2.5m-5m)
3	Bi-directional Flow range	0 to 40 fps (0-12 mps)
4	Accuracy	± 0.5%
5	Display	Colour LCD display with backlight with Bluetooth capability
		Numerical and graphical display interface

No.	Parameters	Requirements
6	Battery	Rechargeable
7	Keyboard	Rubberized tactile membrane keypad
8	Features	i. Lightweight and portable ii. Low installation effort and costs iii. Clamp-on sensors iv. Magnetic sensor clamping fixture with slip scale gauge. v. Internally configured batch controller vi. Have Daily, monthly, and yearly totalized flow
9	Accessories	i. A spare battery ii. User manual and brochures

4.2.9.3. The tenderer shall submit copies of user manual and brochures in English Language.

4.2.9.4. Each unit shall have a calibration certificate.

4.2.9.5. The units shall be manufactured in an ISO 9001:2015 certified facility.

4.2.9.6. The tenderer shall submit one sample on request.

4.2.9.7. Each unit shall have a minimum warranty 24 months from the date it is delivered in KPLC stores. All units with defects due to faulty workmanship shall be replaced at supplier's cost.

4.2.10. Precision aiming infrared thermometer

4.2.10.1. The unit shall be rugged, portable thermometer for noncontact temperature measurement.

4.2.10.2. The unit shall have technical, particulars as shown in table 6 below.

Table 6: Technical Particulars of Precision Aiming Infrared thermometer

No	Technical Parameter		Requirement
1	Operating temperature	^{0}C	0 ^{0}C to 50^{0}C
		^{0}F	32^{0}F to 122^{0}F
2	Temperature range	^{0}C	-30 ^{0}C to 900^{0}C
		^{0}F	-25^{0}F to 1600^{0}F
3	Accuracy	^{0}C	±1 % of reading or ± 1 ^{0}C, whichever is greater
		^{0}F	±1 % of reading or ± 2 ^{0}F, whichever is greater

No	Technical Parameter		Requirement
4	Repeatability	^{0} C	±0.5 % of reading or ± 1 ^{0}C, whichever is greater
		^{0} F	± 0.5 % of reading or ± 2 ^{0}F, whichever is greater
5	Response time		250 milliseconds
6	Spectral response		8 -14 microns
7	Emissivity		Adjustable (from 0.1 to 1.0 by 0.01)
8	Laser Class		3- dot Laser sighting (meets IEC class 2)
9	Distance to Spot ratio		60:1
10	Display		LCD with Backlight
11	Display resolution	^{0} C	0.1 ^{0}C of reading up to 900 ^{0}C
		^{0} F	0.2 ^{0} F of reading up to 999 ^{0}F; 1^{0}F for readings above 999 ^{0} F
12	Temperature Display		^{0} C or ^{0} F selectable
13	Power supply		Alkaline batteries
14	Accessories		User Manual and brochures

4.2.10.3. Each unit shall have a calibration certificate.

4.2.10.4. The units shall be manufactured in an ISO 9001:2015 certified facility.

4.2.10.5. The tenderer shall submit one sample on request.

4.2.10.6. Each unit shall have a minimum warranty 24 months from the date it is delivered in KPLC stores. All units with defects due to faulty workmanship shall be replaced at supplier's cost.

4.2.11. Electronic Combustion Analyzer

4.2.11.1. The unit shall be portable electronic device for measuring and displaying the products of combustion from both domestic and commercial fossil-fueled appliances.

4.2.11.2. The unit shall have technical, particulars as shown in table 7 below.

Table 7: Technical Particulars of Electronic Combustion analyzer

No.	Parameter	Requirement
1	Preprogrammed fuel types	Natural Gas, Coal, Oil #2, Oil #4, Oil #6, Propane, Wood, Bio Fuel, Kerosene, Bagasse, Digester Gas, LPG, Butane, Woodchips
2	Combustion Efficiency	0.1 to 100%
3	Oxygen concentration levels	0 to 21%
4	Carbon dioxide Concentration	0% to Fuel dependent Maximum
5	Carbon Monoxide Measurements	0 to 4000 ppm
6	Ambient Air Temperature	-20 ^{0}C to 100^{0}C
7	Stack Temperature	-20^{0}C to 1200^{0}C
8	Excess Air	1.0 to 250 %
9	Display	LCD with Backlight
10	Battery	Rechargeable Lithium –ion Battery
11	Accessories	AC Adapter Spare Battery USB Cable User Interface Measuring probes Hard carrying case Protective boots User Manuals and brochures
12	Features	Built-in Printer Auto shut-off capability A recording and Hold On feature Saving mode for the measurements

4.2.11.3. Each unit shall have a calibration certificate.

4.2.11.4. The units shall be manufactured in an ISO 9001:2015 certified facility.

4.2.11.5. The tenderer shall submit one sample on request.

4.2.11.6. Each unit shall have a minimum warranty 24 months from the date it is delivered in KPLC stores. All units with defects due to faulty workmanship shall be replaced at supplier's cost.

4.2.12. Ultrasonic Leak Detector

4.2.12.1. The unit shall be capable to detect leakages in compressed air or vacuum systems.

4.2.12.2. The technical particulars of the unit shall be as per table 8 below:

Table 8: Technical particulars of an Ultrasonic Leak Detector

No.	Parameter	Requirement
1	Operating temperature range	-10^0C to $+50^0$
2	Accuracy	± 5%
3	Frequency response	Not less than 35kHz
4	Display	LCD with backlight
5	Battery	Rechargeable
6	Accessories	Ac Adapter Carrying case User manual Brochures
7	Features	Auto shut-off capability Low battery indicator

4.2.12.3. Each unit shall have a calibration certificate.

4.2.12.4. The units shall be manufactured in an ISO 9001:2015 certified facility.

4.2.12.5. The tenderer shall submit one sample on request.

4.2.12.6. Each unit shall have a minimum warranty 24 months from the date it is delivered in KPLC stores. All units with defects due to faulty workmanship shall be replaced at supplier's cost.

