

1kV Insulation + Hi-Performance DMM with 10A Input!

- Insulation with 5 Selectable Test Voltages! Reading Smooth mode! Test-Inhibit & Lock-Test Feature!
- 20kHz ACV Bandwidth! 10A + 60.00mV & 60.00 Ω Hi-Res Ranges! AC+Hz Dual Display! VFD V & Hz!
- Convenient Remote Probe! Records Min/Max Readings! Relative Zero! BeepJack™ Input Warning!



BM880 Series
Insulation Multimeters





● **BM887**



● **BM885**

887	885	FUNCTIONS & FEATURES
●	●	3-5/6 Digits 6,000 Counts Large Easy-To-Read LCD Display
●	●	Nominal 5/Sec Fast Measurements; Fully Auto-Ranging
●	●	61 Segment Analog Bar-graph Updates 60/Sec
●	●	Paper-White Back-Lighted LCD Display
●	●	Dual Digital Display AC + Hz Readings
●	●	AC True RMS Conversion
●	●	Intelligent Auto Power Off
●	●	Data Hold
●	●	Relative Zero Mode
●	●	Records Standard Measurement Max/Min Readings
●	●	BeepJack™ Input Warning Against Improper Plug In To μ AmA/A Terminals
●	●	VFD-V & VFD-Hz Measures Fundamental V & Hz Of Most Variable Frequency Drives
●	●	AC/DC Voltage Ranges 60.00mV To 1000V
●	5kHz	ACV Bandwidth Up To 20kHz
●	●	Ohms Ranges 60.00 Ω To 60.00M Ω
●	●	Fast Audible Continuity Tester
●	●	Diode Tester
●	●	Frequency Ranges 9.999Hz To 100.0kHz
●	●	AC/DC μ A, mA & A Ranges 600.0 μ A To 10.00A
●		Capacitance Ranges 2.000 μ F To 20.00mF
●		Type-K Temperature -40.0°C To 537.0°C; Selectable °F Readings
●	●	Insulation Resistance; Selectable Test Voltage Of 50V, 100V, 250V, 500V & 1000V
●	●	Shows Insulation Results & Actual Test Voltages In Dual Display
●	●	Insulation TEST Activation Inhibits When Live Circuit Is Detected
●	●	Lock-Test Mode For Continuous Insulation Resistance Measurements
●	●	Smooth Mode To Smooth Out Insulation Result Readings
●	●	Convenient Remote Probe (For Insulation Resistance Test)
●	●	Optional Purchase Magnetic Hanger
●	●	Rugged Fire Retarded Casing With Battery/Fuse Access Door
●	●	Replaceable Protective Holster With Probe-Holders & Tilt-Stand
●	●	HBC 1kV Fuses Protected On μ AmA/A Terminals
●	●	Transient Protection Up To 8kV 1.2/50 μ s Lightning Surge
●	●	LVD Meets EN61010-1/-2-030/-2-033 to Measurement CAT III 1000V & CAT IV 600V
●	●	LVD Also Meets EN61557-1/-2 (Insulation Resistance)
●	●	EMC EN61326-1:2013

1kV Insulation + 20kHz True RMS ACV + 10A Input!

**20kHz Bandwidth! 10A Input! 60.00mV & 60.00 Ω Ranges! VFD V & Hz Dual Display!
5 Insulation Test Voltages! Smooth mode! Test-Inhibit & Lock-Test Feature!
Remote Probe! Min/Max Readings! Relative Zero! BeepJack™ Warning!**

Analog Bar-graph
Fast Update Rate 60/sec

Auto & Manual-ranging
Auto-ranging With
Manual-ranging Override

Smooth Mode
Smooth Out Unstable Insulation
Resistance Readings

Function Selection
Toggle Conveniently Between
Primary & Secondary Functions

Paper-white Display Backlight
For Easy Viewing In The Dark

60.00mV AC/DC Ranges
0.01mV High Resolution To
Test Small Signal Changes

Diode Test
For Checking Diodes
And Rectifiers

Fast Audible Continuity
For Quick Open-short Tests
On Switches, Fuses And Wires

High Impedance Voltages
1000VAC/DC Measuring Capabilities;
High Input Impedance For
Load Sensitive Circuits

Hz Of Line Level Voltage
Measures Noisy High Voltage
ACV Frequencies In Dual Display

VFD V & Hz Feature
Measures Fundamental
Voltage & Frequency Of Most
Variable Frequency Drives
In Dual Display

