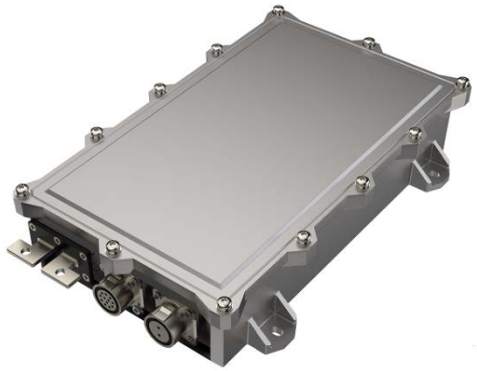
This specification describes the performance characteristic of a wide input range (280Vdc~880Vdc) 3000W power supply module with +27.5V/110A DC output.



Contents

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Features

- For Electric Vehicle on board application
- 280~880Vdc wide input range
- +27.5V/110A 3000W output power with high efficiency
- -40~85℃ wide operation temperature range
- Comprehensive monitoring and protection base on CAN bus communication

☐ SMPS Adaptor (Wall-Mount)
☐ SMPS Adaptor (Desktop)
☐ Open Frame
■ SMPS Unit (With Case)
☐ Others

Applications

Automotive DC/DC power supply

Model List

PLD3000-EVDYL02(A)-27

Input Characteristics

All data tested under 25 ℃ ambient temperature, unless otherwise specified.

Input Voltage

Input	Min.	Typ.	Max.
Input voltage	280Vdc	540Vdc	880Vdc
Auxiliary input voltage	18Vdc	24Vdc	32Vdc

*Output derating at 280~380Vdc input. Derating curve refer to the Performance Curves section.

**No damage under 900Vdc input.

Input Current

Max continuous input current: 12A RMS

Standby Current

Standby current: ≤ 10mA @ 880Vdc input & standby mode

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Peak Efficiency

Peak efficiency: >95% @ 540Vdc input & ≥50% Load

On-off Control

Output on/off is controlled by a PSON signal or CAN communication, while the PSON signal have the control priority. The PSON signal and CAN protocol will be specified in other files.

Output Characteristics

All data tested under 25 ℃ ambient temperature, unless otherwise specified.

Output Load Ratings

Output voltage	Output current
+27.5±0.5V	0~110A

*Output power will derate under the cases below

1) 280~380Vdc input

2) T_{base} derating

3) Error for derating

Vo error：±2V, Vin error：±15V or ±5%， T_{base} ±5℃

Ripple & Noise

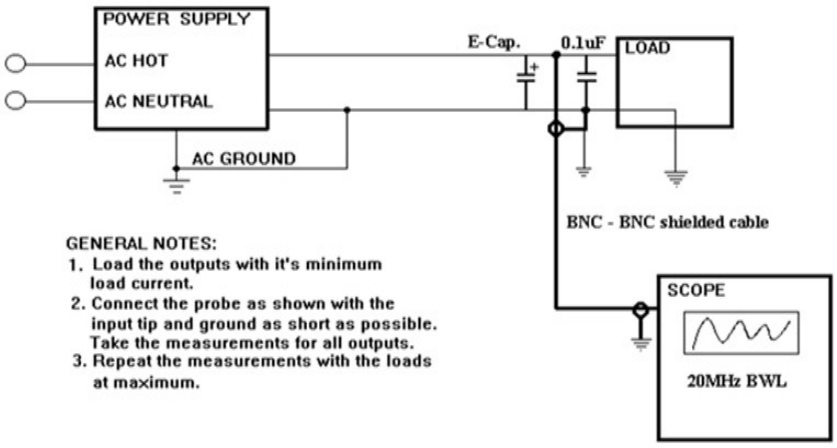
Output	+27.5V / 110A （Full load）
Maximum ripple/noise	500mVp-p *

* measured at the output edge of power supply, measuring setup descripted as bellow:

20MHz BW, 0.1uF X7R MLCC + 10uF e-Cap

Measurements will be made with an oscilloscope set to 20MHz-bandwidth limit. The outputs will be bypassed with one 0.1uF ceramic cap (type X7R) and one 10uF (low ESR) electrolytic capacitor.

