

# KUSAM-MECO®

An ISO 9001:2008 Company

## 1000A DC / 800A AC, 4000 COUNTS CLAMP-ON DMM

Model - 2754 A - AVERAGE SENSING 16 FUNCTION 30 RANGES

2754 A-T - TRUE RMS SENSING 17 FUNCTION 30 RANGES

### SPECIAL FEATURES :

- DC 1000A / AC 800A Clamp-on + Full Multimeter ranges
- Versatile & Handy
- Fully Auto-ranging on all functions
- Backlighted Display (Model 2754A-T)
- 30ms Max HOLD to capture in-rush currents
- Data Hold, Max Hold & Relative Zero Mode
- Fast Audible continuity Test & Diode Test
- Auto power off

### GENERAL SPECIFICATIONS :

- \* **Sensing** : Average sensing (Model 2754A)  
AC TRMS Voltage & Current functions (Model 2754A-T)
- \* **Jaws Opening size** : 50mm Max.
- \* **Display** : 3½ digits 4000 counts
- \* **Update Rate** : 3 per second nominal
- \* **Polarity** : Automatic
- \* **Operating Temperature** : 0°C ~ 40°C
- \* **Relative Humidity** : Maximum 80%R.H. for Temperature upto 31°C decreasing linearly to 50% R.H. at 40°C
- \* **Altitude** : Operating below 2000m
- \* **Storage Temperature** : -20°C ~ 60°C, <80% R.H. (with battery removed)
- \* **Temperature Coefficient** : Nominal 0.15 x (specified accuracy) / °C @ (0°C ~ 18°C or 28°C ~ 40°C), or otherwise Specified
- \* **Power Supply** : Standard 1.5V AAA Battery x 2
- \* **Power Consumption** : typical 11mA for DCA / ACA & 2.9mA for other Functions
- \* **Low Battery** : Below approx. 2.5V
- \* **APO timing** : Idle for 30 minutes
- \* **APO Consumption** : typical 10 A (Model 2754A); typical 190 A (Model 2754A-T)
- \* **Dimension** : 227(L) x 78(W) x 40(H)mm
- \* **Weight** : approx 290 gms.

### SAFETY :

- **Safety** : Meets IEC61010-2-032(2002), EN61010-2-032 (2002), UL61010B-2-032(2003)
- **Measurement Category** : CAT III 600V AC & DC
- **E.M.C.** : Meets EN61326(1997, 1998/A1), EN61000-4-2 (1995), & EN61000-4-3 (1996)  
In an RF Field of 3V/m :  
Capacitance function is not specified  
Other function ranges : Total accuracy = Specified accuracy + 45 digits  
Performance above 3V/m is not specified
- **Overload Protection** :  
Clamp-on jaws : DC 1000A or AC 800A rms continuous  
+ & COM terminals : 600VDC/VAC rms
- **Pollution Degree** : 2
- **Transient Protection** : 6.5kV (1.2/50 s surge)
- **Battery cover with Probe holders**
- **Rugged Fire retarded casing.**
- **LVD EN61010-2-032 CAT III 600V**

### ACCESSORIES :

Test lead pair, Batteries installed, User's manual & Carrying case



All Specifications are subject to change without prior notice

## ELECTRICAL SPECIFICATIONS : 2754A / 2754A-T

Accuracy is  $\pm$  (% of reading digits + number of digits) or otherwise specified, at 23°C  $\pm$  5°C & less than 75% R.H.

**Model 2754A-T** ACV & ACA clamp-on accuracies are specified from 5% to 100% of range or otherwise specified.

Maximum Crest Factor are as specified below, and with frequency spectrums, besides fundamentals, fall within the meter specified AC bandwidth or non-sinusoidal waveform.

### AC CURRENT (CLAMP-ON)

Range	Resolution	Accuracy <sup>1)2)</sup>
<b>400.0A</b>		
15Hz~40Hz	0.1 A	$\pm(2.0\%rdg + 5dgts^3)$
40Hz~200Hz		$\pm(1.5\%rdg + 5dgts)$
200Hz~400Hz @ <50A <sup>4)</sup>		$\pm(2.0\%rdg + 5dgts)$
400Hz~1KHz @ <50A <sup>4)</sup>		$\pm(2.0\%rdg + 5dgts)$
<b>800A</b>		
15Hz~40Hz	1 A	$\pm(2.0\%rdg + 5dgts^3)$
40Hz~100Hz		$\pm(1.5\%rdg + 5dgts)$
15Hz~60Hz		$\pm(5.0\%rdg + 30dgts)$

<sup>1)</sup> Induced error from adjacent current-carrying conductor : < 0.01A/A

<sup>2)</sup> Model - 2754A-T True RMS

Crest Factor : < 1.6:1 at full scale & < 3.2:1 at half scale

<sup>3)</sup> 4.0% + 5d (for Model - 2754A-T)

<sup>4)</sup> Accuracy is specified at <50A in this frequency bandwidth due to limited calibrator output capability for testing

