

# ABC120 Series

## Low Profile Open Frame Power Supplies

The ABC120 Series of open frame power supplies feature a wide universal AC input range of 85 V – 264 VAC, offering 120 W of output power 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.

ABC Series power supplies are ideal for telecom, datacom, industrial equipment and other applications.



### Key Features & Benefits

- 3 x 2 x 1 Inch Footprint
- 120 Watts with Forced Air Cooling
- Efficiencies up to 93%
- -40 to 70°C Operating Temperature (85°C operating temperature available on request)
- Thermal Shut-Down Feature
- IEC/EN/UL 62368-1 Certified
- CCC (China Compulsory Certification approval)
- 3.00 Million Hours, Telcordia -SR332-Issue 3
- No Load Power < 0.3 W
- RoHS Compliant

### Applications

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

## 1. MODEL SELECTION

| MODEL NUMBER <sup>1</sup>    | DESCRIPTION                    | VOLTAGE | MAX. LOAD  |         | POWER |
|------------------------------|--------------------------------|---------|------------|---------|-------|
|                              |                                |         | CONVECTION | 300 LFM |       |
| ABC120-1T12L<br>ABC120-1012L | Screw Terminal<br>Molex Header | 12 V    | 8.33 A     | 10.0 A  | 120 W |
| ABC120-1T15L<br>ABC120-1015L | Screw Terminal<br>Molex Header | 15 V    | 6.66 A     | 8.0 A   | 120 W |
| ABC120-1T24L<br>ABC120-1024L | Screw Terminal<br>Molex Header | 24 V    | 4.16 A     | 5.0 A   | 120 W |
| ABC120-1T30L<br>ABC120-1030L | Screw Terminal<br>Molex Header | 30 V    | 3.33 A     | 4.0 A   | 120 W |
| ABC120-1T48L<br>ABC120-1048L | Screw Terminal<br>Molex Header | 48 V    | 2.08 A     | 2.5 A   | 120 W |
| ABC120-1T58L<br>ABC120-1058L | Screw Terminal<br>Molex Header | 58 V    | 1.72 A     | 2.07 A  | 120 W |
| COVER-120-XBC <sup>2</sup>   | Metal cover kit accessory      |         |            |         |       |

<sup>1</sup> For Class II version contact Bel sales representative.

<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 (see derating under output power) | 85 – 264 VAC / 390 VDC <sup>3</sup> |
| Input Frequency     |                                             | 47 – 63 Hz                          |
| Input Current       | 115 VAC:<br>230 VAC:                        | 1.2 A max.<br>0.65 A max.           |
| No Load Power       | Typical                                     | < 0.3 W                             |
| Inrush Current      | 115 VAC:<br>230 VAC:<br>264 VAC:            | 25 A<br>45 A<br>75 A                |
| Power Factor        | With full load, active PFC                  | > 0.95                              |
| Switching Frequency | Typical                                     | 60 kHz                              |

<sup>3</sup> Functional, not approved.

### 3. OUTPUT SPECIFICATIONS

| PARAMETER                 | DESCRIPTION / CONDITION                                                                                                              | SPECIFICATION              |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| Output Voltage            | Refer to Model selection table                                                                                                       | From 12 V to 58 V          |
| Output Power              | Forced cooling (with 300 LFM) <sup>4</sup><br>Convection cooling for input 100 – 264 VAC:<br>(de-rate linearly to 80 W @ 85 VAC)     | 120 W<br>100 W             |
| Efficiency                | 48 V, 58 V:<br>24 V, 30 V:<br>12 V, 15 V:                                                                                            | 93%<br>91%<br>90%          |
| Hold-up Time              | Typical                                                                                                                              | >10 ms                     |
| Line Regulation           |                                                                                                                                      | +/-0.5%                    |
| Load Regulation           |                                                                                                                                      | +/-1%                      |
| Minimum Load              |                                                                                                                                      | 0.0 A                      |
| Transient Response        | 25% step load change, at 0.1A/uS slew rate,<br>50% duty cycle, 50 Hz = 4%                                                            | recovery time < 5 ms       |
| Ripple <sup>5</sup>       | For all outputs                                                                                                                      | 1.0 % max.                 |
| Output Voltage Adjustment |                                                                                                                                      | +/-3%                      |
| Rise Time                 | Typical                                                                                                                              | 55 ms                      |
| Set Point Tolerance       |                                                                                                                                      | +/-1%                      |
| Over Current Protection   |                                                                                                                                      | > 110%                     |
| Over Voltage Protection   | Latch type (AC recycling required)                                                                                                   | 110 to 140%                |
| Short Circuit Protection  | Hiccup mode                                                                                                                          |                            |
| Cooling                   | With 300 LFM Forced cooling <sup>4</sup><br>With Convection cooling (for input 100 – 264 VAC)<br>(de-rate linearly to 80 W @ 85 VAC) | up to 120 W<br>up to 100 W |

