



650-700 WATT MEDICAL SWITCHING SUPPLIES

DESCRIPTION

The PM650 series comprising single and multiple output models for 650-700 watts of continuous output power is specially designed for medical applications not for patient contact. They operate at 90 to 264 VAC input voltage without the need of a selector strap. The units are constructed on a printed circuit board with a U-bracket for mechanical support and heat sinking. A cover-and-fan assembly can be added during manufacturing.

PM650 SERIES

Preliminary

FEATURES

- EN61000-3-2 class A and D compliant
- Power Factor 0.98 typical
- Overvoltage protection
- Short-circuit protection
- Thermal protection
- Power Fail Detect (PFD)
- 100h burn-in at full rated load
- Remote sense on output #1 and output #2
- Remote inhibit – TTL high disables output

Safety Standard Approvals

INPUT SPECIFICATIONS

Input voltage <input type="checkbox"/>	90 to 264 VAC
Input frequency <input type="checkbox"/>	47 to 63 Hz
Input current <input type="checkbox"/>	10A rms <input type="checkbox"/> for 115VAC 5A rms <input type="checkbox"/> for 230VAC
Leakage current <input type="checkbox"/>	100uA max. @ 115VAC, 60Hz 165uA max. @ 230VAC, 50Hz

ENVIRONMENTAL SPECIFICATIONS

Operating temperature <input type="checkbox"/>	0 <input type="checkbox"/> to +70 <input type="checkbox"/>
Storage temperature <input type="checkbox"/>	-40 <input type="checkbox"/> to +85 <input type="checkbox"/>
Relative humidity <input type="checkbox"/>	5 <input type="checkbox"/> to 95 <input type="checkbox"/> non-condensing
Derating <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"/>

TPUT SPECIFICATIONS

Output voltage/current <input type="checkbox"/>	See rating chart
Total output power <input type="checkbox"/>	See rating chart
Ripple and Noise <input type="checkbox"/>	2 <input type="checkbox"/> peak to peak maximum
Overvoltage protection <input type="checkbox"/>	Provided on output #1 only; set at 115-140 <input type="checkbox"/> of its nominal Output voltage
Overcurrent protection <input type="checkbox"/>	All outputs protected to short circuit conditions
Temperature coefficient <input type="checkbox"/>	All outputs ± 0.04 <input type="checkbox"/> / <input type="checkbox"/> maximum
Transient response <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
PFD signal <input type="checkbox"/>	TTL logic high for normal operation and TTL logic low upon loss of input power. This signal appears at least 1 ms prior to master output dropping 5 <input type="checkbox"/> below its nominal value. This signal also provides a minimum delay of 100 ms after master output is within regulation.
Remote inhibit <input type="checkbox"/>	Requires an external TTL high level signal to inhibit outputs for standard models.

GENERAL SPECIFICATIONS

Switching frequency <input type="checkbox"/>	70KHz ± 10 KHz
Power factor <input type="checkbox"/>	0.98 typical
Efficiency <input type="checkbox"/>	80 <input type="checkbox"/> minimum on all models
Hold-up time <input type="checkbox"/>	12 msec minimum at 110VAC
Line regulation <input type="checkbox"/>	± 0.2 <input type="checkbox"/> maximum at full load
Inrush current <input type="checkbox"/>	40amps @115VAC, or 80 amps @ 230VAC at 25 <input type="checkbox"/> cold start
Withstand voltage <input type="checkbox"/>	4000VAC from input to output 1500VAC from input to ground 500VAC from output to ground
MTBF <input type="checkbox"/>	300,000 hours minimum at full load at 25 <input type="checkbox"/> ambient, calculated per MIL-HDBK-217F
EMC performance (EN60601-1-2)	
EN55011:	Class B conducted, Class A radiated
EN61000-3-2:	Harmonic distortion, Class A and D
EN61000-3-3:	Line flicker
EN61000-4-2:	ESD, ± 8 KV air and ± 6 KV contact
EN61000-4-3:	Radiated immunity, 3V/m
EN61000-4-4:	Fast transient/burst, ± 2 KV
EN61000-4-5:	Surge, ± 1 KV diff., ± 2 KV com.
EN61000-4-6:	Conducted immunity, 3Vrms
EN61000-4-8:	Magnetic field immunity, 3A/m
EN61000-4-11:	Voltage dips, 30% reduction for 500ms, 60%reduction for 100ms and >95% reduction for 10ms

