



## AC (120/220V) 16A Power Supply (Cat. No. 1771-P7 Series D)

### To the Installer

This document provides you with the following information:

For this information	See page
important user information	1
preparing to install the power supply	3
installing the power supply	5
connecting ac power to the power supply	11
troubleshooting	12
power ratings	12
mounting dimensions	12
UL/CSA hazardous location approval	14
specifications	15

### Important User Information

Because of the variety of uses for the products described in this publication, those responsible for the application and use of this equipment 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 the Allen-Bradley Company be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, the Allen-Bradley Company cannot assume responsibility or liability for actual use based on the examples and diagrams.

Allen-Bradley publication SGI-1.1, “*Safety Guidelines for the Application, Installation and Maintenance of Solid State Controls*” describes some important differences between solid state equipment and hard-wired electromechanical devices that should be taken into consideration when applying products such as those described in this publication.

Reproduction of the contents of this manual, in whole or in part, without written permission of the Allen-Bradley Company is prohibited.

Throughout this document we use notes to make you aware of safety considerations.

---

**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.

---

Attentions help you:

- identify a hazard
  - avoid the hazard
  - recognize the consequences
- 

**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.

---

**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.

**Prepare for Installation**

The 1771-P7 power supply can power one 1771-A1B, -A2B, -A3B, -A3B1, or -A4B I/O chassis when used with any adapter module or programmable controller (Mini-PLC-2/02<sup>®</sup>, Mini-PLC-2/05<sup>®</sup>, Mini-PLC-2/16<sup>®</sup>, Mini-PLC-2/17<sup>®</sup>, or PLC-5<sup>™</sup> family processor) that does not have an internal power supply.

**IMPORTANT**

The power supply is **not compatible** with the 1771-A1, -A2, or -A4 I/O chassis.

**ATTENTION**

The 1771-P7 is a stand-alone power supply. Do not connect it in parallel with any other power supply. Connecting it in parallel could result in processor memory loss or injury due to unexpected machine operation.

---

**WARNING**

When used in a Class I Division 2 hazardous location, this equipment must be mounted in a suitable enclosure with a proper wiring method that complies with governing electrical codes.

---

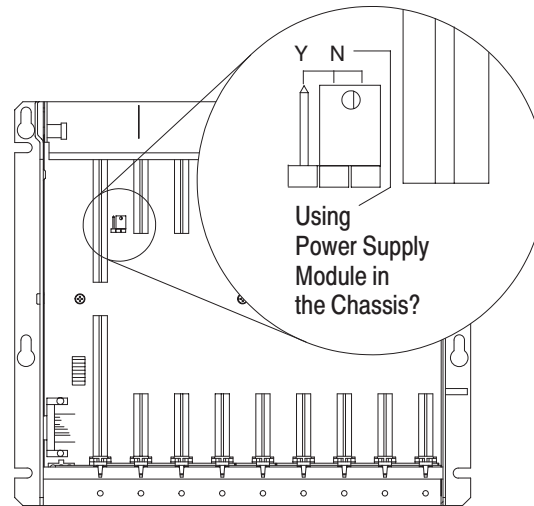
**ATTENTION****Preventing Electrostatic Discharge**

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.
-

Before installing the power supply, you should:

- mount the I/O chassis that the power supply will be connected to. See the Universal I/O Chassis Installation Data (1771-2.210) for information on mounting the I/O chassis.
- set the power supply configuration jumper on the I/O chassis. The 1771-P7 is an external power supply. Set the configuration jumper to the N position.

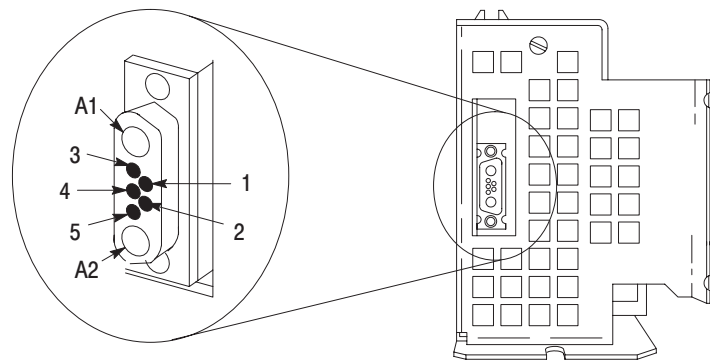


12620-1

## Install the 1771-P7 and Connect Backplane Power

The power supply has a D-shell power connector that provides power to the I/O chassis backplane.

