

6) GENERAL SPECIFICATIONS

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

Polarity: Automatic

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 Bar graph: 60 per second max

Operating Temperature: 0°C to 45°C

Relative Humidity: Maximum relative humidity 80% for temperature up to 31°C decreasing linearly to 50% relative humidity at 45°C

Pollution degree: 2

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

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

Sensing: AC, AC+DC True RMS

Safety: Double insulation per IEC61010-1 2nd Ed., EN61010-1 2nd Ed., UL61010-1 2nd Ed. & CAN/CSA C22.2 No. 61010.1-0.92 to Category III 1000V AC & DC and Category IV 600V AC & DC

BM857a Terminals (to COM) Measurement Category:

V : Category III 1000 Vac & Vdc and Category IV 600 Vac & Vdc.

A / mA μ A : Category III and Category IV 600 Vac and 300 Vdc.

BM859CFa Terminals (to COM) Measurement Category:

V / A / mA μ A : Category III 1000 Vac & Vdc and Category IV 600 Vac & Vdc.

Overload Protections:

BM857a:

μ A & mA : 1A/600V, IR 10kA or better, F fuse

A : 10A/600V, IR 100kA or better, F fuse

V : 1050Vrms, 1450Vpeak

mV, Ω , & Others : 600 Vdc & Vac rms

BM859CFa

μ A & mA : 0.44A/1000V, IR 10kA or better, F fuse

A : 11A/1000V, IR 20kA or better, F fuse

V, mV, Ω , & Others : 1050Vrms, 1450Vpeak

Transient protection: 8kV (1.2/50 μ s surge)

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:

勝特力材料 886-3-5753170
 勝特力电子(上海) 86-21-54151736
 勝特力电子(深圳) 86-755-83298787
[Http://www.100y.com.tw](http://www.100y.com.tw)

Capacitance function is not specified

Other function ranges: Total Accuracy = Specified Accuracy + 100 digits

Performance above 3V/m is not specified

Power Supply: Single Alkaline 9V battery; NEDA1604A, JIS6AM6 or IEC6LF22

Power Consumption: 6mA typical

Low Battery: Below approx. 7V

APO Timing: Idle for 17 minutes

APO Consumption: 55µA typical for BM857a; 30µA typical for BM859CFa

Dimension: L186mm X W87mm X H35.5mm; L198mm X W97mm X H55mm with holster

Weight: 390 gm; 500 gm with holster

Accessories: Test leads (pair), holster, battery installed, user's manual, Bkp60 banana plug K-type thermocouple x 1 (BM859a only)

Optional Accessories: BRUA-85Xa PC interface kit (BC-85Xa RS232 optical adapter cable + Bs85X software CD + BUA-2303 USB-to-Serial adaptor), Bkb32 banana pins to K-type socket plug adapter

Special Features: 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. Backlighted display. dBm readings. T1-T2 differential temperature readings (BM859CFa only). %4-20mA loop current readings. High noise rejection filtered Line Level Frequency mode. Data Hold. Audible & visible input warning.

ELECTRICAL SPECIFICATIONS

Accuracy is \pm (% reading digits + number of digits) or otherwise specified, at $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$ & 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	BM859CFa	BM857a
	Accuracy	
500.00 mV, 5.0000V, 50.000V	0.02% + 2d	0.03% + 2d
500.00V	0.04%+2d	0.05% + 2d
1000.0V	0.05%+ 2d	0.1%+2d

NMRR: >60dB @ 50/60Hz

CMRR: >120dB @ DC, 50/60Hz, Rs=1kΩ

Input Impedance: 10MΩ, 30pF nominal
 (80pF nominal for 500mV range)

Ohms

RANGE	BM859CFa	BM857a
	Accuracy	
500.00Ω	0.07%+10d	0.1%+6d
5.0000kΩ	0.07%+2d	
50.000kΩ		
500.00kΩ		
5.0000MΩ	0.2%+6d	0.4%+6d
50.000MΩ	2.0%+6d	2.0%+6d

