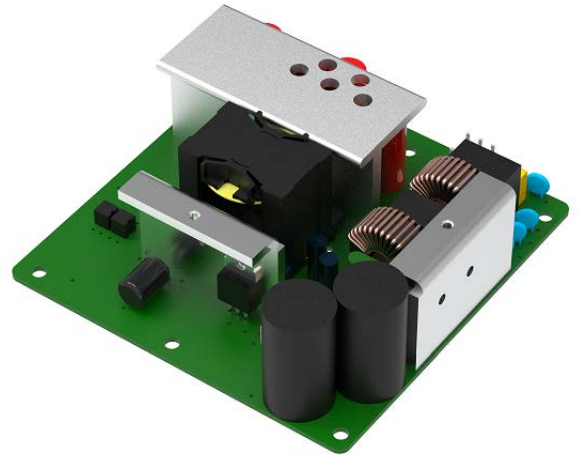


The PLD080-2DAL003-24 is an open frame 80 Watt AC/DC converter with 12VDC @ 2.67A and 24VDC @ 2A outputs with an input range of 100 to 130 VAC.



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## Features

- 3000 Vac Isolation
- Open frame product
- MTBF >550,000 Hours
- RoHS Compliant
- Designed to meet EN55022 B & FCC Class B
- Designed to meet UL 60950-1
- 3 year warranty

## Applications

Industrial Controller Power Supply

## Model List

PLD080-2DAL003-24

## Input Specifications

Parameter	Min.	Typ.	Max.	Units
Input Voltage Range	100		130	Vac
Input Frequency	57		63	kHz
Input Over-voltage Protection			172.5	Vac
Input Current Steady State (130 Vac)		2		A
Inrush Current			35	A
Input Fuse	T5A/250Vac			

## Output Specifications

Parameters	Min	Typ.	Max	Units
Output Voltage		12.0		VDC
Output Current	40		2670	mA
Output Current ( 70°C)	40		2000	mA
Total Voltage Accuracy		5		%
Cross Regulation	11.4		12.6	VDC
Load Regulation		2		%
Line Regulation Vin=Min. to Max.		2		%
Ripple & Noise (20MHz)			120	mV P-P
Load Transient Recovery Time 50%-100% step change 100%-50% step change			20	mSec
Voltage change due to load transient			1	VDC

Start-Up Time		1		Sec
Rise Time (10%-90%)			50	mSec
Hold-Up Time (Full Load)	20			mSec
Output over Current			150	%
Short Circuit Protection < 5 minutes no damage	Automatic recovery			
Parameters	Min	Typ.	Max	Units
Output Voltage		24		VDC
Output Current	0		2000	mA
Output Current ( 70°C)	0		1500	mA
Total Voltage Accuracy		5		%
Cross Regulation	22.8		26.2	VDC
Load Regulation		2		%
Line Regulation Vin=Min. to Max.		2		%
Ripple & Noise (20MHz)			240	mV P-P
Load Transient Recovery Time 50%-100% step change 100%-50% step change			20	mSec
Voltage change due to load transient			1	VDC
Start-Up Time		1		Sec
Rise Time (10%-90%)			50	mSec
Hold-Up Time (Full Load)	20			mSec
Output over Current Test one output at a time			150	%
Short Circuit Protection < 5 minutes no damage	Automatic recovery			