- A1 backplane common
- A2 backplane +5V dc
- 1 no connection
- 2 backplane processor enable
- 3 backplane +5V dc sense
- 4 backplane signal ground sense
- 5 no connection



bottom view of power supply

13445

If you have this I/O chassis	Use this power cable <sup>1</sup>	To connect a 1771-P7 mounted
1771-A3B	1771-CP2	within 1.52m (5ft) of the I/O chassis
1771-A1B, -A2B, -A3B1, or -A4B	1771-CP1	within 0.32m (1.04ft) on the left-side of the I/O chassis
	1771-CP2	within 1.52m (5ft) of the I/O chassis
	1771-CP3 (right angle connector)	within 1.68m (5.5ft) of the I/O chassis

<sup>1</sup> Power supply cable is not shipped with the power supply.

If you are mounting the power supply	Go to
on the left side of a panel-mounted I/O chassis	next section
separately from an I/O chassis	page 9

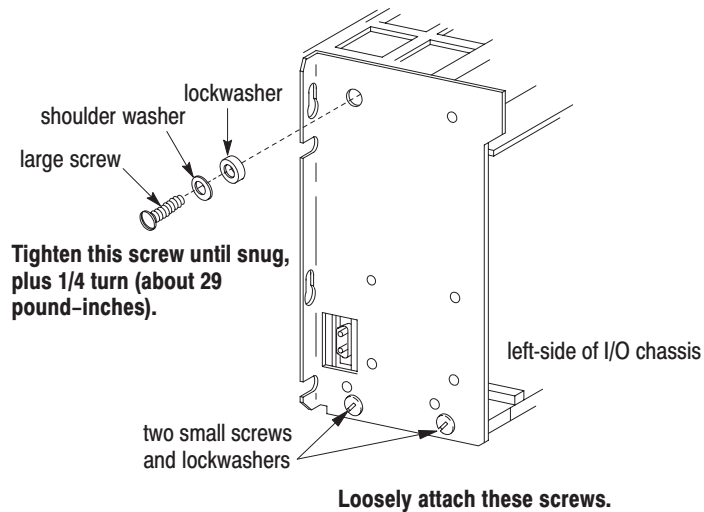
## Attaching to a Panel-mounted I/O Chassis

1. Attach the mounting screws to the side of the I/O chassis:

### ATTENTION



Use the mounting screws provided with the 1771-P7. Longer screws may intrude into the I/O chassis and interfere with module insertion.



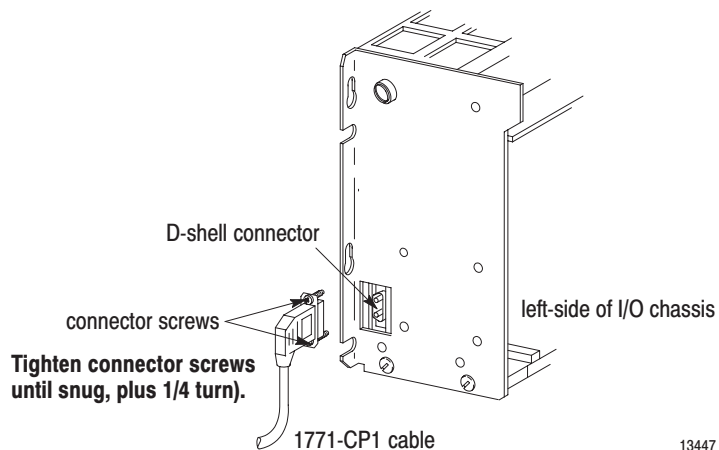
13446

2. Connect the power cable (ordered separately) to the D-shell connector on the I/O chassis and tighten the connector screws.

