

# INSTRUCTION MANUAL

**BK PRECISION**<sup>®</sup>

## Model 8540

### Model 8540 60V/30A/150W DC Electronic Load



# **WARNING**

## **Safety Regulations**

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

To avoid injuries, always disconnect power, discharge circuits, and remove external voltage sources before touching components.

**KEEP AWAY FROM LIVE CIRCUITS.**

We cannot accept responsibility for any direct or indirect financial damage or loss of profit that might occur when using the electronic load.

The instrument chassis and cover must be connected to an electrical ground.

## **Certification**

We certify that this product met its published specifications at time of shipment from the factory.

## **Notice**

The information contained in this document is subject to change without notice. Please consult the B&K Precision website [www.bkprecision.com](http://www.bkprecision.com) for the latest version.

## Compliance Statements

Disposal of Old Electrical & Electronic Equipment (Applicable in the European Union and other European countries with separate collection systems)



This product is subject to Directive 2002/96/EC of the European Parliament and the Council of the European Union on waste electrical and electronic equipment (WEEE), and in jurisdictions adopting that Directive, is marked as being put on the market after August 13, 2005, and should not be disposed of as unsorted municipal waste. Please utilize your local WEEE collection facilities in the disposition of this product and otherwise observe all applicable requirements.

## Safety Symbols



Connect it to safety earth ground using the wire recommended in the user's manual.



High voltage danger



The symbol on an instrument indicates that the user should refer to the operating instructions located in the manual.

## Check out

### Unpacking the instrument

This instrument was carefully inspected before shipment. Upon receipt, inspect the instrument for damage that might have occurred in transit. If any sign of damage is found, notify your B&K Precision distributor.

### Check the list of supplied items

Verify that you have received the following items with your power supply. If anything is missing, contact your authorized B&K Precision distributor.

- Power cord
- Instruction manual

### Power Requirements

The 8540 can operate on 110V AC or 220V AC. Before connecting the power cord to an AC outlet, make sure the voltage selector in the rear is set to the correct line voltage. If necessary, replace fuses according to the table below.

Line voltage	Range	Fuse
110V AC	99 V to 121 V	T0 500 mA, 250V
220V AC	198 V to 242 V	T0 250 mA, 250V

The instrument power fuse is located in a fuse compartment below the AC input receptacle. To access the fuse, first disconnect the power cord and then remove the fuse cartridge.

### Power-on procedure

Turn on the instrument by pressing the main power switch on the front panel of the unit. The instrument will automatically revert to the last setting before the power was turned off.

## Note

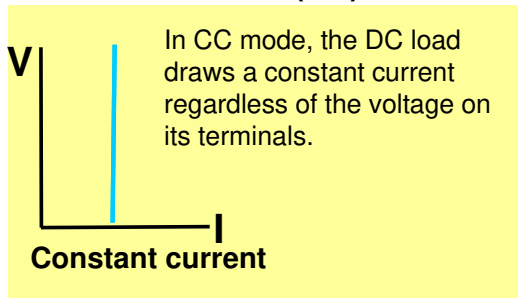
**The 9 pin D-sub connector in the rear is for factory use only!**

**This instrument does not offer a remote control interface.**

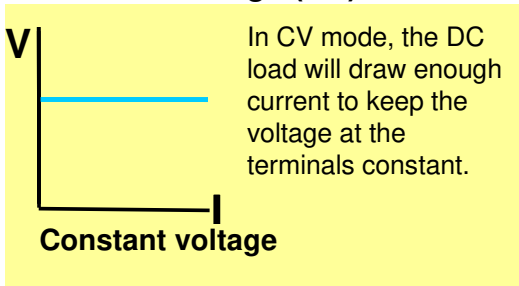
## About the 8540

The B&K Precision 8540 DC electronic load (60V/30A/150W) can sink DC current in constant current, constant voltage, and constant resistance modes. Measured values have 10 mV and 1 mA resolution. Shorts can be simulated. Storage is provided for up to 100 groups, with 4 instrument setups per group. The instrument is easy to use and will find many uses for testing DC power supplies, batteries, and DC to DC converters.