Outputs will be tested per the setup in the Figure below.



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Turn-on Delay Time

Turn on delay: ≤ 3s after CAN or the PSON signal is applied

Turn-on overshoot range

Turn-on Overshoot: ≤ 5% @ 540Vdc input ≥&50% Load

Dynamic Load Response

Recovery time	≤10 ms	* 27.5V output
Over/undershoot	±5%	* load transition25%-50%-25%/50%-75%-50%,0.1A/us

Input Voltage Regulation

Input Voltage Regulation: ≤ ±1% @ half Load, 380~880Vdc input

Load Regulation

Load Regulation: ≤ ±1% @ 540Vdc input, all load range

Protection Functions

All protections are detected by MCU and can be reset by CAN or PSON signal.

Input Over Voltage Protection

Turn off threshold: 910±20Vdc
Recovery threshold: 860±20Vdc

Input Under Voltage Protection

Turn off threshold: 260±15Vdc
Recovery threshold: 270±15Vdc

Output Over Voltage Protection

Turn off threshold: 33±2Vdc

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Output Under Voltage Protection

Turn off threshold: ≤20 ±2V, ≥1sec

Output Current limitation

Current limit: 115±5A

Short Circuit Protection

Turn off threshold: CC output (115±5A) & Vo≤ 15V, ≥ 2sec

Over Temperature Protection

TNTC turn off threshold: >130±5℃
TNTC Recovery: 85±5℃

Reverse Input Polarity Protection

No output, no damage.

Fault Log

Last 5 faults can be recorded on the EEPROM.

Safety &EMC Compliance

Category		Standard	
Hipot	In-out	3500Vdc	3500Vdc, 1min, leakage < 10mA No arcing
	In-case	2000Vdc	2000Vdc, 1min, leakage < 10mA No arcing
	Out-case	500Vdc	500Vdc, 1min, leakage < 10mA No arcing
Insulation Resistance	In – out, In-case	≥20MΩ@500Vdc	500Vdc & normal air pressure, 90% Humidity
EMC	RE/CE	EN55025/GB18655, class 3, tested with customer system.	
	Immunity	95/54/EC(1995)/ GB/T 17619-1998, tested with customer system.	
	ESD	±8kV air, ±6kV contact for case and input, output, signal ports.	

