



P-DUKE POWER

TAD65 Single Series

2 X 3 Inch AC-DC POWER SUPPLIES
Up to 65 Watts

3
YEARS
WARRANTY

ROHS
COMPLIANT

REACH
COMPLIANT

+85°C
-40°C
AMBIENT TEMP.



Automation



Datacom



IPC



Industry



Measurement



Telecom



Medical



Automobile



Boat



Charger



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

PART NUMBER STRUCTURE

| T | A | D | 65 | U | S | 12 | C | - | □ | □ | □ |
|--|---|----------------|------------------|-----------------------|-----------------|---|--|---|--|---------------------------------|---|
| Application | Package Code | Dimension Code | Output Power (W) | Input Voltage (VAC) | Output Quantity | Output Voltage (VDC) | Protection Type | Connector Options | Application Options | Conformal Coating Options | |
| Industry Application U: U chassis type E: Enclosed type D: Din rail type | A: Open type U: U chassis type E: Enclosed type D: Din rail type | | | U: Universal 85 ~ 264 | S: Single | 05:5 7P5:7.5 09:9 12:12 15:15 18:18 24:24 241:24 28:28 281:28 36:36 48:48 53:53 | C: CLASS I D: CLASS II □: CLASS I (*NRND) B: CLASS II (*NRND) | □: JST M: Molex T: Terminal Block | □: None C: OVC III □ A: DC IN* *(Only for TAD CLASS II) | □: None R: Conformal Coating | |
| | | | | | | | *NRND: Not recommended for new designs | | | | |



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 Natural Convection | Max. Output Power | Input Power @No Load | Efficiency | Maximum Capacitor Load |
|--|-------------|----------------|--------------------------------------|-------------------------|-------------------------|------------|---------------------------|
| | VAC | VDC | A | W | W | % | μF |
| TAD65US05C TUD65US05C TED65US05C TDD65US05C | 85 ~ 264 | 5 | 10 | 50 | 0.11 | 90 | 20000 |
| TAD65US7P5C TUD65US7P5C TED65US7P5C TDD65US7P5C | 85 ~ 264 | 7.5 | 8.67 | 65 | 0.11 | 90 | 11560 |
| TAD65US09C TUD65US09C TED65US09C TDD65US09C | 85 ~ 264 | 9 | 7.23 | 65 | 0.11 | 91 | 8033 |
| TAD65US12C TUD65US12C TED65US12C TDD65US12C | 85 ~ 264 | 12 | 5.42 | 65 | 0.11 | 92.5 | 4520 |
| TAD65US15C TUD65US15C TED65US15C TDD65US15C | 85 ~ 264 | 15 | 4.34 | 65 | 0.11 | 93.5 | 2900 |
| TAD65US18C TUD65US18C TED65US18C TDD65US18C | 85 ~ 264 | 18 | 3.62 | 65 | 0.11 | 93.0 | 2015 |
| TAD65US24C TUD65US24C TED65US24C TDD65US24C | 85 ~ 264 | 24 | 2.71 | 65 | 0.11 | 93.5 | 1130 |
| TAD65US241C TUD65US241C TED65US241C TDD65US241C | 85 ~ 264 | 24 | 2.71 | 65 | 0.11 | 92 | 1130 |
| TAD65US28C TUD65US28C TED65US28C TDD65US28C | 85 ~ 264 | 28 | 2.33 | 65 | 0.11 | 93.5 | 830 |
| TAD65US281C TUD65US281C TED65US281C TDD65US281C | 85 ~ 264 | 28 | 2.33 | 65 | 0.11 | 91.5 | 830 |
| TAD65US36C TUD65US36C TED65US36C TDD65US36C | 85 ~ 264 | 36 | 1.81 | 65 | 0.11 | 92.5 | 520 |

| Model NumCer | Input Range | Output Voltage | Output Current Natural Convection | Max. Output Power | Input Power @No Load | Efficiency | Maximum Capacitor Load |
|--|-------------|----------------|-----------------------------------|-------------------|----------------------|------------|------------------------|
| | VAC | VDC | A | W | W | % | μF |
| TAD65US48C TUD65US48C TED65US48C TDD65US48C | 85 ~ 264 | 48 | 1.36 | 65 | 0.11 | 93 | 285 |
| TAD65US53C TUD65US53C TED65US53C TDD65US53C | 85 ~ 264 | 53 | 1.24 | 65 | 0.11 | 92.5 | 235 |