Beep-jack™ Audible & Visible Warning
Guards Against Improper "INS. μ A" & "A" Terminals Plug In. Decreases
Risks Of Damage

Accepts Remote Probe
Convenient Activation For Insulation
Resistance Tests. Full Silicone
Leads To Minimize Insulation Test Error

Intelligent Auto-power-off
To Extend Battery Life; Awake Resets On
Significant Operation & Measurements

ACV True RMS 20kHz Bandwidth
For Non-sinusoidal Waveforms
Of Complex Voltage Or Current Signals

6,000 Counts Wide-view LCD Display
5/sec Fast Nominal Update Rate

Dual Digital Display
Simultaneously View Relevant
Parameters In Complementary Display

ASIC Technology
Allows More Functions &
Features At Affordable Prices

Ergonomic Streamline Design
Fits Comfortably In One's Hand

Relative Zero Mode
For Convenient Readings
Comparison And Offset

LOCK Feature
For Two Handed Continuous
Testing Without The Need
To Press The TEST Button

Data Hold
Freezes The Displaying
Reading For Later View

Max Min Record
Record Measurement
Max & Min Readings

mA & Hz
Measures Currents &
Frequencies In Dual Display

Insulation Resistance Test
5 Test Voltages:
50V, 100V, 250V, 500V & 1000V.
It Is Useful For Determining
The State Of Insulation Material.

Type-k Temperature
Measurements -40.0°C To 537.0°C,
Selectable °C & °F Readings

Capacitance
Autoranging 2.000 μ F To 20.00mF

Resistance Function
0.01 Ω High Resolution,
Autoranging 60.00 Ω To 60.00M Ω

Transient Protection
Up To 8kV 1.2/50 μ s Lightning Surge;
Superb Protection For Serious Users

LVD Safety
Meets EN61557-1/-2,
& EN61010-1/-2-030/-2-033
CAT III 1kV & CAT IV 600V

EMC
Meets EN61326-1:2013

Protective Holster
With Holders For Probe Storage
And "third Hand" Feature,
Replaceable & Washable



GENERAL SPECIFICATION

Display: 3-5/8 digits 6,000 counts
Polarity: Automatic
Update Rate: 5 per second nominal
61 Segments Bar graph: 40 per second max
Operating Temperature: -10°C to 50°C
Relative Humidity: Maximum relative humidity 90% for temperature up to 28°C decreasing linearly to 50% relative humidity at 50°C
Pollution Degree: 2
IP Rating: IP40
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 @(-10°C ~ 16°C or 28°C ~ 50°C), or otherwise specified
Sensing: AC, True RMS
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 and the corresponding CAN/CSA-C22.2 regulations to Measurement CAT III 1000 V AC & DC and Category IV 600V AC & DC

Electrical Specifications

Accuracy is $\pm$ (% reading digits + number of digits) or otherwise specified, at 23°C $\pm$ 5°C & less than 80% relative humidity.

True RMS voltage & current accuracies are specified from 1% to 100% of range or otherwise specified. Maximum Crest Factor < 1.8:1 at full scale & < 3.8:1 at half scale, and with frequency components fall within the specified frequency bandwidth for non-sinusoidal waveforms.

AC Voltage

RANGE	Accuracy	
	BM887	BM885
50Hz ~ 60Hz		
60.00mV, 600.0mV, 6.000V, 60.00V, 600.0V, 1000V	0.7% + 4d	0.7% + 4d
40Hz ~ 1kHz		
60.00mV, 600.0mV, 6.000V, 60.00V, 600.0V	1.3% + 4d	1.3% + 4d
1000V	2% + 4d	2% + 4d
1kHz ~ 5kHz		
60.00mV, 600.0mV, 6.000V, 60.00V, 600.0V	2% + 4d 1)	3% + 5d
1000V	Unspecified	
5kHz ~ 20kHz 2)		
60.00mV	Unspecified	
600.0mV, 6.000V, 60.00V	2% + 20d	Unspecified
600.0V, 1000V	Unspecified	

Input Impedance: 10M Ω , 110pF nominal

¹⁾Add 20d @ >80% of range

²⁾Unspecified @ <5% of range

VFD AC Voltage

RANGE	Accuracy ¹⁾
	10Hz ~ 45Hz
600.0V	4.0% + 5d
	45Hz ~ 200Hz
600.0V	2.5% + 5d
	200Hz ~ 440Hz
600.0V	8.0% + 5d ²⁾

