



# P-DUKE POWER

## TAD180 Series

2 X 3 Inch AC-DC POWER SUPPLIES  
Up to 180 Watts

**3**  
YEARS  
WARRANTY

ROHS  
COMPLIANT

REACH  
COMPLIANT

+85°C  
-40°C  
AMBIENT TEMP.



Automation



Datacom



IPC



Industry



Measurement



Telecom



Automobile



Boat



Charger



Medical



PV



Railway

UL US CB CE UK CA



**3000 VAC**  
Reinforced  
Insulation

**ADJ.**  
Output  
Voltage

Internal  
EN55032  
Class **B**  
Filter

**LOW**  
Leakage  
Current

**LOW**  
Standby  
Power

Operating  
Altitude  
**5000**  
meter

Protection  
Class I  
Class II

**OCP**

**OVP**

**SCP**

**OTP**

**OVCIII**

### PART NUMBER STRUCTURE

TAD180

U

S

12

A

- M



Series Name

Universal  
Input  
(VAC)

Output  
Quantity

Output  
Voltage  
(VDC)

Protection  
Type

Package  
Options

Application  
Options

85~264

Single

12:12V  
15:15V  
18:18V  
24:24V  
28:28V  
36:36V  
48:48V  
53:53V

A: CLASS I  
B: CLASS II

Open type  
 E1: Enclosed type  
 D1: Din rail type

AC Input  
 C: OVC III (2000m)  
 G: DC Input

**TECHNICAL SPECIFICATION** All specifications are typical at 230VAC input, full load and 25°C unless otherwise noted

Model Number	Input Range	Output Voltage	Output Current		Input Power @ No Load	Efficiency	Maximum Capacitor Load
			Natural Convection	Forced Air Cooling With 10 CFM			
	VAC	VDC	A	A	W	%	µF
TAD180US12A-M	85 ~ 264	12	12.5	15	0.15	92	10000
TAD180US15A-M	85 ~ 264	15	10	12	0.15	92	6800
TAD180US18A-M	85 ~ 264	18	8.34	10	0.15	92	4700
TAD180US24A-M	85 ~ 264	24	6.25	7.5	0.15	94	2700
TAD180US28A-M	85 ~ 264	28	5.36	6.43	0.15	93	1800
TAD180US36A-M	85 ~ 264	36	4.17	5	0.15	93	1200
TAD180US48A-M	85 ~ 264	48	3.13	3.75	0.15	93	680
TAD180US53A-M	85 ~ 264	53	2.83	3.40	0.15	93	560

**INPUT SPECIFICATIONS**

Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating input voltage range	AC input	85		264	VAC
	DC input	120		370	VDC
Input frequency	AC input	47		63	Hz
Input current	100VAC and Full Load			3	A
	240VAC and Full Load			1.5	A
No load input power	230VAC		0.15		Watts
Leakage current	264VAC			300	µA
Power factor		0.95			
Start up time				1500	ms
Rise time			15		ms
Hold up time	115VAC and 150W	10			ms
Input inrush current	230VAC			100	A
Input protection	Internal fuse			T4.0A/250VAC	

**OUTPUT SPECIFICATIONS**

Parameter	Conditions	Min.	Typ.	Max.	Unit
Output power	Forced air cooling with 10CFM			180	Watts
	Natural convection			150	Watts
Output peak power	Peak power			220	Watts
	Peak power time		5		s
	Peak power duty		20		%
	Average operation power ( % of Full Load)		55		%
Initial set voltage accuracy	230VAC and Full Load	-1.0		+1.0	%
Line regulation	Low Line to High Line at Full Load	-0.2		+0.2	%
Load regulation	No Load to Full Load	-0.5		+0.5	%
	10% Load to 90% Load	-0.4		+0.4	%
Voltage adjustability		-8		+8	%
Minimum load			0		%
Ripple and noise	Measured by 20MHz bandwidth				
	With a 1µF/25V 1206 X7R MLCC	12Vout, 15Vout, 18Vout	120		mVp-p
	With a 1µF/50V 1206 X7R MLCC	24Vout, 28Vout, 36Vout	120		mVp-p
	With a 0.1µF/100V 1206 X7R MLCC	48Vout, 53Vout	250		mVp-p
Temperature coefficient		-0.02		+0.02	%/°C
Transient response	Load step from 100 ~ 75% change at 2.5A/µs	Peak deviation	3		% Vout
		Recovery time	600		µs
Over voltage protection	% of Vout(nom); Latch mode	115		135	%
Over load protection	% of Iout rated; Hiccup mode		150		%
Short circuit protection					Continuous, automatics recovery

**GENERAL SPECIFICATIONS**

Parameter	Conditions	Min.	Typ.	Max.	Unit
Isolation voltage	1 minute (Reinforced insulation) Input to Output Input (Output) to F.G.	3000 2000			VAC
Isolation resistance	500VDC	0.1			GΩ
Switching frequency	230VAC, Full load		170		kHz
Safety approvals	IEC/ EN/ UL 62368-1			UL:E193009 CB:UL(Demko)	
Weight	Open type Enclosed type Din rail type			162g (5.70oz) 218g (7.70oz) 240g (8.47oz)	
MTBF	MIL-HDBK-217F Ta=25°C, Full load			1.145 x 10 <sup>6</sup>	hrs

