



ControlLogix Power Supplies

Catalog Numbers 1756-PA72/C, 1756-PB72/C

Use this publication when installing the ControlLogix™ power supplies.

For more information on:	See page:
Preparing for Installation	7
Installing the Power Supply	7
Connecting Equipment Protective Earth Ground	9
Verifying Grounding Configuration	10
Connecting Power	11
Removing the Protective Label	12
Activate the Power Supply	12
Understanding Input Power Requirements and Transformer Sizing	13
Troubleshooting the Power Supply	14
Specifications	15

You mount a non-redundant power supply directly on the left end of the ControlLogix chassis, where it plugs directly into the backplane. The power supply provides power for all modules installed in the chassis.

Important User Information

Solid state equipment has operational characteristics differing from those of electromechanical equipment. *Safety Guidelines for the Application, Installation and Maintenance of Solid State Controls* (Publication SGI-1.1 available from your local Rockwell Automation sales office or online at: <http://www.ab.com/manuals/gi> describes some important differences between solid state equipment and hard-wired electromechanical devices. Because of this difference, and also because of the wide variety of uses for solid state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.





In no event will Rockwell Automation, Inc. 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, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

No patent liability is assumed by Rockwell Automation, Inc. with respect to use of information, circuits, equipment, or software described in this manual.

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

<p>WARNING</p> 	<p>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.</p>
<p>IMPORTANT</p>	<p>Identifies information that is critical for successful application and understanding of the product.</p>
<p>ATTENTION</p> 	<p>Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you:</p> <ul style="list-style-type: none">• identify a hazard• avoid a hazard• recognize the consequence
<p>SHOCK HAZARD</p> 	<p>Labels may be located on or inside the drive to alert people that dangerous voltage may be present.</p>
<p>BURN HAZARD</p> 	<p>Labels may be located on or inside the drive to alert people that surfaces may be dangerous temperatures.</p>

Environment and Enclosure

ATTENTION

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.

NOTE: See NEMA Standards publication 250 and IEC publication 60529, as applicable, for explanations of the degrees of protection provided by different types of enclosure. 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.

Prevent Electrostatic Discharge

ATTENTION

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, store the equipment in appropriate static-safe packaging.
-

European Hazardous Location Approval

If you install the module in a European Zone 2 location, consider:

European Zone 2 Certification (The following applies when the product bears the EEx Marking)

This equipment is intended for use in potentially explosive atmospheres as defined by European Union Directive 94/9/EC.

The LCIE (Laboratoire Central des Industries Electriques) certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of Category 3 equipment intended for use in potentially explosive atmospheres, given in Annex II to this Directive. The examination and test results are recorded in confidential report No. 28 682 010.

Compliance with the Essential Health and Safety Requirements has been assured by compliance with EN 50021.



IMPORTANT

When using this product, also consider the following:

- This equipment is not resistant to sunlight or other sources of UV radiation.
 - The secondary of a current transformer shall not be open-circuited when applied in Class I, Zone 2 environments.
 - Equipment of lesser Enclosure Type Rating must be installed in an enclosure providing at least IP54 protection when applied in Class I, Zone 2 environments.
 - This equipment shall be used within its specified ratings defined by Allen-Bradley.
 - Provision shall be made to prevent the rated voltage from being exceeded by transient disturbances of more than 40% when applied in Class I, Zone 2 environments.
-

North American Hazardous Location Approval

The following information applies when operating this equipment in hazardous locations:	Informations sur l'utilisation de cet équipement en environnements dangereux :
<p>Products marked "CL I, DIV 2, GP A, B, C, D" are suitable for use in Class I Division 2 Groups A, B, C, 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.</p>	<p>Les produits marqués "CL I, DIV 2, GP A, B, C, D" ne conviennent qu'à 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.</p>

<p>The following information applies when operating this equipment in hazardous locations:</p>	<p>Informations sur l'utilisation de cet équipement en environnements dangereux :</p>
<p>WARNING</p>  <p>EXPLOSION HAZARD</p> <ul style="list-style-type: none"> • 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 using 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. 	<p>AVERTISSEMENT</p>  <p>RISQUE D'EXPLOSION</p> <ul style="list-style-type: none"> • 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 I, Division 2. • S'assurer que l'environnement est classé non dangereux avant de changer les piles.

