

SERIES: VOF-120D

DESCRIPTION: AC-DC POWER SUPPLY

FEATURES

- 120 W natural convection continuous output power
- 180 W peak power for 5 seconds, 10% duty cycle
- -40 ~ 80°C ambient operating temperature, with derating
- 2" x 4" footprint
- safety Class I or Class II
- certified to EN/IEC/UL 62368-1
- Class A/B conducted and radiated emissions⁶
- 5,000 meter operating altitude
- over current, short circuit, and over voltage protection
- adjustable output voltage



MODEL	output voltage typ (Vdc)	output current max (A)	output power ³ max (W)	ripple and noise ¹ max (mVp-p)	efficiency ² typ (%)
VOF-120D-12	12	10.0	120	120	93
VOF-120D-24	24	5.0	120	240	94
VOF-120D-28	28	4.28	120	280	94
VOF-120D-36	36	3.33	120	360	94
VOF-120D-48	48	2.5	120	480	94

Notes:

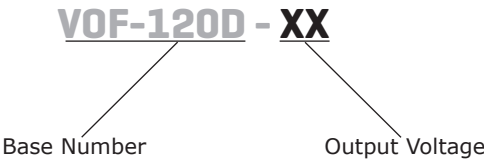
1. Ripple & noise are measured at 20 MHz BW with 0.1 μF ceramic cap and a 10 μF electrolytic capacitors.

2. Typical efficiency at 230 Vac and 75% full load at 25°C.

3. 140 W if Vin exceeds 200 Vac.

4. All specifications are measured at Ta=25°C, 230 Vac input voltage, and rated output load unless otherwise specified.

PART NUMBER KEY



INPUT

parameter	conditions/description	min	typ	max	units
voltage ⁵		90	100~240	264	Vac
frequency		47		63	Hz
input current	at 100 Vac, full load			2	A
inrush current	at 240 Vac, cold start			100	A
leakage current	touch			0.1	mA
power factor		0.9			
no load power consumption				0.15	W
under voltage lockout		60		75	Vac

Notes: 5. See the derating curve for more details.

OUTPUT

parameter	conditions/description	min	typ	max	units
load capacitance	VOF-120D-12			12,500	µF
	VOF-120D-24			6,200	µF
	VOF-120D-28			5,340	µF
	VOF-120D-36			4,100	µF
	VOF-120D-48			3,080	µF
line regulation	high line to low line			±0.5	%
load regulation	from 10% to full load			±1.0	%
output voltage set point	at 90~264 Vac, maximum output current				
	VOF-120D-12	11.88	12	12.12	Vdc
	VOF-120D-24	23.76	24	24.24	Vdc
	VOF-120D-28	27.72	28	28.28	Vdc
	VOF-120D-36	35.64	36	36.36	Vdc
	VOF-120D-48	47.52	48	48.48	Vdc
output voltage adjustment	VOF-120D-12	11.04		12.96	Vdc
	VOF-120D-24	22.08		25.92	Vdc
	VOF-120D-28	25.76		30.24	Vdc
	VOF-120D-36	33.12		38.88	Vdc
	VOF-120D-48	44.16		51.84	Vdc
operating output current	at 90~264 Vac, see derating curve				
	VOF-120D-12		10.0	11.67	A
	VOF-120D-24		5.0	5.83	A
	VOF-120D-28		4.28	4.99	A
	VOF-120D-36		3.33	3.88	A
	VOF-120D-48		2.5	2.92	A
switching frequency			115		kHz
hold-up time	at 115 Vac	20	25		ms

PROTECTIONS

parameter	conditions/description	min	typ	max	units
over voltage protection	latch off (AC cycle to reset)				
	VOF-120D-12			14.2	Vdc
	VOF-120D-24			29.2	Vdc
	VOF-120D-28			34.2	Vdc
	VOF-120D-36			44.2	Vdc
	VOF-120D-48			58.2	Vdc
over current protection		150	160	170	%
short circuit protection	auto recovery				%

