

AC-DC POWER SUPPLIES

UNIVERSAL INPUT, UP TO 450 WATT

INDUSTRIAL APPLICATIONS

UI450 SERIES



FEATURES

- 3000Vac Reinforced Insulation
- Adjustable Output Voltage
- Internal EN55022 Class B Filter
- Low Leakage Current
- Low Standby Power
- Operating Altitude 5000 meter
- Protection: Class I and Class II
- Remote On Off
- IEC/EN/UL 60950-1, **62368-1**
- CE Marked
- Over Current Protection
- Over Voltage Protection
- Short Circuit Protection
- Over Temperature Protection
- 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	UI450-12SB
85 - 264	12			37.5	0.4	91	UIE450-12SB-F2
85 - 264	15	16.6	18.6	30	0.3	92	UI450-15SB
85 - 264	15			30	0.4	92	UIE450-15SB-F2
85 - 264	24	13.3	14.55	18.75	0.5	93	UI450-24SB
85 - 264	24			18.75	0.8	93	UIE450-24SB-F2
85 - 264	28	11.4	12.5	16.1	0.5	93	UI450-28SB
85 - 264	28			16.1	0.8	93	UIE450-28SB-F2
85 - 264	48	6.65	7.3	9.4	0.5	94	UI450-48SB
85 - 264	48			9.4	0.8	94	UIE450-48SB-F2
85 - 264	53	6.05	6.6	8.55	0.5	94	UI450-53SB
85 - 264	53			8.55	0.8	94	UIE450-53SB-F2

* For Class 1: Omit the "B" Suffix

F1 Suffix designates the External FAN 1, on the top (For UIE Enclosed Units)

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

Variable FAN speed

Y1: FAN 1, FAN on top

Y2: FAN 2, FAN on the side

UI450 SERIES

Input Specifications			Output Specifications			
Voltage range	85-264Vac	AC input	Output power, Watt	450	Forced air cooling, All	
	120-370Vdc	DC input	280	280	Conduction cooling at 230Vac, 12Vout, 15Vout	
Input frequency, Hz	47-63	AC input	350	350	Others	
Input current, A	5.8	100Vac and full load	250	250	Natural convection at 230Vac, 12Vout, 15Vout	
	2.4	240Vac and full load	320	320	Others	
No load input power, Watts	0.3	230Vac, UI, 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	UIE-F2, 12Vout, 15Vout	Load regulation, %	±0.5	No Load to Full Load	
	0.8	Others	±0.4	±0.4	10% Load to 90% Load	
Leakage current, µA	300	264Vac	Voltage adjustability, %	±8		
Power factor	0.95		Minimum load, %	0		
Start-up time, ms	2000		Ripple and noise, mVp-p		Measured by 20MHz bandwidth	
Rise time, ms	30			250	250	With a 10µF/25V 1206 X7R MLCC, 12Vout
Hold-up time, ms	14	115Vac and full load		300	300	With a 10µF/25V 1206 X7R MLCC, 15Vout
				240	240	With a 1µF/50V 1206 X7R MLCC, 24Vout
Input inrush current, A	100	230Vac		280	280	With a 1µF/50V 1206 X7R MLCC, 28Vout
Input protection	T6.3A/250Vac	Internal fuse inline and neutral	480	480	With a 1µF/50V 1206 X7R MLCC, 48Vout	
			530	530	With a 0.1µF/100V 1206 X7R MLCC, 53Vout	
Main output remote control	Open or 3 - 12Vdc	Positive logic, Main power ON	Temperature coefficient, %/°C	+0.02		
	Short or 0 - 1.2Vdc	Referenced to "-Control", Main power OFF	Transient response peak deviation, %	3Vout	Load step change from 50-75% at 2.5A/µs	
	-0.5 Min, 1 Max.	Standby power always present, Input current of Control	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)	
			Standby power supply	Latch	Protection level 2 (instantaneous high current)	
			Fan power supply	5V at 2000mA		
				12V at 500mA		

General Specifications			
Isolation voltage, Vac	1 minute (Reinforced insulation)	Input to Output	3000
		Input (Output) to F.G.	2000
Isolation resistance, GΩ	500Vdc		0.1
Switching frequency, kHz	230Vac, Full load	12Vout, 24Vout, 48Vout	65
		Other	75

Environmental Specifications				
Operating ambient temperature, °C	UI	With derating	-40 Min.	+85 Max.
	UIE-F2		-40 Min.	+80 Max.
Storage temperature range, °C	UI		-40 Min.	+85 Max.
	UIE-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	

