

Chrome DIN Rail Power Supply

12V 25W 1 Phase (Class II & NEC Class 2) / DRC-12V30W1A□



*This picture is for reference to DRC-12V30W series only.

CHROME

Highlights & Features

- Class II, Double Isolation (No Earth connection is required)
- Universal AC input voltage range and full power up to 55°C
- Power will not de-rate for the entire input voltage range
- Efficiency > 85.0% @ 115Vac & 230Vac
- NEC Class 2 / Limited Power Source (LPS) certified
- Overvoltage / Overcurrent / Over Temperature Protections

Safety Standards



CB Certified for worldwide use

| | |
|--------------------------------|--|
| Model Number: | DRC-12V30W1A□ |
| Unit Weight: | 0.14 kg (0.31 lb) |
| Dimensions (L x W x D): | 91 x 53 x 55.6 mm (3.58 x 2.09 x 2.19 inch) |

General Description

The DRC-12V30W1A□ is part of the Chrome DIN Rail Power Supply series, which is designed for use in compact cabinets for home automations and the food and beverage industry. Delta's Chrome DIN Rail Power Supply series offers double isolated input. This means that no Earth connection is required thus resulting in low leakage current. This product provides a universal input voltage range of 90-264Vac, and a wide temperature range of -25°C to 71°C. The Chrome series is certified to safety standard according to IEC/EN/UL 60950-1 Information Technology Equipment (ITE) and UL 508 Industrial Control Equipment (ICE). The series is also fully compliant with RoHS Directive 2011/65/EU for environmental protection. NEC Class 2 and Limited Power Source (LPS) approvals are available for this product.

Model Information

Chrome DIN Rail Power Supply

| Model Number | Input Voltage Range | Rated Output Voltage | Rated Output Current |
|---------------|------------------------|----------------------|----------------------|
| DRC-12V30W1A□ | 90-264Vac (125-375Vdc) | 12Vdc | 2.10A |

Model Numbering

| DR | C – | 24V | 30W | 1 | A | □ |
|----------|--|----------------|------------------------------|--------------|--------|---|
| DIN Rail | Product Series C – Isolation Class II Power Supply | Output Voltage | Output Power (30W series) | Single Phase | No PFC | Z – Black Plastic Case G – Grey Plastic Case |

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Specifications

Input Ratings / Characteristics

| | |
|---------------------------------|------------------------------------|
| Nominal Input Voltage | 100-240Vac |
| Input Voltage Range | 90-264Vac |
| Nominal Input Frequency | 50-60Hz |
| Input Frequency Range | 47-63Hz |
| Nominal DC Input Voltage* | 125-375Vdc |
| Input Current | < 0.80A @ 115Vac, < 0.60A @ 230Vac |
| Efficiency at 100% Load | > 85.0% @ 115Vac & 230Vac |
| Max Inrush Current (Cold Start) | < 25A @ 115Vac, < 50A @ 230Vac |
| Leakage Current | < 0.25mA @ 240Vac |

* Fulfills test conditions for DC input. Safety approval for DC input can be obtained upon request.

Output Ratings / Characteristics**

| | |
|---|---|
| Nominal Output Voltage | 12Vdc |
| Factory Set Point Tolerance | 12Vdc \pm 2% |
| Output Voltage Adjustment Range | 11.5-14.5Vdc |
| Output Current | 0-2.10A (25W max.) |
| Output Power | 25W |
| Line Regulation | < 0.5% (@ 90-264Vac input, 100% load) |
| Load Regulation | < 1% (@ 90-264Vac input, 0-100% load) |
| PARD*** (20MHz) | < 100mVpp |
| Rise Time | < 70ms @ nominal input (100% load) |
| Start-up Time | < 2,000ms @ nominal input (100% load) |
| Hold-up Time | > 25ms @ 115Vac (100% load) > 60ms @ 230Vac (100% load) |
| Dynamic Response (Overshoot & Undershoot O/P Voltage) | \pm 5% @ 90-264Vac input, 10-100% load (Slew Rate: 0.1A/ μ S, 50% duty cycle @ 5Hz to 100Hz) |
| Start-up with Capacitive Loads | 3,000 μ F Max |

**For power de-rating from 55°C to 71°C, see power de-rating on page 3.

***PARD is measured with an AC coupling mode, 5cm wires, and in parallel with 0.1 μ F ceramic capacitor & 47 μ F electrolytic capacitor.

