

PMT2

Highlights & Features

- Isolated & non-isolated Output & Ground for CH1 & CH2
- Household appliance approvals to IEC/EN 60335-1, IEC/EN 61558-1 and IEC/EN 61558-2-16
- Universal AC input voltage range
- No load power consumption < 0.3 W
- Low profile design : 30 mm height
- OVC III, Pollution Degree 3
- Conforms to harmonic current IEC/EN 61000-3-2, Class A
- High MTBF > 700,000 hrs per Telcordia SR-332

Safety Standards



CB Certified for worldwide use

Model Number: PMT-□V75W2□A□
Unit Weight: 0.276 kg (0.609 lb)
Dimensions (L x W x H): 129 x 97 x 30 mm
 (5.08 x 3.82 x 1.18 inch)

General Description

PMT 2nd generation (PMT2) power supplies is designed in a low 30 mm profile and accepts universal AC input. The highly efficient convection cooling construction can operate from -30°C to 70°C. The single output model is competitively priced for general industrial and ITE applications. It complies to major safety approvals such as IEC/EN 60335-1, IEC/EN 61558-2-16, IEC 60950-1 & IEC/EN UL 62368-1.

Model Information

PMT2 Panel Mount Power Supply

Model Number	Input Voltage Range	Rated Output Voltage	Rated Output Current
PMT-D1V75W2□A	90 – 264 Vac	V1: 5 Vdc, V2: 12 Vdc	V1: 5.0 A V2: 4.0 A
PMT-D2V75W2□A		V1: 5 Vdc, V2: 24 Vdc	V1: 5.0 A V2: 2.1 A

Model Numbering

PM	T –	□V	75W	2	□	A
Panel Mount	Product Type T – Enclosed	Dual Output Voltage D1 – 5 V & 12 V D2 – 5 V & 24 V	Output Power	Single Phase with Low Profile	B – Non-Isolated C – Isolated	Connector Type A – Terminal Block

Specifications

Model Number	PMT-D1V75W2□A	PMT-D2V75W2□A
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Input Ratings / Characteristics

Nominal Input Voltage	100-240 Vac	
Input Voltage Range	90-264 Vac	
Nominal Input Frequency	50-60 Hz	
Input Frequency Range	47-63 Hz	
Input Current	1.4 A typ. @ 115 Vac, 0.85 A typ. @ 230 Vac	
Efficiency at 100% Load @ 230Vac	83% typ.	85% typ.
No Load Power Consumption	< 0.3 W typ. @ 230 Vac	
Max Inrush Current (Cold Start)	55 A typ. @ 230 Vac	
Leakage Current	< 0.5 mA @ 240 Vac / 50 Hz	

Output Ratings / Characteristics*1

Nominal Output Voltage	V1: 5 V; V2: 12 V	V1: 5 V; V2: 24 V
Factory Set Point Tolerance	± 1% (initial set point tolerance from factory)	
Output Voltage Adjustment Range	V1: Fixed; V2: 10.8 – 13.2 V	V1: Fixed; V2: 21.6 – 26.4 V
Output Current	V1: 0 – 5.0 A, V2: 0.3 – 4.0 A	V1: 0 – 5.0 A, V2: 0.2 – 2.1 A
Output Power	73 W	75.4 W
Line Regulation	V1 & V2: ±0.5% typ. (@ 115 Vac & 230 Vac input)	
Load Regulation	V1: ± 1.5% typ. V2: ± 0.5% typ. (@ 115 Vac & 230 Vac input)	
PARD*2 (20MHz)	V1: <100 mVpp, V2: <120 mVpp @ 0°C to 70°C V1: 300 mVpp, V2: 360 mVpp typ @ -30°C to 0°C	V1: < 100 mVpp, V2: < 150 mVpp @ 0°C to 70°C V1: 300 mVpp, V2: 450 mVpp typ @ -30°C to 0°C
Rise Time	30 ms typ. @ 115 Vac & 230 Vac	
Start-up Time	500 ms typ. @ 115 & 230 Vac	
Hold-up Time	10 ms typ. @ 115 Vac, 50 ms typ. @ 230 Vac	
Dynamic Response (Overshoot & Undershoot O/P)	± 10% @ 230 Vac input, 10-100% load (Slew Rate: 2.5 A/μS, 50% duty cycle @ 5 Hz & 10 KHz)	
Start-up with Capacitive Loads	V1 & V2 : 8000 uF Max	V1 & V2: 8000 uF Max

*1 For power de-rating from > 40°C to 70°C, see power de-rating on page 3.

