# Lyte DIN Rail Power Supply

## DRL-75W series / DRL-□V75W1AZ


LYTE

### Highlights & Features

- Universal AC input voltage range
- Built-in constant current circuit for reactive loads
- Up to 90% efficiency
- Full power from -10°C to +50°C @ 230Vac with -30°C Cold Start
- Compliance to SEMI F47 @ 200Vac
- NEC Class 2 / Limited Power Source (LPS) certified (DRL-24V75W1AZ & DRL-48V75W1AZ)

### Safety Standards

CB Certified for worldwide use

**Model Number:** DRL-□V75W1AZ
**Unit Weight:** 0.22 kg (0.49 lb)
**Dimensions (L x W x D):** 123.6 x 27 x 102 mm (4.86 x 1.06 x 4.01 inch)

### General Description

Delta's Lyte DIN rail power supply series is designed for price sensitive users who require basic yet reliable power output for general industrial applications. The convection-cooled Lyte series operates between 20°C to +70°C, providing 100% output power from -10°C to +50°C at 230Vac. The overcurrent protection is designed to operate in constant current mode, which makes the Lyte series suitable for inductive and capacitive load applications. The product is certified according to safety standards IEC 60950-1 & IEC/EN/UL 62368-1. Electromagnetic radiated and conducted emissions are certified according to EN 55032, Class B; and, the product is RoHS compliant for environmental protection.

### Model Information

LYTE DIN Rail Power Supply

| Model Number | Input Voltage Range | Rated Output Voltage | Rated Output Current |
|---|---|---|---|
| DRL-12V75W1AZ | 85-264Vac | 12Vdc | 6.25A |
| DRL-24V75W1AZ | | 24Vdc | 3.125A |
| DRL-48V75W1AZ | | 48Vdc | 1.57A |

### Model Numbering

| DR | L – | □V | 75W | 1 | A | Z |
|---|---|---|---|---|---|---|
| DIN Rail | Product Type<br>L – LYTE Series | Output Voltage<br>12 – 12V<br>24 – 24V<br>48 – 48V | Output Power | Single Phase | Delta Standard | Z – Plastic case without DC OK relay contact & without coating |



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### Specifications

| Model Number | DRL-12V75W1AZ | DRL-24V75W1AZ | DRL-48V75W1AZ |
|---|---|---|---|

### Input Ratings / Characteristics

| | | | |
|---|---|---|---|
| Nominal Input Voltage | 100-240Vac | | |
| Input Voltage Range | 85-264Vac | | |
| Nominal Input Frequency | 50-60Hz | | |
| Input Frequency Range | 47-63Hz | | |
| Input Current | 1.4A typ. @ 115Vac, 0.9A typ. @ 230Vac | | |
| Efficiency at 100% Load | 87.5% typ. @ 230Vac | 89% typ. @ 230Vac | 90% typ. @ 230Vac |
| Max Inrush Current (Cold Start) | 50A typ. @ 230Vac | | |
| Leakage Current | < 1mA @ 240Vac | | |

### Output Ratings / Characteristics*1

| | | | |
|---|---|---|---|
| Nominal Output Voltage | 12Vdc | 24Vdc | 48Vdc |
| Factory Set Point Tolerance | 12Vdc ± 2% | 24Vdc ± 2% | 48Vdc ± 1% |
| Output Voltage Adjustment Range | 10.8-13.2Vdc | 21.6-26Vdc | 43.2-52.8Vdc |
| Output Current | 6.25A | 3.125A | 1.57A |
| Output Power | 75W | 75W | 75.36W |
| Line Regulation | < 0.5% (@ 85-264Vac, 100% load) | | |
| Load Regulation | < 1% (0-100% load) | | |
| PARD*2 (20MHz) | < 120mVpp @ > -10°C to +70°C<br>< 360mVpp @ ≤ -10°C to -30°C | < 120mVpp @ > -10°C to +70°C<br>< 360mVpp @ ≤ -10°C to -30°C | < 240mVpp @ > -10°C to +70°C<br>< 480mVpp @ ≤ -10°C to -30°C |
| Rise Time | 30ms typ. @ nominal input (100% load) | | |
| Start-up Time | 1200ms typ. @ 115Vac (100% load)<br>1000ms typ. @ 230Vac (100% load) | | |
| Hold-up Time | 16ms typ. @ 115Vac (100% load)<br>60ms typ. @ 230Vac (100% load) | | |
| Dynamic Response<br>(Overshoot & Undershoot O/P Voltage) | ± 10% @ 115Vac & 230Vac input, 0-50%, 50-100% load<br>(Slew Rate: 2.5A/μS, 50% duty cycle @ 100Hz & 1KHz) | | |
| Start-up with Capacitive Loads | 5,000μF Max | 5,000μF Max | 4,000μF Max |

