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TDK·Lambda PXD40 Series

40W Single and Dual Output DC-DC converters

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



Industrial Test COMM Broadcast

The PXD40 industrial DC-DC converters feature wide 4:1 input ranges in a compact 2 x 1" (50.8 x 25.4mm) industry standard package. With efficiencies up to 93%, the PXD40 series typically draws a low 3mA input current when the remote on/off function is used, prolonging battery life for portable equipment. The modules have six-sided shielding to reduce radiated noise.

Features	Benefits
• Wide 4:1 Input Range	• Supports Dual 12/24V or 24/48V System Voltages
• Compact 2" x 1" Industry Package	• Less Board Area Needed
• Certified to IEC/UL/CSA/EN 62368-1	• Suitable For Industrial Applications
• Low No Load Power Consumption	• Longer Battery Life
• Six Sided Shielding	• Reduces Radiated Noise

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							
PXD40-24WS3P3	9 - 36	3.3	12.2	40.3	15	89.5	22,000
PXD40-48WS3P3	18 - 75	3.3	12.2	40.3	10	90	22,000
PXD40-24WS05	9 - 36	5	8	40	15	92	12,000
PXD40-48WS05	18 - 75	5	8	40	10	91	12,000
PXD40-24WS12	9 - 36	12	3.333	40	15	92	2,000
PXD40-48WS12	18 - 75	12	3.333	40	10	92	2,000
PXD40-24WS15	9 - 36	15	2.666	40	15	93	1,300
PXD40-48WS15	18 - 75	15	2.666	40	10	92	1,300
PXD40-24WS24	9 - 36	24	1.666	40	15	91	490
PXD40-48WS24	18 - 75	24	1.666	40	10	92	490
PXD40-24WS48	9 - 36	48	0.833	40	15	91	120
PXD40-48WS48	18 - 75	48	0.833	40	10	92	120
Dual Outputs							
PXD40-24WD12	9 - 36	±12	±1.666	40	15	91	±980
PXD40-48WD12	18 - 75	±12	±1.666	40	10	91	±980
PXD40-24WD15	9 - 36	±15	±1.333	40	15	91	±630
PXD40-48WD15	18 - 75	±15	±1.333	40	10	91	±630
PXD40-24WD24	9 - 36	±24	±0.833	40	15	91	±250
PXD40-48WD24	18 - 75	±24	±0.833	40	10	92	±250

PXD	40	-24W	S	05	-	-
Series	Output Power 40W	-24W 9 - 36V input -48W 18 - 75V input	S Single Output D Dual Output	**Output Voltage** 05 = 5V 12 = 12V 15 = 15V 24 = 24V 48 = 48V	Blank Positive Logic Remote On/Off -N Negative Logic Remote On/Off	Blank No heatsink fitted -HC1 Heatsink with 7.62mm fins -HC2 Heatsink with 12.7mm fins -HC3 Heatsink with 20.32mm fins

Preferred model

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Related Products

Type	Part Number	Description
Heatsink kit (User installation)	ACC-PX2X1-HC01	HC1 heatsink, thermal pad and 2 clips
Heatsink kit (User installation)	ACC-PX2X1-HC02	HC2 heatsink, thermal pad and 2 clips
Heatsink kit (User installation)	ACC-PX2X1-HC03	HC3 heatsink, thermal pad and 2 clips

Specifications

Model		PXD40
Input		
Input Voltage Range	-	See model selector table
Input Surge Voltage	Vdc	-24W models: 50, -48W models: 100. (1s maximum)
Input Shutdown Voltage	Vdc	-24W models: 7 - 8.8, -48W models: 15 - 17.5
Start-up Time	ms	60 max
No Load Current Consumption	mA	See model selector table. Typically 3 when remote on/off is activated
Efficiency	-	See model selector table
Conducted & Radiated EMI	-	EN55032. See instruction manual on website 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	Air ± 8kV and Contact ± 6kV	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 PXD40-24W or SMDJ120A for PXD40-48W)
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	-