### WARNING

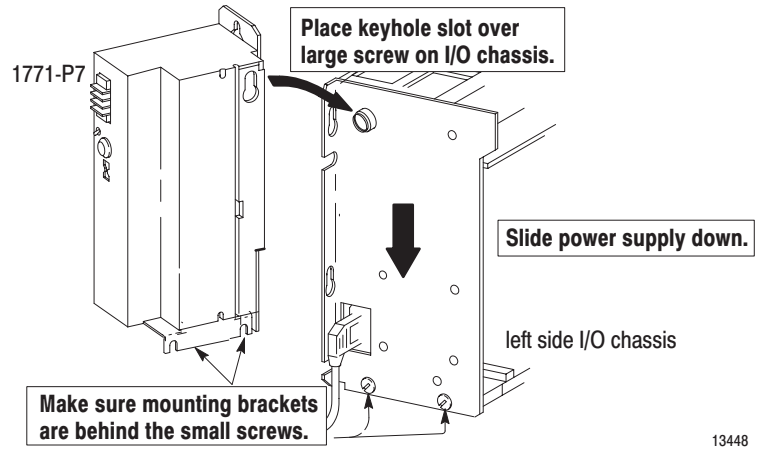


If you connect or disconnect the power supply cable with power applied an electrical arc can occur. This could cause an explosion in hazardous location installations. Be sure power is removed or the area is nonhazardous before proceeding.

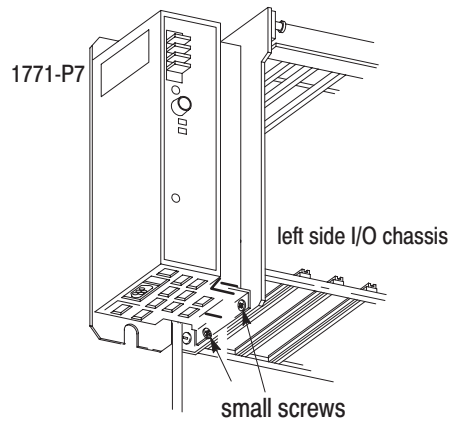


13447

3. Slide the power supply onto the left side of the chassis:



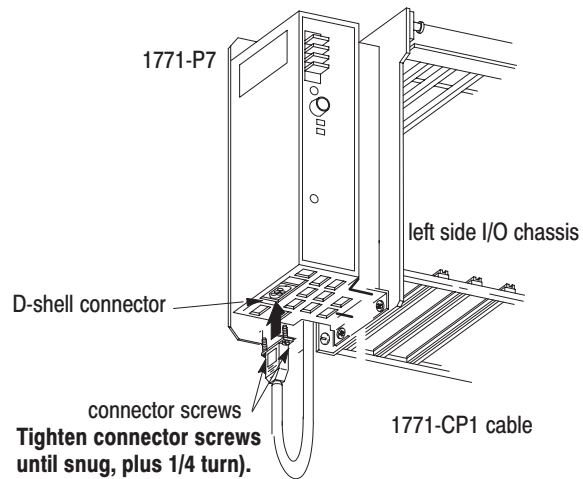
4. Tighten the small screws until snug, plus 1/4 turn (about 29 pound-inches), to secure the power supply to the I/O chassis.



5. Attach the other end of the power cable to the D-shell connector on the bottom of the power supply and tighten the connector screws.

**WARNING**

If you connect or disconnect the power supply cable with power applied an electrical arc can occur. This could cause an explosion in hazardous location installations. Be sure power is removed or the area is nonhazardous before proceeding.