*1 For power de-rating from -10°C to -20°C, and 40°C to 70°C @ 115Vac & 50°C to 70°C @ 230Vac, and Vin < 100Vac, see power de-rating on page 3.
*2 PARD is measured with an AC coupling mode, 5cm wires, and in parallel to end terminal with 0.1μF ceramic capacitor & 47μF electrolytic capacitor. PSU need to burn in around 5 minutes when AMB ≤ 0℃

# Lyte DIN Rail Power Supply

## DRL-75W series / DRL-□V75W1AZ

| Model Number | DRL-12V75W1AZ | DRL-24V75W1AZ | DRL-48V75W1AZ |
|---|---|---|---|

### Mechanical

| | | |
|---|---|---|
| Case Cover / Chassis | | Plastic |
| Dimensions (L x W x D) | | 123.6 x 27 x 102 mm (4.86 x 1.06 x 4.01 inch) |
| Unit Weight | | 0.22 kg (0.49 lb) |
| Indicator | | Green LED (DC OK) |
| Cooling System | | Convection |
| Terminal | Input | 3 Pins (Rated 300V/16A) |
| | Output | 4 Pins (Rated 300V/16A) |
| Wire | Input | AWG 18-12 |
| | Output | AWG 22-12 |
| 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 | -20°C to +70°C (-30°C Cold Start) |
| | Storage | -40°C to +85°C |
| Power De-rating | Temperature | -10°C to -20°C de-rate power by 1% / °C<br>> 40°C de-rate power by 1.67% / °C @ 115Vac<br>> 50°C de-rate power by 2.5% / °C @ 230Vac |
| | Input Voltage | < 100Vac de-rate power by 1.33% / Vac |
| Operating Humidity | | 5 to 95% RH (Non-Condensing) |
| Operating Altitude | | 0 to 5,000 Meters (16,400 ft.) |
| Shock Test | Non-Operating | IEC 60068-2-27, Half Sine Wave: 50G for duration of 11ms; 3 times per direction, 9 times in total |
| | Operating | IEC 60068-2-27, Half Sine Wave: 10G for duration of 11ms; 1 time in X axis |
| Vibration | Non-Operating | IEC 60068-2-6, Random: 5Hz to 500Hz; 2.09$G_{rms}$;<br>20 min per axis for all X, Y, Z directions |
| | Operating | IEC 60068-2-6, Sine Wave: 10Hz to 500Hz @ 19.6m/s² (2G peak);<br>displacement of 0.35mm; 10 min per cycle, 60 min for X direction |
| Over Voltage Category | | II |
| Pollution Degree | | 2 |

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| Model Number | DRL-12V75W1AZ | DRL-24V75W1AZ | DRL-48V75W1AZ |
|---|---|---|---|

### Protections

| | | | |
|---|---|---|---|
| Overvoltage | <18V, SELV Output, Latch Mode | <33.6V, SELV Output, Latch Mode | <62.4V, SELV Output, Latch Mode |
| Overload / Overcurrent | 105 - 133% of rated load current, Constant current limit, Auto-recovery | 105 - 133% of rated load current, Constant current limit, Auto-recovery | 105 - 133% of rated load current, Constant current limit, Auto-recovery |
| Over Temperature | Latch Mode | | |
| Short Circuit | Hiccup Mode, Non-Latching (Auto-Recovery when the fault is removed) | | |
| Internal Fuse at L pin | F5AH | | |
| Degree of Protection | IP20 | | |
| Protection Against Shock | Class I with PE*3 connection | | |

