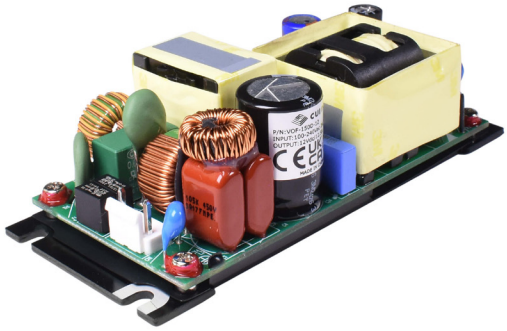
SERIES: VOF-150D | **DESCRIPTION:** AC-DC POWER SUPPLY

FEATURES

- 150 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 emissions[4]
- 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 max (W)	ripple and noise[1] max (mVp-p)	efficiency[2] typ (%)
VOF-150D-12	12	12.5	150	120	93
VOF-150D-24	24	6.25	150	240	94
VOF-150D-28	28	5.35	150	280	94
VOF-150D-36	36	4.16	150	360	94
VOF-150D-48	48	3.125	150	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. 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		90	100~240	264	Vac
frequency		47	50~60	63	Hz
input current	at 100 Vac, full load			2	A
inrush current	at 240 Vac, cold start			100	A
leakage current	touch earth			0.1 1	mA mA
power factor		0.9			
no load power consumption				0.15	W
under voltage lockout		60		75	Vac

OUTPUT

parameter	conditions/description	min	typ	max	units
isolation capacitance	VOF-150D-12 VOF-150D-24 VOF-150D-28 VOF-150D-36 VOF-150D-48			12,500 6,200 5,340 4,100 3,080	µF µF µF µF 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 input current VOF-150D-12 VOF-150D-24 VOF-150D-28 VOF-150D-36 VOF-150D-48	 11.88 23.76 27.72 35.64 47.52	 12 24 28 36 48	 12.12 24.24 28.28 36.36 48.48	 Vdc Vdc Vdc Vdc Vdc
output voltage adjustment	VOF-150D-12 VOF-150D-24 VOF-150D-28 VOF-150D-36 VOF-150D-48	11.04 22.08 25.76 33.12 44.16		12.96 25.92 30.24 38.88 51.84	Vdc Vdc Vdc Vdc Vdc
operating output current	at 90~264 Vac, see derating curve VOF-150D-12 VOF-150D-24 VOF-150D-28 VOF-150D-36 VOF-150D-48			 12.5 6.25 5.35 4.16 3.125	 A A A A A
peak power	at 115 & 230 Vac, 25 °C peak power max 5 s, with a max 10 % duty cycle, peak power function by 120 % load 5 s, 75 % load 45 s		120		%
switching frequency			115		kHz
hold-up time	at 115 Vac	20	25		ms
adjustability			±8		%

PROTECTIONS

parameter	conditions/description	min	typ	max	units
over voltage protection	latch off (AC cycle to reset) VOF-150D-12 VOF-150D-24 VOF-150D-28 VOF-150D-36 VOF-150D-48			 14.2 29.2 34.2 44.2 58.2	 Vdc Vdc Vdc Vdc Vdc
over current protection		120	130	140	%
short circuit protection	auto recovery				%

SAFETY & COMPLIANCE

parameter	conditions/description	min	typ	max	units
isolation voltage	input to output for 1 minute input to ground for 1 minute			4,000 2,500	Vdc Vdc
safety approvals	certified to 62368: IEC, EN, UL				
EMI/EMC[4]	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[4]	Class I or Class II				
MTBF	as per MIL-HDBK-217F at 25 °C, full load as per Telcordia SR-322 at 25 °C, full load	471,000 3,343,000			hours hours
RoHS	yes				

Notes: 4. Conducted emissions: Class I & Class II meet Class B.
Radiated emissions: Class I meets Class B, Class II meets Class A.

