ECP130 series

XP Power

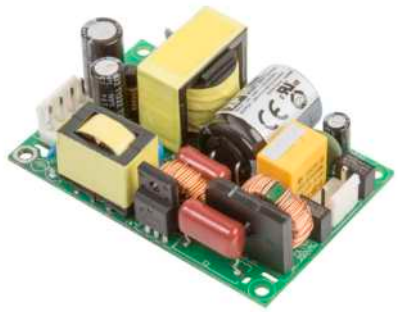
130W Fan cooled **100W** Convection cooled

AC-DC power supplies

The ECP130 series is designed to minimize the no load power consumption and maximize efficiency to facilitate equipment design to meet the latest environmental legislation.

Approved for medical (2 x MOPP), industrial electronics and ITE applications. The power supply contains two fuses and a low leakage current as required for medical applications, it is safety approved to operate in a 70°C ambient.

The low profile and safety approvals covering ITE and medical standards along with conducted emissions to EN55011/32 level B allow the versatile ECP130 series to be used in a vast range of applications.



Features

- 130W fan cooled 100W convection cooled
- 76.2 x 50.8mm (3" x 2") footprint, 28.0mm profile
- Regulated single outputs 12 to 48VDC
- Input range 85 to 264VAC
- High efficiency – up to 95%
- Medical (2 x MOPP) & ITE approvals
- 4.0kVAC input to output isolation
- <0.5W no load input power
- -20°C to +70°C operating temperature
- Full load to +50°C
- 3 year warranty

Applications

Instrumentation

Robotics

IoT

Process control

Dimensions

76.2 x 50.8 x 28.0mm (3.00" x 2.00" x 1.10")

Documentation

Click the link or scan the code

→ xppower.com

Models & ratings

Model number[1]	Output current		Output voltage	Efficiency[2]
	Convection-cooled	Forced Cooled (10CFM)		
ECP130PS12	8.33 A	10.83A	12.0VDC	93%
ECP130PS15	6.66 A	8.66A	15.0VDC	93%
ECP130PS18	5.55 A	7.22A	18.0VDC	93%
ECP130PS24	4.16 A	5.41A	24.0VDC	93%
ECP130PS28	3.57 A	4.64A	28.0VDC	93%
ECP130PS36	2.77 A	3.61A	36.0VDC	93%
ECP130PS48	2.08 A	2.70A	48.0VDC	93%

Notes:

1. Add suffix '-S' for input and output screw terminals e.g. ECP130PS24-S

2. Typical efficiency measured at full load and 230VAC input.

ECP130 series

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Input Voltage - Operating	80	115/230	264	VAC	Derate output from 100% at 90 VAC to 85% at 85 VAC
Input Frequency	47	50/60	63	Hz	Agency approval, 47-63 Hz
Power Factor	0.8				230 VAC, 100% load EN61000-3-2 class A
Input Current - Full Load		1.3/0.65		A	115/230 VAC
Inrush Current		120		A	230 VAC cold start, 25°C
Earth Leakage Current		20/40	50	µA	115/230 VAC/50 Hz (Typ), 264 VAC/60 Hz (Max)
No load Input Power			0.5	W	
Input Protection	F3.15 A/250 V Internal fuse fitted in line and neutral.				

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Output Voltage	12		48	VDC	See models and ratings table
Initial Set Accuracy			±1	%	50% load, 115/230VAC
Output Voltage Adjustment				%	None
Minimum Load	No minimum load required				
Start Up Delay			2	s	115/230 VAC full load.
Hold Up Time	10	15/11		ms	Min at full load, 115VAC. Typical at 100W/ 130W
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	<2% from no load to 10% load, <1% above 10% load. 20MHz bandwidth and 10 µF electrolytic capacitator in parallel with 0.1µF ceramic capacitator.
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		95		%	230 VAC (see fig. 1 & 2)
Isolation: Input to output	4000			VAC	2 x MOPP
Input to ground	1500			VAC	1 x MOPP
Output to ground	500			VDC	1 x MOPP
Switching frequency	40		130	kHz	PFC
	50		135		Main converter
Power density			1.2 (19.7)	W/cm^3 (W/in^3)	Fan cooled
			0.92 (15.1)		Convection cooled
MTBF		680		khrs	MIL-HDBK-217F at 25°C, GB
Weight		115 (0.25)		g (lbs)	

Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Operating temperature	-30		+70	°C	See derating curve, fig.3
Storage temperature	-40		+85	°C	
Cooling	10			CFM	Forced-cooled >100W
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 additional KINGCORE K5B RC 20 x 30 x 5 - MB ferrite on input cable. L & N require 2 turns and earth cable 1 turn.
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	3	as below	
Low voltage PSU EMC	EN61204-3	3	as below	
ESD	EN61000-4-2	3	A	
Radiated	EN61000-4-3		A	
EFT	EN61000-4-4	3	A	
Surge	EN61000-4-5	30% for 10ms	A	
Conducted	EN61000-4-6	Conducted	A	
Magnetic fields	EN61000-4-8	Magnetic Fields	A	
Dips and interruptions	EN55035 (100 VAC)	Dip >95% (0 VAC), 8.3ms	A	
		Dip 30% (70 VAC), 416ms	A	
		Dip >95% (0 VAC), 4160ms	B	
	EN55035 (240 VAC)	Dip >95% (0 VAC), 10.0ms	A	
		Dip 30% (168 VAC), 500ms	A	
		Dip >95% (0 VAC), 5000ms	B	
	EN60601-1-2 (100 VAC)	Dip 100% (0 VAC), 10.0ms	A	
		Dip 100% (0 VAC), 20ms	A	
		Dip 60% (40 VAC), 100ms	B	Performance criteria A <25 W
		Dip 30% (70 VAC), 500ms	A	
		Dip 100% (0 VAC), 5000ms	B	
	EN60601-1-2 (240 VAC)	Dip 100% (0 VAC), 10.0ms	A	
		Dip 100% (0 VAC), 20ms	A	
		Dip 60% (96 VAC), 100ms	A	
		Dip 30% (168 VAC), 500ms	A	
		Dip 100% (0 VAC), 5000ms	B	

Safety approvals

Certification	Standard	Notes & Ccnditions
CB	IEC62368-1	Information technology
	IEC60601-1 Ed 3.1 Including Risk Management	Medical
UL	CSA 22.2 No.62368-1-11 Ed 2, UL62368-1	Information technology
	ANSI/AAMI ES60601-1: & CSA C22.2 No.6061-1:08	Medical
EN	EN62368-1	Information technology
	EN60601-1	Medical
CE	Meets all applicable directives	
UKCA	Meets all applicable legislation	

Isolation	Standard	Notes & Ccnditions
Primary to Secondary	2 x MOPP (Means of Patient Protection)	IEC60601-1 Ed 3.1
Primary to Earth	1 x MOPP (Means of Patient Protection)	
Secondary to Earth	1 x MOPP (Means of Patient Protection)	

Application notes

Thermal considerations

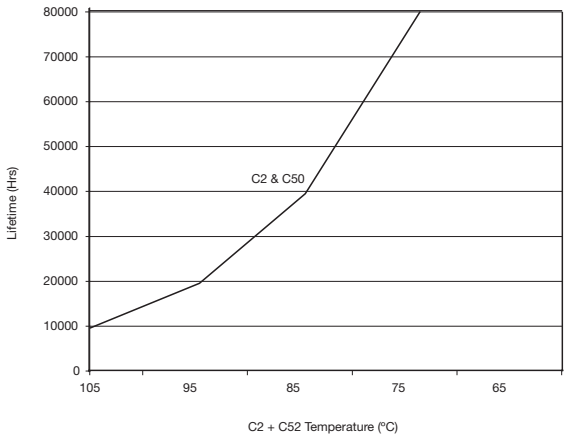
In order to ensure safe operation of the PSU in the end-use equipment, the temperature of the components listed in the table below must not be exceeded. Temperature should be monitored using K type thermocouples placed on the hottest part of the component (out of direct air flow). See mechanical details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

Temperature measurements (at maximum ambient)	
Component	Max temperature (°C)
TR1 Coil	120°C
L4 Coil	120°C
C2	105°C
C50	105°C

Service life

The estimated service life of the ECP225-A is determined by the cooling arrangements and load conditions experienced in the end application. Due to the uncertain nature of the end application this estimated service life is based on the actual measured temperature of a key capacitor with in the product when installed by the end application. The graph below expresses the estimated lifetime of a given component temperature and assumes continuous operation at this temperature.

