



## Model: **BPD-C300C-120E** **Single Output 300W**

The **BPD-C300C-120E** is a highly reliable cPCI Serial Power supply used for CompactPCI Serial Systems. It's capable of delivering up to 300W with 10CFM forced-cooled. With a full range input of 14-154VDC, this power supply module achieves the highest performance and efficiency by incorporating a cascaded push-pull converter and synchronous rectification. The BPD-C300 family also includes PMBus™ interface to monitor and control all essential functions of the power supply module.

**Custom controls available.**



### Special Features

- High efficiency up to 90.0%
- 300W Forced-cooled with a minimum of 10 CFM
- Wide input voltage range: 14 -154VDC
- Redundant operation
- Hot insertion/removal (hot plug)
- Single wire current sharing
- I<sup>2</sup>C interface PMBus™ compatible for control, programming and monitoring
- Remote firmware upgrade capable
- Fully secure(OTP, OVP, OCP, SCP)
- LEDs Status :OK, Fault
- Pwr\_Fail, PS ON,
- CE Compliant
- RoHS Compliant
- Three Year Warranty
- **Custom modifications available**

### Safety

- UL & cUL: 60950-1, 2nd Edition, 2014-10-14 ( Information Technology Equipment – Safety – Part 1: General Requirements)
- IEC 60950-1 (2005)( 2nd Edition): Am 1:2009 + Am 2:2013
- DEMKO EN 60950-1:2006/A11:2009, EN 60950-1:2006/A1:2010, EN 60950-1:2006/A12:2011, EN 60950-1:2006/A2:2013

### Applications

- CompactPCI Serial Systems

| Model #        | Assignment | Voltages | Minimum | Maximum |
|----------------|------------|----------|---------|---------|
| BPD-C300C-120E | VO1        | 12V      | 0A      | 25.0A   |
|                | VO2        | 5VSB     | 0A      | 2.5A    |

**Ordering Info. can be found on last page.**

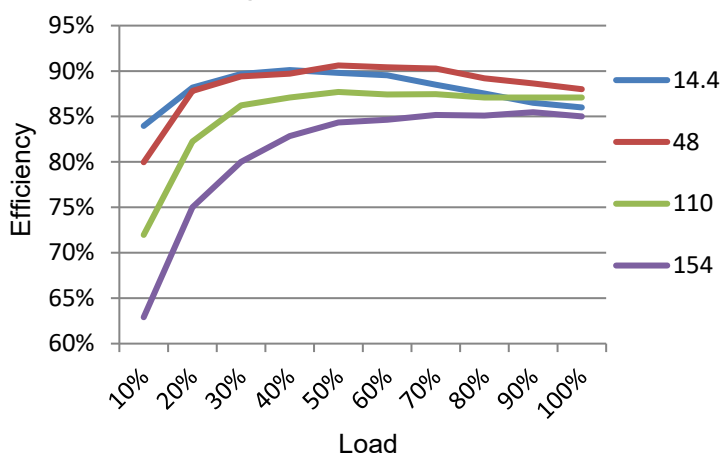
## 1. Input Specifications

| Parameter          | Description/Condition  | Min   | Nom | Max  | Units     |
|--------------------|------------------------|---|-----|------|-----------|
| $V_{i\ nom}$       | Nominal Input Voltage  | 14.4  |     | 154  | VDC       |
| $V_i$              | Input Voltage Ranges   | Normal operating ( $V_{min}$ to $V_{max}$ )                 |     | 154  | VDC       |
| $I_{i\ max}$       | Max. Input Current     | $V_{in} = 16VDC, Full\ Load$                                |     | 25   | $A_{rms}$ |
| $I_{i\ p}$         | Inrush Current         | $154V_{rms}, 25^{\circ}C$                                   |     | 30   | $A_p$     |
| $V_{i\ on}$        | Turn-on Voltage        | Ramping Up  |     | 16.5 | VDC       |
| $V_{i\ off}$       | Turn-off Voltage       | Ramping Down  |     | 13.9 | VDC       |
| Power <sub>i</sub> | Input Power            | $V_{in} = 14VDC-154VDC$                                     |     | 390  | W         |
|                    |                        | $V_{in} = 48V, 12V / 5A, 12V / 0.5A, T_A = 25^{\circ}C$     |     | >88  |           |
| $\eta$             | Efficiency without Fan | $V_{in} = 48V, 12V / 12.5A, 12V / 1.25A, T_A = 25^{\circ}C$ |     | >90  | %         |
|                    |                        | $V_{in} = 48V, 12V / 25A, 12V / 2.5A, T_A = 25^{\circ}C$    |     | >88  |           |
| $T_{hold}$         | Hold-up Time           | $V_{in} = 14.4V-154VDC$                                     |     | 40   | mS        |

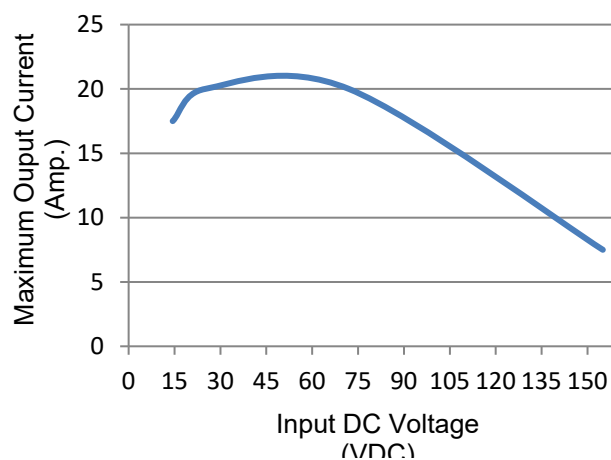
**1.1 Input Fuse** An internal 25A input fuse, in series with the input line, protects against severe defects.

**1.2 Inrush Current** When the power supply module is connected to the main input, it exhibits a low and short peak current due to an X-capacitance initial charge. The internal bulk capacitor is charged through a controlled NTC circuit which will limit the inrush current.

