

ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

Artisan Technology Group
(217) 352-9330 | sales@artisantg.com | artisantg.com

Full-service, independent repair center
with experienced engineers and technicians on staff.

We buy your excess, underutilized, and idle equipment
along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

Expert team | Trust guarantee | 100% satisfaction

All trademarks, brand names, and brands appearing herein are the property of their respective owners.

Visit our website - *Click HERE*

BK PRECISION

Model **1672, 1673**

Triple Output Power Supply

INSTRUCTION MANUAL



1 Safety Summary

The following safety precautions apply to both operating and maintenance personnel and must be observed during all phases of operation, service, and repair of this instrument. Before applying power, follow the installation instructions and become familiar with the operating instructions for this instrument.

GROUND THE INSTRUMENT

To minimize shock hazard, the instrument chassis and cabinet must be connected to an electrical ground. This instrument is grounded through the ground conductor of the supplied, three-conductor ac power cable. The power cable must be plugged into an approved three-conductor electrical outlet. Do not alter the ground connection. Without the protective ground connection, all accessible conductive parts (including control knobs) can render an electric shock. The power jack and mating plug of the power cable meet IEC safety standards.

DO NOT OPERATE IN AN EXPLOSIVE ATMOSPHERE

Do not operate the instrument in the presence of flammable gases or fumes. Operation of any electrical instrument in such an environment constitutes a definite safety hazard.

KEEP AWAY FROM LIVE CIRCUITS

Instrument covers must not be removed by operating personnel. Component replacement and internal adjustments must be made by qualified maintenance personnel. Disconnect the power cord before removing the instrument covers and replacing components. Under certain conditions, even with the power cable removed, dangerous voltages may exist. To avoid injuries, always disconnect power and discharge circuits before touching them.

DO NOT SERVICE OR ADJUST ALONE

Do not attempt any internal service or adjustment unless another person, capable of rendering first aid and resuscitation, is present.

DO NOT SUBSTITUTE PARTS OR MODIFY THE INSTRUMENT

Do not install substitute parts or perform any unauthorized modifications to this instrument. Return the instrument to B&K Precision for service and repair to ensure that safety features are maintained.

WARNINGS AND CAUTIONS

WARNING and ***CAUTION*** statements, such as the following examples, denote a hazard and appear throughout this manual. Follow all instructions contained in these statements.

A ***WARNING*** statement calls attention to an operating procedure, practice, or condition, which, if not followed correctly, could result in injury or death to personnel.

A ***CAUTION*** statement calls attention to an operating procedure, practice, or condition, which, if not followed correctly, could result in damage to or destruction of parts or the entire product.

WARNING: ***Do not alter the ground connection. Without the protective ground connection, all accessible conductive parts (including control knobs) can render an electric shock. The power jack and mating plug of the power cable meet IEC safety standards.***

WARNING: ***To avoid electrical shock hazard, disconnect power cord before removing covers. Refer servicing to qualified personnel.***

CAUTION: ***Before connecting the line cord to the AC mains, check the rear panel AC line voltage indicator. Applying a line voltage other than the indicated voltage can destroy the AC line fuses. For continued fire protection, replace fuses only with those of the specified voltage and current ratings.***

CAUTION: ***This product uses components which can be damaged by electro-static discharge (ESD). To avoid damage, be sure to follow proper procedures for handling, storing and transporting parts and subassemblies which contain ESD-sensitive components.***

SAFETY SYMBOL



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



Electrical shock hazard.



Chassis ground symbol.

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.

