

# PMC Panel Mount Power Supply

## 24 V / 5 V 100 W Dual Output / PMC-DSPV100W1A

# PMC

### Highlights & Features

- Universal AC input voltage range
- Power will not de-rate for the entire input voltage range
- Full corrosion resistant aluminium casing
- Conforms to harmonics current IEC/EN 61000-3-2, Class A
- High MTBF > 700,000 hrs. per Telcordia SR-332
- Safety approval according to IEC/UL 60950-1, IEC/EN/UL 62368-1 and EMI to EN 55022, Class B

### Safety Standards



CB Certified for worldwide use

|                                |                                               |
|--------------------------------|-----------------------------------------------|
| <b>Model Number:</b>           | PMC-DSPV100W1A                                |
| <b>Unit Weight:</b>            | 0.52 kg (1.15 lb)                             |
| <b>Dimensions (L x W x D):</b> | 178 x 97 x 38 mm<br>(7.01 x 3.82 x 1.50 inch) |

### General Description

Delta's PMC series of panel mount power supply offers dual output voltage 24 V & 5 V, a wide temperature range from -10°C to +70°C and a highly dependable minimum hold-up time. The state-of-the-art design is made to withstand harsh industrial environments. What makes the product stands out from the crowd is its lightweight full aluminum body design, which can withstand shock and vibration according to IEC60068-2. The PMC series also offers overvoltage and overload protection. Using a wide input voltage range design, it is compatible worldwide. The input also includes DC operating voltage from 125-375 Vdc. Best of all, this excellent design and quality does not come with a big price tag.

### Model Information

#### PMC Panel Mount Power Supply

| Model Number   | Input Voltage Range      | Rated Output Voltage | Rated Output Current   |
|----------------|--------------------------|----------------------|------------------------|
| PMC-DSPV100W1A | 85-264 Vac (125-375 Vdc) | V1: 24 V<br>V2: 5 V  | V1: 2.7 A<br>V2: 7.0 A |

### Model Numbering

| PMC –      | D        | SPV                                                           | 100W         | 1            | A              |
|------------|----------|---------------------------------------------------------------|--------------|--------------|----------------|
| PMC Series | Dual O/P | S: 24 V Output Voltage<br>P: 5 V Output Voltage<br>V: Voltage | Output Power | Single Phase | Delta Standard |

# PMC Panel Mount Power Supply

## 24 V / 5 V 100 W Dual Output / PMC-DSPV100W1A

### Specifications

#### Input Ratings / Characteristics

|                                 |                                          |
|---------------------------------|------------------------------------------|
| Nominal Input Voltage           | 100-240 Vac                              |
| Input Voltage Range             | 85-264 Vac                               |
| Nominal Input Frequency         | 50-60 Hz                                 |
| Input Frequency Range           | 47-63 Hz                                 |
| Nominal DC Input Voltage        | 125-250 Vdc                              |
| DC Input Voltage Range*         | 125-375 Vdc                              |
| Input Current                   | < 2.0 A @ 115 Vac, < 1.1 A @ 230 Vac     |
| Efficiency at 100% Load         | > 84% @ 115 Vac, > 86% @ 230 Vac         |
| Max Power Dissipation           | 0% load < 2.0W @ 115Vac, < 2.5W @ 230Vac |
|                                 | 100% load < 19W @ 115Vac, < 16W @ 230Vac |
| Max Inrush Current (Cold Start) | < 50 A @ 115 Vac, < 100 A @ 230 Vac      |
| Leakage Current                 | < 1 mA @ 240 Vac                         |

\*Safety approval according to IEC/UL 60950-1 and IEC/EN/UL 62368-1.

