

## BK PRECISION®

### Instruction Manual

## BK PRECISION® Model 117B

Compact Pocket-size Multimeter  
Ideal for use at home, work, boat, auto,  
hobbyist tool case.

Function	Range	Accuracy
DCV	0 -10/50/250/500V	± 5% (2kΩ / V)
ACV	0 -50/25 /500V	± 5% (2kΩ / V)
DCA	0 - 25m/250mA	± 5 %
Ω	0 - 10k / 1MΩ	± 5%
Battery	1.5V (100mA), 9V(20mA)	± 10%
dB	4 to 56dB (0dB=1mW on 600Ω load)	

Specifications subject to change without notice.

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Printed in China

### Model 117B Product Description

#### 1.0 Introduction

This Multimeter is a versatile multi-function instrument, designed in accordance with current safety regulations. Used in accordance with the instructions in this Owner's Manual, it will give safe and reliable measurement. The compact Multimeter is a useful aid, for all standard measurements, to the electrician on site, in industry or for hobby electronics.

- Analog Display
- DC and AC Voltage measurements up to 500V
- DC current measurement up to 250 mA
- Resistance measurement up to 1 MΩ

The Multimeter comes with test leads attached. When unpacking check that the instrument is complete and in good condition.

Symbols marked on the instrument:

 Warns of a potential danger, observe the advice given in the Owner's Manual.

 Indicates a dangerously high voltage.

 Conformity Symbol. The instrument complies with all current EMC and safety regulations. Tested to EN61010-1, EN50081-1 and EN50082-1.

Scope of supply

1 Pce. Multimeter

1 Pce. Instruction Manual

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#### 2.0 Operators Safety

The instrument has left our factory in safe and perfect condition - to maintain this condition the user must pay attention to the safety reference contained in this Instruction Manual.

Do not use this device if you are unfamiliar with electrical circuits and test procedures.

 Attention! This Instruction Manual contains information and warnings necessary for safe operation and maintenance of the instrument.

It is recommended that you read and understand this Instruction Manual thoroughly prior to use the instrument: Failure to understand these instructions and to comply with the warnings and instructions contained herein can result in serious injury or damage.

 Attention! In order to avoid electrical shock proper safety measures have to be respected when working with voltages exceeding 60VDC or 25V RMS AC.

 Attention! Prior to taking any measurement ensure that test leads and test instrument are in perfect condition. These measuring instruments may only be used within the specified ranges.

The instrument must only be opened by the user for fuse or battery replacement while observing safety instructions in this manual. There are no user serviceable parts inside. Prior to opening the

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B-K Precision warrants to the original purchaser that its product and the component parts thereof, will be free from defects in workmanship and materials for a period of 1 year from the date of purchase.

B-K Precision will, without charge, repair or replace, at it's action, defective product or component parts. Return product must be accompanied by proof of the purchase date in the form of a sales receipt.

**Exclusions:** This warranty does not apply in the event of misuse or abuse of the product or as a result of unauthorized alterations or repairs. It is void if the serial number is alternated, defaced or removed.

B-K Precision shall not be liable for any consequential damages, including without limitation damages resulting from loss of use. Some states do not allow limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

This warranty gives you specific rights and you may have other rights, which vary from state-to-state.

Model Number: \_\_\_\_\_ Date Purchased: \_\_\_\_\_

#### Service information

**Warranty Service:** Please return the product in the original packaging with proof of purchase to the below address. Clearly state in writing the performance problem and return any leads, connectors and accessories that you are using with the device.

**Non-Warranty Service:** Please return the product in the original packaging to the below address. Clearly state in writing the performance problem and return any leads connectors and accessories that you are using with the device. Customers not on open account must include payment in the form of a money order or credit card. For the most current repair charges contact the factory before shipping the product.

Return all merchandise to B-K Precision with pre-paid shipping. The flat-rate charge include return shipping to locations in North America. For overnight shipments and non-North America shipping fees contact B-K Precision.

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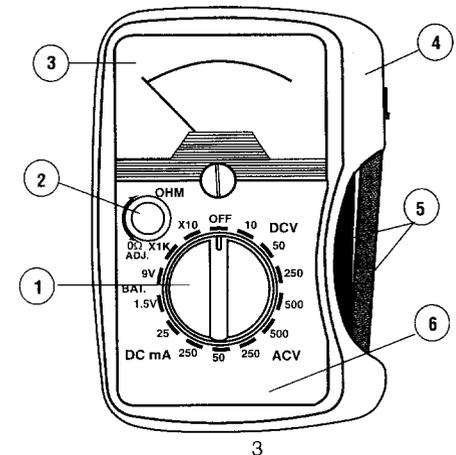
**Include with the instrument your complete return shipping address, contact name, phone number and description of problem.**

instrument, ensure that the instrument is switched off and disconnected from any circuits.

Never measure current in circuits with more than 240 V AC/DC voltage present.

#### 3.0 Operating Elements and Connections

- ① Measurement Range Switch
- ② Resistance-Zero-Adjustment
- ③ Analogue Display
- ④ Protective Holster
- ⑤ Test Leads with Probes
- ⑥ Battery casing on rear of instrument



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## 4.0 Measurements

### 4.1 Preparation and Safety Measures

⚠ Attention! Set range selection switch to desired function prior to connecting test probes to the Unit Under Test (UUT).

- Prior to switching to a new function or measurement range always disconnect measurement leads from UUT.
- Only use the instrument in dry and clean environments. Dirt and humidity lower insulation resistances and can lead to electric shocks in case of higher voltages.
- Only use the instrument within specified measurement ranges.
- Prior to instrument use always verify instrument for correct functioning (e.g. with known voltage source).
- Ensure that measurement leads are in perfect condition.
- Only use fuses of same type and characteristics. Short-circuiting the fuse holders is prohibited.

