

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*

AC (120V) Isolated Output Module

(Catalog Number 1771-OD)

To The Installer

This document provides information on:

To	See page
Important User Information	1
Pre–installation Considerations	4
Suppression	4
Calculate Power Requirements	5
Determine Module Placement	5
Prevent Electrostatic Discharge	5
Key the Backplane Connector	6
Install the Module and Field Wiring Arm	7
Connect Wiring to the Module	8
For this reference information	**See page**
Interpreting the Status Indicators	10
Replacing a Fuse	10
Specifications	11

Important User Information

Because of the variety of uses for the products described in this publication, those responsible for the application and use of these products must satisfy themselves that all necessary steps have been taken to assure that each application and use meets all performance and safety requirements, including any applicable laws, regulations, codes and standards. In no event will Rockwell Automation be responsible or liable for indirect or consequential damage resulting from the use or application of these products.

Any illustrations, charts, sample programs, and layout examples shown in this publication are intended solely for purposes of example. Since there are many variables and requirements associated with any particular installation, Rockwell Automation does not assume responsibility or liability (to include intellectual property liability) for actual use based upon the examples shown in this publication.

Publication 1771–IN078A–EN–P – October 2002

Artisan Scientific - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisan-scientific.com

Allen–Bradley publication SGI–1.1, Safety Guidelines for Application, Installation, and Maintenance of Solid–State Control (available from your local Rockwell Automation office), describes some important differences between solid–state equipment and electromechanical devices that should be taken into consideration when applying products such as those described in this publication.

Reproduction of the contents of this copyrighted publication, in whole or part, without written permission of Rockwell Automation, is prohibited.

Throughout this publication, notes may be used to make you aware of safety considerations. The following annotations and their accompanying statements help you to identify a potential hazard, avoid a potential hazard, and recognize the consequences of a potential hazard.

WARNING



Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.

ATTENTION



Identifies information about practices or circumstances that may lead to personal injury or death, property damage, or economic loss.

IMPORTANT

Identifies information that is critical for successful application and understanding of the product.

Artisan Scientific - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisan-scientific.com

ATTENTION



Environment and Enclosure

This equipment is intended for use in a Pollution Degree 2 industrial environment, in overvoltage Category II applications (as defined in IEC publication 60664–1), at altitudes up to 2000 meters without derating.

This equipment is considered Group 1, Class A industrial equipment according to IEC/CISPR Publication 11. Without appropriate precautions, there may be potential difficulties ensuring electromagnetic compatibility in other environments due to conducted as well as radiated disturbance.

This equipment is supplied as “open type” equipment. It must be mounted within an enclosure that is suitably designed for those specific environmental conditions that will be present, and appropriately designed to prevent personal injury resulting from accessibility to live parts. The interior of the enclosure must be accessible only by the use of a tool. Subsequent sections of this publication may contain additional information regarding specific enclosure type ratings that are required to comply with certain product safety certifications.

See NEMA Standards publication 250 and IEC publication 60529, as applicable, for explanations of the degrees of protection provided by different types of enclosures. Also, see the appropriate sections in this publication, as well as the Allen–Bradley publication 1770–4.1, (“Industrial Automation Wiring and Grounding Guidelines”), for additional installation requirements pertaining to this equipment.

Artisan Scientific - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisan-scientific.com

Pre–installation Considerations

An output from this module can drive an Allen–Bradley Size 5 motor starter, provided its supply voltage does not drop below 105V ac. The maximum load current the module can deliver is 2A per channel, not to exceed 6A total per module.

The switching device in the output circuit is a triac. There is a small leakage current in the off state due to both triac and capacitive characteristics. The maximum leakage current per output is 5ma at 138V ac. Nominal leakage current is 1ma. The on-state voltage drop across the output terminals is no more than 2.0V ac at 100ma.

The triac needs a minimum of 60ma load current to stay on. If your device pulls less than 60ma, the triac will not operate. The total continuous current the module supports is 6A (2A maximum per channel). If this rating is exceeded, the module overheats and damage may occur.

ATTENTION



When using a remote I/O system with a PLC processor, use only the 1771-AS or 1771-AR remote I/O adapter module which is series B or later. These remote I/O adapters add additional capability for shorted data bus detection. Failure to use series B or later remote I/O adapters may result in damage to equipment and/or personal injury.

