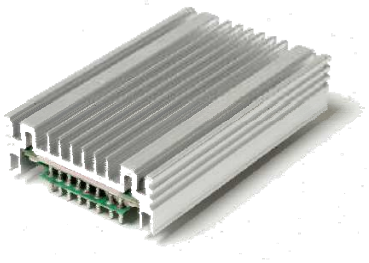
120W CMR120 SERIES

DC/DC CONVERTER FOR RAILWAY APPLICATIONS



> Description

The 120W CMR120 range is designed specifically for worldwide railway applications. Conforming to EN50155 the CMR120 series is compact in size for PCB mounting. Two input voltage versions cover the typical rolling stock battery voltages found between 24 and 110Vdc. The CMR120 series is single output with 12 and 24Vdc versions available at product launch.

Special features include:

- Compact size 92x56x20mm
- Wide input voltage
- EN50155 standards

Product reference	Input range	Output voltage
CMR120 1D 12	12 to 50.4Vdc	12Vdc
CMR 120 1K 12	43.2 to 154Vdc	12Vdc
CMR 120 1D 24	12 to 50.4Vdc	24Vdc
CMR 120 1K 24	43.2 to 154 Vdc	24Vdc

> Input Specifications

Parameter	Detail
Low input voltage version	Range is 12V to 50.4Vdc
High input voltage version	Range is 43.2V to 154Vdc
Input Protection	External protection - application note available
In-rush current	External protection - application note available
Efficiency	>90%
Switching frequency	300kHz typical
Audible noise	No

> Output Specifications

Parameter	Detail
Maximum Output Power	120W
Output Versions	Single output only
Output Voltage	12 and 24Vdc versions
Accuracy	±1%
Current	12Vdc version 10A nominal 24Vdc version 5A nominal
Minimum load	zero
Line / Load Regulation	+0 - 2% (10 to 100% of load)
Temperature Coefficient	240ppm/°C
Output Ripple 0 - 30MHz	60mVrms (measured with external capacitors)
Short circuit protection	Yes
Over voltage protection	Yes - input voltage must be disconnected for recovery
Current limit	Yes - auto recovery
Thermal Protection	Converter shuts down if safe internal temperature is exceeded. Auto recovery
Remote sensing	Range is +10% of output voltage
On/off function	Yes - refer to application note for detail
Synchronisation function	Yes - refer to application note for detail
Trim function	Yes—output voltage trim range is –20 to +10% Application note available
Isolation	Input / output: 3000Vdc Output / chassis: 1500Vdc Input / Chassis: 1500Vdc

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> Environmental Details

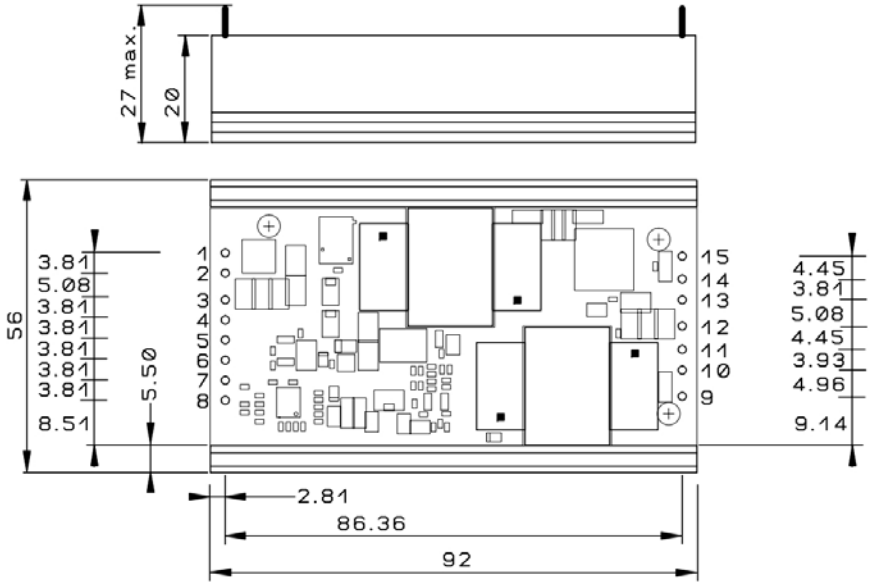
Parameter	Detail
Operating Temperature	-40°C to +85°C
Storage Temperature	-40°C to +85°C
Derating with profile	Low input voltage version: 70°C / 120W 80°C / 100W 85°C / 90W High input voltage version: 60°C / 120W 70°C / 100W 85°C / 60W
Cooling	Free air convection
Relative Humidity	75%, 95% 30 days
Shock & Vibration	EN 50155 (EN 61373)
Environmental Protection	IP00, the PCB is coated

> Applicable Norms

Parameter	Detail
EMC	EN50155 (2007), EN50121-3-2 (2006) with external filter (see application note for a filter proposal)
Other	EN50155 (2007)

> Mechanical Characteristics

Parameter	Detail
Construction	PCB with extruded aluminium heatsink
Dimensions	Length: 92mm, Width: 56mm, Height: 20mm
Weight	160g typical
Connections	Solder pins (ø x 1.5mm) for PCB mounting as standard.



Pin	Name	Function
1,2	Vin(+)	Positive input voltage
3,4	Vin(-)	Negative input voltage
5	On/Off	Input to turn converter on and off, referenced to Vin(-) with internal pull up. **See application note**
6	Bt	Internal voltage **Do not use**
7	Res	Internal voltage
8	Sync	Bidirectional synchronisation pin
9	Sense(+)	Positive remote sense[1]
10,11	Vout(+)	Positive output voltage
12	Trim	Output voltage trim[2]
13,14	Vout(-)	Negative output voltage
15	Sense(-)	Negative remote sense[3]
Notes		
a	Sense(+) should be connected to Vout(+) either remotely or at the converter.	
b	Leave Trim pin open for nominal output voltage.	
c	Sense(-)should be connected to Vout(-) either remotely or at the converter.	