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EMC-PS50
Power Module Safety and Specification Sheet

Installation of the EMC-PS50 power supply module is easy. There is only one way (or direction) that the module can be inserted into the backplane.

Safety

Please take a moment to review these safety precautions. They are provided for your protection and to prevent damage to the module. This safety information applies to all operator and service personnel.

⚡	indicates DANGER. These are safety issues that, if not followed, could result in severe personal injury.

!	indicates WARNING. These are informational instructions that pertain to proper use and protection of the EMC-PS50 power module.

⚡ The EMC-PS50 power supply does not contain an OFF switch. When the system is attached to a live electrical source, internal circuits are live even though the power switch is in the STBY (standby) position. Some type of power disconnect **must** be provided by the user, in the form of an appropriate power cord, fuse, or circuit breaker.

⚡ The EMC-PS50 case is grounded via the front-panel ground connection on the power input terminal strip. This terminal MUST be connected to ground to prevent a shock hazard in the event of a malfunction of the EMC-PS50 unit.

⚡ Do not operate this product without its cover/front panel properly installed. To avoid personal injury, do not remove the cover. The module contains no user-serviceable parts.

⚡ Do not operate this product in an atmosphere of explosive gases. The module provides no explosion protection from static discharge or arcing components.

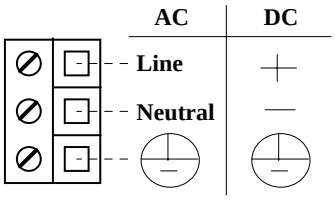
! Never apply a voltage higher than the rating shown on the front panel of the EMC-PS50 unit. Higher voltages may cause the fuse on the EMC-PS50 to blow, and may cause damage to the power supply circuits.

! To avoid fire hazard, use only the fuse specified for the product, matched by type, voltage rating, and current rating.

! Use only the power cord specified. Use only a power cord that is in good condition. The standard power cord shipped to United States and Canadian customers with the AC power module is an 18x3 AWG type SVT or SJT cable assembly listed by UL and certified by CSA and meeting NEMA 5-15-P, and IEC 320, sheet C13, standards. For countries other than the United States and Canada, alternate power cords should have harmonized cordage type HD21 or HD22 and connectors that are approved by the appropriate testing organization for the specific countries where they are to be used.

Power Connector

To attach a power cord to the front-panel power connector, strip back the outer insulation 1 1/2" and separate the individual wires. Strip the insulation on each individual wire 1/4" - 3/8". If the power cord has three conductors plus a shield wire, twist the shield wire and the ground wire together before inserting into the connector. One wire at a time, insert each wire until no bare wire is showing and tighten the holding screw.



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Specifications (All Models)

Output rating	+5VDC	10A	Vibration	Operating	.025" P-P
	+12VDC	0.85A		Storage	.030" P-P
	-12VDC	0.85A	Shock	Operating	30G, 11 msec, ½ sine wave
	Total power	50.0W max		Storage	50G, 11 msec, ½ sine wave
	Load regulation	4% max	MTBF (est.)	Hours	250,000 hrs @ 35°C
	Line regulation	4% max	Dimensions as installed	Height	111.7 mm (4.4 in)
	Ripple and Noise	5V: 150mV ±12V: 250mV		Width	43.15 mm (1.7 in)
	Current limit	5V: 13A max ±12V: 3A max		Depth	151 mm (5.95 in)
Efficiency		80% min at full load	Dimensions (including tabs and connectors)	Height	140.9 mm (5.55 in)
Temperature	Operating	-15°C to +60°C		Width	43.15 mm (1.7 in)
	Storage	-62°C to +85°C		Depth	157.4 mm (6.2 in)
Humidity	Operating	5% to 95% non-cond.			
	Storage	5% to 95% non-cond.	Weight		1.02 kg (2.25 lbs)

