



# 110 WATT MEDICAL SWITCHING POWER SUPPLIES

## DESCRIPTION

The PMP110 series of AC/DC switching power supplies are for 110 watts of continuous output power. They are enclosed in a 94V-1 rated polyphenylene-oxide case with an IEC 320 inlet to mate with interchangeable cord for world-wide use. An on/off switch can be added at request. All models meet CISPR 11 and FCC class B emission limits, and are designed for medical applications not for patient contact.

## FEATURES

- Dual, triple or quadruple outputs
- Optional output connectors
- Optional on/off switch
- Optional Power Fail Detect (PFD) signal
- 100% burn-in
- Wide input range 85 to 264 VAC
- Input surge current protection
- Overvoltage protection
- Overcurrent protection

## INPUT SPECIFICATIONS

<b>Input voltage</b> <input type="checkbox"/>	85 to 264 VAC
<b>Input frequency</b> <input type="checkbox"/>	47 to 63 Hz
<b>Input current</b> <input type="checkbox"/>	3.20A (rms) for 115 VAC 1.80A (rms) for 230VAC
<b>Leakage current</b> <input type="checkbox"/>	90uA max. @ 115VAC, 60Hz 150uA max. @ 230VAC, 50Hz

## OUTPUT SPECIFICATIONS

<b>Output voltage/current</b> <input type="checkbox"/>	See rating chart
<b>Total output power</b> <input type="checkbox"/>	110 watts maximum
<b>Ripple and noise</b> <input type="checkbox"/>	1 <input type="checkbox"/> peak to peak maximum
<b>Overvoltage protection</b> <input type="checkbox"/>	Provided on output #1 only; set at 112-132 <input type="checkbox"/> of its nominal output voltage
<b>Overcurrent protection</b> <input type="checkbox"/>	All outputs protected to short circuit conditions
<b>Temperature coefficient</b> <input type="checkbox"/>	All outputs $\pm 0.04$ <input type="checkbox"/> / <input type="checkbox"/> maximum
<b>Transient response</b> <input type="checkbox"/>	Maximum excursion of 4 <input type="checkbox"/> or better on all models, recovering to 1 <input type="checkbox"/> of final value within 500us after a 25 <input type="checkbox"/> step load change
<b>PFD signal (optional):</b>	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.

## PMP110 SERIES



## Safety Standard Approvals

**UL**  **UL 2601-1, CSA C22.2 NO. 601.1**  
**File NO. E178020**

**TÜV**  **EN60601-1**  
**Certificate No. T9954597**

## ENVIRONMENTAL SPECIFICATIONS

<b>Operating temperature</b> <input type="checkbox"/>	0 <input type="checkbox"/> to +70 <input type="checkbox"/>
<b>Storage temperature</b> <input type="checkbox"/>	-40 <input type="checkbox"/> to +85 <input type="checkbox"/>
<b>Relative humidity</b> <input type="checkbox"/>	5 <input type="checkbox"/> to 95 <input type="checkbox"/> non-condensing
<b>Derating</b> <input type="checkbox"/>	Derate from 100 <input type="checkbox"/> at +50 <input type="checkbox"/> linearly to 50 <input type="checkbox"/> at +70 <input type="checkbox"/>

## GENERAL SPECIFICATIONS

<b>Switching frequency</b> <input type="checkbox"/>	20KHz to 250KHz, varies with load and line
<b>Efficiency</b> <input type="checkbox"/>	70 <input type="checkbox"/> minimum on single output models with $V_o$ <input type="checkbox"/> 12V, 65% minimum on the others
<b>Hold-up time</b> <input type="checkbox"/>	12 msec minimum at 110VAC
<b>Line regulation</b> <input type="checkbox"/>	$\pm 0.5$ <input type="checkbox"/> maximum at full load
<b>Inrush current</b> <input type="checkbox"/>	15 amps @ 115VAC, or 30 amps @ 230VAC, at 25 <input type="checkbox"/> cold start
<b>Withstand voltage</b> <input type="checkbox"/>	4000VAC from input to output 1500VAC from input to ground 500VAC from output to ground
<b>MTBF</b> <input type="checkbox"/>	550,000 hours minimum at full load at 25 <input type="checkbox"/> ambient, calculated per MIL-HDBK-217F, excluding DC fan.
<b>EMC performance(EN60601-1-2: 2001)</b>	
EN55011:	Class B conducted, Class B radiated
FCC:	Class B conducted, Class B radiated
VCCI:	Class B conducted, Class B radiated
EN61000-3-2:	Harmonic distortion, Class A
EN61000-3-3:	Line flicker
EN61000-4-2:	ESD, $\pm 8$ KV air and $\pm 6$ KV contact
EN61000-4-3:	Radiated immunity, 3V/m for 80~2500MHz
EN61000-4-4:	Fast transient/burst, $\pm 2$ KV
EN61000-4-5:	Surge, $\pm 1$ KV diff., $\pm 2$ KV com.
EN61000-4-6:	Conducted immunity, 3Vrms
EN61000-4-8:	Magnetic field immunity, 3A/m
EN61000-4-11:	Voltage dips, 30 <input type="checkbox"/> reduction for 500ms, 60% reduction for 100ms and $>95$ <input type="checkbox"/> reduction for 10ms

