

Choice Of Dual Display Performance & Cat IV 1kV Safety!

12kV Transient Protection, DC+AC True RMS, dBm, Duty %, 4 Digit Resolution, nS Conductance... And More!
Ergonomic, Magnetic Hanger, Probe Holders, Tilt stand & Hanger, Battery Access Cover... User-Oriented!
PC-Comm, Bar-graph, BeepJack, Crest (Peak), Rec (Min Max Avg), Relative, Backlit... Full-features!
AutoCheck+LoZ, EF-Detection, Capacitance, Line Level Hz, T1-T2 Temperature... Full-functions!



BM820s Series
Professional Multimeters

BRYMEN®

BRIGHT PEOPLE'S CHOICE



● **BM829s**



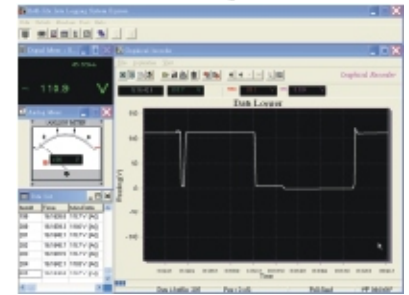
● **BM827s**



● **BM822s**



● **BM821s**



**BU-86X Interface Kit
(Optional Purchase)**

829s	827s	822s	821s	FUNCTIONS & FEATURES
●	●	●	●	4 Digits 10,000 Counts Large Easy To Read LCD Display
●	●	●	●	Fast Measurements, 5/Sec; Fully Auto-Ranging
●	●	●	●	Dual Digital Display
●	●	●	●	41 Segment Analog Bar-graph Updates 60/Sec
●	●	●	●	0.08% High Basic DCV Accuracy
●	●	●	●	Optional Purchase USB Cable & Software For Win98/2k/xp/Vista/7/8
●	●	●	●	Intelligent Auto Power Off
●	●	●	●	Data Hold
●	●	●	●	Relative Zero Mode
●	●	●	●	Audible & Visible BeepJack™ Input Warning Against Improper Plug In
●	(AC)	(AC)		AC, AC+DC True RMS Conversion
●	●			Record Max/Min/MAX-MIN Readings, Auto-Ranging
●	●			Record AVG (Average) Readings, Auto-Ranging
●	●			Crest (Peak Hold) Max/Min/MAX-MIN Readings, Auto-Ranging
●	●			Non-Contact EF-Detection (NCV)
●	●			Probe-Contact EF-Detection For More Precise Indication Of Live
●				AutoCheck™ Feature (Automatic DCV, ACV & Ohms Selection)
●				Lo-Z Volts To Drain Ghost Voltages (AutoCheck™ Feature)
●				Back-Lighted Large Easy To Read LCD Display
●				dBm Readings, 20 Selectable Impedance Values
●	●	●	●	DCV 0.01mV To 1000V
●	●	●	●	ACV 0.01mV To 1000V
●				AC+DCV 0.01mV To 1000V
●	●	●	●	DCA 0.1µA To 10A; 20A For 30 Seconds Per 5 Minutes Cooling
●	●	●	●	ACA 0.1µA To 10A; 20A For 30 Seconds Per 5 Minutes Cooling
●				AC+DCA 0.1µA To 10A; 20A For 30 Seconds Per 5 Minutes Cooling
●	●	●	●	Ohms 0.1Ω To 60MΩ
●	●			Conductance 0.01nS To 100nS
●	●	●	●	Capacitance 0.01nF To 25mF
●	●			T1 Type-K Temperature Readings -50°C To 1000°C
●				T2 Dual Type-K Temperature Readings -50°C To 1000°C
●	●	●	●	Line Level Frequency 15.00Hz To 1.000kHz
●	●	●	●	Logic Level Frequency 5.00Hz To 1.000MHz
●	●	●	●	Logic Level Duty Cycle Readings 0.01% To 100.0%
●	●	●	●	Diode Tester
●	●	●	●	Rugged Fire Retarded Casing With Battery Access Door
●	●	●	●	Replaceable Protective Holster With Probe-Holders & Tilt-Stand
●	●	●	●	Optional Purchase Magnetic Hanger
●	●	●	●	1000V General (Ohm, Capacitance ... etc.) Input Protection
●	●	●	●	1000V High Breaking Capacity Fuses Protected On Current Inputs
●	●	●	●	Transient Protection Up To 12kV 1.2/50µs Lightning Surge
●	●	●	●	LVD Meets EN61010-1/61010-2-030/61010-2-033 to CAT IV 1000V
●	●	●	●	EMC EN61326-1 (EN55022, EN61000-3-2/-3 & EN61000-4-2/-3/-4/-5/-6/-8/-11)

