Data Sheet

True RMS Bench Multimeter
5492B



TRUE RMS AC

USB (standard)

RS232 (standard)

GPIB (5492BGPIB only)

True RMS Bench Multimeter

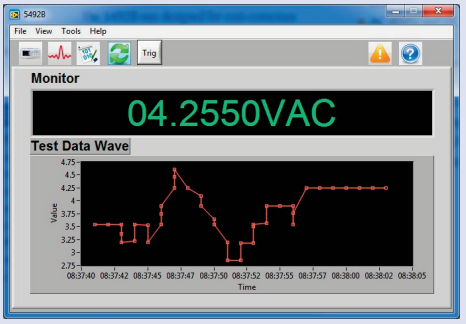
The B&K Precision model 5492B is a versatile 5½-digit, 120,000-count bench multimeter suitable for applications in education, service repair, and manufacturing. The instrument enhances your productivity with built-in math functions and USB connectivity. Rel, Max/Min, dBm, dB, %, and Hold functions provide educators with a convenient tool to teach basic math concepts. Additionally, the 5492B offers powerful features not commonly found in other 5½- digit DMMs such as advanced triggering, buffer storage operation, and a GPIB interface option.

The 5492B measures volts and amps with great accuracy and stability, with basic VDC accuracy of 0.01%. The meter is also capable of measuring frequency, period, resistance, continuity, and performing diode tests. Readings can be taken at a maximum rate of 57 readings/sec and stored to an internal 512-byte buffer for post acquisition statistical analysis.

The 5492B was designed for cost-conscious users requiring an accurate meter with a broad range of features offered at a value price.

Increase Productivity with PC Connectivity

The 5492B is programmable via USB, RS232, and GPIB (5492BGPIB only) interface using industry standard SCPI commands. Users can remotely control and configure the instrument from a PC and retrieve measurement results for further analysis. The multimeter can also be remotely controlled using application software (via USB & RS232), which supports front panel emulation and data logging of measurement results.



Features & benefits

- 5½-digit, 120,000-count display resolution
- 0.01% basic VDC accuracy
- Advanced triggering options such as external, bus and event trigger
- Two and four-wire resistance measurement up to 120 MΩ
- AC voltage and AC current measurement over wide frequency range (ACV 100 kHz/ACI 10 kHz)
- AC (RMS) and DC current measurements up to 12 A
- Limit mode for Pass/Fail testing
- Save/recall up to 10 instrument settings
- Built-in math functions: Rel, Max/Min, dBm, dB, %, Hold, Compare
- CATI (1000 V)/CATII (300 V) protection
- USB (Virtual Com) and RS232 interface
- SCPI compatible

Technical data subject to change
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ELECTRONIC TEST INSTRUMENTS

▲ Versatile tools

Limit Operation

The limit operation lets you set and control the values that determine a HI / IN / LO status of subsequent measurements. The meter can be configured to emit an audible alarm when readings are outside of the configured limit.

Advanced Triggering

A variety of advanced trigger options are available: Manual Trigger via a front panel button press, Bus Trigger sending a *TRG command via PC interface, External Trigger using the EXT TRIG input terminal on the rear panel. Additionally, a trigger delay can be programmed after an event detection, and a VM Comp output is available to indicate the instrument's completion of a present measurement.

Fast Buffering with Built-in Statistics

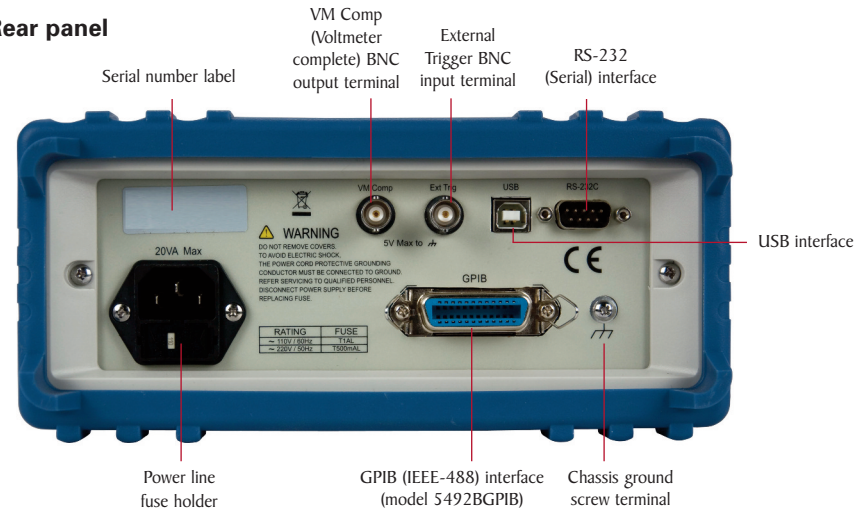
The 5492B provides an internal buffer capable of storing up to 512 readings. Buffer storage operation can be enabled via front panel or remote command. The buffer fills up with the requested number of readings at a rate of up to 57 readings/sec and then stops. The instrument automatically calculates statistical information based on the stored readings such as minimum, maximum, or average reading, and standard deviation, which can then be retrieved along with the readings via the front panel or remote command.

