



150W ER SERIES

DC/DC CONVERTER



Description

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

Input Specifications

The following input voltage 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	(25.2 - 50.4V) dc	(suffix F)
24V	(16.8 - 33.6V) dc	(suffix B)

Other ranges are available to order

Product reference	All references
Input Ripple	To RIA 13 and EN50155
Input Protection	Reverse polarity protection; surges and transients to BRB/RIA 12, EN50155
Inrush Current	Limited to typically 6x nominal current (after 0.1ms)
Efficiency	80 to 90% dependent on input / output voltage
Input Fuse	20mm cartridge style mounted on rear panel (except -B input) (option for internal or none)

Output Specifications

Product reference	All references
Output Power	150W (limited to 125W for 24V input or 5V output unit)
Minimum Load	Zero for all outputs
Setting Accuracy	±0.5% at 50% load, 15°C to 25°C
Line Regulation	±0.2% all outputs
Load Regulation	±0.5% all outputs
Remote Sensing	Compensates for upto 250mV drop in each line (single output only)
Temperature Coeff.	<0.02% / °C
Output Ripple	<1% Pk-Pk of output voltage
Output Noise	<1% Pk-Pk superimposed (up to 20 MHz)
Response Time	1.0ms to within 2% of nominal (for a 20% - 90% load change)
Indicators	Green LED for each output
Protection	Output and signal lines protected against indirect transients to BRB/RIA 12, EN50155
Current Limit	Operates at a minimum of 105% of nominal load. Automatic recovery.
Primary Protection	Operates at approximately 115% of rated output power for dual units
Thermal Protection	Shuts down PSU if safe internal temperature is exceeded (85°C to 100°C). Automatic recovery.
Isolation	Input to Output 3.0kV dc Input to Case 1.5kV dc Output to Case 1.5kV dc Output to output 250V dc

Part Number	Output 1		Output 2	
	$U_{o\ nom}$ [V dc]	$I_{o\ nom}$ [A]	$U_{o\ nom}$ [V dc]	$I_{o\ nom}$ [A]
ER 0500	5	25.0		
ER 1200	12	12.0		
ER 1500	15	10.0		
ER 2400	24	6.0		
ER 3000	30	5.0		
ER 0512	5	15.0	12	6.0
ER 1212	12	6.0	12	6.0
ER 1515	15	5.0	15	5.0
ER 2424	24	3.0	24	3.0
ER 1205	12	10.0	5	5.0
ER 2412	24	4.0	12	4.5

Option	Operation	Code
Input Fuse	Fitted internally on PCB	B
	Not Fitted	Z
Current Sharing	For parallel operation of two or more supplies using one interconnection. Sharing better than 60 / 40% on main output	S
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 voltage 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

Product reference	All references
Operating Temperature (no derating)	-25°C to +71°C -40°C to +71°C (option T)
Storage Temperature	-40°C to +85°C
Cooling	Convection
Relative Humidity	95% maximum
Sealing	IP54
Shock and Vibration	BRB/RIA 13 - Para 10.5.11, BRB/RIA 20, EN50155 para 10.2.11

Option	Details	Code
Operating Temperature	Extended to -40°C	T

Applicable Norms

Item	Reference
EMC	BRB/RIA 12, 18; EN50155, EN50121-3-2
Other	BRB/RIA 13, 18, 20; EN50155, IEC571

Mechanical Characteristics

Product reference	All references
Construction	Eurocassette (front panel optional)
Dimensions	Depth = 168.5mm Width = 16TE – heatsink = 9TE – cold wall mount Height = 3U
Weight	1.3kg (0.9kg cold wall mount)
Mounting	Four slotted M6 holes in heatsink. Option 'M' – six M4 threaded inserts; option 'M2' – six M5 holes
Connections	DIN 41612 H15 Class 1 (silver or gold). Clips for retaining mating connector are available as an option. Alternatively, specify option Q6 for connections via flying leads (halogen free cable).

Option	Details	Code
Connections	Gold plated pins to Class 1 Flying leads	G Q6
Enclosure	Alochrom front panel	Q4
	Cold wall mounting plate instead of heatsink	M1
	Cold wall mounting plate with clear holes	M2
	Connector retaining clips	H

NOTES

Output voltages:
See table overleaf for standard voltages available

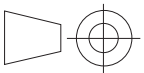
Output currents:
The values specified overleaf are the standard current option '1'

Alternative voltages & currents are available on request.

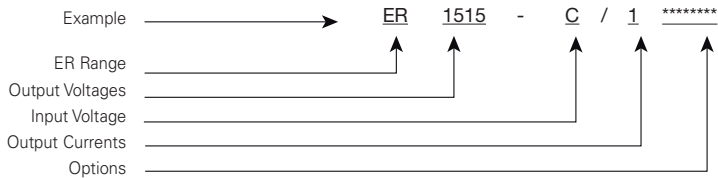
1. All dimensions in mm

2. Specifications subject to change without notification

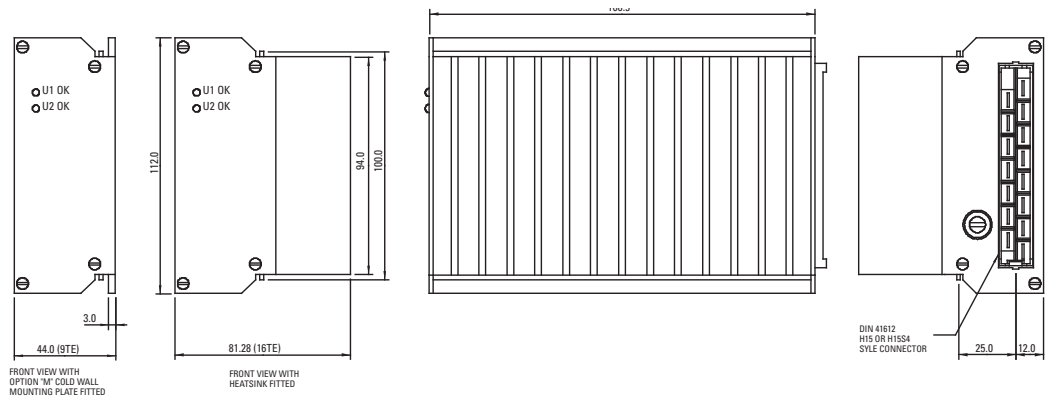
3.



Ordering Information



Technical Drawing



PIN No.	SINGLE D/P	DUAL D/P
4	U1 +	U1 +
6	U1 -	U1 -
8	U1 -	U1 -
10	U1 -	U1 -
12	U1 sense +	U2 +
14	U1 sense -	U2 -
16	Not connected	Not connected
18	Inhibit	Inhibit
20	Power/Output fail	Power/Output fail
22	Current Share	Current Share
24	Earth	Earth
26	Vin +	Vin +
28	Vin +	Vin +
30	Vin -	Vin -
32	Vin -	Vin -