

Experion PKS
Redundant Power Supply Installation Guide

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1 About This Document

This document provides information for installing a redundant power supply for your C200 Controller and/or I/O chassis.

Revision	Date	Description
A	December 2013	Initial release of the document.

2 Installation

Related topics

“Preparing for Installation” on page 8

“Installing Components” on page 14

“Connecting Components” on page 17

2.1 Preparing for Installation

Related topics

- “Before you begin” on page 8
- “Installation declaration” on page 8
- “Check Components” on page 8
- “Verify mounting space requirements” on page 9
- “Component layout recommendations” on page 12
- “Tools needed” on page 13

2.1.1 Before you begin

Be sure you have reviewed the *Preinstallation Considerations* in the *Control Hardware Installation Guide* and confirmed that you have taken steps to minimize Electrostatic Discharge (ESD).



CAUTION

Since power output ratings vary for given approval bodies, be sure the specified load capacity and temperature rating for the power supply will not be exceeded in your application.

For applicable power output rating specifications, refer to the Experion specifications. The Experion specifications can be found on the Honeywell website: (<http://www.honeywellprocess.com>). Just follow the Experion product links.

2.1.2 Installation declaration



Attention

This equipment shall be installed in accordance with the requirements of the National Electrical Code (NEC), ANSI/NFPA 70, or the Canadian Electrical Code (CEC), C22.1. It is supplied as “open equipment” that is intended to be mounted on a sub-panel within an enclosure. The suitability of the enclosure and installed system shall be acceptable to the local “authority having jurisdiction,” as defined in the NEC, or “authorized person” as defined in the CEC.

2.1.3 Check Components

Verify that you have the correct redundant power supply components to meet your particular installation requirements. The following table lists the available components for reference and the following figure shows a typical installation configuration.

Note that model numbers beginning with the prefix “TK” are for a coated version of the component.

Model Number	Component	Quantity per Chassis
TC-RPCXX1 or TK-RPCXX1	120/240Vac Redundant Power Supply	2 ¹
TC-RPDXX1 or TK-RPDXX1	24Vdc Redundant Power Supply	2 ¹
TC-RPSCA2 or TK-RPSCA2	Redundant Power Supply Chassis Adapter	1
TC-RPSC04	Redundant Power Supply Cables [Length is 914mm (3ft)]	2

Model Number	Component	Quantity per Chassis
User Supplied ²	12-14 AWG Annunciator Wiring [Maximum Length is 10m (32.8ft)]	2

¹The redundant power supply models can be mixed or matched, so the quantity would be 1 per chassis if they were mixed.

²Optional user-supplied annunciator wiring can be connected to a solid-state relay for status and troubleshooting purposes.

**Attention**

If you have a Series A chassis with any of the following model numbers, contact your Honeywell Service representative for redundant power supply options.

- TC-FXXnn1
- TK-FXXnn1

Note: nn = the number of slots available in the chassis, (04, 07, 10, 13, 17).

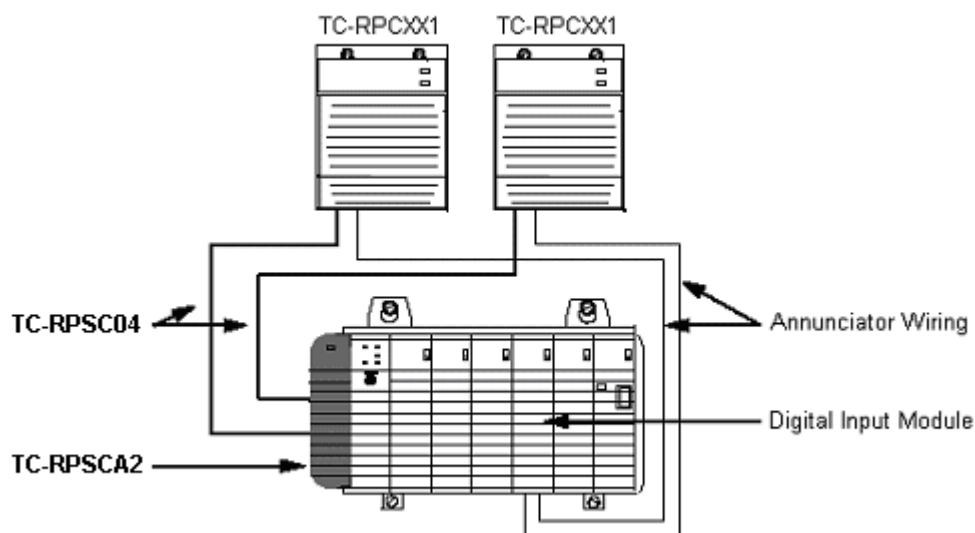


Figure 1: Typical Redundant Power Supply Application

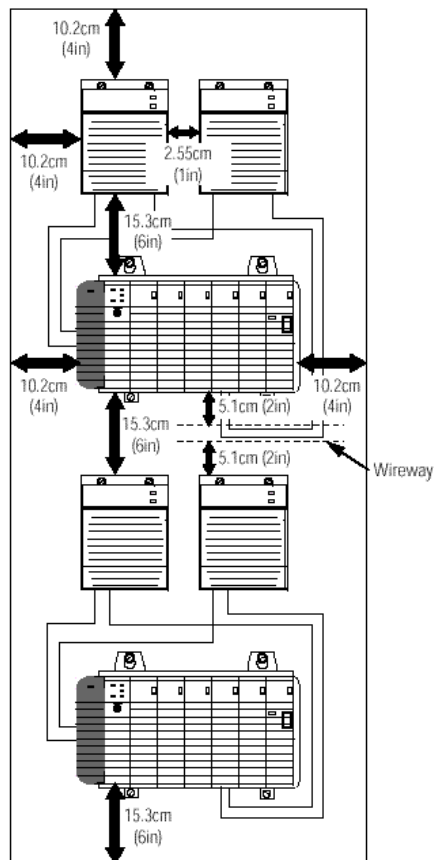
The redundant power supplies (TC-RPCxx1 or TC-RPDxx1) are surface mounted within 3 feet of the controller or I/O chassis. A redundant power supply adapter, (TC-RPSCA2) is installed on one end of the chassis. Three-foot cables, (TC-RPSC04) are installed connecting the redundant power supplies to the adapter.

