

Технические характеристики на преобразователи напряжения DC/DC серии РАН

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Набережные Челны (8552)20-53-41
Новосибирск (383)227-86-73
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PAH Series

48V Input Half brick
DC-DC Converters

- Industry Standard Footprint & Pinouts
- 12V output for driving non-isolated converters
- Safety Approved
- Full power at +100°C baseplate
- Wide Adjustable Output Range

Key Market Segments & Applications

Central Office:	ATM, Sonet, DSL, ISDN, Frame relay
Broadband:	Switching Equipment, Routers
Wireless/Cellular:	Micro Cells (larger in size/10 sq. mi.) Pico Cells (smaller in size/1 to 2 sq. mi.)
Remote Electronics:	Fixed Local Loop, Fiber Optic Transmission, Microwave Transmission, Wireless Local Loop
Customer Premise:	PBX, PABX, Datacomm, Voice Systems, Video Conferencing

PAH Features and Benefits

Features

- Wide adjustment range
- Zero Pre-load
- ASIC Design
- No potting materials

Benefits

- Reduces need for custom modules
- Eliminates heat dissipation in system
- Reduced component count, increased MTBF
- Lower weight

Specifications

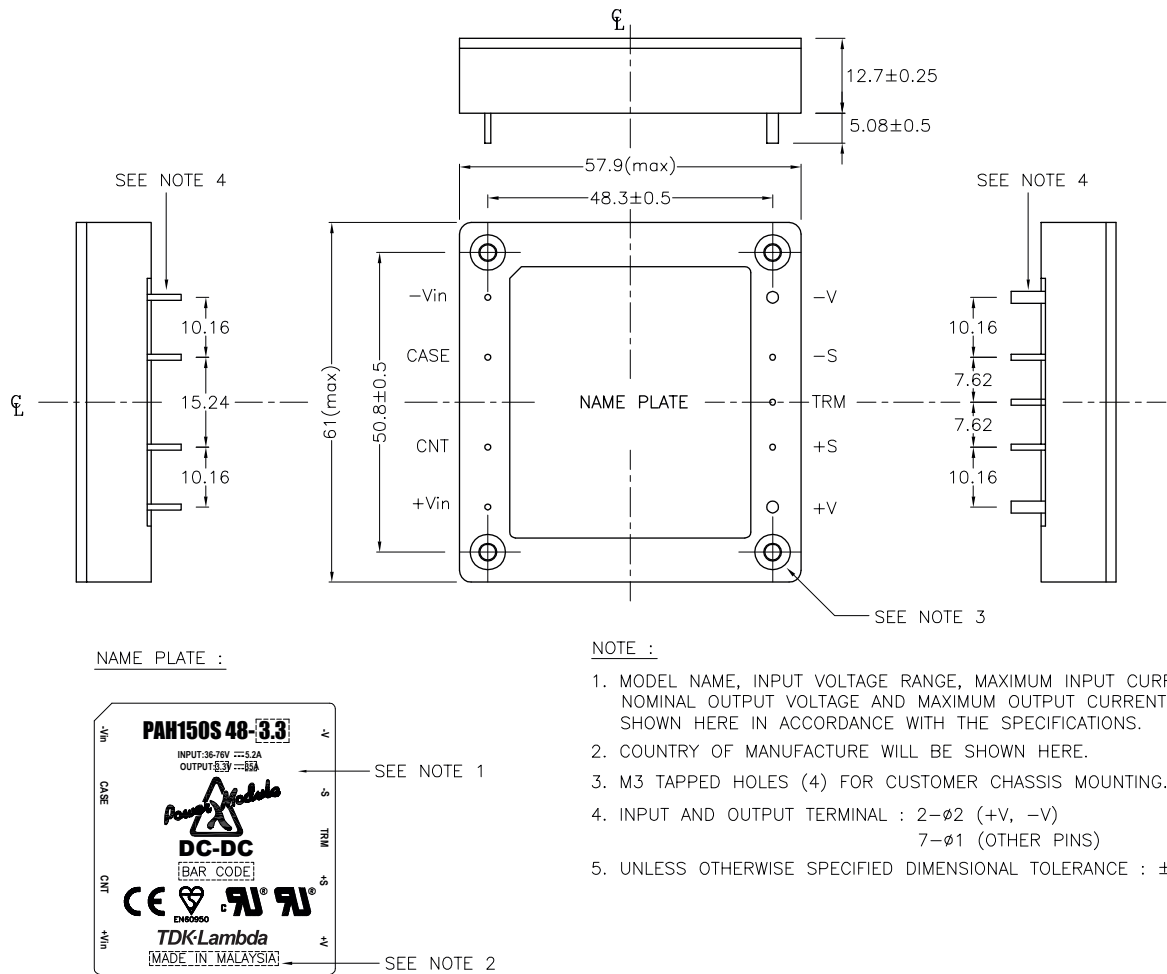
MODELS		2.5V	3.3V	5V	12V	15V	24V	28V	48V
ITEMS									
Efficiency (Typ)	%	75-76	79-80	83-84	85-86		86-88		88
Input Voltage range	VDC	36-76							
Output Voltage Accuracy	%	±1.6							
Max Ripple & Noise	mV	150			200		240	280	250
Max Line Regulation	mV	10			24	30	48	56	96
Max Load Regulation	mV	10			24	30	48	56	96
Overcurrent Protection	A	105 - 150% automatic recovery							
Overvoltage Protection	(1) %	120-160	120-140	125-145					135-155
Remote Sense	-	Yes							
Remote On/Off	-	Standard; Low = ON, Open = OFF /P option; Low = OFF, Open = ON)							
Operating Temperature	-	-40°C to +100°C baseplate							
Overtemperature	-	Shutdown between 105°C to 130°C, Auto restart							
Cooling	-	Conduction (See Installation Manual for heatsink selection)							
Isolation Voltage	V	Input - Baseplate 1500VAC, Input - Output 1500VAC, Output-Baseplate 500VDC							
Shock	-	196.1m/s²							
Vibration	-	Non Operating, 10-55Hz (sweep for 1 min.)							
Amplitude	-	0.825mm constant (Max 49 m/s²) X,Y,Z 1 hour each							
Safety Agency Approvals	-	UL60950-1, CSAC22.2 No.60950-1, EN60950-1, CE LVD							
Weight (Typ)	g	80							
Size (WxHxD)	in(mm)	2.28x0.5x2.4 (57.9x12.7x61) See outline drawing							
Warranty	yrs	2							