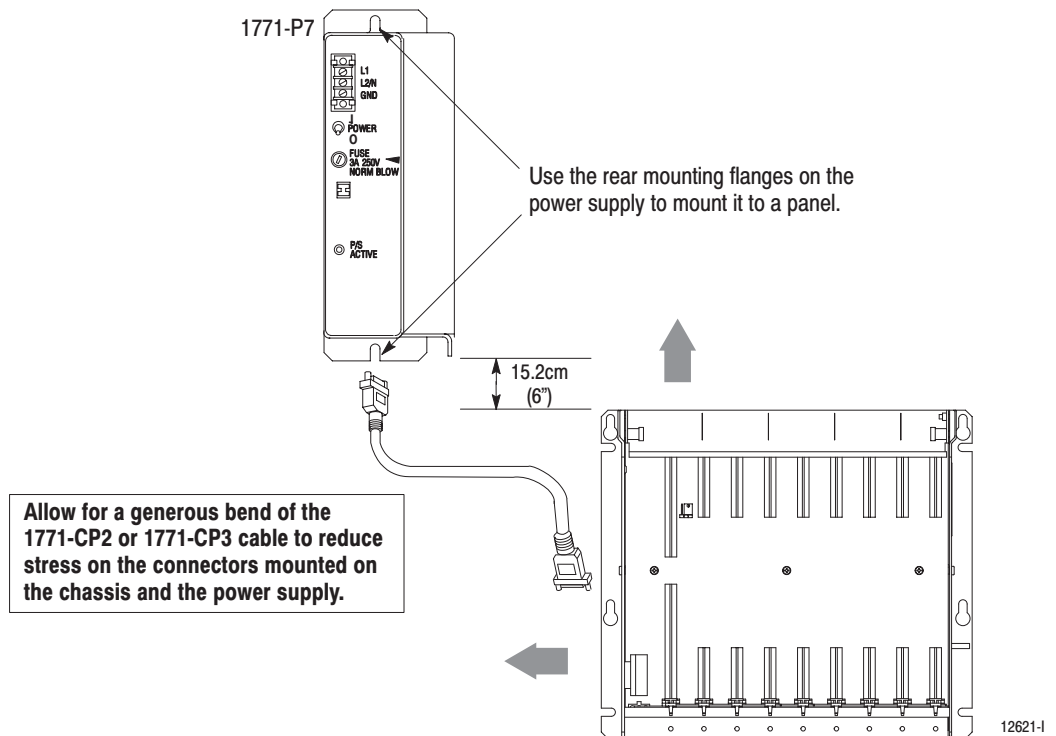
13449



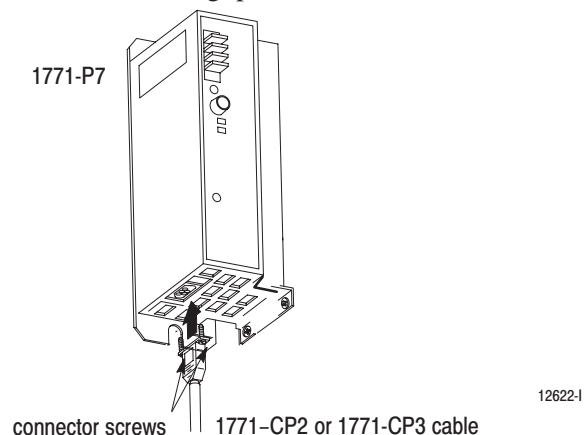
## Mounting the Power Supply Separately

When mounted separately, the power supply may be mounted above or next to the I/O chassis. It may **not** be mounted below, since it is necessary to allow convection cooling of both the power supply and the I/O chassis. A minimum vertical distance of 6 inches (15.2cm) should be maintained.

1. Mount the power supply vertically, above and within the specified cable-feet (for your cable) of the D-shell connector on the I/O chassis.



2. Connect one end of the power cable to the D-shell connector located on the bottom of the power supply and tighten the connector screws until snug, plus 1/4 turn.

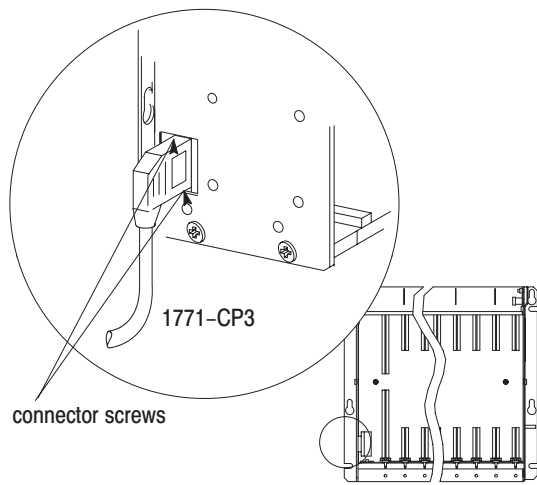


**WARNING**

If you connect or disconnect the power supply cable with power applied an electrical arc can occur. This could cause an explosion in hazardous location installations. Be sure power is removed or the area is nonhazardous before proceeding.

