

AC-DC POWER SUPPLIES

UNIVERSAL INPUT, UP TO 450 WATT

MEDICAL APPLICATIONS

MUI450 SERIES



FEATURES

- 2 MOPP
- 4000 VAC Reinforced Insulation
- Adjustable Output Voltage
- Internal EN55022 Class B Filter
- Low Leakage Current
- Low Standby Power
- Operating Altitude 5000 meter
- Protection Class I
- Remote ON OFF
- Over Current Protection
- Over Voltage Protection
- Short Circuit Protection
- Over Temperature Protection
- Safety Approvals: ANSI/AAMI ES60601-1, EN60601-1 and IEC60601-1 3rd Edition
- CE Marked: IEC60601-1-2 ED4.0
- Compliant to RoHS II & Reach
- Open Frame: 5" × 3" × 1.58" (127 × 76.2 × 40.1mm)
- Enclosed: 5.83" × 3.15" × 1.60" (148.2 × 80 × 40.6mm)

SELECTION GUIDE All specifications are typical at 230Vac input, full load and 25°C, unless otherwise noted.

Input Range Vac	Output Voltage Vdc	Output Current @ 230Vac and Ta 50°C			Input Power at No Load W	Efficiency %	Model Number*
		Natural Convection A	Conduction Cooling A	Forced air cooling with 21CFM A			
85 - 264	12	20.8	23.3	37.5	0.3	91	MUI450-12SB2
85 - 264	12			37.5	0.4	91	MUIE450-12SB-F2
85 - 264	15	16.6	18.6	30	0.3	92	MUI450-15SB
85 - 264	15			30	0.4	92	MUIE450-15SB-F2
85 - 264	24	13.3	14.55	18.75	0.5	93	MUI450-24SB
85 - 264	24			18.75	0.8	93	MUIE450-24SB-F2
85 - 264	28	11.4	12.5	16.1	0.5	93	MUI450-28SB
85 - 264	28			16.1	0.8	93	MUIE450-28SB-F2
85 - 264	48	6.65	7.3	9.4	0.5	94	MUI450-48SB
85 - 264	48			9.4	0.8	94	MUIE450-48SB-F2
85 - 264	53	6.05	6.6	8.55	0.5	94	MUI450-53SB
85 - 264	53			8.55	0.8	94	MUIE450-53SB-F2

* For Class 1: Omit the "B" Suffix

F2 Suffix designates the External FAN 2(For UIE Enclosed Units)

MUIE: Enclosed package

MUI450 SERIES

Input Specifications			Output Specifications		
Voltage range	85-264Vac	AC input	Output power, Watt	450	Forced air cooling, All
	120-370Vdc	DC input		280	Conduction cooling at 230Vac, 12Vout, 15Vout
Input frequency, Hz	47-63	AC input		350	Others
				250	Natural convection at 230Vac, 12Vout, 15Vout
Input current, A	5.8	100Vac and full load		320	Others
	2.4	240Vac and full load			
No load input power, Watts	0.3	230Vac, MUI, 12Vout, 15Vout	Initial set voltage accuracy, %	±1.0	230Vac and Full Load
	0.5	Others	Line regulation, %	±0.2	Low Line to High Line at Full Load
	0.4	MUIE-F2, 12Vout, 15Vout	Load regulation, %	±0.5	No Load to Full Load
	0.8	Others		±0.4	10% Load to 90% Load
			Voltage adjustability, %	±8	
Leakage current, µA	100	264Vac	Minimum load, %	0	
Power factor	0.95		Ripple and noise, mVp-p		Measured by 20MHz bandwidth
Start-up time, ms	2000			250	With a 10µF/25V 1206 X7R MLCC, 12Vout
Rise time, ms	30			300	With a 10µF/25V 1206 X7R MLCC, 15Vout
Hold-up time, ms	14	115Vac and full load		240	With a 1µF/50V 1206 X7R MLCC, 24Vout
Input inrush current, A	100	230Vac		280	With a 1µF/50V 1206 X7R MLCC, 28Vout
Input protection	T6.3A/250Vac	Internal fuse inline and neutral		480	With a 1µF/50V 1206 X7R MLCC, 48Vout
			Temperature coefficient, %/°C	+0.02	With a 0.1µF/100V 1206 X7R MLCC, 53Vout
			Transient response peak deviation, %	3Vout	Load step change from 50-75% at 2.5A/µs
			Transient response recovery time, µs	600	Load step change from 50-75% at 2.5A/µs
			Over voltage protection, %	110-135	% of Vout(nom); Latch mode
			Over load protection, %	115-150	% of Iout rated; Hiccup mode
			Short circuit protection	Continuous, automatic recovery	Protection level 1 (nominal)
				Latch	Protection level 2 (instantaneous high current)
			Standby power supply	5V at 2000mA	
			Fan power supply	12V at 500mA	

