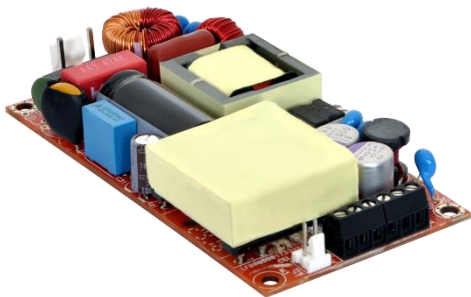


# ABC180 Series

## Ultra-Low Profile Open Frame Power Supplies

Not For New Design  
Please refer to exact equivalent product series  
**ULP180**



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 Inch Form Factor
- 180 Watts with Forced Air Cooling
- Efficiencies up to 92%
- -40 to 70 °C Operating Temperature
- IEC / EN / UL 62368-1 Compliant
- 12 V / 0.5 A Fan Output
- Thermal Shut-Down Feature
- 3.37 million hours, Telcordia -SR332-issue 3 MTBF
- No Load Power < 0.5 W

### Applications

- Instrumentation
- Lighting
- Industrial Applications
- Renewable Energy
- Test and Measurement
- Robotics



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## 1. MODEL SELECTION

| MODEL NUMBER <sup>1</sup>  | OUTPUT CONNECTOR            | VOLTAGE | MAX. LOAD                    |                            |                   | POWER |
|----------------------------|-----------------------------|---------|------------------------------|----------------------------|-------------------|-------|
|                            |                             |         | CONVECTION 50°C<br>(112.5 W) | CONVECTION 40°C<br>(120 W) | 13 CFM<br>(180 W) |       |
| ABC180-1T12L               | Screw Terminal              | 12 V    | 9.37 A                       | 10 A                       | 15 A              | 180 W |
| ABC180-1012L               | Header Molex Connector      |         |                              |                            |                   |       |
| ABC180-1T15L               | Screw Terminal              | 15 V    | 7.5 A                        | 8 A                        | 12 A              | 180 W |
| ABC180-1015L               | Header Molex Connector      |         |                              |                            |                   |       |
| ABC180-1T24L               | Screw Terminal              | 24 V    | 4.68 A                       | 5 A                        | 7.5 A             | 180 W |
| ABC180-1024L               | Header Molex Connector      |         |                              |                            |                   |       |
| ABC180-1T30L               | Screw Terminal              | 30 V    | 3.75 A                       | 4 A                        | 6 A               | 180 W |
| ABC180-1030L               | Header Molex Connector      |         |                              |                            |                   |       |
| ABC180-1T48L               | Screw Terminal              | 48 V    | 2.34 A                       | 2.5 A                      | 3.75 A            | 180 W |
| ABC180-1048L               | Header Molex Connector      |         |                              |                            |                   |       |
| ABC180-1T58L               | Screw Terminal              | 58 V    | 1.94 A                       | 2.07 A                     | 3.1 A             | 180 W |
| ABC180-1058L               | Header Molex Connector      |         |                              |                            |                   |       |
| COVER-180-XBC <sup>2</sup> | Metal Cover Kit (accessory) |         |                              |                            |                   |       |

<sup>1</sup> Class II version available. Add suffix "-2" at the end of the Model Number

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

## 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                                                     | < 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)<br>Touch current          | 300 µA<br>< 100 µA          |
| Switching Frequency | PFC<br>PWM                                                  | 70 – 130 kHz<br>50 – 80 kHz |

