

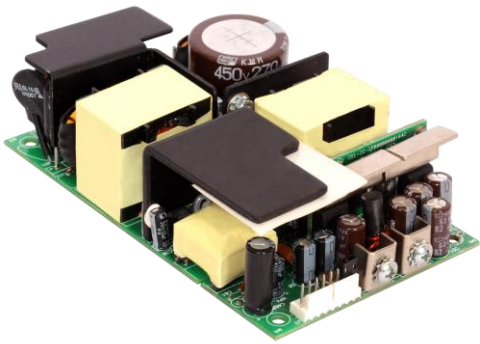
# ABC300 Series

## AC-DC Open Frame Power Supplies

The ABC300 Series of open-frame power supplies, with its wide universal 90-264 VAC input range and high power density, is available at 300 W of output power and a variety of 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 telecom, datacom, industrial equipment and other applications.



### Key Features & Benefits

- 5 x 3 x 1.5 inch form factor
- 200 W convection cooled
- -20 to 50°C full load operation
- No minimum load required
- 12 V fan & 5 V standby outputs
- Inhibit & Power Good signals
- 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
- ITE Safety Agency Approvals
- RoHS Compliant
- CE marked

### Applications

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



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## 1. MODEL SELECTION

| MODEL                      | CONNECTOR                 | OUTPUT VOLTAGE | MAX LOAD CONVECTION <sup>1,2,3</sup> | MAX LOAD 300 LFM <sup>1,2,3</sup> | MINIMUM LOAD | RIPPLE & NOISE <sup>4</sup> | TOTAL REGULATION |
|----------------------------|---------------------------|----------------|--------------------------------------|-----------------------------------|--------------|-----------------------------|------------------|
| ABC300-1T05G               | Screw Terminal            | 5 VDC          | 28.0 A                               | 40.0 A                            | 0.0 A        | 2%                          | ± 2.5%           |
| ABC300-1T12G               | Screw Terminal            | 12 VDC         | 16.67 A                              | 25.0 A                            | 0.0 A        | 2%                          | ± 2.5%           |
| ABC300-1T15G               | Screw Terminal            | 15 VDC         | 13.33 A                              | 20.0 A                            | 0.0 A        | 2%                          | ± 2.5%           |
| ABC300-1T24G               | Screw Terminal            | 24 VDC         | 7.5 A                                | 13.54 A                           | 0.0 A        | 2%                          | ± 2.5%           |
| ABC300-1T30G               | Screw Terminal            | 30 VDC         | 6.0 A                                | 10.83 A                           | 0.0 A        | 2%                          | ± 2.5%           |
| ABC300-1T48G               | Screw Terminal            | 48 VDC         | 3.75 A                               | 6.77 A                            | 0.0 A        | 2%                          | ± 2.5%           |
| Cover-300-XCB <sup>5</sup> | 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  | 90-264 VAC / 120-390 VDC                        |
| Input Frequency     |  | 47 to 63 Hz                                     |
| Input Current       | 120 VAC<br>230 VAC                                     | 3.2 A max<br>1.65 A max                         |
| No Load Power       |  | 0.8 W   |
| Inrush Current      | 120 VAC<br>230 VAC                                     | 35 A max<br>65 A max                            |
| Leakage Current     | 120 VAC<br>230 VAC                                     | < 150 µA<br>< 300 µA                            |
| Switching Frequency | PFC converter (fixed)<br>Resonant converter (variable) | 80 kHz typical<br>35 to 250 kHz, 90 kHz typical |

<sup>1</sup> Peak current rating on main output is 120% of max., lasting < 30 s with a maximum 10% duty cycle.

<sup>2</sup> Combined output power of main output, fan supply and standby supply shall not exceed max. power rating.

<sup>3</sup> Derate output power linearly to 80% from 90 VAC to 80 VAC input.

