OPS3x5-350 | OPEN FRAME POWER SUPPLIES



Features :

- 5 x 3 x 1.16 Inches Form Factor
- 350 Watts with Forced Air Cooling & 200 Watts Convection Cooling
- No Load Power < 0.5 W
- - 40°C to + 70°C Operating Temperature
- 12 V / 0.5 A Fan Output, Thermal Shut-Down Feature
- Efficiencies Up to 93 %
- Remote Inhibit Available
- Class II Option Available
- Medical (BF) Safety Approvals
- Approved to Household, ITAV and Medical Standards

SPECIFICATIONS:

MODEL		OPS3x5-350-12	OPS3x5-350-15	OPS3x5-350-24	OPS3x5-350-48
OUTPUT	NOMINAL DC VOLTAGE	12 V	15 V	24 V	48 V
	RATED CURRENT (CONVECTION)	16.67 A	13.34 A	8.34 A	4.17 A
	RATED CURRENT (FORCED AIR)	25.00 A	23.34 A	14.59 A	7.30 A
	RATED POWER (CONVECTION)	200 W	200 W	200 W	200 W
	RATED POWER (FORCED AIR)	300 W	350 W	350 W	350 W
	RIPPLE & NOISE (Max)	< 1 % of Vout	< 1 % of Vout	< 1 % of Vout	< 1 % of Vout
	VOLTAGE ADJ. RANGE	12 to 13 V	15 to 16.5 V	24 to 26 V	48 to 52 V
	VOLTAGE TOLERANCE	± 1 %			
	LINE REGULATION	± 0.5 %			
	LOAD REGULATION	± 1 %			
	TURN ON TIME	< 2 sec; at full load			
	HOLD UP TIME	> 20 msec at convection load & > 10 msec at full load for nominal Vout			
	RISE TIME	< 100 msec			
	FAN OUTPUT	12 V, 0.5 A output is available on a 2 pin connector header			
	TRANSIENT RESPONSE	Max excursion 5 % for step load change from 50 % to 100 % at 0.1 A / µsec slew rate, 50 % duty cycle, 50 / 60 Hz. Recovery time < 5 msec			
INPUT	VOLTAGE RANGE *	90 - 264 VAC (127 - 370 VDC) **Note:** 90 - 305 VAC operation available on demand			
	FREQUENCY RANGE	47 - 63 Hz			
	EFFICIENCY @ 230V AC	Up to 91 %	Up to 91 %	Up to 93 %	Up to 93 %
	AC CURRENT	3.6 A @ 115 VAC; 1.8 A @ 230 VAC			
	POWER FACTOR	> 0.95 at Full Load over entire input AC voltage range			
	INRUSH CURRENT	< 60 Amps; Measured at 264 VAC, 25°C Ambient, Cold start			
	LEAKAGE CURRENT	< 300 uA; 264 VAC input			
	TOUCH CURRENT	< 100 uA; 264 VAC input			
	NO LOAD POWER CONSUMPTION	< 0.5 W; 115 VAC input			
PROTECTION	OVERLOAD	110 % to 140 % of rated output current; Hiccup mode; Autorecovery type.			
	OVERVOLTAGE	13.5 - 15.5 VDC	17 - 20.5 VDC	27 - 31 VDC	53. 5 - 62.5 VDC
	OUTPUT SHORT CIRCUIT	Latched type; Input AC power to be recycled to recover the power supply			
	OVER TEMPERATURE	Hiccup mode when output is shorted; Autorecovery type.			
		Power supply shuts down when the temperature of PCB below main transformer reaches typically 120°C; Turns on only after the temperature falls below 90°C typically and AC power is recycled thereafter.			
SIGNALS	REMOTE INHIBIT	Available on a 2 pin connector header. Power Supply output is disabled when external 5 V is applied.			
ENVIRONMENT	OPERATING TEMP	- 40°C to + 70°C; De-rate linearly above 50°C from 100 % load at 50°C to 50 % load at 70°C. **Note:** Only start up guaranteed at - 40°C with specification deterioration.			
	STORAGE TEMP	- 40°C to + 85°C			
	COOLING	Natural convection cooled or Forced Air cooled (minimum 13 CFM) as per power requirements.			
	HUMIDITY	5 to 95 % RH, Non condensing			
	ALTITUDE	2000 m			
	VIBRATION	Component: 10 ~ 500 Hz, 2 G 10 min. / 1 cycle, Period for 60 min. each along X, Y, Z axes			

Note: *Although power supply will work for the specified DC input voltage range, UL approval is only for the specified AC input voltage range.