**Efficiency BPD-C300C-120**



**Convection Cooling Curve @ 50°C**



## 2. Output Specifications

| Parameter                            | Description/Condition    | Min  | Nom   | Max  | Units            |
|--------------------------------------|--------------------------|--|-------|------|------------------|
| <b>Main Output V<sub>1</sub></b>     |                          |  |       |      |                  |
| V <sub>1 nom</sub>                   | Nominal Output Voltage   | 0.5 · I <sub>1 nom</sub> , T <sub>amb</sub> =25°C  | 12.12 |      | V <sub>dc</sub>  |
| V <sub>1 set</sub>                   | Output Setpoint Accuracy | 0.5 · I <sub>1 nom</sub> , T <sub>amb</sub> =25°C  | -0.04 | 0.04 | V <sub>1</sub>   |
| P <sub>1 nom</sub>                   | Nominal Output Power     | V <sub>1</sub> =12 V <sub>DC</sub>   |       | 300  | W                |
| I <sub>1 nom</sub>                   | Nominal Output Current   | V <sub>1</sub> =12 V <sub>DC</sub>   | 25    |      | A <sub>DC</sub>  |
| V <sub>1 pp</sub>                    | Output Ripple Voltage    | V <sub>1 nom</sub> , I <sub>1 nom</sub> , 20MHz BW   | 31    | 60   | mV <sub>pp</sub> |
| dV <sub>1 Load</sub>                 | Load Regulation          | V <sub>1</sub> =V <sub>i nom</sub> , 0 - 100% I <sub>1 nom</sub>   | -1    | 1    | %V               |
| dV <sub>1 Line</sub>                 | Line Regulation          | V <sub>i</sub> =V <sub>i min</sub> .....V <sub>i max</sub>   | -0.5  | 0.5  | %V               |
| dV <sub>1 tot</sub>                  | Total Regulation         | V <sub>i min</sub> to V <sub>i max</sub> , 0 to 100% I <sub>1 nom</sub> , T <sub>a min</sub> to T <sub>a max</sub> | -1    | 1    | %V <sub>1</sub>  |
| dI <sub>share</sub>                  | Current Sharing          | when Bus load ≥ (20%)  | -5    | 5    | %A               |
| dI <sub>share</sub>                  | Current Sharing          | when Bus load < (20%)  | -5    | 5    | %A               |
| dV <sub>dyn</sub>                    | Dynamic Load Regulation  | I <sub>out</sub> :10%--50% of full load;50--100% of full load  |       | 3    | %V               |
| T <sub>rec</sub>                     | Recovery Time            | dI <sub>1</sub> /dt =1A/μs, recovery within 1% of V <sub>1 nom</sub>   | 900   |      | μs               |
| t <sub>DC V1</sub>                   | Start-up Time from DC    | Varies with Input Line   |       | 3    | sec              |
| tV <sub>1 rise</sub>                 | Rise Time                | V <sub>1</sub> =10%.....90% V <sub>1 nom</sub>   | 4.5   |      | ms               |
| C <sub>Load</sub>                    | Capacitive Loading       | T <sub>amb</sub> =25°C   | 36000 |      | μF               |
| <b>Standby Output V<sub>SB</sub></b> |                          |  |       |      |                  |
| V <sub>SB nom</sub>                  | Nominal Output Voltage   | 0.5 · I <sub>1 nom</sub> , T <sub>amb</sub> =25°C  | 5.05  |      | V <sub>dc</sub>  |
| V <sub>SB set</sub>                  | Output Setpoint Accuracy | 0.5 · I <sub>1 nom</sub> , T <sub>amb</sub> =25°C  | -.05  | .05  | V <sub>SB</sub>  |
| P <sub>SB nom</sub>                  | Nominal Output Power     | V <sub>SB</sub> = 5VDC   | 12.5  |      | W                |
| I <sub>SB nom</sub>                  | Nominal Output Current   | V <sub>SB</sub> = 5VDC   | 2.5   |      | A <sub>DC</sub>  |
| V <sub>SB pp</sub>                   | Output Ripple Voltage    | V <sub>SB</sub> , I <sub>SB</sub> , 20MHz BW   | 27    | 50   | mV <sub>pp</sub> |
| dV <sub>SB tot</sub>                 | Total Regulation         | V <sub>i min</sub> to V <sub>i max</sub> , 0 to 100% I <sub>1 nom</sub> , T <sub>a min</sub> to T <sub>a max</sub> | -5    | 5    | %V <sub>SB</sub> |
| dV <sub>SB</sub>                     | Droop                    | 0 - 100% I <sub>SB nom</sub>   | 5.2   | 4.8  | V                |
| dV <sub>SB dyn</sub>                 | Dynamic Load Regulation  | ΔI <sub>SB</sub> = 50%, I <sub>SB nom</sub> , I <sub>SB</sub> 5.....100% I <sub>SB nom</sub> ,                     | -0.3  | 0.3  | %V <sub>SB</sub> |
| T <sub>rec</sub>                     | Recovery Time            | dI <sub>1</sub> /dt =1A/μs, recovery within 1% of V <sub>SB nom</sub>  | 650   |      | μs               |
| t <sub>DC VSB</sub>                  | Start-up Time from DC    | Varies with Input Line   |       | 600  | ms               |
| tV <sub>SB rise</sub>                | Rise Time                | V <sub>SB</sub> = 10% .....90%V <sub>SB nom</sub>  | 2.5   |      | mS               |
| C <sub>Load</sub>                    | Capacitive Load          | T <sub>amb</sub> =25°C   | 10000 |      | μF               |

**2.1. Output Voltage Ripple** Ripple and noise are measured with 0.1μF of ceramic capacitance and 10μF of tantalum capacitance on each of the outputs.

