



DC/DC converter for railway applications

Description

The SRE series is a very low profile converter designed specifically for use on railway rolling stock. Rated at 120W, units are available in single or dual output configurations with input ranges to cover all those typically found in rail applications. The unit is suitable for either rack or bulkhead mounting. The range is fully compliant with the current national and international railway standards and norms.

Special features include:

- Very low profile
- Very high efficiency
- Fully enclosed 3U euro cassette
- Active current sharing as standard

Input specifications

The following input voltages versions are available as standard:

110V (77.0 - 137.5V) dc (Suffix A)
72V (50.0 - 90.0V) dc (Suffix D)
52V (36.0 - 65.0V) dc (Suffix C)
36V (25.0 ¹ - 45.0V) dc (Suffix F)
24V (16.8 - 33.0V) dc (Suffix B)



Part number	Output 1		Output 2	
	V _{dc}	A	V _{dc}	A
SRE 0500	5	16.0 ²		
SRE 1200	12	10.0		
SRE 1500	15	8.0		
SRE 2400	24	5.0		
SRE 3600	36	3.3		
SRE 4800	48	2.5		
SRE1212	12	5.0	12	5.0
SRE1515	15	4.0	15	4.0
SRE2424	24	2.5	24	2.5

Note:

1. Operation at 23.0V input is possible at maximum ambient (70°C) and 100W output load continuously, or at maximum ambient and 120W load for 10 minutes.
2. 20A peak, 5 minutes maximum continuous in a 1:10 duty cycle.

Parameter

Detail

Input Ripple	To EN50155
Input Protection	Reverse polarity protection. Surges and transients EN50155
Inrush Current	Limited to typically 5 x nominal current (after 0.1ms)
Efficiency	Typically 90%
Hold-up time	EN50155 Class S0. Consult factory for optional hold up module to EN50155 Class S2
Input fuse	Board-mounted.

Output specifications

Parameter

Detail

Maximum Output Power	120W (for most output versions)
Output Versions	Single and dual output
Output Voltage	Can be specified from 5V to 48V
Setting Tolerance	±0.6% at 50% load, 15°C to 25°C
Line Regulation	±0.2%
Load Regulation	±0.5% (U1 only)



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Output specifications (Continued)

Parameter	Detail
Cross Regulation (dual output versions)	U1= ±0.5%, U2= ±3.5% (for 10 - 100% loading)
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	Output OK LED
Signal	Output good signal given by an isolated open collector transistor.
Current sharing	Active current sharing fitted to U1 on both single & dual versions
Output Protection	Protected against indirect transients to EN50155
Overvoltage Protection	Operates at approximately 120% of nominal output Standard for all single output versions. Dual output versions either U1 or U2 - consult Sales team
Current limit	Operates at approximately 115% of nominal or peak load. Auto recovery.
Thermal Protection	Shuts down PSU if safe internal temperature is exceeded. Auto recovery.
Isolation (tested at dc equivalent voltage)	Input to Output 2.0kV ac
	Input to Case 1.0kV ac
	Output to Case 1.0kV ac
	Output to Output 0.3kV ac

Environmental details

Parameter	Detail
Operating Temperature	-40°C to +71°C (no derating). {90°C max case temperature} Note: 5Vdc output versions are -25°C to +71°C.
Storage Temperature	-40°C to +85°C
Cooling	Convection / Conduction
Relative Humidity	95% max.
Shock & Vibration	EN 50155 (EN 61373)
Environmental Protection	IP54

Applicable norms

Parameter	Detail
EMC	EN50155 (2017), EN50121-3-2 (2016)
Other	EN50155 (2017), EN45545-2 (2020)

Mechanical characteristics

Parameter	Detail
Construction	Euro cassette
Dimensions	Length = 166.7 mm Width = 4TE (20.32mm) Height = 3U (111 mm)
Weight	< 0.5kg
Connections	DIN 41612 H15 Class 1
Fixings	Four ø 3mm tapped holes in cassette Four ø 5mm clear holes in mounting plate option

Options for SRE series

Option	Detail	Code
Mounting plate	Chassis mounting	M
Heatsink	Additional 2TE (10mm) heatsink	Q1
Front panel	5TE silver front panel + handle	Q4
Connector retaining brackets	2 x brackets to retain mating connector	H2

Technical drawing