*2 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°C

Mechanical

Case Chassis	Aluminum
Case Cover	SGCC
Dimensions (L x W x H)	129 x 97 x 30 mm (5.08 x 3.82 x 1.18 inch)
Unit Weight	0.276 kg (0.609 lb)
Indicator	Green LED (DC OK)
Cooling System	Convection
Terminal	M3.5 x 7 Pins (Rated 300 V / 20A)
Wire	AWG 18-12 Current rating can refer to page 6 "Wire AWG Table"
Noise (1 Meter from power supply)	Sound Pressure Level (SPL) < 25 dBA

Environment

Surrounding Air Temperature	Operating	-30°C to +70°C (-40°C Cold Start)
	Storage	-40°C to +85°C
Power De-rating		> 40°C de-rate power by 1.67% / °C < 100 Vac de-rate power by 1.33% / V (86.67% load @ 90 Vac)
Operating Humidity		20 to 90% RH (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: 50 G for a duration of 11 ms, 3 shocks for each 3 directions
	Operating	IEC 60068-2-27, Half Sine Wave: 10 G 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 (2.09 G); 20 min per axis for all X, Y, Z direction
	Operating	IEC 60068-2-6, Sine Wave: 20 Hz to 500 Hz (5 G); 10 min per cycle, 60 min for each axis (X, Y,Z)
Over Voltage Category		II (Compliance to EN 62477-1 OVC III with 2000 meters altitude)
Pollution Degree		3

Protections

Overvoltage	V1: 5.5 - 7.5 V; V2: 13.2 - 17.4 V ; Latch Mode	V1: 5.5 - 7.5 V; V2: 26.4 - 33.6 V; Latch Mode
Overload / Overcurrent	V1 > 110% of rate load current, Hiccup Mode, Non-Latching (Auto-Recovery) V2 >110% of rate load current, Hiccup Mode, Non-Latching (Auto-Recovery) (when V2 auto-recovery, V1 auto-recovery)	
Over Temperature	V1: Hiccup Mode, Non-Latching (Auto-Recovery) V2: Latch (when V2 latch, V1 latch)	
Short Circuit	Hiccup Mode, Non-Latching (Auto-Recovery) (Auto-Recovery when the fault is removed)	
Protection Against Shock	Class I with PE*3 connection	

*3 PE: Protection Earth

Reliability Data

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

Safety Standards / Directives

Safety Entry Low Voltage		SELV
Electrical Safety	TUV Bauart	EN 62368-1, EN 60335-1, EN 61558-1/-2-16
	UL/cUL	UL 62368-1, and CSA C22.2 No. 62368-1
	CB scheme	IEC 62368-1, IEC 60950-1, IEC 60335-1, IEC 61558-1/-2-16,
	KC	K 60950-1
	EAC	TP TC 004/2011
CE		In conformance with EMC Directive 2014/30/EU and Low Voltage Directive 2014/35/EU
UKCA		In conformance with Electromagnetic Compatibility Regulations 2016 and Electrical Equipment (Safety) Regulations 2016
Galvanic Isolation	Input to Output	4.0 KVac
	Input to Ground	2.0 KVac
	Output to Ground	1.25 KVac
	V1 to V2	0.5 KVac (PMT-□V75W2CA□ model)

EMC

Emissions (CE & RE)		CISPR 32, EN/BS EN 55032, EN/BS EN 61000-6-4, KN32 Compliance to EN/BS EN 55014-1, FCC Title 47, EN/BS EN 61000-6-3 : Class B
Immunity		EN/BS EN 55035, KN 35, EN/BS EN 61000-6-2 Compliance to EN/BS EN 55014-2, EN/BS EN 61000-6-1
Electrostatic Discharge	IEC 61000-4-2	Level 4 Criteria A ¹⁾ Air Discharge: 15 kV Contact Discharge: 8 kV
Radiated Field	IEC 61000-4-3	Level 3 Criteria A ¹⁾ 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⁾ 2 kV
Surge	IEC 61000-4-5	Level 4 Criteria A ¹⁾ Common Mode ⁴⁾ : 4 kV Differential Mode ⁵⁾ : 2 kV
Conducted	IEC 61000-4-6	Level 3 Criteria A ¹⁾ 150 kHz-80 MHz, 10 Vrms
Power Frequency Magnetic Fields	IEC 61000-4-8	Level 4 Criteria A ¹⁾ 30 A / Meter
Voltage Dips and Interruptions	IEC 61000-4-11	0% residual; 1 cycle, Criteria B ²⁾ 40% residual; 10 cycle, Criteria C ³⁾ 70% residual; 25 cycle, Criteria C ³⁾
Harmonic Current Emission	IEC/EN/BS EN 61000-3-2	Class A

