

300W DC/DC Converter Wide-Range Input Data Sheet



Green Watt/Powerland’s 300W wide-input range DC/DC modules are featured with extraordinary circuit designs, providing high-power density, high reliability, and high efficiency performance. The module is designed with excellent thermal management, anti-shock techniques, and long lifetime.

Features:

- Ultra-Wide Input Voltage Range: 28~160Vdc
- High Efficiency: Up to 95%
- LED power good indicator and power fail warning
- All-Around Protections: OVP, OTP, OCP, SCP, Brownout
- Natural Cooling
- On/Off Control
- Low input ripple and noise
- Compact design with on metal plate for thermal management
- Conduction and radiation EMI performance comply with EN55032 Class A, EN55022 Class A



| General Specifications | |
|------------------------------|--|
| Model | EVD-94-300-24 (PLD320-WDDA) |
| Power | 300W |
| Input Voltage | 28~160Vdc |
| Output Voltage | 24V |
| Output Current | 12.5A |
| On/Off | Yes |
| Isolation | Input to Case only; No Input to Output Isolation |
| Efficiency (Typical) | 94% |
| Operating Temperature (Case) | -40~85°C |
| IP Rating | IP65 |
| Dimensions (LxWxH) | 100x90x27mm |
| Cooling | Natural Cooling |

Model # in parenthesis is factory number

| Input Parameters | | | | |
|---|-----|-----|-----|-------|
| | Min | Typ | Max | Units |
| Input Voltage Range | 28 | 48 | 160 | VDC |
| Input Current | | | 14 | A |
| Input Current No Load | | | | |
| Vin = 48V, Io = 0 | | 30 | | mA |
| Vin = 96V, Io = 0 | | 20 | | |
| Input Current in Shut Down Mode (48Vin) | | 25 | | mA |

| Output Parameters | | | | |
|--|--|------------|------------|--------------|
| | Min | Typ | Max | Units |
| Output Voltage Vin = 48V, Io = 0-12.5A | 23.52 | 24.0 | 24.48 | VDC |
| Output Current | | 12.5 | 13.3 | A |
| Load Regulation Vin=48V, Iout=1.25~11.25A | | 0.6 | | % |
| Ripple & Noise (@Iout=12.5A, Tested with 10uF Al CAP and 0.1u MLCC CAP, and 5M~20MHz BW) | | | | mV |
| Peak-peak | | 100 | 200 | |
| RMS | | 40 | 80 | |
| Overshoot Turn-on Voltage | | | 5 | % |
| Output Current Protection | | | 15 | A |
| Start-Up Time, from On/Off Control | | | | |
| Start-Up Time, from Input | | 300 | 400 | mS |
| Rise Time (Input Voltage from 0 to within 1% Vout Nominal) | 1 | | 50 | mS |
| General Specification | | | | |
| 100% Load Efficiency | | | | |
| @Vin=48V, Iout=12.5A | 93.5 | 94.0 | | % |
| @Vin=96V, Iout=12.5A | 92.0 | 92.5 | | |
| 50% Load Efficiency | | | | |
| @Vin=48V, Iout=6.25A | 95.0 | 95.5 | | % |
| @Vin=96V, Iout=6.25A | 93.0 | 93.5 | | |
| Capacitive Load | | | 1500 | μF |
| Isolation: Input to Case (Only) | | | 2800 | Vdc |
| Isolation Resistance: Input to case (Only) | 100 | | | Mohms |
| Humidity (Relative) no condensing | | | 10~95 | % |
| Storage Temperature | -55 | | 125 | °C |
| Operating Temperature - Baseplate (Max. Case Temperature) | -40 | | 85 | °C |
| Cooling/Temperature | Natural Cooling: Baseplate temperature cannot exceed specified maximum, under all conditions | | | |
| Case Size | 100x90x27mm | | | |
| Case Material | Metal | | | |
| Weight | 400g | | | |
| EMI | EN55022 Class A | | | |

Notes: Specification is subject to change without notice. Model in parenthesis is factory number.

Unless noted, the characteristics are specified at 25°C, 48Vdc input, and 12.5A load output.

Application Notes:

Over Voltage Protection:

When its output is over 28V, the over voltage protection is triggered. The power supply shall enter auto-recovery mode during over voltage protection, and shall return to normal operation after the fault condition is removed.

Over Temperature Protection:

When the power supply enters overheating protection condition (case temperature over 95oC), no components should be damaged. The power supply shall enter auto-recovery mode during over temperature protection, and shall return to normal operation after the fault condition is removed.

Output Over-Current Limit

When the output is above 15A, no components should be damaged. The power supply shall enter auto-recovery mode during over current protection, and shall return to normal operation after the fault condition is removed.

Short Circuit Protection

When the output is being shorted, no components should be damaged. The power supply shall enter auto-recovery mode during short current protection, and shall return to normal operation after the fault condition is removed.

Input Voltage Over-Voltage Protection/

When its input voltage is over 165±3V, the power supply should be shut down and shall be auto recovered when input voltage is below 161±3V.

Input Voltage Brownout

When its input voltage is below 22±1V, the power supply should be shut down and shall be auto recovered when input voltage is over 25±1V.

Remote On/Off:

The converter has Enable control function. This Enable Pin is designed on the input side of the converter, the converter will turn on when pin connected to VIN+, and OFF when pin is left open.