#### Output Ratings / Characteristics\*\*

|                                                       |                                                                                                                                 |
|-------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| Nominal Output Voltage                                | V1: 24 Vdc, V2: 5 Vdc                                                                                                           |
| Factory Set Point Tolerance                           | V1: 24 Vdc $\pm$ 2% V2: fixed                                                                                                   |
| Output Voltage Adjustment Range                       | V1: 22.8-26.4 Vdc, V2: 5 V fixed                                                                                                |
| Output Current                                        | V1: 2.7 A rated (0.3-4.0 A) V2: 7.0 A rated (0.8-7.0 A) (100 W max.)                                                            |
| Output Power***                                       | 100 W                                                                                                                           |
| Line Regulation                                       | < 0.5% (@ 85-264 Vac input, 100% load)                                                                                          |
| Load Regulation                                       | < 1.0% (@ 85-264 Vac input, V1: 100% rated load and V2: 60% rated load and vice versa)                                          |
| PARD**** (20 MHz)                                     | V1: <200 mVpp V2: <80 mVpp                                                                                                      |
| Rise Time                                             | V1: <30 ms V2: <20 ms nominal input (100% load)                                                                                 |
| Start-up Time                                         | < 1000 ms @ nominal input (100% load)                                                                                           |
| Hold-up Time                                          | > 15 ms @ 115 Vac, > 80 ms @ 230 Vac (100% load)                                                                                |
| Dynamic Response (Overshoot & Undershoot O/P Voltage) | $\pm$ 5% @ V1: 0-100% rated load and V2: 60% rated load and vice versa (Slew Rate: 0.1A/ $\mu$ s, 50% duty cycle @ 5Hz to 1KHz) |
| Start-up with Capacitive Loads                        | V1: 4,000 $\mu$ F Max                                                                                                           |

\*\*For power de-rating from 50°C to 70°C, see power de-rating on page 3.

\*\*\*Combination of output power at V1 + V2 shall keep within 100 W. For example: V1: 24 V/4 A (96 W), V2: 5 V/0.8 A (4 W) or V1: 24 V/2.7 A (65 W), V2: 5 V/7 A (35 W).

\*\*\*\*PARD is measured with an AC coupling mode, and in parallel with 0.1  $\mu$ F ceramic capacitor & 47  $\mu$ F electrolytic capacitor.

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### Mechanical

|                                   |                                            |
|-----------------------------------|--------------------------------------------|
| Case Cover                        | Aluminium                                  |
| Dimensions (L x W x D)            | 178 x 97 x 38 mm (7.01 x 3.82 x 1.50 inch) |
| Unit Weight                       | 0.52 kg (1.15 lb)                          |
| Indicator                         | Green LED                                  |
| Cooling System                    | Convection                                 |
| Terminal                          | Input and Output                           |
| Wire                              | M3.5 x 7 Pins (Rated 300 V/15 A)           |
| Noise (1 Meter from power supply) | AWG 20-14                                  |
|                                   | Sound Pressure Level (SPL) <40 dBA         |

### Environment

|                             |               |                                                                                                               |
|-----------------------------|---------------|---------------------------------------------------------------------------------------------------------------|
| Surrounding Air Temperature | Operating     | -10°C to +70°C                                                                                                |
|                             | Storage       | -25°C to +85°C                                                                                                |
| Power De-rating             |               | > 50°C de-rate power by 2.5% / °C                                                                             |
| Operating Humidity          |               | 5 to 95% RH (Non-Condensing)                                                                                  |
| Operating Altitude          |               | 0 to 3,000 Meters (9,840 ft.)                                                                                 |
| Shock Test                  | Non-Operating | IEC60068-2-27, 30 G (300m/S <sup>2</sup> ) for a duration of 18ms<br>3 times per direction, 18 times in total |
| Vibration                   | Non-Operating | IEC60068-2-6, 10 Hz to 150 Hz @ 50 m/S <sup>2</sup> (5G peak);<br>20 min per axis for all X, Y, Z direction   |
| Over Voltage Category       |               | II                                                                                                            |
| Pollution Degree            |               | 2                                                                                                             |

### Protections

|                          |                                                                                                                                                                                                                                                                                                                             |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Overvoltage              | V1: < 32.4 V, V2: 6.75 V, Hiccup Mode, Non-Latching (Auto recovery).                                                                                                                                                                                                                                                        |
| Overload / Overcurrent   | OLP: > 150% of total rated output power, Hiccup Mode, Non-Latching (Auto recovery).<br>OCP: Hiccup Mode, Non-Latching (Auto recovery)<br><ul style="list-style-type: none"> <li>V1: 3-6 A, V2: rated current, protect both V1&amp;V2</li> <li>V2: 8-12 A, V1: rated current, protect only V2 and V1 still remain</li> </ul> |
| Over Temperature         | < 75°C Surrounding Air Temperature @ 100% load, Non-Latching (Auto-recovery).                                                                                                                                                                                                                                               |
| Short Circuit            | Hiccup Mode, Non-Latching (Auto-recovery when the fault is removed)                                                                                                                                                                                                                                                         |
| Internal Fuse at L pin   | T3.15AH                                                                                                                                                                                                                                                                                                                     |
| Protection Against Shock | Class I with PE* connection                                                                                                                                                                                                                                                                                                 |

