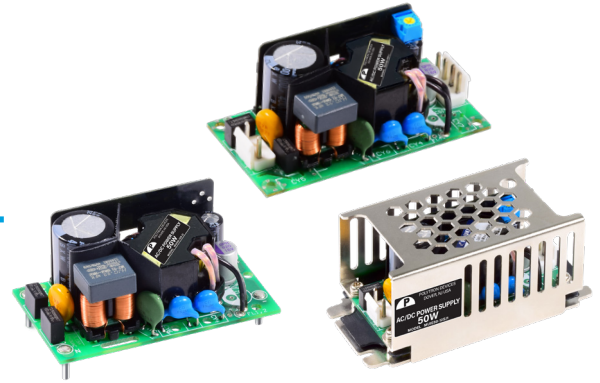


## AC-DC POWER SUPPLY

### UNIVERSAL INPUT RANGE, UP TO 50 WATT

#### MEDICAL APPLICATIONS

#### MUI50 SERIES



#### FEATURES

- 2XMOPP
- Peak Power
- 4,000Vac Reinforced Insulation
- Adjustable Output Voltage
- Internal EN55032 Class B Filter
- Low Leakage Current
- Low Standby Power
- Operating Altitude 5,000 meter
- Class I and II Protection
- Over Current Protection
- Over Voltage Protection
- Short Circuit Protection
- Safety Meets:  
IEC/ EN/ ANSI/AAMI ES 60601-1 and  
IEC/ EN/ UL 62368-1
- RoHS and REACH Compliant

#### SELECTION GUIDE All specifications are typical at nominal input, full load and 25°C, unless otherwise noted.

Input Voltage Range Vac	Output Voltage Vdc	Output Current Natural Convection mA	Maximum Output Power W	Efficiency %	Input Power @ No Load mW	Maximum Capacitor Load µF	Model Number
85 - 264	5	8,000	40	90.5	50	16,000	MUI50-S5B
85 - 264	7.5	6,670	50	90.5	50	8,900	MUI50-S7.5B
85 - 264	9	5,560	50	90.5	50	6,200	MUI50-S9B
85 - 264	12	4,170	50	92.5	50	3,500	MUI50-S12B
85 - 264	15	3,340	50	92.5	50	2,300	MUI50-S15B
85 - 264	18	2,780	50	92.5	100	1,600	MUI50-S18B
85 - 264	24	2,085	50	92.5	100	870	MUI50-S24B
85 - 264	36	1,390	50	91.5	100	390	MUI50-S36B
85 - 264	48	1,045	50	91.5	100	220	MUI50-S48B
85 - 264	53	950	50	91.5	100	180	MUI50-S53B

#### PACKAGE OPTIONS:

- **Open:** Standard
- **Enclosed:** Use pre-fix: MUIE50 (In place of MUI50)
- **JST:** Use Suffix "J"
- **Molex:** Use Suffix "M"
- **Terminal Block:** Use Suffix "T"
- **Pin Type:** Use Suffix "D" (Class II only)

#### PROTECTION TYPE:

- **Class II:** Standard
- **Class I:** Use Suffix "A" in place of Suffix "B"

### Input Specifications

Operating input voltage range	85 Min., 264 Max., Vac	AC Input
	120 Min., 370 Max., Vdc	DC Input
Input frequency, Hz	47 Min., 63 Max.	AC Input
Input current, A	1.4 Max.	100 Vac and full load
	0.8 Max.	240 Vac and full load
Leakage current, $\mu$ A	100 Max.	264 Vac
Start up time, ms	1,000 Max.	
Rise time, ms	15 Typ.	
Hold up time, ms	12 Typ.	115 Vac and full load
Input inrush current, A	60 Max.	230 Vac
Input protection	T3.15A/250VAC	Internal fuse

### Output Specifications

Output power, w	40 Max.	5Vout, Full Load
	50 Max.	Others
Output peak power, w	56 Max.	5Vout
	65 Max.	7.5Vout
	70 Max.	Others
Output peak power time, s	5 Typ.	
Output peak power duty, %	20 Typ.	
Average operation power, %	70 Typ.	% of full load
Initial set voltage accuracy, %	-1.0 Min., 1.0 Max.	230 Vac and full load
Line regulation, %	-0.2 Min., 0.2 Max.	Low line to high line at full load
Load regulation, %	-0.7 Min., 0.7 Max.	No load to full load, 5 Vout
	-0.5 Min., 0.5 Max.	No load to full load, Others
	-0.6 Min., 0.6 Max.	10% load to 90% load, 5 Vout
	-0.4 Min., 0.4 Max.	10% load to 90% load, Others
Voltage adjustability, %	-10 Min., 10 Max.	Single output, 5Vout, 7.5Vout, 9Vout,
	-20 Min., 10 Max.	Others
Minimum load, %	0 Typ.	
Ripple and noise, mVp-p		Measured by 20MHz bandwidth
	75 Typ.	With a 10 $\mu$ F/25V 1206 X7R MLCC, 5Vout, 7.5Vout, 9Vout
	100 Typ.	With a 10 $\mu$ F/25V 1206 X7R MLCC, 12Vout, 15Vout, 18Vout
	100 Typ.	With a 1 $\mu$ F/50V 1206 X7R MLCC, 24Vout, 36Vout
	100 Typ.	With a 0.1 $\mu$ F/100V 1206 X7R MLCC, 48Vout, 53Vout
Temperature coefficient, %/°C	-0.02 Min., 0.02 Max	
Transient response	3% Vout Max.	Load step from 50 ~ 75% change at 2.5A/ $\mu$ s, peak deviation
	300 $\mu$ s Typ.	Recovery time
Over voltage protection, %	115 Min., 135 Max.	% of Vout(nom); Latch mode
Over load protection, %	165 Typ.	% of Iout rated; Hiccup mode
Short circuit protection	Continuous, automatic recovery	