4.2.13. Air Flow Meters

4.2.13.1. The airflow meter shall be capable to measure air velocity, air volume and temperature.

4.2.13.2. The technical particulars of the airflow meter shall be as shown in table 9.

Table 9: Technical Particulars of the Airflow Meter

No.	Parameter	Units		Requirement
1	Air Velocity	m/s	Range	0.4 to 25.0
			Resolution	0.1

			Accuracy	± 2% + 0.2 d
		Mph	Range	0.9 to 55.9
			Resolution	0.1
			Accuracy	± 2% + 0.2 d
		Knots	Range	0.8 to 48.27
			Resolution	0.1
			Accuracy	± 2% + 0.2 d
		kM/hr.	Range	1.4 to 90.0
			Resolution	0.1
			Accuracy	± 2% + 0.2 d
2	Air volume	Ft^3/min	Range	0 to 999000
			Resolution	0.001 to 100
3	Temperature	^0C	Range	32 to 122
		^0F	Range	0 to 55
		^{0}	Resolution	0.1

4.2.13.3. The unit shall have a power source of rechargeable 9V Battery.

4.2.13.4. Each unit shall be supplied together with user manuals and brochures

4.2.13.5. Each unit shall have a calibration certificate.

4.2.13.6. The units shall be manufactured in an ISO 9001:2015 certified facility.

4.2.13.7. The tenderer shall submit one sample on request.

4.2.13.8. Each unit shall have a minimum warranty 24 months from the date it is delivered in KPLC stores. All units with defects due to faulty workmanship shall be replaced at supplier's cost.

4.2.14. Optical Tachometer

4.2.14.1. The Optical Tachometer shall be used to measure the rotation speed of a shaft or disc in a motor or machine.

4.2.14.2. The technical particulars of the optical tachometer shall be as shown in table 10 below:

Table 10: Technical particulars of the optical tachometer

No.	Parameter	Requirement
1	Speed Range	5.0 RPM to 500000RPM Fixed decimal or Auto-Ranging

No.	Parameter		Requirement
2	Accuracy	5.0000- 9.9999 RPM	± 0.0001
		10.000-99.999 RPM	±0.001
		100.00-999.99 RPM	±0.01
		1000.0-9999.9 RPM	±0.1
		10,000-99,999 RPM	±1.0
		100,000 – 500000RPM	±0.001% of the reading
3	Resolution	5.0000- 9.9999 RPM	0.0001
		10.000-99.999 RPM	0.001
		100.00-999.99 RPM	0.01
		1000.0-9999.9 RPM	0.1
		10,000-99,999 RPM	1.0
4	Frequency range		0.08 Hz to 10,000 Hz
5	Display		6 digit alphanumeric 0.44 inch high backlighted LCD
6	Indicators		On Target, Low Battery, Mode, Max, Min, Instrument "Locked On" Scale and Error
7	Power		4AA-Alkaline batteries. Rechargeable NiCad batteries optional

4.2.14.3. Each unit shall have a calibration certificate.

4.2.14.4. The units shall be manufactured in an ISO 9001:2015 certified facility.

4.2.14.5. The tenderer shall submit one sample on request.

4.2.14.6. Each unit shall have a minimum warranty 24 months from the date it is delivered in KPLC stores. All units with defects due to faulty workmanship shall be replaced at supplier's cost.

4.2.15. Digital Humidity Meter

4.2.15.1. The digital Humidity meter shall be capable to measure relative humidity and temperature.

4.2.15.2. The technical particulars of the digital humidity shall be as shown in table 11 below:

Table 11: Technical particulars of the digital humidity

No.	Parameter		Requirement
1	Relative humidity	Range	0 to 100%
		Resolution	0.1%
		Accuracy	± 2 %
2	Operating Temperature	Range	-10^0 C to $+100^0$C
		Accuracy	± 1 ^{0}C
3	Storage temperature		-10^0 to 60^0C
4	Display		LCD with backlight
5	Power source		Rechargeable battery
6	Features		Low battery indicator Auto shut-off capability
7	Accessories		An AC adapter A carrying case User manual and brochures

4.2.15.3. Each unit shall have a calibration certificate.

4.2.15.4. The units shall be manufactured in an ISO 9001:2015 certified facility.

4.2.15.5. The tenderer shall submit one sample on request.

4.2.15.6. Each unit shall have a minimum warranty 24 months from the date it is delivered in KPLC stores. All units with defects due to faulty workmanship shall be replaced at supplier's cost.

4.2.16. Pair of Electrician Pliers

4.2.16.1. The pair of Electrician pliers shall be manufactured and tested to conform to ISO 5743 and ISO 5744.

4.2.16.2. The pliers shall be capable of cutting, crimping, stripping and gripping, and shall be suitable for both hard and soft wire.

4.2.16.3. The tool shall have heavy-duty insulation on handle grips with superb ergonomic handling conforming to IEC 60900 for safe electrical application up to nominal voltages of 100V a.c. and 1500V d.c.

4.2.16.4. The tool shall be made of forged and oil hardened vanadium electric steel.

4.2.16.5. The plier's cutting edge shall have a hardness of HRC58-62.

4.2.16.6. Each unit shall have an overall length of 200mm and an head of 70mm

4.2.16.7. The pliers shall have carefully controlled gap at the tip to ensure important cutting edge with terminal crimping slot and a finger stops to prevent slipping

4.2.16.8. Each tool shall be stamped with date-month and year- of manufacture.

4.2.16.9. The tenderer shall submit copies of user manual and brochures.

4.2.16.10. The tools shall be manufactured in an ISO 9001:2015 certified facility.

4.2.16.11. The tenderer shall submit one sample on request.

4.2.16.12. Each tool shall have a minimum warranty 24 months from the date it is delivered in KPLC stores. The supplier shall replace all tools with defects due to faulty workmanship at his cost.

4.2.17. Pair of Long Nose Pliers

4.2.17.1. The pair of long nose pliers shall be manufactured and tested to conform to ISO 5743 and ISO 5744.

4.2.17.2. The pliers shall be capable of cutting and gripping, and shall be suitable for both hard and soft wire.

4.2.17.3. The tool shall have heavy-duty insulation on handle grips with superb ergonomic handling conforming to IEC 60900 for safe electrical application up to nominal voltages of 100V a.c. and 1500V d.c.