▲ Easy operation

Front panel



Rear panel



Specifications

Specifications are based on the following conditions:

- One year calibration cycle
- Operating temperature between 18 °C to 28 °C
- Accuracy expressed as: ± (% of reading + % of range) after 30 minutes warm-up and valid for 10 PLC (Slow)
- Temperature coefficient: add ± [0.1% × (applicable accuracy)/°C] for 0 °C to 18 °C and 28 °C to 40 °C
- Relative humidity: Up to 80% RH for 0 °C to 28 °C (75% RH for 10 MΩ and above ranges for resistance measurement), up to 70% RH for 28 °C to 40 °C

DC Voltage

Resolution, Full Scale Reading and Accuracy ± (% of reading + % of range), 23 °C ± 5 °C

Range	Resolution	Full Scale Reading	Accuracy (1 year)	Typical Input Impedance
120.000 mV	1 μV	119.999	0.02+0.008(1)	>10 GΩ
1.20000 V	10 μV	1.19999	0.01+0.004(1)	>10 GΩ
12.0000 V	100 μV	11.9999	0.01+0.004	>10 GΩ
120.000 V	1 mV	119.999	0.01+0.004	10 MΩ ±1%
1000.00 V	10 mV	1010.00(2)	0.01+0.004	10 MΩ ±1%

(1) under REL status
(2) 1% overrange (1010 V) is readable at 1000 V range

Input protection: 1000 V

AC Voltage (True RMS, AC coupled)

Resolution, Full Scale Reading and Accuracy ± (% of reading + % of range), 23 °C ± 5 °C

Range	Resolution	Full Scale Reading	Accuracy (1 year)(1)				
			10-20 Hz	20-50 Hz	50-20 kHz	20-50 kHz	50-100 kHz
120.000 mV	1 μV	119.999	1.50+0.100	0.50+0.100	0.10+0.100	0.30+0.150	1.0+0.150
1.20000 V	10 μV	1.19999	1.50+0.100	0.50+0.100	0.10+0.100	0.30+0.150	1.0+0.100
12.0000 V	100 μV	11.9999	1.50+0.100	0.50+0.100	0.10+0.100	0.30+0.150	1.0+0.100
120.000 V	1 mV	119.999	1.50+0.100	0.50+0.100	0.10+0.100	0.30+0.150	1.0+0.100
750.00 V	10 mV	757.50(3)	1.50+0.100	0.50+0.100	0.10+0.100	0.30+0.150(2)	1.0+0.100(1)

(1) Specifications are for sine wave inputs >5% of range
(2) ≤ 3×10^7 Volt-Hz for 750 V range
(3) 1% overrange (757.5V) is readable at 750 V range

Measurement method: AC coupled true RMS, measuring the AC component only
Maximum Crest factor: 3.0 at full scale
Input impedance: 1 MΩ ± 2% in parallel with capacitance <100 pF
Input protection: 750 Vrms, 500 Vdc

DC Current

Resolution, Full Scale Reading and Accuracy ± (% of reading + % of range), 23 °C ± 5 °C

Range	Resolution	Full Scale Reading	Accuracy (1 year)	Burden Voltage(1) & Shunt Resistor
12.0000 mA	0.1 μA	11.9999	0.05+0.008(2)	<0.15 V / 10.1 Ω
120.000 mA	1 μA	119.999	0.05+0.004(2)	<1.5 V / 10.1 Ω
1.20000 A	10 μA	1.19999	0.10+0.004	<0.3 V / 0.1 Ω
12.0000 A(3)	100 μA	11.9999	0.25+0.004	<0.15 V / 10 mΩ

(1) Typical voltage across the input terminals at full scale reading
(2) Use REL function
(3) In 12 A range, >10~12 ADC is readable for 20 seconds maximum

Input protection: Externally accessible 2A / 250V fuse protecting the low input current terminal (LO).
Internally accessible 20A / 250V fuse protecting the high current input terminal (10A)

Specifications (cont.)

AC Current (True RMS, AC Coupled)

Resolution, Full Scale Reading and Accuracy ± (% of reading + % of range), 23 °C ± 5 °C

Range	Resolution	Full Scale Reading	Burden Voltage[1] & Shunt Resistor	Accuracy (1 year)[3]			
				10-20 Hz	20-50 Hz	50-2 kHz	2-20 kHz
12.0000 mA	0.1 µA	11.9999	<0.15 V / 10.1 Ω	1.0+0.080	0.50+0.080	0.25+0.080	2.0+0.080
1.20000 A	10 µA	1.19999	<0.3 V / 0.1 Ω	1.0+0.080	0.50+0.080	0.25+0.080	2.0+0.080
12.0000 A[2]	100 µA	11.9999	<0.15 V / 10 mΩ	1.0+0.080	0.50+0.080	0.25+0.080	2.0+0.080

(1) Typical voltage across the input terminals at full scale reading
(2) In 12 A range, >10-12 A AC is readable for 20 seconds maximum
(3) Specifications are for sine wave inputs >5% of range

