

**AC-DC POWER SUPPLY**  
**3" x 2" PACKAGE**  
**UNIVERSAL INPUT RANGE, 150 WATTS**  
**UP TO 200 WATTS PEAK POWER**  
MEDICAL APPLICATIONS  
*MUIPP150 SERIES*



**FEATURES**

- 200 W Peak Power (5 Sec)
- Compact 3" x 2" Package
- Open Frame, Enclosed and DIN-Rail Configurations Available
- 2XMOPP 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
- Over Temperature 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 230VAC input, full load and 25°C, unless otherwise noted.

Input Voltage Range Vac	Output Voltage Vdc	Output Current Natural Convection A	Output Current Forced Air Cooling With 10 CFM A	Efficiency %	Input Power @ No Load mW	Maximum Capacitor Load µF	Model Number
85 - 264	12	10.84	12.5	92	0.2	8600	MUIPP150-12S
85 - 264	15	8.67	10	92	0.2	5400	MUIPP150-15S
85 - 264	18	7.23	8.34	92	0.2	4000	MUIPP150-18S
85 - 264	24	5.42	6.25	93	0.2	2200	MUIPP150-24S
85 - 264	28	4.65	5.36	93	0.2	1500	MUIPP150-28S
85 - 264	36	3.62	4.17	93	0.2	1000	MUIPP150-36S
85 - 264	48	2.71	3.13	94	0.2	560	MUIPP150-48S
85 - 264	54	2.42	2.79	94	0.2	470	MUIPP150-54S

**PACKAGE OPTIONS:**

- **Open Type:** Standard No Suffix Needed.
- **Enclosed Type:** Suffix "E"
- **Din Rail Type:** Suffix "D"

**CONNECTOR OPTIONS:**

- **Molex:** Suffix "M"
- **JST:** Suffix "J"
- **Terminal Block:** Suffix "T"

### Input Specifications

Operating input voltage range	85 Min., 264 Max., Vac	AC Input
	88 Min., 370 Max., Vdc	DC Input
Input frequency, Hz	47 Min., 63 Max.	AC Input
Input current, A	3 Max.	100 Vac and at 150W full load
	1.5 Max.	240 Vac and at 150W full load
No load input power, Watts	0.2 Typ.	230 Vac
Leakage current, $\mu$ A	100 Max.	264 Vac
Power factor	0.95 Min.	
Start up time, ms	1,500 Max.	
Rise time, ms	15 Typ.	
Hold up time, ms	10 Min.	115VAC and 130W
Input inrush current, A	80 Typ.	230 Vac, Cold start at 25°C
Input protection	T4.0A/250VAC	Internal fuse

### Output Specifications

Output power <sup>(1)</sup> , w	150 Max.	Forced air cooling with 10CFM
	130 Max.	Natural convection
Output peak power <sup>(2)</sup> , w	200 Max.	
Output peak power time, s	10 Typ.	
Output peak power duty, %	20 Typ.	
Average operation power, %	50 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, %	-0.5 Min., 0.5 Max.	No load to full load
	-0.4 Min., 0.4 Max.	10% load to 90% load
Voltage adjustability, %	-7 Min., 7 Max.	At Full Load Condition
	-7 Min., 2 Max.	At Peak Power Up to 200W Condition
Minimum load, %	0 Typ.	No minimum load required
Ripple and noise, mVp-p		Measured by 20MHz bandwidth
	120 Typ.	With a 1 $\mu$ F/25V 1206 X7R MLCC, 12Vout
	150 Typ.	With a 1 $\mu$ F/25V 1206 X7R MLCC, 15Vout
	180 Typ.	With a 1 $\mu$ F/25V 1206 X7R MLCC, 18Vout
	240 Typ.	With a 1 $\mu$ F/50V 1206 X7R MLCC, 24Vout
	280 Typ.	With a 1 $\mu$ F/50V 1206 X7R MLCC, 28Vout
Temperature coefficient, %/°C	360 Typ.	With a 0.1 $\mu$ F/100V 1206 X7R MLCC, 36Vout, 48Vout, 54Vout
	-0.02 Min., 0.02 Max	
Transient response	3% Vout Typ.	Load step from 75 ~ 50% change at 2.5A/ $\mu$ s, peak deviation
	600 $\mu$ s Typ.	Recovery time
Over voltage protection, %	110 Min., 135 Max.	% of Vout(nom); Latch mode
Over load protection, %	160 Typ.	% of Iout rated; Hiccup mode
Short circuit protection	Continuous, automatics recovery	Output short circuit is defined to be a short circuit load of less than 0.1 ohm