### DC CURRENT (CLAMP-ON)

Range	Resolution	Accuracy <sup>1)2)</sup>
<b>400.0A</b>		
0A ~ 400A	0.1 A	$\pm(1.5\%rdg + 4dgts)$
<b>1000A</b>		
400A ~ 800A	1 A	$\pm(1.5\%rdg + 4dgts)$
800A ~ 900A		$\pm(2.0\%rdg + 4dgts)$
900A ~ 1000A		$\pm(5.0\%rdg + 30dgts)$

<sup>1)</sup> Induced error from adjacent current-carrying conductor : < 0.01A / A

<sup>2)</sup> Relative Zero mode is applied to offset the non-zero residual readings, if any.

### CAPACITANCE

Range <sup>1)</sup>	Resolution	Accuracy <sup>2)3)</sup>
500.0 nF	0.1 nF	$\pm(3.5\%rdg + 6dgts)$
5.000 F	1 nF	
50.00 F	10 nF	
500.0 F	100 nF	
3000 F	1 F	

<sup>1)</sup> Additional 50.00nF range accuracy is not specified.

<sup>2)</sup> Accuracies with film capacitor or better

<sup>3)</sup> Specified with battery voltage above 2.8V (approximately half full battery). Accuracy decreases gradually to 12% at low battery warning voltage of approximately 2.4V

### DIODE TESTER

Open Circuit Voltage	Test Current (Typical)
< 1.6 VDC	0.4mA

### DC VOLTAGE

Range	Resolution	Accuracy
400.0 mV	0.1 mV	$\pm(0.3\%rdg + 3dgts)$
4.000 V	1 mV	$\pm(0.5\%rdg + 3dgts)$
40.00 V	10 mV	$\pm(0.5\%rdg + 3dgts)$
400.0 V	100 mV	$\pm(0.5\%rdg + 3dgts)$
600 V	1 V	$\pm(1.0\%rdg + 4dgts)$

NMRR: > 50dB @ 50Hz / 60Hz

CMRR: > 120dB @ DC, 50Hz / 60Hz, Rs=1K

Input Impedance : 10M , 30pF nominal;

(1000M for 400.0mV range)

### AC VOLTAGE

Range	Resolution	Accuracy
<b>50Hz ~ 500Hz</b>		
400.0 mV <sup>1)</sup>	100 V	$\pm(4.0\%rdg + 4dgts)$
<b>50Hz ~ 60Hz</b>		
4.000 V	1 mV	$\pm(1.0\%rdg + 4dgts)$
40.00 V	10 mV	$\pm(1.0\%rdg + 4dgts)$
400.0 V	100 mV	$\pm(1.0\%rdg + 4dgts)$
<b>60Hz ~ 500Hz</b>		
4.000 V	1 mV	$\pm(1.5\%rdg + 4dgts)$
40.00 V	10 mV	$\pm(1.5\%rdg + 4dgts)$
400.0 V	100 mV	$\pm(1.5\%rdg + 4dgts)$
<b>50Hz ~ 500Hz</b>		
600 V	1 V	$\pm(2.0\%rdg + 4dgts)$

CMRR: > 60dB @ DC to 60Hz, Rs = 1K

Input Impedance : 10M , 30pF nominal

Model 2754A-T True RMS Crest Factor :

< 1.6 : 1 at full scale & < 3.2 : 1 at half scale

<sup>1)</sup> Selection by RANGE button manually, and is specified from AC 40mV, (AC 60mV for Model 2754A-T) & up

### RESISTANCE

Range	Resolution	Accuracy
400.0	0.1	$\pm(0.8\%rdg + 6dgts)$
4.000 k	1	$\pm(0.6\%rdg + 4dgts)$
40.00 k	10	$\pm(0.6\%rdg + 4dgts)$
400.0 k	100	$\pm(0.6\%rdg + 4dgts)$
4.000 M	1 k	$\pm(1.0\%rdg + 4dgts)$
40.00 M	10 k	$\pm(2.0\%rdg + 4dgts)$

Open Circuit Voltage : 0.4VDC typical

All Specifications are subject to change without prior notice



G-17, Bharat Industrial Estate, T. J. Road, Sewree (W), Mumbai - 400 015. INDIA.  
**Sales Direct.:** 022 -24156638, **Tel.:** 022-241224540, 24181649, **Fax:** 022 - 24149659  
**Email:** kusam\_meco@vsnl.net, **Website:** www.kusamelectrical.com



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# USE TRUE RMS WHEN MEASURING AC WAVEFORMS

The waveforms on today's AC power lines are anything but clean. Electronic equipment such as office computers, with their switching power supplies, produce harmonics that distort power-line waveforms. These distortions make measuring AC voltage inaccurate when you use an averaging DMM.