### 3. OUTPUT SPECIFICATIONS

| PARAMETER                              | DESCRIPTION / CONDITION                                                                                                       | SPECIFICATION            |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| Output Voltage                         | Refer to Model selection table                                                                                                | From 12 V to 58 V        |
| Output Power <sup>3</sup>              | 13 CFM (forced air cooling)<br>Convection (natural cooling)                                                                   | 180 W<br>up to 120 W     |
| Efficiency                             | 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           |
| Power Factor                           | 115 VAC:<br>230 VAC:                                                                                                          | > 0.95<br>0.90           |
| Line Regulation <sup>4</sup>           |                                                                                                                               | ± 0.5%                   |
| Load Regulation <sup>4</sup>           |                                                                                                                               | ± 1%                     |
| Minimum Load                           |                                                                                                                               | 0.0 A                    |
| 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     |
| Ripple <sup>4,5</sup>                  | 24, 30, 48 & 58 V outputs<br>12 V & 15 V outputs                                                                              | 1.0 % max.<br>2.0 % max. |
| Output Voltage Adjustment <sup>6</sup> |                                                                                                                               | ± 3%                     |
| Rise Time                              | Typical                                                                                                                       | 55 ms                    |
| Set Point Tolerance <sup>4</sup>       |                                                                                                                               | ± 1%                     |
| Over Current Protection                |                                                                                                                               | > 110%                   |
| Over Voltage Protection                |                                                                                                                               | 110 to 140%              |
| Short Circuit Protection               | Hiccup mode                                                                                                                   |                          |
| Cooling                                | With 13 CFM forced air cooling (100 to 264 VAC) <sup>7</sup><br>With natural convection cooling (100 to 264 VAC) <sup>8</sup> | 180 W<br>Up to 120 W     |

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

<sup>4</sup> Fan supply output voltage tolerance including set point accuracy, line and load regulation is ± 10% and ripple and noise is less than 10%.

<sup>5</sup> Ripple is peak to peak with 20 MHz bandwidth and 10  $\mu$ F (Electrolytic capacitor) in parallel with a 0.1  $\mu$ F capacitor at rated line voltage and load ranges.

<sup>6</sup> Adjustment potentiometer is located on the SMT side of the PCB

<sup>7</sup> Refer to Mechanical Drawing

<sup>8</sup> Refer to Derating Curve

### 4. EMC SPECIFICATIONS

| PARAMETER                          | DESCRIPTION / CONDITION                                                       | SPECIFICATION        |
|------------------------------------|-------------------------------------------------------------------------------|----------------------|
| Conducted Emissions                | EN 55032-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      |

## 5. SAFETY SPECIFICATIONS

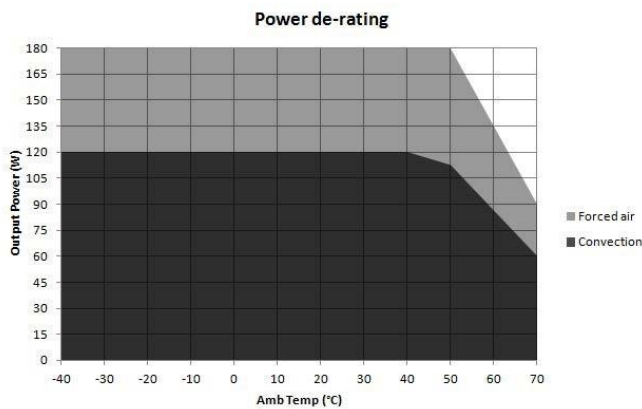
| PARAMETER          | DESCRIPTION / CONDITION                                                                       | SPECIFICATION        |
|--------------------|-----------------------------------------------------------------------------------------------|----------------------|
| Isolation Voltage  | Input to Output: (for ITE applications)<br>Input to GND: (Not Applicable for Class II Option) | 4000 VDC<br>2500 VDC |
| Safety Standard(s) | EN / IEC / UL 62368-1(Ed .3)                                                                  |                      |
| Agency Approvals   | Nemko, UL, C-UL                                                                               |                      |
| CE mark            | Complies with LVD Directive                                                                   |                      |

## 6. ENVIRONMENTAL SPECIFICATIONS

| PARAMETER             | DESCRIPTION / CONDITION                                         | SPECIFICATION            |
|-----------------------|-----------------------------------------------------------------|--------------------------|
| Operating Temperature | -40 to 0°C startup guaranteed, with spec deviation <sup>9</sup> | -40 to +70°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       |

<sup>9</sup> Output ripple can be more than 10% of the output voltage.

