

POWER SUPPLY INSTALLATION INSTRUCTIONS

CPCIE2933 (47 pin) CPCIE2933-D (38 pin)

These products are not intended for use with IT power systems.

These instructions apply to standard configuration UNIPOWER Corporation power supply models.
Consult factory for additional documentation that may be required for user specified custom variations.

Introduction:

The UNIPOWER Corporation model CPCIE series of multiple output power supplies are capable of delivering up to 350 Watts of DC power through four fixed voltage outputs ranging from 3.3V to 12.0V. Designed for "warm pluggable" installation in the end-product, single wire current share circuitry for redundant mode (N+1) applications allows replacement of individual units without the need to shut down the equipment. AC input, PE, DC output, and signal and control function connections are through a 38 or 47 circuit connector at the rear of the supply. Standard installation configuration requires user supplied cooling airflow direction from bottom-to-top.

Ratings:

Refer to the General Product Specifications at the end of this document.

Engineering Considerations:

For use in or with complete equipment where the acceptability of the combination is determined by the authority having jurisdiction (AHJ) over the users end-product or application.

The CPCIE series complies with the requirements of the U.S. and Canadian Bi-National Standard CSA C22.2 No. 60950/UL 60950, Third (3rd) Edition, and IEC/EN60950, Third Edition and is so identified on the model ID label applied to the power supply.

Refer to Sec. 2.0 for additional application and design considerations.

These instructions apply only to original factory installation. The end product equipment manufacturer shall be responsible for providing the necessary installation and/or operating instructions for the end product user and/or field service technicians.

Instructions:

- 1.0 **CAUTIONS** Damage can result unless the following precautions are taken:
 - 1.1 Do not remove protective covers or panels at any time. There are no operator serviceable components contained within any equipment or assemblies covered by these installation instructions. Doing so will expose the operator to hazardous voltages or currents, and will void all warranties on the equipment. Refer all service to qualified factory service personnel only.
 - 1.2 Do not apply AC power to any output.
 - 1.3 Do not apply AC hipot voltage; apply DC hipot only. Repeated hipot testing may result in insulation deterioration.
 - 1.4 Do not operate this equipment when the AC input voltage is less than 100V or above 250V.
 - 1.5 Do not apply loads that exceed the maximum output rating of any individual output, or exceed the maximum total output power rating of the power supply. Refer to the output power ratings shown on the manufacturers labels applied to this equipment.
 - 1.6 Do not restrict cooling airflow at either the input or exhaust air vents. Allow sufficient clearance to surrounding equipment for adequate cooling.
 - 1.7 Do not operate the power supply(s) at full load when the available cooling air ambient temperature exceeds 50C (122F). Refer to the factory for output derating guidelines.
- 1.8 This power supply is designed for use in redundant mode (N+1, N2) type systems. Prior to installing a new or replacement UNIPOWER power supply in a system containing units from other sources, or vice versa, the user must verify that the supplies are compatible. This includes, but is not limited to, the input and output voltage and current ratings, the connector pinout functions, and connector type and location.
- 1.9 This power supply is designed for "Hot Swap" replacement. It is not necessary to disconnect the AC source prior to inserting or removing a single power supply from a multiple power supply system, provided that the total output load demand on the remaining operational units does not exceed their total output capacity.
- 1.10 Caution should be used when removing a power supply from the end use equipment as some or all of the unit enclosure may become hot under certain operating conditions.
- 2.0 **OPERATING CONDITIONS and RESTRICTIONS**
 - 2.1 The CPCIE series are considered a Class I, pluggable Type A power supply as defined in IEC 60950, Sec. 1.2.4. Additional user evaluation is required if used in other than Class I applications.
 - 2.2 The CPCIE series has only been evaluated for use in pollution Degree 2 environments as defined in IEC 60950.
 - 2.3 A minimum of 120 CFM of airflow for 38 contact models, and 90 CFM for 47 contact models is required for continuous operation under low line, full output load conditions with 50C ambient air.
 - 2.4 An internal circuit board protection fuse, 1.5AG type, rated 10A 250V, is installed in the power supply. In case of failure, the power supply must be returned to UNIPOWER Corporation for service.
 - 2.5 The Protective Earthing (PE) connection is made through a pin in the I/O connector of the power supply. The mating connector socket in the users' equipment must be properly grounded to the mains protective earthing termination at end use. Use of the mating connector specified by UNIPOWER Corporation is required to insure the PE is a "make first/break last" connection when installing or removing the power supply. Refer to the Outline Configuration Drawing and to the power supply general specifications elsewhere in this document.
 - 2.6 This power supply is not authorized for use in life support systems, equipment used in hazardous environments or nuclear control systems without obtaining expressed written approval from authorized UNIPOWER Corporation personnel prior to installing or using this equipment.
- 3.0 **RATINGS** Refer to the manufacturers label applied to the power supply for specific AC input power requirements and DC output ratings.
- 4.0 **INITIAL INSPECTION** Inspect all components of this power supply system for shipping damage prior to in-stalling or applying power. Use of damaged power supplies is never recommended and may be hazardous for the user.
- 5.0 **DO NOT** make any connections until the user has verified the following:
 - 5.1 Users power source supplies the correct input voltage;
 - 5.2 Input terminals in the users equipment has been wired for correct polarity;
 - 5.3 Output voltages are correct for the users application;
 - 5.4 Output current is sufficient for the users' application;
 - 5.5 Output terminal connections in the users' equipment match the polarity of the power supply terminals;
 - 5.6 The mating connector installed in the users' equipment is the type and model specified by UNIPOWER Corporation for use with this power supply. Refer to the Outline Configuration Drawing and to the power supply general specifications elsewhere in this document;
 - 5.7 See CAUTIONS, Sec. 1.8 and 1.9.

