chanhvinh.com

# TDK·Lambda PXG-M Series

## 15-20W Medical and Industrial DC-DC Converters

https://product.tdk.com/en/power/pxg-m
www.emea.tdk-lambda.com/pxg-m




Medical Industrial Test COMM Broadcast

The PXG-M series of medical and industrial DC-DC converters feature a wide 4:1 input range in a compact 1.6 x 1" (41 x 25mm) industry standard package. With 5kV input to output isolation, 2.5uA touch current and a low off-load power draw, these encapsulated modules are ideal for fixed and portable applications.

| Features | Benefits |
|---|---|
| • Wide 4:1 Input Range | • Supports Dual 12/24V or 24/48 System Voltages |
| • Compact 1.6" x 1" Industry Package | • Less Board Area Needed |
| • Certified to IEC 60601-1 and IEC 62368-1 | • Suitable For Medical and Industrial Applications |
| • 2 x MOPP Isolation | • High Input to Output Isolation |
| • Low No Load Power Consumption | • Longer Battery Life |

## Model Selector

| Model | Input Voltage (V) | Output Voltage (V) | Maximum Current (A) | Maximum Power (W) | No Load Input Current (mA) | Efficiency (%) | Maximum Load Capacitance (uF) |
|---|---|---|---|---|---|---|---|
| **Single Outputs** | | | | | | | |
| PXG-M15-24WS05 | 9 - 36 | 5 | 3 | 15 | 9 | 88 | 3800 |
| PXG-M20-24WS05 | 9 - 36 | 5 | 4 | 20 | 8 | 88.5 | 5000 |
| PXG-M15-24WS12 | 9 - 36 | 12 | 1.25 | 15 | 10 | 88.5 | 650 |
| PXG-M20-24WS12 | 9 - 36 | 12 | 1.67 | 20 | 11 | 88.5 | 850 |
| PXG-M15-24WS15 | 9 - 36 | 15 | 1 | 15 | 11 | 89 | 530 |
| PXG-M20-24WS15 | 9 - 36 | 15 | 1.33 | 20 | 10 | 89 | 700 |
| PXG-M15-24WS24 | 9 - 36 | 24 | 0.625 | 15 | 10 | 88 | 190 |
| PXG-M20-24WS24 | 9 - 36 | 24 | 0.833 | 20 | 10 | 88.5 | 220 |
| PXG-M15-48WS05 | 18 - 75 | 5 | 3 | 15 | 9 | 89.5 | 3800 |
| PXG-M20-48WS05 | 18 - 75 | 5 | 4 | 20 | 9 | 89.5 | 5000 |
| PXG-M15-48WS12 | 18 - 75 | 12 | 1.25 | 15 | 9 | 88 | 650 |
| PXG-M20-48WS12 | 18 - 75 | 12 | 1.67 | 20 | 9 | 88.5 | 850 |
| PXG-M15-48WS15 | 18 - 75 | 15 | 1 | 15 | 9 | 89 | 530 |
| PXG-M20-48WS15 | 18 - 75 | 15 | 1.33 | 20 | 9 | 89 | 700 |
| PXG-M15-48WS24 | 18 - 75 | 24 | 0.625 | 15 | 9 | 88.5 | 190 |
| PXG-M20-48WS24 | 18 - 75 | 24 | 0.833 | 20 | 9 | 88.5 | 220 |
| **Dual Outputs** | | | | | | | |
| PXG-M15-24WD05 | 9 - 36 | ±5 | ±1.5 | 15 | 10 | 86 | ±1900 |
| PXG-M20-24WD05 | 9 - 36 | ±5 | ±2.0 | 20 | 9 | 86 | ±2500 |
| PXG-M15-24WD12 | 9 - 36 | ±12 | ±0.625 | 15 | 10 | 88 | ±380 |
| PXG-M20-24WD12 | 9 - 36 | ±12 | ±0.833 | 20 | 10 | 88.5 | ±500 |
| PXG-M15-24WD15 | 9 - 36 | ±15 | ±0.5 | 15 | 12 | 89 | ±270 |
| PXG-M20-24WD15 | 9 - 36 | ±15 | ±0.677 | 20 | 11 | 89 | ±350 |
| PXG-M15-48WD05 | 18 - 75 | ±5 | ±1.5 | 15 | 9 | 86 | ±1900 |
| PXG-M20-48WD05 | 18 - 75 | ±5 | ±2.0 | 20 | 9 | 86 | ±2500 |
| PXG-M15-48WD12 | 18 - 75 | ±12 | ±0.625 | 15 | 9 | 88.5 | ±380 |
| PXG-M20-48WD12 | 18 - 75 | ±12 | ±0.833 | 20 | 9 | 88.5 | ±500 |
| PXG-M15-48WD15 | 18 - 75 | ±15 | ±0.5 | 15 | 9 | 89 | ±270 |
| PXG-M20-48WD15 | 18 - 75 | ±15 | ±0.677 | 20 | 9 | 89 | ±350 |

