

720-1000W Conduction Cooled Power Supplies

<https://product.tdk.com/en/power/cpfe>
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Industrial



COTS



Test



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The CPFE1000F series of industrial AC-DC conduction cooled power supplies have an integral baseplate and offer output powers of up to 1008W. Features include voltage and current monitoring, remote on/off, remote sense, a standby supply, I²C monitoring and a wide operating temperature range of -40°C to +70°C. The CPFE1000F also complies with MIL-STD-810F vibration and MIL-STD-810E shock.

Features

- Fanless
- Integral Baseplate Cooling
- Wide Range AC Input
- I²C Interface

Benefits

- Longer Field Life and No Fan Noise
- Conducts Heat Outside of the System Enclosure
- Supports Global Use
- Allows Remote Monitoring

Model Selector

Model	Nominal Output Voltage (V)	Adjustment Range (V)	Maximum Current (A)	Max Power (W) at 50°C
CPFE1000F-12	12	9.6 - 14.4	60	720
CPFE1000F-28	28	22.4 - 33.6	36	1008
CPFE1000F-48	48	38.4 - 57.6	21	1008

Derating Ambient Temperature ⁽¹⁾

Model	Input Voltage	Output Power (W)			
		50°C	60°C	70°C	85°C
CPFE1000F-12	85 - 170Vac	720	720	576	360
	170 - 265Vac	720	720	670	595
CPFE1000F-28	85 - 170Vac	1008	864	720	-
	170 - 265Vac	1008	1008	958	883
CPFE1000F-48	85 - 170Vac	1008	864	720	-
	170 - 265Vac	1008	1008	958	883

Specification					
Model		CPFE1000F-12		CPFE1000F-28	CPFE1000F-48
Input					
Input Voltage Range (Operating)	Vac	90 - 265			
Nominal Input Voltage Range	Vac	100 - 240 (Note: Safety certified for 90-264Vac only)			
Input Frequency(1)	Hz	47 - 440(1) (Note: Safety certified from 47 to 63Hz only)			
Input Current (110 / 220Vac)	A	13.6 / 6.6 (Model dependent)			
Inrush Current (115 / 230Vac)	A	23 / 46 peak			
Leakage Current	mA	<1.5			
Power Factor	-	0.95 typical (meets EN61000-3-2)			
Hold Up Time (Typical) at 230Vac	ms	25			
Efficiency (Typical, 100% load, 110 / 220Vac)	%	83 / 86	85 / 88	86 / 89	
Conducted & Radiated EMI	-	EN55032/EN55011 Class B, MIL STD 461/462D CE102			
Immunity	-	See Immunity table			
Line Dip	-	Complies with SEMI F47 (200Vac line only)			
Safety Certifications and Markings	-	IEC/UL/CSA/EN62368-1, 60950-1, CE Mark and UKCA Mark			

Immunity				
Test	Standard	Test Level	Criteria	Notes
ESD	IEC 61000-4-2	±8 kV air discharge, ±4 kV contact discharge	B	See test report
Radiated Susceptibility	IEC 61000-4-3	10 V/m from 80-1000 MHz (80% AM at 1kHz)	A	
Electrical Fast Transient Burst	IEC 61000-4-4	Power line pulses of ± 2kV; I/O line pulses of ± 1kV	B	
Surge	IEC 61000-4-5	±4kV common mode, ±2kV differential mode	B	
Conducted Susceptibility	IEC 61000-4-6	10 Vrms, 150 kHz - 80 MHz 1 kHz 80% AM	B	
Magnetic fields	IEC 61000-4-8	Inductive loop at 50 Hz, to 30.0 amps (rms) per meter	A	
Voltage Dips and Input Interruptions	IEC 61000-4-11	Voltage Dips of 60%, 30%, 20% and >95%; Interruptions of >95%.	B / C	
Oscillatory waves	IEC 61000-4-12	±2kV common mode surges. ±1kV differential mode surges.	A	
Voltage Fluctuation	EN 61000-4-14	$\Delta U = \pm 12\% U_n$, $\Delta U = +12\% U_n$, $\Delta U = -12\% U_n$	A	

Specification				
Model		CPFE1000F-12	CPFE1000F-28	CPFE1000F-48
Output				
Line Regulation	mV	48	56	96
Load Regulation	mV	48	56	96
Output Voltage Setpoint Accuracy	%	±2 at 50% load		
Temperature Coefficient	ppm/°C	200		
Ripple & Noise (20MHz BW)	%	1 (2 below 0°C)		
Minimum Load	A	None		
Overcurrent Protection	%	105 - 140 (Automatic recovery)		
Overvoltage Protection	%	125 - 145 (Automatic recovery)		
Overtemperature Protection	°C	Unit shuts down between 90 - 115 (Automatic recovery)		
Remote Sense	-	Yes, Compensates up to 500mV cable drop		
Remote On/Off (Opto Isolated)	-	High = ON		
Power On Signal (ENA)	-	Open Collector (10mA sink current). Low (on) when output present		
Auxiliary Supply	-	10 - 14V, 20mA		
Parallel Operation	-	Yes, single wire		
Series Operation	-	Possible, see installation manual		