UI450 SERIES

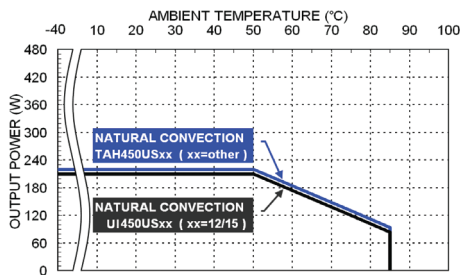
Physical Specifications		EMC Specifications				
Design meet safety standard	IEC/EN/UL 60950-1, 62368-1		Specifications	Conditions	Level	
Weight, g	450g (15.87oz)	UI	EMI ⁽¹⁾	EN55011, EN55022, and FCC Part 15	Conducted	Class B
	535g (18.87oz)	UIE-F2			Radiated	Class A
Dimensions	Open Frame: 5" × 3" × 1.58" (127mm × 76.2mm × 40.1mm)		Harmonic currents	EN61000-3-2	Full load	Class A and D
	Enclosed: 5.83" × 3.15" × 1.60" (148.2mm × 80mm × 40.6mm)		Voltage flicker	EN61000-3-3		
MTBF	4.093 × 10 ⁵ hrs, MIL-HDBK-217F, Ta=25°C, Full load		EMS	EN55024 and EN60601-1-2		
			ESD	EN61000-4-2	Air ±15kV and Contact ±8kV	Perf. Criteria A
			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:

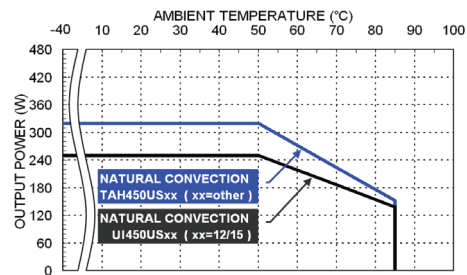
- For optimum EMI performance, the power supply should be mounted to a metal plate grounded to all 4 mounting holes of the power supply. To comply with safety standards, this plate must be properly grounded to protective earth.
- For further information, please contact Polytron Devices.

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

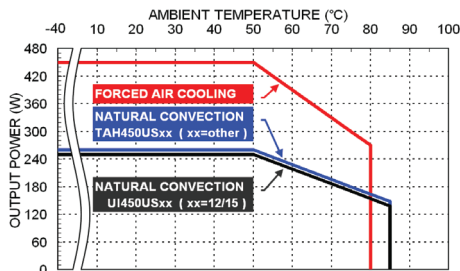
Characteristic Curve



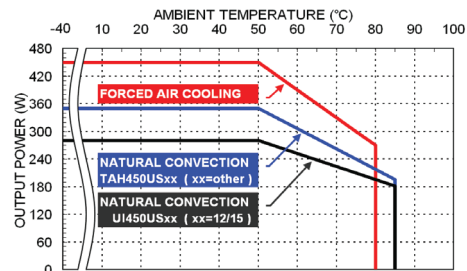
Derating Curve vs. Ambient Temperature
Vin= 115Vac and Natural convection



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



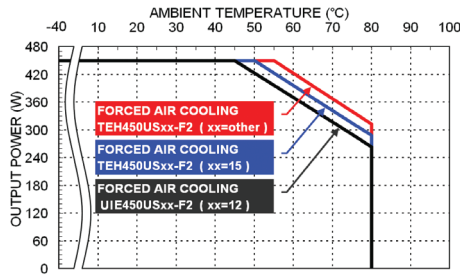
Derating Curve vs. Ambient Temperature
Vin= 115Vac and Conduction cooling, Forced air cooling with 21CFM



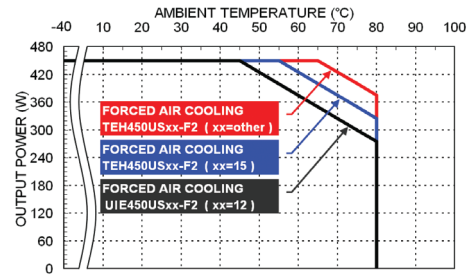
Derating Curve vs. Ambient Temperature
Vin= 230Vac and Conduction cooling, Forced air cooling with 21CFM

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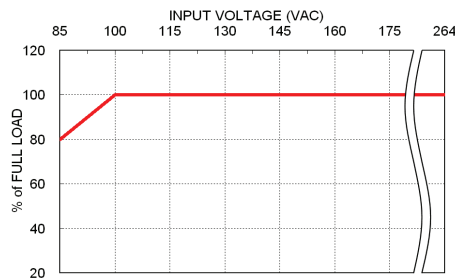
Characteristic Curve (cont.)