*3 PE: Primary Earth

### Reliability Data

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

### Safety Standards / Directives

| | | |
|---|---|---|
| Electrical Safety | CB scheme | IEC 62368-1, IEC 60950-1, IEC 61010-1 |
| | TUV Bauart | EN 62368-1 |
| | UL/cUL and cTUVus | UL 62368-1 |
| | CCC | GB4943.1 |
| | EAC | TP TC 004/2011 |
| | KC | K60950-1 |
| Class 2 Power Supply | CB scheme | IEC 62368-1 (For DRL-24V75W1AZ & DRL-48V75W1AZ) |
| CE | | In conformance with EMC Directive 2014/30/EU and Low Voltage Directive 2014/35/EU |
| Galvanic Isolation | Input to Output | 3.0KVac |
| | Input to Ground | 2.0KVac |
| | Output to Ground | 0.5KVac |

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| Model Number | DRL-12V75W1AZ | DRL-24V75W1AZ | DRL-48V75W1AZ |
|---|---|---|---|

### EMC

| | | | | |
|---|---|---|---|---|
| Emissions (CE & RE) | | CISPR 32, EN 55032, EN 55011, AS/NZS CISPR32: Class B;<br>GB9254.1<br>Compliance with: EN 61000-6-3, EN 61000-6-4 | | |
| Component Power Supply for General Use | | EN 61204-3 | | |
| Immunity | | EN 55035, EN 55024<br>Compliance with: EN 61000-6-1, EN 61000-6-2 | | |
| Electrostatic Discharge | IEC 61000-4-2 | Level 4 Criteria A[1]<br>Air Discharge: 15kV<br>Contact Discharge: 8kV | | |
| Radiated Field | IEC 61000-4-3 | Level 2 Criteria A[1]<br>80MHz-1GHz, 3V/M with 1kHz tone / 80% modulation | | |
| Electrical Fast Transient / Burst | IEC 61000-4-4 | Level 3 Criteria A[1]<br>2kV | | |
| Surge | IEC 61000-4-5 | Level 4 Criteria A[1]<br>Common Mode[3]: 4kV<br>Differential Mode[4]: 2kV | | |
| Conducted | IEC 61000-4-6 | Level 2 Criteria A[1]<br>150kHz-80MHz, 3Vrms | | |
| Power Frequency Magnetic Fields | IEC 61000-4-8 | Level 2 Criteria A[1]<br>3A/m | | |
| Voltage Dips and Interruptions | IEC 61000-4-11 | 0% of 115Vac, 12ms<br>40% of 115Vac, 200ms<br>70% of 115Vac, 500ms<br>0% of 115Vac, 5000ms<br>0% of 240Vac, 12ms<br>40% of 240Vac, 200ms<br>70% of 240Vac, 500ms<br>0% of 240Vac, 5000ms | Criteria A[1]<br>Criteria B[2]<br>Criteria A[1]<br>Criteria B[2]<br>Criteria A[1]<br>Criteria A[1]<br>Criteria A[1]<br>Criteria B[2] | |
| Harmonic Current Emission | | IEC/EN 61000-3-2, Class A; GB17625.1 | | |
| Voltage Fluctuation and Flicker | | IEC/EN 61000-3-3 | | |
| Voltage Sag Immunity SEMI F47 – 0706 | | 80% of 200Vac<br>70% of 200Vac<br>50% of 200Vac | 160Vac, 1000ms<br>140Vac, 500ms<br>100Vac, 200ms | Criteria A[1]<br>Criteria A[1]<br>Criteria A[1] |

1) Criteria A: Normal performance within the specification limits
2) Criteria B: Temporary degradation or loss of function which is self-recoverable
3) Asymmetrical: Common mode (Line to earth)
4) Symmetrical: Differential mode (Line to line)