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Mechanical

| | | |
|-----------------------------------|--|-------------------------|
| Case Cover | Plastic | |
| Dimensions (L x W x D) | 91 x 53 x 55.6 mm (3.58 x 2.09 x 2.19 inch) | |
| Unit Weight | 0.14 kg (0.31 lb) | |
| Indicator | Green LED (DC OK) | |
| Cooling System | Convection | |
| Terminal | Input | 2 Pins (Rated 300V/25A) |
| | Output | 4 Pins (Rated 300V/25A) |
| Wire | Input / Output | AWG 24-12 |
| Mounting Rail | Standard TS35 DIN Rail in accordance with EN 60715 | |
| Noise (1 Meter from power supply) | Sound Pressure Level (SPL) < 25dBA | |

Environment

| | | |
|-----------------------------|-----------------------------------|--|
| Surrounding Air Temperature | Operating | -25°C to +71°C |
| | Storage | -25°C to +85°C |
| Power De-rating | > 55°C de-rate power by 2.5% / °C | |
| Operating Humidity | 5 to 95% RH (Non-Condensing) | |
| Operating Altitude | 0 to 2,000 Meters (6,560 ft) | |
| Shock Test | Operating | IEC 60068-2-27, Half Sine Wave: 4G for a duration of 22ms, 3 shocks for each 3 directions, 9 times in total |
| Vibration | Operating | IEC 60068-2-6, Sine Wave: 10-500Hz @ 19.6m/S ² (2G peak); 10 min per cycle, 60 min for all X, Y, Z directions |
| Over Voltage Category | II | |
| Pollution Degree | 2 | |

Protections

| | |
|--------------------------|---|
| Overvoltage | < 17.4V, SELV Output, Latch Mode |
| Overload / Overcurrent | > 130% of rated load current, Hiccup Mode, Non-Latching (Auto-Recovery) |
| Over Temperature | > 75°C Surrounding Air Temperature @ 100% load, Latch Mode |
| Short Circuit | Hiccup Mode, Non-Latching (Auto-Recovery when the fault is removed) |
| Internal Fuse at L pin | T3.15AH |
| Degree of Protection | IP20 |
| Protection Against Shock | Class II (No PE* connection is required) |

*PE: Primary Earth

Reliability Data

| | |
|------------------------|---|
| MTBF | > 500,000 hrs. as per Telcordia SR-332 I/P: 100Vac, O/P: 100% load, Ta: 35°C |
| Expected Cap Life Time | 10 years (115Vac & 230Vac, 50% load @ 40°C) |

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Safety Standards / Directives

| | | |
|------------------------------|-------------------|---|
| Safety Entry Low Voltage | | SELV (EN 60950) |
| Electrical Safety | TUV Bauart | EN 60950-1 |
| | UL/cUL recognized | UL 60950-1 and CSA C22.2 No. 60950-1 (File No. E131881) |
| | CB scheme | IEC 60950-1, Limited Power Source (LPS) |
| Industrial Control Equipment | UL/cUL listed | UL 508 and CSA C22.2 No. 107.1-01 (File No. E338991) |
| Class 2 Power Supply | UL/cUL recognized | UL 60950-1 and CSA C22.2 No. 60950-1 (File No. E131881) |
| CE | | In conformance with EMC Directive 2014/30/EU and Low Voltage Directive 2014/35/EU |
| Material and Parts | | RoHS Directive 2011/65/EU Compliant |
| Galvanic Isolation | Input to Output | 3.0kVac |

