

**150W** Fan cooled

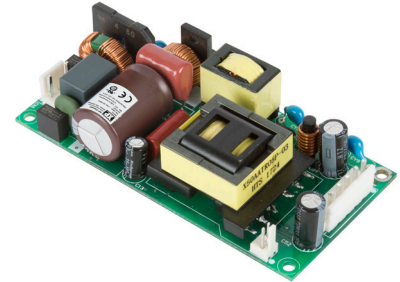
**100W** Convection cooled

AC-DC power supplies

The EPL150 series maximises efficiency across the load range and minimises no load power consumption minimising heat dissipation, reducing running costs and enabling compliance with the latest environmental goals and legislation.

Fully approved as Class I & Class II for ITE, industrial electronics and medical (BF) applications, the EPL150 provides up to 100W when convection cooled and up to 150W when fan cooled at just 283.2 l/m. A 12V 0.5A fan supply is included to support force cooled applications.

The small footprint, low profile, low noise and comprehensive safety agency approvals enable this versatile product to be suitable for a wide range of medical (BF), ITE and industrial electronics applications.



## Features

- ▶ 150W fan cooled 100W convection cooled
- ▶ 101.6 x 50.8mm (4" x 2) footprint, 25.1mm profile
- ▶ Regulated single outputs 12 to 48VDC
- ▶ Input range 80 to 264VAC
- ▶ High efficiency – up to 94%
- ▶ Medical (BF) & ITE approvals
- ▶ 4.0kVAC input to output isolation
- ▶ Class I & class II operation
- ▶ <0.5W no load input power
- ▶ 12V/0.5A fan supply
- ▶ -20°C to +70°C operating temperature
- ▶ Full load to +50°C
- ▶ 3 year warranty

## Applications



Healthcare

## Dimensions

101.6 x 50.8 x 25.1mm (4.00" x 2.00" x 0.99")

## Models & ratings

Model number <sup>(2)</sup>	Output current		Output voltage	Fan output	Efficiency <sup>(1)</sup>	Output power
	Convection cooled	Fan Cooled (10CFM)				
EPL150PS12	8.33A <sup>(2)</sup>	12.50A	12.0VDC	12V/0.5A	93%	150W
EPL150PS15	6.67A	10.00A	15.0VDC	12V/0.5A	93%	150W
EPL150PS18	5.56A	8.33A	18.0VDC	12V/0.5A	93%	150W
EPL150PS24	4.17A	6.25A	24.0VDC	12V/0.5A	93%	150W
EPL150PS28	3.50A	5.40A	28.0VDC	12V/0.5A	93%	150W
EPL150PS36	2.78A	4.17A	35.0VDC	12V/0.5A	93%	150W
EPL150PS48	2.08A	3.10A	48.0VDC	12V/0.5A	93%	150W

### Notes:

1. Minimum average efficiencies measured at 25%, 50%, 75% & 100% of 150W load and 230VAC input.
2. Derate to 7.5A below 100VAC input.

## Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Input voltage - operating	80	115/230	264	VAC	Derate output from 100% at 90VAC to 90% at 85VAC and 85% at 80VAC. 12VDC models derate to 90% below 100VAC.
Input frequency	47	50/60	63	Hz	
Power factor		>0.9		A	230VAC, 100% load EN61000-3-2 class A
Input current - full load		2.2/1.1		A	115/230VAC
Inrush current		120		A	At 230VAC, cold start at +25°C
Earth leakage current		80/150	230	µA	115/230VAC/50Hz (Typ), 264VAC/60Hz (max)
Input protection	F3.15A/250V Internal fuse fitted in line and neutral.				
Power factor			0.5	W	

## Output - main output

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Output voltage - V1	12		48	VDC	See models and ratings table
Initial set accuracy			±1	%	50% load, 115/230VAC
Output voltage adjustment-V1				%	None
Minimum load	No minimum load required				
Start up delay			2	s	115/230 VAC full load.
Hold up time	10	20/13		ms	Min at full load, 115VAC. Typical at 100W/150W
Drift			±0.02	%	After 20 min warm up
Line regulation			±0.5	%	90-264 VAC
Load regulation			±0.5	%	0-100% load.
Transient response			4	%	Recovery within 1% in less than 500µs for a 50-75% and 75-50% load step
Over/undershoot			7	%	Full load
Ripple & noise			1	% pk-pk	20MHz bandwidth and 10µF electrolytic capacitor in parallel with 0.1µF ceramic capacitor.
Overvoltage protection	110		140	%	Vnom, recycle input to reset
Overload protection	110		170	% I nom	
Short Circuit protection					Trip & restart
Temperature coefficient			0.02	%/°C	

