

# KUSAM-MECO<sup>®</sup>

An ISO 9001:2015 Company

## 3-4/5 DIGIT 5000 COUNTS DIGITAL MULTIMETER WITH ANALOG BAR GRAPH & RS-232 COMPUTER INTERFACE

Model - 5040

### SPECIAL FEATURES :

- Auto lead zero function
- 50ms record MAX-MIN readings at fast 20/second measurement mode
- 0.8ms Crest (instantaneous Peak-HOLD)
- Data Hold & Range- Hold
- Backlighted Display
- Autoranging
- Audible & Visible input warning.
- Optical isolated RS232 PC-interface capabilities
- MAX-MIN readings
- Relative-Zero offset mode
- Auto power off

13 FUNCTIONS 45 RANGES

### GENERAL SPECIFICATIONS

- \* **Sensing :** Average Sensing
- \* **Display :** 3-4/5 digits 5000 counts LCD display
- \* **Update Rate :**  
Fast data : 5 / second nominal;  
52 Segment Bar-graph : 60 per second nominal.
- \* **Operating Temperature :** 0°C to 45°C
- \* **Relative Humidity :** Maximum 80% R.H. for Temperature upto 31°C decreasing linearly to 50% R.H. at 45°C
- \* **Storage Temperature :** -20°C to 60°C, 80% R.H. (With battery removed)
- \* **Pollution degree :** 2
- \* **Altitude :** Operating below 2000m
- \* **Temperature Coefficient :** Nominal 0.15 x (specified accuracy)°C@(0°C ~ 18°C or 28°C ~ 45°C), or otherwise specified.
- \* **Power Consumption :** 4.3mA typical
- \* **Low Battery :** Below approx. 7V
- \* **APO Timing :** Idle for 17 minutes.
- \* **APO Consumption :** 50µA typical
- \* **Power Supply :** Single 9V battery.
- \* **Dimension :** 186(L)mm x 87(W)mm x 35.5(H)mm; 198(L)mm x 97(W)mm x 55(H)mm with holster
- \* **Weight :** Approx.340gm, Approx. 430gm with holster.

### ACCESSORIES :

Test leads (pair), Holster, Battery installed, User's Manual

### OPTIONAL ACCESSORIES :

PC interface Kit, (RS232 optical adapter cable+ software CD), Current Clamp CA300, Current Clamp Adaptor CA500, CA1000, CA2000, High Voltage Probe PD-28.

### SAFETY

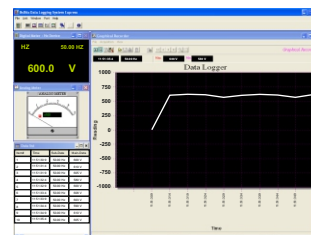
- **Safety :** Double insulation per IEC61010-1 2nd Ed., EN61010-1 2nd Ed., UL61010-1 2nd Ed., & CAN/CSA22.2 No.61010.1-0.92 to CAT III 1000V AC & DC and CAT IV 600V AC & DC.
- **E. M. C. :** Meets EN61326-1:2006(EN55022, EN61000-3-2, EN61000-3-3, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-8, EN61000-4-11)  
In an RF field of 3V/m :  
Capacitance function is not specified.  
Other function ranges : Total Accuracy = Specified Accuracy + 100 digits  
Performance above 3V/m is not specified.
- **Transient Protection :** 8kV lightning surge (1.2/50µs)
- **Terminals (to COM) ratings :**  
V : CAT III 1000 Volts AC & DC, and CAT IV\* 600 Volts AC & DC.  
A / mAµA : CAT III and CAT IV 600 Volts AC and 300 Volts DC.
- **Overload Protections :**  
µA & mA : 1A/600V, IR 10kA or better, F fuse;  
A : 10A/600V, IR 100kA or better, F fuse  
V : 1050 Vrms, 1450V peak  
mV, Ω & Others : 600VDC/VAC rms



CE



Software CD



Software



Software Cable

All Specifications are subject to change without prior notice

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## ELECTRICAL SPECIFICATIONS : KM 5040

Accuracy is  $\pm$  (% reading digits + number of digits) or otherwise specified @ 23°C  $\pm$  5°C & less than 75% R.H.  
Maximum Crest Factor <3:1 at full scale & <6:1 at half scale, and with frequency spectrums, besides fundamentals, fall within the meter specified AC bandwidth for non-sinusoidal waveforms.

### AC VOLTAGE

Range	Resolution	Accuracy
<b>50Hz -- 60Hz</b>		
50.00 mV	10 $\mu$ V	$\pm(0.5\%rdg + 3dgts)$
500.0 mV	100 $\mu$ V	
5.000 V	1 mV	
50.00 V	10 mV	
500.0 V	100 mV	
1000 V	1 V	
<b>40Hz -- 500Hz</b>		
50.00 mV	10 $\mu$ V	$\pm(0.8\%rdg + 3dgts)$
500.0 mV	100 $\mu$ V	
5.000 V	1 mV	$\pm(1.0\%rdg + 4dgts)$
50.00 V	10 mV	
500.0 V	100 mV	$\pm(1.2\%rdg + 4dgts)$
1000 V	1 V	
<b>Upto 20 KHz</b>		
50.00 mV	10 $\mu$ V	0.5dB*
500.0 mV	100 $\mu$ V	
5.000 V	1 mV	3dB*
50.00 V	10 mV	
500.0 V	100 mV	Unspec'd
1000 V	1 V	

\*Specified from 30% to 100% of range

**CMRR** : > 60dB @ DC to 60Hz,  $R_s = 1K\Omega$

**Input Impedance** : 10M $\Omega$ , 16pF nominal

(44pF nominal for 50mV & 500mV ranges)