General Specifications			
Isolation voltage, Vac	1 minute (2MOPP insulation)	Input to Output	4000
		Input (Output) to F.G.	2500
Isolation resistance, GΩ	500Vdc		0.1
Switching frequency, kHz	230Vac, Full load	12Vout, 24Vout, 48Vout	65
		Other	75

Environmental Specifications			
Operating ambient temperature, °C	MUI	With derating	-40 Min. +85 Max.
	MUIE-F2		-40 Min. +80 Max.
Storage temperature range, °C	MUI		-40 Min. +85 Max.
	MUIE-F2		-40 Min. +75 Max.
Operating altitude, m			5000 Max.
Thermal shock			MIL-STD-810F
Shock			IEC60068-2-27
Vibration			IEC60068-2-2-6
Relative humidity	Non-condensing		5% to 95% RH

MUI450 SERIES

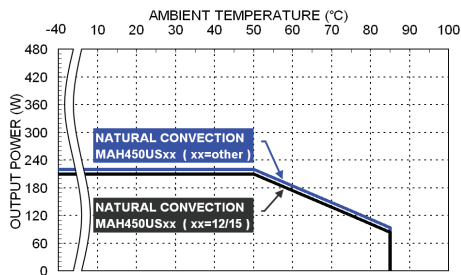
Physical Specifications			EMC Specifications		
Design meet safety standard	IEC/EN/ANSI/AAMI ES 60601-1		Specifications	Conditions	Level
	IEC/EN/UL 60950-1		EMI ⁽¹⁾	EN55011, EN55022, EN60601-1-2 and FCC Part 18/15	Conducted Class B Radiated Class A
Weight, g	450g (15.87oz)	MUI	Harmonic currents	EN61000-3-2	Full load Class A and D
	535g (18.87oz)	MUIE-F2	Voltage flicker	EN61000-3-3	
Dimensions	Open Frame: 5" × 3" × 1.58" (127mm × 76.2mm × 40.1mm)		EMS	EN55024 and EN60601-1-2	
	Enclosed: 5.83" × 3.15" × 1.60" (148.2mm × 80mm × 40.6mm)		ESD	EN61000-4-2	Air ±15kV and Contact ±8kV Perf. Criteria A
MTBF	4.093 × 10 ⁵ hrs, MIL-HDBK-217F, Ta=25°C, Full load		Radiated immunity	EN61000-4-3	20V/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:

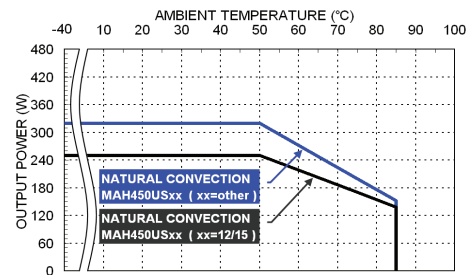
- For optimum EMI performance, the power supply should be mounted to a metal plate grounded to all 4 mounting holes of the power supply. To comply with safety standards, this plate must be properly grounded to protective earth.
- For further information, please contact Polytron Devices.

