

500 Watt AC-DC Power Module

Features

- ◆ 4" x 2.4" Brick Foot-print with Metal Case
- ◆ High Power Density; High Efficiency
- ◆ Suitable for Conduction Cooling
- ◆ Power Factor Corrected
- ◆ PMBus™
- ◆ Droop Load Share (optional)
- ◆ No Minimum Load Requirement



Key Market Segments & Applications



Specifications

Model		PFH500F-12	PFH500F-28	PFH500F-48
AC Input Voltage (1)	VAC	85 to 265VAC, 47-63Hz		
AC Input Current (typ) (4)	A	5 / 2.5A		
Power Factor	-	0.95 minimum (Vin=230VAC, Io > 80%, Tc=25°C, meets EN61000-3-2)		
Inrush Current (typ) (4)	A	9A / 18A (peak) (20A max)		
Input Turn-on Voltage	VAC	83V (typ)		
Input Turn-off Voltage	VAC	79V (typ)		
Hold-up (Typ.) (1) (2)	ms	40ms	20ms	10ms (6)
Output Voltage Set-point	VDC	11.76 - 12.24VDC (Vin=115Vac, Io=0%)	27.5 - 28.5VDC (Vin=115Vac, Io=0%)	47.04 - 48.96VDC (Vin=115Vac, Io=0%)
AC Start-Up Delay (115/230 VAC) (2)	s	2.8/1.2 typ	2.7/1.2 typ	2.7/1.2 typ
Remote ON/OFF Start-Up Delay (2)	s	2.5/1.0 typ (115/230VAC) with AC applied from Remote ON/OFF assertion to 10% of Vo		
Output Voltage Rise Time (typ)	ms	45ms	65ms	150ms
Line Regulation (typ) (Io=50% of Io,max, Vin=Vin,min to Vin, max)	mV	35mV (0.3%)	42mV (0.15%)	48mV (0.1%)
Load Regulation (typ) (Vin=115/230 Vac)	mV	15mV (0.125%) (Io=10% to Io,max, excluding Droop)	28mV (0.1%) (Vin=115/230 Vac, (Io=0 to Io,max, excluding Droop)	48mV (0.1%) (Vin=115/230 Vac, (Io=0 to Io,max, excluding Droop)
Output Ripple (Pk to Pk) (3)	mV	150mV Typ. (250mV max.)	400mV Typ. (500mV max.)	400mV Typ. (500mV max.)
Over Voltage Protection (max)	VDC	15.7V	35.5V	55.0V
Over Current Protection (Hiccup) (typ) (5)	A	47.5A	21.5A	12.5A
Output Capacitance Range (CC) (CR)	uF	3,000 - 10,000 3,000 - 45,000	470 - 6,000 470 - 20,000	470 - 4,000 470 - 6,000
Power Good Signal	mA	Open collector 200mA max. (Active low)		
Auxiliary Supply	-	10-14V; 200mA		
Remote On/Off	VDC	Low = On, < 0.8VDC (3.3V max input)		
Over Temperature Protection	°C	Input line voltage dependent (see derating curves)		
Series Operation	-	Yes (maximum of two units)		
Parallel Operation (optional)	-	Droop Share		
Operating Baseplate Temperature	°C	-40 to 100°C (with derating)		
Storage Temperature	°C	-55 to 125°C		
Humidity (non condensing)	%	Operating: 20 - 95%RH, Non Operating: 10 - 95%RH		
Cooling	-	Conduction		
Withstand Voltage (1 min)	VAC	Input to Output 3,000VAC: Input to Case 2,500VAC: Output to Case 1,500VDC		
Isolation Resistance	Ω	Output to Case: 100MΩ at 500Vdc, 25C ambient, 70%RH		
Vibration (Non Operating)	-	MIL-STD-810G: 514.6 Cat 4, Cat 21; Sine Vibration 23.52 m/s ² Constant (XYZ Axis)		
Shock	-	MIL-STD-810G: 516.6 Procedure I (XYZ Axis)		
Safety Certifications	-	UL/cUL60950-1, IEC/EN60950-1, CE Mark		
Size (typ)	in. (mm)	4.00 x 2.40 x 0.53 (101.6 x 61.0 x 13.3)		
Weight (max)	g	225		
Warranty	Years	3		

Notes: External components are required. Consult the Instruction Manual for more detailed information.

1) Maximum Power will be derated at Vin < 100V with 6.7 W/W (400W@85Vin).

2) With 2 x 470uF bulk cap, 100% Load, Tc = 25°C.

3) Vin=115/230Vac, Io=100%, Tc=25°C. Measured across one 0.1uF, four 10uF ceramic capacitors and recommended minimum output capacitance located 2 inches away. BW = 20MHz.

4) Vin = 115/230Vac, Io = 100%, Tc = 25°C.

5) When Vo > VO_nominal, OCP trip point will be lower to limit PO_max allowed.

6) For longer Hold-Up time on 48V, consult factory.