Input Impedance: 10M Ω , 110pF nominal

¹⁾Unspecified for fundamental frequency > 440Hz

²⁾Accuracy linearly decreases from 2.5% + 5d @200Hz to 8.0% + 5d @440Hz

DC Voltage

RANGE	Accuracy	
	BM887	BM885
50Hz ~ 60Hz		
60.00mV	0.2% + 3d	0.3% + 3d
600.0mV, 6.000V, 60.00V	0.1% + 2d	0.2% + 2d
600.0mV, 600.0V, 1000V	0.2% + 3d	0.3% + 3d

Input Impedance: 10M Ω , 110pF nominal

Ohms

RANGE ¹⁾	Accuracy	
	BM887	BM885
60.00 Ω ²⁾	0.5% + 5d	0.6% + 5d
600.0 Ω	0.2% + 3d	0.3% + 3d
6.000k Ω , 60.00k Ω	0.2% + 2d	0.3% + 2d
600.0k Ω	0.3% + 2d	0.4% + 2d
6.000M Ω ³⁾	1% + 3d	1.5% + 3d
60.00M Ω ⁴⁾	1.5% + 6d ⁵⁾	2% + 6d ⁶⁾

¹⁾Open Circuit Voltage: 1.7VDC typical

²⁾Specified assumes input lead resistance has been offset by REL Δ or Shrt (short) feature

³⁾Constant Test Current: 0.2 μ A Typical

⁴⁾Constant Test Current: 0.02 μ A Typical

⁵⁾Add 1% @ >20M Ω

⁶⁾Add 2% @ operation temperature >35°C

Audible Continuity Tester

Audible threshold: between 20 Ω and 350 Ω

Response time: < 30ms

Compliance to IEC/EN61557:2007 (Per CE requirements, not certified by UL or ETL): IEC/EN61557-1 & IEC/EN61557-2

Overload Protections:

Insulation Resistance, μ A & mA: 0.4A/1KV, IR 30kA, F Fuse; or better

A: 11A/1KV, IR 20kA, F Fuse; or better

V: 1100Vrms

mV, Ω & Others: 1000 Vrms

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

E.M.C.: Meets EN61326-1:2013

In an RF field of 3V/m:

Total Accuracy = Specified Accuracy + 25 digits

Performance above 3V/m is not specified

Power Supply: Four Alkaline AA batteries (IEC LR6)

Power Consumption: 6.5mA typical except the followings:

VFD ACV ⁴⁾: 8mA

Insulation Resistance @1mA test current:

50V output voltage: 25mA

100V output voltage: 45mA

250V output voltage: 85mA

500V output voltage: 170mA

1000V output voltage: 440mA

Tester can perform at least 950 insulation tests with new alkaline batteries at room temperature. These are standard tests of 1000 V into 1 M Ω with a duty cycle of 5 seconds on and 25 seconds off.

Low Battery: approx. 4.6V

APD Timing: Idle for 20 minutes

APD Consumption: 20 μ A typical

Dimension: L208mm X W103mm X H84.5mm with holster

Weight: 635 gm with holster

Accessories: Test probe pair, Alligator clip pair, BRP21S2-C

Remote probe, Holster, User's manual, Bkp60 banana plug type-K

thermocouple (Model 887 only)

Optional Accessories: BKB32 banana plug to type-K socket plug adaptor (Model 887 only), BMH-01 magnetic hanger; BMP-88x soft carrying pouch

Special Features: Record MAX/MIN regular readings; Relative Zero; Display Hold; LCD Backlight; VFD V & Hz readings; Dual display +Hz Readings; High resolution 60.00mV & 60.00 Ω ranges, Lock-Test mode for Insulation resistance; Beep/Jack™ audible & visible input warning

Diode Tester

Range	Accuracy	Test Current (Typical)	Open Circuit Voltage
2.700V	1.5% + 4d	0.4mA	< 2.8 VDC

Capacitance (BM887 only)

RANGE	Accuracy ¹⁾
2.000 μ F ²⁾ , 20.00 μ F, 200.0 μ F, 2000 μ F	1.5% + 5d
20.00mF	5% + 5d

¹⁾Accuracies with film capacitor or better

²⁾Specified from 0.200 μ F

DC current

RANGE	Accuracy		Burden Voltage
	BM887	BM885	
600.0 μ A ¹⁾	0.2% + 4d	0.4% + 4d	0.2mV/ μ A
6000 μ A ¹⁾	0.2% + 2d	0.4% + 2d	0.2mV/ μ A
60.00mA ¹⁾	0.2% + 4d	0.4% + 4d	3mV/mA
600.0mA ¹⁾	0.3% + 3d	0.5% + 3d	3mV/mA
6.000A	0.5% + 4d	0.8% + 4d	30mV/A
10.00A ²⁾	0.7% + 2d	0.8% + 2d	30mV/A

¹⁾ μ A/mA DC accuracies will be affected by extreme interior temperatures of the meter. For rated accuracies, allow 8 to 20 minutes cool down interval after measuring A-currents of 3 to 10A continuously.

