OPS2x4-60 | OPEN FRAME POWER SUPPLIES



Features :

- 4 x 2 x 1.16 Inches Form Factor
- 60 Watts Convection
- No Load Power < 0.5 W
- -40°C to +70°C Operating Temperature
- Efficiencies up to 87%
- Class II Option Available
- Medical (BF) Safety Approvals
- Approved to Household, ITAV and Medical Standards

SPECIFICATIONS:

MODEL		OPS2x4-60-05	OPS2x4-60-12	OPS2x4-60-15	OPS2x4-60-24	OPS2x4-60-48
OUTPUT	NOMINAL DC VOLTAGE	5 V	12 V	15 V	24 V	48 V
	RATED CURRENT (CONVECTION)	10 A	5 A	4 A	2.5 A	1.25 A
	RATED CURRENT (FORCED AIR)	NA	NA	NA	NA	NA
	RATED POWER (CONVECTION)	50 W	60 W	60 W	60 W	60 W
	RATED POWER (FORCED AIR)	NA	NA	NA	NA	NA
	RIPPLE & NOISE (max)	< 1.5 % of Vout	< 1 % of Vout	< 1 % of Vout	< 1 % of Vout	< 1 % of Vout
	VOLTAGE ADJ. RANGE	5.0 to 6.0 V	12 to 14 V	15 to 17.5 V	24 to 28 V	48 to 56 V
	VOLTAGE TOLERANCE	± 1 %				
	LINE REGULATION	± 0.5 %				
	LOAD REGULATION	± 1 %				
	TURN ON TIME	< 1 sec @ 230 VAC & < 3 sec @ 115 VAC, Full load				< 3 sec @ 230 VAC & < 6 sec @ 115 VAC, Full load
	HOLD UP TIME	≥ 60 ms @ 230 VAC & ≥ 10 ms @ 115 VAC, Full load				
	RISE TIME	< 100 ms				
	FAN OUTPUT	Not Available				
	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 @ 230 VAC	Up to 80 %	Up to 85 %	Up to 85 %	Up to 87 %	Up to 87 %
	AC CURRENT	1.2 A @ 115 VAC; 0.8 A @ 230 VAC				
	POWER FACTOR	No active PFC is available				
	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 % of rated output current; Hiccup mode; Autorecovery type.				
	OVERVOLTAGE	7 - 9 VDC	15.5 - 18.5 VDC	18.5 - 22.5 VDC	28.5 - 33.5 VDC	56.5 - 66.5 VDC
		Latched type; Input AC power to be recycled to recover the power supply				
	OUTPUT SHORT CIRCUIT	Hiccup mode when output is shorted; Autorecovery type.				
	OVER TEMPERATURE	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.				
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				
	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		OPS2x4-60-05	OPS2x4-60-12	OPS2x4-60-15	OPS2x4-60-24	OPS2x4-60-48
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	> 525K hrs. as per MIL-HDBK-217F (25°C)				
MECHANICAL	DIMENSION	Overall: 4" x 2" x 1.16" (L x W x H) ; Height above PCB: 1"				
	WEIGHT	< 150 gms				
	MOUNTING	Open Frame				

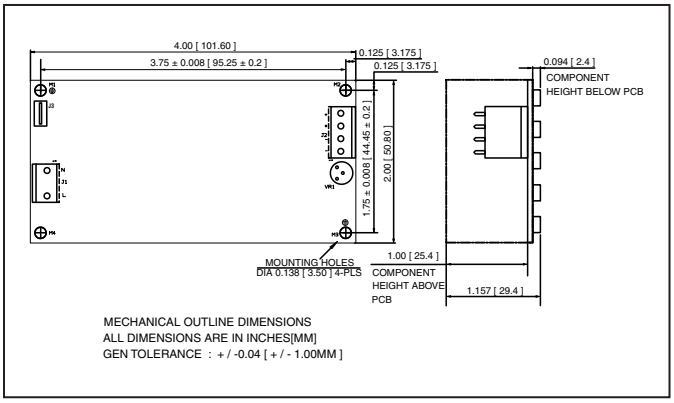
Means of Protection		Category
Primary to Secondary	2 x MOPP (Means of Patient Protection)	IEC 60601-1 Ed 3
Primary to Earth	1 x MOPP (Means of Patient Protection)	
Secondary to Earth	1 x MOPP (Means of Patient Protection)	

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	Tyco: 640445-4; Mates with 647402-4; Pin: 3-647409-1	1, 2	V1 Negative
			3, 4	V1 Positive
J3	Earth*	Molex: 19705-4301; Mates with 19003-0001	-	Earth

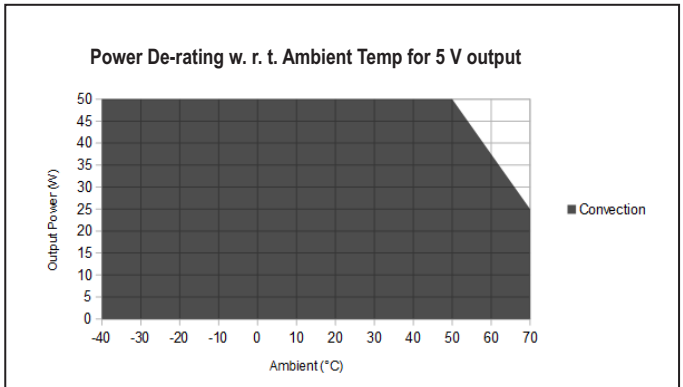
Note: * All the mounting holes marked with Earth symbol must be Earthed.

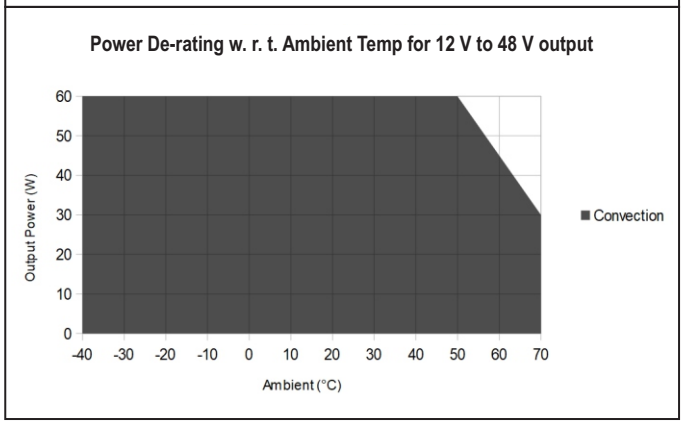
Mechanical dimensions



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
OPS2x4-60-05-A-1-CU	Open Frame Power Supply with 4 x 2 x 1.16" Form factor, 5 V / 10 A, 50 Watts with Convection Cooling	
OPS2x4-60-12-A-1-CU	Open Frame Power Supply with 4 x 2 x 1.16" Form factor, 12 V / 5 A, 60 Watts with Convection Cooling	
OPS2x4-60-15-A-1-CU	Open Frame Power Supply with 4 x 2 x 1.16" Form factor, 15 V / 4 A, 60 Watts with Convection Cooling	
OPS2x4-60-24-A-1-CU	Open Frame Power Supply with 4 x 2 x 1.16" Form factor, 24 V / 2.5 A, 60 Watts with Convection Cooling	
OPS2x4-60-48-A-1-CU	Open Frame Power Supply with 4 x 2 x 1.16" Form factor, 48 V / 1.25 A, 60 Watts with Convection Cooling	