# PMT Panel Mount Power Supply

## PMT2 350W series / PMT-☐V350W2B☐☐



# PMT2

### Highlights & Features

- AC input voltage range selectable by switch (90-132 Vac, 180-264 Vac)
- No load power consumption < 0.75 W
- Low profile design: 30 mm height
- High MTBF > 700,000 hrs per Telcordia SR-332
- 150% Peak power supported as option
- Wide operating temp -40°C ~70°C

### Safety Standards

CB Certified for worldwide use

**Model Number:** PMT-☐V350W2B☐☐
**Unit Weight:** 0.833 kg (1.84 lb)
**Dimensions (L x W x H):** 215 x 115 x 30 mm (8.46 x 4.53 x 1.18 inch)

### General Description

PMT 2nd generation (PMT2) 350 W power supplies is designed in a low 30mm profile. It uses a selectable AC switch input. With the built-in fan, it can operate from -40°C to 70°C.

### Model Information

PMT Panel Mount Power Supply

| Model Number | Input Voltage Range | Rated Output Voltage | Rated Output Current |
|---|---|---|---|
| PMT-12V350W2B☐☐ | 90-132 Vac, 180-264 Vac (Selectable by Switch) | 12 Vdc | 29.0 A |
| PMT-24V350W2B☐☐ | | 24 Vdc | 14.6 A |
| PMT-36V350W2B☐☐ | | 36 Vdc | 9.7 A |
| PMT-48V350W2B☐☐ | | 48 Vdc | 7.3 A |

### Model Numbering

| | | | | | | | CC code |
|---|---|---|---|---|---|---|---|
| **PM** | **T –** | **☐V** | **350W** | **2** | **B** | **☐** | **☐** |
| Panel Mount | Product Type<br>T – Enclosed | Output Voltage<br>12 – 12 V<br>24 – 24 V<br>36 – 36 V<br>48 – 48 V | Output Power | Single Phase with Low Profile | Family Code: B<br>With No PFC | Connector Type<br>With UL, TUV, CE, EAC<br>R*1 – Terminal Block<br>With UL, EAC<br>M – Terminal Block | Blank – Without connector cover & coating<br>B – Single side coating *2 |

*1 Support 150% peak power & with EMI Class B
*2 12 V / 24 V models only



All parameters are specified at 25°C ambient and nominal AC input unless otherwise indicated.
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# PMT Panel Mount Power Supply

## PMT2 350W series / PMT-☐V350W2B☐☐

### Specifications

| Model Number | PMT-12V350W2B☐☐ | PMT-24V350W2B☐☐ | PMT-36V350W2B☐☐ | PMT-48V350W2B☐☐ |
|---|---|---|---|---|

### Input Ratings / Characteristics

| | | | | |
|---|---|---|---|---|
| Nominal Input Voltage | 100-120 Vac, 200-240 Vac (Selectable by Switch) | | | |
| Input Voltage Range | 90-132 Vac, 180-264 Vac (Selectable by Switch) | | | |
| Nominal Input Frequency | 50-60 Hz | | | |
| Input Frequency Range | 47-63 Hz | | | |
| Input Current | 6 A typ. @ 115 Vac, 3.4 A typ. @ 230 Vac | | | |
| Efficiency at 100% Load @ 230Vac | 84.5% typ. | 87% typ. | 88% typ. | 88% typ. |
| No Load Power Consumption | 0.75 W typ. @ 230 Vac | | | |
| Max Inrush Current (Cold Start) | 60 A typ. @ 230 Vac | | | |
| Leakage Current | < 0.75 mA @ 240 Vac | | | |

### Output Ratings / Characteristics*3

| | | | | |
|---|---|---|---|---|
| Nominal Output Voltage | 12 Vdc | 24 Vdc | 36 Vdc | 48 Vdc |
| Factory Set Point Tolerance | 12 Vdc ± 1.5% | 24 Vdc ± 1% | 36 Vdc ± 1% | 48 Vdc ± 1% |
| Output Voltage Adjustment Range | 10.8-13.2 Vdc | 21.6-26.4 Vdc | 32.4-39.6 Vdc | 43.2-52.8 Vdc |
| Output Current | 29.0 A<br>43.5 A / 1S*5 | 14.6 A<br>21.9 A / 1S*5 | 9.7 A<br>14.55 A / 1S*5 | 7.3 A<br>10.95 A / 1S*5 |
| Output Power | 348 W Max.<br>522 W Max./1S*5 | 350.4 W Max.<br>525.6 W Max./1S*5 | 349.2 W Max.<br>523.8 W Max./1S*5 | 350.4 W Max.<br>525.6 W Max./1S*5 |
| Line Regulation | ± 0.5% typ. @ 100-132 Vac, 180-264 Vac (Selectable by Switch) | | | |
| Load Regulation | ±1% @ 100-132 Vac, 180-264 Vac (Selectable by Switch) | ±0.5% typ. @ 100-132 Vac, 180-264 Vac (Selectable by Switch) | | |
| PARD*4 (20MHz) | < 150 mVpp<br>@ 0°C to 70°C<br>450 mVpp typ.<br>@ -30°C to 0°C | < 200 mVpp @ 0°C to 70°C<br>600 mVpp typ. @ -30°C to 0°C | | |
| Rise Time | 30 ms typ. @ 115 Vac & 230 Vac | | | |
| Start-up Time | 1500 ms typ. @ 115 Vac & 230 Vac | | | |
| Hold-up Time | 20 ms typ. @ 115 Vac & 230 Vac | | | |
| Dynamic Response<br>(Overshoot & Undershoot O/P Voltage) | ± 10% @ 115 & 230 Vac input, 10-100% load (Slew Rate: 2.5 A/μS, 50% duty cycle @ 5 Hz & 10 KHz) | | | |
| Start-up with Capacitive Loads | 8,000 μF Max | 8,000 μF Max | 3,000 μF Max | 2,000 μF Max |

