



DC/DC converter for railway applications

Description

The 100W CPCIR series is a Compact PCI converter which is fully compliant with international railway standards. Designed specifically to meet the demanding requirements of EN50155, the CPCIR series is ideally suited to on-board computer applications.

Special features include:

- Standard cPCI profile
- EN50155 temperature class TX (-40 to +70°C, +85°C for 10 mins.) without derating
- Convection cooled

Input specifications

The following input voltages versions are available as standard:

72 / 110V (43.2 - 137.5V) dc (Suffix AD)

24 / 36V (16.8 - 50.4V) dc (Suffix BF)

Parameter	Detail
Input Ripple	To EN50155
Input Protection	Reverse polarity protection (shunt diode) Surges and transients to EN50155
Inrush Current	Limited to typically 7x nominal current for 5ms (after 0.2ms)
Efficiency	AD input: 84% typical, BF input: 82% typical
Hold-up time	To EN50155 class S2 supply interruptions (10ms from nominal voltage, i.e. from 72V for 'AD' version and from 24V for 'BF')
Input fuse	Board mounted. Factory replacement

Output specifications

Parameter	Output 1	Output 2	Output 3
Output Voltage	5.1V	3.3V	12V
Output current nominal	12A	15A	3.3A
Output Power nominal	61W ¹	50W ¹	40W ¹
Setting Tolerance (50% load, 15°C to 25°C)	±1.0%	±1.0%	±2.0%
Minimum Load	0.1A ²	0.1A ²	Zero ²
Line / Load Regulation	-3 / +5%	-3 / +5%	±2.0%
Output Ripple (p-p)	50mV	50mV	200mV
Output Noise (p-p) (superimposed, up to 20MHz)	1%	1%	1%
Rise time (from start of output)	<20ms	<20ms	<100ms

Notes: 1. Power trade-off. Total maximum load not to exceed 100W. Total load of Output 1 and Output 2 not to exceed 60W
 2. Minimum load for output 1 / 2 cross regulation within specified limits



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Output specifications (continued)

Parameter	Detail	
Maximum Output Power	100W maximum (power trade off between outputs)	
Remote sensing	N/A	
Output sequencing	During power-up / power-down the 5V output is always greater than 3.3V output.	
Current limit	All outputs protected against overload / short circuit. Auto recovery.	
Output Protection	Protected against indirect transients to EN50155	
Temperature Coefficient	<0.02% / °C	
Thermal Protection	Shuts down PSU if safe internal temperature is exceeded. Auto recovery.	
Degrade signal (DEG#)	Operates in conjunction with thermal protection. Active low.	
Over-voltage protection	Fitted to all outputs. Limits output voltage to < 115% of nominal	
Inhibit (INH#)	Connect to OV to inhibit all outputs (floating or logic high enables all outputs).	
Enable (EN#)	Must be connected to OV output to enable PSU.	
Power Fail / Output Fail (FAL#)	Combined signal; operates when input voltage falls below 0.6Un. Provides early indication of loss of output (typically 2ms if output loading is maximum; longer at lighter loads). Also indicates if any output is low. Active low signal (NPN transistor)	
Indicators	Outputs Present: Green for ok, red for fault	
Isolation (tested at dc equivalent voltage)	Input to Output	2.0kV ac
	Input to Chassis	1.0kV ac
	Output to Chassis	1.0kV ac
	Output to Output	None (common zero)

Environmental details

Parameter	Detail
Operating Temperature	-40°C to +70°C at full load, no de-rating +85°C for 10 minutes (EN50155 class Tx)
Storage Temperature	-40°C to +85°C
Cooling	Convection (0.2m/s)
Relative Humidity	95% max.
Shock & Vibration	EN 50155 (EN 61373)
Environmental Protection	IP20; Conformal coating on PCB

Applicable norms

Parameter	Detail
EMC	EN50155 (2007), EN50121-3-2 (2006), EN55022 Class B, EN61000-6-2
General	EN50155 (2007)
Safety	EN60950
Fire & Smoke	NF-F-16-102 category A2

Mechanical characteristics

Parameter	Detail
Construction	19" ventilated cassette with EMC screened front panel and lower ejector.
Dimensions	Length = 12HP
	Width = 3U
	Height = 162.5mm
Weight	<0.9kg
Connections	Positronic P47 compatible with PICMG 2.11
Mounting	Normal (system slot right)

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