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 240VAC and Full Load | | | 1.6 0.9 | A |
| No load input power | 230VAC | | 0.11 | | Watts |
| Leakage current | 264VAC | | 75 | | μA |
| Start up time | | | | 1000 | ms |
| Rise time | | | 20 | | ms |
| Hold up time | 115VAC and Full Load | | 16 | | ms |
| Input inrush current | 230VAC | | 60 | | A |
| Input protection | Internal fuse | | | T3.15A/250VAC | |

OUTPUT SPECIFICATIONS

| Parameter | Conditions | Min. | Typ. | Max. | Unit |
|------------------------------|---|------------------------|------|-------|--------------------------------|
| Output power | | | | 65 | Watts |
| 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 | 5Vout | | +0.7 | % |
| | | Others | -0.5 | +0.5 | |
| | 10% Load to 90% Load | 5Vout | -0.6 | +0.6 | |
| | | Others | -0.4 | +0.4 | |
| Voltage adjustability | Single output | 53Vout | | +10 | % |
| | | Others | -20 | +10 | |
| Minimum load | | | 0 | | % |
| Ripple and noise | Measured by 20MHz bandwidth With a 10μF/25V 1206 X7R MLCC | 5Vout, 7.5Vout, 9Vout | 75 | | mVp-p |
| | | 12Vout, 15Vout, 18Vout | 75 | | |
| | With a 1μF/50V 1206 X7R MLCC With a 0.1μF/100V 1206 X7R MLCC | 24Vout, 28Vout, 36Vout | 75 | | |
| | | 48Vout, 53Vout | 150 | | |
| Temperature coefficient | | -0.02 | | +0.02 | %/°C |
| Transient response | Load step from 50 ~ 75% change at 2.5A/μs | | | 3 | % Vout |
| | Peak deviation | | 600 | | μs |
| | Recovery time | | | | |
| Over voltage protection | % of Vout(nom); Latch mode | 125 | | 140 | % |
| Over load protection | % of Iout rated; Hiccup mode | | 145 | | % |
| Short circuit protection | | | | | Continuous, automatic recovery |

GENERAL SPECIFICATIONS

| Parameter | Conditions | | Min. | Typ. | Max. | Unit |
|----------------------|----------------------------------|---|--------------|-----------------------|------|--|
| Isolation voltage | 1 minute (Reinforced insulation) | Input to Output Input (Output) to F.G. | 3000 2500 | | | VAC |
| Isolation resistance | 500VDC | | 0.1 | | | GΩ |
| Switching frequency | 230VAC | 5Vout 7.5Vout 9Vout Others | | 60 80 70 120 | | kHz |
| Safety approvals | IEC/ EN/ UL 62368-1 | | | | | UL:E193009 CB:UL(Demko) |
| Weight | | TAD TUD TED TDD | | | | 117g (4.13oz) 157g (5.54oz) 172g (6.07oz) 193g (6.81oz) |
| MTBF | MIL-HDBK-217F, Full load | | | | | 1.494 x 10 ⁶ hrs |

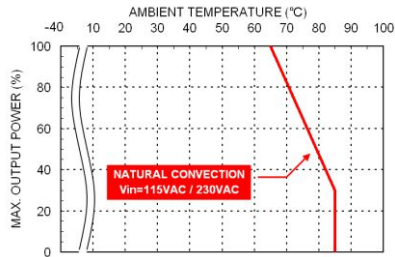
ENVIRONMENTAL SPECIFICATIONS

| Parameter | Conditions | | Min. | Typ. | Max. | Unit |
|-------------------------------|--------------------|---------------|------|------|------|---------------|
| Operating ambient temperature | Natural convection | With derating | -40 | | +85 | °C |
| Storage temperature range | | | -40 | | +85 | °C |
| Operating altitude | | | | | 5000 | m |
| Shock | | | | | | IEC60068-2-27 |
| Vibration | | | | | | IEC60068-2-6 |
| Relative humidity | Non-condensing | | | | | 5% to 95% RH |