Notes: (1) See options table. General: See Installation Manual for full details, test methods of parameters and application notes

Model Selector				
Model Name	Output Voltage	Adjustment	Output Current	Maximum Power
PAH50S48-2.5	2.5	2.25 - 2.75	11.70	29.3
PAH75S48-2.5	2.5	2.25 - 2.75	17.50	43.8
PAH100S48-2.5	2.5	2.25 - 2.75	23.40	58.5
PAH150S48-2.5	2.5	2.25 - 2.75	35.00	87.5
PAH50S48-3.3	3.3	2.97 - 3.63	11.70	38.6
PAH75S48-3.3	3.3	2.97 - 3.63	17.50	57.8
PAH100S48-3.3	3.3	2.97 - 3.63	23.40	77.2
PAH150S48-3.3	3.3	2.97 - 3.63	35.00	115.5
PAH50S48-5	5.0	3.0 - 5.75	10.00	50.0
PAH75S48-5	5.0	3.0 - 5.75	15.00	75.0
PAH100S48-5	5.0	3.0 - 5.75	20.00	100.0
PAH150S48-5	5.0	3.0 - 5.75	30.00	150.0
PAH50S48-12	12.0	7.2 - 13.2	4.20	50.4
PAH75S48-12	12.0	7.2 - 13.2	6.30	75.6
PAH100S48-12	12.0	7.2 - 13.2	8.40	100.8
PAH150S48-12	12.0	7.2 - 13.2	12.50	150.0
PAH200S48-12	12.0	7.2 - 13.2	16.70	200.4
PAH50S48-15	15.0	9.0 - 16.5	3.40	51.0
PAH75S48-15	15.0	9.0 - 16.5	5.00	75.0
PAH100S48-15	15.0	9.0 - 16.5	6.70	100.5
PAH150S48-15	15.0	9.0 - 16.5	10.00	150.0
PAH200S48-15	15.0	9.0 - 16.5	13.40	201.0
PAH50S48-24	24.0	14.4 - 26.4	2.10	50.4
PAH75S48-24	24.0	14.4 - 26.4	3.20	76.8
PAH100S48-24	24.0	14.4 - 26.4	4.20	100.8
PAH150S48-24	24.0	14.4 - 26.4	6.30	151.2
PAH200S48-24	24.0	14.4 - 26.4	8.40	201.6
PAH50S48-28	28.0	16.8 - 30.8	1.80	50.4
PAH75S48-28	28.0	16.8 - 30.8	2.70	75.6
PAH100S48-28	28.0	16.8 - 30.8	3.60	100.8
PAH150S48-28	28.0	16.8 - 30.8	5.40	151.2
PAH200S48-28	28.0	16.8 - 30.8	7.20	201.6
PAH150S48-48	48.0	38.4 - 57.6	3.20	153.6