2.1.4 Verify mounting space requirements

**Attention**

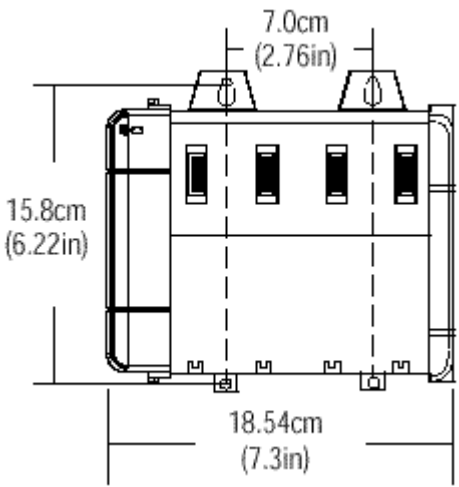
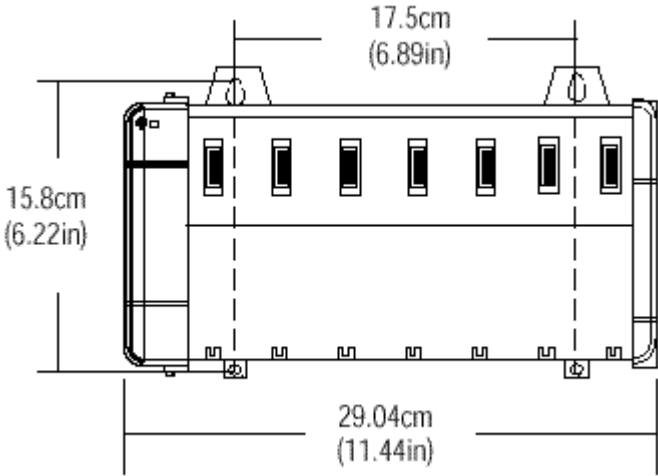
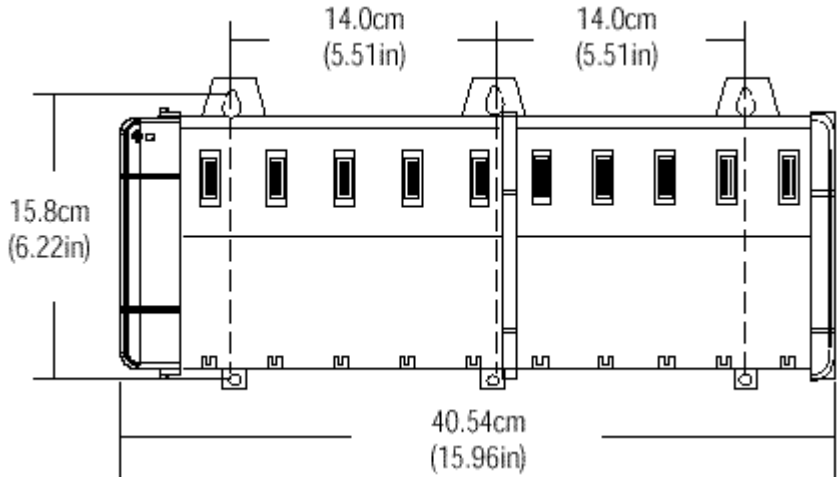
Be sure you meet these minimum spacing requirements when mounting components in an enclosure, as shown in the following Figure.