Preparing for Installation

Before you attempt to install the power supply, make sure you have the following items:

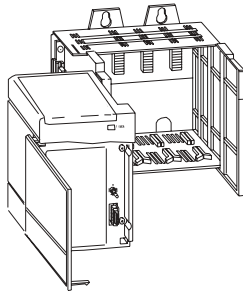
- 1/8" slotted screwdriver
- 1/4" slotted (#2) or phillips screwdriver
- torque screwdriver
- needle-nose pliers
- crimping tool

Installing the Power Supply

You can use the 1756-PA72/C and 1756-PB72/C power supplies with any ControlLogix chassis, Series A or Series B. Do these tasks to install the power supply:

1. Align the power supply circuit board with the card guides on the left side of the chassis.

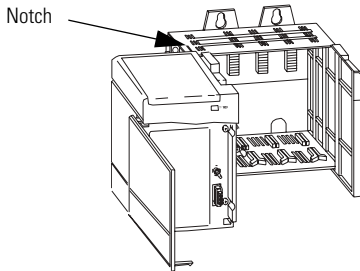
Figure 1



20264a-M

2. Guide the extended tab on the power supply circuit board into the notch of the chassis.

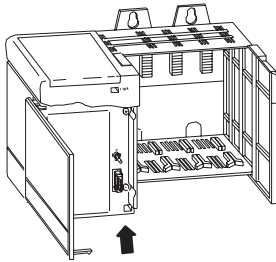
Figure 2



43614

3. Slide the power supply in until it is flush with the back of the chassis.

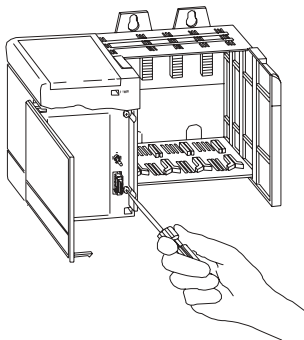
Figure 3



44144

4. Fasten the power supply to the chassis.

Figure 4

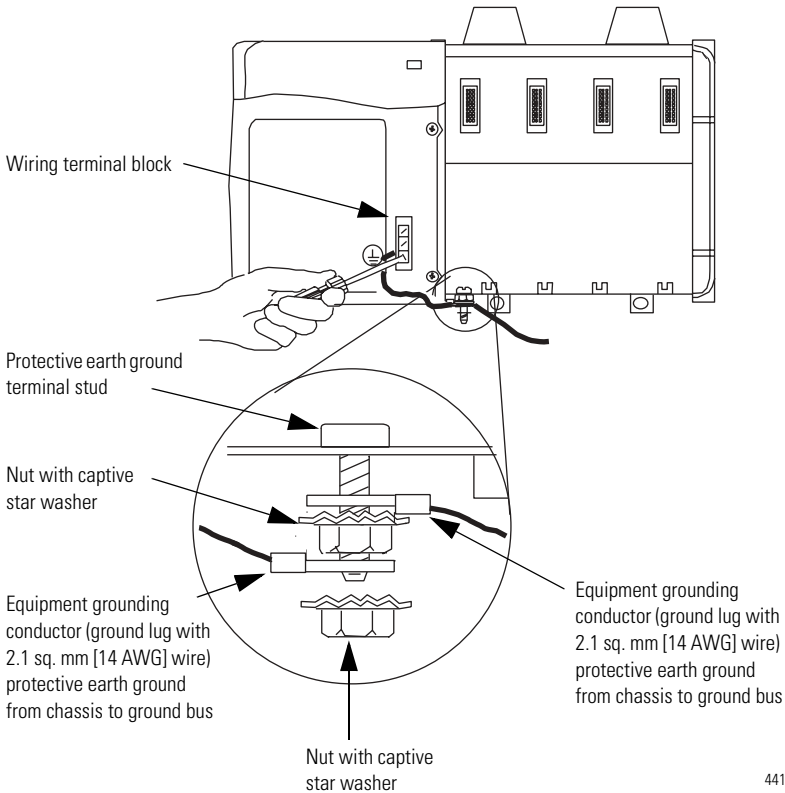


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Connecting Equipment Protective Earth Ground

Use Figure 5 to connect equipment protective earth ground from the power supply to the chassis. Tighten the nut on the equipment protective earth ground terminal stud to a torque of 12 inch-pounds (1.4Nm).