- 6.0 HIPOT TESTING Use DC Hipot only:
- 6.1 Extreme caution is necessary when performing Hipot tests to prevent harm to the operator or the power supply.
- 6.2 Hipot input to chassis, and input to outputs only.
CAUTION: Hipot testing between the outputs and the chassis is not recommended. If this test is performed, do not exceed DC 100V, or damage to the power supply may result.
- 6.3 Notes:
- 6.3.1 Isolation resistance between the DC outputs and the chassis should equal or exceed 10 megohms, measured with a meg-ohmmeter set to DC 100V maximum.
- 6.3.2 All DC outputs within this equipment are rated under DC 42V, and are tested at DC 100V to chassis ground, with all output terminals bussed together.
- 6.4 Test set-up:
- 6.4.1 Buss the AC (L) and ACC (N) terminals together.
- 6.4.2 Buss all outputs and chassis or power supply ground terminals together.
- 6.4.3 Refer to users hipot test equipment instructions. With hipot tester test voltage set to zero (0.0) volts, connect hipot tester between AC input terminal buss and the output common buss.
- 6.5 Test procedure:
- 6.5.1 At a rate of no greater than 200V per second, slowly ramp up the test voltage to DC 2121V, and hold for a minimum of one (1) second, or up to DC 1700V and hold for a minimum of one (1) minute.
- 6.5.2 At a rate of no greater than 200V per second, reduce the test voltage to zero (0.0) volts prior to disconnecting.
- 6.5.3 Remove all buss connections from the input and output.
- 7.0 MOUNTING
- 7.1 The PCI350 series power supplies comply with the Eurorack packaging utilized for CompactPCI®. The power supply may be mounted in any orientation required by the user when installed directly into the users equipment, provided forward cooling airflow is not restricted at either the input or exhaust openings. Refer to the Outline Configuration Drawing elsewhere in this document.
- 8.0 INSTALLATION
- 8.1 See CAUTIONS, Sec. 1.8.
Caution: Due to the "custom design" nature of power supplies, the user shall refer to the end-equipment manufacturers instructions for specific assembly or installation requirements beyond this point.
It shall be the responsibility of the end-equipment manufacturer to resolve conflicts between the instructions or requirements of this Procedure, and the manufacturer's installation or operating instructions for the end-equipment; or, between this Procedure and requirements of the various AHJ's standards to which the end-product must comply.
Generally, it may be assumed that the end-equipment manufacturer has supplied correct instructions for the safe assembly and operation of their equipment, and adherence to those instructions assures compliance with the relevant safety standards.
In the event of a conflict between this Procedure and the Safety Standards to which the end-product must comply, until the conflict is resolved the more stringent requirements shall be met.
In no case shall these instructions or requirements be ignored, overlooked, circumvented or performed in such a manner that the safety or integrity of the power supply or the equipment in which it is installed is jeopardized, or in such a way that puts service personnel and/or the equipment operator or end user at risk of injury.
- 8.2 The model CPCIE2933 power supply is designed be installed directly into the users equipment into a recess (slot) provided by the user. It is not necessary to disconnect the AC source prior to inserting or removing a single power supply from a multiple power supply system. See CAUTIONS, Sec. 1.9.
- 8.3 Before inserting the power supply into the recess, inspect the recess to insure there are no obstructions.
- 8.4 Set the retaining latches for standard models at each of the front panel in the "Unlatched" position by pushing the latch ends away from the center of the panel to an angle approximately 45.