Average voltage measurements work fine when the signal you're measuring is a pure sine wave, but errors mount as the waveform distorts. By using true RMS measurements, however, you can measure the equivalent heating effect that a voltage produces, including the heating effects of harmonics. Table 1 shows the difference between measurements taken on averaging DMMs & those taken on true RMS DMMs. In each case, the measured signal's peak-to-peak value is 2V. Therefore, the peak value is 1V.

For a 1-V peak sine wave, the average & RMS values are both 0.707V. But when the input signal is no longer a sine wave, differences between the RMS values & the average reading values occur. Those errors are most prominent when you are measuring square waves & pulse waveforms, which are rich in harmonics.

Table 1. Average versus true RMS comparison of typical waveforms.

Waveform	Actual Pk-Pk	True RMS Reading	Average Reading	Reading Error
Sine Wave	2.000	0.707	0.707	0%
Triangle Wave	2.000	0.577	0.555	-3.8%
Square Wave	2.000	1.000	1.111	+11.1%
Pulse (25% duty Cycle)	2.000	0.433	0.416	-3.8%
Pulse (12.5% duty Cycle)	2.000	0.331	0.243	-26.5%
Pulse (6.25% duty Cycle)	2.000	0.242	0.130	-46.2%

One limitation to making true RMS measurements is crest factor, and you should consider crest factor when making AC measurements. Crest factor is the ratio of a waveform's peak ("crest") voltage to its RMS voltage. Table 2 shows the crest factors for ideal waveforms.

Table 2. Crest factors of typical waveforms.

Waveform	Crest Factor
DC	1.000
Square Wave	1.000
Sine Wave	1.414
Triangle Wave	1.732
Pulse (25% duty Cycle)	1.732
Pulse (12.5% duty Cycle)	2.646
Pulse (6.25% duty Cycle)	3.873

A DMM's specifications should tell you the maximum crest factor that the meter can handle while maintaining its measurement accuracy. True RMS meters can handle higher crest factors when a waveform's RMS voltage is in the middle of the meter's range setting. Typically, a DMM may tolerate a crest factor of 3 near the top of its scale but it might handle a crest factor of 5 that's in the middle of the range. Therefore, if you're measuring waveforms with high crest factors (greater than 3), you should adjust the DMM so the measured voltage is closest to the center of the measurement range.

Another limitation of true RMS is speed. If you're measuring relatively clean sine waves, then you can save time & money by using an averaging DMM. True RMS meters cost more than averaging meters and can take longer to produce measurements, especially when measuring millivolt-level AC signals. At those low levels, true RMS meters can take several seconds to stabilize a reading. Averaging meters won't leave you waiting.

### LIST OF PRODUCTS

- \* Digital Multimeter
- \* Digital AC & AC/DC Clampmeter
- \* AC Clamp Adaptor
- \* AC/DC Current Adaptor
- \* Transistorised Electronic Analog & Digital Insulation Resistance Testers
- \* Digital Sound Level Meter & Sound Level Calibrator
- \* Digital contact & Non-contact Type Tachometer
- \* Digital Non-contact (infrared) Thermometer
- \* Thermo Hygrometer
- \* Thermo Anemometer
- \* Wood Moisture Meter
- \* Distance Meter
- \* Digital Hand Held Temperature Indicators
- \* Digital Lux Meter
- \* Network Cable Tester
- \* Power Factor Regulator
- \* Maximum Demand Controller/Digital Power Meter

**KUSAM-MECO**

17, Bharat Industrial Estate, T. J. Road, Sewree (W),  
Mumbai-400015. INDIA

Sales Direct: 24156638 Tel.:(022)2412 4540, 2418 1649 Fax:(022)2414 9659

E-mail : kusam\_meco@vsnl.net, Website : www.kusamelectrical.com  
www.kusam-meco.co.in

**KUSAM-MECO**

**CLAMP-ON  
MULTIMETER  
2754A  
2754A-T(TRUE RMS)**

**OPERATION  
MANUAL**

**KUSAM-MECO**

#### WARRANTY

Each "KUSAM-MECO" product is warranted to be free from defects in material and workmanship under normal use & services.

The warranty period is one year (12 months) and begins from the date of despatch of goods. In case any defect occurs in functioning of the instrument, under proper use, within the guarantee period, the same will be rectified by us free of charges, provided the to and fro freight charges are borne by you.

This warranty does not apply for damaged IC's, burnt PCB's fuses, disposable batteries, carrying case, test leads, or to any product which in KUSAM-MECO's opinion, has been misused, altered, neglected, contaminated or damaged by accident or abnormal conditions of operation or handling.

Any dealer/customer wanting to avail post-warranty calibration services should forward the meters to Mumbai at their cost & risk along with calibration charges. The meters so received will be calibrated and sent back.

This warranty is exclusive and is in lieu of all other warranties, expressed or implied, including but not limited to any implied warranty or merchantability or fitness for a particular purpose or use. KUSAM-MECO will not be liable for any special, indirect, incidental or consequential damages.

All transactions are subject to Mumbai Jurisdiction.