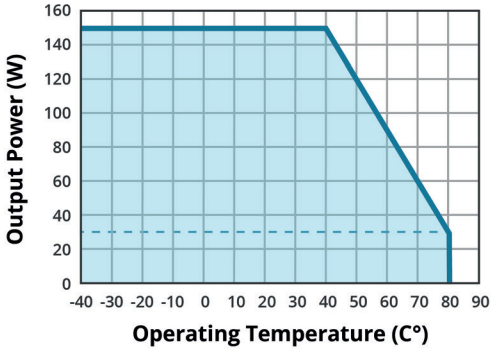
ENVIRONMENTAL

parameter	conditions/description	min	typ	max	units
operating temperature[5]	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

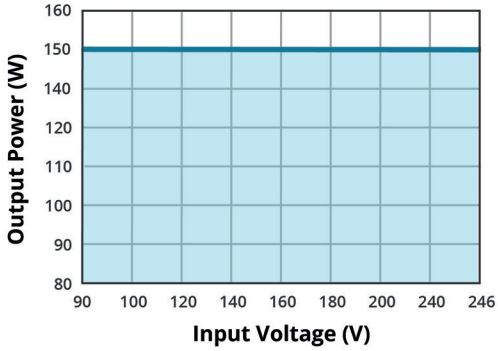
Notes: 5. Vin = 90 Vac, operates at -30°C ~ 80°C.

DERATING CURVES

TEMPERATURE DERATING CURVE

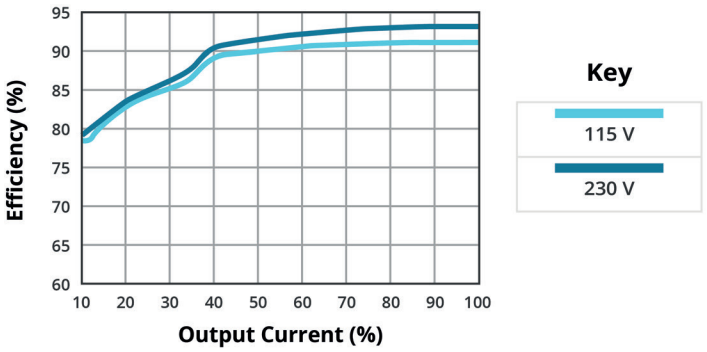


INPUT VOLTAGE DERATING CURVE

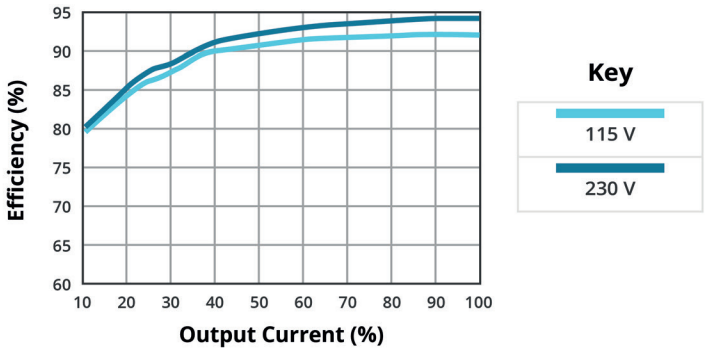


EFFICIENCY CURVES

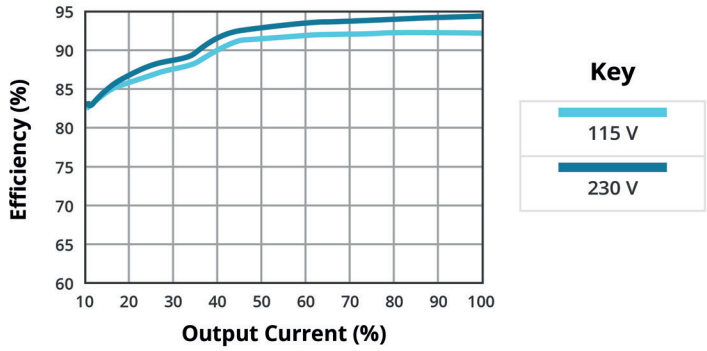
EFFICIENCY VS OUTPUT LOAD (VOF-150D-12)



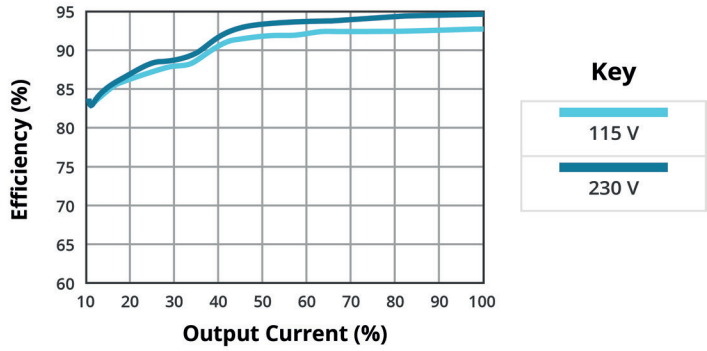
EFFICIENCY VS OUTPUT LOAD (VOF-150D-24)