**Note:**

1. Please refer to the derating curve for detailed rating. For further information, please contact Polytron.
2. Please refer to the Definition of peak power rating. For further information, please contact Polytron.

### 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, GΩ	500 Vdc		0.1 Min.
Switching frequency, kHz	230 Vac, Full Load		100 Typ.

### Environmental Specifications

Operating ambient temperature, °C		With derating	-40 Min.	+85 Max.
Storage temperature range, °C			-40 Min.	+85 Max.
Over temperature protection, °C	Internal thermistor; Hiccup mode		125 Typ.	
Operating altitude, m				5,000 Max.
Thermal shock			MIL-STD-810F	
Shock			IEC60068-2-27	
Vibration			IEC60068-2-6	
Relative humidity	Non-condensing		5% to 95% RH	

### Physical Specifications

Design meets safety standard	IEC/ EN/ ANSI/AAMI ES 60601-1, IEC/ EN/ UL 62368-1	
Weight	134g (4.70oz)	Open Type
	190g (6.70oz)	Enclosed Type
	212g (7.48oz)	Din Rail Type
MTBF	7.245 x 10 <sup>5</sup> hrs, MIL-HDBK-217F Ta=25°C, Full load	

### EMC Specifications

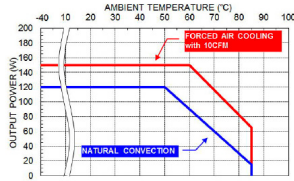
Specifications	Conditions	Level
EMI <sup>(1)</sup>	EN55011, Conducted	Class B
	EN55032, Radiated	Class B
	EN60601-1-2 and Class I	Class A
Harmonic currents	EN61000-3-2 Full Load	Class D
Voltage flicker	EN61000-3-3	
EMS	EN55035 and EN60601-1-2	
ESD	EN61000-4-2	Perf. Criteria A
Radiated immunity	EN61000-4-3 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 30 A/m	Perf. Criteria A
Dip and interruptions	EN61000-4-11	

**Note:**

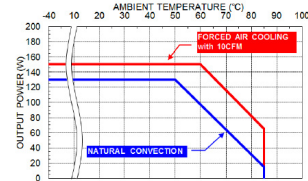
1. Unnecessary to connect with safety earth for CLASS II application.

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

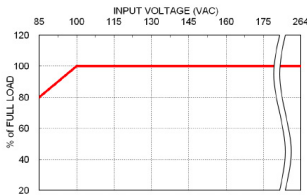
**Characteristic Curve**



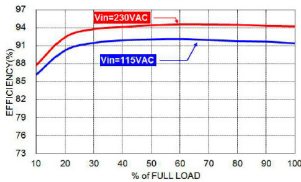
Derating Curve vs. Ambient Temperature  
Vin=115VAC Open type



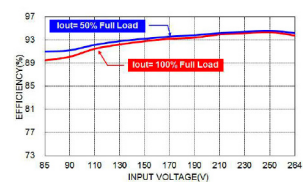
Derating Curve vs. Ambient Temperature  
Vin=230VAC Open type



