

DC-DC / AC-DC Modular Converter

Photovoltaic DC/DC Converter Up to 1500Vdc input

WRMod



- **Power from 25 to 240 watts**
- **Modular design**

Wide range for input voltage

9..36Vdc, 18..75Vdc, 40..160Vdc, 110..370Vdc, 200..1500Vdc

Wide range for output voltage

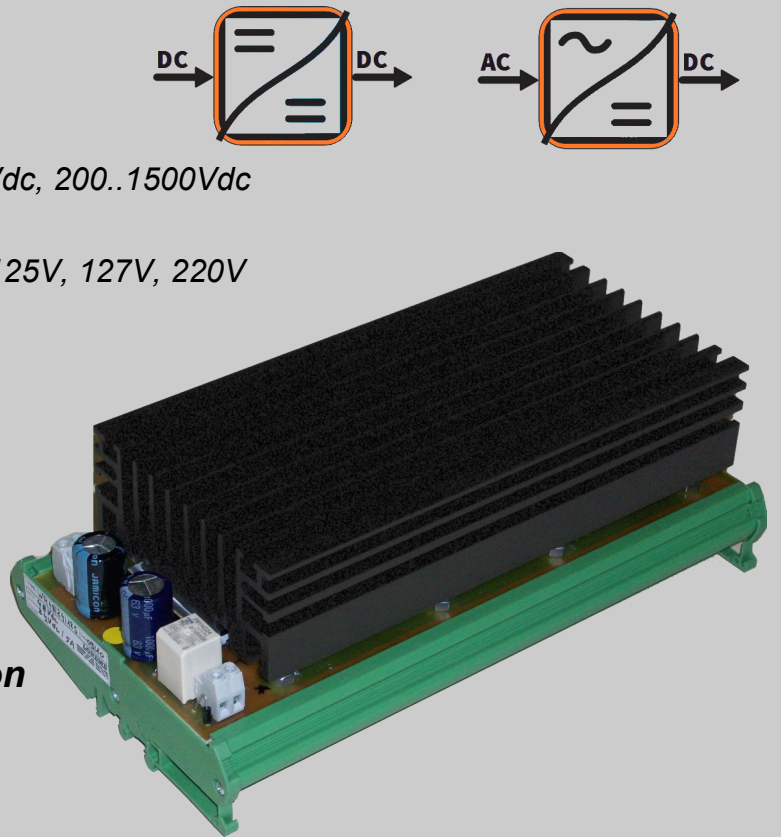
5V, 12V, 15V, 24V, 48V, 72V, 110V, 115V, 125V, 127V, 220V

- **Protection**

Short circuit, overload, thermal

- **High efficiency up to 95%**
- **input / output isolated**
- **Low ripple**
- **Excellent regulation**
- **Extended temperature range version**
- **Application:**

- Photovoltaic, wind power
- Regulation of a varying voltage



The WRMod series is a complete range of high density switching DC-DC converters. Through its modular design, this series is suitable for many application.

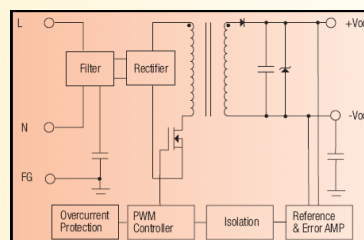
Description:

Mount on DIN rail profile PCB holders
 Width according to the power: 230mm for 150W module
 Internal shield on 6 faces, internal silicon encapsulation and conformal coating, shock and vibration proof, insensitive to humidity and dust.
 Wiring on screw terminal 2.5mm² / 4mm² / 10mm².
 overload protected,
 continuous short circuit protected,
 thermal Protection (output power limiting).
 Natural air convection cooling.
 Built-in EMI filter (EN55022 class A).
 Possible output parallel connections (currents summing).
 (specific manufacturing on request)
 Input voltage : available from 9V to 1500VDC or AC with a wide input range (2:1 or 4:1 on demand)
 Single output voltage: 5 , 12 , 15 , 24 , 30 , 48 , 72 , 127 , ...
 dual (symmetrical) : +/-5 , +/-12 , +/-15 , +/-24 ,
 or multiple output on request.