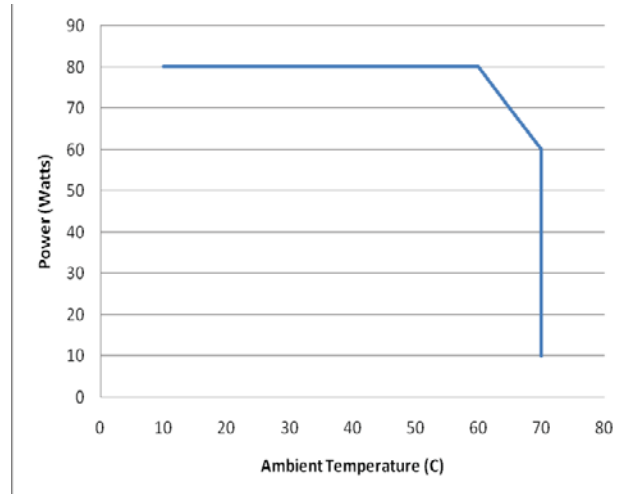
## General Specifications

Parameters	Min	Typ.	Max	Units
Efficiency @ max load	80			%
Power Factor	0.4			
Capacitive Load			1000	µF
Isolation Voltage Input to Output 3 sec @ <10mA	3000			Vac
Isolation Voltage Input to Chassis 3 sec @ <10mA	1500			Vac
Leakage Current to Safety Ground			300	uA
Grounding	At least one mounting hole shall provide an electrical connection to chassis ground			
Operating Temperature (Ambient)	-20		+70	°C
Storage Temperature	-50		+125	°C
Humidity	5		90	%
MTBF	550,000			Hours
Cooling	Free Air Convection			
Shock & Vibration	ISTA 3A Shipping Vibration Test			
Agency Approvals	Designed to meet UL 60950-1			

## Notes

1. Specifications typical at  $T_a=+25^{\circ}\text{C}$ , 115VAC, 60Hz input voltage, rated output current unless otherwise noted.
2. Ripple & Noise measured with a 0.1 $\mu\text{F}$  ceramic and 22  $\mu\text{F}$  electrolytic in parallel with output, 20MHz bandwidth.
3. Long term (> 5 minute) short circuit operation may cause damage to the unit.