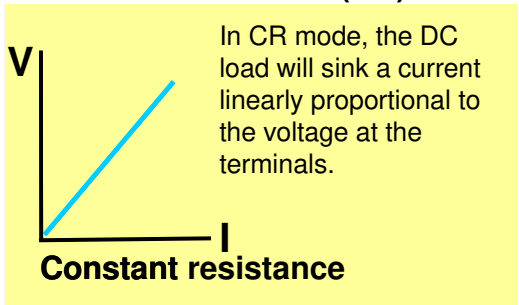
### Constant Current (CC) mode



### Constant Voltage (CV) mode



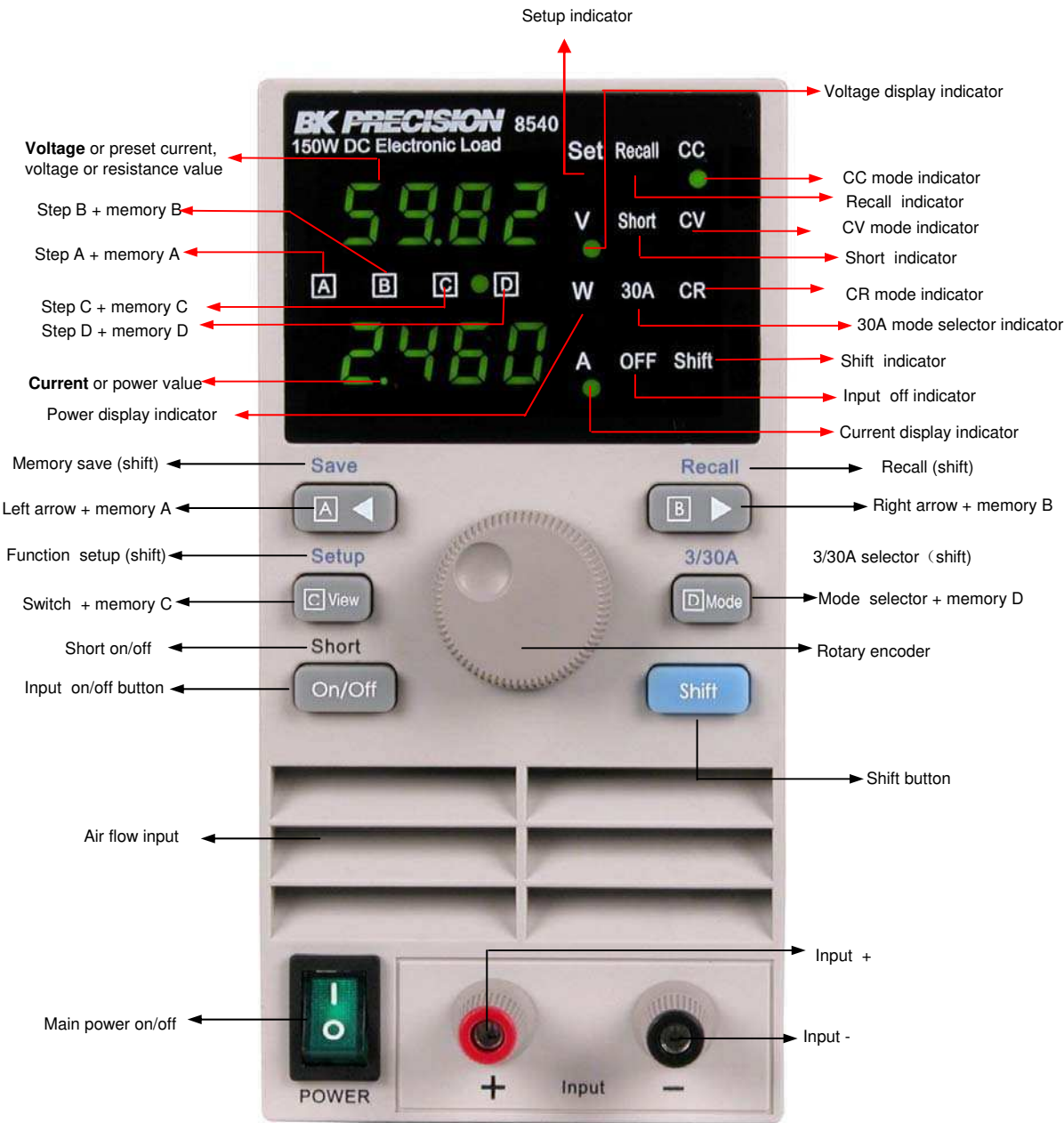
### Constant Resistance (CR) mode



## Features

- Full digital control
- 1mV /1mA measurement resolution
- Compact size
- Bright, readable LED display
- Operating modes: CC/CV/CR
- Input on/off control
- High reliability due to OCP/OVP (over current, over voltage) protection
- Storage for 100 groups, 4 setups each
- Easy operation

# Panel layout



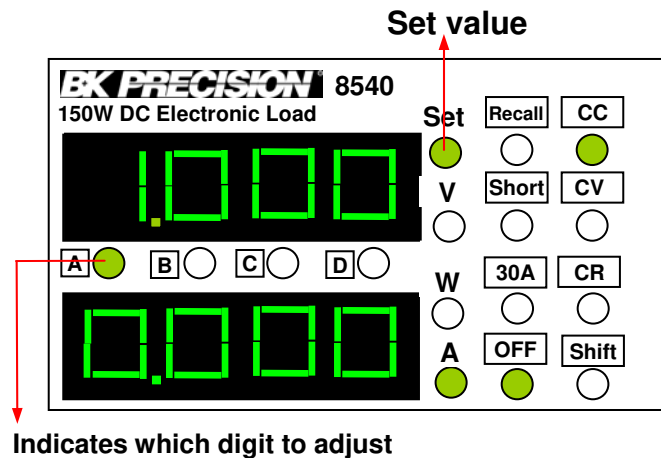
## Quick Start

Set the line voltage selector on the back panel to your local line voltage (110 VAC or 220 VAC). Then connect the power cord to the DC load and a wall power socket.

Turn on the power to the DC load by pressing the 1 on the power switch.

