

## PBM300 Series



- Worldwide Medical Approvals
- Single, Dual, Triple and Quad Outputs
- Power Fail Detect
- Remote On/Off
- U Channel and Enclosed Versions
- 150 Watt Convection-cooled Rating
- 3 Year Warranty

## Specification

## Input

|                       |                                                              |
|-----------------------|--------------------------------------------------------------|
| Input Voltage         | • 90-264 VAC                                                 |
| Input Frequency       | • 47-63 Hz                                                   |
| Input Current         | • 4.7 A rms at 115 VAC,<br>2.3 A rms for 230 VAC             |
| Inrush Current        | • 30 A at 115 VAC,<br>60 A at 230 VAC cold start +25 °C      |
| Power Factor          | • 0.98 typical                                               |
| Earth Leakage Current | • 100 µA max at 115 VAC/60 Hz<br>220 µA max at 230 VAC/50 Hz |
| Input Protection      | • Internal F6.3 A/250 V in line and neutral lines            |

## Output

|                               |                                                                                                         |
|-------------------------------|---------------------------------------------------------------------------------------------------------|
| Output Voltage                | • See table                                                                                             |
| Output Voltage Trim           | • ±5% for outputs 1 & 2                                                                                 |
| Initial Set Accuracy          | • ±2%                                                                                                   |
| Minimum Load                  | • See table and note 5                                                                                  |
| Start Up Delay                | • 2 s max                                                                                               |
| Start Up Rise Time            | • 18 ms typical                                                                                         |
| Hold Up Time                  | • 12 ms min at full load and 110 VAC                                                                    |
| Drift                         | • ±0.2%                                                                                                 |
| Line Regulation               | • ±0.2% max                                                                                             |
| Load Regulation               | • See note 6                                                                                            |
| Transient Response            | • 4% max deviation, recovery to within<br>1% in 500 µs for a 25% load change                            |
| Ripple & Noise                | • 2% max pk-pk, 20 MHz bandwidth, with<br>a 22 µF electrolytic & a 0.47 µF tantalum<br>capacitor        |
| Overvoltage Protection        | • 115-140% Vnom output 1 only, recycle<br>input to reset                                                |
| Overtemperature<br>Protection | • Shutdown at +95 °C (singles) or +105 °C<br>(multi-outputs) with auto recovery,<br>measured internally |
| Overload Protection           | • 110-150% typical, auto recovery                                                                       |
| Short Circuit Protection      | • Trip and restart (Hiccup mode)                                                                        |
| Temperature<br>Coefficient    | • 0.04%/°C                                                                                              |
| Remote Sense                  | • Compensates for up to 0.5 V drop                                                                      |
| Remote On/Off                 | • On = Logic low or open circuit<br>Off = Logic high                                                    |

## General

|                     |                                                                                    |
|---------------------|------------------------------------------------------------------------------------|
| Efficiency          | • 80% maximum                                                                      |
| Isolation           | • 4000 VAC Input to Output<br>1500 VAC Input to Ground<br>500 VAC Output to Ground |
| Switching Frequency | • 70 kHz ±10 kHz                                                                   |
| Signals             | • Power fail detect, remote on/off                                                 |
| Power Density       | • 5.08 W/in <sup>3</sup>                                                           |
| Power Fail Detect   | • AC OK = TTL logic high<br>AC not OK = TTL logic low                              |
| MTBF                | • 300 kHrs to MIL-HDBK-217F at<br>+25 °C, GB                                       |

## Environmental

|                       |                                                                                                                         |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------|
| Operating Temperature | • 0 °C to +70 °C, derate linearly from 100%<br>power at +50 °C to 50% power at +70 °C                                   |
| Cooling               | • 'C' versions have internal fan,<br>'B' versions are derated with convection<br>cooling or require 35 CFM (see note 4) |
| Operating Humidity    | • up to 95% RH, non-condensing                                                                                          |
| Storage Temperature   | • -40 °C to +85 °C                                                                                                      |
| Operating Altitude    | • 2500 m                                                                                                                |
| Shock                 | • Half sine pulse. acceleration 50 g,<br>11 ms duration, 3 shocks in each<br>direction, unpackaged, non-operating       |
| Vibration             | • Sinusoidal 10-50 Hz, amplitude 0.15 mm,<br>30 min/axis, unpackaged, non-operating                                     |