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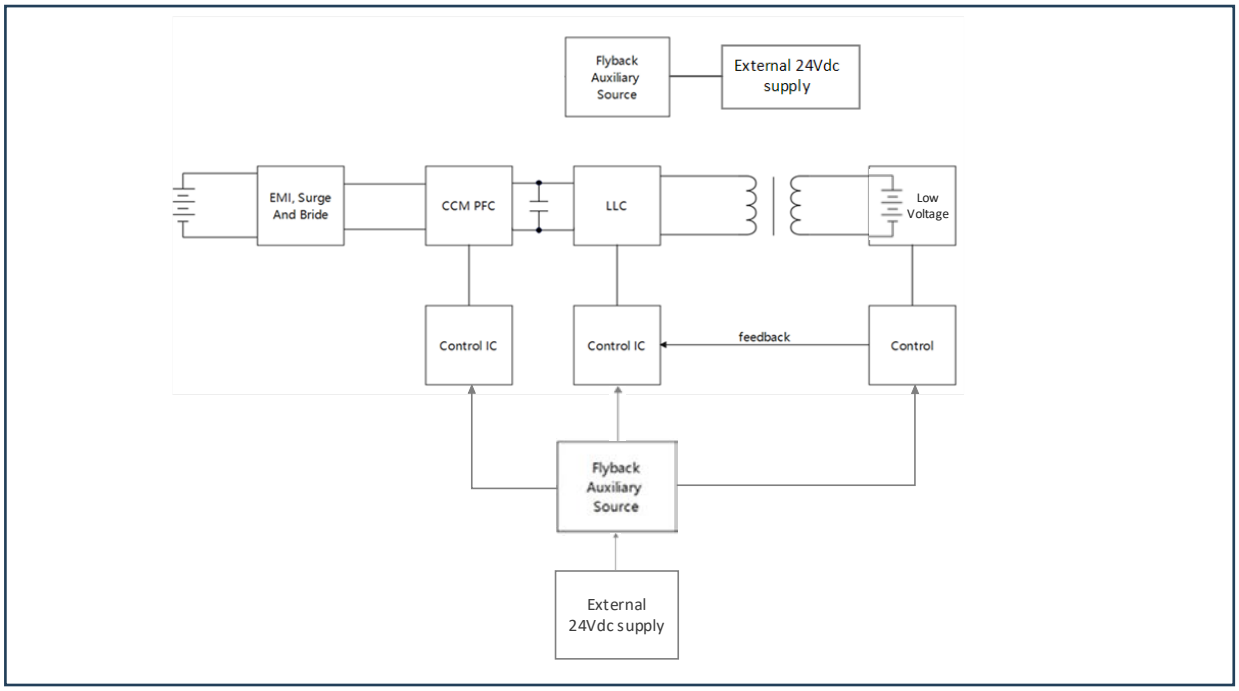
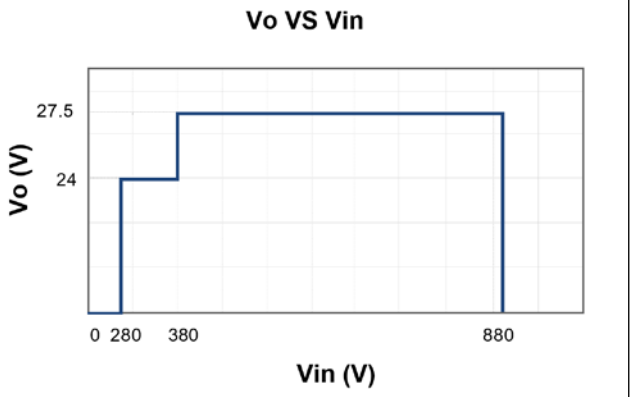
Block Diagram