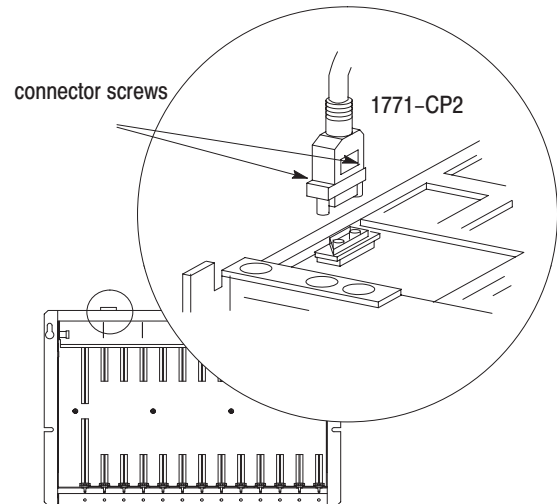
3. Connect the other end of the power cable to the D-shell connector on the I/O chassis and tighten the connector screws until snug, plus 1/4 turn.

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



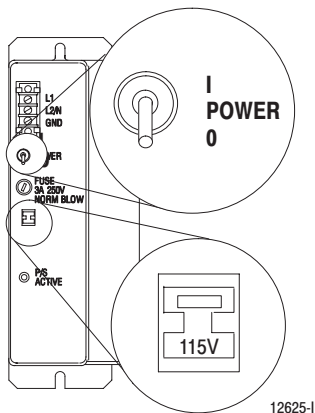
12623-I

1771-A3B I/O chassis



12624-I

## Connect ac Power Source to the Power Supply



The power supply operates on nominal 120V ac or 220V ac input source.

1. Make sure the power switch is set to 0 (off).
2. Use a 1/8" slotted screwdriver to set the input-voltage selector switch.

### WARNING



Do not set the input voltage selector switch with power applied. This could cause an electrical arc which could cause an explosion in hazardous location installations. Be sure power is removed or the area is nonhazardous before proceeding.

### ATTENTION



To avoid damaging the power supply, do not place the screwdriver blade more than 3/8" into the switch slot.

### For an input voltage of      Set the voltage selector switch to

97 to 132V ac

115 position



195 to 264V ac

230 position



3. Connect the ac power line to the terminal strip on the power supply.

### WARNING

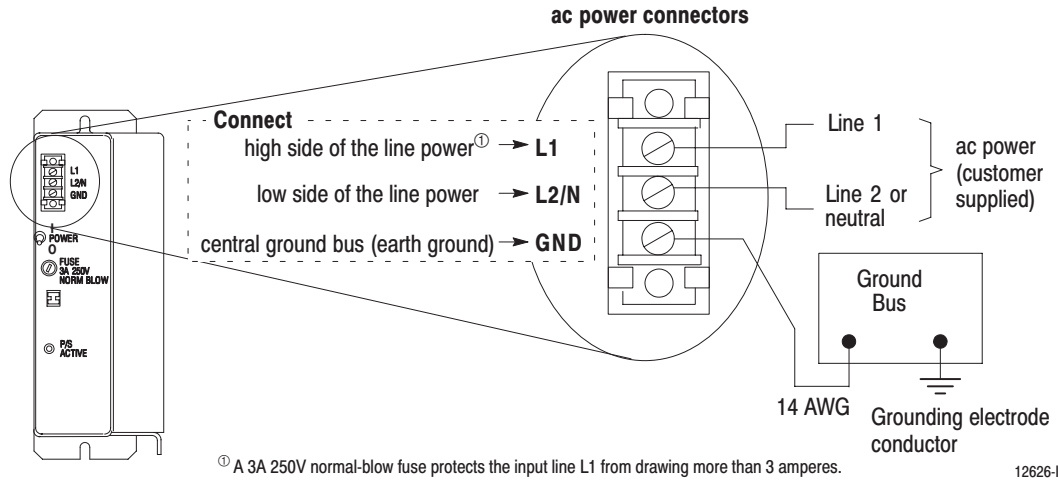


If you connect or disconnect the ac power line to the terminal strip with power applied an electrical arc can occur. This could cause an explosion in hazardous location installations. Be sure power is removed or the area is nonhazardous before proceeding.

