



50W to 300W DC-DC Converters, Single Output High Density Power Modules



Quarter brick shown

Features	Benefits
• High Density	• Smaller Package Size
• Up to 425 Vdc Input	• Cover HVDC Telecom Requirements
• Fixed Operating Frequency	• Easier System Filtering
• High Efficiency	• Better System Thermal Management
• Certified to IEC/EN62477-1 OVC III	• No External Transformer Needed

Specification			PH50A280	PH75A280	PH100A280	PH150A280	PH300A280
ITEMS							
Input Voltage range	-				200 - 425 VDC		
Input Current (1)	A				See Model selector		
Output Voltage Accuracy	%				+/-2		
Maximum Ripple and Noise (5)	mV		3.3 & 5V: 100mV, 12 & 15V: 150mV, 24V: 240mV, 28V: 280mV, 48V: 400mV (300W 480mV)				
Temperature Coefficient	-				<0.02°C / W		
Overvoltage protection (2) (4)	-				See model selector		
Overcurrent protection (6)	%				102-150		
Remote sense (2)	-				Yes		
Remote ON/OFF control (2)	-				yes - SHORT=ON OPEN=OFF		
Series Operation (2)	-				Yes		
Parallel Operation	-				No		
Operating Temperature (2)	°C				-40°C to +100°C (Baseplate), -40°C to +85°C (Ambient)		
Storage Temperature	°C				-40°C to +100°C		
Humidity (non condensing)	-				Operating: 5 - 95%RH, Storage: 5 - 95%RH		
Cooling	-				Conduction cooled		
Withstand Voltage (3)	-				I/P to Baseplate 2.5kVAC (20mA), I/P to O/P: 3kVAC (20mA), O/P to Baseplate: 500VAC (20mA) for 1min		
Isolation Resistance	MΩ				>100MΩ at 25°C & 70%RH, Output to Baseplate: 500VDC		
Vibration	-				10 - 55Hz (1 minute sweep), Amplitude 0.825mm Constant (Maximum 49.0m/s ²) X, Y, Z 1 hour each		
Shock	-				196.1 m/s ²		
Safety Agency Approvals	-				IEC/EN/UL/CSA60950-1, IEC/EN/UL/CSA62368-1, EN62477-1 (OVC III, PH300A only) and CE Mark		
Weight (Typ)	g				50 - 150W: 55, 300W: 100		
Size (W x H x D) (7)	mm				Quarter Brick Format 37.2 x 12.7 x 58.3		Half Brick Format 61.0 x 12.7 x 57.9
Warranty	yrs				5		

Notes:

- (1) At 280 VDC input and maximum output current (baseplate temperature = 25°C)
- (2) Refer to detailed Specifications & Instruction Manual
- (3) This specification applies to the Power Module as a stand-alone item
- (4) OVP reset: Line OFF or Control OFF
- (5) 200 - 425 VDC input, Constant load
- (6) Constant current limitation - Automatic recovery
- (7) Refer to outline drawing

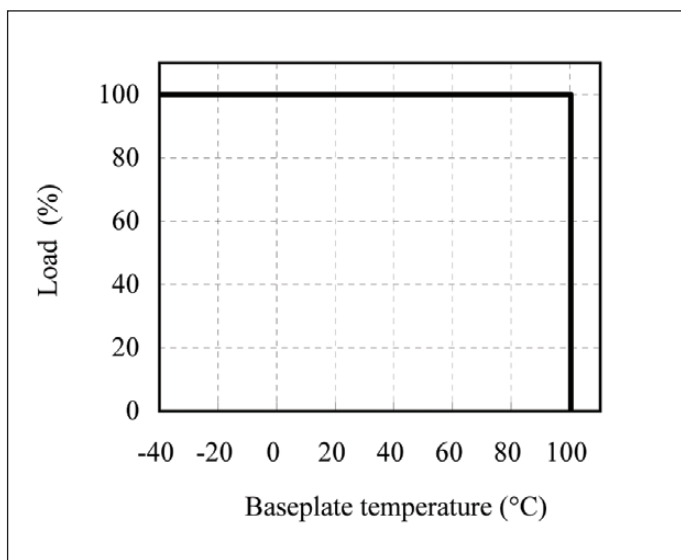
Read Instruction Manual carefully before using the Power module unit