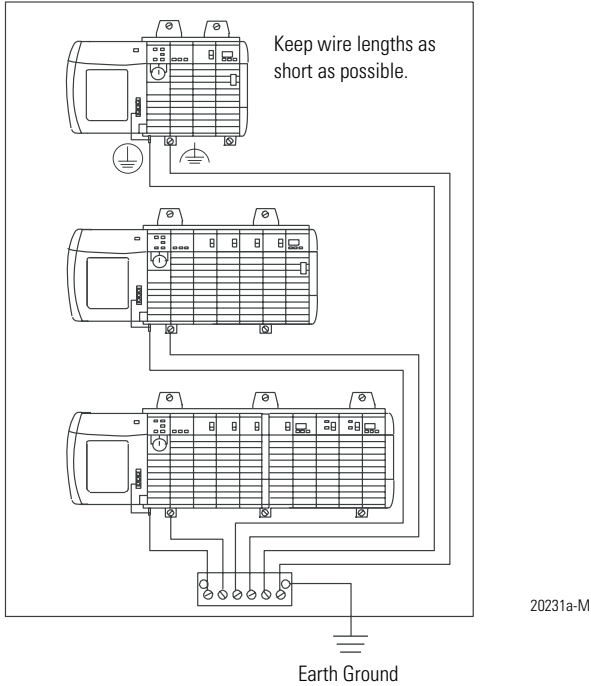
Figure 5



Verifying Grounding Configuration

Figure 6 shows you how to run functional and equipment protective earth ground connections from the chassis and power supply to the ground bus. Using a ground bus is recommended because it reduces the electrical resistance at the connection.

Figure 6



For more information on installing and connecting protective earth ground to the ControlLogix chassis, refer to the ControlLogix Chassis-Series B Installation Instructions, publications 1756-IN080.

Connecting Power

WARNING

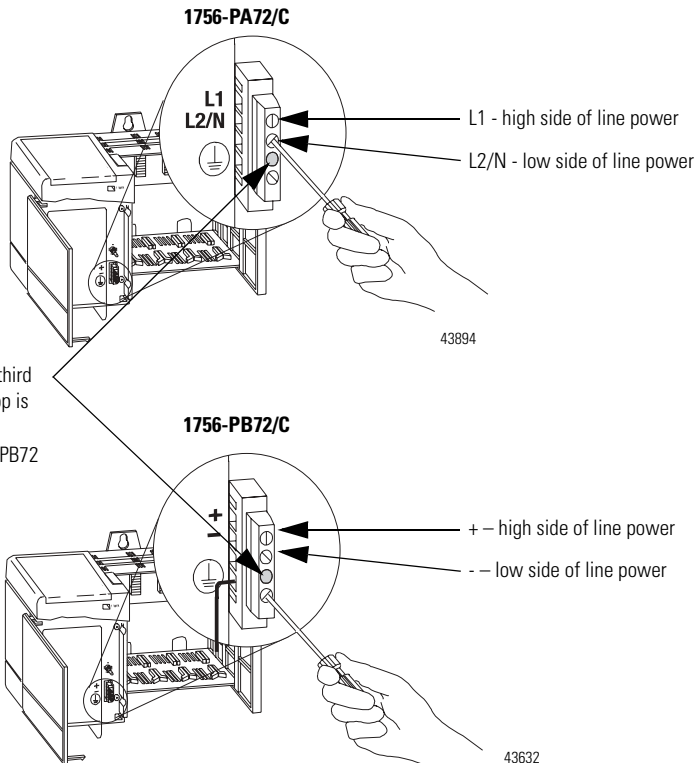


If you connect or disconnect wiring while the field-side power is on, an electrical arc can occur. This could cause an explosion in hazardous location installations. Be sure that power is removed or the area is nonhazardous before proceeding.