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

*4 PARD is measured with an AC coupling mode, and in parallel to end terminal with 0.1μF ceramic capacitor & 47μF electrolytic capacitor. PSU need to burn in > 5 minutes when AMB ≤ 0℃

*5 PMT-☐V350W2BR☐ models only



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# PMT Panel Mount Power Supply
## PMT2 350W series / PMT-☐V350W2B☐☐

### Mechanical

| | |
|---|---|
| Case Chassis | SGCC |
| Case Cover | SGCC |
| Dimensions (L x W x H) | 215 x 115 x 30 mm (8.46 x 4.53 x 1.18 inch) |
| Unit Weight | 0.833 kg (1.84 lb) |
| Indicator | Green LED (DC OK) |
| Cooling System | Force Cooling |
| Terminal | M3.5 x 9 Pins (Rated 300 V / 20 A) |
| Wire | AWG 18-12<br>Current rating can refer to page 6 “Wire AWG Table” |

### Environment

| | | |
|---|---|---|
| Surrounding Air Temperature | Operating | -40°C to +70°C |
| | Storage | -40°C to +85°C |
| Power De-rating | | > 50°C de-rate power by 2% / °C<br>< 100Vac de-rate power by 2% / V<br>(80% load @ 90 Vac) |
| Operating Humidity | | 20 to 90% (Non-Condensing) |
| Operating Altitude | | 0 to 5,000 Meters (0 to 16,400 ft) |
| Shock Test | Non-Operating | IEC 60068-2-27, Half Sine Wave: 50G for a duration of 11 ms, 3 shocks for each 3 directions |
| | Operating | IEC 60068-2-27, Half Sine Wave: 10G for a duration of 11 ms, 3 shock for each 3 directions. |
| Vibration | Non-Operating | IEC 60068-2-6, Random: 5 Hz to 500 Hz (2.09G); 20 min per axis for all X, Y, Z direction |
| | Operating | IEC 60068-2-6, Sine Wave: 20 Hz to 500 Hz (5G); 10 min per cycle,<br>60 min for each axis (X,Y,Z) |
| Over Voltage Category | | II |
| Pollution Degree | | 2 |

### Protections

| | | | | |
|---|---|---|---|---|
| Overvoltage | 13.2 V - 17.4 V<br>SELV Output,<br>Latch Mode | 26.4 V - 33.6 V<br>SELV Output,<br>Latch Mode | 39.6 V - 48.6 V<br>SELV Output,<br>Latch Mode | 52.8 V - 64.8 V<br>SELV Output,<br>Latch Mode |
| Overload / Overcurrent | 110-175% of rated load current, Hiccup Mode, Non-Latching (Auto-Recovery) | | | |
| Over Temperature | Latch Mode | | | |
| Short Circuit | Hiccup Mode, Non-Latching<br>(Auto-Recovery when the fault is removed) | | | |
| Protection Against Shock | Class I with PE*6 connection | | | |

*6 PE: Protection Earth

### Reliability Data

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



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# PMT Panel Mount Power Supply

## PMT2 350W series / PMT-☐V350W2B☐☐

### Safety Standards / Directives

| | | |
|---|---|---|
| Safety Entry Low | | SELV |
| Electrical Safety | | **PMT-☐V350W2BR☐:** |
| | TUV Bauart | EN 62368-1 |
| | UL/cUL | UL 62368-1, and CAN/CSA C22.2 No. 62368-1 |
| | CB scheme | IEC 62368-1, IEC 60950-1 |
| | KC | K 60950-1 ( Except 36V model ) |
| | EAC | TP TC 004/2011 |
| | BSMI | CNS 14336-1 |
| | BIS | IS 13252 (Part 1) |
| | CQC | GB4943.1 |
| | | **PMT-☐V350W2BM☐:** |
| | UL/cUL | UL 62368-1, and CAN/CSA C22.2 No. 62368-1 |
| | CB scheme | IEC 62368-1, IEC 60950-1 |
| | EAC | TP TC 004/2011 |
| | CQC | GB4943.1 |
| CE | | **PMT-☐V350W2BR☐:**<br>In conformance with EMC Directive 2014/30/EU and Low Voltage Directive 2014/35/EU<br>This power supply does not comply with the harmonic current emission requirements specified in BS EN/EN61000-3-2. Please ensure it is not used in applications where compliance with this standard is required. |
| UKCA | | In conformance with Electromagnetic Compatibility Regulations 2016 and Electrical Equipment (Safety) Regulations 2016 |
| Galvanic Isolation | Input to Output | 3.0 KVac |
| | Input to Ground | 2.0 KVac |
| | Output to Ground | 0.5 KVac |