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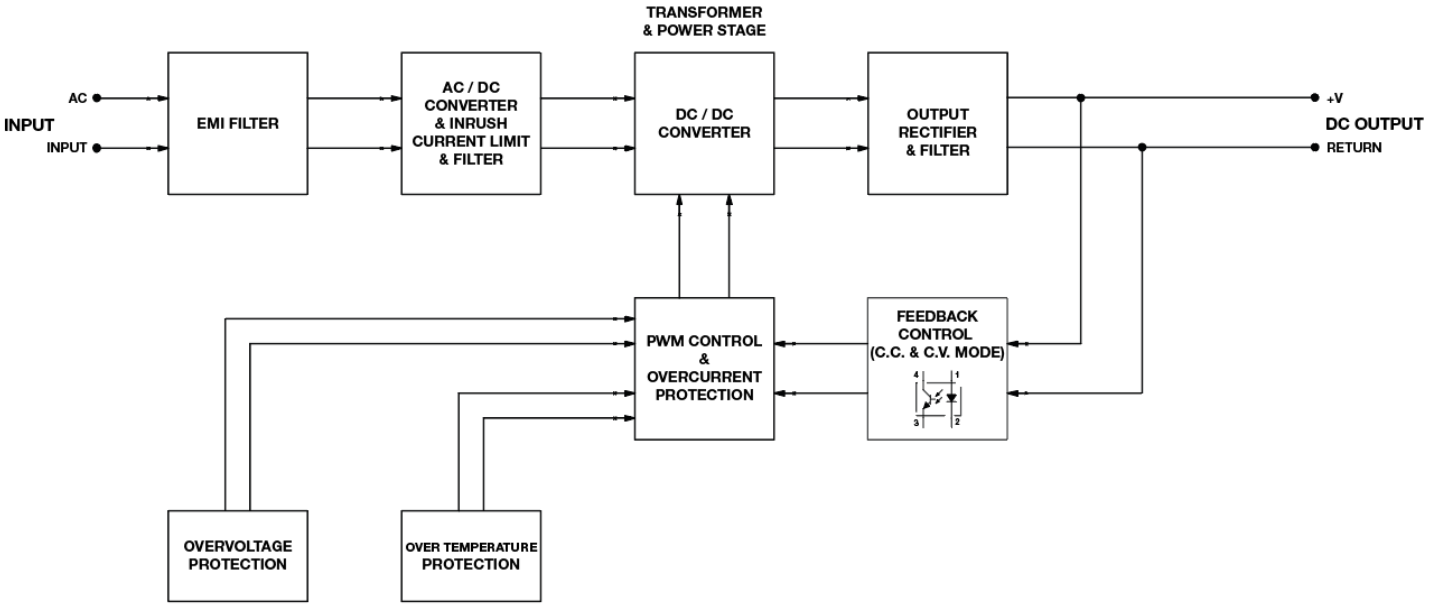
### Block Diagram

