Install Chassis and Redundant Power Supplies

This chapter describes how to install standard and ControlLogix-XT versions of the 1756 chassis with redundant power supplies.

Redundant Power Supplies

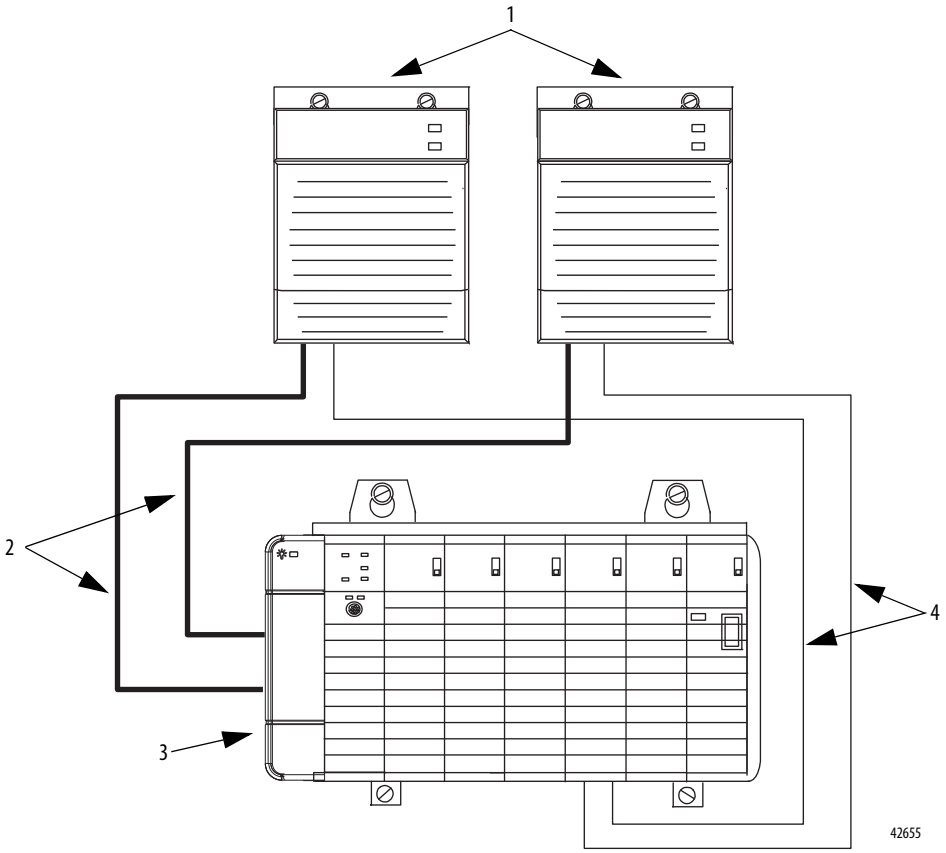
The redundant power supply system provides additional uptime protection for chassis used in critical applications. The two remotely-mounted supplies are designed to share the current required by the chassis and are available in AC (catalog number 1756-PA75R/A or 1756-PAXTR) and DC (catalog number 1756-PB75R/A or 1756-PBXTR) versions that can be mixed or matched when used in tandem.

In the event of a failure by one power supply, the remaining supply accommodates the entire load of the chassis without disruption to chassis activity.

The 1756-PSCA2 chassis adapter is a passive device designed to funnel power from one or two ControlLogix redundant power supplies to the single power connector on the ControlLogix chassis (only Series B) backplane.

Components of the Redundant System

The following figure shows the components of a redundant system in a typical configuration.



Item	Description	Cat. No.
1	Redundant power supply	1756-PA75R/A and/or 1756-PB75R/A
2	Redundant power supply cable(1) (Length = 0.91 m [3 ft])	1756-CPR2
3	Redundant power supply chassis adapter	1756-PSCA2
4	Annunciator wiring(2) (Maximum length = 10 m [32.8 ft])	User-supplied

(1) Cable bend radius is 12.7 cm (5.0 in.)