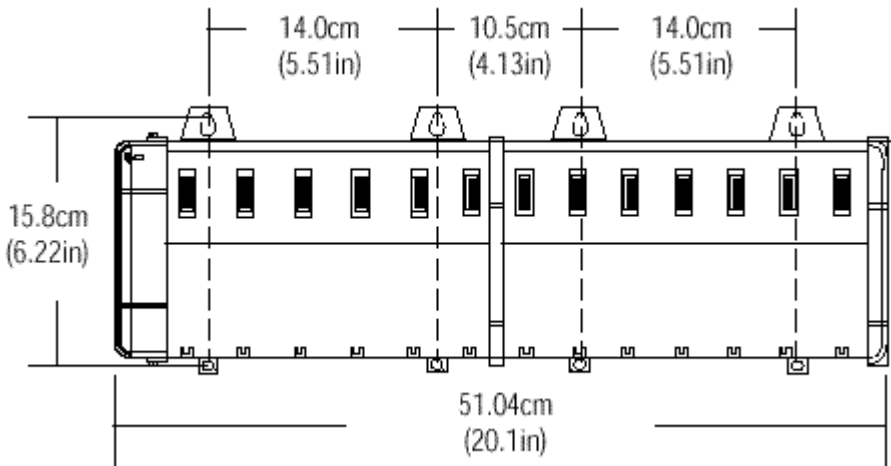
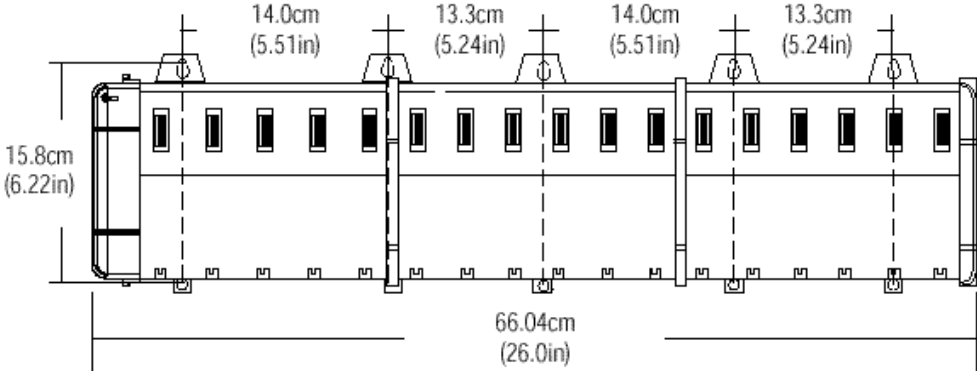
- 10.2cm (4in) between redundant power supplies and the enclosure.
- 2.55cm (1in) between redundant power supplies.
- 15.3cm (6in) between chassis and heat source.
- 5.1cm (2in) between wireway and top or bottom of chassis.
- 5.1cm (2in) between wireway and power supply.
- 7.7 to 10.2cm (3 to 4in) between chassis mounted horizontally - not shown.



Refer to the dimensions for the appropriate chassis model in the following table to plan the panel layout for your particular installation. See the *Control Hardware Installation Guide* for more chassis mounting information.

Chassis Model	Dimensions
All models - Right-Side View	<p>The diagram illustrates the right-side view of the chassis. It shows a rectangular profile with a central recessed area. The overall height is dimensioned as 16.9cm (6.65in) from the top to the bottom. The overall width is dimensioned as 14.5cm (5.8in) from the left to the right. The top and bottom edges are labeled 'Top' and 'Bottom' respectively. The left and right vertical edges are labeled 'Front' and 'Back' respectively.</p>

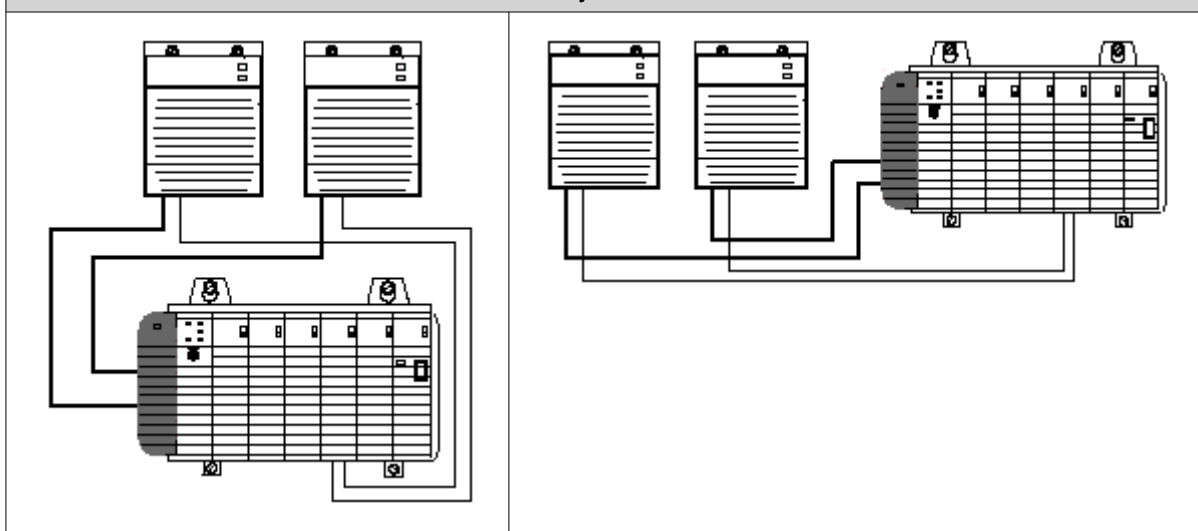
Chassis Model	Dimensions
TC-FXX042 (With Adapter installed)	
TC-FXX072 (With Adapter installed)	
TC-FXX102 TK-FXX102 (With Adapter installed)	

Chassis Model	Dimensions
TC-FXX132 TK-FXX132 (With Adapter installed)	
TC-FXX172 (With Adapter installed)	

