

PMC Panel Mount Power Supply

12V 50W 1 Phase / PMC-12V050W1A□

PMC



Highlights & Features

- Universal AC input range from 85Vac to 264Vac without power de-rating
- Full Aluminum casing for light weight and corrosion resistant handling
- High MTBF > 700,000 hrs. as per Telcordia SR-332
- Overvoltage / Overcurrent / Over Temperature Protections
- Certified according to IEC/EN/UL 62368-1

Safety Standards



Model Number: PMC-12V50W1A□
Unit Weight: 0.26 kg (0.57 lb)
Dimensions (L x W x H): 128 x 97 x 38 mm
 (5.04 x 3.82 x 1.50 inch)

General Description

Delta's PMC series of panel mount power supply offers a nominal output voltage of 12V, 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 IEC 60068-2. 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 125-375Vdc. 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-12V050W1AA	85-264Vac (125-375Vdc)	12Vdc	4.17A

Model Numbering

PMC	12V	050W	1	A	□
PMC Series	Output Voltage	Output Power	Single Phase	Delta Standard	Connector Type A – Terminal Block J – IP20 Connector*

*Options



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Specifications

Input Ratings / Characteristics

Nominal Input Voltage	100-240Vac
Input Voltage Range	85-264Vac
Nominal Input Frequency	50-60Hz
Input Frequency Range	47-63Hz
Nominal DC Input Voltage	125-250Vdc
DC Input Voltage Range	125-375Vdc
Input Current	< 1.1A @ 115Vac, < 0.7A @ 230Vac
Efficiency at 100% Load	> 84% @ 115Vac, > 85% @ 230Vac
Max Inrush Current	< 30A @ 115Vac, < 65A @ 230Vac
Power Factor	Conform to EN61000-3-2
Leakage Current	< 1mA @ 240Vac

Output Ratings / Characteristics

Nominal Output Voltage	12Vdc
Output Voltage Tolerance	± 2% (initial set point tolerance from factory)
Output Voltage Adjustment Range	11-14Vdc
Output Current	4.17A
Output Power	50W
Line Regulation	< 0.5% typ. (@ 85-264Vac input, 100% load)
Load Regulation	< 1% typ. (@ 85-264Vac input, 0-100% load)
PARD (20MHz)	< 100mVpp
Rise Time	< 30ms @ nominal input (100% load)
Start-up Time	< 2500ms @ nominal input (100% load)
Hold-up Time	> 15ms @ 115Vac, > 80ms @ 230Vac (100% load)
Dynamic Response (Overshoot & Undershoot O/P Voltage)	± 5% @ 0-100% load
Start-up with Capacitive Loads	8,000µF Max

Mechanical

Case Chassis / Cover	Aluminium
Dimensions (L x W x H)	128 x 97 x 38 mm (5.04 x 3.82 x 1.50 inch)
Unit Weight	0.26 kg (0.57 lb)
Indicator	Green LED
Cooling System	Convection
Terminal	Input and Output
Wire	PMC-12V050W1AA
	PMC-12V050W1AJ
Noise (1 Meter from power supply)	Sound Pressure Level (SPL) <40dBA

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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		< 95% RH
Operating Altitude		0 to 3,000 Meters (9,840 ft)
Shock Test	Non-Operating	IEC60068-2-27, 30G (300m/S ²) for a duration of 18ms 3 times per direction, 18 times in total
Vibration	Non-Operating	IEC60068-2-6, 10Hz to 150Hz @ 50m/S ² (5G peak); 20 min per axis for all X, Y, Z direction
Pollution Degree		2

Protections

Overvoltage	16V +10%/-5%, SELV output, Hiccup Mode, Non-Latching (Auto-Recovery).
Overload / Overcurrent	> 120% of rated load current, Hiccup Mode, Non-Latching (Auto-Recovery).
Over Temperature	< 75°C Ambient Temp@ 100% load, Non-Latching (Auto-Recovery).
Short Circuit	Hicc-up Mode, Non-Latching (Auto-Recovery when the fault is removed).
Protection Against Shock	Class I with PE* connection

*PE: Primary Earth

Reliability Data

MTBF	> 700,000 hrs, as per Telcordia SR-332
Expected Cap Life Time	10 years (115Vac & 230Vac, 50% load @ 40°C)

