



Kenya Power

TITLE:

**SPECIFICATION FOR LOW  
VOLTAGE MEASURING  
INSTRUMENTS**

Part 3: Multimeters

Doc. No.

KP1/3CB/TSP/09/058-3

Issue No.

1

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**ANNEX A:** *Guaranteed Technical Particulars (to be filled and signed by the supplier and submitted together with copies of the Manufacturer's catalogues, brochures, drawings, technical data, sales records and copies of test certificates for tender evaluation)*

**Tender No .....** **Bidder's Name & Address .....**

Sr. No.	Description	Bidder's Offer (To be fully filled)
1	Name of the manufacturer and country of origin	
	Type Reference Number or Model Number	
2	<b>Applicable Standards</b>	
3	<b>Terms and Definitions</b>	
4	Requirements	
4.1	Service conditions	
4.2	<b>Design and Construction</b>	
	4.2.1 – 4.2.13	

**Table 3: Power Supply and Mechanical Data as per Table 3**

Single-phase, nominal	220 V AC ... 250 V AC, 16 A	
Frequency, nominal	50 Hz	
Power consumption	<3500 VA (<7000 VA for short time < 10 sec)	
Connection socket	C22 conforming to IEC 60320	
Operating temperature	-10 ... +55 °C (+14 ... +131 °F)	
Storage temperature	-20 ... +70 °C (-4 ... +158 °F)	
Humidity range - Rel. humidity	5 ... 95 %, non-condensing	
Shock (operating)	15 g / 11 ms half sine as per IEC 60068-2-27	
Vibration (operating)	frequency range from 10 Hz to 150 Hz, continuous acceleration 2 g (20 m/s <sup>2</sup> ), 10 cycles per axis as per IEC 60068-2-6	
Performance criteria of the equipment	IEC 61326-1 Class A,	
Rated Impulse Voltage for equipment - 1.2/50µs	6000 V as per IEC 60664-1, table 1	
Overvoltage category	Class IV as per IEC 61010-1	
Pollution category	Class 2 as per IEC 61010-1	
Insulation material group	Group II - 400≤CTI<600 (PLC=1) as per IEC 60112	

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Partial discharge  
requirements

As per IEC 60664-1 Annex C

Solid insulation design

Shall withstand short term and long term stresses as per IEC 60664-1 clause 3.3

**Measurement characteristics multimeters**

**DC VOLTS**

Ranges:

400 mV, 4 V, 40 V, 400 V, 600 V

Resolution:

100  $\mu$ V

Accuracy (ranges):

$\pm(0.25\% \text{ rdg} + 1\text{dgt})$  on 400 mV to 400 V  
 $\pm(0.25\% \text{ rdg} + 3\text{dgts})$  on 600 V

Input impedance :

> 10 M $\Omega$

Overload protection:

600 VDC or AC rms

**AC VOLTS (True RMS) (50Hz - 500Hz)**

Ranges:

4 V, 40 V, 400 V, 600 V

Resolution:

1 mV

Accuracy:

$\pm (0.75\% \text{ rdg} + 4\text{dgts})$  on 50 - 60Hz  
 $\pm (2.0\% \text{ rdg} + 4\text{dgts})$  on 40 - 500Hz

Input impedance :

> 10 M $\Omega$

Effect Reading:

100 – 3999

Overload protection:

600 VDC or 600 VAC rms

**RESISTANCE**

Ranges:

400  $\Omega$ , 4 k $\Omega$ , 40 k $\Omega$ , 400 k $\Omega$ , 4000 k $\Omega$ , 40 M $\Omega$

Accuracy (ranges):

$\pm (0.3\% \text{ rdg} + 5\text{dgts})$  on 400  $\Omega$   
 $\pm (0.3\% \text{ rdg} + 1\text{dgt})$  on 4 kV to 400 k $\Omega$   
 $\pm (0.5\% \text{ rdg} + 1\text{dgt})$  on 4000 k $\Omega$   
 $\pm (2.0\% \text{ rdg} + 4\text{dgts})$  on 40 M $\Omega$

Open circuit volts:

0.4 Vdc

Overload protection:

600 VDC or AC rms

**CONTINUITY**

Audible indication:

less than 40  $\Omega \pm 20 \Omega$

Overload protection:

600 VDC or AC rms

**DIODE TEST**

Test current:

1.0 mA + 0.6 mA

Accuracy:

+ (3.0% rdg + 3dgts)

Open circuit volts:

3.0 Vdc typical

Overload protection:

600 VDC or AC rms

**FREQUENCY (Auto ranging)**

Ranges:

100 Hz, 1 kHz, 10 kHz, 100 kHz, 500 kHz

Resolution:

0.01 Hz

Accuracy:

+ (0.1% rdg + 2dgts)

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	Sensitivity:	2.0 Vrms min	
	Effect reading:	10 - 9999	
	Overload protection:	600 VDC or AC rms	
	<b>CAPACITANCE</b>		
	Ranges:	4 nF, 40 nF, 400 nF, 4 mF, 40 mF	
	Accuracy:	± (3.0% rdg + 20dgt) on 4 nF range (use DZERO) ± (3.0% rdg + 4dgt) on 40 nF to 20 mF ranges ± (6.0% rdg + 4dgt) above 20 mF	
	Overload protection:	600 VDC or AC rms	
	<b>DC CURRENT (Put conductor at the center of the jaws)</b>		
	Ranges:	400 A, 1200 A	
	Resolution:	100 mA	
	Accuracy:	± (1.5% rdg + 5dgt): *700A to 1200A ± (2.0% rdg + 5dgt)	
	Overload protection:	1200A dc maximum for 1 minute.	
	<b>AC CURRENT (True RMS) (40 Hz – 500 Hz)</b>		
	Ranges:	400 A, 1000 A	
	Resolution:	100 mA	
	Accuracy:	± (1.75% rdg + 5dgt) on 50 Hz/ 60 Hz ± (3.5% rdg + 5dgt) on 40 Hz – 500 Hz *700A to 1000A: (50Hz/60Hz) ± (2.5% rdg + 5dgt)	
	Overload protection:	1000 V maximum for 1 minute.	
4.3	Design and construction		
4.3.1	Digital Multimeter		
	4.3.1.1 – 4.3.1.8		
4.3.2	Digital clamp-On Meter		
	4.3.2.1 – 4.3.2.4		
4.4	Quality Management Systems		
	4.4.1 – 4.4.3		
5.0	Test and Inspection		
	5.1 – 5.3		
	5.3.1 – Types tests for the instrument performance		
	5.3.2. - Types tests for the printed circuit coating performance		
	5.4 – 5.6		
6.0	Marking and packing		
	6.1 Packing		
	6.1.1 – 6.1.3		

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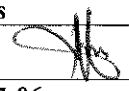
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	6.2 Marking	
7.0	Documentation	
	7.2– 7.3	
8.0	Manufacturer's Guarantee and Warranty	
9.0	List catalogues, brochures, technical data and drawings submitted to support the offer.	
10.0	List customer sales records submitted to support the offer.	
11.0	List Test Reports and Test Certificates submitted with tender	
12.0	List test & calibration reports to be submitted to KPLC for approval before shipment	
13.0	Statement of compliance to specification (indicate deviations if any & supporting documents)	

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

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