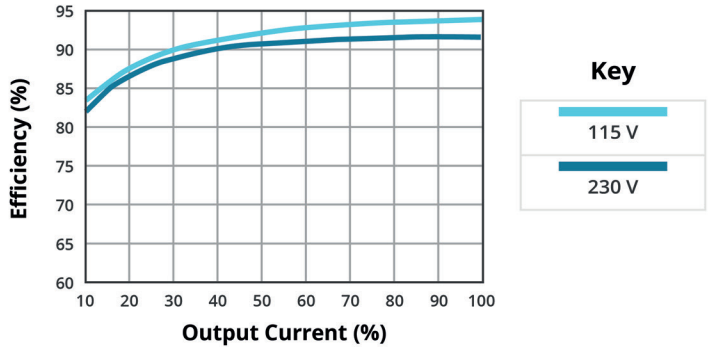
EFFICIENCY VS OUTPUT LOAD (VOF-150D-28)



EFFICIENCY VS OUTPUT LOAD (VOF-150D-36)



EFFICIENCY VS OUTPUT LOAD (VOF-150D-48)



MECHANICAL

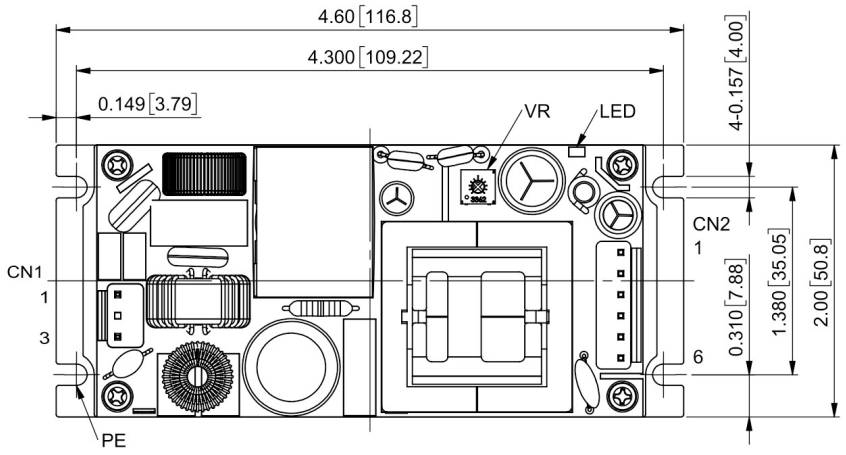
parameter	conditions/description	min	typ	max	units
dimensions	4.598 x 2.000 x 1.362 [116.8 x 50.80 x 34.6 mm]				inch
weight			240		g
cooling method	base plate cooling				

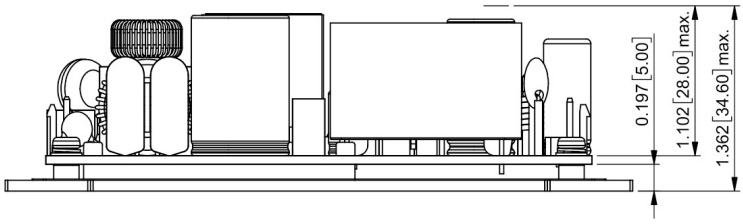
MECHANICAL DRAWING

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)		