Derating Curve vs. Input Voltage  
MUIPP150



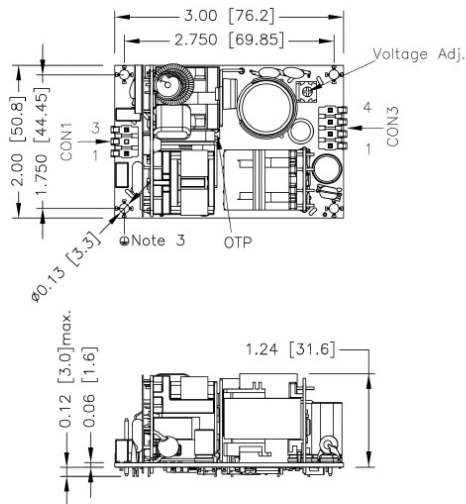
Efficiency vs. Output Load  
MUIPP150-24 with Forced air cooling



Efficiency vs. Input Voltage  
MUIPP150-24 with Forced air cooling

**Mechanical Drawing**

**Open Type**



FRONT VIEW

1. All dimensions in inches (mm)
2. Tolerance:  $x.xx \pm 0.02$  ( $x.x \pm 0.5$ )  
 $x.xxx \pm 0.01$  ( $x.xx \pm 0.25$ )
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.
5. Unnecessary to connect with safety earth for CLASS II application.

**CON1 INPUT CONNECTOR**

PIN	AC Input
3	Line
1	Neutral

Mates with  
Molex housing: 09-93-0300  
Molex crimp terminals: 2478

**CON3 OUTPUT CONNECTOR**

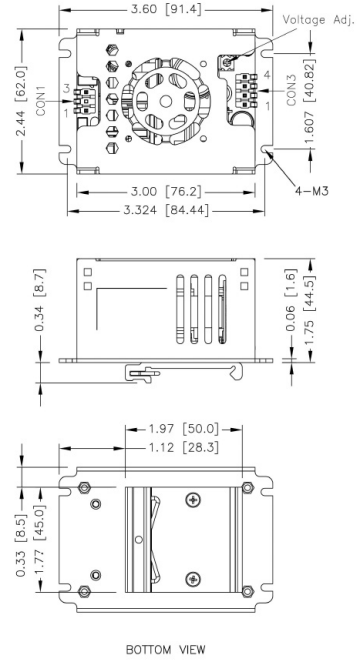
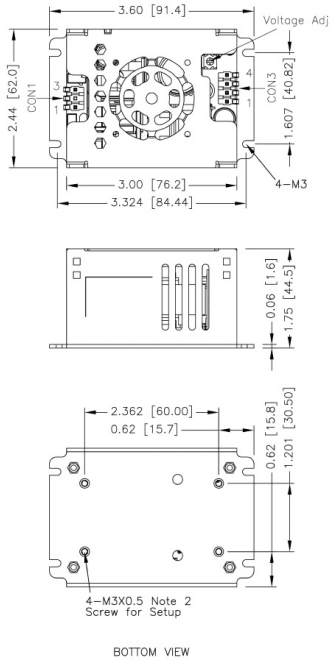
PIN	AC Input
1,2	+Vout
3,4	-Vout

Mates with  
Molex housing: 09-93-0400  
Molex crimp terminals: 2478

**Mechanical Drawing**

**Enclosed Type**

**Din Rail Type**



1. All dimensions in inches (mm)
2. Tolerance:  $x.xx \pm 0.02$  ( $x.x \pm 0.5$ )  
 $x.xxx \pm 0.01$  ( $x.xx \pm 0.25$ )
3. The screw locked torque MAX 4.2Kgf-cm/0.41N-m

1. All dimensions in inches (mm)
2. Tolerance:  $x.xx \pm 0.02$  ( $x.x \pm 0.5$ )  
 $x.xxx \pm 0.01$  ( $x.xx \pm 0.25$ )

**CON1 INPUT CONNECTOR**

PIN	AC Input
3	Line
1	Neutral

**CON3 OUTPUT CONNECTOR**

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

**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: 09-93-0300	CON1: 2478
CON2: 09-93-0400	CON2: 2478

Mates with:	Wire dimension range
Screw locked torque MAX 2Kgf.cm/0.2N.m	26 ~ 16AWG