



Highlights

- >> 325 W Output Power

- >> Hot-Swap, N+1 Load Sharing

- >> 47-Pin Input/Output Connector

- >> Protection Features
 - Input Fusing
 - Input Reverse Polarity
 - Overvoltage
 - Overcurrent/Short Circuit
 - Auto Recovery, All Outputs
 - Overtemperature Warning and Shutdown
 - Fault Isolation

- >> IPMI-Compliant System Management Functions

- >> Status LEDs-Fault, Input OK

- >> Status Output Signals-(DEG#), (FAL#)

- >> Main Output Remote Sense (+3.3 V, +5 V, +12 V)

- >> Built-In EMI Filter

- >> Eurorack-Compatible Module

- >> Injector/Ejector Handle

The CPC6314 Hot-Swap DC Power Supply, part of Performance Technologies's Advanced Managed Platform™ product offering, combines high power capacity with standards-based IPMI management capability and a reliable, modular package, making it the power supply of choice for systems requiring DC power input. This CompactPCI® 3U x 8HP form factor supply is ideally suited for telecommunications, industrial automation, and a variety of embedded computer applications where redundancy and hot-swap are required.

The input voltage range is -36 to -72 V DC. Four outputs are capable of providing a total of 325 W for +3.3 V DC, +5 V DC and ±12 V DC with independent output regulation. This supply implements management functions, such as system control, monitoring and status reporting, through an IPMI-based intelligent communications bus. The CPC6314 meets the electrical and mechanical requirements of the PICMG® specification for CompactPCI systems. It uses a 47-pin Positronic power connector to provide efficient, effective, high current DC connectivity, and is UL, CSA, IEC recognized TUV CB Certificate and CE Marked.

As an AC alternative, the CPC6304 250 W Hot-Swap Power Supply is also available.

Key Design Elements

Operation

The CPC6314 325 W power supply utilizes switching technology to achieve its small size and large power output. An EMI-filtered input automatically accepts DC input voltages from -36 to -72 V DC. Optionally, two or more power supplies can be used to implement an N+1 or N+N, load sharing, fault-tolerant system. An optional I2C hardware bus interface supports IPMI protocol for use in systems compliant with the PICMG 2.9 R1.0 specification.

Load Sharing and N+1 Redundancy

Two or more power supplies can share the same input source. With two supplies, each provides approximately 50 percent of the total system power during normal operation, although either is capable of powering the entire system (with a 325 W load) in the event that the other should fail. This feature increases overall system reliability by sharing the load responsibilities. Additional power supplies may be used to implement true N+1 load sharing (i.e., a 650 W system requires two power supplies, plus a third for redundancy).

Hot-Swap and Fault Tolerance

The CPC6314 power supply can be inserted or removed from a system that employs a redundant power scheme without disturbing operation or reducing the reliability of any associated devices. Likewise, a failed power supply will not disturb the operation of the system if a redundant power supply is operating in the system.

Status LEDs

Two status LED indicators are visible from the front of the power supply. The green "INPUT" LED indicates that the input voltage is present. The green "INPUT" LED blinks when the power supply outputs are inhibited. Off indicates that no input power is present. The amber "FAULT" LED indicates a failed power supply or input source.

Remote Sense

Remote sense on the +3.3 V, +5 V and +12 V power supply outputs detects the voltages at a load remote from the power supply, compensating for connector, backplane, and wiring voltage drops greater than 0.25 V.

Inhibit/Enable Inputs (INH#, EN#)

The INH# input signal on the rear connector turns off the outputs when grounded. EN# is used in conjunction with INH# to enable the power supply after all signals make contact with the mating connector. Outputs are disabled when the EN# pin is disengaged.

The source into a grounded connection is less than 150 mA and the open circuit input voltage is less than +15 V DC. The signal is capable of sinking more than 2 mA and maintaining the output voltage at less than 0.5 V DC.

INH#	Low	Low	Open	Open
En#	Low	Open	Low	Open
Power Output	Off	Off	On	Off

CPC6314 Inhibit/Enable

Current Share

Active current sharing is provided on the +3.3 V, +5 V and +12 V power supply outputs with accuracy better than 10 percent of maximum rated load with up to eight supplies operating in parallel. Passive (droop response) current sharing is provided on the -12 V output.

System Notification (DEG#, FAL#)

Two fault outputs are available on the rear connector for system notification. One output (DEG#) is an open collector/drain, low true signal that indicates the internal temperatures are within 10 degrees C of the thermal shutdown limit. The second output (FAL#) is an open collector/drain, low true signal that indicates when the supply has shut off the outputs due to a problem or due the input voltage being removed.

Overvoltage Shutdown

A 125 percent of nominal overvoltage condition on any of the outputs disables all outputs of the power supply. Outputs can be enabled, once the overvoltage condition is resolved, either with an IPMI command or by cycling the input power of the system.

Overtemperature Shutdown

The power supply automatically shuts down if an overtemperature event occurs. Overtemperature events that can cause a shutdown include a hardware-defined trip point or a trip point defined through an IPMI command. Once the supply cools down, the supply restarts automatically.

