

This specification describes the performance characteristic of a wide input range (490Vdc~900Vdc) 4200W power supply module with +50.4V/84A DC output.



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Features

- Electric vehicle on board application
- 490~900Vdc wide input range
- +50.4V/84A 4200W output power with high efficiency
- -40~85°C wide operation temperature range

 SMPS Adaptor (Wall mount)

 SMPS Adaptor (Desk-top)

 Open Frame

 SMPS Unit (With Case)

 Others

Applications

Automotive DC/DC power supply

Industrial DC/DC power supply

Model List

PLD4200-EVDYL02(A)-48

Input Characteristics

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

Parameter	Min.	Typ.	Max.	Notes
Input Voltage	490 Vac	650 Vac	900 Vac	
Input Current	-	-	10A RMS	Max continuous input current: 10A RMS
Inrush Current	-	-	-	No Damage @900Vdc input
Standby Current	-	-	1mA	≤ 1mA @ 900Vdc input & standby mode
Peak Efficiency		96%	-	96% @ 650Vdc input & ≥50% Load

Output Characteristics

Output Load Ratings

Output	Min.	Typ.	Max.
Output voltage	35Vdc	50.4Vdc	52Vdc
Output Current Regulation Range	8A		84A

Recovery time	≤1000 ms	Current overshoot of no more than 10% after receiving a current adjustment command
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Over/undershoot	<10%	
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Low Voltage Signals

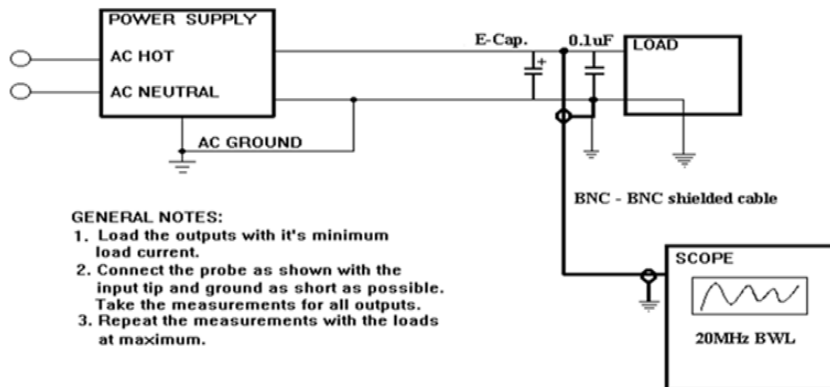
Parameters	Data	Notes
Auxiliary input voltage	9-18V	
Sleep static current	<3mA	MCU with CAN wake-up function, quiescent current to be reached during
Wake-up input voltage	6-18V	
Auxiliary or Wake-up input withstand	-40 to +40V	
Maximum continuous current	2A	Use of auxiliary source input as power supply
Wake-up protection	OCP、SCP	

Ripple & Noise

Output condition	+50.4V / 84A (Full load)
Maximum ripple/noise	500mVp-p *
Current Ripple	±10% I _{o.} , with Battery load at 25°C, @ 650Vdc input ,

* measured at the PCB output of power supply, measuring setup described as bellow.

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.



Other parameters

parameters	Notes	
Turn-on Delay Time	≤3s after the PSON signal is applied	
Turn-on Overshoot	≤5% @650Vdc input & ≥ 50% Load	
Dynamic Load Response	Recovery time	≤10 ms
	Over/undershoot	±1V
Input Voltage Regulation	≤ ±1% @ half Load, 490~900Vdc input	
Load Regulation	≤ ±1% @ 650Vdc input, all load range	

* 50.4V output, Rated output
*4700uF capacitance,
25%-50%-100% load step

Protection Functions

All protections are detected by MCU and can be reset by wakeup signal.

parameters	Notes
Input Over Voltage Protection	Turn off threshold: 930±15Vdc Recovery threshold: 900±15Vdc
Input Under Voltage Protection	Turn off threshold: 470±20Vdc Recovery threshold: 490±20Vdc
Output Over Voltage Protection	Turn off threshold: 60±3Vdc Latch off, when the fault is removed, restart wake-up signal to recover normal operations.
Output Under Voltage Protection	Turn off threshold: ≤30 ±2V, ≥1sec
Short Circuit Protection	When output is being shorted, no components shall be damaged. When the fault is removed, restart wake-up signal to recover normal operations.
Over Temperature Protection	Tbase turn off threshold: ≥70±5°C Tbase Recovery: 50±5°C
Reverse Input Polarity Protection	No output, no damage.
HVIL Protection	When HVIL fault is detected, shut off the output. When the fault is removed, restart wake-up signal to recover normal
Fault Log	Last 5 faults can be recorded on the EEPROM.