- 8.4.1 For models with the optional "Telecom" flush type latches, depress the locking tab located at the end of the latch handle, then pull the latch away from the front panel.
- 8.5 In addition to the latches, the units are supplied with 2 2.5x11mm Posipanhead screws, 1 located under each latch handle, to secure the unit in the user's equipment. Back these screws out 1 full turn max on the threaded portion. These screws may be withdrawn completely and not used at the user's option.
- 8.6 The 38 or 47-pin "hot swap" I/O connector, located on the end of the power supply opposite the front panel, is mounted offset on the power supply. Examine the recess and locate the mating connector. Orientate the power supply so that the connectors are aligned. Integral guide rails are provided at each end of the power supply chassis. Slide the power supply into the recess with the guide rails in the mating guide slots in the user's equipment, and push in with sufficient pressure to insure the I/O connector has fully engaged.
- 8.7 Lock the power supply in place by pushing each standard model latch towards the panel center until the detent at the base of each latch is engaged; or, push the optional Telecom latch flush to the front panel until a "click" is heard as the latch lock engages. If used, install the 2 retaining screws, 6in/lb max. Front panels are drilled to allow 2 additional 2.5x11mm Posipanhead screws to be used at the user's option.
- 8.8 Check to insure the power supply is properly retained by grasping both latch handles and pulling lightly. No movement should occur.
- 8.9 The unit is functioning within specifications when the LED indicator located in the front panel is green. Off or red indicates an input or output fault condition.
- 8.10 Removal is performed in the reverse order. Caution should be used when removing a power supply as some or all of the unit enclosure may become hot under certain operating conditions.
- 9.0 TROUBLESHOOTING
- 9.1 Unit does not glide smoothly into PSU bay, or does not engage mating connector. Check to insure-
Guides in the PSU bay are the correct type, properly installed and straight. Refer to guide requirements in the General Specifications, Mechanical, below;
Guide rails on the unit are straight;
The unit guide rail offset matches the installed guides;
The mating connector in the users equipment is the type specified by UNIPOWER for use with the power supply model being installed, and is properly located within the equipment at the correct depth. Refer to the connector requirements in the General Specifications, Mechanical, below, or to UNIPOWER product literature or Mechanical Outline Drawings for the connector location on the equipment backplane.
- 9.2 Unit does not turn on (front panel LED is off). Check to insure-
The power supply is completely engaged in the users' equipment connector;
The I/O connector AC input pins are not damaged or bent;
The users AC power source is properly connected and functioning within specifications.
- 9.3 No output (LED is red), AC-OK. Check to insure-
The remote inhibit, enable switch settings in the user's equipment are correct;
The remote sense leads in the users' equipment are connected correctly. Cycle AC input off-on, or cycle remote inhibit or enable to reset power supply;
That cooling airflow is adequate and unblocked at both the inlet and outlet sides. Automatic recovery when the units' internal temperature drops into the operational range;
That the equipment load demand does not exceed the capacity of the power supply(ies). Automatic recovery following overload removal. See CAUTIONS, Sec. 1.9;
Following an output over voltage fault condition, cycle AC or inhibit/enable to reset.

