

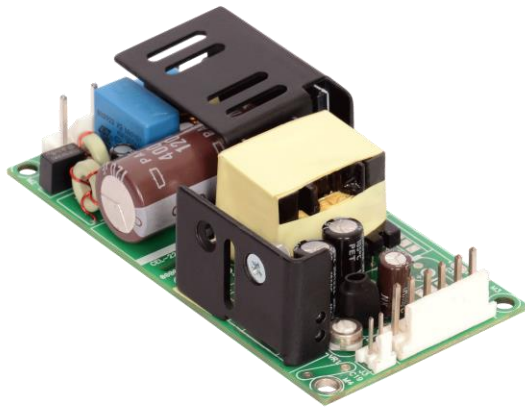
# ABC60 Series

## AC-DC Open Frame Power Supplies

The ABC60 Series of AC-DC open-frame power supplies, with its wide universal 90-264 VAC input range and high power density, is available at 60 W of output power and a variety of single and multiple 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 telecom, datacom, industrial equipment and other applications.



### Key Features & Benefits

- 4 x 2 x 1.2 Inch Form Factor (101.6 x 50.8 x 30.48 mm)
- 50 - 65 W Convection Cooled
- Single to Triple Outputs
- High Efficiency > 85%
- No Load Power < 0.3 W
- IEC Protection Class Options:
  - Class I: Earth pin J4 (no suffix)
  - Class II: No Earth pin (-2 suffix)
- Conducted EMI EN 55022-B, FCC Part 15 Level B
- IEC / EN / UL 62368-1 Compliant
- RoHS Compliant
- Cover Kit Accessory Available

### Applications

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

## 1. MODEL SELECTION

| MODEL <sup>1</sup>        | VOLTAGE                   | MAX LOAD <sup>2</sup> | MIN LOAD <sup>3</sup> | RIPPLE <sup>4</sup> | POWER |
|---------------------------|---------------------------|-----------------------|-----------------------|---------------------|-------|
| ABC60-1005G               | 5.0 V                     | 10.0 A                | 0.0 A                 | 1.5%                | 50 W  |
| ABC60-1012G               | 12 V                      | 5.42 A                | 0.0 A                 | 1%                  | 65 W  |
| ABC60-1015G               | 15 V                      | 4.33 A                | 0.0 A                 | 1%                  | 65 W  |
| ABC60-1024G               | 24 V                      | 2.71 A                | 0.0 A                 | 1%                  | 65 W  |
| ABC60-1048G               | 48 V                      | 1.35 A                | 0.0 A                 | 1%                  | 65 W  |
| ABC60-3000G               | V <sub>1</sub> = 5.2 V    | 8.0 A                 | 0.5 A                 | 1.5%                | 60 W  |
|                           | V <sub>2</sub> = 12.5 V   | 3.0 A                 | 0.1 A                 | 1%                  |       |
|                           | V <sub>3</sub> = -12.8 V  | 0.5 A                 | 0.0 A                 | 1%                  |       |
| ABC60-3001G               | V <sub>1</sub> = 5.2 V    | 8.0 A                 | 0.5 A                 | 1.5%                | 60 W  |
|                           | V <sub>2</sub> = 24 V     | 1.5 A                 | 0.1 A                 | 1%                  |       |
|                           | V <sub>3</sub> = -12.8 V  | 0.5 A                 | 0.0 A                 | 1%                  |       |
| ABC60-3002G               | V <sub>1</sub> = 5.2 V    | 8.0 A                 | 0.5 A                 | 1.5%                | 60 W  |
|                           | V <sub>2</sub> = 15 V     | 2.5 A                 | 0.1 A                 | 1%                  |       |
|                           | V <sub>3</sub> = -15 V    | 0.5 A                 | 0.0 A                 | 1%                  |       |
| ABC60-3003G               | V <sub>1</sub> = 3.3 V    | 6.0 A                 | 1.0 A                 | 1.5%                | 45 W  |
|                           | V <sub>2</sub> = 5 V      | 3.0 A                 | 0.1 A                 | 1%                  |       |
|                           | V <sub>3</sub> = -12.8 V  | 0.5 A                 | 0.0 A                 | 1%                  |       |
| COVER-60-XBC <sup>5</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> Maximum current per output channel. Do not exceed total output power rating.

