https://product.tdk.com/en/power/pxe
www.emea.lambda.tdk.com/pxe

# 20-30W Single and Dual Output Isolated DC-DC Converters




Industrial Test COMM Broadcast

The PXE isolated DC-DC converters feature a 2:1 input range, and for some models, a wide 4:1 input range in a 2 x 1.6" (50.8 x 40.6mm) industry standard package. With IEC/UL/CSA/EN 62368-1 and single or dual output options, these models also feature a six-sided, shielded metal case for reduced radiated noise, making them suitable for a wide variety of Industrial, ICT (Information and Communications Technology) and Test and Measurement applications.

| Features | Benefits |
|---|---|
| • IEC/UL/CSA/EN 62368-1 Approvals | • Easier System Approvals |
| • Wide Range Input | • Less Parts to Inventory |
| • Six Sided Shielding | • Reduced Radiated Noise |
| • Up to 90% Efficiency | • Long Field Life |

## Related Products

| Type | Part Number | Description |
|---|---|---|
| Accessory | 7G0011A | PXE heatsink with adhesive pad |
| Smaller size DC-DC converter | CCG | 1.3 to 30W single/dual output DC-DC converters (1 x 1 x 0.39") |

| PXE- | 30 | -24 | S | 05 | -N |
|---|---|---|---|---|---|
| Series | 20 20W Output Power<br>30 30W Output Power | -12 9 - 18V input<br>-24 18 - 36V input<br>-48 36 - 75V input<br>-24W 9 - 36V input<br>-48W 18 - 75V input | S Single Output<br>D Dual Output | **Single Output**<br>3P3 3.3V Output Voltage<br>**Single and Dual Output**<br>05 5V Output Voltage<br>12 12V Output Voltage<br>15 15V Output Voltage | Blank Positive Logic Remote On/Off<br>-N *Negative Logic Remote On/Off |

Preferred model

*PXE30 Wide Range Only

## Model Selector

| Model | Input Voltage (V) | Output Voltage (V) | Maximum Current (A) | No Load Input Current (mA) | Ripple & Noise ($mV_{pk-pk}$) | Efficiency (%) | Maximum Load Capacitance (uF) |
|---|---|---|---|---|---|---|---|
| **Single Outputs** | | | | | | | |
| PXE30-12S3P3 | 9 - 18 | 3.3 | 6 | 115 | 50 | 85 | 19,500 |
| PXE30-24S3P3 | 18 - 36 | 3.3 | 6 | 50 | 50 | 88 | 19,500 |
| PXE30-48S3P3 | 36 - 75 | 3.3 | 6 | 30 | 50 | 87 | 19,500 |
| PXE30-24WS3P3 | 10 - 40 | 3.3 | 6 | 50 | 60 | 87 | 19,500 |
| PXE30-48WS3P3 | 18 - 75 | 3.3 | 6 | 30 | 60 | 87 | 19,500 |
| PXE20-24WS05 | 9 - 36 | 5 | 4 | 10 | 75 | 79 | 6,800 |
| PXE20-48WS05 | 18 - 75 | 5 | 4 | 10 | 75 | 80 | 6,800 |
| PXE30-12S05 | 9 - 18 | 5 | 6 | 95 | 50 | 87 | 10,200 |
| PXE30-24S05 | 18 - 36 | 5 | 6 | 50 | 50 | 88 | 10,200 |
| PXE30-48S05 | 36 - 75 | 5 | 6 | 35 | 50 | 89 | 10,200 |
| PXE30-24WS05 | 10 - 40 | 5 | 6 | 65 | 75 | 87 | 10,200 |
| PXE30-48WS05 | 18 - 75 | 5 | 6 | 30 | 75 | 88 | 10,200 |
| PXE20-24WS12 | 9 - 36 | 12 | 1.67 | 20 | 100 | 81 | 2,200 |
| PXE20-48WS12 | 18 - 75 | 12 | 1.67 | 10 | 100 | 81 | 2,200 |
| PXE30-12S12 | 9 - 18 | 12 | 2.5 | 35 | 75 | 88 | 3,240 |
| PXE30-24S12 | 18 - 36 | 12 | 2.5 | 30 | 75 | 89 | 3,300 |
| PXE30-48S12 | 36 - 75 | 12 | 2.5 | 25 | 75 | 90 | 3,300 |
| PXE30-24WS12 | 10 - 40 | 12 | 2.5 | 65 | 100 | 87 | 3,300 |
| PXE30-48WS12 | 18 - 75 | 12 | 2.5 | 35 | 100 | 87 | 3,300 |
| PXE20-24WS15 | 9 - 36 | 15 | 1.33 | 20 | 100 | 81 | 755 |
| PXE20-48WS15 | 18 - 75 | 15 | 1.33 | 10 | 100 | 81 | 755 |
| PXE30-12S15 | 9 - 18 | 15 | 2 | 45 | 75 | 88 | 1,100 |
| PXE30-24S15 | 18 - 36 | 15 | 2 | 30 | 75 | 89 | 1,100 |
| PXE30-48S15 | 36 - 75 | 15 | 2 | 25 | 75 | 90 | 1,100 |
| PXE30-24WS15 | 10 - 40 | 15 | 2 | 70 | 100 | 88 | 1,100 |
| PXE30-48WS15 | 18 - 75 | 15 | 2 | 45 | 100 | 88 | 1,100 |
| **Dual Outputs** | | | | | | | |
| PXE20-24WD05 | 9 - 36 | ±5 | ±2.0 | 15 | 75 | 79 | ±3400 |
| PXE20-48WD05 | 18 - 75 | ±5 | ±2.0 | 10 | 75 | 79 | ±3400 |
| PXE20-24WD12 | 9 - 36 | ±12 | ±0.833 | 20 | 100 | 81 | ±680 |
| PXE20-48WD12 | 18 - 75 | ±12 | ±0.833 | 15 | 100 | 83 | ±680 |
| PXE30-12D12 | 9 - 18 | ±12 | ±1.25 | 60 | 100 | 87 | ±1020 |
| PXE30-24D12 | 18 - 36 | ±12 | ±1.25 | 30 | 100 | 88 | ±1020 |
| PXE30-48D12 | 36 - 75 | ±12 | ±1.25 | 20 | 100 | 88 | ±1020 |
| PXE30-24WD12 | 10 - 40 | ±12 | ±1.25 | 30 | 100 | 84 | ±1000 |
| PXE30-48WD12 | 18 - 75 | ±12 | ±1.25 | 25 | 100 | 85 | ±1000 |
| PXE20-24WD15 | 9 - 36 | ±15 | ±0.666 | 25 | 100 | 82 | ±450 |
| PXE20-48WD15 | 18 - 75 | ±15 | ±0.666 | 20 | 100 | 84 | ±450 |
| PXE30-12D15 | 9 - 18 | ±15 | ±1.0 | 40 | 100 | 87 | ±675 |
| PXE30-24D15 | 18 - 36 | ±15 | ±1.0 | 30 | 100 | 88 | ±675 |
| PXE30-48D15 | 36 - 75 | ±15 | ±1.0 | 20 | 100 | 88 | ±675 |
| PXE30-24WD15 | 10 - 40 | ±15 | ±1.0 | 35 | 100 | 85 | ±680 |
| PXE30-48WD15 | 18 - 75 | ±15 | ±1.0 | 25 | 100 | 86 | ±680 |

