

# INSTRUCTION MANUAL

## Model 1682A

13.8 VOLT

12 AMP

DC POWER SUPPLY

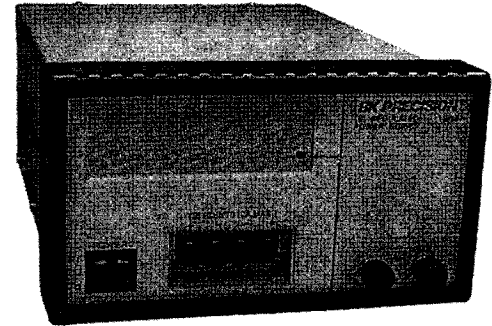


**B&K Precision Corporation**  
22820 Savi Ranch Parkway  
Yorba Linda, California 92887  
[www.bkprecision.com](http://www.bkprecision.com)

©2002 B&K Precision Corporation

481-372-9-001

Printed in China  
7673-9812-1010



# MAINTENANCE

## WARNING

*The following instructions are for use by qualified personnel only. To avoid electrical shock, do not perform any servicing other than contained in the operating instructions unless you are qualified to do so.*

### FUSE REPLACEMENT

If the fuse blows, the power ON LED indicator will not light and the power supply will not operate. The fuse should not normally open unless a problem has developed in the unit. Try to determine and correct the cause of the blown fuse, then replace only with a fuse of the correct rating. The fuse is located on the rear panel (Fig. 2).

LINE VOLTAGE 115/230 VAC

FUSE VALUE 5A/2.5A

### LINE VOLTAGE CONVERSION

The primary winding of the power transformer is tapped to permit operation from 120 or 220 VAC 50/60 Hz line voltage. Conversion from one line voltage to another is done by simply changing the position of the Line Voltage Select switch located on the bottom of the chassis. To convert to a different line voltage, perform the following procedure.

1. Make sure the power cord is unplugged.
2. Turn the unit over (bottom up) and reset the Line Voltage Select switch for the desired line voltage, **115V or 230V**.
3. A change in line voltage will also require a corresponding change of fuse value. Install the correct fuse value as listed in the FUSE REPLACEMENT paragraph in this section

### INSTRUMENT REPAIR SERVICE

Because of the specialized skills and test equipment required for instrument repair and calibration, many customers prefer to rely upon **B+K Precision** for this service. We maintain a network of **B+K Precision** authorized service agencies for this purpose. To use this service, even if the instrument is no longer under warranty, follow the instructions given in the WARRANTY SERVICE INSTRUCTIONS section of this manual. There is a nominal charge for instruments out of warranty.

B+K Precision offers courteous, professional technical support services before and after the sale of their test instruments. The following services are typical of those available from our toll-free telephone number:

- Technical advice on the use of your instrument
- Technical advice on special applications of your instrument
- Technical advice on selecting the best instrument for a given task
- Information on optional accessories for your instrument
- Replacement parts ordering
- Information on other **B+K Precision** instruments
- Requests for a new **B+K Precision** catalog
- The name of your nearest **B+K Precision** distributor

Call Toll-Free 1-800-462-9832  
Monday thru Friday 8:00 AM to 5:00 PM

## **WARRANTY SERVICE INSTRUCTIONS** **(For U.S.A. and its Overseas Territories)**

1. Refer to the MAINTENANCE section of your **B+K Precision** instruction manual for adjustments that may be applicable.
2. If the above-mentioned does not correct the problem you are experiencing with your unit, pack it securely (preferable in the original carton or double-packed).
3. Enclose a letter describing the problem and include your name and address.
4. Enclose proof of purchase date, that is, a dated copy of the sales receipt.
5. Deliver to, or ship PREPAID (UPS preferred in U.S.A.) to the nearest **B+K Precision** authorized service agency (see list enclosed with unit).

If your list of authorized **B+K Precision** service agencies has been misplaced, contact your distributor for the name of your nearest service agency, or write to:

**B&K Precision Corporation**  
22820 Savi Ranch Parkway  
Yorba Linda, California 92887  
www.bkprecision.com  
(800) 462-9832

Also use this information for technical  
and replacement parts inquires

## **Limited One-Year Warranty**

B&K Precision Corp. 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 one year from the date of purchase.