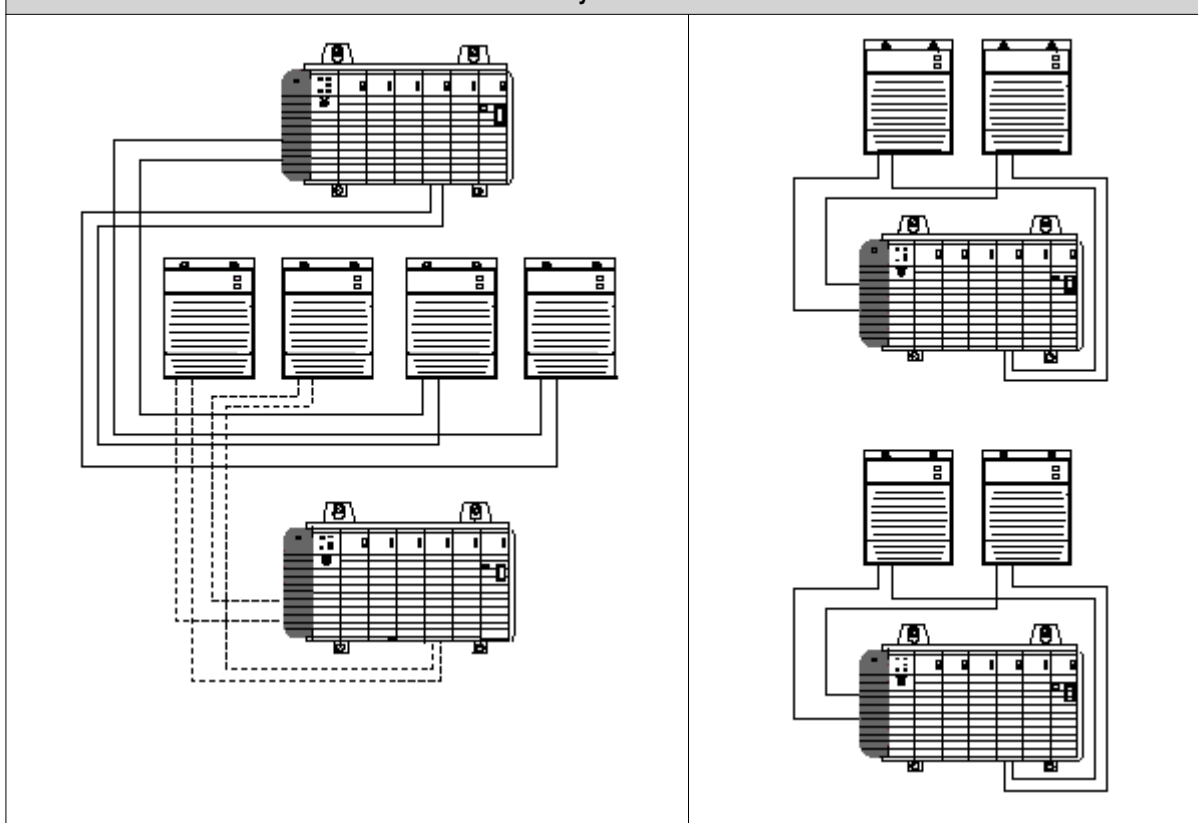
2.1.5 Component layout recommendations

We recommend that you use one of the following recommended layouts for installing redundant power supply components with one or two chassis.

Recommended Layouts With One Chassis



Recommended Layouts With Two Chassis



2.1.6 Tools needed

- 1/8-inch flat-blade screwdriver
- 1/4-inch flat-blade (#2) or Phillips screwdriver
- Needle-nose pliers
- Wire stripper
- Electric drill

2.2 Installing Components

Related topics

“Installing redundant power supply” on page 14

“Installing redundant power supply chassis adapter” on page 16

2.2.1 Installing redundant power supply

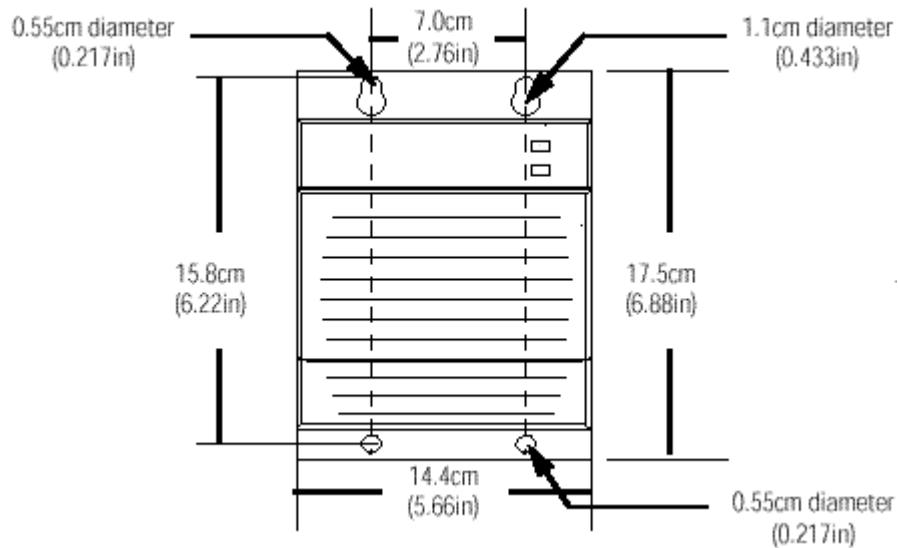
Use the following procedure to install a redundant power supply on the back panel of an enclosure.



CAUTION

Do **not** drill holes for a redundant power supply above an already installed chassis. Metal chips from drilling can damage the backplane and cause intermittent operation.

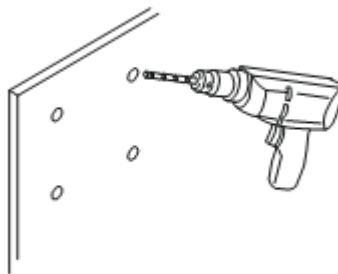
- 1 Reference the following mounting dimensions and measure and mark the location of the mounting tab holes for the power supply on the back panel. Or, if you have help, position the power supply in the desired location on the back panel and use a center punch to mark the location of the mounting tab holes.