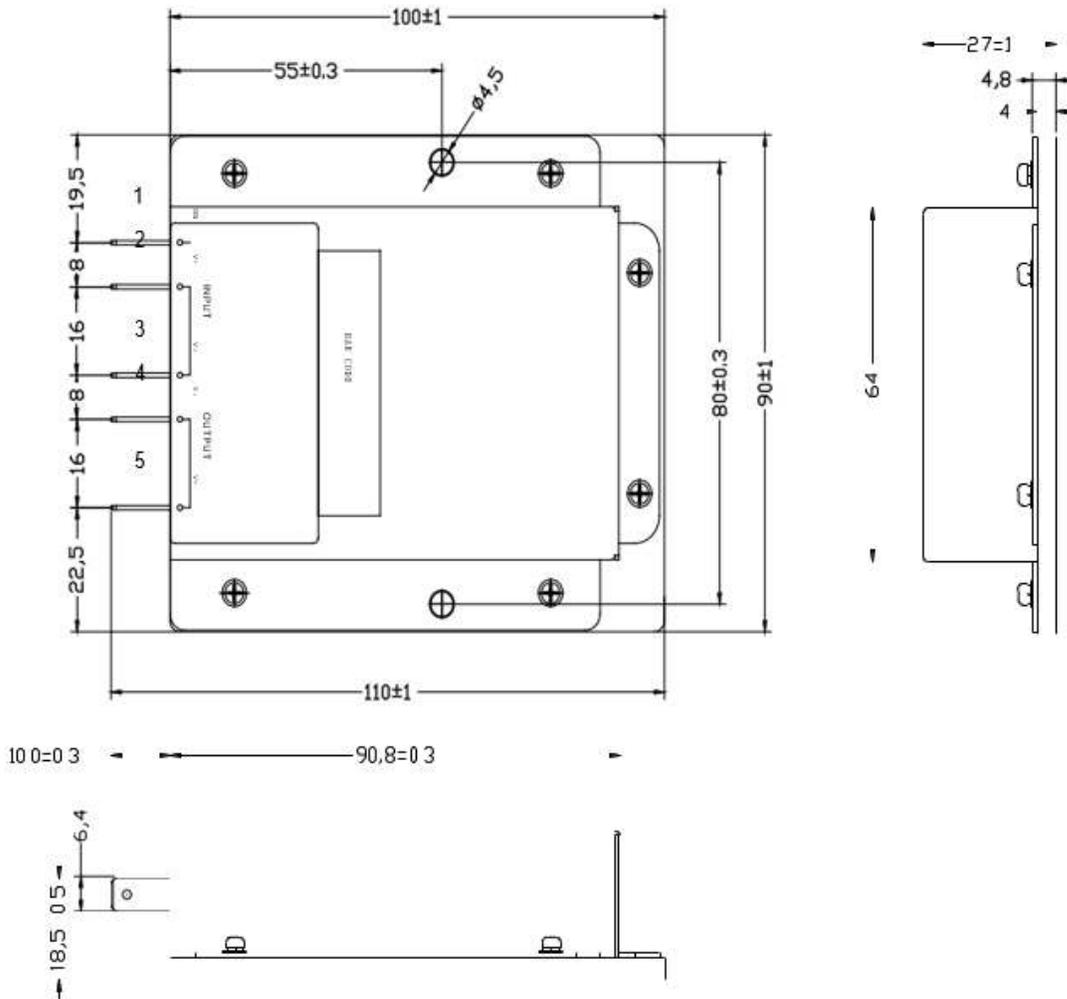
Thermal Condition:

The converter should be mounted on a base plate with thermal grease, and the maximum base plate temperature is suggested to be controlled to within 85°C.

LED Indicator

There is a LED indicator at the front panel of the power supply. The description for each status is as below.

| Color | Indicator Status | Description |
|-------|------------------|-----------------------|
| Green | Green On | Input and Output Good |
| | Green Off | No Output |



Input and Output Connectors*

| Pin No. | Name | Description |
|---------|--------|--|
| 1 | ENABLE | Power supply on/off control (ON when pin connected to VIN+, and OFF when pin is left open) |
| 2 | VIN+ | Input Positive |
| 3 | VIN- | Input Negative |
| 4 | VOUT- | Output Negative |
| 5 | VOUT+ | Output Positive |

Note: quick-disconnect terminal output connectors should be available locally or customer can solder as required. Connector width is .08.

REGULATORY INFORMATION:

Agency Requirements

- A) Input to Case: 2800Vdc
- B) Insulation Resistance: 100MΩ min. @ input to case

Electromagnetic Compatibility

- A) EMI: Conduction and radiation comply with EN55022 Class A.
- B) IMMUNITY:
 - EN61000-4-2: ESD 8kV Air Discharge, 6kV Contact Discharge.
 - EN61000-4-3: Radio-frequency Electromagnetic Field Susceptibility Test-RS, 80-1000MHz, 10V/m.
 - EN61000-4-4: Electrical Fast Transient/Burst-EFT ±2kV.
 - EN61000-4-5: Surge Immunity Test, DC Input Line: Line to Line 2kV; Line to Earth 2kV.
 - EN61000-4-6: Conducted Radio Frequency Disturbance Test-CS, 0.15-80MHz, 10V/m.