1) Criteria A: Normal performance within the specification limits

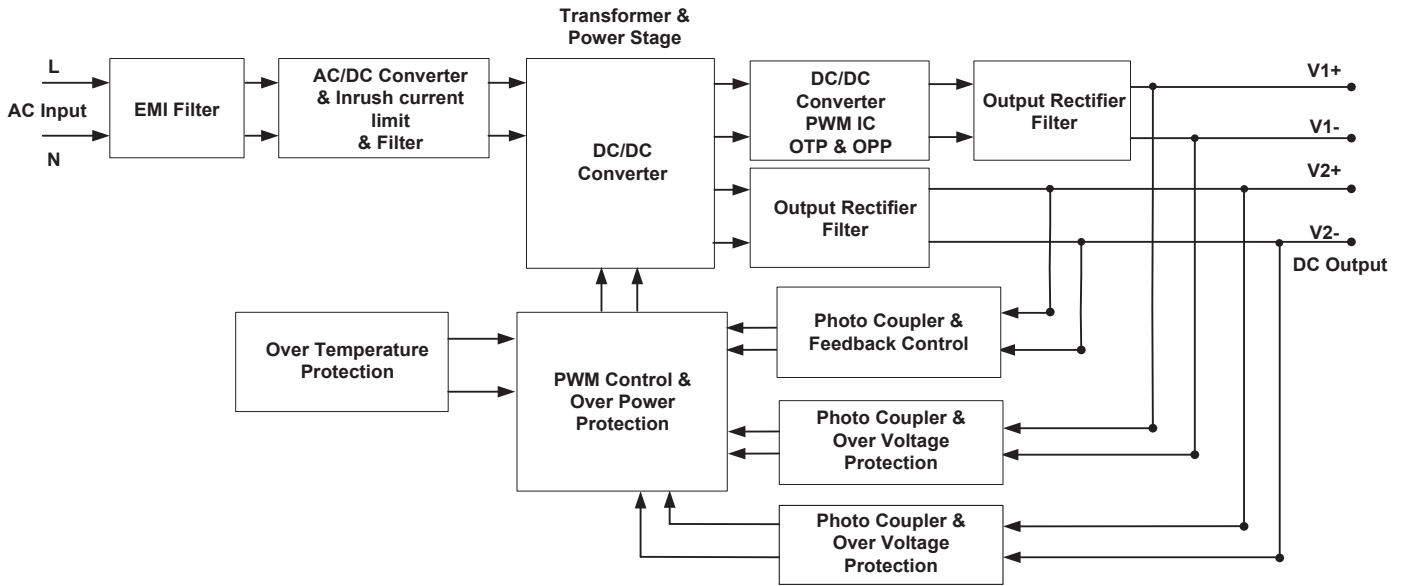
2) Criteria B: Output out of regulation, or shuts down during test. Automatically restored to normal operation after test.

3) Criteria C: Output out of regulation, shuts down during test (Need to recycle AC power cord to normal operation after test)