MODEL		OPS3x5-350-12	OPS3x5-350-15	OPS3x5-350-24	OPS3x5-350-48
DIELECTRIC WITHSTAND	TEST VOLTAGE	I/P to Earth: 1500 VAC, I/P to O/P: 4000 VAC, O/P to Earth: 1500 VAC			
RELIABILITY	MTBF	> 335K hrs. as per MIL-HDBK-217F (25°C)			
MECHANICAL	DIMENSION	Overall: 5" x 3" x 1.16" (L x W x H); Height above PCB: 1"			
	WEIGHT	< 300 gms			
	MOUNTING	Open Frame			

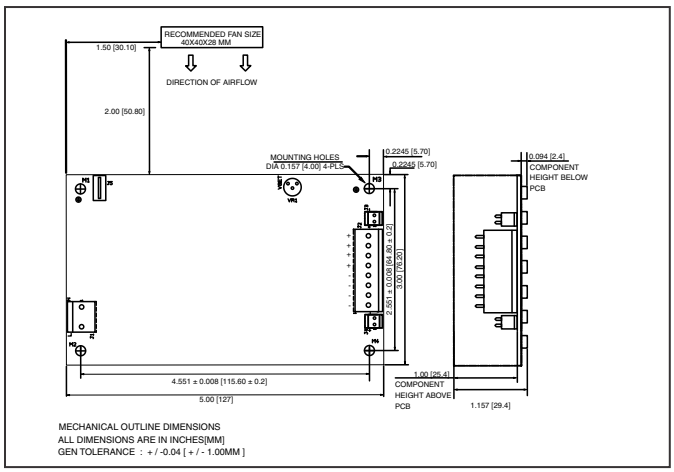
Means of Protection		Category
Primary to Secondary	2 x MOPP (Means of Patient Protection)	IEC 60601-1 Ed 3
Primary to Earth	1 x MOPP (Means of Patient Protection)	
Secondary to Earth	1 x MOPP (Means of Patient Protection)	

Connectors details

Ref Des	Description	Type	Pin number	Function
J1	Input AC connector	Tyco: 640445-3; Mates with 647402-3; Pin: 3-647409-1	1	AC Neutral
			2	Not connected
			3	AC Line
J2	Output DC connector (option 1)	Tyco: 640445-8; Mates with 647402-8; Pin: 3-647409-1	1, 2, 3, 4	V1 Negative
			5, 6, 7, 8	V1 Positive
	Output DC connector (option 2)	Screw Terminal with M4 screw. Mating: Ring Tongue Terminal TE / AMP: 8-31886-1 / equivalent.**	1	V1 Negative
			2	V1 Positive
J3	Remote Inhibit	Molex: 22-04-1021; Mates with 22-01-1022; Pin: 08-50-0113	1	Ext V Positive
			2	Ext V Negative
J4	Fan connector	Molex: 22-04-1021; Mates with 22-01-1022; Pin: 08-50-0113	1	V2 Positive
			2	V2 Negative
J5	Earth*	Molex: 19705-4301; Mates with 19003-0001	-	Earth

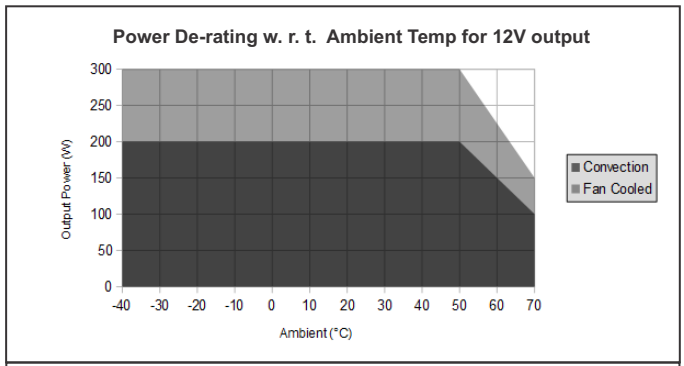
Note:
* All the mounting holes marked with Earth symbol must be Earthed.
** One Ring Tongue Terminal with 16 AWG is recommended for current up to 11 A only. Use multiple tongue terminals with wire for more current.

