

## 300-450W Half Brick DC-DC Converters

<https://product.tdk.com/en/power/pah>  
[www.emea.lambda.tdk.com/pah](http://www.emea.lambda.tdk.com/pah)



Industrial



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Test



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The PAH300, PAH350 and PAH450 series of isolated half brick DC-DC converters operate from a 24V or 48V nominal dc input and are rated at 300W to 450W. Output voltages are 12V, 28V or 48V and can be adjusted over a wide range using the trim terminal by up to -40% to +18%. Remote sense and remote on/off are included as standard. The power modules can be conduction cooled to a cold plate or fitted with an optional heatsink. These efficient converters are well suited for distributed power architectures and power systems.

### Features

- Wide Range Inputs
- Baseplate Cooled
- -40 to +100°C Baseplate Temperature
- Up to 92% Efficient
- Fixed Switching Frequency

### Benefits

- Operates From Batteries or DC Power Systems
- Can be Conduction or Convection Cooled with a Heatsink
- Operates in Harsh Environments
- Easier To Cool In the End System
- Predictable Switching Noise

### Model Selector

Model	Input Voltage (V)	Output Voltage (V)	Adjustment Range (V)	Maximum Current (A)	Maximum Power (W)	Input Current (A) nominal input, 100% load	Efficiency (%) nominal input, 100% load	Oversoltage Protection (%)
PAH300S24-12	18 - 36	12	7.2 - 13.2	25	300	14.71	87	115 - 135
PAH300S48-12	36 - 76	12	7.2 - 13.2	25	300	7.02	90	115 - 135
PAH350S48-12	36 - 76	12	7.2 - 13.2	29.2	350	8.25	89	115 - 135
PAH300S24-28	18 - 36	28	16.8 - 33.0	11	308	15.1	88	125 - 140
PAH350S24-28	18 - 36	28	16.8 - 33.0	12.5	350	17.36	88	125 - 140
PAH300S48-28	36 - 76	28	16.8 - 33.0	11	308	7.21	90	125 - 140
PAH350S48-28	36 - 76	28	16.8 - 33.0	12.5	350	8.24	89	125 - 140
PAH450S48-28	36 - 76	28	16.8 - 33.0	16	448	10.3	92	125 - 145
PAH350S24-48	18 - 36	48	28.8 - 52.8	7.3	350	17.36	87	115 - 140
PAH450S48-48	36 - 76	48	28.8 - 57.6	9.4	451	10.4	92	125 - 145

<b>PAH</b>	<b>450</b>	<b>S</b>	<b>24</b>	<b>-</b>	<b>28</b>	<b>/T</b>
Series	Output Power (W) 300, 350, 450	Simple Function	Nominal Input 24 = 24V 48 = 48V		Output Voltage 12, 28, 48	Options
						Suffix   Description
						Blank   M3 tapped mounting inserts
						/T   3.3mm non-threaded inserts
						/P   Positive logic remote On/Off (Not on PAH450S)*

\* Contact factory for availability on other models

### Related Products

	Part Number	Description
DC-DC Converters	<a href="#">PAF600F24-48</a>	600W, 24 & 48V Input Full Brick DC-DC Converters
DC-DC Converters	<a href="#">PH50A280 to PH600A280</a>	50W to 600W, 200 to 425V Input DC-DC Converters
DC-DC Converters	<a href="#">i7A</a>	500 to 700W, Non-isolated Step Down DC-DC Converters
Heatsink	<a href="#">HAH-10L</a>	Half brick 25mm longitudinal fins
Heatsink	<a href="#">HAH-10T</a>	Half brick 25mm transverse fins
Heatsink	<a href="#">HAH-15L</a>	Half brick 38.1mm longitudinal fins

Specifications		
Model		PAH300-450
<b>Input</b>		
Input Voltage range	-	See model selector
Input Current	-	See model selector
Efficiency	-	See model selector
Conducted & Radiated EMI	-	EN55011/EN55032-A, FCC Class A, VCCI-A (External components are required, consult Instruction manual on website)
Immunity	-	IEC61000-4-2, -3, -4, -5, -6 (External component are required, consult Immunity Data on website)
Safety Certifications and Markings	-	IEC/UL/CSA/EN62368-1, 60950-1, CE Mark and UKCA Mark

Immunity				
Test	Standard	Test Level	Criteria	Notes
ESD	EN61000-4-2	Air ±10kV and contact ±5kV	A	External components are required (Consult Immunity Data on website)
Radiated Susceptibility	EN61000-4-3	80M -1GHz: 10V/m 1.4 - 2.0GHz: 3V/m 2.0 - 2.7GHz: 1V/m	A	
Electrical Fast Transient Burst	EN61000-4-4	±2.4kV	A	
Surge	EN61000-4-5	Common, Normal ± 600V	A	
Conducted Susceptibility	EN61000-4-6	10Vrms	A	