\*PE: Primary Earth

### Reliability Data

|                        |                                                                                  |
|------------------------|----------------------------------------------------------------------------------|
| MTBF                   | > 700,000 hrs. as per Telcordia SR-332<br>I/P: 115 Vac, O/P: 100% load, Ta: 25°C |
| Expected Cap Life Time | 10 years (115 Vac & 230 Vac, 50% load @ 40°C)                                    |

# PMC Panel Mount Power Supply

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### Safety Standards / Directives

|                          |                   |                                                                                                                                                   |
|--------------------------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Safety Entry Low Voltage |                   | SELV (EN 60950-1)                                                                                                                                 |
| Electrical Safety        | TUV Bauart        | EN 62368-1                                                                                                                                        |
|                          | UL/cUL recognized | UL 60950-1 and CSA C22.2 No. 60950-1 (File No. E191395),<br>UL 62368-1 and CSA C22.2 No. 62368-1 (File No. E191395)                               |
|                          | CB scheme         | IEC 60950-1, IEC 62368-1                                                                                                                          |
|                          | UKCA              | BS EN 62368-1                                                                                                                                     |
| CCC                      |                   | GB/T9254, GB17625.1 and GB4943.1<br>仅适用于海拔 2000m 以下地区安全使用                                                                                         |
| CE                       |                   | In conformance with EMC Directive 2014/30/EU and<br>Low Voltage Directive 2014/35/EU                                                              |
| UKCA                     |                   | In conformance with Electrical Equipment (Safety)<br>Regulations 2016 No. 1011 and<br>The Electromagnetic Compatibility Regulations 2016 No. 1091 |
| Galvanic Isolation       | Input to Output   | 3.0 KVac                                                                                                                                          |
|                          | Input to Ground   | 1.5 KVac                                                                                                                                          |
|                          | Output to Ground  | 0.5 KVac                                                                                                                                          |

### EMC

|                                   |               |                                                                                                                |
|-----------------------------------|---------------|----------------------------------------------------------------------------------------------------------------|
| Emissions (CE & RE)               |               | Generic Standards: CISPR32, EN/BS EN 55032,<br>FCC Title 47: Class B, GB 9254                                  |
| Immunity                          |               | Generic Standards: EN/BS EN 55024                                                                              |
| Electrostatic Discharge           | IEC61000-4-2  | Level 4 Criteria A <sup>1)</sup><br>Air Discharge: 15 kV<br>Contact Discharge: 8 kV                            |
| Radiated Field                    | IEC61000-4-3  | Level 2 Criteria A <sup>1)</sup><br>80 MHz-1 GHz, 3 V/M with 1 kHz tone / 80% modulation                       |
| Electrical Fast Transient / Burst | IEC61000-4-4  | Level 3 Criteria A <sup>1)</sup><br>2 kV                                                                       |
| Surge                             | IEC61000-4-5  | Level 3 Criteria A <sup>1)</sup><br>Common Mode <sup>2)</sup> : 2 kV<br>Differential Mode <sup>3)</sup> : 2 kV |
| Conducted                         | IEC61000-4-6  | Level 2 Criteria A <sup>1)</sup><br>150 kHz-80 MHz, 3 Vrms                                                     |
| Power Frequency Magnetic Fields   | IEC61000-4-8  | Criteria A <sup>1)</sup><br>1 A/Meter                                                                          |
| Voltage Dips and Interruptions    | IEC61000-4-11 | 100% dip; 1 cycle (20 ms); Self Recoverable                                                                    |
| Low Energy Pulse Test (Ring Wave) | IEC61000-4-12 | Level 3 Criteria A <sup>1)</sup><br>Common Mode <sup>2)</sup> : 2 kV<br>Differential Mode <sup>3)</sup> : 1 kV |
| Harmonic Current Emission         |               | IEC/EN/BS EN 61000-3-2, Class A                                                                                |
| Voltage Fluctuation and Flicker   |               | IEC/EN/BS EN 61000-3-3                                                                                         |

1) Criteria A: Normal performance within the specification limits

2) Asymmetrical: Common mode (Line to earth)

3) Symmetrical: Differential mode (Line to line)

The diagram illustrates a 24VDC power supply system with the following components and connections:

- Input Section:** AC\_Line and AC\_Neutral are connected to an EMI FILTER & INRUSH CURRENT LIMIT, which then feeds into a BRIDGE RECTIFIER & FILTER.
- Power Stage:** The rectified AC feeds a POWER STAGE FLYBACK DC/DC CONVERTER. It also includes an OVER TEMPERATURE PROTECTION block and a PWM CONTROL & OVER CURRENT PROTECTION block.
- Transformer:** The power stage is connected to a transformer with a 1:1 ratio (13.14V primary, 13.14V secondary).
- Output Rectifiers:** The secondary output feeds a 24V OUTPUT RECTIFIER Circuit and a 12V OUTPUT RECTIFIER & FILTER.
- 5Vdc Output Section:** The 12V output feeds a 5V OUTPUT BUCK DC/DC CONVERTER, which includes a 7.5Vcc\_Buck REGULATOR and a 5V Output Filter. It also features a 5V\_OVP (Over Voltage Protection) block and a 5V OUTPUT OVER CURRENT PROTECTION block.
- Opto Couplers:** Two OPTO COUPLER (Feedback) blocks are used for feedback control, and an OPTO COUPLER (24V OVP) block is used for over-voltage protection.
- Grounding:** Various ground points are labeled, including PG, P\_Gnd, and P\_Gnd\_Signal.

The diagram shows a 3D-printed rectangular device with a front panel. The top surface is covered in a grid of small circular holes. The front panel features a row of five rectangular slots. Labels with arrows point to the 'Ventilated surface' (top), 'Side surface' (left), 'Top surface' (right), and 'Base surface' (bottom). Numbered callouts 1, 2, and 3 are located near the front panel: 1 points to the bottom of the front panel, 2 points to the right side of the front panel, and 3 points to the top of the front panel.

- 5

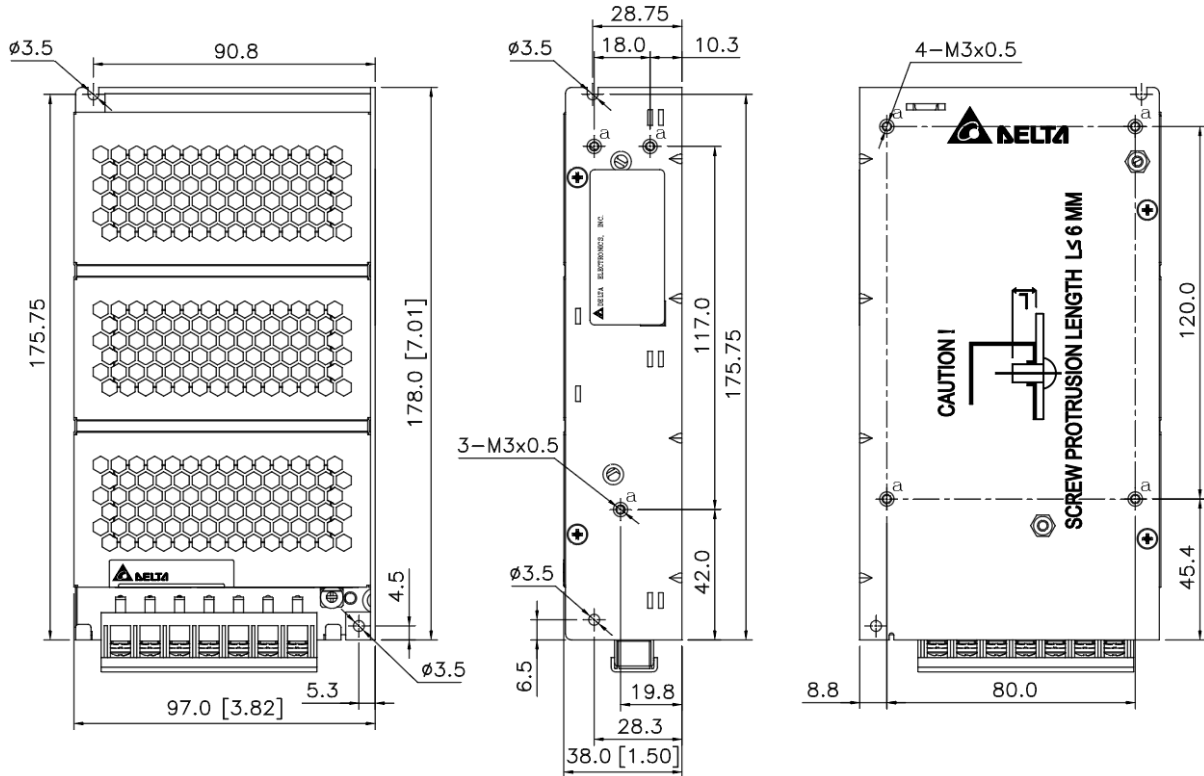


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## 24 V / 5 V 100 W Dual Output / PMC-DSPV100W1A

