



## DCR1000 RAILWAY DC/DC CONVERTER

### SERIES DCR1000

The DCR1000 series consists of DC-DC converters with a galvanic isolation input-output and fixed switching frequency.

For maximum regulation, the remote sensing terminals can be connected to the load. This will allow a power cable voltage drop of up to 0.3 V on each cable to be offset.

The device is protected against overloads and short-circuits by means of a current limiting circuit.

The device is also protected against reverse polarity input voltage, and the input fuse blows if an improper connection is made.

When a converter input under-voltage condition occurs, the converter is disabled, thus preventing the battery from becoming totally discharged.

### APPLICATIONS

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

### FEATURES

- Designed according to EN50155
- Fire and smoke: EN45545-2 approved
- High input-output isolation
- Adjustable output voltage
- Remote sensing
- Remote inhibit
- Input & Output OK LEDs
- Output failure alarm
- Protection against overloads and short-circuits
- Protection against input undervoltage
- Option: Oring FET
- Different cooling options: Convection, Conduction or fan cooling



High frequency technology



Light weight, compact size



Full electronic protection



Extended temperature range



Convection Cooling (no Fan)



Remote inhibit



Output fail alarm (Form B)

## SPECIFICATIONS

	24Vin 14,4V ... 30V	36Vin 21,6V ... 45V	48Vin 28,8V ... 60V	72Vin 43,2V ... 90V	110Vin 66V ... 144V
24Vout	<b>DCR1000-24-24</b> 1000W 88%	<b>DCR1000-36-24</b> 1000W 89%	<b>DCR1000-48-24</b> 1000W 91%	<b>DCR1000-72-24</b> 1000W 91%	<b>DCR1000-110-24</b> 1000W 92%
48Vout	<b>DCR1000-24-48</b> 1000W 89%	<b>DCR1000-36-48</b> 1000W 90%	<b>DCR1000-48-48</b> 1000W 91%	<b>DCR1000-72-48</b> 1000W 92%	<b>DCR1000-110-48</b> 1000W 93%
72Vout	<b>DCR1000-24-72</b> 1000W 89%	<b>DCR1000-36-72</b> 1000W 91%	-	-	-
110Vout	<b>DCR1000-24-110</b> 1000W 90%	-	-	-	<b>DCR1000-110-110</b> 1000W 93%

Input	
Input voltage range	See table
Maximum input ripple	5% Vrms, 15% Vpp
Typical efficiency at full load	See table
Output	
Output voltage range	
V <sub>imin</sub> >60% V <sub>i</sub> nom	-10% ... +0% V <sub>o</sub> nom
V <sub>imin</sub> >70% V <sub>i</sub> nom <sup>(1)</sup>	-10% ... +15% V <sub>o</sub> nom <sup>(2)</sup>
Line regulation (I <sub>o</sub> = nom)	<0.2%
Load regulation (V <sub>in</sub> = nom)	<0.2%, 2.5 % for ORing FET option
Ripple	< 50 mVpp
Noise (BW = 20MHz)	< 100 mVpp
Maximum remote sensing	0,3V / pole
Max. overvoltage protection	< 140% V <sub>out</sub> nom
Environmental	
Storage temperature	-40°C ... 85°C
Operating temperature full load	-25°C ... 55°C (-40°C ... 55°C, see note-1)
Operating temperature 63% load	-25°C ... 70°C (-40°C ... 70°C, see note-1)
Cooling options	Convection, Conduction or Fan cooling
Maximum Relative humidity	95% without condensation
MTBF (at 40°C and 75% load)	350.000h according to IEC61709 (fan not included)

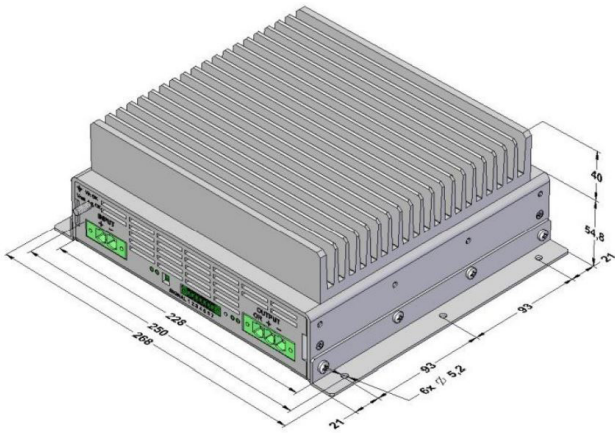
Note-1: The unit can start up and work at an ambient temperature of -40°C with the following restrictions:

1) Do not actuate over the connectors below -25°C.