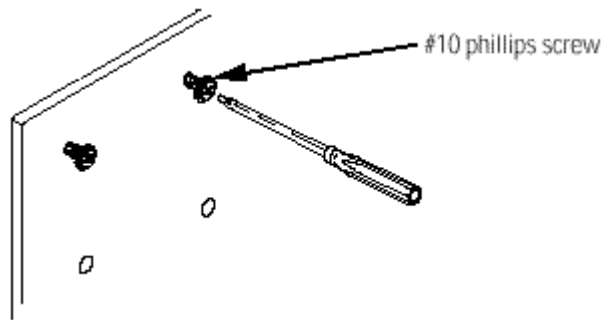
Tip

The mounting hole dimensions for a redundant power supply are identical to the ones for a 4-slot chassis.

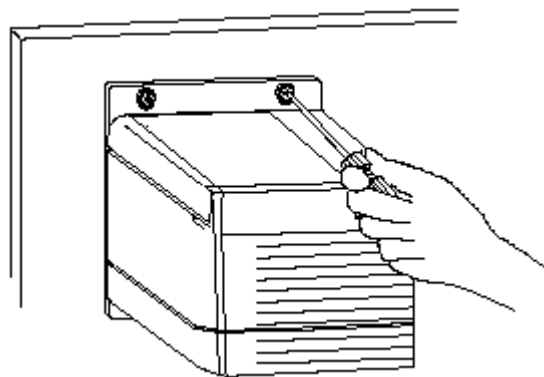
- 2 Using the marks made in Step 1, drill tap holes in the back panel of the enclosure for #10 (M4) or #12 (M5) mounting screws.



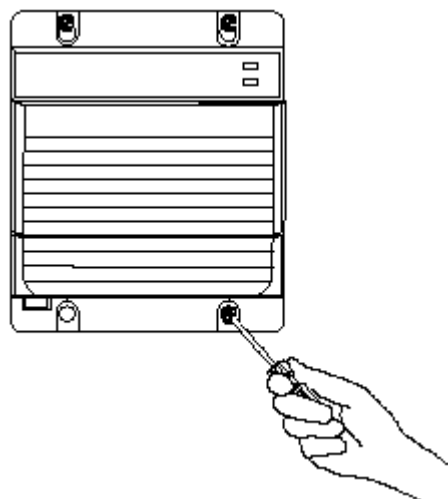
- 3 Put a split lock-washer and flat washer on a #10 (M4) or #12 (M5) screw and screw it into a top mounting hole so it is secure, but not tight against the panel. Repeat for the other top mounting hole.



- 4 Align the top mounting tab holes in the redundant power supply with the installed screws, slip the tabs over the screws, and slide the power supply behind the washers, so it rests on the screws. Tighten the screws.



- 5 Install screws and washers in the bottom mounting tabs and tighten.

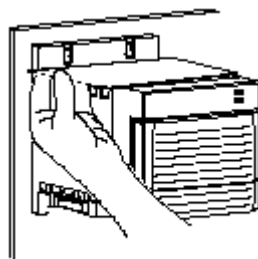


- 6 Observing spacing and layout recommendations, repeat this procedure to install the other redundant power supply (ies).


Attention

Be sure the power supply is mounted and all panel fabrication is completed before you remove the protective label. The label protects the power supply from metal shavings falling inside it.

- 7 Peel the protective label off the top of each redundant power supply.

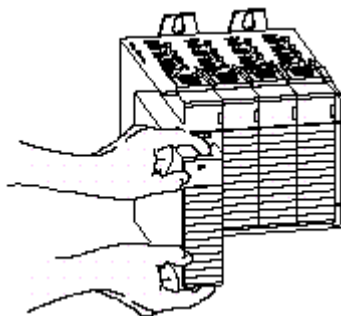


- 8 Go to the next section “Installing redundant power supply chassis adapter” on page 16.

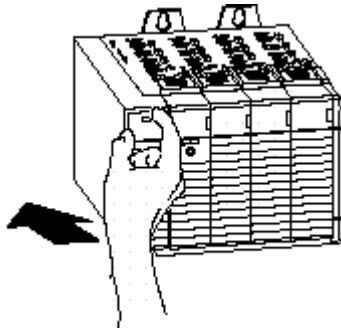
2.2.2 Installing redundant power supply chassis adapter

Use the following procedure to install a chassis adapter on the left most side of a chassis.

- 1 Align the right side of the chassis adapter with the left most edge of the chassis.



- 2 Push the module onto the chassis until the locking tabs click.



- 3 Go to the next section “Connecting Components” on page 17.