4.2.17.4. The tool shall be made of forged and oil hardened vanadium electric steel.

4.2.17.5. The plier's cutting edge shall have a hardness of HRC58-62.

4.2.17.6. Each unit shall have an overall length of 200mm and an head of 95mm

4.2.17.7. The pliers shall have a finger stops to prevent slipping

4.2.17.8. Each tool shall be stamped with date-month and year- of manufacture.

4.2.17.9. The tenderer shall submit copies of user manual and brochures.

4.2.17.10. The tools shall be manufactured in an ISO 9001:2015 certified facility.

4.2.17.11. The tenderer shall submit one sample on request.

4.2.17.12. Each tool shall have a minimum warranty 24 months from the date it is delivered in KPLC stores. The supplier shall replace all tools with defects due to faulty workmanship at his cost.

4.2.18. Side Cutting Pliers

4.2.18.1. The side cutting pliers shall be manufactured and tested to conform to ISO 5743 and ISO 5744.

4.2.18.2. The pliers shall be capable of cutting and crimping, and shall be suitable for both hard and soft wire.

4.2.18.3. The tool shall have heavy-duty insulation on handle grips with superb ergonomic handling conforming to IEC 60900 for safe electrical application up to nominal voltages of 100V a.c. and 1500V d.c.

4.2.18.4. The tool shall be made of drop forged high carbon steel.

4.2.18.5. The plier's cutting edge shall have a hardness of HRC58-62.

4.2.18.6. Each unit shall have an overall length of 215 mm and a head of 75 mm.
4.2.18.7. The pliers shall have carefully controlled gap at the tip to ensure important cutting edge with terminal crimping slot and a finger stops to prevent slipping
4.2.18.8. Each tool shall be stamped with date-month and year- of manufacture.
4.2.18.9. The tenderer shall submit copies of user manual and brochures.
4.2.18.10. The tools shall be manufactured in an ISO 9001:2015 certified facility.
4.2.18.11. The tenderer shall submit one sample on request.
4.2.18.12. Each tool shall have a minimum warranty 24 months from the date it is delivered in KPLC stores. The supplier shall replace all tools with defects due to faulty workmanship at his cost.

4.2.19. Wire Stripping Pliers

4.2.19.1. The Wire Stripping pliers shall be manufactured and tested to conform to ISO 5743 and ISO 5744.
4.2.19.2. The pliers shall adjustable screw for setting the required wire or cable diameter and shall be capable to strip wires of up to 20mm 2.
4.2.19.3. The tool shall have dual compound insulation on handle grips with superb ergonomic handling conforming to IEC 60900 for safe electrical application up to nominal voltages of 100V a.c. and 1500V d.c.
4.2.19.4. The tool shall be made of drop forged high carbon steel and chrome plated.
4.2.19.5. The pliers shall have a finger stops to prevent slipping.
4.2.19.6. Each tool shall be stamped with date-month and year- of manufacture.
4.2.19.7. The tenderer shall submit copies of user manual and brochures.
4.2.19.8. The tools shall be manufactured in an ISO 9001:2015 certified facility.
4.2.19.9. The tenderer shall submit one sample on request.
4.2.19.10. Each tool shall have a minimum warranty 24 months from the date it is delivered in KPLC stores. The supplier shall replace all tools with defects due to faulty workmanship at his cost.

4.2.20. Professional Heavy duty 8-piece screw driver set

4.2.20.1. The screwdriver shall be made of forged chrome vanadium steel.
4.2.20.2. The screwdriver have precision-machined tips for accurate fastening.
4.2.20.3. The screwdrivers shall have corrosion resistant tips.
4.2.20.4. The screwdrivers shall have soft grip handles for maximum torque.

4.2.20.5. The tool shall have heavy-duty insulation on handle grips with superb ergonomic handling conforming to IEC 60900 for safe electrical application up to nominal voltages of 100V a.c. and 1500V d.c.

4.2.20.6. The unit shall have heavy duty stepped insulation to improve terminal access.

4.2.20.7. Each screw driver shall be designed for comfort with recessed finger stops to prevent slipping

4.2.20.8. A set shall comprise of Five (5) flat and three (3) star screw drivers as shown in table 12 below:

Table 12: Screw Driver set

No.	Type	Overall Length	Blade Length	Tip size
1	Flat	255mm	150mm	8mm
		230mm	125mm	6mm
		220mm	125mm	5mm
		185mm	100mm	4mm
		140mm	75mm	3mm
2	Star	200mm	150mm	No.2
		175mm	75mm	No.1
		140mm	75mm	No.0

4.2.20.9. Each tool shall be stamped with date-month and year- of manufacture and the handle shall be marked for easy identification of screw driver size, type and length.

4.2.20.10. The tenderer shall submit copies of user manual and brochures.

4.2.20.11. The tools shall be manufactured in an ISO 9001:2015 certified facility.

4.2.20.12. The tenderer shall submit one sample on request.

4.2.20.13. Each tool shall have a minimum warranty 24 months from the date it is delivered in KPLC stores. The supplier shall replace all tools with defects due to faulty workmanship at his cost.

4.2.21. Mains Neon Tester Screw Driver

4.2.21.1. The Mains Neon Tester screw Driver shall be made of High grade Steel.

4.2.21.2. It shall have a transparent handle with a high quality fully insulated blade and a distinct glow of neon lamp.

4.2.21.3. The minimum operating voltage shall be 230V ± 10%.

4.2.21.4. The maximum length shall be 152mm.

4.2.21.5. The tenderer shall submit copies of user manual and brochures.

4.2.21.6. The tools shall be manufactured in an ISO 9001:2015 certified facility.

4.2.21.7. The tenderer shall submit one sample on request.

4.2.21.8. Each tool shall have a minimum warranty 24 months from the date it is delivered in KPLC stores. The supplier shall replace all tools with defects due to faulty workmanship at his cost.

4.2.22. Set of Allen Keys (Metric Hex Key Sets)

4.2.22.1. They shall be made from chrome vanadium.

4.2.22.2. The ends shall be beveled for easy screw access.

4.2.22.3. A set shall comprise of 9 piece with 1.5mm; 2mm; 2.5mm; 3mm; 4;5mm; 6mm; 8mm and 10mm

4.2.22.4. They shall have easy to select protective dispenser.

4.2.22.5. Each tool shall be stamped with date-month and year- of manufacture.

4.2.22.6. The tenderer shall submit copies of user manual and brochures.

4.2.22.7. The tools shall be manufactured in an ISO 9001:2015 certified facility.

4.2.22.8. The tenderer shall submit one sample on request.

4.2.22.9. Each tool shall have a minimum warranty 24 months from the date it is delivered in KPLC stores. The supplier shall replace all tools with defects due to faulty workmanship at his cost.

