cPCI350 SERIES

350W 6Ux8HP DC/DC CompactPCI™ Power Supply

SELECTION GUIDE

Model Number	Power	Output Current				Production Status	RoHS COMPLIANT 2002/95/EC
		5V	3.3V	12V	-12V		
CPCI350D-1	350W	50A[1]	40A[1]	12A	2A	Consult Factory	No
CPCI350D-1C	350W	50A[1]	40A[1]	12A	2A	**Active**	**Yes**

INPUT CHARACTERISTICS

Parameter	Conditions	Min	Typ	Max	Units
Input Operating Voltage		36		72	Vdc
Input Voltage Withstand		34		75	Vdc
Inrush Current	72Vdc input		36		Apk

FEATURES

- 6Ux8HP package
- 350W power at 0-50ºC
- PICMG 2.11 Compliant
- Widerange 36-72VDC Input Range
- PCI Voltage Architecture
- 47-pin I/O Connector
- No minimum load
- Hot-swap capable

OUTPUT CHARACTERISTICS

Output	Nominal Voltage	Output Current		Total Regulation[2]	
		Min	Max		
V1	+5.0Vdc	0A	50A[1]	±2%	
V2	+3.3Vdc	0A	40A[1]	±2%	
V3	+12Vdc	0A	12A	+4/-2%	
V4	-12Vdc	0A	2A	+4/-2%	
Parameter	Conditions	Min	Typ	Max	Units
Output Voltage Adjustment	V1 & V2 only		±5		$\%V_{nom}$
Temperature Coefficient				0.02	%/ºC
PARD (V1 & V2)	20MHz bandwidth			50	mV_{p-p}
PARD (V3 & V4)	20MHz bandwidth			120	mV_{p-p}
Output Power	50ºC, 400lfm airflow	0		350	W
	70ºC, 400lfm airflow	0	175		W
Transient Response	ΔV, 50% load step			±8	$\%V_{nom}$
	Settling time			200	µsec
Over-Voltage Protection[3]	Output V1 (+5.0V)	5.5	6.0	6.5	V
	Output V2 (+3.3V)	3.8	4.3	4.8	V
	Output V3 (+12V)	13.0	13.5	14.0	V
	Output V4 (-12V)	-14.0	-13.5	-13.0	V
Minimum Load		0[4]			A
Remote Sense Compensation	V1, V2, & V3	500			mV
Current Share Tolerance	V1-V3; full load			±10	$\%I_{tot}$
	V4, full load			±40	$\%I_{tot}$
Isolation	Pri-Sec	4			kVac
	Pri-Chassis	1.5			kVac
	Sec-Chassis	500			Vac
Thermal Shutdown	A thermal switch shuts down the power supply in the event that critical temperatures are exceeded. Unit will automatically restart when acceptable temperatures are restored.				

DESCRIPTION

The cPCI350 is a high-reliability, 350W, 6Ux8HP CompactPCI™ power supply operating from widerange 48Vdc-input. Equipped with the 47-pin I/O connector option, these units are fully compliant with the PICMG 2.11 R1.0 *Power Interface Specification* as well as the underlying CompactPCI™ standards.

ORing diodes and active current sharing allow the cPCI350 to be operated in N+n parallel-redundant configurations to support high-availability (HA) telecom applications.

With a wide-range input of 36-72Vdc, safety agency approvals to UL1950 and EN60950, EMI compliance to ETSI and Telcordia standards, the cPCI350 was designed with globally-deployed systems in mind. Additional features include remote sense compensation, unit enable control (EN#), output inhibit control (INH#), output fault signal (FAL#), and thermal warning signal (DEG#). LEDs are provided for visual indication of input power presence and output fault condition.

The proven design and complement of global safety agency approvals provide for an advanced power solution for your telecom CompactPCI requirements.

Notes:
1. Combined currents from outputs V1 & V2 not to exceed 50A total.
2. Total regulation includes line, load, and cross regulation.
3. Response to an OVP fault is a latching shutdown, restart of the unit requires cycling of the input power.
4. May not be in regulation.

