

# MobileLogger Supports Multi-session, More Memory & Dual Display!

12kV Transient Protection, 1kV Fuses, DC+AC True RMS, Duty %, 4 Digit Resolution, nS Conductance... And More!  
Data-Logging, PC-Comm, Bar-graph, BeepJack, Crest (Peak), Rec (Min Max), Relative, Backlit... Full-Features!  
Ergonomic, Magnetic Hanger, Probe Holders, Tilt stand & Hanger, Battery Access Cover... User-Oriented!  
AutoCheck+LoZ, Capacitance, Line Level Hz, T1-T2 Temperature... Full-Functions!



**BM520 Series  
Professional Multimeter**



BRIGHT PEOPLE'S CHOICE  
<http://www.brymen.com>

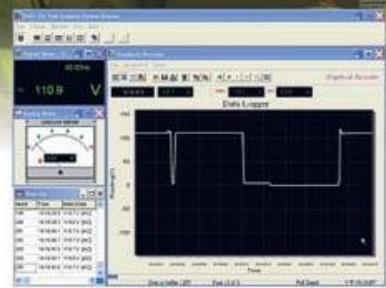




● **BM525**



● **BM521**



**BU-82X interface kit  
(optional purchase)**



525	521	FUNCTIONS & FEATURES
87,000	10,800	Stand-Alone Data-Logging Function (Points at Single Display Mode)
43,000	5,400	Stand-Alone Data-Logging Function (Points at Dual Display Mode)
●	●	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
●	●	Intelligent Auto Power Off
●	●	Data Hold
●	●	Relative Zero Mode
●	●	Audible & Visible BeepJack™ Input Warning Against Improper Plug In
●	●	AC, AC+DC True RMS Conversion
●	●	Record Max/Min/MAX-MIN Readings, Auto-Ranging
●	●	Crest (Peak Hold) Max/Min/MAX-MIN Readings, Auto-Ranging
●	●	AutoCheck™ Feature (Automatic DCV, ACV & Ohms Selection)
●	●	Lo-Z Volts To Drain Ghost Voltages (AutoCheck™ Feature)
●	●	Back-Lighted Large Easy To Read LCD Display
●	●	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 CAT IV 1kV
●	●	EMC EN61326-1:2006 (EN55022, EN61000-3-2/-3 & EN61000-4-2/-3/-4/-5/-6/-8/-11)



# The Best Of The Best: 1kV Protection + MobileLogger!

87,000 Points Stand-Alone Data-Logging With On-Screen Recall!  
Includes AutoCheck™ & Ghost-Voltage-Buster™!

**ANALOG BAR-GRAPH**  
FAST UPDATE RATE 60/SEC

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

**DISPLAY BACKLIGHT**  
FOR EASY VIEWING IN THE DARK

**FUNCTION SELECTION**  
TOGGLE CONVENIENTLY BETWEEN  
PRIMARY & SECONDARY FUNCTIONS

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

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

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

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

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

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

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

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

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

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

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

**STAND-ALONE DATA-LOGGING**  
UP TO 87,000 DATA ITEMS IN SINGLE  
DISPLAY MODE, OR 43,000 DATA  
ITEMS IN DUAL DISPLAY MODE

**STAND-ALONE DATA RECALL**  
ON-SCREEN REVIEW LOGGED READINGS  
WITHOUT THE NEED OF A COMPUTER

**SELECTABLE SAMPLING INTERVAL**  
16 SELECTABLE SAMPLING INTERVALS  
FROM 0.05S TO 600S

**DUAL DIGITAL DISPLAY**  
SIMULTANEOUSLY VIEW  
RELEVANT PARAMETERS IN  
COMPLEMENTARY DISPLAY

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

**DATA HOLD**  
FREEZES THE DISPLAYING  
READING FOR LATER VIEW

**MAX MIN RECORD**  
RECORD MAX and MIN  
READINGS; AUTO-RANGING

**DIODE TEST**  
FOR CHECKING DIODES  
AND RECTIFIERS

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

**CAPACITANCE**  
UP TO 25mF 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  
2ND EDITION.CAT IV-1kV

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





## BM525 & BM521 GENERAL SPECIFICATIONS

### Display:

9999 counts: ACV, DCV, Hz & nS  
6000 counts: mV,  $\mu$ A, mA, A, Ohm & Capacitance

