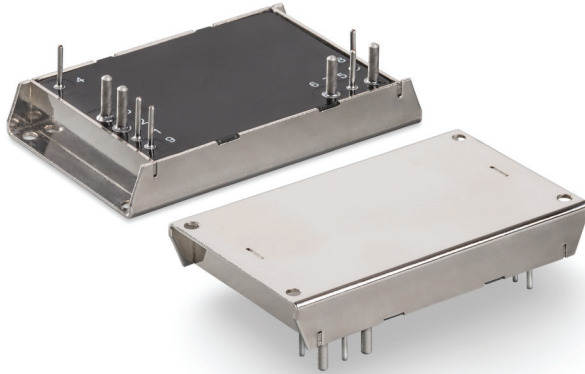


DC/DC Converters

MDR160



Features

- Up to 5 year warranty
- Output current up to 40 A
- Low-profile design (11,2 mm) with cylindrical pin outs
- 24 VDC (index “W”) inputs compliant with MIL-STD-704F
- Copper case with mounting flanges
- Case operating temperature $-60...+125^{\circ}\text{C}$
- Magnetic feedback without optocouples
- Short circuit protection, overvoltage, thermal protection
- Remote on/off
- Output voltage adjustment
- Switching frequency synchronization
- Typical efficiency 88% ($U_{\text{out}}=5$ VDC)
- Polymer potting sealing

Description

Ultra-compact isolated DC/DC converters of MDR160 Series have been particularly designed for industrial and special purpose applications. These compact units ($57,5 \times 40,2 \times 11,2$ mm) have output power up to 160 W and wide operating temperature range $-60...+125^{\circ}\text{C}$. These modules can be switched on/off by a signal, have full protection complex against overcurrent, short circuit and overtemperature and can be connected in parallel or series. Without optocouplers in the converter's circuit it can safely operate in conditions of ionizing radiation and high temperature. Polymer potting sealing protects modules from different factors: vibration, dirt, moisture and salt fog. These modules undergo special thermal and limit test including burn-in test with extreme on/off modes.

Compliance

Designed to meet MIL-STD-810G

Designed to meet MIL-STD-461E (CE102)

Designed to meet MIL-STD-704F

DC/DC Converters

MDR160

Ordering information

MDR i 160 – 1 W 12
 ① ② ③ ④ ⑤ ⑥

- ① - DC/DC converter MDR Family
- ② - Application index
 i – from –40 to +85°C; 3 year warranty
 m – from –60 to +125°C; 5 year warranty
- ③ - Rated output power, W
- ④ - Quantity of output channels (1)
- ⑤ - Index of nominal input voltage
 B – 12 VDC (9...36 VDC)
 W – 24 VDC (18...75 VDC)
- ⑥ - Nominal output voltage (two signs), VDC

Models with output power 160 W

Model	Input voltage range	Rated output power	Output voltage / rated output current
MDRx160-1B3,3	9...36 VDC	160 W	3,3 VDC / 40 A
MDRx160-1B05	9...36 VDC	160 W	5 VDC / 32 A
MDRx160-1B09	9...36 VDC	160 W	9 VDC / 17,7 A
MDRx160-1B12	9...36 VDC	160 W	12 VDC / 13,3 A
MDRx160-1B15	9...36 VDC	160 W	15 VDC / 10,6 A
MDRx160-1B24	9...36 VDC	160 W	24 VDC / 6,6 A
MDRx160-1B27	9...36 VDC	160 W	27 VDC / 5,9 A
MDRx160-1B48	9...36 VDC	160 W	48 VDC / 3,3 A
MDRx160-1W3,3	18...75(84) VDC	160 W	3,3 VDC / 40 A
MDRx160-1W05	18...75(84) VDC	160 W	5 VDC / 32 A
MDRx160-1W09	18...75(84) VDC	160 W	9 VDC / 17,7 A
MDRx160-1W12	18...75(84) VDC	160 W	12 VDC / 13,3 A
MDRx160-1W15	18...75(84) VDC	160 W	15 VDC / 10,6 A
MDRx160-1W24	18...75(84) VDC	160 W	24 VDC / 6,6 A
MDRx160-1W27	18...75(84) VDC	160 W	27 VDC / 5,9 A
MDRx160-1W48	18...75(84) VDC	160 W	48 VDC / 3,3 A

Models with output voltage from 3 to 70 VDC and maximum output current up to 40 A could be produced by special order.