### 3. Protection

| Parameter              | Description/Condition                       | Min                        | Nom | Max | Units            |
|------------------------|---|----------------------------|-----|-----|------------------|
| F <sub>1</sub>         | Input Fuse                                  | Not user accessible        |     |     | A                |
| V <sub>1 OV</sub>      | Over Voltage Threshold V <sub>1</sub>       | 115                        |     | 135 | %V <sub>dc</sub> |
| t <sub>OV V1</sub>     | Over Voltage Latch Off Time V <sub>1</sub>  |                            |     | 1   | ms               |
| V <sub>SB OV</sub>     | Over Voltage Threshold V <sub>SB</sub>      | 115                        |     | 135 | %V <sub>SB</sub> |
| t <sub>OV VSB</sub>    | Over Voltage Latch Off Time V <sub>SB</sub> |                            |     | 1   | ms               |
| I <sub>V1 lim</sub>    | Current Limit                               | Auto Recovery              |     |     | A                |
| V <sub>1 SC Max</sub>  | Short Circuit Current V <sub>1</sub>        | V <sub>1</sub> < 3V        |     |     | A                |
| t <sub>V1 SC off</sub> | Short Circuit Time                          | Time when in short circuit |     |     | ms               |
| T <sub>SD</sub>        | Over Temperature Protection                 | Internal temperature       |     |     | °C               |
|                        | Recovery Temperature                        |                            |     |     | °C               |
| I <sub>VSB lim</sub>   | Standby Current Limit                       | Auto Recovery              |     |     | A                |

**3.1 Overvoltage Protection** The power supply module will shut down if the output voltage exceeds the over voltage threshold. The power supply module must be manually repowered by recycling DC Source, by toggle PS\_ON, or PMBus™ operation command.

**3.2 Undervoltage Protection** The power supply module will shutdown if the output voltage falls below under voltage threshold. The power supply module must be manually repowered by recycling AC Source, by toggle PS\_ON, or PMBus™ operation command.

**3.3 Overload Protection** The overload protection feature will reduce the output voltage to a safe dissipation level when the output power rating exceeds 110% of a maximum rated power. The unit will automatically return to regulation upon removal of the overload.

**3.4 Short-circuit Protection** The unit will withstand a continuous short without damage. It will automatically return to regulation upon removal of the short.

**3.5 Over Temperature Protection** The power supply module will shut down if temperature exceeds the over temperature threshold (internal temperature). The power supply module will restart when temperature falls below recovery temperature threshold. The power supply module can also be manually repowered by recycling DC Source, by toggle PS\_ON, or PMBus™ operation command.

### 4. Safety/Approval

| Parameter                | Description/Condition  | Min                          | Nom        | Max | Units |
|--------------------------|--|------------------------------|------------|-----|-------|
| Agency Approvals         | Approved to the latest edition of the following standards:<br>UL/cUL 60950-1<br>IEC/EN 60950-1 | Approved by independent body |            |     |       |
| Isolation Strength       | Input(L/N) to case (PE)  | 1500                         | Basic      |     | Vrms  |
|                          | Input (L/N) to output  | 1500                         | Reinforced |     | Vrms  |
|                          | Output to case (PE)  | 500                          | Functional |     | VDC   |
| Electrical Strength Test | Input to Case  | 2121                         |            |     | VDC   |
|                          | Input to Output  | 2121                         |            |     | VDC   |

## **5. Electromagnetic Compatibility**

### **5.1 Immunity**

| <b>Parameter</b>                  | <b>Description/Condition</b>   | <b>Criterion</b> |
|-----------------------------------|--|------------------|
| ESD Contact Discharge             | IEC/EN61000-4-2, Level 3 $\pm 4\text{kV}$  | A                |
| Radiated Electromagnetic Field    | IEC/EN61000-4-3, Level 2 (3V/m) 80MHz- 1000MHz, 1.4GHz -2.0GHz                     | A                |
| Electrical Fast Transients/ Burst | IEC/EN61000-4-4, level 1 DC port $\pm 0.5\text{kV}$ , 1 minute                     | A                |
| Surge                             | IEC/EN61000-4-5, Level 1 DC port $\pm 0.5\text{kV}$ , 20sec CM                     | A                |
| RF Conducted Immunity             | IEC/EN 61000-4-6, Level 2, 3V, CW, 0.15 ... 80MHz<br>Amplitude Modulation 1kHz/80% | A                |
| Magnetic Field Immunity           | IEC/EN 61000-4-8, Level 2 3A/m   | A                |

### **5.2 Emission**

| <b>Parameter</b>    | <b>Description/Condition</b>      | <b>Criterion</b> |
|---------------------|-----------------------------------|------------------|
| Conducted Emissions | EN 55022 / EN 55016-2-1 conducted | Class B          |
| Radiated Emission   | EN 55022 / EN 55016-2-1 conducted | Class B          |

## **6. Environmental Specifications**

| <b>Parameter</b>                   | <b>Description/Condition</b>  | <b>Min</b> | <b>Nom</b>    | <b>Max</b> | <b>Units</b>  |
|------------------------------------|---|------------|---------------|------------|---------------|
| T <sub>A</sub> Ambient Temperature | V <sub>i min</sub> to V <sub>i max</sub> , I <sub>1 nom</sub> , I <sub>SB nom</sub> | -40        |               | 70         | °C            |
| T <sub>S</sub> Storage Temperature | Non- operational  | -40        |               | 85         | °C            |
| Altitude                           | Operational, above Sea Level  |            | 5000<br>16400 |            | Meter<br>Feet |
| RH Humidity                        | Non-condensing  | 5          |               | 95         | %             |
| Shock and Vibration Acceleration   | EN 61373:2010 Category 1 Class B  |            |               |            |               |

T<sub>A</sub> -40°C up to +70°C without derating with forced cooling.