<sup>3</sup> Min Load specified to meet cross regulation.

<sup>4</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>5</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               | 90 - 264 VAC   |
| Input Frequency <sup>6</sup> |                         | 47 to 400 Hz   |
| Input Current                | 120 VAC:                | 1.5 A max.     |
|                              | 230 VAC:                | 0.75 A max.    |
| No Load Power                | Single output models    | < 0.3 W        |
|                              | Multi output models     | < 0.5 W        |
| Inrush Current               | 120 VAC:                | 30 A max.      |
|                              | 230 VAC:                | 60 A max.      |
| Leakage Current              | 120 VAC:                | < 500 $\mu$ A  |
|                              | 230 VAC:                | < 1000 $\mu$ A |
| Switching Frequency          | Typical                 | 67 kHz         |

<sup>6</sup> Safety approved: 47 to 63 Hz

### 3. OUTPUT SPECIFICATIONS

| PARAMETER                 | DESCRIPTION / CONDITION                                     | SPECIFICATION                  |
|---------------------------|---|--------------------------------|
| Efficiency <sup>7</sup>   | Typical   | 85%                            |
| Hold Up Time              | @ 120 VAC typical   | >10 ms                         |
| Output Power <sup>8</sup> |   | 50 - 65 W                      |
| Line Regulation           |   | ± 0.3%                         |
| Load Regulation           | V1:<br>V2 & V3:   | ± 0.5%<br>± 5%                 |
| Transient Response        | 50% to 100% load change, 50/60 Hz, 50% duty cycle, 0.1 A/μs | < 10%,<br>recovery time < 5 ms |
| Rise Time                 |   | < 100 ms                       |
| Set Point Tolerance       | V1:<br>V2 & V3:   | ± 3%<br>± 5%                   |
| Output Voltage Adjustment | V1  | ± 10%                          |
| Over Current Protection   | Typical above rating  | 130%                           |
| Over Voltage Protection   | Typical for V1 only   | 130%                           |
| Short Circuit Protection  | Short term, autorecovery                                    |                                |
| Cooling                   | Convection  |                                |

<sup>7</sup> For ABC60-3003G efficiency is 75% typical

<sup>8</sup> Derate output power linearly to 80% from 90 VAC to 80 VAC input.  
Single output models deliver 65 W, except for ABC60-1005G (50 W).  
Triple output models deliver 60 W, except for ABC60-3003G (45 W).

### 4. ENVIRONMENTAL SPECIFICATIONS

| PARAMETER             | DESCRIPTION / CONDITION  | SPECIFICATION            |
|-----------------------|--|--------------------------|
| Operating Temperature | Refer to derating curve, Fig. 1<br>-20 to 0°C start-up is guaranteed | -20 to 70°C              |
| Storage Temperature   |  | -40 to +85°C             |
| Relative Humidity     | Non Condensing   | 95%                      |
| Altitude              | Operating:<br>Non-Operating:   | 10,000 ft.<br>40,000 ft. |
| Reliability           | MTBF according to Telcordia -SR332-Issue 3                           | 1.87 million hours       |
| Cooling               | Convection   |                          |