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G-17, Bharat Industrial Estate,  
T.J.Road, Sewree (W),  
Mumbai - 400015, (INDIA)

**Sales Direct** : 24156638

**Tel** : 91-22-2412 4540, 2418 1649

**Fax** : 91-22-2414 9659

**Email** : kusam\_meco@vsnl.net

**Website** : www.kusamelectrical.com

www.kusam-meco.co.in

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**KUSAM-MECO**

## CLAMP-ON MULTIMETER 2754A 2754A-T(TRUE RMS)



**TAKE MEASUREMENT CAREFULLY AND YOU'LL  
SPARE YOUR METER AND YOURSELF, SOME PAIN**

Nearly every electrical engineer has a hand held digital clamp meter (Tongtester). We sometimes take them for granted, until we damage them or "burn them out". If you incorrectly connect your clamp meter to a circuit, or if you have the clamp meter on wrong setting, you damage the meter and possibly hurt yourself. You can also get into trouble if you try to measure the voltage across a charged capacitor.

Clamp meter users frequently burn their meters by trying to measure current the same way as they measure voltage. Remember, you measure voltage **across** a circuit, and current **through** a circuit. When you use the current input, your clamp meter becomes a low impedance circuit element.

Even if you correctly insert your clamp meter in to the circuit, you can still damage your meter. Don't try to measure current in excess of your meter's capacity. Check the current capacity of the Clamp meter first.

If you are measuring current in industrial environment, to prevent excess current from flowing through your meter, always disconnect your test leads from the circuit under test whenever you change Clamp meter functions. Set your meter to the correct function, say current, and its highest range for the setting. If the reading is small, change the range to the next lower range till the reading can be read with the best possible accuracy. When measuring voltage, connect the test leads before your apply power to your circuit. To be safe, start by setting your meter to its highest range first.

RANGE	ACCURACY	RESULT
<b>Capacitance</b>		
500 nF	± 3.5% + 6d	
5 μF	± 3.5% + 6d	
50 μF	± 3.5% + 6d	
500 μF	± 3.5% + 6d	
3000 μF	± 3.5% + 6d	
Diode Test		
Continuity Test		

TESTED BY \_\_\_\_\_



MUMBAI  
TEST CERTIFICATE

**CLAMP-ON MULTIMETER**

MODEL : 2754A/2754A-T SR. NO. : \_\_\_\_\_  
DATE : \_\_\_\_\_ CHECKED BY : \_\_\_\_\_

RANGE	ACCURACY	RESULT
<b>DC Current (Clamp-on)</b>		
400 A	1.5% + 4d	
800 A	1.5% + 4d	
900 A	2.0% + 4d	
1000 A	5.0% + 30d	
<b>AC Current (Clamp-on)</b>		
400 A	± 2.0% + 5d	
600 A	± 2.0% + 5d	
800 A	± 5.0% + 30d	
<b>DC Voltage</b>		
400 mV	± 0.3% + 3d	
4 V	± 0.5% + 3d	
40 V	± 0.5% + 3d	
400 V	± 0.5% + 3d	
600 V	± 1.0% + 4d	
<b>AC Voltage</b>		
400 mV	± 4.0% + 4d	
4 V	± 1.0% + 4d	
40 V	± 1.0% + 4d	
400 V	± 1.0% + 4d	
600 V	± 2.0% + 4d	
<b>Resistance</b>		
400 Ω	± 0.8% + 6d	
4 kΩ	± 0.6% + 4d	
40 kΩ	± 0.6% + 4d	
400 kΩ	± 0.6% + 4d	
4 M	± 1.0% + 4d	
40 MΩ	± 2.0% + 4d	



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### 1) SAFETY

This manual contains information and warnings that must be followed for operating the instrument safely and maintaining the instrument in a safe operating condition. If the instrument is used in a manner not specified by the manufacturer, the protection provided by the instrument may be impaired.

The meter meets the requirements for double insulation to IEC61010-2-032(2002), EN61010-2-032(2002), UL61010B-2-032(2003): Category III 600 Volts AC and DC.

#### PER IEC61010 OVERVOLTAGE INSTALLATION CATEGORY

##### *OVERVOLTAGE CATEGORY II*

Equipment of OVERVOLTAGE CATEGORY II is energy-consuming equipment to be supplied from the fixed installation.

Note-Examples include household, office, and laboratory appliances.

##### *OVERVOLTAGE CATEGORY III*

Equipment of OVERVOLTAGE CATEGORY III is equipment in fixed installations.

Note - Examples include switches in the fixed installation and some equipment for industrial use with permanent connection to the fixed installation.