Communication Protocol

The DC/DC is designed with CAN communication, and please contact the manufacturer for detailed Protocols.

Environmental Requirements

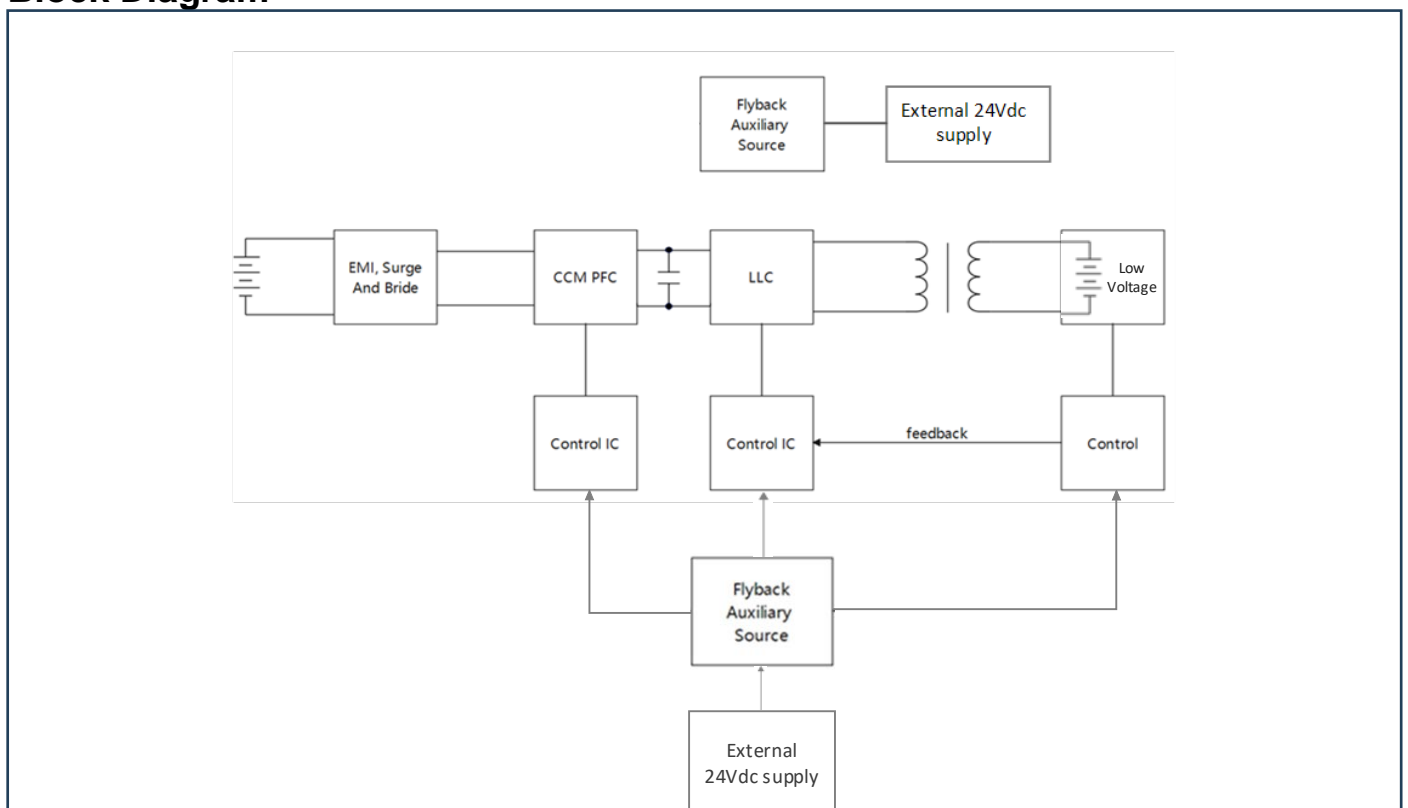
Parameter	Notes		
Operating Temperature	Ambient temperature	-40°C to +85°C	Coolant temperature 55°C, ring temperature 85°C, full load operation; after coolant temperature greater than 55°C, ring temperature 85°C, derating allowed.
	Base temperature	65°C max	
Storage Ambient temperature	-40°C to +95°C		
Humidity	5%-90%RH, non-condensing		
Altitude	0 to 2000m		
Air Pressure	70~106 kPa		
Waterproof Grade	IP67 (high voltage input connector satisfy IP69K)		
Vibration	ISO 16750-3 Sec. 4.1.2.4		
Shock	Acceleration peak: 30G	ISO 16750-3 Sec. 4.2.2 and IEC 60068-2-27	
	Duration: 11 milliseconds		
	Pulse shape: half-sine		
	Number of impacts: 10 shocks		