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Safety Standards / Directives

Electrical Safety	TUV Bauart	EN60950-1, EN 62368-1
	UL/cUL recognized	UL 60950-1 and CSA C22.2 No. 60950-1 (File No. E191395), UL 62368-1 and CSA C22.2 No. 62368-1 (File No. E191395)
	CB scheme	IEC60950-1, IEC-62368-1
CCC		GB4943
CE		In conformance with EMC Directive 2014/30/EU and Low Voltage Directive 2014/35/EU
Galvanic Isolation	Input to Output	3.0 KVac
	Input to Ground	1.5 KVac
	Output to Ground	0.5 KVac

EMC

EMC / Emissions		CISPR32, EN55032, FCC Title 47: Class B, GB9254
Immunity to		
Electrostatic Discharge	IEC61000-4-2	Level 4 Criteria A ¹⁾ Air Discharge: 15kV Contact Discharge: 8kV
Radiated Field	IEC61000-4-3	Level 3 Criteria A ¹⁾ 80MHz-1GHz, 10V/M with 1kHz tone / 80% modulation
Electrical Fast Transient / Burst	IEC61000-4-4	Level 3 Criteria A ¹⁾ 2kV
Surge	IEC61000-4-5	Level 3 Criteria A ¹⁾ Common Mode ²⁾ : 2kV Differential Mode ³⁾ : 2kV
Conducted	IEC61000-4-6	Level 3 Criteria A ¹⁾ 150kHz-80MHz, 10Vrms
Power Frequency Magnetic Fields	IEC61000-4-8	Criteria A ¹⁾ 10A/Meter
Voltage Dips	IEC61000-4-11	100% dip; 1 cycle (20ms); Self Recoverable
Low Energy Pulse Test (Ring Wave)	IEC61000-4-12	Level 3 Criteria A ¹⁾ Common Mode ²⁾ : 2kV Differential Mode ³⁾ : 1kV

1) Criteria A: Normal performance within the specification limits

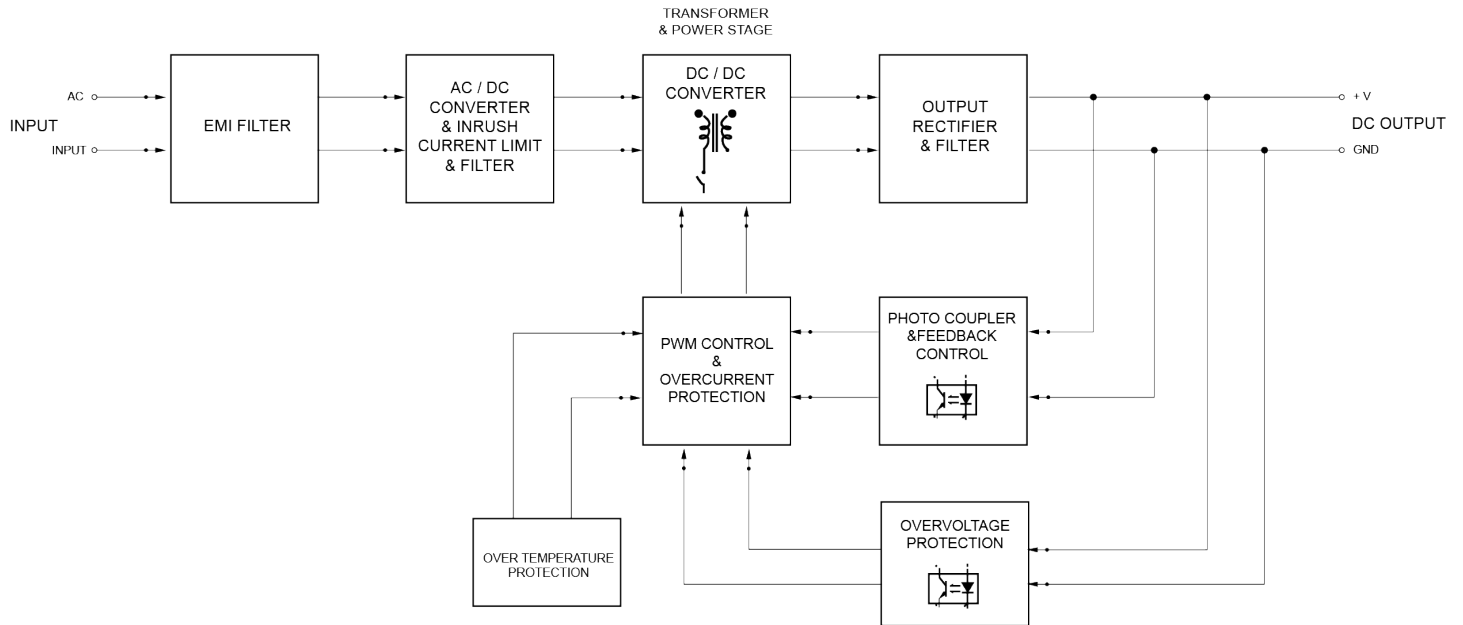
2) Asymmetrical: Common mode (Line to earth)

