

PRODUCT SPECIFICATION

1kW DC/DC converter
with fan cooling

DDC8630 (110VDC/24VDC)

DDC8640 (36VDC/24VDC)

DDC8650 (24VDC/24VDC)



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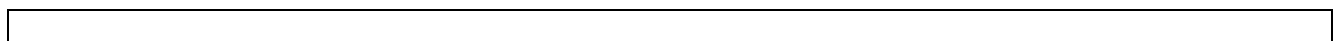
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Date	Version	Remarks	Author
2014-10-03	0.9	Initial release	Samuli Räisänen / Powernet Oy
2015-01-16	0.95	<ul style="list-style-type: none"> Updated mechanical appearance. Updated connectors, original 2 connectors changed to 3 connectors (input, output and communications) Physical dimensions updated per Stadler approval in Nov 2014. Output voltage tolerance updated. Status LED operation updated. 	Samuli Räisänen / Powernet Oy
2015-03-18	0.96	<ul style="list-style-type: none"> Updated figure 3 (mechanical dimensions) 	Sten Nordman / Powernet Oy
2015-05-12	0.97	<ul style="list-style-type: none"> Fire Safety standard update 	Janne Rosti / Powernet Oy
2015-05-13	0.98	<ul style="list-style-type: none"> Input current added 	Janne Rosti / Powernet Oy
2015-11-13	1.00	<ul style="list-style-type: none"> X2 connector pin diagram added 	Janne Rosti / Powernet Oy
2016-01-29	1.01	<ul style="list-style-type: none"> X2 connector note field text corrected for PSU Fail/OK status 	Janne Rosti / Powernet Oy



1. General description

This document describes the functional parameters of three input voltage versions of 1kW DC/DC converter. These products are different input voltage variants with the same 24VDC output voltage as follows:

- DDC8630 110VDC input, 24VDC output
- DDC8640 36VDC input, 24VDC output
- DDC8650 24VDC input, 24VDC output

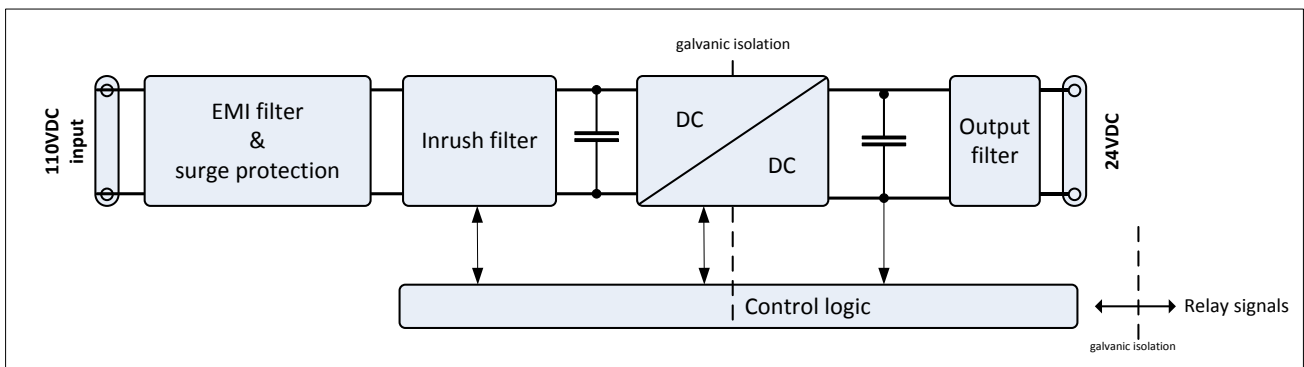


Figure 1: Functional block diagram of 1kW DC/DC converter.

2. Environmental parameters

Parameter	Value/Standard	Note
Operating temperature range	-40°C ... +55°C	EN 50155 T2 (up to +70°C for <10minutes)
Cold start-up	-50°C	Maximum 50% load
Relative air humidity	EN 50155	Yearly average ≤75% RH 30 consecutive days 95% RH
Shock and vibration	EN 61373, category 1 class B	
Pollution degree (PD)	PD2	

3. Input parameters

Parameter		Value/range	Note
Input voltage	DDC8630	110VDC	Nominal
	DDC8640	36VDC	Nominal
	DDC8650	24VDC	Nominal
Input current	DDC8630	11A	At nominal input voltage and max load current
	DDC8640	32A	
	DDC8650	46A	
Input voltage range	DDC8630	77VDC ... 138VDC	EN 50155
	DDC8640	25 ... 45VDC	EN 50155
	DDC8650	17 ... 30VDC	EN 50155
Under voltage shut-down	DDC8630	75VDC	
	DDC8640	23VDC	
	DDC8650	15VDC	
Over voltage shut down	DDC8630	140 VDC	
	DDC8640	48 VDC	