## 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

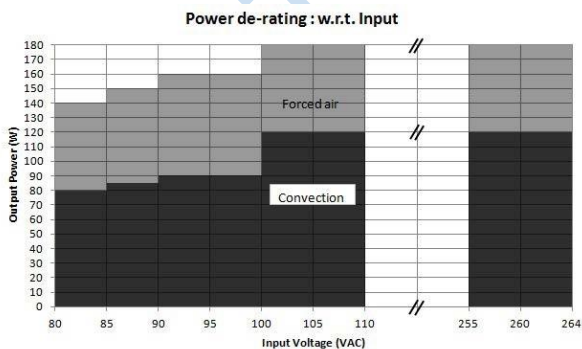


Figure 1. Power Derating Curves

## 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 <sup>10</sup> | 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                                                                                                                     |

<sup>10</sup> Fusing on neutral for ITE model is optional.

## 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 in) |

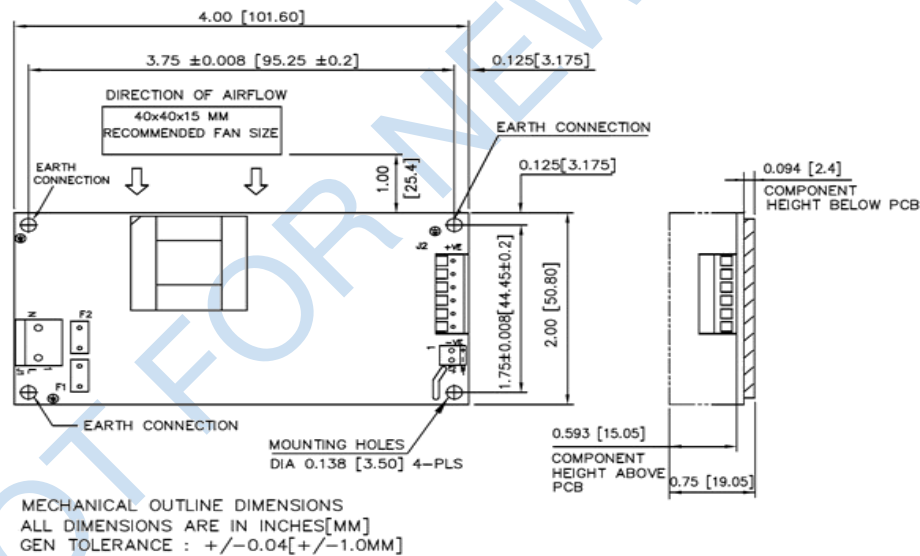


Figure 2. Mechanical Drawing – Option 1 (Output Connector – Screw Terminal)