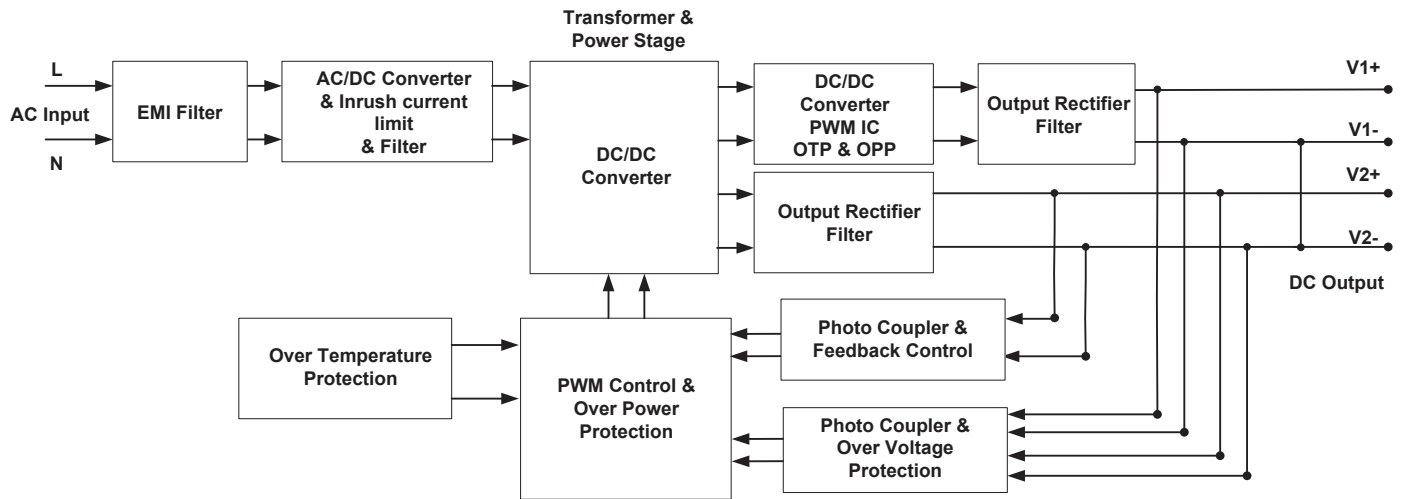
4) Asymmetrical: Common mode (Line to earth)

5) Symmetrical: Differential mode (Line to line)

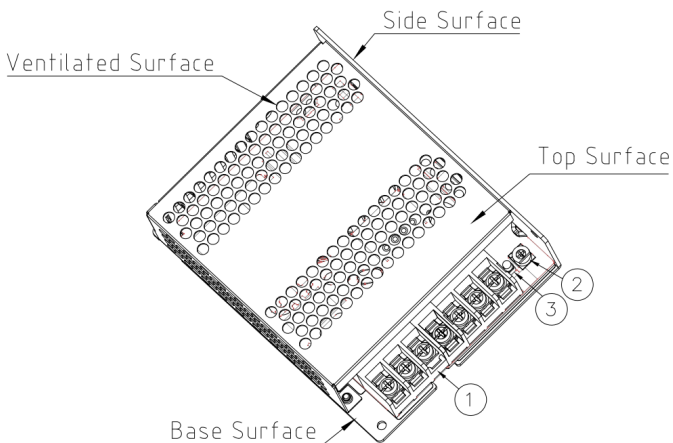
Block Diagram (PMT-□V75W2CA)



Block Diagram (PMT-□V75W2BA)