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

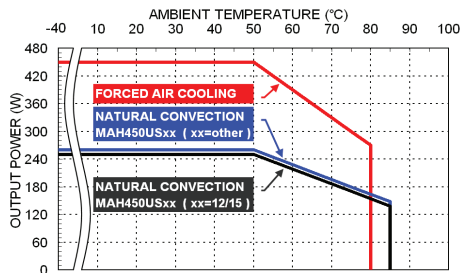
Characteristic Curve



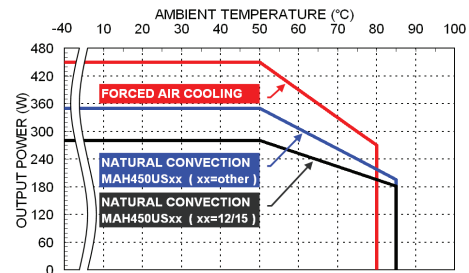
Derating Curve vs. Ambient Temperature
Vin= 115Vac and Natural convection



Derating Curve vs. Ambient Temperature
Vin= 230Vac and Natural convection



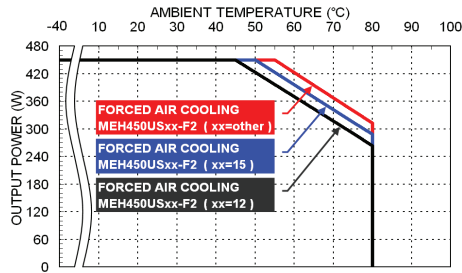
Derating Curve vs. Ambient Temperature
Vin= 115Vac and Conduction cooling, Forced air cooling with 21CFM



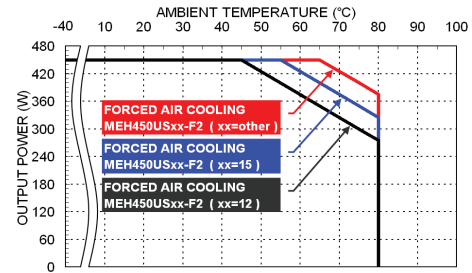
Derating Curve vs. Ambient Temperature
Vin= 230Vac and Conduction cooling, Forced air cooling with 21CFM

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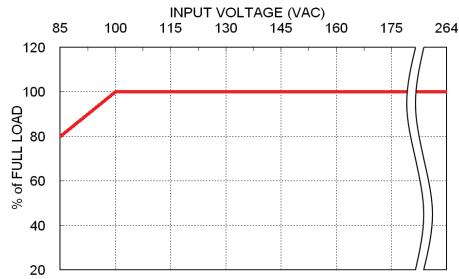
Characteristic Curve (cont.)



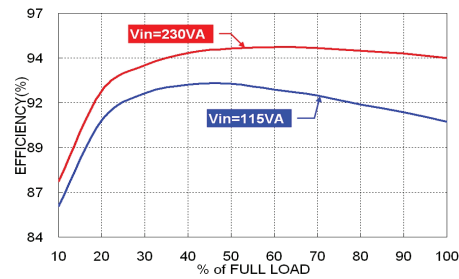
Derating Curve vs. Ambient Temperature
Vin= 115Vac and Forced air cooling



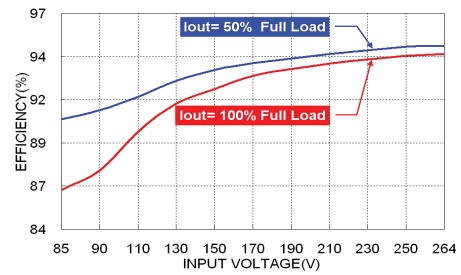
Derating Curve vs. Ambient Temperature
Vin= 230Vac and Forced air cooling



