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RDD08 series

XP Power

8W

DC-DC converters

RDD08 series converters designed for railway applications comply with EN50155 & meets EN50121-3-2 railway standards for electronic equipment used on traction & rolling stock.

The 8 Watt RDD08 is available in two input ranges, covering: 13 to 70VDC for 24 & 48VDC; 42 to 160VDC for 72 & 110VDC.

They are suitable for a wide range of railway applications where there is a low power requirement. They are also particularly suited to portable & battery-operated equipment where they can provide a constant load voltage at different states of battery charge/discharge.



Features

- Regulated single & dual outputs
- 4:1 input range
- Covers 24/48 & 72/110VDC input for railway applications
- Single outputs 3.3 to 15VDC
- Dual outputs ±5 to ±15VDC
- DIP24 package
- 3.0kVAC isolation
- Complies with EN50155 & IEC6057
- Meets EMC standard EN50121-3-2
- -40°C to +85°C operating temperature
- Full power to +70°C
- 3 year warranty

Applications

Autonomous equipment

Industrial

Technology

Instrumentation

Railway

Robotics

Dimensions

31.8 x 20.3 x 10.7mm (1.25" x 0.80" x 0.42")

Documentation

For further information click the link or scan the code

→ xppower.com

Models & ratings

Model number	Input voltage	Output voltage	Output current	Overvoltage level	Input current[1]		Maximum capacitive load	Efficiency[2]
					No load	Full load		
RDD0824S3V3	13-70VDC	3.3VDC	2400mA	3.9VDC	30mA	398mA	1330µF	83%
RDD0824S05		5.0VDC	1600mA	6.2VDC	20mA	388mA	1330µF	86%
RDD0824S12		12.0VDC	665mA	15VDC	10mA	392mA	330µF	85%
RDD0824S15		15.0VDC	535mA	18VDC	10mA	389mA	220µF	86%
RDD0824D05		±5.0VDC	±800mA	±6.2VDC	10mA	402mA	±900µF	83%
RDD0824D12		±12.0VDC	±335mA	±15VDC	10mA	395mA	±220µF	85%
RDD0824D15		±15.0VDC	±265mA	±18VDC	10mA	386mA	±100µF	86%

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Notes:

1. Input currents measured at nominal input voltage.
2. Typical value at full load and nominal input

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Models & ratings

Model number	Input voltage	Output voltage	Output current	Overvoltage level	Input current[1]		Maximum capacitive load	Efficiency[2]
					No load	Full load		
RDD08110S3V3	42-176VDC	3.3VDC	2400mA	3.9VDC	10mA	89mA	1330µF	81%
RDD08110S05		5.0VDC	1600mA	6.2VDC	10mA	87mA	1330µF	84%
RDD08110S12		12.0VDC	665mA	15VDC	5mA	87mA	330µF	84%
RDD08110S15		15.0VDC	535mA	18VDC	5mA	88mA	220µF	83%
RDD08110D05		±5.0VDC	±800mA	±6.2VDC	5mA	91mA	±900µF	80%
RDD08110D12		±12.0VDC	±335mA	±15VDC	5mA	90mA	±220µF	82%
RDD08110D15		±15.0VDC	±265mA	±18VDC	5mA	88mA	±100µF	83%

Notes:

1. Input currents measured at nominal input voltage.
2. Typical value at full load and nominal input

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Input voltage range	13		70	VDC	24VDC nominal
	42		176		110VDC nominal
Input filter	Pi type				
Input reflected ripple current		20		mA	Through 12µH inductor and 33µF capacitor
Input surge			100	VDC for 1000ms	24VDC models
			185		110VDC models

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Output voltage	3.3		15		See models and ratings table
Initial set accuracy			±1	%	At 70% load
Minimum load	Minimum load required to meet specification. Operation at no load will not cause damage.				
Line regulation			±0.5	%	
Load regulation			±0.5	%	From 0% to full load
Cross regulation			±5	%	On dual output models, when one output is at 25% load and other is varied from no load to full load
Ripple & noise			75	mV pk-pk	20MHz bandwidth. Measured using 0.1µF ceramic capacitor
Short circuit protection	Continuous hiccup mode, with auto recovery				
Maximum capacitive load	See models and ratings table				
Temperature coefficient			0.02	%/ ˚C	
Overload protection		160		%	Of nominal output current
Overvoltage protection	See models and ratings table				
Remote on/off	Output turns off if remote on/off (pin 1) is shorted to -Vin (pin 2,3) Output is on if remote on/off (pin 1) is open or >3VDC				
Start up time		30	40	ms	Nominal Vin and constant resistive load

