

UNIVERSAL INPUT

FEATURES

- ◆ Low safety ground leakage current
- ◆ Meet EN 55011 and FCC Class B
- ◆ 85 to 264 VAC universal input
- ◆ Power Fail Detect (PFD) Signal
- ◆ Input surge current protection
- ◆ Overvoltage & overcurrent protection
- ◆ Open PCB, L-bracket or enclosed option
- ◆ 100% burn-in
- ◆ UL/CSA/TÜV approved & CE marked to LVD

DESCRIPTION

The SM110P series of compact, open PCB constructed, AC-DC switching power supplies are specially designed for medical applications. They are capable of delivering 110 watts of continuous power at 25 CFM forced air cooling or 80 watts at convection cooling. They operate at 85 to 264 VDC input voltage without the need of changing jumper. All models meet the safety requirements of UL, CSA and IEC for non-patient contact medical equipment.

INPUT SPECIFICATIONS

Input Voltage:	85 to 264 VAC
Input Frequency:	47 to 63Hz
Input Current:	3.2A (rms) for 115 VAC 1.8A (rms) for 230 VAC
Leakage Current:	90µA max. at 110 VAC, 60Hz 150µA max. at 230 VAC, 50Hz

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature:	0° C to +70° C
Storage Temperature:	-40° C to +85° C
Relative Humidity:	5% to 95% non-condensing
Derating:	Derate from 100% at +50° C linearly to 50% at +70° C
Cooling:	110 watts continuous output power at 25 CFM or 80 watts at convection cooling

SM110P SERIES 110 WATT MEDICAL SWITCHING POWER SUPPLIES

GENERAL SPECIFICATIONS

Switching Frequency:	20kHz to 250kHz, varies with load and line
Efficiency:	70% min. on single output models with $V_o \geq 12V$, 65% minimum on all others
Hold-up Time:	12mS min. at 110 VAC
Line Regulation:	$\pm 0.5\%$ max. at full load
Inrush Current:	15 amps at 115 VAC 30 amps at 230 VAC
Withstand Voltage:	4000 VAC input to output 1500 VAC input to ground 500 VAC output to ground
MTBF (+25° C ambient):	400,000 hours min. full load
EMI Requirements:	In compliance with EN 55011 Class B and FCC Class B
Safety Requirements:	Meets or exceeds UL 2601-1, CSA C22.2 No. 601.1, EN 60601-1/IEC 601-1

OUTPUT SPECIFICATIONS

Output Voltage/Current:	See Rating Chart
Total Output Power:	110 watts maximum at 25 CFM forced air cooling or 80 watts maximum at convection cooling
Ripple and Noise:	1% peak to peak max.
Overvoltage Protection:	O/P #1 only; set at 112-132% of its nominal output voltage
Overcurrent Protection:	All outputs protected to short circuit conditions
Temp. Coefficient:	All outputs, $\pm 0.04\%$ / °C max.
Transient Response:	Maximum excursion of 4% or better on all models, recovering to 1% of final value within 500µs after a 25% step load change
PFD Signal:	TTL logic high for normal operation and TTL logic low upon loss of input power. This signal appears at least 1ms prior to +5V output dropping 5% below its nominal value. This signal also provides a minimum delay of 100ms after +5V is within regulation.