Options		
Suffix	ON/OFF Control	Overvoltage
-	Negative	Manual Reset
/P	Positive	Manual Reset
/V*	Negative	Auto Reset
/PV	Positive	Auto Reset
Note: * Standard US Stock Item.		

Outline Drawing PAH150S



Pinout

Pin Description	Function
-Vin	Negative Input Terminal
+Vin	Positive Input Terminal
Case	Baseplate Terminal
CNT	On / Off Control terminal
+V	Positive Output Terminal
-V	Negative Output Terminal
TRIM	Output adjustment Trim pin
+S	Positive Remote sense
-S	Negative Remote sense

PAH75D Series



Dual Output Half-Brick DC-DC Converters

- ◆ Industry Standard Footprint & Pinouts
- ◆ Telecom Approvals & Compliance
- ◆ Zero Pre-load Current
- ◆ 24 or 48VDC input
- ◆ Level B EMI with External Filtering
- ◆ Remote On / Off

RoHS

Key Market Segments & Applications

Central Office:	ATM, Sonet, DSL, ISDN, Frame relay
Broadband:	Switching Equipment, Routers
Wireless/Cellular:	Micro Cells Pico Cells
Remote Electronics:	Fixed Local Loop, Fiber Optic Transmission, Microwave Transmission, Wireless Local Loop
Customer Premise:	PBX, PABX, Datacomm, Voice Systems, Video Conferencing

PAH Features and Benefits

Feature

- ◆ Industry Standard footprint/pinout.
- ◆ ASIC Design
- ◆ No-preload requirements
- ◆ No potting materials used

Benefit

- ◆ Allows for multi-sourcing
- ◆ Increased reliability
- ◆ Eliminates the need for external components
- ◆ Less weight. Lower cost.

