

PR BX

POWERBOX Railway Line ENAR150D Series 150W Dual Output DC/DC Power Supply

Features

DC/DC power supply with wide input voltage range for railway / rolling stock applications

Rugged, low profile

Input voltage options: 110VDC (77-137.5VDC), 48VDC (33.6-60VDC), 24VDC (16.8-30VDC), 72VDC (50.4-90VDC)

Output: 2x24V or 2x12V 150W (other outputs available on request)

Remote on/off

DC OK signal

Conformal coating

Reverse polarity protection

Input

Nominal voltage	See table 1.
DC input range	See table 1.
Inrush current	Max 5 times nominal input current after 0.1ms.
Isolation voltage	Input to output 2100VAC. Input to GND (PE) 1500VAC. Output to case 1000VAC. Output to output 500VDC.
Reverse polarity	Reverse polarity protection functionality.

Output

Output voltage	See table 1.
Maximum power	150W.
Line regulation	1% max.
Load regulation	1% max in load range 10-90% of max load level.
Efficiency	Up to 93%.
Temperature coefficient	0.3 to 0.4V.
Transient response	0.5ms within 2% for a load change 20 to 90% or 90 to 20%. Risetime and falltime 5A/us.
Ripple voltage	Typical 0.5% p/p (20MHz).
Current limit	115% of load. Auto recovery.
Overvoltage protection	Operates at 120-130% of nominal voltage level.
Short circuit protection	Protection for continuous operation.
Overtemp. protection	Automatically limiting available output power. Automatic recovery.
Output power	150W in ambient temperature class T2, (-40 to +55°C) according to EN50155. 140W in ambient temperature class TX, (-40 to +70°C) according to EN50155.
Max capacitive load	Start up and operational with capacitive load <15mF.
Specific protection	Common input power limitation. Individual output short circuit protection. Individual internal temperature protection circuit.
Parallel operation	Passive load sharing in parallel operation. Approx. load sharing level: 70%.
Output configuration	See table 2.



Signals

DC OK signal	DC OK output signal indicate that output voltage level will be within nominal range.
Inhibit signal	Inhibit input signal turn the DC/DC unit on/off.
LED indicators	Green LED indicates output voltage level within range.

Environmental

Operating temperature	Ambient air temperature -40°C to +70°C, class TX according to EN50155. Some additional cooling needed above +55°C.
Storage temperature	-55°C to +85°C.
Case temperature	+100°C max.
Cooling	Natural convection cooling.
Humidity	95% RH max.
Shock and vibration	IEC61373 category 1, class B.
Compliance	RoHS and REACH.
Fire protection	Approved to EN 45545.
MTBF	500,000 hours min at +45°C.
Technical lifetime	Minimum 15 years at ambient temperature +45°C and 80% load level.

EMC Standards (approved)

EMC	EN50155, EN50121-3-2.
Conducted emission	According to EN50121-3-2 and EN55011.
Radiated emission	According to EN50121-3-2 and EN55011.
ESD	6kV contact discharge. 8kV air discharge. Test setup EN61000-4-2.
Radiated electr. field	EN61000-4-3. 20V/m. 80-1000MHz and 1-2.5GHz.
Fast transients	EN61000-4-4.
Surge	EN61000-4-5.
Conducted RF	EN61000-4-6.

Connector

Connector type	Male connector type H15 acc to DIN41612.
Connector configuration	See table 3.

General

Mechanical	Euro cassette according to IEC60297-3.
Mechanical protection	Conformal coating.
Size (HxWxD)	111mm x 18.5mm x 162mm.
Weight	450g.