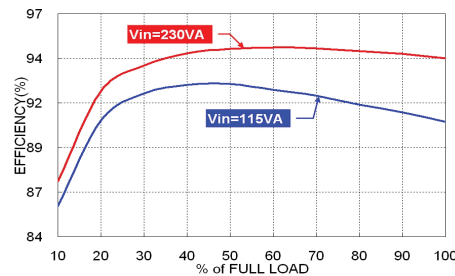
Derating Curve vs. Ambient Temperature
Vin= 115Vac and Forced air cooling



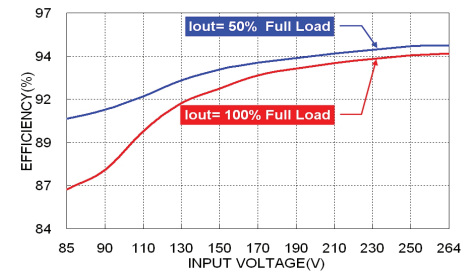
Derating Curve vs. Ambient Temperature
Vin= 230Vac and Forced air cooling



Derating Curve vs. Input Voltage



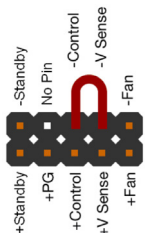
Efficiency vs. Output Load
With forced air cooling



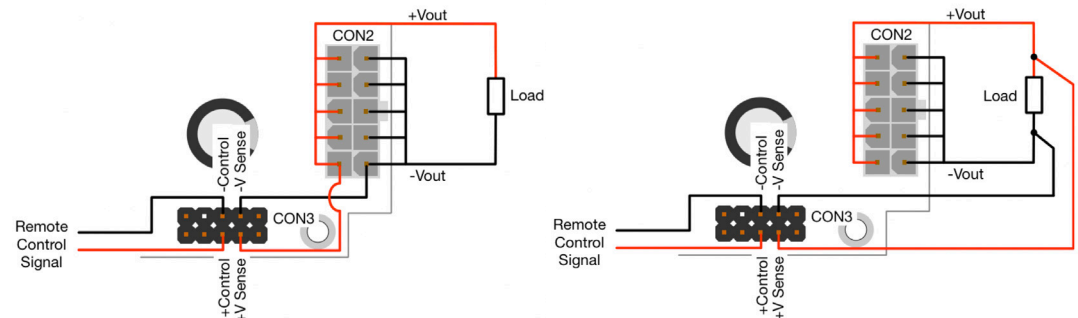
Efficiency vs. Input Voltage
With forced air cooling

Output Sensing

Output sensing function can be applied via connecting wires on CON3. Initially, Pin7 and Pin 8 are shorted by a jumper set as default.



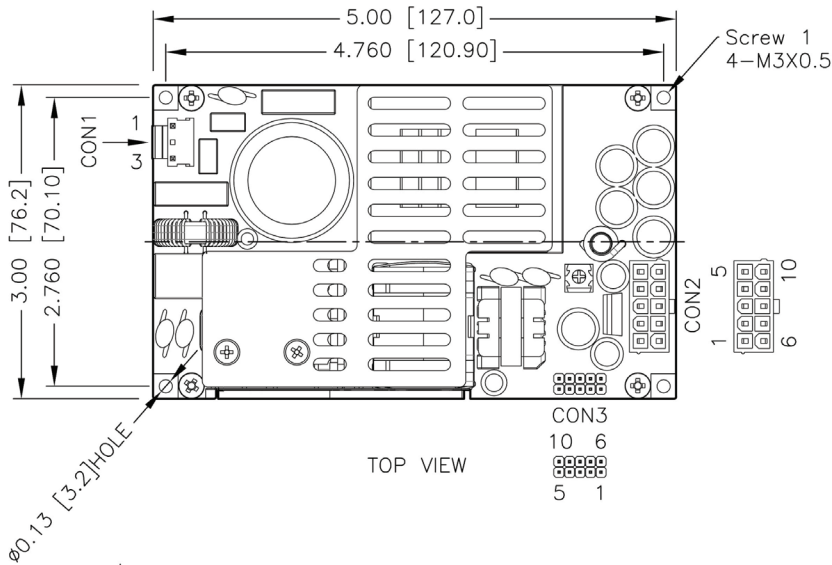
If remote control function is to be used, the jumper on Pin 7 and Pin 8 should be removed. Since pins should not be left open for module stability, follow the below connections:



UI450 SERIES

Mechanical Drawing

UI450



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

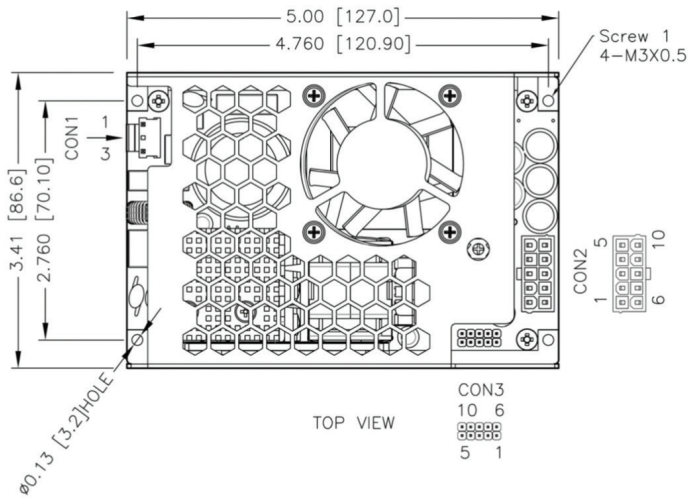
MATES WITH

Molex Housing	90143-0008
Molex Crimp Terminals	90119

UI450 SERIES

Mechanical Drawing

UIE450-F1Y1

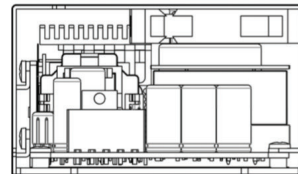
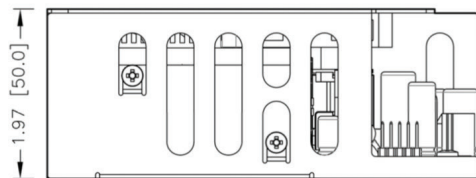


FAN dimension: 50 × 50 × 10mm

Air flow: 11.4 CFM

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

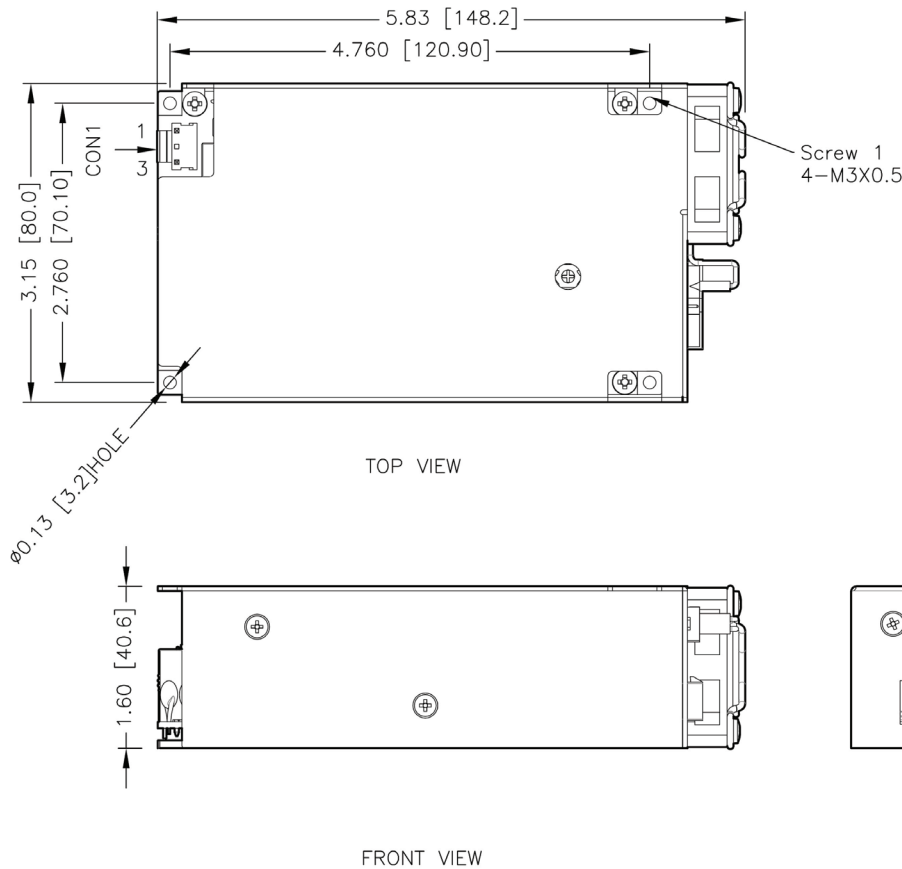
MATES WITH

Molex Housing	90143-0008
Molex Crimp Terminals	90119

UI450 SERIES

Mechanical Drawing (cont.)

UIE450-F2Y2



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