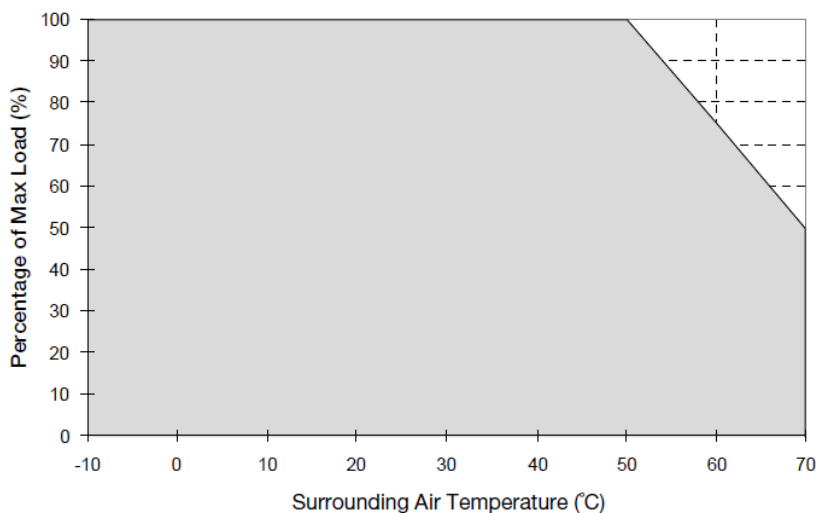
### Dimensions

L x W x H: 178 x 97 x 38 mm (7.01 x 3.82 x 1.50 inch)



### Engineering Data

#### Output Load De-rating VS Surrounding Air Temperature



**Fig. 1 De-rating for Vertical and Horizontal Mounting Orientation**  
 > 50°C de-rate power by 2.5% / °C

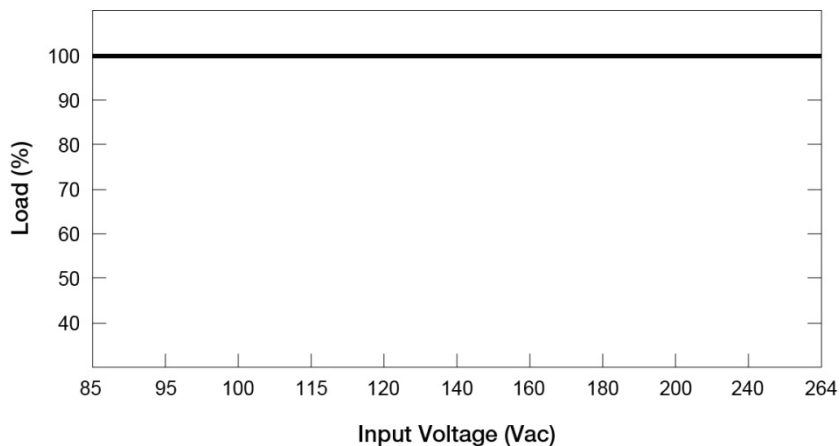
#### Note

1. Power supply components may degrade, or be damaged, when the power supply is continuously used outside the shaded region, refer to the graph shown in Fig. 1.
2. If the output capacity is not reduced when the surrounding air temperature exceeds its specification as defined on Page 3 under "Environment", the device may run into Over Temperature Protection. When activated, the output voltage will go into bouncing mode and will recover when the surrounding air temperature is lowered or the load is reduced as far as necessary to keep the device in working condition.
3. In order for the device to function in the manner intended, it is also necessary to keep a safety distance as recommended in the safety instructions while the device is in operation.
4. Depending on the surrounding air temperature and output load delivered by the power supply, the device housing can be very hot!
5. If the device has to be mounted in any other orientation, please contact [info@deltapsu.com](mailto:info@deltapsu.com) for more details.

# PMC Panel Mount Power Supply

## 24 V / 5 V 100 W Dual Output / PMC-DSPV100W1A

### Output Load De-rating VS Input Voltage



■ No output power de-rating across the entire input voltage range

### Assembly & Installation

- Ⓐ Mounting holes for power supply assembly onto the mounting surface.  
Power supply shall be mounted on minimum 2 mounting holes using M3 screw minimum 5 mm (0.20 inch) length.
- Ⓑ This surface belongs to customer's end system or panel where the power supply is mounted.
- Ⓒ Connector.