### DC VOLTAGE

Range	Resolution	Accuracy
50.00 mV	10 $\mu$ V	$\pm(0.12\%rdg + 2dgts)$
500.0 mV	100 $\mu$ V	$\pm(0.06\%rdg + 2dgts)$
5.000 V	1 mV	$\pm(0.08\%rdg + 2dgts)$
50.00 V	10 mV	
500.0 V	100 mV	
1000 V	1 V	

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

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

**Input Impedance** : 10M $\Omega$ , 16pF nominal

(44pF nominal for 50mV & 500mV ranges)

### RESISTANCE

Range	Resolution	Accuracy
50.00 $\Omega$	0.01 $\Omega$	$\pm(0.3\%rdg + 6dgts)$
500.0 $\Omega$	0.1 $\Omega$	$\pm(0.1\%rdg + 3dgts)$
5.000 K $\Omega$	1 $\Omega$	$\pm(0.1\%rdg + 2dgts)$
50.00 K $\Omega$	10 $\Omega$	
500.0 K $\Omega$	100 $\Omega$	
5.000 M $\Omega$	1 K $\Omega$	$\pm(0.4\%rdg + 3dgts)$
50.00 M $\Omega$	10 K $\Omega$	$\pm(1.5\%rdg + 5dgts)$

**Open Circuit Voltage** : < 1.3V DC

(< 3V DC for 50 $\Omega$  & 500 $\Omega$  ranges)

### )) AUDIBLE CONTINUITY TESTER

<b>Audible Threshold</b>	Between 20 $\Omega$ & 200 $\Omega$
<b>Fast Response Time</b>	< 100 $\mu$ s

### AC CURRENT

Range	Resolution	Accuracy	Burden Voltage
<b>50Hz -- 60Hz</b>			
500.0 $\mu$ A	0.1 $\mu$ A	$\pm(0.6\%rdg + 3dgts)$	0.15mV/ $\mu$ A
5000 $\mu$ A	1 $\mu$ A		0.15mV/ $\mu$ A
50.00 mA	0.01 mA		3.3mV/mA
500.0 mA	0.1 mA	$\pm(1.0\%rdg + 3dgts)$	3.3mV/mA
5.000 A	0.001 A	$\pm(0.6\%rdg + 3dgts)$	45mV/A
10.00 A*	0.01 A*		45mV/A
<b>40Hz -- 1kHz</b>			
500.0 $\mu$ A	0.1 $\mu$ A	$\pm(0.8\%rdg + 4dgts)$	0.15mV/ $\mu$ A
5000 $\mu$ A	1 $\mu$ A		0.15mV/ $\mu$ A
50.00 mA	0.01 mA		3.3mV/mA
500.0 mA	0.1 mA	$\pm(1.0\%rdg + 4dgts)$	3.3mV/mA
5.000 A	0.001 A	$\pm(0.8\%rdg + 4dgts)$	45mV/A
10.00 A*	0.01 A*		45mV/A

\* 10A continuous, >10A to 15A for 30 seconds max with 5 minutes cool down interval

**Burden Voltage** : 0.15mV /  $\mu$ A for 500 $\mu$ A, 5000 $\mu$ A.

3.3mV / mA for 50mA,

500mA & 45mV / A for 5A, 10A.

### DC CURRENT

Range	Resolution	Accuracy	Burden Voltage
500.0 $\mu$ A	0.1 $\mu$ A	$\pm(0.2\%rdg + 4dgts)$	0.15mV/ $\mu$ A
5000 $\mu$ A	1 $\mu$ A		0.15mV/ $\mu$ A
50.00 mA	0.01 mA		3.3mV/mA
500.0 mA	0.1 mA		3.3mV/mA
5.000 A	0.001 A		45mV/A
10.00 A*	0.01 A*		45mV/A

\* 10A continuous, >10A to 15A for 30 seconds max with 5 minutes cool down interval

**Burden Voltage** : 0.15mV /  $\mu$ A for 500 $\mu$ A, 5000 $\mu$ A.

3.3mV / mA for 50mA,

500mA & 45mV / A for 5A, 10A.

### CAPACITANCE

Range	Resolution	Accuracy*
50.00 nF	10 pF	$\pm(0.8\%rdg + 3dgts)$
500.0 nF	100 pF	
5.000 $\mu$ F	1 nF	$\pm(1.5\%rdg + 3dgts)$
50.00 $\mu$ F	10 nF	$\pm(2.5\%rdg + 3dgts)$
500.0 $\mu$ F**	100 nF	$\pm(3.5\%rdg + 5dgts)$
9999 $\mu$ F	1 $\mu$ F	$\pm(5.0\%rdg + 5dgts)$

\* Accuracies with film capacitor or better.

\*\* In manual-ranging mode, measurements not specified below 45.0 $\mu$ F and

450 $\mu$ F for 500.0 $\mu$ F & 9999 $\mu$ F ranges respectively.

### FREQUENCY

Function	Sensitivity (sine Rms)	Range
mV	300 mV	10Hz - 125kHz
5 V	2 V	10Hz - 125kHz
50 V	20 V	10Hz - 20kHz
500 V	80 V	10Hz - 1kHz
1000 V	300 V	10Hz - 1kHz
$\Omega$ , $C_x$ , Diode	300 mV	10Hz - 125kHz
$\mu$ A, mA, A	10% F.S.	10Hz - 125kHz

**Accuracy** : 0.01% rdg + 2 dgts

### → DIODE TEST

Range	Resolution	Accuracy	Test Current	Open Circuit Volt
2.000 V	0.001 V	$\pm(1.0\%rdg + 1dgt)$	0.4 mA	<3.5V DC

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