

# PACSystems™ RX3i

DC POWER SUPPLY, 40W

(IC695PSD040)



## Warnings and Caution Notes as Used in this Publication

### **WARNING**

Warning notices are used in this publication to emphasize that hazardous voltages, currents, temperatures, or other conditions that could cause personal injury exist in this equipment or may be associated with its use.

In situations where inattention could cause either personal injury or damage to equipment, a Warning notice is used.

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### **CAUTION**

Caution notices are used where equipment might be damaged if care is not taken.

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**Note:** Notes merely call attention to information that is especially significant to understanding and operating the equipment.

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# Introduction

PACSystems<sup>®</sup> RX3i Power Supply IC695PSD040 is a 40-Watt supply that operates from an input voltage source in the range of 18 VDC to 30 VDC.

This power supply provides three outputs:

- +5.1 VDC output used internally by RX3i modules with IC695 and IC694 catalog numbers.
- +24 VDC relay output used to power circuits on Output Relay modules.
- +3.3 VDC output used internally by RX3i modules with IC695 catalog numbers.

## CAUTION

Only one IC695PSD040 can be installed in a PACSystems RX3i (IC695 catalog number) Universal Backplane. This Power supply cannot be used with other RX3i power supplies in redundant or increased capacity modes.

Power Supply version IC695PSD040C or before may cause equipment damage if inadvertently installed in the same backplane as another RX3i power supply.

This DC Power Supply occupies one backplane slot. If the number of modules required exceeds the capacity of the Power Supply, the additional modules must be installed in Expansion or Remote backplanes or power supplies capable of increased capacity mode operation must be used.

The Power Supply indicates when an internal fault occurs so the CPU can detect loss of power or log the appropriate fault code.

## LEDs

Four LEDs on the Power Supply indicate:

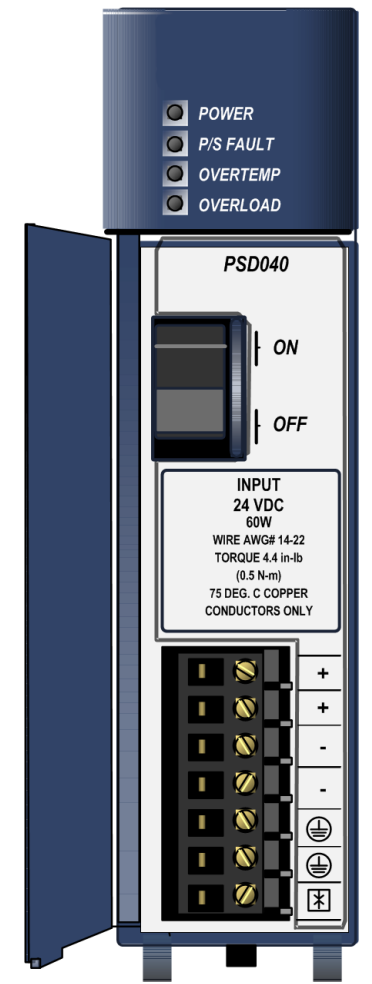
- Power (Green/Amber). When this LED is green, it indicates power is being supplied to the backplane. When this LED is amber, power is applied to the Power Supply but the Power Supply switch is off.
- P/S Fault (Red). When this LED is lit, it indicates the Power Supply has failed and is no longer supplying sufficient voltage to the backplane.
- Over Temperature (Amber). When this LED is lit, it indicates the Power Supply is near or exceeding its maximum operating temperature.
- Overload (Amber). When this LED is lit, it indicates the Power Supply is near or exceeding its maximum output capability on at least one of its outputs.

The CPU Fault Table shows a fault if any Overtemperature, Overload, or P/S Fault occurs.

## On/Off Switch

The ON/OFF switch is located behind the door on the front of the module. The switch controls the operation of the outputs of the supply. It does NOT interrupt line power. A projecting tab next to the switch helps prevent accidentally turning it on or off.

**Figure 1: Module in Open Door Position**



## Wiring Terminals

Terminals for +24 V and -24 V power, ground, and MOV disconnect accept individual 14 to 22 AWG wires.

