

# AC-DC CONVERTERS

## UNIVERSAL INPUT, 150 WATT, 2" × 4" PACKAGE

### INDUSTRIAL APPLICATIONS

#### UI150 SERIES



#### FEATURES

- Package Size: 2" × 4" × 1.16"
- 3000 VAC Reinforced Insulation
- Efficiency to 92%
- Adjustable Output Voltage
- Internal EN55022 Class Filter B
- Low Leakage Current
- Low Standby Power
- Protection Class I, Class II
- Operating Altitude: 5000 meter
- Over Current Protection
- Over Voltage Protection
- Short Circuit Protection
- Safety Meets: IEC/UL/EN60950-1
- RoHS Compliant
- REACH Compliant
- CE Mark

#### 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 Natural Convection A		Output Current Forced Air Cooling with 10CFM/Option with Fan A	Efficiency %	Model Number*
		Open Type and Chassis Type	Enclosed Type and Din Rail Type			
85 - 264	12	8.34	10.84	12.5	91	UI150-12S
85 - 264	15	7.34	9	10	92	UI150-15S
85 - 264	24	4.59	5.63	6.25	92	UI150-24S
85 - 264	28	3.93	4.83	5.36	92	UI150-28S
85 - 264	36	3.06	3.75	4.17	92	UI150-36S
85 - 264	48	2.09	2.71	3.13	92	UI150-48S

#### \* Prefix:

Enclosed Type: UI150-  
Open Type: UI0150-  
Chassis Type: UIU150-  
Din-rail Type: UID150-

#### Enclosed and Din Rail Types:

JST (Standard): No Suffix  
Molex: "M" Suffix  
Terminal Block: "T" Suffix  
External Fan: "F" Suffix (Only available for enclosed (UI) and Din-rail (UID) Models)  
For Class 1 Protection: Remove Suffix "B"

## UI150 SERIES

Input Specifications			Output Specifications			
Operating input voltage range, Vdc or Vac	85 Min., 264 Max.	AC input, VAC	Output power, Watts	150 Max.	Forced air cooling with 10CFM or Option -F	
	120 Min., 370 Max.	DC input, VDC		110 Max.	Natural convection for 15Vout, 24Vout, 28Vout, 36Vout	
Input frequency, Hz	47 Min., 63 Max.	AC input		100 Max.	Natural convection for 12Vout, 48Vout	
Input current, A	1.7 Max.	115VAC and Full load	Initial set voltage accuracy, %	-1 Min., 1 Max.	230VAC and Full load	
	0.8 Max.	230VAC and Full load	Line regulation, %	-0.2 Min., 0.2 Max.	Low Line to High Line at Full Load	
No load input power, Watts	0.6 Typ.	230VAC, Option -F (with fan)	Load regulation, %	-0.5 Min., 0.5 Max.	No load to full load	
	0.3 Max.	230VAC, Others		-0.4 Min., 0.4 Max.	10% load to 90% load	
Leakage current, $\mu$ A	300 Max.	264VAC	Voltage adjustability, %	-10 Min., 10 Max.		
Power factor	0.95 Min.		Minimum load, %	0 Typ.		
Start up time, ms	1000 Max.		Ripple and noise, mVp-p		20MHz bandwidth	
Rise time, ms	20 Typ.					With a 1 $\mu$ F/25V 1206 X7R MLCC
Hold up time, ms	16 Min.	115VAC and Full load			120 Typ.	12Vout
Input inrush current, A	100 Max.	230VAC			150 Typ.	15Vout
Input protection	T3.15A/250VAC	Internal fuse			220 Typ.	24Vout
					220 Typ.	28Vout
				250 Typ.	36Vout	
					With a 0.1 $\mu$ F/100V 1206 X7R MLCC	
			Temperature coefficient, %/°C	-0.02 Min., 0.02 Max.		
			Transient response, %Vout or $\mu$ s		Load step from 50-75% change at 2.5A/ $\mu$ s	
					3 Max.	Peak deviation, %Vout
			Over voltage protection, %	115 Min., 135 Max.	% of Vout(nom); Latch mode	
			Over load protection, %	115 Min., 150 Max.	% of Iout rated; Hiccup mode	
			Short circuit protection		Continuous, automatic recovery	
			Fan power supply		12V at 500mA	

General Specifications					
Isolation voltage, Vac	1 minute (reinforced insulation)	Input to output	3000 Min.		
		Input (output) to F.G.	2000 Min.		
Isolation resistance, G $\Omega$	500Vdc		0.1 Min.		
Switching frequency, kHz				60 Typ.	

