# LDD240-WU

## 240 W DC-DC DIN Rail Converter with Programmable Output

This LDD240-WU DC-DC converter is the optimal response to the applications where compactness and high reliability are requested.

It is isolated and offers a wide range of input and output voltages.

Simple but elegant look and ease of installation makes it ideal for various industrial applications.


## FEATURES

- Output power up to 240 W (voltage dependent)
- Converts any voltage between 11 V and 55 V to any voltage between 5 V and 55 V
- Efficiency up to 92% (voltage dependent)
- Operating ambient temperature range -40°C to +70°C
- Constant current or hiccup mode limitation (user settable)
- Digital power regulation
- Isolated topology (2.2 kVDC)
- Modbus over USB interface for control and monitoring
- Multiple integrated protections
- Parallelable for power or redundancy (integrated ORing circuitry)
- Compact size in aluminum enclosure
- Dimensions: 40 x 115 x 110 mm

## APPLICATIONS

- Industrial machine control
- Process control
- Energy management
- Remote control systems
- Railway applications

## 1. MODEL SELECTION

| MODEL | INPUT VOLTAGE RANGE | INPUT CURRENT | OUTPUT VOLTAGE | MAX OUTPUT CURRENT | EFFICIENCY [1] | MAX OUTPUT POWER |
|---|---|---|---|---|---|---|
| LDD240-WU | 11 - 55 VDC | 12 A | 5 - 55 VDC | 10 A | 77 - 92 % | 240 W |

[1] *Depending on Vin/Vout*

## 2. INPUT SPECIFICATIONS.

| PARAMETER | DESCRIPTION / CONDITIONS | SPECIFICATION |
|---|---|---|
| DC Input Voltage | Nominal<br>Range (UL certified) | 12 - 48 VDC<br>11 - 55 VDC |
| DC Input Current | | 12 A |
| Recommended External Protection | Use DC rated devices | Fuse 20 A<br>or MCB 20 A C curve |

## 3. OUTPUT SPECIFICATIONS

| PARAMETER | DESCRIPTION / CONDITIONS | SPECIFICATION |
|---|---|---|
| Output Voltage (Adjustable) | | 5 - 55 VDC |
| Output Current (Continuous) | 240 W, See *Figure 1.* | 10 A |
| Load Regulation | @ 5 VDC<br>@ 12 VDC<br>@ ≥ 24 VDC | ≤ 4.0 %<br>≤ 2.0 %<br>≤ 1.5 % |
| Ripple & Noise [2] | | ≤ 200 mVpp |
| Hold-up Time | | ≥ 5 ms |
| Parallel Connection [3] | Possible for power or redundancy with integrated ORing circuitry | |

[2] *Ripple and Noise are measured with 20 MHz bandwidth, probe terminated with a 0.1 µF MKP parallel capacitor.*
[3] *Pay attention, set the operating mode to "parallel" when connecting more units in parallel, see Instruction Manual for details.*

## 4. PROTECTIONS

| PARAMETER | DESCRIPTION / CONDITIONS | SPECIFICATION |
|---|---|---|
| Input Over Voltage Protection | Active shutdown | > 60 V |
| Reverse Polarity Protection | | |
| Fuse Protection | Mini ATO blade (not user replaceable) | 20 A |
| Short Circuit Protection [4] | Constant current or Hiccup mode, Short circuit peak current | 18 A |
| Output Overload Protection [4] | Constant current mode, Overload Limit, 264 W, See *Figure 1.*<br>Hiccup mode, Overload Limit (max. 5 s), 360 W, See *Figure 1.* | 11 A<br>15 A |
| Thermal Protection | | |
| Output Over Voltage Protection | 120% of Vout active self tracking | |