²⁾ $\leq$ 400mA continuous; >400mA for <1.1 hours on per >20 minutes off

³⁾10A continuous up to ambient 35°C; <15 mins on per >5 mins off @ 35°C ~ 50°C. >10A to 20A for <30 seconds on per >5 mins off

AC current

RANGE	Accuracy		Burden Voltage
	BM887	BM885	
50Hz ~ 60Hz			
600.0μA, 6000μA	1% + 3d		0.2mV/μA
60.00mA, 600.0mA ¹⁾			3mV/mA
6.000A, 10.00A ²⁾			30mV/A
40Hz ~ 3kHz			
600.0μA, 6000μA	2% + 3d		0.2mV/μA
60.00mA, 600.0mA ¹⁾			3mV/mA
6.000A, 10.00A ²⁾			30mV/A
3kHz ~ 5kHz			
600.0μA, 6000μA	2% + 5d	Unspecified	0.2mV/μA
60.00mA, 600.0mA ¹⁾			3mV/mA
6.000A, 10.00A ²⁾			30mV/A

¹⁾ $\leq$ 400mA continuous; >400mA for <1.1 hours on per >20 minutes off

²⁾10A continuous up to ambient 35°C; <15 mins on per >5 mins off @ 35°C ~ 50°C. >10A to 20A for <30 seconds on per >5 mins off

Temperature (BM887 only)

RANGE	Accuracy ¹⁾
-40.0°C ~ 0.0°C	1% + 2°C
0.0°C ~ 50.0°C	2.2°C
50.0°C ~ 537.0°C	1% + 2°C
-40.0°F ~ 32.0°F	1% + 3.6°F
32.0°F ~ 122.0°F	4°F
122.0°F ~ 999.0°F	1% + 3.6°F

¹⁾Accuracies assume meter interior has the same temperature of

the ambient (isothermal stage) for a correct junction voltage compensation. Allow enough time to reach the isothermal stage for a significant change of ambient temperature. It can take up to an hour for changes > 5°C.

²⁾Type-K thermocouple range & accuracy not included

~ Hz Line Level Frequency

Function RANGE	Sensitivity (Sine RMS)	Range
60mV	4mV	6Hz ~ 50kHz
600mV	40mV	10Hz ~ 100kHz
6V	0.4V	10Hz ~ 5kHz
60V	4V	10Hz ~ 50kHz
600V	40V	10Hz ~ 30kHz
1000V	400V	10Hz ~ 5kHz
VFD 600V	40V	10Hz ~ 440Hz
600 μ A	40 μ A	10Hz ~ 5kHz
6000 μ A	400 μ A	
60mA	4mA	
600mA	40mA	
6A	0.6A	10Hz ~ 3kHz
10A	6A	

Accuracy: 0.02%+4d

Record mode

This mode records standard measurement Max and Min readings on most functions, Manual or Auto-ranging where available.

Nominal response and accuracy: Same as standard measurements

Insulation Resistance

Test Voltage ¹⁾	Range	Test Current	Accuracy
50V	3.000M Ω , 30.00M Ω , 55.0M Ω	1mA @50k Ω	1.5%+5d
100V	3.000M Ω , 30.00M Ω , 110.0M Ω	1mA @100k Ω	
250V	3.000M Ω , 30.00M Ω , 275.0M Ω	1mA @250k Ω	
500V	3.000M Ω , 30.00M Ω , 300.0M Ω , 550.0M Ω	1mA @500k Ω	
1000V	3.000M Ω , 30.00M Ω , 300.0M Ω	1mA @1M Ω	1.5%+5d
	3000M Ω		2.0%+5d
	25.0G Ω		10%+5d

¹⁾Actual output voltage: 100% ~ 120% of Test Voltage

Live Circuit Detector: Inhibit test and display voltage reading instead if terminal voltage > 30V prior to initialization of test.

Display voltage accuracies:

DCV: 1.5% + 5d

ACV: 3.0% + 5d @50Hz ~ 60Hz

Specified measuring range is 0.020M Ω ... 25.0G Ω for percentage operating uncertainty B[%] $\leq$ $\pm$ 30% per IEC/EN61557-2 requirements



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