4.2.23. Adjustable Spanner 8"

4.2.23.1. The spanner shall be made from bright polished nickel chrome.

4.2.23.2. The unit shall have slim line, tip and jaw for improved access.

4.2.23.3. The jaw opening shall be up to 30mm.

4.2.23.4. Each spanner shall have length of 200(8"), torque of 3100kg/cm and a weight of 260g.

4.2.23.5. The length and jaw size shall be clearly marked on the spanner.

4.2.23.6. The tools shall be manufactured in an ISO 9001:2015 certified facility.

4.2.23.7. The tenderer shall submit one sample on request.

4.2.23.8. Each tool shall have a minimum warranty 24 months from the date it is delivered in KPLC stores. The supplier shall replace all tools with defects due to faulty workmanship at his cost.

4.2.24. Professional Hacksaw Frames

4.2.24.1. The frames shall be made of heavy-duty materials.

4.2.24.2. Each hacksaw frame shall have Strong beam to keep blades rigid.

4.2.24.3. Each hacksaw frame shall have additional 45-degree blade position for use at awkward angles.
4.2.24.4. Each hacksaw frame shall have handgrip design for comfort and protection.
4.2.24.5. Each hacksaw frame shall have versatile key hole saw section
4.2.24.6. They shall be supplied complete with high-grade Bi-metal blade and an easy to use tensioning device.
4.2.24.7. The maximum length shall be 400mm.
4.2.24.8. The tenderer shall submit copies of user manual and brochures.
4.2.24.9. The tools shall be manufactured in an ISO 9001:2015 certified facility.
4.2.24.10. The tenderer shall submit one sample on request.
4.2.24.11. Each hacksaw frame shall have a minimum warranty 24 months from the date it is delivered in KPLC stores. The supplier shall replace all tools with defects due to faulty workmanship at his cost.

4.2.25. Hacksaw Replacement 400mm Blades

4.2.25.1. The blades shall be of high-grade bi-metal material with superb high-speed cutting performance.
4.2.25.2. The blade length shall be 400mm.
4.2.25.3. The tenderer shall submit copies of user manual and brochures.
4.2.25.4. The tools shall be manufactured in an ISO 9001:2015 certified facility.
4.2.25.5. The tenderer shall submit one sample on request.
4.2.25.6. Each tool shall have a minimum warranty 24 months from the date it is delivered in KPLC stores. The supplier shall replace all tools with defects due to faulty workmanship at his cost.

4.2.26. Retractable Knife (with 10 replacement knives)

4.2.26.1. The retractable knife shall have tough die cast construction.
4.2.26.2. It shall have adjustable blade depth characteristics.
4.2.26.3. It shall have a slip resistant handle with comfortable ergonomic grip
4.2.26.4. It shall have a convenient loophole for storage.
4.2.26.5. The knife shall have at least ten stainless steel blades with angular and cylindrical shapes for trimming/ stripping of electric cables.
4.2.26.6. The tenderer shall submit copies of user manual and brochures.
4.2.26.7. The tools shall be manufactured in an ISO 9001:2015 certified facility.
4.2.26.8. The tenderer shall submit one sample on request.

4.2.26.9. Each tool shall have a minimum warranty 24 months from the date it is delivered in KPLC stores. The supplier shall replace all tools with defects due to faulty workmanship at his cost.

4.2.27. Steel Trunking Hole cutter (Electricians hole saw kit)

4.2.27.1. They shall be of heavy-duty Bi-metal construction for durability with alternate set variable pitch 4/6 teeth – producing tighter grip, less vibration, cleaner faster cut and shall be made of pressed gap to give full cutting depth.

4.2.27.2. The hole saw kit shall include the following saw sizes:

1 x 19mm (3/4")
1 x 25mm (1")
1 x 32mm (11/4")
1 x 38mm (11/2")
1 x 44mm (13/4")
1 x 51 mm (2")

4.2.27.3. Each unit shall have M3 steel cutting edge to keep its teeth sharper for longer time.

4.2.27.4. The body shall be made of shatterproof material for staying power.

4.2.27.5. Each unit shall be able to cut brass, copper, steel, aluminium, wood.

4.2.27.6. The hole saws shall be able to be used in electric drills, pneumatic drills, vertical drilling machines and lathes.

4.2.27.7. Bi-Metal hole saw kit supplied in blow mould plastic carrying case.

4.2.27.8. The tenderer shall submit copies of user manual and brochures.

4.2.27.9. The tools shall be manufactured in an ISO 9001:2015 certified facility.

4.2.27.10. The tenderer shall submit one sample on request.

4.2.27.11. Each tool shall have a minimum warranty 24 months from the date it is delivered in KPLC stores. The supplier shall replace all tools with defects due to faulty workmanship at his cost.

4.2.28. Steel Trunking Hole Cutter (Sheet Metal Punch)

4.2.28.1. The cutter shall be robust, engineered, and heat-treated for long keen cutting life.

4.2.28.2. The cutter shall be able to cut mild steel up to 16swg (1.62mm), stainless steel up to 16swg (1.62mm), sheet copper, brass and aluminium up to 2.0mm.

4.2.28.3. It shall have simple Allen key operation that can be effected in less than one minute.

4.2.28.4. It shall produce an accurate and burr free hole with no jagged edges.
4.2.28.5. The cutter shall have black anti-corrosive surface finish to prevent rusting.
4.2.28.6. The following Allen keys should be provided:

Hole Size	Allen Key	Pilot Hole
16mm	6mm	9mm
20mm	8mm	11mm
22.5mm	8mm	11mm
25mm	8mm	11mm
32.5mm	10mm	13mm

4.2.28.7. The tenderer shall submit copies of user manual and brochures.
4.2.28.8. The tools shall be manufactured in an ISO 9001:2015 certified facility.
4.2.28.9. The tenderer shall submit one sample on request.
4.2.28.10. Each tool shall have a minimum warranty 24 months from the date it is delivered in KPLC stores. The supplier shall replace all tools with defects due to faulty workmanship at his cost.