chanhvinh.com

TDK·Lambda

| PXG-M | 15 | -24W | S | 05 | -N |
|---|---|---|---|---|---|

| 15 | 15W Output Power |
|---|---|
| 20 | 20W Output Power |

| -24W | 9 - 36V input |
|---|---|
| -48W | 18 - 75V input |

| S | Single Output |
|---|---|
| D | Dual Output |

| 05 | 5V Output Voltage |
|---|---|
| 12 | 12V Output Voltage |
| 15 | 15V Output Voltage |
| 24 | 24V Output Voltage |

| Blank | No Remote On/Off |
|---|---|
| -N | Negative Logic Remote On/Off |
| -P | Positive Logic Remote On/Off |

Preferred model

## Specifications

| Model | | PXG-M15 | PXG-M20 |
|---|---|---|---|
| **Input** | | | |
| Input Voltage Range | Vdc | See model selector table | |
| Input Surge Voltage | Vdc | -24W models: 50, -48W models: 100. (3s maximum) | |
| Input Shutdown Voltage | Vdc | -24W models: 7.8 - 8.6, -48W models: 15.8 - 17.4 | |
| Start-up Time | ms | 60 maximum | |
| Touch Current | uA | 2.5 maximum | |
| No Load Power Consumption | W | See model selector table | |
| Efficiency | - | See model selector table | |
| Conducted & Radiated EMI | - | EN55011-A, EN55032-A without external components. Class B with external components | |
| Immunity | - | See immunity section | |
| Safety Certifications and Markings | - | IEC/UL/CSA/EN62368-1, IEC/ANSI/AAMI ES/CSA/EN60601-1, CE Mark and UKCA Mark | |

## Immunity

| Test | Standard | Test Level | Criteria | Notes |
|---|---|---|---|---|
| ESD | EN61000-4-2 | Air ± 15kV and Contact ± 8kV | A | - |
| Radiated Susceptibility | EN61000-4-3 | 10V/m | A | - |
| Electrical Fast Transient Burst | EN61000-4-4 | ± 2kV | A | With an input filter of two 220uF capacitors and a TVS (SMDJ58A for PXG-M24W or SMDJ120A for PXG-M48W) |
| Surge | EN61000-4-5 | ± 2kV | A | |
| Conducted Susceptibility | EN61000-4-6 | 10 Vrms | A | - |
| Magnetic Fields | EN61000-4-8 | 100A/m continuous; 1000A/m 1s | A | - |