Table of Contents

1 Safety Summary 1

2 Introduction 5

3 Installation 5

3.1 Initial Inspection 5

3.2 Input Power Requirements 6

3.3 Location 6

4 Controls and Indicators 7

4.1 Front Panel 7

4.2 Rear Panel 8

5 Operating Instructions 9

5.1 Setting the Output Voltage and Output Current 9

5.2 Constant Voltage (CV) /Constant Current (CC) Mode 9

5.3 System Configuration 10

5.3.1 Independent Mode 10

5.3.2 Series Tracking Mode 10

5.3.3 Parallel Tracking Mode 11

5.3.4 Multiple Units in Series Mode 12

5.3.5 Multiple Units in Parallel Mode 13

5.3.6 Fixed 5V/3A Output 14

6 Specifications 15

7 Maintenance 16

7.1 Preventive Steps 16

7.2 When the Unit is Not Turning On 17

7.3 Fuse Replacement 17

8 Service Information 18

9 Limited Two-Year Warranty 19

2 Introduction

Description
B&K Precision's 1672 and 1673 triple output DC power supplies provide two variable outputs (0 – 32V/ 0 – 3A [model 1672], 0-6A [model 1673]) and one fixed output (5V/3A). The variable outputs can work independently, in series tracking, or parallel mode. Conveniently adjust voltage and current with independent front panel knobs and bright quad display. These power supplies are ideally suited for applications in electronic test, production, and service, where multiple independent DC power supplies are required and bench space is at a premium.

Features

- Three independent outputs
- Individual control of voltage and current controls for variable outputs
- CV (constant voltage)/CC (constant current) mode operation
- Separate 3-digit displays for voltage and current for variable outputs
- LED indication for CV/CC mode
- Overload indication LED for fixed output
- Series tracking and parallel mode operation
- Power On/Off switch on front panel
- Input voltage selection on rear side (115 Vac/ 230 Vac)

3 Installation

3.1 Initial Inspection

This unit is tested prior to shipment. It is therefore ready for immediate use upon receipt. The initial physical inspections should be made to ensure that no damage has been sustained during shipment.

Inspect the packing box on receipt for any external damage. If any external damage is evident, remove the instrument and visually inspect its case and parts for any damage. If damage to the instrument is evident, a description of the damage should be noted on the carrier's receipt and signed by the driver or carrier agent. Save all shipping packaging for inspection. Forward a report of any damage to the agent through which the unit is procured.

Retain the original packing in case subsequent repackaging for return is required. Use of the original packing is essential.

After the mechanical inspection, verify the contents of the shipment. The items included with the instrument are:

- Power cord
- Instruction manual
- Pair of test leads (x2)

If the contents are incomplete, or if the instrument does not pass the specification acceptance tests, notify the local service center.

3.2 Input Power Requirements

The instrument can operate on 115 V or 230 V AC source at 50 or 60 Hz. The line selector plug on the rear panel allows you to select the line voltage. Before connecting the power plug to an AC line outlet, be sure to check that voltage selector plug is set in the correct position corresponding to the line voltage in your location and the fuse rating is as shown in the table.

Selector	Line Voltage	Fuse	
115V	100 ~ 125V 50/60 Hz	6A (model 1672)	10A (model 1673)
230V	220 ~ 240V 50/60 Hz	3A (model 1672)	6A (model 1673)

Figure 1 – Fuse Table

3.3 Location

Before applying power to unit, make sure that input voltage setting is correct and the ventilation holes are not blocked. Ensure that the ventilation fan located on the rear panel is working well (it should turn on when powered on). Do not load the output if ventilation fan is not working otherwise it may cause the power supply to overheat.

