cPCI200A-1C Series

200W 3Ux4HP AC/DC CompactPCI™

Murata Power Solutions



FEATURES

- 3Ux4HP package
- 200W power at 0-50ºC
- PICMG 2.11 Compliant
- Widerange 90-264VAC Input
- Active power factor correction to EN61000-3-2
- Class A conducted EMI performance
- 47-pin I/O Connector
- 80% efficiency
- Full power with just 250lfm airflow
- Hot-swap capable

DESCRIPTION

The cPCI200A-1C is a high-reliability, 200W, 3Ux4HP CompactPCI™ power supply developed for chassis' with airflows as low as 250lfm. The use of resonant conversion and ORing FETs yields high efficiency which consequently permits packaging of this product in a compact, single card slot format (4HP).

The ORing FETs, current sharing, and synchronous start control allow the cPCI200A-1C to be operated in N+n parallel-redundant configurations. The low leakage current permits redundant configurations to comply with safety standards. The unit is capable of hot-swap performance to support high-availability enterprise applications.

With a widerange input of 90-264VAC, safety agency approvals to UL60950 and EN60950, EMI compliance to Class A FCC and EN55022 standards, the cPCI200A-1C 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.

SELECTION GUIDE

Model Number	Power	Output Current				For full details go to www.murata-ps.com/rohs	RoHS COMPLIANT 2002/95/EC
		5V	3.3V	12V	-12V		
CPCI200A-1C	200W	25A	30A	5A	1A	**Yes**	**Yes**

INPUT CHARACTERISTICS

Parameter	Conditions	Min	Typ	Max	Units
Input Operating Voltage		90		264	Vac
Input Frequency		47		63	Hz
Input Current				3.5	A_{rms}
Power Factor		0.95	0.98	0.99	
Inrush Current	240Vac			35	A_{pk}
Leakage Current	240VAC, 63Hz		1		mA

OUTPUT CHARACTERISTICS

Output	Nominal Voltage	Output Current		Total Regulation[1]	
		Min	Max		
V1[2]	+5.0Vdc	1A[3]	25A	+4/-2%	
V2[2]	+3.3Vdc	1 A[3]	30A	+4/-2%	
V3	+12Vdc	0A	5A	±4%	
V4	-12Vdc	0A	1A	±4%	
Parameter	**Conditions**	**Min**	**Typ**	**Max**	**Units**
Temperature Coefficient				0.02	%/ºC
PARD (V1 & V2)	20MHz bandwidth		50		mV_{p-p}
PARD (V3 & V4)	20MHz bandwidth		120	180	mV_{p-p}
Output Power	50ºC, 250lfm airflow	0		200	W
Output Power	70ºC, 250lfm airflow	0		100	W
Transient Response	ΔV, 50% load step			±5	$\%V_{nom}$
	Settling time			500	µsec
Over-Voltage Protection	V1, V2, & V3		125	135	$\%V_{nom}$
Minimum Load[4]	V1 or V2	1			A
Output Holdup Time	Full load, low line	12		16	msec
Remote Sense Compensation[5]	V1, V2, & V3	250			mV
Current Share Tolerance	V1-V3; I_o>25%			10	%
Isolation	Pri-Sec	3			kVac
	Pri-Chassis	1.5			kVac
	Sec-Chassis	500			Vac

Notes:
1. Total regulation includes line, load, and cross regulation.
2. Maximum combined power from V1 & V2 not to exceed 125W.
3. Minimum load requirement of 1A may be fulfilled on either V1 or V2, but need not be applied to both. The unit will operate with less than the stated minimum, but full load on V3 & V4 is only achievable with the minimum load requirement met on V1 and/or V2.
4. Minimum load is for a single unit; units operated in parallel may require additional load to achieve full power on outputs V3 and V4.
5. Unit automatically reverts to local sensing if the sense lines are opened. Unit is protected against shorted or reversed sense lines.

GENERAL CHARACTERISTICS

Parameter	Conditions	Min	Typ	Max	Units
Efficiency	Full load, 240Vac		79	81	%
Switching Frequency	PFC Converter		100		kHz
	Main Converter		130		kHz
MTBF	Calculated per Telcordia SR-332, Issue 1, 50ºC, 250lfm, ground benign	200			khrs
Weight	Unpackaged		620		g

PROTECTION

Parameter	Conditions/Response	Inception			Units
		Min	Typ	Max	
Thermal Shutdown	Automatic recovery upon restoration to operational temperatures		100		ºC
Input Current Limit			3		A_{rms}
Input Protection	Internal line fuse; Schurter 0034.6981 or equivalent			4	A_{rms}
Over-voltage Protection	V1, V2, & V3		125	135	$\%V_{nom}$
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 outputs V1-V3 is constant-current mode. Overload response for V4 is foldback; hiccup mode in response to a hard short.				
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 5%. 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 load 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 devises are present in all outputs to isolate faults within a failed power supply.				