## General

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Efficiency		93		%	230 VAC (see efficiency vs load graphs)
Isolation: Input to output	4000			VAC	2 x MOPP
Input to ground	1500			VAC	1 x MOPP
Output to ground	500			VAC	1 x MOPP
Patient leakage current		50	80	µA	At 264VAC, 60Hz
Switching frequency	40		130	kHz	PFC
	50		95	kHz	Main converter
Power density			1.15/0.76 (18.9/12.6)	W/cm <sup>3</sup> (W/in <sup>3</sup> )	Fan/convection-cooled
MTBF		600		kHrs	MIL-HDBK-217F, Notice 2 +25°C GB
Weight		120 (0.26)		g (lb)	

## Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Operating temperature	-20		+70	°C	Derate linearly from +50°C at 2.5%/°C to 50% load at +70°C
Storage temperature	-40		+85	°C	
Cooling	10				
Humidity	5		95	%RH	Non-condensing
Operating altitude			5000	m	
Shock	±3 x 30g shocks in each plane, total 18 shocks. 30g = 11ms (+/- 0.5msecs), half sine. Conforms to EN60068-2-27				
Vibration	Single axis 10-500 Hz at 2g sweep and endurance at resonance in all 3 planes. Conforms to EN60068-2-6				

## Emissions - EMC

Phenomenon	Standard	Test level	Notes & conditions
Conducted	EN55011/32	Class B	
Radiated	EN55011/32	Class A	Class B with King Core, KCF-100-B on input cable
Harmonic current	EN61000-3-2	Class A	
Voltage flicker	EN61000-3-3		

## Immunity - EMC

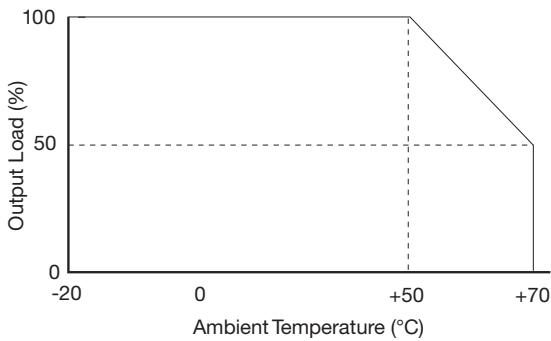
Phenomenon	Standard	Test Level	Criteria	Notes & conditions
Medical device EMC	IEC60601-1-2	Ed.4.0 : 2014	as below	
Low voltage PSU EMC	EN61204-3	High severity level	as below	
ESD	EN61000-4-2	4	A	±6kV contact, ±15kV air discharge
Radiated	EN61000-4-3	3	A	
EFT	EN61000-4-4	3	A	
Surges	EN61000-4-5	Installation class 3	A	
Conducted	EN61000-4-6	3	A	
Magnetic fields	EN61000-4-8	4	A	
Dips and interruptions	EN55035 (100 VAC)	Dip >95% (0VAC), 8.3ms	A	
		Dip 30% (70VAC), 416ms	A	
		Dip >95% (0VAC), 4160ms	B	
	EN55035 (240 VAC)	Dip >95% (0VAC), 10.0ms	A	
		Dip 30% (168VAC), 500ms	A	
		Dip >95% (0VAC), 5000ms	B	
	EN60601-1-2 (100 VAC)	Dip 100% (0VAC), 10.0ms	A	
		Dip 100% (0VAC), 20ms	B	
		Dip 60% (40VAC), 100ms	B	
		Dip 30% (70VAC), 500ms	A	
	EN60601-1-2 (240 VAC)	Dip 100% (0VAC), 5000ms	B	
		Dip 100% (0VAC), 10.0ms	A	
Dip 100% (0VAC), 20ms		B		
Dip 60% (96VAC), 100ms		A		
		Dip 30% (168VAC), 500ms	A	
		Dip 100% (0VAC), 5000ms	B	

## Safety approvals

Certification	Standard	Notes & Cnditions
CB	IEC60950-1-1, IEC62368-1	
	IEC60601-1	
UL	UL60950-1, UL62368-1	
	ES60601-1	
EN	EN62368-1	
	EN60601-1	
CE	Meets all applicable directives	
UKCA	Meets all applicable legislation	

