## OPS3x5-350 OPEN FRAME POWER SUPPLIES — SELEC





#### 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</li>
- - 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	
ОИТРИТ	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				
	VOLTAGE RANGE *	90 - 264 VAC ( 127 - 370 VDC ) <b>Note:</b> 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				
INPUT	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					
	OVERLOAD	110 % to 140 % of rated output current; Hiccup mode; Autorecovery type.				
	0/50/0/7405	13.5 - 15.5 VDC	17 - 20.5 VDC	27 - 31 VDC	53. 5 - 62.5 VDC	
PROTECTION	OVERVOLTAGE	Latched type; Input AC power to be recycled to recover the power supply				
PROTECTION	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.				
SIGNALS	REMOTE INHIBIT	Available on a 2 pin connector header. Power Supply output is disabled when external 5 V is applied.				
	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				
ENVIRONMENT	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.

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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)			
	DIMENSION	Overall: 5" x 3" x 1.16" ( L x W x H ); Height above PCB: 1"			
MECHANICAL	WEIGHT	< 300 gms			
	MOUNTING	Open Frame			

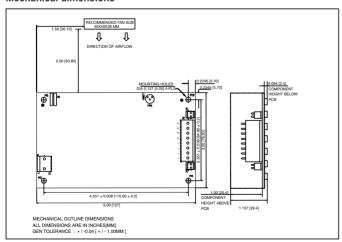
Means of Protection		Category
Primary to Secondary	2 x MOPP ( Means of Patient Protection )	
Primary to Earth	1 x MOPP ( Means of Patient Protection )	IEC 60601-1 Ed 3
Secondary to Earth	1 x MOPP ( Means of Patient Protection )	

### **Connectors details**

Ref Des	Description	Туре	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

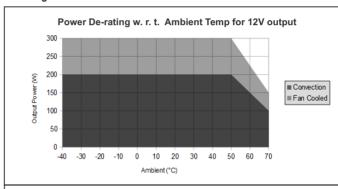
Note:
\* All the mounting holes marked with Earth symbol must be Earthed.
\*\* One Ring Tongue Terminal with 16 AWG is recommended for current up to 11 A only.
Use multiple tongue terminals with wire for more current.

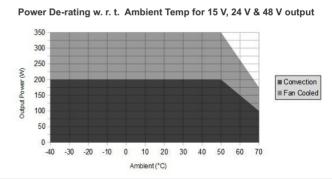
#### **Mechanical dimensions**

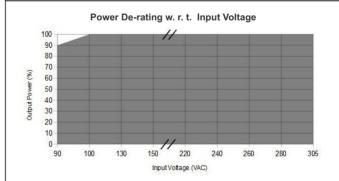


- This open frame power supply should preferably be mounted horizontally on 4 metal stand-offs having diameter not more than 6 mm and height not less than 7 mm.
   Screws used to fix PCB on stand-offs should not have head diameter more than 6 mm.
- 3. Washer used should not have diameter more than 6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

#### De-rating curve







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## OPS3x5-350 OPEN FRAME POWER SUPPLIES



### 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	RoHS C NUS
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	RoHS C NUS
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	ROHS C WUS
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	ROHS C SUS

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