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General

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Efficiency	80		86	%	See models & ratings table
Isolation: input to output	3000			VDC	
Switching frequency		330/220		kHz	24VDC/110VDC models
Isolation resistance	10^9			Ω	
Isolation capacitance		1000		pF	
Power density			0.85 (14)	W/cm³ (W/in³)	
Mean time between failure	800			khrs	MIL-HDBK-217F, +25°C GB
Weight		18 (0.039)		g (lb)	

Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Operating temperature	-40		+85	°C	Derate from 100% load at +70°C to 50% at +85°C
Storage temperature	-55		+125	°C	
Case temperature			+105	°C	
Humidity			95	%	RH, non condensing
Cooling	Natural convection				

Safety approvals

Safety agency	Standard	Notes & conditions
EN	EN50155	Railway applications
	LVD	Evaluated to EN62368-1
CE	Meets all applicable directives	
UKCA	Meets all applicable legislation	

Emissions - EMC

Phenomenon	Standard	Test level	Notes & conditions
Conducted	EN50121-3-2	0.15-0.50MHz, 99dBµV 0.50-30.0MHz, 93dBµV	RDD0824 models also meet EN55022 Class A. See application note to meet EN55022 Class A for RDD08110 models.
Radiated	EN50121-3-2	30.0-230.0MHz, 40dBµV 230.0-1000.0MHz, 47dBµV	

Immunity - EMC

Phenomenon	Standard	Test level	Criteria	Notes & conditions
ESD immunity	EN50121-3-2	Air ±8kV Contact ±6kV	A	
Radiated immunity	EN50121-3-2	20Vrms/m	A	
EFT/Burst	EN50121-3-2	2kV	A	External input capacitor required, see application note
Surge	EN50121-3-2	2kV	A	External input capacitor required, see application note
Conducted immunity	EN50121-3-2	10V	A	
Magnetic fields	EN61000-4-8	10A/m	A	

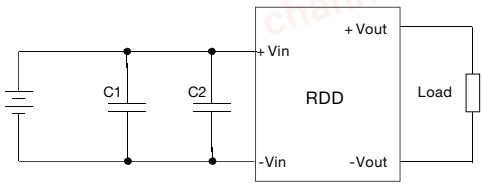
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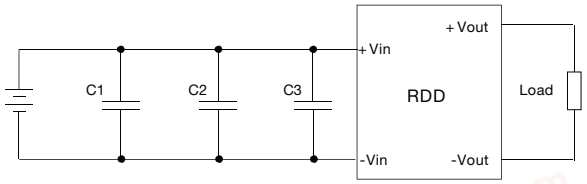
Application notes

External filter for surge and EFT



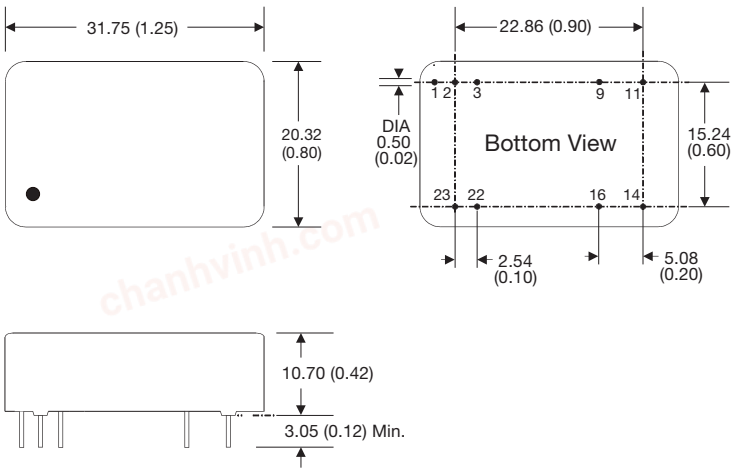
For RDD0824 models, C1 = 330µF, 100VDC and C2 not fitted
For RDD08110 models, C1 and C2 = 100µF, 250VDC

EMI filter for RDD08110 models



C1, C2, & C3 are 1µF, 250VDC multilayer ceramic Chip Capacitor, placed as close as possible to the input pins

Mechanical details



Pin connections		
Pin	**Single**	**Dual**
1	Remote On/Off	Remote On/Off
2	-Vin	-Vin
3	-Vin	-Vin
9	No Pin	Common
11	N.C.	-Vout
14	+Vout	+Vout
16	-Vout	Common
22	+Vin	+Vin
23	+Vin	+Vin

Notes:

1. All dimensions are in (mm (inches)
2. Weight: 18g (0.039lb)
3. Pin diameter: 0.5 ±0.05 (0.02 ±0.002)
4. Pin pitch tolerance: ±0.35 (±0.014)
5. Case tolerance: ±0.5 (±0.02)
6. Package: 24 pin DIL nickel-coated copper.