## 7. Signals and Controls

### 7.1 Electrical Characteristics

| Parameter                  | Description/Condition                 | Min | Nom | Max  | Unit       |
|----------------------------|---------------------------------------|-----|-----|------|------------|
| <b>PS_ON/Enable</b>        |                                       |     |     |      |            |
| V <sub>IL</sub>            | Input Low Level Voltage               | 0   |     | 0.8  | V          |
| V <sub>IH</sub>            | Input High Level Voltage              | 2.4 |     | 3.3  | V          |
| R <sub>puPS_ON</sub>       | Internal Pull Up Resistor on PS_ON    |     | 2   |      | k $\Omega$ |
| R <sub>puEnable</sub>      | Internal Pull Up Resistor on Enable   |     | 2   |      | k $\Omega$ |
| <b>Pwr_Fail/ PSPresent</b> |                                       |     |     |      |            |
| V <sub>IL</sub>            | Input Low Level Voltage               | 0   |     | 0.8  | V          |
| V <sub>IH</sub>            | Input High Level Voltage              | 2.4 |     | 5.3  | V          |
| I <sub>IL,H</sub>          | Maximum Input Sink or Source Current  | 0   |     | 10   | mA         |
| R <sub>puPwr_Fail</sub>    | Internal Pull Up Resistor on Pwr_Fail |     | 1   |      | k $\Omega$ |
| <b>SCL/SDA</b>             |                                       |     |     |      |            |
| V <sub>IL</sub>            | Input Low Level Voltage               | 0   |     | 0.8  | V          |
| V <sub>IH</sub>            | Input High Level Voltage              | 2.4 |     | 3.3  | V          |
| I <sub>IL,H</sub>          | Maximum Input Sink or Source Current  |     |     | 0.25 | mA         |
| R <sub>puSCL</sub>         | Internal Pull Up Resistor on SCL      |     | 6.8 |      | k $\Omega$ |
| R <sub>puSDA</sub>         | Internal Pull Up Resistor on SDA      |     | 6.8 |      | k $\Omega$ |
| <b>A0/A1/A2</b>            |                                       |     |     |      |            |
| V <sub>IL</sub>            | Input Low Level Voltage               | 0   |     | 0.8  | V          |
| V <sub>IH</sub>            | Input High Level Voltage              | 2.4 |     | 3.3  | V          |
| R <sub>puA0</sub>          | Internal Pull Up Resistor on A0       |     | 4.7 |      | k $\Omega$ |
| R <sub>puA1</sub>          | Internal Pull Up Resistor on A1       |     | 4.7 |      | k $\Omega$ |
| R <sub>puA2</sub>          | Internal Pull Up Resistor on A2       |     | 4.7 |      | k $\Omega$ |

**7.2 PS\_ON** The PS\_ON signal is used to remotely enable/disable the main output V1. If this signal is not tied to ground it will operate in Standby Mode, where the green light blinks. This active-low pin is also used to clear any latched fault condition.

**7.3 Enable** The Enable signal is used to remotely enable/disable the main output V1 similar to PS\_ON except it doesn't trigger Standby Mode. This active-low pin is also used to clear any latched fault condition.

**7.4 Pwr\_Fail** The Pwr\_Fail is an active-high signal that indicating whether both VSB and V1 outputs are within regulation and DC input voltage is above 14.4VDC. This pin is active-low when V1 and VSB are not within regulation or when the dc voltage falls outside the requirements for more than 8ms.

**7.5 Current Share (12VCS)** When used in a redundant configuration, all the current share pins need to be interconnected in order to activate the sharing function. If a supply has an internal fault or is not turned on, the current share line will automatically disengage from the bus.

If current share is not required the current share pin can be left open.

**7.6 Remote Sense (+VS and -VS)** The main output incorporates sense lines to compensate for voltage drop across the load line.

1. (+) Sense connects to the positive rail of the system backplane. Maximum voltage drop of 200mV.
2. (-) Sense connects to the negative rail of the system backplane. Maximum voltage drop of 200mV.

If remote sense is not required the (+) Sense and (-) Sense pins can be left open.

## 7.7 Front LED

| <b>Power Supply Condition</b> | <b>Green LED</b> | <b>Yellow LED</b> | <b>Pwr_Fail</b> |
|-------------------------------|------------------|-------------------|-----------------|
| Normal Operation              | On               | Off               | High            |
| Standby Mode                  | Blink            | Off               | Low             |
| <b>PSU Faults Condition</b>   |                  |                   |                 |
| Input UnderVoltage            | Off              | Blinks            | Low             |
| Over Temperature              | Off              | On                | Low             |
| Output OverVoltage            | Off              | On                | Low             |
| Output OverLoad               | Off              | Blinks            | Low             |
| <b>PSU Warning Condition</b>  |                  |                   |                 |
| Over Temperature              | On               | Blinks            | High            |
| Input Under Voltage           | Off              | Blinks            | Low             |
| Output OverVoltage            | On               | Blinks            | High            |
| Output OverLoad               | On               | Blinks            | High            |

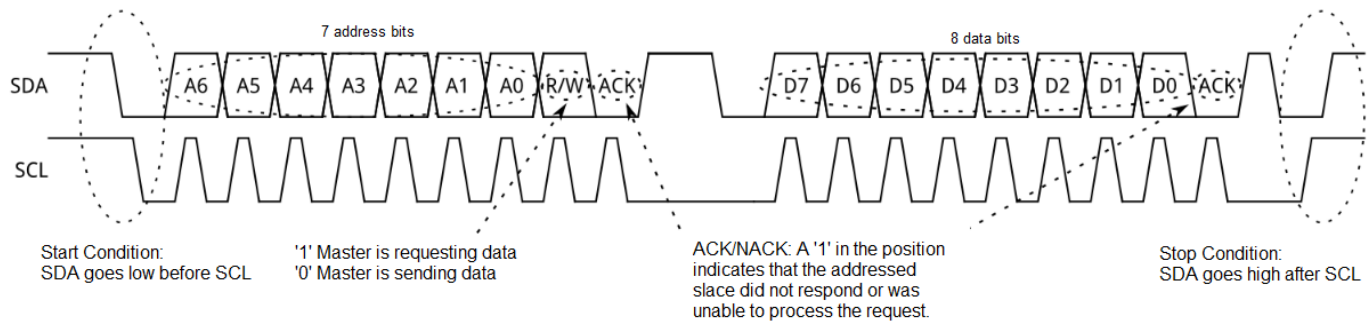
See Page 4 (3.Protections) for fault Threshold.

For Faults the power supply module must be manually repowered by recycling DC Source, by toggle PS\_ON, or PMBus™ operation command after the fault is removed.

## 7.8 Warnings

| <b>PSU Warning Triggers</b> | <b>Min</b> | <b>Nom</b> | <b>Max</b> | <b>Units</b> |
|-----------------------------|------------|------------|------------|--------------|
| Over Temperature            |            | 85         |            | °C           |
| Input UnderVoltage          |            | <14        |            | VDC          |
| Output OverVoltage          |            | 13.2       |            | VDC          |
| Output OverLoad             |            | 27.2       |            | A            |

**7.9 SDA & SCL** The I2C bus consist of a Serial Clock (SCL) and a Serial Data Line (SDA). Both signals lines are pull up internally to 3.3V bus via 6.8k ohm resistors, if customer requires stronger pull up resistors, it is possible to install additional pull up resistors in the customer's backplane.



**7.10 Address Select (A0, A1, A2)** These digital input lines are used to set the address of the power supply module. These addresses are used to differentiate between multiple power supply modules utilize in a redundant mode within the same system.