SAFETY & COMPLIANCE

parameter	conditions/description	min	typ	max	units
isolation voltage	input to output for 1 minute			4,000	Vdc
	input to ground for 1 minute			2,500	Vdc
safety approvals	certified to 62368: IEC, EN, UL				
EMI/EMC	EN 55032:2015+A11:2020, EN 61204-3:2018, EN IEC 61000-3-2:2019+A1:2021, EN 61000-3-3:2013+A2:2021, EN IEC 61000-6-3:2021, EN IEC 61000-6-4:2019				
conducted emissions	EN 55032:2015+A11:2020 (Class I & Class II meets Class B)				
radiated emissions	EN 55032:2015+A11:2020 (Class I meets Class B; Class II meets Class A)				
ESD	IEC 61000-4-2:2008 Air Discharge: ±8 kV, Contact Discharge: ±4 kV, perf. Criteria A				
radiated immunity	IEC 61000-4-3:2020, perf. Criteria A				
EFT/burst	IEC 61000-4-4:2012, ±2 kV, perf. Criteria A				
surge	IEC 61000-4-5:2014+A1:2017, L-N: ± 1kV, L-E (ground): ±2 kV, perf. Criteria A				
conducted immunity	IEC 61000-4-6:2023, perf. Criteria A				
PFMF	IEC 61000-4-8:2009, perf. Criteria A				
voltage dips	IEC 61000-4-11:2020 Dip: 95 % 10ms, Dip: 30 % 500 ms or 60 % 200 ms, perf. Criteria A				
voltage interruptions	IEC 61000-4-11:2020, >95 % 5000 ms, perf. Criteria B				
class ⁶	Class I or Class II				
MTBF	as per MIL-HDBK-217F at 25 °C, full load	471,000			hours
	as per Telcordia SR-322 at 25 °C, full load	3,343,000			hours
RoHS	yes				

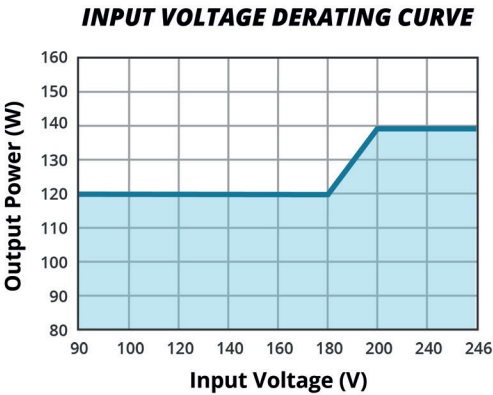
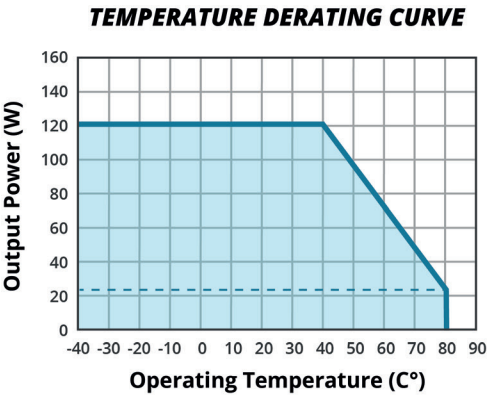
Notes: 6. Conducted emissions: Class I & Class II meet Class B.
Radiated emissions: Class I meets Class B, Class II meets Class A.

ENVIRONMENTAL

parameter	conditions/description	min	typ	max	units
operating temperature ⁷	see derating curves (safety approved at maximum 40°C)	-40		80	°C
storage temperature		-40		85	°C
operating humidity	non-condensing	-		93	%
operating altitude			5,000		m
shock	meets MIL-STD-810F table 516.5-I, 10 ms, 3 times along each of the X, Y, and Z axes		75		g
vibration	meets MIL-STD-810F table 514.5C-VIII, 15~2000 Hz, 1 hr along each of the X, Y, and Z axes, total 3 hours		4		g

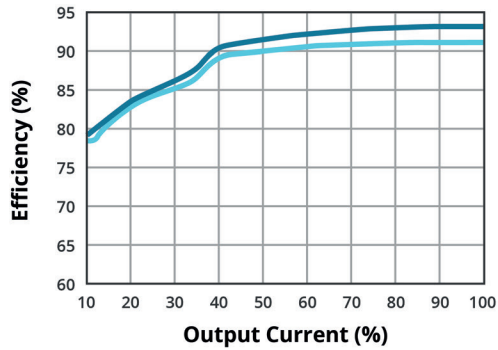
Notes: 7. Vin = 90 Vac, operates at -30°C ~ 80°C.