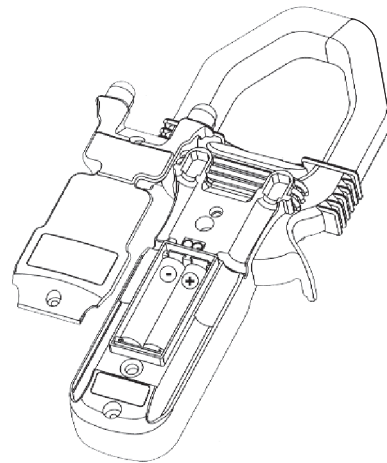
##### *OVERVOLTAGE CATEGORY IV*

Equipment of OVERVOLTAGE CATEGORY IV is for use at the origin of the installation. Note - Examples include electricity meters and primary over-current protection equipment.

### BATTERY REPLACEMENT

The meter uses standard 1.5V AAA Size battery X 2, or 1.5V AAA size alkaline battery X 2.

Loosen the 2 captive screws from the battery cover case. Lift the battery cover case. Replace the batteries. Replace battery cover case. Re-fasten the screws.





**MAINTENANCE****WARNING**

To avoid electrical shock, disconnect the meter from any circuit, remove the test leads from the input jacks and turn OFF the meter before opening the case. Do not operate with open case.

**Trouble Shooting**

If the instrument fails to operate, check batteries and test leads etc., and replace as necessary. Double check operating procedure as described in this user's manual.

If the instrument voltage-resistance input terminal has subjected to high voltage transient (caused by lightning or switching surge to the system) by accident or abnormal conditions of operation, the series fusible resistors will be blown off (become high impedance) like fuses to protect the user and the instrument. Most measuring functions through this terminal will then be open circuit. The series fusible resistors and the spark gaps should then be replaced by qualified technician. Refer to the Warranty section for obtaining warranty and repairing service.

**Cleaning and storage**

Periodically wipe the case with a damp cloth and mild detergent; do not use abrasives or solvents. If the meter is not to be used for periods of longer than 60 days, remove the batteries and store it separately.

**TERMS IN THIS MANUAL**

**Warning :** Identifies conditions and actions that could result in serious injury or even death to the user.



**Caution :** Identifies conditions and actions that could cause damage or malfunction in the instrument

**WARNING:**

To reduce the risk of fire or electric shock, do not expose this product to rain or moisture. The meter is intended only for indoor use.

To avoid electrical shock hazard, observe the proper safety precautions when working with voltages above 60 VDC or 30 VAC rms. These voltage levels pose a potential shock hazard to the user.









Keep your hands/ fingers behind the hand/finger barriers (of the meter and the test leads) that indicate the limits of safe access of the hand-held part during measurement. Inspect test leads, connectors, and probes for damaged insulation or exposed metal before using the instrument. If any defects are found, replace them immediately.

This Clamp-on meter is designed to apply around or remove from uninsulated hazardous live conductors. But still, individual protective equipment must be used if hazardous live parts in the installation where measurement is to be carried out could be accessible.

**CAUTION :**

Disconnect the test leads from the test points before changing meter functions.

**INTERNATIONAL ELECTRICAL SYMBOLS**

	Caution ! Refer to the explanation in this Manual
	Caution ! Risk of electric shock
	Earth (Ground)
	Double Insulation or Reinforced insulation
	Fuse
	AC--Alternating Current.
	DC--Direct Current
	Application around and removal from hazardous live conductors is permitted

**2) CENELEC Directives**

The instruments conform to CENELEC Low-voltage directive 73/23/EEC and Electro magnetic compatibility directive 89/336/EEC

**RELATIVE ZERO  $\Delta$  MODE**

Relative Zero  $\Delta$  mode allows the user to offset the meter consecutive measurements with the displaying reading as the reference value. The display will now show readings relative to the stored reference value. That is, display= reading - stored value. Press the  $\Delta$  button momentarily to toggle to the relative zero mode. The annunciator " $\Delta$ " turns on. The meter also enters manual ranging mode where available. The annunciator **AUTO** turns off.

**MANUAL OR AUTO-RANGING**

Press the RANGE button momentarily to select manual -ranging mode, and the meter will remain in the range it was in, the LCD annunciator **AUTO** turns off. Press the button momentarily again to step through the ranges. Press and hold the button for 1 second or more to resume auto-ranging mode.

**Display Backlight (available in 2754A-T only)**

Press the **SELECT** button for 1 second or more to toggle the display backlight on and off.

**AUTO POWER OFF (APO)**

When the meter is on, the Auto Power Off (APO) feature will switch the meter to sleep mode automatically after approximately 30 minutes of no slide-switch nor push button operations to extend battery life. To wake up the meter from APO, press any push-buttons momentarily or set the slide-switch to the OFF position and then slide back on again. Always set the slide-switch to the OFF position manually when the meter is not in use.

(Defective). An OL indicates an open diode (defective). Reverse the test leads connections (reverse biased) across the diode. The digital display shows OL if the diode is good. Any other readings indicate the diode is resistive or shorted (defective).



#### ⇄ **CAPACITANCE FUNCTION**

Inputs are made through the test leads terminals. Slide-switch on defaults at  $\Omega$ . Press **SELECT** button momentarily 3 times to select ⇄ Capacitance function. Relative zero  $\Delta$  mode can be used to zero out the parasitic capacitance of the leads and the internal protection circuitry of the meter when measuring low capacitance in the order of Pico Farad (pF).