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

AC & AC+DC Voltage

RANGE	BM859CFa	BM857a
Accuracy*		
20Hz -- 45Hz		
500.00mV, 5.0000V, 50.000V	1.5% + 60d	Unspec'd
500.00V, 1000.0V	Unspec'd	
45Hz -- 300Hz		
500.00mV	0.3% + 20d	0.8%+60d
5.0000V, 50.000V	0.8% + 20d	
500.00V, 1000.0V	0.4% + 40d	
300Hz -- 5kHz		300Hz -- 1kHz
500.00mV	0.3% + 10d	0.8%+40d
5.0000V, 50.000V, 500.00V	0.4% + 40d	2.0%+60d
1000.0V	0.8% + 40d (300Hz--1kHz)	1.0%+40d
5kHz -- 20kHz		1kHz -- 20kHz
500.00mV	0.5%+20d	1dB**
5.0000V, 50.000V	0.8%+20d	2dB**
500.00V	0.5%+20d	3dB**
1000.0V	Unspec'd	Unspec'd
20kHz -- 100kHz		
500.00mV	2.5%+40d	Unspec'd
5.0000V, 50.000V	4.0%+40d**	
500.00V	Unspec'd	
1000.0V	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=1kΩ

Input Impedance: 10MΩ, 30pF nominal
(80pF nominal for 500mV range)

Residual reading less than 50 digits with test leads shorted.

dBm

At 600Ω, -11.76dBm to 54.25dBm,

Accuracy: ± 0.25dB + 2d (@40Hz -- 20kHz)

Input Impedance: 10MΩ, 30pF nominal

Selectable reference impedance of 4, 8, 16, 32, 50, 75, 93, 110, 125, 135, 150, 200, 250, 300, 500, 600, 800, 900, 1000, 1200Ω

•)) Audible Continuity Tester

Audible threshold: between 20Ω and 200Ω

Response time < 100μs

➤ Diode Tester

Range	Accuracy	Test Current (Typical)	Open Circuit Voltage
5.0000V	1%+1d	0.4mA	< 3.5 VDC

Capacitance

RANGE	Accuracy*
50.00nF	0.8% + 3d
500.0nF	0.8% + 3d
5.000μF	1.5% + 3d
50.00μF	2.5% + 3d
500.0μF**	3.5% + 5d
9999μF**	5.0% + 5d

*Accuracies with film capacitor or better

**In manual-ranging mode, measurements not specified below 45.0μF and 450μF for 500.0μF and 9999μF ranges respectively

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DC Current

RANGE	Accuracy	Burden Voltage
500.00μA	0.15%+20d	0.15mV/μA
5000.0μA	0.1%+20d	0.15mV/μA
50.000mA	0.15%+20d	3.3mV/mA
500.00mA	0.1%+30d	3.3mV/mA
5.0000A	0.5%+20d	45mV/A
10.000A*	0.5%+20d	45mV/A

*10A continuous, >10A to 15A (to 20A for BM859CFa) for 30 second max with 5 minutes cool down interval

AC & AC+DC Current

RANGE	Accuracy		Burden Voltage
	BM859CFa	BM857a	
50Hz -- 60Hz			
500.00μA	0.5% +50d	1.0% +40d	0.15mV/μA
5000.0μA			0.15mV/μA
50.000mA			3.3mV/mA
500.00mA			3.3mV/mA
5.0000A			45mV/A
10.000A*			45mV/A
40Hz – 1kHz			
500.00μA	0.7% +50d	1.0% +40d	0.15mV/μA
5000.0μA			0.15mV/μA
50.000mA			3.3mV/mA
500.00mA			3.3mV/mA
5.0000A			45mV/A
10.000A*			45mV/A
1kHz – 10kHz			
500.00μA	2.0% +50d	Unspec'd	0.15mV/μA
5000.0μA			0.15mV/μA
50.000mA			3.3mV/mA
500.00mA			3.3mV/mA
5.0000A	Unspec'd	Unspec'd	45mV/A
10.000A*			

*10A continuous, >10A to 15A (to 20A for BM859CFa) for 30 second max with 5 minutes cool down interval

DC Loop Current %4--20mA

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

Crest mode (Instantaneous Peak Hold)

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

T1-T2 Dual Temperature (BM859CFa only)

RANGE	Accuracy
-50.0°C to 1000.0°C	0.3%+1°C
-58.0°F to 1832.0°F	0.3%+2°F

Thermocouple range & accuracy not included

~Hz Line Level Frequency

Function RANGE	Sensitivity (Sine RMS)	Range
500mV	100mV	10Hz ~ 200kHz
5V	1V	10Hz ~ 200kHz
50V	10V	10Hz ~ 100kHz
500V	100V	10Hz ~ 100kHz
1000V	900V	10Hz ~ 10kHz

Accuracy: 0.02%+4d

⏏ Hz Logic Level Frequency

RANGE	Accuracy
5.0000Hz--2.00000MHz	0.002%+4d

Sensitivity: 2.5Vp square wave

%Duty Cycle

RANGE	Accuracy
0.1% -- 99.99%	3d/kHz+2d

Input Frequency:

5Hz -- 500 kHz, 5V Logic Family