DERATING CURVES



EFFICIENCY CURVES

**EFFICIENCY VS OUTPUT LOAD
(VOF-120D-12)**

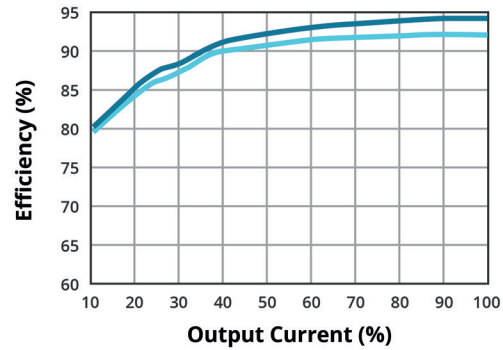


Key

115 V

230 V

**EFFICIENCY VS OUTPUT LOAD
(VOF-120D-24)**

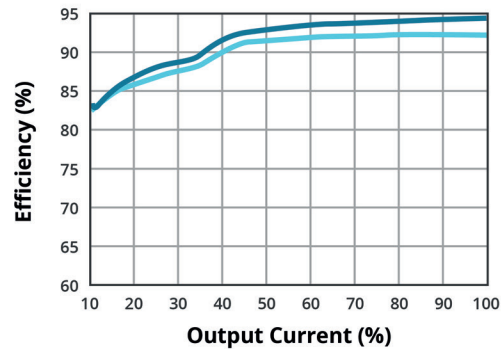


Key

115 V

230 V

**EFFICIENCY VS OUTPUT LOAD
(VOF-120D-28)**

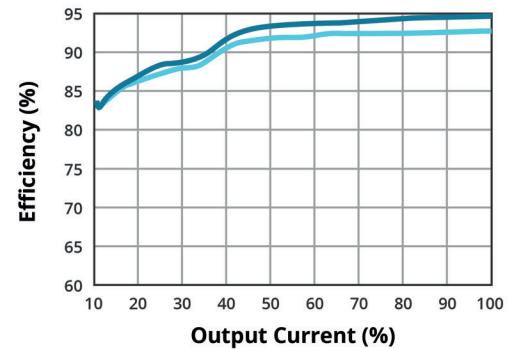


Key

115 V

230 V

**EFFICIENCY VS OUTPUT LOAD
(VOF-120D-36)**

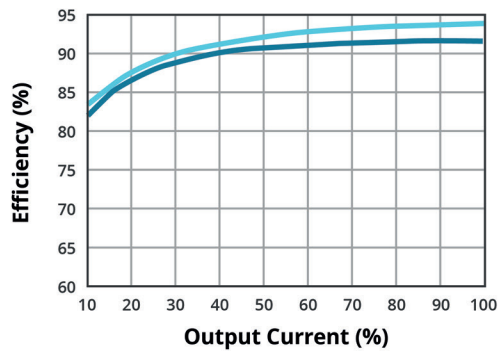


Key

115 V

230 V

**EFFICIENCY VS OUTPUT LOAD
(VOF-120D-48)**



Key

115 V

230 V

MECHANICAL

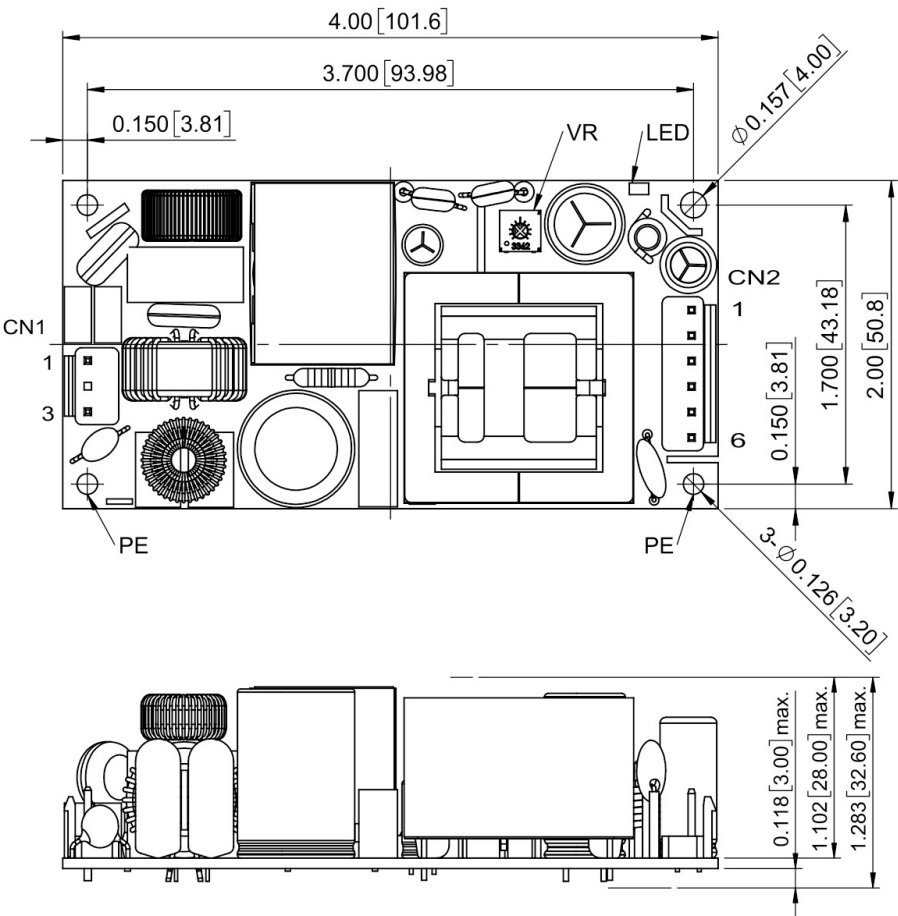
parameter	conditions/description	min	typ	max	units
dimensions	4.000 x 2.000 x 1.283 [101.6 x 50.80 x 32.6 mm]				inch
weight			200		g
cooling method	natural convection				