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# PMT Panel Mount Power Supply

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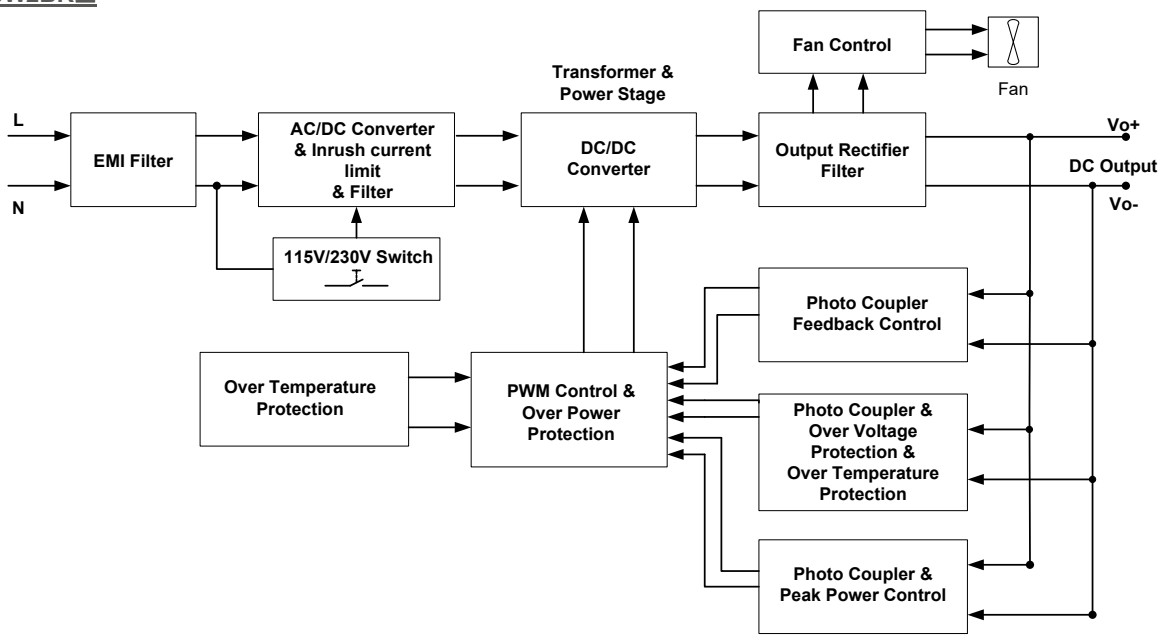
### EMC

| | | |
|---|---|---|
| Emissions (CE & RE) | | **PMT-☐V350W2BR☐:**<br>CISPR 32, EN/BS EN 55032, EN/BS EN 61000-6-4, KN32, AS/NZS CISPR32<br>Compliance to FCC Title 47, EN/BS EN 61000-6-3: Class B<br>**PMT-☐V350W2BM☐:**<br>CISPR 32, EN/BS EN 55032, FCC Title 47: Class B<br>(With Delta EMI filter P/N: 12DCCG5B) |
| Immunity | | **PMT-☐V350W2BR☐:**<br>EN/BS EN 55035, KN35, EN/BS EN 61000-6-2 & Compliance to EN/BS EN 61000-6-1 |
| Electrostatic Discharge | IEC 61000-4-2 | Level 4 Criteria A[1)]<br>Air Discharge: 15 kV<br>Contact Discharge: 8 kV |
| Radiated Field | IEC 61000-4-3 | Level 3 Criteria A[1)]<br>80 MHz – 1 GHz, 10 V/M with 1 kHz tone / 80% modulation |
| Electrical Fast Transient / Burst | IEC 61000-4-4 | Level 3 Criteria A[1)]<br>2 kV |
| Surge | IEC 61000-4-5 | Level 4 Criteria A[1)]<br>Common Mode[4)]: 4 kV<br>Differential Mode[5)]: 2 kV |
| Conducted | IEC 61000-4-6 | Level 3 Criteria A[1)]<br>150 kHz-80 MHz, 10 Vrms |
| Power Frequency Magnetic Fields | IEC 61000-4-8 | Level 4 Criteria A[1)]<br>30 A/Meter |
| Voltage Dips and Interruptions | IEC/EN/BS EN 61000-4-11 | 0% residual; 1 cycle, Criteria B[2)]<br>40% residual; 10 cycle, Criteria C[3)]<br>70% residual; 25 cycle, Criteria C[3)] |

1) Criteria A: Normal performance within the specification limits
2) Criteria B: Output out of regulation, or shuts down during test. Automatically restored to normal operation after test.
3) Criteria C: Output out of regulation, shuts down during test (Need to recycle AC power cord to normal operation after test)
4) Asymmetrical: Common mode (Line to earth)
5) Symmetrical: Differential mode (Line to line)

### Block Diagram

**PMT-☐V350W2BR☐**






All parameters are specified at 25°C ambient and nominal AC input unless otherwise indicated.

