

SPECIAL FEATURES

- 100kHz Bandwidth voltage function
- Record MAX, MIN, MAX-MIN readings.
- Crest (Instantaneous Peak Hold) MAX, MIN, MAX- MIN readings.
- Relative zero mode.
- 500,000 counts high resolution stable reading mode.
- dBm readings.
- %4-20mA loop current readings.
- High noise rejection filtered Line Level Frequency mode.
- Line Level Frequency with 4 Trigger Levels.
- HBC Fuse Protection

GENERAL SPECIFICATIONS :

- * **Sensing :** AC, AC + DC True RMS; Frequency Bandwidth 100kHz (V) & 10kHz (A)
- * **Display :** 4-4/5 digits 50,000 counts. Selectable stable mode
5-4/5 digits 500,000 counts for DC Voltage & 6 digits 999,999 counts for Hz
- * **Update Rate :** 4-4/5 digits fast mode : 5 per second nominal;
5-4/5 digits stable mode : 1.25 per second nominal;
42 Segments Analog Bar graph :60 per second max.
- * **Polarity :** Automatic
- * **Low Battery :** Below approx. 7V
- * **Operating Temperature :** -20°C ~ 60°C
- * **Relative Humidity :** Maximum 90% R.H. For Temperature upto 31°C decreasing linearly to 50% R.H. at 60°C
- * **Pollution Degree :** 2
- * **Altitude :** Operating below 2000m
- * **Temperature Coefficient :** nominal 0.1 x (specified accuracy) / °C @ (0°C -- 18°C or 28°C -- 40°C), or otherwise specified
- * **Power Consumption :** 6mA typical
- * **Apo Timing :** Idle for 17 minutes
- * **Apo Consumption :** 30µA typical
- * **Power Supply :** Single Alkaline 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. 390 gm,
Approx. 500 gm with Holster

FEATURES :

- DC Voltage Basic Accuracy 0.02%
- Fully Autoranging
- Backlighted display.
- T1-T2 differential Temperature readings.
- Fast Data Measurement 5/sec
- Data Hold, Diode Test & Duty Cycle
- Audible & Visible input warning.
- Auto Power Off

SAFETY :

- Double insulation per IEC/UL/EN61010-1Ed.3.0, IEC / EN61010-2-030 Ed. 1.0, IEC / EN61010-2-033 Ed. 1.0, IEC/UL/EN61010-031 Ed. 1.1 and CAN/CSA-C22.2 No. 61010-1-12 Ed. 3.0 to CAT III 1000V AC & DC & CAT IV 600V AC & DC.
- **Transient Protection :** 8KV (1.2/50µs surge)
- **Terminals (to Com) Measurement Category:** V/A/mAµA : Category III 1000V AC & V DC & CAT IV 600V AC & V DC.
- **Overload Protections :** µA & mA : 0.44A/1000V DC/AC rms, IR10kA, F Fuse
A : 11A/1000V DC/AC rms, IR 20kA, F Fuse
V : 1100V DC/AC rms
mV, Ω & Others : 1000V DC/AC rms
- **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

ACCESSORIES :

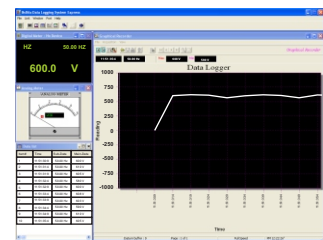
Test Leads pair, Holster, Battery installed, User Manual, Bkp60 banana plug K-type Thermocouple.

OPTIONAL ACCESSORIES :

PC interface kit, RS232 optical adapter cable + Software CD + BUA-2303 USB-to-Serial adaptor, Bkb32 banana pins to K-type socket plug adapter.

14 FUNCTIONS 43 RANGES

Model KM 859CF



Software



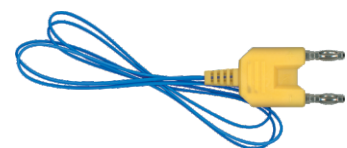
Software CD



Software Cable



Fuse



Thermocouple

All Specifications are subject to change without prior notice

ELECTRICAL SPECIFICATIONS : KM 859CF

Accuracy is \pm (%Reading digits + number of digits) or otherwise specified, at 23°C \pm 5°C & less than 75% relative humidity.
 True RMS voltage & current accuracies are specified from 5% to 100% of range or otherwise specified. Maximum Crest Factor < 5:1 at full scale & <10:1 at half scale, and with frequency components within the specified frequency bandwidth for non-sinusoidal waveforms.