<sup>4</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>5</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>6,7</sup>      | Derate linearly to 80% from 90 VAC to 80 VAC input.             | 200 to 325 W                |
| Efficiency                       | 120 VAC<br>230 VAC  | 88% typical<br>92% typical  |
| Hold Up Time                     | 120 / 230 VAC   | 10 ms                       |
| Power Factor                     | 120 VAC<br>230 VAC  | 0.98<br>0.95                |
| Line Regulation                  |   | +/-0.5%                     |
| Load Regulation                  |   | +/-2%                       |
| Transient Response               | 50% to 100% load change, 50 Hz, 50% duty cycle, 0.1 A/ $\mu$ s, | < 10%, recovery time < 5 ms |
| Rise Time                        |   | < 100 ms                    |
| Set Point Tolerance <sup>8</sup> |   | $\pm$ 1%                    |
| Voltage Output Adjustment        |   | $\pm$ 3 %                   |
| Over Voltage Protection          | Automatic recovery  | 110 to 150 %                |
| Over Current Protection          |   | 110 to 150 %                |
| Short Circuit Protection         | Short term, automatic recovery                                  |                             |
| Over Temperature Protection      | Automatic Recovery  | 110° C primary heat sink    |

### 4. SIGNALS

| PARAMETER               | DESCRIPTION / CONDITION   |
|-------------------------|---|
| Power Good <sup>9</sup> | TTL signal goes high after main output is within regulation band, delay is 0.1 to 0.3 s |
| Remote On/ Off          | To turn on PSU short remote pin to ground   |
| Remote Sense            | Compensates for 200 mV cable drop   |

### 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>6</sup> Fan supply output voltage tolerance including set point accuracy, line and load regulation is +/-30% and needs min. 1% load on main output to be within regulation band. Ripple and noise is less than 10%.

<sup>7</sup> The de-rating curves are valid for input voltages of 115VAC to 264 VAC. Below 115 VAC to 90 VAC the convection rating is 180 W max.

<sup>8</sup> Standby output voltage tolerance including set point accuracy, line and load regulation is +/-10%. Ripple and noise is less than 5%.

<sup>9</sup> Power good signal cannot be used as a current source. Internal pull up resistor from PG signal to 5 V is 10K.  
It is recommended to use external transistor if intended to source current.

## 6. ENVIRONMENTAL SPECIFICATIONS

| PARAMETER             | DESCRIPTION / CONDITION   | SPECIFICATION  |
|-----------------------|---|--|
| Operating Temperature | Refer to de-rating curves (Fig. 1) to determine output power over the entire operating temperature range.<br>Start-up is guaranteed | -20 to 70°C<br>-20 to 0°C  |
| Storage Temperature   |   | -40 to 85°C  |
| Cooling               | Convection:   | 5 V model 140 W max<br>12 V, 15 V, 24 V, 30 V & 48 V models 200 W max                        |
|                       | With 300LFM:  | 5 V model 200 W max<br>12 V and 15 V models 300 W max<br>24 V, 30V and 48 V models 325 W max |
| Relative Humidity     | Non Condensing  | 95% Rh   |
| Altitude              | Operating:  | 10,000 ft.   |
|                       | Non-Operating:  | 40,000 ft.   |
| Reliability           | MTBF according to Telcordia –SR332-issue 3  | 1.77 million hours   |

## 7. SAFETY SPECIFICATIONS

| PARAMETER         | DESCRIPTION / CONDITION   | SPECIFICATION |
|-------------------|---|---------------|
| Isolation Voltage | Input to Output:  | 4242 VDC min  |
| Safety Standards  | Approved to the latest edition of the following standards:<br>CSA/UL60950-1, EN60950-1 and IEC60950-1 |               |
| Agency Approvals  | Nemko, Nemko-CCL  |               |
| CE mark           | Complies with LVD Directive   |               |