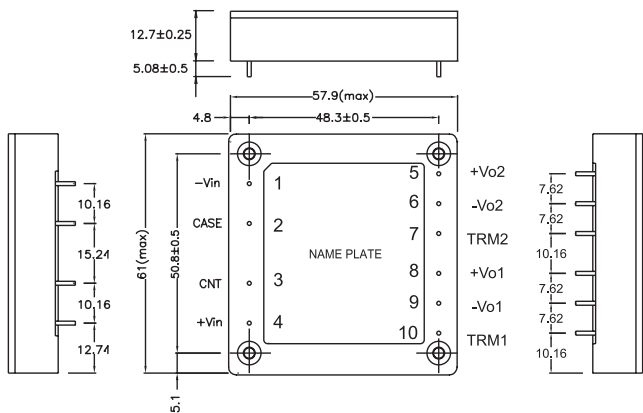
Specifications

MODEL		2518		3318		3325		5033	
		Vo1	Vo2	Vo1	Vo2	Vo1	Vo2	Vo1	Vo2
ITEMS									
Nominal Output Voltage	V	2.5	1.8	3.3	1.8	3.3	2.5	5.0	3.3
Output Current (Max)	A	15	15	15	15	15	15	15	15
Total Output Power (Max)	W	45		50		60		75	
Efficiency (Typ at 48VDC input)	%	74		78		78		82	
Input Voltage Range	-	36 ~ 76VDC				18 ~ 36VDC or 36 ~76VDC			
Input Current (Typ) 24/48Vnom	A	-1.06		-1.33		2.71/1.33		3.91/1.91	
Output Voltage Accuracy	%	±2							
Output Voltage Adjustment	V	2.5~2.75	1.8~1.98	2.97~3.63	1.8~1.98	2.97~3.63	2.25~2.75	4.5 ~ 5.5	2.97~3.63
Max Ripple & Noise	mV	75	75	100	75	100	75	100	100
Max Line Regulation	mV	±6.6	±6.6	±6.6	±6.6	±6.6	±6.6	±10	±6.6
Max Load Regulation	mV	±16.5	±16.5	±16.5	±16.5	±16.5	±16.5	±25	±16.5
Over Current Protection (*1)	%	105-165	105-165	105-165	105-165	105-165	105-165	105-165	105-165
	A	Vo2@0A	Vo1@5A	Vo2@0A	Vo1@5A	Vo2@0A	Vo1@5A	Vo2@0A	Vo1@5A
Over Voltage Protection	%	115-140	115-150	115-140	115-150	115-140	115-140	125-145	115-140
Operating Temperature	-	-40℃ ~ +100℃ (Baseplate)							
Cooling	-	Conduction cooled							
Isolation Voltage	-	Input-Output : 1.5kVDC, Input-Baseplate:1.5kVDC (20mA) for 1 min Output-Baseplate: 500VDC for 1 min							
Shock	m/s ²	196.1							
Safety Agency Approvals	-	UL60950-1, CSA60950-1, EN60950-1, CE Marking (48V input only)							
Weight (Typ.)	g	80							
Vibration	-	Non Operating, 10-55Hz (Sweep for 1min.)							
	-	Amplitude 0.825mm Constant (Maximum 49.0m/s ²) X, Y, Z 1 hour each							
Size (W×H×D)	mm	57.9 x 12.7 x 61 (Refer to outline drawing)							

*1: Other channel at output current specified.

PAH75D Series

Dual Output Outline Drawing



M3 tapped holes (4) for customer chassis mounting.

All of the terminals: 10-Ø1.0 mm

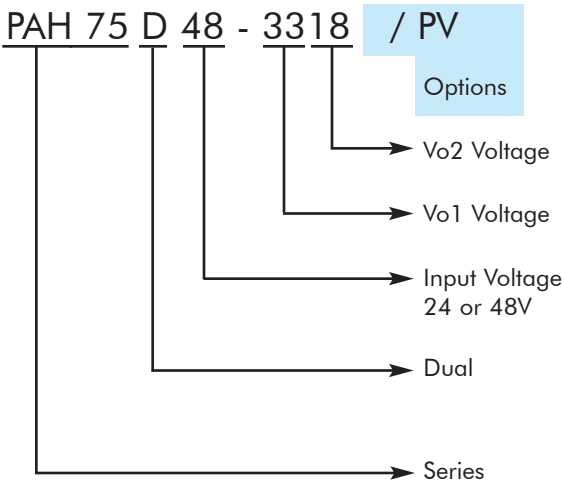
PAH Series Dual Output

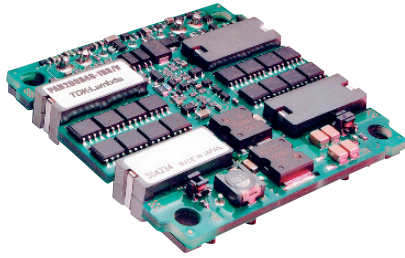
PIN#	Description	Function
1	-Vin	Negative Input Terminal
2	CASE	Baseplate Terminal
3	CNT	ON/OFF Control Terminal
4	+Vin	Positive Input Terminal
5	+Vo2	Vo2 Positive Output Terminal
6	-Vo2	Vo2 Negative Output Terminal
7	TRM2	Vo2 Output Adjust. Terminal
8	+Vo1	Vo1 Positive Output Terminal
9	-Vo1	Vo1 Negative Output Terminal
10	TRM1	Vo1 Output Adjust. Terminal

Options

Suffix	ON/OFF Control	OVP
-	Negative	Manual Reset
/P	Positive	Manual Reset
/V*	Negative	Auto Restart
/PV	Positive	Auto Restart
* standard US stock item		

