



## DC/DC converter for railway applications

### Description

The 100W CPCIR series is a Compact PCI converter which is compliant with international railway standards. Designed specifically to meet the demanding requirements of EN 50155, the CPCIR series is ideally suited to on-board computer applications.

### Special features include:

- Standard cPCI profile
- EN 50155 temperature class TX (-40 to +70°C, +85°C for 10 mins) without derating
- Convection cooled

### Input specifications

The following input voltage 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 EN 50155
Input Protection	Reverse polarity protection (shunt diode) Surges and transients to EN 50155
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 EN 50155 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 <sup>1</sup>	50W <sup>1</sup>	40W <sup>1</sup>
Setting Tolerance (50% load, 15°C to 25°C)	±1.0%	±1.0%	±2.0%
Minimum Load	0.1A <sup>2</sup>	0.1A <sup>2</sup>	Zero <sup>2</sup>
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



## 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 EN 50155
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 0V to inhibit all outputs (floating or logic high enables all outputs)
Enable (EN#)	Must be connected to 0V 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 (EN 50155 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	EN 50155 (2007), EN 50121-3-2 (2006), EN 55022 Class B, EN 61000-6-2
General	EN 50155 (2007)
Safety	EN 60950
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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LPA Group 2025 | 05/2025/V2

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