-LIMITED WARRANTY POLICY-

All UNIPOWER Corporation standard model power supplies and products are guaranteed to be free of defects in workmanship and materials for a period of two (2) years from the date of original shipment, when operated within specification. This warranty applies only to defects that result in a failure to comply or perform to published specifications. Non-standard (custom) power supplies and products may be warranted on an individual basis. The unused portion of this warranty is fully transferable with the original equipment in which the power supply is installed.
For complete warranty and return conditions please request a copy from our Sales Offices.

All statements and technical information contained herein are believed by UNIPOWER to be reliable as of the publication date of this document, but the accuracy or completeness is not guaranteed, and UNIPOWER reserves the right to change specifications without prior notification. However, every reasonable effort will be made by UNIPOWER to inform users of UNIPOWER products of changes to design form, fit or function that may affect the user's applications. UNIPOWER supplies a quality product, equal to any available in the marketplace; however, these products are intended to be used in accordance with the specifications described in this document. Any use or application that deviates from the stated operating specifications is not recommended and may be unsafe.

GENERAL SPECIFICATIONS

Typical at Nominal 115/230VAC Line or 48VDC, Full Load and 25°C Unless Otherwise Noted.

Input Specifications

Voltage/Current.....	90-264VAC, 47-63Hz, Single Phase, 7.0A max.
Fusing.....	Internal line fuse provided, non-user serviceable 10.0A, 250V.
AC Power Factor.....	0.99 line PFC typical at 115VAC, full load.
Inrush Current.....	Thermistor soft start. ~25°C AC cold start 15Apk @ 115VAC; 30Apk @ 230VAC. 15Apk @ 48VDC.
Transient Protection.....	MOV. Withstands transients as specified by IEEE C62.41 - 3KV (differential and common mode).
AC EMI Line Filtering....	Meets IFCC Level A, and EN55022 Level A.
Efficiency.....	typical full load: 60% at 115VAC.
Redundant/Hot Swap....	Full power N+1 redundant, hot-swap capable.

Output Specifications

Line/Load Regulation....	At the sense point, full input range, 0-100% loading: <±1% for V1, V2 & V3, sense leads connected. <±5% for V4.
Minimum Loading.....	None required for single unit applications. 10% loading required for sharing applications.
Stability.....	<±0.2% output drift after 20 minutes warm-up.
Temp. Coefficient.....	<±0.02%/°C, 0°- 50°C, after 20 minute warm-up.
Dynamic Response.....	<3% deviation with a 25% load change at 1A/µsec. Output returns to within 1% in less than 300µsec.
Ripple and Noise.....	<50mV for all outputs, or 1% pk-pk nominal, which ever is greater, DC to 20MHz bandwidth with a coaxial probe and 0.1µF/22µF capacitors at the output terminals.
Current Sharing/ N+1 Operation.....	V1, V2, V3 outputs, single wire connection for ±10% current sharing between any number of units.
Remote Sense.....	V1, V2, V3 outputs compensate for up to 0.25V total line drop in the load cables. Outputs are internally sensed if leads are opened.
Over/Under Shoot.....	None at turn-on or turn-off.
AC Hold-Up Time.....	>15msec following loss of AC power at low line, full load.
Over Current/Short Circuit Protection.....	Constant current limit on all outputs. Automatic recovery when overload is removed.
Over Temperature Protection.....	Internal temperature sensing. Causes all outputs to shut down. Automatic recovery.
Under Voltage Alarm.....	Any output dropping below 10% of nominal triggers the power fail warning signal.
OVP.....	Any output that exceeds 25% ±10% of nominal Vout will cause all outputs to latch off. Remote inhibit, enable or input recycle required to reset.
Reverse Sense Protection.....	Outputs latch off if remote sense connections are installed in reverse. Remote inhibit, enable or power input recycle required to reset.

Signal & Control Line, Indicators

Remote Enable.....	Enabled by closed circuit or TTL logic 0. Disabled by open circuit or TTL logic 1.
Remote Inhibit.....	Enabled by open circuit or TTL logic 1. Disabled by closed circuit or TTL logic 0.
Power Fail Warning.....	Loss of input AC causes a TTL compatible signal to go low >4msec prior to any output dropping out of regulation. At AC turn-on, signal stays low until all outputs are in regulation. Also triggered in both AC and DC models by an under voltage condition on any output.
LED Indicator.....	Single bi-colour LED. Green indicates input power ON and outputs within regulation. OFF or RED indicates input and/or output power fault.

Operating Environment

Temperature Range Operating.....	0° to 50°C ambient at full load, with specified airflow.
Storage Temperature....	-40° to 85°C.
Cooling.....	Direct forward airflow required to achieve full rated power and specified MTBF. AC input versions require 90cfm for 47-pin configurations and 120 cfm for 38-pin configurations. DC input version requires 90 CFM for all configurations.
Relative Humidity.....	Up to 90% RH, non-condensing.
Operational Vibration....	0.75G peak, 5-500Hz along three orthogonal axes.
Altitude.....	Operating to 10,000 ft. Storage to 30,000 ft.
MTBF.....	Designed for 150,000 hrs at 25°C.