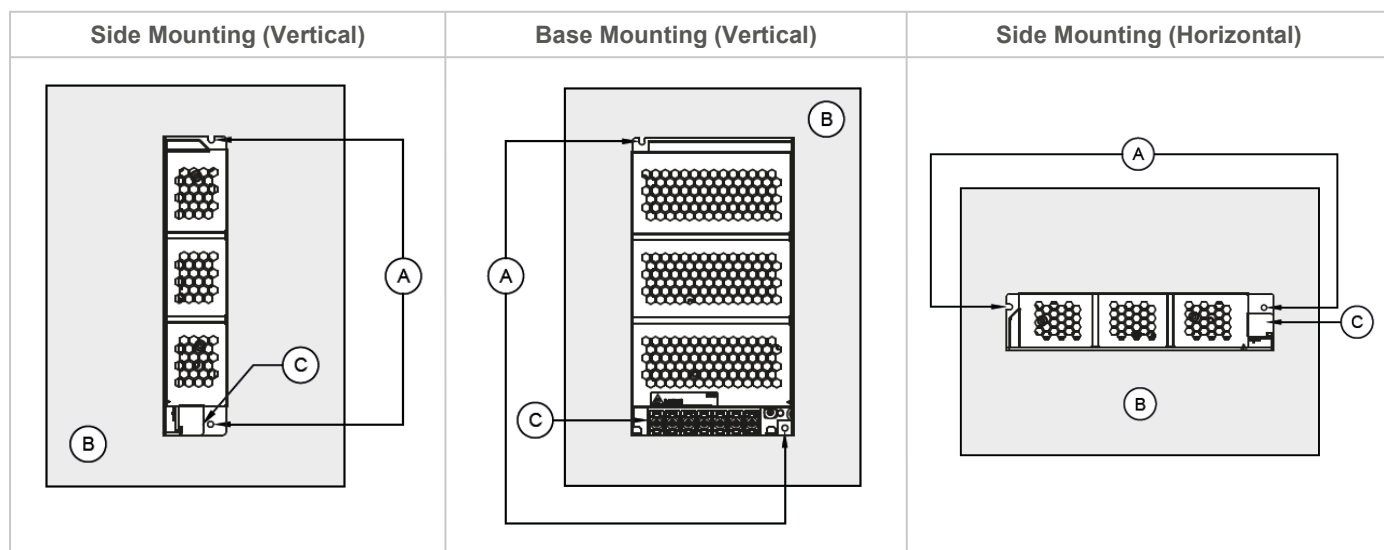


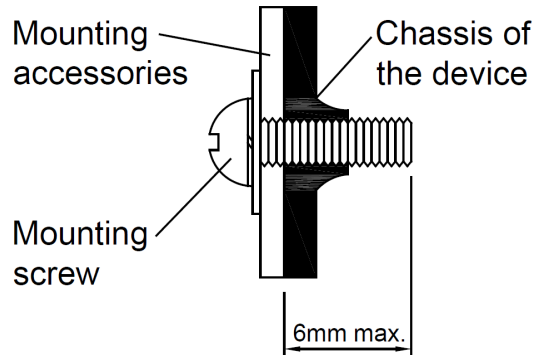
Fig. 2 Mounting Orientation

- Use flexible cable (stranded or solid) of AWG 20-14.
- The torque at the Connector shall not exceed 13 Kgf.cm. (11.23 lb.in). The insulation stripping length should not exceed 0.275" or 7 mm.

# PMC Panel Mount Power Supply

## 24 V / 5 V 100 W Dual Output / PMC-DSPV100W1A

### Installation of Mounting Accessories



- Only use M3 screw  $\leq 6$  mm (0.24 inch) through the base mounting holes. This is to keep a safe distance between the screw and internal components.
- Recommended mounting tightening torque: 4~8 Kgf.cm. (3.47~6.94 lbf.in).

