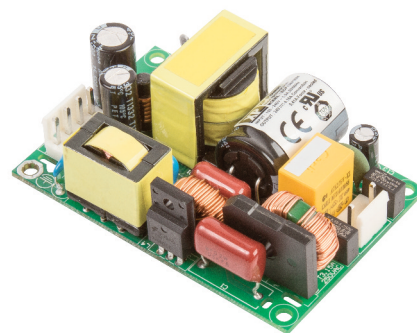


### 130 Watts

- 100 W Convection/130 W Forced-cooled Ratings
- 2" by 3" Footprint
- Low 1.1" Profile
- High Efficiency, up to 95%
- Medical and ITE Approvals
- High Power Density
- Less than 0.5 W No Load Input Power
- 3 Year Warranty



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 and ITE applications, this range of single output AC-DC power supplies are packaged in a low profile 1.1" height with a foot print of just 2" by 3". The ECP130 provides up to 130 W force-cooled or 100 W convection-cooled leading to very high power densities of 19.7 W/in<sup>3</sup> or 15.1 W/in<sup>3</sup> respectively. The power supply contains two fuses and low leakage currents as required by medical applications and is safety approved to operate in a 80 °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.

#### Dimensions:

##### ECP130:

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

### Models & Ratings

| Output Power | Output Voltage | Output Current    |                              | Efficiency <sup>(2)</sup> | Model Number <sup>(3)</sup> |
|--------------|----------------|-------------------|------------------------------|---------------------------|-----------------------------|
|              |                | Convection-cooled | Forced-cooled <sup>(1)</sup> |                           |                             |
| 130 W        | 12.0 V         | 8.33 A            | 10.83 A                      | 93%                       | ECP130PS12                  |
| 130 W        | 15.0 V         | 6.66 A            | 8.66 A                       | 93%                       | ECP130PS15                  |
| 130 W        | 18.0 V         | 5.55 A            | 7.22 A                       | 93%                       | ECP130PS18                  |
| 130 W        | 24.0 V         | 4.16 A            | 5.41 A                       | 93%                       | ECP130PS24                  |
| 130 W        | 28.0 V         | 3.57 A            | 4.64 A                       | 93%                       | ECP130PS28                  |
| 130 W        | 36.0 V         | 2.77 A            | 3.61 A                       | 93%                       | ECP130PS36                  |
| 130 W        | 48.0 V         | 2.08 A            | 2.70 A                       | 93%                       | ECP130PS48                  |

### Notes

1. Requires 10 CFM.
2. Typical efficiency measured at full load and 230VAC input.
3. Add suffix '-S' for input and output screw terminals e.g. ECP130PS24-S

### Summary

| Characteristic        | Minimum | Typical  | Maximum | Units | Notes & Conditions                               |
|-----------------------|---------|--|---------|-------|--|
| Input Range           | 85      | 115/230  | 264     | VAC   | Derate load from 100% at 90 VAC to 85% at 85 VAC |
| No Load Input Power   |         |  | 0.5     | W     |  |
| Efficiency            |         | 95   |         | %     | 230 VAC (see fig.1 & 2)                          |
| Operating Temperature | -30     |  | +80     | °C    | See derating curve (fig.3)                       |
| Safety Approvals      | ITE     | IEC60950, UL60950-1, CSA 22.2 No.60950-1-11 Ed 2, EN60950-1, LVD                                     |         |       |  |
|                       | Medical | IEC60601-1 Ed 3.1 Including Risk Management, ANSI/AAMI ES60601-1 & CSA C22.2 No.6061-1:08, EN60601-1 |         |       |  |

