

WRHD-DC-DC-280



GENERAL FEATURES:

Input voltage 400V.....1100Vdc output Voltage 24Vdc or 110Vdc power 280W

High input-output isolation 7 kVrms

Output ORing diode

Input voltage OK LED

Output voltage OK LED

Overtemperature shutdown

Model	input voltages	Nominal output voltage
WRHD-DC-DC-280-24	400 / 1100 Vdc	24 Vdc
WRHD-DC-DC-280-110	400 / 1100 Vdc	110 Vdc

WRHD-DC-DC-280

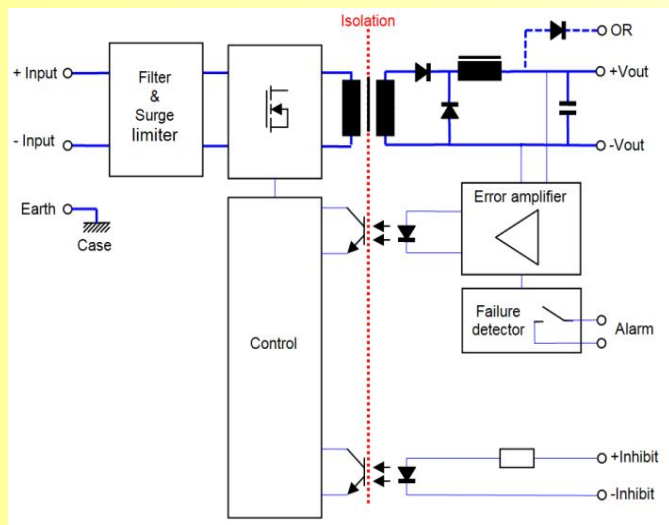


INPUT	
Nominal DC input voltage	600 / 750 V
Minimum DC input voltage	400 V
Maximum DC input voltage	1100 V continuous 3 kV for 10 ms, 4.5 kV for 1 ms
Maximum input current	0.84 A
Input consumption at no load	$\leq 7 \text{ W @ } 600 \text{ V}_{in}$, $\leq 9 \text{ W @ } 750 \text{ V}_{in}$
Input undervoltage shutdown	45 % to 55 % $V_{i \text{ nom}}$
OUTPUT	
Output voltage	24Vdc or 110Vdc
Voltage tolerance	$\leq \pm 1 \%$
Maximum peak current (Iopk) time	500 ms
Total regulation	$< \pm 1 \%$
Ripple	$< 100 \text{ mVpp}$ at $T_a > 0^\circ\text{C}$ $< 240 \text{ mVpp}$ at $T_a -40^\circ\text{C}$
Ripple + noise (BW 20 MHz)	$\leq 1\%$ of nominal output voltage
Maximum continuous power	280 W
Peak power	400 W
ENVIRONMENTAL	
Storage temperature	-40 ... 85 °C
Operating temperature range at $I_o = 100\%$	-40 ... 70 °C
Operating temperature range at $I_o = 62.5\%$	-40 ... 85 °C
Cooling	Natural convection
Operating altitude	2500 m
Maximum Relative humidity	95 % with no condensation
Shock and vibration	EN61373:2010 Category 1 class B body mounted
Service life	> 20 years
MTBF	200.000 h @ 40 °C according to IEC61709
EMC	
Emission	EN50121-3-2:2016
Immunity	EN50121-3-2:2016
SAFETY	
Dielectric strength Input / Output	7000 Vac 50 Hz 10 s
Dielectric strength Input / Earth	5300 Vac 50 Hz 10 s
Dielectric strength Output / Earth	1800 Vac 50 Hz 1 min
Protection Degree	IP20
Fire and smoke	EN45545-2:2013 +A1:2015
MECHANICAL	
Dimensions	65 x 162 x 230 mm
Weight	1750 g
CONTROL	
Low output voltage alarm	Threshold: 0.9 ... 0.95 $V_o \text{ nom}$. Isolated solid state relay open when alarm. Maximum rating contact capacity 100 mA and 160 V (closed $< 8 \Omega$)
Remote inhibit input	Inhibit voltage range: Nominal Output Voltage $\pm 40 \%$
PROTECTIONS	
Against output overloads and short-circuits	Current limiting
Against reverse input voltage	By input diode in serial connection.
Against input under-voltage	Under-voltage lock-out
Against Input over-currents	Input fuse
Against Overtemperature	Shutdown when internal temperature rises 120 °C
Others	PCB conformal coated with acrylic varnish

WRHD-DC-DC-280



BLOCKS DIAGRAM



DESCRIPTION

The WRHD-280 series consists of DC/DC converters, with a galvanic isolation between input and output, operating at fixed switching frequency.

It includes an output ORing diode which allows redundancy. It also allows paralleling with a battery.