	EMC-PS50-AC	EMC-PS50-DC12	EMC-PS50-DC24	EMC-PS50-DC48
Input voltage	85-264 VAC, 47-440 Hz	10-20 VDC	21-32 VDC	40-64 VDC
Max input current	1.0 A	9.0 A	6.0 A	3 A
Fuse type	IEC Pub. 127/III, 1.0A 250V	IEC Pub. 127/I, 10A 250V	IEC Pub. 127/I, 6.3A 250V	IEC Pub. 127/I, 3.15A 250V

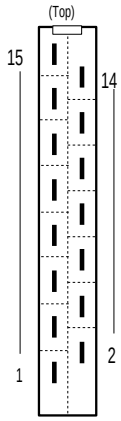
Cooling Requirements

The EMC-PS50 power supply is convection cooled, requiring no forced air in or around the unit. However, the system should be installed so that a minimum of 5" of air space is provided on each of the three exposed sides of the power supply unit. In no case should the heatsink temperature be allowed to exceed 80°C, as evidenced by the "overtemp" indicator.

Rear Connector

The rear connector on the power supply is a 15-pin male T&B/Ansley 371-21530-305X (or equivalent) power connector. The mating female connector is a T&B/Ansley 376-21530-095X (or equivalent). The signals provided are specified as follows:

Pin	Signal	Pin	Signal
1	ACF-	2	ACF+
3	IRQ-	4	IRQ+
5	RST-	6	RST+
7	(not used)	8	-12V
9	+12V	10	GND
11	GND	12	GND
13	+5V	14	+5V
15	+5V		



Rear View

Rear connector signals IRQ and RST (+ & -) are provided to pass the front-panel remote connector signals through to the backplane. These signals are defined below under the remote connector section.

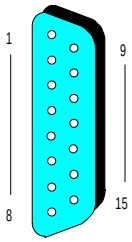
In addition, when using the EMC-PS50-AC power supply, ACF (AC Fail + & -) is provided to signal a processor when the AC input fails. ACF is tied to -I/O Channel Check on the backplane.

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Remote Connector

The front-panel remote connector is a DB15 female connector. It is used to provide remote control of the power supply and to signal the CPU through the backplane. The signal definitions for the remote connector are listed in the table below.

Pin	Signal	Pin	Signal
1	GND	9	GND
2	FLT-	10	FLT+
3	OT-	11	OT+
4	(not used)	12	SD-
5	SD+	13	IRQ-
6	IRQ+	14	RST-
7	RST+	15	+5V EXT
8	+5V EXT		



+5V EXT — This is a current limited +5V output with a maximum current of 1A.

GND — This is chassis/logic ground.

All of the following signals occur as pairs (+ and -). Output signals will provide an uncommitted optoisolator collector/emitter, rated at 50V max, 50mA max. The phototransistor conducts whenever the particular condition exists. Therefore, applying 5V to the + signal and Gnd to - signal will provide a TTL level output. Input signals require a 5V potential to be applied across the pair to signal the condition.

FLT — FAULT is an output signal which occurs whenever the 5V output falls below 4.6V.

OT — OVERTEMP is an output signal which occurs whenever the internal temperature (at the heat sink) exceeds 80° C.

SD — SHUTDOWN is an input signal. It is used to remotely turn the power supply on or off. It is active only when the front-panel power switch is in the ON/REMOTE position. As long as a 5V potential exists across these two lines, the power supply will remain in standby mode and will not provide power to the backplane. When the potential no longer exists, the power supply will again power the backplane.

IRQ — INTERRUPT is an input signal which allows an external event to signal IRQ15 on the backplane. This is a buffered (inverted) input. Since IRQs are positive edge-triggered (with pull-up resistors), to signal the interrupt, apply a voltage across these 2 lines for a minimum of 100 microseconds. This sets IRQ15 low. When the power is removed, the pull-up resistor returns the line to +5V causing a positive edge which triggers the interrupt.

RST — RESET is an input signal that allows a remote hardware reset of the CPU on the backplane.

Power Switch

The front-panel power switch does not shut off input power to the power supply. It toggles the power supply output between ON and STBY (standby).