## EMC &amp; Safety

|                      |                                                                                                                   |
|----------------------|-------------------------------------------------------------------------------------------------------------------|
| Emissions            | • EN55011 and FCC Class B conducted<br>& radiated                                                                 |
| Harmonic Currents    | • EN61000-3-2, Class A                                                                                            |
| Voltage Flicker      | • EN61000-3-3                                                                                                     |
| ESD Immunity         | • EN61000-4-2, level 3 Perf Criteria A                                                                            |
| Radiated Immunity    | • EN61000-4-3, level 3 Perf Criteria A                                                                            |
| EFT/Burst            | • EN61000-4-4, level 3 Perf Criteria A                                                                            |
| Surge                | • EN61000-4-5, level 3 Perf Criteria A                                                                            |
| Conducted Immunity   | • EN61000-4-6, 3 V Perf Criteria A                                                                                |
| Dips & Interruptions | • EN61000-4-11, 30% 10 ms,<br>60% 100 ms, >95% 5000 ms,<br>Perf Criteria A, A, B                                  |
| Safety Approvals     | • EN60601-1, UL60601-1, CSA22.2<br>No. 601-1 per cUL, CE & UKCA meets all<br>applicable directives & legislation. |

## Models and Ratings

PBM300 XP

| Output Power <sup>(4)</sup> | Output 1            |                     |                  |                    | Output 2 <sup>(2)</sup> |       |                  |                    | Output 3 <sup>(2)</sup> |                  |                    | Output 4 <sup>(2)</sup> |                  |                    | Model Number <sup>(1)</sup> |
|-----------------------------|---------------------|---------------------|------------------|--------------------|-------------------------|-------|------------------|--------------------|-------------------------|------------------|--------------------|-------------------------|------------------|--------------------|-----------------------------|
|                             | Vnom <sup>(3)</sup> | Imin <sup>(5)</sup> | I <sub>max</sub> | Reg <sup>(6)</sup> | Vnom <sup>(3)</sup>     | Imin  | I <sub>max</sub> | Reg <sup>(6)</sup> | Vnom                    | I <sub>max</sub> | Reg <sup>(6)</sup> | Vnom                    | I <sub>max</sub> | Reg <sup>(6)</sup> |                             |
| 200 W                       | 3.3 V               | 3.0 A               | 60.0 A           | 3%                 |                         |       |                  |                    |                         |                  |                    |                         |                  |                    | PBM300PS03-C                |
| 300 W                       | 5.1 V               | 3.0 A               | 60.0 A           | 2%                 |                         |       |                  |                    |                         |                  |                    |                         |                  |                    | PBM300PS05-C                |
| 300 W                       | 12.0 V              | 1.2 A               | 25.0 A           | 2%                 |                         |       |                  |                    |                         |                  |                    |                         |                  |                    | PBM300PS12-C                |
| 300 W                       | 15.0 V              | 1.0 A               | 20.0 A           | 2%                 |                         |       |                  |                    |                         |                  |                    |                         |                  |                    | PBM300PS15-C                |
| 300 W                       | 24.0 V              | 0.6 A               | 12.5 A           | 2%                 |                         |       |                  |                    |                         |                  |                    |                         |                  |                    | PBM300PS24-C                |
| 300 W                       | 30.0 V              | 0.5 A               | 10.0 A           | 2%                 |                         |       |                  |                    |                         |                  |                    |                         |                  |                    | PBM300PS30-C                |
| 300 W                       | 48.0 V              | 0.5 A               | 6.3 A            | 2%                 |                         |       |                  |                    |                         |                  |                    |                         |                  |                    | PBM300PS48-C                |