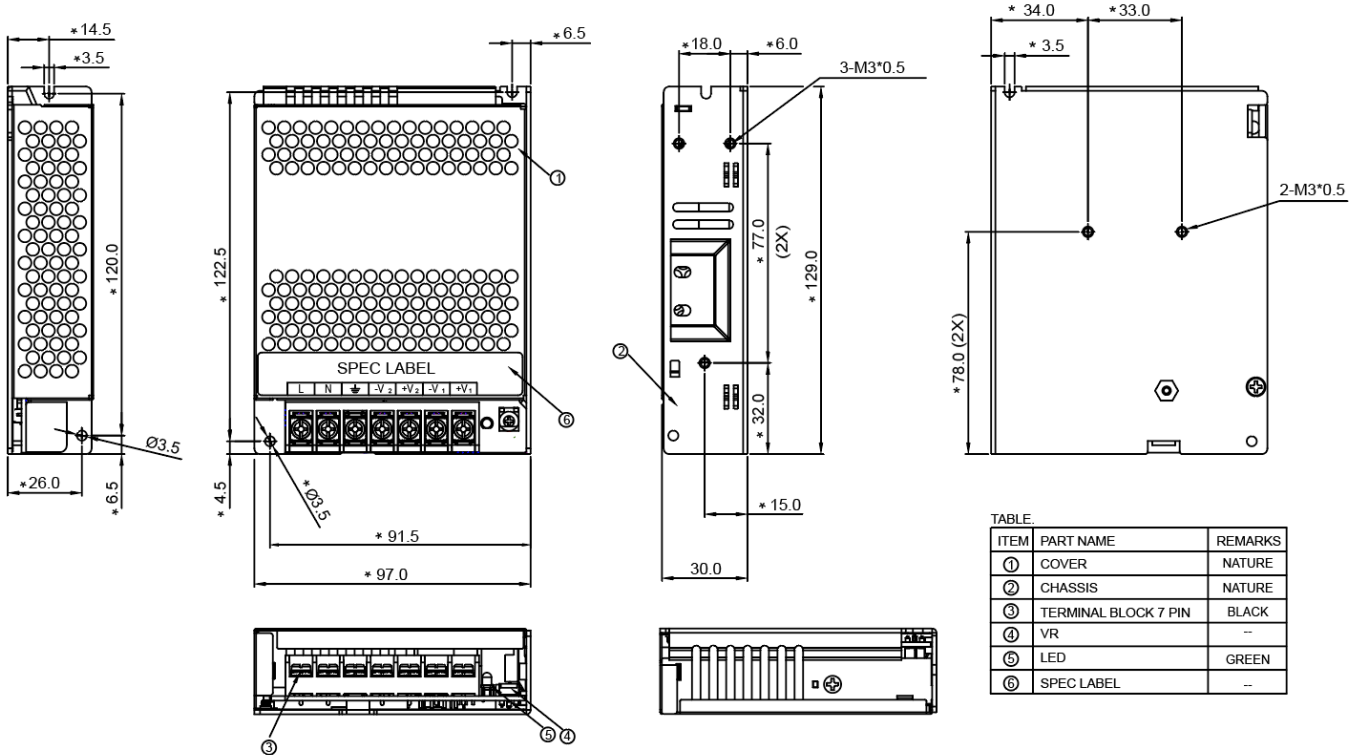
Device Descriptions



- 1) Input & Output terminal block connector
- 2) DC voltage adjustment potentiometer
- 3) DC OK control LED (Green)

Dimensions:

L x W x H: 129 x 97 x 30 mm (5.08 x 3.82 x 1.18 inch)



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

UNLESS OTHERWISE SPECIFIED TOLERANCE OF DIMENSION ARE ±0.5.

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
18 AWG	9.0 A	30 AWG	1.5 A
16 AWG	12.0 A		

Engineering Data

Output Load De-rating VS Surrounding Air Temperature

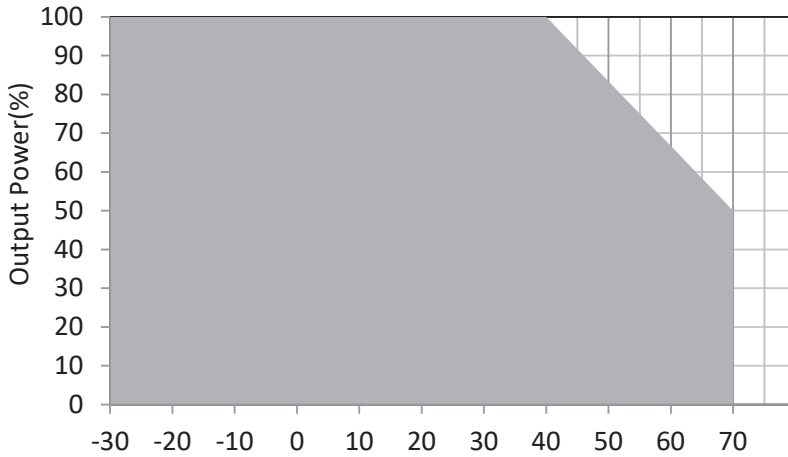


Fig. 1 De-rating for Vertical and Horizontal Mounting Orientation
 > 40°C de-rate power by 1.67% / °C