Derating Curve vs. Input Voltage



Efficiency vs. Output Load
With forced air cooling

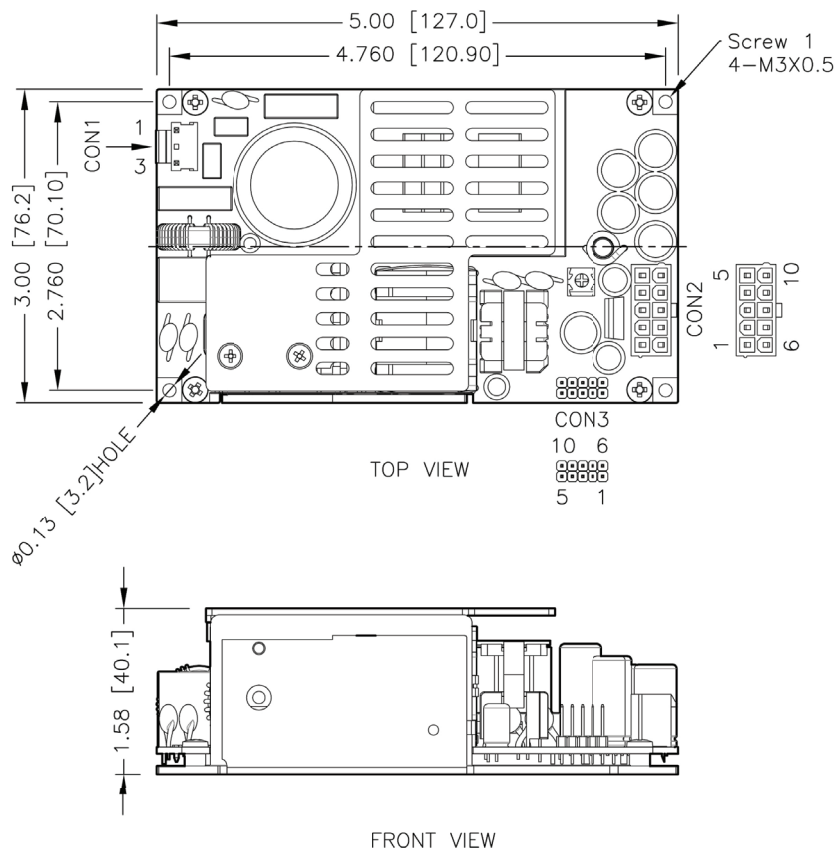


Efficiency vs. Input Voltage
With forced air cooling

MUI450 SERIES

Mechanical Drawing

MUI450



Either one of four screws holes can be considered as PE connection for CLASS 1 application.

1. All dimensions in inch (mm)
2. Tolerance :x.xx±0.02 (x.x±0.5)
x.xxx±0.01 (x.xx±0.25)
3. Screw 1 locked torque MAX 2.5Kgf-cm/0.51N.m

Pin Connections

CON1: INPUT CONNECTIONS

PIN	
1	Line
3	Neutral

MATES WITH

Molex Housing	09-50-8031
Molex Crimp Terminals	2478, 6838, 45570

CON2: OUTPUT CONNECTIONS

PIN	
1, 2, 3, 4, 5	+Vout
6, 7, 8, 9, 10	-Vout

MATES WITH

Molex Housing	39-01-2105
Molex Crimp Terminals	5556, 45750

CON3: FAN CONNECTIONS

PIN		
1	+Fan	6 -Fan
2	+V Sense	7 -V Sense
3	+Control	8 -Control
4	+PG	9 -PG
5	+5V	10 -5V