## Specifications

Specification	Description
Nominal Rated Voltage	24 VDC
Input Voltage Range	18 to 30 VDC
Input Power	60 Watts maximum at full load
Inrush Current	4 Amps, 100 milliseconds maximum <sup>1</sup>
Output Power	40 Watts maximum total of both outputs. 5.1 VDC = 30 Watts maximum 3.3 VDC = 30 Watts maximum Maximum output power depends on ambient temperature, as shown. Refer to <i>Thermal Deratings: PSD040</i> for more information.
Output Voltage	5.1 VDC: 5.0 VDC to 5.25 VDC (5.1 VDC nominal) 3.3 VDC: 3.2 VDC to 3.465 VDC (3.3 VDC nominal)
Output Current	5.1 VDC: 0 to 6 Amps 3.3 VDC: 0 to 9 Amps
Isolation	None
Ripple (all outputs)	50 mV
Noise (all outputs)	50 mV
Ride-through time	10 ms This is the length of time the Power Supply maintains valid outputs if the power source is interrupted. If this Power Supply is used with IC694 and IC693 modules that have relay outputs, special precautions should be taken because dropouts in the source voltage will be seen by the module and may cause relay dropouts.
Wiring Terminals	Each terminal accepts one 14 AWG to 22 AWG wire.
Terminal Current	6 Amps
Number of Daisy-Chained PSD040 Supplies	Up to 2
Installation Environment	For use in Pollution Degree 2 environments only

<sup>1</sup> The Inrush Current specification is given as a guide for sizing the external power source for the IC695PSD040. Peak inrush current may be higher for shorter durations.

# Thermal Deratings: PSD040

The maximum output power for Power Supply PSD040 depends on the ambient temperature, as shown below. Full output power is available up to at least 40°C (89.6°F).

Figure 2: Thermal Derating @ 5V

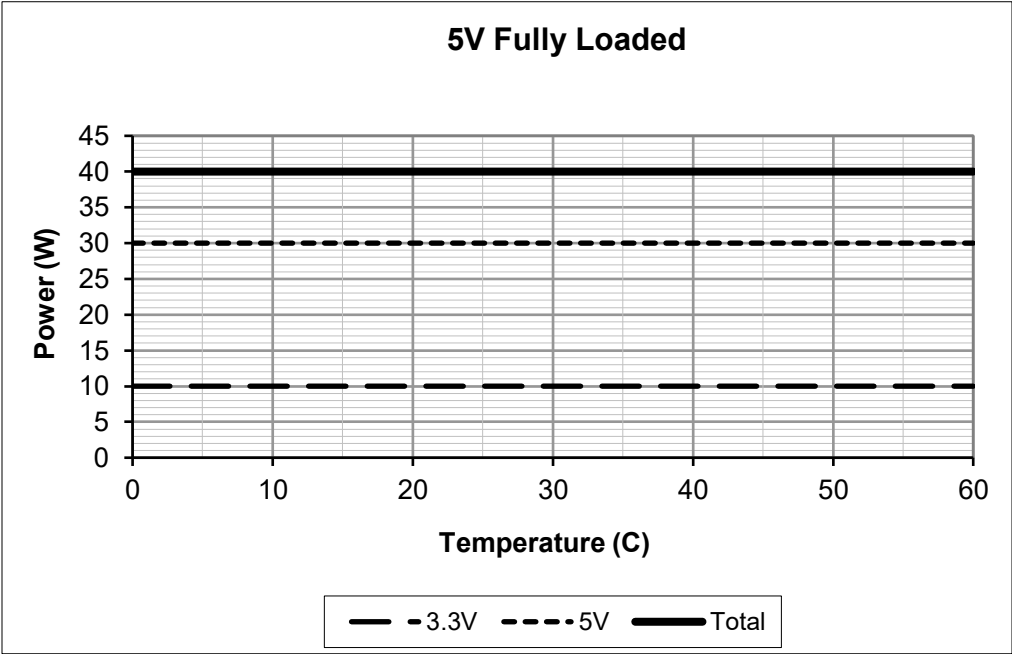
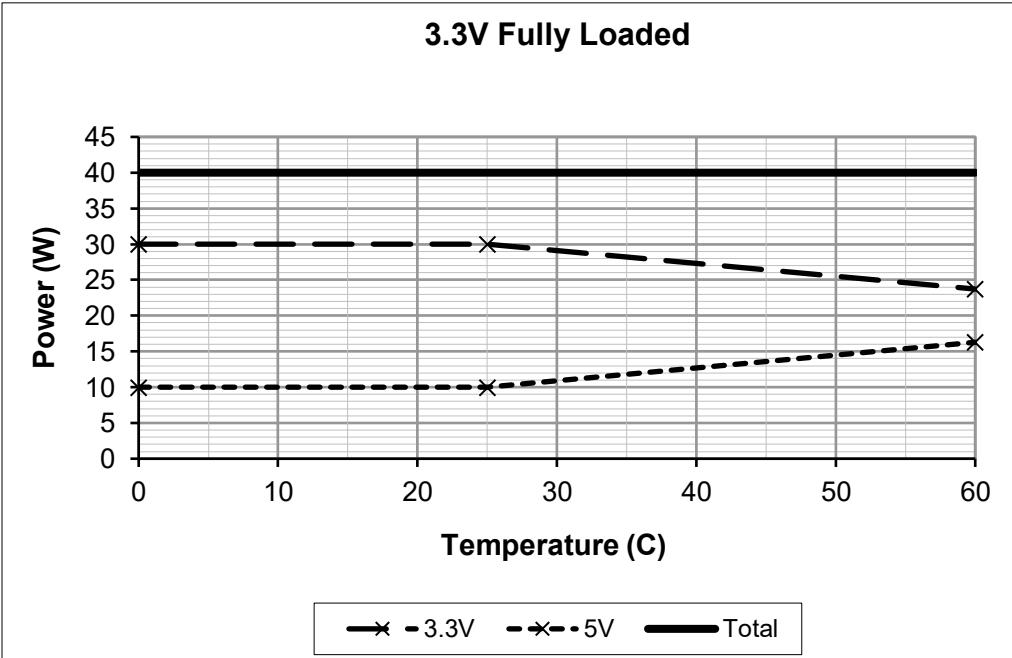