## UI150 SERIES

Environmental Specifications				
Operating ambient temperature, °C	Option -F (with fan)	With derating	-40 Min.	80 Max.
	Others		-40 Min.	85 Max.
	-40°C start up: 80% load, Max.	@ Vin > 100VAC		
	-40°C start up: 100% load, Max.	@ Vin > 200VAC		
Storage temperature range, °C	Option -F (with fan)		-40 Min.	75 Max.
	Others		-40 Min.	85 Max.
Operating altitude, m				5000 Max.
Thermal shock			MIL-STD-810F	
Shock			IEC60068-2-27	
Vibration			IEC60068-2-6	
Relative humidity	Non-condensing		5% to 95% RH	

Physical Specifications			EMC Specifications			
Design meet safety standard	IEC/UL/EN60950-1, UL:E193009, CB: DK-56637-UL		Specifications	Conditions	Level	
Weight, g	187g (6.60oz)	UI	EMI	EN55024, EN55011, EN55022 and FCC Part 15	External components may be required for class I application	Conducted, Class B Radiated, Class A
	235g (8.29oz)	UIO				
	256g (9.03oz)	UIOU	Harmonic currents	EN61000-3-2	Full load	Class A and D
	278g (9.81oz)	UIOD	Voltage flicker	EN61000-3-3		
			EMS	EN55024		
Dimensions	2" × 4" × 1.16" (50.8mm × 101.6mm × 29.5mm)		ESD	EN61000-4-2	Air ±8kV and Contact ±6kV	Perf. Criteria A
			Radiated immunity	EN61000-4-3	20V/m	Perf. Criteria A
MTBF	7.861 × 10 <sup>5</sup> hrs, MIL-HDBK-217F Ta=25°C, Full load		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		

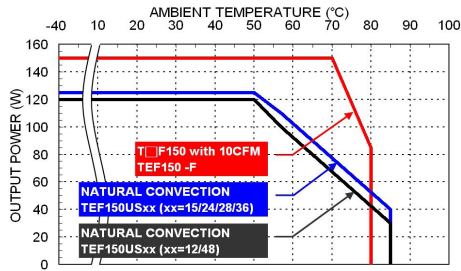
**Note:**

1. For further information, please contact Polytron Devices.

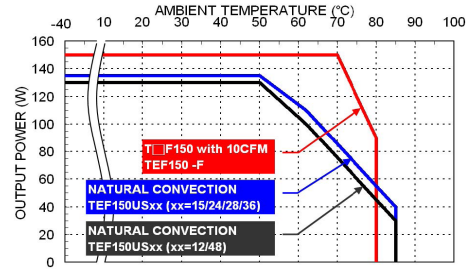
**CAUTION:** This power module is not internally fused. An input line fuse must always be used.

**UI150 SERIES**

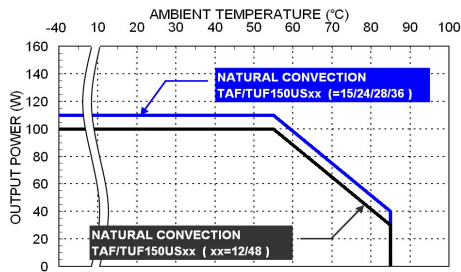
**Characteristic Curve**



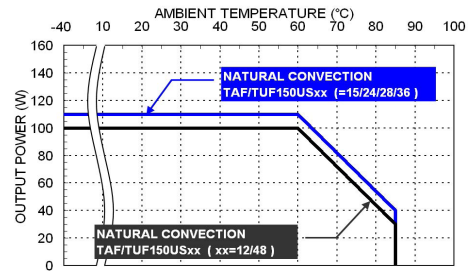
Derating Curve vs. Ambient Temperature - Vin=115VAC