Suppression

Surge suppression circuitry is provided for the output of the triacs of this module. To suppress high-voltage transients from the ac line, a metal-oxide varistor (MOV) is provided between each set of terminals on the module. In each output circuit, an RC network limits the magnitude of voltage transients that may occur when a device is wired in parallel or series with hard contacts.

Loads with inductive characteristics may require additional suppression devices. The impedance characteristic of the load is the most important factor in selecting a suppression device; thus no single suppression device can be recommended for every possible load. See table a for acceptable suppression devices for typical loads.

Table A
Allen-Bradley Suppressors

Allen-Bradley Equipment	Suppressor Catalog Number
Motor Starter Bulletin 509	599–K04[1]
Motor Starter Bulletin 709	1401–N10[1]
Relay Bulletin 700 Type N or P	700–N5/700N9[3]
Miscellaneous	700–N24[4]

1 For starters with 120V ac coils
2 Maximum coil voltage 150V ac or dc
3 Bulletin 77–N24 is a universal surge suppressor. You can use it on electromagnetic devices with limitation of 35 sealed VA, 150V.

Artisan Scientific - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisan-scientific.com

Calculate Power Requirements

The isolated output module is powered by the power supply connected to the I/O chassis backplane. The module requires a maximum current of 225mA from the +5V dc output of this supply. Total the current requirements of this module with the other modules in the I/O chassis to avoid overloading the supply or the I/O chassis backplane.

Determine Module Placement

Group your modules to minimize adverse effects from radiated electrical noise and/or heat. We recommend the following:

- Group analog input and low voltage dc modules away from ac modules or high voltage dc modules to minimize electrical noise interference.
- Place analog input modules and other I/O modules sensitive to heat away from slot power supplies and rack controllers to minimize adverse heat effects.

ATTENTION



Preventing Electrostatic Discharge

This equipment is sensitive to electrostatic discharge, which can cause internal damage and affect normal operation. Follow these guidelines when you handle this equipment:

- Touch a grounded object to discharge potential static.
- Wear an approved grounding wriststrap.
- Do not touch connectors or pins on component boards.
- Do not touch circuit components inside the equipment.
- If available, use a static–safe workstation.
- When not in use, keep modules in appropriate static–safe packaging.

The 1771–OD module is a modular component of the 1771 I/O system requiring a properly installed system chassis. Refer to publication 1771–IN075 for detailed information on acceptable chassis, proper installation and grounding requirements. Limit the maximum adjacent slot power dissipation to 10W maximum.

Artisan Scientific - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisan-scientific.com

Key the Backplane Connector

Place your module in any slot in the chassis except the leftmost slot which is reserved for processors or adapters.

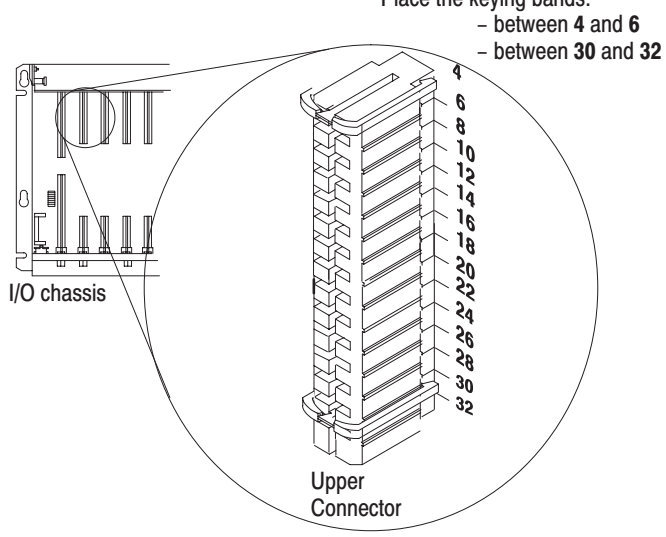
ATTENTION Observe the following precautions when inserting or removing keys:



- insert or remove keys with your fingers
- make sure that key placement is correct

Incorrect keying or the use of a tool can result in damage to the backplane connector and possible system faults.

Position the keying bands in the backplane connectors to correspond to the key slots on the module.