EMC

| | | |
|-----------------------------------|----------------|--|
| Emissions (CE & RE) | | CISPR 32, EN 55032, FCC Title 47: Class B |
| Immunity | | EN 55024 |
| Electrostatic Discharge | IEC 61000-4-2 | Level 3 Criteria A ¹⁾ Air Discharge: 8kV Contact Discharge: 4kV |
| Radiated Field | IEC 61000-4-3 | Level 2 Criteria A ¹⁾ 80MHz-1GHz, 3V/M with 1kHz tone / 80% modulation |
| Electrical Fast Transient / Burst | IEC 61000-4-4 | Level 3 Criteria A ¹⁾ 1kV |
| Surge | IEC 61000-4-5 | Level 3 Criteria A ¹⁾ Common Mode ²⁾ : 2kV Differential Mode ³⁾ : 1kV |
| Conducted | IEC 61000-4-6 | Level 2 Criteria A ¹⁾ 150kHz-80MHz, 3Vrms |
| Power Frequency Magnetic Fields | IEC 61000-4-8 | Criteria A ¹⁾ 1A/Meter |
| Voltage Dips and Interruptions | IEC 61000-4-11 | > 95% dip; 0.5 cycle (10ms) |
| Voltage Fluctuation and Flicker | | IEC/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)

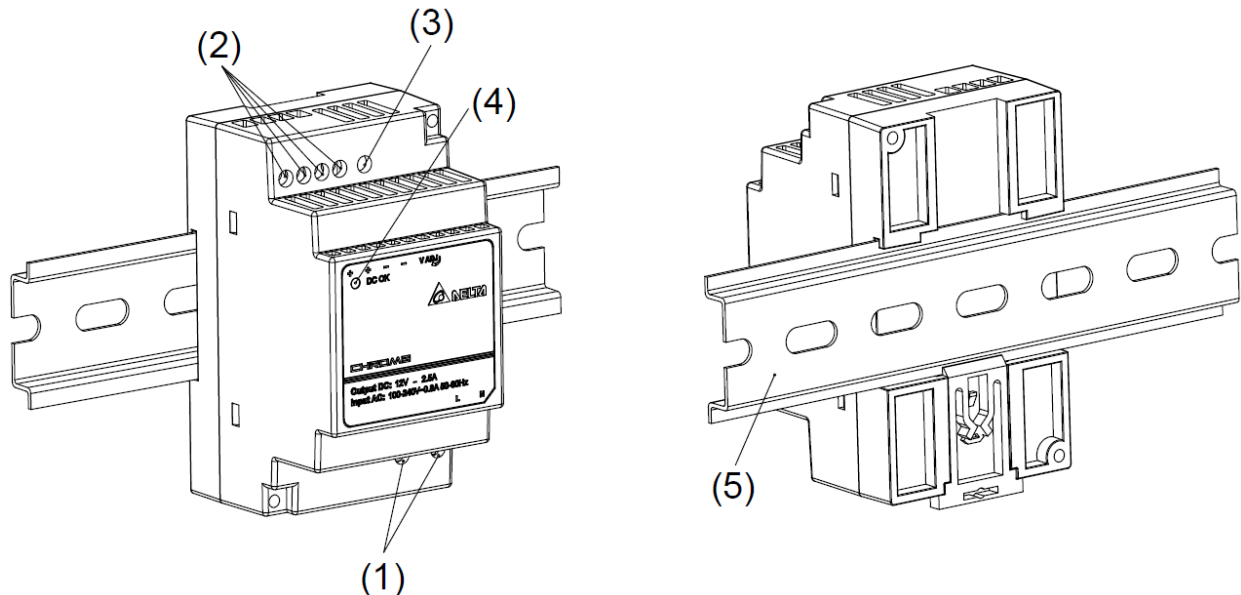
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Block Diagram



