

This product is an AC-DC power supply with lead free. It provides 60W maximum output power with 24V output voltage.



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## Features

AC input range 90~264V

High reliability for industrial applications

SMPS Adaptor (Wall mount)

SMPS Adaptor (Desk-top)

Open Frame

SMPS Unit (With Case)

Others

## Applications

Industrial Adaptors

## Model List

PLD060-FM24

## Input Characteristics

Parameter	Min.	Typ.	Max.	Notes
Input Voltage	90 Vac	100~240Vac	264 Vac	single phase AC input
Input Frequency	47 Hz	50/60Hz	63 Hz	
Input Current	-	-	1.5A	@ 90 Vac input & Full load
AC Line Inrush (Cold Start)	No component was damaged and input fuse shall not blow when adaptor is powered on.			

## Efficiency (Warm Up)

CoC V5 Level VI Tier2

Average efficiency@ 115Vac/230Vac. Test points are at 25%, 50%, 75% and 100% of full load respectively.

AC input	DC output	Requirement	Spec (on board)
115V/60Hz & 230V/50Hz	24V	Average	>89.00%

## Output Characteristics

### Steady state Output Characteristics

Output	Rated Load Condition		Output Range (230Vac@25%load)	Ripple & Noise <sup>1</sup>
	Min. Load	Max. Load		
+24V	0A	2.5A	23.76~24.24V	150mVp-p

Note1: ripple and noise is measured at the end of DC Cable, by an oscilloscope using 20MHz bandwidth and the output is paralleled with a 0.1uF ceramic capacitor and a 47uF electrolytic capacitor. The test condition is under 90Vac~264Vac input voltage, from no load to full load.

## Output Accuracy

Items	Accuracy	Notes
Voltage	±1.0%	Including set up tolerance, line regulation and load regulation
Line Regulation	±0.5%	
Load Regulation	±1.0%	

## Turn-on Delay Time

3.0s max. @ 90Vac/264Vac, No Load/ Full Load, 25°C

## Turn-on Delay Time with Capacitor Load

3.0s max. @ 90Vac/264Vac, No Load/ Full Load, 25°C

(w/CAP. Load Turn On add 470uF and 0.01uF and 10uF capacitor)

## Hold-up time

10ms min. @ 100Vac, turn off & half load

## Rise time

AC input	Output voltage	Load	Spec
90Vac/264Vac	24V	0A, 2.5A	10~275mS

## Output Overshoot/Undershoot

AC input	Output voltage	Load	Spec
90Vac/264Vac	24V	0A, 2.5A	Overshoot: 25.2V

\*when the power is on or off.

## Hot Plugging

The output voltage during the following transient load condition shall not shut down

@90Vac/115Vac/230Vac/264Vac, Full Load, 25°C

## Protection Functions

### Over Voltage Protection

The power supply should shut down for any cause of over voltage condition before any voltage exceeds its limits below.

Nominal output voltage(V)	Over voltage (max)
+24V	31.2V

The power supply will auto-restart if the fault is removed.

### Over Current Protection

The power supply should provide over current protection on output. The power supply shall be auto-recovery when the fault condition is removed. Maximum current inception point of output shall be limited to the following values:

Nominal output voltage (V)	Current limit
+24V	3.2 A±10%

### Over Temperature Protection

When the power supply enters overheating protection condition, no components damage, the power supply shall be auto-recovery when the fault condition is removed.

### Short Circuit Protection

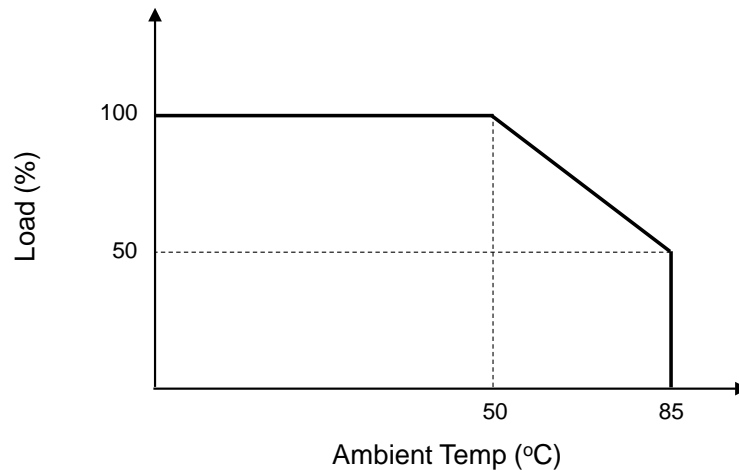
When output is being shorted, the power supply will enter hiccup mode, and shall be auto-recovery when the fault condition is removed.