STATUS & CONTROL SIGNALS & INDICATORS

Name	Description
Enable (EN#)	Short pin 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; TTL compatible. Logic “0” 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 250mV between the output terminals of the power supply and the point of connection. The output is protected against shorted or open leads. Each of the Remote Sense lines must be terminated to the corresponding output and return lines in order guarantee all performance specifications.
Thermal Warning (DEG#)	Secondary referenced; TTL compatible. Logic “0” denotes a thermal warning; nominally, 10ºC prior to thermal shutdown.
Sync Start (Sync)	Interconnection of the sync start leads between cPCI200A-1 units connected in parallel permits synchronous starting to support loads that exceed the maximum for a single unit. Pin 35 (V1 Share) is used for the synchronous start function.
Fault Indicator LED	An LED will illuminate red if the output voltages are not within specification, coincident with assertion of the FAL# signal. This LED will also illuminate amber if the output is inhibited.
Power Present Indicator LED	A green LED will be illuminated when the input voltage is present and above the minimum requirement.

ENVIRONMENTAL CHARACTERISTICS

Parameter	Conditions	Min	Typ	Max	Units
Ambient Operating Temperature		0		50	ºC
Ambient Storage Temperature		-40		125	ºC
Operating Humidity	Non-condensing	10		90	%
Storage Humidity	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
Input Current Harmonics	EN61000-3-2, Class A
Conducted Emissions	CFR Title 47, Part 15, Sub-part B, Class A EN55022, Class A
Electrostatic Discharge (ESD)	EN61000-4-2, Level 3, Criterion B
Radiated Immunity	EN61000-4-3, Level 3
Conducted Immunity	EN61000-4-4, Level 3, Criterion A
Line Voltage Surge	EN61000-4-5, Level 2, Criterion B
Line Voltage Interruptions	EN61000-4-11

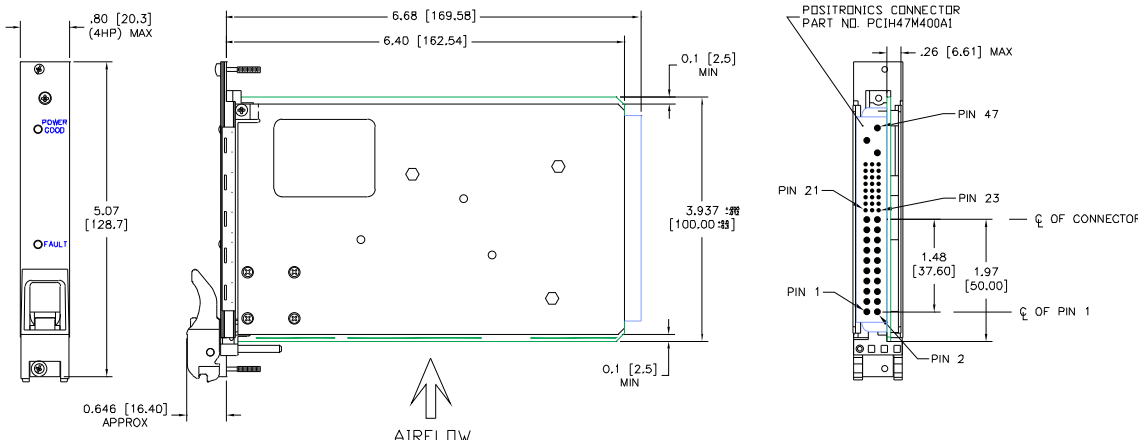
CERTIFICATIONS

Agency/Characteristic	Standard
UL	UL60950-1
CSA	CSA60950-1 (per cUL)
VDE	EN60950-1
CE	LVD Directive; self-certified
RoHS	EN Directive 2002/95/EC; self-certified (see Selection Guide for specific model compliances)
SELV	Certified
Vibration	MIL-STD-883F, Method 2007.3, Test Condition A, pending
Shock	MIL-STD-883F, Method 2002.4, Test Condition A, pending

SAFETY AGENCY RATINGS

Input Voltage	120/240Vac
Input Current	3A
Input Power	270W

MECHANICAL DIMENSIONS



CONNECTOR

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[3]	M	V1ADJ	V1 Adjust
30	M	V1 SENSE	V1 Remote Sense
31	M	GA2	Geographic Address Bit 2
32[3]	M	V2ADJ	V2 Adjust
33	M	V2 SENSE	V2 Remote Sense
34	M	S RTN	Sense Return
35	M	V1 SHARE	Sync Start
36	M	V3 SENSE	V3 Remote Sense
37[3]	M	IPMB SCL	IPMB Serial Clock Line
38	M	DEG#	Degrade Signal
39	M	INH#	Inhibit
40[3]	M	IPMB SDA	IPMB Serial Data Line
41[3]	M	V2 SHARE	V2 Current Share
42	M	FAL#	Fail Signal
43[3]	M	IPMB PWR	IPMB Power Input
44[3]	M	V3 SHARE	V3 Current Share
45	L	CGND	Chassis Grnd (Safety Grnd)
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 backpane connector.
2. "L" denotes long pin length (first mate, last break)
   "M" denotes medium pin length
   "S" denotes short pin length (last mate, first break)
3. This function not used in the CPCI200A-1C Series.

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.murata-ps.com/rohs

ISO9001 CERTIFIED

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