#### **CAUTION**

Discharge capacitors before making any measurement. Large value capacitors should be discharged through an appropriate resistance load.

#### **HOLD**

The Hold feature freezes the display for later viewing. Press the **HOLD**  button momentarily to toggle to the Hold feature. The annunciator "" turns on.

#### **MAX**

The max feature compares and displays the measured maximum value as fast as 30ms with auto-ranging capability. It allows the meter to capture in-rush currents in current functions. Press and hold the **MAX**  button for 1 second or more to toggle to the max feature. The annunciators "**MAX**" and "" turn on.

## **SPECIFICATIONS**

### **GENERAL SPECIFICATIONS:**

**Display** : 3¾ digits 4000 counts LCD display(s)

**Update Rate** : 3 per second nominal

**Polarity** : Automatic

**Low Battery** : Below approx. 2.4V

**Operating Temperature** : 0°C to 40°C

**Relative Humidity** : Maximum relative humidity 80% for temperature up to 31°C decreasing linearly to 50% relative humidity at 40°C

**Altitude** : Operating below 2000m

**Storage Temperature** : -20°C to 60°C, < 80% R.H.  
(With battery removed)

**Temperature Coefficient** : Nominal 0.15 X  
(specified accuracy)/°C @(0°C-18°C or 28°C -40°C),  
or otherwise specified

**Sensing** : Average sensing for Model 2754A; True RMS for Model 2754A-T

**Safety** : Meets IEC61010-2-032(2002), EN61010-2-032(2002), UL61010B-2-032(2003)

Category III 600 Volts AC & DC.

**Transient protection** : 6.5kV (1.2/50µS surge)

**Pollution degree** : 2

**E.M.C.** : Meets EN61326(1997, 1998/A1),  
EN61000-4-2(1995), and EN61000-4-3(1996)

In an RF field of 3V/m:

Capacitance function is not specified

**Other function ranges :**

Total Accuracy = Specified Accuracy + 45 digits

Performance above 3V/m is not specified

**Overload Protections:**

**Clamp-on jaws :** DC 1000A or AC 800A rms  
continuous + & COM terminals (all functions):  
600VDC/VAC rms

**Power Supply :** Standard 1.5V AAA size battery X  
2; or 1.5V AAA size alkaline battery X 2

**Power Consumption :** typical 11mA for ACA/DCA  
and 2.9mA for other functions

**APO Timing :** Idle for 30 minutes

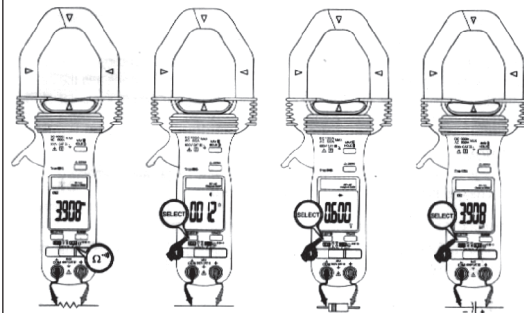
**APO Consumption :** typical 10 $\mu$ A for Model 2754A  
& 190 $\mu$ A for Model 2754A-T

**Dimension :** 227(L) X 78(W) X 40(H)mm

**Weight :** 290gm approx

**Jaw opening & Conductor diameter :** 50mm max

**Accessories :** Test lead pair, batteries installed,  
manual & soft carrying case.

**CAUTION**

Using Resistance, Continuity or Diode function in a live circuit will produce false results and may damage the instrument. In many cases the suspected component must be disconnected from the circuit to obtain an accurate measurement reading.

 **$\Omega$  RESISTANCE AND  $\rightarrow$ ) CONTINUITY FUNCTIONS**

Inputs are made through the test leads terminals. Slide-switch on defaults at  $\Omega$ . Press **SELECT** button momentarily to select  $\rightarrow$ ) Continuity function which is convenient for checking wiring connections and operation of switches. A continuous beep tone indicates a complete wire.

 **$\rightarrow$ ) DIODE TEST FUNCTION**

Inputs are made through the test leads terminals. Slide-switch on defaults at  $\Omega$ . Press **SELECT** button momentarily 2 times to select  $\rightarrow$ ) Diode test function. Normal forward voltage drop (forward biased) for a good silicon diode is between 0.400V to 0.900V. A reading higher than that indicates a leaky diode (defective). A zero reading indicates a shorted diode

**CAUTION**

*(Application and removal of the Clamp-on meter)*

Press the jaw trigger and clamp the jaws around only one single conductor of a circuit for load current measurement. Make sure the jaws are completely closed, or else it will introduce measurement errors. Enclosing more than one conductor of a circuit will result in differential current (like identifying leakage current) measurement. Locate the conductor(s) at the jaws center as much as possible to get the best measuring accuracy. The jaw arrow-mark indicates current flow direction on DCA positive readings. For removal, press the jaw trigger and remove the jaws from the conductor(s).