For Those Who Only Accept The Best: Cat IV 1kV !

4 digit High Resolution, High Speed & Dual Display Multi-Features !

Includes NCV EF-Detection, AutoCheck™ & Ghost-Voltage-Buster™ !

HIGH ACCURACY
0.08% BASIC DCV ACCURACY;
FAST AUTO-RANGING

ANALOG BAR-GRAPH
FAST UPDATE RATE 60/SEC

LARGE 10000 COUNTS LCD DISPLAY
5/SEC FAST NOMINAL UPDATE RATE

ASIC TECHNOLOGY
MORE FUNCTIONS & FEATURES
AT AFFORDABLE PRICES

DUAL DIGITAL DISPLAY
SIMULTANEOUSLY VIEW RELEVANT
PARAMETERS IN COMPLEMENTARY DISPLAY

FAST AUDIBLE CONTINUITY
FOR QUICK OPEN-SHORT TESTS
ON SWITCHES, FUSES, AND WIRES

EF-DETECTION
BOTH NON-CONTACT (NCV)
& SINGLE-PROBE VOLTAGE
DETECTION FOR IDENTIFYING
LIVE LINES

DATA HOLD
FREEZES THE DISPLAYING
READING FOR LATER VIEW

MAX MIN AVG RECORD
RECORD MAX/MIN/MAX-MIN/AVG
READINGS; AUTO-RANGING

T1-T2 TYPE-K TEMPERATURE
2 CHANNEL MEASUREMENTS,
SELECTABLE °C & °F READINGS

DIODE TEST
FOR CHECKING DIODES
AND RECTIFIERS

CAPACITANCE
UP TO 27mF WITH 1000V PROTECTION;
AUTO-RANGING

CURRENT & Hz
MEASURES CURRENT & FREQUENCIES
IN DUAL DISPLAY

ERGONOMIC STREAMLINE DESIGN
FITS COMFORTABLY IN ONE'S HAND

INTELLIGENT AUTO-POWER-OFF
TO EXTEND BATTERY LIFE

TRANSIENT PROTECTION
UP TO 12kV 1.2/50µs LIGHTNING SURGE;
SUPERB PROTECTION FOR SERIOUS USERS

EMC
MEETS EN61326-1:2006 (EN55022,
EN61000-3-2/-3 & EN61000-4-2/-3/-4/-5/-6/-8/-11)