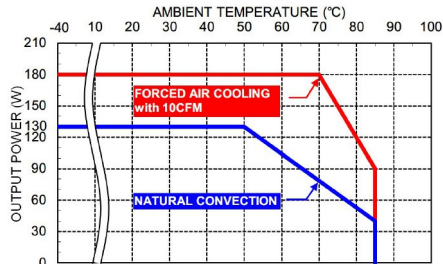
**ENVIRONMENTAL SPECIFICATIONS**

Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating ambient temperature	With derating	-40		+85	°C
Storage temperature range		-40		+85	°C
Over temperature protection	Internal thermistor; Hiccup mode		125		°C
Operating altitude				5000	m
Thermal shock				MIL-STD-810F	
Shock				IEC60068-2-27	
Vibration				IEC60068-2-6	
Relative humidity	Non-condensing			5% to 95%	RH

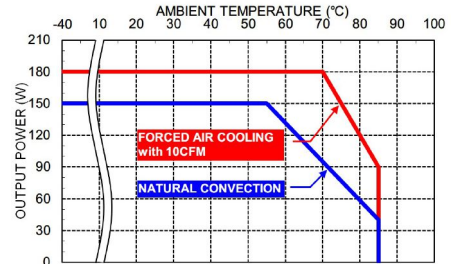
**EMC SPECIFICATIONS**

Parameter	Conditions	Level	
EMI	EN55032 and FCC Part 15	Conducted	Class B
		Radiated	Class A
Harmonic currents	EN61000-3-2 Full Load		Class D
Voltage flicker	EN61000-3-3		
EMS	EN55024		
ESD	EN61000-4-2		Perf. Criteria A
Radiated immunity	EN61000-4-3 20 V/m		Perf. Criteria A
Fast transient	EN61000-4-4 ± 2kV		Perf. Criteria A
Surge	EN61000-4-5 DM ± 1kV and CM ± 2kV		Perf. Criteria A
Conducted immunity	EN61000-4-6 20 Vr.m.s		Perf. Criteria A
Power frequency magnetic field	EN61000-4-8 30A/m		Perf. Criteria A
Dip and interruptions	EN61000-4-11		

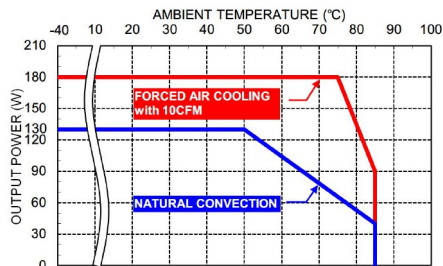
### CHARACTERISTIC CURVE



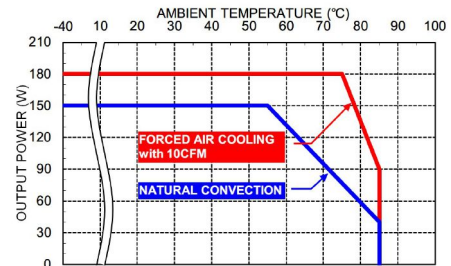
Derating Curve vs. Ambient Temperature  
Vin=115VAC Open type



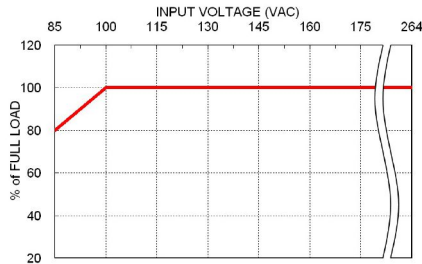
Derating Curve vs. Ambient Temperature  
Vin=230VAC Open type



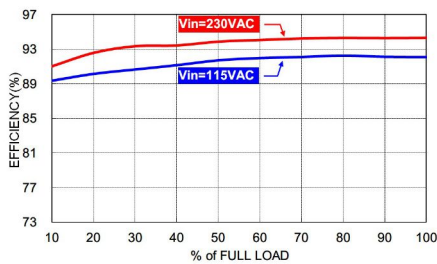
Derating Curve vs. Ambient Temperature  
Vin=115VAC Enclosed type / Din rail type



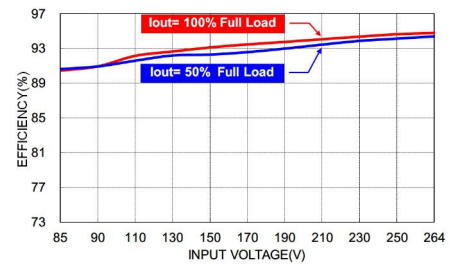
Derating Curve vs. Ambient Temperature  
Vin=230VAC Enclosed type / Din rail type