Output Load De-rating VS Input Voltage

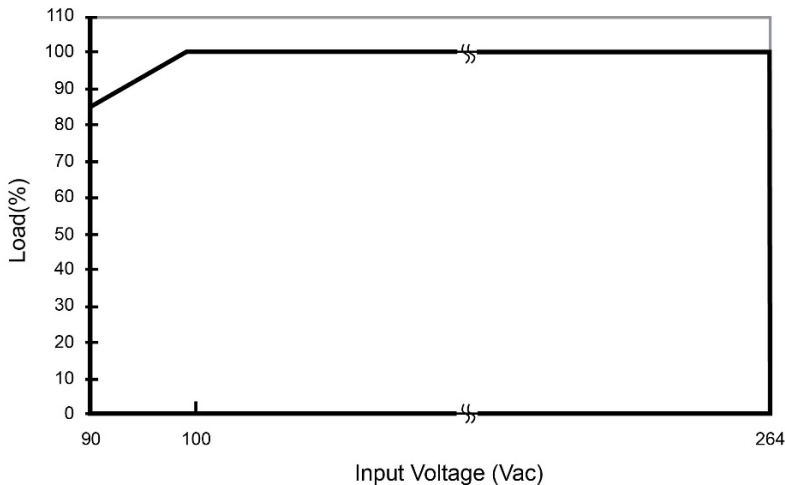


Fig. 2 De-rating for AC Input Voltage
 < 100 Vac de-rate power by 1.33% / V

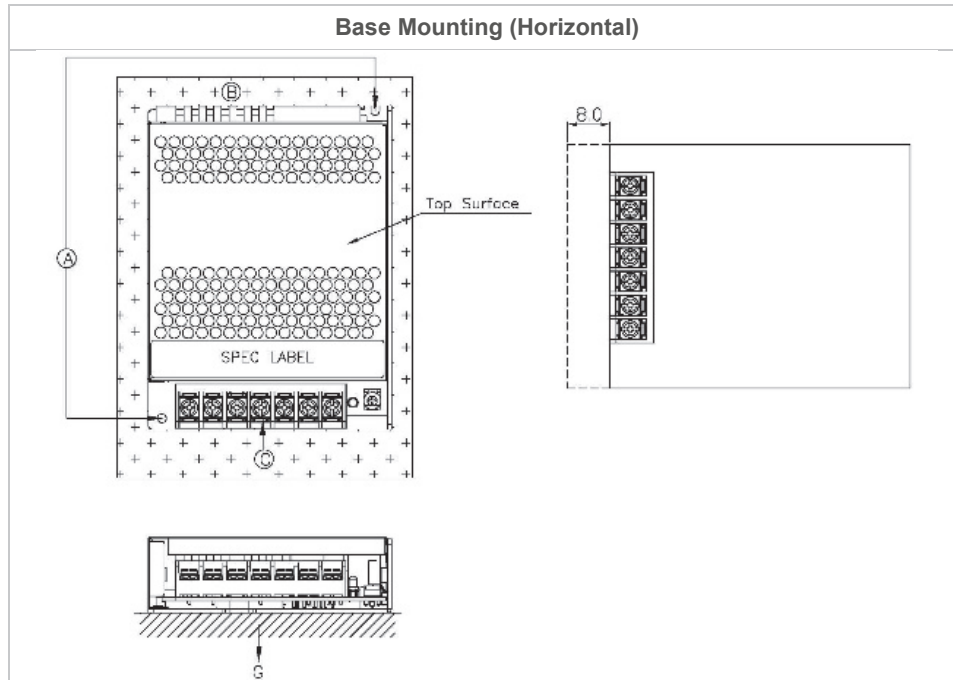
Note

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. The PSU will be bouncing and start up time will not exceed 5s when ambient temperature at ≈ 30 °C
3. If the output capacity is not reduced when the surrounding air temperature >40°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!