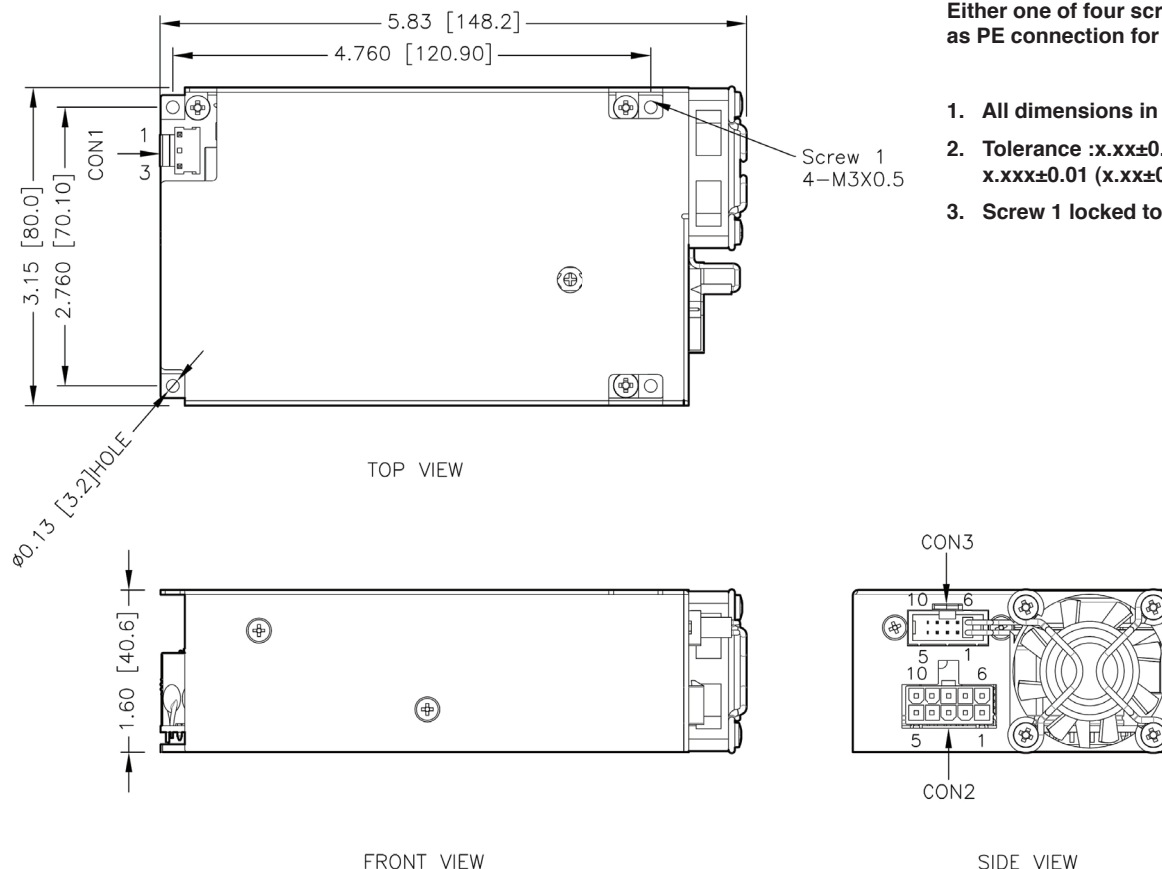
MATES WITH

Molex Housing	90143-0008
Molex Crimp Terminals	90119

MUI450 SERIES

Mechanical Drawing (cont.)

MUIE450



Either one of four screws holes can be considered as PE connection for CLASS 1 application.

1. All dimensions in inch (mm)
2. Tolerance :x.xx±0.02 (x.x±0.5)
x.xxx±0.01 (x.xx±0.25)
3. Screw 1 locked torque MAX 2.5Kgf-cm/0.51N.m

Pin Connections

CON1: INPUT CONNECTIONS

PIN	
1	Line
3	Neutral

MATES WITH

Molex Housing	09-50-8031
Molex Crimp Terminals	2478, 6838, 45570

CON2: OUTPUT CONNECTIONS

PIN	
1, 2, 3, 4, 5	+Vout
6, 7, 8, 9, 10	-Vout

MATES WITH

Molex Housing	39-01-2105
Molex Crimp Terminals	5556, 45750

CON3: FAN CONNECTIONS

PIN			
1	+Fan	6	-Fan
2	+V Sense	7	-V Sense
3	+Control	8	-Control
4	+PG	9	-PG
5	+5V	10	-5V

MATES WITH

Molex Housing	90143-0008
Molex Crimp Terminals	90119