PAH Series Model Number Example





PAH200H Series

High Current Half Brick
DC-DC Converters

- Industry Standard Package
- Low voltage outputs to 0.96V
- Output Currents up to 70A
- Designed for telecom standards
- Output voltage adjustment
- Remote On / Off

Key Market Segments & Applications

Central Office: ATM, Sonet, DSL, ISDN, Frame relay
Broadband: Switching Equipment, Routers
Remote Electronics: Fixed Local Loop, Fiber Optic Transmission, Microwave Transmission, Wireless Local Loop
Customer Premise: PBX, PABX, Datacomm, Voice Systems, Video Conferencing
Industrial: Systems, Video Conferencing, Distributed Power Applications

PAH200H Features and Benefits

Features

- High Efficiency
- Wide adjustment range
- ASIC Design
- No potting materials

Benefits

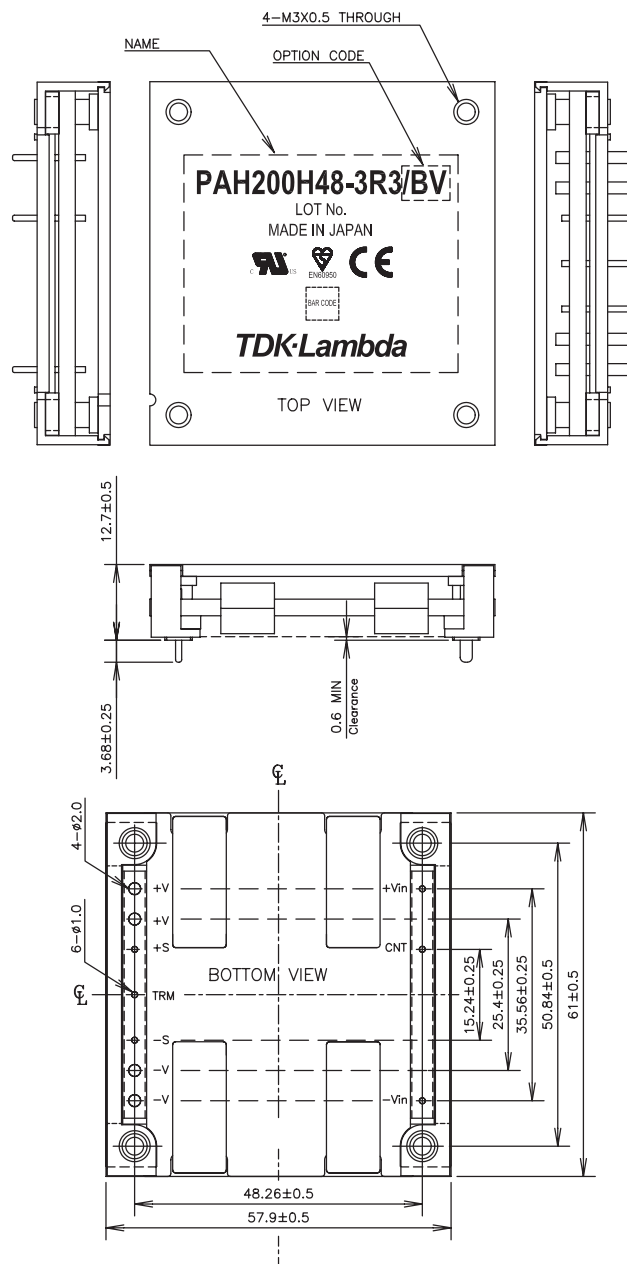
- Reduces System Heating
- Reduces need for custom modules
- Reduced component count, increased MTBF
- Lower weight

