

## 48W DC/DC Isolated Converter Wide-Range Input Data Sheet



Green Watt/Powerland's 48W 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: 22~160Vdc
- Isolated
- High Efficiency: 86.5%
- 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



<b>General Specifications</b>	
Model	EVD-91-48-24 (PLD048-WDDA)
Power	48W
Input Voltage	22~160Vdc
Output Voltage	24V
Output Current	2A
On/Off	Yes
Efficiency (Typical)	86.5%
Operating Temperature (Case)	-40~85°C
IP Rating	IP55
Dimensions (LxWxH)	100x90x27mm CASE (mounted on metal plate)
Cooling	Natural Cooling

Model # in parenthesis is factory number

<b>Input Parameters</b>				
	Min	Typ	Max	Units
Input Voltage Range	22	48	160	VDC
Input Current			3	A
Input Current No Load				
Vin=Vinnom		50		mA
Vin=2 Vinnom		30		
Input Current in Shut Down Mode (48Vin)		25		mA

<b>Output Parameters</b>				
	<b>Min</b>	<b>Typ</b>	<b>Max</b>	<b>Units</b>
Output Voltage	23.52	24.0	24.48	VDC
Output Current			2	A
Load Regulation		0.6		%
Ripple & Noise (@full load, Tested with 10uF Al CAP and 0.1u MLCC CAP, and 5M~20MHz BW)				
Peak-peak		200	300	mV
RMS		30	40	mV
Overshoot Turn-on Voltage			5	%
Output Current Protection			2.7	A
Start-Up Time, from On/Off Control				
Start-Up Time, from Input		300	400	mS
Rise Time	1		300	mS

<b>General Specification</b>				
100% Load Efficiency		86.5		%
50% Load Efficiency		83.5		%
Maximum Output Capacitance			2000	μF
Isolation: Output to Case			500	Vac
Isolation: Input to Output			1500	Vac
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 2A 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 95°C), 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 2.7A, 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 166±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 18±1V, the power supply should be shut down and shall be auto recovered when input voltage is over 21.5±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:

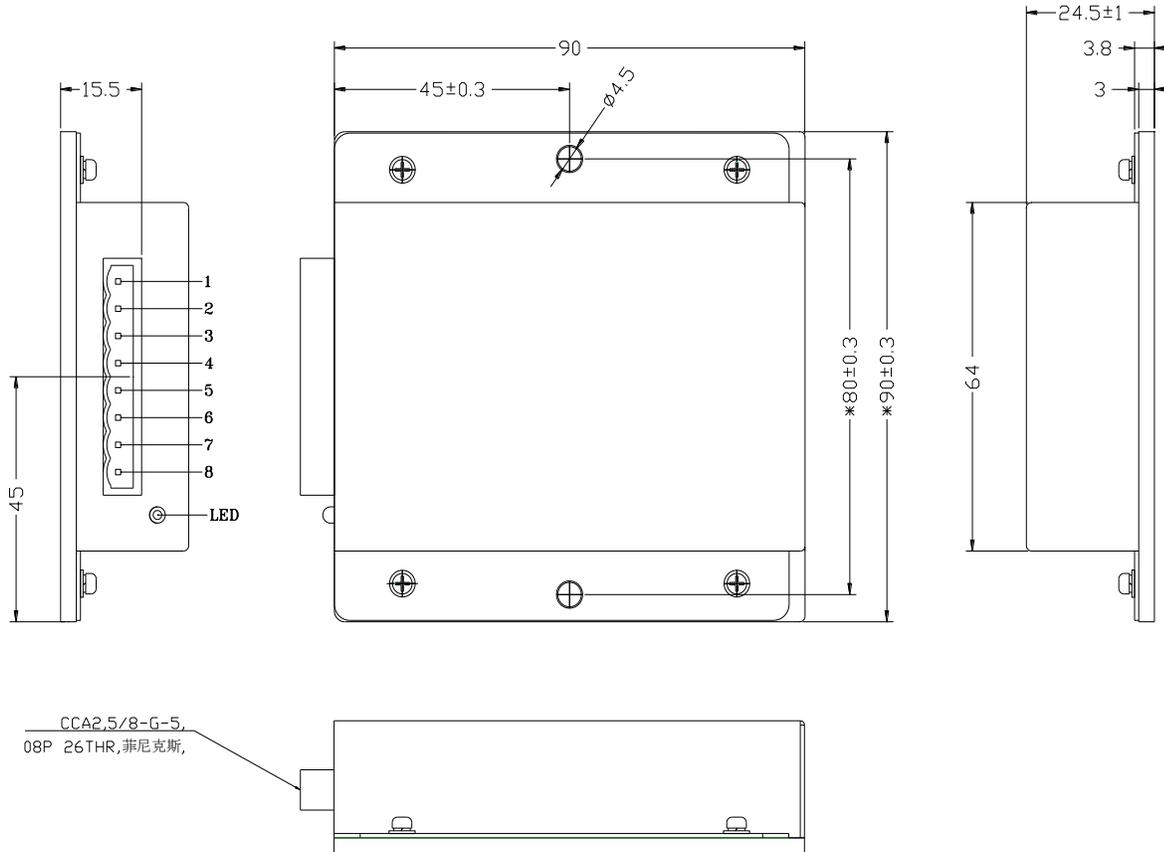
The converter should be mounted on a base plate with thermal grease, and the maximum base plate temperature is suggested to be controlled to within 85°C.

### 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

## Mechanical Information



### Input/Output Connector on DC/DC Converter:

CCA 2,5/ 8-G-5,08 p26THR Phoenix Contact (product number 1954980)

<https://www.phoenixcontact.com/en-us/products/pcb-header-cca-25-8-g-508-p26thr-1954980>

Pin No.	Function	Electrical determination
1	Vin+	Input voltage positive
2	Vin-	Input voltage negative
3		Pin connected to Vin+
4	NC	Not used
5	PG	Power good
6	NC	Not used
7	Vo-	Output voltage negative
8	Vo+	Output voltage positive

## REGULATORY INFORMATION:

### *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  $\pm 2$ kV.
  - 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.