(2) Optional user-provided annunciator wiring can be connected to the solid-state relay for status and troubleshooting purposes. See page 50 for more information.

Install the Chassis and Chassis Adapter

After planning your system, use the instructions below to properly install your chassis and 1756-PSCA2 chassis adapter.

ATTENTION: Do not drill holes above an installed chassis. Metal chips from drilling can damage the backplane and cause intermittent operation.

IMPORTANT Chassis are intended to be mounted only horizontally. Do not mount vertically.

1. Drill holes in the back panel of the enclosure for the chassis mounting tabs.

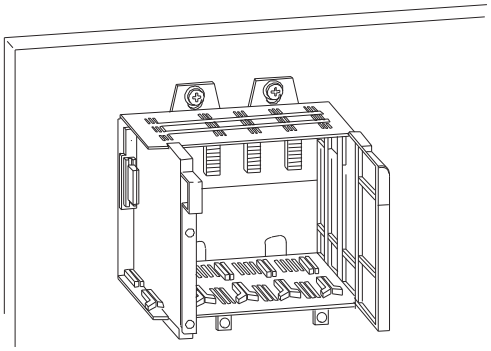
   See the Spacing Requirements on page 35 for assistance in hole placement.
2. Scrape paint off the back panel for an electrical connection between the chassis and back panel.
3. Hold the chassis in place against the holes.

ATTENTION: If the chassis mounting tabs do not lay flat before the screws are tightened, use additional washers as shims so the chassis is not warped by tightening the screws.

Warping a chassis can damage the backplane and cause intermittent operation.

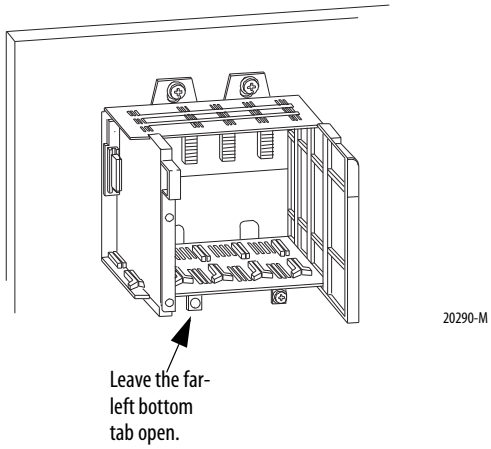
4. Install the hardware for the top mounting tabs and tighten.

   See Parts Required on page 33 for more information.



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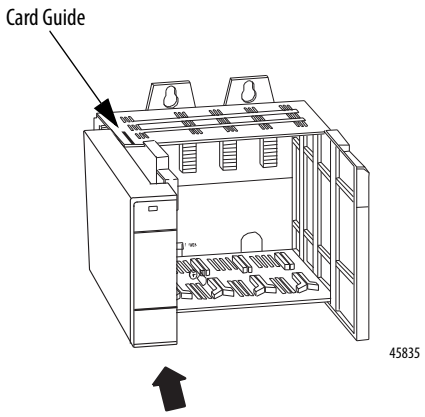
5. Leaving the far-left bottom tab open for functional ground, install the remaining tab screws.



6. Align the 1756-PSCA2 adapter's circuit board with the card guides on the left side of the chassis and slide the adapter back until it is flush with the front of the chassis.

WARNING: If you connect or disconnect the 1756-CPR2 cables while either backplane power source is on, an electrical arc can occur. This could cause an explosion in hazardous location installations. Repeated electrical arcing causes excessive wear to contacts on both the module and its mating connector. Worn contacts may create electrical resistance that can affect module operation.

Be sure that power is removed or the area is nonhazardous before proceeding.



Connect the Power

Use the information in the following sections to connect the power.

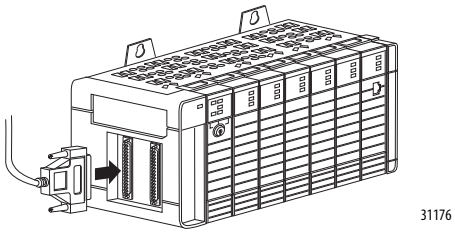
Connect the 1756-CPR2 Cable

Use the 1756-CPR2 cable to connect your redundant power supply to the 1756-PSCA2 chassis adapter.