4 Controls and Indicators

4.1 Front Panel

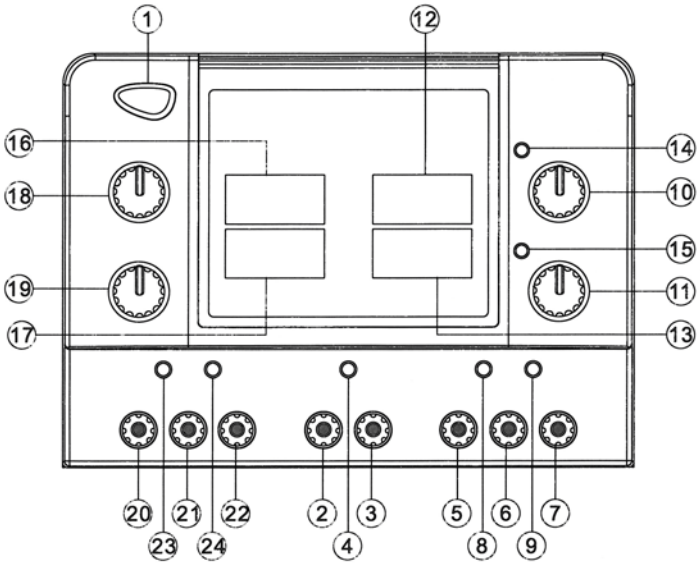


Figure 2 – Front Panel

---

1) Power switch
2) Negative output terminal of the fixed 5V/3A output
3) Positive output terminal of the fixed 5V/3A output
4) Overload indicator LED for fixed 5V/3A output
5) Negative output terminal of the master output
6) Ground terminal of the master output
7) Positive output terminal of the master output
8) CC mode LED for the master to indicate constant current
9) CV mode LED for the master to indicate constant voltage
10) Master voltage adjustment knob with push/pull switch mechanism for series tracking mode operation
11) Master current adjustment knob with push/pull switch mechanism for parallel mode operation
12) Master voltage indicator display (3-digit green 0.56" LED)

13) Master current indicator display (3-digit red 0.56” LED)
14) Series mode indicator LED
15) Parallel mode indicator LED
16) Slave voltage indicator display (3-digit green 0.56” LED)
17) Slave current indicator display (3-digit red 0.56” LED)
18) Voltage adjustment knob for adjusting slave output voltage when master power is in CV mode
19) Current adjustment knob for adjusting slave output current when master power is in CC mode
20) Negative output terminal of the slave output
21) Ground terminal of the slave output
22) Positive output terminal of the slave output
23) CC mode LED for the slave to indicate constant current
24) CV mode LED for the master to indicate constant voltage

4.2 Rear Panel

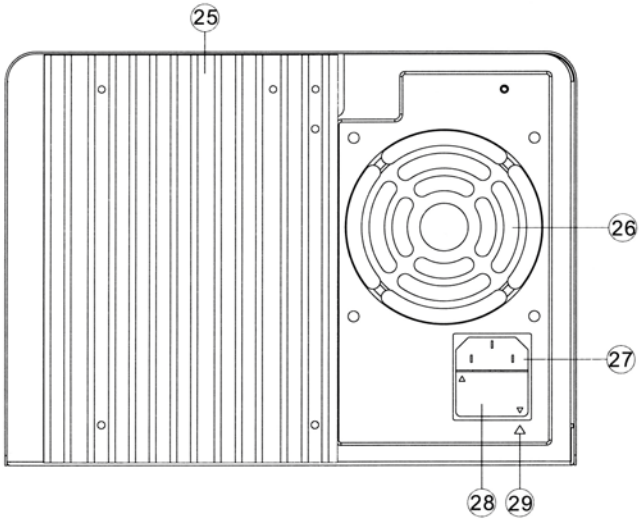


Figure 3 – Rear Panel

---

25) Heat sink for dissipating the heat of power devices
26) Fan ventilation (80mm 12V DC Fan)
27) Power input socket
28) Fuse holder and input line selector
29) Input line voltage indicator (refer to ▽ mark)

5 Operating Instructions

5.1 Setting the Output Voltage and Output Current

1. As per load requirement, calculate the voltage and maximum current limit to be set on output. Note: V=IR
2. Disconnect the load from output terminals.
3. For current limit adjustment, turn the current adjustment knob counter-clockwise to get minimum current output.
4 Short the circuit between the positive and negative output terminals by the accessory leads.
5. Vary the current adjustment knob clockwise until the current displays the required current limit. The CC LED will be lit while adjusting the current limit. Remove the accessory lead after current limit adjustment.
6. The voltage will be displayed again and the CV LED will be lit.
7. Vary the voltage adjustment knob to get the desired output voltage on the display.

Depending on load condition, the power supply will work either in CV or in CC mode. The automatic changeover is indicated by the CV / CC LEDs.