## Specifications

| Model | | PXE20W | PXE30 |
|---|---|---|---|
| **Input** | | | |
| Input Voltage Range | - | See Model Selector Table | |
| Input Surge Voltage | Vdc | 12V input: 36, 24V input: 50, 48V input: 100 (100ms maximum) | |
| Start-up Time | ms | 20 | 25 (10 for PXE30W Models) |
| No Load Input Current | - | See Model Selector Table | |
| Efficiency | - | See Model Selector Table | |
| Conducted & Radiated EMI | - | EN55032-A (Class B - See installation diagrams for external circuitry) | |
| Immunity | - | See Immunity Section | |
| Safety Certifications and Markings | - | IEC/UL/CSA/EN62368-1, CE Mark and UKCA Mark | |

## Immunity

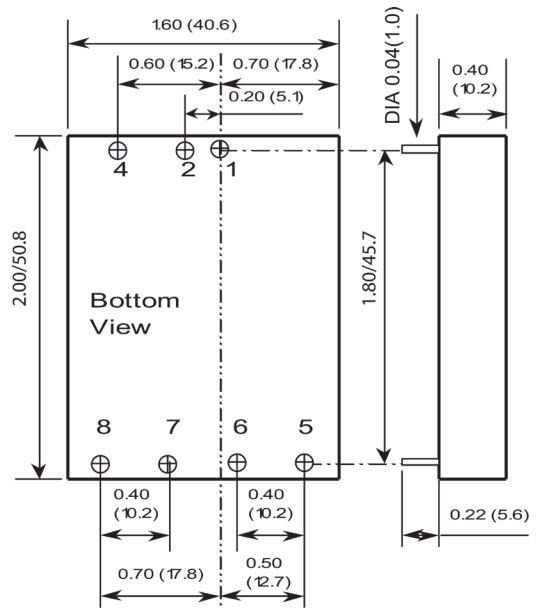
| Test | Standard | Test Level | Criteria | Notes |
|---|---|---|---|---|
| ESD | EN61000-4-2 | 3 | B | Air ± 8kV and Contact ± 6kV |
| Radiated Susceptibility | EN61000-4-3 | 3 | A / B | 10V/m (Criteria A for PXE30W Models) |
| Electrical Fast Transient Burst | EN61000-4-4 | 3 (±2kV) | B | With an input filter capacitor (Nippon chemi-con KY series, 220µF/100V) |
| Surge | EN61000-4-5 | 2 (±1kV) | B | |
| Conducted Susceptibility | EN61000-4-6 | 3 | A | 10Vrms |
| Magnetic Fields | EN61000-4-8 | 5 | A | 100A/m continuous; 1000A/m 1s |