LVD SAFETY
MEETS EN61010-1 ED. 3.0,
EN61010-2-030 ED. 1.0 &
EN61010-2-033 ED. 1.0 to
CAT IV 1kV

PROTECTIVE HOLSTER
WITH HOLDERS FOR PROBE STORAGE
AND "THIRD HAND" FEATURE,
REPLACEABLE & WASHABLE

AC, AC+DC TRUE RMS MEASUREMENTS
FOR NON-SINUSOIDAL WAVEFORMS
OF COMPLEX VOLTAGE OR CURRENT SIGNALS

BEEP-JACK™ AUDIBLE & VISIBLE WARNING
GUARDS AGAINST IMPROPER A-TERMINAL
PLUG IN. DECREASES RISKS OF DAMAGE

PC INTERFACE CAPABILITY
OPTIONAL PURCHASE USB CABLE
WITH DATA RECORDING PC SOFTWARE
FOR WIN98/NT4/2K/XP/VISTA

GHOST-VOLTAGE-BUSTER
LoZ DRAINS GHOST/ STRAY VOLTAGES
LEAVING ONLY HARD SIGNALS
ON METER READINGS

AUTOCHECK™ FEATURE
AUTOMATIC SELECTION OF
LoZ DCV, LoZ ACV & OHMS

dBm FUNCTION
WITH 20 SELECTABLE
IMPEDANCE VALUES

Hz OF LINE LEVEL VOLTAGE
MEASURES NOISY HIGH VOLTAGE
ACV FREQUENCIES UP TO 200kHz
IN DUAL DISPLAY

HIGH IMPEDANCE VOLTAGE
1000VAC/DC MEASURING CAPABILITIES;
HIGH INPUT IMPEDANCE FOR
LOAD SENSITIVE CIRCUITS

LOGIC LEVEL Hz
MEASURES DIGITAL LOGIC LEVEL
FREQUENCIES UP TO 2MHz

LOGIC LEVEL DUTY%
MEASURES DIGITAL LOGIC LEVEL
DUTY CYCLE % READINGS

CREST (PEAK HOLD)
CAPTURES INSTANTANEOUS
+PEAK & -PEAK, AUTO-RANGING

nS CONDUCTANCE
nS=1/GΩ VIRTUALLY EXTENDS RESISTANCE
MEASUREMENT TO THE ORDER OF GΩ.
IT IS USEFUL FOR LEAKAGE MEASUREMENTS

FUNCTION SELECTION
TOGGLE CONVENIENTLY BETWEEN
PRIMARY & SECONDARY FUNCTIONS

DISPLAY BACKLIGHT
FOR EASY VIEWING IN THE DARK

AUTO & MANUAL-RANGING
AUTO-RANGING WITH
MANUAL-RANGING OVERRIDE



GENERAL SPECIFICATIONS

Display:

9999 counts: ACV, DCV, Hz & nS
6000 counts: mV, μ A, mA, A, Ohm & Capacitance

Polarity:

Automatic

Update Rate:

Digital Display: 5 per second nominal
41 Segments Bar-graph: 60 per second max

Low Battery:

Below approx. 7V

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 0.15 x (specified accuracy) / °C @ (0°C ~ 18°C or 28°C ~ 45°C), or otherwise specified

Electrical Specifications

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 10% to 100% of range or otherwise specified. Maximum Crest Factor < 2:1 at full scale & < 4:1 at half scale, and with frequency components within the specified frequency bandwidth for non-sinusoidal waveforms.

DC Voltage

Function	RANGE	Accuracy
mV	60.00mV	0.12%+2d
	600.0mV	0.06%+2d
V	9.999V, 99.99V, 999.9V	0.08%+2d

Input Impedance: 10M Ω , 50pF nominal (80pF nominal for 600mV range)

AC Voltage

Function	RANGE	Accuracy
50Hz ~ 60Hz		
mV	60.00mV, 600.0mV	0.5% + 3d
V	9.999V, 99.99V, 999.9V	
40Hz ~ 500Hz		
mV	60.00mV, 600.0mV	0.8% + 4d
V	9.999V, 99.99V	1.0%+4d
	999.9V	2.0%+4d
500Hz ~ 1kHz		
mV	60.00mV, 600.0mV	2.0% + 3d
V	9.999V, 99.99V	1.0%+4d
	999.9V	2.0%+4d
1kHz ~ 3kHz		
mV	60.00mV, 600.0mV	2.0%+3d
V	9.999V, 99.99V, 999.9V	3.0%+4d
3kHz ~ 20kHz		
mV	60.00mV ¹⁾ , 600.0mV ¹⁾	2%+3d
V	9.999V ²⁾ , 99.99V	3dB
	999.9V	Unspec'd

¹⁾Specified from 30% to 100% of range.