Device Description



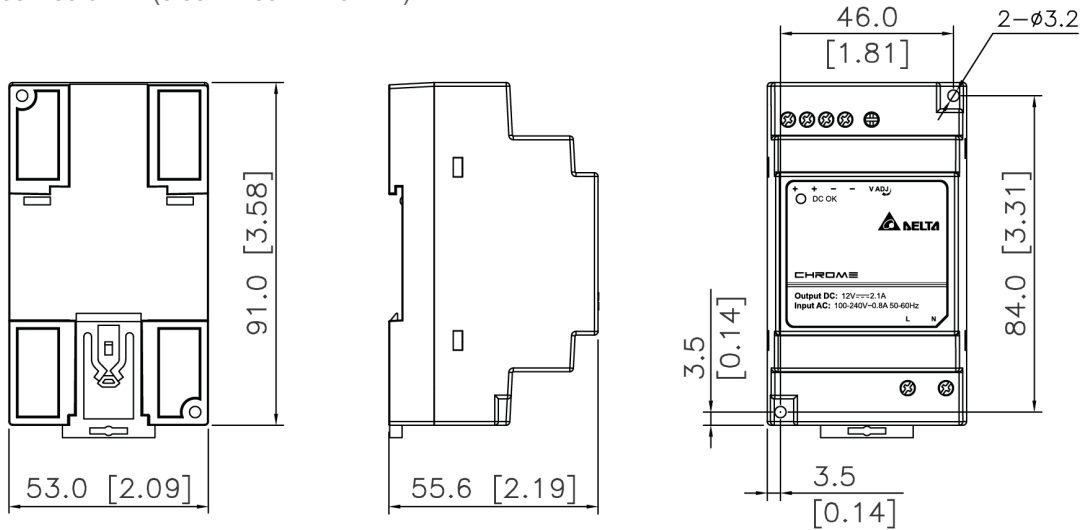
- 1) Input terminal block connector
- 2) Output terminal block connector
- 3) DC voltage adjustment potentiometer
- 4) DC OK control LED (Green)
- 5) Universal mounting system

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Dimensions

L x W x D: 91 x 53 x 55.6 mm (3.58 x 2.09 x 2.19 inch)



Engineering Data

Output Load De-rating VS Surrounding Air Temperature

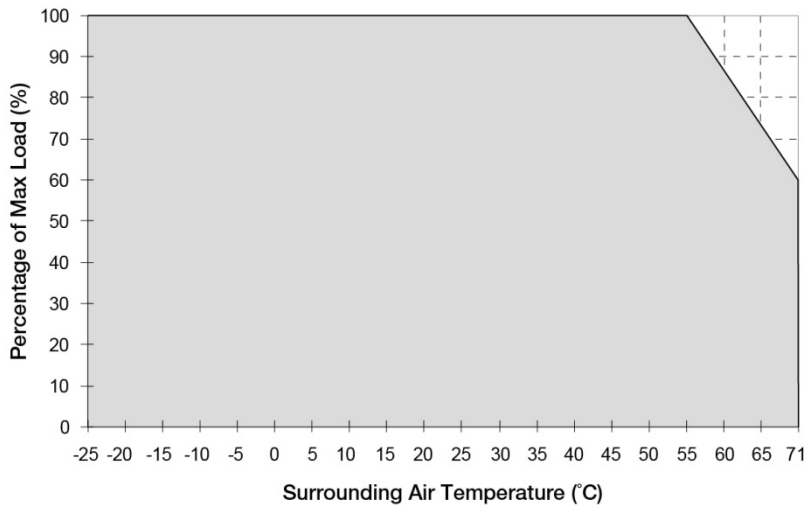


Fig. 1 De-rating for Vertical Mounting Orientation
 > 55°C de-rate power by 2.5% / °C

