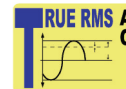





Data Sheet

True RMS Bench Multimeter 5492B



- 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.

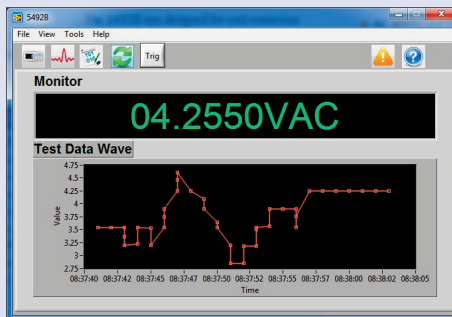
The 5492B was designed for cost-conscious users requiring an accurate meter with a broad range of features offered at a value price.

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
- CAT I (1000 V)/CAT II (300 V) protection
- USB (Virtual Com) and RS232 interface
- SCPI compatible

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.



▲ **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**



Specifications

Specifications are based on the following conditions:

- One year calibration cycle
- Operating temperature between 18 °C to 28 °C
- Accuracy expressed as: \pm (% of reading + % of range) after 30 minutes warm-up and valid for 10 PLC (Slow)
- Temperature coefficient: add \pm [0.1% \times (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 M Ω and above ranges for resistance measurement), up to 70% RH for 28 °C to 40 °C

DC Voltage

| Resolution, Full Scale Reading and Accuracy \pm (% of reading + % of range), 23 °C \pm 5 °C | | | | |
|---|-------------|------------------------|---------------------------|-------------------------|
| Range | Resolution | Full Scale Reading | Accuracy (1 year) | Typical Input Impedance |
| 120.000 mV | 1 μ V | 119.999 | 0.02+0.008 ⁽¹⁾ | > 10 G Ω |
| 1.20000 V | 10 μ V | 1.19999 | 0.01+0.004 ⁽¹⁾ | > 10 G Ω |
| 12.0000 V | 100 μ V | 11.9999 | 0.01+0.004 | > 10 G Ω |
| 120.000 V | 1 mV | 119.999 | 0.01+0.004 | 10 M Ω \pm 1% |
| 1000.00 V | 10 mV | 1010.00 ⁽²⁾ | 0.01+0.004 | 10 M Ω \pm 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 \pm (% of reading + % of range), 23 °C \pm 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 μ V | 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 μ V | 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 μ V | 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) $\leq 3 \times 10^7$ 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 M Ω \pm 2% in parallel with capacitance < 100 pF
Input protection: 750 Vrms, 500 Vdc

DC Current

| Resolution, Full Scale Reading and Accuracy \pm (% of reading + % of range), 23 °C \pm 5 °C | | | | |
|---|-------------|--------------------|---------------------------|--|
| Range | Resolution | Full Scale Reading | Accuracy (1 year) | Burden Voltage ⁽¹⁾ & Shunt Resistor |
| 12.0000 mA | 0.1 μ A | 11.9999 | 0.05+0.008 ⁽²⁾ | <0.15 V / 10.1 Ω |
| 120.000 mA | 1 μ A | 119.999 | 0.05+0.004 ⁽²⁾ | <1.5 V / 10.1 Ω |
| 1.20000 A | 10 μ A | 1.19999 | 0.10+0.004 | <0.3 V / 0.1 Ω |
| 12.0000 A ⁽³⁾ | 100 μ A | 11.9999 | 0.25+0.004 | <0.15 V / 10 m Ω |

(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 | |

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