

3-5/6 DIGIT 6000 COUNTS TRMS DMM WITH VFD, EF-DETECTION Model KM 235

SPECIAL FEATURES :

- VFD V & Hz Function
- EF-Detection (NCV)
- Paper White Backlight Display
- Auto-ranging Relative Zero Mode
- Auto Power Off
- Low Battery Indication
- Display Hold
- Diode & Continuity Test
- Type-K Temperature

- Beep/Lit Continuity, Features Audible Beep & Visible Backlight Effects
- Beep-Jack Input warning on $\mu\text{A}/\text{mA}$ terminals plug in
- Auto-ranging MAX/MIN/AVG record
- AutoV LoZ Feature. Automatic DC & AC1000V Selection with Low Initial Impedance to drain ghost voltages.
- Rugged Fire retarded casing.

20 FUNCTIONS 50 RANGES

CAT II 1000V
CAT III 600V
CAT IV 300V
UL
APPROVED



GENERAL SPECIFICATIONS :

- * **Sensing** : TRUE RMS sensing
- * **Display** : 3-5/6 digits 6000 counts LCD display
- * **Update Rate** : 5 per second nominal
- * **Operating Temperature** : -10°C to 45°C
- * **Relative Humidity** : Maximum relative humidity 80% for temperature upto 31°C decreasing linearly to 50% relative humidity at 45°C
- * **Altitude** : Operating Below 2000m.
- * **Storage Temperature** : -20°C to 60°C, <80% R.H. With battery removed from meter.
- * **Pollution Degree** : 2
- * **Temperature Coefficient** : nominal 0.15 x (specified accuracy) /°C @ (0°C~18°C or 28°C~45°C), or otherwise specified.
- * **Low battery** : Below approx. 2.5V
- * **Power Consumption** : Typical 3.2mA
- * **APO Consumption** : Typical 10 μA
- * **APO Timing** : Idle for 30 minutes
- * **Power Supply** : 1.5V AAA battery x 2
- * **Dimension** : 161(L) X 80(W) X 50(H) mm (with Holster)
- * **Weight** : Approx. 334 gm (with Holster)

SAFETY :

- **Safety** : Double insulation per IEC/UL/EN61010-1 Ed. 3.0, IEC/UL/EN61010-2-030 Ed. 1.0, IEC/UL/EN61010-2-033 Ed. 1.0, IEC/UL/EN61010-031 Ed. 1.1 & the corresponding CAN/CSA-C22.2 regulations to measurement CAT II 1000V, CAT III 600V and CAT IV 300V AC & DC.
- **E. M. C.** : Meets EN61326-1:2006
In an RF field of 3V/m :
Ohm function : Total Accuracy = Specified Accuracy + 15 digits
Other function ranges : Total Accuracy = Specified Accuracy
Performance above 3V/m is not specified.
- **Transient Protection** : 6.0kV lightning surge (1.2/50 μs)
- **Terminals (to COM) Measurement Category** :
V/ mA μA / A : CAT II 1000 Volts and CAT III 600V and CAT IV 300 Volts AC & DC.
- **Overload Protections** : μA & mA : 0.4A / 1000V DC/AC rms, IR 30kA, F fuse
A : 11A / 1000V DC/AC rms, IR 20kA, F fuse
V & Auto V: 1100V DC/ACrms
mV, Ω & Others : 1000V DC/AC rms



Magnetic Hanger

ACCESSORIES : Test leads pair, Carrying Case, Batteries installed, User's Manual, BKP60 banana plug type-K Thermocouple.

OPTIONAL ACCESSORIES : BMH-01Magnetic Hanger, BKB32 banana plug to type-K socket plug adaptor, Current Clamp CA300, Current Clamp Adaptor CA500, CA1000, CA2000, High Voltage Probe PD-28.

ELECTRICAL SPECIFICATIONS - KM 235

Accuracy is $\pm$ (% reading digits + number of digits) or otherwise specified, at 23°C $\pm$ 5°C

ACV & ACA accuracies are specified from 1% to 100% of range or otherwise specified. Maximum Crest Factor <2:1 at full scale & <4:1 half scale, and with frequency components fall within the meter specified frequency bandwidth for non-sinusoidal waveforms.

DC VOLTAGE

Range	Resolution	Accuracy
60.00 mV	10 μV	$\pm(0.3\%\text{rdg} + 2\text{dgts})$
600.0 mV	100 μV	
6.000 V	1 mV	
60.00 V	10 mV	
600.0 V	100 mV	
1000 V	1 V	

Input Impedance : 10M Ω , 54pF nominal

VFD AC VOLTAGE (with Low Pass Filter)

Range	Resolution	Accuracy ¹⁾
10Hz -- 440Hz (fundamental)		
600.0 V	100 mV	$\pm(2.0\%\text{rdg} + 3\text{dgts})$
1000 V	1 V	

¹⁾ Not specified for fundamental frequency >440Hz

All Specifications are subject to change without prior notice.