chanhvinh.com

TDK·Lambda

## Specifications

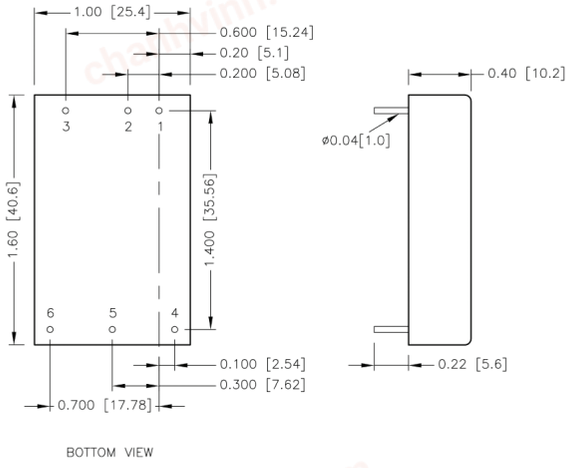
| Model | | PXG-M15 | PXG-M20 |
|---|---|---|---|
| **Output** | | | |
| Output Voltage Tolerance | % | ±1 | |
| Output Voltage Adjustment | - | Single output only. 5V: 4.5 -5.5V, 12V: -10.8 - 13.2V, 15V: 13.5 - 18V, 24V: 21.6 - 28.8V | |
| Switching Frequency | kHz | 225 - 285 | |
| Line Regulation | % | Single output: ±0.2. Dual output: ±0.5 | |
| Load Regulation | % | Single output: ±0.2. Dual output: ±1 | |
| Cross Regulation | % | Dual output: ±5 (Asymmetrical 25% to 100% load change) | |
| External Load Capacitance | uF | See model selector table | |
| Ripple & Noise (1) | mV | 5V outputs: 50, 12/15V outputs: 75, 24V outputs: 100 | |
| Temperature Coefficient | %/°C | ±0.02 | |
| Minimum Load | - | No minimum load required | |
| Transient Loading | - | 250us recovery time for a 25% load change | |
| Overcurrent Protection | - | Hiccup mode. 150 - 185% | |
| Overvoltage Protection | V | Zener clamp method. 5V: 6.2, 12V: 15, 15V: 20, 24V: 30 (typical) | |
| Overtemperature Protection | - | Shutdown, typically 115°C | |
| Remote Sense | - | No remote sense | |
| Remote On/Off | - | Positive Logic (-P): ON: Open or 3.5-12V, OFF Short or 0-1.2V<br>Negative Logic (-N): ON: Short or 0-1.2V, OFF: Open or 3.5-12V | |
| Parallel Operation | - | Not possible | |
| **Environmental** | | | |
| Operating Temperature (2) | °C | Convection:-40 to +105, derate linearly to zero load from +55 to 105<br>Forced air (200LFM):-40 to +105, derate linearly to zero load from +90 to 105.<br>(Model dependent, confirm case temperatures in end system) | |
| Maximum Case Temperature | °C | 105. Measured centrally on the upper case (module top view) | |
| Thermal Impedance | °C/W | 15.3 | 14.36 |
| Storage Temperature | °C | -55 to +125 | |
| Humidity (non condensing) | %RH | 5 - 95 (Operating & Storage) | |
| Cooling | - | Convection or forced air | |
| Altitude | m | 5,000 (operating) | |
| Withstand Voltage (For 1 minute) | Vac | Input to output 5,000 (2xMOPPs) | |
| Isolation Capacitance | pF | 20 | |
| Vibration (Operating) | - | MIL-STD-810F | |
| Thermal Shock | - | MIL-STD-810F | |
| **Other** | | | |
| Weight (Typ) | g | 24 | |
| Size (LxWxH) | mm | 40.6 x 25.4 x 10.2 | |
| Size (LxWxH) | Inches | 1.6 x 1 x 0.4 | |
| Case Material | - | Non-conductive black plastic. (Silicone (UL94 V-0) potting) | |
| MTBF - MIL-HDBK-217F, Full Load | Hours | 2,080,000 | 1,712,000 |
| Warranty | yrs | 5 | |

Notes
See website for detailed specifications, test methods and installation manual
(1) Measured with a 20MHz bandwidth oscilloscope across a 10uF 25V X7R MLCC (4.7uF 50V for 24V models)
(2) The case temperature must be confirmed in end application. The product rating may be affected by airflow direction and physical obstructions near the module.