3) Symmetrical: Differential mode (Line to line)

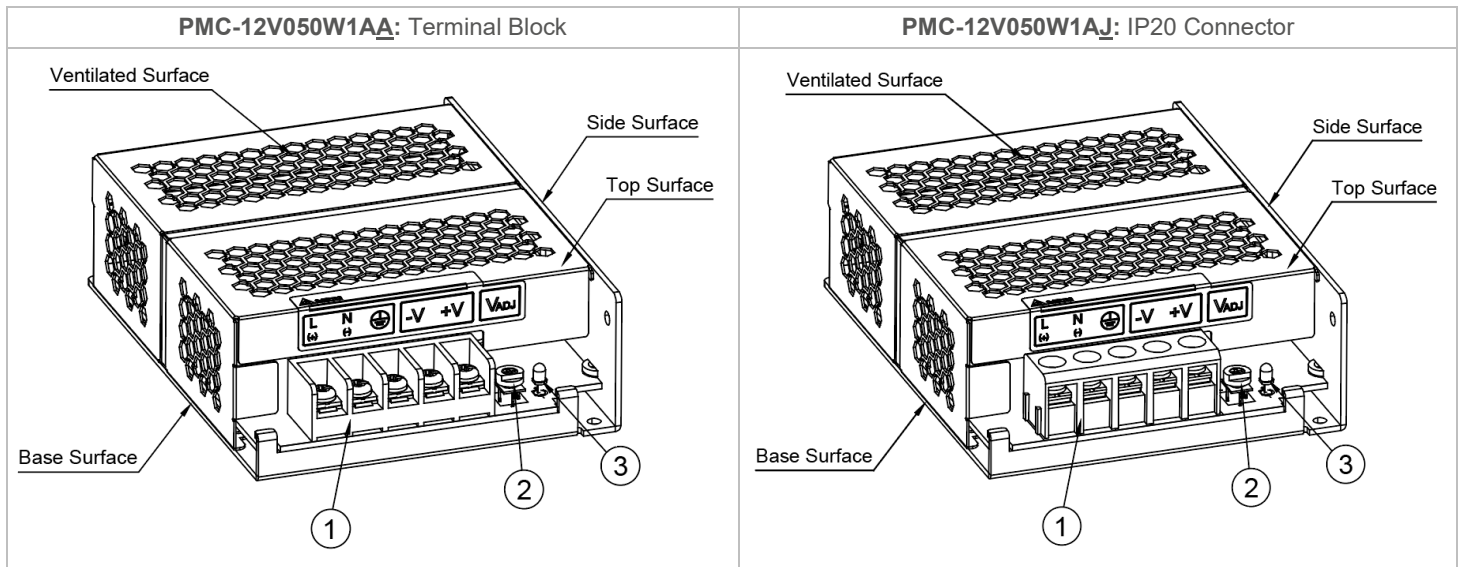
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Block Diagram