You can change the position of these bands if subsequent system design and rewiring makes insertion of a different type of module necessary.

11022-I

Artisan Scientific - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisan-scientific.com

Install the Module and Field Wiring Arm

ATTENTION

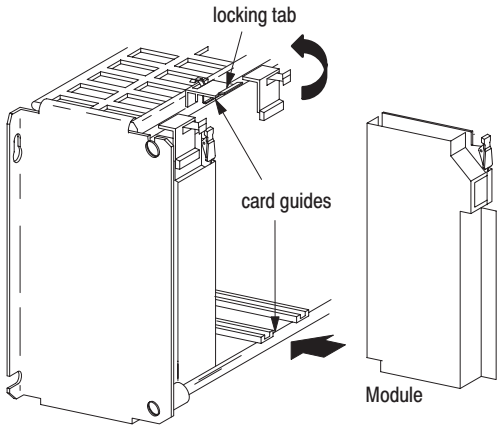


Remove power from the 1771 I/O chassis backplane and wiring arm before removing or installing an I/O module.

- Failure to remove power from the backplane or wiring arm could cause module damage, degradation of performance, or injury.
- Failure to remove power from the backplane could cause injury or equipment damage due to possible unexpected operation.

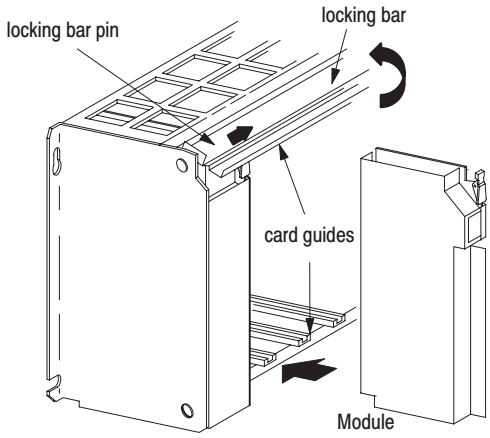
1

1771-A1B, -A2B, -A3B, -A3B1, -A4B I/O chassis



Snap the chassis latch over the top of the module to secure it.

1771-A1B, -A2B, -A3B1, -A4B Series B I/O chassis



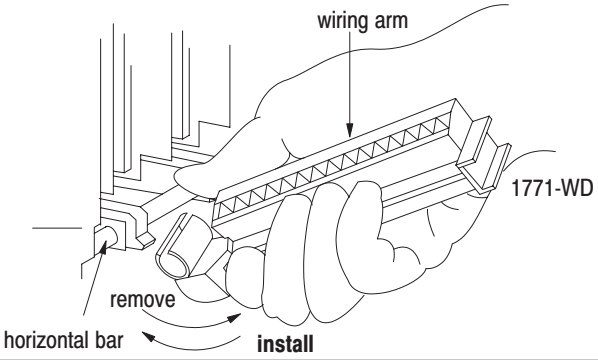
Swing the chassis locking bar down into place to secure the modules. Make sure the locking pins engage.

19809

2

Attach the wiring arm (1771-WD) to the horizontal bar at the bottom of the I/O chassis.

The wiring arm pivots upward and connects with the module so you can install or remove the module without disconnecting the wires.



17643

Artisan Scientific - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisan-scientific.com

Connect Wiring to the Module

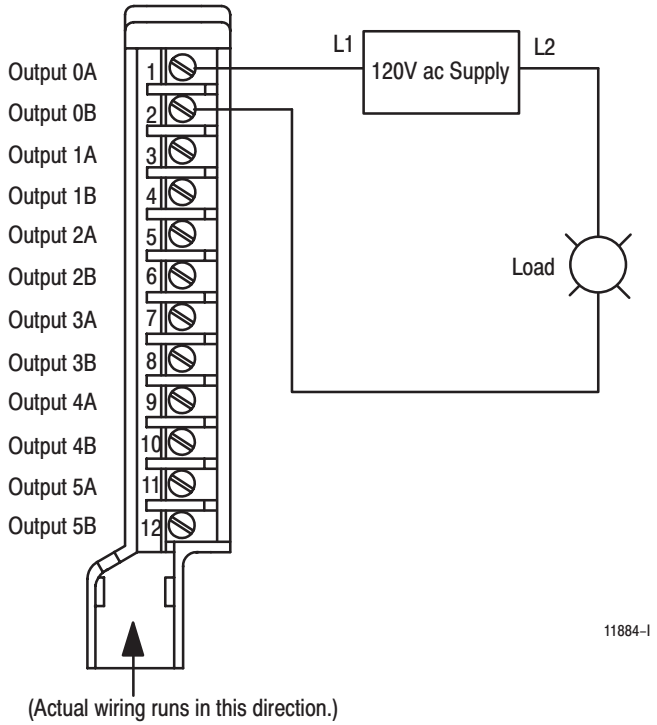
You make connections to the module through the 1771-WD field wiring arm shipped with the module. The arm pivots on the chassis to connect with the 8 terminals on the front of the module. The wiring arm allows the module to be removed from the chassis without disconnecting wiring.