## Specifications

| Model | | PXE20W | PXE30 |
|---|---|---|---|
| **Output** | | | |
| Output Voltage Accuracy | % | ±1 | |
| Output Voltage Adjustment | % | ±10 | |
| Switching Frequency | kHz | 270 - 330 | |
| Line Regulation | % | Single Output: ±0.2, Dual Output: ±-0.5 | |
| Load Regulation | % | Single Output: ±0.5, Dual Output: ±3 | Single Output: ±0.5, Dual Output: ±1 |
| Cross Regulation | % | Dual Output: ±5 (Asymmetrical 25% to 100% load change) | |
| External Load Capacitance | - | See Model Selector Table | |
| Ripple & Noise (1) | - | See Model Selector Table | |
| Temperature Coefficient | %/°C | ±0.02 | |
| Minimum Load (2) | % | 10 | None |
| Transient Response (25% step load) | µs | 500 | 300 |
| Overcurrent Protection | % | 150 (Hiccup Mode with Auto-Recovery) | |
| Overvoltage Protection | V | 3.3V: 3.9, 5V: 6.2, 12V: 15, 15V: 18 (Zener Diode Clamp) | |
| Overtemperature Protection | °C | None | 115 |
| Short Circuit Protection | - | Hiccup Mode with Auto-Recovery | |
| Remote Sense | - | No Remote Sense | |
| Remote On/Off | - | Positive Logic (-P): ON: Open or 3.5-12V, OFF: Short or 0-1.2V | Positive Logic (-P): ON: Open or 3-12V, OFF: Short or 0-1.2V (PXE30W Only) Negative Logic (-N): ON: Short or 0-1.2V, OFF Open or 3-12V |
| **Environmental** | | | |
| Operating Temperature | °C | -40 to +85 (See Derating Curves below) | |
| Maximum Case Temperature | °C | 100 | |
| Thermal Impedance | °C/W | 10 | |
| Storage Temperature | °C | -55 to +125 | |
| Humidity (non condensing) | %RH | 5 - 95 (Operating & Storage) | |
| Cooling | - | Convection | |
| Withstand Voltage (For 1 minute) | Vdc | Input to Output, Input to Case, Output to Case: 1,600 | |
| Isolation Resistance | Ω | $10^9$ | |
| Isolation Capacitance | pF | 300 | 1,000 |
| Vibration (Operating) | - | MIL-STD-810F | |
| Thermal Shock | - | MIL-STD-810F | |
| **Other** | | | |
| Weight (Typ) | g | 48 | |
| Size (LxWxH) | mm | 50.8 x 40.6 x 10.2 | |
| Size (LxWxH) | Inches | 2 x 1.6 x 0.4 | |
| Case Material | - | Nickel-coated Copper | |
| Base Material | - | Non-conductive Black Plastic | FR4 PCB |
| Potting Material | - | Epoxy (UL94 V-0) | |
| MTBF - MIL-HDBK-217F, Full Load | Hours | 1,922,000 | 1,283,000 (759,800 for PXE30W Models) |
| Warranty | yrs | 3 | |

Notes
See website for detailed specifications, test methods and installation manual
(1) Measured with a 20MHz bandwidth oscilloscope across a 0.1uF/50V MLCC
(2) To meet regulation & noise specifications. Operation at zero load will not damage the device

## PXE Outline Drawing

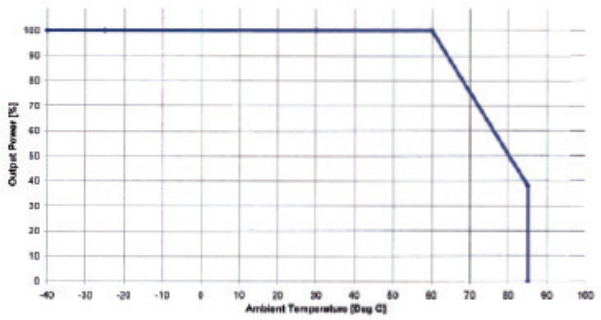



1. All dimensions in Inches (mm)
2. Pin pitch tolerance ±0.014(0.35)

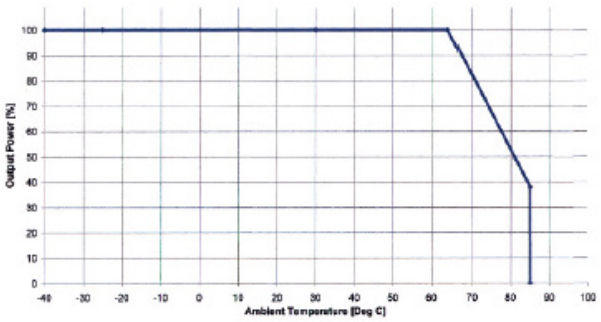
## PXE Pinout

| PIN | Function | |
|---|---|---|
| | Single O/P | Dual O/P |
| 1 | +Vin | +Vin |
| 2 | -Vin | -Vin |
| 4 | Remote On/Off | Remote On/Off |
| 5 | No Pin | +Vout |
| 6 | +Vout | Common |
| 7 | -Vout | -Vout |
| 8 | Trim | Trim |

## PXE20 Derating Curve




## PXE30 Derating Curve





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