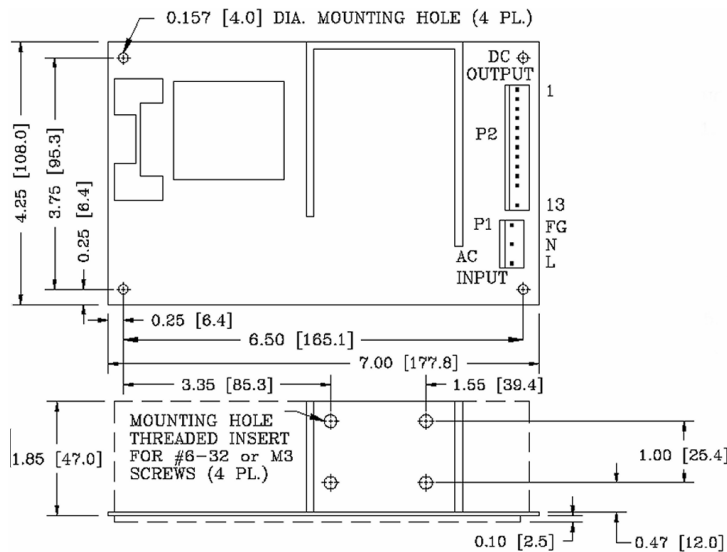


OUTPUT VOLTAGE/CURRENT RATING CHART

Model	Output #1				Output #2					Output #3				Output #4				Max. Power
	Vnom	Imin	Imax	Tol.	Vnom	Imin	Imax	Ipeak	Tol.	Vnom	Imin	Imax	Tol.	Vnom	Imin	Imax	Tol.	
SM110P10-1	3.3V	0A	22A	3%			(N/A)					(N/A)				(N/A)		72W
SM110P10	5.0V	0A	22A	3%			(N/A)					(N/A)				(N/A)		110W
SM110P12	12V	0A	9.0A	2%			(N/A)					(N/A)				(N/A)		110W
SM110P13	15V	0A	7.5A	2%			(N/A)					(N/A)				(N/A)		110W
SM110P14	24V	0A	4.5A	2%			(N/A)					(N/A)				(N/A)		110W
SM110P16	30V	0A	3.6A	2%			(N/A)					(N/A)				(N/A)		110W
SM110P23	+5V	0A	10A	3%	+12V	0A	5A	9.0A	3%			(N/A)				(N/A)		110W
SM110P31	+5V	0A	10A	3%	+12V	0A	5A	9.0A	3%	-12V	0A	1A	4%			(N/A)		110W
SM110P32	+5V	0A	10A	3%	+15V	0A	4A	7.5A	3%	-15V	0A	1A	4%			(N/A)		110W
SM110P40	+5V	0A	10A	3%	+12V	0A	5A	9.0A	3%	-12V	0A	1A	4%	-5V	0A	1A	4%	110W
SM110P41	+5V	0A	10A	3%	+15V	0A	4A	7.5A	3%	-15V	0A	1A	4%	+24V	0A	1A	4%	110W
SM110P42	+5V	0A	10A	3%	+12V	0A	5A	9.0A	3%	-12V	0A	1A	4%	+12V	0A	1A	4%	110W
SM110P45	+5V	0A	10A	3%	+12V	0A	5A	9.0A	3%	-12V	0A	1A	4%	+24V	0A	1A	4%	110W
SM110P45-1	+5V	2A	10A	3%	+12V	0A	5A	9.0A	3%	-12V	0A	1A	4%	+24V	1.5A	3A	10%	110W
SM110P45-2	+5V	0A	10A	3%	+24V	0A	3A	5.0A	3%	-12V	0A	1A	4%	+12V	0A	1A	4%	110W
SM110P46	+5V	0A	10A	3%	+15V	0A	4A	7.5A	3%	-15V	0A	1A	4%	-5V	0A	1A	4%	110W

- Notes: (1) Peak output current with 10% maximum duty cycle for less than 60 seconds. Total peak power must not exceed 130 watts.
 (2) 110 watts maximum at 25 CFM forced air cooling or 80 watts maximum at convection cooling, except model SM110P10-1 which is rated maximum 60 watt convection cooling or 72W at 25 CFM forced air cooling.
 (3) Safety agency approvals are for the above listed models in PCB format. To order a model with a metallic L-bracket or box, add suffix "B" for L-bracket format or "C" for enclosed format e.g., SM110P45C.
 (4) The output #1 of model SM110P45-1 needs a minimum current of 2A to support the other outputs at their maximum rated loads.

MECHANICAL SPECIFICATIONS



Notes:

- Dimensions shown in inch (mm)
- Tolerance 0.02 (0.5) maximum
- Input connector mates with Molex housing 09-50-3051 and Molex 2878 series crimp terminal
- Output connector mates with Molex housing 09-50-3131 and Molex 2878 series crimp terminal
- Weight: 640 grams (PCB format)
- The copper pad of the mounting hole near P1 is for system grounding through a metallic stand-off to the system chassis.

PIN CHART

MODEL		PIN	1, 2, 3	4, 5	6, 7	8, 9	10	11	12	13
SM110P10-1	SM110P10		Output #1	Return	Return	Output #1	P.F.D.	N.C.	Key	N.C.
SM110P12	SM110P13		Output #1	Return	Return	Output #1	P.F.D.	N.C.	Key	N.C.
SM110P14	SM110P16		Output #1	Return	Return	Output #1	P.F.D.	N.C.	Key	N.C.
SM110P23			Output #1	Common Return	Common Return	Output #2	P.F.D.	N.C.	Key	N.C.
SM110P31	SM110P32		Output #1	Common Return	Common Return	Output #2	P.F.D.	Output #3	Key	N.C.
SM110P40	SM110P41		Output #1	Common Return	Common Return	Output #2	P.F.D.	Output #3	Key	Output #4
SM110P42	SM110P45		Output #1	Common Return	Common Return	Output #2	P.F.D.	Output #3	Key	Output #4
SM110P45-1	SM110P45-2		Output #1	Common Return	Common Return	Output #2	P.F.D.	Output #3	Key	Output #4
SM110P46			Output #1	Common Return	Common Return	Output #2	P.F.D.	Output #3	Key	Output #4

Note: All data are subject to change without notice