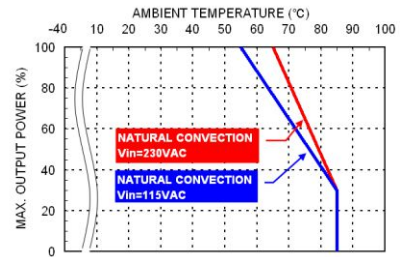
EMC SPECIFICATIONS

| Parameter | Conditions | | Level | |
|--------------------------------|--|-------------------------|-----------|------------------|
| EMI | EN55032 and FCC Part 15 | | Conducted | Class B |
| | External components may be required for class I application. | | Radiated | Class B |
| Harmonic currents | EN61000-3-2 | Full Load | | Class A |
| Voltage flicker | EN61000-3-3 | | | |
| EMS | EN55035 and Complies with EN 61850-3 | | | |
| ESD | EN61000-4-2 | | | Perf. Criteria A |
| Radiated immunity | EN61000-4-3 | 20 V/m | | Perf. Criteria A |
| Fast transient | EN61000-4-4 | ± 4kV | | Perf. Criteria A |
| Surge | EN61000-4-5 | DM ± 2kV and CM ± 4kV | | Perf. Criteria A |
| Conducted immunity | EN61000-4-6 | 20 Vr.m.s | | Perf. Criteria A |
| Power frequency magnetic field | EN61000-4-8 | 100 A/m | | Perf. Criteria A |
| Dip and interruptions | EN61000-4-11 | | | |
| Damped Oscillatory Wave | EN61000-4-18 | DM ± 1kV and CM ± 2.5kV | | Perf. Criteria A |

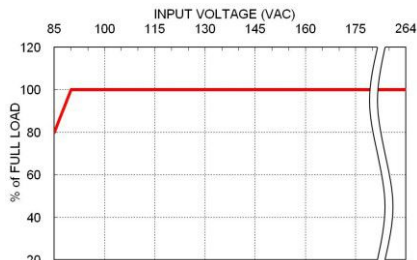
CHARACTERISTIC CURVE



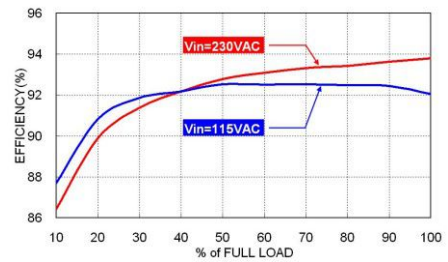
TAD65 & TUD65 Derating Curve vs. Ambient Temperature



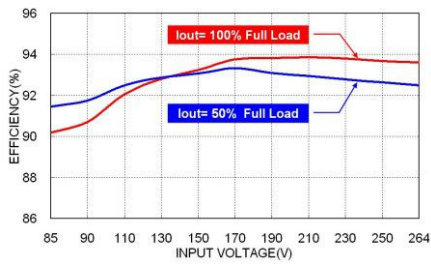
TED65 & TDD65 Derating Curve vs. Ambient Temperature



