



## 500 Watt AC-DC Power Module



Features	Benefits
• 2.4 x 4" Brick Foot-print with Metal Case	• Smaller Package Size
• Load Share (optional)	• Parallel Capable
• High Efficiency	• Less Heat in System
• PMBus™	• Control and Monitoring
• Suitable for Conduction Cooling	• No Forced Air Required



Specification		PFH500F-28-R
Model		PFH500F-28-R
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
Input Turn - off Voltage	VAC	79V
Hold -up (Typ.) (1) (2)	ms	20ms
Output Voltage Setpoint	VDC	27.5 - 28.5VDC (Vin=230VAC, Io=0%)
Start-up Delay (from application of Vin) (5)	s	2.3 / 1.1 sec (Vin = 115 / 230VAC, On/Off = On, Io = Io max., Vo = 0 to 0.1*Vo nom, Tc = 25°C)
Start-up Delay (from On / Off) (5)	s	2.2 / 1.1 sec (Vin = 115 / 230VAC, Io = Io max., Vo = 0 to 0.1*Vo nom, Tc = 25°C)
Output Voltage Rise Time (typ)	ms	65ms
Line Regulation (typ)	mV	42mV (0.15%) (Io=50% of Io,max, Vin=Vin,min to Vin, max)
Load Regulation (typ)	mV	28 mV (0.1%) (Vin=115/230 Vac, Io=0 to Io,max, excluding Droop)
Output Ripple (Pk to Pk) (3)	mV	400mV Typ. (500mV max.)
Over Voltage Protection (max)	VDC	35.5V
Over Current Protection (Hiccup) (max) (6)	A	21.5A
Maximum Output Capacitance	uF	3,000uF
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°C to 100°C (with derating)
Storage Temperature	°C	-55°C 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 <sup>2</sup> 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)	mm	101.6 x 61.0 x 13.3
Weight	g	225
Warranty	Yrs	3

Notes: External components are required. Consult Installation Manual for detailed specifications, test methods and application notes.

- 1) Maximum Power will be de-rated at Vin < 100V with 6.7 W/W (400W@85Vin)
- 2) Typical holdup time with 2 x 470uF bulk cap, 100% Load
- 3) Vin=115/230Vac, Io=100%, Tc=25°C. Measured across one 0.1uF, four 10uF ceramic capacitors, and two 220uF electrolytic capacitors located 2 inches away. BW = 20MHz.
- 4) Vin = 115/230Vac, Io = 100%, Tc = 25°C
- 5) With 2 x 470uF bulk cap
- 6) Vo=28V. When Vo is higher than 28V, OCP trip point will be lower to limit Po\_max