Specifications

MODELS		PAH200H48-1R2	PAH200H48-1R5	PAH200H48-1R8	PAH200H48-2R5	PAH200H48-3R3
ITEM						
Nominal Output Voltage	VDC	1.2	1.5	1.8	2.5	3.3
Output Current (Max)	A	70	70	70	70	60
Max Output Power	W	84	105	126	175	198
Efficiency (Typ)	%	82	84	87	88	90
Input Voltage range	VDC	36-76V(100V for 100ms)				
Input Current (typ)	A	2.19	2.67	3.08	4.23	4.68
Output Voltage Accuracy	%	±1				
Output Voltage Adjustment	V	0.96-1.32	1.2-1.65	1.44 - 1.98	2.0 - 2.75	2.805-3.795
Max Ripple & Noise	mV	100				
Max Line Regulation	mV	10				
Max Load Regulation	mV	10				
Overcurrent Protection	-	105 - 140% (See Options)				
Overvoltage Protection	-	120 - 140% (See Options)				
Remote Sense	-	Yes				
Remote On / Off	-	Yes (See options)				
Operating Temperature	-	-40°C to +85°C (100°C /B option) Baseplate temperature				
Operating Humidity	-	5 - 95% Non condensing				
Storage Temperature	-	-40°C to +100°C				
Cooling	-	Convection, or forced air				
Withstand Voltage	-	Input to Output 1500VAC for 1 min.				
Vibration (non operating)	-	10~55Hz (1 minute), amplitude 0.825mm (49m/s ² max), X, Y, Z 1 hr ea.				
Shock	-	196.1 m/s ²				
Safety Agency Approvals	-	IEC60950-1, EN60950-1, UL/CSA60950-1				
Weight (Typ)	g	90				
Size (WxHxD)	mm	57.9 x 10.2* x 61 */B version 12.7				
Warranty	-	2 Years				

Notes: See Installation Manual for full details, test methods of parameters and application notes.

Outline Drawing PAH200H/B

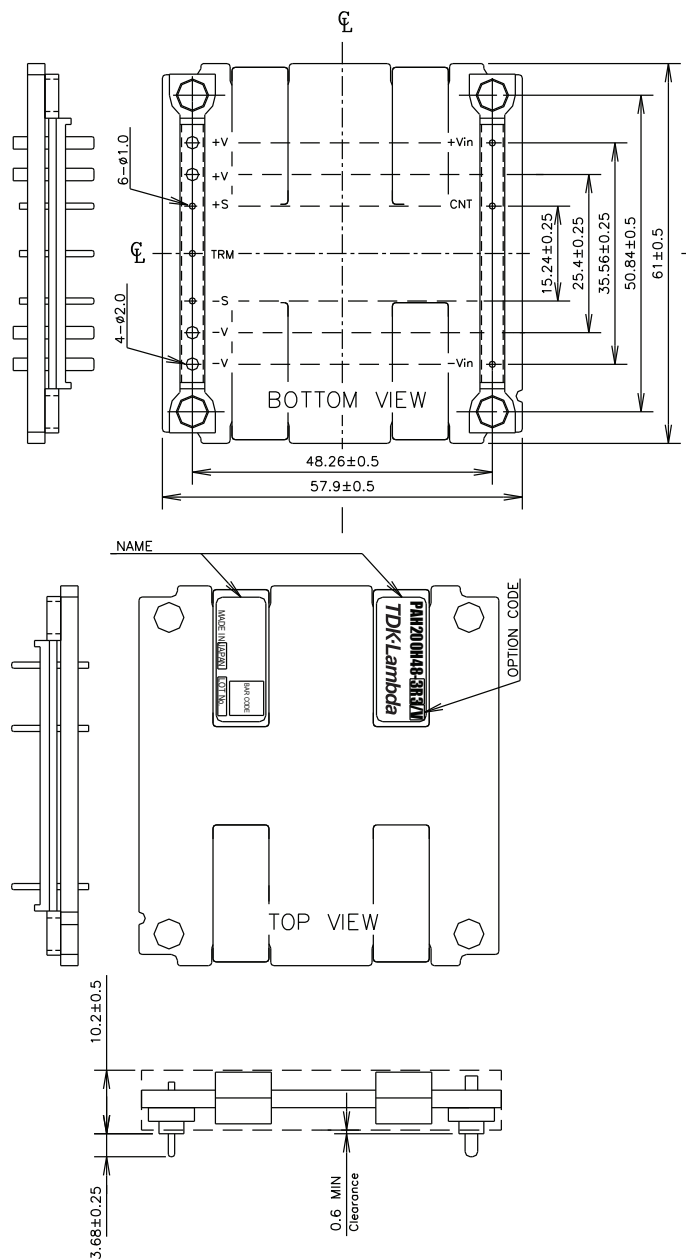


Options

Suffix	OCP / OVP	Remote On / Off
Blank	Manual Reset	Negative, Short = On
/V*	Auto Reset	Negative, Short = On
/P	Manual Reset	Positive, Open = On
/PV*	Auto Reset	Positive, Open = On
/C**	Single set of O/P pins	
/B	Baseplate Fitted	

Note: Suffix letter order: /C followed by /P followed by /V
Example: /CPV.
* Standard US Stock Item.
** See website for outline drawing—not available with /B option.