Measurement method: AC coupled true RMS, measuring the AC component only
Input protection: Externally accessible 2 A / 250 V fuse protecting the low input current terminal (LO). Internally accessible 20 A / 250 V fuse protecting the high current input terminal (10A)
Max. crest factor: 3.0 at full scale

Resistance (2-Wire and 4-Wire)

Resolution, Full Scale Reading and Accuracy ± (% of reading + % of range), 23 °C ± 5 °C

Range[1]	Resolution	Full Scale Reading	Test Current	Accuracy (1 year)
120.000 Ω	1 mΩ	119.999	1 mA	0.05 +0.008[2]
1.20000 kΩ	10 mΩ	1.19999	1 mA	0.03 +0.004[2]
12.0000 kΩ	100 mΩ	11.9999	100 µA	0.03 +0.004[2]
120.000 kΩ	1 Ω	119.999	10 µA	0.03 +0.004
1.20000 MΩ	10 Ω	1.19999	10 µA	0.03 +0.004
12.0000 MΩ	100 Ω	11.9999	7.0/(10M+Rx) µA	0.10 +0.004
120.000 MΩ	1 kΩ	119.999	7.0/(10M+Rx) µA	0.50 +0.008

(1) In order to eliminate the noise interference, which might be induced to the test leads, it is recommended to use a shielded test cable for measuring resistance above 120 kΩ
(2) Using REL function

Input protection: 1000 Vdc or 750 Vac for all ranges
Note: Rx is the measured resistance value

Continuity

Resolution, Full Scale Reading and Accuracy ± (% of reading + % of range), 23 °C ± 5 °C

Range	Resolution	Full Scale Reading	Test Current	Accuracy (1 year)
1 kΩ	100 mΩ	999.9	1 mA	0.1%+0.02%

For 0.1 PLC (Fast)
Input protection: 1000 Vdc or 750 Vac

Diode

Resolution, Full Scale Reading and Accuracy ± (% of reading + % of range), 23 °C ± 5 °C

Range	Resolution	Full Scale Reading	Test Current	Accuracy (1 year)
3.0000 V	100 µV	2.9999	1 mA	0.030+0.020
10.0000 V	100 µV	10.0000	100 µA	0.030+0.020
10.0000 V	100 µV	10.0000	10 µA	0.030+0.020

For 1 PLC (Medium)
Input protection: 1000 Vdc or 750 Vac for all ranges

Specifications (cont.)

Frequency

Resolution, Full Scale Reading and Accuracy ± (% of reading + % of range), 23 °C ± 5 °C					
ACV Range	Frequency Range	Resolution	Full Scale Reading	Accuracy[2]	Input Sensitivity (Sine Wave)
100 mV to 750 V	5 ~ 10 Hz	10 μHz	9.99999	0.05	200 mVrms
	10 ~ 100Hz	100 μHz	99.9999	0.01	40 mVrms
	100 ~ 100 kHz	1 mHz	999.999	0.005	40 mVrms
	100 k ~ 1 MHz [1]	1 Hz	999.999	0.005	100 mVrms
(1) If testing frequency is greater than 1MHz, it will be displayed but no specified accuracy is guaranteed. (2) Specified accuracy at input >5 % of range.					

Gate Time at 1 Sec.
Input protection: 750 Vrms or 500 Vdc

Period

Resolution, Full Scale Reading and Accuracy ± (% of reading + % of range), 23 °C ± 5 °C					
ACV Range	Period Range	Resolution	Full Scale Reading	Accuracy[2]	Input Sensitivity (Sine Wave)
100 mV to 750 V	1 ~ 10 μs [1]	0.01 ns	9.99999	0.005	100 mVrms
	10 μs ~ 10 ms	0.1 ns	9.99999	0.005	40 mVrms
	10 ms ~ 100 ms	0.1 μs	99.9999	0.01	40 mVrms
	100 ms ~ 200 ms	1 μs	199.999	0.05	200 mVrms
(1) If testing frequency is greater than 1MHz, it will be displayed but no specified accuracy is guaranteed. (2) Specified accuracy at input >5 % of range.					

Gate Time at 1 Sec.
Input protection: 750 Vrms or 500 Vdc

Supplemental

Environmental	
Operating Environment	0 °C to 40 °C, 32 °F to 104 °F
Storage Environment	-40 °C to 70 °C -40 °F to 158 °F
Humidity	≤ 90 %RH
General	
Remote Interfaces	RS232, USB (virtual COM) GPIB (model 5492BGPIB only)
Measurement Category	CAT II 300V, CAT I 1000V, pollution degree 2
Math Functions	Rel, Max/Min/Average/StdDev (for stored readings), dB, dBm, Limit Test, % and mX+b
Input Voltage	110/220 V ± 10%, 50/60 Hz ± 5%
Power Consumption	≤ 20 VA
Safety & EMC	EN 61010-1:2001, EN61326-1:2006 and EN61326-2-1:2006
Dimensions (W×H×D)	8.85" x 3.93 " x 13.97" (225 mm×100 mm×355 mm)
Net Weight	5.51 lbs (2.5 kg)
	Three Year Warranty
Included Accessories: Test leads, AC power cord, spare fuse, user manual, USB cable, calibration certificate and test report	