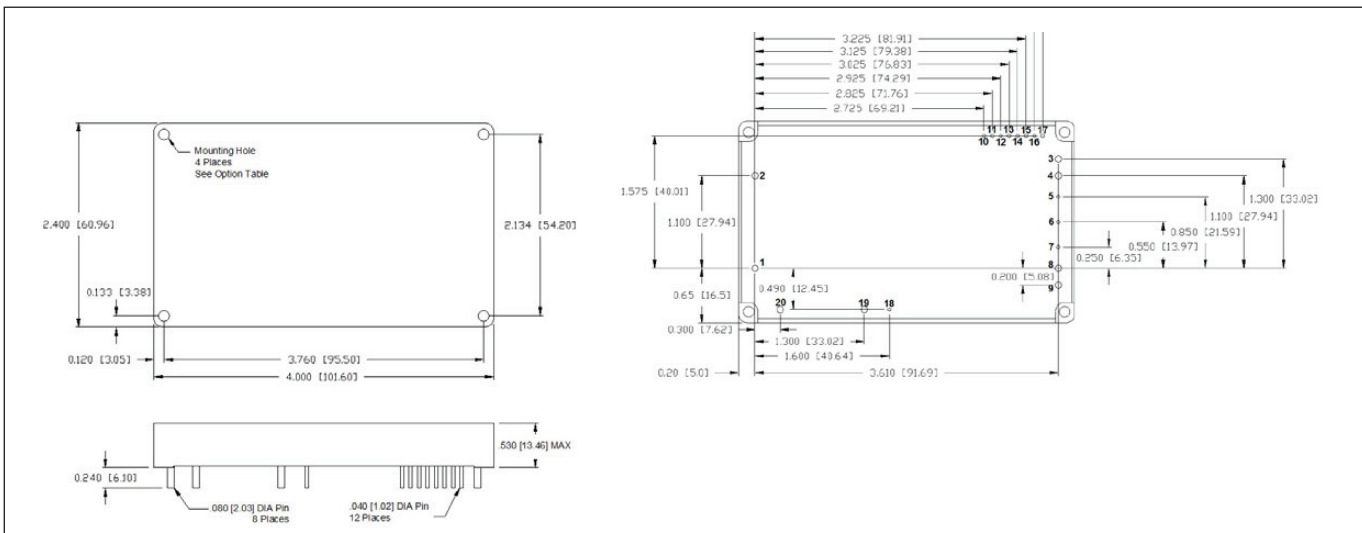
## Specifications

Model	Voltage (V)	Range (V)	Current (A)	Wattage (W)	(typ) (%) (4)
PFH500F-28-XXX-R	28	22.4 - 33.6	18	504	90 / 92