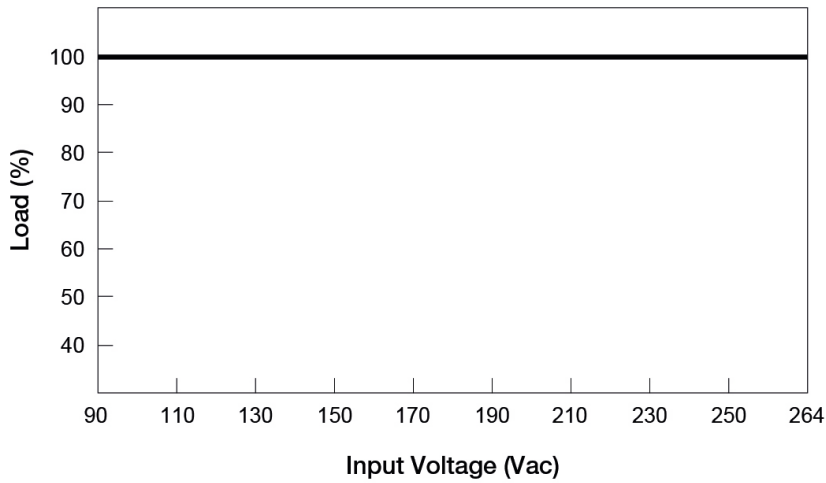
Note

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 latch mode and recover when AC power recycles.
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 can be very hot!
5. If the device has to be mounted in any other orientation, please 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

The power supply unit (PSU) can be mounted on 35mm DIN rails in accordance with EN60715. The device should be installed with input terminal block at the bottom.

Each device is delivered ready to install.

Mounting

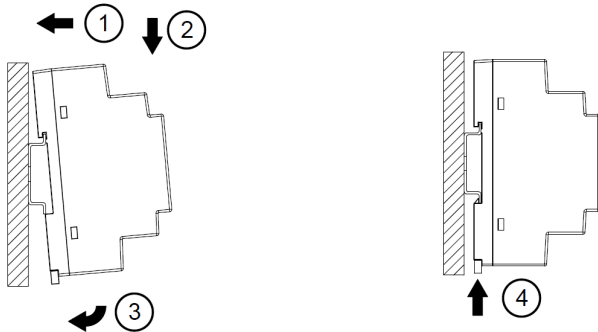


Fig. 2.1 Mounting

Snap on the DIN rail as shown in Fig. 2.1:

1. Tilt the unit upwards and insert it onto the DIN rail.
2. Push downwards until stopped.
3. Press against the bottom front side for locking.
4. Shake the unit slightly to ensure that it is secured.

Dismounting

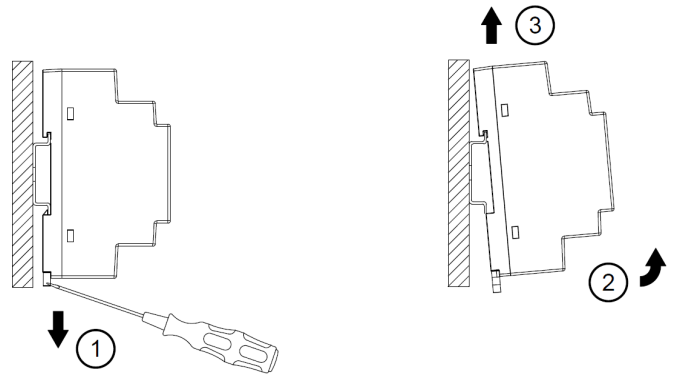


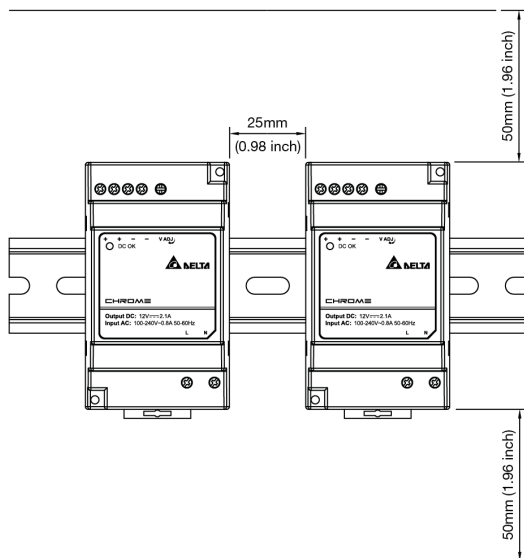
Fig. 2.2 Dismounting

To uninstall, pull or slide down the latch with screw driver as shown in Fig. 2.2. Then slide the power supply unit (PSU) in the opposite direction, release the latch and pull out the power supply unit (PSU) from the rail.

