

# DR67 SERIES | 60/75 AMPS

## DIN RAIL MOUNT SOLID STATE RELAYS

### Introduction

The DR67 is a compact 3-phase solid state relay in a DIN rail 67.5mm wide package with output ratings up to 75 Amps per channel @ 40°C. It has an integrated fan which allows the product to achieve very high ratings while maintaining a compact design. Its built-in overvoltage protection and the overtemperature protection make it suitable for demanding heating, motion and lighting applications.

It's easy to install and its large cage clamp terminals allow connecting wires up to 2 AWG size on the output terminals without the use of any additional accessories, therefore reducing installation cost and time.

UL listed and VDE certified, the DR67 is a powerful and versatile solid state relay with superior performance when compared to previous generations and competitor products.



### Features

- 3-Phase AC Output DIN Rail Mount SSRs
- Output ratings up to 75 Amps at 600 VAC
- 2 & 3 controlled Legs option
- Built-in overvoltage protection
- Clamp Cage terminal type accepts up to 2 AWG wire size
- Fan controlled through thermistor and microprocessor to optimize fan operation
- IP20 touch-safe housing
- AC or DC control
- cULus listed and VDE approved

### Applications

- Plastic injection molding equipment
- Packaging equipment
- Industrial ovens
- Lighting control
- Professional cooking equipment
- Pump control
- Conveyor drives
- HVAC&R

**NOVA22**



### PRODUCT SELECTION

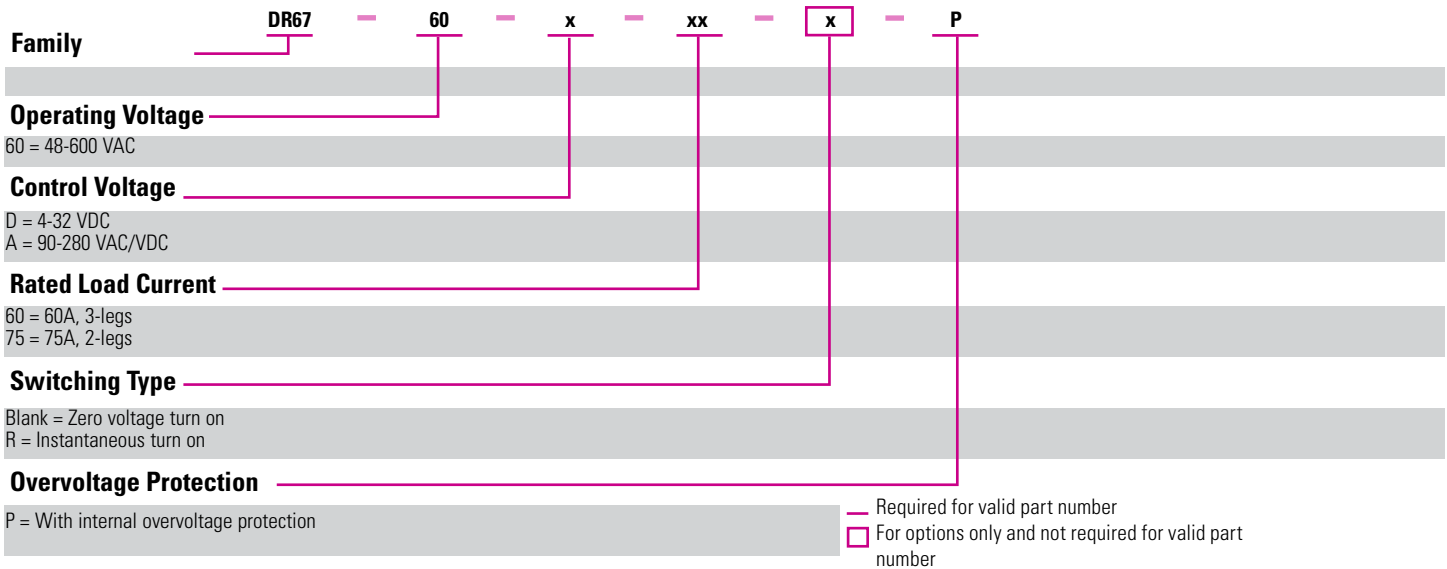
Control Voltage	60A	75A
4-32 VDC	DR6760D60P	DR6760D75P
90-280 VAC/VDC	DR6760A60P	DR6760A75P