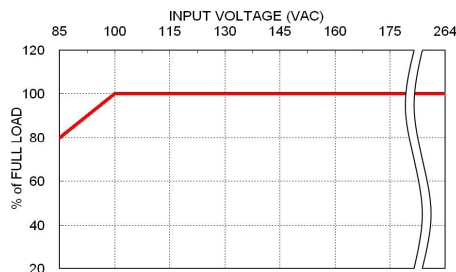
Derating Curve vs. Ambient Temperature - Vin=230VAC



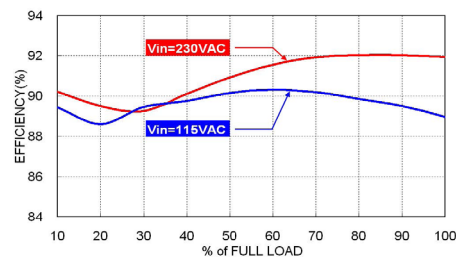
Derating Curve vs. Ambient Temperature - Vin=115VAC



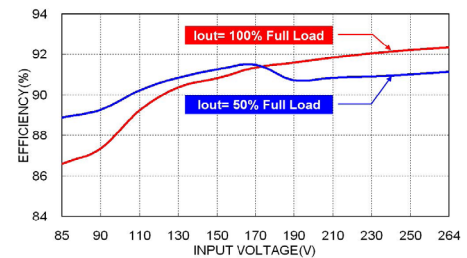
Derating Curve vs. Ambient Temperature - Vin=230VAC



Derating Curve vs. Input Voltage



Efficiency vs. Output Load



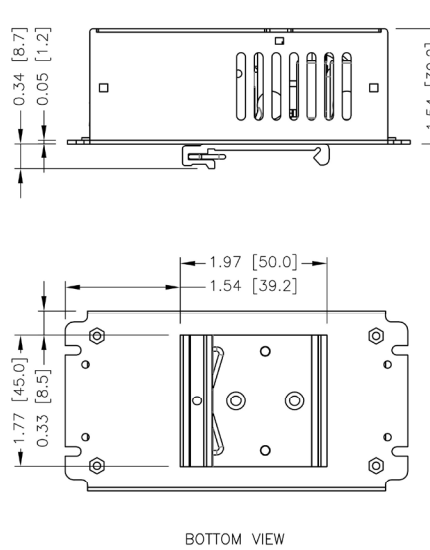
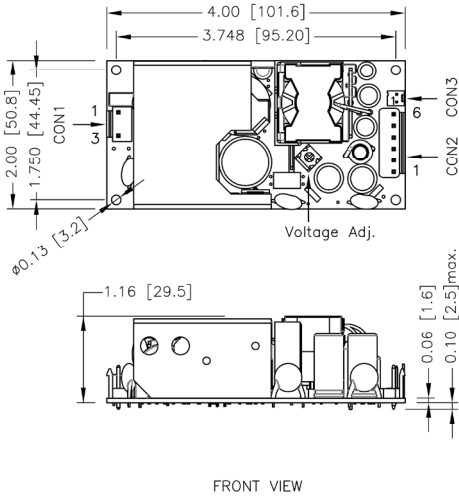
Efficiency vs. Input Voltage