DC/DC Converters

MDR160

Models with output power 120 W

Model	Input voltage range	Rated output power	Output voltage / rated output current
MDRx120-1B3,3	9...36 VDC	120 W	3,3 VDC / 30 A
MDRx120-1B05	9...36 VDC	120 W	5 VDC / 24 A
MDRx120-1B09	9...36 VDC	120 W	9 VDC / 13,3 A
MDRx120-1B12	9...36 VDC	120 W	12 VDC / 10 A
MDRx120-1B15	9...36 VDC	120 W	15 VDC / 8 A
MDRx120-1B24	9...36 VDC	120 W	24 VDC / 5 A
MDRx120-1B27	9...36 VDC	120 W	27 VDC / 4,4 A
MDRx120-1B48	9...36 VDC	120 W	48 VDC / 2,5 A
MDRx120-1W3,3	18...75(84) VDC	120 W	3,3 VDC / 30 A
MDRx120-1W05	18...75(84) VDC	120 W	5 VDC / 24 A
MDRx120-1W09	18...75(84) VDC	120 W	9 VDC / 13,3 A
MDRx120-1W12	18...75(84) VDC	120 W	12 VDC / 10 A
MDRx120-1W15	18...75(84) VDC	120 W	15 VDC / 8 A
MDRx120-1W24	18...75(84) VDC	120 W	24 VDC / 5 A
MDRx120-1W27	18...75(84) VDC	120 W	27 VDC / 4,4 A
MDRx120-1W48	18...75(84) VDC	120 W	48 VDC / 2,5 A

Models with output voltage from 3 to 70 VDC and maximum output current up to 40 A could be produced by special order.

DC/DC Converters

MDR160

Specifications*

Input specifications											
Input voltage range / transient deviation, 1 s	<table border="0"> <tr> <td>B</td> <td>9...36 VDC / 9...40 VDC</td> </tr> <tr> <td>W</td> <td>18...75 VDC / 17...84 VDC</td> </tr> </table>	B	9...36 VDC / 9...40 VDC	W	18...75 VDC / 17...84 VDC						
B	9...36 VDC / 9...40 VDC										
W	18...75 VDC / 17...84 VDC										
Output specifications											
Output voltage adjustment	±5% U _{out} .										
Total regulation (I _{nom} 10–100%)	max ±6%										
Ripple and noise (p-p)	<2% U _{out} . nom										
Overcurrent protection level**	<1,5 P _{max}										
Short circuit protection**	Auto repair										
Remote on/off	Off.: connection of pins "ON" and "-IN", I _{leak} ≤ 5 mA										
General specifications											
Case temperature***	<table border="0"> <tr> <td>operating "i"</td> <td>-40...+85°C</td> </tr> <tr> <td>operating "m"</td> <td>-60...+125°C</td> </tr> <tr> <td>storage</td> <td>-60...+125°C</td> </tr> <tr> <td>power derating (natural convection)</td> <td>diagram (dashed, dash-dotted curve)</td> </tr> <tr> <td>without power derating with heatsink</td> <td>diagram (solid curve)</td> </tr> </table>	operating "i"	-40...+85°C	operating "m"	-60...+125°C	storage	-60...+125°C	power derating (natural convection)	diagram (dashed, dash-dotted curve)	without power derating with heatsink	diagram (solid curve)
operating "i"	-40...+85°C										
operating "m"	-60...+125°C										
storage	-60...+125°C										
power derating (natural convection)	diagram (dashed, dash-dotted curve)										
without power derating with heatsink	diagram (solid curve)										
Typical efficiency	88% U _{out} .=5 VDC 87% U _{out} .=24 VDC										
Switching frequency	280 kHz										
Isolation voltage	<table border="0"> <tr> <td>in./out., in./case, out./case</td> <td>500 VDC</td> </tr> <tr> <td>Isolation resistance @ 500 VDC</td> <td>20 MOhm min</td> </tr> </table>	in./out., in./case, out./case	500 VDC	Isolation resistance @ 500 VDC	20 MOhm min						
in./out., in./case, out./case	500 VDC										
Isolation resistance @ 500 VDC	20 MOhm min										
Environmental	designed to meet MIL-STD-810G										
EMC Standards	designed to meet MIL-STD-461E (CE102)										
Humidity	98% / +35°C										
Thermal resistance case-ambient	7,8°C/W										
Typical MTBF	2000 kHrs										
Cooling	convictional with heatsink or forced fan										
Weight	max 95 g										