<sup>4</sup> Refer to Mechanical Drawing

<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.

### 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

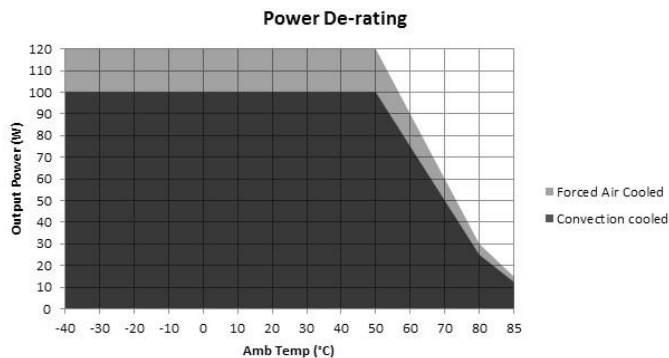
| PARAMETER          | DESCRIPTION / CONDITION                                                                                                             | SPECIFICATION        |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| Isolation Voltage  | Input to Output: (For ITE application)<br>Input to GND:                                                                             | 3000 VAC<br>1500 VAC |
| Safety Standard(s) | IEC 62368-1:2018, EN 62368-1:2014; A11,<br>UL 62368-1 and CAN/CSA C22.2 No. 62368-1:19 GB17625.1-2012; GB4943.1-2011; GB/T9254-2008 |                      |
| Agency Approvals   | Nemko, UL, C-UL, CCC                                                                                                                |                      |
| CE mark            | Complies with LVD Directive                                                                                                         |                      |

## 6. ENVIRONMENTAL SPECIFICATIONS

| PARAMETER                          | DESCRIPTION / CONDITION                                         | SPECIFICATION           |
|------------------------------------|-----------------------------------------------------------------|-------------------------|
| Operating Temperature <sup>6</sup> | -40 to 0°C startup guaranteed, with spec deviation <sup>7</sup> | -40 to +70°C            |
| Storage Temperature                |                                                                 | -40 to +85°C            |
| Relative Humidity                  | Noncondensing                                                   | 5% to 95%               |
| Altitude                           | Operating:<br>Non-operating:                                    | 16,000 ft<br>40,000 ft. |
| Reliability                        | MTBF according to Telcordia -SR332-Issue 3                      | 3.00 million hours      |

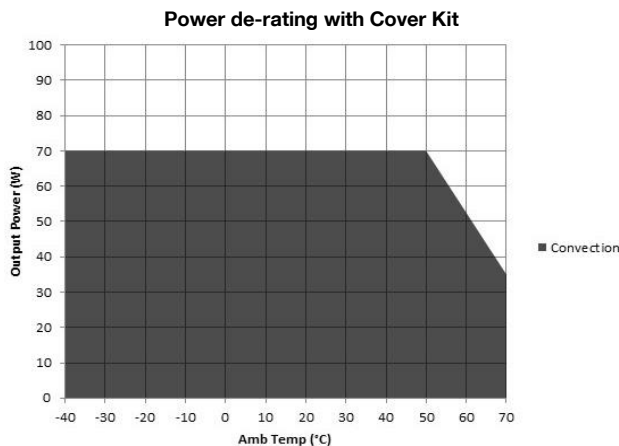
<sup>6</sup> 85°C operating temperature available on request

<sup>7</sup> Output ripple can be more than 10% of the output voltage.