**7.11 PSU Address Table** (Address Bit Settings)

| A0, A1, & A2 | PSU Address Value | A2 | A1 | A0 | Recognize Address |
|--------------|-------------------|----|----|----|-------------------|
| 00h          | B0h               | 0  | 0  | 0  | Yes               |
| 01h          | B2h               | 0  | 0  | 1  | Yes               |
| 02h          | B4h               | 0  | 1  | 0  | Yes               |
| 03h          | B6h               | 0  | 1  | 1  | Yes               |
| 04h          | B8h               | 1  | 0  | 0  | Yes               |
| 05h          | BAh               | 1  | 0  | 1  | Yes               |
| 06h          | BCh               | 1  | 1  | 0  | Yes               |
| 07h          | BEh               | 1  | 1  | 1  | Yes               |

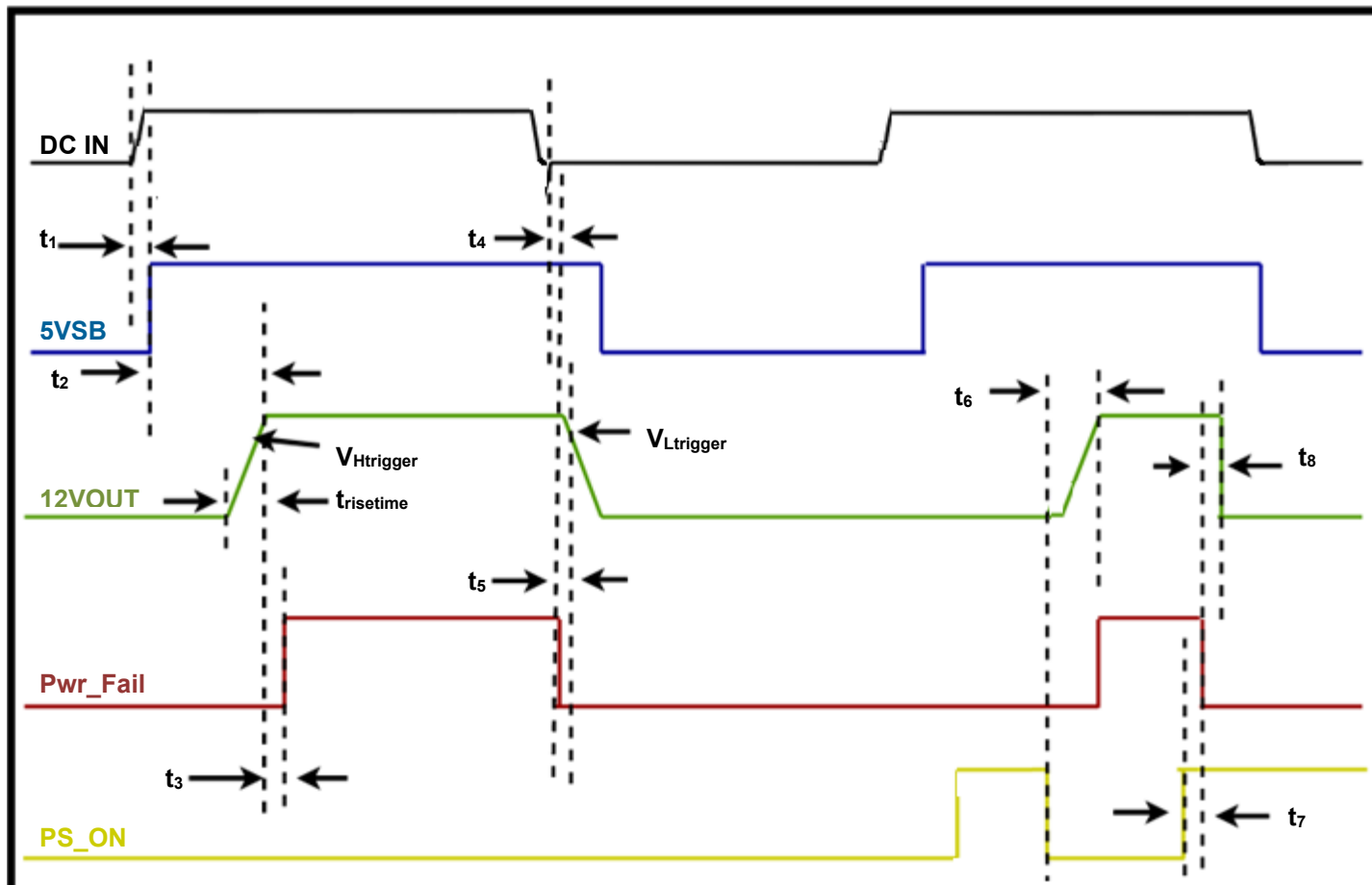
**7.12 PMBus™ Monitoring**

| Parameter           | Description/Condition   | Min  | Nom | Max  | Units |
|---------------------|---|------|-----|------|-------|
| V <sub>i mon</sub>  | Input RMS Voltage<br>V <sub>i min</sub> ≤ V <sub>i</sub> ≤ V <sub>i max</sub> | -3.5 |     | 3.5  | %     |
| I <sub>i mon</sub>  | Input RMS Current   | -2   |     | 2    | %     |
| P <sub>i mon</sub>  | Input Power   | -4   |     | 4    | %     |
| V <sub>1 mon</sub>  | V1 Voltage  | -0.5 |     | 0.5  | %     |
| I <sub>1 mon</sub>  | V1 Current  | -2   |     | -2   | %     |
| P <sub>o nom</sub>  | Total Output Power  | -1.5 |     | -1.5 | %     |
| V <sub>SB mon</sub> | Standby Voltage   | -1   |     | 1    | %     |
| I <sub>SB mon</sub> | Standby Current   | -2   |     | 2    | %     |
| t <sub>1</sub>      | Temperature1<br>Internal Secondary Components' Temperature                    | -2   |     | 2    | °C    |
| t <sub>2</sub>      | Temperature2<br>Internal Primary Components' Temperature                      | -2   |     | 2    | °C    |
| t <sub>3</sub>      | Temperature3<br>Intake/Exhaust Temperature*                                   | -2   |     | 2    | °C    |
| t <sub>4</sub>      | Temperature4<br>Intake/Exhaust Temperature*                                   | -2   |     | 2    | °C    |