[4] *User settable*

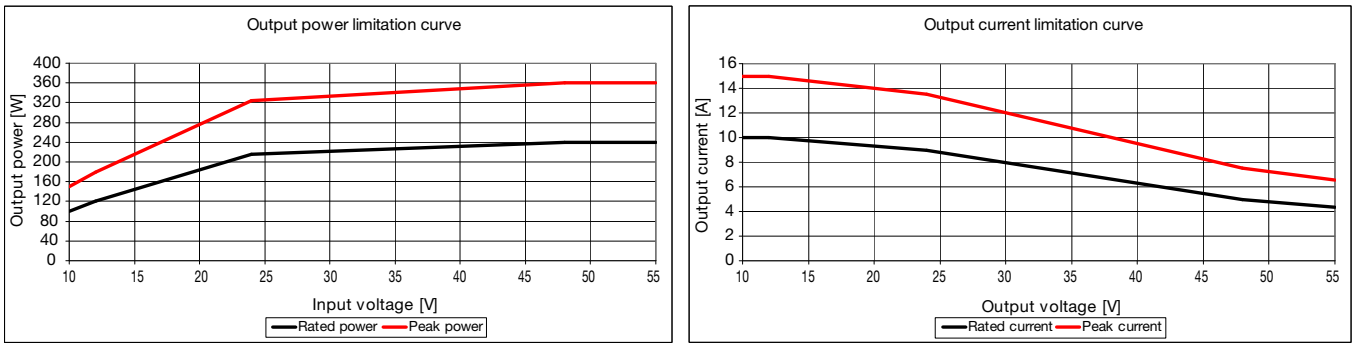



*Figure 1. Voltage derating curves*

## 5. USER INTERFACE, SIGNALLING & CONTROL

| PARAMETER | DESCRIPTION / CONDITIONS |
|---|---|
| User Interface | 7 segment, 2 digit display<br>3 programming keys<br>DC OK - dry contact (NO, 24 VDC / 1 A)<br>Modbus over USB interface |
| Measurement Precision | Output voltage: range: 5 - 55 V ± 1% ± 1 digit<br>Output current: range: 0 - 16 A ± 3% ± 1 digit<br>Input voltage: range: 10 - 52 V ± 3% ± 1 digit |

## 6. ENVIRONMENTAL, EMC & SAFETY SPECIFICATIONS

| PARAMETER | DESCRIPTION / CONDITIONS | SPECIFICATION |
|---|---|---|
| Operating Temperature | UL certified up to 60°C<br>Start-up type tested: - 40°C, possible at Vnom with load deration. | -40 to +70 °C |
| Storage Temperature | | -40 to +80 °C |
| Derating | Over 60°C, depending on Vin/Vout, see *Figure 2* | |
| Dissipated Power | Depending on Vin/Vout | < 28 W |
| Humidity | Non-condescending | 5 - 95 % RH |
| Life Time Expectancy | Ta = 25°C, full load | 180 542 (20.61) hrs (years) |
| MTBF | MIL-HDBK-217F at Ta = 25°C, full load | > 600 000 hrs |
| Overvoltage Category | EN 50178 | I |
| Pollution Degree | IEC 60664-1 | 2 |
| Protection Class | Class I | |
| Isolation | Input to Output<br>Input to Ground<br>Output to Ground | 2.2 kVDC<br>2.2 kVDC<br>0.75 kVDC |
| Safety Standards & Approvals | UL 508 (certified)<br>IEC/EN 61010-1<br>IEC/EN 61010-2-201<br>IEC/EN 60950 | |
| EMC Emissions | EN 61000-6-3 | |
| EMC Immunity | EN 61000-6-2 | |
| Protection Degree | EN 60529 | IP20 |
| Vibration Sinusoidal | IEC 60068-2-6 | 5 - 17.8 Hz: ±1.6 mm; 17.8 - 500 Hz:<br>2 g, 2 hours / axis (X, Y, Z) |
| Shock | IEC 60068-2-27 | 30 g 6 ms, 20 g 11 ms;<br>3 bumps / direction, 18 bumps total |