Fuse

The replaceable fuse is accessible from the front panel. It is housed in a ¼ turn socket immediately above the power switch. The correct replacement fuse type is specified on the front panel immediately above the fuse socket. When replacing the fuse, be sure to use the same type and rating fuse specified.

LEDs

There are three front-panel LEDs; Power on, Overtemp, and 5VDC OK.

Power On — indicates that the power supply is providing output power to the backplane.

Overtemp — is lit whenever the internal temperature of the power supply (measured at the heat sink) exceeds 80° C. If the internal temperature reaches 100° C, the power supply will automatically shut off.

5VDC OK — indicates that the 5V output voltage is greater than 4.6V. This LED circuit only measures under-voltages, not over-voltages.

Warranty

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RadiSys Corporation ("RadiSys") warrants the EMC-PS50 power supply to the original purchaser for two years from the product's shipping date. If an EMC-PS50 fails to operate in compliance with its specification during this period, RadiSys will, at its option, repair or replace the product at no charge. The customer is, however, responsible for shipping the product; RadiSys assumes no responsibility for the product until it is received. This warranty does not cover repair of products that have been damaged by abuse, accident, disaster, misuse, or incorrect installation.

RadiSys' limited warranty covers products only as delivered. User modification may void the warranty, and if the product is damaged during installation of the modifications, this warranty does not cover repair or replacement.

This warranty in no way warrants suitability of the product for any specific application.

IN NO EVENT WILL RADISYS BE LIABLE FOR ANY DAMAGES, INCLUDING LOST PROFITS, LOST SAVINGS, OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PRODUCT EVEN IF RADISYS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, OR FOR ANY CLAIM BY ANY PARTY OTHER THAN THE PURCHASER.

THE ABOVE WARRANTY IS IN LIEU OF ANY AND ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED OR STATUTORY, INCLUDING THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR USE, TITLE AND NONINFRINGEMENT. Repair or replacement as provided above shall be the Purchaser's sole and exclusive remedy and RadiSys' exclusive liability for any breach of warranty.

Repair Services

Factory repair service is provided for all RadiSys products. Standard service for all RadiSys products covers factory repair and shipment back to customer's site, with customers paying shipping to the factory and RadiSys paying for return shipment. Normal turn-around time for repair and recertification is five working days.

Arranging Service

To schedule service for a product, call RadiSys Technical Support at (503) 646-1800. Have the product model and serial numbers available, along with a description of the problem. A Technical Support representative will issue a Returned Materials Authorization (RMA) number, a code number by which we track the product while it is being processed. Once you have received the RMA number, follow the instructions of the Technical Support representative and return the product to RadiSys, freight prepaid, with the RMA number clearly marked on the exterior of the package. If possible re-use the original shipping containers and packaging. In any case, be sure you follow good ESD-control practices when handling the product, and ensure that anti-static bags and packing materials with adequate padding and shock-absorbing properties are used. Remember, this is your property you are entrusting to the carrier, and you are assuming liability for correct packaging.

Ship the product, freight prepaid, to the following address:

Product Service Center
RadiSys Corporation
15025 SW Koll Parkway
Beaverton, Oregon 97006

When shipping the product, include the following information: return address, contact names and phone numbers in purchasing and engineering, and a description of the suspected problem. Any ancillary information that might be helpful with the debugging process will be appreciated.

Outside North America

Contact the sales organization from which you purchased your RadiSys product for service and support.

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EMC-PS50 Spec Sheet

The EMC-PS50 power supply is used with the RadiSys Embedded Modular Computer (EMC) systems.

Safety Precautions are provided for your protection and to prevent module damage. These precautions apply to all operator and service personnel.

⚡	indicates DANGER or severe personal injury if not followed.

!	indicates WARNING messages for proper use and protection of the module.

⚡ The EMC-PS50 power supply does not contain an OFF switch. When the system is attached to a live electrical source, internal circuits are live even though the power switch is in the STBY (standby) position. Some type of power disconnect **must** be provided by the user (appropriate power cord, fuse, or circuit breaker).

⚡ The EMC-PS50 case is grounded via the front-panel ground connection on the power input terminal strip. This terminal MUST be connected to ground to prevent a shock hazard in the event of a malfunction of the EMC-PS50 unit.