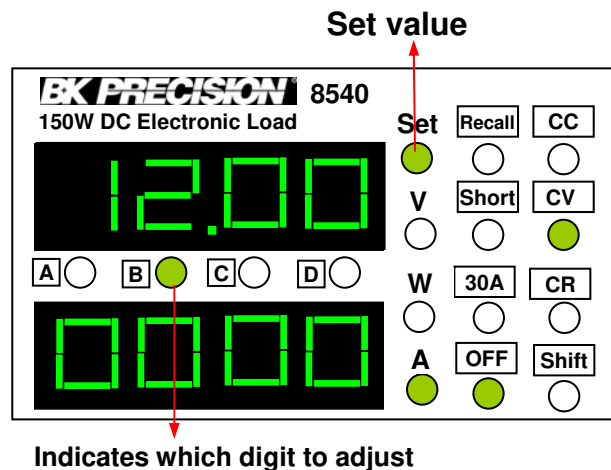
### Constant Current Mode

Press the **[D]Mode** key to turn on the CC LED. The load is now in CC mode. Set the current value by pressing the **[A]◀** or **[B]▶** keys to select the digit to adjust, then turn the knob to change its value. After setting the current value, press the **[On/Off]** key to turn the load on.



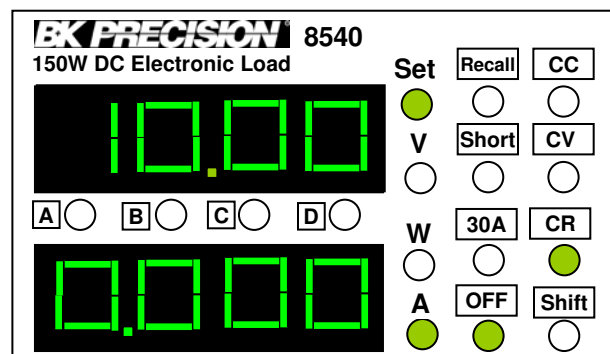
### Constant Voltage Mode

Press the **[D]Mode** key to turn on the CV LED. The load is now in CV mode. Set the voltage value by pressing the **[A]◀** or **[B]▶** keys to select the digit to adjust, then turn the knob to change its value. After setting the voltage value, press the **[On/Off]** key to turn the load on.