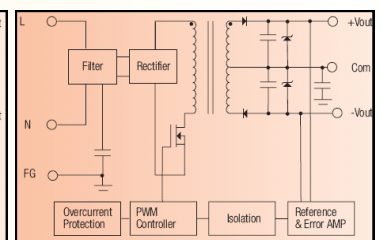
Technical characteristics:

Output voltage accuracy: +/-1% typical
 Line voltage regulation (input variation) : +/-0.5%
 Load voltage regulation (output current variation) : +/-1%
 Output ripple and noise : < 100mVp-p (20MHz bandwidth)
 Temperature coefficient : +/-0.02% / °C
 Operating temperature: -20°C to +60°C (standard)
 Power derating 2.5% / °C above 60°C
 Operating temperature: -40°C to +85°C (extend version)
 Output current limitation : 110%
 Reliability : MTBF of 700 000 to 1 000 000 hours at 25°C

Synoptic for single output



Synoptic for dual (symmetrical) output



Version and order code:

[Request a quote](#)

WRMod in / out / pwr : 240 watts max

WRModAC in / out / pwr : (for AC input version)

in : DC or AC input voltage (depend of model)
out : DC output voltage
pwr : Output power
 (to define for each output if multiple outputs model)

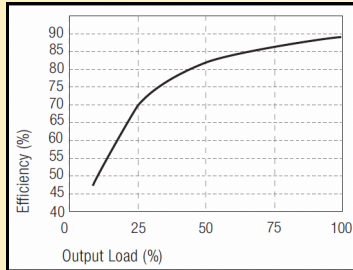
Option :

- **rev** : reverse voltage protection for input
- **rd** : Watchdog output relay (normally closed contact)
- **D** : Internal ORing diode for parallel connection. (Redundancy)
- **HT** : Extended temperature range

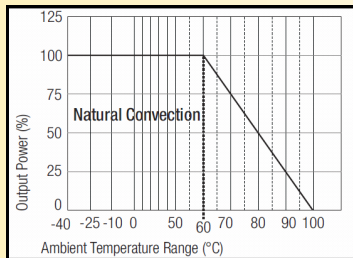
OUTPUTS (Number and voltage to be define)

Single voltage output : 3, 5, 12, 15, 24, 30, 48, 72, ...
 (other value on request)
 Symmetrical output : +/-5, +/-12, +/-15, +/-24,
 or multiple output on request (8 max)
 Transient response setting time 1 ms (typical)
 (25% load step change)

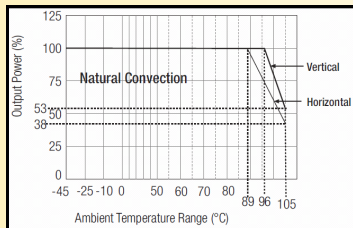
Efficiency vs output load
 (typical value)



Output power vs temperature
 (standard version)



(HT version.
 Extended temperature)



POWER SUPPLY (to be define)

Input DC voltage: 9Vdc, ... 1500Vdc.
 Wide range 4:1, with under voltage lockout
 and overvoltage protection (2U nominal during 500ms).