Geographical Address Pins (GA0, GA1, GA2)

These pins configure the final IPMI address for the power supply. The geographical address pins are pulled up to +5 V DC via a 10 kW ± 10% resistor on each signal.

IPMI Interface

The CPC6314 provides an I2C hardware bus interface that supports IPMI protocol consistent with PICMG 2.9 R1.0. The IPMI controller is an event generator and is implemented as a dynamic SDR device.

The following sensors are supported:

- Temperature sensor(s) of critical areas
- DEG# thermal warning status
- FAL# signal status
- Output voltages (+3.3 V, +5 V, +12 V, -12 V) on the inboard side of the output isolation device with a resolution of 1% and an accuracy of ±2%
- Output currents with a resolution of 500 mA and an accuracy of ±10%

The following functions are supported:

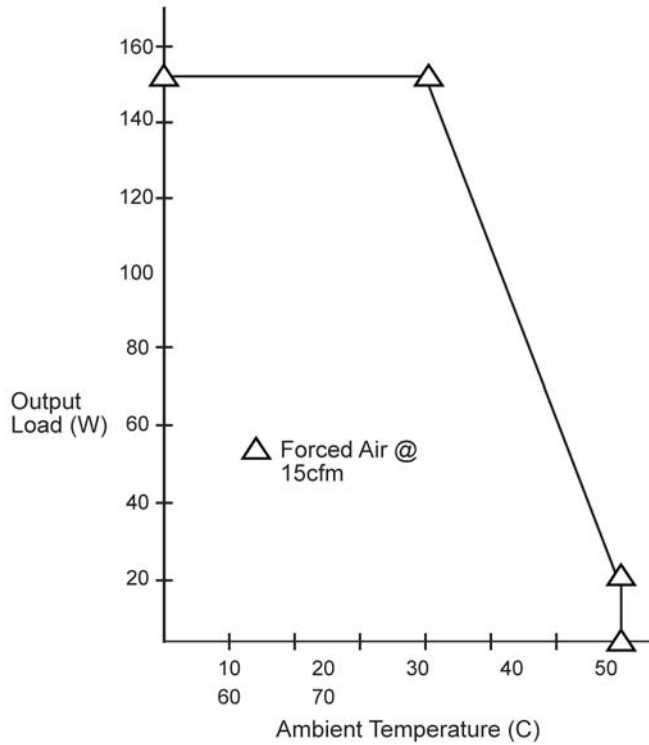
- IPMI controller reset
- Position (geographic) address
- Field Replaceable Unit (FRU) information
- Fault LED control commands
- Firmware upgradeable through the I2C bus

Sensor Number	Sensor Name (From SDR)	Nominal (Raw Value)	Nominal (Actual Value)
Sensor 0	S0 +5 V (V1)	0xB6-0xD3	4.8594 V to 5.6337 V
Sensor 1	S1 +3.3 V (V2)	0xBF-0xD9	3.3616 V to 3.8192 V
Sensor 2	S2 +12 V (V3)	0xBA-0xCD	11.904 V to 13.120 V
Sensor 3	S3 -12 V (V4)	0xB3-0xC6	-11.456 V to -12.672 V
Sensor 4	S4 +5 V current	0x00-0xE3	0 A to 33.823 A
Sensor 5	S5 +3.3 V current	0x00-0xDE	0 A to 39.960 A
Sensor 6	S6 +12 V current	0x00-0x67	0 A to 5.2015 A
Sensor 7	S7 -12 V current	0x00-0x43	0 A to -1.0452 A
Sensor 8	S8 temperature	0x00-0xAB	0 to 90.63°C (32 to 195.1°F)

CPC6314 IPMI Sensors

CPC6314

325W DC Power Supply with IPMI Management

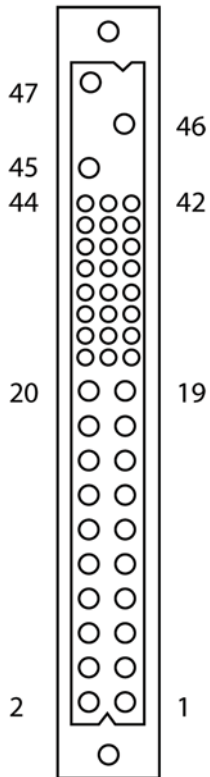


Output Derating Curves for Various Air Flows

Pin # ⁽¹⁾	Staging ⁽²⁾	Signal Name	Description
1-4	M	V1	V1 Output
5-12	M	RTN	V1 and V2 Return
13-18	M	V2	V2 Output
19	M	RTN	V3 Return
20	M	V3	V3 Output
21	M	V4	V4 Output
22	M	RTN	Signal Return
23	M	RESERVED	Reserved
24	M	RTN	V4 Return
25	M	GA0	Geographic Address Bit 0
26	M	RESERVED	Reserved
27	S	EN#	Enable
28	M	GA1	Geographic Address Bit 1
29	M	V1ADJ ³	V1 Adjust
30	M	V1 SENSE	V1 Remote Sense
31	M	GA2	Geographic Address Bit 2
32	M	V2ADJ ³	V2 Adjust
33	M	V2 SENSE	V2 Remote Sense
34	M	S RTN	Sense Return
35	M	V1 SHARE	V1 Current Share
36	M	V3 SENSE	V3 Remote Sense
37	M	IPMB_SCL	IPMB Serial Clock Line
38	M	DEG#	Degrade Signal
39	M	INH#	Inhibit
40	M	IPMB_SDA	IPMB Serial Data Line
41	M	V2 SHARE	V2 Current Share
42	M	FAL#	Fail Signal
43	M	IPMB_PWR	IPMB Power
44	M	V3 SHARE	V3 Current Share
45	L	CGND	Chassis Ground (safety ground)
46	M	ACN/+DC IN	AC Input Neutral / +DC Input
47	M	ACL/-DC IN	AC Input Line / -DC Input