Convection load: 100 W up to 50 °C  
De-rate above 50 °C @ 2.5% per °C  
Up to 85°C operating temperature

Forced air cooled load: 120 W up to 50°C  
De-rate above 50 °C @ 2.5% per °C  
Up to 85°C operating temperature



Convection load: 70W up to 50 °C  
De-rate above 50 °C @ 2.5% per °C

Figure 1. Derating Curves

## 7. CONNECTOR & PIN DESCRIPTIONS

| CONNECTOR           | PIN | DESCRIPTION / CONDITION |            | MANUFACTURER / PN         |                                                                                                                    |
|---------------------|-----|-------------------------|------------|---------------------------|--------------------------------------------------------------------------------------------------------------------|
| AC Input Connector  | J1  | Pin 1                   | AC Line    | Screw Terminal (Option 1) | Molex: 39357-0003                                                                                                  |
|                     |     | Pin 2                   | Not Fitted | Molex Header (Option 2)   | Tyco-2-1776112-3                                                                                                   |
|                     |     | Pin 3                   | AC Neutral |                           | Molex: 1722861103<br>(Mating conn: Molex 1722561003,<br>Molex 1722561103,<br>Molex 1722563103)                     |
| DC Output Connector | J2  | Pin 1, 2                | V1 -VE     | Screw Terminal (Option 1) | Molex: 39357-0004                                                                                                  |
|                     |     | Pin 3, 4                | V1 +VE     | Molex Header (Option 2)   | Tyco-2-1776112-4<br>Molex: 1722861104<br>(Mating conn: Molex 1722561004,<br>Molex 1722561104,<br>Molex 1722563104) |

## 8. MECHANICAL SPECIFICATIONS

| PARAMETER  | DESCRIPTION / CONDITION                   |
|------------|-------------------------------------------|
| Weight     | 200 g max.                                |
| Dimensions | 76.2 x 50.8 x 30.1 mm (3 x 2 x 1.18 inch) |

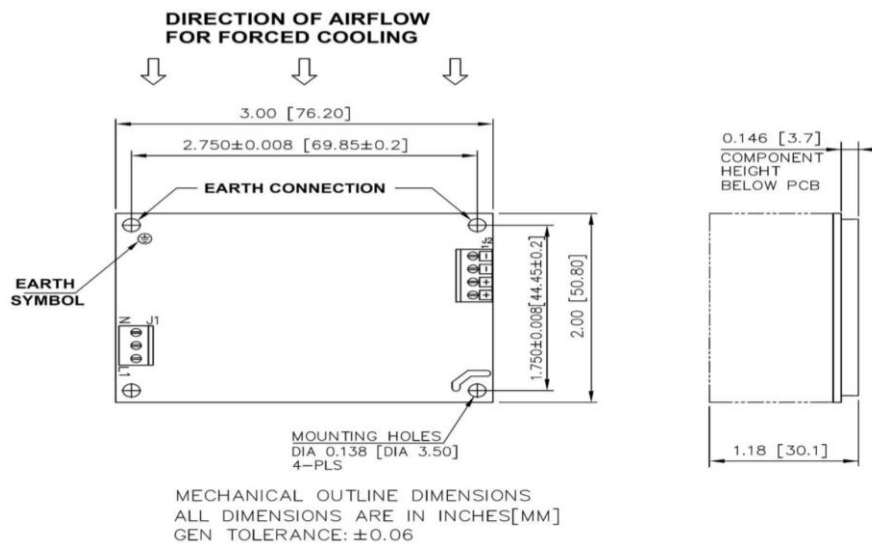


Figure 2. Mechanical Drawing - Screw Terminal (Option 1)