Device Description



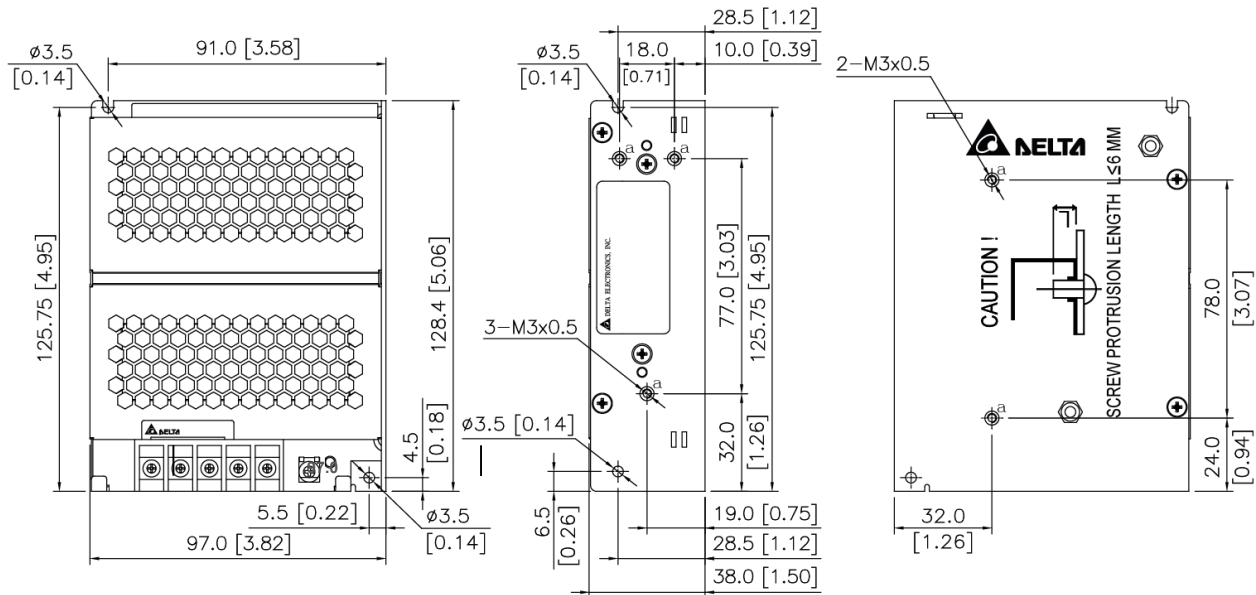
- 1) Input & Output terminal block connector
- 2) DC Voltage adjustment potentiometer
- 3) DC OK control LED (Green)

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Dimensions

L x W x H: 128 x 97 x 38 mm (5.04 x 3.82 x 1.50 inch) (PMC-12V050W1AA and PMC-12V050W1AJ)



Engineering Data

Output Load De-rating VS Surrounding Air Temperature

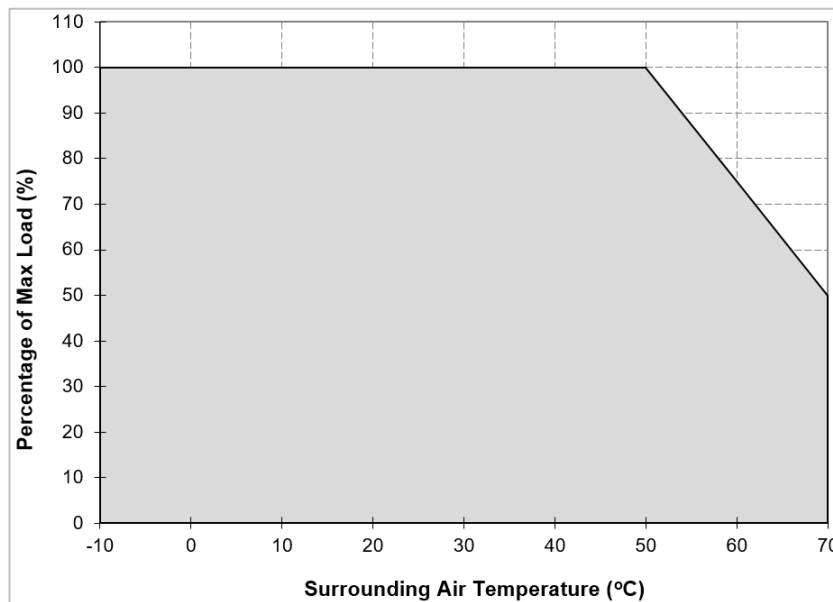


Fig. 1 De-rating for Vertical and Horizontal Mounting Orientation
> 50°C de-rate power by 2.5% / °C