## Input

| Characteristic            | Minimum   | Typical  | Maximum | Units | Notes & Conditions                                 |
|---------------------------|---|----------|---------|-------|--|
| Input Voltage - Operating | 85  | 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 - Main Output

| Characteristic            | Minimum | Typical | Maximum | Units   | Notes & Conditions   |
|---------------------------|---------|---------|---------|---------|--|
| Output Voltage            | 12      |         | 48      | VDC     | See Models and Ratings table   |
| Initial Set Accuracy      |         |         | ±1      | %       | 50% load, 115/230 VAC  |
| Output Voltage Adjustment |         |         |         | %       | None   |
| Minimum Load              | 0       |         |         | A       | 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, 115 VAC. 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 500 µs 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. 20 MHz bandwidth and 10 µF electrolytic capacitor in parallel with 0.1 µF 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  |         | 95        |           | %                 | 230 VAC (see fig. 1 & 2)          |
| Isolation: Input to Output<br>Input to Ground<br>Output to Ground | 4000    |           |           | VAC               | 2 MOPP                            |
|   | 1500    |           |           | VAC               | 1 MOPP                            |
|   | 1500    |           |           | VAC               | 1 MOPP                            |
| Switching Frequency   | 40      |           | 130       | kHz               | PFC                               |
|   | 50      |           | 135       | kHz               | Main converter                    |
| Power Density   |         |           | 19.7/15.1 | W/in <sup>3</sup> | Forced/convection-cooled          |
| Mean Time Between Failure   |         | 680       |           | kHrs              | MIL-HDBK-217F, Notice 2 +25 °C GB |
| Weight  |         | 0.43(195) |           | lb(g)             |                                   |

### Efficiency Vs Load

Figure 1  
ECP130PS12  
12 V at 130 W

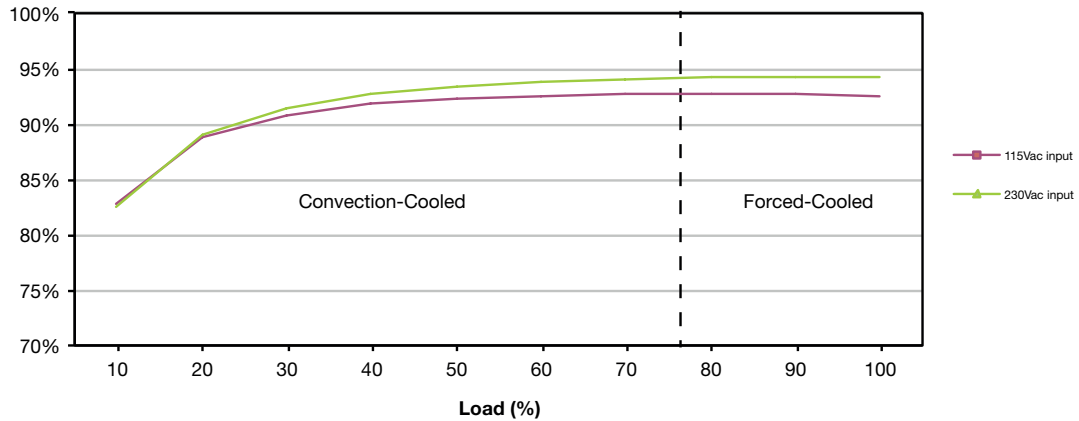
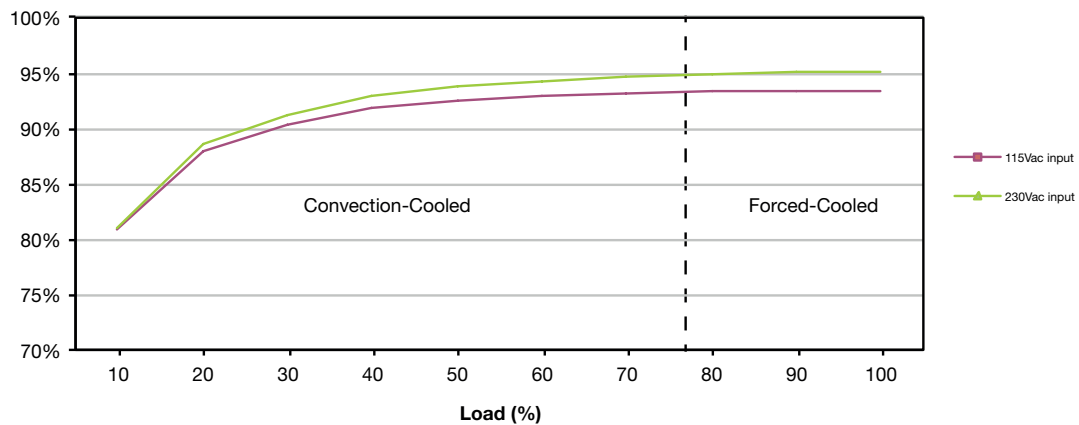