Estimate service life vs component temperature



Efficiency vs load

Figure 1, ECP130PS12, 12 V at 130 W

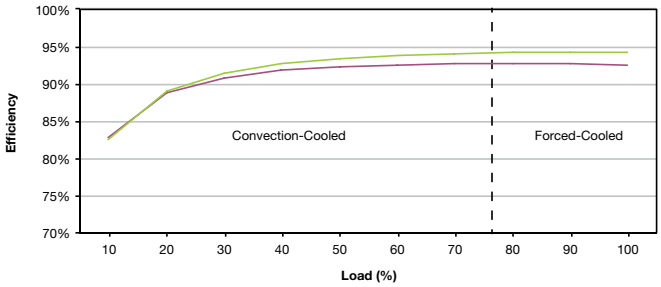
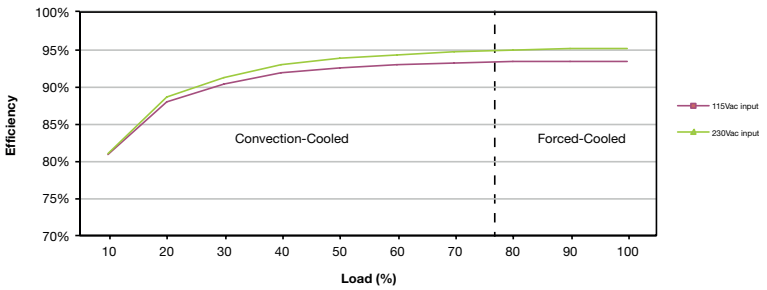
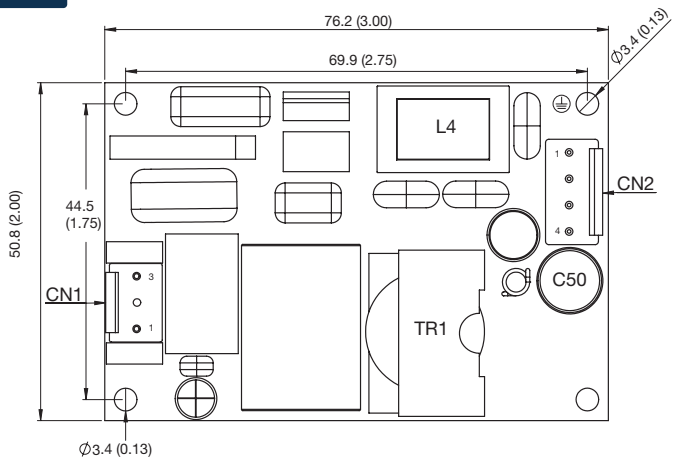
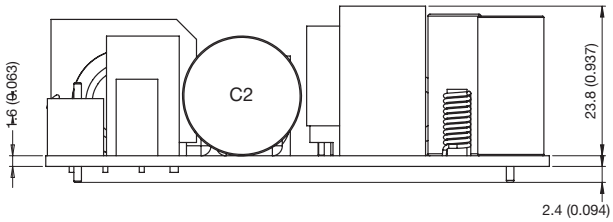


Figure 2, ECP130PS24, 24 V at 130 W



Mechanical details





CN1 - Input Connector	
Pin 1	Neutral
Pin 2	Not Fitted
Pin 3	Line

Mates with JST housing
VHR-3N and JST Series
SVH-21T-P1.1 crimp terminals

Mounting hole marked with
⏚ must be connected to safety earth

CN2 - Output Connector	
Pin 1	+Vout
Pin 2	+Vout
Pin 3	Com
Pin 4	Com

Mates with JST housing
VHR-4N and JST Series
SVH-21T-P1.1 crimp terminals

Notes:

1. All dimensions in mm (inches). Tolerance .xx = 0.50 (±0.02); .xxx = 0.25 (±0.01)
2. Weight: 115g (0.0.25lbs)