1. Make certain all power is removed from the module before making wiring connections.
2. Swing the wiring arm up into position on the front of the module. The locking tab on the module will secure it into place.
3. Make your connections to the field wiring arm as shown in Figure 1. (Use the label on the front of the wiring arm to identify your wiring.)

IMPORTANT The field wiring arm terminal identification number is not the same as the number of the bit which controls that output.

You should identify the labels on the wiring arm with the name or number of the device connected at each terminal.

Figure 1
Connection Diagram for the 1771-OD Isolated Output Module



If multiple power sources are used, do not exceed the specified isolation voltage.

Artisan Scientific - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisan-scientific.com

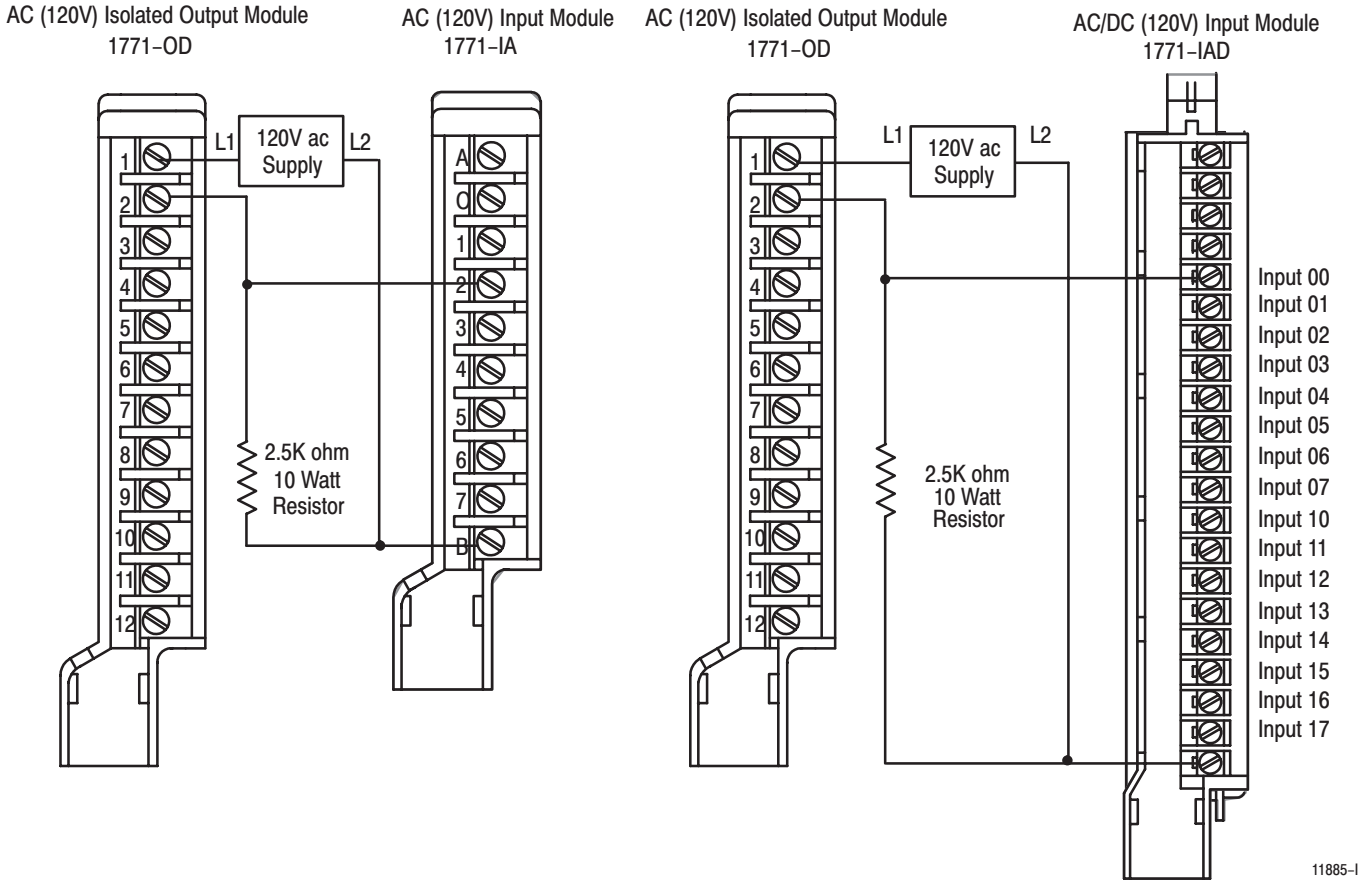
You can use an output of the 1771–OD module to drive an input of a 120V AC input module (1771–IA, –IA2, –ID and –IAD) to indicate status, such as the turning on of a motor starter (Figure 2). Both modules must be powered by the same ac source. In addition, you must add an external resistor (or an electronic snubber, pt. no. RG–1676–1) between the output terminal and the common (L2) (Figure 2). Typically, this is a 2.5K ohm, 10W resistor.