## Environmental Requirements

The power supply shall operate normally and sustain no damage as a result of the environmental conditions listed in this section

Parameter	Notes
Operating Temperature and Relative Humidity	-20 to +85°C (de-rating above 50°C) 5%RH to 95%RH
Storage Temperature and Relative Humidity	-40 °C to +85 °C 5%RH to 95%RH
Altitude	The power Supply operates up to an altitude of 5000 meter above sea level.
MTBF	The MTBF shall be at least 100,000hours at 25 °C, with 90% confidence.
Burn-in	The power supply samples shall run a minimum of 4 Hours burn-in test at 35 °C under full load condition.
Vibration	10 to 300Hz sweep at a constant acceleration of 1.0G (Breadth: 3.5mm) for 1 hour for each of the perpendicular axes X, Y, Z.

De-rating curve



## Safety & EMC Compliance

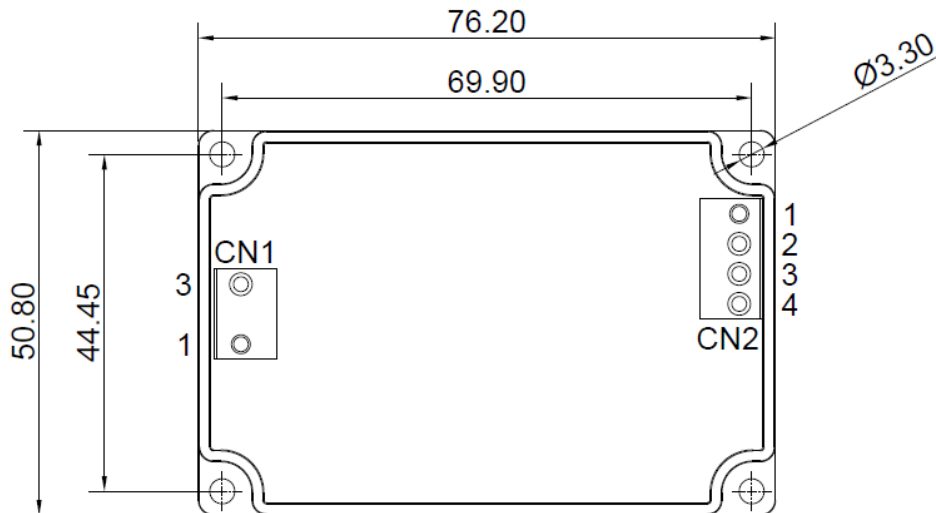
EMI/EMC Requirements	Notes
EMI:	Comply with EN55022: 1998, +A1: 2000, +A2: 2003, Class B
	CISPR 22: 2003, Class B
IMMUNITY:	Notes
EN61000-3-2	Harmonic current emission
EN61000-3-3	Voltage fluctuations and flicker
EN61000-4-2	ESD 15kV air discharge, 8kV contact discharge
EN61000-4-3	Radio-frequency Electromagnetic Field Susceptibility Test-Rs
EN61000-4-4	Electrical Fast Transient/ burst-EFT 1kV
EN61000-4-5	Surge Immunity Test, AC power line: line to line 1kV
EN61000-4-6	Conducted Radio Frequency Disturbance Test-Cs
EN61000-4-8	Power Frequency Magnetic Field Test
EN61000-4-11	Voltage Dips
Safety	Notes
Dielectric Strength (Hi-pot)	Primary to Secondary: 3750Vac / 10mA Max / 60seconds (3 seconds for production, Turn off ARC)
Leakage Current	250uA Max. @ 264Vac / 50Hz & 240Vac/63Hz
Insulation Resistance	100MΩ min. at 500Vdc primary to secondary test voltage.

## Mechanical Info

### Dimensions

The outside dimension, not including mounting brackets, handles and output connector, shall be 76.2x50.8x28mm or 3x2x1.1 inches

### Outline Drawing



## Connectors

AC Input Connector (CN1): JST B3P-VH or equivalent

Pin 1	Pin 2	Pin 3
AC-L	No Pin	AC-N

DC Output Connector (CN2): JST B4P-VH or equivalent

Pin 1&2	Pin 3&4
+V	-V

## Revision History

Date	Revision	Remarks		
		Section	From	To
2021-07-15	V1.0	First Released		
2021-08-27	V1.1	Output Range	22.8~25.2V	23.76~24.24
2021-08-27		Hold-up time	5mS min. @ 100Vac, turn off & full load	10mS min. @ 100Vac, turn off & half load

2021-08-29		Standby Power Dissipation		delete
2021-08-29		Output Overshoot/Undershoot	Spec: 24V&5%	Overshoot: 25.2V Undershoot: 22.8V
2022-01-18		Over Current Protection	Current limit: 3.5A	Current limit: 3.2 A±10%
2022-01-18		Dielectric Strength (Hi-pot)	Primary to Secondary: 4242Vdc, 50μA Max. /60 seconds (3 seconds for production, Turn off ARC)	Primary to Secondary: 3750Vac / 10mAMax / 60seconds (3 seconds for production, Turn off ARC)
2022-03-02	V1.2	Outline Drawing		replace
2022-07-25	V1.3	Steady state Output Characteristics	Output Range 23.76~24.24V	Output Range (230Vac@25%load) 23.76~24.24V