275 Watt Medical



Features

- 5 x 3 x 0.75 Inches Form factor
- 275 Watts with Forced Air Cooling
- Approval to EN60601 3rd Edition
- Efficiencies upto 92%
- -40 to 70 degree operating temperature*
- Dual fusing
- 12V / 0.5A Fan Output, Thermal Shut-Down feature
- 3.37m Hours, Telcordia -SR332-issue 3 MTBF
- Standby Power < 0.5W
- Medical (BF) Safety Approvals
- Meets standard IEC60601-1-2: 2014 (4th Edition)

	Electrical Specifications			
Input Voltage	Voltage 80-264 VAC/390 VDC, Universal (Derate from 100% at 100V AC to 72% for Forced C			
	and 69% for Convection Cooling at 80V AC)			
Input Frequency	47-63 Hz			
Input Current	115 VAC: 2.6 A max. 230 VAC: 1.3 A max.			
No Load Power	<0.5W typical for MULP275-1XXX and <0.85W typical for MULP275-0XXX			
Inrush Current	115 VAC – 25 A, 230 VAC – 45 A, 264 VAC – 75 A			
Leakage Current	300 uA Typical, (N.A. For Class II Option) Touch current <100uA			
Efficiency	92%(48V,58V), 90%(24V,30V), 88%(12V,15V)			
Hold-up Time	at 275W:8 ms ; 160W: 16 ms			
Power Factor	excess 0.95 with Full Load			
Output Power	275W with 13 CFM, upto 160W Convection			
Line Regulation	+/-0.5%			
Load Regulation	+/-1%			
Transient Response	25% step load change, at 0.1A/uS slew rate, 50% duty cycle, 50Hz=4%,			
	recovery time < 5 ms			
Rise Time	55ms typical			
Set Point Tolerance	+/-1%			
Output Voltage Adjustment	+/-3% (Ref. Note 8)			
Over Current Protection	>110%			
Over Voltage Protection	110 to 140%			
Short Circuit Protection	Hiccup mode			
Switching Frequency	PFC – 70 to 130 KHz ,PWM – 50-80 KHz			
Operating Temperature ⁷	- 40 to +70°C, * -40 to 0°C startup is guaranteed with spec deviation			
Storage Temperature	-40 to +85°C			
Relative Humidity	5% to 95%, noncondensing			
Altitude	Operating: 16,000 ft.; Nonoperating: 40,000 ft.			
MTBF	3.37m Hours, Telcordia -SR332-issue 3			
Isolation Voltage	Input to Output – 4000 VAC medical applications.			
	Input to GND - 1500 VAC (Not Applicable For Class II Option)			
	Output to GND- 1500VAC for type BF , 500 VAC for type B (Not Applicable For Class II Option			
Cooling	275W with 13 CFM forced air cooling ⁶ (refer Mechanical Drawing)			
	upto 160 W with natural convection cooling ⁶ (refer Derating Curve)			