	DDC8650	32 VDC	
Inrush current	DDC8630	5 A	Nominal input voltage
	DDC8640	5 A	
	DDC8650	5 A	
	DDC8650	5 A	
Supply voltage interruption		Class S2	EN 50155
Over voltage category		OV2	EN 50124-1
Input grounding		Floating	
Input fusing		No. External	
Reverse polarity protection		Yes	

4. Output parameters

Parameter		Value/range	Note
Output voltage		24 VDC	Nominal
Output voltage range		21...26VDC	
Line regulation		±8%	Change of output over full input voltage range
Output overvoltage protection		30 VDC	
Maximum output current		42 ADC	
Maximum output power		1000W	
Regulation		Voltage ±2.5% Current ±5.0%	
Output ripple voltage		<120 mV _{rms}	(f = 20 Hz...300 kHz, T _{amb} =25°C)
Output current limit adjustment		No	
Hold-up time		5ms	At nominal input voltage
Load sharing		Droop-method	V _o -0,1 VDC for 10 ADC I _o
Reverse polarity protection		Mechanical	By connector
Output grounding		Floating	
Efficiency	DDC8630	>90%	Output power > 200W
	DDC8640	>90%	
	DDC8650	>90%	

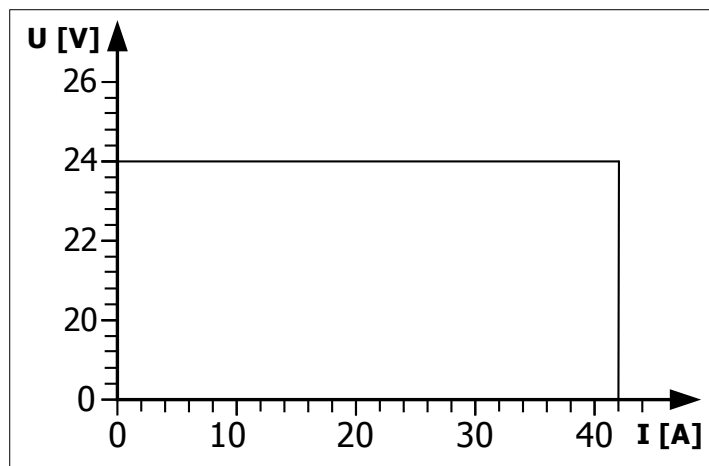


Figure 2: Nominal output voltage / current characteristics

5. Connectors and pin-outs

Designator	Function	Type/manufacturer
X1	Input	Phoenix contact PC 16
X2	Communications & control	Phoenix contact DMC 1,5 10-pin
X3	Output	Phoenix contact PC 16

5.1. X1: pin-out

Designator	Function/signal	Description
X1-1	DC +	Input
X1-2	DC -	Input
X1-3	Protective earth	Chassis grounding

Mating plug connector: Phoenix Contact PC 6/ 3-STF-10,16 order number 1913581 or Phoenix Contact PC 16/ 3 –STF-10,16 order number 1967469

5.2. X2: pin-out

Designator	Function/signal	Description/type	
X2-1	Output ON/OFF – control 110V	Input	>50V output OFF, <30V output ON
X2-2	Output ON/OFF – control 0V	Input	
X2-3	Current limit - common	Output	
X2-4	Current limit – normally closed	Output	OK=Closed, Current limit = Open
X2-5	Current limit – normally open	Output	OK=Open, Current limit = Closed
X2-6	OK/Fail – common	Output	
X2-7	OK/Fail - normally closed	Output	Ok=Open, Fail =Closed
X2-8	OK/Fail – normally open	Output	Ok=Closed, Fail =Open
X2-9	-	n.c.	Leave open (Reserved pin)
X2-10	-	n.c.	Leave open (Reserved pin)

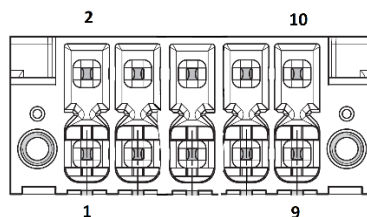


Figure 3: Connector X2 pin diagram

Mating plug connector: Phoenix Contact DFMC 1,5/ 5-ST-3,5-LR order number 1790519 or Phoenix Contact DFMC 1,5/ 5-STF-3,5 order number 1790328

6.