### Update Rate:

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

### Low Battery:

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

### 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 IV 1000Vac & Vdc.

Transient protection: 12kV (1.2/50 $\mu$ s surge)

### Terminals (to COM) Measurement Category:

V / A / mA $\mu$ A: Category IV 1000Vac & Vdc

### Overload Protections:

$\mu$ A & mA : 0.44A/1000Vac & Vdc, IR 10kA, F fuse

A : 11A/1000Vac & Vdc, IR 20kA, F fuse

V, mV,  $\Omega$ , & Others: 1050Vrms, 1450Vpeak

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

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 $\mu$ A typical

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

Weight: 635 gm with holster

Special Features: Dual displays; Data Hold; Audible & Visible Input Warning; Auto-Ranging Relative Zero; USB Interface capability (Optional purchase interface kit BU-82X);

AutoCheck™ V- $\Omega$ ; Auto-Ranging 50ms Record; Auto-Ranging Crest (Instantaneous Peak Hold); Backlighted display;; T1-T2 differential temperature readings (BM525 only); nS conductance; Stand-alone logging capability

(5400/10800 points for BM521 dual/single display; 43500/87000 points for BM525 dual/single display) with selectable logged interval 0.05s, 0.1s, 0.5s, 1s, 2s, 3s, 4s, 5s, 10s, 15s, 30s, 60s, 120s, 180s, 300s, 600s

Accessories: Test lead pair; Battery installed; User's manual; One BKP60 banana plug type-K thermocouple

Optional purchase accessories:

USB interface kit BU-82X; BMH-01 Magnetic hanger; BKB32

banana plug to type-K socket plug adaptor

## Electrical Specifications

Accuracy is  $\pm$ (% reading digits + number of digits) or otherwise specified, at 23 $\pm$ 0.5°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 < 3:1 at full scale & < 6:1 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	999.9mV, 9.999V, 99.99V, 999.9V	0.08%+2d

NMRR: >60dB @ 50/60Hz

CMRR: >110dB @ DC, 50/60Hz, Rs=1k $\Omega$

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

### AutoCheck™ (DCV)

RANGE	Accuracy
999.9mV, 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 $\Omega$ , 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 $\Omega$  @100V  
125k $\Omega$  @ 300V  
320k $\Omega$  @ 600V  
500k $\Omega$  @ 1000V

### AC & AC+DC Voltage

Function	RANGE	Accuracy
50Hz ~ 60Hz		
mV	60.00mV, 600.0mV	0.5% + 3d
	999.9mV, 9.999V, 99.99V, 999.9V	
40Hz ~ 500Hz		
mV	60.00mV, 600.0mV	0.8% + 4d
	999.9mV	5.0% + 4d
V	9.999V, 99.99V	1.0%+4d
	999.9V	2.0%+4d
500Hz ~ 1kHz		
mV	60.00mV, 600.0mV	2.0% + 3d
	999.9mV	3dB
V	9.999V, 99.99V	1.0%+4d
	999.9V	2.0%+4d
1kHz ~ 3kHz		
mV	60.00mV, 600.0mV	2.0%+3d
	999.9mV	Unspec'd
V	9.999V, 99.99V, 999.9V	3.0%+4d
	999.9V	Unspec'd
3kHz ~ 20kHz		
mV	60.00mV <sup>1)</sup> , 600.0mV <sup>1)</sup>	2.0%+3d
	999.9 mV	Unspec'd
V	9.999V, 99.99V	3dB
	999.9V	Unspec'd

<sup>1)</sup>Specified from 30% to 100% of range.

CMRR: >60dB @ DC to 60Hz, Rs=1k $\Omega$

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

Non-zero residual reading does not affect measurement accuracy. It shows less than 5 digits with test leads shorted over time.