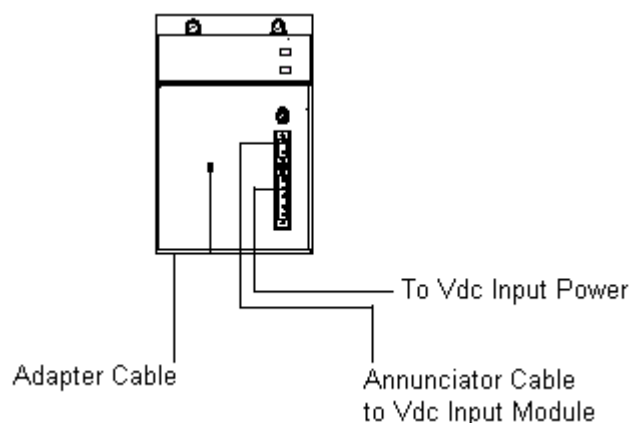
2.3 Connecting Components

Related topics

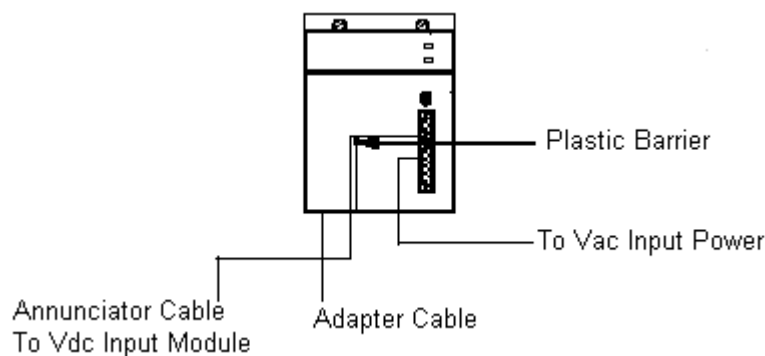
- “General wiring guidelines” on page 17
- “Connecting adapter cable” on page 18
- “Connecting optional annunciator cable” on page 18
- “Connecting power” on page 19

2.3.1 General wiring guidelines

- Never run all three lines together in any application. For example, do not run input power, adapter cable, and annunciator cable together in the same raceway.
- If the redundant power supply and the annunciator cable use the same input power source, you can route the power line and annunciator cable together. For example, if your application uses a Vdc redundant power supply and the annunciator cable is connected to a Vdc input module, you can route the power source line and the annunciator cable together, as shown below.



- If the redundant power supply and the annunciator cable use different input power sources, you must route the power line and annunciator cable separately. For example, if your application uses a Vac redundant power supply and the annunciator is connected to a Vdc input module, you must route the power source line and annunciator cable separately. In this case, be sure to route the annunciator cable under the tab at the top of the plastic barrier, as shown below.



- Be sure the length of the annunciator cable does not exceed 10m (32.8ft).

**WARNING**

When components are located in a Division 2 hazardous location, do **not** attempt to connect or disconnect cables unless power has been removed, or the area is known to be nonhazardous.

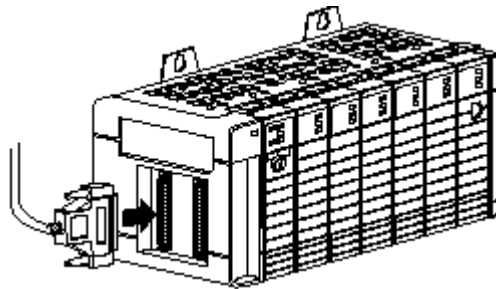
2.3.2 Connecting adapter cable

Use the following procedure to connect the cable TC-RPSC04 to the chassis adapter and the redundant power supply. This procedure assumes that there is a minimum space of 4 inches (10.2cm) between the adapter and the enclosure per previous spacing recommendations. You will not be able to connect the cable to the adapter, if the space is less than 4 inches (10.2cm).

**Attention**

- Be sure the redundant power supply is turned off before making any cable connections.

1. Connect a plug on one end of the adapter cable to one of the ports on the left side of the chassis adapter. Be sure the plug is fully seated and tighten the plug screws to secure it.



2. Connect the plug on the other end of the adapter cable to the port under the left side of the redundant power supply. Be sure the plug is fully seated and tighten the plug screws to secure it.



3. Repeat this procedure to connect the other adapter cable to the remaining port on the adapter and to the second redundant power supply.
4. Go to the next section “Connecting optional annunciator cable” on page 18.

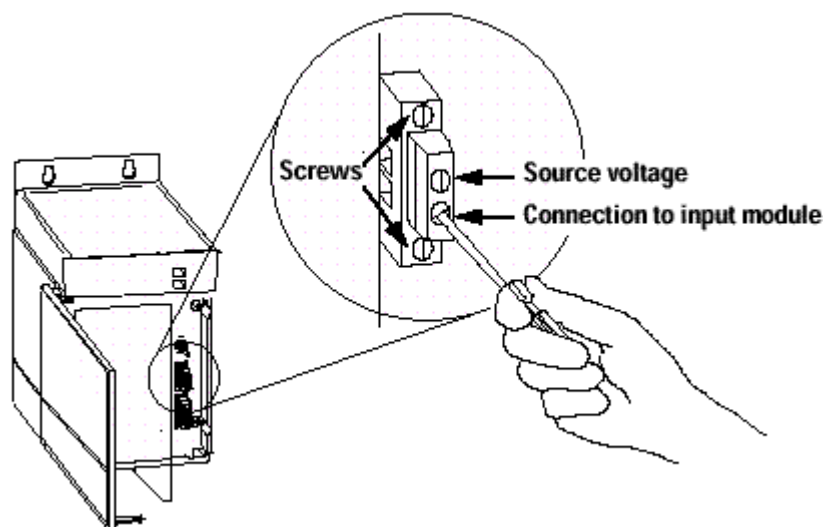
2.3.3 Connecting optional annunciator cable

Use the following procedure to connect a user-supplied cable between the solid-state relay on a redundant power supply to an input module in the chassis. The normally open relay is held closed during normal operation and opens when the power supply fails or is turned off.

**Attention**

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

1. Open the redundant power supply door.
2. Connect the source voltage lead to one of the terminals on the solid-state relay connector, as shown below. The source voltage must be compatible with the input module.



- 3 Connect the input point lead to the other terminal on the solid state relay; connector.
- 4 Connect the other end of the cable to the appropriate terminals on the input module. Be sure the length of the annunciator cable does not exceed 10m (32.8ft).
- 5 Make sure the solid-state relay connector is fully seated on the power supply and tighten the screws to secure it.
- 6 Close the power supply door.
- 7 Repeat this procedure for the second redundant power supply, if applicable.
- 8 Go to the next section “Connecting power” on page 19.