UNIVERSAL INPUT

PM650 SERIES

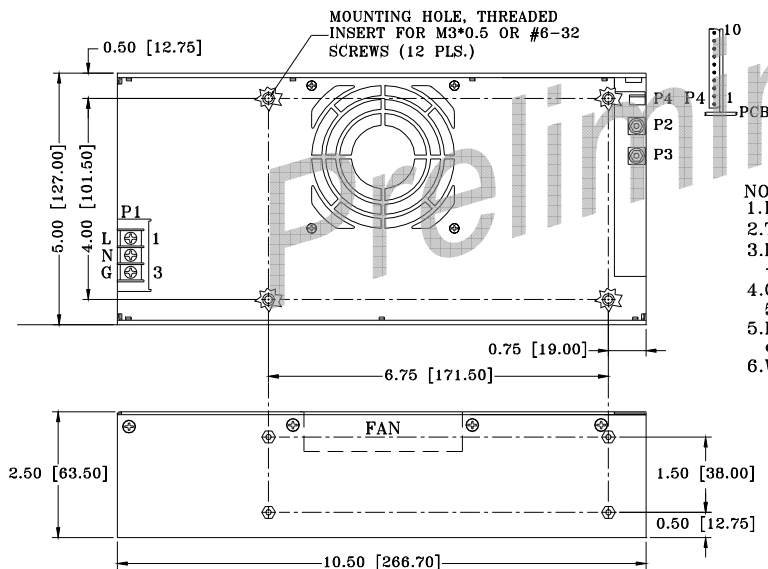
OUTPUT VOLTAGE/CURRENT RATING CHART

Model	Output # 1				Output # 2				Output # 3				Max. Output Power
	Vnom.	Imin.	Imax.	Tol.	Vnom.	Imin.	Imax.	Tol.	Vnom.	Imin.	Imax.	Tol.	
PM650-12	12V	0A	54.2A	2%									650W
PM650-13	15V	0A	43.4A	2%									650W
PM650-14	24V	0A	27.1A	2%									650W
PM650-15	27V	0V	24.1A	2%									650W
PM650-16	30V	0A	21.7A	2%									650W
PM650-18	48V	0A	14.9A	2%									700W
PM650-20	24V	1.5A	18A	2%	12V	1.2A	22A	5%					650W
PM650-21	24V	1.5A	18A	2%	15V	1.0A	18A	5%					650W
PM650-22	48V	0.75A	9A	2%	24V	0.6A	12A	5%					650W
PM650-23	48V	0.75A	9A	2%	12V	1.2A	22A	5%					650W
PM650-24	48V	0.75A	9A	2%	15V	1.0A	18A	5%					650W
PM650-30	24V	1.5A	18A	2%	12V	1.2A	22A	5%	3.3V	0A	10A	3%	650W
PM650-31	24V	1.5A	18A	2%	15V	1.0A	18A	5%	3.3V	0A	10A	3%	650W
PM650-32	24V	1.5A	18A	2%	12V	1.2A	22A	5%	5.1V	0A	10A	3%	650W
PM650-33	24V	1.5A	18A	2%	15V	1.0A	18A	5%	5.1V	0A	10A	3%	650W
PM650-34	48V	0.75A	9A	2%	12V	1.2A	22A	5%	3.3V	0A	10A	3%	650W
PM650-35	48V	0.75A	9A	2%	15V	1.0A	18A	5%	3.3V	0A	10A	3%	650W
PM650-36	48V	0.75A	9A	2%	12V	1.2A	22A	5%	5.1V	0A	10A	3%	650W
PM650-37	48V	0.75A	9A	2%	15V	1.0A	18A	5%	5.1V	0A	10A	3%	650W

- Notes: (1) Add suffix "B" for U-bracket format or "C" for enclosed format, e.g. PM650-14C.
 (2) All outputs are floating. It can be connected externally for positive or negative output.
 (3) Output #1 & #2 can be adjusted within +/- 5% of their nominal voltage.
 (4) Output #3 can be adjusted within +/- 15% of their nominal voltage.
 (5) 650 watts for "C" version with cover-and-fan assembly. 325 watts for "B" version without moving air (maximum current of output #1 & #2 derated to 70%), or 650 watts with 50 CFM forced air provided by user.
 (6) All models may operated at no-load. At no-load, output voltage tolerance increases to 10%.