DC VOLTAGE

Range	Resolution	Accuracy
500.000 mV	1 μ V	$\pm(0.02\%rdg + 2dgts)$
5.00000 V	10 μ V	
50.0000 V	100 μ V	
500.000 V	1 mV	$\pm(0.04\%rdg + 2dgts)$
1000.00 V	10 mV	$\pm(0.05\%rdg + 2dgts)$

NMR : > 60dB @ 50/60Hz

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

Input Impedance : 10M Ω , 30pF nominal
(80pF nominal for 500mV ranges)

||| HZ LOGIC LEVEL FREQUENCY

Range	Accuracy
5.00000Hz-- 2.00000MHz	0.002%+4d

Sensitivities : 2.5Vp square wave

DC CURRENT

Range	Resolution	Accuracy	Burden Voltage
500.00 μ A	10 nF	$\pm(0.15\%rdg + 20dgts)$	0.15 mV/ μ A
5000.0 μ A	0.1 μ A	$\pm(0.1\%rdg + 20dgts)$	0.15 mV/ μ A
50.000 mA	1 μ A	$\pm(0.15\%rdg + 20dgts)$	3.3 mV/mA
500.00 mA	10 μ A	$\pm(0.1\%rdg + 30dgts)$	3.3 mV/mA
5.0000 A	100 μ A	$\pm(0.5\%rdg + 20dgts)$	45 mV/A
10.000 A*	1 mA	$\pm(0.5\%rdg + 20dgts)$	45 mV/A

* 10A continuous, >10A to 20A for 30 second max with 5 minutes cool down interval.

AC & AC+DC VOLTAGE

Range	Resolution	Accuracy*
20Hz -- 45Hz		
500.00 mV	10 μ V	$\pm(1.5\%rdg + 60dgts)$
5.0000 V	100 μ V	$\pm(1.5\%rdg + 60dgts)$
50.000 V	1 mV	$\pm(1.5\%rdg + 60dgts)$
500.00 V	10 mV	Unspec'd
1000.0 V	100 mV	Unspec'd
45Hz -- 300Hz		
500.00 mV	10 μ V	$\pm(0.3\%rdg + 20dgts)$
5.0000 V	100 μ V	$\pm(0.8\%rdg + 20dgts)$
50.000 V	1 mV	$\pm(0.8\%rdg + 20dgts)$
500.00 V	10 mV	$\pm(0.4\%rdg + 40dgts)$
1000.0 V	100 mV	$\pm(0.4\%rdg + 40dgts)$
300Hz -- 5kHz; 300Hz -- 1kHz		
500.00 mV	10 μ V	$\pm(0.3\%rdg + 10dgts)$
5.0000 V	100 μ V	$\pm(0.4\%rdg + 40dgts)$
50.000 V	1 mV	$\pm(0.4\%rdg + 40dgts)$
500.00 V	10 mV	$\pm(0.4\%rdg + 40dgts)$
1000.0 V	100 mV	$\pm(0.8\%rdg + 40dgts)$ (300Hz--1kHz)
5kHz -- 20kHz		
500.00 mV	10 μ V	$\pm(0.5\%rdg + 20dgts)$
5.0000 V	100 μ V	$\pm(0.8\%rdg + 20dgts)$
50.000 V	1 mV	$\pm(0.8\%rdg + 20dgts)$
500.00 V	10 mV	$\pm(0.5\%rdg + 20dgts)$
1000.0 V	100 mV	Unspec'd
20kHz -- 100kHz		
500.00 mV	10 μ V	$\pm(2.5\%rdg + 40dgts)$
5.0000 V	100 μ V	$\pm(4.0\%rdg + 40dgts^{**})$
50.000 V	1 mV	$\pm(4.0\%rdg + 40dgts^{**})$
500.00 V	10 mV	Unspec'd
1000.0 V	100 mV	Unspec'd

*From 5% to 10% of range: Accuracy % of reading(or in dB)+ 80d

**From 5% to 10% of range: Accuracy % of reading(or in dB)+ 180d

** From 10% to 15% of range: Accuracy % of reading(or in dB)+100d

CMRR : >80dB @ DC to 60Hz, Rs = 1k Ω

Input Impedance : 10M Ω , 30pF nominal (80pF nominal for 500mV range) Residual reading less than 50 digits with test leads shorted.