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GENERAL CHARACTERISTICS					
Parameter	Conditions	Min	Typ	Max	Units
Efficiency	48Vdc input, 350W load		68		%
MTBF	Calculated per MIL-HDBK-217F, 25ºC ambient, ground benign	374			khrs
	Calculated per MIL-HDBK-217F, 50ºC ambient, ground benign	174			khrs
Weight	Unpackaged		0.7		Kg

PROTECTION					
Parameter	Conditions/Response	Inception			
		Min	Typ	Max	Units
Thermal Shutdown	Automatic recovery upon restoration to operational temperatures		90		ºC
Input Protection	Internal line fuse, Littlefuse 314020 or equivalent (fast-acting 3AB)			20	A
Over-Voltage Protection	All outputs	110	125	145	%Vnom
Parameter	Conditions/Response				
Output Overload Protection	Outputs are individually protected against overloads and indefinite short circuit with automatic recovery upon removal of the fault condition. Overload response for all outputs is hiccup mode.				
Hot-Swap Capability	Design Verification Testing (DVT) confirms that voltage excursions on the output buses resulting from insertion/extraction events do not exceed the specified maximum of 8%. However, routing of power and signal lines in the mating backplane is critical to minimization of such excursions. In addition, performance can be critically affected by load characteristics including resistance, negative resistance, and reactive components. While the control loop responses have been designed for optimum hot-swap performance over a wide range of characteristics, there may be instances where the voltage excursions exceed published specifications. In such cases, the control loop responses can be modified to perform optimally.				
Output Fault Isolation	Output isolation devices are present in all outputs to isolate faults within a failed power supply.				

STATUS & CONTROL SIGNALS & INDICATORS	
Name	Description
Enable (EN#)	Short pin (#27) on connector will enable the outputs when the mating pin is grounded. Supply will not power up until this pin is engaged to its mate in the backplane. Unit output will be inhibited as pin is disengaged from the mating connector.
Output Inhibit (INH#)	Secondary referenced; active low, TTL compatible. Logic “0” or short circuit to output return inhibits all outputs.
Output Fault (FAL#)	Secondary referenced. Open collector signal denotes that one of the output voltages has fallen below the lower regulation limit.
Remote Sense (RS+, RS-)	Connection of the sense leads across the load at the desired point of regulation will compensate for voltage distribution drops up to 300mV between the output terminals of the power supply and the point of connection. The unit reverts to local sensing if the sense lines are opened for any reason. The output is protected against shorted or open leads. Applies to outputs V1-V3.
Thermal Warning (DEG#)	Secondary referenced; TTL compatible. Open collector denotes a thermal warning; nominally, 10ºC prior to thermal shutdown.
Fault Indicator LED	An LED will illuminate red if the output voltages are not within specification, coincident with assertion of the FAL# signal.
Power Present Indicator LED	A green LED will be illuminated when the input voltage is present and above the minimum requirement.

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ENVIRONMENTAL CHARACTERISTICS					
Parameter	Conditions	Min	Typ	Max	Units
Ambient OperatingTemperature	400lfm of airflow is required to maintain full output power at 0 to 50ºC ambient. De-rate to 175W at 70ºC. At 200lfm and 50ºC ambient, output power is de-rated to 175W.	0		70	ºC
Ambient Storage Temperature		-20		85	ºC
Over-Temperature Protection	Unit is protected against thermal overloead. Output will automatically restore upon recovery to acceptable temperatures.				
Humidity	Operating; non-condensing	10		90	%
	Storage; non-condensing	5		90	%
Altitude	Operating. De-rate operating ambient temperature by 2Cº per 1000ft above 5000ft.	-200		10000	ft
	Storage	-200		50000	ft

ELECTROMAGNETIC COMPATIBILITY (EMC)	
Characteristic	Compliance
Conducted Emissions	NEBS GR-1089

CERTIFICATIONS	
Agency/Characteristic	Standard
UL	UL1950
CSA	CSA950 (per cUL)
VDE	EN60950
CE	LVD Directive; self-certified
RoHS	EN Directive 2002/95/EC; self-certified; see Selection Guide table for specific model compliance
SELV	Self-certified
Vibration	MIL-STD-810d, Method 514.3, Procedure 1
Shock	MIL-STD-810d, Method 516.3, Procedure 1.