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Specifications

Model		PXD40
Output		
Output Voltage Tolerance	%	± 1
Output Voltage Adjustment	%	Single output only. 3.3V-12V, 48V: ±10, 15V-24V: -10/+20, Dual output none
Switching Frequency	kHz	225 - 275
Line Regulation	%	± 0.2
Load Regulation	%	Single output: ±0.3 Dual output: ±0.5
Cross Regulation	%	Dual output: ±-5 (Asymmetrical 25% to 100% load change)
External Load Capacitance	uF	See model selector table
Ripple & Noise (1)	mVp-p	Single output: 3.3-5V outputs: 75, 12-15V outputs: 100, 24V outputs: 150, 48V outputs: 300
Temperature Coefficient	%/°C	± 0.02
Minimum Load	-	No minimum load required
Transient Loading	-	250us recovery time for a 25% load change
Overcurrent Protection (typ)	%	150, hiccup mode
Overvoltage Protection (typ)	V	Zener clamp method. 3.3V: 3.9, 5V: 6.2, 12V: 15, 15V: 20, 24V: 30, 48V: 60
Overtemperature Protection	°C	115
Remote Sense	-	No remote sense
Remote On/Off	-	Positive Logic (Blank): ON: Open or 3-12V, OFF Short or 0-1.2V Negative Logic (-N): ON: Short or 0-1.2V, OFF: Open or 3-12V
Environmental		
Operating Temperature (2)	°C	-40 to +105 - see derating section and instruction manual on website (Confirm case temperatures in end system)
Maximum Case Temperature	°C	105 (Overtemperature Protection 115)
Thermal Impedance	°C/W	No heatsink: 10.8, -HC1: 9.3, -HC2: 7.7, -HC3: 6.2
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)	Vdc	Input to output 1,600
Isolation Capacitance	pF	1500
Vibration (Operating)	-	MIL-STD-810F
Thermal Shock	-	MIL-STD-810F
Other		
Weight (Typ)	g	34 (no heatsink)
Size (LxWxH)	mm	50.8 x 25.4 x 10.2 (no heatsink)
Size (LxWxH)	Inches	2 x 1 x 0.4 (no heatsink)
Case Material	-	Copper
MTBF - MIL-HDBK-217F, Full Load	Hours	1,245,000
Warranty	yrs	3

Notes

See website for detailed specifications, test methods and installation manual

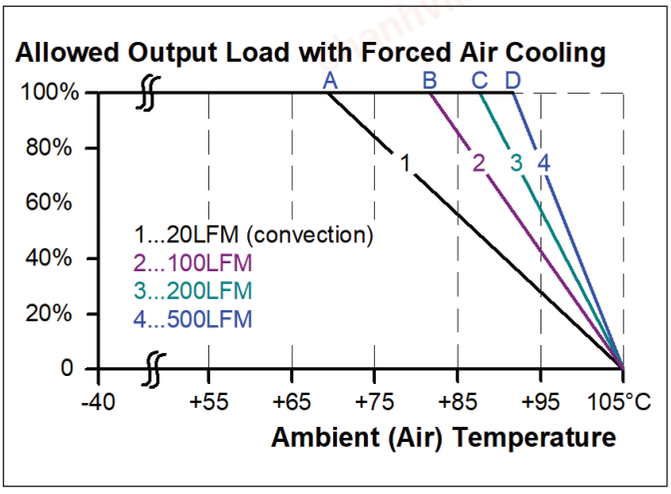
(1): Measured with a 20MHz bandwidth oscilloscope across a 1uF/100V X7R multi-layer ceramic capacitor

(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.

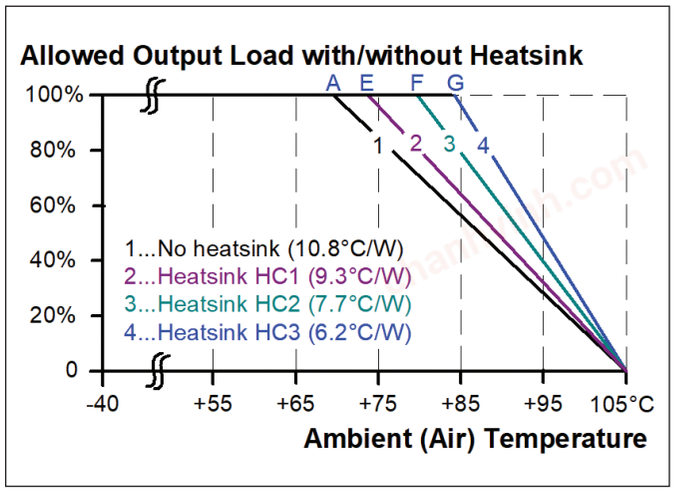
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Derating Section