4.2.29. Cordless Drill/Driver Machine

4.2.29.1. The drill shall be capable of drilling and fastening/unfastening screws.
4.2.29.2. Each unit shall have an electronic speed control for speed adjustment.
4.2.29.3. The unit shall have a soft start trigger.
4.2.29.4. Each machine shall have depth sensitive clutch capable of disengaging when set depth is reached.
4.2.29.5. Each machine shall come with standard accessories for holding/ driving screws into variety of materials.
4.2.29.6. The unit shall have a rechargeable 18 V battery.
4.2.29.7. Each machine shall have durable gear housing
4.2.29.8. The tenderer shall submit copies of user manual and brochures.
4.2.29.9. The tools shall be manufactured in an ISO 9001:2015 certified facility.
4.2.29.10. The tenderer shall submit one sample on request.
4.2.29.11. Each tool shall have a minimum warranty 24 months from the date it is delivered in KPLC stores. The supplier shall replace all tools with defects due to faulty workmanship at his cost.

4.2.30. Power Drilling Machines

4.2.30.1. The machine shall be suitable for drilling of hard metals-carbon steel, alloy steel, cast steel, cast iron, bronze, copper and aluminium, wood and plastic and shall be capable of both fastening/unfastening screws .

4.2.30.2. Each machine shall have adjustable speed option with electronic speed control.

4.2.30.3. Each Machine shall have Soft start trigger.

4.2.30.4. Each machine maximum rated input power shall be 800 watts.

4.2.30.5. Each machine shall have depth sensitive clutch capable of disengaging when set depth is reached.

4.2.30.6. The drilling machine shall have Variable and reversible features to make screw fastening and unfastening easy.

4.2.30.7. Each machine shall have durable gear housing

4.2.30.8. Each machine shall come with standard accessories for holding/ driving screws into variety of materials.

4.2.30.9. The tenderer shall submit copies of user manual and brochures.

4.2.30.10. The tools shall be manufactured in an ISO 9001:2015 certified facility.

4.2.30.11. The tenderer shall submit one sample on request.

4.2.30.12. Each tool shall have a minimum warranty 24 months from the date it is delivered in KPLC stores. The supplier shall replace all tools with defects due to faulty workmanship at his cost.

4.2.31. Drill Bits – 10 Piece set sizes from 1mm – 10 mm

4.2.31.1. They shall be made of high speed steel for drilling hard metals, wood and plastic.

4.2.31.2. The Sizes shall range from 1 mm to 10 mm in 1 mm increment with a roll up storage porch.

4.2.31.3. The tenderer shall submit copies of user manual and brochures.

4.2.31.4. The tools shall be manufactured in an ISO 9001:2015 certified facility.

4.2.31.5. The tenderer shall submit one sample on request.

4.2.31.6. Each tool shall have a minimum warranty 24 months from the date it is delivered in KPLC stores. The supplier shall replace all tools with defects due to faulty workmanship at his cost.

5.0. TESTS REQUIREMENTS

The tools shall be inspected and tested in accordance with the requirements of relevant international and national standards and provisions of this specification.

6.0. MARKING AND PACKING

6.1. Marking

The following information shall be marked indelibly and legibly on the tool (in English Language).

a) Manufacturer's name and/or registered trade mark.
b) Model number, name or other means to identify the equipment or tool
c) The words "**PROPERTY OF KPLC**".

6.2. PACKING

6.2.1. Each item shall be packed in such a manner as to protect it from damage during transportation and storage.

6.2.2. Each package shall contain relevant instructions for handling and use printed in English language.

6.2.3. The following information shall be printed on a suitable label firmly attached to each packaging:

a) Type of tool or equipment
b) Purchase order number/tender
c) Manufacturer's name
d) Year of manufacture
e) The words, "PROPERTY OF KENYA POWER & LIGHTING CO."

A: TESTS AND INSPECTION (NORMATIVE)

A.1 It shall be the responsibility of the manufacturer to perform or to have performed all the tests specified.

A.2 Copies of previous Test Certificates and 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. The accreditation certificate for the third-party testing laboratory shall also be submitted with the tender (all in English Language).

A.3 After manufacture, Sampling, Inspection and Methods of Test shall be in accordance with relevant national and international standards. The tests shall be done at the manufacturer's works in the presence of KPLC Engineers.

A.4 Complete test reports for the tools or equipment shall be submitted to KPLC for approval before delivery.

A.5 Upon delivery of the tools and equipment, KPLC 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 all equipment or tools without extra or additional charge to KPLC, which upon examination, test or use fail to meet any of the requirements in the specification and reference standards.

B: QUALITY MANAGEMENT SYSTEM (NORMATIVE)

B.1 The supplier shall submit a quality assurance plan (QAP) that used to ensure that the tools and /or equipment physical properties, tests and documentation, would 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 items, manufacturer's monthly & annual production capacity and experience in the production of the type and size of items being offered. A detailed list & contact addresses (including e-mail) of the manufacturer's previous customers for similar type of tools and /or equipment 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

C.1 The bidder shall submit its tender complete with technical documents required by Annex A (Guaranteed Technical Particulars) 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) signed by the manufacturer;
b) Copies of the Manufacturer's catalogues, brochures, drawings 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 9001:2015 certificate.
h) Operating instructions.

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

a) Fully filled clause by clause guaranteed technical particulars (GTP) signed by the manufacturer;
b) Detailed design drawings of tools and equipment to be manufactured for KPLC.
c) 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 9001:2015.
d) Detailed test program to be used during factory testing;

C.3 The supplier shall submit recommendations for use, care, storage and routine inspection/testing procedures, all in the English Language, during delivery of tools and equipment to KPLC stores.

ANNEX A: 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 manufacturing capacity, the manufacturer's experience and copies of complete type test certificates and type test reports for tender evaluation, all in English Language)

Tender No .....