**DRL-□V75W1AZ**



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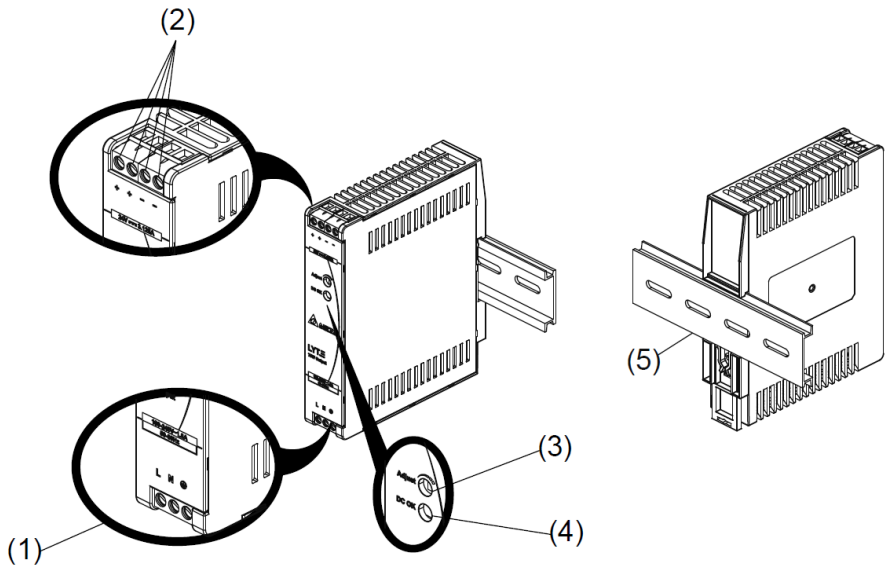
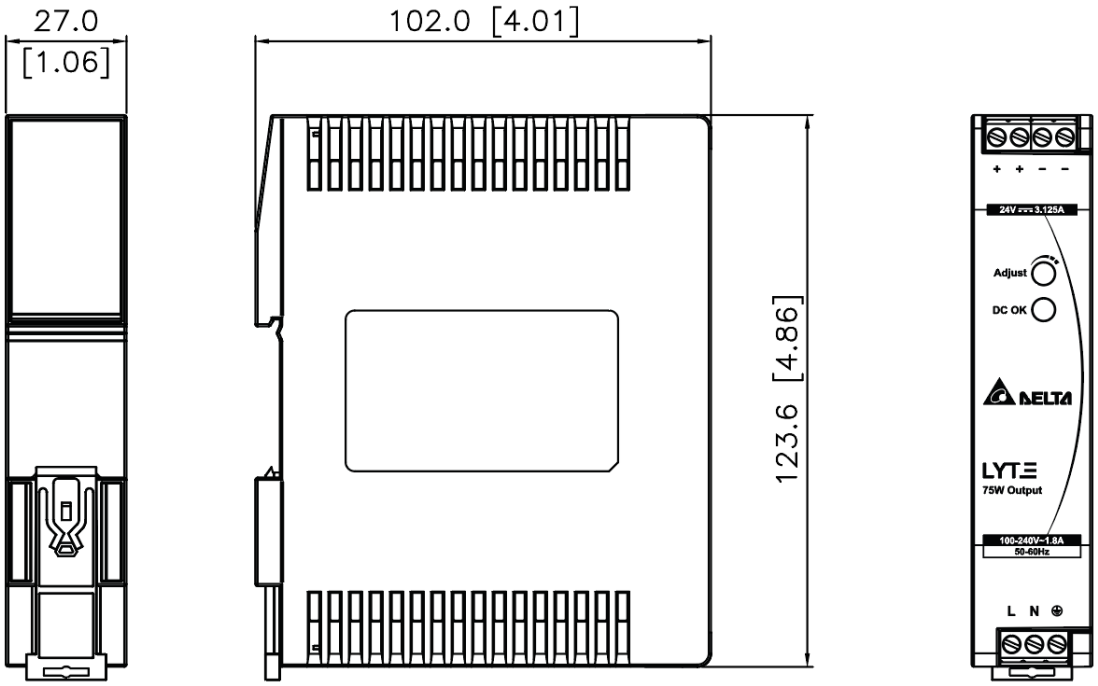
### Device Description




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

### Dimensions

**L x W x D:** 123.6 x 27 x 102 mm (4.86 x 1.06 x 4.01 inch)



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# Lyte DIN Rail Power Supply
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### Engineering Data