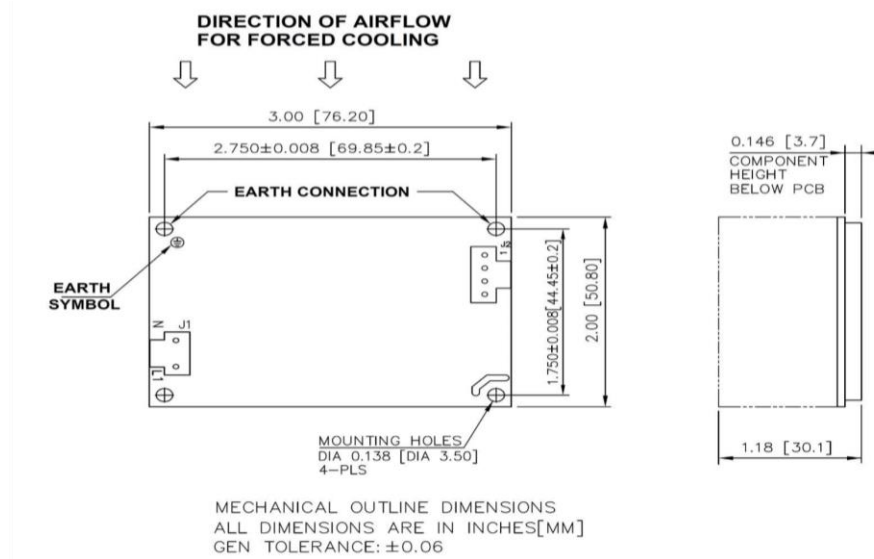


Figure 3 - Mechanical Drawing - Molex Header (Option 2)

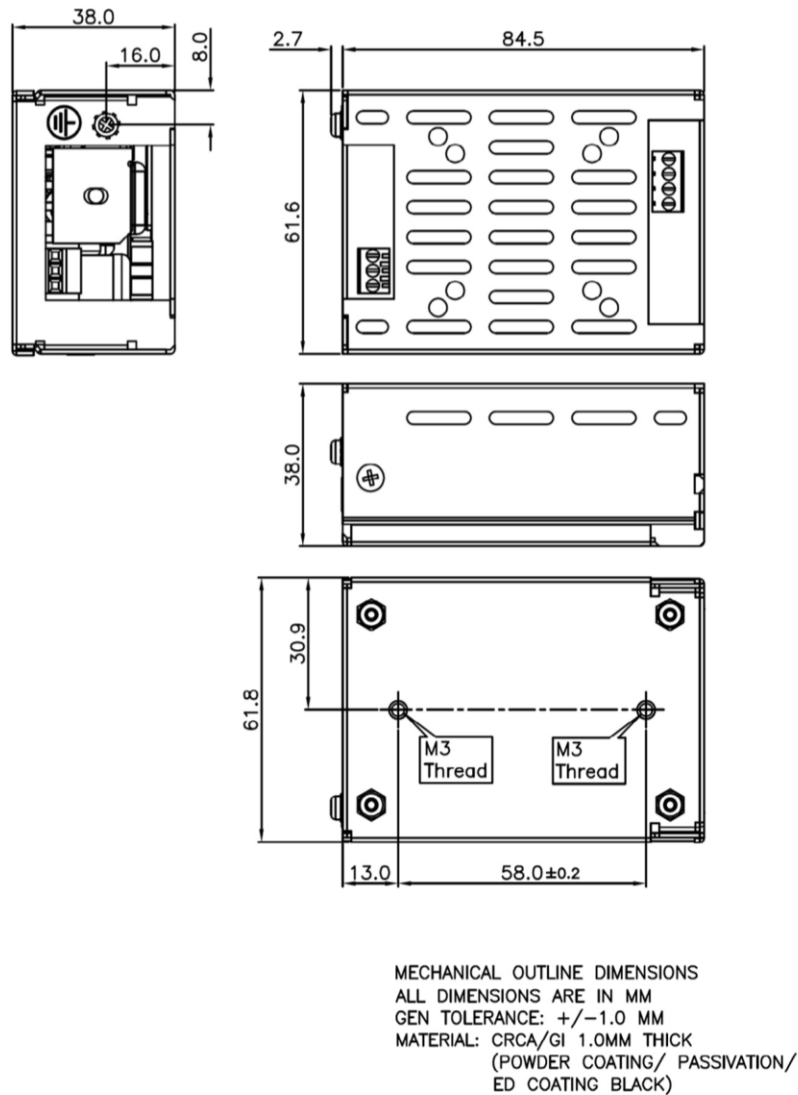


Figure 4 - Mechanical Drawing - With Cover Kit

**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.

**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.