Derating Curve vs. Input Voltage  
TAD180



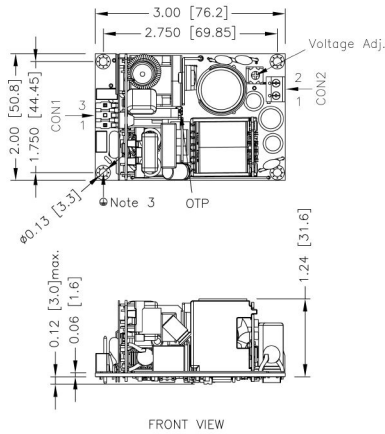
Efficiency vs. Output Load  
TAD180US24 with Forced air cooling



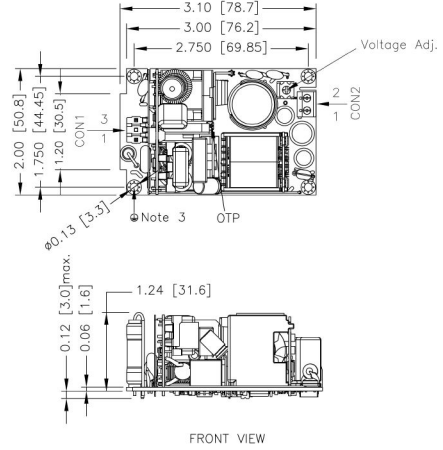
Efficiency vs. Input Voltage  
TAD180US24 with Forced air cooling

**MECHANICAL DRAWING**

Open type- AC Input



Open type -DC Input



1. All dimensions in inch [mm]  
Tolerance : x.xx±0.02 [x.x±0.5]  
x.xxx±0.01 [x.xx±0.25]

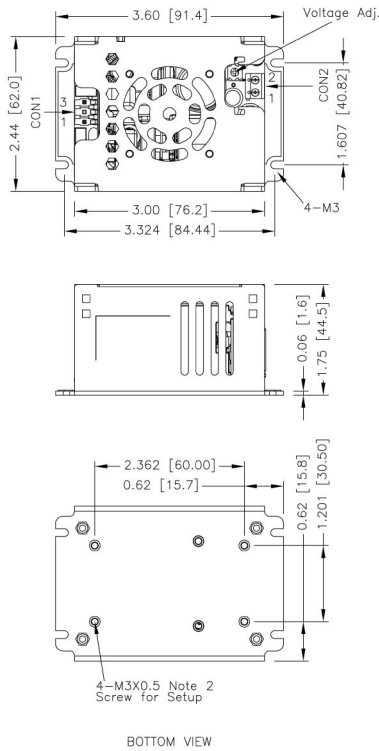
- 2.The CON2 locked torque: MAX 2.5Kgf.cm/0.25N.m
- 3.The screws holes can be considered as PE connection for CLASS I application.

1. All dimensions in inch [mm]  
Tolerance : x.xx±0.02 [x.x±0.5]  
x.xxx±0.01 [x.xx±0.25]

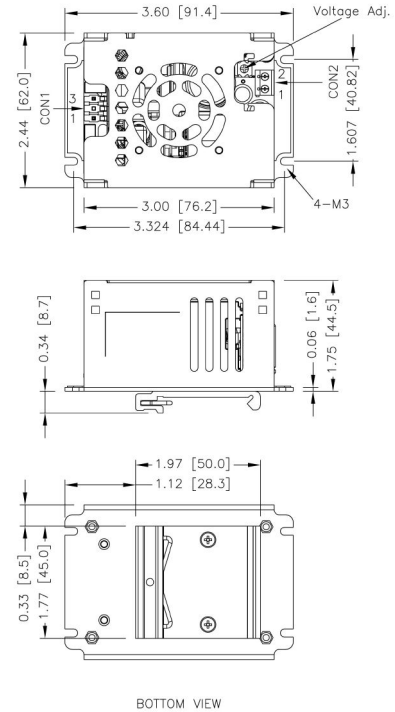
- 2.The CON2 locked torque: MAX 2.5Kgf.cm/0.25N.m
- 3.The screws holes can be considered as PE connection for CLASS I application.

## MECHANICAL DRAWING

### Enclosed type



### Din rail type



- All dimensions in inch [mm]  
Tolerance : x.xx±0.02 [x.x±0.5]  
x.xxx±0.01 [x.xx±0.25]
- The screw locked torque: MAX 5Kgf.cm/0.49N.m
- The CON2 locked torque: MAX 2.5Kgf.cm/0.25N.m

- All dimensions in inch [mm]  
Tolerance : x.xx±0.02 [x.x±0.5]  
x.xxx±0.01 [x.xx±0.25]
- The CON2 locked torque: MAX 2.5Kgf.cm/0.25N.m

## CONNECTOR CONNECTIONS

### CONNECTORS CONNECTIONS

#### CON1 – Input Connector

Pin Number	AC Input	DC Input
Pin 3	Line	DC+
Pin 1	Neutral	DC-

Mates with  
Molex housing : **09-50-8031**  
Molex crimp terminals : **2478,6838,45570**

#### CON2 – Output Connector

Pin 1	+Vout
Pin 2	-Vout

Mates with  
Screw locked torque MAX 2.5Kgf.cm/0.25N.m  
Wire dimension range 24 ~ 14AWG