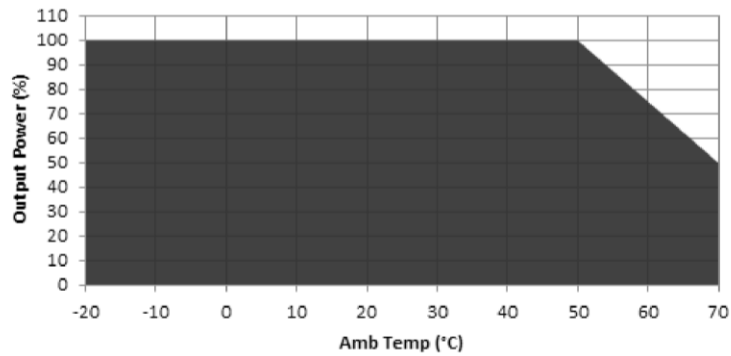


Figure 1. Derating Curve

De-rate linearly from 100% at 50°C to 50% at 70°C

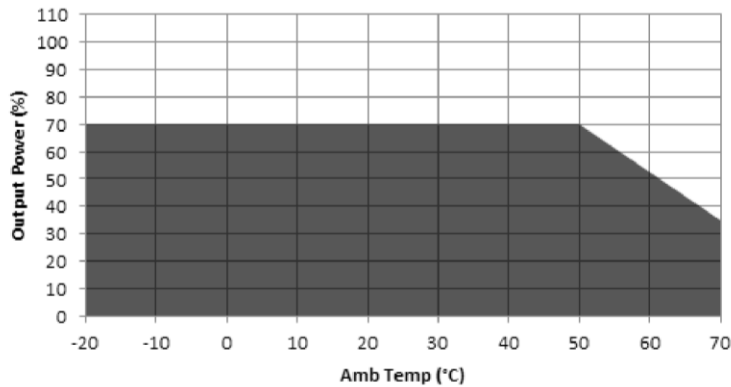


Figure 2. Derating Curve with Cover Kit

## 5. EMC SPECIFICATIONS

| PARAMETER                          | DESCRIPTION / CONDITION             | SPECIFICATION        |
|------------------------------------|-------------------------------------|----------------------|
| Conducted Emissions                | EN 55032-B, CISPR22-B, FCC PART15-B | Pass                 |
| Radiated Emissions                 | EN 55032 B                          | Pass                 |
| Input Current Harmonics            | EN 61000-3-2                        | Class A              |
| 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      |

## 6. SAFETY SPECIFICATIONS

| PARAMETER         | DESCRIPTION / CONDITION   | SPECIFICATION |
|-------------------|---|---------------|
| Isolation Voltage | Input to Output:  | 4000 VAC/VDC  |
| Safety Standards  | IEC 60950-1(ed.2), EN 60950-1, UL 60950-1 (2nd Edition), CSA C22.2 No. 60950-1 (2nd Edition), UL 62368-1, 2nd Ed, 2014-12-01 CAN/CSA C22.2 No. 62368-1-14, 2nd Ed, Class 1 SELV<br>IEC 62368-1:2014, EN 62368-1:2014; A11 |               |
| Agency Approvals  | Nemko, UL, C-UL   |               |
| CE mark           | Complies with LVD Directive   |               |

## 7. CONNECTOR & PIN DESCRIPTION

| CONNECTOR               | PIN | DESCRIPTION / CONDITION                           | MANUFACTURER / PN   |
|-------------------------|-----|---|---|
| AC Input Connector      | J1  | Pin 1 AC Line<br>Pin 2 AC Neutral                 | Molex: 26-60-4030 or equivalent<br>Mating: 09-50-3031; Pins: 08-50-0106 |
| DC Output Connector     | J2  | Pin 1,2 V1<br>Pin 3,4 RTN<br>Pin 5 V3<br>Pin 6 V2 | Tyco: 640445-6 or equivalent<br>Mating: 647402-6; Pins: 3-647409-1      |
| Signal Connector        | J3  | Pin 1 +V1 Sense<br>Pin 2 -V1 Sense                | Molex: 22-23-2021 or equivalent<br>Mating: 22-01-2021                   |
| Earth (Spade Connector) | J4  |   | Molex: 19705-4301<br>Mating: 190030001                                  |

## 8. MECHANICAL SPECIFICATIONS

| PARAMETER  | DESCRIPTION / CONDITION                    |
|------------|--|
| Weight     | 150 g (0.33 lbs.)                          |
| Dimensions | 101.6 x 50.8 x 30.48 mm (4 x 2 x 1.2 inch) |