## De-Rating Curve

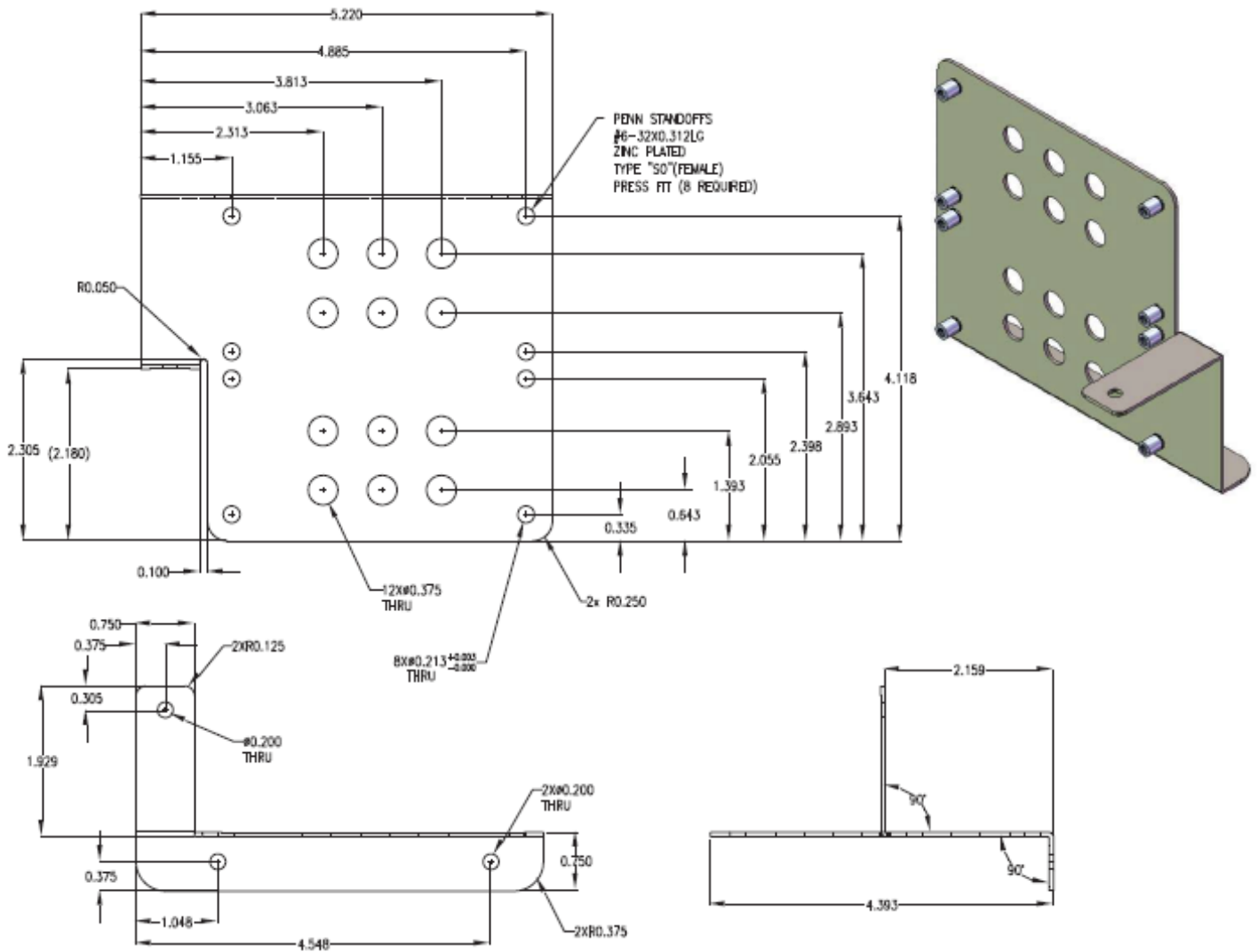


Minimum Thermal Shutdown Temperature: 90°C

## Mechanical Drawings:

PCB Mounting Bracket provided as a reference for PCB design.

PCB Bracket is not included with the PLD080-2DAL003-24.



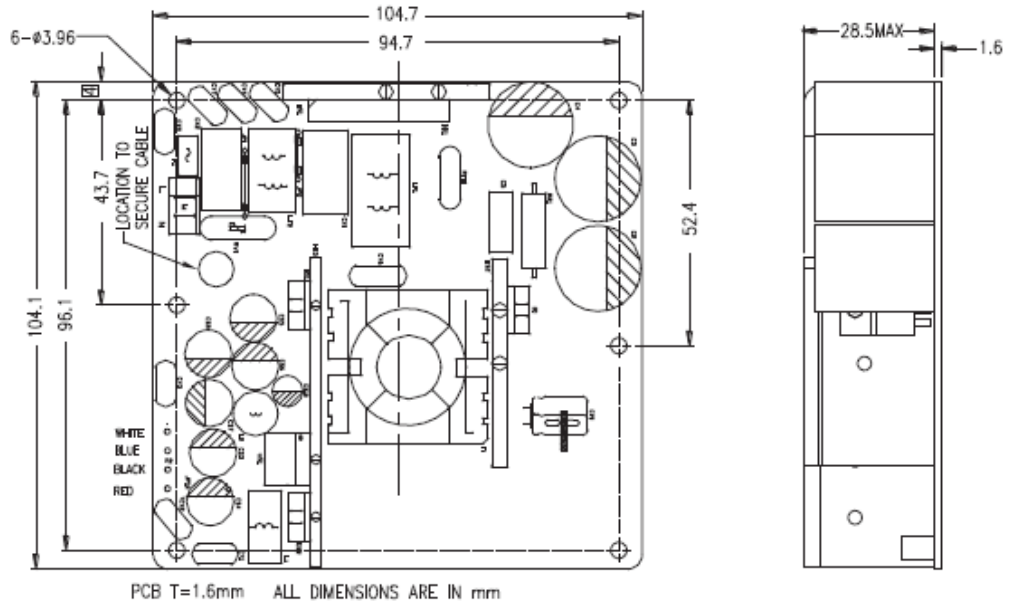
**Mechanical Tolerances  
Unless noted**