Mechanical

Outline.....	6U x 8HP front panel. Complies with all current PICMG® CompactPCI PSU specifications.
Weight (Approx.).....	4.8lbs / 2.38kgs.
Retaining Latches.....	Type IV Telecom Rittal #3286.903 upper and #3686.902 lower latches.

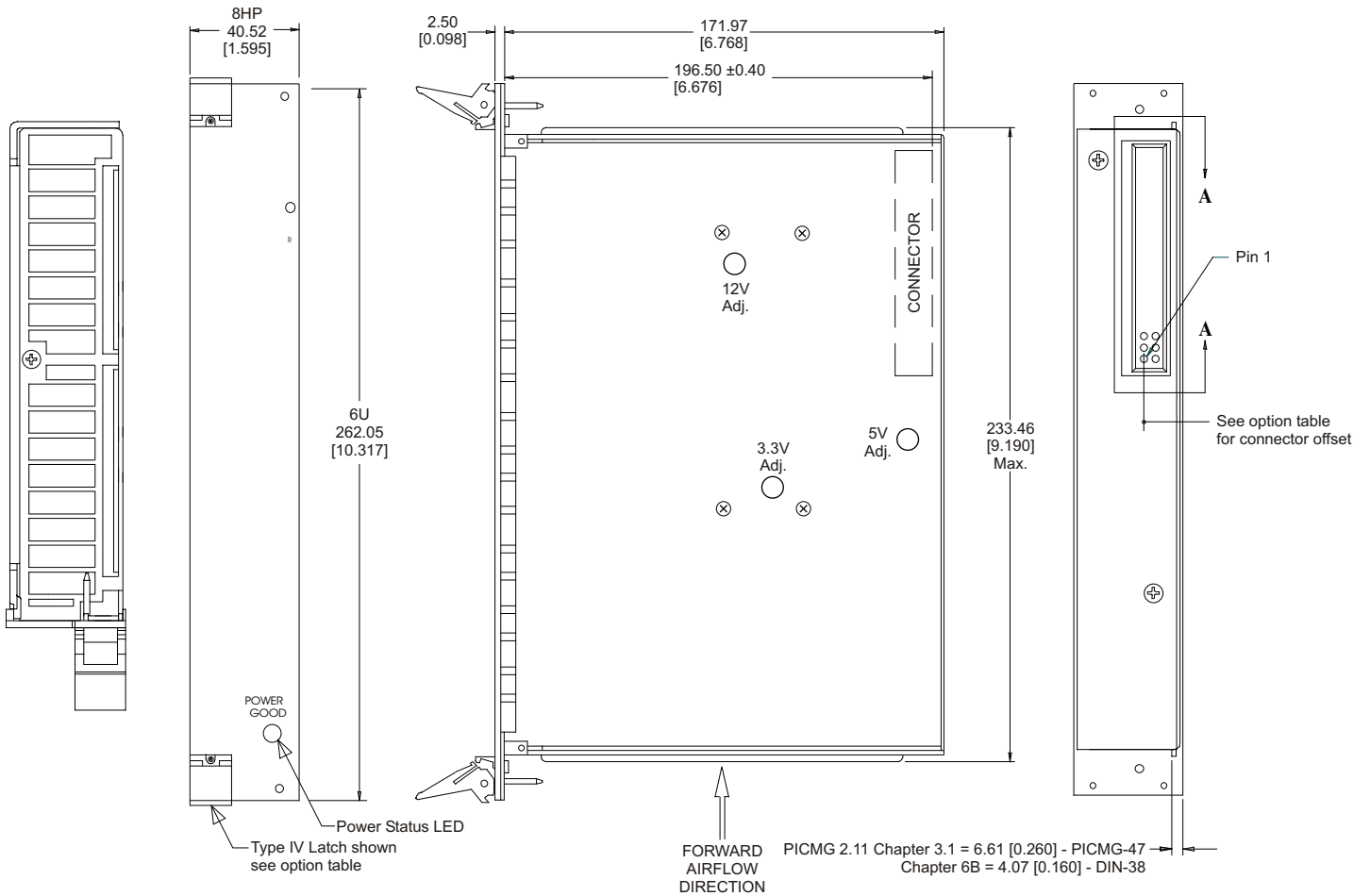
Safety

Recognised to U.S. and Canadian Bi-National Standard CSA22.2
 No. 60950 / UL60950, 3rd Edition (cULus).
 CE Marked in accordance with LVD73/23/EEC and EN60950/A11:1997.