Figure 3: Thermal Derating @ 3.3V



## Overcurrent Protection

The 5.1 VDC output is electronically limited to 7 Amps. The 3.3 VDC output is limited to 10 Amps. If an overload (including short circuits) occurs, it is sensed internally and the Power Supply shuts down. The Power Supply continually tries to restart until the overload condition is removed. An internal non-repairable fusible link in the input line is provided as a backup. The Power Supply usually shuts down before the fusible link blows. The fusible link also protects against internal supply faults. The CPU Fault Table shows a fault if any Overtemperature, Overload, or P/S Fault occurs. There is no additional indication if the Power Supply fusible link blows.

## Installation in Hazardous Areas

The following information is for products bearing the UL marking for Hazardous Locations or ATEX marking for explosive atmospheres:

### WARNING

- EXPLOSION HAZARD - SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2 OR ZONE 2;
- EXPLOSION HAZARD - WHEN IN HAZARDOUS LOCATIONS, TURN OFF POWER BEFORE REPLACING OR WIRING MODULES; AND
- EXPLOSION HAZARD - DO NOT CONNECT OR DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NONHAZARDOUS.
- EQUIPMENT LABELED WITH REFERENCE TO CLASS I, GROUPS A, B, C & D, DIV. 2 OR ZONE 2 HAZARDOUS LOCATIONS IS SUITABLE FOR USE IN CLASS I, DIVISION 2, GROUPS A, B, C, D, ZONE 2, OR NON-HAZARDOUS LOCATIONS ONLY.

# Field Wiring: IC695PSD040

## Power Source and Ground Connections

The wires from the power source and ground connect to the terminals on the power supply as shown at right.

When tightening the screw terminals, do not exceed the maximum torque limit of 0.5 N-m (4.4 inch-lbs). Use copper conductors rated 75 degree C minimum.

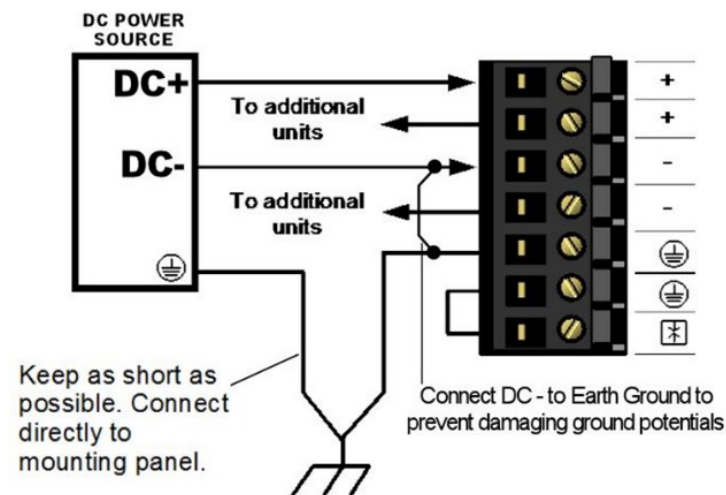
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### IMPORTANT

Connect DC- to earth ground to prevent damaging ground potentials.

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**Figure 4: Field Wiring**



### ⚠ WARNING

If the same external DC power source is used to provide power to two or more power supplies in the system, connection polarity must be identical at each RX3i power supply. A resulting difference in potential can injure personnel or cause damage to equipment. Also, each backplane must be connected to a common system ground.