### Safety Instructions

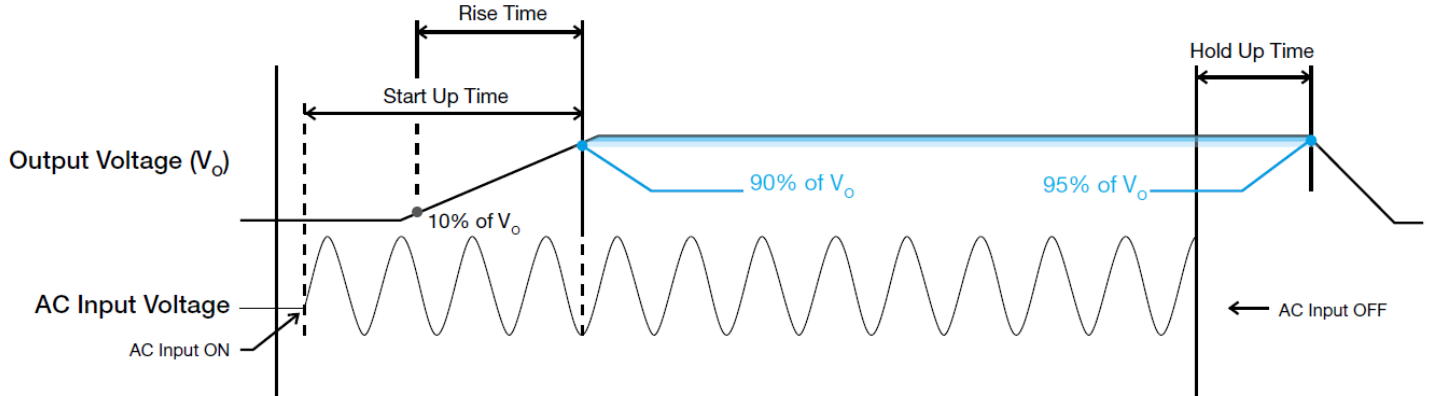
- To ensure sufficient convection cooling, always maintain a safety distance of  $>20$  mm (0.79 inch) from all ventilated surfaces while the device is in operation.
- The device is not recommended to be placed on low thermal conductive surface, for example, plastics.
- Note that the enclosure of the device can become very hot depending on the ambient temperature and load of the power supply. Do not touch the device while it is in operation or immediately after power is turned OFF. Risk of burning!
- Do not touch the terminals while power is being supplied. Risk of electric shock.
- Prevent any foreign metal, particles or conductors to enter the device through the openings during installation. It can cause: Electric shock; Safety Hazard; Fire; Product failure
- Warning: When connecting the device, secure Earth connection before connecting L and N. When disconnecting the device, remove L and N connections before removing the Earth connection.

# PMC Panel Mount Power Supply

## 24 V / 5 V 100 W Dual Output / PMC-DSPV100W1A

### Functions

#### ■ Graph illustrating the Start-up Time, Rise Time, and Hold-up Time



### Start-up Time

The time required for the output voltage to reach 90% of its final steady state set value, after the input voltage is applied.

### Rise Time

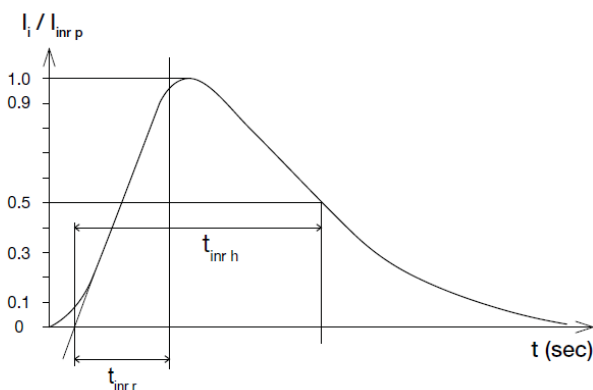
The time required for the output voltage to change from 10% to 90% of its final steady state set value.

### Hold-up Time

Time between the collapse of the AC input voltage, and the output falling to 95% of its steady state set value.

### Inrush Current

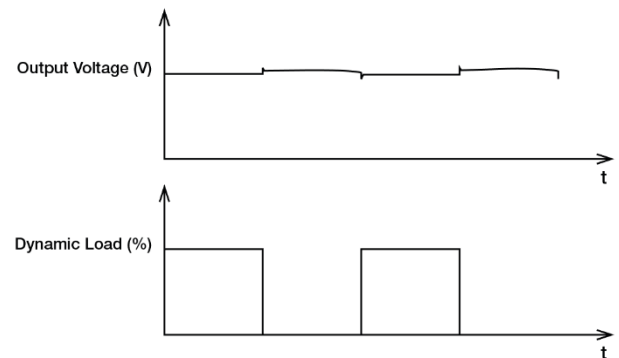
Inrush current is the peak, instantaneous, input current measured and, occurs when the input voltage is first applied. For AC input voltages, the maximum peak value of inrush current will occur during the first half cycle of the applied AC voltage. This peak value decreases exponentially during subsequent cycles of AC voltage.