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

To obtain warranty coverage in the U.S.A., this product must be registered by completing and mailing the enclosed warranty card to B&K Precision Corp., 22820 Savi Ranch Parkway – Yorba Linda, CA 92887 within fifteen (15) days from proof of purchase.

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

# MAINTENANCE

## WARNING

*The following instructions are for use by qualified personnel only. To avoid electrical shock, do not perform any servicing other than contained in the operating instructions unless you are qualified to do so.*

### FUSE REPLACEMENT

If the fuse blows, the power ON LED indicator will not light and the power supply will not operate. The fuse should not normally open unless a problem has developed in the unit. Try to determine and correct the cause of the blown fuse, then replace only with a fuse of the correct rating. The fuse is located on the rear panel (Fig. 2).

LINE VOLTAGE 115/230 VAC

FUSE VALUE 5A/2.5A

### LINE VOLTAGE CONVERSION

The primary winding of the power transformer is tapped to permit operation from 120 or 220 VAC 50/60 Hz line voltage. Conversion from one line voltage to another is done by simply changing the position of the Line Voltage Select switch located on the bottom of the chassis. To convert to a different line voltage, perform the following procedure.

1. Make sure the power cord is unplugged.
2. Turn the unit over (bottom up) and reset the Line Voltage Select switch for the desired line voltage, **115V or 230V**.
3. A change in line voltage will also require a corresponding change of fuse value. Install the correct fuse value as listed in the FUSE REPLACEMENT paragraph in this section.

### INSTRUMENT REPAIR SERVICE

Because of the specialized skills and test equipment required for instrument repair and calibration, many customers prefer to rely upon **B+K Precision** for this service. We maintain a network of **B+K Precision** authorized service agencies for this purpose. To use this service, even if the instrument is no longer under warranty, follow the instructions given in the WARRANTY SERVICE INSTRUCTIONS section of this manual. There is a nominal charge for instruments out of warranty.

# TEST INSTRUMENT SAFETY

## WARNING

An electrical shock causing 10 milliamps of current to pass through the heart will stop most human heartbeats. Voltage as low as 35 volts dc or ac rms should be considered dangerous and hazardous since it can produce a lethal current under certain conditions.

1. There is little danger of electrical shock from the dc output of this power supply. However, if the equipment under test uses high voltage in any of its circuits, a shock hazard may be present.
2. Use only a polarized 3-wire ac outlet. This assures that the power supply chassis, case, and ground terminal are connected to a good earth ground and reduces danger from electrical shock

## INTRODUCTION

The **B+K Precision** Model 1682 DC Power Supply has a regulated output of 13.8 volts DC, which is the same voltage as an automotive electrical system when the engine is running and the battery is charging. Thus, it is ideal for powering automotive accessories when removed from the vehicle. Applications include displaying, demonstrating, and servicing of electronic automotive equipment such as stereo sound systems, cellular telephones, CB radios, mobile two-way radios, and vehicular alarm systems. The 12-amp continuous and 15-amp peak output current should be sufficient for all such devices except ultra high power sound systems and high power two-way radios. This manual provides the information to assure the maximum performance and longest life for your power supply.

# CONTROLS A

1. **POWER Switch.** Turns power supply on and off. Power on indicated by pilot lamp above switch.
2. **POWER ON Indicator.** Lights when power is turned on.
3. **OVERLOAD Indicator.** Lights when overload condition exists.
4. **OUTPUT + Terminal (red).** Positive polarity output terminal.
5. **OUTPUT - Terminal (black).** Negative polarity output terminal.
6. **TIE POINTS + and - (2 A MAX).** Red terminals are +, Black terminals are -. Load must not exceed 2 amperes.
7. **Voltage Select Switch(bottom of unit).** Sets input for 115VAC 60Hz. or 230VAC 50Hz.
8. **Line Cord.**
9. **Fuse.**
10. **Fan.**