5.2 Constant Voltage (CV) /Constant Current (CC) Mode

The working characteristic of this power supply is called a constant voltage/constant current automatic crossover type. This permits continuous transition from constant current to constant voltage modes in response to the load change. The intersection of constant voltage and constant current modes is called the crossover point. Figure 4 shows the relationship between this crossover point and the load.

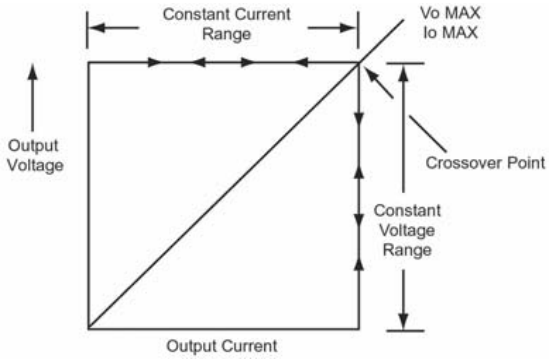


Figure 4 – CC/CV Characteristic

For example, if the load is such that the power supply is operating in the constant voltage mode, a regulated output voltage is provided. The output voltage remains constant as the load increases, up until the point where the preset current limit is reached. At that point, the output current becomes constant and the output voltage drops in proportion to further increases in load. The crossover point is indicated by the front panel LED indicators. The crossover point is reached when the CV indicator goes off and the CC indicator comes on. Similarly, crossover from the constant current to the constant voltage mode automatically occurs from a decrease in load.

5.3 System Configuration

Models 1672 and 1673 have two variable outputs, which can work independently, in series tracking mode, or parallel mode with pull and push switch arrangements provided by the master voltage and current control knobs. Users can also connect multiple units in series or parallel mode to increase their voltage or current.

5.3.1 Independent Mode

Ensure the master voltage and current control knobs are in the push condition to operate the variable outputs independently. Connect the appropriate load between the positive and negative terminal.

5.3.2 Series Tracking Mode

In this mode, the negative output terminal of the master gets connected internally to the positive output terminal of the slave.

1. Pull the voltage adjustment knob of the master. The green LED will light up to indicate series tracking mode.
2. Set output voltage with the voltage adjustment knob of the master. The display of the master shows half the voltage of the actual output available across the positive output terminal of the master and the negative output terminal of the slave.

The output is available across the positive output terminal of the master and the negative output terminal of the slave.



Figure 5 – Series Tracking Mode Load Connection

5.3.3 Parallel Tracking Mode

In this mode, the positive output terminal of the master gets connected internally to the positive output terminal of the slave and the negative output terminal of the master gets connected to the negative output terminal of the slave. The output voltage will be the same as the master set value and the output current is twice the set master output current.

1. Pull the current adjustment knob of the master. The red LED and the red CC LED of the slave output will light up to indicate parallel tracking mode.
2. Turn both the slave voltage adjustment knob and current adjustment knob clockwise to maximum.
3. Set the output voltage with master voltage adjustment knob. The output current will be twice that of the set master output current.

In parallel mode of operation, connect the appropriate load between the positive terminal and negative terminal of the slave or between the positive terminal of the master and negative terminal of the slave.



Figure 6 – Parallel Tracking Mode Load Connection

5.3.4 Multiple Units in Series Mode

For achieving higher voltage, two or more units can be connected in series (Max 240V only). The output voltage of the system will be the sum of all units.

1. Set the power supplies connected in series operation under series tracking mode as described in Series Tracking mode and adjust to the same output.
2. Connect the negative of the slave output terminal of unit 1 to the positive of the master output terminal of unit 2.
3. The output shall be available across the positive of the master terminal of unit 1 and the negative of the slave terminal of unit 2.