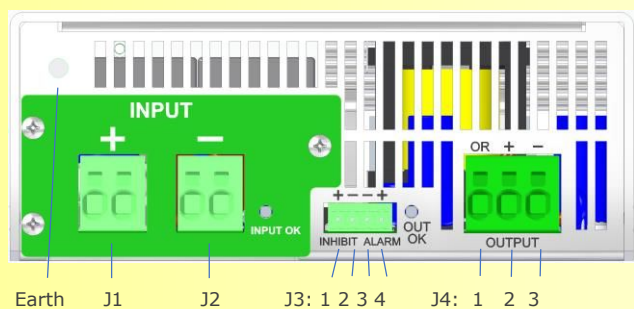
The device is protected against overload and short-circuits by means of a current limiting circuit.

The device is also protected against reverse polarity input voltage by means of an input diode in series with the input line.

When an input undervoltage condition occurs, the converter is disabled, thus preventing an improper output voltage.

The failure output voltage detector circuit close the contact (NO) when the output voltage is higher than 90..95 % of the nominal output voltage.

CONNECTIONS



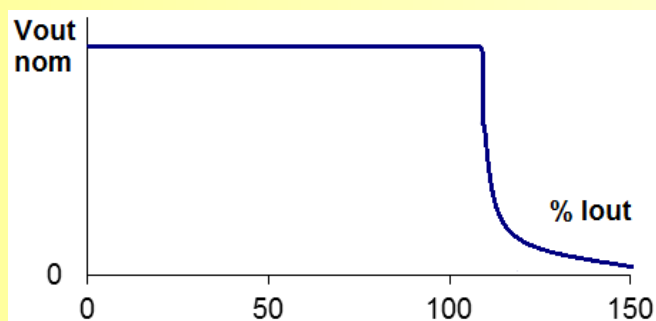
Note 1: maximum spring terminals cross section cable 6mm² or 10 mm² for solid

Note 2: J3 recommended female connector Phoenix Contact FMC 1,5/4-ST-3,81 or MC 1,5/4-ST-3,81

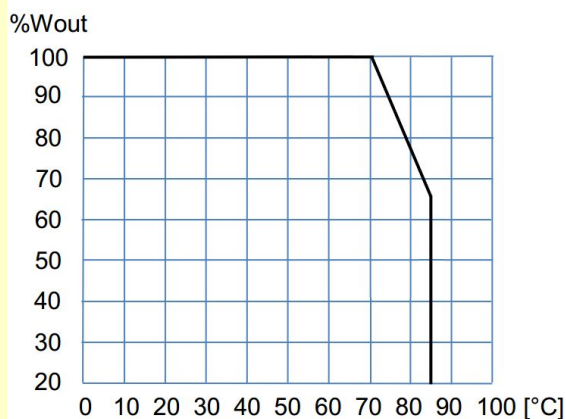
Note 3: maximum nut torque in M5 earth connection 1.9 Nm

	Function
Earth	M5 male earth connection
J1	Positive input clamp terminal (x2)
J2	Negative input clamp terminal (x2)
J3-1	Positive input inhibit signal
J3-2	Negative input inhibit signal
J3-3	Alarm output state contact 1
J3-4	Alarm output state contact 2
J4-1	Positive output clamp terminal by Oring
J4-2	Positive output clamp terminal
J4-3	Negative output clamp terminal

TYPICAL OUTPUT CHARACTERISTIC



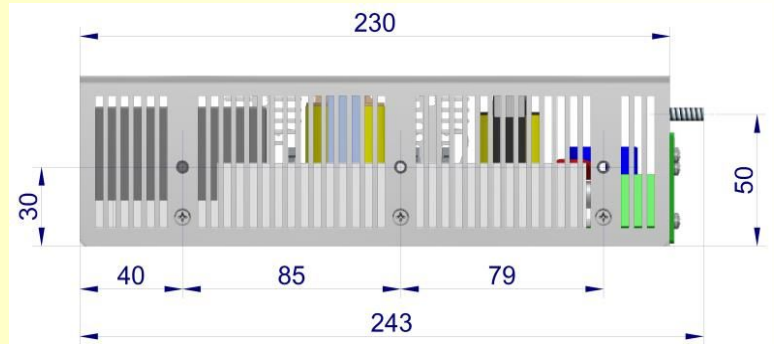
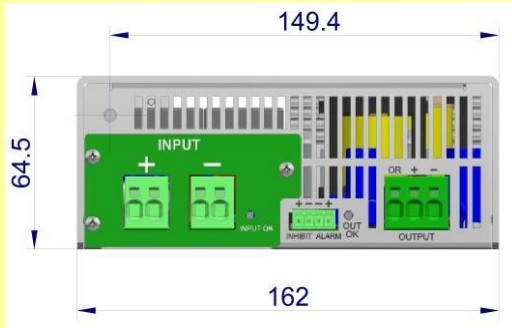
POWER DERATING vs AMBIENT TEMP.