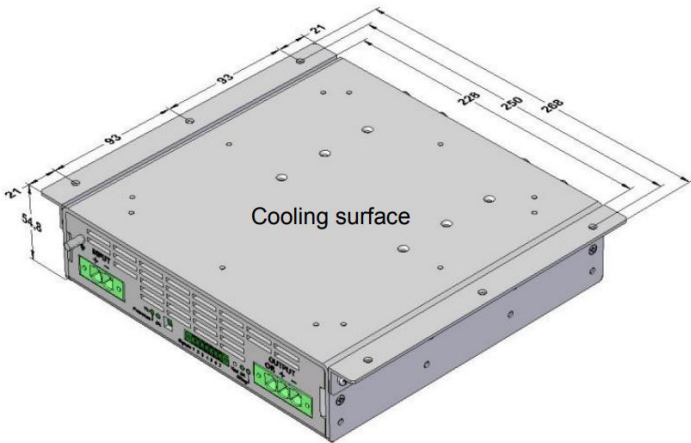
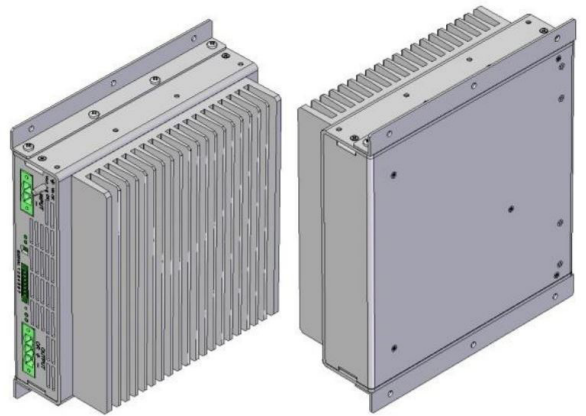
2) The output ripple can rise up to 150mVpp at -40°C

EMC	
Immunity according to	EN61000-6-2 / EN50121-3-2
Emissions according to	EN61000-6-3 / EN50121-3-2
Safety	
Safety according to	EN60950
Dielectric strength: Input / output	3000Vac, 4200Vdc 1min.
Dielectric strength: Output / ground	1500Vac, 2100Vdc 1min.
Dielectric strength: Input / ground	1500Vac, 2100Vdc 1min.
Fire and smoke	EN45545-2, NFPA 130
Mechanical	
Weight	2500 to 5000 g
Dimensions conduction cooling	228 x 268 x 54.8mm
convection cooling	228 x 268 x 94.8mm
Control	
Remote inhibit input	Logic: 1=OFF, Range: 15 ... 143 Vdc, Impedance > 27kΩ
Alarm contacts	1A @ 24Vdc, 0.3A @ 150Vdc, 1A @ 125Vac
Local: Input OK, Output OK	Green LEDs
Protections	
Against overloads and short-circuits	Current limiting
Against output over-voltages	Shutdown (reset by input switch off)
Against over-temperature	Shutdown with self-recovery
Against reverse input voltage	Input fuse Optional active protection
Against input under-voltage	Under-voltage lock-out
Against Input over-currents	Input fuse

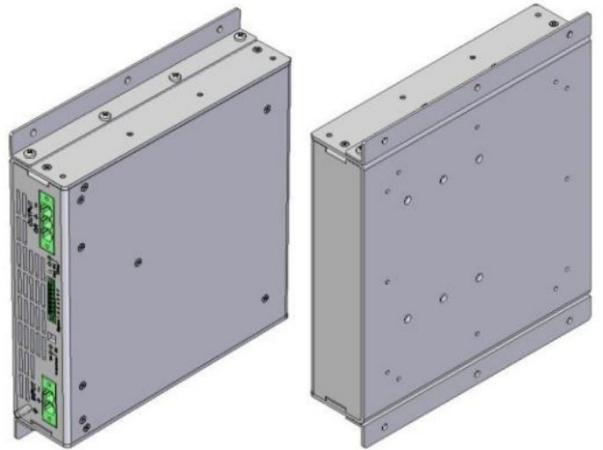
# ENCLOSURE



Convection cooling version (weight 5kg)



Conduction cooling version (weight 2.5kg)



OPTIONS	OPTION CODE
Fan cooling (2 fans with speed control)	-C
Fan redundancy cooling (4 fans with a duty cycle = 50%)	-R
Convection cooling	-V
Conduction cooling	-D
ORing FET for redundancy Includes a passive current sharing by voltage drop < 2.5%	-XO
<ul style="list-style-type: none"> <li>• Hold up time 10ms (EN50155 class S2)</li> <li>• Active protection against input reverse polarity</li> <li>• Active inrush current limiter: <math>I(\text{inrush}) &lt; 3 \cdot I(\text{input nominal})</math></li> </ul>	-XH