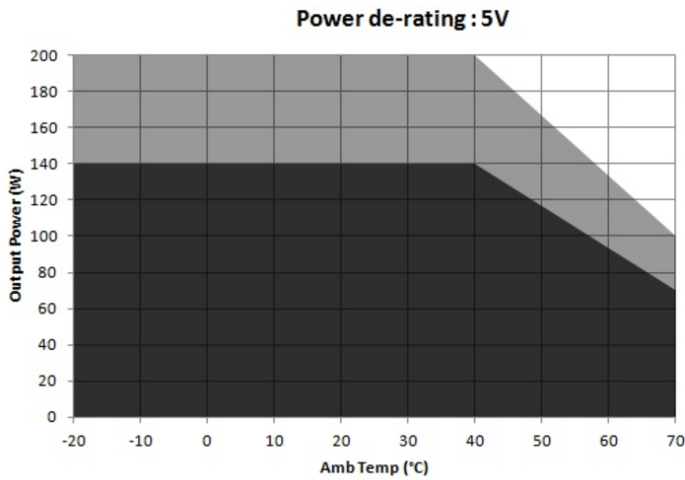
## 8. CONNECTOR & PIN DESCRIPTION

| CONNECTOR                         | PIN | DESCRIPTION / CONDITION                                       | MANUFACTURER / PN   |
|-----------------------------------|-----|---|---|
| AC Input Connector                | J1  | Pin 1 AC LINE   | Molex: 26-60-4030   |
|                                   |     | Pin 2 AC NEUTRAL  | Mating: 09-50-3031; Pins: 08-50-0106  |
| DC Output Connector               | J2  | Pin 1 RTN   | 6-32 inches Screw Pan HD  |
|                                   |     | Pin 2 V1  | Mating: Designed to accept Ring Tongue Terminal AMP : 8-31886-1, wherein one 16 AWG (max) wire can be crimped.<br>Note: One Ring Tongue Terminal with 16 AWG is recommended for current up to 11 A only.<br>Use multiple tongue terminals with wire for more current. |
| Signals & Aux Power <sup>10</sup> | J3  | Pin 1 REMOTE ON/OFF   | Molex: 22-23-2081<br>Mating: 22-01-2087; Pins: 08-50-0113   |
|                                   |     | Pin 2 RTN   |   |
|                                   |     | Pin 3 VFAN (+12 V/0.5 A)                                      |   |
|                                   |     | Pin 4 -VE REMOTE SENSE  |   |
|                                   |     | Pin 5 VSTBY (+5 V/2 A, +/-5%)                                 |   |
|                                   |     | Pin 6 +VE REMOTE SENSE  |   |
| Earth                             | J4  | Pin 7 RTN   | Molex: 19705-4301<br>Mating: 190030001  |
|                                   |     | Pin 8 POWER GOOD<br>Spade Connector<br>(Class I product only) |   |

## 9. MECHANICAL SPECIFICATIONS

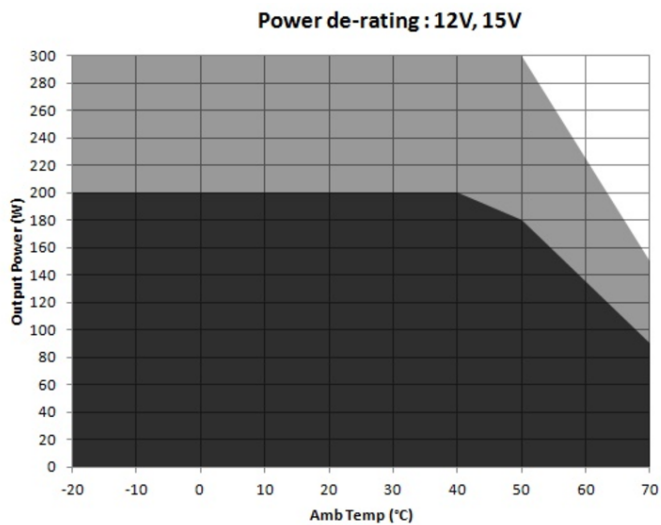
| PARAMETER  | DESCRIPTION / CONDITION                       |
|------------|---|
| Weight     | 450 g (0.99 lbs)                              |
| Dimensions | 127.0 x 76.2 x 38.1 mm (5.0 x 3.0 x 1.5 inch) |

<sup>10</sup> PSU is supplied with J3 housing, pin-1 and pin-2 shorted to enable main output without remote on/off feature.



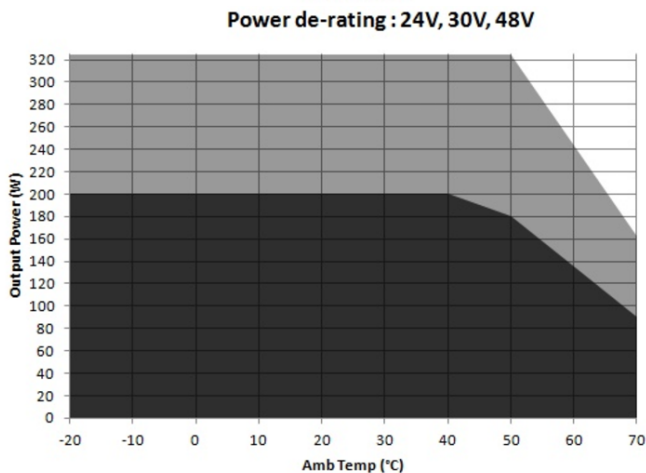
Convection load: 140 W up to 40 °C  
De-rate above 40 °C @ 1.67% per °C

Forced air cooled load: 200 W up to 40°C  
De-rate above 40 °C @ 1.67% per °C



Convection load: 200 W up to 40 °C  
De-rate between 40-50 °C @ 1% per °C  
De-rate above 50 °C @ 2.5% per °C

Forced air cooled load: 300 W up to 50°C  
De-rate above 50 °C @ 2.5% per °C



Convection load: 200 W up to 40 °C  
De-rate between 40-50 °C @ 1% per °C  
De-rate above 50 °C @ 2.5% per °C

Forced air cooled load: 325 W up to 50°C  
De-rate above 50 °C @ 2.5% per °C

Figure 1. Derating Curves

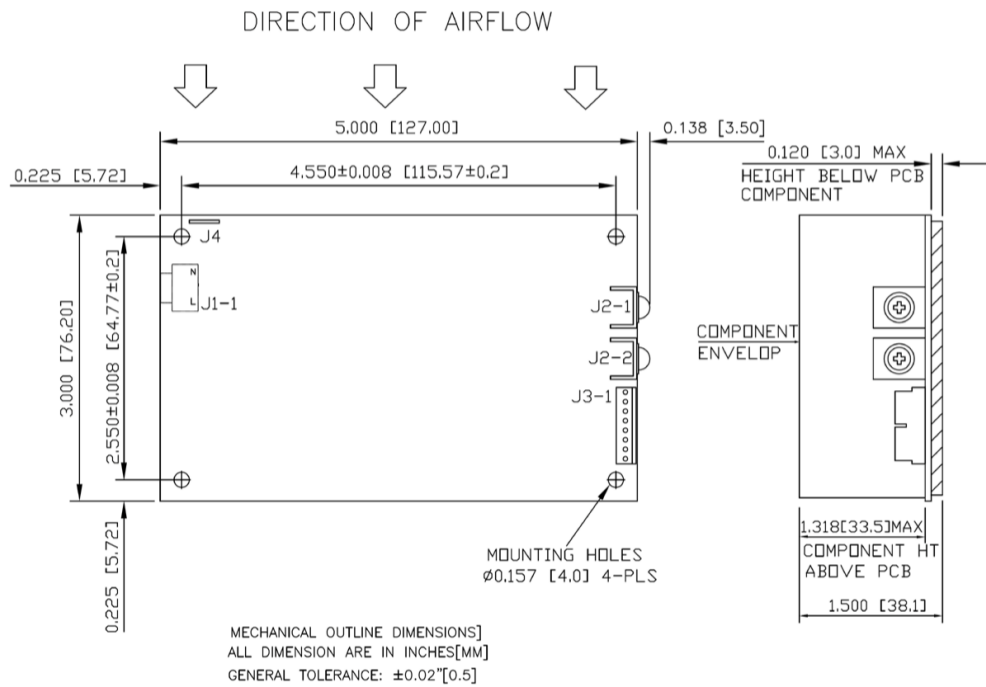


Figure 2. Mechanical Drawing

**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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