Derating Curve vs. Input Voltage



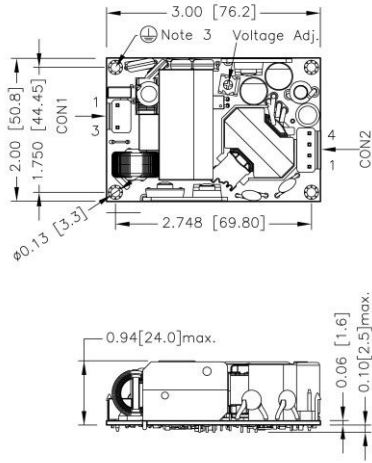
TAD65US24C Efficiency VS Output Load



TAD65US24C Efficiency VS Input Voltage

MECHANICAL DRAWING

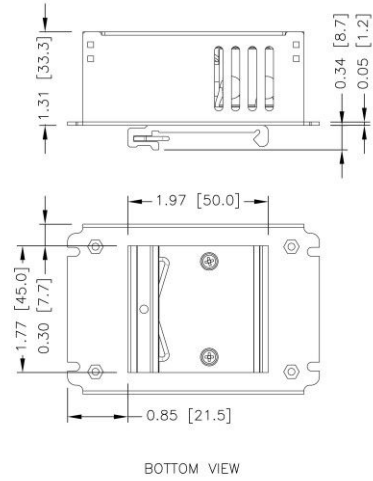
TAD Open type



FRONT VIEW

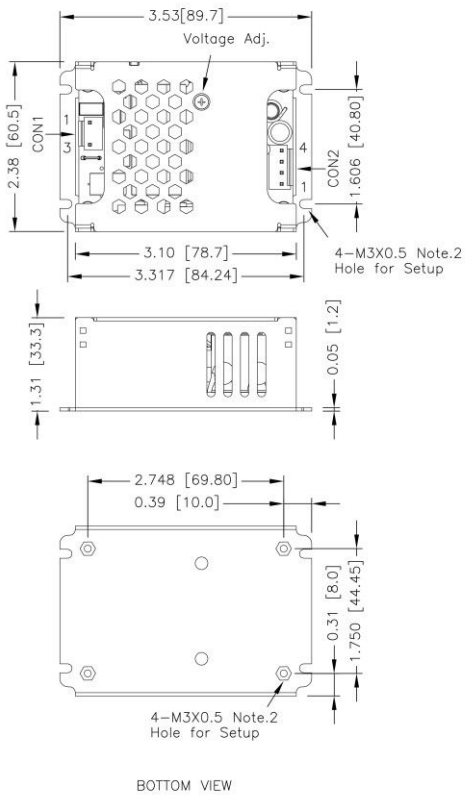
1. All dimensions in inch [mm]
Tolerance : $x.xx \pm 0.02$ [$x.x \pm 0.5$] $x.xxx \pm 0.010$ [$x.xx \pm 0.25$]
2. The screw locked torque: MAX 5.0kgf-cm/0.49N-m
3. The screws holes can be considered as PE connection for CLASS I application.

TDD Din rail type



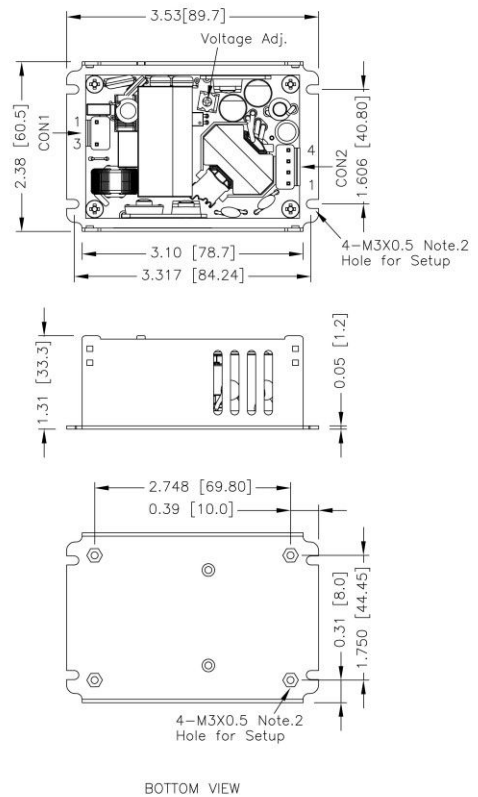
1. All dimensions in inch [mm]
Tolerance : $x.xx \pm 0.02$ [$x.x \pm 0.5$] $x.xxx \pm 0.010$ [$x.xx \pm 0.25$]

TED Enclosed type



1. All dimensions in inch [mm]
Tolerance : $x.xx \pm 0.02$ [$x.x \pm 0.5$] $x.xxx \pm 0.010$ [$x.xx \pm 0.25$]
2. The screw locked torque: MAX 5.0kgf-cm/0.49N-m

TUD U chassis type



1. All dimensions in inch [mm]
Tolerance : $x.xx \pm 0.02$ [$x.x \pm 0.5$] $x.xxx \pm 0.010$ [$x.xx \pm 0.25$]
2. The screw locked torque: MAX 5.0kgf-cm/0.49N-m

CONNECTOR CONNECTIONS

CON1 – Input Connector

| Pin Number | AC Input | DC Input |
|------------|----------|-------------------------|
| | | T□D65USXXC · T□D65USXXD |
| Pin 1 | Line | DC+ |
| Pin 3 | Neutral | DC- |

CON2 – Output Connector

| | |
|---------|-------|
| Pin 1,2 | -Vout |
| Pin 3,4 | +Vout |

*Either one of four screws holes of Chassis type can be considered as PE connection for CLASS I application.

CONNECTOR OPTIONS

Blank:

JST Type



Mates with housing
CON1: **VHR-3N**
CON2: **VHR-4N**

Crimp terminals
CON1: **SVH-21T-P1.1**
CON2: **SVH-21T-P1.1**

-M



Molex Type

Mates with housing
CON1: **09-50-8031**
CON2: **09-50-8041**

Crimp terminals
CON1: **SD-2478**
CON2: **SD-2478**

-T



Terminal Block

Screw locked torque
MAX 2Kgf.cm/0.2N.m

Wire dimension range
26 ~ 16AWG