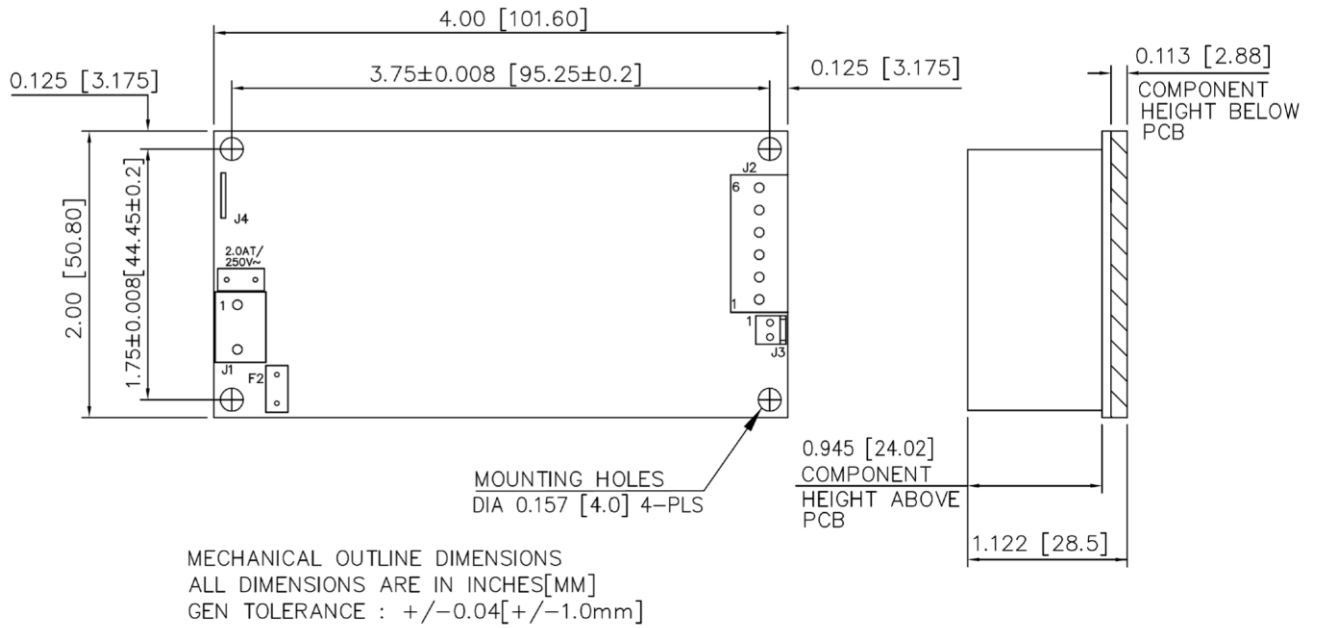


Figure 3. Mechanical Drawing ABC60-1xxxG

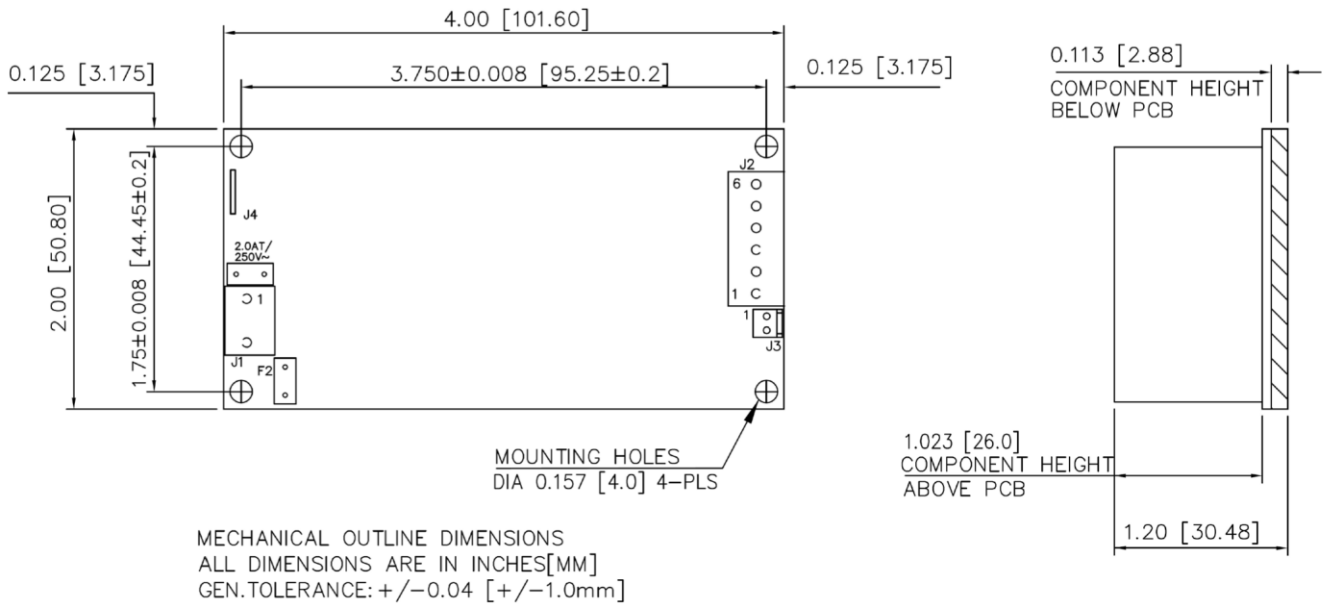
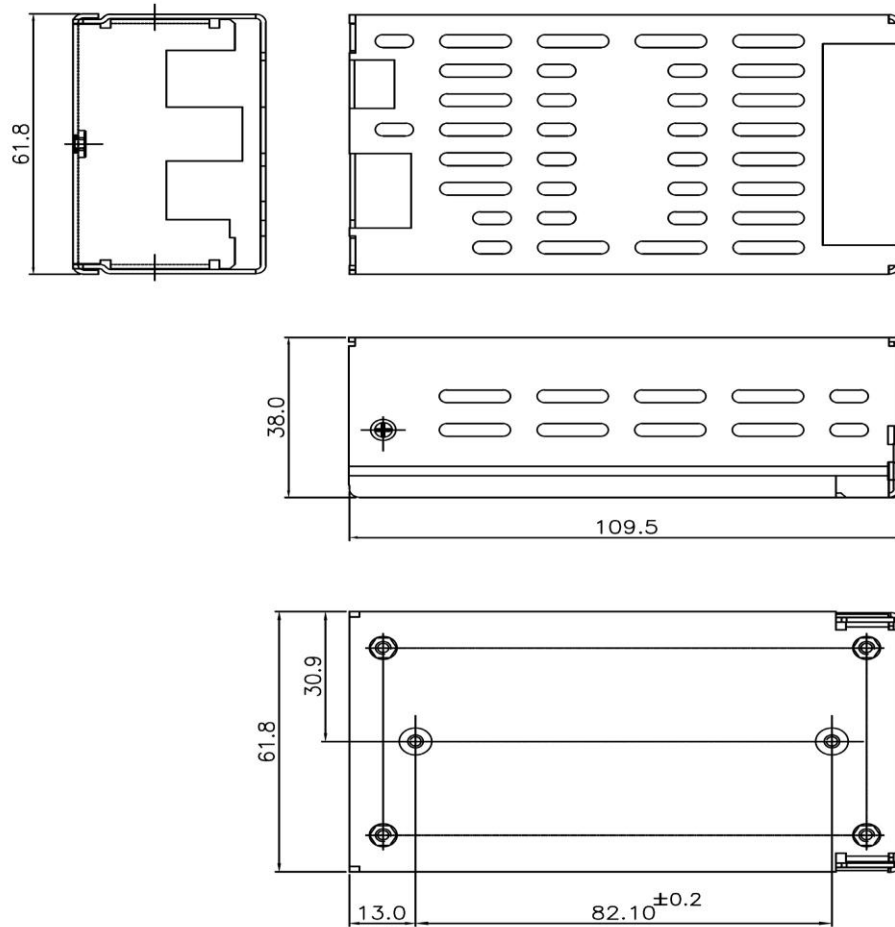


Figure 4. Mechanical Drawing ABC60-3xxxG



MECHANICAL OUTLINE DIMENSIONS  
 ALL DIMENSIONS ARE MM  
 GEN TOLERANCE :  $\pm 0.5$ mm

Figure 5. Mechanical Drawing wit 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)**

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