Use #14 AWG 75 °C copper wire to connect power. Follow these steps for each wire (i.e. high side, low side and ground) to connect power:

1. Turn the screw counterclockwise to open the wiring terminal.
2. Insert the wire into the terminal.
3. Turn the screw clockwise to tighten the terminal on the wire.

Figure 7



IMPORTANT: The third terminal from the top is not used on the 1756-PA72 or 1756-PB72 power supply.

4. Tighten the terminals to a torque of 7 inch-pounds (0.8Nm).

Removing the Protective Label

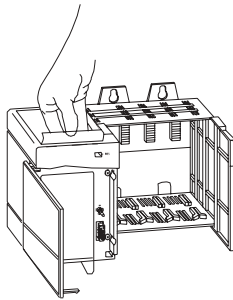
ATTENTION



Make sure the chassis is mounted and all panel fabrication is complete before you remove the protective label. This label protects the power supply from metal shavings falling inside the power supply and damaging it during operation.

Remove the plastic label from the top of the power supply.

Figure 8

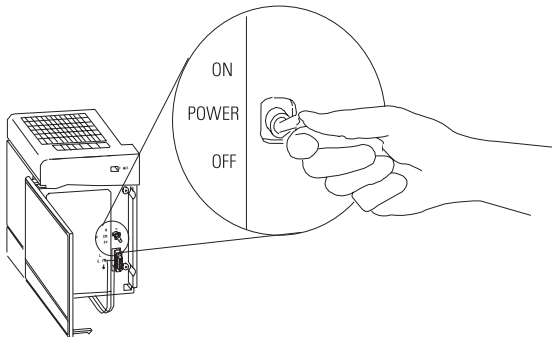


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Activate the Power Supply

Flip the power switch up to turn the supply on.

Figure 9



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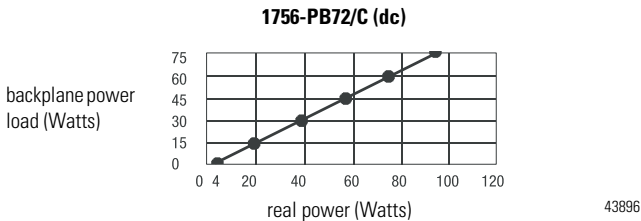
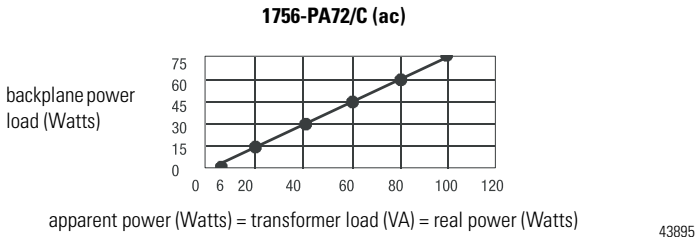
Understanding Input Power Requirements and Transformer Sizing

Use the graphs in Figure 10 to determine the input power requirements for the supplies, given the power they are providing to the modules in the chassis. The vertical axis of each graph shows the backplane power consumed by all of the modules in the chassis; the horizontal axis shows input power requirements of the power supply. To use the graphs:

1. Add all of the backplane power (i.e. watts) for all of the modules in the chassis.
2. Find the number from step 1 on the vertical axis.
3. Follow that value to the right until it intersects the line on the graph.
4. Find the associated input power rating consumed by the power supply on the horizontal axis.

For example, if the power consumption of all of the modules in the chassis is 30 watts, a 1756-PB75/B consumes approximately 40 watts of Real Power.

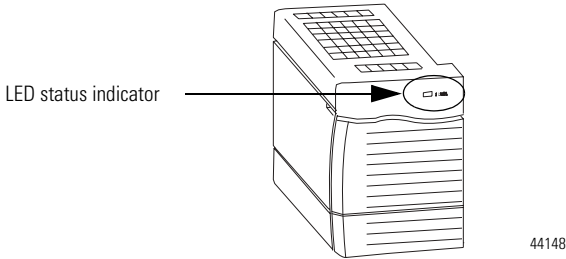
Figure 10



Troubleshooting the Power Supply

ControlLogix power supplies have a green LED status indicator that remains ON during normal operation.

