# DCCrail212 Series DC/DC Voltage Converter

## Benefits

- Ultra-Quiet
- Power sensitive electronics without interference
- Rugged & Reliable
- Ensure years of safe and trouble free operation

## Applications

- Railway / Transportation
- Mining
- Oil Rigs
- Military Applications
- Marine / Automotive / RV
- Electric Utilities and Substations
- Telecom Power Plants
- Manufacturing Locations
- Steel Mills
- Industrial Controls
- OEM Applications

# DC/DC Converters

DCCrail212 Series (isolated)

## Description

The DCCrail212 series fully encapsulated single output DC/DC converter uses field-proven topology to generate 200W output power.
It meets the requirements of EN 50155 for electronic equipment used on rolling stock.
This version also meets requirements for RIA 13 and RIA 20, and has a built in voltage limiter circuit to ensure input voltage surge withstand capability to meet RIA 12 (3.5Vn for 20msec).
The converter is conduction cooled via a base plate and is rated for operation over a -40 to +70°C temperature range without derating. It is entirely potted with a thermally conductive MIL-spec. silicon rubber compound for resistance against shock, vibration, humidity, moisture, dust and insects.
The use of components with many years of established reliability and generous headroom results in a high demonstrated MTBF.
The unit is also suitable for operation in mining, oil rigs, military and other harsh environments.
The DCCrail212 series is manufactured at our plant under strict quality control. Customized versions are also available.

## Features

- Compact case
- Rugged construction
- Complete encapsulation
- Conduction cooling
- Single output
- 200W output power
- Meets IEC950, EN50155, RIA 12, RIA 13, RIA 20
- Competitive price
- Full electronic protection
- Telecom quality
- Field-proven design
- 2 years parts and labour warranty

# Specifications *( Specifications Subject to Change Without Notice)*

| | |
|---|---|
| **Input Voltage range** | 24V (14.4 – 37Vdc)<br>36V (22 – 55Vdc)<br>48V (28 – 74Vdc)<br>72V (42 – 110Vdc)<br>96 & 110V (57 – 168Vdc)<br>Other inputs upon request |
| **Input Protection** | Inrush current limiting Varistor<br>Reverse polarity protection<br>Internal safety fuse<br>Lower voltage than specified input min. will not damage unit |
| **Isolation** | Input to chassis: 1500Vdc<br>Input to output: 3000Vdc<br>Output to chassis: 1500Vdc |
| **Output Voltages** | 12Vdc/16A or 24Vdc/8A or 36Vdc/5A or 48Vdc/4A<br>Consult factory for other voltages<br>Outputs are floating; either terminal can be grounded |
| **Switching Frequency** | 80kHz ±5kHz |
| **Redundancy Diode** | None |
| **Line / Load Regulation** | +/- 1% combined from zero load to full load on each output |
| **Dynamic Response** | Max 5% voltage deviation for 10% to 50% load step, with better than 1ms recovery time |
| **Output Overvoltage Protection** | Second regulator loop completely stable and independent of main regulator loop |
| **Overload Protection** | Rectangular current limiting with hiccup type short-circuit protection<br>Thermal shutdown with automatic recovery in case of insufficient cooling |
| **Efficiency** | 80 to 90% depending on input/output configuration |
| **EMI** | EN55022 Class B and EN50121-3-2 conducted and radiated |
| **Output Ripple/Noise** | Less than 1% peak-to-peak or 0.2% RMS of the output voltage (20MHZ BW) |
| **Immunity** | Meets criteria of EN50155 and EN50121-3-2 according to the following standards:<br>EN 61000-4-2 (ESD), EN61000-4-3 (RF Immunity), EN61000-4-4 (Fast Transients)<br>EN50155 (Surge), EN61000-4-6 (Conducted Imm.), EN50155 (Voltage Variations)<br>Built-in protection against the 3.5Vn, 20ms surge according to RIA 12 |
| **MTBF** | 150,000 hours @ 45°C  Demonstrated MTBF is significantly higher |
| **Indicators** | None  (Optional 'ON' LED available) |
| **Control Input** | None |
| **Alarm Output** | None |
| **Environmental Protection** | Full encapsulation with thermally conductive silicon potting compound with UL94V-0 flammability rating |
| **Shock/Vibration** | Designed to meet IEC 61373 Cat 1 A&B and Cat 2 as a min. |
| **Humidity** | 5 – 95% non-condensing  Contact factory for higher rating |
| **Operating Temperature** | -40 to +70°C cold-plate temperature for full specification |
| **Temperature Drift** | 0.03% per °C over operating temperature range |
| **Cooling** | Conduction cooling via base plate to customer chassis or heat-sink |
| **Connections** | 5-pole barrier-type terminal block with 3/8" spacing.<br>Cover can be provided upon request |
| **Dimensions** | 23cm x 9.4cm x 6.0cm  including terminal block and flanges  Mounting holes are clear |
| **Weight** | 1.3 Kg |
| **Safety** | Designed to meet IEC950, EN50155, RIA 12, RIA 13, RIA 20 |
| **RoHS Compliance** | Fully compliant |
| **Warranty** | 2 years |

## Available from:

RIPEnergy®

The power conversion company

RIPEnergy AG
Talstrasse 2
CH-8702 Zollikon
Switzerland

Ph +41-(0)43-818 53 85
Fax +41-(0)43-818 53 87
www.ripenergy.ch