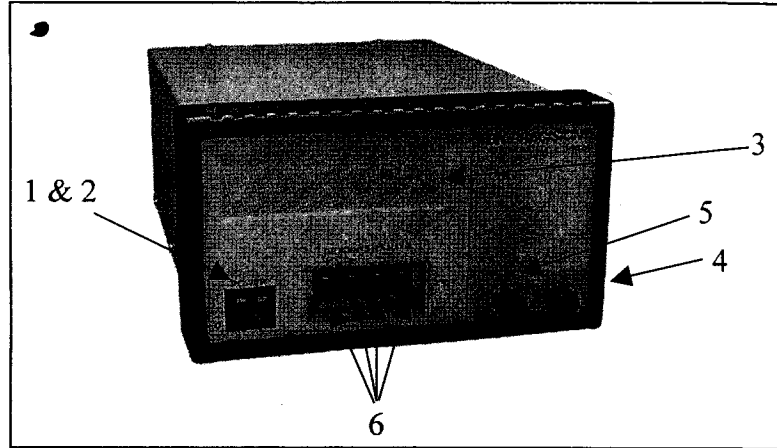


Figure 1  
Front Panel Controls and Indicators, Model 1682

## SAFETY PRECAUTIONS

### WARNING

The following precautions must be observed to help prevent electric shock

1. Use only a polarized 3-wire outlet. This assures that the power supply chassis and case are connected to a good earth ground and reduces danger of electrical shock.
2. There is little danger of electric shock from the power supply output, which produces a maximum of 13.8 volts dc. However, there may be great danger of electrical shock if the power supply output is connected to an external high voltage. Some equipment being powered may contain high voltage and present a shock hazard. Observe caution. If the power supply output is floated (referenced to a voltage rather than earth ground) turn off the power supply and the equipment under test when making connections. Never float the power supply to a voltage greater than 100 volts peak with respect to ground.

## EQUIPMENT PROTECTION PRECAUTIONS

### CAUTION

The following precautions will help avoid damage to the power supply:

1. Avoid using the power supply in ambient temperatures above +40°C (104°F). Always allow sufficient air space around the fan opening at the rear of the power supply and the top and side vent openings for effective air flow to prevent internal heat build-up. Typically a two inch space at the sides, as well as a six inch space at the top and rear of the power supply is adequate. DO NOT block the fan opening at the rear of the power supply or the vent on top of the power supply.
2. Avoid overloading the power supply. The unit will provide 12 amps continuous and up to 15 amps peak. Do not operate at greater than 12 amps for more than 10 minutes initially, then allow 10 minutes for cooling before operating again for a 5 minute period. Overloading will burn out the power supply.
3. Make certain that hook-up is as intended before turning power supply on. Incorrect polarity may damage the equipment being powered.

## POWER SUPPLY HOOK-UP AND OPERATION

1. Turn off the power supply and equipment being powered.

### NOTE

Use solid copper hook-up wire with a minimum diameter of 12 AWG. Using smaller wire may result in overheating of the hook-up leads, and increases the source resistance "seen" by the load, thereby derating the maximum current and regulation capabilities of the power supply. Tighten connections snugly to assure low resistance.

2. Connect the red (+) OUTPUT terminal of the power supply to the positive polarity input of the equipment being powered.

### NOTE

The clip type TIE POINT terminals can be used to attach equipment requiring a maximum of 2 amps. Be sure to observe polarity when connecting equipment

## OPERATING INSTRUCTIONS

3. Connect the black (-) OUTPUT terminal of the power supply to the negative polarity input of the equipment being powered.
4. Place the POWER switch in the On position, the ON indicator should illuminate.
5. Turn on the equipment being powered

## PROTECTING AGAINST OVERLOAD

### CAUTION

Overloading the power supply may burn it out. This is considered misuse and damage caused by overloading is not covered under warranty. Heed the following precautions to prevent overload.

### A. Severe Overloads

The power supply is self protected against severe overload such as accidental short circuits of the output terminals, connection to defective (shorted) equipment, or loads that require more than 15 amps. In such cases OVERLOAD light will be lit. The output voltage will drop significantly below 13.8 volts and the POWER LED indicator will go off. This condition can be further verified by measuring the output voltage as shown in Fig. 3.

### B. Moderate Overload

The Model 1682 provides 12 amps continuous and 15 to 16 amps peak. Overloads of greater than 12 amps but less than 16 amps are the greatest risk to burnout. The equipment being powered will operate normally, and the OVERLOAD indicator will not light, but the power supply may overheat. Connecting an ammeter in series with the load as shown in Fig. 4 permits measurement of unknown loads.