Clause Number	Requirement	Bidder's Offer
Bidder's Name and address		State
1.	Scope	State
2.	Normative References	State
3.	Terms, Definitions and Abbreviations	State
4.	Requirements	
4.1	Service condition	State
4.2	Specific requirements	
4.2.5	**Insulation Tester**	
	Manufacturer	State
	Brand name	State
4.2.5.1	Standard of manufacture	State
4.2.5.2	Technical parameters	
Table 1	Voltage Measurement range	State
	Insulation resistance	State
	Frequency Range	State
	Nominal test voltages	State
	Continuity Test ranges	State
	Adjustable buzzer	State
	Open circuit voltage	State
	Short circuit current	State
	Test current on load	State
	Accuracy	State
	Battery	State
	Display	State
	Degree of Ingress Protection	State
	Features	State
	Accessories	State

Clause Number	Requirement	Bidder's Offer
4.2.5.3	Terminal Voltage at which to inhibit test	State
	Live circuit detention	State
4.2.5.4	Safety requirements	State
4.2.5.5	Ability to absorb any physical shocks requirements	State
4.2.5.6	EMC requirements	State
4.2.5.7	Calibration certificate	state
4.2.5.8	ISO 9001:2015 of the manufacturer	State
4.2.5.9	Sample	State
4.2.5.10	Warranty period	State
4.2.6	**Non-Contact AC Voltage Detector/Finder**	
	Manufacturer	State
	Brand name	State
4.2.6.1	Application	State
4.2.6.2	Technical Parameters	
Table 2	Voltage Range	State
	Frequency Range	State
	Battery type	State
	Display	State
	Features	State
	Accessories	State
4.2.6.3	Safety requirements	State
4.2.6.4	EMC requirements	State
4.2.6.5	Calibration certificate	state
4.2.6.6	ISO 9001:2015 of the manufacturer	Provide
4.2.6.7	Sample	Provide
4.2.6.8	Warranty period	State
4.2.7	**Earth Loop Impedance**	
	Manufacturer	State
	Brand name	State
4.2.7.1	Standard of manufacture	State
4.2.7.2	Measuring capabilities	State
4.2.7.3	Technical Parameters	State
Table 3	Accuracy	State
	Frequency range	State
	Voltage range	State
	Type of display	State
	Type of battery and its capability	State

Clause Number	Requirement	Bidder's Offer
	Degree of Ingress Protection	State
	Features	State
	Accessories	state
4.2.7.4	Safety requirements	State
4.2.7.5	EMC requirements	State
4.2.7.6	Calibration certificate	State
4.2.7.7	ISO 9001:2015 of the manufacturer	Provide
4.2.7.8	Sample	Provide
4.2.7.9	Warranty period	State
4.2.8	**TRMS Power Meter**	
	Manufacturer	State
	Brand name	State
4.2.8.1	Standard of manufacture	State
4.2.8.2	Application	State
4.2.8.3	Technical Particulars	
Table 4	AC Voltage range	
	AC Current range	
	Degrees of Ingress protection	
	Display	
	Battery	
	Feature	
	Accessories	
4.2.8.4	Safety requirements	State
4.2.8.5	EMC requirements	State
4.2.8.6	Calibration certificate	State
4.2.8.7	ISO 9001:2015 of the manufacturer	Provide
4.2.8.8	Sample	Provide
4.2.8.9	Warranty period	State
4.2.9	**Portable Ultrasonic Flow meter**	
	Manufacturer	State
	Brand name	State
4.2.9.1	Application	State
4.2.9.2	Technical Particulars	State
Table 5	Operating temperatures	State
	Range of pipe sizes	State
	Bi-directional Flow range	State

Clause Number	Requirement		Bidder's Offer
	Accuracy		State
	Display		State
	Battery		State
	Keyboard		State
	Features		State
	Accessories		State
4.2.9.4	Calibration certificate		State
4.2.9.5	ISO 9001:2015 of the manufacturer		Provide
4.2.9.6	Sample		Provide
4.2.9.7	Warranty period		State
4.2.10	**Precision aiming infrared thermometer**		
	Manufacturer		State
	Brand name		State
4.2.10.1	Type of thermometer		State
4.2.10.2	Technical Particulars of Precision aiming infrared thermometer		
Table 6	Operating temperature	^{0}C	State
		^{0}F	State
	Temperature range	^{0}C	State
		^{0}F	State
	Accuracy	^{0}C	State
		^{0}F	State
	Repeatability	^{0}C	State
		^{0}F	State
	Response time		State
	Spectral response		State
	Emissivity		State
	Laser Class		State
	Distance to Spot ratio		State
	Display		State
	Display resolution	^{0}C	State
		^{0}F	State
	Temperature Display		State
	Power supply		State
	Accessories		List
4.2.10.3	Calibration certificate		State

Clause Number	Requirement	Bidder's Offer
4.2.10.4	ISO 9001:2015 of the manufacturer	Provide
4.2.10.5	Sample	Provide
4.2.10.6	Warranty period	State
4.2.11	**Electronic Combustion Analyzer**	
	Manufacturer	State
	Brand name	State
4.2.11.1	Application	State
4.2.11.2	Technical Particulars of the Electronic Combustion Analyzer	
Table 7	Preprogrammed fuel types	State
	Combustion Efficiency	State
	Oxygen concentration levels	State
	Carbon dioxide Concentration	State
	Carbon Monoxide Measurements	State
	Ambient Air Temperature	State
	Stack Temperature	State
	Excess Air	State
	Display	State
	Battery	State
	Accessories	State
	Features	State
	User manual And brochures	Provide
4.2.11.3	Calibration certificate	State
4.2.11.4	ISO 9001:2015 of the manufacturer	Provide
4.2.11.5	Sample	Provide
4.2.11.6	Warranty period	State
4.2.12	**Ultrasonic Leak detector**	
	Manufacturer	State
	Brand name	State
4.2.12.1	Application	State
4.2.12.2	Technical particulars of an Ultrasonic Leak Detector	
Table 8	Operating temperature range	State
	Accuracy	State
	Frequency response	State
	Display	State
	Battery	State

Clause Number	Requirement			Bidder's Offer
	Accessories			State
	Features			State
4.2.12.3	Calibration certificate			State
4.2.12.4	ISO 9001:2015 of the manufacturer			Provide
4.2.12.5	Sample			Provide
4.2.12.6	Warranty period			State
4.2.13	**Air Flow Meters**			
	Manufacturer			State
	Brand name			State
4.2.13.1	Application			State
4.2.13.2	Technical Particulars of the airflow meter			
Table 9	Air Velocity	m/s	Range	State
			Resolution	State
			Accuracy	State
		mph	Range	State
			Resolution	State
			Accuracy	State
		knots	Range	State
			Resolution	State
			Accuracy	State
		kM/hr.	Range	State
			Resolution	State
			Accuracy	State
	Air volume	Ft^3/min	Range	State
			Resolution	State
	Temperature	^0C	Range	State
		^0F	Range	State
		^{0}	Resolution	State
4.2.13.3	Power source			State
4.2.13.4	Accessories			List
4.2.13.5	Calibration certificate			State
4.2.13.6	ISO 9001:2015 of the manufacturer			Provide
4.2.13.7	Sample			Provide
4.2.13.8	Warranty period			State
4.2.14	**Optical Tachometer**			