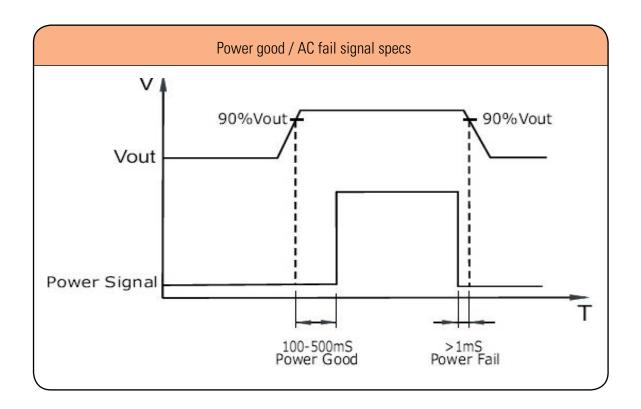
Model Number	Description	Voltage	Max. Load (Convection) (152W) @50°C	Max.Load (Convection) (160W) @40°C	Max. Load (13 CFM)	Min. Load	Ripple ¹	Signals
MULP275-1012	with Screw Terminal	12 V	12.50A	13.33A	22.92A	0.0 A	2%	N.A
MULP275-1312	with Molex Connector	12 V	12.50A	13.33A	22.92A	0.0 A	2%	N.A
MULP275-1015	with Screw Terminal	15 V	10.00A	10.66A	18.33A	0.0 A	2%	N.A
MULP275-1315	with Molex Connector	15 V	10.00A	10.66A	18.33A	0.0 A	2%	N.A
MULP275-1024	with Screw Terminal	24 V	6.25A	6.67A	11.46A	0.0 A	1%	N.A
MULP275-1324	with Molex Connector	24 V	6.25A	6.67A	11.46A	0.0 A	1%	N.A
MULP275-1030	with Screw Terminal	30 V	5.00A	5.33A	9.17A	0.0 A	1%	N.A
MULP275-1330	with Molex Connector	30 V	5.00A	5.33A	9.17A	0.0 A	1%	N.A
MULP275-1048	with Screw Terminal	48 V	3.12A	3.33A	5.73A	0.0 A	1%	N.A
MULP275-1348	with Molex Connector	48 V	3.12A	3.33A	5.73A	0.0 A	1%	N.A
MULP275-1058	with Screw Terminal	58 V	2.58A	2.76A	4.74A	0.0 A	1%	N.A
MULP275-1358	with Molex Connector	58 V	2.58A	2.76A	4.74A	0.0 A	1%	N.A
ULP275-CK metal cover kit accessory								
MULP275-0012	with Screw Terminal	12 V	12.50A	13.33A	22.92A	0.0 A	2%	PG & AC PF ¹⁰
MULP275-0312	with Molex Connector	12 V	12.50A	13.33A	22.92A	0.0 A	2%	PG & AC PF ¹⁰
MULP275-0015	with Screw Terminal	15 V	10.00A	10.66A	18.33A	0.0 A	2%	PG & AC PF ¹⁰
MULP275-0315	with Molex Connector	15 V	10.00A	10.66A	18.33A	0.0 A	2%	PG & AC PF ¹⁰
MULP275-0024	with Screw Terminal	24 V	6.25A	6.67A	11.46A	0.0 A	1%	PG & AC PF ¹⁰
MULP275-0324	with Molex Connector	24 V	6.25A	6.67A	11.46A	0.0 A	1%	PG & AC PF ¹⁰
MULP275-0030	with Screw Terminal	30 V	5.00A	5.33A	9.17A	0.0 A	1%	PG & AC PF ¹⁰
MULP275-0330	with Molex Connector	30 V	5.00A	5.33A	9.17A	0.0 A	1%	PG & AC PF ¹⁰
MULP275-0048	with Screw Terminal	48 V	3.12A	3.33A	5.73A	0.0 A	1%	PG & AC PF ¹⁰
MULP275-0348	with Molex Connector	48 V	3.12A	3.33A	5.73A	0.0 A	1%	PG & AC PF ¹⁰
MULP275-0058	with Screw Terminal	58 V	2.58A	2.76A	4.74A	0.0 A	1%	PG & AC PF ¹⁰
MULP275-0358	with Molex Connector	58 V	2.58A	2.76A	4.74A	0.0 A	1%	PG & AC PF ¹⁰
ULP275-CKP metal cover kit accessory								

	Connecto	ors
J1	Pin 1	AC LINE
	Pin 2	NOT FITTED
	Pin 3	AC NEUTRAL
J2 Option 1 & 2	Pin 1,2,3	V1 +VE
	Pin 4,5,6	V1 -VE
J3	Pin 1	FAN +VE
	Pin 2	FAN -VE
J4	Pin 1	Vs
(For PGPF Option Only)	Pin 2	PGPF
	Pin 3	GND



Notes

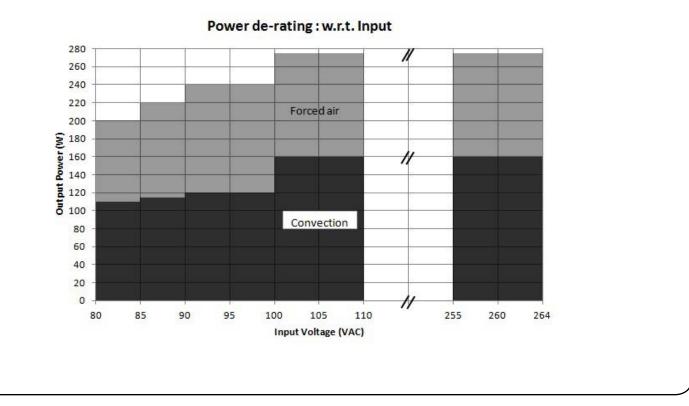
- 1. Ripple is peak to peak with 20 MHz bandwidth and 10 μ F (Tantalum capacitor) in parallel with a 0.1 μ F capacitor at rated line voltage and load ranges.
- 2. Class II means without input Earth pin.
- 3. Combined output power of main output, fan supply shall not exceed max. Power rating.
- 4. Fan supply output voltage tolerance including set point accuracy, line and load regulation is +/-10% and Ripple and noise is less than 10%.
- 5. Specifications are for nominal input voltage, 25°C unless otherwise stated.
- 6. 275W with 13CFM forced air cooling and 160W with natural convection cooling at 100 to 264VAC.
- 7. Output ripple can be more than 10% of the output voltage.
- **8.** Adjustment potentiometer is located on the SMT side of the PCB.
- 9. When used in Cover Kit, de-rate output power to 70 % under all operating conditions
- 10. A TTL signal is available at pin 2 of J4 which goes high 100-500mS after output voltage reaches 90% of set value. It goes low a minimum of 1mS before output falls below 90% of the set value, when input AC is switched off.