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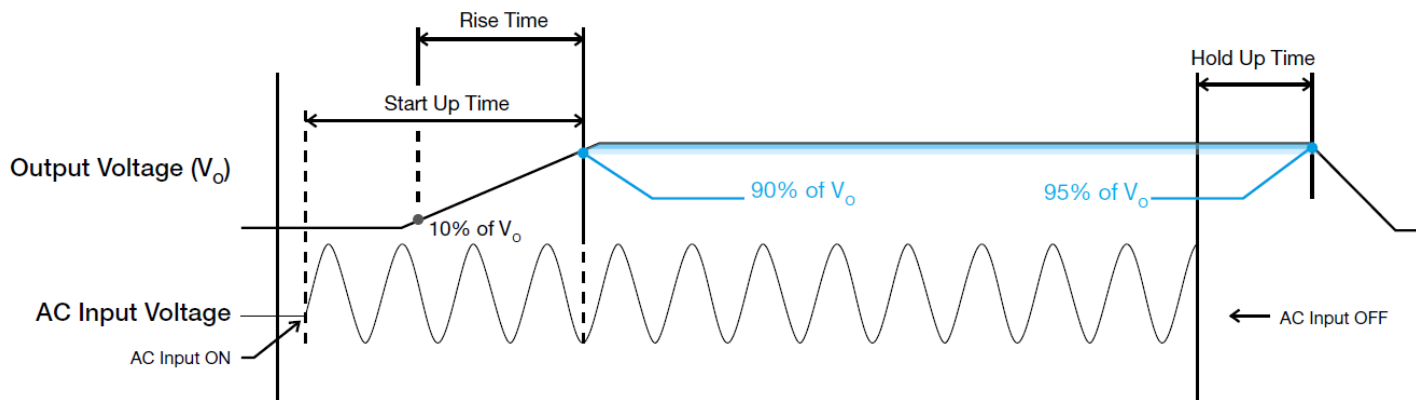
Safety Instructions



- ALWAYS switch mains of input power OFF before connecting and disconnecting the input voltage to the unit. If mains are not turned OFF, there is risk of explosion / severe damage.
- **To guarantee sufficient convection cooling, keep a distance of 50mm (1.96 inch) above and below the device as well as a lateral distance of 25mm (0.98 inch) to other units.**
- Note that the enclosure of the device can become very hot depending on the surrounding air temperature and load of the power supply. Risk of burns!
- DO NOT insert any objects into the unit.
- Hazardous voltages may be present for up to 5 minutes after the input mains voltage is disconnected. Do not touch the unit during this time.
- The power supplies unit should be installed in minimum IP54 rated enclosure.
- The power supplies are built in units and must be installed in a cabinet or room (condensation free environment and indoor location) that is relatively free of conductive contaminants.

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

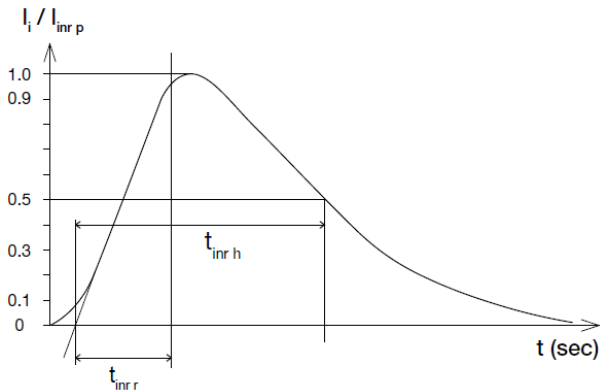
Time between the collapse of the AC input voltage, and the output falling to 95% of its steady state set value.