6.1. X3: pin-out

Designator	Function/signal	Description
X3-1	DC +	Input
X3-2	DC -	Input

Mating plug connector: Phoenix Contact PC 6/ 2-STF-10,16 order number 1913578 or Phoenix Contact PC 16/ 2 –STF-10,16 order number 1967456

7. Status LED operation

- Solid GREEN: Output ON, normal operation, within limits
- Orange: Operating in current limit.
- Solid RED: Failure/overtemperature or in standby-mode.

8. Mechanical parameters

Parameter	Value/range	Note
Cooling	Forced cooling	Fan
Enclosure material	Aluminum	
Weight	Appr 2kg	
Dimensions	224 x 76 x 286mm	(W x H x D)

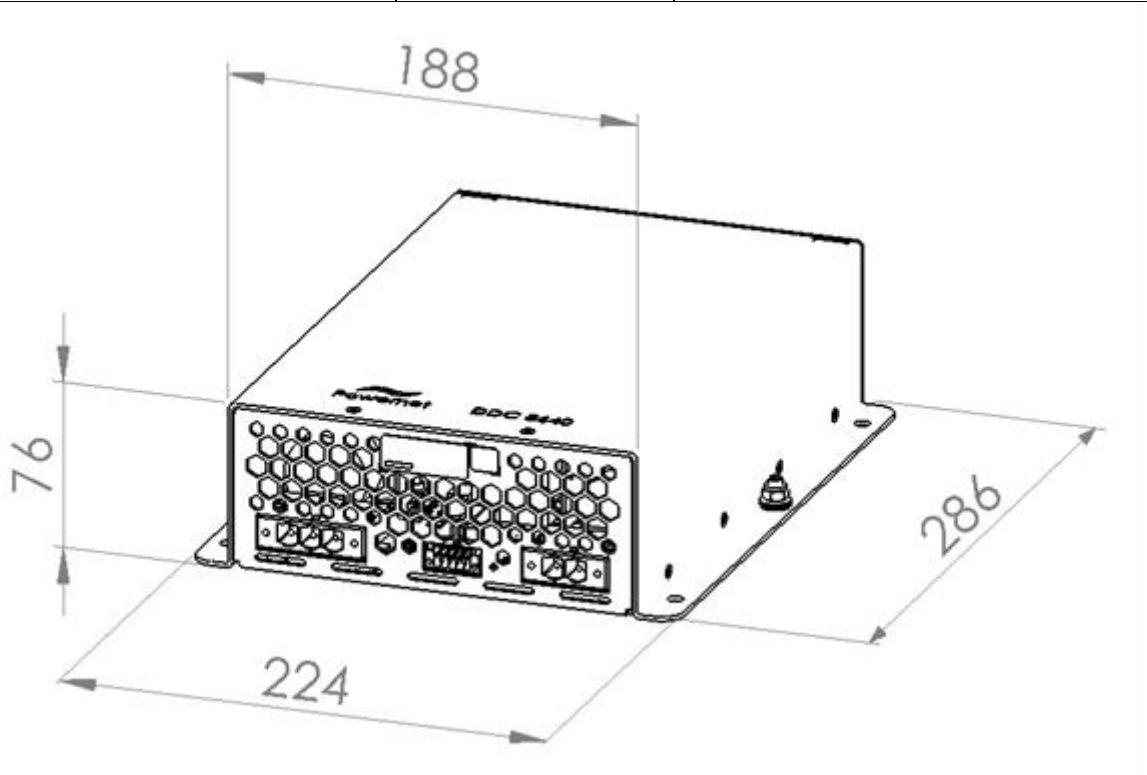
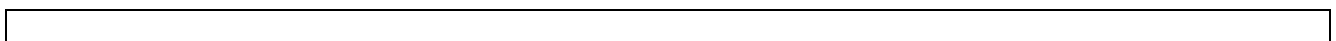


Figure 4: 1000W DC/DC converter mechanical dimensions.

8.2. Installation



The location must be dry, dust-free, and indoors.

9. EMC parameters

Parameter	Value/Standard	Note
Surge	EN 50121-3-2	
Fast transients	EN 50121-3-2	
Conducted disturbances	EN 50121-3-2	
Radiated disturbances	EN 50121-3-2	
Conducted emissions	EN 50121-3-2	EN 55011 Basic standard. Auxiliary DC power ports
Radiated emissions	EN 50121-3-2	EN 55011 Basic standard. Auxiliary DC power ports

10. Safety

Parameter	Value/Standard	Note
Fire safety	EN 45545-2 (DIN 5510-2)	
Voltage withstand tests	EN 50124-1	
Insulation resistance	EN 50155	