Another rule of thumb method to prevent overloading is to periodically check the temperature of the power supply heatsink. The cooling fan will permit the initial overload for 10 minutes. Subsequently, the load should be removed for 10 minute intervals and reconnected for 5 minute intervals. If the power supply "smells" hot or the heat sink is too hot to touch (exceeds 100°C or 200°F), it should be cooled by removing the load.

An overload of about 15 or 16 amps may cause loss of regulation and extremely high ripple in the output. High ripple will produce a loud buzz in most audio equipment or electronic products with a speaker. If you hear a loud buzz, you need to reduce the load or use a power supply with a higher current rating.

## MEASURING OUTPUT VOLTAGE

The output voltage with the load connected, can be measured by connecting a multimeter across the power supply TIEPOINT terminals as shown in Fig. 3. Be sure multimeter is set to a voltage range to measure 13.8 VDC

## MEASURING OUTPUT CURRENT

The output current with the load connected, can be measured by connecting a multimeter in series with the load as shown in Fig. 4. Be sure multimeter is set to a range sufficient to measure the maximum current.

# VD INDICATORS

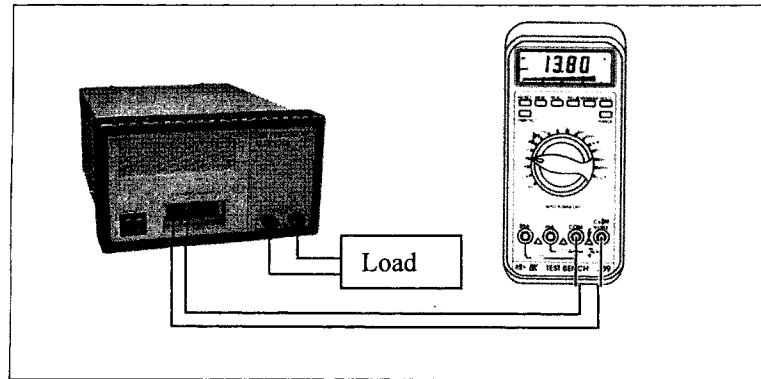
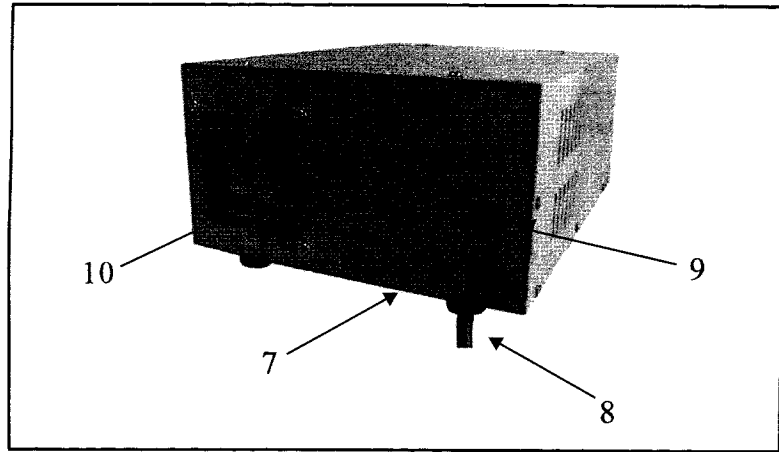


Figure 3  
Measuring Output Voltage

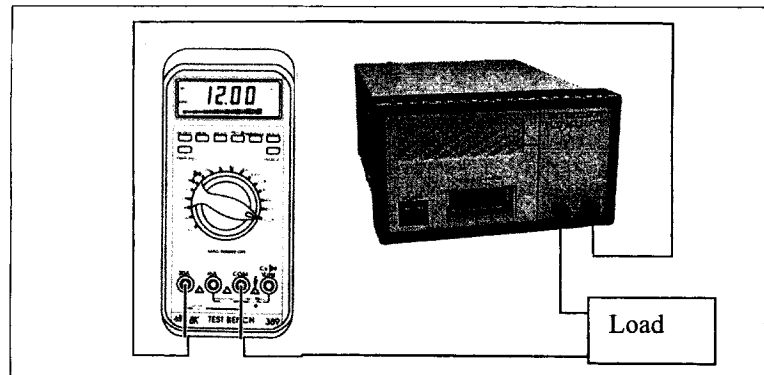


Figure 4  
Measuring Output Current