### ATTENTION

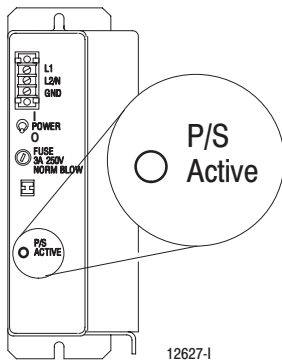


You must connect a 14 AWG wire from the GND terminal to the ground bus to provide an adequate safety ground.



### Troubleshooting

The power supply has a green P/S ACTIVE LED that provides status indication during power supply operation.



Normal operation	If indicator is	Then
on	off	it may be due to: input voltage not within specified range blown fuse overcurrent

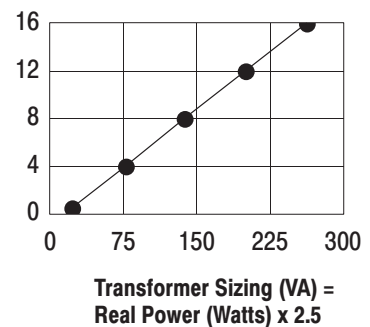
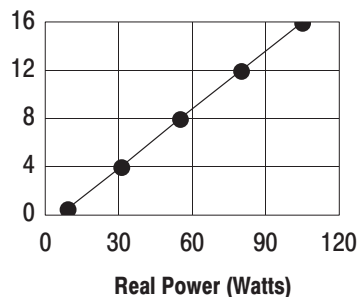
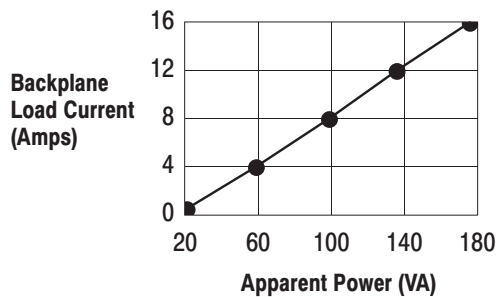
**Important:** If a shutdown condition occurs, wait 15 seconds before attempting to apply power.

For additional assistance, contact your local Allen-Bradley representative.

