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
- No Load Power < 0.5W
- Medical (BF) Safety Approvals
- Meets standard IEC60601-1-2 : 2014 (4th Edition)

	Electrical Specifications
Input Voltage	80-264 VAC/390 VDC, Universal (Derate from 100% at 100V AC to 72% for Forced Cooling
	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)

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Model Number	Type of Connector	Voltage	Max. Load (Convection) (152W) @50°C	Max.Load (Convection) (160W) @40°C	Max. Load (13 CFM)	Min. Load	Ripple ¹	Signals
MULP275-1012	Header Molex @ I/P	12 V	12.50A	13.33A	22.92A	0.0 A	2%	N.A
	Screw Terminal @ O/P							
MULP275-1312	Header Molex @ I/P	12 V	12.50A	13.33A	22.92A	0.0 A	2%	N.A
	Header Molex @ O/P							
MULP275-1015	Header Molex @ I/P	15 V	10.00A	10.66A	18.33A	0.0 A	2%	N.A
	Screw Terminal @ O/P							
MULP275-1315	Header Molex @ I/P	15 V	10.00A	10.66A	18.33A	0.0 A	2%	N.A
	Header Molex @ O/P							
MULP275-1024	Header Molex @ I/P	24 V	6.25A	6.67A	11.46A	0.0 A	1%	N.A
	Screw Terminal @ O/P							
MULP275-1324	Header Molex @ I/P	24 V	6.25A	6.67A	11.46A	0.0 A	1%	N.A
	Header Molex @ O/P							
MULP275-1030	Header Molex @ I/P	30 V	5.00A	5.33A	9.17A	0.0 A	1%	N.A
	Screw Terminal @ O/P							
MULP275-1330	Header Molex @ I/P	30 V	5.00A	5.33A	9.17A	0.0 A	1%	N.A
	Header Molex @ O/P							
MULP275-1048	Header Molex @ I/P	48 V	3.12A	3.33A	5.73A	0.0 A	1%	N.A
	Screw Terminal @ O/P							
MULP275-1348	Header Molex @ I/P	48 V	3.12A	3.33A	5.73A	0.0 A	1%	N.A
	Header Molex @ 0/P							
MULP275-1058	Header Molex @ I/P	58 V	2.58A	2.76A	4.74A	0.0 A	1%	N.A
	Screw Terminal @ O/P							
MULP275-1358	Header Molex @ I/P	58 V	2.58A	2.76A	4.74A	0.0 A	1%	N.A
	Header Molex @ O/P							
ULP275-CK metal cov	ver kit accessory							