⚡ Do not operate this product without its cover/front panel properly installed. Do not remove the cover. The module contains no user-serviceable parts.

⚡ Do not operate this product in an atmosphere of explosive gases. The module provides no explosion protection from static discharge or arcing components.

! Never apply a voltage higher than the rating shown on the front panel of the EMC-PS50 unit. Higher voltages may cause the fuse on the EMC-PS50 to blow.

! Use only the fuse specified for the product, matched by type, voltage rating, and current rating.

! Use only an 18x3 AWG type SVT or SJT cable assembly listed by UL and certified by CSA and meeting NEMA 5-15-P, and IEC 320, sheet C13, standards. Outside the US and Canada, power cords should have harmonized cordage type HD21 or HD22 with approved connectors.

Cooling Requirements are minimal. The unit is convection cooled, requiring no forced air in or around the unit. However, the system should be installed so that a minimum of 5" of air space is provided on each of the three exposed sides of the power supply unit. The heatsink temperature must not exceed 80°C.

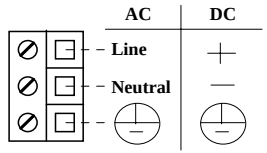
The Front-Panel Power Switch does not shut off input power to the power supply. It toggles the power supply output between ON and STBY (standby).

Fuse The replaceable fuse is accessible from the front panel. It is housed in a ¼ turn socket immediately above the power switch. The correct replacement fuse type is specified on the front panel immediately above the fuse socket. When replacing the fuse, be sure to use the same type and rating fuse specified.

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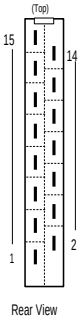
EMC-PS50 Specification Sheet



Power Connection is attached via a power cord to the front-panel power connector. Strip back the outer insulation 1 1/2" and separate the individual wires. Strip the insulation on each individual wire 1/4" - 3/8". If the power cord has three conductors plus a shield wire, twist the shield wire and the ground wire together before inserting into the connector. One wire at a time, insert each wire until no bare wire is showing and tighten the screw.

Rear Connector is a 15-pin male T&B/Ansley 371-21530-305X (or equivalent) power connector. The mating female connector is a T&B/Ansley 376-21530-095X (or equivalent). The signals provided are specified as follows:

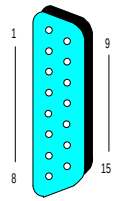
Pin	Signal	Pin	Signal	Pin	Signal
1	ACF-	6	RST+	11	GND
2	ACF+	7	(not used)	12	GND
3	IRQ-	8	-12V	13	+5V
4	IRQ+	9	+12V	14	+5V
5	RST-	10	GND	15	+5V



Rear connector signals IRQ and RST (+ & -) are provided to pass the front-panel remote connector signals through to the backplane. These signals are defined below under the remote connector section. In addition, when using the EMC-PS50-AC power supply, ACF (AC Fail + & -) is provided to signal a processor when the AC input fails. ACF is tied to -I/O Channel Check on the backplane.

Remote Connector The front-panel remote connector is a DB15 female connector, used to provide remote control of the power supply and to signal the CPU through the backplane. The pin-out is below:

Pin	Signal	Pin	Signal	Pin	Signal
1	GND	6	IRQ+	11	OT+
2	FLT-	7	RST+	12	SD-
3	OT-	8	+5V EXT	13	IRQ-
4	(not used)	9	GND	14	RST-
5	SD+	10	FLT+	15	+5V EXT



+5V EXT This is a current limited +5V output with a maximum current of 1A.

GND This is chassis/logic ground.

All of the following signals occur as pairs (+ and -). Output signals will provide an uncommitted optoisolator collector/emitter, rated at 50V max, 50mA max. The phototransistor conducts whenever the particular condition exists. Therefore, applying 5V to the + signal and Gnd to - signal will provide a TTL level output. Input signals require a 5V potential to be applied across the pair to signal the condition.