# UI150 SERIES

## Mechanical Drawing

### Open Type: UI0150-XXX

### Din Rail Type: UID150-XXX



### PIN CONNECTION

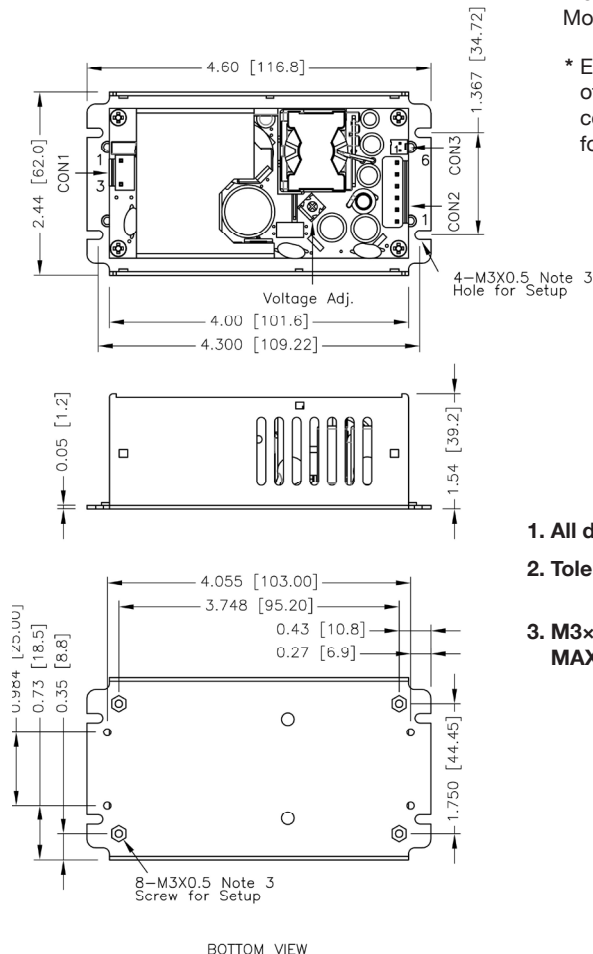
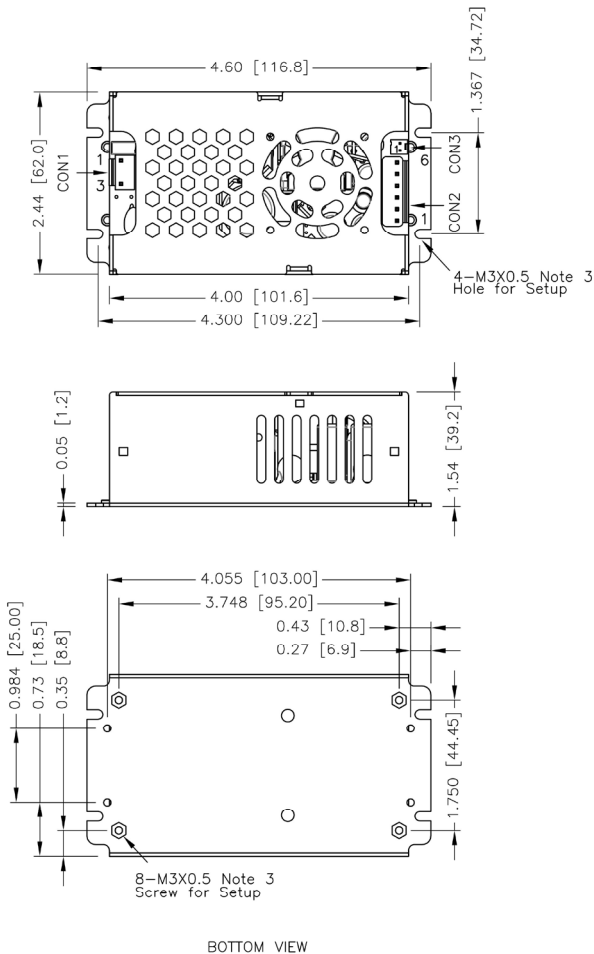
PIN	CON1-INPUT
1	Line
3	Neutral

	CON2-OUTPUT
1	-Vout
2	-Vout
3	-Vout
4	+Vout
5	+Vout
6	+Vout

PIN	CON1-FAN
1	-Fan
2	+Fan

### Enclosed Type: UI150-XXX

### Chassis Type: UIU150-XXX



Mates with:

Molex housing: 22-01-1022  
Molex crimp terminals: 2759

\* Either one of four screw holes of Open/Chassis type can be considered as PE connection for CLASS I application.