Clause Number	Requirement		Bidder's Offer
	Manufacturer		State
	Brand name		State
4.2.14.1	Application		State
4.2.14.2	Technical particulars of the optical tachometer		
Table 10	Speed Range		State
	Accuracy	5.0000- 9.9999 RPM	State
		10.000-99.999 RPM	State
		100.00-999.99 RPM	State
		1000.0-9999.9 RPM	State
		10,000-99,999 RPM	State
		100,000 – 500000RPM	State
	Resolution	5.0000- 9.9999 RPM	State
		10.000-99.999 RPM	State
		100.00-999.99 RPM	State
		1000.0-9999.9 RPM	State
		10,000-99,999 RPM	State
	Frequency range		State
	Display		State
	Indicators		State
	Power		State
4.2.14.3	Calibration certificate		State
4.2.14.4	ISO 9001:2015 of the manufacturer		Provide
4.2.14.5	Sample		Provide
4.2.14.6	Warranty period		State
4.2.15	**Digital Humidity meter**		
	Manufacturer		State
	Brand name		State
4.2.15.1	Application		State
4.2.15.2	Technical particulars of the digital humidity		
Table 11	Relative humidity	Range	State
		Resolution	State
		Accuracy	State
	Operating Temperature	Range	State
		Accuracy	State
	Storage temperature		State
	Display		State
	Power source		State

Clause Number	Requirement	Bidder's Offer
	Features	State
	Accessories	State
4.2.15.3	Calibration certificate	State
4.2.15.4	ISO 9001:2015 of the manufacturer	Provide
4.2.15.5	Sample	Provide
4.2.15.6	Warranty period	State
4.2.16	**Pair of Electrician pliers**	
	Manufacturer	State
	Brand name or designation	State
4.2.16.1	Standard of manufacture	State
4.2.16.2	Application	State
4.2.16.3	Insulation type	State
4.2.16.4	Material of manufacture	State
4.2.16.5	Cutting edge hardness	State
4.2.16.6	Dimensions	State
4.2.16.7	Features	State
4.2.16.8	Marking	State
4.2.16.9	User manuals and brochures	Provide
4.2.16.10	ISO 9001:2015 of the manufacturer	Provide
4.2.16.11	Sample	Provide
4.2.16.12	Warranty period	State
4.2.17	**Pair of Long Nose Pliers**	
	Manufacturer	State
	Brand name or designation	State
4.2.17.1	Standard of manufacture	State
4.2.17.2	Application	State
4.2.17.3	Insulation type	State
4.2.17.4	Material of manufacture	State
4.2.17.5	Cutting edge hardness	State
4.2.17.6	Dimensions	State
4.2.17.7	Features	State
4.2.17.8	Marking	State
4.2.17.9	User manuals and brochures	Provide
4.2.17.10	ISO 9001:2015 of the manufacturer	Provide
4.2.17.11	Sample	Provide
4.2.17.12	Warranty period	State
4.2.18	**Side cutting pliers**	Prov
	Manufacturer	State

Clause Number	Requirement	Bidder's Offer
	Brand name or designation	State
4.2.18.1	Standard of manufacture	State
4.2.18.2	Application	State
4.2.18.3	Insulation type	State
4.2.18.4	Material of manufacture	State
4.2.18.5	Cutting edge hardness	State
4.2.18.6	Dimensions	State
4.2.18.7	Features	State
4.2.18.8	Marking	State
4.2.18.9	User manuals and brochures	Provide
4.2.18.10	ISO 9001:2015 of the manufacturer	Provide
4.2.18.11	Sample	Provide
4.2.18.12	Warranty period	State
4.2.19	**Wire Stripping Pliers**	
	Manufacturer	State
	Brand name or designation	State
4.2.19.1	Standard of manufacture	State
4.2.19.2	Application	State
4.2.19.3	Insulation type	State
4.2.19.4	Material of manufacture	State
4.2.19.5	Features	State
4.2.19.6	Marking	State
4.2.19.7	User manuals and brochures	Provide
4.2.19.8	ISO 9001:2015 of the manufacturer	Provide
4.2.19.9	Sample	Provide
4.2.19.10	Warranty period	State
4.2.20	**Professional Heavy Duty 8-piece screw driver set**	
	Manufacturer	State
	Brand name or designation	State
4.2.20.1	Material of manufacture	State
4.2.20.2	Construction of tips	State
4.2.20.3	Characteristics of the tip	State
4.2.20.4	Characteristics of the handle	State
4.2.20.5	Insulation type	State
4.2.20.6	Characteristic of the insulation	State
4.2.20.7	Handle features	State
4.2.20.8	Screw driver set sizes	State
4.2.20.9	Marking	State

Clause Number	Requirement	Bidder's Offer
4.2.20.10	User manuals and brochures	Provide
4.2.20.11	ISO 9001:2015 of the manufacturer	Provide
4.2.20.12	Sample	Provide
4.2.20.13	Warranty period	State
4.2.21	**Mains Neon Tester Screw Driver**	
	Manufacturer	State
	Brand name or designation	State
4.2.21.1	Material	State
4.2.21.2	Handle material and construction	State
4.2.21.3	Operating voltage range	State
4.2.21.4	Length	State
4.2.21.5	User manuals and brochures	Provide
4.2.21.6	ISO 9001:2015 of the manufacturer	Provide
4.2.21.7	Sample	Provide
4.2.21.8	Warranty period	State
4.2.22	**Set of Allen Keys (Metric Hex Key Sets)**	
	Manufacturer	State
	Brand name or designation	State
4.2.22.1	Material of manufacture	State
4.2.22.2	Construction	State
4.2.22.3	Allen keys sizes	State
4.2.22.4	Type of dispenser	State
4.2.22.5	Marking	State
4.2.22.6	User manuals and brochures	Provide
4.2.22.7	ISO 9001:2015 of the manufacturer	Provide
4.2.22.8	Sample	Provide
4.2.22.9	Warranty period	State
4.2.23	**Adjustable Spanner 8"**	
	Manufacturer	State
	Brand name or designation	State
4.2.23.1	Material	State
4.2.23.2	Construction	State
4.2.23.3	Jaw size	State
4.2.23.4	Length	State
	Torque	State
	Weight	State
4.2.23.5	Marking	State
4.2.23.6	ISO 9001:2015 of the manufacturer	Provide