ENVIRONMENT

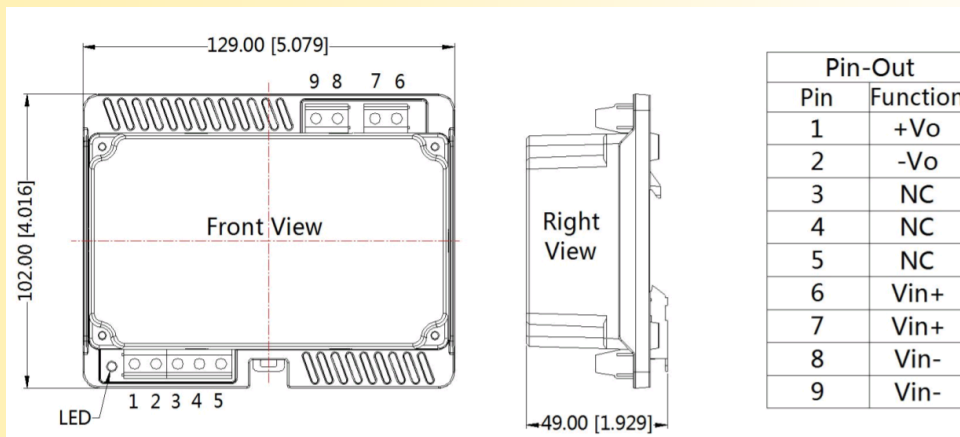
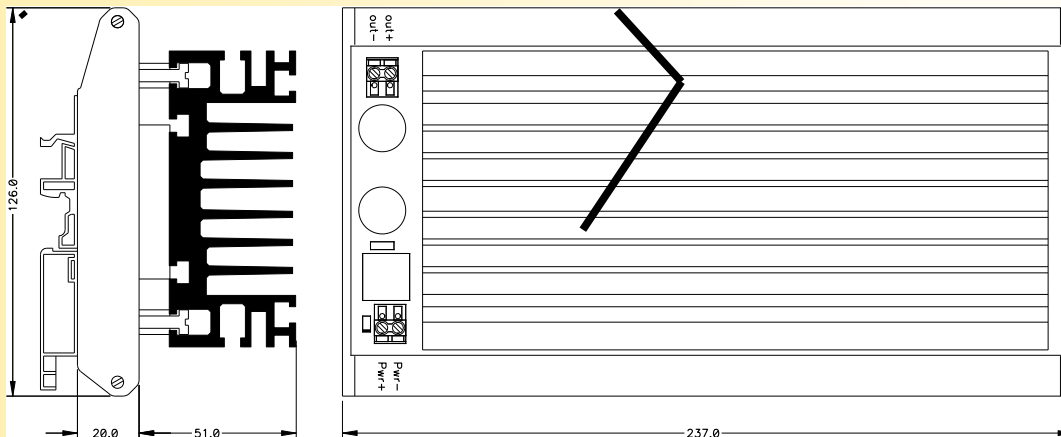
Temperature (standard version):
 operating -20 to 60 °C (without derating)
 storage -20 to 85 °C
 Temperature (extended version: -HT):
 operating -40 to 85 °C (without derating)
 storage -45 to 105 °C
 Humidity 95 % (not condensing)
 Protection rating IP20 (enclosure and connectors)
 IP68 (electronic)
 Isolation voltage 1500 Vrms continuous
 Insulation resistance > 100 Mohms at 1000Vdc
 Capacity (input / output) 1200pf typical
 Safety standards EN 60950-1
 Efficiency between 81 and 90%.
 Vibration 10-55Hz, 10G, 30 minutes X,Y,Z.
 Weight model dependant, 0.1kg to 1Kg
 Switching frequency 330 kHz typical

Electromagnetic compatibility 2014/30/UE / Low Voltage Directive 2014/35/UE

Immunity standard for industrial environments EN 61000-6-2		Emission standard for industrial environments EN 61000-6-4
EN 61000-4-2 ESD	EN 61000-4-8 AC MF	EN 55011 group 1 class A
EN 61000-4-3 RF	EN 61000-4-9 pulse MF	
EN 61000-4-4 EFT	EN 61000-4-11 AC dips	
EN 61000-4-5 CWG	EN 61000-4-12 ring wave	
EN 61000-4-6 RF	EN 61000-4-29 DC dips	



WIRING AND OUTLINE DIMENSIONS: *The length depend of power and outputs number*



Pin-Out	
Pin	Function
1	+Vo
2	-Vo
3	NC
4	NC
5	NC
6	Vin+
7	Vin+
8	Vin-
9	Vin-

- **Very wide voltage input range**
800... 1700Vdc
- **24Vdc 5A output**
Low ripple, low noise
excellent regulation
- **High efficiency**
up to 80%
- **High voltage isolation**
4000Vac input / output
- **Protection**
reverse polarity,
short circuit, overload, thermal
- **Modular design**
- **Application:**
 - Photovoltaic, wind power
 - Regulation of a varying voltage



DC-DC converter regulated with wide input range. It take advantage with it's high efficiency, a high reliability and a high safety isolation. This device is suitable for industrial applications like photovoltaic energy production.