2.3.4 Connecting power

Use the appropriate portion of the following procedure to connect the power wiring to the redundant power supply.



WARNING

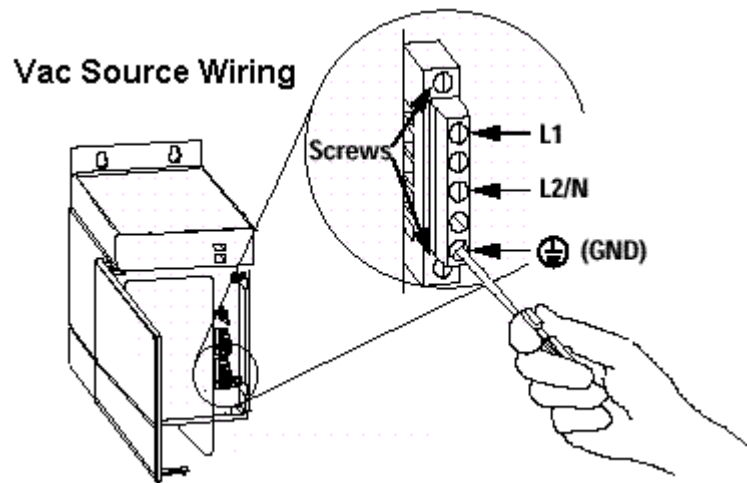
Turn off power at the source of the supply before connecting to the power supply terminals. Failure to do so could cause injury to personnel and/or equipment. This equipment must be provided with a disconnect on each ungrounded conductor.



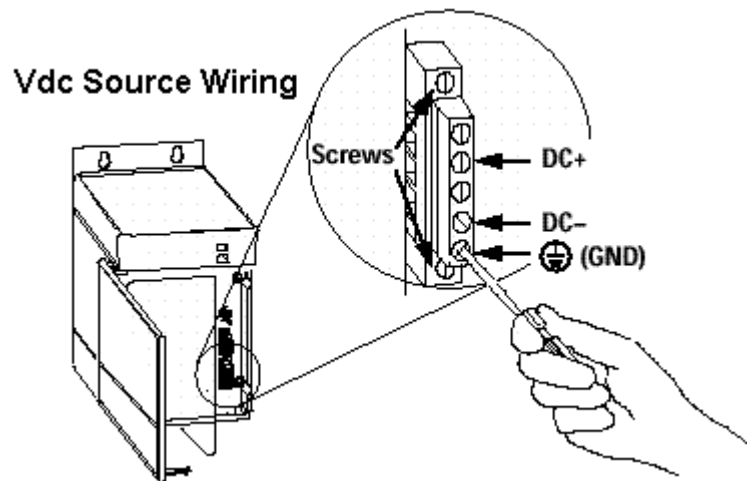
Attention

- We recommend 14 AWG, 75°C, copper wire for power connections.
- Torque screw terminals to 7 inch-pound (0.8 Newton-meter).

- 1 *120/240 Vac Power*
- 2 Open the door on the front of the redundant power supply.
- 3 Connect the high side of the Vac power line (black) to the L1 terminal on the power connector.
- 4 Connect the low side of the Vac power line (white) to the L2/N terminal.



- 5 Connect the PE ground (green with yellow stripe) to the ground terminal. Please refer to the *Protective Earth (PE) ground guidelines* and *Ground bus connection guidelines* in the *Control Hardware Installation Guide* for general grounding recommendations.
- 6 Be sure the power connector is fully seated on the power supply and tighten the screws to secure it.
- 7 Close the power supply door.
- 8 Repeat this procedure for other Vac powered redundant power supplies, as required.
- 9 *24Vdc Power*
- 10 Open the door on the front of the redundant power supply.
- 11 Connect the positive Vdc lead to the DC+ terminal on the power connector.



- 12 Connect the negative Vdc lead to the DC- terminal on the power connector.
- 13 Connect the PE ground (green with yellow stripe) to the ground terminal. Please refer to the *Protective Earth (PE) ground guidelines* and *Ground bus connection guidelines* in the *Control Hardware Installation Guide* for general grounding recommendations.
- 14 Be sure the power connector is fully seated on the power supply and tighten the screws to secure it.
- 15 Close the power supply door.
- 16 Repeat this procedure for other Vdc powered redundant power supplies, as required.

