

BM525 & BM521 GENERAL SPECIFICATIONS

Display:

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

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

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 μ s surge)

Terminals (to COM) Measurement Category:

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

Overload Protections:

μ A & mA : 0.44A/1000Vac & Vdc, IR 10kA, F fuse

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

V, mV, Ω , & 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 μ 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- Ω ; 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°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 < 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,	0.08%+2d
	99.99V, 999.9V	

NMRR: >60dB @ 50/60Hz

CMRR: >110dB @ DC, 50/60Hz, Rs=1k Ω

Input Impedance: 10M Ω , 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 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

AC & AC+DC Voltage

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

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

CMRR: >60dB @ DC to 60Hz, Rs=1k Ω

Input Impedance: 10M Ω , 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 ¹⁾	Accuracy
50Hz ~ 60Hz	
999.9mV, 9.999V, 99.99V, 999.9V	1.0%+4d

Lo-Z ACV Threshold:

> 2VAC (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	2.0%+5d

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

* Diode Tester

RANGE	Accuracy
2.000V	1.0%+1d

Test Current (Typically): 0.4mA

Open Circuit Voltage: < 3.5 VDC

* 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 ranges 600.0 μ F, 6.000mF and 25.00mF respectively

DC Current

RANGE	Accuracy	Burden voltage
600.0 μ A, 6000 μ A	0.2%+4d	0.08mV/ μ A
60.00mA, 600.0mA		1.50mV/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

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		1.50mV/mA
600.0mA	1.0%+3d	1.50mV/mA
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		1.50mV/mA
600.0mA	1.0%+4d	1.50mV/mA
6.000A, 10.00A ¹⁾	0.8%+6d	0.02V/A

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

Logic Level Frequency (MHz) & Duty Cycle (D%)

@ DCmV Function	Range	Accuracy ¹⁾
Frequency	5.00Hz ~ 1.000MHz	0.004%+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

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 ~ 1.00kHz	25V
AC 999.9V		100V
AC 600.0 μ A	15.00 ~ 3.000kHz	45 μ A
AC 6000 μ A		600 μ 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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