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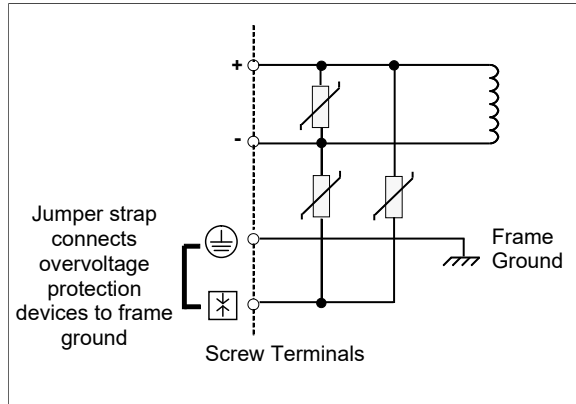


## Input Overvoltage Protection

The bottom terminal is normally connected to frame ground with a user-installed jumper as shown at lower right. If overvoltage protection is not required or is supplied upstream, no jumper is required.

To Hi-pot test this supply, overvoltage protection must be disabled during the test by removing the jumper. Re-enable overvoltage protection after testing by reinstalling the jumper.

**Figure 5: Over Voltage Protection**



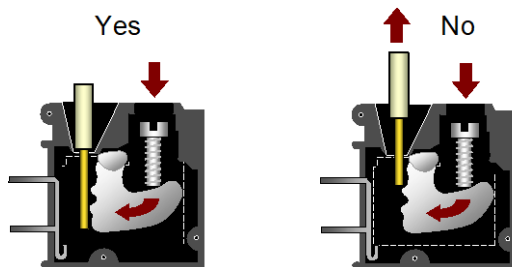
### ⚠ WARNING

This power supply is not isolated and is therefore not compatible with floating or positive grounded systems.

## Power Supply Field Wiring Terminals

Each terminal accepts one AWG 14 to AWG 22 wire. The end of each wire should be stripped at least 3/8-inch (9mm). The terminal can accept a wire that is stripped up to 11 mm (.433 in) while providing full seating of the insulator. The wire must be fully inserted as shown at left, so that the insulation meets the insulation stop position inside the terminal. Tightening the terminal screw pivots the clamp firmly against the stripped end of the wire, holding it in place. If the wire is not fully inserted as shown at right, tightening the terminal screw may push the wire upward so that it is not connected.

**Figure 6: Terminal Connection**



## Release History

Version	Date	Comments
IC695PSD040CAM IC695PSD040LTM IC695PSD040M	Oct 2021	The product's labels have been updated to show compliance with new certifications. For updated certifications, please refer to <a href="https://emerson-mas.force.com/communities/en_US/Article/Certifications-and-Agency-Approvals-Landing-Page">https://emerson-mas.force.com/communities/en_US/Article/Certifications-and-Agency-Approvals-Landing-Page</a> .
IC695PSD040L	Sep 2020	Manufacturing update. No change to fit, form, or function.
IC695PSD040K	Sep 2019	Following Emerson's acquisition of this product, changes have been made to apply appropriate branding and registration of the product with required certification agencies. No changes to material, process, form, fit or functionality.
IC695PSD040J	Jan 2016	Updated modules are RoHS converted product with applicable exemptions. No change in form-fit-functionality.
IC695PSD040H	Apr 2016	Increases the margin of the 5V and 3.3V under voltage detectors to prevent PS faults during power-up.
IC695PSD040G	Oct 2012	Resolves radiated susceptibility and surge issues in the RX3i PSD140 DC power supplies.
IC695PSD040F	Nov 2011	Resolves an issue with previous versions of this power supply occasionally failing to power up when installed in a 16-Slot Universal Backplane, IC695CHS016.
IC695PSD040E	Oct 2006	Corrected issue with reporting of module identification.
IC695PSD040A	Mar 2006	Initial release.

# Important Product Information for this Release

## Compatibility

### Output Relay Modules

When the following modules in an RX3i backplane are powered by Power Supply IC695PSD040:

IC693MDL930	IC694MDL930
IC693MDL931	IC694MDL931
IC693MDL940	IC694MDL940

and the 24 VDC input power to the power supply could experience a momentary loss of power, special precautions should be taken. A momentary loss of input power will cause a momentary loss of +24 V relay power. This loss of +24 V relay power may cause the module relays to momentarily drop out. Power dropouts of up to 10mS do not affect the 5 VDC and 3.3 VDC power outputs.

### PSx040 does not Support Load Sharing and Redundancy

The IC695PSD040 and IC695PSA040 power supplies do not support load sharing and redundancy. They should not be used with the IC695PSA140 and IC695PSD140 RX3i Multi-Purpose 40 W Power Supplies in multiple power supply systems. No damage will result, but redundancy fault detection will not be functional.

## Problems Resolved by this Product Revision

None

# General Contact Information

Home link: <http://www.emerson.com/industrial-automation-controls>

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Any escalation request should be sent to: [mas.sfdcescalation@emerson.com](mailto:mas.sfdcescalation@emerson.com)

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