**\*Depending on how the backplane's fan system is set up the Intake and Exhaust Temperature change.**



### 7.13 Timing Graph



| Parameter             | Description/Condition  | Min  | Nom    | Max  | Unit |
|-----------------------|------------------------|------|--------|------|------|
| t <sub>risetime</sub> | 12VOUT, 0V to 12V      | -    | 5      | -    | ms   |
| V <sub>Htrigger</sub> | Pwr_Fail(high)         | 11.4 |        | 11.8 | V    |
| V <sub>Ltrigger</sub> | Pwr_Fail(low)          | 10.8 |        | 11.4 | V    |
| <b>Turn-On</b>        |                        |      |        |      |      |
| t <sub>1</sub>        | DC IN - 5VSB           | 200  | Varies | 500  | ms   |
| t <sub>2</sub>        | 5VSB - 12VOUT          | -    | 970    | -    | ms   |
| t <sub>3</sub>        | 12VOUT - Pwr_Fail(H)   | -    | 500    | 600  | ms   |
| t <sub>6</sub>        | PS_ON(low) - 12VOUT    | -    | 240    | -    | ms   |
| <b>Turn-Off</b>       |                        |      |        |      |      |
| t <sub>4</sub>        | DC IN - Pwr_Fail       | 350  |        | -    | μs   |
| t <sub>5</sub>        | Pwr_Fail - 12VOUT      | 150  | -      | -    | μs   |
| t <sub>8</sub>        | PS_ON(high) - Pwr_Fail | -    | 370    | -    | ms   |
| t <sub>7</sub>        | Pwr_Fail - 12VOUT      | 200  | -      | -    | μs   |

## 7.14 PMBus™ Functionality Supported By PSU(PMBus™ Info)

| Address | Commands         | Description   | Supported | Transaction-Type | Byte_Size |
|---------|------------------|---|-----------|------------------|-----------|
| 00h     | Page             | Used to select which output gets reported via Read_VOUT, Read_IOUT & Read_POUT commands, for PSU's with multiple outputs.   | Y         | Read/Write       | 2-bytes   |
| 01h     | Operation_ON_OFF | Used to enable or disable the output of the PSU depending value of the second byte that follows.  | Y         | Read/Write       | 2-bytes   |
| 03h     | Clear_Fault      | Used to clear all status registers and error flags. This command also affects the SMB_ALERT signal.   | Y         | Write Only       | 1-byte    |
| 19h     | Capability       | Used by the end user system to query the PSU, to determine if it supports certain features, or not. Features such packet error checking, SMB_ALERT and the max SMBUS clock rate.  | Y         | Read Only        | 1-byte    |
| 79h     | Status_Word      | Used to retrieve and report two bytes containing a summary of faults conditions. All bits in this register should read as zero when the PSU is operating normally. This register acts as an index to all the other status registers.  | Y         | Read/Write       | 2-bytes   |
| 7Ah     | Status_VOUT      | Used to retrieve and report the status of the output voltages. It reports information such as output under-voltage, output over-voltage, output under voltage-warning   | Y         | Read/Write       | 1-byte    |
| 7Eh     | Status_CML       | Used to retrieve and report the status of the I2C or SMBUS communication bus; error such as packet error checking (PEC), receive an unsupported command etc...  | Y         | Read/Write       | 1-byte    |
| 88h     | Read_VIN         | Used to retrieve a two bytes value in Little Endian format representing the active input voltage of the device in a linear format ( $VIN = Y \cdot 2^n$ ), where n is the exponent in two's complement represented by the five most significant bits of the upper byte. Y is the mantissa represented the eleven lower bits of the two byte word. | Y         | Read Only        | 2-bytes   |
| 89h     | Read_IIN         | Used to retrieve a two bytes value in Little Endian format representing the active input current of the device in a linear format ( $IIN = Y \cdot 2^n$ ), where n is the exponent in two's complement represented by the five most significant bits of the upper byte. Y is the mantissa represented the eleven lower bits of the two byte word. | Y         | Read Only        | 2-bytes   |

## 7.14 PMBus™ Functionality Supported By PSU(PMBus™ Info) - Continued

| Address | Commands           | Description   | Supported | Transaction-Type | Byte_Size |
|---------|--------------------|---|-----------|------------------|-----------|
| 8Bh     | Read_VOUT          | Used to retrieve a two bytes value in Little Endian format representing the active output voltage of the device in a linear format ( $V_{OUT} = Y \cdot 2^n$ ), where n is the exponent in two's compliment represented by the five most significant bits of the upper byte. Y is the mantissa represented the eleven lower bits of the two byte word.                      | Y         | Read Only        | 2-bytes   |
| 8Ch     | Read_IOUT          | Used to retrieve a two bytes value in Little Endian format representing the active output current of the device in a linear format ( $I_{OUT} = Y \cdot 2^n$ ), where n is the exponent in two's compliment represented by the five most significant bits of the upper byte. Y is the mantissa represented the eleven lower bits of the two byte word.                      | Y         | Read Only        | 2-bytes   |
| 8Dh     | Read_Temperature_1 | Used to retrieve a two bytes value in Little Endian format representing the air intake ambient temperature of the device in a linear format ( $Temp\_1 = Y \cdot 2^n$ ), where n is the exponent in two's compliment format, represented by the five most significant bits of the upper byte. Y is the mantissa represented by the eleven lower bits of the two byte word.  | Y         | Read Only        | 2-bytes   |
| 8Eh     | Read_Temperature_2 | Used to retrieve a two bytes value in Little Endian format representing the air exhaust ambient temperature of the device in a linear format ( $Temp\_2 = Y \cdot 2^n$ ), where n is the exponent in two's compliment format, represented by the five most significant bits of the upper byte. Y is the mantissa represented by the eleven lower bits of the two byte word. | Y         | Read Only        | 2-bytes   |
| 96h     | Read_POUT          | Used to retrieve a two bytes value in Little Endian format representing the active output power of the device in a linear format ( $P_{OUT} = Y \cdot 2^n$ ), where n is the exponent in two's compliment format, represented by the five most significant bits of the upper byte. Y is the mantissa represented by the eleven lower bits of the two byte word.             | Y         | Read Only        | 2-bytes   |