**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.

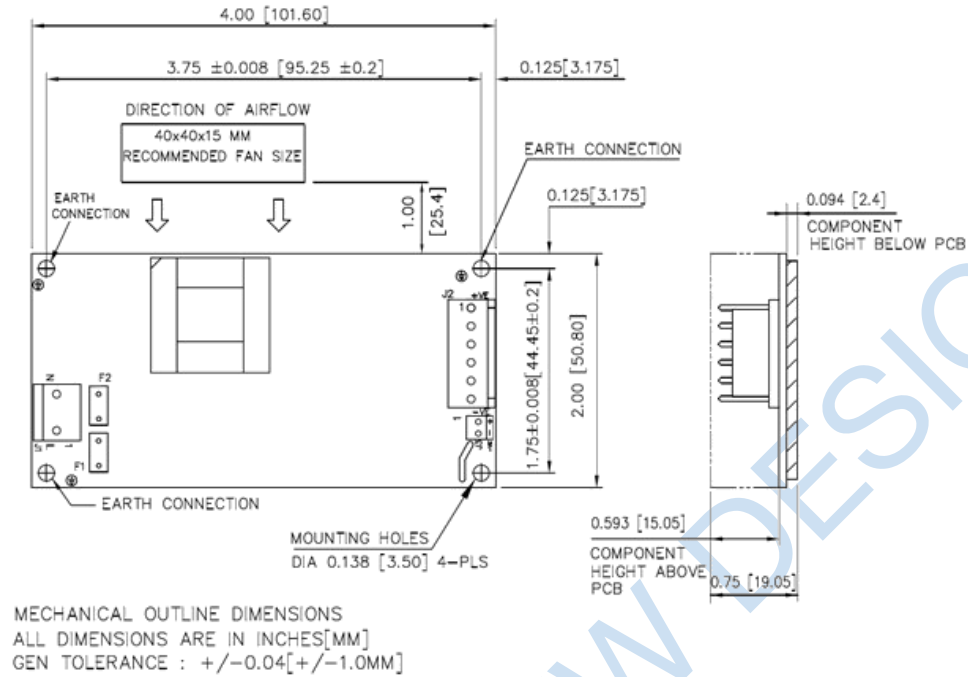
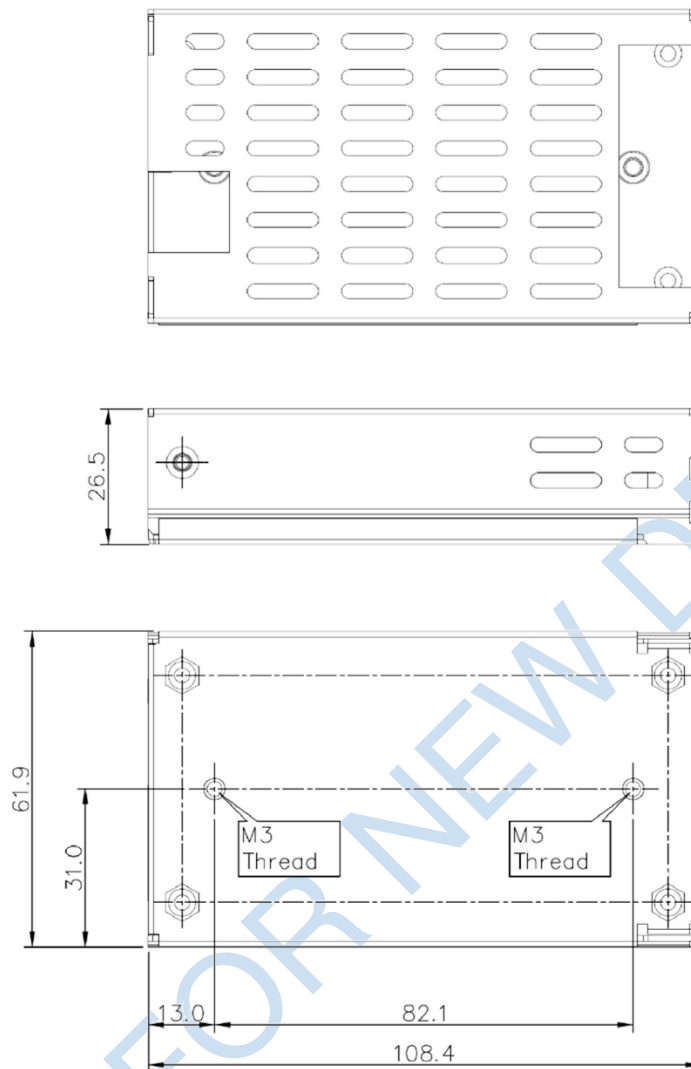


Figure 3. Mechanical Drawing – Option 2 (Output Connector – Header Molex)

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

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



**MECHANICAL OUTLINE DIMENSIONS**  
**ALL DIMENSIONS ARE IN MM.**  
**GEN. TOLERANCE:  $\pm 1.0$  mm**

*Figure 4. Mechanical Drawing – Cover Kit Option*

**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.

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