Isolation	Standard	Notes & Cnditions
Primary to secondary	2 x MOPP (Means of patient protection)	
Primary to earth	1 x MOPP (Means of patient protection)	
Secondary to earth	1 x MOPP (Means of patient protection)	Suitable for use in BF applied part applications

## Derating Curve



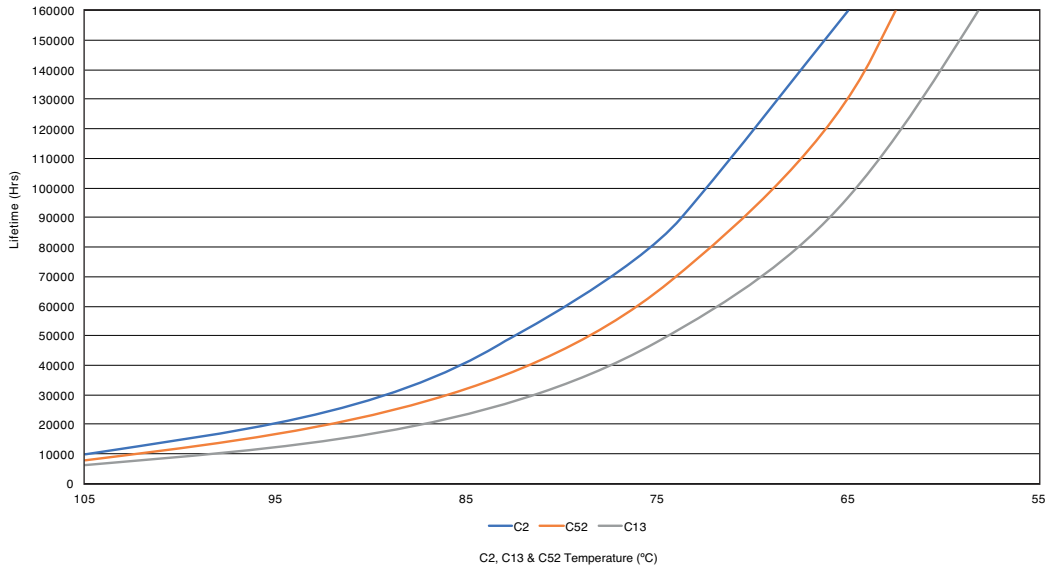
## Thermal considerations

In order to ensure safe operation of the PSU in the end-use equipment, the temperature of the components listed in the table below must not be exceeded. Temperature should be monitored using thermocouples placed on the hottest part of the component (out of direct air flow). See mechanical details for component locations.