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

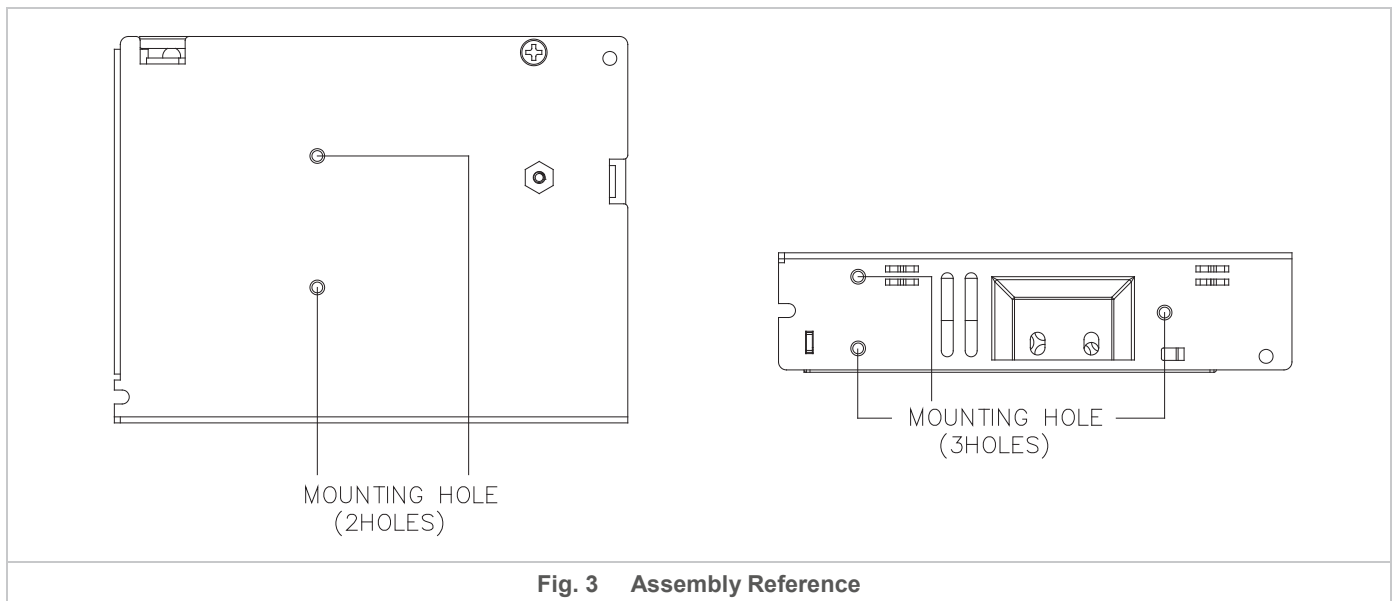
Assembly & Installation

- Ⓐ Mounting holes for power supply assembly onto the mounting surface.
 The 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



* If the device has to be mounted in any other orientation, please contact info@deltapsu.com for more details.

- 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).



Ensure the mounted device is kept at $\geq 8\text{mm}$ (0.16 inch) safety distance at all sides from other components and equipment.

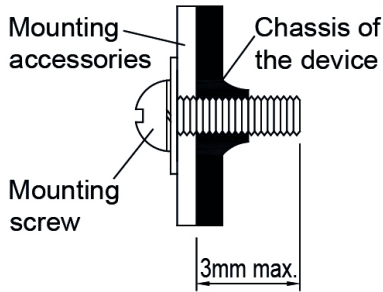


Fig. 4 Mounting Screw

- Only use M3 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: 4~7 Kgf.cm. (3.47~6.08 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 ≥ 50 mm (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.

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.