Note : In DCA measurements, hysteresis of the jaws (after measuring high DC currents) may introduce non-zero residual readings. Relative Zero  $\Delta$  mode should be used to offset the residual readings, if any, so as to get more accurate measurements. Adjacent current-carrying devices such as transformers, motors and conductor wires will affect measurement accuracy. Keep the jaws away from them as much as possible to minimize influence.

**ELECTRICAL SPECIFICATIONS**

Accuracy is  $\pm$  (% reading digits + number of digits) or otherwise specified, at 23°C  $\pm$  5°C and less than 75% R.H

True RMS Model 2754A-T ACV & ACA clamp-on accuracies are specified from 5% to 100% of range or otherwise specified. Maximum Crest Factor are as specified below, and with frequency spectrums, besides fundamentals, fall within the meter specified AC bandwidth for non-sinusoidal waveofrms.

**DC VOLTAGE**

Range	Accuracy	Resolution
400.0 mV	0.3% + 3d	0.1 mV
4.000 V	0.5% + 3d	0.001 V
40.00 V		0.01 V
400.0 V		0.1 V
600 V	1.0% + 4d	1 V

**NMRR** : >50dB @ 50/60Hz

**CMRR** : >120dB @ DC 50/60Hz, Rs =1k $\Omega$

**Input Impedance** : 10M $\Omega$ , 30pF nominal (1000M $\Omega$  for 400.0mV range)

**AC VOLTAGE**

Range	Accuracy	Resolution
<b>50Hz ~ 500Hz</b>		
400.0mV <sup>(1)</sup>	4.0% + 4d	0.1 mV
<b>50Hz ~ 60Hz</b>		
4.000V	1.0% + 4d	0.001 V
40.00V		0.01 V
400.0V		0.1 V

**AC VOLTAGE**

Range	Accuracy	Resolution
<b>60Hz ~ 500Hz</b>		
4.000V	1.5% + 4d	0.001 V
40.00V		0.01 V
400.0V		0.1 V
<b>50Hz ~ 500Hz</b>		
600V	2.0% + 4d	1 V

**CMRR** : >60dB @DC to 60Hz,  $R_s = 1k\Omega$   
**Input Impedance** :  $10M\Omega$ , 30pF nominal  
 True RMS Model 2754A-T Crest factor :  
 <1.6:1 at full scale & <3.2:1 at half scale  
<sup>1</sup>Selection by RANGE button manually, and is specified from AC 40mV (AC 60mV for True RMS) and up.

**OHMS**

Range	Accuracy	Resolution
400.0 $\Omega$	0.8% + 6d	0.1 $\Omega$
4.000 K $\Omega$		1 $\Omega$
40.00 K $\Omega$	0.6% + 4d	10 $\Omega$
400.0 K $\Omega$		100 $\Omega$
4.000 M $\Omega$	1.0% + 4d	1 K $\Omega$
40.00 M $\Omega$		10 K $\Omega$

**Open Circuit Voltage** : 0.4VDC typical

**Audible Continuity Tester**

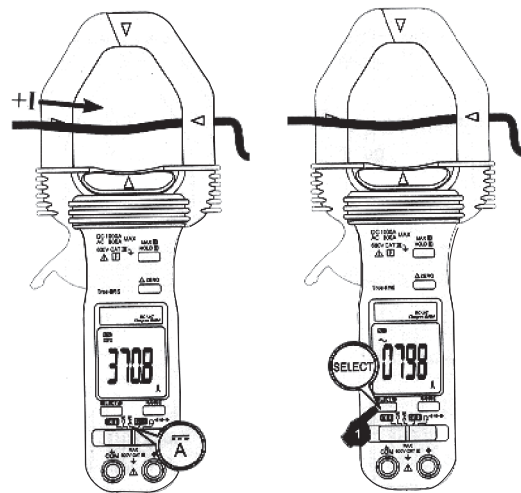
Open Circuit Voltage : 0.4VDC typical  
 Range : 400.0 $\Omega$ ; Accuracy : 1.5% + 6d  
 Audible threshold : between 10 $\Omega$  and 120 $\Omega$ .

The meter will show a close to zero reading when the inputs are shorted. Open input is actually a floating condition, which is not a zero-volt-input condition.

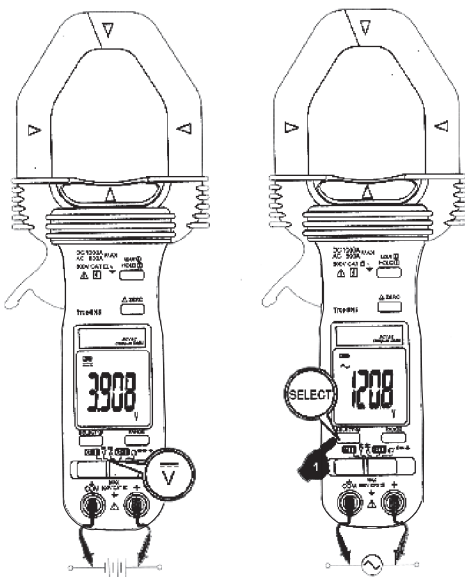
**Note** : AC 400.0mV range selection is by RANGE button manually, and is specified from AC 40mV & up for Model 2754A and from AC 60mV & up for True RMS Model 2754A-T.