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

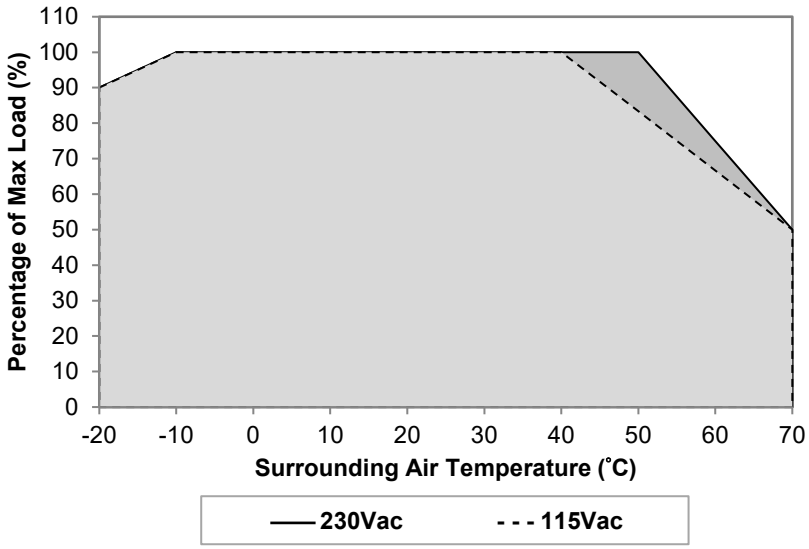
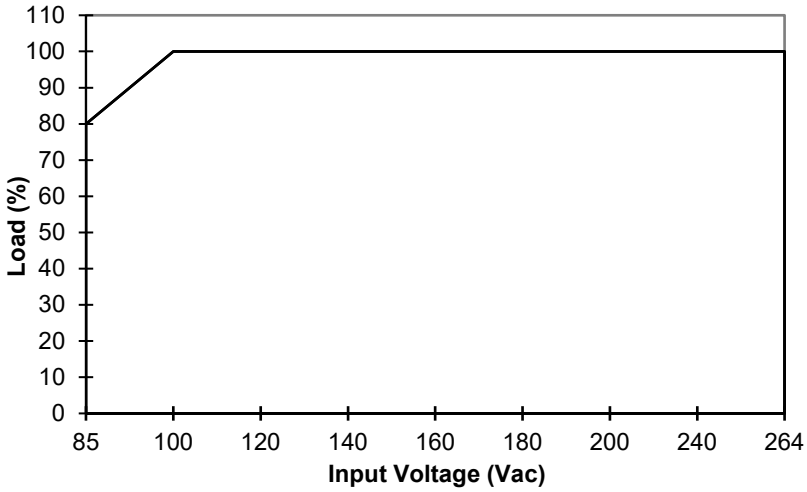



**Fig. 1** **De-rating for Vertical Mounting Orientation**
-10°C to -20°C de-rate power by 1% / °C
> 40°C de-rate power by 1.67% / °C @ 115Vac
> 50°C de-rate power by 2.5% / °C @ 230Vac

**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 > 40°C (115Vac) or > 50°C (230Vac), 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.
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.

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




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

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### Assembly & Installation

The power supply unit (PSU) can be mounted on 35mm DIN rails in accordance with EN 60715. The device should be installed with input terminal block at the bottom.

Each device is delivered ready to install.

#### Mounting

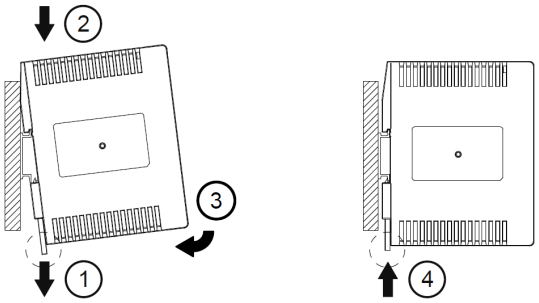



**Fig. 2.1 Mounting**

Snap on the DIN rail as shown in Fig. 2.1:
1. Pull the unit's DIN rail latch OUT.
2. Tilt the unit slightly upwards, hook the top end onto the DIN rail and push downwards until stopped.
3. Position the bottom front end against the DIN rail.
4. Push the unit's latch DIN rail IN to lock.