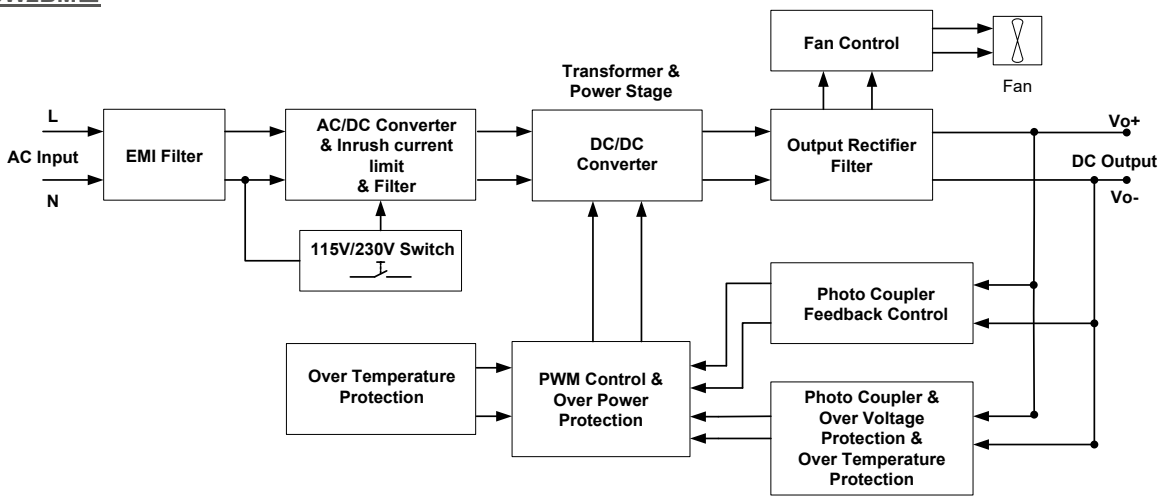


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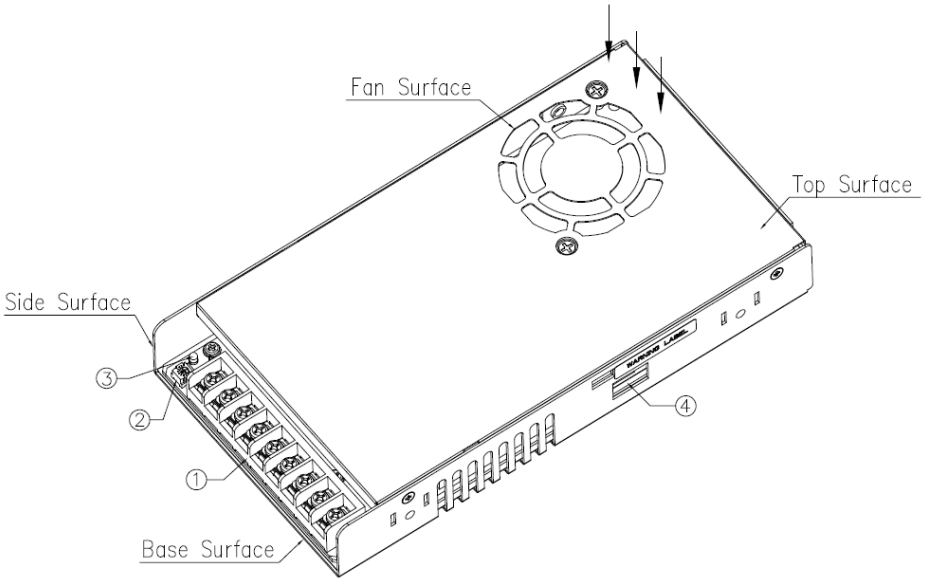
# PMT Panel Mount Power Supply

## PMT2 350W series / PMT-☐V350W2B☐☐

**PMT-☐V350W2BM☐**




### Device Descriptions




1) Input & Output terminal block connector
2) DC voltage adjustment potentiometer
3) DC OK control LED (Green)
4) AC selectable switch



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# PMT Panel Mount Power Supply