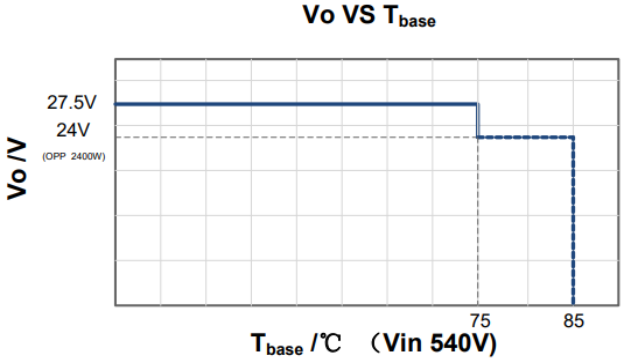


Performance Curves

Output Voltage De-rating with Vin

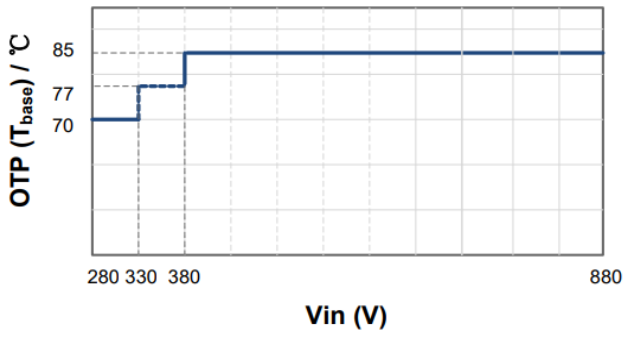


Output Voltage De-rating with T_{base}



* T_{base}: Baseplate temperature

OTP VS Vin



*OTP: Over Temperature Protection

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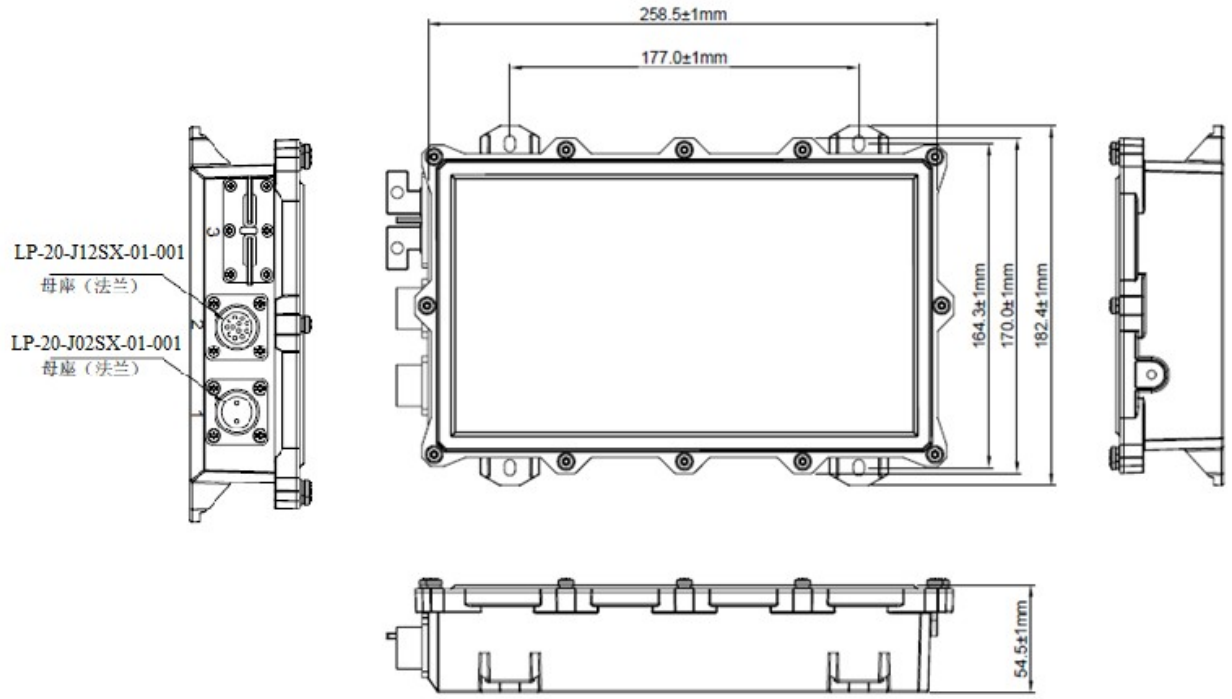
Mechanical Specification

Dimension and Outline Drawing



Aux power & Signal Ports

Function	Pin No.	Signal	Note
AUX In*	8	24V	Aux. Power Input
	6	24V_GND	Aux. Power Input
CAN	3	CAN-H	CAN H signal / CAN H
	5	CAN-L	CAN L signal / CAN L
CONTROL	10	#PSON	On/off control: - power on: LOW resistance (ref 1k ohm) to AUXin GND - power off: open or >1Meg ohm to AUXin GND

Communication signals can be customized if necessary.

Connector	Model	Manufacturer
Input Connector	LP-20-J02SX-01-001	Cnlinko
Signal Connector	LP-20-J12SX-01-001	Cnlinko

*The instructions will be shipped with the goods.