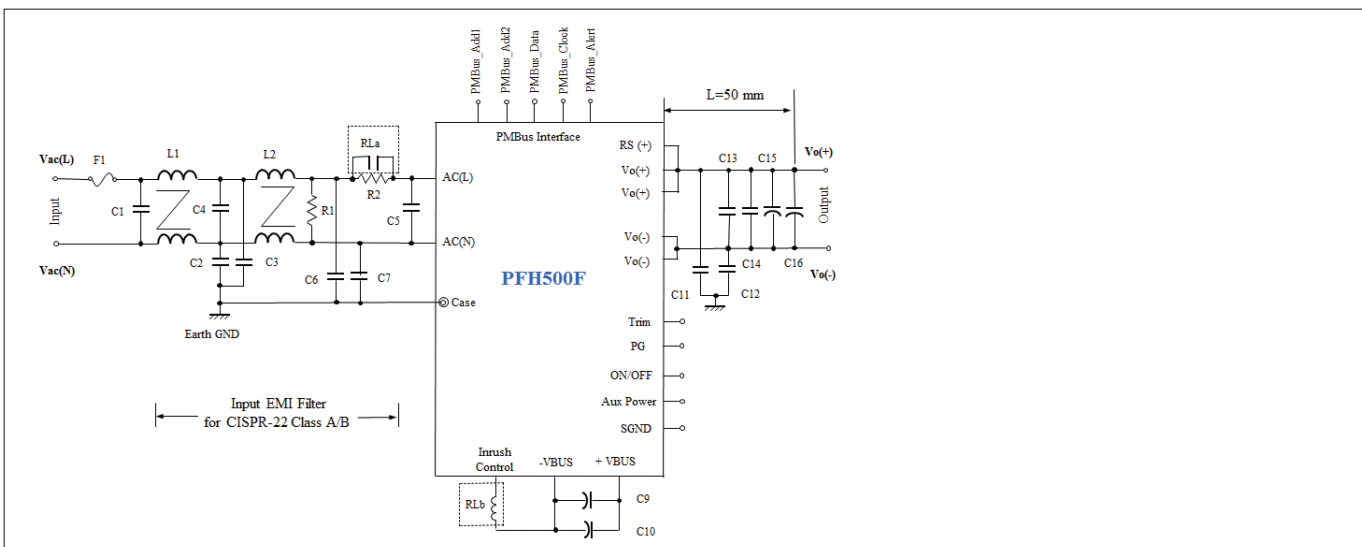
## Model Selector

Model	Mounting Inserts	Overtoltage Protection	Overcurrent Protection	Overtemperature Protection	Pin Length	Droop Model Current Share
PFH500F-28-0D0-R	3.3mm Ø Non-threaded	Latching	Non-Latching	Non-Latching	0.24" (6.1mm)	Yes
PFH500F-28-1D0-R	3mm (M3) Threaded	Latching	Non-Latching	Non-Latching	0.24" (6.1mm)	Yes
PFH500F-28-000-R	3.3mm Ø Non-threaded	Latching	Non-Latching	Non-Latching	0.24" (6.1mm)	No
PFH500F-28-100-R	3mm (M3) Threaded	Latching	Non-Latching	Non-Latching	0.24" (6.1mm)	No

## Outline Drawing PFH500F



## Basic Connection Diagram PFH500F



Pin Assignment			
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	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

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

Evaluation Board	
Evaluation Kit Part #	Content
PFH05W-001-EVK-S0	Evaluation Kit Assembly with no module
PFH05W28-100-EVK-S1	Evaluation Kit Assembly with PFH500F-28-100-R module
PFH05W28-1D0-EVK-S1	Evaluation Kit Assembly with PFH500F-28-1D0-R module
PFH05W-S01-EVK-S0	Evaluation Kit Assembly with surge I/P filter, no module



## TDK-Lambda France SAS

3 Avenue du Canada  
Parc Technopolis  
Bâtiment Sigma  
91940 les Ulis  
France  
Tel: +33 1 60 12 71 65  
Fax: +33 1 60 12 71 66  
france@fr.tdk-lambda.com  
www.emea.lambda.tdk.com/fr



## Italy Sales Office

Via Giacomo Matteotti 62  
20092 Cinisello Balsamo (MI)  
Italy  
Tel: +39 02 61 29 38 63  
Fax: +39 02 61 29 09 00  
info.italia@it.tdk-lambda.com  
www.emea.lambda.tdk.com/it



## Netherlands

info@nl.tdk-lambda.com  
www.emea.lambda.tdk.com/nl



## TDK-Lambda Germany GmbH

Karl-Bold-Strasse 40  
77855 Achern  
Germany  
Tel: +49 7841 666 0  
Fax: +49 7841 5000  
info.germany@de.tdk-lambda.com  
www.emea.lambda.tdk.com/de



## Austria Sales Office

Aredstrasse 22  
2544 Leobersdorf  
Austria  
Tel: +43 2256 655 84  
Fax: +43 2256 645 12  
info@at.tdk-lambda.com  
www.emea.lambda.tdk.com/at



## Switzerland Sales Office

Eichtalstrasse 55  
8634 Hombrechtikon  
Switzerland  
Tel: +41 44 850 53 53  
Fax: +41 44 850 53 50  
info@ch.tdk-lambda.com  
www.emea.lambda.tdk.com/ch



## Nordic Sales Office

Haderslevvej 36B  
DK-6000 Kolding  
Denmark  
Tel: +45 8853 8086  
info@dk.tdk-lambda.com  
www.emea.lambda.tdk.com/dk



## TDK-Lambda UK Ltd.

Kingsley Avenue  
Ilfracombe  
Devon EX34 8ES  
United Kingdom  
Tel: +44 (0) 12 71 85 66 66  
Fax: +44 (0) 12 71 86 48 94  
info@uk.tdk-lambda.com  
www.emea.lambda.tdk.com/uk



## TDK-Lambda Ltd.

1 Alexander Yanai  
Segula  
Petah-Tikva  
Israel  
Tel: +9 723 902 4333  
Fax: +9 723 902 4777  
info@tdk-lambda.co.il  
www.emea.lambda.tdk.com/il



## C.I.S.

### Commercial Support:

Tel: +7 (495) 665 2627

### Technical Support:

Tel: +7 (812) 658 0463  
info@tdk-lambda.ru  
www.emea.lambda.tdk.com/ru

## Local Distribution