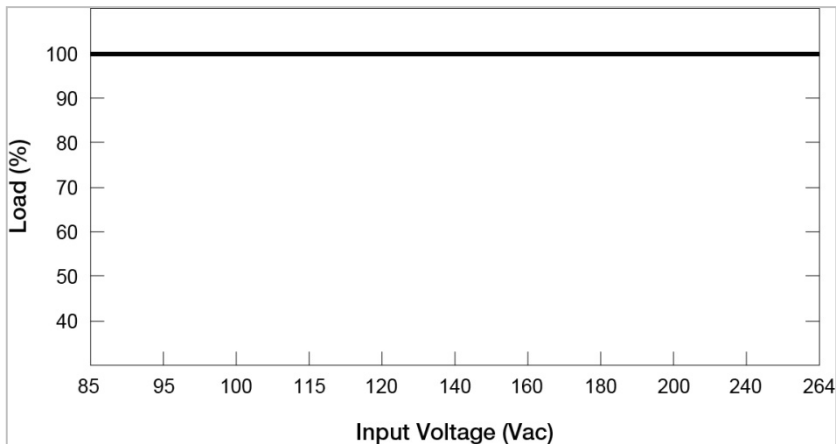
Note

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 > 50°C, the device will 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 of 20mm (0.79 inch) with adjacent units 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 do not hesitate to contact info@deltapsu.com for more details.

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Output Load De-rating VS Input Voltage

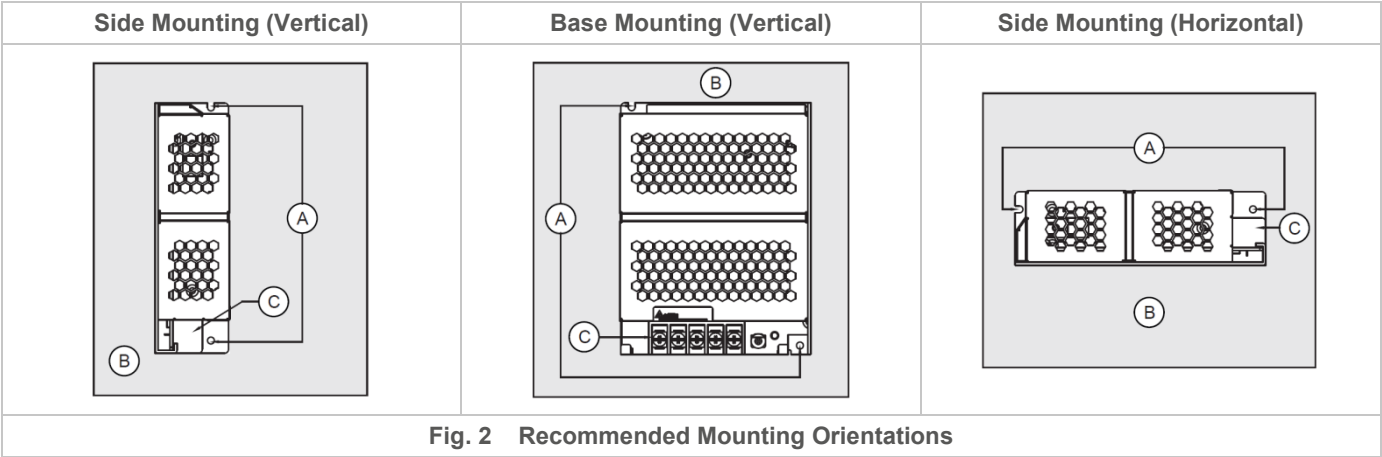


- No output power de-rating across the entire input voltage range

Assembly & Installation

Mounting

- Ⓐ 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.



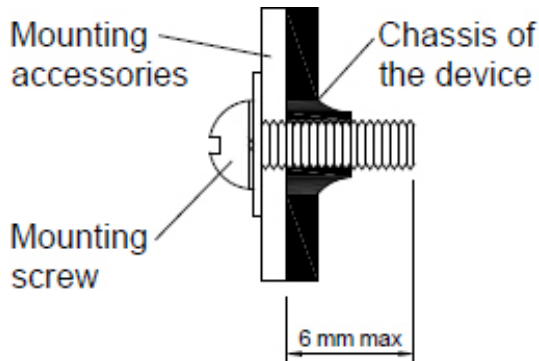
- Use flexible cable (stranded or solid) with the following sizes:

PMC-12V050W1AA	PMC-12V050W1AJ
AWG 20-14	AWG 20-12
- PMC-12V050W1AA / PMC-12V050W1AJ : The torque at the Connector shall not exceed 13 Kgf.cm. The insulation stripping length should not exceed 0.275" or 7mm

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Installation of Mounting Accessories

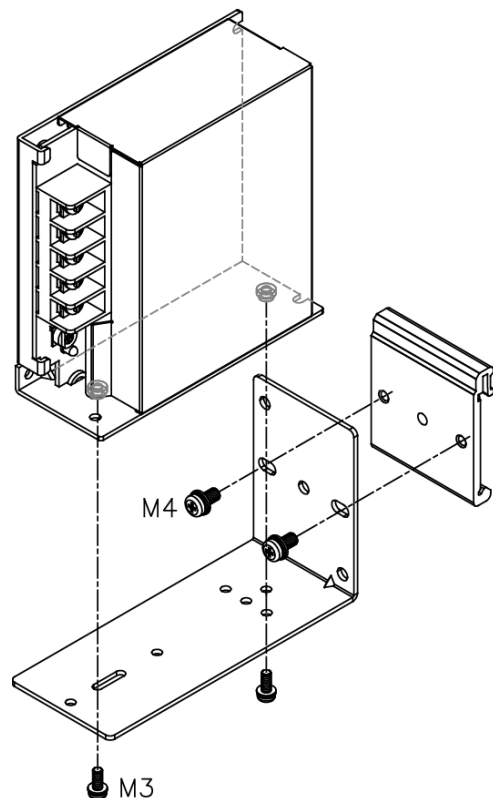


- Only use M3 screw ≤ 6 mm through the base mounting holes. This is to keep a safe distance between the screw and internal components.
- Recommended mounting tightening torque : 4~8Kgf.cm

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.

Accessories



L-01: Latch

P-03: Bracket

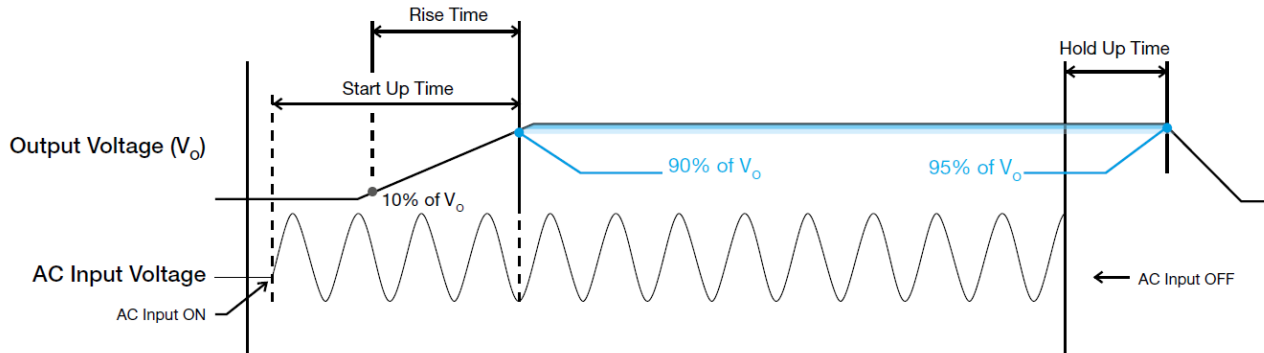
These accessories are used to mount the panel mount power supply onto a DIN rail.

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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 set value, after the input voltage is applied.

Rise Time

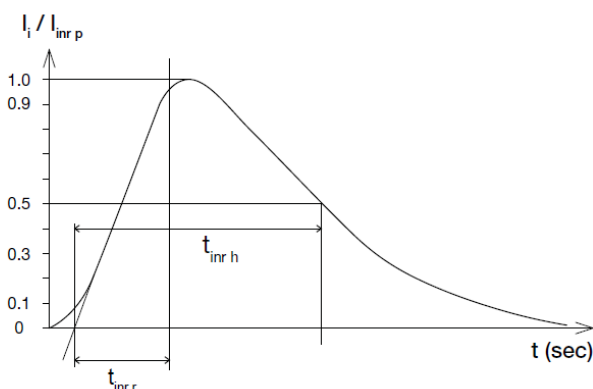
The time required for the output voltage to change from 10% to 90% of its set value.