Figure 2  
ECP130PS24  
24 V at 130 W

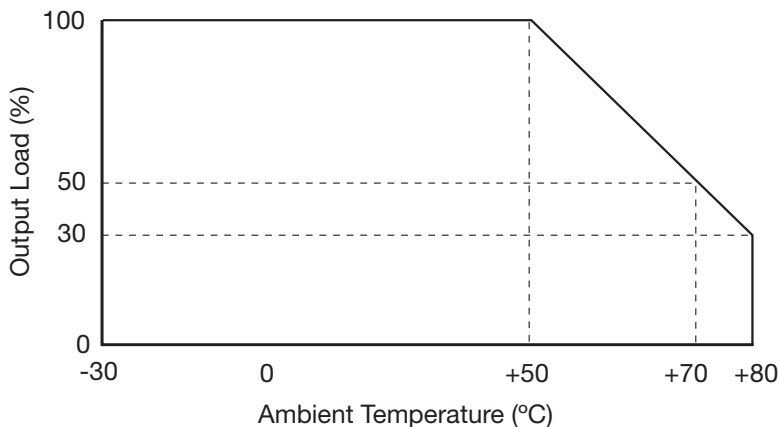


### Environmental

| Characteristic        | Minimum  | Typical | Maximum | Units | Notes & Conditions        |
|-----------------------|--|---------|---------|-------|---------------------------|
| Operating Temperature | -30  |         | +80     | °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          |         |         |       |                           |

### Temperature Derating Curve

Figure 3



### EMC: Emissions

| Phenomenon        | Standard    | Test Level | Criteria | Notes & Conditions |
|-------------------|-------------|------------|----------|--------------------|
| Conducted         | EN55011/32  | Class B    |          |                    |
| Radiated          | EN55011/32  | Class A    |          |                    |
| Harmonic Current  | EN61000-3-2 | Class A    |          |                    |
| Voltage Functions | EN61000-3-3 |            |          |                    |

### EMC: Immunity

| 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           | ±8kV contact, ±15kV air   | A        |                              |
| Radiated               | EN61000-4-3           | 3                         | A        |                              |
| EFT                    | EN61000-4-4           | 3                         | A        |                              |
| Surge                  | EN61000-4-5           | Installation class 3      | A        |                              |
| Conducted              | EN61000-4-6           | 3                         | A        |                              |
| Magnetic Fields        | EN61000-4-8           | 4                         | A        |                              |
| Dips and Interruptions | EN55024 (100 VAC)     | Dip >95% (0 VAC), 8.3 ms  | A        |                              |
|                        |                       | Dip 30% (70 VAC), 416 ms  | A        |                              |
|                        |                       | Dip >95% (0 VAC), 4160 ms | B        |                              |
|                        | EN55024 (240 VAC)     | Dip >95% (0 VAC), 10.0 ms | A        |                              |
|                        |                       | Dip 30% (168 VAC), 500 ms | A        |                              |
|                        |                       | Dip >95% (0 VAC), 5000 ms | B        |                              |
|                        | EN60601-1-2 (100 VAC) | Dip 100% (0 VAC), 10.0 ms | A        |                              |
|                        |                       | Dip 100% (0 VAC), 20 ms   | A        |                              |
|                        |                       | Dip 60% (40 VAC), 100 ms  | B        | Performance criteria A <25 W |
|                        |                       | Dip 30% (70 VAC), 500 ms  | A        |                              |
|                        |                       | Dip 100% (0 VAC), 5000 ms | B        |                              |
|                        | EN60601-1-2 (240 VAC) | Dip 100% (0 VAC), 10.0 ms | A        |                              |
|                        |                       | Dip 100% (0 VAC), 20 ms   | A        |                              |
|                        |                       | Dip 60% (96 VAC), 100 ms  | A        |                              |
|                        |                       | Dip 30% (168 VAC), 500 ms | A        |                              |
|                        |                       | Dip 100% (0 VAC), 5000 ms | B        |                              |