Interconnect

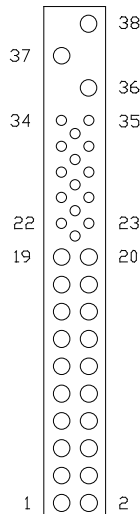
47 Circuit.....	Positronic Ind. P/N PCIH47M400A1. Mates with PI P/N PCIH47F300A1.
38 Circuit.....	Positronic Ind. P/N PCIH38M400A1-241.1. Mates with PI P/N PCIH38F300A1. Use of the specified mating connector is required to ensure proper contact sequence.

DIMENSIONS & CONNECTOR PINOUTS



PIN CONNECTIONS - 38 PIN

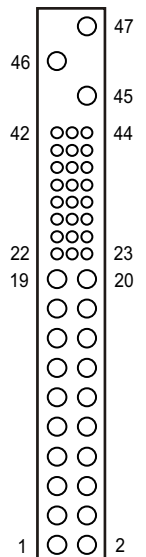
PIN	FUNCTION	PIN	FUNCTION
1	V1 Out (+5V)	20	N/C
2	V1 Out (+5V)	21	V4 Out (-12V)
3	V1 Out (+5V)	22	V4 Return
4	V1 Out (+5V)	23	V4 Return
5	V1 & V2 Return	24	Remote Sense V1 (+5V)
6	V1 & V2 Return	25	Remote Enable
7	V1 & V2 Return	26	Sense Return (V1, V2 & V3)
8	V1 & V2 Return	27	Remote Sense V2 (+3.3V)
9	V1 & V2 Return	28	N/C
10	V1 & V2 Return	29	N/C
11	V1 & V2 Return	30	Remote Sense V3 (+12V)
12	V1 & V2 Return	31	Remote Inhibit
13	V2 Out (+3V3)	32	Current Share V1
14	V2 Out (+3V3)	33	Current Share V2
15	V2 Out (+3V3)	34	Current Share V3
16	V2 Out (+3V3)	35	Input Power Fail
17	V3 Return	36	Chassis Ground
18	V3 Out (+12V)	37	AC Neutral
19	N/C	38	AC Live



Pin staging:
Pin 36 is leading and first to connect.
Pins 25, 32, 33 & 34 are lagging and last to connect.

PIN CONNECTIONS - 47 PICMG

PIN	FUNCTION	PIN	FUNCTION
1	V1 Out (+5V)	25	N/C
2	V1 Out (+5V)	26	N/C
3	V1 Out (+5V)	27	Remote Enable
4	V1 Out (+5V)	28	N/C
5	V1 & V2 Return	29	V1 Remote Adjust
6	V1 & V2 Return	30	Remote Sense V1 (+5V)
7	V1 & V2 Return	31	N/C
8	V1 & V2 Return	32	V2 Remote Adjust
9	V1 & V2 Return	33	Remote Sense V2 (+3.3V)
10	V1 & V2 Return	34	Sense Return (V1, V2 & V3)
11	V1 & V2 Return	35	Current Share V1
12	V1 & V2 Return	36	Remote Sense V3 (+12V)
13	V2 Out (+3V3)	37	N/C
14	V2 Out (+3V3)	38	N/C
15	V2 Out (+3V3)	39	Remote Inhibit
16	V2 Out (+3V3)	40	N/C
17	V2 Out (+3V3)	41	Current Share V2
18	V2 Out (+3V3)	42	Input Power Fail
19	V3 Return	43	N/C
20	V3 Out (+12V)	44	Current Share V3
21	V4 Out (-12V)	45	Chassis Ground
22	Signal Return	46	AC Neutral
23	N/C	47	AC Live
24	V4 Return		



Pin staging:
Pin 45 is leading and first to connect.
Pins 27, 35, 41 & 44 are lagging and last to connect.

ALL DIMENSIONS IN MILLIMETERS (in).
All specifications subject to change without notice.