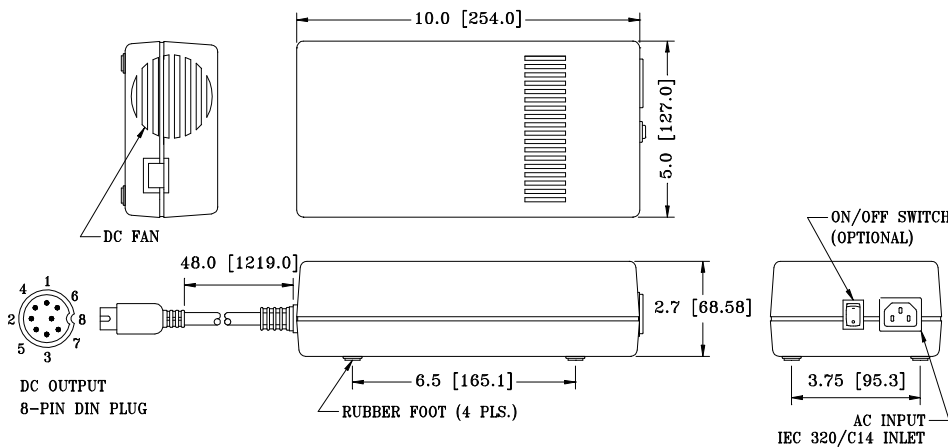
# UNIVERSAL INPUT PMP110 MEDICAL SERIES

## OUTPUT VOLTAGE/CURRENT RATING CHART

Model (2)	Output #1				Output #2 (1)					Output #3				Output #4				Maximum Output Power
	Vnom.	Imin.	Imax.	Tol.	Vnom.	Imin.	Imax.	Ipeak	Tol	Vnom.	Imin.	Imax.	Tol	Vnom.	Imin.	Imax.	Tol.	
PMP110-23	+5V	0.8A	10A	5%	+12V	0A	5A	9.0A	5%	(N/A)				(N/A)				110W
PMP110-31	+5V	0.8A	10A	5%	+12V	0A	5A	9.0A	5%	-12V	0A	2A	5%	(N/A)				110W
PMP110-32	+5V	0.8A	10A	5%	+15V	0A	4A	7.5A	5%	-15V	0A	2A	5%	(N/A)				110W
PMP110-40	+5V	0.8A	10A	5%	+12V	0A	5A	9.0A	5%	-12V	0A	2A	5%	-5V	0A	2A	5%	110W
PMP110-41	+5V	0.8A	10A	5%	+15V	0A	4A	7.5A	5%	-15V	0A	2A	5%	+24V	0A	2A	5%	110W
PMP110-42	+5V	0.8A	10A	5%	+12V	0A	5A	9.0A	5%	-12V	0A	2A	5%	+12V	0A	2A	5%	110W
PMP110-45	+5V	0.8A	10A	5%	+12V	0A	5A	9.0A	5%	-12V	0A	2A	5%	+24V	0A	2A	5%	110W
PMP110-45-1	+5V	2.0A	10A	5%	+12V	0A	5A	9.0A	5%	-12V	0A	2A	5%	+24V	1.5A	3A	10%	110W
PMP110-45-2	+5V	0.8A	10A	5%	+24V	0A	3A	5.0A	5%	-12V	0A	2A	5%	+12V	0A	2A	5%	110W
PMP110-46	+5V	0.8A	10A	5%	+15V	0A	4A	7.5A	5%	-15V	0A	2A	5%	-5V	0A	2A	5%	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) The output #1 of model PMP110-45-1 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
- Weight: 1.40 Kgs (3.08 Lbs.) approx.
- See pages 6-19 to 6-26 for optional output connectors. Add the suffix assigned for a selected connector to a wanted model number, e.g. PMP110-31-K1, for ordering.
- To order a model with on/off switch, add suffix "S" to the model number. e.g. PMP110-31-K1-S.
- To order a model with PFD signal, add suffix "PF" to the model number, e.g. PMP110-31-K1-PF.

## PIN CHART

MODEL	PIN	1	2	3	4	5	6	7	8
PMP110-23		COMMON RETURN	N.C.	OUTPUT #1.	N.C.	OUTPUT #2.	COMMON RETURN	OUTPUT #1	N.C. or PFD
PMP110-31	PMP110-32	COMMON RETURN	OUTPUT #3	OUTPUT #1.	N.C	OUTPUT #2.	COMMON RETURN	OUTPUT #1	N.C. or PFD
PMP110-40	PMP110-41	COMMON RETURN	OUTPUT #3	OUTPUT #1.	OUTPUT #4	OUTPUT #2..	COMMON RETURN	OUTPUT #1	N.C. or PFD.
PMP110-42	PMP110-45								
PMP110-45-1	PMP110-45-2								
PMP110-46									