## ORDERING OPTIONS

Example : DR6760A60RP

Description of part number example



## SPECIFICATIONS

### Output <sup>(1)</sup>

Description	60A	75A
<b>Operating Voltage (47-440Hz) [V<sub>RMS</sub>]</b>	48-600	48-600
<b>Transient Overvoltage [V<sub>pk</sub>] <sup>(2)</sup></b>	1200	1200
<b>Maximum Off-State Leakage Current @ Rated Voltage [mA<sub>RMS</sub>]</b>	1	1
<b>Minimum Off-State dV/dt @ Maximum Rated Voltage [V/μsec]</b>	500	500
<b>Load Current, General Use UL508/LC A IEC62314 @ 40°C [A<sub>RMS</sub>]</b>	60	75
<b>Load Current, Motor Starting UL508 FLA/LC B IEC62314 @ 40°C [A<sub>RMS</sub>]</b>	21/17.6	21/17.6
<b>Minimum Load Current [mA<sub>RMS</sub>]</b>	150	150
<b>Maximum 1 Cycle Surge Current (50/60Hz) [A<sub>pk</sub>]</b>	1290/1350	1290/1350
<b>Maximum On-State Voltage Drop @ Rated Current [V<sub>RMS</sub>]</b>	1.15	1.20
<b>Maximum 1/2 Cycle I<sup>2</sup> t for Fusing (50/60Hz) [A<sup>2</sup> sec]</b>	8320/7593	8320/7593
<b>Minimum Power Factor (at Maximum Load)</b>	0.5	0.5
<b>Motor Rating UL 508: 120 VAC / 240 VAC / 480 VAC [HP]</b>	3.0/5.0/15.0	3.0/5.0/15.0
<b>Motor Rating IEC62314: 240 VAC / 400 VAC / 500 VAC [kW]</b>	4.0/7.5/11.0	4.0/7.5/11.0

## Input<sup>(1)</sup>

Description	DR6760Dxxx	DR6760Axxx
Control Voltage Range	4-32 VDC	90-280 VAC/VDC
Maximum Reverse Voltage	-32 VDC	-
Minimum Turn-On Voltage	4 VDC	90 VAC/VDC
Must Turn-Off Voltage	1 VDC	5 VAC/VDC
Minimum Input Current (for on-state)	0.8 mA	0.6 mA
Maximum Input Current	12 mA	2.8 mA
Nominal Input Impedance	3.2K ohms	120K ohms
Maximum Turn-On Time [msec]	20 <sup>(3)</sup>	
Maximum Turn-Off Time [msec]	25	

## Power Supply<sup>(1)</sup>

Description	DR6760Dxxx	DR6760Axxx
Supply Voltage Range	18-32 VDC	90-280 VAC/VDC
Maximum Reverse Voltage	-32 VDC	-
Minimum Supply Current	3 mA	1.5 mA
Maximum Supply Current	130 mA	70 mA

## Alarm<sup>(1)</sup>

Description	DR6760Dxxx	DR6760Axxx
Output type	Solid State	
Maximum Output Voltage	60 VDC	400 VDC / 265 VAC
Maximum Alarm Output Current [mA]	60	60