Notes:

- (1) Pin numbers correspond to the female backplane connector
- (2) L = Long length pins (First make, last break); M = Medium length pins; S = Short length pins (Last Make, First Break)
- (3) This function not available



Mating backplane connector is a 47-pin modular connector (Positronics PCI47F300A1 or equivalent) in accordance with PICMG® Power Interface Specification 2.11.

Pin assignment

Pin assignment is compliant with PICMG 2.11 R1.0, Section 5.5. The table above details this assignment.

Figure 2. Mating Connector

Ordering Information

- >> **PT-CPC6314-12058**
325 W DC Supply with
IPMI Support

The CPC6314 is compliant with the following specifications:

- CompactPCI® Core Specification, PICMG® 2.0 R2.1
- CompactPCI Power Interface Specification, PICMG 2.11 R1.0
- CompactPCI System Management Specification, PICMG 2.9 R1.0
- Intelligent Platform Management Interface (IPMI) Specification, V1.5 Rev 1.1 and IPMB V1.0

Hold-Up Time

- 2 ms typical from -54 V DC input

Electrical

- Input Voltage Range: -36 to -72 V DC
- Input Filter Type: common and differential mode

Mechanical

- Height: 133.4 mm (5.25-in.)
- Width: 40.3 mm (1.59-in.)
- Depth: 168 mm (6.62-in.)

Environmental

- General: Complies with the requirements of GR-63-CORE environmental criteria
- Airflow: External airflow of 200 LFM will be provided. The supply will be inverted in some applications and may also be mounted horizontally.
- Operating: 0 to 50°C (32 to 122°F) [up to 70°C (158°F) with linear derating of power to 50% of rated output between 50 and 70°C]; short-term operation at 55°C (131°F) for 96 hours at full load will be supported
- Storage Temperature: -20 to 5°C (-4 to 41°F)
- Operating Altitude: Up to 3.96 km (13,000 ft) [with ambient derating above 1.83 km (6,000 ft) equal to the adiabatic lapse rate, approximately 2°C per 0.304 km (3.6°F per 1,000 ft)]
- Non-Operating Altitude: Up to 12.2 km (40,000 ft)
- Humidity: <95% maximum, non-condensing

Input Current

- Maximum Continuous: 11.5 A
- Cold Start, Surge Maximum: <16 A maximum peak, -36 to -72 V DC input

Output Specifications

- Total Output Power (maximum continuous at 55°C (131°F) with 200 LFM: 325 W
- Total Output Current:
 - +3.3 V at 40.0 A + 4/-2% output regulation
 - +5 V at 30.0 A + 4/-2% output regulation
 - +12 V at 5.0 A ±4% output regulation
 - 12 V at 1.0 A ±4% output regulation

Total Regulation:

- +4/-2% total (outputs +3.3 V, +5 V)
- +/-4% total (outputs +12 V, -12 V)

Ripple and Noise

(measured at full load with 20 MHz bandwidth)

+3.3 V	50 mV maximum P-P
+5 V	50 mV maximum P-P
+12 V	240 mV maximum P-P
-12 V	240 mV maximum P-P

Overvoltage Protection (+3.3 V, +5 V)

125% maximum

General Specifications

- Efficiency: 80% typical
- Weight: 0.704 kg (1.55 lb)

Reliability

- MTTR: One minute (based on module replacement)

Regulatory Compliance

Designed for NEBS/ETSI

CE Certification

The CPC6314 meets intent of Directive 89/336/EEC for Electromagnetic Compatibility and Low-Voltage Directive 73/23/EEC for Product Safety. Compliance was demonstrated to the following specifications as listed in the Official Journal of the European Communities:

Safety

- UL 60950
- CSA 60950
- VDE to EN60950
- CB Report
- CE Certificate

EMI Compatibility

DC-Input Model:

- ETSI 300-386, Class A
- EN55022 Radiated Emissions Class A
- EN61000-4-2 ESD (Level 4)
- EN61000-4-3 Radiated Immunity (Level 2)
- EN61000-4-8 Magnetic Field Immunity (Level 2)

Safety Agency Ratings

DC-Input Model:

- Input Voltage: -36 to -75 V DC
- Input Current: 11.3 A
- Input Power: 406 W
- Isolation:
 - 1500 V DC primary-secondary
 - 1500 V DC primary-chassis
 - 500 V DC secondary-chassis



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