Outline Drawing PAH200H



Pinout

Pin Description	Function
-Vin	Negative Input Terminal
+Vin	Positive Input Terminal
CNT	On / Off Control terminal
+V	Positive Output Terminal
-V	Negative Output Terminal
TRIM	Output adjustment Trim pin
+S	Positive Remote sense
-S	Negative Remote sense



- 12V output for driving non-isolated converters
- Safety Approved
- Operation at +100°C baseplate
- Wide Adjustable Output Range
- Industry Standard Half Brick Package

Key Market Segments & Applications

Base Station Power Amplifiers

Bus converters for Distributed Power Architectures

PAH300/450 Series

300W to 450W 24V & 48V Input Half Brick DC-DC Converters

PAH Features and Benefits

Features

- Wide adjustment range
- Compact size
- ASIC Design
- 24V & 48V inputs

Benefits

- Reduces need for custom modules
- Replaces 3/4 or Full Brick Power Modules
- Reduced component count, increased MTBF
- Suitable for remote & central office applications

Specifications

ITEM		MODELS	PAH300S, 350S, 450S		
Nominal Output Voltage	VDC		12V	28V	48V
Input Voltage range	VDC		18-36 or 36-76		
Input Current (Max)	A		8.24-17.4A (model dependant)		
Output Voltage Adjustment	VDC		7.2 - 13.2	16.8 - 33	28.8 - 57.6(5)
Ripple & Noise (max) (pk to pk)	mV		200	280(1)	480
Line Regulation (max)	mV		24	56	96
Load Regulation (max)	mV		24	56	96
Overload Protection	%		105 - 140%, constant current with auto recovery		
Overvoltage Protection (3)	%		115-135%	125-140%(2)	125-145%(6)
Remote Sense	-		Yes		
Remote On/Off (See options)	-		Standard; Low = ON, Open = OFF /P option; Low = OFF, Open = ON		
Temperature (operating)	°C		-40°C to +100°C baseplate, full power(4)		
Temperature (storage)	°C		-40°C to +100°C		
Temperature Coefficient	-		0.02%/°C		
Humidity (operating)	-		5 - 95% RH Non condensing		
Humidity (storage)	-		5 - 95% RH Non condensing		
Cooling	-		Conduction (See Installation Manual for heatsink selection)		
Isolation Voltage	VDC		1500VDC Input to output & baseplate, 500VDC Output to baseplate		
Vibration	-		Non Operating, 10-55Hz (sweep for 1 min.)		
Amplitude	-		0.825mm constant (Max 49 m/s ²) X,Y,Z 1 hour each		
Shock	-		196.1m/s ²		
Safety Agency Approvals	-		UL60950-1, CSA60950-1, EN60950-1, CE LVD (48V input models only)		
Weight (Typ)	g		90/100		
Size (WxHxD)	mm		61x12.7x57.9 See outline drawing		
Warranty	yrs		2		

Note: See Installation Manual for full details, test methods of parameters and application notes