FLT FAULT is an output signal which occurs whenever the 5V output falls below 4.6V.

OT OVERTEMP is an output signal which occurs when the heatsink temperature exceeds 80° C.

SD SHUTDOWN is an input signal used to remotely turn the power supply on or off. It is active only when the front-panel power switch is in the ON/REMOTE position. As long as a 5V potential exists across these two lines, the power supply will remain in standby mode and will not provide power to the backplane. When the potential no longer exists, the power supply will again power the backplane.

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IRQ INTERRUPT is an input signal which allows an external event to signal IRQ15 on the backplane. This is a buffered (inverted) input. Since IRQs are positive edge- triggered (with pull-up resistors), to signal the interrupt, apply a voltage across these 2 lines for a minimum of 100 microseconds. This sets IRQ15 low. When the power is removed, the pull-up resistor returns the line to +5V causing a positive edge which triggers the interrupt.

RST RESET is an input signal that allows a remote hardware reset of the CPU on the backplane.

LEDs There are three front-panel LEDs: *Power on*, *Overtemp*, and *5VDC OK*.

Power On indicates that the power supply is providing output power to the backplane.

Overtemp is lit whenever the internal temperature of the power supply (measured at the heat sink) exceeds 80° C. If the internal temperature reaches 100° C, the power supply will automatically shut off.

5VDC OK indicates that the 5V output voltage is greater than 4.6V. This LED circuit only measures under-voltages, not over-voltages.

Specifications

Output rating	+5VDC	10A
	+12VDC	0.85A
	-12VDC	0.85A
	Total power	50.0W max
	Load regulation	4% max
	Line regulation	4% max
	Ripple and Noise	5V: 150mV ±12V: 250mV
	Current limit	5V: 13A max ±12V: 3A max
Efficiency		80% min at full load
Temperature (Ambient)	Operating	-15°C to +60°C
	Storage	-40°C to +85°C
Humidity	Operating	5% to 95% non-cond.
	Storage	5% to 95% non-cond.

Vibration	Operating	.015" disp. w/ 2.5G peak, 5-2000 Hz
	Storage	.030" disp. w/ 5G peak, 5-2000 Hz
Shock	Operating	30G, 11 msec, ½ sine wave
	Storage	50G, 11 msec, ½ sine wave
Dimensions as installed	Height	111.7 mm (4.4 in)
	Width	43.15 mm (1.7 in)
	Depth	151 mm (5.95 in)
Dimensions (including tabs and connectors)	Height	140.9 mm (5.55 in)
	Width	43.15 mm (1.7 in)
	Depth	157.4 mm (6.2 in)
Weight		1.02 kg (2.25 lb.)

	EMC-PS50-AC	EMC-PS50-DC12	EMC-PS50-DC24	EMC-PS50-DC48
Input voltage	85-264 VAC, 47-440 Hz	10-20 VDC	21-32 VDC	40-64 VDC
Max input current	1.0 A	9.0 A	6.0 A	3 A
Fuse type	IEC Pub. 127/III, 1.0A 250V	IEC Pub. 127/I, 10A 250V	IEC Pub. 127/I, 6.3A 250V	IEC Pub. 127/I, 3.15A 250V

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Warranty

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IN NO EVENT WILL RADISYS BE LIABLE FOR ANY DAMAGES, INCLUDING LOST PROFITS, LOST SAVINGS, OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PRODUCT EVEN IF RADISYS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, OR FOR ANY CLAIM BY ANY PARTY OTHER THAN THE PURCHASER.

THE ABOVE WARRANTY IS IN LIEU OF ANY AND ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED OR STATUTORY, INCLUDING THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR USE, TITLE AND NONINFRINGEMENT. Repair or replacement as provided above shall be the Purchaser's sole and exclusive remedy and RadiSys' exclusive liability for any breach of warranty.

Repair Services

Factory repair service is provided for all RadiSys products. Standard service for all RadiSys products covers factory repair and shipment back to customer's site, with customers paying shipping to the factory and RadiSys paying for return shipment. Normal turn-around time for repair and recertification is five working days.

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