	per direction, 3 axis	
Odor	No odor or health-harming gas release.	
Environment protective requirements	Meeting 2002/95/EC (ROHS 1): no cadmium, hydride and fluoride; The polymers must be marked; No organic compounds; No asbestos; The package should be recycled.	

Safety & EMC Compliance

Hipot	Value	Notes
In-out	4250Vdc	4250Vdc, 1min, leakage < 3mA No arcing
In-case	3000Vdc	3000Vdc, 1min, leakage < 3mA No arcing
Out-case	750Vdc	750Vdc, 1min, leakage < 3mA No arcing
Insulation Resistance	Value	Notes
In-case	$\geq 20M\Omega @ 500Vdc$	500Vdc & normal air pressure, 90% Humidity
EMC	Notes	
ESD	$\pm 15kV$ air, $\pm 8kV$ contact for case and input, output, signal ports.	

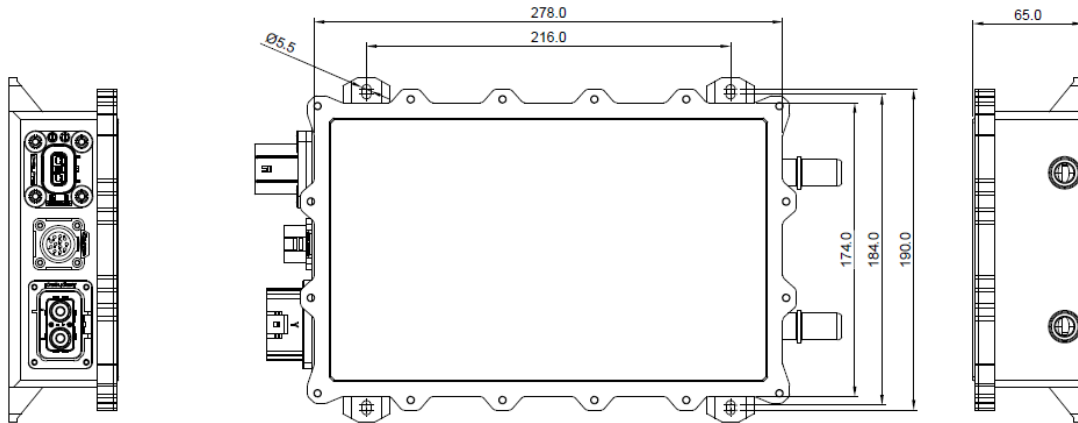
Block Diagram



Mechanical Specification

Dimension and Outline Drawing

Dimension: 278L*174W*65H mm



Input Voltage port

Input Port: APTIV: 35149836

Function	Pin No.	Signal	Note
VIN	1	VIN-	Negative Input Voltage
	2	VIN+	Positive Input Voltage
HVIL	3	HVIL	High voltage interlock signals
	4	HVIL	High voltage interlock signals

Aux power & Signal Ports

Signal Port: .cnlinko: LP-20-J12SX-01-001 Female base (Flange)

Function	Pin No.	Signal	Note
AUX In	1	12V	Aux. Power Input
	2	12V_GND	Aux. Power Input
	3	Wake-up	Wake-up
CAN	4	CAN-L	CAN L signal / CAN L
	5	CAN-H	CAN H signal / CAN H
Wake-up	7	Wake-up Output	The wake up Input
	8	Wake-up GND	The wake up GND
	9	Wake-up Input	The wake up Input

Output Voltage Port

Output Port: Amphenol: C40-738985-2YP3

Function	Pin No.	Signal	Note
VOUT	1	Vout+	Positive Output Voltage
	2	Vout-	Negative Output Voltage

*The instructions will be shipped with the goods.

Revision History

This section contains the release history of this document:

Change Date	Rev.	Description of Change		
		Item	From	To
2022.12.2	V0.1	First released.		
2022.12.16	V0.2	Add in input and output terminal type and signal definition information		