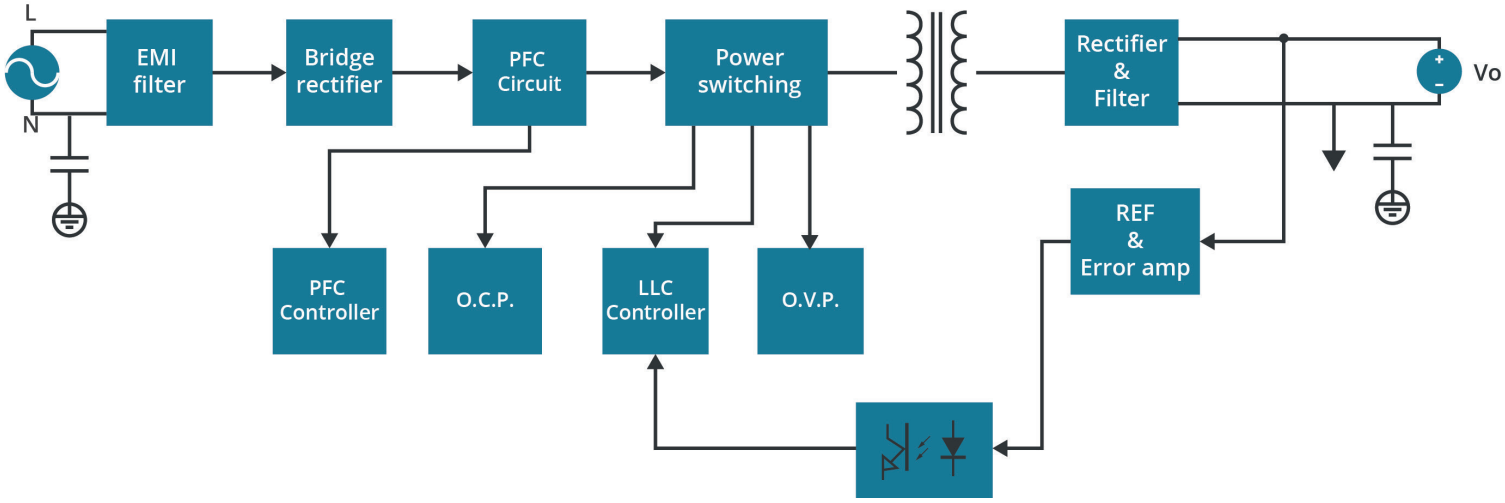
DC output connector CN2 (TKP PVHI-06 or equivalent)			
PIN	Function	Mating housing	Terminal
1	+Vout	JST VHR-6N or equivalent	JST SVH-21T-P1.1 or equivalent
2	+Vout		
3	+Vout		
4	-Vout		
5	-Vout		
6	-Vout		





ELECTRICAL BLOCK DIAGRAM

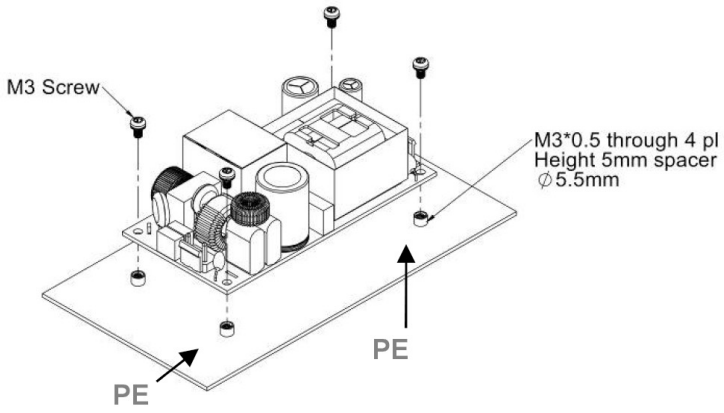
Figure 1

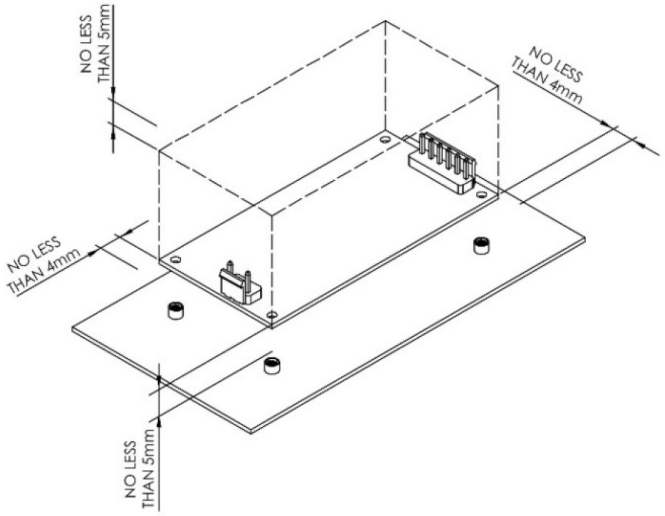


MOUNTING INSTRUCTIONS

The VOF-150D series features four mounting holes, each with a diameter of 3.2 mm. There are three installation methods available. Please utilize the mounting holes as specified below:

Insert the spacer (5.5 mm diameter max.) of 5 mm height or more to mount the unit

