

# 180 Watts

## ECP180 Series



GREEN XP POWER

- Low 1" Profile with 2" x 4" Footprint
- 120 W Convection / 180 W Forced-cooled
- High Efficiency – up to 95%
- Medical & ITE Approvals
- Built-in Fan Supply
- <0.5 W No Load Input Power
- 3 Year Warranty

### Specification

#### Input

|                       |                                                                                                          |
|-----------------------|----------------------------------------------------------------------------------------------------------|
| Input Voltage         | • 85-264 VAC, derate from 120 W at 100 VAC to 110 W at 90 VAC and 100 W at 85 VAC when convection cooled |
| Input Frequency       | • 47-63 Hz                                                                                               |
| Input Current         | • 1.8 A typical at 115 VAC, 0.9 A typical at 230 VAC                                                     |
| Inrush Current        | • 120 A max at 230 VAC, cold start at 25 °C                                                              |
| Power Factor          | • >0.95 at full load                                                                                     |
| Earth Leakage Current | • <230 $\mu$ A at 264 VAC, 60 Hz                                                                         |
| No Load Input Power   | • <0.5 W                                                                                                 |
| Input Protection      | • Internal T3.15A/250VAC fitted in line and neutral                                                      |

#### Output

|                          |                                                                                         |
|--------------------------|-----------------------------------------------------------------------------------------|
| Output Voltage           | • See tables                                                                            |
| Initial Set Accuracy     | • 1% at 50 % load                                                                       |
| Minimum Load             | • No minimum load requirement                                                           |
| Start Up Delay           | • 1 s max                                                                               |
| Start Up Rise Time       | • 55 ms typical                                                                         |
| Hold Up Time             | • 10 ms minimum at full load and 115 VAC<br>16 ms typical at 120 W                      |
| Line Regulation          | • $\pm 0.5\%$ max                                                                       |
| Load Regulation          | • $\pm 0.5\%$ max                                                                       |
| Transient Response       | • 4% maximum deviation, recovering to less than 1% within 500 $\mu$ s for 25% step load |
| Ripple & Noise           | • 1% max pk-pk, 20 MHz bandwidth, (see note 2)                                          |
| Overvoltage Protection   | • 110% - 140% of nominal voltage on main output. Recycle mains to reset.                |
| Overload Protection      | • 110-160%                                                                              |
| Short Circuit Protection | • Trip and restart (hiccup)                                                             |
| Thermal Protection       | • Measured internally. Auto resetting.                                                  |
| Temperature Coefficient  | • 0.02%/°C                                                                              |
| Fan Supply               | • 12 V at 500 mA                                                                        |

#### General

|                     |                                                                                          |
|---------------------|------------------------------------------------------------------------------------------|
| Efficiency          | • See table                                                                              |
| Isolation           | • 4000 VAC Input to Output<br>1500 VAC Input to Ground<br>1500 VAC Output to Ground      |
| Protection Level    | • Primary to Secondary: 2 MOPP<br>Primary to Earth: 1 MOPP<br>Secondary to Earth: 1 MOPP |
| Power Density       | • 15/22 W/in <sup>3</sup> convection/forced-cooled                                       |
| Switching Frequency | • PFC: 70-130 KHz, PWM: 50-90 KHz                                                        |
| MTBF                | • >300 kHrs to MIL-HDBK-217F at 25 °C, GB                                                |

#### Environmental

|                       |                                                                         |
|-----------------------|-------------------------------------------------------------------------|
| Operating Temperature | • -20 °C to +70 °C derate from 100% load at 50 °C to 50% load at 70 °C  |
| Cooling               | • Convection cooled: 120 W<br>Forced cooled: 180 W with 10 CFM          |
| Operating Humidity    | • 5% to 90% RH, non condensing                                          |
| Operating Altitude    | • 5000 m                                                                |
| Storage Temperature   | • -40 °C to +85 °C                                                      |
| Shock                 | • IEC68-2-27, 30 g, 11 ms half sine, 3 times in each of 6 axes          |
| Vibration             | • IEC68-2-6, 10-500 Hz, 2 g 10 mins / sweep. 60 mins for each of 3 axes |

#### EMC & Safety

|                      |                                                                                                                                                                                                                                                                          |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Emissions            | • EN55022/11, Level B conducted & Level A radiated                                                                                                                                                                                                                       |
| Harmonic Currents    | • EN61000-3-2 Class A                                                                                                                                                                                                                                                    |
| Voltage Flicker      | • EN61000-3-3                                                                                                                                                                                                                                                            |
| ESD Immunity         | • EN61000-4-2, $\pm 8$ kV air, $\pm 4$ kV contact, Perf Criteria A                                                                                                                                                                                                       |
| Radiated Immunity    | • EN61000-4-3, 3 V/m, Perf Criteria A                                                                                                                                                                                                                                    |
| EFT/Burst            | • EN61000-4-4, level 3, Perf Criteria A                                                                                                                                                                                                                                  |
| Surge                | • EN61000-4-5, installation class 3, Perf Criteria A                                                                                                                                                                                                                     |
| Conducted Immunity   | • EN61000-4-6, 3 V, Perf Criteria A                                                                                                                                                                                                                                      |
| Dips & Interruptions | • EN55024, 100% 10 ms, 30%, 500 ms, 100%, 5000 ms<br>Perf Criteria A, A, B for high line, A, B, B for low line at full load, EN60601-1-2, 30% 500 ms, 60% 100 ms, 100% 10 ms, 100% 5000 ms, Perf Criteria A, A, A, B for high line, A, B, A, B for low line at full load |
| Safety Approvals     | • UL60950-1, IEC60950-1, EN60950-1, ANSI/AAMI ES 60601-1, IEC60601-1, EN60601-1                                                                                                                                                                                          |

## Models and Ratings

ECP180 **XP**

| Output Voltage | Output Current    |                              | Ripple and Noise<br>pk-pk <sup>(2)</sup> | Fan Output | Efficiency <sup>(3)</sup> | Model Number <sup>(4)</sup> |
|----------------|-------------------|------------------------------|------------------------------------------|------------|---------------------------|-----------------------------|
|                | Convection-cooled | Forced-cooled <sup>(1)</sup> |                                          |            |                           |                             |
| 12.0 V         | 10.00 A           | 15.00 A                      | 120 mV                                   | 12 V/0.5 A | 92%                       | ECP180PS12                  |
| 15.0 V         | 8.00 A            | 12.00 A                      | 150 mV                                   | 12 V/0.5 A | 92%                       | ECP180PS15                  |
| 24.0 V         | 5.00 A            | 7.50 A                       | 240 mV                                   | 12 V/0.5 A | 93%                       | ECP180PS24                  |
| 28.0 V         | 4.30 A            | 6.43 A                       | 280 mV                                   | 12 V/0.5 A | 93%                       | ECP180PS28                  |
| 36.0 V         | 3.33 A            | 5.00 A                       | 360 mV                                   | 12 V/0.5 A | 94%                       | ECP180PS36                  |
| 48.0 V         | 2.50 A            | 3.75 A                       | 480 mV                                   | 12 V/0.5 A | 94%                       | ECP180PS48                  |

## Notes

1. Requires 10 CFM.

2. Measured with 20 MHz bandwidth and 10  $\mu$ F electrolytic capacitor in parallel with 0.1  $\mu$ F ceramic capacitor

3. Minimum average efficiencies measured at 25%, 50%, 75% &amp; 100% of 180 W load and 230 VAC input.

## 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

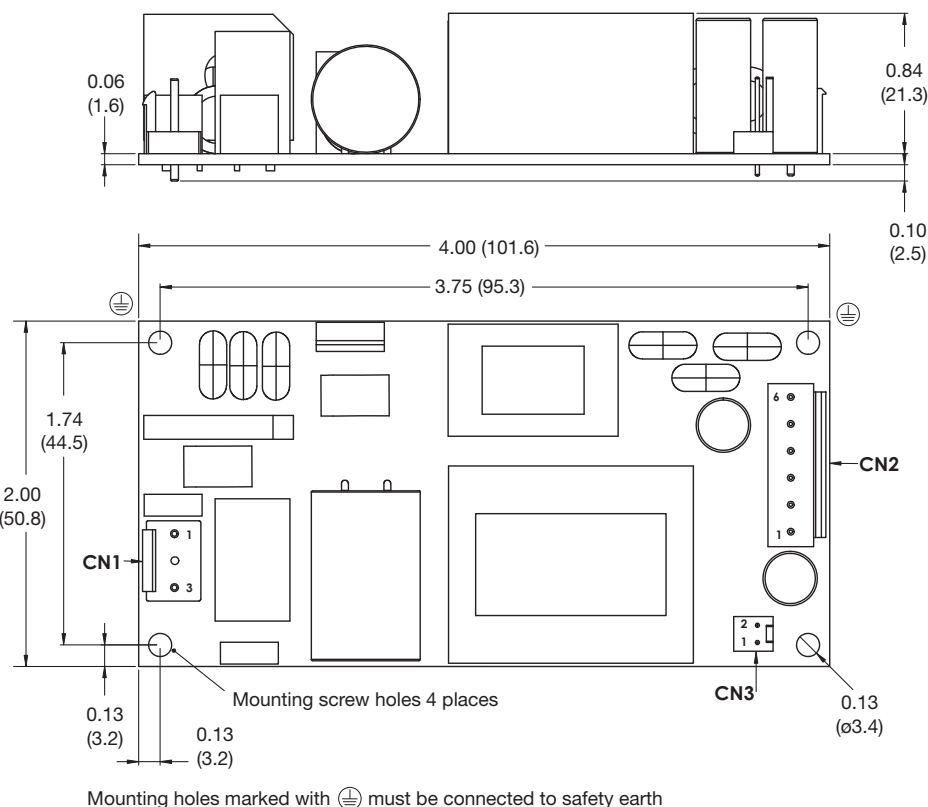
Mounting holes marked with  $\oplus$  must be connected to safety earth

| CN2 - Output Connector |       |
|------------------------|-------|
| Pin 1                  | -Vout |
| Pin 2                  | -Vout |
| Pin 3                  | -Vout |
| Pin 4                  | +Vout |
| Pin 5                  | +Vout |
| Pin 6                  | +Vout |

Mates with JST housing  
VHR-6N and JST Series  
SVH-21T-P1.1 crimp terminals

| CN3 - Fan Connector |       |
|---------------------|-------|
| Pin 1               | Fan - |
| Pin 2               | Fan + |

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



Mounting holes marked with  $\oplus$  must be connected to safety earth

## Notes

1. All dimensions shown in inches (mm).

Tolerance:  $\pm 0.02$  (0.5)

2. Weight: 0.51 lbs (230 g) approx.

## Derating Curve