#### Dismounting

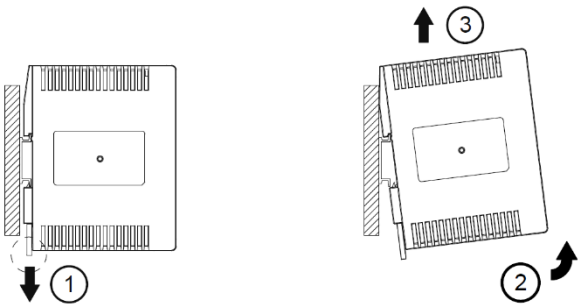


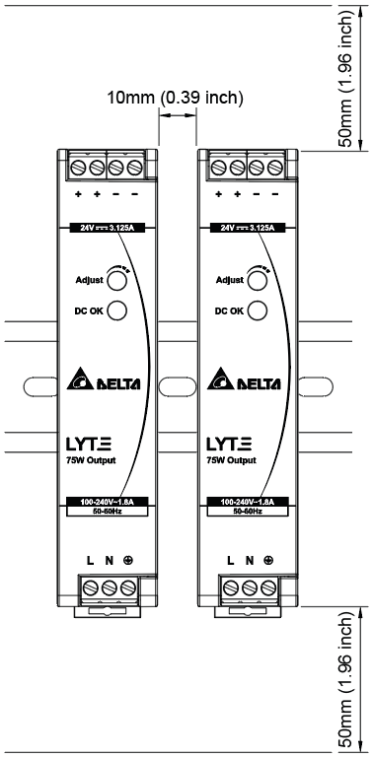

**Fig. 2.2 Dismounting**

To uninstall,
1. Pull the unit's DIN rail latch OUT.
2. Tilt the bottom part of the unit out.
3. Push the unit up and pull out from the DIN rail.

In accordance to EN 60950 / UL 60950, flexible cables require ferrules.
Use appropriate copper cables designed to sustain operating temperature of at least 60°C / 75°C or more to fulfill UL requirements.

### Safety Instructions

■ **Vertical Mounting**




- 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 10mm (0.39 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!
- The main power must be turned off before connecting or disconnecting wires to the terminals.
- 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 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.

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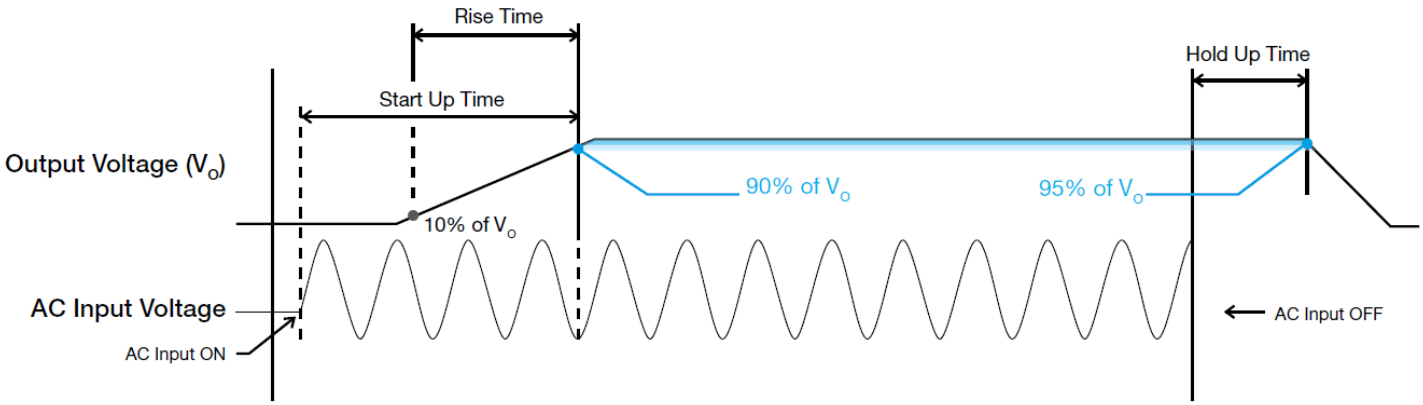
## Functions

■ **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 final steady state set value, after the input voltage is applied.

### Rise Time

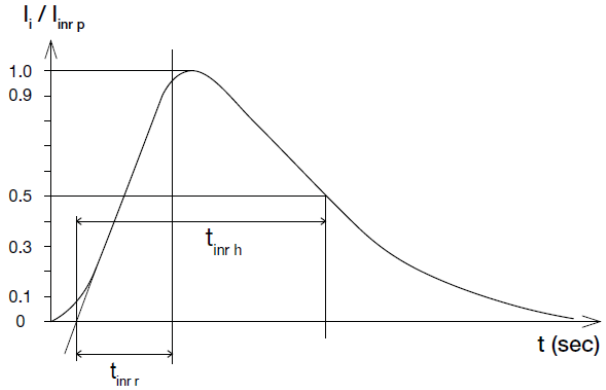
The time required for the output voltage to change from 10% to 90% of its final steady state set value.