**X.XXX :±0.020 inches**

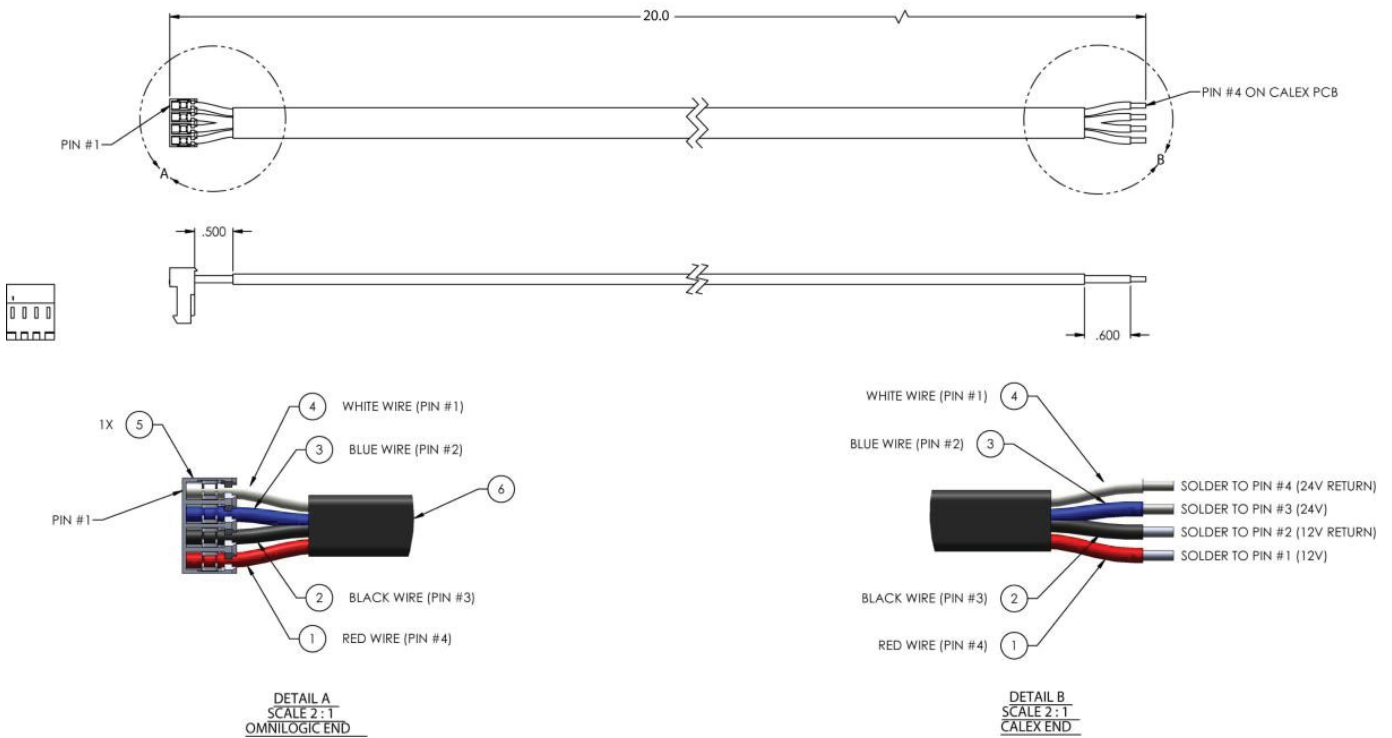
PCB shall fit within 4.3"x 4.3"x 1.25" envelope

Each mounting hole will have a keep out area of 0.4 " in diameter

7mm diameter hole for securing cable assembly (Not used).