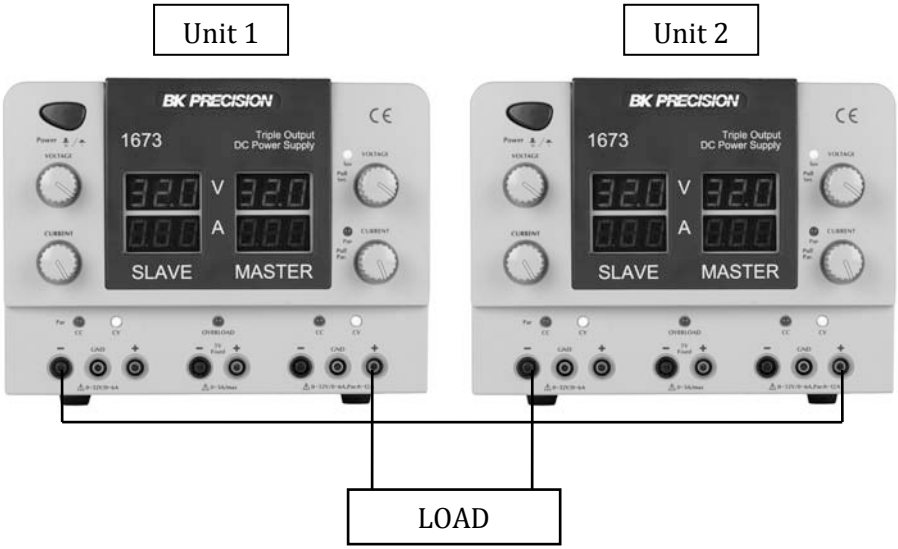


Figure 7 – Connecting Multiple Units in Series

5.3.5 Multiple Units in Parallel Mode

Two or more units can be connected in parallel to obtain a higher current output (Max 24A only).

1. Set the power supplies connected in parallel operation under parallel tracking mode as described in parallel tracking mode and adjust all units to the same output voltage.
2. Make the parallel connection of the positive and the negative terminals of the Master and Slave outputs for all units.

The output voltage of the system will be the same for all units. The output current of the system will be the sum of all units.

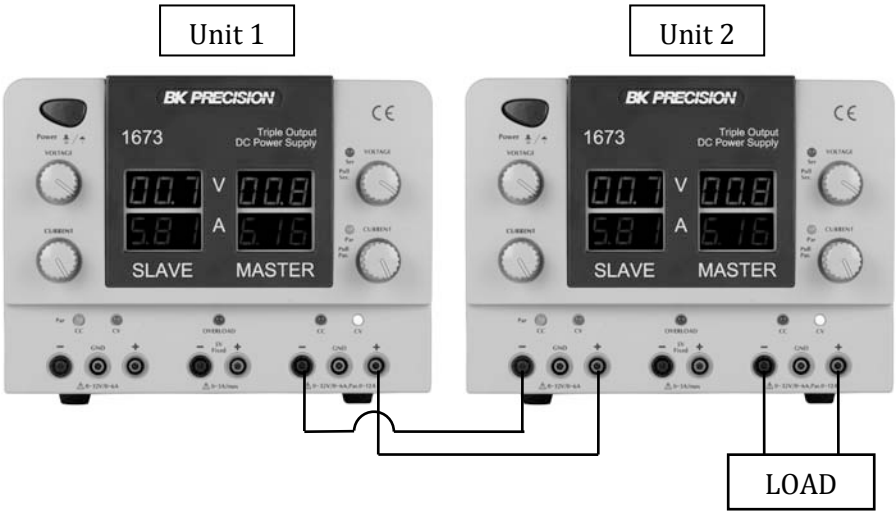


Figure 8 – Connecting Multiple Units in Parallel

5.3.6 Fixed 5V/3A Output

This is the standard 5V/ 3A power output provided for supplying the power to TTL logic circuits. When the load exceeds 3A, the red OVERLOAD LED will light up. The output voltage will be lower and the power supply will be under CC mode.