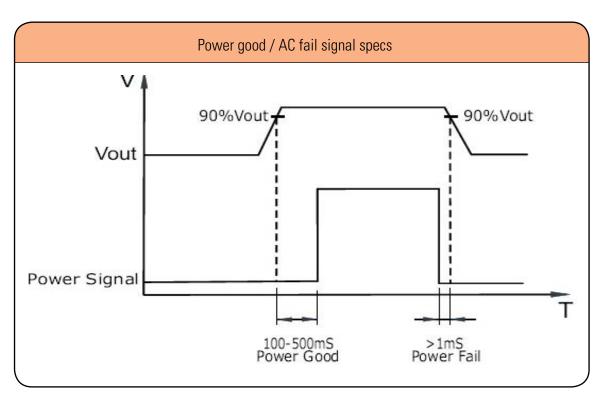
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Model Number	Type of Connector	Voltage	Max. Load (Convection) (152W) @50°C	Max.Load (Convection) (160W) @40°C	Max. Load (13 CFM)	Min. Load	Ripple ¹	Signals
MULP275-0012	Header Molex @ I/P	12 V	12.50A	13.33A	22.92A	0.0 A	2%	PG & AC PF ¹⁰
	Screw Terminal @ O/P							
MULP275-0312	Header Molex @ I/P	12 V	12.50A	13.33A	22.92A	0.0 A	2%	PG & AC PF ¹⁰
	Header Molex @ O/P							
MULP275-0015	Header Molex @ I/P	15 V	10.00A	10.66A	18.33A	0.0 A	2%	PG & AC PF ¹⁰
	Screw Terminal @ O/P							
MULP275-0315	Header Molex @ I/P	15 V	10.00A	10.66A	18.33A	0.0 A	2%	PG & AC PF ¹⁰
	Header Molex @ O/P							
MULP275-0024	Header Molex @ I/P	24 V	6.25A	6.67A	11.46A	0.0 A	1%	PG & AC PF ¹⁰
	Screw Terminal @ O/P							
MULP275-0324	Header Molex @ I/P	24 V	6.25A	6.67A	11.46A	0.0 A	1%	PG & AC PF ¹⁰
	Header Molex @ O/P							
MULP275-0030	Header Molex @ I/P	30 V	5.00A	5.33A	9.17A	0.0 A	1%	PG & AC PF ¹⁰
	Screw Terminal @ O/P							
MULP275-0330	Header Molex @ I/P	30 V	5.00A	5.33A	9.17A	0.0 A	1%	PG & AC PF ¹⁰
	Header Molex @ O/P							
MULP275-0048	Header Molex @ I/P	48 V	3.12A	3.33A	5.73A	0.0 A	1%	PG & AC PF ¹⁰
	Screw Terminal @ O/P							
MULP275-0348	Header Molex @ I/P	48 V	3.12A	3.33A	5.73A	0.0 A	1%	PG & AC PF ¹⁰
	Header Molex @ O/P							
MULP275-0058	Header Molex @ I/P	58 V	2.58A	2.76A	4.74A	0.0 A	1%	PG & AC PF ¹⁰
	Screw Terminal @ O/P							
MULP275-0358	Header Molex @ I/P	58 V	2.58A	2.76A	4.74A	0.0 A	1%	PG & AC PF ¹⁰
	Header Molex @ O/P							
ULP275-CKP metal cov	er 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 (Electrolytic capacitor) in parallel with a 0.1 μ F capacitor at rated line voltage and load ranges.
- 2. Class II version available, Add "-II" suffix at the end of the Model Number.
- 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.
- 11. Add suffix "S1" to get model number with Input connector Screw terminal and Output Connector Screw Terminal. e.g. MULP275-1012-S1.
- 12. Add suffix "S2" to get model number with Input connector Right Angle Type and Output Connector Right Angle Type. e.g. MULP275-1012-S2.

