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 :** 3¾ 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 ± (% of reading digits + number of digits) or otherwise specified, at 23°C ± 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[1)2)]
400.0A		
15Hz~40Hz	0.1 A	±(2.0%rdg + 5dgts[3)])
40Hz~200Hz		±(1.5%rdg + 5dgts)
200Hz~400Hz @<50A[4)]		
400Hz~1KHz @<50A[4)]		±(2.0%rdg + 5dgts)
800A		
15Hz~40Hz	1 A	±(2.0%rdg + 5dgts[3)])
40Hz~100Hz		±(1.5%rdg + 5dgts)
15Hz~60Hz		±(5.0%rdg + 30dgts)

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

DC CURRENT (CLAMP-ON)

Range	Resolution	Accuracy[1)2)]
400.0A		
0A ~ 400A	0.1 A	±(1.5%rdg + 4dgts)
1000A		
400A ~ 800A	1 A	±(1.5%rdg + 4dgts)
800A ~ 900A		±(2.0%rdg + 4dgts)
900A ~ 1000A		±(5.0%rdg + 30dgts)

[1)] **Induced error from adjacent current- carrying conductor :** < 0.01A / A
[2)] Relative Zero mode is applied to offset the non-zero residual readings, if any.

CAPACITANCE

Range[1)]	Resolution	Accuracy[2)3)]
500.0 nF	0.1 nF	±(3.5%rdg + 6dgts)
5.000 F	1 nF	
50.00 F	10 nF	
500.0 F	100 nF	
3000 F	1 F	

[1)] **Additional 50.00nF range accuracy is not specified.**
[2)] **Accuracies with film capacitor or better**
[3)] **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	±(0.3%rdg + 3dgts)
4.000 V	1 mV	±(0.5%rdg + 3dgts)
40.00 V	10 mV	±(0.5%rdg + 3dgts)
400.0 V	100 mV	±(0.5%rdg + 3dgts)
600 V	1 V	±(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
50Hz ~ 500Hz		
400.0 mV[1)]	100 V	±(4.0%rdg + 4dgts)
50Hz ~ 60Hz		
4.000 V	1 mV	±(1.0%rdg + 4dgts)
40.00 V	10 mV	±(1.0%rdg + 4dgts)
400.0 V	100 mV	±(1.0%rdg + 4dgts)
60Hz ~ 500Hz		
4.000 V	1 mV	±(1.5%rdg + 4dgts)
40.00 V	10 mV	±(1.5%rdg + 4dgts)
400.0 V	100 mV	±(1.5%rdg + 4dgts)
50Hz ~ 500Hz		
600 V	1 V	±(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
[1)] 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	±(0.8%rdg + 6dgts)
4.000 k	1	±(0.6%rdg + 4dgts)
40.00 k	10	±(0.6%rdg + 4dgts)
400.0 k	100	±(0.6%rdg + 4dgts)
4.000 M	1 k	±(1.0%rdg + 4dgts)
40.00 M	10 k	±(2.0%rdg + 4dgts)

Open Circuit Voltage : 0.4VDC typical

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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 readig 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 as 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.