MECHANICAL SPECIFICATIONS

Single output models



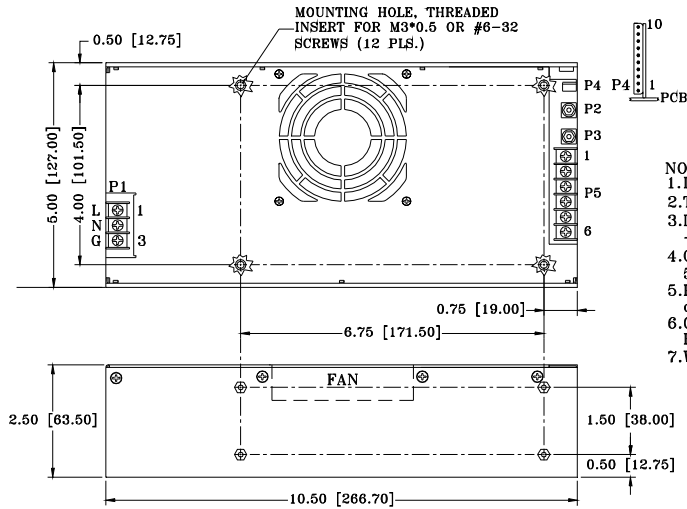
- NOTES:
 1. Dimensions shown in inch [mm]
 2. Tolerance 0.02 [0.5] maximum
 3. Input connector P1 is Dinkle DT-35-B01W -03 screws are M3, Nickel plated.
 4. Connector P4 mates with Molex housing 50-37-5103 and pins 5263.
 5. P2, P3: Output studs are nickel plated copper, M5*0.8mm threaded.
 6. Weight:

UNIVERSAL INPUT

PM650 SERIES

MECHANICAL SPECIFICATIONS

Multiple output models



- NOTES:
 1. Dimensions shown in inch [mm]
 2. Tolerance 0.02 [0.5] maximum
 3. Input connector P1 is Dinkle DT-35-B01W -03 screws are M3, Nickel plated.
 4. Connector P4 mates with Molex housing 50-37-5103 and pins 5263.
 5. P2,P3: Output studs are nickel plated copper, M5*0.8mm threaded.
 6. Output connector P5 is Dinkle DT-35-B01W-06 screws are M3, Nickel plated.
 7. Weight:

PIN CHART

Single Output models

MODEL	CONN PIN	P1 (AC)			P2	P3	P4			
		1	2	3			1	2	3	4
PM650-12	PM650-13	GROUND	NEUTRAL	LIVE	□V	□V	SIGNAL GROUND (□V)	□S (V)	□S (V)	PFD
PM650-14	PM650-16									
PM650-17	PM650-18									

MODEL	CONN PIN	P4					
		5	6	7	8	9	10
PM650-12	PM650-13						
PM650-14	PM650-16	INHIBIT +Ve	INHIBIT -Ve	N.C.	N.C.	0V (FAN)	FAN
PM650-17	PM650-18						

Multiple output models

MODEL	CONN PIN	P1 (AC)			P2	P3	P4			
		1	2	3			1	2	3	4
PM650-20	PM650-21									
PM650-22	PM650-23									
PM650-24	PM650-30									
PM650-31	PM650-32	GROUND	NEUTRAL	LIVE	□V1	□V1	SIGNAL GROUND (□V)	□S (V1)	□S (V1)	PFD
PM650-33	PM650-34									
PM650-35	PM650-36									
PM650-37										

MODEL	CONN PIN	P4						P5					
		5	6	7	8	9	10	1	2	3	4	5	6
PM650-20	PM650-21							□V2	□V2	□V2	□V2	N.C.	N.C.
PM650-22	PM650-23												
PM650-24													
PM650-30	PM650-31	INHIBIT +Ve	INHIBIT -Ve	□S (V2)	□S (V2)	0V (FAN)	FAN	□V2	□V2	□V2	□V2	□V3	□V3
PM650-32	PM650-33												
PM650-34	PM650-35												
PM650-36	PM650-37												