PXD40-24WS05 - Derating Diagram



PXD40-24WS05 - Derating Diagram

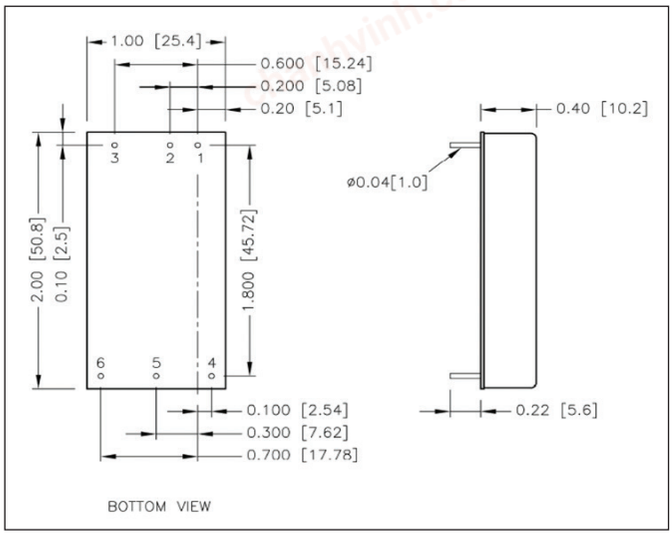


The required power reduction depends on the individual device. The example shows the PXD40-24WS05. The points A to G describe the temperatures at which the power reduction starts. For other models, these points can be taken from the table.

Derating Starting Point	A 20LFM (convection)	B 100LFM	C 200LFM	D 500LFM	E with HS1	F with HS2	G with HS3
PXD40-24WS3P3	53°C	73°C	82°C	86°C	57°C	62°C	65°C
PXD40-24WS05	69°C	83°C	88°C	92°C	74°C	81°C	84°C
PXD40-24WS12	68°C	82°C	88°C	91°C	73°C	80°C	83°C
PXD40-24WS15	71°C	84°C	90°C	93°C	76°C	83°C	87°C
PXD40-24WS24	56°C	78°C	85°C	89°C	60°C	65°C	68°C
PXD40-24WD12	63°C	79°C	86°C	89°C	67°C	74°C	77°C
PXD40-24WD15	64°C	80°C	87°C	90°C	69°C	75°C	78°C
PXD40-24WD24	63°C	79°C	87°C	90°C	67°C	74°C	77°C
PXD40-48WS3P3	55°C	74°C	82°C	87°C	59°C	64°C	67°C
PXD40-48WS05	63°C	79°C	86°C	89°C	67°C	74°C	77°C
PXD40-48WS12	68°C	82°C	88°C	91°C	73°C	80°C	83°C
PXD40-48WS15	73°C	85°C	91°C	94°C	78°C	85°C	89°C
PXD40-48WS24	66°C	81°C	87°C	90°C	71°C	77°C	81°C
PXD40-48WD12	63°C	79°C	86°C	90°C	67°C	74°C	77°C
PXD40-48WD15	63°C	80°C	86°C	90°C	67°C	74°C	77°C
PXD40-48WD24	67°C	82°C	87°C	91°C	72°C	78°C	82°C

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Outline Drawing



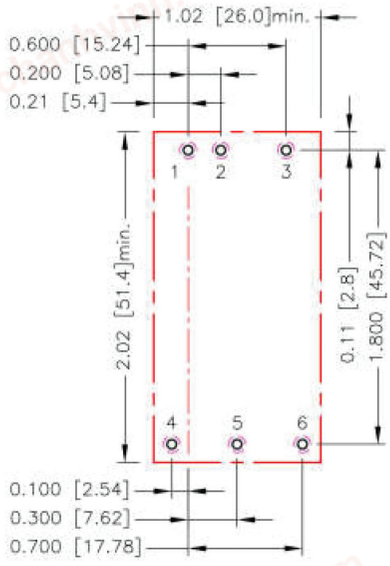
Pinout

PIN	Function	
	Single	Dual
1	+Vin	
2	-Vin	
3	Ctrl	
4	+Vout	
5	-Vout	Com
6	Trim	-Vout