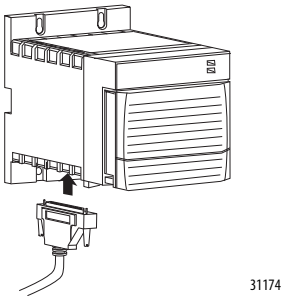
WARNING: If you connect or disconnect the 1756-CPR2 cables while either backplane power source is on, an electrical arc can occur. This could cause an explosion in hazardous location installations. Repeated electrical arcing causes excessive wear to contacts on both the module and its mating connector. Worn contacts may create electrical resistance that can affect module operation.

Be sure that power is removed or the area is nonhazardous before proceeding.

1. Connect the male end of the 1756-CPR2 cable to the 1756-PSCA2 chassis adapter.



2. Connect the female end of the 1756-CPR2 cable to the redundant power supply.



3. Tighten the screws to hold the cable in place.

   Make sure you tighten the screws all the way to hold the cable in place for the life of the product.

4. Repeat these steps with the second redundant power supply.

Connect Power to the Redundant Power Supply

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

ATTENTION: Do not wire more than 1 conductor on any single terminal.
Use 15 A time-delay type fuse in all ungrounded power connections.

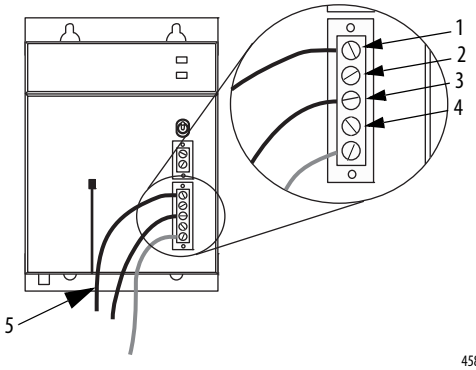
Use 2.5 mm² (14 AWG) solid or stranded-copper wire rated at 90 °C (194 °F), or greater, 1.2 mm (3/64 in.) insulation maximum to connect power. Tighten the terminals to a torque of 0.8 N•m (7 lb•in).

Connect the power as shown in Figure 35.

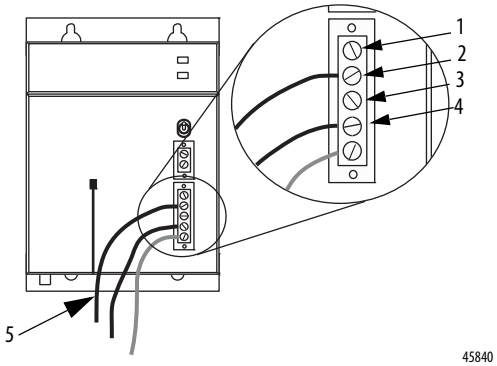
IMPORTANT The power supplies' voltage input connections are auto-sensing.
You do **not** use a jumper, for example, a 120/240V AC jumper, when connecting external power to the power supply, as shown in Figure 35.

Figure 35 - Power Connection

1756-PA75R/A (AC)



1756-PB75R/A (DC)



Item	Description, 1756-PA75R/A (AC)	Description, 1756-PB75R/A (DC)
1	L1 (high side of line power)	Not used
2	Not used	DC+ (positive supply)
3	L2 (low side of line power)	Not used
4	Not used	DC- (negative supply return)
5	2.5 mm² (14 AWG) solid or stranded-copper wire rated at 90 °C (194 °F), or greater, 1.2 mm (3/64 in.) insulation max	

For recommendations on how to route the wiring in your redundant power supply application, see page 45.

Connect the Solid-state Relay

A solid-state relay on your redundant power supplies can be connected to any compatible monitoring or signaling device. This connection indicates if the supplies are functioning properly.