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Inrush Current

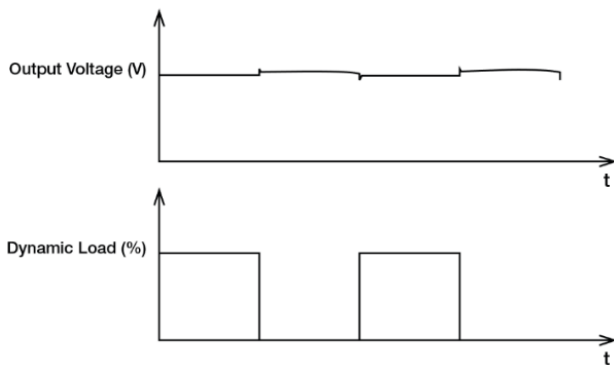
Inrush current is the peak, instantaneous, input current measured and, occurs when the input voltage is first applied. For AC input voltages, the maximum peak value of inrush current will occur during the first half cycle of the applied AC voltage. This peak value decreases exponentially during subsequent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



Dynamic Response

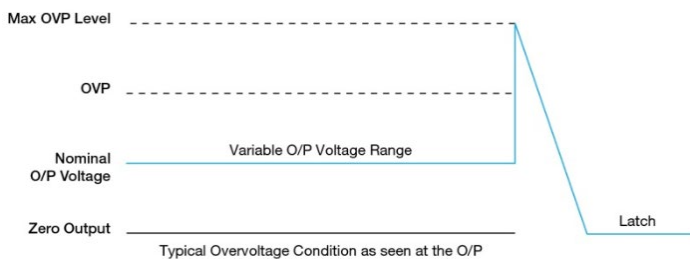
The power supply output voltage will remain within $\pm 5\%$ of its steady state value, when subjected to a dynamic load from 10 to 100% of its rated current.

■ 50% duty cycle / 5Hz to 100Hz



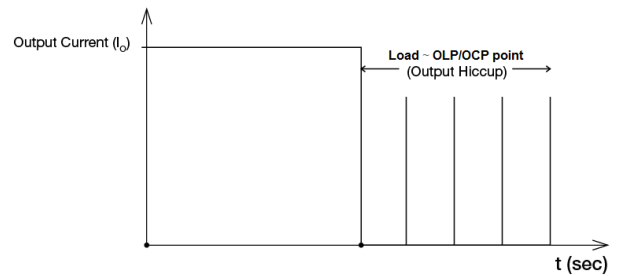
Overvoltage Protection (Latch Mode)

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 Page 3 under "Protections". Power supply will latch, and require removal/re-application of input AC voltage in order to restart.



Overload & Overcurrent Protections (Auto-Recovery)

The power supply's Overload (OLP) and Over current (OCP) Protections will be activated when output current exceeds its specification as defined on Page 3 under "Protections". In such occurrence, 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.



Over Temperature Protection (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; or, when the operating temperature is beyond what is recommended in the de-rating graph, the OTP circuit will be activated. When activated, power supply will latch, until the surrounding air temperature drops to its normal operating temperature or the load is reduced as recommended in the de-rating graph. Removal/re-application of input AC voltage will then be required in order to restart.

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.

External Input Protection Device

The unit is protected with internal fuse (not replaceable) at L pin and it has been tested and approved on 20A (UL) and 16A (IEC) branch circuits without additional protection device. An external protection device is only required if the supplying branch has an ampacity greater than above. Thus, if an external protective device is necessary, or, utilized, a minimum value of 13A B- or 8A C-characteristic breaker should be used.

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Others

Delta RoHS Compliant



Restriction of the usage of hazardous substances

The European directive 2011/65/EU limits the maximum impurity level of homogeneous materials such as lead, mercury, cadmium, chrome, polybrominated flame retardants PBB and PBDE for the use in electrical and electronic equipment. RoHS is the abbreviation for "Restriction of the use of certain hazardous substances in electrical and electronic equipment".

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 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.

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