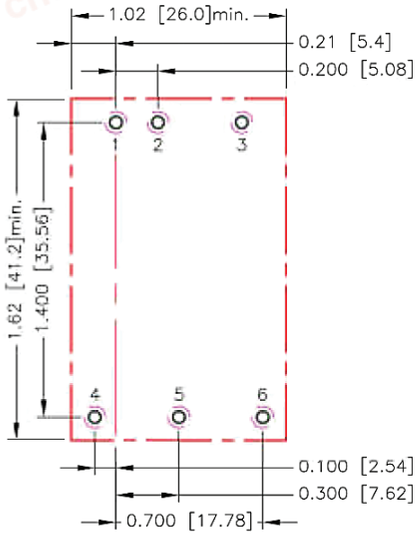
chanhvinh.com



## Outline Drawing




## Recommended Hole Pattern




## Pinout

| PIN | Function | |
|---|---|---|
| | Single | Dual |
| 1 | +Vin | |
| 2 | -Vin | |
| 3 | Remote On/Off (Option) | |
| 4 | +Vout | |
| 5 | -Vout | Com |
| 6 | Trim | -Vout |

| | |
|---|---|
| Hole diameter: | 0.05” [1.30mm) |
| Top side pad diameter: | 0.064” [1.63mm] |
| Bottom side pad diameter: | 0.102” [2.60mm] |

1. All dimensions in inch [mm]
2. Tolerance :x.xx±0.02 [x.x±0.5]
   x.xxx±0.01 [x.xx±0.25]
3. Pin dimension tolerance ±0.004[0.10]

chanhvinh.com

# TDK·Lambda



**TDK-Lambda France SAS**
Tel: +33 1 60 12 71 65
tlf.fr.powersolutions@tdk.com
www.emea.lambda.tdk.com/fr



**Italy Sales Office**
Tel: +39 02 61 29 38 63
tlf.it.powersolutions@tdk.com
www.emea.lambda.tdk.com/it



**Netherlands**
tlf.nl.powersolutions@tdk.com
www.emea.lambda.tdk.com/nl



**TDK-Lambda Germany GmbH**
Tel: +49 7841 666 0
tlg.powersolutions@tdk.com
www.emea.lambda.tdk.com/de



**Austria Sales Office**
Tel: +43 2256 655 84
tlg.at.powersolutions@tdk.com
www.emea.lambda.tdk.com/at



**Switzerland Sales Office**
Tel: +41 44 850 53 53
tlg.ch.powersolutions@tdk.com
www.emea.lambda.tdk.com/ch



**Nordic Sales Office**
Tel: +45 8853 8086
tlg.dk.powersolutions@tdk.com
www.emea.lambda.tdk.com/dk



**TDK-Lambda UK Ltd.**
Tel: +44 (0) 12 71 85 66 66
tlu.powersolutions@tdk.com
www.emea.lambda.tdk.com/uk



**TDK-Lambda Ltd.**
Tel: +9 723 902 4333
tli.powersolutions@tdk.com
www.emea.lambda.tdk.com/il-en



**TDK-Lambda Americas**
Tel: +1 800-LAMBDA-4 or 1-800-526-2324
tla.powersolutions@tdk.com
www.us.lambda.tdk.com



**TDK Electronics do Brasil Ltda**
Tel: +55 11 3289-9599
sales.br@tdk-electronics.tdk.com
www.tdk-electronics.tdk.com/en



**TDK-Lambda Corporation**
Tel: +81-3-6778-1113
www.jp.lambda.tdk.com



**TDK-Lambda (China) Electronics Co. Ltd.**
Tel: +86 21 6485-0777
tlc.powersolutions@tdk.com
www.lambda.tdk.com.cn



**TDK-Lambda Singapore Pte Ltd.**
Tel: +65 6251 7211
tls.marketing@tdk.com
www.sg.lambda.tdk.com



**TDK India Private Limited, Power Supply Division**
Tel: +91 80 4039-0660
mathew.philip@tdk.com
www.sg.lambda.tdk.com

For additional information, please visit
https://product.tdk.com/en/power/