### General Specifications

Isolation voltage, Vac	1 minute, 2MOPP insulation	Input to output	4,000 Min.	
		Input (Output) to F.G.	2,500 Min.	
Isolation resistance, G $\Omega$	500 Vdc		0.1 Min.	
Switching frequency, kHz	230 Vac	5Vout	70 Min.	95 Max.
		75Vout	95 Min.	120 Max.
		Others	110 Min.	135 Max.

### Environmental Specifications

Operating ambient temperature, °C	Natural convection	With derating	-40 Min.	+85 Max.
Storage temperature range, °C			-40 Min.	+85 Max.
Operating altitude, m				5,000 Max.
Shock			IEC60068-2-27	
Vibration			IEC60068-2-6	
Relative humidity	Non-condensing		5% to 95% RH	

### Physical Specifications

Design meet safety standard	IEC/ EN/ ANSI/AAMI ES 60601-1, IEC/ EN/ UL 62368-1	
Dimensions	3 × 1.5 × 1.08 inches (76.2 × 38.1 × 27.5 mm)	Open Type
	3.65 × 1.91 × 1.56 inches (92.7 × 48.6 × 39.5 mm)	Enclosed Type
	2.76 × 1.5 × 1.08 inches (70 × 38.1 × 27.5 mm)	Pin Type
Weight	78g (2.75oz)	Open Type
	175g(6.18oz)	Enclosed Type
	75g(2.65oz)	Pin Type
MTBF	1.487 × 10 <sup>6</sup> hrs, MIL-HDBK-217F, Full load	

### EMC Specifications

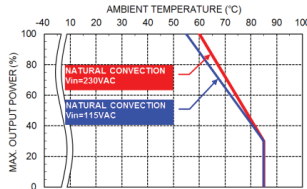
Specifications	Conditions	Level	
EMI <sup>1</sup>	EN55011, EN55032, EN60601-1-2 and FCC Part 18 / 15	Conducted Radiated	Class B Class B
	Harmonic currents	EN61000-3-2 Full Load	Class A
Voltage flicker	EN61000-3-3		
EMS	EN55035 and EN60601-1-2		
ESD	EN61000-4-2		Perf. Criteria A
Radiated immunity	EN61000-4-3	20 V/m	Perf. Criteria A
Fast transient	EN61000-4-4	± 2kV	Perf. Criteria A
Surge	EN61000-4-5	DM ± 1kV and CM ± 2kV	Perf. Criteria A
Conducted immunity	EN61000-4-6	20 Vr.m.s	Perf. Criteria A
Power frequency magnetic field	EN61000-4-8	10 A/m	Perf. Criteria A
Dip and interruptions	EN61000-4-11		

**Note:**

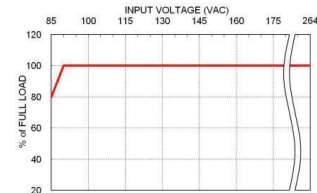
1. External components may be required for class I application.. For further information, please contact Polytron Power Supplies.