### AutoCheck™ (ACV)

RANGE <sup>1)</sup>	Accuracy
50Hz ~ 60Hz	1.0%+4d
999.9mV, 9.999V, 99.99V, 999.9V	

Lo-Z ACV Threshold:

> 2VAC (50/60Hz) nominal

Lo-Z ACV Input Impedance:

Initially approx. 3.0k $\Omega$ , 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 $\Omega$  @100V  
125k $\Omega$  @ 300V  
320k $\Omega$  @ 600V  
460k $\Omega$  @ 1000V

### Ohms

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

Open Circuit Voltage: < 1.2VDC (< 1.0VDC for 60M $\Omega$  range)

### AutoCheck™ (Ohms)

RANGE	Accuracy
600.0 $\Omega$ , 6.000k $\Omega$ , 60.00k $\Omega$ , 600.0k $\Omega$	0.5%+4d
6.000M $\Omega$	0.8%+3d
60.00M $\Omega$	2.0%+5d

Open Circuit Voltage: < 1.2VDC (< 1.0VDC for 60M $\Omega$  range)

### \*) Audible Continuity Tester

Audible threshold: between 20k $\Omega$  and 300k $\Omega$ ; Response time < 100 $\mu$ s

### \*) Diode Tester

RANGE	Accuracy
2.000V	1.0%+1d

Test Current (Typically): 0.4mA

Open Circuit Voltage: < 3.5 VDC

### \*) Capacitance

RANGE	Accuracy <sup>1)</sup>
60.00nF, 600.0nF	0.8% + 3d
6.000 $\mu$ F	1.0% + 3d
60.00 $\mu$ F	2.0% + 3d
600.0 $\mu$ F <sup>2)</sup>	3.5% + 5d
6.000mF <sup>2)</sup>	5.0% + 5d
25.00mF <sup>2)</sup>	6.5% + 5d

<sup>1)</sup>Accuracies with film capacitor or better

<sup>2)</sup>In manual-ranging mode, measurements not specified below 50.0 $\mu$ F, 0.54mF and 5.4mF for ranges 600.0 $\mu$ F, 6.000mF and 25.00mF respectively

### DC Current

RANGE	Accuracy	Burden voltage
600.0 $\mu$ A, 6000 $\mu$ A	0.2%+4d	0.08mV/ $\mu$ A
60.00mA, 600.0mA		1.50mV/mA
6.000A, 10.00A <sup>1)</sup>		0.02V/A

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

### AC & AC+DC Current

RANGE	Accuracy	Burden voltage
50Hz ~ 60Hz		
600.0 $\mu$ A, 6000 $\mu$ A	0.6%+3d	0.08mV/ $\mu$ A
60.00mA		1.50mV/mA
600.0mA	1.0%+3d	1.50mV/mA
6.000A, 10.00A <sup>1)</sup>	0.8%+6d	0.02V/A
40Hz ~ 1kHz		
600.0 $\mu$ A, 6000 $\mu$ A	0.8%+4d	0.08mV/ $\mu$ A
60.00mA		1.50mV/mA
600.0mA	1.0%+4d	1.50mV/mA
6.000A, 10.00A <sup>1)</sup>	0.8%+6d	0.02V/A

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

### Logic Level Frequency (fHz) & Duty Cycle (D%)

@ DCmV Function	Range	Accuracy <sup>1)</sup>
Frequency	5.00Hz ~ 1.000MHz	0.004%+4d
Duty Cycle	0.00% ~ 100.0%	3d/(kHz+2d <sup>2)</sup> )

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

<sup>2)</sup>Specified Frequency: 5Hz ~ 10kHz

### Line Level Frequency (Hz)

Function Range	Frequency	Sensitivity (Sine RMS)
AC 60.00mV	15.00 ~ 50.00kHz	40mV
AC 600.0mV		60mV
AC 999.9mV	15.00 ~ 1.000kHz	0.5V
AC 9.999V		2.5V
AC 99.99V	15.00 ~ 10.00kHz	25V
AC 999.9V		100V
AC 600.0 $\mu$ A	15.00 ~ 3.000kHz	45 $\mu$ A
AC 6000 $\mu$ A		600 $\mu$ A
AC 60.00mA	15.00 ~ 3.000kHz	40mA
AC 600.0mA		60mA
AC 6.000A	15.00 ~ 3.000kHz	4A
AC 10.00A		6A

Accuracy: 0.04%+4d

### 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

### 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

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