²⁾for 3kHz ~ 15kHz only

Input Impedance: 10M Ω , 50pF nominal (80pF nominal for mV ranges)

dBm

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

AutoCheck™ (DCV)

RANGE	Accuracy
9.999V, 99.99V, 999.9V	0.5%+3d

Lo-Z DCV Threshold:

> +1.5VDC or < -1.0VDC nominal

Lo-Z DCV Input Impedance:

Initially approx. 3.0k Ω , 165pF 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:

18k Ω @100V
125k Ω @ 300V
320k Ω @ 600V
500k Ω @ 1000V

DC AC & AC+DC AC Voltage¹⁾

Function	RANGE	Accuracy
DC, 50Hz ~ 60Hz		
mV	60.00mV, 600.0mV	0.7% + 6d
V	9.999V, 99.99V, 999.9V	
40Hz ~ 1kHz		
mV	60.00mV, 600.0mV	1.0%+6d
V	9.999V, 99.99V, 999.9V	2.2%+6d
1kHz ~ 20kHz		
mV	60.00mV ²⁾ , 600.0mV ²⁾	2.2%+6d
V	9.999V ³⁾ , 99.99V	3dB
	999.9V	Unspec'd

¹⁾Specified from 10% to 100% of range for Model 821

Sensing:

Models 829s: AC+DC True RMS
Models 827s & 822s: AC True RMS
Model 821s: Average Sensing
Safety: Double insulation per IEC/UL/EN61010-1 Ed. 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 Category IV 1000Vac & Vdc.

Transient protection:

12kV (1.2/50 μ s surge)

Terminals (to COM) Measurement Category:

V / A / mA μ A : Category IV 1000Vac & Vdc

Overload Protections:

μ A & mA : 0.44A/1000V DC/AC rms, IR 10kA, 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,

²⁾Specified from 30% to 100% of range.

³⁾for 1kHz ~ 15kHz only

Input Impedance: 10M Ω , 50pF nominal (80pF nominal for mV ranges)

AutoCheck™ (ACV)

RANGE	Accuracy
50Hz ~ 60Hz	
9.999V, 99.99V, 999.9V	1.0%+4d

Lo-Z ACV Threshold:

> 3VAC (50/60Hz) nominal

Lo-Z ACV Input Impedance:

Initially approx. 3.0k Ω , 150pF 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:

18k Ω @100V
125k Ω @ 300V
320k Ω @ 600V
460k Ω @ 1000V

Ohms

RANGE	Accuracy
600.0 Ω , 6.000k Ω , 60.00k Ω , 600.0k Ω	0.1%+3d
6.000M Ω	0.4%+3d
60.00M Ω	1.5%+5d
99.99nS	0.8%+10d

Open Circuit Voltage: < 1.2VDC (< 1.0VDC for 60M Ω range)

AutoCheck™ (Ohms)

RANGE	Accuracy
600.0 Ω , 6.000k Ω , 60.00k Ω , 600.0k Ω	0.5%+4d
6.000M Ω	0.8%+3d
60.00M Ω ¹⁾	2.0%+5d

¹⁾Temperature Coefficient: 0.6 x (specified accuracy) / °C @ (0°C ~ 18°C or 28°C ~ 45°C)

Open Circuit Voltage: < 1.2VDC (< 1.0VDC for 60M Ω range)

Audible Continuity Tester

Audible threshold: between 20 Ω and 300 Ω ; Response time < 100 μ s

Capacitance

RANGE	Accuracy ¹⁾
60.00nF, 600.0nF	0.8% + 3d
6.000 μ F	1.0% + 3d
60.00 μ F	2.0% + 3d
600.0 μ F ²⁾	3.5% + 5d
6.000mF ²⁾	5.0% + 5d
25.00mF ²⁾	6.5% + 5d

¹⁾Accuracies with film capacitor or better

²⁾In manual-ranging mode, measurements not specified below 50.0 μ F, 0.54mF and 5.4mF for 600.0 μ F, 6.000mF and 25.00mF ranges respectively