3 Operation

Related topics

“Activate Redundant Power Supply System” on page 22

3.1 Activate Redundant Power Supply System

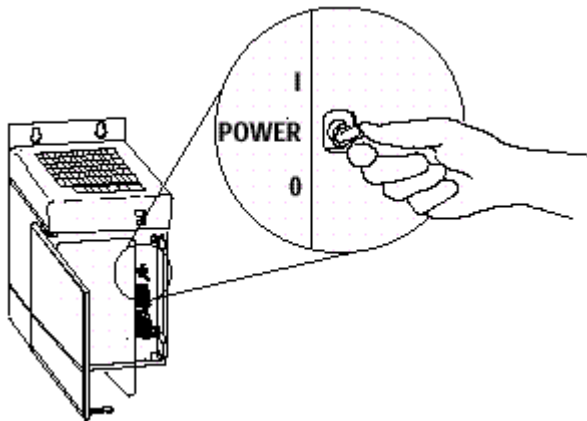
Related topics

“Turn on power” on page 22

“Interpreting LED indications” on page 22

3.1.1 Turn on power

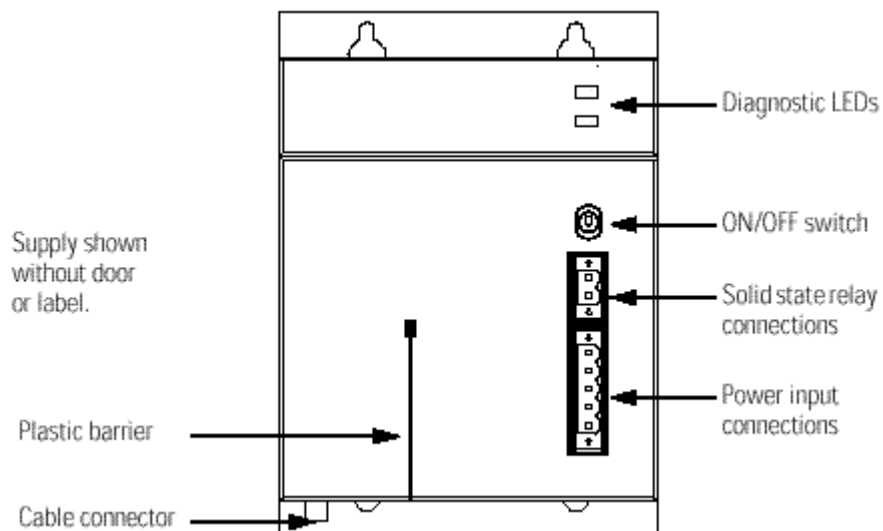
Open the door on the front of each redundant power supply and flip the power switch to the ON position. Close the power supply door.



3.1.2 Interpreting LED indications

Each redundant power supply includes the following two diagnostic LEDs, as shown in the following Figure.

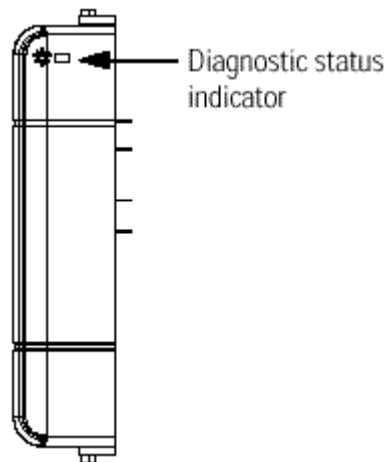
- Power - Green
- Non-Red (non-redundancy) - Amber



Use the following table to interpret the meaning of some typical status indications.

If LED indications are . . .	Then, it means . . .	And, the possible corrective action is . . .
Power - Solid Green Non-red - Off	Both supplies are operating properly. (You should see this status on both supplies, if it appears on either.)	None
Power - Solid Green Non-red - Solid Amber	This supply is operating properly but is the only supply providing power to the chassis adapter.	Check the other supply.
Power - Off Non-red - Solid Amber	All possible connections are made, but the redundant power supply is turned Off.	Turn the supply ON. If the supply does not turn ON, follow these steps: <ol style="list-style-type: none"> 1. Remove input power to supply. 2. Wait 15 minutes. 3. Reconnect input power. 4. Turn supply ON. If the supply still does not turn ON, replace it.
Power - Off Non-red - Off	Any of the following conditions may apply: <ol style="list-style-type: none"> 1. The supply is turned Off. 2. Line voltage is not within the specified range. 3. All connections are made, but input power is not supplied. 4. All connections are made, including input power, but adapter cable is not connected. 5. The supply is ON but defective. 	Take the appropriately numbered action for each condition. <ol style="list-style-type: none"> 1. Turn the supply ON. 2. Verify that the line power is in the specified range. If the LEDs remain Off, cycle power. 3. Verify that input power is supplied and turn ON the supply. 4. Connect adapter cable and turn the supply ON. 5. Replace the supply.

The redundant power supply chassis adapter has only one status LED, as shown in the following Figure. It is ON when the chassis is receiving power and OFF when the chassis is not receiving power.



4 Notices

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4.1 Documentation feedback

You can find the most up-to-date documents on the Honeywell Process Solutions support website at:

<http://www.honeywellprocess.com/support>

If you have comments about Honeywell Process Solutions documentation, send your feedback to:

hpsdocs@honeywell.com

Use this email address to provide feedback, or to report errors and omissions in the documentation. For immediate help with a technical problem, contact your local Honeywell Process Solutions Customer Contact Center (CCC) or Honeywell Technical Assistance Center (TAC) listed in the “Support and other contacts” section of this document.

4.2 How to report a security vulnerability

For the purpose of submission, a security vulnerability is defined as a software defect or weakness that can be exploited to reduce the operational or security capabilities of the software.

Honeywell investigates all reports of security vulnerabilities affecting Honeywell products and services.

To report a potential security vulnerability against any Honeywell product, please follow the instructions at:

<https://honeywell.com/pages/vulnerabilityreporting.aspx>

Submit the requested information to Honeywell using one of the following methods:

- Send an email to security@honeywell.com.
- or
- Contact your local Honeywell Process Solutions Customer Contact Center (CCC) or Honeywell Technical Assistance Center (TAC) listed in the “Support and other contacts” section of this document.

4.3 Support

For support, contact your local Honeywell Process Solutions Customer Contact Center (CCC). To find your local CCC visit the website, <https://www.honeywellprocess.com/en-US/contact-us/customer-support-contacts/Pages/default.aspx>.

4.4 Training classes

Honeywell holds technical training classes on Experion PKS. These classes are taught by experts in the field of process control systems. For more information about these classes, contact your Honeywell representative, or see <http://www.automationcollege.com>.