Hold-up Time

Hold up time is the time when the AC input collapses and output voltage retains regulation for a certain period of time. The time required for the output to reach 95% of its set value, after the input voltage is removed.

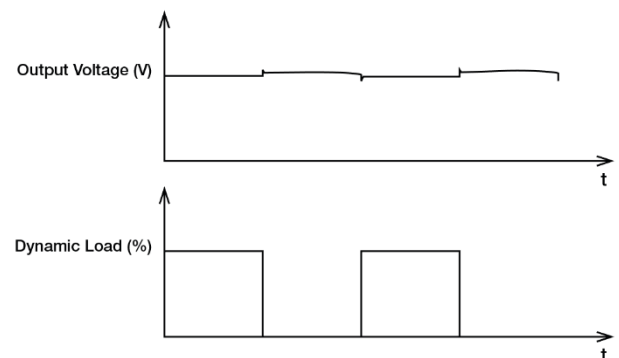
Inrush Current

Inrush Current is the first surge current seen on the input side when AC input is applied to the power supply. It is the first pulse captured; see a typical picture for the inrush current as seen in the power supply.



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.

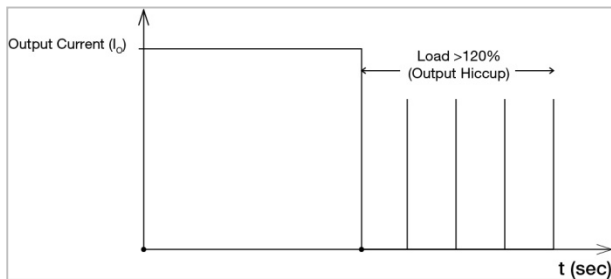


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Overload & Overcurrent Protections (Auto-Recovery)

The power supply's Overload (OLP) and Overcurrent (OCP) Protections will be activated when output current exceeds 110-160% 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 I_O when it is <110-160% 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.

Others

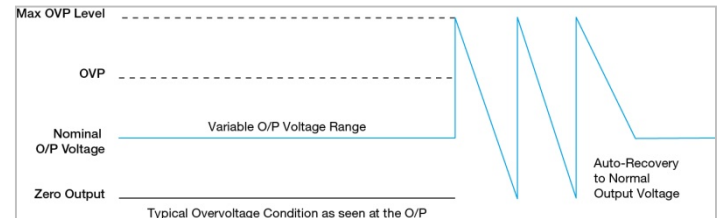
Attention

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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). This is activated when the overload condition persists for an extended duration and the output current is below the overload trigger point but >100% load. In the event of a higher operating condition at 100% load, the power supply will run into OTP when the surrounding air temperature is >75°C. When activated, the output voltage will go into bouncing mode until the operating surrounding temperature drops to 50°C or output capacity is reduced as recommended in the de-rating graph.

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Document Revision Record

Date	Item	Content Revised	Page Affected	Rev
14 Dec 17	1	- Update footer statement - Add EAC mark - Update model numbering - Update CE to EMC Directive 2014/30/EU and Low Voltage Directive 2014/35/EU - Replace CISPR22, EN55022 to CISPR32, EN55032	All 1 1 4	01
7 Nov 18	1	Add attention 1 paragraph	10	02
	2	Change dynamic response graph and content	9	
27 Apr 20	1	Remove RoHS	4 10	03
13 Nov 20	1	Update DS format with 62368-1 info - update product image - update Highlights & Features - update model name - add lb in weight - update dimension to (L x W x H) and add inch - update general description - update model numbering - add "Rated" for output voltage and output current - add "IP20 connector" and *option - add connector picture - update Mechanical: Case Chassis / Cover - update Indicator - update Terminal, Wire - add (1 Meter from power supply) - update Environment part - update Operating altitude - update Shock, Vibration - update Protections - update safety section - update Block diagram - update Device Description - update Dimension section - update Fig. 1 and Output Load De-rating VS Input Voltage - update drawings and format in Assembly & Installation section - update Safety Instructions add inch - add Installation of Mounting Accessories and drawing - Add "of its rated current" in Dynamic Response - update protection section BY Eak	1 1 1 1 1 1 1 1 1 1 1 2 2 2 2 3 3 3 4 5 5 5 6 7 7 8 8 9 10	04