## PMT2 350W series / PMT-☐V350W2B☐☐

### Dimensions

**L x W x H:** 215 x 115 x 30 mm (8.46 x 4.53 x 1.18 inch)

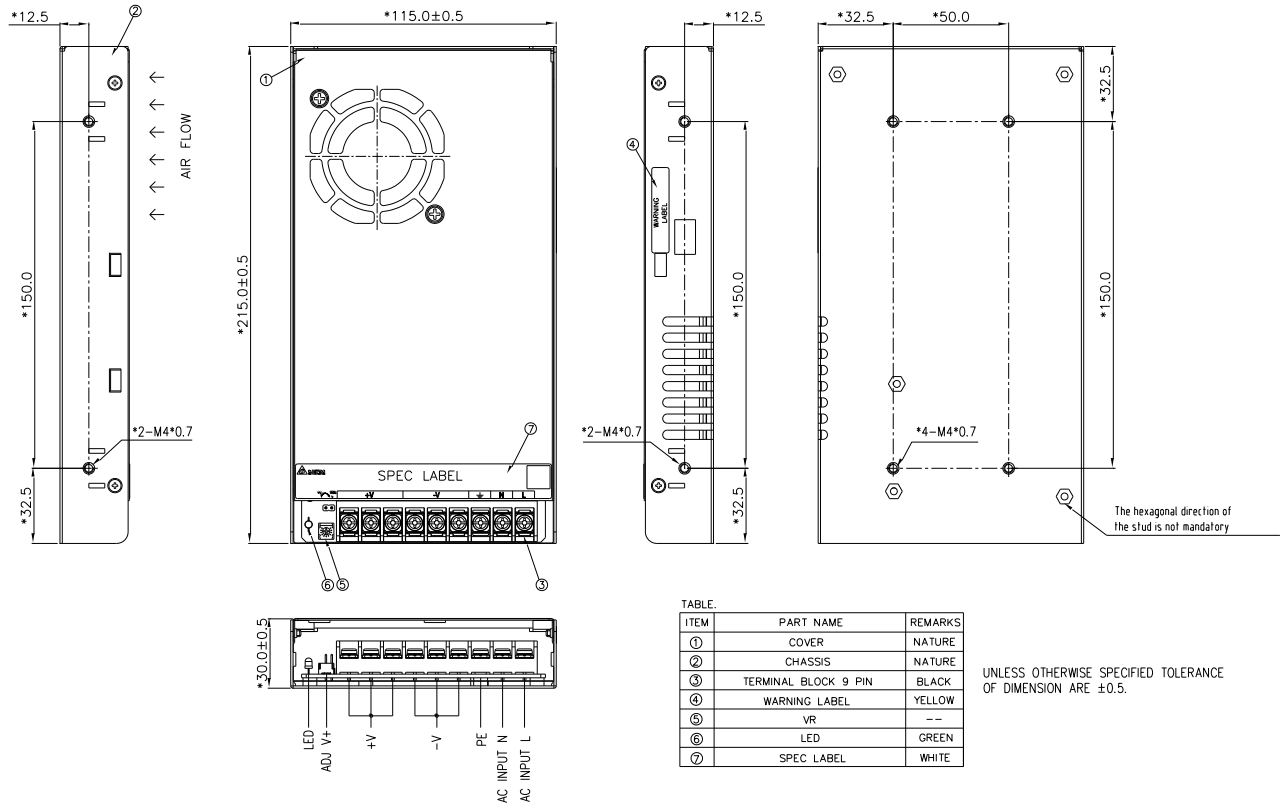



TABLE.

| ITEM | PART NAME | REMARKS |
|---|---|---|
| ① | COVER | NATURE |
| ② | CHASSIS | NATURE |
| ③ | TERMINAL BLOCK 9 PIN | BLACK |
| ④ | WARNING LABEL | YELLOW |
| ⑤ | VR | -- |
| ⑥ | LED | GREEN |
| ⑦ | SPEC LABEL | WHITE |

UNLESS OTHERWISE SPECIFIED TOLERANCE OF DIMENSION ARE ±0.5.

Note : Built-in cooling fan. Must prevent dust suction into power supply, or use natural convection power supply if any concerns.

### Wire AWG Table

| Current rating for PVC Wire AWG | | | |
|---|---|---|---|
| 6 AWG | 52.5 A | 20 AWG | 6.5 A |
| 8 AWG | 37.5 A | 22 AWG | 5.0 A |
| 10 AWG | 29.0 A | 24 AWG | 3.5 A |
| 12 AWG | 22.5 A | 26 AWG | 2.5 A |
| 14 AWG | 16.5 A | 28 AWG | 2.0 A |
| 16 AWG | 12.0 A | 30 AWG | 1.5 A |
| 18 AWG | 9.0 A | | |



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# PMT Panel Mount Power Supply