The relays are closed during standard operation. The solid-state relay contacts open if either of these events occur:

- One or both of the supplies fail.
  In this case, the contact opens on the failed supply (or supplies), and the input module alerts you to the failure through the controller program.
- The connected redundant power supplies are turned OFF.

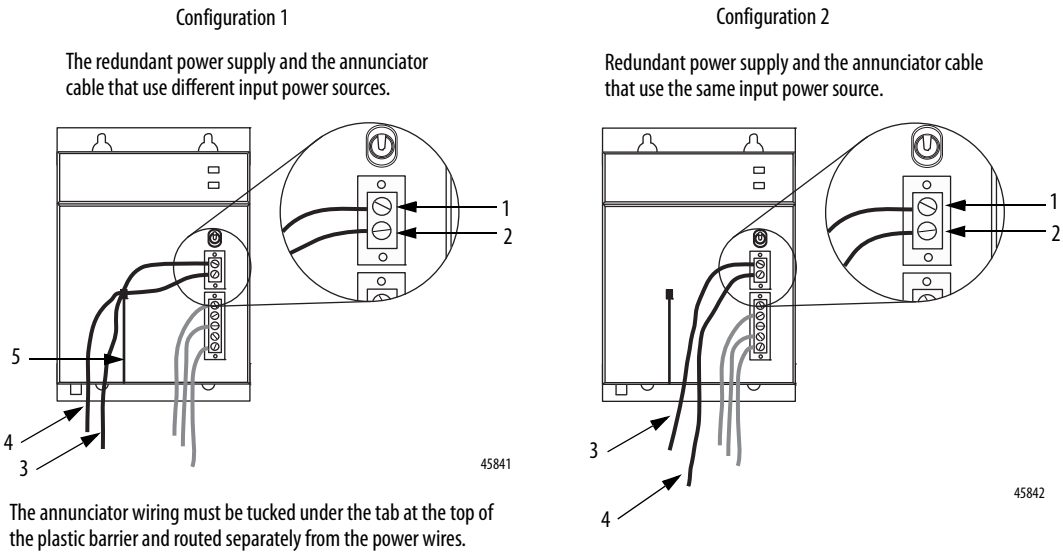
When you use the solid state relay annunciator function, connect a compatible source voltage to either contact terminal. Then connect the other terminal to the monitoring or signaling device.

ATTENTION: Annunciator cable length is less than 10 m (32.8 ft).

The annunciator output is rated for resistive loads. Do not use it to drive the coil of an electromagnetic relay.

Connect the solid-state relay as shown in Figure 36.

Figure 36 - Solid-state Relay Connection



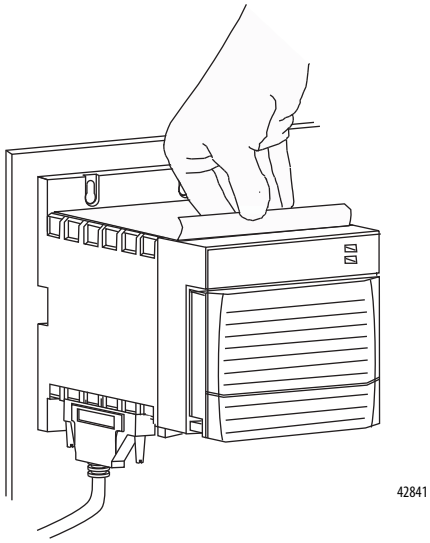
The annunciator wiring must be tucked under the tab at the top of the plastic barrier and routed separately from the power wires.

Item	Description
1	Source voltage
2	Annunciator cable to input module
3	0.25…2.5 mm^2 (22…14 AWG) solid or stranded-copper wire rated at 90 °C (194 °F), or greater, 1.2 mm (3/64 in.) insulation max
4	0.25…2.5 mm^2 (22…14 AWG) solid or stranded-copper wire rated at 90 °C (194 °F), or greater, 1.2 mm (3/64 in.) insulation max
5	Plastic barrier

Remove the Protective Label

ATTENTION: Make sure the power supply 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.



Apply Power to the Chassis

Turn on the power.

