



DC/DC converter for railway applications

Description

The 55W DR series is a well-established product range designed specifically for use on railway rolling stock. Units are available in single, dual and triple output versions with input ranges to cover all of those typically found in rail applications. Housed in a rugged 3U Euro cassette, the DR series is a suitable for both rack and bulkhead mounting. The range is fully compliant with the current national and international railway standards and norms.

Special features include:

- 3U Euro cassette
- Single, Dual and Triple outputs
- Wide range of optional features

Input specifications

The following input voltages versions are available as standard:

110V	(66.0 - 137.5V)	dc	(Suffix A)
72V	(43.2 - 90.0V)	dc	(Suffix D)
52V	(31.2 - 65.0V)	dc	(Suffix C)
36V	(21.0 - 50.4V)	dc	(Suffix F)
24V	(16.8 - 33.6V)	dc	(Suffix B)

Parameter	Detail
Input Ripple	To RIA 13 and EN50155
Input Protection	Reverse polarity protection. Surges and transients to RIA 12, EN50155
Inrush Current	Limited to typically 5 x nominal current (after 0.1ms)
Efficiency	75% to 85% dependent on voltage combinations
Hold-up time	10ms to EN50155 Class S2 (input removal only)
Input fuse	20mm cartridge style mounted on rear panel. See table overleaf for fuse options



Part number	Output 1		Output 2		Output 3	
	V _{dc}	A	V _{dc}	A	V _{dc}	A
DR0500	5	8.0				
DR1100	11	5.2				
DR1200	12	4.5				
DR1400	14	4.0				
DR1500	15	3.5				
DR1800	18	3.3				
DR2400	24	2.2				
DR2800	28	1.8				
DR3000	30	1.8				
DR4800	48	1.25				
DR0512	5	5.0	12	2.0		
DR1212	12	2.2	12	2.2		
DR1248	12	3.0	48	0.3		
DR1515	15	1.8	15	1.8		
DR2424	24	1.1	24	1.1		
DR3030	30	0.9	30	0.9		
DR5555	55	0.5	55	0.5		
DR051212	5	5.0	12	1.0	12	1.0
DR051515	5	5.0	15	0.8	15	0.75
DR051224	5	4.0	12	0.8	24	0.4
DR241515	24	1.0	15	0.8	15	0.75



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Output specifications

Parameter	Detail
Maximum Output Power	55W (45W for triple output) 60W for single 48Vdc output version
Output Voltage	Can be specified from 5V to 48Vdc
Minimum Load	Zero for all outputs
Setting Tolerance	±0.5% at 50% load, 15°C to 25°C
Line Regulation	±0.2%
Load Regulation	±0.5%
Temperature Coefficient	<0.02% / °C
Output Ripple	<1% Pk-Pk of Output Voltage
Output Noise	<1% Pk-Pk superimposed (up to 20MHz)
Response Time	0.5ms to within 2% (for a 20% - 90% load change)
Indicators	Green "Output good" LED for each output
Output Protection	Output and signal lines protected against indirect transients to RIA 12, EN50155
Current limit	Operates at approximately 110% of full power. Auto recovery
Thermal Protection	Shuts down PSU if safe internal temperature is exceeded. Auto recovery.
Isolation (tested at dc equivalent voltage)	<div> <div>Input to Output</div> <div>Input to Case</div> <div>Output to Case</div> <div>Output to Output</div> </div> <div> <div>2.0kV ac</div> <div>1.0kV ac</div> <div>1.0kV ac</div> <div>350V ac</div> </div>

Electrical options for DR series

Option	Detail	Code
Input Fuse	Fitted on PCB	B
Input Fuse	Not fitted	Z
Input Fail	Operates when input falls below minimum. (Active high or Active low)	I or J
Output Fail	Operates when U1 output falls below 96% of nominal value. (Active high or Active low)	K or L
Over-voltage	Limits voltages of U1 to safe level under fault conditions	P
Inhibit	TTL high to inhibit	V
Enable	Link to U1 return to enable	W

Environmental details

Parameter	Detail
Operating Temperature	-25°C to +70°C (+85°C for 10 minutes)
Storage Temperature	-40°C to +85°C
Cooling	Convection
Relative Humidity	95% max.
Shock & Vibration	EN 50155 (EN 61373)
Environmental Protection	IP54
Altitude	5000m maximum

Applicable norms

Parameter	Detail
EMC	RIA 12, EN50155 (2017), EN50121-3-2 (2016)
Other	EN50155 (2017), EN45545 (HL3)

Mechanical characteristics

Parameter	Detail
Construction	Euro cassette - suitable for either rack or bulkhead mounting
Dimensions	<div>Length = 168.5mm</div> <div>Width = 8TE</div> <div>Height = 3U</div>
Weight	0.7kg
Connections	<div>Connector DIN 41612 H11 Class 1</div> <div>- Option for connection retaining clips</div> <div>- Option for cable connections</div>
Fixings	<div>Six M3 tapped holes in cassette side panel</div> <div>Option for rack mounting or bulkhead mounting plate</div>

Environmental & mechanical options for DR series

Option	Detail	Code
Extended temperature range	- 40°C operating	T
Connector fixing	Retaining clips	H
Mounting plate	Bulkhead fixing Drawing 900-911	M
Rack mounting Front Panel	8HP Front Panel Drawing 900-910	Q4
Connections	Flying leads (Halogen free cable)	Q6

Technical drawing