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

Recommended Pcb Layout

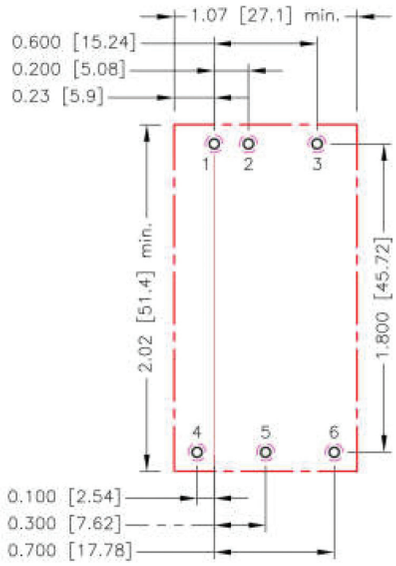
Standard



All dimensions in inch[mm]
Pad size(lead free recommended)
Through hole 1.2.3.4.5.6: Φ0.051[1.30]
Top view pad 1.2.3.4.5.6: Φ0.064[1.63]
Bottom view pad 1.2.3.4.5.6: Φ0.102[2.60]

Recommended Pcb Layout

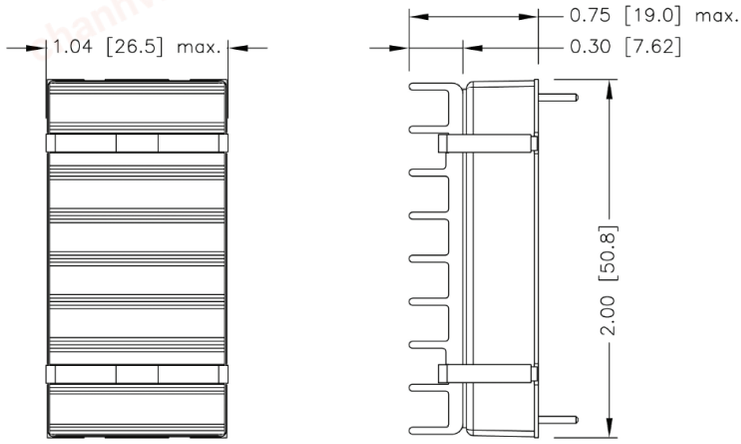
-HC1、-HC2、-HC3



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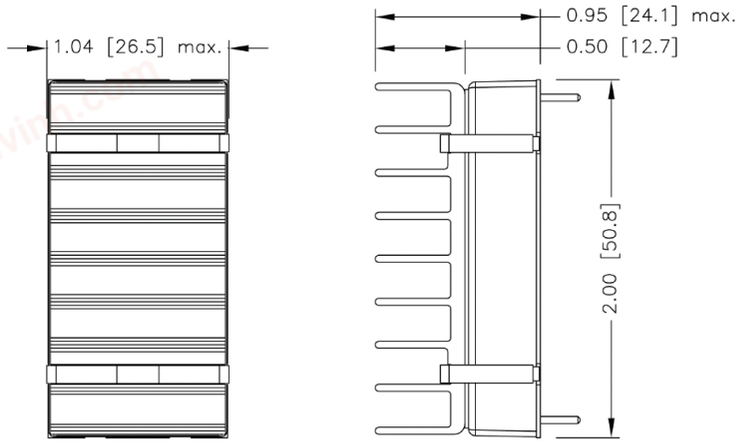
Heat-Sink Type Options

HC1



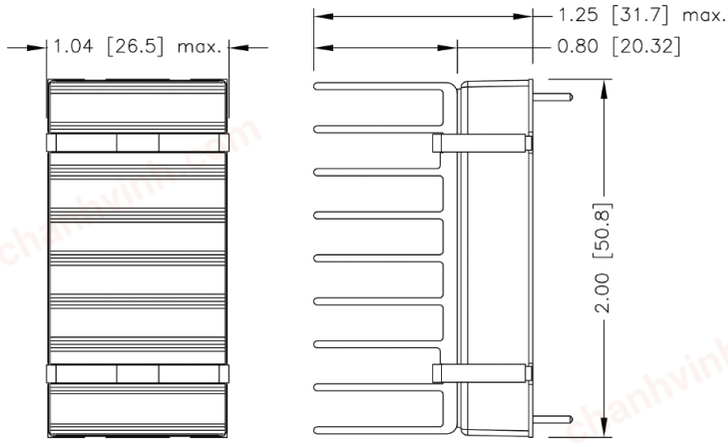
SIDE VIEW

HC2



SIDE VIEW

HC3



SIDE VIEW

1. All dimensions in inch [mm]
2. Tolerance :x.xx±0.02 [x.x±0.5]
x.xxx±0.010 [x.xx±0.25]

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