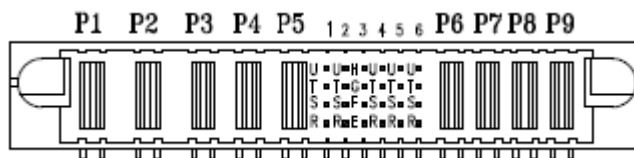
## 7.14 PMBus™ Functionality Supported By PSU(PMBus™ Info) - Continued

| Address | Commands          | Description  | Supported | Transaction-Type | Byte_Size                  |
|---------|-------------------|--|-----------|------------------|----------------------------|
| 97h     | Read_PIN          | Used to retrieve a two bytes value in Little Endian format representing the active input power of the device in a linear format ( $PIN = Y \cdot 2^n$ ), where n is the exponent in two's compliment represented by the five most significant bits of the upper byte. Y is the mantissa represented by the eleven lower bits of the two byte word. | Y         | Read Only        | 2-bytes                    |
| 98h     | PMBus™_Revision   | Used to set and retrieve the version of the PMBus™ specification, with which the PSU is in compliance.   | Y         | Read Only        | 1-byte                     |
| 9Ah     | MFR_Model         | Used to set and retrieve the manufacturer's model number assign to the device.   | Y         | Read/Write       | Variable plus 1-byte count |
| 9Bh     | MFR_Revision      | Used to set and retrieve the manufacturer's revision of the device.  | Y         | Read/Write       | 1-byte                     |
| 9Ch     | MFR_Location      | Used to set and retrieve the location of manufacturing of the device.  | Y         | Read/Write       | Variable plus 1-byte count |
| 9Dh     | MFR_Date          | Used to set and retrieve the date of manufacturing of the device.  | Y         | Read/Write       | 4-bytes plus 1byte count   |
| 9Eh     | MFR_Serial        | Used to set and retrieve the value of the manufacturer's serial number assigned to the device.   | Y         | Read/Write       | Variable plus 1-byte count |
| A0h     | MFR_VIN_MIN       | Used to retrieve the value of the minimum rated input voltage that the PSU can be operated.  | Y         | Read Only        | 2-bytes                    |
| A1h     | MFR_VIN_MAX       | Used to retrieve the value of the maximum rated input voltage that the PSU can be operated safely.   | Y         | Read Only        | 2-bytes                    |
| A2h     | MFR_IIN_MAX       | Used to retrieve the value of the maximum rated input current in Amps, that the PSU can be operated.   | Y         | Read Only        | 2-bytes                    |
| A3h     | MFR_PIN_MAX       | Used to retrieve the value of the maximum rated output power in Watts, that the PSU can be operated.   | Y         | Read Only        | 2-bytes                    |
| A4h     | MFR_VOUT_MIN      | Used to retrieve the value of the minimum rated output voltage that the PSU can provide.   | Y         | Read Only        | 2-bytes                    |
| A5h     | MFR_VOUT_MAX      | Used to retrieve the value of the maximum rated output voltage that the PSU can provide.   | Y         | Read Only        | 2-bytes                    |
| A6h     | MFR_IOUT_MAX      | Used to retrieve the value of the maximum rated output current in Amps, that the PSU is expected to provide.   | Y         | Read Only        | 2-bytes                    |
| A7h     | MFR_POUT_MAX      | Used to retrieve the value of the maximum rated output power in Watts, that the PSU is expected provide.   | Y         | Read Only        | 2-bytes                    |
| A8h     | MFR_TAMBIENT_MAX  | Used to retrieve the value of the maximum ambient temperature that the PSU can be operated, in degrees Celsius.  | Y         | Read Only        | 2-bytes                    |
| A9h     | MFR__TAMBIENT_MIN | Used to retrieve the value of the minimum ambient temperature that the PSU can be operated, in degrees Celsius.  | Y         | Read Only        | 2-bytes                    |

## 8. Connection

### 8.1 Connectors

Input/Output ----- FCI51939-667



Note: H3, G3, E3 and F3 are short pins

| P1 | P2 | P3  | P4   | P5   | U1 | U2       | H3    | U4  | U5     | U6     | P6  | P7  | P8      | P9      |
|----|----|-----|------|------|----|----------|-------|-----|--------|--------|-----|-----|---------|---------|
| NU | NU | GND | -VIN | +VIN | NU | Pwr_Fail | NU    | COM | Deg    | 5Vstby | COM | COM | 12V Out | 12V Out |
|    |    |     |      |      | T1 | T2       | G3    | T4  | T5     | T6     |     |     |         |         |
|    |    |     |      |      | NU | NU       | COM   | A0  | 5Vstby | 5Vstby |     |     |         |         |
|    |    |     |      |      | S1 | S2       | F3    | S4  | S5     | S6     |     |     |         |         |
|    |    |     |      |      | NU | 12VCS    | PSON  | A1  | SCL    | COM    |     |     |         |         |
|    |    |     |      |      | R1 | R2       | E3    | R4  | R5     | R6     |     |     |         |         |
|    |    |     |      |      | NU | (-)VS    | (+)VS | A2  | SDA    | Enable |     |     |         |         |