## PMT2 350W series / PMT-☐V350W2B☐☐

### Engineering Data

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

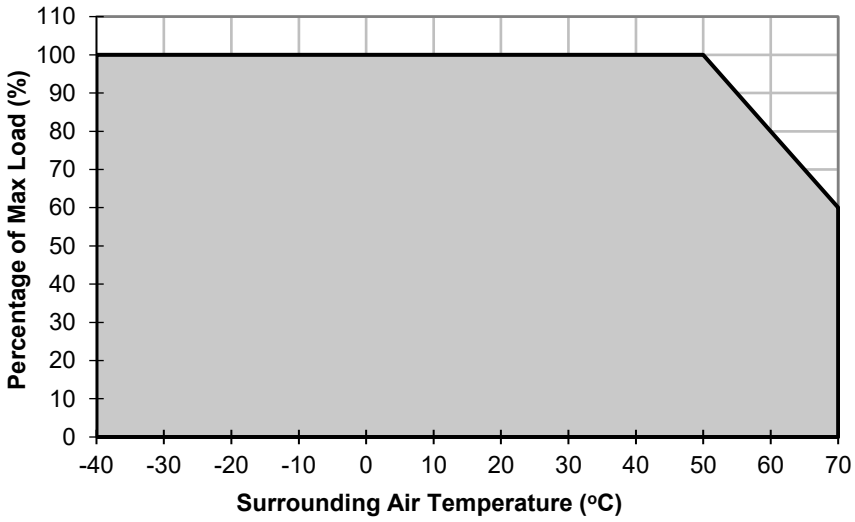



**Fig. 1 De-rating for Horizontal Mounting Orientation**
> 50°C de-rate power by 2.0% / °C

**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 & Fig.2.
2. The power supply will have long rise time when the ambient temperature range is -30°C to -40°C.
3. If the output capacity is not reduced when the surrounding air temperature >50°C, the device will run into Over Temperature Protection. When activated, power supply will latch off, until the surrounding air temperature is lowered or the load is reduced as far as necessary to keep the device in working condition, and require removal/re-application of input AC voltage in order to restart.
4. 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.
5. Depending on the surrounding air temperature and output load delivered by the power supply, the device can be very hot!

#### Output Load De-rating VS Input Voltage

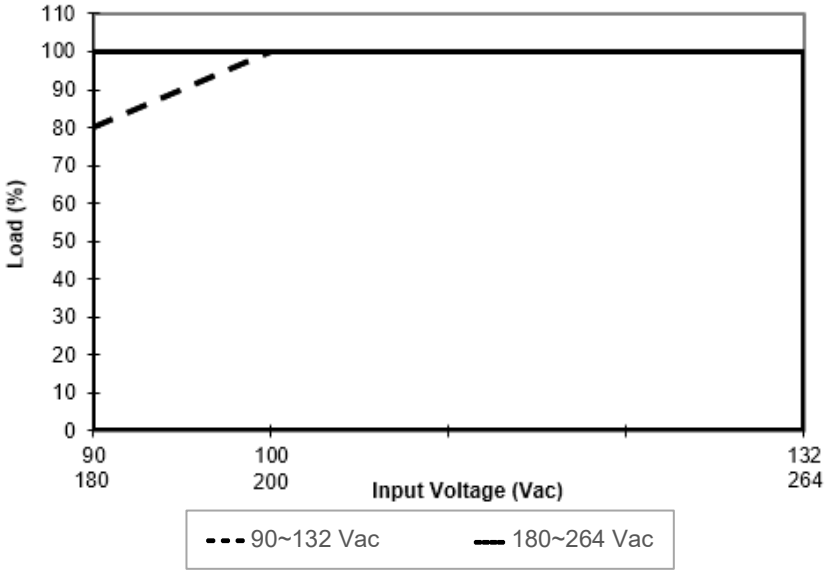



**Fig. 2 De-rating for AC Input Voltage**
< 100Vac de-rate power by 2% / V (80% load @ 90 Vac)

- No output power de-rating for the input voltage from 100 Vac to 264 Vac



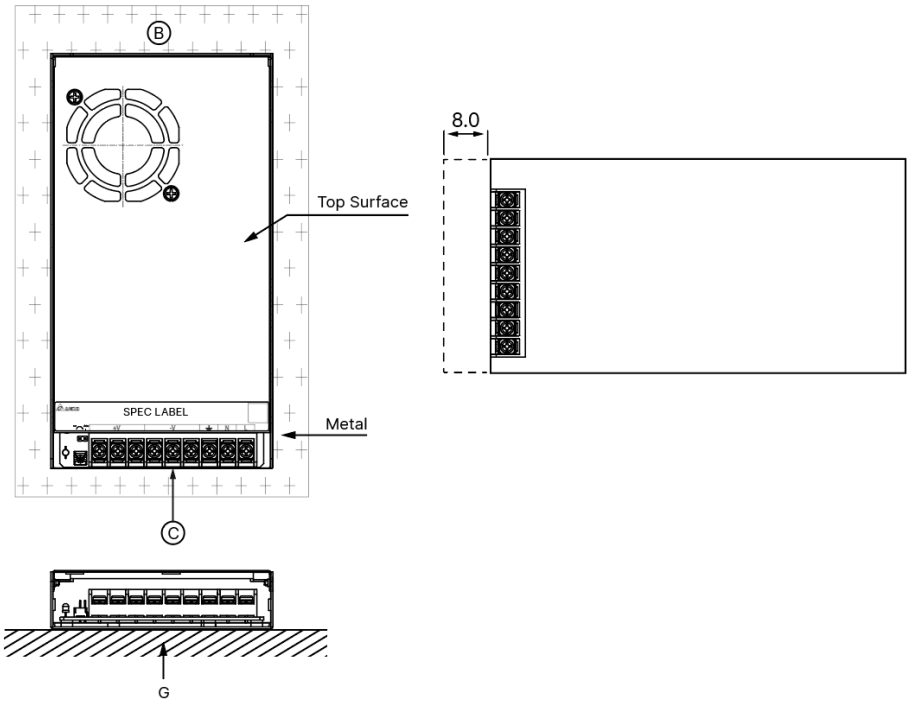
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# PMT Panel Mount Power Supply
## PMT2 350W series / PMT-☐V350W2B☐☐

### Assembly & Installation

Ⓐ Base Mounting: Fig.3 shows the mounting hole locations for power supply assembly onto a metal mounting surface.
Ⓑ This surface belongs to customer's end system or panel where the power supply is mounted.
Ⓒ Connector

**Base Mounting (Horizontal)**




* If the device has to be mounted in any other orientation, please leave a message via the Contact Us form.