AC & AC+DC Current

RANGE	Accuracy	Burden voltage
50Hz ~ 60Hz		
600.0 μ A, 6000 μ A	0.6%+3d	0.08mV/ μ A
60.00mA		2.1mV/mA
600.0mA	1.0%+3d	
6.000A, 10.00A ¹⁾	0.8%+6d	0.02V/A
40Hz ~ 1kHz		
600.0 μ A, 6000 μ A	0.8%+4d	0.08mV/ μ A
60.00mA		2.1mV/mA
600.0mA	1.0%+4d	
6.000A, 10.00A ¹⁾	0.8%+6d	0.02V/A

¹⁾10A continuous, >10A to 20A for 30 second max with 5 minutes

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

Power Supply: Single 9V battery; NEDA1604G, JIS006P

IEC6F22, NEDA1604A, JIS6AM6 or IEC6LF22

Power Consumption: 5 mA typical

APO Timing: Idle for 30 minutes

APO Consumption: 50 μ A typical

Dimension: L208mm X W103mm X H64.5mm with holster

Weight: 635 gm with holster

Accessories: Test lead pair; battery installed; user's manual; BKP60 banana plug type-K thermocouple (Models 829s & 827s only)

Optional purchase accessories: USB interface kit BU-86X;

BKB32 banana plug to type-K socket plug adaptor

cool down interval

DC Current

RANGE	Accuracy	Burden voltage
600.0 μ A, 6000 μ A	0.2%+4d	0.08mV/ μ A
60.00mA, 600.0mA		2.1mV/mA
6.000A, 10.00A ¹⁾		0.02V/A

¹⁾10A continuous, >10A to 20A for 30 second max with 5 minutes cool down interval

Line Level Frequency (~Hz)

Function Range	Frequency	Sensitivity (Sine RMS)
AC 60.00mV	15.00 ~ 50.00kHz	40mV
AC 600.0mV		60mV
AC 9.999V	15.00 ~ 10.00kHz	2.5V
AC 99.99V		25V
AC 999.9V		100V
AC 600.0 μ A		200 μ A
AC 6000 μ A		600 μ A
AC 60.00mA		40mA
AC 600.0mA		60mA
AC 6.000A		4A
AC 10.00A		6A

Accuracy: 0.04%+4d

Logic Level Frequency & Duty Cycle (D%)

@ DCmV Function	Range	Accuracy ¹⁾
Frequency	5.00Hz ~ 1.000MHz	0.04%+4d
Duty Cycle	0.00% ~ 100.0%	3d/kHz+2d ²⁾

¹⁾Sensitivity: 2.5Vp (Square wave) for 3V & 5V Logic Family

²⁾Specified Frequency: 5Hz ~ 10kHz

Non-Contact EF-Detection

Typical Voltage	Bar Graph Indication
20V (tolerance: 10V~36V)	-
55V (tolerance: 23V ~ 83V)	--
110V (tolerance: 59V ~ 165V)	---
220V (tolerance: 124V ~ 330V)	----
440V (tolerance: > 250V)	-----

Indication: Bar graph segments & audible beep tones proportional to the field strength

Detection Frequency: 50/60Hz

Detection Antenna: Top end of the meter

Probe-Contact EF-Detection:

For more precise indication of live wires, such as distinguishing between live and ground connections, use the Red (+) test probe for direct contact measurements.

Crest mode (Instantaneous Peak Hold)

Accuracy: Specified accuracy adds 250 digits for changes > 1.0 ms in duration

Record mode

Accuracy: Specified accuracy adds 10 digits for changes > 100 ms in duration

Diode Tester

RANGE	Accuracy
2.000V	1.0%+1d

Test Current (Typically): 0.4mA

Open Circuit Voltage: < 3.5 VDC

Temperature

RANGE	Accuracy
-50°C to 1000°C	0.3%+2°C
-58°F to 1832°F	0.3%+5°F

Type-K thermocouple range & accuracy not included