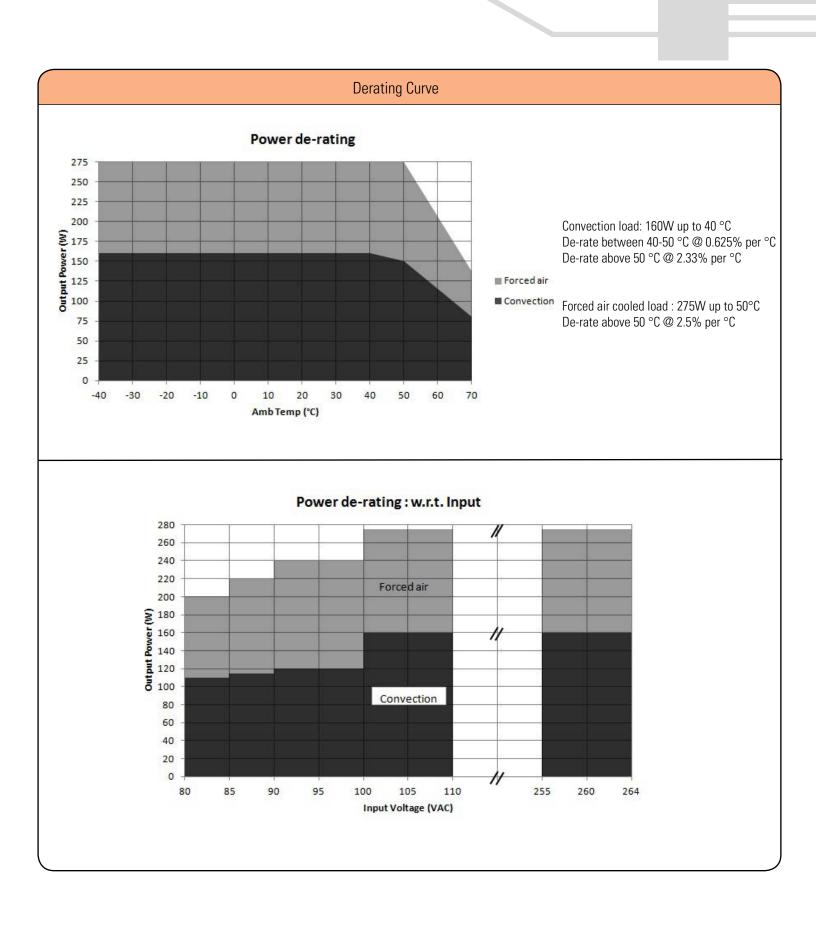


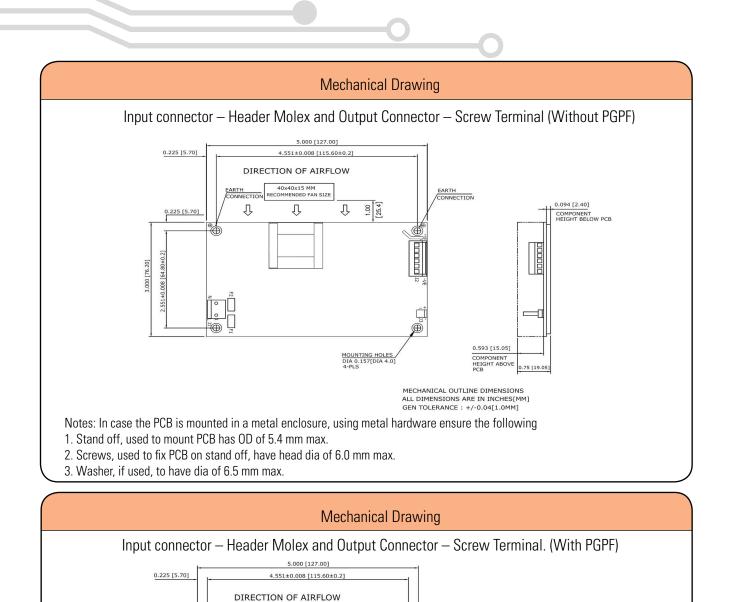
4EM-19-180

	Mechanical Specification	1\$				
AC Input Connector (J1) Option 1	Molex: 26-60-4030					
(Molex Connector @ I/P)	Mating: 09-50-3031; Pins: 08-50-0106	3				
AC Input Connector (J1) Option 2 (Screw Terminal @ I/P)	Molex: 39357 Series or equivalent					
DC Output Connector (J2) Option 1	Molex: 26-60-4060					
(Molex Connector @ O/P)	Mating: 09-50-3061; Pins: 08-50-0106					
DC Output Connector (J2) Option 2 (Screw Terminal @ 0/P)	Molex: 39357 Series or equivalent					
AC Input Connector (J1) Option 3	TE Connectivity: 647676-3					
(Right Angle Type @ I/P)	Mating: 1-1123722-3 ; Crimp: 1123721-	-2				
DC Output Connector (J2) Option 3	TE Connectivity: 647676-6					
(Molex Connector @ O/P)	Mating: 1-1123722-6 ; Crimp: 1123721-	-2				
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	250 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 : NO94798					
	Class-II : UL: E173812,VOL D1, Nemko: Certif	ficate No: P16221548, CB Test Certificate No: NO9484				



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1.00

MOUNTING HOLES

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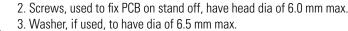
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EARTH

0.094 [2.40]

COMPONENT HEIGHT BELOW PCB



1. Stand off, used to mount PCB has OD of 5.4 mm max.

0.4745 [12.05]

3.500 [88.90] 2.551±0.008 [64.80±0.2]

> ECS Innovations in Power

4EM-19-180

40x40x15 MM COMMENDED FAN SIZE

MECHANICAL OUTLINE DIMENSIONS ALL DIMENSIONS ARE IN INCHES[MM] GEN TOLERANCE : +/-0.04[1.0MM] Notes: In case the PCB is mounted in a metal enclosure, using metal hardware ensure the following