Specifications		
Model		PAH300-450
<b>Output</b>		
Output Voltage Tolerance	%	±1
Output Voltage Adjustment	-	See model selector
Switching Frequency	kHz	PAH300-350S24: 330, PAH300-350S48: 370, PAH450S48-28 400, PAH450S48-48: 460
Line Regulation	mV	12V: 24, 28V: 56, 48V: 96
Load Regulation	mV	12V: 24, 28V: 56, 48V: 96
External Load Capacitance	-	Contact Technical Sales
Ripple & Noise	mV	12V: 200; 28V: 280 (240 for PAH300 ), 48V: 480
Temperature Coefficient	%/°C	0.02
Minimum Load	-	No minimum load required
Overcurrent Protection	%	105 - 140, constant current with automatic recovery
Overvoltage Protection	-	See model selector, cycle input or remote on/off to reset
Overtemperature Protection	°C	105 - 130 base-plate
Remote Sense	-	Yes
Remote On/Off	-	Yes; Low = ON, High = OFF
Parallel Operation	-	Not possible
<b>Environmental</b>		
Operating Temperature (Baseplate)	°C	-40 to +100. PAH350S24-28 & -48: derate linearly to 85% load from 90 to 100
Storage Temperature	°C	-40 to +100
Humidity (non condensing)	%RH	Operating and storage: 5 - 95
Cooling	-	Conduction. (See Instruction Manual for heatsink selection)
Altitude	m	3,000
Withstand Voltage (For 1 minute)	Vdc	Input to Base-plate: 1,500; Input to Output 1,500; Output to Baseplate: 500
Isolation Resistance	MΩ	>100 at 25°C, 70%RH & 500Vdc
Vibration	-	Non Operating, 10-55Hz (sweep for 1 min.) Amplitude 0.825mm constant (Max 49 m/s <sup>2</sup> ) X,Y,Z 1 hour each
Shock	-	196.1m/s <sup>2</sup>

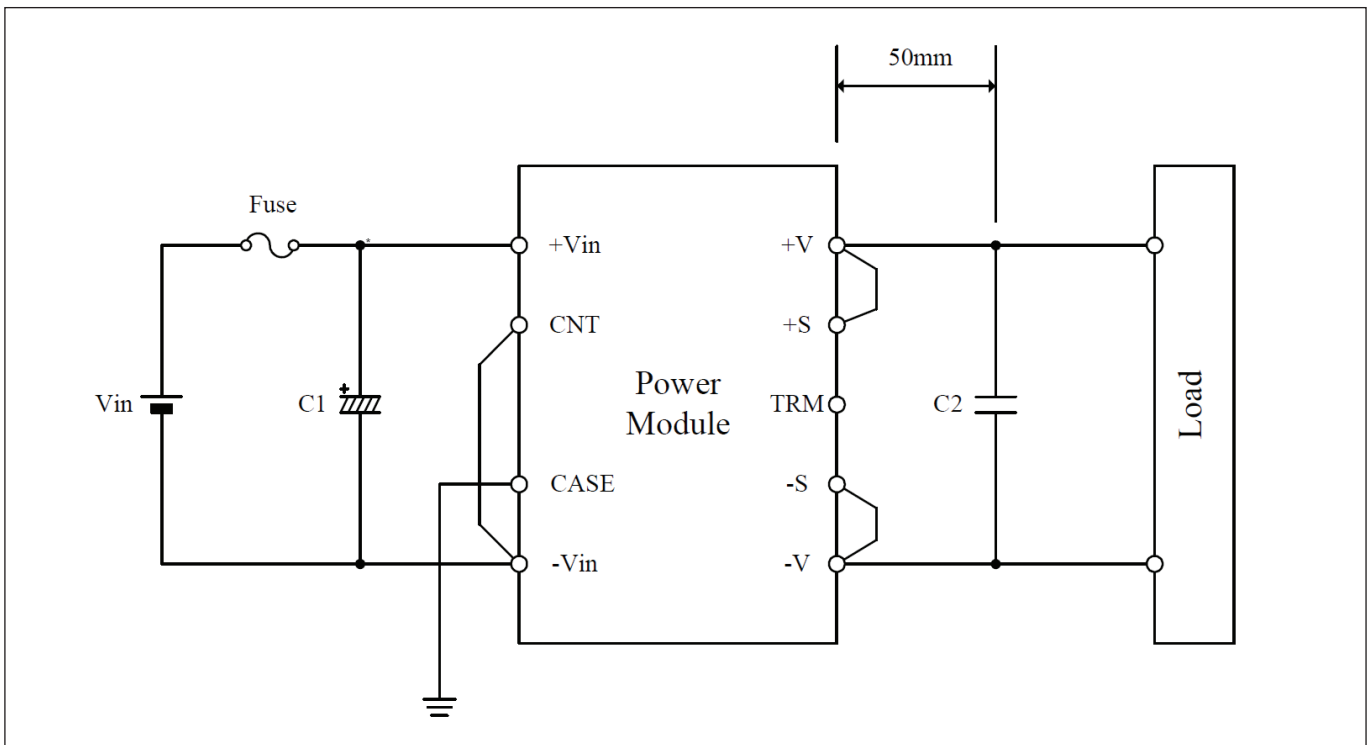
Specifications			
Model		PAH300-450	
<b>Other</b>			
Weight (Typ)	g	PAH300: 90, PAH350-450: 100	
Size (LxWxH)	mm	61 x 57.9 x 12.7	
Size (LxWxH)	Inches	2.4 x 2.28 x 0.5	
MTBF - Telcordia SR-332 issue 3*	Hours	PAH300: 5,133,191, PAH350: 5,181,681, PAH450: 1,733,846	
Warranty	Years	2	