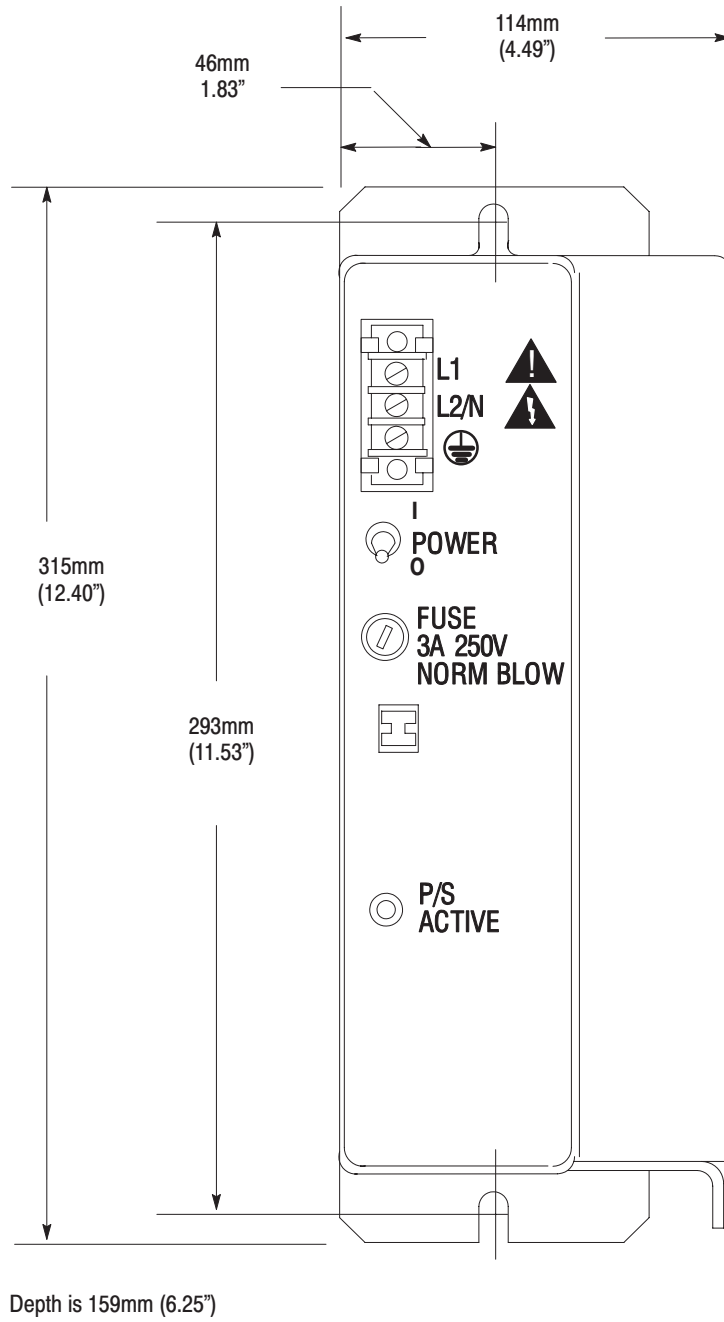
### Power Ratings

Use these graphs to determine your:

- cooling requirements
- power cost
- transformer size (unless the transformer manufacturer has a recommended multiplier for sizing a transformer for an ac-to-dc power supply)



## Mounting Dimensions



12628-1

---

**The following information applies when operating this equipment in hazardous locations:**


---

Products marked “CL I, DIV 2, GP A, B, C, D” are suitable for use in Class I Division 2 Groups A, B, C, and D Hazardous Locations and nonhazardous locations only. Each product is supplied with markings on the rating nameplate indicating the hazardous location temperature code. When combining products within a system, the most adverse temperature code (lowest “T” number) may be used to help determine the overall temperature code of the system. Combinations of equipment in your system are subject to investigation by the local Authority Having Jurisdiction at the time of installation.

**WARNING**

**EXPLOSION HAZARD –**

- Do not disconnect equipment unless power has been removed or the area is known to be nonhazardous.
- Do not disconnect connections to this equipment unless power has been removed or the area is known to be nonhazardous. Secure any external connections that mate to this equipment by screws, sliding latches, threaded connectors, or other means provided with this product.
- Substitution of components may impair suitability for Class I, Division 2.
- If this product contains batteries, they must only be changed in an area known to be nonhazardous.

---

**Informations sur l'utilisation de cet équipement en environnements dangereux:**


---

Les produits marqués CL I, DIV 2, GP A, B, C, D ne conviennent que une utilisation en environnements de Classe I Division 2 Groupes A, B, C, D dangereux et non dangereux. Chaque produit est livré avec des marquages sur sa plaque d'identification qui indiquent le code de température pour les environnements dangereux. Lorsque plusieurs produits sont combinés dans un système, le code de température le plus défavorable (code de température le plus faible) peut être utilisé pour déterminer le code de température global du système. Les combinaisons d'équipements dans le système sont sujettes à inspection par les autorités locales qualifiées au moment de l'installation.

**AVERTISSEMENT**

**RISQUE D'EXPLOSION –**

- Couper le courant ou s'assurer que l'environnement est classé non dangereux avant de débrancher l'équipement.
  - Couper le courant ou s'assurer que l'environnement est classé non dangereux avant de débrancher les connecteurs. Fixer tous les connecteurs externes reliés à cet équipement à l'aide de vis, loquets coulissants, connecteurs filetés ou autres moyens fournis avec ce produit.
  - La substitution de composants peut rendre cet équipement inadapté à une utilisation en environnement de Classe 1, Division 2.
  - S'assurer que l'environnement est classé non dangereux avant de changer les piles.
-