### Dynamic Response

The power supply output voltage will remain within  $\pm 5\%$  of its steady state value, when subjected to a dynamic load from 0 to 100% of its rated current.

#### ■ 50% duty cycle / 5Hz to 1KHz

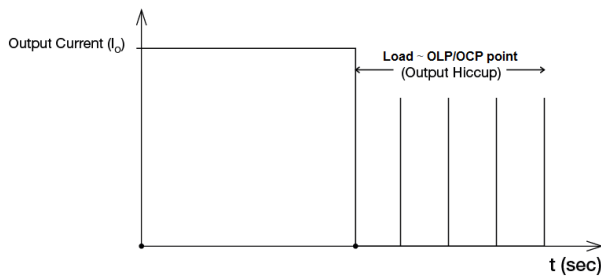


# PMC Panel Mount Power Supply

## 24 V / 5 V 100 W Dual Output / PMC-DSPV100W1A

### Overload & Overcurrent Protections (Auto-Recovery)

The power supply's Overload (OLP) and Overcurrent (OCP) Protections will be activated when output current ( $I_o$ ) exceeds its specification as defined on Page 3 under "Protections". In such occurrence, the output voltage ( $V_o$ ) will start to droop and once the power supply has reached its maximum power limit, the protection is activated and the power supply will go into "Hiccup mode" (Auto-Recovery). The power supply will recover once the fault condition of the OLP and OCP is removed and  $I_o$  is back within the specifications.



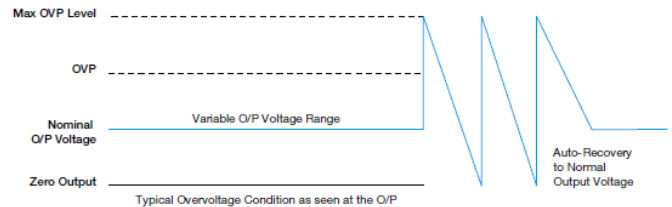
It is not recommended to prolong the duration of  $I_o$  when it is less than OLP/OCP point, but greater than 100%, since it may cause damage to the PSU.

### Short Circuit Protection (Auto-Recovery)

The power supply's output OLP/OCP function also provides protection against short circuits. When a short circuit is applied, the output current will operate in "Hiccup mode", as shown in the illustration in the OLP/OCP section on this page. The power supply will return to normal operation after the short circuit is removed.

### Overvoltage Protection (Auto-Recovery)

The power supply's overvoltage circuit will be activated when its internal feedback circuit fails. The output voltage shall not exceed its specifications defined on Page 3 under "Protections".



### Over Temperature Protection (Auto-Recovery)

As mentioned above, the power supply also has Over Temperature Protection (OTP). In the event of a higher operating temperature at 100% load, the power supply will run into OTP when the operating temperature is beyond what is recommended in the de-rating graph. When activated, the output voltage will go into bouncing mode until the temperature drops to its normal operating temperature as recommended in the de-rating graph.

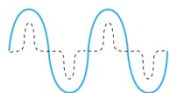
# PMC Panel Mount Power Supply

## 24 V / 5 V 100 W Dual Output / PMC-DSPV100W1A

### Others

#### PFC – Norm EN 61000-3-2

##### Line Current harmonic



Typically, the input current waveform is not sinusoidal due to the periodical peak charging of the input capacitor. In industrial environment, complying with EN 61000-3-2 is only necessary under special conditions. Complying to this standard can have some technical drawbacks, such as lower efficiency as well as some commercial aspects such as higher purchasing costs. Frequently, the user does not profit from fulfilling this standard, therefore, it is important to know whether it is mandatory to meet this standard for a specific application.

This product conforms to this standard.

### Attention

Delta provides all information in the datasheets on an “AS IS” basis and does not offer any kind of warranty through the information for using the product. In the event of any discrepancy between the information in the catalog and datasheets, the datasheets shall prevail (please refer to [www.DeltaPSU.com](http://www.DeltaPSU.com) for the latest datasheets information). Delta shall have no liability of indemnification for any claim or action arising from any error for the provided information in the datasheets. Customer shall take its responsibility for evaluation of using the product before placing an order with Delta.

Delta reserves the right to make changes to the information described in the datasheets without notice.

### Manufacturer and Authorized Representatives Information

#### Manufacturer

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Authorized Distributor

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