Model Selector

Model	Output Voltage	Output Adjust Range (V)	Max Output Current (A)	Max Output Power (W)	Efficiency ⁽³⁾ (%)	Input Current (A)	Load Reg ⁽¹⁾ (mV)	Line Reg ⁽²⁾ (mV)	OVP (V)
PH50A280-5	5V	4 - 6	10	50	86	0.21	10	10	6.25 - 7.5
PH50A280-12	12V	9.6 - 13.2	4.2	50.4	89	0.20	24	24	13.8 - 17.4
PH50A280-24	24V	19.2 - 26.4	2.1	50.4	89	0.20	48	48	27.6 - 34.8
PH50A280-48	48V	38.4 - 52.8	1.1	52.8	89	0.21	96	96	55.2 - 69.6
PH75A280-3.3	3.3V	2.97 - 3.96	15	49.5	83	0.22	10	10	4.3 - 6.6
PH75A280-5	5V	4 - 6	15	75	86	0.32	10	10	6.25 - 7.5
PH75A280-12	12V	9.6 - 13.2	6.3	75.6	89	0.31	24	24	13.8 - 17.4
PH75A280-15	15V	12.5 - 16.5	5	75	90	0.30	30	30	17.2 - 21.8
PH75A280-24	24V	19.2 - 26.4	3.2	76.8	90	0.31	48	48	27.6 - 34.8
PH75A280-28	28V	23.3 - 30.8	2.7	75.6	90	0.30	56	56	32.2 - 40.6
PH75A280-48	48V	38.4 - 52.8	1.6	76.8	90	0.31	96	96	55.2 - 69.6
PH100A280-3.3	3.3V	2.97 - 3.96	20	66	83	0.29	10	10	4.3 - 6.6
PH100A280-5	5V	4 - 6	20	100	86	0.42	10	10	6.25 - 7.5
PH100A280-12	12V	9.6 - 13.2	8.4	100.8	88	0.41	24	24	13.8 - 17.4
PH100A280-24	24V	19.2 - 26.4	4.2	100.8	89	0.41	48	48	27.6 - 34.8
PH100A280-48	48V	38.4 - 52.8	2.1	100.8	90	0.40	96	96	55.2 - 69.6
PH150A280-12	12V	9.6 - 13.2	12.5	150	88	0.62	24	24	13.8 - 17.4
PH150A280-15	15V	12.5 - 16.5	10	150	90	0.6	30	30	17.2 - 21.8
PH150A280-24	24V	19.2 - 26.4	6.3	151.2	89	0.61	48	48	27.6 - 34.8
PH150A280-28	28V	23.3 - 30.8	5.4	151.2	90	0.61	56	56	32.2 - 40.6
PH150A280-48	48V	38.4 - 52.8	3.2	153.6	90	0.60	96	96	55.2 - 69.6
PH300A280-5	5V	2.5 - 6	60	300	89	1.22	10	10	6.25 - 7.25
PH300A280-12	12V	7.2 - 14.4	25	300	89	1.22	24	24	15 - 17.4
PH300A280-24	24V	14.4 - 28.8	12.5	300	90.5	1.20	48	48	30 - 34.8
PH300A280-28	28V	16.8 - 33.6	10.8	302.4	91	1.20	56	56	35 - 40.6
PH300A280-48	48V	28.8 - 57.6	6.3	302.4	92	1.19	96	96	60 - 69.6

Notes: (1) No load - Full load, Constant input voltage (2) 200 - 425 VDC input, Constant load (3) At 280VDC input and maximum output current

Derating Curve PH-A 280 Series



Pin Assignments

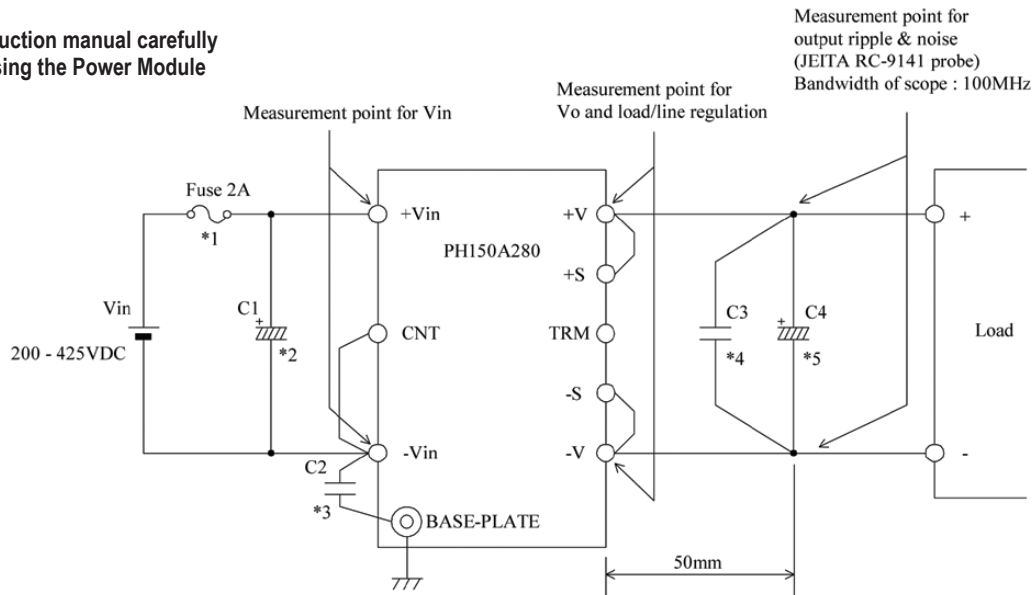
Pin Description	Function
+Vin	Positive Input Terminal
-Vin	Negative Input Terminal
+S	Positive Remote Sense
-S	Negative Remote Sense
+V	Positive Output Terminal
-V	Negative Output Terminal
CNT	On/Off Control Terminal
TRM	Output Adjustment Trim Pin

Heat Sink Accessories

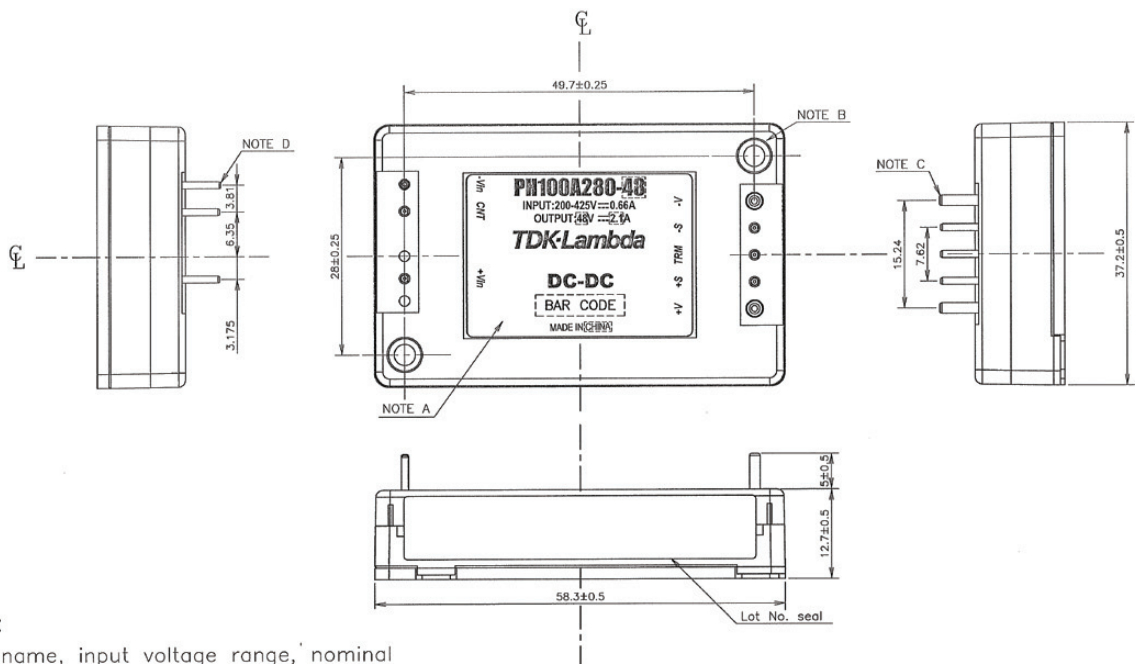
Model	Description
HAQ-10T	PH50A to 150A 25mm transverse fins
HAH-10T	PH300A 25mm transverse fins
HAH-15T	PH300A 38mm transverse fins
HAH-15L	PH300A 38mm longitudinal fins

Basic Connection PH-A 280 Series

Read instruction manual carefully
before using the Power Module



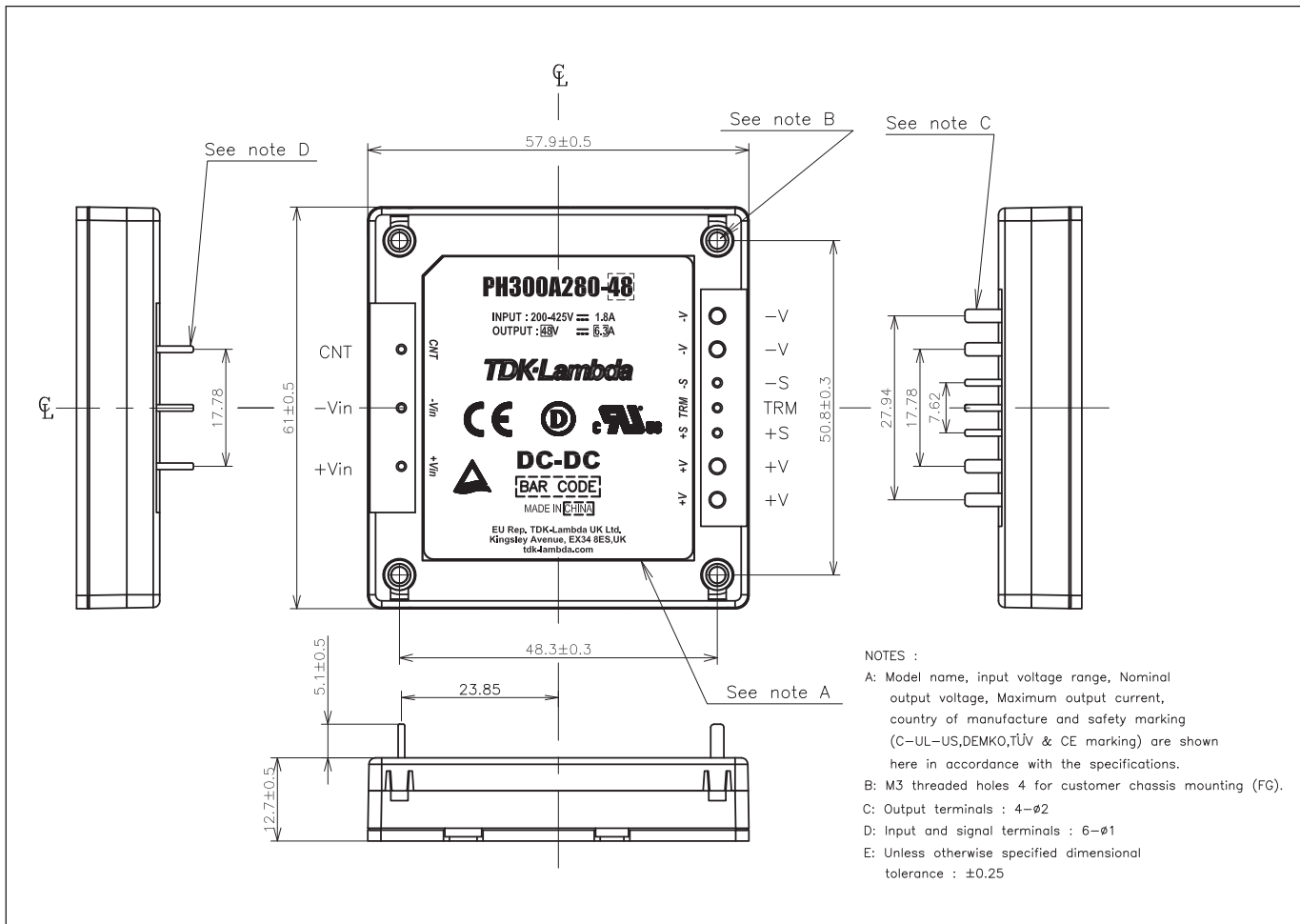
Outline Drawing PH50-A to PH150-A 280 Series



NOTES :

- A: Model name, input voltage range, nominal output voltage, maximum output current, country of manufacture and safety marking (C-UL-US & CE marking) are shown here in accordance with the specifications.
- B: M3 tapped holes 2 for customer chassis mounting (FG).
- C: Output pin : 2- ϕ 1.5
- D: Input and Signal pin : 6- ϕ 1.0
- E: Unless otherwise specified dimensional tolerance : ± 0.25 mm

Outline Drawing PH300-A 280 Series





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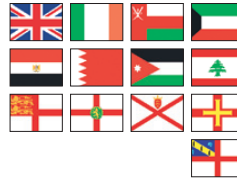
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