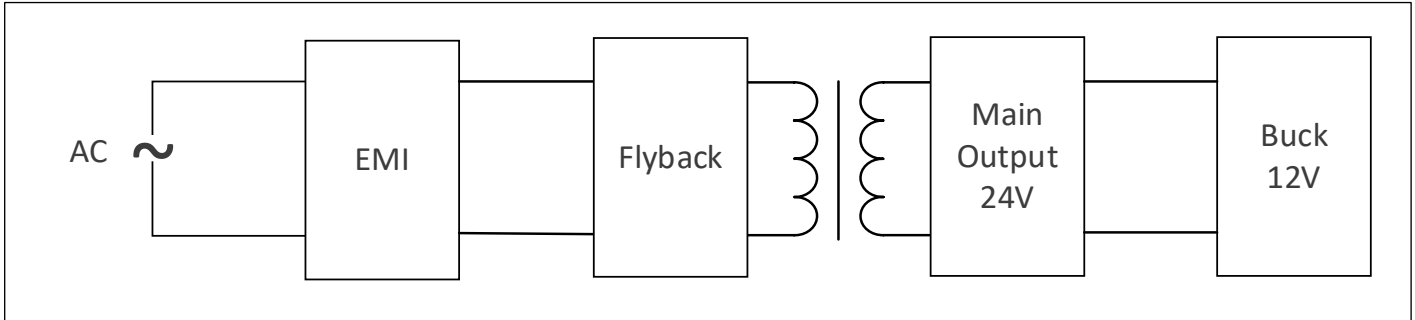


Mechanical Tolerances Unless noted X.X ±0.125 mm



PIN	Color	Output
1	White	24V Rtn
2	Blue	24V
3	Black	12V Rtn
4	Red	12V

## Block Diagram



## Qualification Testing

Unless otherwise specified, the DUT operation shall be verified after test exposure by measuring the fully loaded outputs at -20C, 25C, and 70C.

### Test 1

Test	# of Samples	Description	Additional Pass Criteria
400 hour thermal cycling; unpowered	3	100 thermal cycles (neg 20C for one hour, one hour transition to +70C, +70C for one hour, one hour transition to neg. 20C)	
100 hour low temperature endurance; full electrical load	Same samples as above	-40C for 100 hours – full electrical load applied for duration of test	Power supply stays in spec during exposure.
1000 hour high temperature endurance; full electrical load		95C for 1000 hours – full electrical load (60W) applied for duration of test; power supply outputs are checked one time per week.	See Pass Criteria Below
No catastrophic failure while operated above the specified operating temperature. Returns to proper operation when returned to specified temperature range.			

### Test 2

Test	# of Samples	Description	Additional Pass Criteria
ESD; unpowered EN61000-4-2	3	±4kV contact discharge to connector i/o	
20 hour thermal cycling; unpowered	Same samples as above	5 thermal cycles (neg 20C for one hour, one hour transition to +70C, +70C for one hour, one hour transition to neg. 20C)	

### Test 3

Test	# of Samples	Description	Additional Pass Criteria
Immunity to dips, short interruptions, and voltage variations EN61000-4-11	3	Expose fully-loaded supply to Class 2 voltage dips and short interruptions; test temperature is 25C  (Note: voltage variation is not tested)	Unit shall automatically recover without user intervention

### Test 4

Test	# of Samples	Description	Additional Pass Criteria
Overload	3	12V output is exposed to 50% rated load and 24V output is exposed to 150% rated load.  24V output is exposed to 50% rated load and 12V output is exposed to 150% rated load. Test temperature is 25C	
Overcurrent Withstand	3 See Note	Test one output at a time. Apply overcurrent of 150% for 1 hour	Output not required to maintain regulation. Recovery upon removal of the excess load.

Note: The overcurrent withstand test can use different samples than those used for the overload test.

### Test 5

Test	# of Samples	Description	Additional Pass Criteria
Radiated Emissions	3	Measure radiated emissions per EMC - FCC Part 15, class B, EN550022, class B. Harnessing to the input and output shall be 1m in length. The output harness shall be terminated in the full load	Emissions shall be 6dB below the limit
Conducted Emissions	Same samples as above	Measure conducted emissions per EMC - FCC Part 15, class B, EN550022, class B. Harnessing to the output shall be 0.3m in length. The output harness shall be terminated in the full load	Emissions shall be 6dB below the limit
In-Rush Current	Same samples as above	Measure inrush current fully loaded. Input AC voltage shall be turned on at peak voltage.	Inrush is below the limit specified above
Load Transients	Same samples as above	Apply a 50%-100% step change in 12V output load. Apply a 100%-50% step change in 12V output load. Apply a 50%-100% step change in 24V output load. Apply a 100%-50% step change in 24V output load.	



**Test 6**

Test	# of Samples	Description	Additional Pass Criteria
Reliability of electrolytic capacitors	3	Using test data (core temperature measurements, current ripple measurements, etc), demonstrate reliability of electrolytic capacitors. Testing and calculation shall be based on an average ambient temperature of 45C for 3 years.	Data and calculations shall support MTBF requirement as shown above.

**Revision History**

Date	Revision	Remarks		
		Section	From	To
2020-09-11	V1.0	First Released		