Clause Number	Requirement	Bidder's Offer
4.2.23.7	Sample	Provide
4.2.23.8	Warranty period	State
4.2.24	**Professional Hacksaw Frames**	
	Manufacturer	State
	Brand name or designation	State
4.2.24.1	Frame material	State
4.2.24.2	Frame construction	State
4.2.24.3	Additional 45-degree blade position for use at awkward angles feature	State
4.2.24.4	Hand-grip design	State
4.2.24.5	key hole saw section	State
4.2.24.6	Blade material	State
	Tensioning device	State
4.2.24.7	Length	State
4.2.24.8	User manual and brochures	Provide
4.2.24.9	ISO 9001:2015 of the manufacturer	Provide
4.2.24.10	Sample	Provide
4.2.24.11	Warranty period	State
4.2.25	**Replacement 400mm Blades**	
4.2.25.1	Blade material	State
4.2.25.2	Blade length	State
4.2.25.3	User manual and brochures	Provide
4.2.25.4	ISO 9001:2015 of the manufacturer	Provide
4.2.25.5	Sample	Provide
4.2.25.6	Warranty period	State
4.2.26	**Retractable Knife (with 10 replacement knives)**	
4.2.26.1	Construction	State
4.2.26.2	Adjustable blade depth feature	State
4.2.26.3	Handle design	State
4.2.26.4	Storage	State
4.2.26.5	No of blades	State
	Blade material	State
	Shapes blades	State
4.2.26.6	User manual and brochures	Provide
4.2.26.7	ISO 9001:2015 of the manufacturer	Provide
4.2.26.8	Sample	Provide
4.2.26.9	Warranty period	State
4.2.27	**Steel Trunking Hole cutter (Electricians hole saw kit)**	
4.2.27.1	Construction	

Clause Number	Requirement	Bidder's Offer
4.2.27.2	Hole saw kit sizes	
4.2.27.3	Type of cutting age	State
4.2.27.4	Body material	State
4.2.27.5	Capability to cut brass, copper, steel, aluminium, wood	State
4.2.27.6	Application	State
4.2.27.7	Material of carrying case	State
4.2.27.8	User manual and brochures	Provide
4.2.27.9	ISO 9001:2015 of the manufacturer	Provide
4.2.27.10	Sample	Provide
4.2.27.11	Warranty period	State
4.2.28	**Steel Trunking Hole Cutter (Sheet Metal Punch)**	
4.2.28.1	Cutter construction	State
4.2.28.2	Cutter capabilities	State
4.2.28.3	simple Allen key operation feature	State
4.2.28.4	Capability to produce an accurate and burr free hole with no jagged edges	State
4.2.28.5	The cutter finish	State
4.2.28.6	Allen keys size	State
4.2.28.7	User manual and brochures	Provide
4.2.28.8	ISO 9001:2015 of the manufacturer	Provide
4.2.28.9	Sample	Provide
4.2.28.10	Warranty period	State
4.2.29	**Cordless drill/Driver Machine**	
4.2.29.1	Application	State
4.2.29.2	Electronic speed control feature	State
4.2.29.3	Soft start trigger feature	State
4.2.29.4	Depth sensitive clutch capable of disengaging when set depth is reached feature	State
4.2.29.5	Accessories for holding/ driving screws into variety of materials.	State
4.2.29.6	Power source	State
4.2.29.7	Durable gear housing feature	State
4.2.29.8	User manual and brochures	Provide
4.2.29.9	ISO 9001:2015 of the manufacturer	Provide
4.2.29.10	Sample	Provide
4.2.29.11	Warranty period	State
4.2.30	**Power Drilling Machines**	
4.2.30.1	Application	State
4.2.30.2	Electronic speed control feature	State

Clause Number	Requirement	Bidder's Offer
4.2.30.3	Soft start trigger feature	State
4.2.30.4	Maximum rated input power	State
4.2.30.5	Depth sensitive clutch capable of disengaging when set depth is reached feature	State
4.2.30.6	Variable and reversible features to make screw fastening and unfastening easy	State
4.2.30.7	Durable gear housing feature	State
4.2.30.8	Accessories for holding/ driving screws into variety of materials.	State
4.2.30.9	User manual and brochures	Provide
4.2.30.10	ISO 9001:2015 of the manufacturer	Provide
4.2.30.11	Sample	Provide
4.2.30.12	Warranty period	State
4.2.31	**Drill Bits – 10 Piece set sizes from 1mm – 10mm**	
4.2.31.1	Material and application	
4.2.31.2	Sizes	State
4.2.31.3	User manual and brochures	Provide
4.2.31.4	ISO 9001:2015 of the manufacturer	Provide
4.2.31.5	Sample	Provide
4.2.31.6	Warranty period	State
5.0	**Test Requirements**	**State**
6.0	**Marking and Packing**	
6.1	Marking	State
6.2	Packing	State
A.	**TESTS AND INSPECTION (NORMATIVE)**	
A.1	Test standards and responsibility of carrying out tests	Provide
A.2	Copies of Type Test Reports submitted with tender	Provide
A.3	Acceptance tests to be witnessed by KPLC at factory before shipment	Provide
A.4	Test reports to be submitted by supplier to KPLC for approval before shipment	Provide
A.5	Replacement of rejected tools and/or equipment	State compliance
B.	**QUALITY MANAGEMENT SYSTEM (NORMATIVE)**	
B.1	Quality Assurance Plan	Provide
B.2	Copy of ISO 9001:2015 Certificate	Provide
B.3	Delivery time	State
	Manufacturer's experience	State
	Manufacturing Capacity (units per month)	State
	Detailed list & contact addresses of previous customers	State

Clause Number	Requirement	Bidder's Offer
	Customer reference letters	State
C	**Documentation**	
C.1	Documents to be submitted with tender	
C.2	Documents to be submitted by supplier to KPLC for approval before manufacture	
C.3	Documents to be submitted during delivery of tools and equipment to KPLC stores	
	Statement of compliance to specification	

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Manufacturer's Name, Signature, Stamp and Date