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EARTH

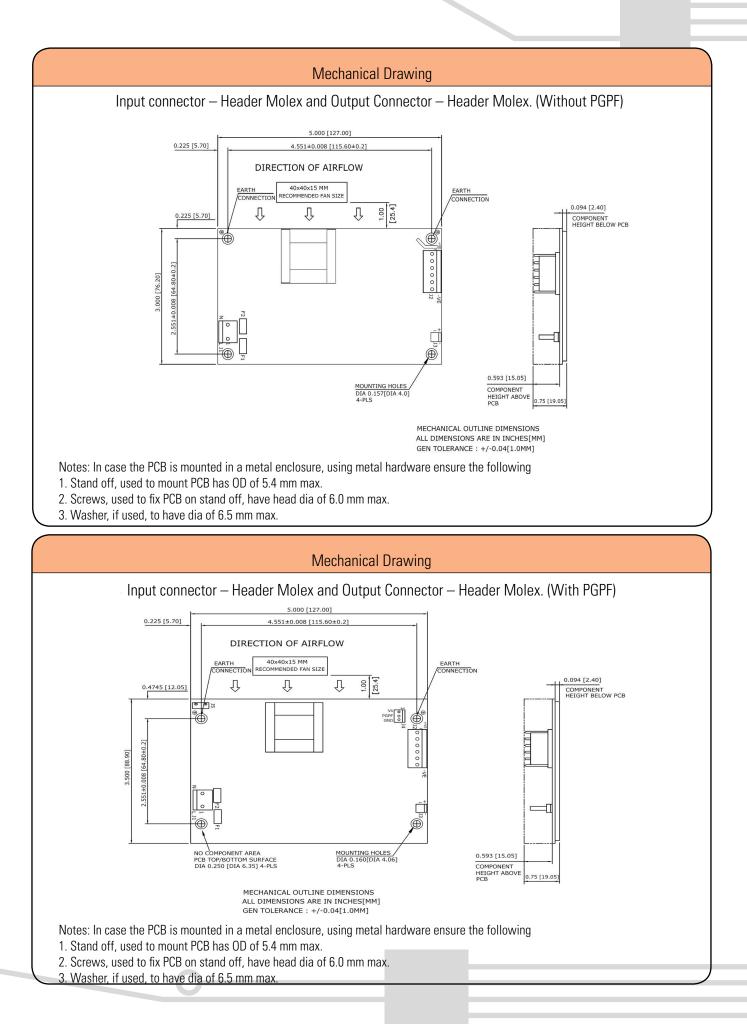
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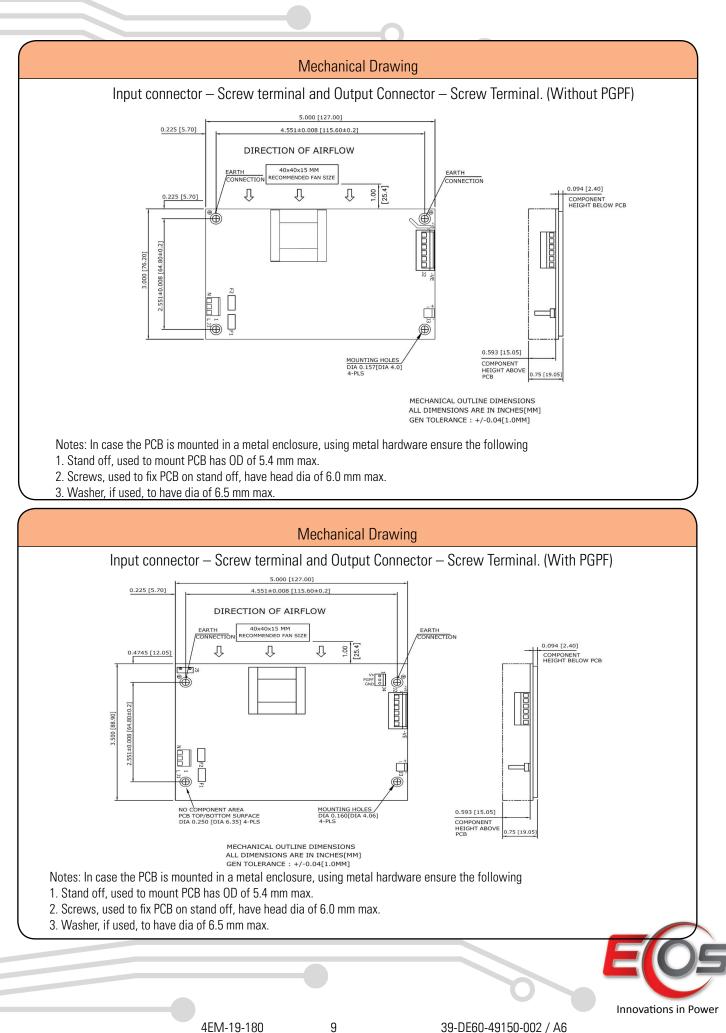
NO COMPONENT AREA PCB TOP/BOTTOM SURFACE DIA 0.250 [DIA 6.35] 4-PLS

39-DE60-49150-002 / A6

0.75 [19.05

0.593 [15.05] COMPONENT HEIGHT ABOVE





39-DE60-49150-002 / A6