6 Specifications

	1672	1673
Output Parameters		
Number of Outputs	Three (two variable and one fixed)	
Range	0 to 32 VDC / 0 to 3 A (variable) and 5 V / 3 A (fixed)	0 to 32 VDC / 0 to 6 A (variable) and 5 V / 3 A (fixed)
Constant Voltage Mode (variable outputs)		
Line Regulation	<0.01% + 5 mV	
Load Regulation	<0.2% + 10 mV	<0.55% + 10 mV
Ripple & Noise	<1 mVrms	<1 mVrms (master) <4 mVrms (slave)
Constant Current Mode (variable outputs)		
Line Regulation	<0.2% + 5 mA	
Load Regulation	<0.2% + 8 mA	0.4% + 8 mA
Ripple & Noise	<1 mArms	
Tracking Operation		
Slave Tracking Error	< 0.5%+3 digits of the master	
5V Fixed Output		
Voltage Accuracy	5 V ± 0.25 V	
Ripple & Noise	<1 mVrms	
Display		
Voltage	3 digits 0.56" Green LED	
Current	3 digits 0.56" Red LED	
Accuracy	<0.1% + 3 digits	

General		
Power Requirements	115/230 V ± 10%, 50/60 Hz ± 10%	
Operating Temperature	50 °F to 104 °F (10 °C to 40 °C)	
Humidity	90% R.H.	
Temperature Coefficient	<300PPM / C° (voltage and current)	
Dimensions (W x H x D)	9” x 6.7” x 12.2” (230 x 170 x 310 mm)	
Weight	12.6 lbs (5.7 kg)	19.8 lbs (9.0 kg)
		Two Year Warranty
Included Accessories	Power cord, instruction manual, two pairs of test leads	

Note: All specifications apply to the unit after a temperature stabilization time of 15 minutes over an ambient temperature range of 25 °C ± 5 °C.

Specifications are subject to change without notice.

To ensure the most current version of this manual, please download the current version here: http://www.bkprecision.com/search/manual/1673

For current up-to-date product information, please visit www.bkprecision.com

7 Maintenance

7.1 Preventive Steps

Please follow these preventive steps to ensure the proper operation of your instrument.

- Never place heavy objects on the instrument.
- Never place a hot soldering iron on or near the instrument.
- Never insert wires, pins, or other metal objects into ventilation fan.
- Never move or pull the instrument with power cord or output lead. More importantly, never move the instrument when the power cord or output lead is connected.

- Do not obstruct the ventilation holes in the rear panel as this will increase the internal temperature.
- Do not operate the instrument with the cover removed unless you are a qualified service technician.
- Clean and recalibrate the instrument on a regular basis to keep the instrument looking nice and working well.
- Remove any dirt, dust, and grime whenever they become noticeable on the outside cover using a soft cloth moistened with a mild cleaning solution.

7.2 When the Unit is Not Turning On

Check if the power ON/OFF switch is turned ON. Check for blown fuse. If not, then check the power cord. Please make sure that the power cord is properly connected to the unit. Please also check the main switch and ensure that the AC supply at your site is the same as the one mentioned at the rear chassis of the unit.

7.3 Fuse Replacement

If the fuse blows, the LED will not light and the instrument will not operate. Replace only with the correct value fuse. The fuse is located on the rear panel adjacent to the power cord receptacle.

Remove the fuse holder assembly as follows:

1. Unplug the power cord from the rear of the instrument.
2. Insert a small screwdriver in the fuse holder slot (located between fuse holder and receptacle).

When reinstalling fuse holder, be sure that the fuse is installed so that the correct line voltage is selected.

8 Service Information

Warranty Service: Please go to the support and service section on our website www.bkprecision.com to obtain an 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 the support and service section on our website www.bkprecision.com to obtain an 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.
22820 Savi Ranch Parkway
Yorba Linda, CA 92887
www.bkprecision.com
714-921-9095

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

9 Limited Two-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 two years from 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 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 our website 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.
22820 Savi Ranch Parkway
Yorba Linda, CA 92887
www.bkprecision.com
714-921-9095

(Page intentionally left blank)



22820 Savi Ranch Parkway
Yorba Linda, CA 92887
www.bkprecision.com

© 2010 B&K Precision Corp.

Printed in Taiwan v112410

Artisan Technology Group is an independent supplier of quality pre-owned equipment

Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP