1200W, 200 to 425VDC Input DC-DC Converters

https://product.tdk.com/en/power/ph-a
www.emea.lambda.tdk.com/ph-a



Industrial COTS Test COMM

The PH1200A280 series of isolated DC-DC converters operate from a wide range 200 to 425Vdc input and are rated at 1200W. Output voltages cover 12V to 48V and can be adjusted using the trim terminal by up to -40% to +20%. All models feature a parallel function and ORing FET for higher power or N+1 redundant systems. Remote sense, remote on/off, inverter good signal and a 12V auxiliary voltage are also included as standard. The power modules can be conduction cooled to a cold plate or fitted with an optional heatsink. These 94% efficient converters are well suited for distributed power architectures, HVDC (High Voltage Direct Current) power transmission systems and renewable energy applications.

Features	Benefits
• Wide Range 200 to 425Vdc Input	• Suitable for HVDC Applications
• Baseplate Cooled	• Can be Conduction or Convection Cooled with a Heatsink
• -40 to 100°C Baseplate Temperature	• Operates in Harsh Environments
• Parallel Function with Internal ORing FET	• Suitable for Higher Power or N+1 Redundant Systems
• Up to 94% Efficient	• Easier To Cool In the End System

Model Selector

Model	Output Voltage (V)	Adjustment Range (V)	Maximum Current (A)	Maximum Power (W)	Input Current (A) 280V input, 100% load	Efficiency (%) 280V input, 100% load	Overvoltage Protection (V)
PH1200A280-12	12	7.2 - 14.4	100	1200	4.61	94	15 - 17.4
PH1200A280-24	24	14.4 - 28.8	50	1200	4.61	94	30 - 34.8
PH1200A280-28	28	16.8 - 33.6	42.9	1201.2	4.61	94	35 - 40.6
PH1200A280-36	36	21.6 - 43.2	33.4	1202.4	4.62	94	45 - 52.2
PH1200A280-48	48	28.8 - 57.6	25	1200	4.61	94	60 - 69.6

PH	1200A	280	-12	/T
Series	Output Power	Nominal Input Voltage	Output Voltage: 12, 24, 28, 36, 48V	Options

Suffix	Description
Blank	M3 tapped mounting inserts
/T	3.3mm non-threaded inserts

Related Products

Type	Part Number(s)	Description
DC-DC Converters	PH-A series	50W to 600W, 200 to 425V Input DC-DC Converters
DC-DC Converters	CN200B110 to CN300B110	200 to 300W, 43 to 160V Input DC-DC Converters
Heatsink	HAF-10L	Full brick 25mm longitudinal fins
Heatsink	HAF-15L	Full brick 38.1mm longitudinal fins
Heatsink	HAF-15T	Full brick 38.1mm transverse fins

Specifications

Model		PH1200A280
Input		
Input Voltage range	Vdc	200 - 425V
Input Current (280Vdc)	A	See model selector
No Load Power Consumption	W	See evaluation data on website
Efficiency	-	See model selector
Conducted & Radiated EMI	-	See evaluation data on website
Immunity	-	See immunity data on website
Safety Certifications and Markings	-	IEC/UL/CSA/EN62368-1, CE Mark and UKCA Mark
Output		
Output Voltage Tolerance	%	±1
Output Voltage Adjustment	-	See model selector
Switching Frequency	kHz	200
Line Regulation	mV	12V: 48, 24V: 56, 28V: 56, 36V: 72, 48V: 96
Load Regulation	mV	12V: 48, 24V: 56, 28V: 56, 36V: 72, 48V: 96
Ripple & Noise	mV	12V: 260, 24V: 240, 28V: 280, 36V: 360, 48V: 480
Temperature Coefficient	%/°C	0.02
Minimum Load	-	No minimum load required
Overcurrent Protection	-	102 - 150% constant current characteristic. Unit will shutdown if left in an overload condition
Overvoltage Protection	V	See model selector. Cycle input or remote on/off to reset
Remote Sense	-	Yes
Remote On/Off	-	Yes; Low = ON, High = OFF
Module Good Signal	-	Signal is low when inverter is operating normally
Auxiliary Voltage	-	10 - 14V, 20mA
Parallel Operation	-	Up to 11 units, see instruction manual. Internal ORing FET for redundant applications
Environmental		
Operating Temperature	°C	-40 to +100 Base-plate, -40 to +85 Ambient (See derating section)
Storage Temperature	°C	-40 to +100
Humidity (non condensing)	%RH	5 - 95 Operating and Non Operating
Cooling	-	Conduction, convection or forced air (See Instruction Manual for heatsink selection)
Altitude	m	3,048
Withstand Voltage (For 1 minute)	Vac	Input to Base-plate: 2,500; Input to Output 3,000; Output to Base-plate: 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 49m/s^2) X,Y,Z 1 hour each
Shock	-	196.1m/s^2
Other		
Weight (Typ)	g	200
Size (LxWxH)	mm	116.6 x 61 x 12.7
Size (LxWxH)	Inches	4.6 x 2.4 x 0.5
MTBF - Telcordia SR-332 issue 3*	Hours	4,870,826
Warranty	yrs	5

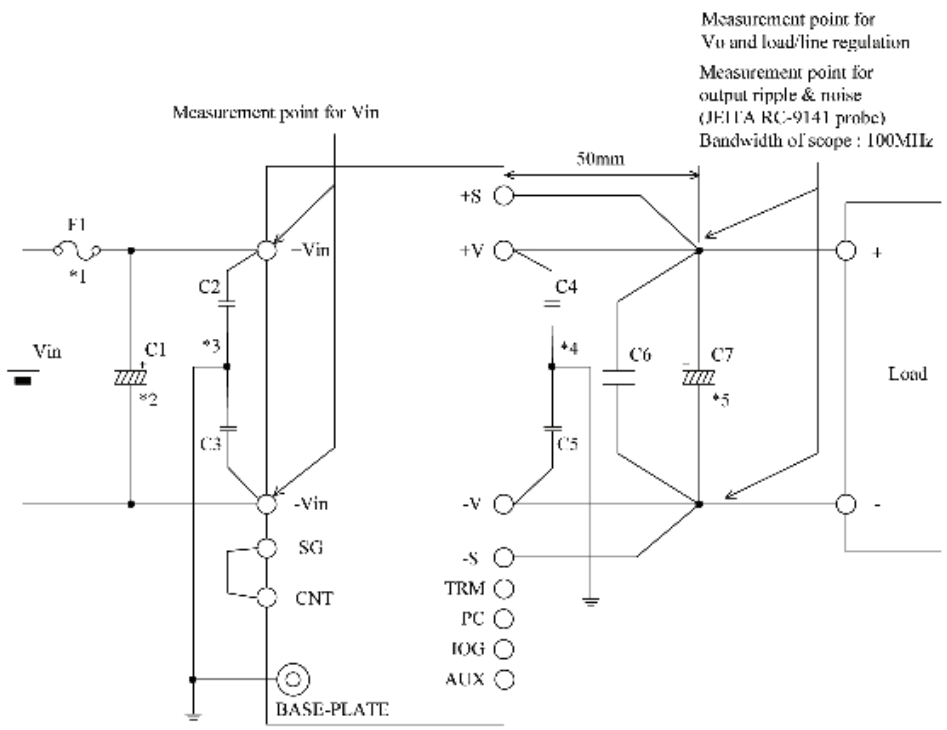
Notes

See website for detailed specifications, test methods and installation manual

* 40°C baseplate, full load, 280Vdc input, ground benign

(See full reliability data on website)

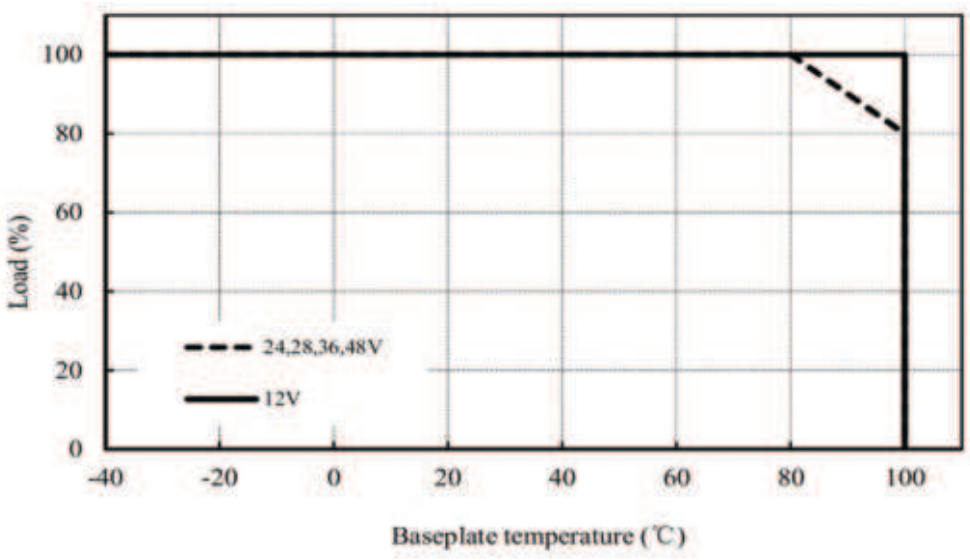
Typical Application Circuit



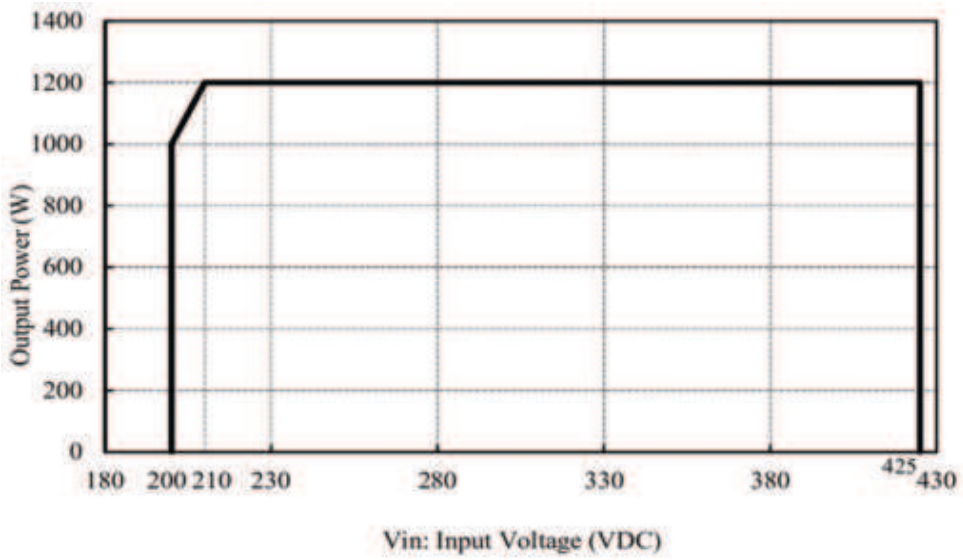
External Components list

F1:	10A		C7:	12V	1500uF x2 Parallel (Elec. Cap.)
C1:	22uF (Elec. Cap.)			24V	1500uF (Elec. Cap.)
C2:	4700pF (Ceramic Cap.)			28V	1500uF (Elec. Cap.)
C3:	4700pF (Ceramic Cap.)			36V	560uF x2 Parallel (Elec. Cap.)
C4:	0.022uF (Film. Cap.)			48V	1500uF x2 Series (Elec. Cap.)
C5:	0.022uF (Film. Cap.)				
C6:	2.2uF (Ceramic Cap.)				

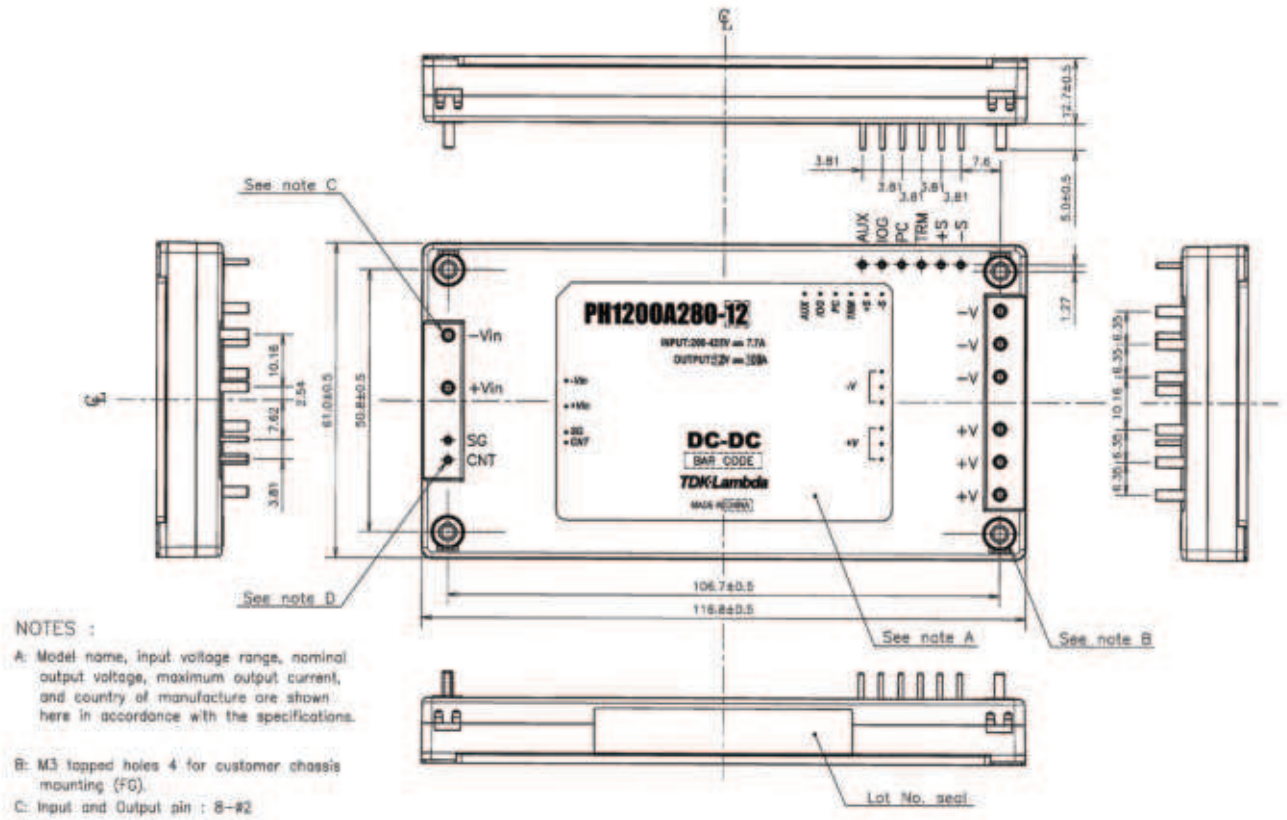
Derating Curve Load vs. Baseplate Temperature



Derating Curve Load vs. Input Voltage



Outline Drawing



NOTES :

A: Model name, input voltage range, nominal output voltage, maximum output current, and country of manufacture are shown here in accordance with the specifications.

B: M3 tapped holes 4 for customer chassis mounting (FG).

C: Input and Output pin : 8-#2

D: Signal pin : 8-#1

E: Unless otherwise specified dimensional tolerance : ±0.3mm

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