Figure 11



If the indicator turns OFF during operation, follow these steps:

1. Verify that the line voltage is within the specified range.
2. If the indicator remains OFF, cycle line power OFF.
3. Loosen the screws holding the power supply to the chassis, as described in step 4 on page 8.
4. Slide the power supply out so that the rear connector is disconnected.
5. Reapply input power.
6. If the indicator:
 - turns ON:
 - a. Verify that the module loads in the system are within the output rating of the power supply.
 - b. Power down the power supply.
 - c. Reinstall the power supply in the chassis.
 - turns OFF, return the power supply to your local Rockwell Automation distributor.

Specifications

Cat. No.	1756-PA72/C	1756-PB72/C
Mounting Location	Left side of ControlLogix chassis	
Chassis Compatibility	Series A or B	
Input Voltage Range	85...265V ac	18...32V dc ⁽⁷⁾
Input Voltage, Nom.	120V/240V ac	24V dc
Input Frequency Range	47...63 Hz	dc
Input Power, Max.	100VA/100 W	95 W
Output Power, Max. ⁽¹⁾	75 W @ 60 °C	
Power Dissipation	25 W @ 60 °C	20 W @ 60 °C
Power Consumption	85.3 BTU/hr	68.2 BTU/hr
Hold Up Time ⁽²⁾	5 cycles @ 85V ac, 50/60 Hz 6 cycles @ 120V ac, 50/60 Hz 6 cycles @ 200V ac, 50/60 Hz 6 cycles @ 240V ac, 50/60 Hz	35 ms @ 18V dc 40 ms @ 24V dc 40 ms @ 32V dc
Inrush Current, Max.	20 A	30 A
Current Capacity, @ 1.2V	1.5 A	
Current Capacity, @ 3.3V	4 A	
Current Capacity, @ 5.1V	10 A	
Current Capacity, @ 24V	2.8 A	
Overcurrent Protection, Max. ⁽³⁾	15 A, user-supplied	
Fusing ⁽⁴⁾	Non-replaceable fuse is soldered in place	
Isolation voltage (continuous-voltage withstand rating)	250 V continuous	
Conductors, Wire Size	#14 AWG	
Conductors, Wire Type	Copper	
Conductors, Category	1 ⁽⁶⁾	
Conductor Screw Torque, Imperial	7 in-lb	
Conductor Screw Torque, Metric	0.8 N-m	
Dimensions (H x W x D), Imperial	5.51 x 4.41 x 5.71 in	
Dimensions (H x W x D), Metric	140 x 112 x 145 mm	
Weight, Imperial	2.10 lb	
Weight, Metric	1.12 kg	

Cat. No.	1756-PA72/C	1756-PB72/C
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): 0 to 60°C (32 to 140°F)	
Storage Temperature	IEC 60068-2-1 (Test Ab, Un-packaged Non-operating Cold), IEC 60068-2-2 (Test Bb, Un-packaged Non-operating Dry Heat), IEC 60068-2-14 (Test Na, Un-packaged Non-operating Thermal Shock): -40 to 85°C (-40 to 185°F)	
Relative Humidity	IEC 60068-2-30 (Test Db, Un-packaged Non-operating Damp Heat): 5 to 95% non-condensing	
Vibration	IEC 60068-2-6 (Test Fc, Operating): 5g @ 10-500Hz	
Operating Shock	IEC 60068-2-27 (Test Ea, Unpackaged Shock): 30g	
Non-operating Shock	IEC 60068-2-27 (Test Ea, Unpackaged Shock): 50g	
Emissions	CISPR 11: Group 1, Class A	
ESD Immunity	IEC 61000-4-2: 6kV contact discharges 8kV air discharges	
Radiated RF Immunity	IEC 61000-4-3: 10V/m with 1kHz sine-wave 80%AM from 30MHz to 2000MHz 10V/m with 200Hz 50% Pulse 100%AM at 900Mhz 10V/m with 200Hz 50% Pulse 100%AM at 1890Mhz	
EFT/B Immunity	IEC 61000-4-4: ±4kV at 5kHz on power ports	
Surge Transient Immunity	IEC 61000-4-5: ±1kV line-line(DM) and ±2kV line-earth(CM) on power ports	
Conducted RF Immunity	IEC 61000-4-6: 10Vrms with 1kHz sine-wave 80%AM from 150kHz to 80MHz	
Oscillatory Surge Withstand	IEEE C37.90.1: 3kV	
Enclosure Type Rating	None (open-style)	