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Table 1

Model Number Number	Nominal Input Voltage	Output 1	Output 2	Configuration	Note
ENAR150D110/2x24	110VDC	24V/3,12A	24V/3,12A	Independent configured	
ENAR150D110/2x24	110VDC	24V/6,25A		Paralleled outputs	
ENAR150D110/2x24	110VDC	24V/3,12A	-24V/3,12A	Symmetrical connected	
ENAR150D110/2x24	110VDC	48V/3,12A		Serial Connected	
ENAR150D110/2x12	110VDC	12V/6,25A	12V/6,25A	Independent configured	
ENAR150D110/2x12	110VDC	12V/12,5A		Paralleled outputs	
ENAR150D110/2x12	110VDC	12V/6,25A	-12V/6,25A	Symmetrical connected	
ENAR150D110/2x12	110VDC	24V/6,25A		Serial Connected	
ENAR150D24/2x24	24VDC	24V/3,12A	24V/3,12A	Independent configured	
ENAR150D24/2x24	24VDC	24V/6,25A		Paralleled outputs	
ENAR150D24/2x24	24VDC	24V/3,12A	-24V/3,12A	Symmetrical connected	
ENAR150D24/2x24	24VDC	48V/3,12A		Serial Connected	
ENAR150D24/2x12	24VDC	12V/6,25A	12V/6,25A	Independent configured	
ENAR150D24/2x12	24VDC	12V/12,5A		Paralleled outputs	
ENAR150D24/2x12	24VDC	12V/6,25A	-12V/6,25A	Symmetrical connected	
ENAR150D24/2x12	24VDC	24V/6,25A		Serial Connected	
ENAR150D72/2x24	72VDC	24V/3,12A	24V/3,12A	Independent configured	MOQ apply
ENAR150D72/2x24	72VDC	24V/6,25A		Paralleled outputs	MOQ apply
ENAR150D72/2x24	72VDC	24V/3,12A	-24V/3,12A	Symmetrical connected	MOQ apply
ENAR150D72/2x24	72VDC	48V/3,12A		Serial Connected	MOQ apply
ENAR150D72/2x12	72VDC	12V/6,25A	12V/6,25A	Independent configured	MOQ apply
ENAR150D72/2x12	72VDC	12V/12,5A		Paralleled outputs	MOQ apply
ENAR150D72/2x12	72VDC	12V/6,25A	-12V/6,25A	Symmetrical connected	MOQ apply
ENAR150D72/2x12	72VDC	24V/6,25A		Serial Connected	MOQ apply
ENAR150D48/2x24	48VDC	24V/3,12A	24V/3,12A	Independent configured	MOQ apply
ENAR150D48/2x24	48VDC	24V/6,25A		Paralleled outputs	MOQ apply
ENAR150D48/2x24	48VDC	24V/3,12A	-24V/3,12A	Symmetrical connected	MOQ apply
ENAR150D48/2x24	48VDC	48V/3,12A		Serial Connected	MOQ apply
ENAR150D48/2x12	48VDC	12V/6,25A	12V/6,25A	Independent configured	MOQ apply
ENAR150D48/2x12	48VDC	12V/12,5A		Paralleled outputs	MOQ apply
ENAR150D48/2x12	48VDC	12V/6,25A	-12V/6,25A	Symmetrical connected	MOQ apply
ENAR150D48/2x12	48VDC	24V/6,25A		Serial Connected	MOQ apply

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Table 2

Configuration	Definition	Note
Independent conf.	Output 1 and output 2 connected to separate load. Galvanic isolation between output 1 and 2.	Load range 0 to 100%. Max 75W load per output.*
Symmetrical conf.	Outputs connected together. Vo1- pin connected to Vo2+ pin. One load connected to Vo1+ and Vo1-/Vo2+. One load connected to Vo1-/Vo2+ and Vo2-.	Load range 0 to 100%. Max 75W load per output.*
Parallel conf.	Outputs connected together. Vo1+ pin connected to Vo2+ pin. Vo1- pin connected to Vo2- pin.	Load range 0 to 100%. Max 150W output load.
Series conf.	Outputs connected together. Vo1- pin connected to Vo2+ pin. One load connected to Vo1+ and Vo2-.	Load range 0 to 100%. Max 150W output load.

* Load range for output 1 is 0 to 100%.
 Load range for output 2 is 0 to 100% if load at output 1 is above 20% (15W).
 If load at output 1 is below 20%, load for output 2 needs to be equal or less than load for output 1.

Accessories Available

ACCM1101A	Wall Mounting Kit
ACCM1102A	Connector Locking Block Kit
ACCM1103A	Front Plate Kit
ACCX2001A	Connector

For further details, see separate datasheet.



Wall Mounting

For fixed mounting of an ENAR150D converter on a wall or on the wall of a metal box. Be sure that the surface the plate is mounted to can absorb heat as the surface facing the wall /box dissipate most of the heat from the converter.



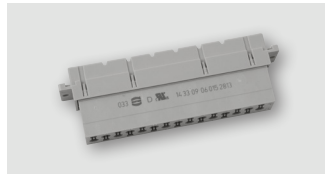
Connector Locking Block

Connector blocks used to fix the connector by the ENAR150D, securing the connector for any mechanical stress.



Front Plate

Front plate kit for mounting ENAR150D in DIN 41612 compatible euro card racks.



Connector

15 pol connector for DIN41612, female with case clamp.

Table 3

Description H15 DIN1612	Pin No	Signal
	4	+Vo1
	6	+Vo2
	8	-Vo1
	10	-Vo2
	12	NC
	14	NC
	16	NC
	18	NC
	20	NC
	22	DC OK +
	24	DC OK -
	26	PE ²⁾
	28	Inhibit control ³⁾
	30	+Vin
	32	-Vin

2) Leading pin (pre-connecting). 3) If not used, connect to pin 32