ELECTRICAL SPECIFICATIONS - KM 235

AC VOLTAGE

Range	Resolution	Accuracy
50Hz -- 60Hz		
6.000 V	1 mV	±(0.7%rdg + 3dgts)
60.00 V	10 mV	
600.0 V	100 mV	
1000 V	1 V	
45Hz -- 440Hz		
6.000 V	1 mV	±(2.0%rdg + 3dgts)
60.00 V	10 mV	
600.0 V	100 mV	
1000 V	1 V	
10Hz -- 500Hz		
60.00 mV	10 μV	±(1.0%rdg + 3dgts)
600.0 mV	100 μV	
500Hz -- 800Hz		
60.00 mV	10 μV	±(2.0%rdg + 3dgts)
600.0 mV	100 μV	

Input Impedance : 10M Ω , 54pF nominal

LINE FREQUENCY

Function	Sensitivity (Sine RMS)	Range
60 mV	50 mV	10Hz - 50kHz
600 mV	50 mV	10Hz - 50kHz
6 V	3 V	10Hz - 50kHz
60 V	5 V	10Hz - 50kHz
600 V	50 V	10Hz - 1kHz
1000 V	500 V	10Hz - 1kHz
VFD 600 V	50 V	10Hz - 1kHz
VFD 1000V	500 V	10Hz - 1kHz
600 μ A	500 μ A	10Hz - 5kHz
6000 μ A	500 μ A	10Hz - 5kHz
60 mA	50 mA	10Hz - 5kHz
600 mA	50 mA	10Hz - 5kHz
6 A	8 A	50Hz - 1kHz
10 A	8 A	50Hz - 1kHz

Accuracy : 0.03%+2d

OHMS

Range ¹⁾	Resolution	Accuracy
600.0 Ω	100 m Ω	$\pm(0.3\%rdg + 3dgt)$
6.000 k Ω	1 Ω	
60.00 k Ω	10 Ω	$\pm(0.5\%rdg + 3dgt)$
600.0 k Ω	100 Ω	
6.000 M Ω ²⁾	1 k Ω	$\pm(0.9\%rdg + 2dgt)$ ⁴⁾
60.00 M Ω ³⁾	10 k Ω	

¹⁾ Open Circuit Voltage : 1.6VDC typical.

²⁾ Constant Test Current : 0.2 μ A Typical

³⁾ Constant Test Current : 0.02 μ A Typical

⁴⁾ 5% + 20d @ > 30M Ω .

TEMPERATURE

Range	Accuracy
-40.0°C ~ 99.9°C	$\pm (1\% + 1.0^\circ\text{C})$
100.0°C ~ 400°C	
-40.0°F ~ 99.9°F	$\pm (1\% + 2^\circ\text{F})$
100°F ~ 752°F	

Type-K thermocouple range & accuracy not included.

DC CURRENT

Range	Resolution	Accuracy	Burden Voltage
600.0 μ A	100 nA	$\pm(1.0\%rdg + 3dgt)$	0.1 mV / μ A
6000 μ A	1 μ A		0.1 mV / μ A
60.00 mA	10 μ A	$\pm(0.7\%rdg + 3dgt)$	1.9 mV / mA
600.0 mA	100 μ A		1.9 mV / mA
6.000 A	1 mA		0.04 V / A
10.00 A ¹⁾	10 mA		0.04 V / A

¹⁾ 10A continuous, >10A to 20A for 30 Sec. Max with 5 minutes cool down interval

AC CURRENT

Range	Resolution	Accuracy	Burden Voltage
50Hz -- 400Hz			
600.0 μ A	100 nA	$\pm(1.5\%rdg + 3dgt)$	0.1 mV / μ A
6000 μ A	1 μ A		0.1 mV / μ A
60.00 mA	10 μ A	$\pm(1.0\%rdg + 3dgt)$	1.9 mV / mA
600.0 mA	100 μ A		1.9 mV / mA
6.000 A	1 mA		0.04 V / A
10.00 A ¹⁾	10 mA		0.04 V / A

¹⁾ 10A continuous, >10A to 20A for 30 Sec. Max with 5 minutes cool down interval

BEEPLIT CONTINUITY TESTER

Continuity Threshold :	Between 30 Ω and 480 Ω
Response time :	64ms
Latch time :	128ms
Audible Response :	Beep sound
Visible Response :	LCD Backlight

DIODE TESTER

Range	Resolution	Accuracy
3.000 V	100mV	$\pm(0.9\%rdg + 2dgt)$

Test Current : 0.3mA typical.

Open Circuit Voltage : <3.2VDC typical.

AutoV_DC Voltage

Range	Resolution	Accuracy ¹⁾
45Hz ~ 440Hz		
600.0 V	100 mV	$\pm(2.0\%rdg + 3dgt)$
1000 V	1 V	

¹⁾ Not specified at <1VAC

Threshold : > +1.0VDC or < -1.0VDC nominal

Input Impedance:

Initially approx. 2.1k Ω , 164pF nominal; Impedance increases abruptly within a fraction of a second as display voltage is above 50V (typical). Ended up impedances vs display voltages typically are:

12k Ω @100V
100k Ω @300V
240k Ω @600V
580k Ω @1000V

AutoV_AC Voltage

Range	Resolution	Accuracy ¹⁾
45Hz ~ 440Hz		
600.0 V	100 mV	$\pm(2.0\%rdg + 3dgt)$
1000 V	1 V	

¹⁾ Not specified at <1VAC

Threshold : > 1VAC nominal

Input Impedance:

Initially approx. 2.1k Ω , 164pF nominal; Impedance increases abruptly within a fraction of a second as display voltage is above 50V (typical). Ended up impedances vs display voltages typically are:

12k Ω @100V
100k Ω @300V
240k Ω @600V
580k Ω @1000V

CAPACITANCE

Range	Resolution	Accuracy
20.00 nF	10 pF	$\pm(1.5\%rdg + 8dgt)$
200.0 nF	100 pF	
2000 nF	1 nF	$\pm(1.5\%rdg + 2dgt)$
20.00 μ F	10 nF	
200.0 μ F	100 nF	
2000 μ F	1 μ F	
10.00 mF	10 μ F	$\pm(4.5\%rdg + 10dgt)$

Accuracies with film capacitor or better

All Specifications are subject to change without prior notice.