## Specifications

Supply Voltage Range	120V ac: 97-132V ac 50/60Hz 2.0A 220V ac: 195-264V ac 50/60Hz 1.3A
Input Power (Real/Apparent)	108 Watts/176VA maximum (see charts)
External Transformer	270VA at full load
Isolation Voltage	Tested to 1200V ac for 1s
Output Voltage	5.06V dc $\pm$ 3.8%
Output Current	16A max @ 5V dc
Power Loss Time Delay — Input Power to Processor Disable	13.6ms $\pm$ 2.9ms
Maximum User-supplied Overcurrent Protection <sup>1</sup>	15A
Fuse <sup>2</sup>	3A, 250V 3AG normal blow (Bussmann AGC 3 — Littelfuse 312003)
Conductor	Wire Size Category 14AWG (2.5mm <sup>2</sup> ) stranded copper wire rated at 75°C or greater <sup>13</sup>
Terminal Strip Screw Torque	12 pound-inches
Weight	1.95kg (4.3 lbs.)
Dimensions (H x W x D)	315mm x 115mm x 159mm (12.40" x 4.53" x 6.25")
Environmental Conditions	
Operating 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 Bc, 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	IEC 60068-2-27;1987 (Test Ea, Unpackaged Shock, ES#002)
Operating	15g
Nonoperating	30g
Vibration	IEC 60068-2-6 (Test Fc, Operating) 2g @ 10-500Hz
Emissions	CISPR 11 Group 1, Class A
ESD Immunity	IEC 61000-4-2 4KV Contact Discharges
Radiated RF Immunity	IEC 61000-4-3 10V/m, 3V/m Broadcast bands, with 1kHz sine-wave 80% AM from 30MHz to 1000MHz
EFT/B Immunity	IEC 61000-4-4 $\pm$ 2kV @ 2.5kHz on power ports
Surge Transient Immunity	IEC 61000-4-5 $\pm$ 1kV line-line (DM) and $\pm$ 2kV line-earth (CM) on ac power ports
Conducted RF Immunity	IEC 61000-4-6 10V rms with 1kHz sine wave 80% AM from 150kHz to 30MHz
Enclosure Type Rating	None (open style)

Cables 1771-CP1 1771-CP2 1771-CP3	0.32m (1.04ft) — connects panel-mounted I/O chassis to chassis-mounted 1771-P7 1.52m (5ft) — connects rack-mounted I/O chassis to remote 1771-P7 1.68m (5.5ft) — connects panel-mounted I/O chassis to remote 1771-P7
Agency Certification (when product is marked)	<p>UL UL Listed Industrial Control Equipment</p> <p>CSA CSA Certified Process Control Equipment for Class I, Division 2 Group A, B, C, D Hazardous Locations</p> <p>CE<sup>4</sup> European Union 89/336/EEC EMC Directive, compliant with: EN 50081-2, Industrial Emissions EN 50082-2, Industrial Immunity</p> <p>European Union 73/23/EEC LVD Directive, compliant with: EN 61131-2, Programmable Controllers</p> <p>C-Tick<sup>4</sup> Australian Radiocommunications Act, compliant with: AS/NZS 2064, Industrial Emissions</p>
<p><sup>1</sup> Use time delay overcurrent protection in all ungrounded conductors.</p> <p><sup>2</sup> This fuse is intended to guard against fire hazard due to short circuit conditions.</p> <p><sup>3</sup> Refer to publication 1770-4.1, Industrial Automation Wiring and Grounding Guidelines.</p> <p><sup>4</sup> See the Product Certification link at <a href="http://www.ab.com">www.ab.com</a> for Declarations of Conformity, Certificates, and other certification details.</p>	



Allen-Bradley, a Rockwell Automation Business, has been helping its customers improve productivity and quality for more than 90 years. We design, manufacture and support a broad range of automation products worldwide. They include logic processors, power and motion control devices, operator interfaces, sensors and a variety of software. Rockwell is one of the world's leading technology companies.



## Worldwide representation.

Argentina • Australia • Austria • Bahrain • Belgium • Brazil • Bulgaria • Canada • Chile • China, PRC • Colombia • Costa Rica • Croatia • Cyprus • Czech Republic • Denmark • Ecuador • Egypt • El Salvador • Finland • France • Germany • Greece • Guatemala • Honduras • Hong Kong • Hungary • Iceland • India • Indonesia • Ireland • Israel • Italy • Jamaica • Japan • Jordan • Korea • Kuwait • Lebanon • Malaysia • Mexico • Netherlands • New Zealand • Norway • Pakistan • Peru • Philippines • Poland • Portugal • Puerto Rico • Qatar • Romania • Russia-CIS • Saudi Arabia • Singapore • Slovakia • Slovenia • South Africa, Republic • Spain • Sweden • Switzerland • Taiwan • Thailand • Turkey • United Arab Emirates • United Kingdom • United States • Uruguay • Venezuela • Yugoslavia

Allen-Bradley Headquarters, 1201 South Second Street, Milwaukee, WI 53204 USA, Tel: (1) 414 382-2000 Fax: (1) 414 382-4444