SAFETY AGENCY RATINGS	
Input Voltage	48Vdc
Input Current	15Adc
Input Power	650W

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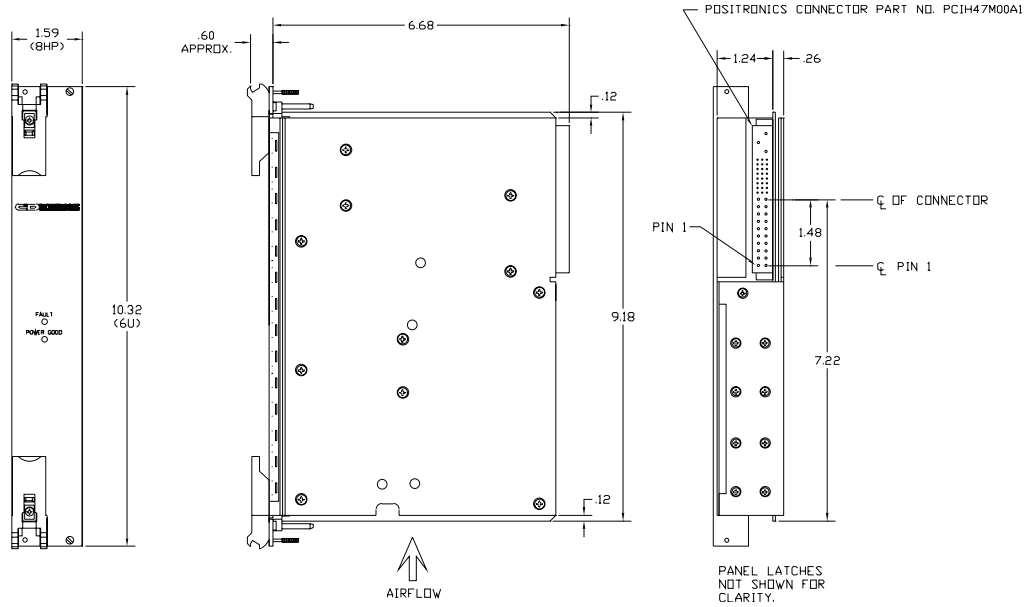
PACKAGE SPECIFICATIONS



All measurements are in inches.

Weight: 0.7kg

Shock: MIL-STD-810d, Method 516.3, Procedure 1.
Vibration: MIL-STD-810d, Method 514.3, Procedure 1.
Dimensions; 6U x 8 HP x 160mm.

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PACKAGE SPECIFICATIONS (Continued)

CONNECTORS

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[3]	Reserved[3]
24	M	RTN	V4 Return
25	M	GA0[4]	Geographic Address Bit 0
26	M	RESERVED	Reserved
27	S	EN#	Enable
28	M	GA1[4]	Geographic Address Bit 1
29	M	V1ADJ[4]	V1 Adjust
30	M	V1 SENSE	V1 Remote Sense
31	M	GA2[4]	Geographic Address Bit 2
32	M	V2ADJ[4]	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[4]	Serial Communication Receive; Clock
38	M	DEG#	Degrade Signal
39	M	INH#	Inhibit
40	M	IPMB SDA[4]	Serial Communication Transmit; Data
41	M	V2 SHARE	V2 Current Share
42	M	FAL#	Fail Signal
43	M	IPMB PWR[4]	System Management 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 Pin (First Make, Last Break); M = Medium Length Pins; S = Short Length Pins (Last Make, First Break).
3. PICMG™ 2.11 has reserved Pin 23 for future designation -- the cPCI350 uses this pin for synchronous start, required when N>1 for N+1 redundant configurations.
4. This function not available in the cPCI350DC.

RoHS COMPLIANT INFORMATION

RoHS COMPLIANT 2002/95/EC

This series is compatible with RoHS soldering systems with a peak wave solder temperature of 300ºC for 10 seconds. The pin termination finish on this product series is Tin Plate, Hot Dipped over Matte Tin with Nickel Preplate. The series is backward compatible with Sn/Pb soldering systems.

For further information, please visit www.cd4power.com/rohs

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