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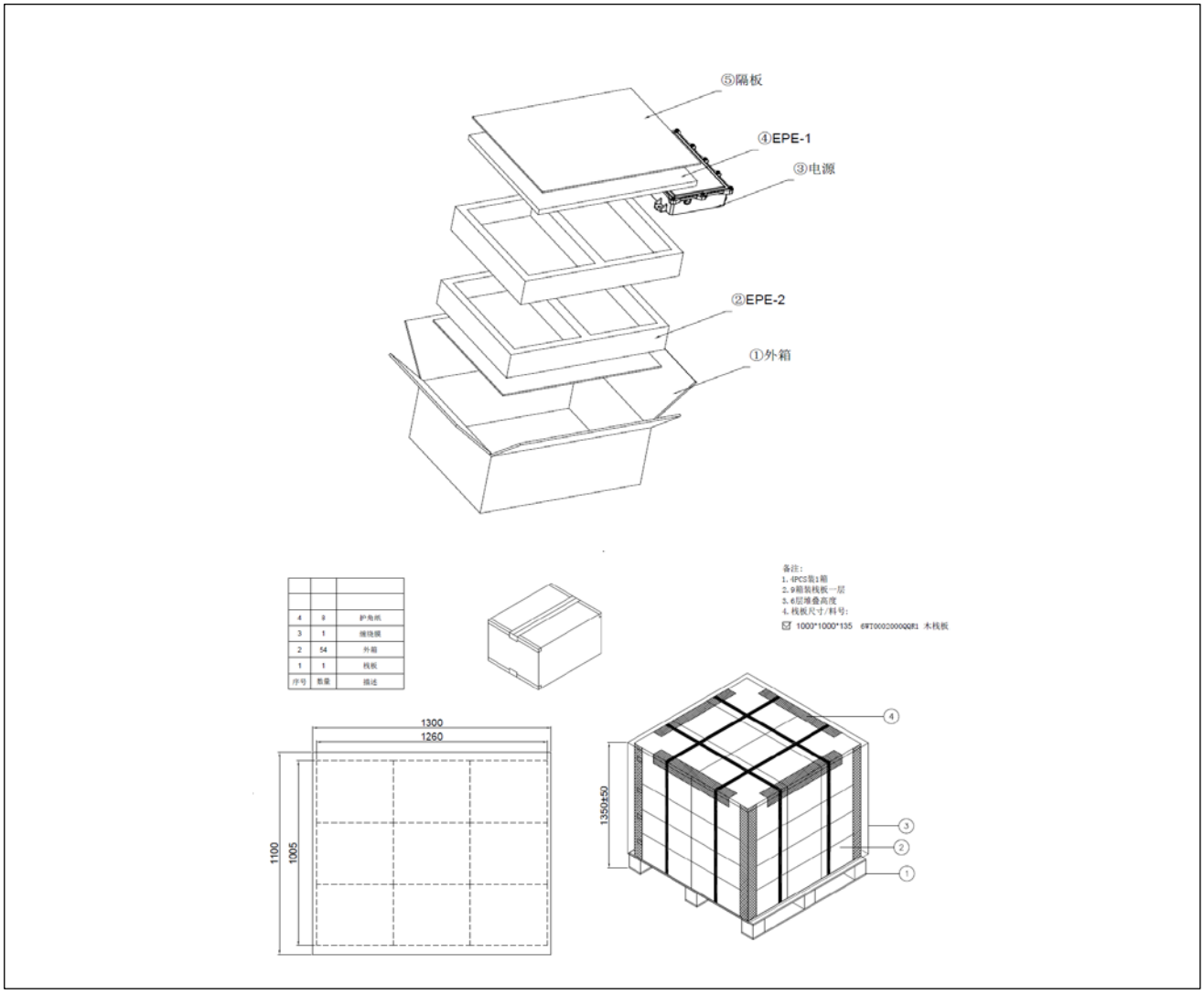
Package

Carton	L×W×H =420mm×335mm×165mm
EPE	2pcs/carton
Shield Board	2pcs/carton
DC/DC power supply	4pcs/carton
Net weight	3.85kg/pcs
Gross weight	16kg/carton



Revision History

Change Date	Rev.	Description of Change		
		Section	From	To
2023.2.13	V0.1	First released.		
2023.6.29	V1.0	Protection functions	Removed restarting in 15s after fault shutdown	
2023.7.21	V1.2	Output under-voltage protection	Modified output under-voltage point from ≤5V to ≤20V	

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