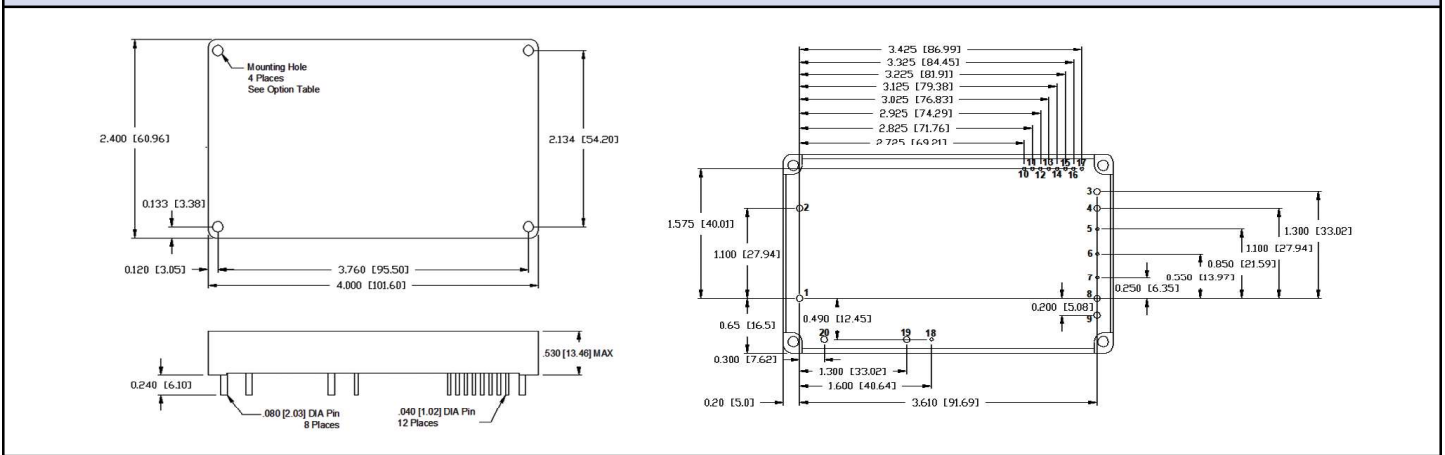
Specifications

Model	Output Voltage (V)	Adjust. Range (V)	Maximum Current (A)	Maximum Wattage (W)	Efficiency (typ) (%) (4)
PFH500F-28-XXX-R	28	22.4 - 33.6	18	504	90 / 92
PFH500F-12-XXX-R	12	9.6 - 14.4	42	504	90 / 92
PFH500F-48-XXX-R	48	38.4 - 52.8	10.5	504	89 / 91

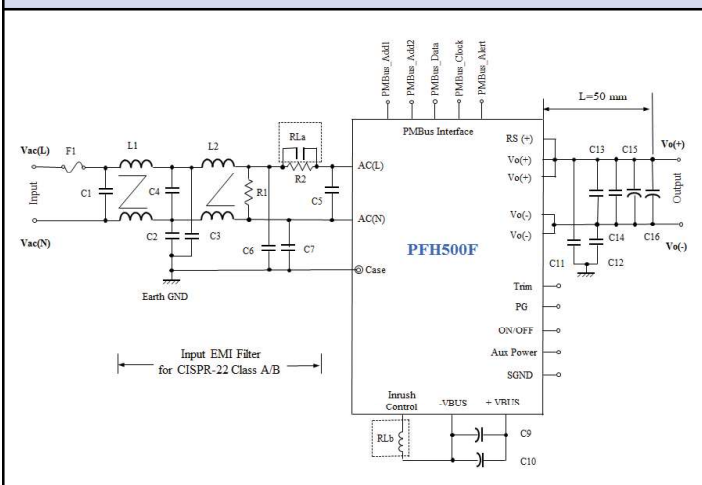
Model Suffix (“XXX”) Selector

Suffix	Mounting Inserts	Overvoltage Protection	Overcurrent Protection	Overtemperature Protection	Pin Length	Drop Mode Current Share
0D0	3.3mm Ø Non-threaded	Latching	Non-Latching	Non-Latching	0.24” (6.1mm)	Yes
1D0	3mm (M3) Threaded	Latching	Non-Latching	Non-Latching	0.24” (6.1mm)	Yes
000	3.3mm Ø Non-threaded	Latching	Non-Latching	Non-Latching	0.24” (6.1mm)	No
100	3mm (M3) Threaded	Latching	Non-Latching	Non-Latching	0.24” (6.1mm)	No

PFH500F Outline Drawing



PFH500F Basic Connection Diagram



Pinout

PIN	Function	PIN	Function
1	AC Input (Line) or AC (L)	11	Secondary Signal GND or SGND
2	AC Input (Neutral) or AC (N)	12	Aux Power Supply or Aux Power
3	Vout (-)	13	PMBus Clock
4	Vout (-)	14	PMBus Data
5	Remote ON/OFF	15	PMBus Alert
6	Trim	16	PMBus Address 2
7	Remote Sense (+) or RS (+)	17	PMBus Address 1
8	Vout (+)	18	Inrush Control or Inrush CTL
9	Vout (+)	19	- Boost Voltage Bus or - VBUS
10	Power Good or PG	20	+ Boost Voltage Bus or + VBUS

Evaluation Board

Evaluation Kit Part#	Content
PFH05W###-100-EVK-S1	Evaluation kit assembly with PFH500F-###-100-R module
PFH05W###-1D0-EVK-S1	Evaluation kit assembly with PFH500F-###-1D0-R module

- Designates Output Voltage (e.g. 12 = 12V; 28 = 28V; 48 = 48V)

For additional information, please visit <https://product.tdk.com/en/power/pfh>



Heatsink Accessory

Part #	Description
HS00110	2.4" x 4" x 1.5" Al with cylindrical pin fins and integrated thermal pad