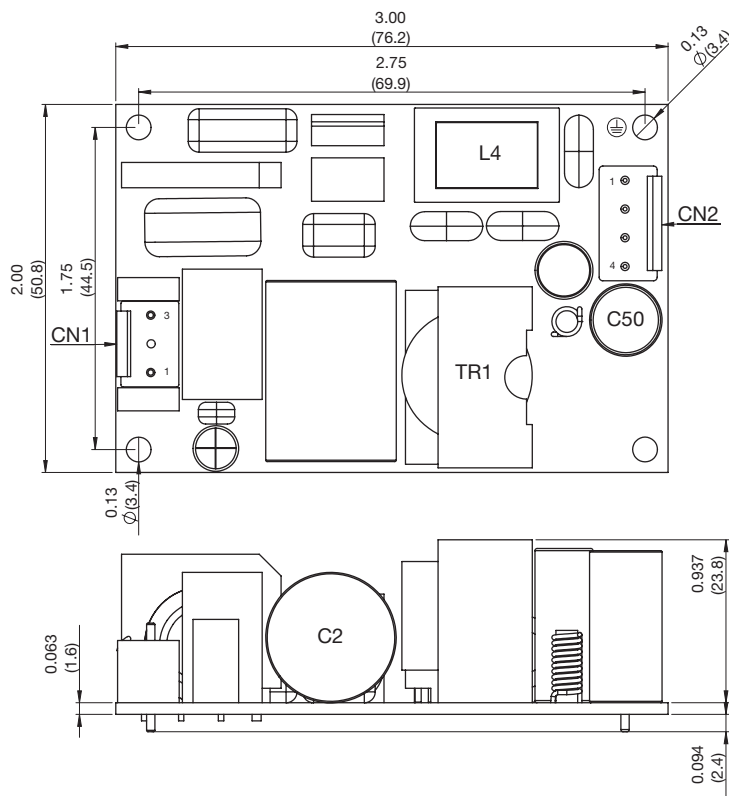
### Safety Approvals

| Safety Agency | Safety Standard                        | Notes & Conditions     |
|---------------|--|------------------------|
| CB Report     | IEC60950-1:2005                        | Information Technology |
| UL            | UL60950-1, CSA 22.2 No.60950-1-11 Ed 2 | Information Technology |
| TUV           | EN60950-1                              | Information Technology |
| CE            | LVD                                    |                        |

| Safety Agency | Safety Standard                               | Notes & Conditions |
|---------------|---|--------------------|
| CB Report     | IEC60601-1 Ed 3.1 Including Risk Management   | Medical            |
| UL            | ANSI/AAMI ES60601-1: & CSA C22.2 No.6061-1:08 | Medical            |
| CE            | EN60601-1                                     | Medical            |

| Isolation            | Safety Standard                        | Notes & Conditions |
|----------------------|--|--------------------|
| 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) |                    |

### 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  $\oplus$  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 shown in inches (mm).  
Tolerance:  $\pm 0.02$  (0.5)

2. Weight: 0.43 lbs (195 g) approx.

### 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              |
| C2  | 105°C              |
| C50   | 105°C              |

### Service Life

The estimated service life of the ECP130 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 key capacitors within the product when installed by the end application,

The graph below expresses the estimated lifetime based on the temperature of these key components based on the average temperature over the lifetime of the equipment.

#### Estimated Service Life vs Component Temperature

Figure 4

