



DC/DC converter for railway applications

Encapsulated version



Open frame PCB version



Description

The 10W D10R series is a range of low power converters, which incorporate full surge and transient protection to RIA 12 and EN 50155. They are single output units with nominal inputs from 24V dc up to 110V dc. The D10R is available in encapsulated and open frame versions and can be supplied with pins for PCB mounting or input / output cables for bulkhead mounting.

Special features include:

- Fully protected to rail norms EN 50155 and RIA 12
- Choice of construction - encapsulated or open frame PCB
- Choice of connections - PCB pins or cables

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	(21.0 - 50.4V)	dc	(Suffix F)
24V	(16.8 - 33.6V)	dc	(Suffix B)

Parameter	Detail
Input Ripple	To RIA 13 and EN 50155
Input Protection	Reverse polarity protection. Surges and transients to RIA 12 & EN 50155
Inrush Current	Limited to typically 5 x nominal current (after 0.1ms)
Efficiency	85% typical
Hold-up time	10ms to EN 50155 Class S2 (including input short)

Output specifications

Parameter	Detail
Maximum Output Power	Up to 10W
Output Versions	Single output only
Output Voltage	Can be specified from 5V to 48V
Setting Tolerance	±1.0% at 50% load, 15°C to 25°C
Minimum Load	Zero



Output specifications (Continued)

Parameter	Detail
Line Regulation	±0.2%
Load Regulation	±0.5%
Temperature Coefficient	<0.02% / °C
Output Ripple	<1% Pk-Pk of Output Voltage
Output Noise	<50mV Pk-Pk superimposed (up to 20MHz)
Response Time	1.0ms to within 2% (for a 20% - 90% load change)
Output Protection	Protected against indirect transients to RIA 12
Current Limit	Operates at approximately 120% of rated output current
Isolation (tested at dc equivalent voltage)	Input to Output 2.0kV ac

Environmental details

Parameter	Detail
Operating Temperature	Encapsulated versions -25°C to +65°C (no derating) Open frame versions -40°C to +70°C (no derating)
Derating	Open frame versions can be derated at 2.25%/°C to 95°C
Storage Temperature	-40°C to +85°C
Cooling	Convection
Relative Humidity	99% max. (encapsulated version)
Shock & Vibration	EN 50155 (EN 61373)
Environmental Protection	IP65 (encapsulated version)

Applicable norms

Parameter	Detail
EMC	EN 50155 (2017), EN 50121-3-2 (2016) & RIA 12
Other	EN 50155 (2017), EN 45545-2

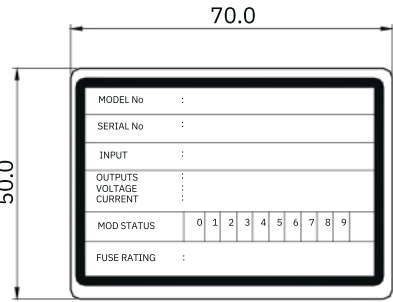
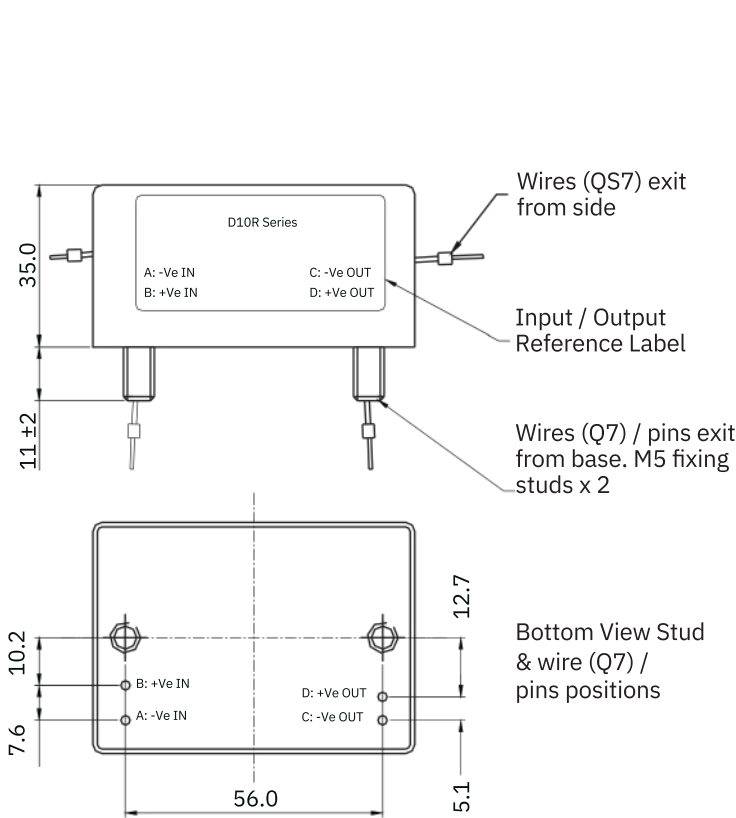
Mechanical characteristics

Parameter	Detail
Construction	Encapsulated Module or conformal coated PCB
Dimensions (L,W,H)	Encapsulated 70 x 50 x 35 mm Open frame 66 x 46 x 25 mm
Weight	Encapsulated: 220g Open frame: 45g
Connections	PCB pins as standard or option for cables
Fixings	Two Ø 5mm fixing studs (encapsulated version)

Options for Encapsulated & Open frame series

Code	Detail
Q7	Encapsulated, connections via cables from the underside; drawing 867-901
QS7	Encapsulated, connections via cables from the side; drawing 867-901
U	Open frame PCB, connections via pins; drawing 867-902
UQ7	Open frame PCB with cable connections; drawing 867-903
DQS7	DIN rail mounting, encapsulated, side entry cables; drawing 867-904

Technical drawing



Notes:
All dimensions in mm
Case: Moulded in ABS
Flame retardant to UL94 V-0
Pins fitted as standard
Option U denotes Open-frame
Option Q7 denotes wire version
(wires exit from base; for open-frame wires fitted to component side)
Option QS7 denotes wire version (exit from sides)

Wires are zero halogen type:
Martek Power 361072 (0.6sq. mm 20AWG)
Wire Length - 370mm
Wire termination - None
Cable marker code (as per label):
A: -Ve IN C: -Ve OUT
B: +Ve IN D: +Ve OUT

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