	Mechanical Specification	S			
AC Input Connector (J1)	Molex: 26-60-4030				
	Mating: 09-50-3031; Pins: 08-50-0106				
DC Output Connector (J2) Option 1 (Screw Terminal)	Molex: 39357 Series or equivalent				
DC Output Connector (J2) Option 2	Molex: 26-60-4060				
(Molex Connector)	Mating: 09-50-3061; Pins: 08-50-0106				
Aux (Fan) Output(J3)	AMP :640456-2				
	Mating: 640440-2				
Signal Ouput (J4)	AMP :640456-3				
	Mating: 640440-3				
Dimensions	5 x 3 x 0.75 inches				
	(127 x 76.2x 19.05 mm)				
Weight	200 gm approx				
	EMC				
Parameter	Conditions/Description	Criteria			
Conducted Emissions	EN 55011-B,CISPR22-B, FCC PART15-B	Pass			
Radiated Emissions	EN 55011 A	Pass			
		(Level B with external core (King core K5B RC 25x12x15-M in input cable))			
Input Current Harmonics	EN 61000-3-2	Class D			
Voltage Fluctuation and Flicker	EN 61000-3-3	Pass			
ESD Immunity	EN 61000-4-2	Level 4, Criterion A			
Radiated Field Immunity	EN 61000-4-3	Level 3, Criterion A			
Electrical Fast Transient Immunity	EN 61000-4-4	Level 3, Criterion A			
Surge Immunity	EN 61000-4-5	Level 3, Criterion A			
Conducted Immunity	EN 61000-4-6	Level 3, Criterion A			
Magnetic Field Immunity	EN 61000-4-8	Level 4, Criterion A			
Voltage dips, interruptions	EN 61000-4-11	Criterion B			
	Safety				
CE Mark	Complies with LVD Directive				
Approval Agency	Nemko, UL, C-UL				
Safety Standard(s)	EN60601-1, IEC 60601-1 (ed.3), ANSI / AAMI ES 60601 - 1, CSA C22.2 No. 60601-1				
Safety File Number(s)	Class-I: UL: E173812,VOL D1, Nemko: Certificate No: P16221541, CB Test Certificate No: N094798				
	Class-II: UL: E173812, VOL D1, Nemko: Certifi	cate No: P16221548, CB Test Certificate No: NO94849			

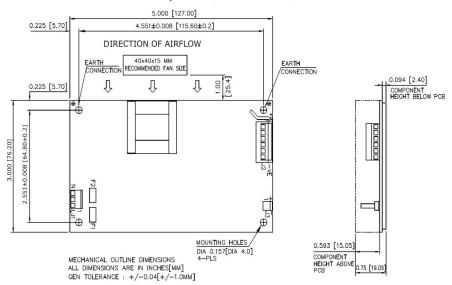






Mechanical Drawing

Option 1 (Wihout PGPF)

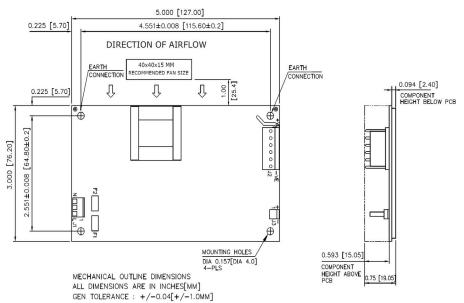


Notes: In case the PCB is mounted in a metal enclosure, using metal hardware ensure the following

- 1. Stand off, used to mount PCB has OD of 5.4 mm max.
- 2. Screws, used to fix PCB on stand off, have head dia of 6.0 mm max.
- 3. Washer, if used, to have dia of 6.5 mm max.

Mechanical Drawing

Option 2 (Without PGPF)



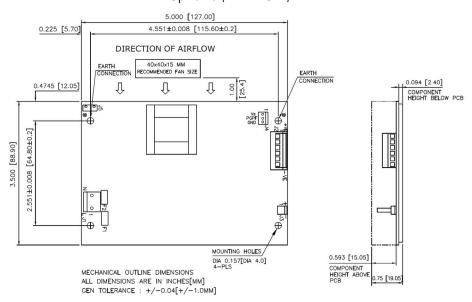
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Mechanical Drawing

Option 3 (With PGPF)

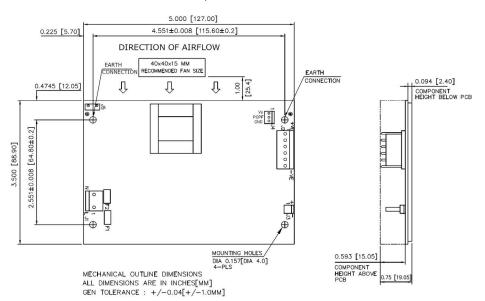


Notes: In case the PCB is mounted in a metal enclosure, using metal hardware ensure the following

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- 2. Screws, used to fix PCB on stand off, have head dia of 6.0 mm max.
- 3. Washer, if used, to have dia of 6.5 mm max.

Mechanical Drawing

Option 4 (With PGPF)



Notes: In case the PCB is mounted in a metal enclosure, using metal hardware ensure the following

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- 2. Screws, used to fix PCB on stand off, have head dia of 6.0 mm max.
- 3. Washer, if used, to have dia of 6.5 mm max.