WRHD-DC-DC-280



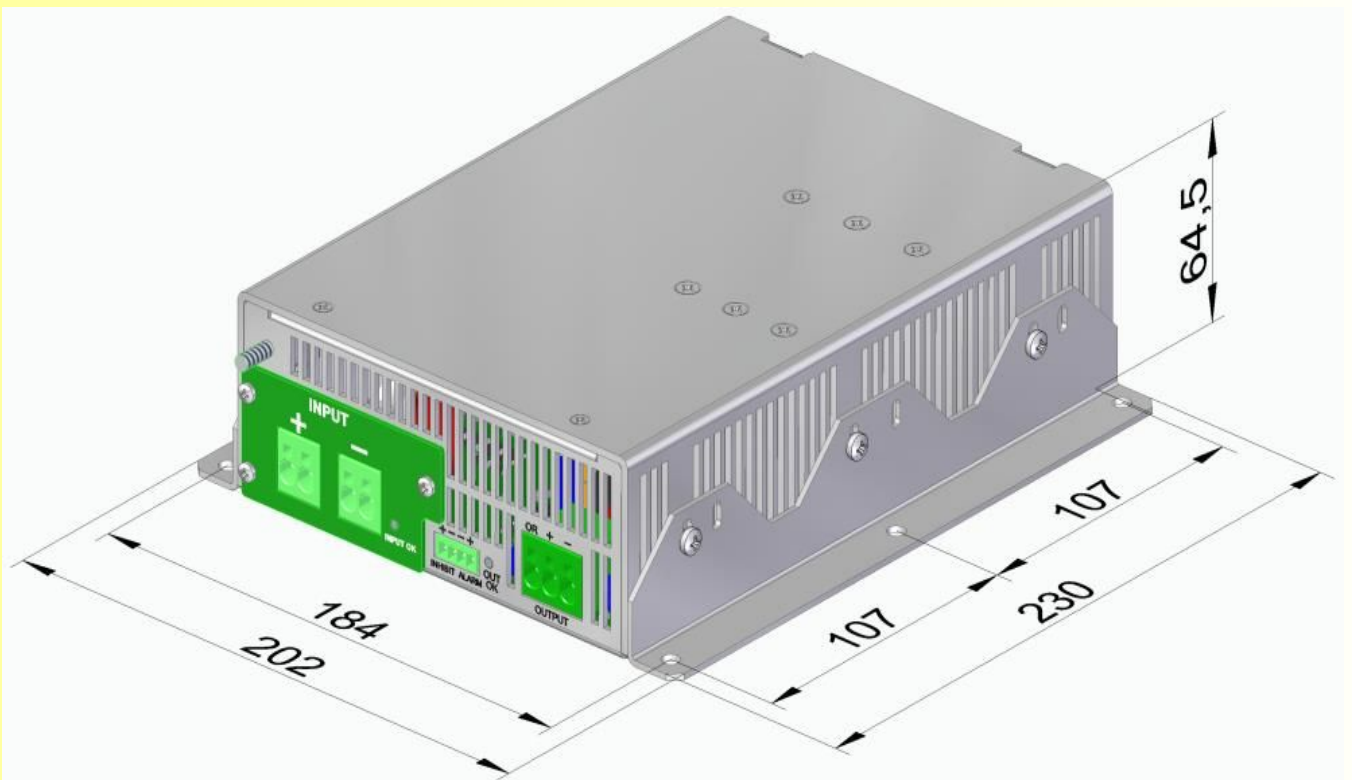
DIMENSIONS



Lateral fixing holes 6 x M4 (screw torque < 1.6 Nm). Maximum screw deep 6 mm.

ACCESSORIES

DESCRIPTION	NOTES	CODE
Mounting brackets kit	Contains two brackets and screws	NP-9435



ANNEXE

Working altitude	Up to 2500m																																																																											
Ambient temperature	Class OT4: load < 100% Class OT6: load < 62.5%																																																																											
Switch-on extended operating temp.	Class ST1, ST2																																																																											
Rapid temperature variations	Class H1																																																																											
Shocks and vibrations	According EN61373:2010 Category 1 class B																																																																											
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P= Performance criteria, L= Line, P= PE (Protective Earth)																																																																												
Relative humidity	Up to 95%																																																																											
DC power supply range	From 0.70 to 1.25 Un continuous																																																																											
Temporary DC power supply fluctuation	From 0.60 to 1.40 Un 0.1s From 1.25 to 1.40 Un 1s without damage																																																																											
Interruptions of voltage supply	Class S3 (20ms)																																																																											
Input ripple factor	10% peak to peak with a DC Ripple Factor of 5 %																																																																											
Supply change-over	0,6 Un duration 100 ms (without interruptions). Performance criterion A																																																																											
Input reverse polarity protection	By serial diode in the input																																																																											
Protective coating for PCB assemblies	Class PC2																																																																											
Tests list	1 Visual Inspection			Routine																																																																								
	2 Performance test			Routine																																																																								
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	10 Enclosure protection test (IP code)			-																																																																								
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	14 Rapid Temperature variation test			Type																																																																								