- (1) 240mV for PAH300
 (2) 125-145% for PAH450S48-28
 (3) Manual reset

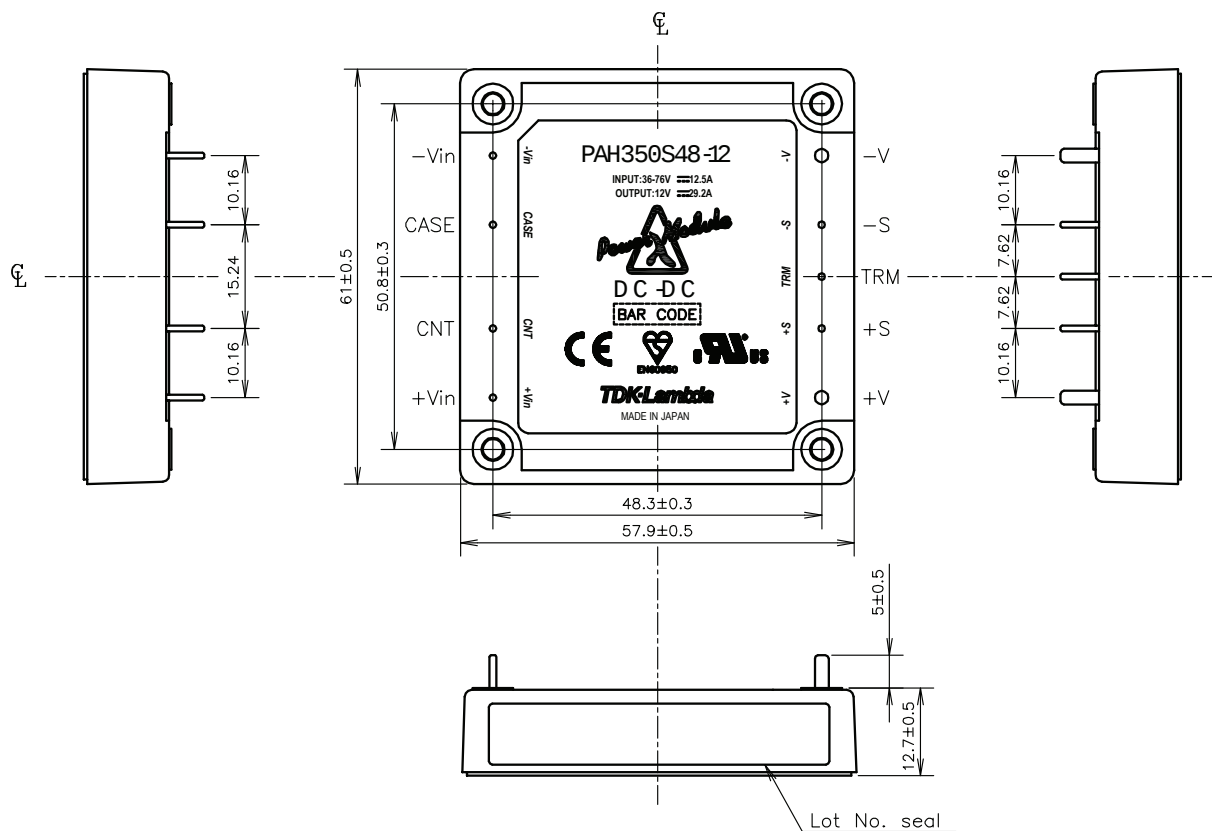
- (4) PAH350S24-28 & -48 derate linearly to 85% load from 90°C to 100°C
 (5) 28.8-52.8 PAH350S24-48
 (6) 115-140% PAH350S24-48

Model Selector					
Model	Input Voltage (V)	Output Voltage (V)	Max. Curr. (A)	Max. Output Power (W)	Efficiency Typ. (%)
PAH300S24-12	18 - 36	12	25	300	87
PAH300S48-12	36 - 76	12	25	300	90
PAH350S48-12	36 - 76	12	29.2	350	89
PAH300S24-28	18 - 36	28	11	308	88
PAH350S24-28	18 - 36	28	12.5	350	88
PAH350S24-48	18 - 36	48	7.3	350	87
PAH300S48-28	36 - 76	28	11	308	90
PAH350S48-28	36 - 76	28	12.5	350	89
PAH450S48-28	36 - 76	28	16	448	92
PAH450S48-48	36 - 76	48	9.4	451	92

Pinout	
Pin Description	Function
-Vin	Negative Input Terminal
+Vin	Positive Input Terminal
CNT	On / Off Control terminal
+V	Positive Output Terminal
-V	Negative Output Terminal
TRIM	Output adjustment Trim pin
+S	Positive Remote sense
-S	Negative Remote sense

Options	
Suffix	Description
-	M3 Tapped inserts for mounting
/T	M3 clearance inserts for mounting
/P	Positive logic remote On/Off (not on PAH450S)

Outline Drawing PAH300/450 Series



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