**CAUTION:** This power module is not internally fused. An input line fuse must always be used.

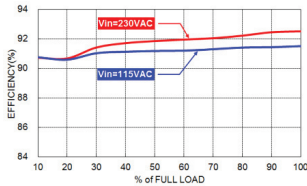
**Characteristic Curve**



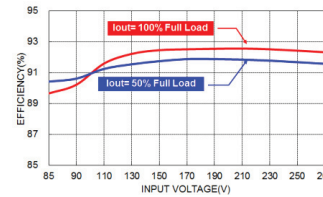
Derating Curve vs. Ambient Temperature



Derating Curve vs. Input Voltage



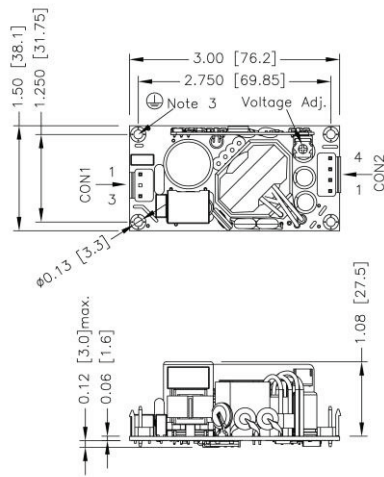
Efficiency VS Output Load



Efficiency VS Input Voltage

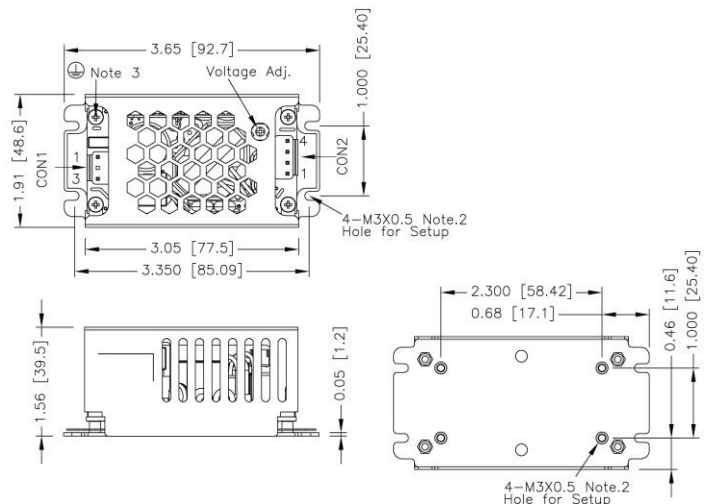
**Mechanical Drawing**

**Open Type**



FRONT VIEW

**Enclosed Type**



BOTTOM VIEW

1. All dimensions in inches (mm)
2. Tolerance :x.xx±0.02 (x.x±0.5)  
x.xxx±0.01 (x.xx±0.25)
3. The screw locked torque MAX 3.4Kgf-cm/0.33N-m
4. The screws holes can be considered as PE connection for CLASS I application.

1. All dimensions in inches (mm)
2. Tolerance :x.xx±0.02 (x.x±0.5)  
x.xxx±0.01 (x.xx±0.25)
3. The screw locked torque MAX 4.2Kgf-cm/0.41N-m
4. The screws holes can be considered as PE connection for CLASS I application.

**CON1 INPUT CONNECTOR**

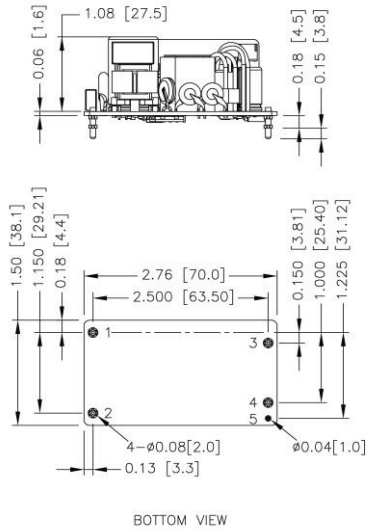
PIN	AC Input
1	Line
3	Neutral

**CON2 OUTPUT CONNECTOR**

PIN	AC Input
1,2	-Vout
3,4	+Vout

**Mechanical Drawing (Continued)**

**Pin Type**



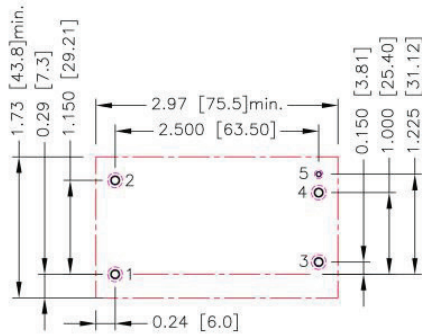
**CON1 INPUT CONNECTOR**

PIN	AC Input
1	Neutral
2	Line
3	-Vout
4	+Vout
5	Trim

1. All dimensions in inches (mm)
2. Tolerance :x.xx±0.02 (x.x±0.5)  
x.xxx±0.01 (x.xx±0.25)
3. Pin dimension tolerance ±0.004[0.10]

**Recommended Pad Layout**

**Pin Type**



1. All dimensions in inch[mm]
2. Pad size(lead free recommended)
3. Through hole 5:ø0.051[1.30]
4. Through hole 1.2.3.4:ø0.091[2.30]
5. Top view pad 5:ø0.064[1.63]
6. Top view pad 1.2.3.4:ø0.113[2.88]
7. Bottom view pad 5:ø0.102[2.60]
8. Bottom view pad 1.2.3.4:ø0.181[4.60]

**Connector Options**

**JST Type, Suffix J**



**Molex Type, Suffix M**



**Terminal Block, Suffix T**



Mates with:	Crimp Terminals:
CON1: VHR-3N	CON1: SVH-21T-P1.1
CON2: VHR-4N	CON2: SVH-21T-P1.1

Mates with:	Crimp Terminals:
CON1: 09-50-8031	CON1: SD-2478
CON2: 09-50-8041	CON2: SD-2478

Mates with:	Wire dimension range
Screw locked torque	26 ~ 18AWG