- Use flexible cable (stranded or solid) of AWG No.18-12. User should calculate and select the suitable wire specification (type/quantity/diameter) according to actual output current. The torque at the Connector shall not exceed 8 Kgf.cm. (6.94 lbf.in). The insulation stripping length should not exceed 0.275" or 7 mm. (Refer to Fig. 3).

### Installation of Mounting Accessories

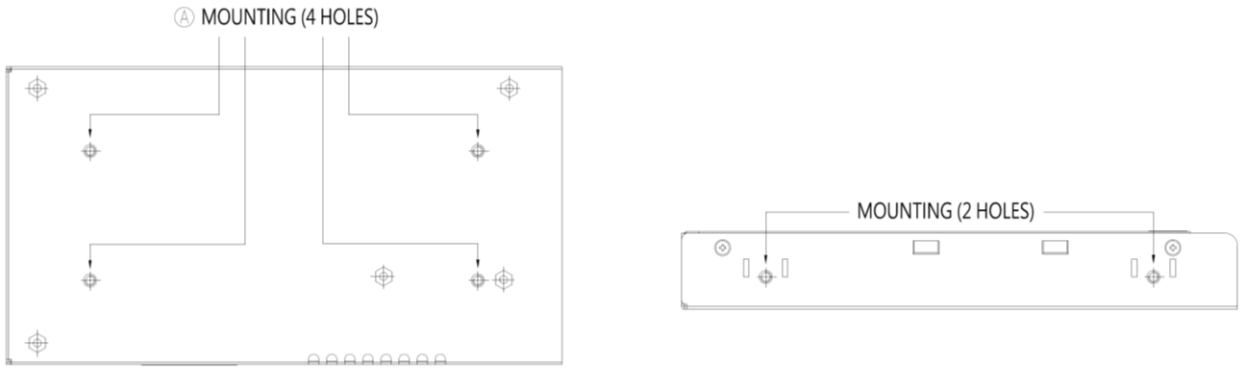



**Fig. 3 Assembly Reference**



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# PMT Panel Mount Power Supply
## PMT2 350W series / PMT-☐V350W2B☐☐

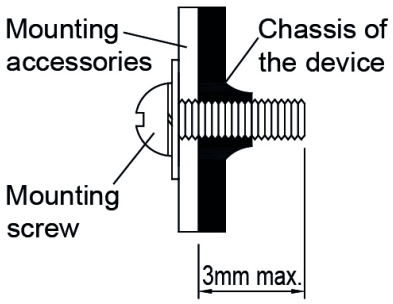



Fig. 4 Mounting Screw

- Only use M4 screw ≤ 3 mm (0.20 inch) through the base mounting holes. This is to keep a safe distance between the screw and internal components.
- Recommended mounting tightening torque: 4~5 Kgf.cm (3.47~4.33 lbf.in).

### Safety Instructions

- If user's mounting orientation is not according to the recommended mounting orientations, please consult Delta for further information.
- To ensure sufficient convection cooling, always maintain a safety distance of ≥ 50mm (1.97 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.
- 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 from entering the device through the openings during installation. It may cause: Electric shock; Safety Hazard; Fire; Product failure
- The power supply must be mounted by metal screws onto a grounded metal surface. It is highly recommended that the Earth terminal on the connector be connected to the grounded surface.



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# PMT Panel Mount Power Supply
## PMT2 350W series / PMT-☐V350W2B☐☐