MECHANICAL DRAWING

units: inch [mm]
tolerance: inches: x.xxx = ±0.020
mm: x.xx = ±0.50

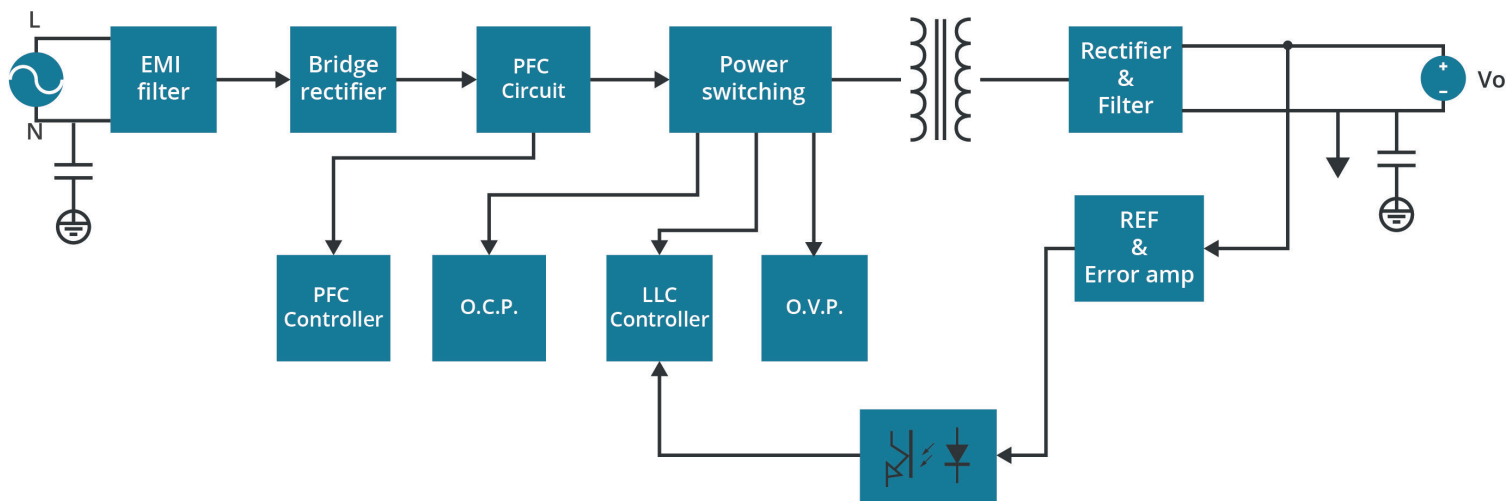
AC input connector CN1 (TKP PVHI-03N2 or equivalent)			
PIN	Function	Mating housing	Terminal
1	AC (L)	JST VHR-3N or equivalent	JST SVH-21T-P1.1 or equivalent
2	no pin		
3	AC (N)		

DC output connector CN2 (TKP PVHI-06 or equivalent)			
PIN	Function	Mating housing	Terminal
1	+Vout	JST VHR-6N or equivalent	JST SVH-21T-P1.1 or equivalent
2	+Vout		
3	+Vout		
4	-Vout		
5	-Vout		
6	-Vout		



ELECTRICAL BLOCK DIAGRAM

Figure 1



REVISION HISTORY

rev.	description	date
1.0	initial release	12/06/2024

The revision history provided is for informational purposes only and is believed to be accurate.



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