**ACA & DCA CURRENT CLAMP-ON FUNCTION**

Inputs are made through the clamp jaws for non-invasive ACA & DCA current measurements.



**OPERATION**



**DC Voltage and AC Voltage functions**

Inputs are made through the test lead terminals.

Note : DC 400.0mV range is designed with 1000MΩ high input impedance for least current drain in measuring small signals, and can cope better with most commercially available voltage output transducers/adapters. The non-zero display reading is normal when the meter inputs are open circuit, which will not affect actual measurement accuracy.

**DIODE TESTER**

Open Circuit Voltage	Test Current (Typical)
< 1.6 VDC	0.4mA

**CAPITANCE**

Range <sup>1)</sup>	Accuracy <sup>2)3)</sup>	Resolution
500.0nF	3.5% + 6d	0.1 nF
5.000μF		0.001 μF
50.00μF		0.01 μF
500.0μF		0.1 μF
3000μF		1 μF

<sup>1)</sup> Additional 50.00nF range accuracy is not specified

<sup>2)</sup> Accuracies with film capacitor or better

<sup>3)</sup> Specified with battery voltage above 2.8V (approximately half full battery). Accuracy decreases gradually to 12% at low battery warning voltage of approximately 2.4V

**DCA CURRENT (Clamp-on)**

Range	Accuracy <sup>1)2)</sup>	Resolution
<b>400.0A</b>		
0A ~ 400.0A	1.5% + 4d	0.1 A
<b>1000A</b>		
400A ~ 800A	1.5% + 4d	1 A
800A ~ 900A	2.0% + 4d	
900A ~ 1000A	5.0% + 30d	

<sup>1)</sup> Induced error from adjacent current-carrying conductor : <0.01A/A

<sup>2)</sup> Relative Zero Δ mode is applied to offset the non-zero residual readings, if any

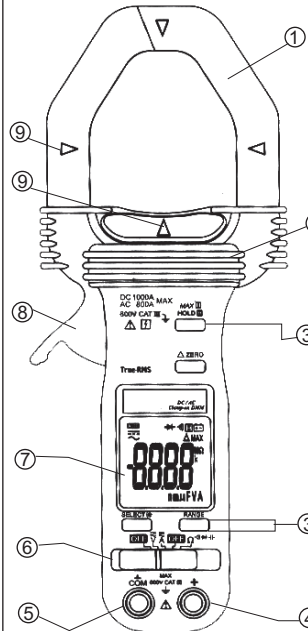
**ACA CURRENT (Clamp-on)**

Range	Accuracy <sup>1)2)</sup>	Resolution
<b>400.0A</b>		
15Hz~40Hz	2.0% + 5d <sup>3)</sup>	1 A
40Hz~200Hz	1.5% + 5d	
200Hz~400Hz @<50A <sup>4)</sup>	1.5% + 5d	
400Hz~1kHz @<50A <sup>4)</sup>	2.0% + 5d	
<b>800A</b>		
15Hz~40Hz @400A~600A	2.0% + 5d <sup>3)</sup>	1 A
40Hz~100Hz @400A~600A	1.5% + 4d	
15Hz~60Hz @600A~800A	5.0% + 30d	

<sup>1)</sup>Induced error from adjacent current-carrying conductor : <0.01A/A  
<sup>2)</sup>True RMS Model 2754A-T Crest Factor : < 1.6:1 at full scale & < 3.2:1 at half scale  
<sup>3)</sup>4.0% + 5d for True RMS Model 2754A-T  
<sup>4)</sup>Accuracy is specified at <50A in this frequency bandwidth due to limited calibrator output capability for testing.

**PRODUCT DESCRIPTION**

This user's manual uses only representative model(S) for illustrations. Please refer specification details for function availability to each model.



**1)** Hall-effect Clamp Jaw for AC & DC current electric field pick up.

**2)** Hand/Finger Barrier to indicate the limits of safe access of the meter during measurement.

**3)** Push-buttons for special functions & features.

**4)** Input Jack for all functions EXCEPT non-invasive ACA & DCA current functions

**5)** Common (Ground reference) Input Jack for all functions EXCEPT non-invasive ACA & DCA current functions

**6)** Slide-switch Selector to turn the power ON/OFF And Select a function

**7)** 3¾ digits 4000 counts LCD display

**8)** Jaw trigger for opening the clamp jaw

**9)** Jaw center Indicators, at where best ACA & DCA accuracy is specified.