| 250 W                       | 3.3 V               | 3.0 A               | 35.0 A           | 3%                 | 5.1 V                   | 2.0 A | 22.0 A           | 2%                 | 12.0 V                  | 4.0 A            | 4%                 | 12.0 V                  | 4.0 A            | 4%                 | PBM300PQ01-C                |
| 300 W                       | 5.1 V               | 2.0 A               | 35.0 A           | 2%                 | 12.0 V                  | 1.0 A | 10.0 A           | 2%                 | 12.0 V                  | 4.0 A            | 4%                 | 5.1 V                   | 4.0 A            | 4%                 | PBM300PQ02-C                |
| 300 W                       | 5.1 V               | 2.0 A               | 35.0 A           | 2%                 | 15.0 V                  | 0.8 A | 8.0 A            | 2%                 | 15.0 V                  | 4.0 A            | 4%                 | 24.0 V                  | 2.5 A            | 4%                 | PBM300PQ03-C                |
| 300 W                       | 5.1 V               | 2.0 A               | 35.0 A           | 2%                 | 12.0 V                  | 1.0 A | 10.0 A           | 2%                 | 12.0 V                  | 4.0 A            | 4%                 | 12.0 V                  | 4.0 A            | 4%                 | PBM300PQ04-C                |
| 300 W                       | 5.1 V               | 2.0 A               | 35.0 A           | 2%                 | 12.0 V                  | 1.0 A | 10.0 A           | 2%                 | 12.0 V                  | 4.0 A            | 4%                 | 24.0 V                  | 2.5 A            | 4%                 | PBM300PQ05-C                |
| 300 W                       | 5.1 V               | 2.0 A               | 35.0 A           | 2%                 | 12.0 V                  | 1.0 A | 10.0 A           | 2%                 | 12.0 V                  | 4.0 A            | 4%                 | 15.0 V                  | 4.0 A            | 4%                 | PBM300PQ06-C                |
| 300 W                       | 5.1 V               | 2.0 A               | 35.0 A           | 2%                 | 24.0 V                  | 0.5 A | 5.0 A            | 2%                 | 12.0 V                  | 4.0 A            | 4%                 | 12.0 V                  | 4.0 A            | 4%                 | PBM300PQ07-C                |
| 300 W                       | 5.1 V               | 2.0 A               | 35.0 A           | 2%                 | 24.0 V                  | 0.5 A | 5.0 A            | 2%                 | 5.1 V                   | 4.0 A            | 4%                 | 15.0 V                  | 4.0 A            | 4%                 | PBM300PQ08-C                |
| 300 W                       | 5.1 V               | 2.0 A               | 35.0 A           | 2%                 | 12.0 V                  | 1.0 A | 10.0 A           | 2%                 | 5.1 V                   | 4.0 A            | 4%                 | 24.0 V                  | 2.5 A            | 4%                 | PBM300PQ09-C                |
| 300 W                       | 24.0 V              | 0.5 A               | 6.3 A            | 2%                 | 12.0 V                  | 1.0 A | 10.0 A           | 2%                 | 5.1 V                   | 4.0 A            | 4%                 | 12.0 V                  | 4.0 A            | 4%                 | PBM300PQ10-C                |
| 300 W                       | 24.0 V              | 0.5 A               | 6.3 A            | 2%                 | 12.0 V                  | 1.0 A | 10.0 A           | 2%                 | 5.1 V                   | 4.0 A            | 4%                 | 24.0 V                  | 2.5 A            | 4%                 | PBM300PQ11-C                |
| 300 W                       | 24.0 V              | 0.5 A               | 6.3 A            | 2%                 | 12.0 V                  | 1.0 A | 10.0 A           | 2%                 | 12.0 V                  | 4.0 A            | 4%                 | 12.0 V                  | 4.0 A            | 4%                 | PBM300PQ12-C                |
| 300 W                       | 24.0 V              | 0.5 A               | 6.3 A            | 2%                 | 24.0 V                  | 0.5 A | 5.0 A            | 2%                 | 5.1 V                   | 4.0 A            | 4%                 | 15.0 V                  | 4.0 A            | 4%                 | PBM300PQ13-C                |
| 300 W                       | 24.0 V              | 0.5 A               | 6.3 A            | 2%                 | 24.0 V                  | 0.5 A | 5.0 A            | 2%                 | 12.0 V                  | 4.0 A            | 4%                 | 12.0 V                  | 4.0 A            | 4%                 | PBM300PQ14-C                |

## Notes

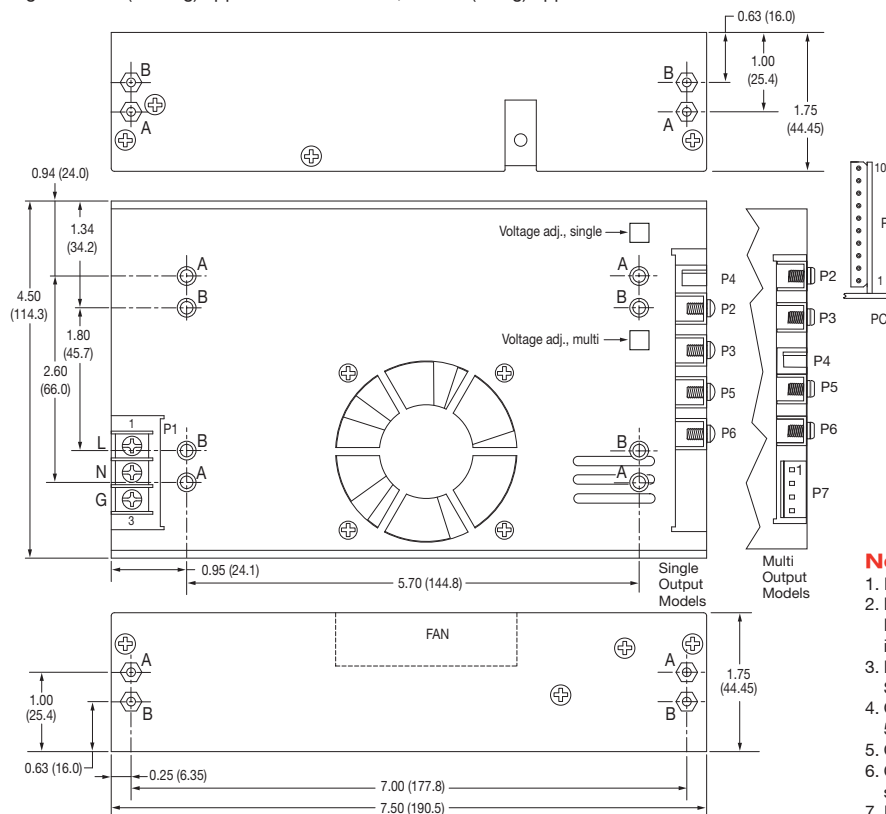
1. For U-bracket format replace suffix '-C' with suffix '-B'.
2. All auxiliary outputs are floating and can be connected externally for either positive or negative output.
3. Output 1 & 2 can be adjusted within  $\pm 5\%$  of their nominal voltage.
4. 300 W for 'C' version with cover and fan assembly. 150 watts for 'B' version with convection cooling (maximum current of output 1 & 2 derated by 50%). 300 W for 'B' version with 35 CFM forced air provided by user.

PBM300PS03 is rated 200 W with 35 CFM forced air cooling or 100 W convection-cooled. PBM300PQ01 is rated 250 W with 35 CFM forced air cooling or 125 W with convection cooling.

5. Zero minimum load for outputs 3 & 4. 10% minimum load required on output 1 for all outputs to meet regulation.
6. Total regulation includes initial tolerance, line regulation and load regulation.

## Mechanical Details

Weight: 2.40 lb (1.09 kg) approx. for '-B' version, 2.75 lb (1.25g) approx. for '-C' version.



| Conn | Pin | Model Number(s) |               |
|------|-----|-----------------|---------------|
|      |     | PSXX            | PQXX          |
| P1   | 1   | Line            | Line          |
|      | 2   | Neutral         | Neutral       |
|      | 3   | Ground          | Ground        |
| P2   | 1   | OP1             | OP1           |
| P3   | 1   | OP1             | OP1 Return    |
| P4   | 1   | Signal Ground   | Signal Ground |
|      | 2   | +sense          | +sense OP1    |
|      | 3   | -sense          | -sense OP1    |
|      | 4   | PFD             | PFD           |
|      | 5   | Remote On/Off   | Remote On/Off |
|      | 6   | N.C.            | N.C.          |
|      | 7   | N.C.            | +sense OP2    |
|      | 8   | N.C.            | -sense OP2    |
|      | 9   | 0V (fan)        | 0V (fan)      |
|      | 10  | 12V (fan)       | 12V (fan)     |
| P5   | 1   | OP1 Return      | OP2           |
| P6   | 1   | OP1 Return      | OP2 Return    |
| P7   | 1   | n/a             | OP3           |
|      | 2   | n/a             | OP3 Return    |
|      | 3   | n/a             | OP4           |
|      | 4   | n/a             | OP4 Return    |

## Notes

1. Dimensions shown in inches (mm). Tolerance 0.02 (0.5) max.
2. Mounting Holes A: #6-32 Mounting Screw, B: M3 x 0.5, Maximum mounting screw length from surface of chassis is 0.14 inch (3.5 mm)
3. Input connector P1 is Dinkle P/N DT-35-B01W-03. Screws are M3 x 0.5 on 0.375" centres.
4. Connector P4 mates with Molex housing 50-37-5103 & pins 5263.
5. Connectors P2, P3, P5 & P6: M3x0.5 screw connections.
6. Connector P7 mates with Molex housing 09-50-3041 & 2878 series crimp terminals.
7. DC fan on P4 is rated at 12 V/0.1 A.