| Pins           | Pin Type              | Assignment | Description/Function   |
|----------------|-----------------------|------------|--|
| <b>Input</b>   |                       |            |  |
| P5             | Power                 | +VIN       | This is the + input voltage pin.   |
| P4             | Power                 | -VIN       | This is the - input voltage pin.   |
| P3             | Power                 | GND        | This pin is connected to Chassis Ground  |
| <b>Output</b>  |                       |            |  |
| P8,P9          | Power                 | 12Vout     | These are the +12V output pin.   |
| P6,P7          | Power                 | COM        | These are the 12V return output pin.   |
| <b>Control</b> |                       |            |  |
| E3             | Signal                | 12VS(+)    | (+) Sense - If remote sense is required this pin must be connected to the +12V load on the system backplane. This pin can be left open if remote sense is not required.  |
| R2             | Signal                | 12VS(-)    | (-) Sense - If remote sense is required this pin must be connected to the 12V return/COM on the system backplane. This pin can be left open if remote sense is not required.   |
| S2             | Signal                | 12VCS      | Current Share - This pin must be connected to the 12V current share of the redundant power supplies on the system backplane. This pin can be left open if current share is not required.   |
| T5,T6,U6       | Signal House Keeping  | 5VSB       | 5V Standby - This is the 5V standby output voltage pin.  |
| F3             | Signal                | PS_ON      | Power Supply On - This is the power supply module control pin. This pin must be directly connected to common or controlled by a transistor connected to common on the system backplane. This pin is active-low but if left high will trigger Standby Mode.   |
| G3,U4,S6       | Signal                | COM        | Common - This is the common return pin for the power supply module.  |
| U2             | Signal Open Collector | Pwr_Fail   | Pwr_Fail - This pin is used to monitor the output voltage. The signal on this pin will go high about 500mSecs after the 12V output has reached regulation (above 10.8 V) and when the DC input voltage is above 14.4VDC. This signal will go low when the output voltage drops out of regulation (10.8V-11.4V) and when the DC input voltage drops below 14.4VDC. This pin must be connected to an external voltage via pull up resistor on the system backplane 20V max 10mA max. |
| U5             | Signal Open Collector | Deg        | Fault/Warning - An open collector signal is provided to indicate any fault or warning for temperature.   |
| R6             | Signal                | Enable     | When driven high, main output is disabled. When low, power supply main output state is as controlled by PS_ON.   |
| R5             | Signal                | SDA        | Communication Data pin internal pulled up by a 6.8k $\Omega$ resistor.   |
| S5             | Signal                | SCL        | Communication Clock pin internal pulled up by a 6.8k $\Omega$ resistor.  |
| T4             | Signal                | A0         | Address Pin-This pin operates at 3.3V internal pulled up by a 4.7k $\Omega$ resistor.  |
| S4             | Signal                | A1         | Address Pin-This pin operates at 3.3V internal pulled up by a 4.7k $\Omega$ resistor.  |
| R4             | Signal                | A2         | Address Pin-This pin operates at 3.3V internal pulled up by a 4.7k $\Omega$ resistor.  |

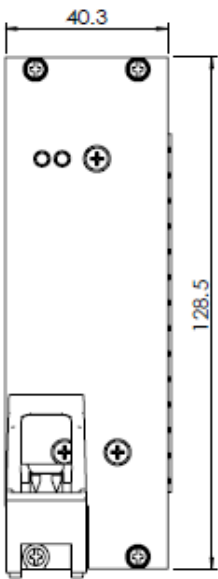
Phone: 973-594-1800

[SalesTeam@BluTekPower.com](mailto:SalesTeam@BluTekPower.com)

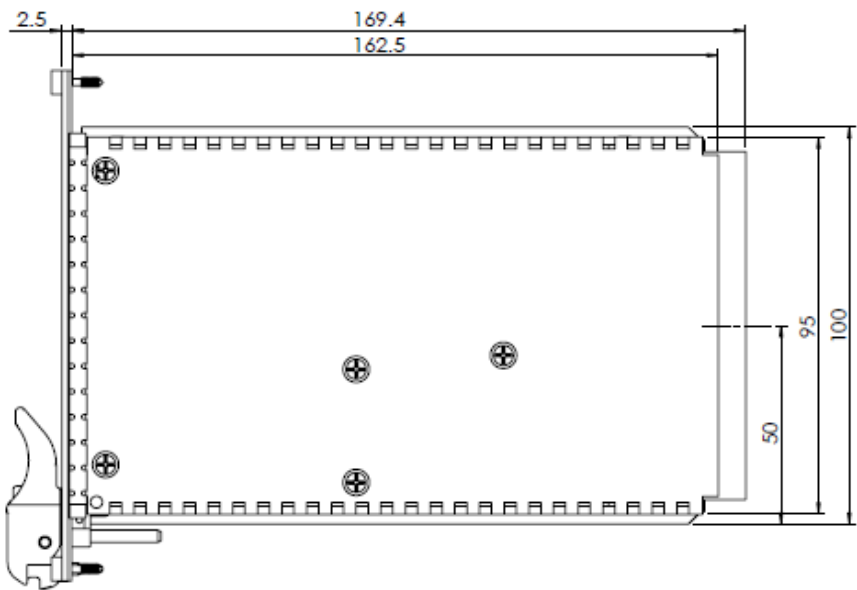
9. Mechanical

| Parameter | Description/Condition | Min | Nom         | Max | Units   |
|-----------|-----------------------|-----|-------------|-----|---------|
| Dimension | Width                 |     | 169.4(6.67) |     |         |
|           | Height                |     | 128.5(5.06) |     | mm(in)  |
|           | Depth                 |     | 40.3(1.59)  |     |         |
| Weight    |                       |     | 0.8(1.5)    |     | Kg(lbs) |

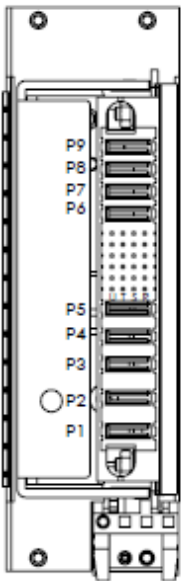
Front View



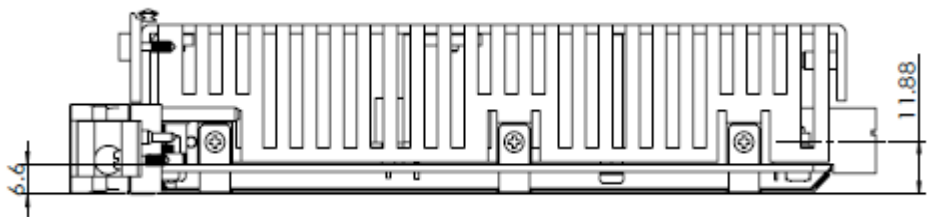
Top View



Rear View



Side View



## 10. Ordering Information

Model number matrix for BPD-C300W-120XY

|          |   |      |   |   |
|----------|---|------|---|---|
| BPD-C300 | W | -120 | X | Y |
|----------|---|------|---|---|

C = Conformal Coating

E = ELMA IEEE Latch

Voltage Output x 10 i.e. 12V = 120

B = 14.4 -72 VDC  
C = 14.4 -154 VDC

**Technical Revisions** – The appearance of products, including safety agency certification pictured on labels, may change depending on the date manufactured. Specifications are subject to change without notice.

**Custom Modifications Available**

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***For more information on these products please contact a BluTek Sale Representative.***