### Constant Resistance Mode

Press the **[D]Mode** key to turn on the CR LED. The load is now in CR mode. Set the resistance value by pressing the **[A]◀** or **[B]▶** keys to select the digit to adjust, then turn the knob. After setting the voltage value, press the **[On/Off]** key to turn the load on.

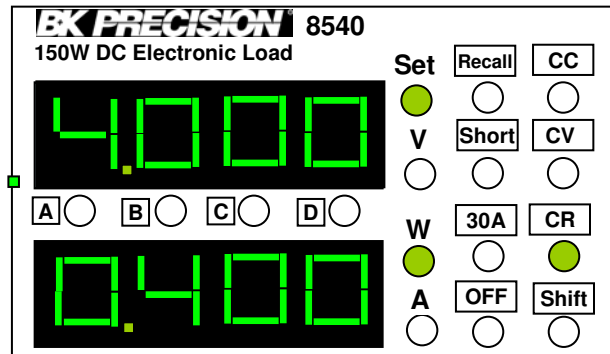


## Input on/off

The load can be toggled on and off by pressing the **On/Off** key. The programmed setting is not affected. The OFF LED will be lit when the load is off.

## Change the displayed values

The electronic load usually displays the actual voltage and current values. Press the **View** key to display the preset voltage, current or resistance value and the actual power. Press the **View** key again to return to the current/voltage display.

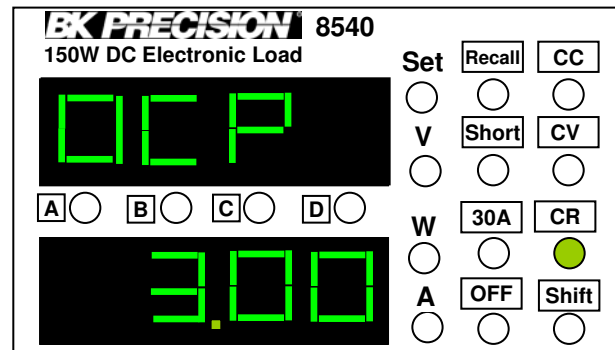


## OCP function

Press the **Shift** key, then press the **View** key. The display will show OCP (Over Current Protection). This is the maximum current that will be allowed. Use the **A** and **B** keys and the knob to set the value.

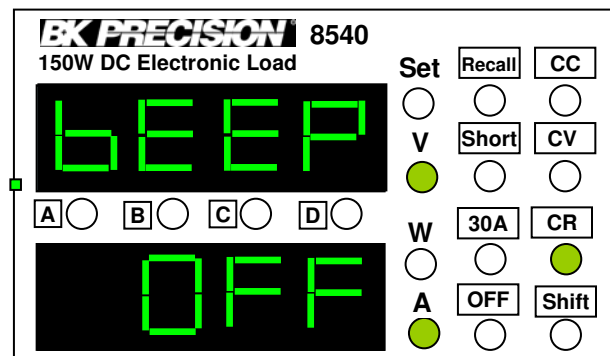
### NOTE

The input of the electronic load will be turned off automatically if the OCP value is lower than the actual current value. The default OCP setting is 30 A.



## Key sound

Press **View** again to turn the key sound ON or OFF (bEEP). Use the rotary knob to make your selection.