Description, features, implementation:

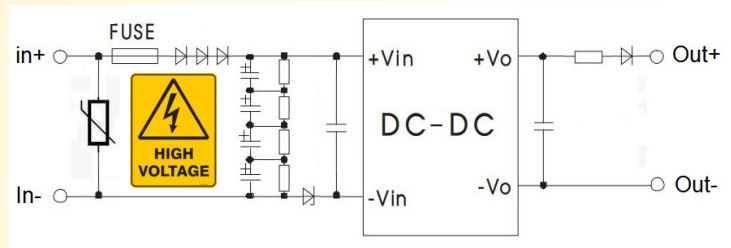
Mount on DIN rail profile PCB holders without protection rating
 Internal silicon encapsulation for modules and conformal coating
 Wiring on screw terminal blocks.
 Natural air convection cooling.
 Thermal protection (output power limiting).
 Built-in EMI filter.
 Possible output parallel connections (sharing currents).
 Attention : It is a device with High Voltage.
 The implementation of the device should be made on an enclosure to ensure the protection of persons. Respect a positioning allowing a good air flow for natural ventilation.
 The implementation must protect the device against humidity and conductive dust.

Primary protection:

10x85 cylindrical fuse link
 Rated voltage 1.5KVdc
 Rated current 10A
 Diameter 10.3mm
 Overall length 85mm
 Attention : Do not use fuse with switching capacity < 1500Vdc



Simplified synoptic



Version and order code:

[Request a quote](#)

WRMOD-1500V-24V-5A-TPS:

Input voltage 800...1700Vdc
 Output voltage 24Vdc
 Output power 120Watt

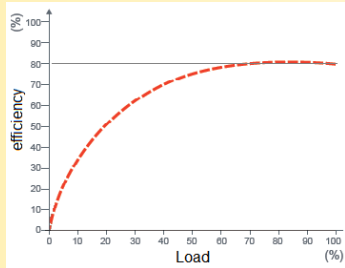
Options included in standard model:

- rev : Reverse polarity protection for input:
- D : Internal ORing diode for parallel connection. (Redundancy)

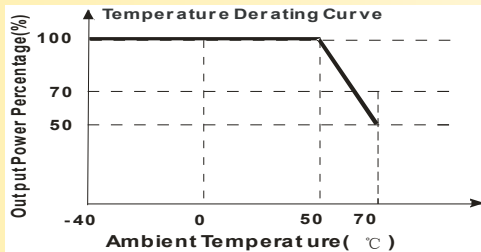
OUTPUT

Voltage with no load 24Vdc
 Voltage in full loaded 23.4v @ 5A
 Voltage accuracy: +/-4%
 Line voltage regulation (input variation) : +/-1%
 Load voltage regulation (output current variation) : +/-1%
 Output ripple and noise : < 400mVp-p (20MHz bandwidth)
 Thermal stability : +/-0.05% / °C
 Output current limitation: 110%
 Transient response setting time 1 ms (typical)

Efficiency vs load (typical value)



Output power vs temperature



POWER SUPPLY

Input voltage : 800Vdc1700Vdc
 wide range 5:1 ,with under voltage lockout .
 and overvoltage protection (2U nominal during 500ms).
 Max input current at 1500V : 140mA
 Max input current at 800V : 250mA

ENVIRONMENT

Operating temperature: -20 °C to 50 °C (without derating)
 Temperature derating 2.5% / °C above 50°C (70°C max)
 Storage temperature -25 °C to 85 °C
 Humidity 95 % (not condensed)
 Protection rating IP00 no protection rating
 Dielectric strength 4000 Vac continuous
 Insulation resistance > 100 Mohms @ 1000Vdc
 Input / output capacity 1200pf typical
 Max efficiency 80%.
 Vibration 10-55Hz, 1G, 30 minutes X,Y,Z.
 Weight 1.6 Kg
 Switching frequency 65 kHz typical
 MTBF (MIL HDBK 217F) > 300 000 Hrs @ 25°C

Electromagnetic compatibility 2014/30/UE / Low Voltage Directive 2014/35/UE

Immunity standard for industrial environments EN 61000-6-2		Emission standard for industrial environments EN 61000-6-4
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WIRING AND OUTLINE DIMENSIONS:

