

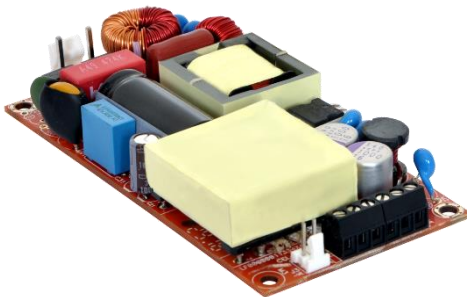
# ABC180 Series

## Ultra Low Profile Open Frame Power Supplies

The ABC180 Series of ultra low profile open frame power supplies feature a wide universal AC input range of 80 – 264 VAC, offering up to 180 W of output power with 13 CFM, or up to 120 W with convection cooling in a compact footprint, with a variety of isolated single output voltages.

The high efficiency and high power density of the ABC family ensures minimal power loss in end-use equipment, thereby facilitating higher reliability, easier thermal management and meets regulatory approvals for environmentally-friendly end products.

These power supplies are ideal for broad range of telecom, datacom, industrial equipment and other applications.



### Key Features & Benefits

- 4 x 2 x 0.75 Inches Form factor
- 180 Watts with Forced Air Cooling
- Efficiencies up to 92%
- -40 to 70°C degree operating temperature
- 12 V / 0.5 A Fan Output, Thermal Shut-Down feature
- 3.37 million Hours, Telcordia -SR332-issue 3 MTBF
- Standby Power < 0.5W

### Applications

- Instrumentation
- Lighting
- Industrial Applications
- Applied Computing
- Renewable Energy
- Test and Measurement
- Robotics
- Wireless Communication

## 1. MODEL SELECTION

| MODEL NUMBER   | CONNECTOR                                  | VOLTAGE | MAX. LOAD<br>(CONVECTION)<br>112.5 W @ 50°C | MAX. LOAD<br>(CONVECTION)<br>120 W @ 40°C | MAX. LOAD<br>(13 CFM) | MIN.<br>LOAD | RIPPLE &<br>NOISE¹ |
|----------------|--|---------|---|---|-----------------------|--------------|--------------------|
| ABC180-1T12L   | Screw Terminal                             | 12 V    | 9.37 A                                      | 10 A                                      | 15 A                  | 0.0 A        | 2%                 |
| ABC180-1012L   | Molex Connector                            |         |   |   |                       |              |                    |
| ABC180-1T15L   | Screw Terminal                             | 15 V    | 7.5 A                                       | 8 A                                       | 12 A                  | 0.0 A        | 2%                 |
| ABC180-1015L   | Molex Connector                            |         |   |   |                       |              |                    |
| ABC180-1T24L   | Screw Terminal                             | 24 V    | 4.68 A                                      | 5 A                                       | 7.5 A                 | 0.0 A        | 1%                 |
| ABC180-1024L   | Molex Connector                            |         |   |   |                       |              |                    |
| ABC180-1T30L   | Screw Terminal                             | 30 V    | 3.75 A                                      | 4 A                                       | 6 A                   | 0.0 A        | 1%                 |
| ABC180-1030L   | Molex Connector                            |         |   |   |                       |              |                    |
| ABC180-1T36    | Header Molex @ I/P<br>Screw Terminal @ O/P | 36 A    | 3.125                                       | 3.33 A                                    | 13 A                  | 0.0 A        | 1%                 |
| ABC180-1036    | Header Molex @ I/P<br>Header Molex @ O/P   |         |   |   |                       |              |                    |
| ABC180-1T48L   | Screw Terminal                             | 48 V    | 2.34 A                                      | 2.5 A                                     | 3.75 A                | 0.0 A        | 1%                 |
| ABC180-1048L   | Molex Connector                            |         |   |   |                       |              |                    |
| ABC180-1T58L   | Screw Terminal                             | 58 V    | 1.94 A                                      | 2.07 A                                    | 3.1 A                 | 0.0 A        | 1%                 |
| ABC180-1058L   | Molex Connector                            |         |   |   |                       |              |                    |
| COVER-180-XBC² | metal cover kit accessory                  |         |   |   |                       |              |                    |

## 2. INPUT SPECIFICATIONS

Specifications are for nominal input voltage, 25°C unless otherwise stated.

| PARAMETER           | DESCRIPTION / CONDITION  | SPECIFICATION                 |
|---------------------|--|-------------------------------|
| Input Voltage       | Universal<br>(Derate from 100% at 100 VAC to 77% at 80 VAC)                  | 80-264 VAC / 390 VDC          |
| Input Frequency     |  | 47-63 Hz                      |
| Input Current       | 115 VAC:<br>230 VAC:   | 2.2 A max.<br>1.1 A max.      |
| No Load Power       | Typical for ABC180-1XXX  | < 0.5 W                       |
| Inrush Current      | 115 VAC:<br>230 VAC:<br>264 VAC:   | 25 A<br>45 A<br>75 A          |
| Leakage Current     | Typical (N.A. For Class II Option- without input Earth pin)<br>Touch current | 300 µA<br>< 100 µA            |
| Power Factor        | 115 VAC:<br>230 VAC:   | > 0.95<br>0.90                |
| Switching Frequency | PFC<br>PWM   | 70 to 130 kHz<br>50 to 80 kHz |

<sup>1</sup> Ripple is peak to peak with 20 MHz bandwidth and 10 µF (Tantalum capacitor) in parallel with a 0.1 µF capacitor at rated line voltage and load ranges.

<sup>2</sup> When used in Cover Kit, de-rate output power to 70 % under all operating conditions.

### 3. OUTPUT SPECIFICATIONS

| PARAMETER                                | DESCRIPTION / CONDITION   | SPECIFICATION        |
|--|---|----------------------|
| Output Power <sup>3</sup>                | With 13 CFM forced air cooling<br>With natural convection cooling at 100 to 264 VAC | 180 W<br>up to 120 W |
| Efficiency (typical @ 230 VAC full load) | 48 V, 58 V:<br>24 V, 30 V:<br>12 V, 15 V:   | 92%<br>90%<br>88%    |
| Hold-up Time                             | At 180 W:<br>At 120 W:  | 10 ms<br>16 ms       |
| Line Regulation                          |   | +/-0.5%              |
| Load Regulation                          |   | +/-1%                |
| Transient Response                       | 25% step load change, at 0.1 A/ $\mu$ s slew rate,<br>50% duty cycle, 50 Hz = 4%    | recovery time < 5 ms |
| Voltage Adjustment <sup>4</sup>          |   | +/-3%                |
| Rise Time                                | Typical   | 55 ms                |
| Set Point Tolerance <sup>5</sup>         |   | +/-1%                |
| Over Current Protection                  |   | > 110%               |
| Over Voltage Protection                  |   | 110 to 140%          |
| Short Circuit Protection                 | Hiccup mode   |                      |

### 4. ENVIRONMENTAL SPECIFICATIONS

| PARAMETER                          | DESCRIPTION / CONDITION                 | SPECIFICATION              |
|------------------------------------|---|----------------------------|
| Operating Temperature <sup>6</sup> | Startup guaranteed with spec. deviation | -40 to +70°C<br>-40 to 0°C |
| Storage Temperature                |   | -40 to +85°C               |
| Relative Humidity                  | Non-condensing                          | 5% to 95%                  |
| Altitude                           | Operating:<br>Non-operating:            | 16,000 ft.<br>40,000 ft.   |
| MTBF                               | Telcordia -SR332-issue 3                | 3.37 million hours         |

### 5. EMC SPECIFICATIONS

| PARAMETER                          | DESCRIPTION / CONDITION  | SPECIFICATION        |
|------------------------------------|--|----------------------|
| Conducted Emissions                | EN55032-B, CISPR22-B, FCC PART15-B   | Pass                 |
| Radiated Emissions                 | EN 55032 A;<br>with external core (King core K5B RC 25x12x15-M in input cable) | Pass<br>Level B      |
| Input Current Harmonics            | EN 61000-3-2   | Class D              |
| Voltage Fluctuation and Flicker    | EN 61000-3-3   | Pass                 |
| ESD Immunity                       | EN 61000-4-2   | Level 3, Criterion A |
| Radiated Field Immunity            | EN 61000-4-3   | Level 3, Criterion A |
| Electrical Fast Transient Immunity | EN 61000-4-4   | Level 3, Criterion A |
| Surge Immunity                     | EN 61000-4-5   | Level 3, Criterion A |
| Conducted Immunity                 | EN 61000-4-6   | Level 3, Criterion A |
| Magnetic Field Immunity            | EN 61000-4-8   | Level 3, Criterion A |
| Voltage Dips, Interruptions        | EN 61000-4-11  | Criterion A & B      |

<sup>3</sup> Combined output power of main output, fan supply shall not exceed max. Power rating.

<sup>4</sup> Adjustment potentiometer is located on the SMT side of the PCB.

<sup>5</sup> Fan supply output voltage tolerance including set point accuracy, line & load regulation is +/-10% and Ripple & noise is less than 10%.

<sup>6</sup> Output ripple can be more than 10% of the output voltage.

## 6. SAFETY SPECIFICATIONS

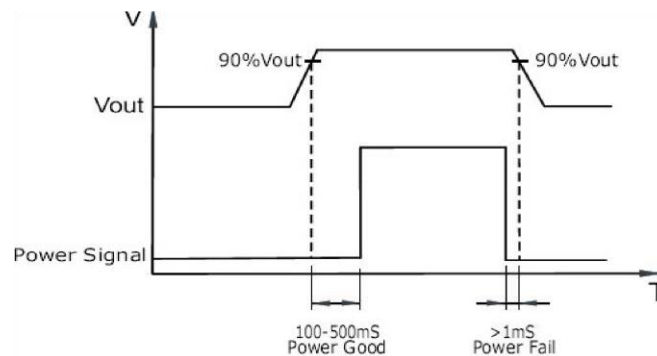
| PARAMETER          | DESCRIPTION / CONDITION   | SPECIFICATION        |
|--------------------|---|----------------------|
| Isolation Voltage  | Input to Output: (for ITE applications)<br>Input to GND: (Not Applicable for Class II Option*)                  | 3000 VAC<br>1500 VAC |
| Safety Standard(s) | Approved to the latest edition of the following standards: CSA/UL60950-1, EN60950-1 and IEC60950-1. Class1 SELV |                      |
| Agency Approvals   | Nemko, UL, C-UL   |                      |
| CE mark            | Complies with LVD Directive   |                      |

\* Class II Option means without input Earth pin.

## 7. CONNECTOR & PIN DESCRIPTION

| CONNECTOR                  | PIN | DESCRIPTION / CONDITION                                | MANUFACTURER / PN   |
|----------------------------|-----|--|---|
| AC Input Connector         | J1  | Pin 1 AC Line<br>Pin 2 Not Fitted<br>Pin 3 AC Neutral* | Molex: 26-60-4030<br>Mating: 09-50-3031; Pins: 08-50-0106   |
| DC Output Connector        | J2  | Pin 1, 2, 3 V1 +VE<br>Pin 4, 5, 6 V1 -VE               | Option 1 (Screw Terminal): Molex: 39357 Series or equivalent<br>Option 2 (Molex Connector): Molex: 26-60-4060<br>Mating: 09-50-3061; Pins: 08-50-0106 |
| Aux (Fan) Output           | J3  | Pin 1 FAN +VE<br>Pin 2 FAN -VE                         | AMP: 640456-2<br>Mating: 640440-2   |
| Signal Output <sup>7</sup> | J4  | Pin 1 Vs<br>Pin 2<br>Pin 3 GDN                         | AMP :640456-3<br>Mating: 640440-3   |

\*Fusing on neutral for ITE model is optional.



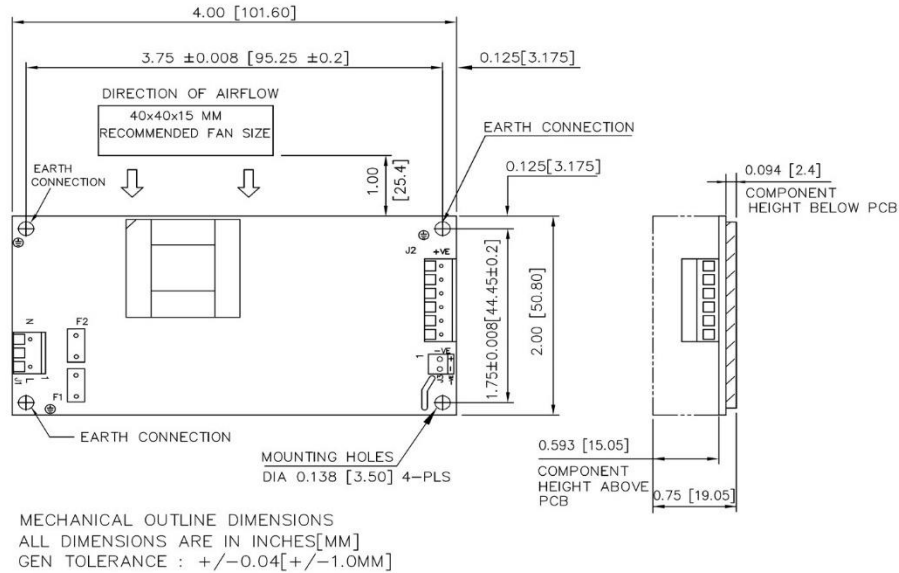
Power good / AC fail signal specs

## 8. MECHANICAL SPECIFICATIONS

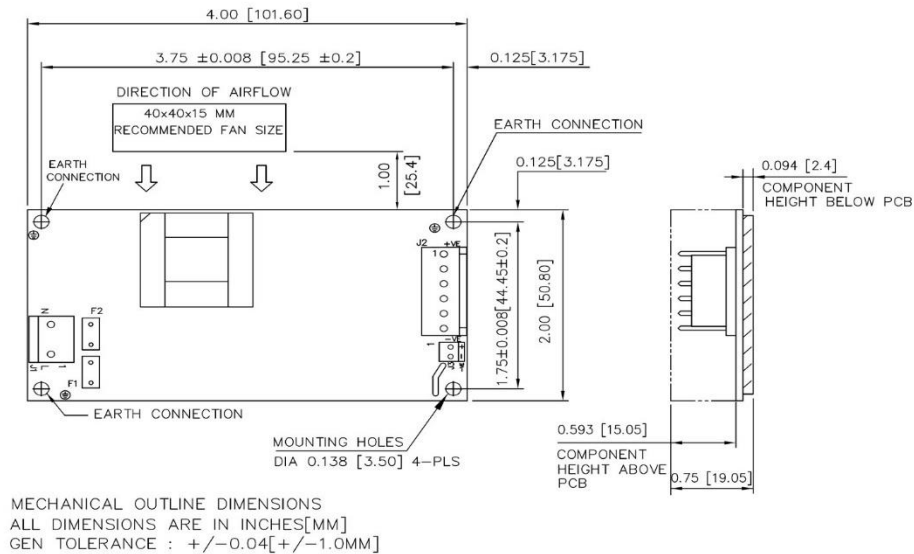
| PARAMETER            | DESCRIPTION / CONDITION   |
|----------------------|---|
| Weight               | approx. 200 g   |
| Dimensions           | 101.6 x 50.8 x 19.05 mm (4 x 2 x 0.75 inches)   |
| Cooling <sup>8</sup> | 180 W with 13 CFM forced air cooling (refer to Mechanical Drawing)<br>Up to 120 W with natural convection cooling (refer to Derating Curve) |

<sup>7</sup> A TTL signal is available at pin 2 of J4 which goes high 100-500mS after output voltage reaches 90% of set value. It goes low a minimum of 1 ms before output falls below 90% of the set value, when input AC is switched off.

<sup>8</sup> 180 W with 13CFM forced air cooling and 120 W with natural convection cooling at 100 to 264 VAC.



*Mechanical Drawing – Option 1*

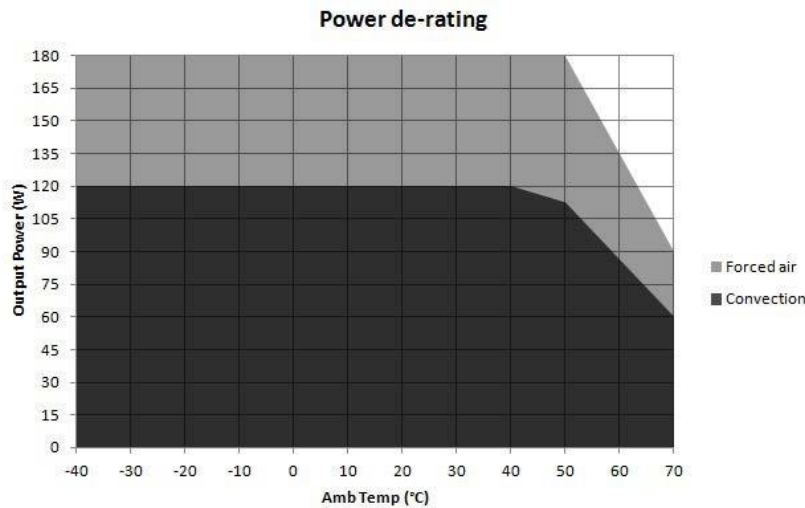


*Mechanical Drawing – Option 2*

**NOTES:** In case the PCB is mounted in a metal enclosure, using metal hardware ensure the following:

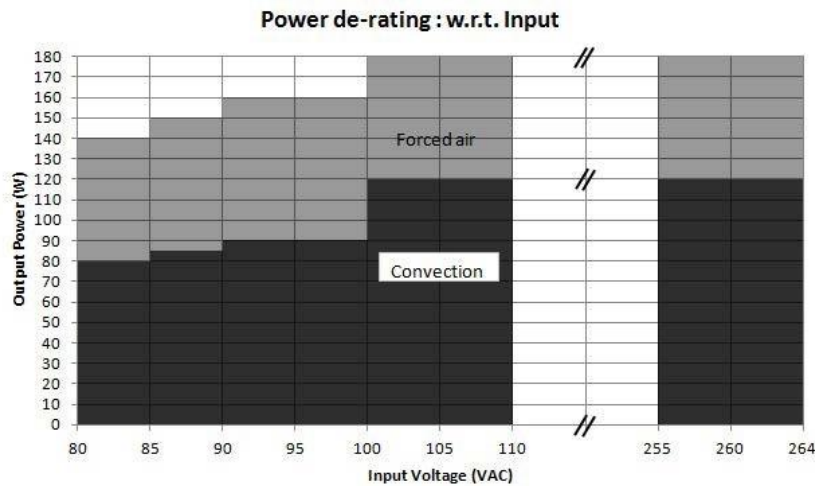
- 1 Stand off, used to mount PCB has OD of 5.4 mm max.
- 2 Screws, used to fix PCB on stand off, have head dia of 6.0 mm max.
- 3 Washer, if used, to have dia of 6.5 mm max.

## DERATING CURVES



Convection load: 120 W up to 40 °C  
 De-rate between 40-50 °C @ 0.625% per °C  
 De-rate above 50 °C @ 2.33% per °C

Forced air cooled load: 180 W up to 50°C  
 De-rate above 50 °C @ 2.5% per °C



**For more information on these products consult: [tech.support@psbel.com](mailto:tech.support@psbel.com)**

**NUCLEAR AND MEDICAL APPLICATIONS** - Products are not designed or intended for use as critical components in life support systems, equipment used in hazardous environments, or nuclear control systems.

**TECHNICAL REVISIONS** - The appearance of products, including safety agency certifications pictured on labels, may change depending on the date manufactured. Specifications are subject to change without notice.