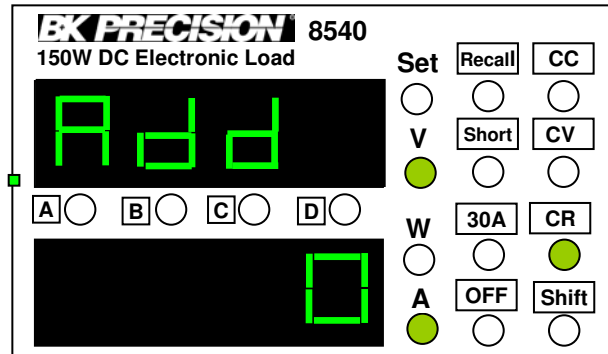




## Set address

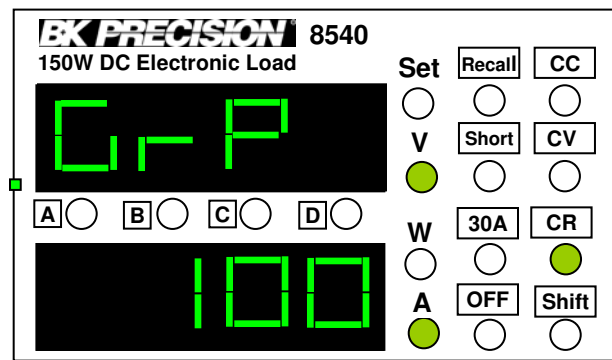
Press **[C View]** twice to skip the address menu and advance to the next menu.

Note: This setting is for factory use only and should be ignored.



## Choose Storage Group

Press the **[C View]** key to see the storage group (GrP) setting. Use the **[A◀]** and **[B▶]** keys and knob to choose the storage group. Each group can store four instrument settings. (see storage operation). Press the **[C View]** key to confirm selection of the displayed storage group. There are 100 groups that can be stored.



## Store Operation

To save the load's settings to a register (internal memory), press the **[Shift]** and **[A◀]** (**Save**) keys. The **[A]** **[B]** **[C]** **[D]** LEDs will blink together.

Press the **[A◀]** or **[B▶]** or **[C View]** or **[D Mode]** keys to save the settings to non volatile memory. Note you may do this for any of the 100 different groups assigned in the previous paragraph (Choose Storage Group).

## Recall Operation

Press the **[Shift]** and **[B▶]** (**Recall**) keys. The Recall LED will turn on, which means you may recall settings from the currently-chosen group. Press the **[A◀]** or **[B▶]** or **[C View]** or **[D Mode]** keys to recall the desired setting. When the Recall LED is lit, the other keys are disabled. To exit the recall state, press the **[Shift]** and **[B▶]** (**Recall**) keys again.

## Short

When the **[Shift]** + **[On/Off]** keys are pressed, the load simulates a short circuit. In CC and CR modes, the maximum short-circuit current value is 1.2 times the current range. In CV mode, the short-circuit current is the same as setting the CV operation to 0.1 V. Note that the short-circuit current in CV mode will be less than the short-circuit current in CC or CR modes.

## Current range switch (3/30 A)

The **Shift** and **D Mode** keys switch between the 3 A and 30 A ranges. The 30A LED is lit when the load is on the 30 A range. The current resolution is 10 mA for the 30 A range and 1 mA for the 3 A range.

## Checking the set value

The electronic load usually displays the actual voltage and current values at the load's terminals. To check the set value, press the **A◀** or **B▶** keys. The set value display will blink, showing you the currently-set value. You can use the knob to change it. It will stop blinking after 3 seconds and revert to the previous display. You can also turn the knob to see the set value.

## Knob incremental values

The following table shows the incremental changes in the set value when the knob is turned corresponding to which "cursor" LED is lit.

Cursor position	Voltage Increment	Current Increment		Resistance Increment	
		Range	Increment	Range	Increment
<b>A</b>	10 V	0-3 A	1 A	0.1-10 Ω	1 Ω
				10-99 Ω	10 Ω
		0-30 A	10 A	100-999 Ω	100 Ω
				1000-4000 Ω	1000 Ω
<b>B</b>	1 V	0-3 A	0.1 A	0.1-10 Ω	0.1 Ω
				10-99 Ω	1 Ω
		0-30 A	1 A	100-999 Ω	10 Ω
				1000-4000 Ω	100 Ω
<b>C</b>	0.1 V	0-3 A	0.01 A	0.1-10 Ω	0.01 Ω
				10-99 Ω	0.1 Ω
		0-30 A	0.1 A	100-999 Ω	1 Ω
				1000-4000 Ω	10 Ω
<b>D</b>	0.01 V	0-3 A	0.001 A	0.1-10 Ω	0.001 Ω
				10-99 Ω	0.01 Ω
		0-30 A	0.01 A	100-999 Ω	0.1 Ω
				1000-4000 Ω	1 Ω