### 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

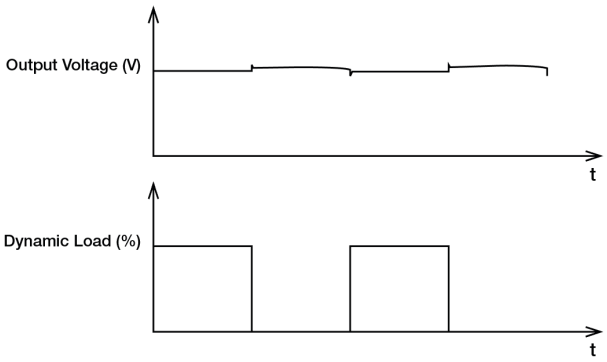
Inrush current is the peak, instantaneous, input current measured and, occurs when the input voltage is first applied. For AC input voltages, the maximum peak value of inrush current will occur during the first half cycle of the applied AC voltage. This peak value decreases exponentially during subsequent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




### Dynamic Response

The power supply output voltage will remains within ±10% of its steady state value, when subjected to a dynamic load from 0% to 50% and 50% to 100% of its rated current.

■ **50% duty cycle / 5Hz to 100Hz**



# Lyte DIN Rail Power Supply
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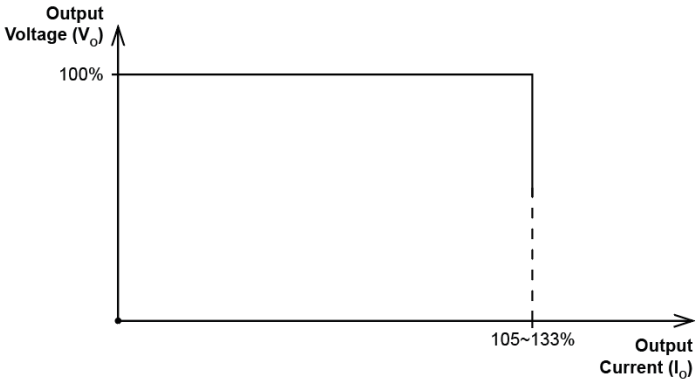
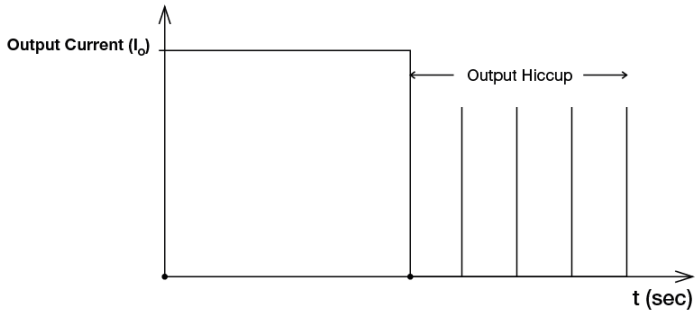
### Overload & Overcurrent Protections (Continuous Current)

The power supply's Overload (OLP) and Overcurrent (OCP) Protections will be activated when output current is 105~133% of $I_O$ (Max load). Upon such an occurrence, the $V_O$ (output voltage) will start to droop. Once the power supply has reached its maximum power limit, the protection will be activated; and, the power supply will operate in continuous current. The power supply will recover once the cause of OLP or OCP is removed, and $I_O$ (output current) is back within the specified range.




### Short Circuit Protection (Auto-Recovery)

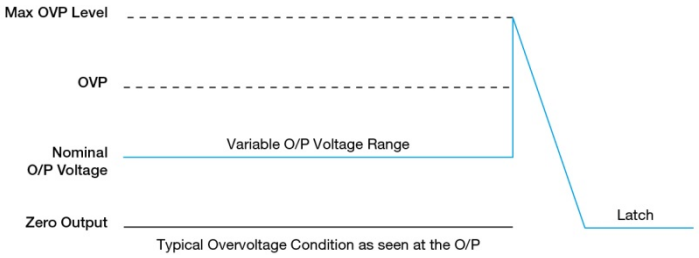
The power supply's output Short Circuit Protection function also provides protection against short circuits. When a short circuit is applied, the output current will operate in "Hiccup mode". The power supply will return to normal operation after the short circuit is removed.




### 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 as described in "Protections" section. Power supply will latch off, and require removal/re-application of input AC voltage in order to restart.

**The power supply should be latch.**




### 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 off, 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.

## 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 **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.