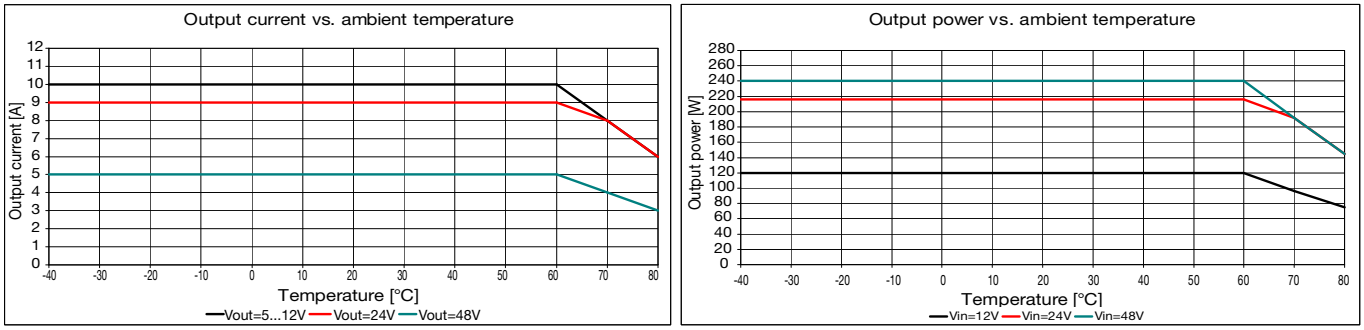


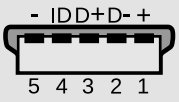

*Figure 2. Temperature derating curves*

## 7. MECHANICAL SPECIFICATIONS

| PARAMETER | DESCRIPTION / CONDITIONS | SPECIFICATION |
|---|---|---|
| Dimensions | | 40 x 115 x 110 mm<br>1.57 x 4.53 x 4.33 in |
| Weight | | 400 g |
| Mounting Rail | IEC 60715/H15/TH35-7.5(-15) | |
| IN/OUT Connection Terminals | Screw type pluggable (24 - 12 AWG) | 2.5 mm² |
| Communication Interface Connector | Mini USB-B Type (virtual Com Port) | |
| Case Material | Aluminum | |

## 8. PIN LAYOUT & DESCRIPTION


| CONNECTION | DESCRIPTION |
|---|---|
| **INPUT CONNECTION** | + = Positive DC<br>- = Negative DC<br>⏚ = Earth ground |
| **OUTPUT CONNECTION** | + = Positive DC<br>- = Negative DC |
| **SIGNALLING** | DC OK: dry contact<br>• NO<br>• COM |
| **MINI USB TYPE** | • 1 = VBUS (+5V)<br>• 2 = Data (D-)<br>• 3 = Data (D+)<br>• 4 = Not connected (ID)<br>• 5 = GND |




## MECHANICAL DRAWING

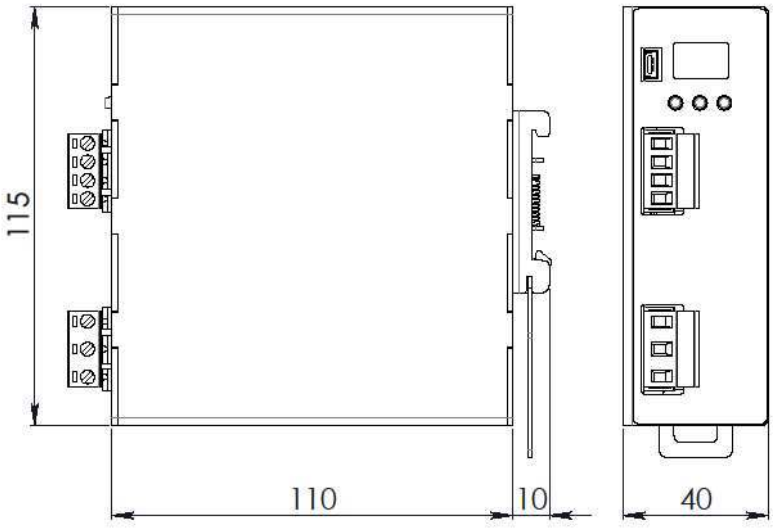



*Figure 3. Mechanical Drawing*

***Notes:***

*Technical parameters are typical, measured in laboratory environment at 25°C and 24 VDC Vin/Vout, at nominal values, after min. 5 minutes of operation. Power rating, losses, efficiency, ripple, thermal behaviour and start-up may change outside of the nominal rated input range. Contact factory for details.*

**NUCLEAR AND MEDICAL APPLICATIONS** - Products are not designed or intended for use as critical components in life support systems, equipment used in hazardous environments, or nuclear control systems.

**TECHNICAL REVISIONS** - The appearance of products, including safety agency certifications pictured on labels, may change depending on the date manufactured. Specifications are subject to change without notice.