# Specifications

Parameter		8540	
Input rating ( 0 - 40 °C )	Voltage	0 – 60 V	
	Current	1 mA – 30 A	
	Power	150 W	
Load Regulation	Range	Accuracy	Resolution
	0-10 V	$\pm(0.05\%+0.1\%FS)$	1 mV
	0-60 V	$\pm(0.05\%+0.1\%FS)$	10 mV
	0-3 A	$\pm(0.1\%+0.1\%FS)$	1 mA
	0-30 A	$\pm(0.1\%+0.15\%FS)$	10 mA
CV Mode Regulation	0.1-60 V	$\pm(0.05\%+0.1\%FS)$	10 mV
CC Mode Regulation	0-3 A	$\pm(0.1\%+0.1\%FS)$	1 mA
	0-30 A	$\pm(0.1\%+0.15\%FS)$	10 mA
CR Mode Regulation	0.1-10 $\Omega$	$\pm(1\%+0.8\%FS)$	0.001 $\Omega$
	10-99 $\Omega$	$\pm(1\%+0.8\%FS)$	0.01 $\Omega$
	100-999 $\Omega$	$\pm(1\%+0.8\%FS)$	0.1 $\Omega$
	1K-4K $\Omega$	$\pm(1\%+0.8\%FS)$	1 $\Omega$
Current Measurement	0-3 A	$\pm(0.1\% + 0.1\%FS)$	1 mA
	0-30 A	$\pm(0.1\% + 0.15\%FS)$	10 mA
Voltage Measurement	0-10 V	$\pm(0.05\% + 0.1\%FS)$	1 mV
	0-60 V	$\pm(0.05\% + 0.1\%FS)$	10 mV
Power Measurement	0-10 W	$\pm(1\%+0.5\%FS)$	1 mW
	10-99 W	$\pm(1\%+0.5\%FS)$	10 mW
	100-150 W	$\pm(1\%+0.5\%FS)$	100 mW
Dimension ( W x H x D )	88 x 175 x 282 mm 3.5 x 6.9 x 11.10 inches		
Weight (net)	2.7 kg 6 pounds		

Specifications and information are subject to change without notice. Please visit [www.bkprecision.com](http://www.bkprecision.com) for the most current product information.

# Warranty

## Service Information

**Warranty Service:** Please go to the service and support section on our website [www.bkprecision.com](http://www.bkprecision.com) to obtain a RMA #. Return the product in the original packaging with proof of purchase to the address below. Clearly state on the RMA the performance problem and return any leads, probes, connectors and accessories that you are using with the device.

**Non-Warranty Service:** Please go to the service and support section on our website [www.bkprecision.com](http://www.bkprecision.com) to obtain a RMA #. Return the product in the original packaging to the address below. Clearly state on the RMA the performance problem and return any leads, probes, connectors and accessories that you are using with the device. Customers not on an open account must include payment in the form of a money order or credit card. For the most current repair charges please refer to the service and support section on our website.

Return all merchandise to B&K Precision Corp. with pre-paid shipping. The flat-rate repair charge for Non-Warranty Service does not include return shipping. Return shipping to locations in North America is included for Warranty Service. For overnight shipments and non-North American shipping fees please contact B&K Precision Corp.

B&K Precision Corp.  
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Yorba Linda, CA 92887  
[www.bkprecision.com](http://www.bkprecision.com)  
714-921-9095

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

## Limited One-Year Warranty

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

B&K Precision Corp. will, without charge, repair or replace, at its option, the defective product or its component parts. The returned product must be accompanied by proof of the purchase date in the form of a sales receipt.

To obtain warranty coverage in the U.S.A., this product must be registered by completing a warranty registration form on [www.bkprecision.com](http://www.bkprecision.com) within fifteen (15) days of purchase.

**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. The warranty is void if the serial number is altered, defaced or removed.**

B&K Precision Corp. shall not be liable for any consequential damages, including without limitation damages resulting from loss of use. Some states do not allow limitations 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.

B&K Precision Corp.  
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