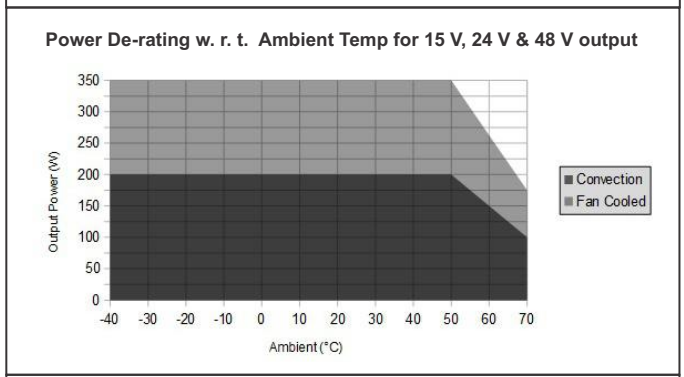
Mechanical dimensions

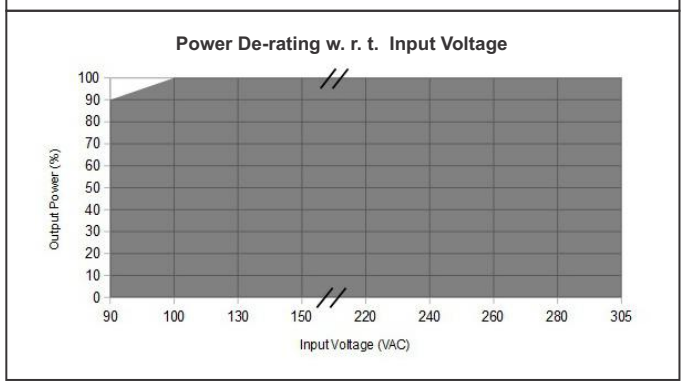


Note:
1. This open frame power supply should preferably be mounted horizontally on 4 metal stand-offs having diameter not more than 6 mm and height not less than 7 mm.
2. Screws used to fix PCB on stand-offs should not have head diameter more than 6 mm.
3. Washer used should not have diameter more than 6 mm.

De-rating curve







Compliance

Applicable EMI / EMC Standards		
Category	**Reference Standards**	**Testing Level**
Conducted Emission	CISPR32	CLASS B
Radiated Emission	CISPR32	CLASS A
Electrostatic Discharge	IEC 61000-4-2	Level 4, Criteria A Level 3, Criteria A
Radiated Susceptibility	IEC 61000-4-3	Level 3, Criteria B
Electrical Fast Transient / Burst	IEC 61000-4-4	Level 3, Criteria A
Surge	IEC 61000-4-5	Level 3, Criteria A
Conducted Susceptibility	IEC 61000-4-6	Level 3, Criteria B
Power Frequency Magnetic Field	IEC 61000-4-8	Level 4, Criteria A
Voltage Dips & Interruption	IEC 61000-4-11	Criteria A & B
Safety	Approved to IEC / EN / UL 62368-1; IEC / EN 60601-1; IEC / EN 61558	

Ordering information

Product Code	Description	Certification
OPS3x5-350-12-A-1-CU	Open Frame Power Supply with 5 x 3 x 1.16" Form factor, 12 V / 25.00 A, 300 Watts with Forced Air Cooling & 12 V / 16.67 A, 200 Watts Convection Cooling	
OPS3x5-350-15-A-1-CU	Open Frame Power Supply with 5 x 3 x 1.16" Form factor, 15 V / 23.34 A, 350 Watts with Forced Air Cooling & 15 V / 13.34 A, 200 Watts Convection Cooling	
OPS3x5-350-24-A-1-CU	Open Frame Power Supply with 5 x 3 x 1.16" Form factor, 24 V / 14.59 A, 350 Watts with Forced Air Cooling & 24 V / 8.34 A, 200 Watts Convection Cooling	
OPS3x5-350-48-A-1-CU	Open Frame Power Supply with 5 x 3 x 1.16" Form factor, 48 V / 7.30 A, 350 Watts with Forced Air Cooling & 48 V / 4.17 A, 200 Watts Convection Cooling	