-HZ LINE LEVEL FREQUENCY

Function Range	Sensitivity (sine Rms)	Range
500 mV	100 mV	10Hz ~ 200kHz
5 V	1 V	10Hz ~ 200kHz
50 V	10 V	10Hz ~ 100kHz
500 V	100 V	10Hz ~ 100kHz
1000 V	900 V	10Hz ~ 10kHz

Accuracy : 0.02%+4d

))) AUDIBLE CONTINUTY TESTER

Audible threshold :
between 20 Ω & 200 Ω .
Response time :
<100 μ s

DC LOOP CURRENT %4--20mA

4mA = 0% (zero);
20mA = 100% (span)
Resolution : 0.01%
Accuracy : \pm 25d

% DUTY CYCLE

Range
0.1%--99.99%

Accuracy : 3d/kHz+2d
 Input Frequency : 5Hz -- 500 kHz,
 5V Logic Family

CREST MODE (Instantaneous Peak Hold) :

Accuracy : Specified accuracy \pm 100 digits for changes
 > 0.8ms in duration

dBm :

At 600 Ω , -11.76dBm to 54.25dBm,
Accuracy :
 \pm 0.25dB + 2d (@40Hz -- 20kHz)
Input Impedance: 10M Ω , 30pF nominal
 Selectable reference impedance values of 4, 8, 16, 32, 50, 75, 93, 110, 125, 135, 150, 200, 250, 300, 500, 600, 800, 900, 1000, 1200 Ω

➤ % DIODE TESTER

Range	Resolution	Accuracy
5.0000V	100 μ V	$\pm(1\%rdg + 1dgt)$

Test Current (typical) : 0.4mA
 Open Circuit Voltage : < 3.5VDC

T1-T2 DUAL TEMPERATURE (K-Type Thermocouple)

Range	Accuracy
-50.0°C ~ 1000.0°C	$\pm(0.3\% + 1^\circ\text{C})$
-58.0°F ~ 1832.0°F	$\pm(0.3\% + 2^\circ\text{F})$

Thermocouple range & accuracy not included
 Supplied Thermocouple suitable for measurement upto 250°C.

AC & AC+DC CURRENT

Range	Resolution	Accuracy	Burden Voltage
50Hz -- 60Hz			
500.00 μ A	10 nA	$\pm(0.5\%rdg + 50dgts)$	0.15mV/ μ A
5000.0 μ A	0.1 μ A		0.15mV/ μ A
50.000 mA	1 μ A		3.3 mV/mA
500.00 mA	10 μ A		3.3 mV/mA
5.0000 A	100 μ A		45 mV/A
10.000 A*	1 mA		45 mV/A
40Hz -- 1kHz			
500.00 μ A	10 nA	$\pm(0.7\%rdg + 50dgts)$	0.15mV/ μ A
5000.0 μ A	0.1 μ A		0.15mV/ μ A
50.000 mA	1 μ A		3.3 mV/mA
500.00 mA	10 μ A		3.3 mV/mA
5.0000 A	100 μ A		45 mV/A
10.000 A*	1 mA		45 mV/A
1kHz -- 10kHz			
500.00 μ A	10 nA	$\pm(2.0\%rdg + 50dgts)$	0.15mV/ μ A
5000.0 μ A	0.1 μ A		0.15mV/ μ A
50.000 mA	1 μ A		3.3 mV/mA
500.00 mA	10 μ A		3.3 mV/mA
5.0000 A	100 μ A		45 mV/A
10.000 A*	1 mA		45 mV/A

*10A continuous, >10A to 20A for 30 second max with 5 minutes cool down interval.

CAPACITANCE

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

*Accuracies with film capacitor or better

**In manual-ranging mode, measurement not specified below 45.0 μ F & 450 μ F for 500.0 μ F & 9999 μ F ranges respectively.

RESISTANCE

Range	Resolution	Accuracy
500.00 Ω	10 m Ω	$\pm(0.07\%rdg + 10dgts)$
5.0000 k Ω	100 m Ω	$\pm(0.07\%rdg + 2dgts)$
50.000 k Ω	1 Ω	$\pm(0.07\%rdg + 2dgts)$
500.00 k Ω	10 Ω	$\pm(0.07\%rdg + 2dgts)$
5.0000 M Ω	100 Ω	$\pm(0.2\%rdg + 6dgts)$
50.000 M Ω	1 k Ω	$\pm(2.0\%rdg + 6dgts)$

Open Circuit Voltage : <1.3VDC (<3VDC for 500 Ω range)

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