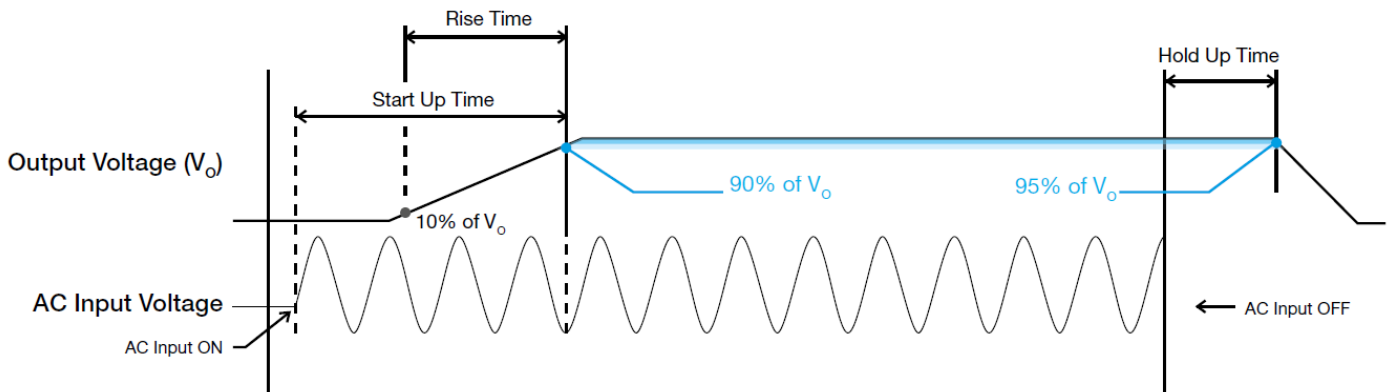
Rise Time

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

Hold-up Time

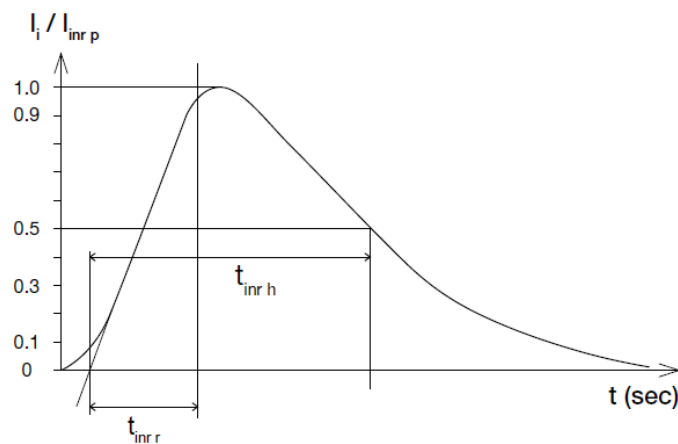
Time between the collapse of the AC input voltage, and the output falling to 95% of its steady state set value.

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



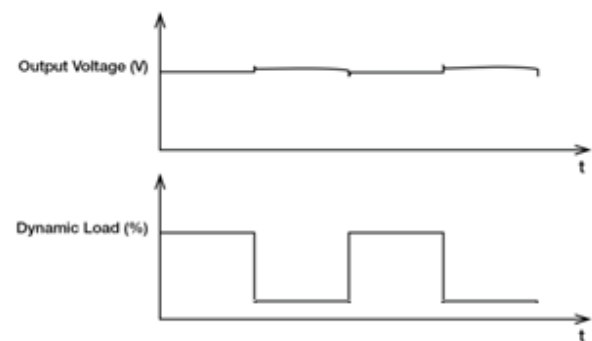
Inrush Current

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.



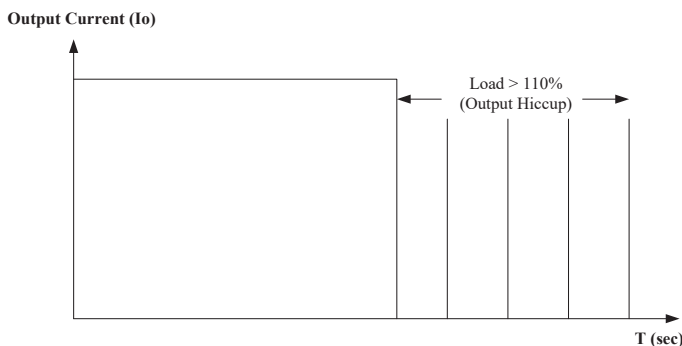
Dynamic Response

The power supply output voltage will remain within $\pm 10\%$ of its steady state value, when subjected to a dynamic load from 10% to 100%.



Overload & Overcurrent Protections (Auto-Recovery)

The power supply's Overload (OLP) and Overcurrent (OCP) Protections will be activated when either output current exceeds 110% of I_o (Max load). In such occurrence, the output V1/V2 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). When V1 (OLP or OCP) activated, the V1 will go into Hiccup mode itself and V2 keep normal operation. When V2 (OLP or OCP) activated, the V2 will go into Hiccup mode and also cause V1 go into Hiccup mode. The power supply will recover once the fault condition of the OLP and OCP is removed and I_o is back within the specifications.



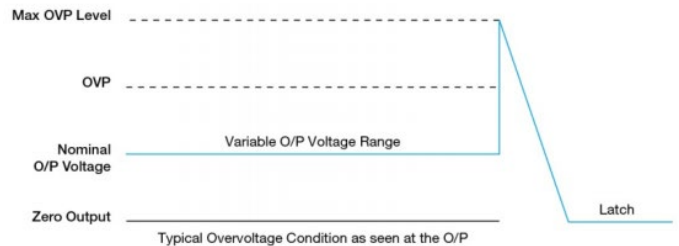
It is not recommended to prolong the duration of I_o when it is 100% < I_o < 110% range, since it may cause damage to the PSU.

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". When V1 (OVP) activated, the V1 will go into Latch mode and also cause V2 go into latch mode. When V2 (OVP) activated, the V2 will go into Latch mode and also cause V1 go into Latch mode. Removal/re-application of input AC voltage in order to restart.



Over Temperature Protection (Auto-Recovery / Latch Mode)

As described in load de-rating 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. There are two different OTP behaviors for V1 & V2 output. When V1 OTP activated, the V1 will go into auto-recovery mode itself and V2 keep normal operation until the temperature drops to its normal operating temperature as recommended in the de-rating graph. And when V2 OTP activated, the V2 will go into latch mode and also cause V1 latch. Removal/re-application of input AC voltage in order to rest

(March 2022, Rev. 07)