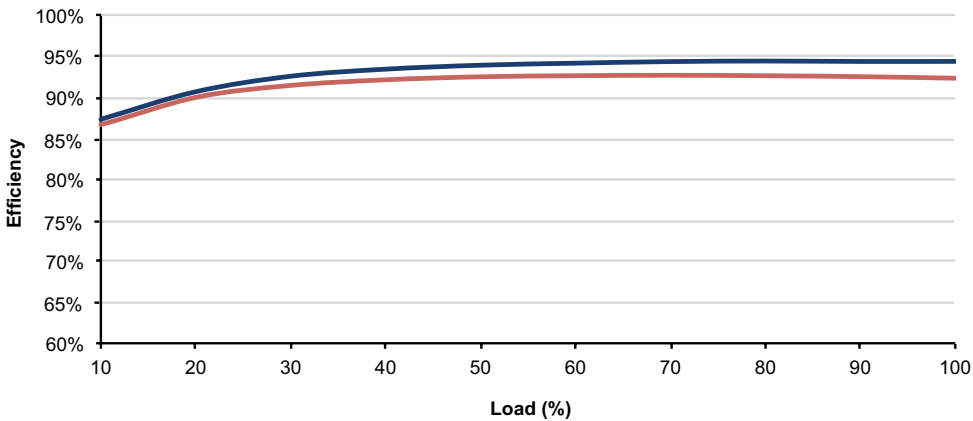
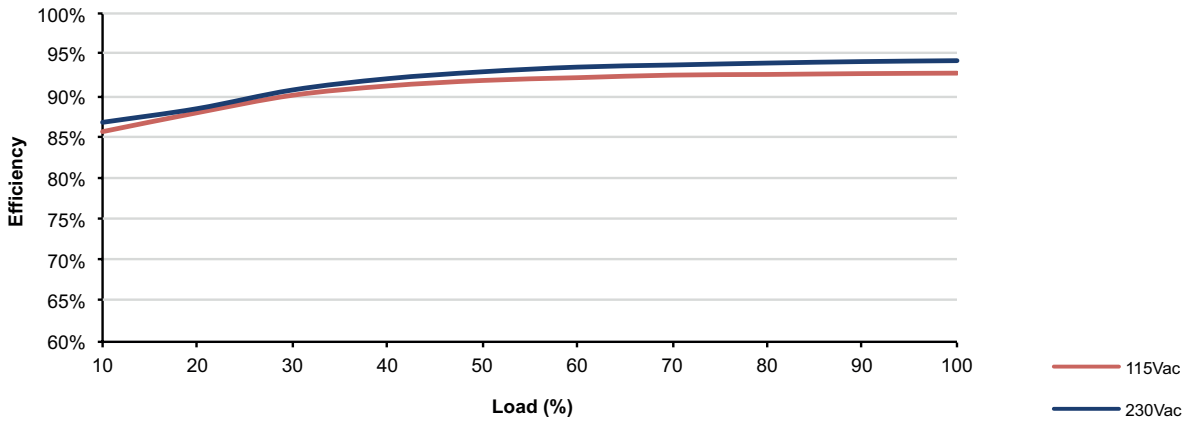
Temperature measurements (at maximum ambient)	
Component	Max temperature °C
TR1 Coil	120°C
L4 Coil	120°C
C13	105°C
C52	105°C
C2	105°C

## Service life

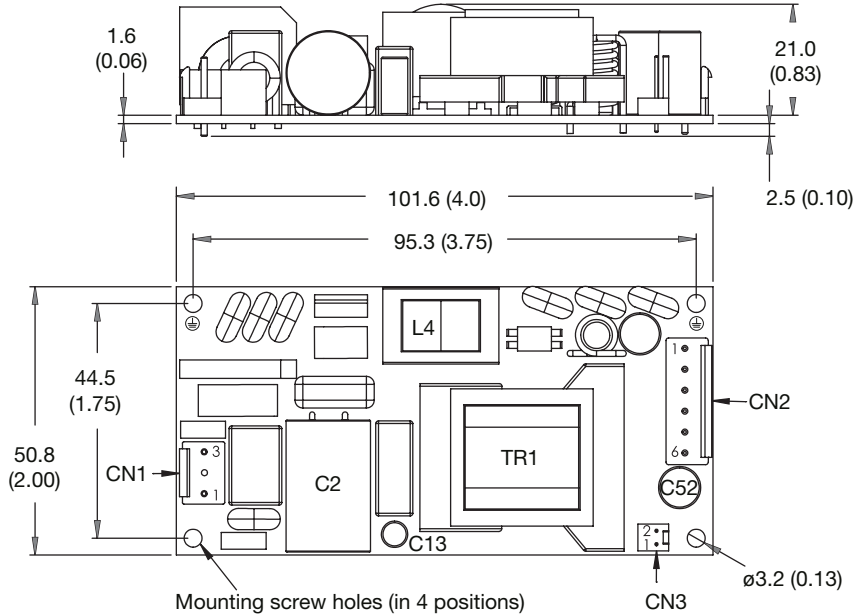
Estimated service life vs component temperature



## Efficiency vs load



## Mechanical details



CN1	
Pin 1	AC-L
Pin 2	
Pin 3	AC-N

Mates with JST VHR-3N housing and SVH-21T-P1.1 crimps

CN2	
Pin 1	+Vo
Pin 2	+Vo
Pin 3	+Vo
Pin 4	Com
Pin 5	Com
Pin 6	Com

Mates with JST VHR-6N housing and SVH-21T-P1.1 crimps

CN3	
Pin 1	Fan -
Pin 2	Fan +

Mates with Molex 22-01-1022 housing and 2759 crimps

Mounting holes marked with must be connected to safety earth in Class I application or connected together in Class II application.

### Notes:

1. All dimensions in mm (inches). Tolerance .xx = 0.50 (±0.02); .xxx = 0.25 (±0.01)

2. Weight:120g (0.26 lbs)

Specifications subject to change without notice.