### 4.2 Voltage Measurement

⚠ Attention! Never apply more than 500 V AC/DC at input sockets. Exceeding these threshold values could lead to instrument being damaged or personnel injuries.

⚠ Attention! Disconnect test probes from UUT prior to selecting different measurement range.

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#### 4.2.1 DC Voltage Measurement

1. Set measurement range switch (1) to one of the DC voltage measurement (V $\rightarrow$ ) settings. Always select highest measurement range for unknown voltages and select lower measurement range, if required, until maximum resolution is achieved.
2. Connect test probes to UUT.
3. Read the voltage on the black scale.

#### 4.2.2 AC Voltage Measurement

1. Set measurement range switch (1) to one of the AC voltage measurement (V $\sim$ ) settings. Always select highest measurement range for unknown voltages and select lower measurement range, if required, until maximum resolution is achieved.
2. Connect test probes to UUT
3. Read the voltage on AC scale (For 10 V range, read on the red AC10V scale).

### 4.3 Resistance Measurement

⚠ Attention! Prior to any measurement ensure that the UUT is not live. If required carry out voltage measurement for verification. See para. 4.2 for voltage measurement.

1. Set measurement range switch (1) to " $\Omega$ " range. Short two probes together and adjust the OHM ADJ. (2) knob to set the pointer to "0" at the right end of the resistance scale. If you cannot get it, replace the battery with a new one.

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2. Connect test leads to UUT.

3. Read the resistance reading on the OHMS scale (green); use proper multiplier to get the correct value (Rx10, Rx1K, depending on the resistance range).

### 4.4 DC Current Measurement

⚠ Attention! Never measure in circuits with more than 240V nominal voltage. Do not attempt to read AC current.

1. Set measurement range switch (1) to one of the DC current measurement (mA $\rightarrow$ ) settings.
2. In case of unknown currents, always select 250 mA current range and switch to the lower measurement range, if required. Disconnect test leads from UUT prior to changing measurement ranges.
3. Connect the instrument in series to UUT and only switch on UUT once the Multitester is connected to UUT.
4. Read the current reading on the current scale.

### 4.5 Decibel Measurement

⚠ Attention! Never apply more than 500 V AC/DC at input sockets. Exceeding these threshold values could lead to instrument being damaged or personal injuries.

⚠ Attention! Disconnect test probes from UUT prior to selecting different measurement range.

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1. Set the Measurement range switch to one of the Decibel measurement (V $\sim$ ) settings.
2. For AC 50V range, read dB reading on the dB scale directly, but for other ranges, calculate the reading by the table:

dB range	4 to 36	18 to 50	24 to 56
ACV range	50V	250V	500V
Add value	0	14	20

NOTE: For absolute dB measurement, circuit impedance must be 600  $\Omega$ . 0dB=1mW dissipated in a 600  $\Omega$  load.

3. For the signal with DC component, you have to insert a capacitor with capacity > 0,1  $\mu$ F between test probe and circuit under test.

### 4.6 Battery Check

1. Set measurement range switch to one of the BATTERY TEST positions - 9 V OR 1.5 V.
2. Connect probes to the battery with red probe to + end and black to - end respectively.
3. Read the GOOD BAD (green and red) scale.

### 5.0 Maintenance

When using instrument in compliance with the Owner's Manual no special maintenance is required. Any adjustments and repairs may only be carried out by authorized staff.

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### 5.1 Battery Replacement

Short the two probes together and adjust the OHM ADJ. (2) knob to set the pointer to "0" at the right end of the resistance scale. If you cannot get it, replace the battery with a new one as follows:

1. Remove instrument from all circuits.
2. Loosen the 2 screws, and remove the back cover.
3. Replace the discharged battery by using one new AA alkaline battery. Respect correct polarity!
4. Replace the back cover and tighten the 2 screws before continuing measurements.

Please consider your environment when disposing of used batteries.

### 5.2 Fuse Replacement

If the fuse has tripped due to current range overload, please respect the following references for fuse replacement. Only use fuses with specified current and voltage ratings.

1. Remove instrument from all circuits.
2. Loosen the 2 screws, and remove the back cover.
3. Remove defective fuse.
4. Insert new fuse ensuring it is positioned correctly (Fuse: 500mA/250V, Fast Acting). Using auxiliary fuse holders and/or short circuiting the fuse holder is prohibited as it can lead to instrument destruction and serious personal injury. Replace the back cover and tighten the 2 screws before continuing measurements.

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### 6.0 Technical Data

Operating temperature: 0...40°C, max. 75% RH  
 Display: Analogue Display  
 Meter Movement: Wide 3 colour mirrored scale 180 $\mu$ A movement.  
 Overvoltage Category: II max. 300V $\neq$   
 Pollution degree: 2  
 Battery: One AA alkaline battery (23-552 or equivalent)  
 Fuse: 500 mA/250 V Fast Acting  
 Dimensions: 120 X 80 X 30 mm  
 Weight: 125 g  
 Specifications valid for 23°C  $\pm$  5°C, max. 75% RH

Function	Range	Accuracy
DCV	0 - 10/50/250/500V	$\pm$ 5% (2k $\Omega$ / V)
ACV	0 - 50/25 /500V	$\pm$ 5% (2k $\Omega$ / V)
DCA	0 - 25m/250mA	$\pm$ 5 %
$\Omega$	0 - 10k / 1M $\Omega$	$\pm$ 5%
Battery	1.5V (100mA), 9V(20mA)	$\pm$ 10%
dB	4 to 56dB (0dB=1mW on 600 $\Omega$ load)	

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