Specification				
Model		CPFE1000F-12	CPFE1000F-28	CPFE1000F-48
Environmental				
Operating Baseplate Temperature (2)	°C	-40 to +85	-40 to +70 / 85 (2)	-40 to +70 / 85 (2)
Storage Temperature	°C	-40 to +100		
Humidity (non condensing)	%RH	Operating: 20 - 90, Non operating: 10 - 95 (PCB assembly protective coated)		
Cooling	-	Conduction cooled through 6mm base plate		
Altitude	m	-200 to 2000 operational (-200 to 5000 storage / transportation)		
Withstand Voltage	Vdc	Input to Ground 2121, Input to Output 4242, Output to Ground 500		
Isolation Resistance	MΩ	>100 at 25°C, 70%RH & 500VDC		
Vibration (non operating)	-	MIL-STD-810F, Method 514.5, Figure 514.5C US (Category IV) and Figure 514.5C-15 (Category X)		
Shock	-	MIL-STD-810E, Method 516.5, Procedure I, IV & VI		
Other				
Weight (Typ)	g	2,400		
Size (WxHxD)	mm	190 x 61 x 270		
Size (WxHxD)	Inches	7.48 x 2.4 x 10.6		
MTBF - Telcordia SR-332 issue 2	Hours	131,000 hours Method 1, Ground Benign, 25C, nominal input, 85C baseplate		
Warranty	Years	2 years		

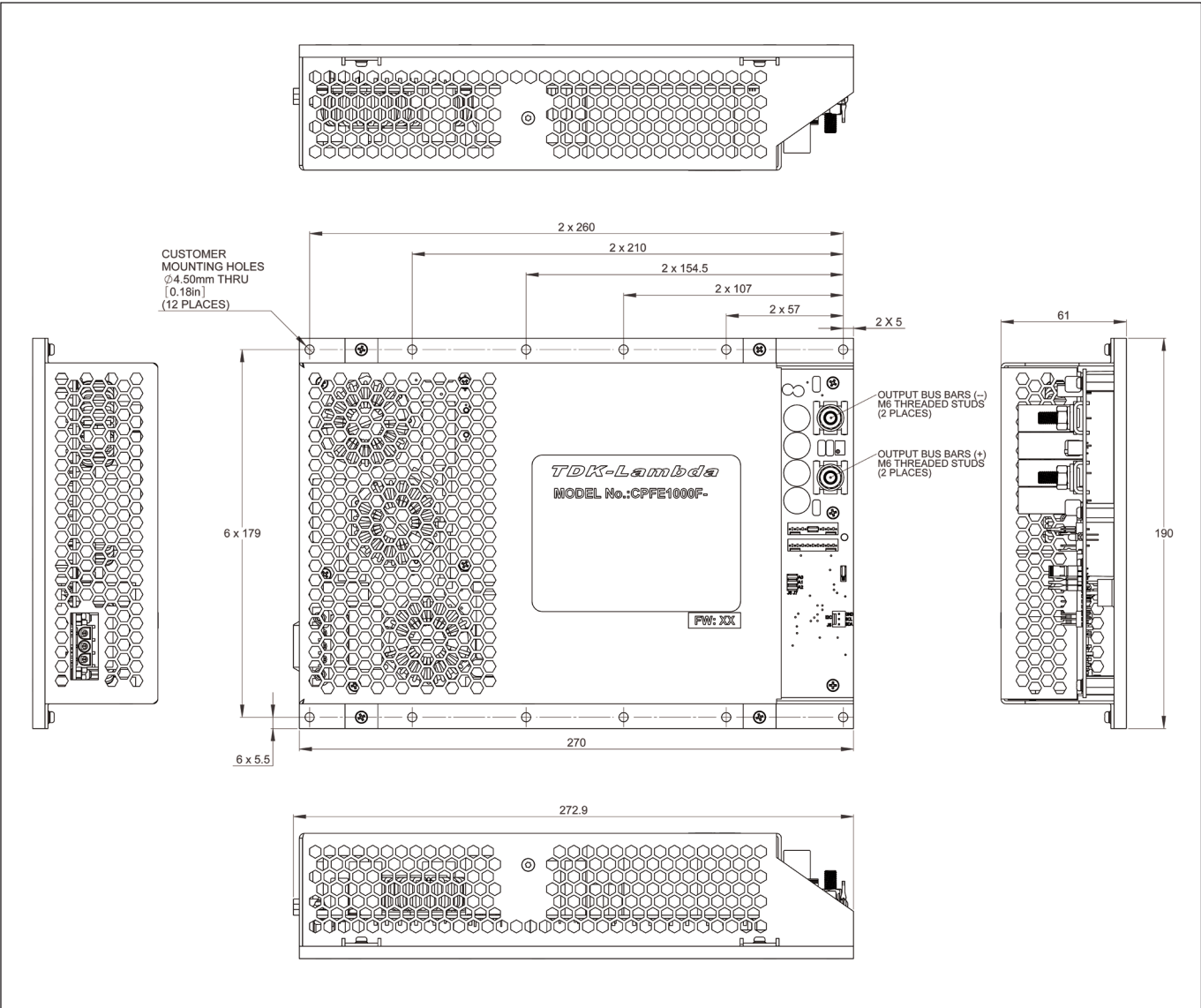
I ² C Interface	
Output Voltage Monitoring	
Output Current Monitoring	
Base Plate Temperature Monitoring	
Remote On/Off Programming	
IOG Warning	
DC Good Warning	
Over Temperature Warning	
Reading Manufacturing Related Data	

Pin Out			
J2, J3 Pin	Function	J5 Pin	Function
1	+ Sense	1	GND
2	- Sense	2	SCL
3	COM	3	SDA
4	- remote on/off		
5	+ remote on/off		
6	Aux		
7	Current share		
8	Trim		
9	ENA		
10	IOG		

Notes

- (1) Reduced PFC and no safety certification above 63Hz. Contact technical support for 440Hz operation.
 (2) CPFE1000F-28, -48: -40 to +70°C below 170VAC input voltage

Outline Drawing





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