It is important to note that the information herein is not full. More detailed information (specific requirements, basic connection circuits, rules of operations etc.) can be found on our web-site: www.aedon.ru

* All specifications valid at normal climatic conditions (ambient temp. +15...+35°C; relative humidity 45...80%; air pressure 8,6*10⁴...10,6*10⁴ Pa), U_{in}.nom., I_{out}.nom., unless otherwise stated.

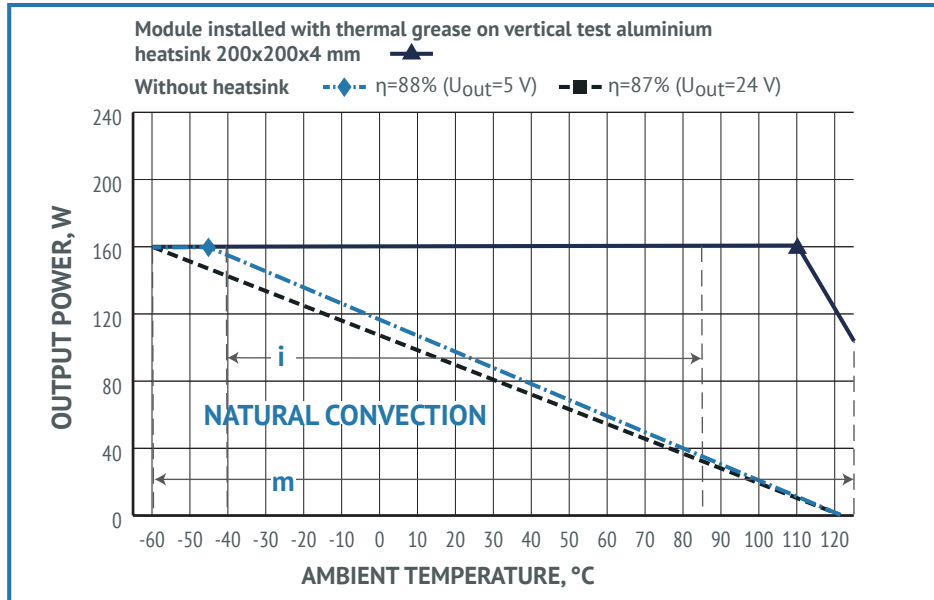
** Parameters are stated for the information purposes and could not be used at long term work, exciding maximum output current, at work outside of a range of operating temperatures.

*** Thermal protection level between +118...+125°C.

DC/DC Converters

MDR160

Power derating vs ambient temperature MDM160-R



Decreasing parts of the curves correspond to the maximum case temperature (+125°C). Output power must not exceed the values limited by curve for a given ambient temperature.

DC/DC Converters

MDR160

Pin out

Pin #	1	2	3	4	5	6	7	8	9
Function	CASE	+IN	-IN	ON	+OUT	-OUT	TRIM	PARAL	SYNC

Single-channel modules with flanges