Cat. No.	1756-PA72/C	1756-PB72/C
Voltage Variation	IEC 61000-4-11: 30% dips for 1 period at 0° & 180° on AC supply ports 60% dips for 5 & 50 periods on AC supply ports ±10% fluctuations for 15min on AC supply ports >95% interruptions for 250 periods on AC supply ports	IEC 61000-4-11: 60% dips for 100ms on DC supply ports 100% dips for 50ms on DC supply ports ±20% fluctuations for 15min on DC supply ports 5sec interruptions on DC supply ports
Certifications: ⁽⁵⁾ (when product is marked)	UL UL Listed Industrial Control Equipment CSA CSA Certified Process Control Equipment CSA CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations FM FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations CE European Union 89/336/EEC EMC Directive, compliant with: EN 50082-2; Industrial Immunity EN 61326; Meas./Control/Lab., Industrial Requirements EN 61000-6-2; Industrial Immunity EN 61000-6-4; Industrial Emissions European Union 73/23/EEC LVD Directive, compliant with: EN 61131-2; Programmable Controllers (1756-PA72 only) C-Tick Australian Radiocommunications Act, compliant with: AS/NZS CISPR 11; Industrial Emissions EEx European Union 94/9/EC ATEX Directive, compliant with: EN 50021; Potentially Explosive Atmospheres, Protection "n" (Zone 2) (1756-PB72 only)	

- (1) The combination of all output power (5.1V backplane, 24V backplane, 3.3V backplane and 1.2V backplane) cannot exceed 75W.
- (2) Time between input voltage removal and dc power failure.
- (3) Use time-delay type overcurrent protection in all ungrounded conductors.
- (4) This fuse is intended to guard against fire hazard due to short circuit conditions.
- (5) See the Product Certification link at www.ab.com for Declarations of Conformity, Certificates, and other certification details.
- (6) Use this Conductor Category information for planning conductor routing. Refer to Publication 1770-4.1, "Industrial Automation Wiring and Grounding Guidelines".
- (7) Input may drop to 16V for a maximum of two minutes each hour for motor starting.

Notes:

Notes:

Rockwell Automation Support

Rockwell Automation provides technical information on the web to assist you in using its products. At <http://support.rockwellautomation.com>, you can find technical manuals, a knowledge base of FAQs, technical and application notes, sample code and links to software service packs, and a MySupport feature that you can customize to make the best use of these tools.

For an additional level of technical phone support for installation, configuration and troubleshooting, we offer TechConnect Support programs. For more information, contact your local distributor or Rockwell Automation representative, or visit <http://support.rockwellautomation.com>.

Installation Assistance

If you experience a problem with a hardware module within the first 24 hours of installation, please review the information that's contained in this manual. You can also contact a special Customer Support number for initial help in getting your module up and running:

United States	1.440.646.3223 Monday – Friday, 8am – 5pm EST
Outside United States	Please contact your local Rockwell Automation representative for any technical support issues.

New Product Satisfaction Return

Rockwell tests all of its products to ensure that they are fully operational when shipped from the manufacturing facility. However, if your product is not functioning and needs to be returned:

United States	Contact your distributor. You must provide a Customer Support case number (see phone number above to obtain one) to your distributor in order to complete the return process.
Outside United States	Please contact your local Rockwell Automation representative for return procedure.

www.rockwellautomation.com

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