## Functions

### 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.

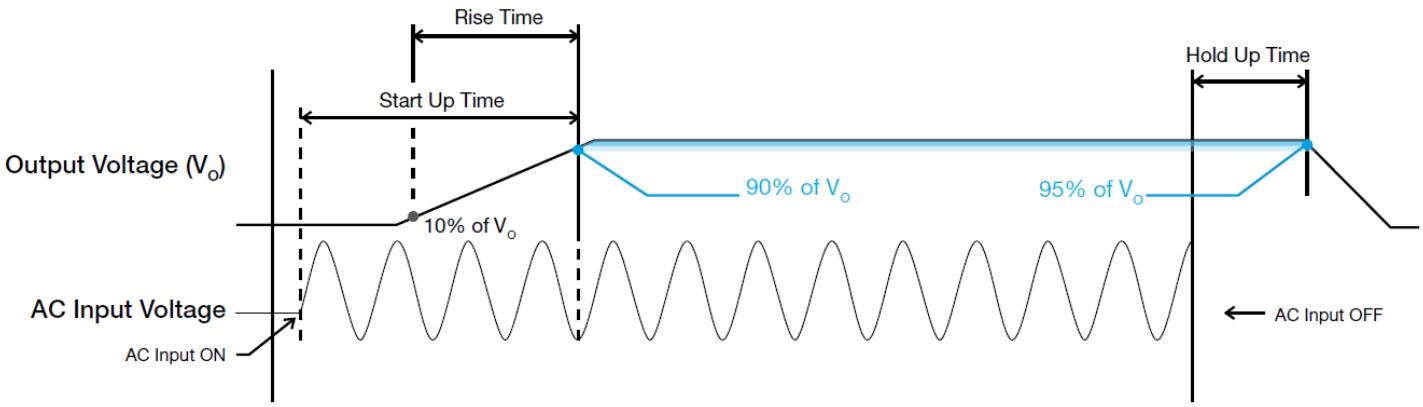
### Rise Time

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

### Hold-up Time

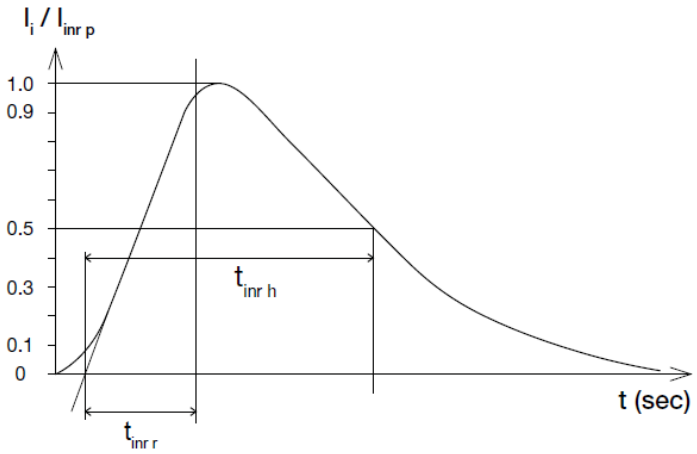
Time between the collapse of the AC input voltage, and the output falling to 95% of its steady state set value.

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



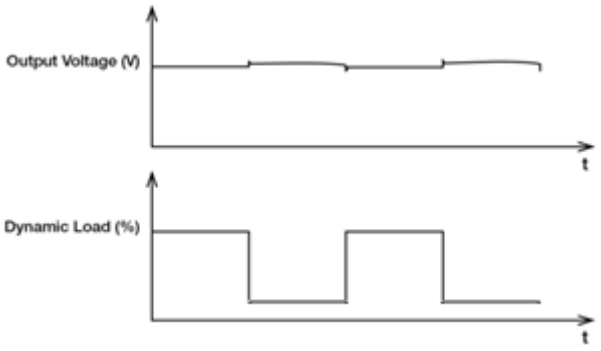

### Inrush Current

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 remains within ± 10% of its steady state value, when subjected to a dynamic load from 10% to 100%.






All parameters are specified at 25°C ambient and nominal AC input unless otherwise indicated.

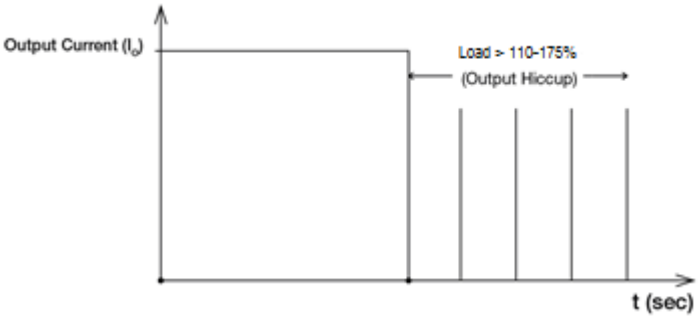


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# PMT Panel Mount Power Supply
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### Overload & Overcurrent Protections (Auto-Recovery)

The power supply's Overload (OLP) and Overcurrent (OCP) Protections will be activated when output current exceeds 110% of $I_O$ (Max load). In such occurrence, the $V_O$ 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 Io when it is <110% but >100%, since it may cause damage to the PSU.

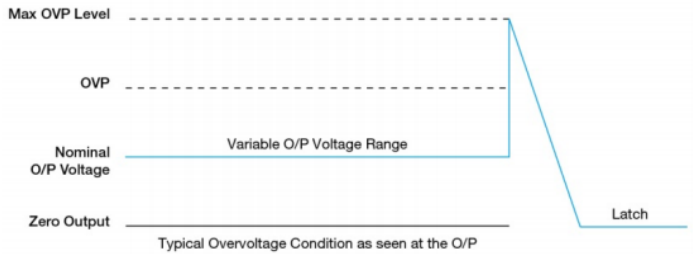
### Short Circuit Protection (Auto-Recovery)

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 (Latch Mode)

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 under "Protections". Power supply will latch, and require removal/re-application of input AC voltage in order to restart.

**The power supply should be latch, and require removal /re-apply of input AC voltage in order to restart**.




### Over Temperature Protection (Latch Mode)

As described in Engineering data section, 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 latch mode until the temperature drops to its normal operating temperature as recommended in the de-rating graph.

## Others

### 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 PSU.deltaww.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

Thailand
Delta Electronics (Thailand) PCL.
909 Pattana 1 Rd., Muang, Samutprakarn, 10280 Thailand

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