**Notes**

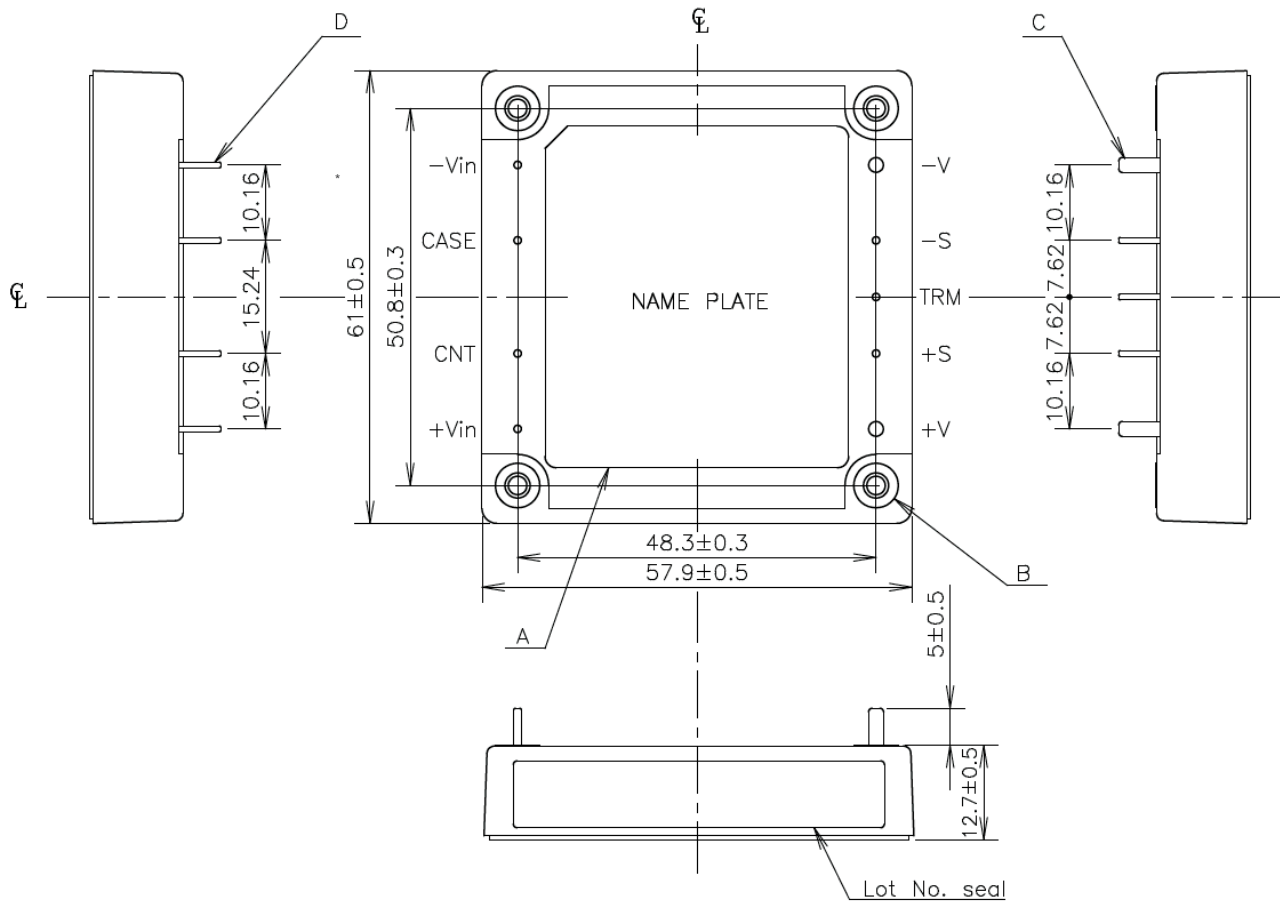
See website for detailed specifications, test methods and installation manual

\*Ground Benign 25°C

### Basic Connection Circuit



**Outline Drawing**



**NOTES :**

- A: Model name, input voltage range, nominal output voltage, maximum output current, country of manufacture and safety marking (for only approved products) are shown here in accordance with the specifications.
- B: M3 threaded holes 4 for customer chassis mounting (FG).
- C: Output terminals : 2- $\phi$ 2.0
- D: Input and signal terminals : 7- $\phi$ 1
- E: Unless otherwise specified dimensional tolerance :  $\pm$ 0.25