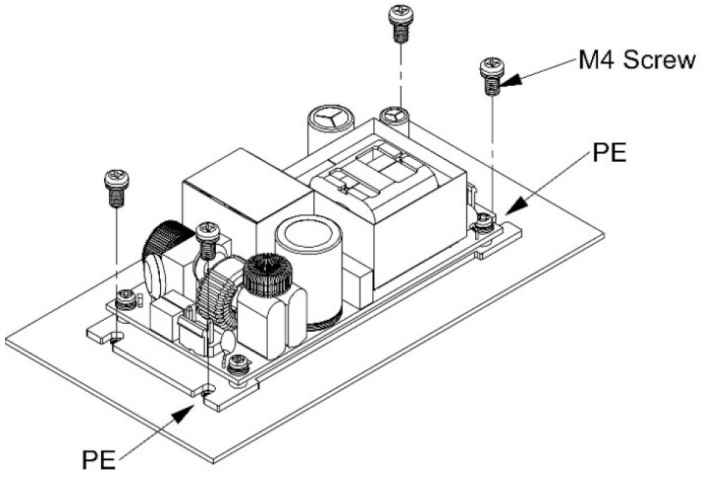




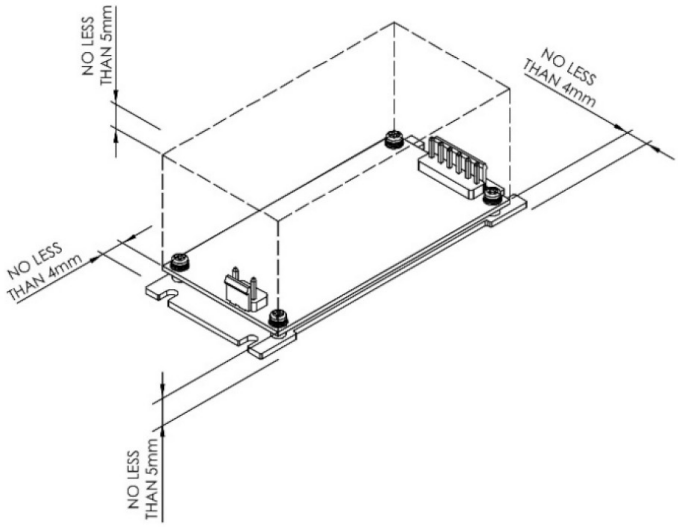
Note: M3 screw head and washer diameter must not exceed 5.5 mm.

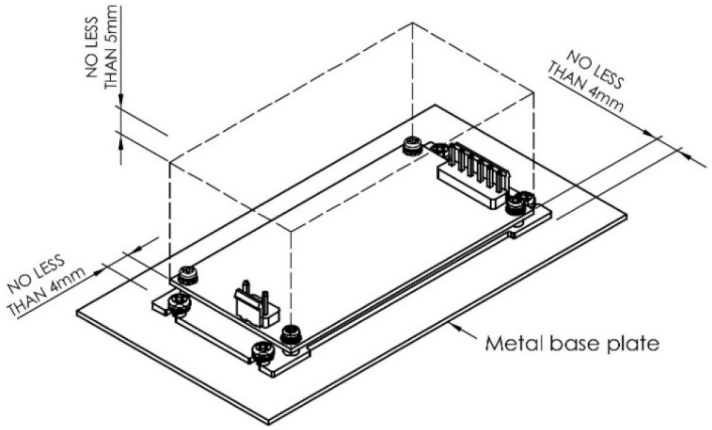
MOUNTING INSTRUCTIONS (CONTINUED)

Please ensure a 4 mm side clearance from all components and edges of the PCB. Additionally, maintain a 5 mm clearance above the tallest components on the PCB. Pay special attention to providing a 5 mm gap between the solder side of the PCB and the mounting surface. Insufficient clearances will invalidate the isolation and withstand specifications.
The VOF-150D series offers baseplate cooling to enhance heat dissipation. Refer to the following figure for installation details.



Note: The diameter of the M4 screw head and washer must not exceed 5.5 mm. Ensure a 4 mm side clearance from all components and edges of the PCB. Maintain a 5 mm clearance above the tallest components on the PCB. Pay special attention to providing a 5 mm gap between the solder side of the PCB and the mounting surface. Failure to maintain these clearances will invalidate the isolation and withstand specifications.





Base Cooling Setup
Ensure that the PE (Protective Earth) is connected to the ground terminal of the apparatus. Failure to do so will result in increased conducted and output noise.

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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