ATTENTION



Do not connect the 1771-OD output channels in series. Doing so can result in distortion of the output waveform causing the output devices to chatter.

Figure 2
Using an Output Module to drive an Input Module



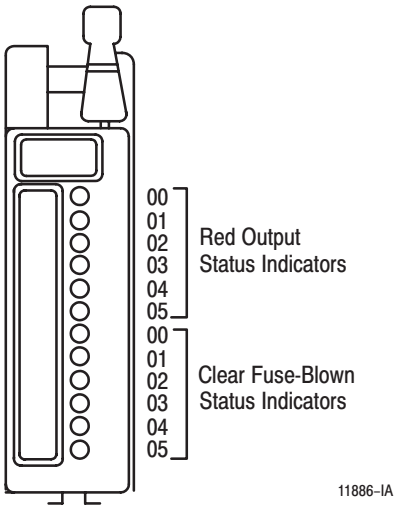
Artisan Scientific - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisan-scientific.com

Interpreting the Status Indicators

The module has 12 status indicators (Figure 3). The top 6 indicators show the state of each output and are driven by the logic circuitry on the programmable controller side of the module. These indicators light when their corresponding outputs are energized.

The bottom 6 indicators display a blown–fuse condition at the respective output regardless of the state of the output. This indicator is driven by your field device power supply.

Figure 3
Status Indicators



Replacing a Fuse

Each module output is individually fused. You can easily access the module fuse by removing the front component-side cover.

ATTENTION

Remove power from the 1771 I/O chassis backplane and wiring arm before removing or installing the module.

- Failure to remove power from the backplane or field wiring arm could cause module damage, degradation of performance, or injury.
- Failure to remove power from the backplane could cause injury or equipment damage due to possible unexpected operation.

If a blown fuse occurs:

1. Turn off power to the I/O chassis backplane.
2. Pivot the wiring arm away from the module and pull the module from the I/O chassis.
3. Remove the front half of the protective cover from the unlabeled side of the module by removing the two slotted screws.

Artisan Scientific - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisan-scientific.com

4. Replace the blown fuse with a 5A, 250V Bussman MTH5, IEC 127 Type F fuse.
5. Replace the protective cover and install the module in the I/O chassis.
6. Reposition the wiring arm.
7. Restart system power.