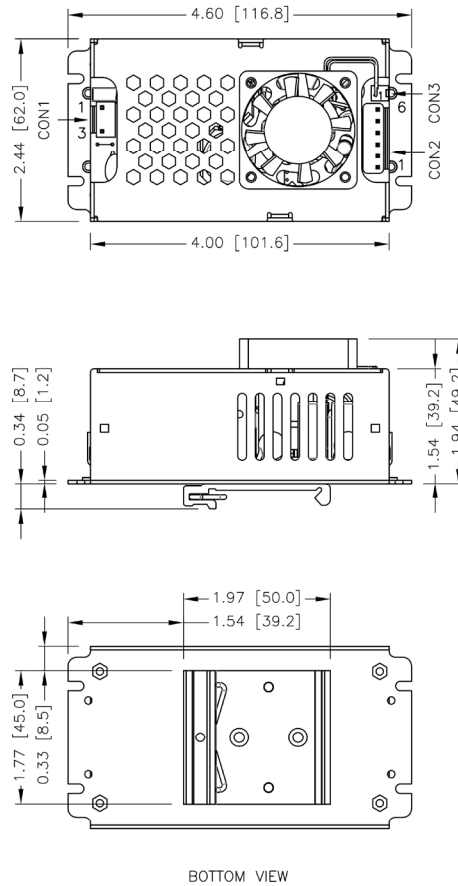
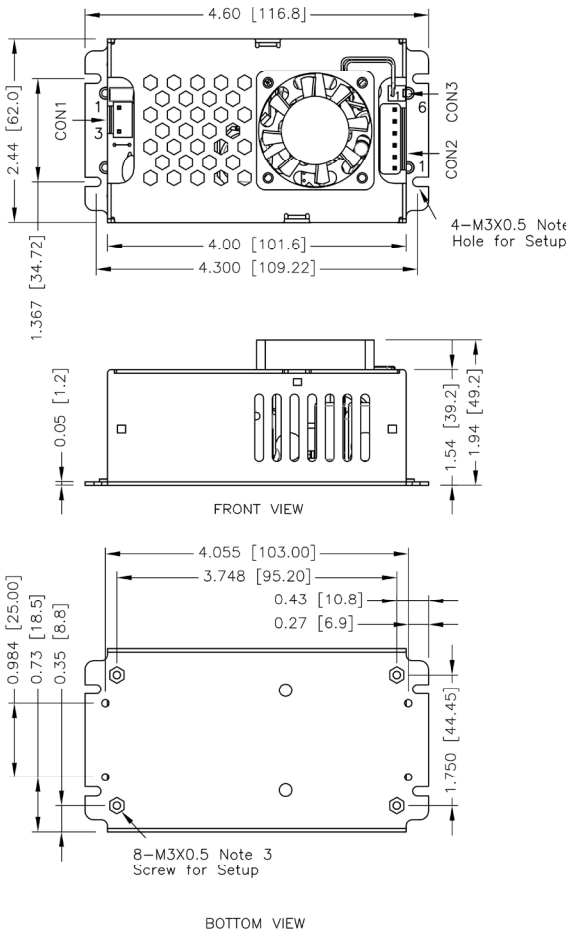
1. All dimensions in inches (mm)
2. Tolerance:  $x.xx \pm 0.02$  ( $x.x \pm 0.5$ )  
 $x.xxx \pm 0.01$  ( $x.xx \pm 0.25$ )
3. M3x0.5 screw locked torque  
MAX 5Kgf.cm/0.49N.m

**UI150 SERIES**

**Mechanical Drawing (cont.)**

**Enclosed Type with FAN**

**Din Rail Type with FAN**



**PIN CONNECTION**

PIN	CON1-INPUT
1	Line
3	Neutral

	CON2-OUTPUT
1	-Vout
2	-Vout
3	-Vout
4	+Vout
5	+Vout
6	+Vout

PIN	CON1-FAN
1	-Fan
3	+Fan

Mates with:  
Molex housing: 22-01-1022  
Molex crimp terminals: 2759

\* Either one of four screws holes of Open/Chassis type can be considered as PE connection for CLASS I application.

1. All dimensions in inch (mm)
2. Tolerance:  $x.xx \pm 0.02$  ( $x.x \pm 0.5$ )  
 $x.xxx \pm 0.01$  ( $x.xx \pm 0.25$ )
3. M3x0.5 screw locked torque  
MAX 5Kgf.cm/0.49N.m

**External Fan Option**

There is an external fan option for the UIOU UIOD models. The fan's life is shorter than the power supply and has a two year warranty.

Specifications for replacement:  
Fan dimensions: 40 x 40 x 10 mm  
Air flow: 7 CFM