Specifications

Outputs per Module	6
Module Location	1771 I/O chassis
Output Voltage Range	92 to 138V ac @ 47 – 63Hz
Output Current Rating	2.0A per output – not to exceed 6A per module
Surge Current (maximum)	20A maximum for 100ms at 120V ac, repeatable every 5s
Minimum Load Current	60mA per output @ 120V ac, 60Hz
On State Voltage Drop	2V at 100mA
Off State Leakage Current (max.)	5mA per output @ 138V ac
Power Dissipation	13.2 Watts (max.), 1.2 Watts (min.)
Thermal Dissipation	45.2 BTU/hr (max.), 4.1 BTU/hr (min.)
Adjacent Slot Power Dissipation	10 Watts
Backplane Current	225mA @ 5V dc 5%
Maximum Cable Length	1000 ft (304.8m)
Opto–electrical Isolation	Tested to 1200V ac channel-to-channel for 1s Tested to 1800V ac backplane-to-channel for 1s
Environmental Conditions	
Operational Temperature	IEC 60068–2–1 (Test Ad, Operating Cold) IEC 60068–2–2 (Test Bd, Operating Dry Heat) IEC 60068–2–14 (Test Nb, Operating Thermal Shock) 32 to 140°F (0 to 60°C)
Storage Temperature	IEC 60068–2–1 (Test Ab, Unpackaged, Nonoperating Cold) IEC 60068–2–2 (Test Bb, Unpackaged, Nonoperating Dry Heat) IEC 60068–2–14 (Test Na, Unpackaged, Nonoperating Thermal Shock) –40 to 185°F (–40 to 85°C)
Relative Humidity	IEC 60068–2–30 (Test Db, Unpackaged, Nonoperating Damp Heat) 5 to 95% noncondensing
Shock Operating Nonoperating	IEC 60068–2–27 (Test Ea, Unpackaged Shock) 30g 50g
Vibration	IEC 60068–2–6 (Test Fc, Operating) 2g @ 10–500Hz
Enclosure Type Rating	None (open style)
Keying	Between 4 and 6 Between 30 and 32

Specifications continued on next page.

Artisan Scientific - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisan-scientific.com

Fuses		5A, 250V Bussman MTH5, IEC 127 Type F
Field Wiring Arm		Cat. No. 1771–WD
Field Wiring Arm Screw Torque		7–9 pound–inches (0.8–1.0Nm)
Conductors	Wire Size	14–22AWG (2.5–0.25mm^2) stranded copper wire rated at 75ºC or greater[1] 3/64 inch (1.2mm) insulation (max)
	Category	1[2]
Certifications (when product is marked)		UL UL Listed Industrial Control Equipment CSA CSA Certified Process Control Equipment

1 One or two 14–22 AWG solid or stranded copper wires per terminal. Must be same size. Do not intermix solid and stranded wires. Use copper wire only.
2 Use this conductor category information for planning conductor routing . Refer to publication 1770-4.1, "Industrial Automation Wiring and Grounding Guidelines."

www.rockwellautomation.com

Corporate Headquarters
Rockwell Automation, 777 East Wisconsin Avenue, Suite 1400, Milwaukee, WI 53202–5302 USA, Tel: (1) 414.212.5200, Fax: (1) 414.212.5201

Headquarters for Allen–Bradley Products, Rockwell Software Products and Global Manufacturing Solutions
Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204–2496 USA Tel: (1) 414.382.2000, Fax: (1) 414.382.4444
Europe: Rockwell Automation SA/NV, Vorstlaan/Boulevard du Souverain 36–BP 3A/B, 1170 Brussels, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640
Asia Pacific: Rockwell Automation, 27/F Citicorp Centre, 18 Whitfield Road, Causeway Bay, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846

Headquarters for Dodge and Reliance Electric Products
Americas: Rockwell Automation, 6040 Ponders Court, Greenville, SC 29615–4617 USA, Tel: (1) 864.297.4800, Fax: (1) 864.281.2433
Europe/Middle East/Africa: Rockwell Automation, Brühlstraße 22, D–74834 Elztal–Dallau, Germany, Tel: (49) 6261 9410, Fax: (49) 6261 1774
Asia Pacific: Rockwell Automation, 55 Newton Road, #11–01/02 Revenue House, Singapore 307987, Tel: (65) 351 6723, Fax: (65) 355 1733

Publication 1771–IN078A–EN–P – October 2002
Supersedes Publication 1771-2.12 – April 1990

PN957689–80
Copyright 2002 Rockwell International, Inc. Printed in USA

Artisan Scientific - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisan-scientific.com

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