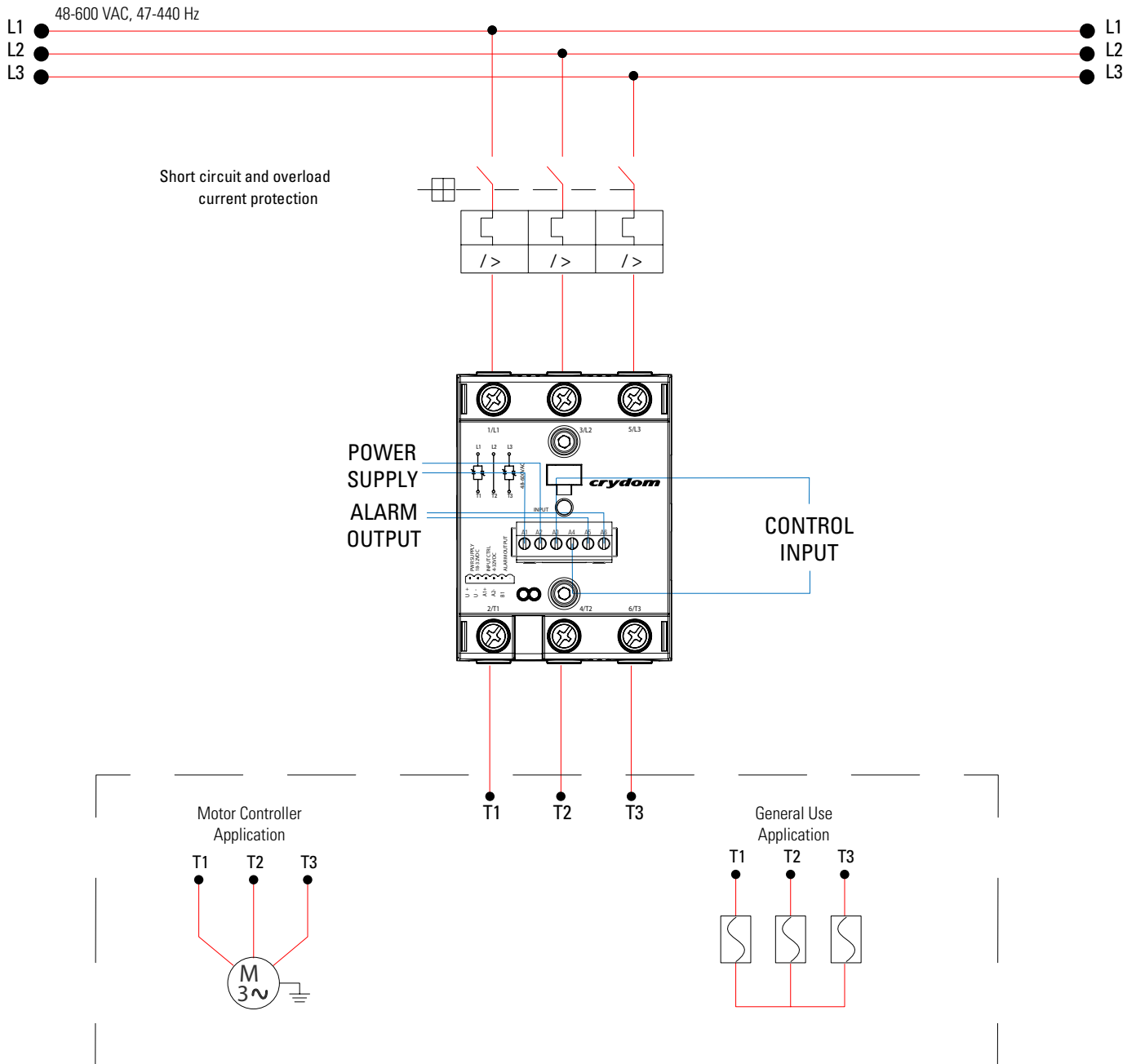
## General<sup>(1)</sup>

Description	Parameters
Dielectric Strength, Input to Output (50/60Hz)	4k V <sub>RMS</sub>
Dielectric Strength, Input/Output to Case (50/60Hz)	4k V <sub>RMS</sub>
Minimum Insulation Resistance (@ 500 VDC)	10 <sup>9</sup> Ohms
Maximum Capacitance, Input/Output	25pF
Ambient Operating Temperature Range	-40 to 70°C
Ambient Storage Temperature Range	-40 to 80°C
Short Circuit Current Rating <sup>(4)</sup>	100 kA
Weight (typical)	33.9 oz (961 g)
Housing Material	UL94 V-0
Heat Sink Material	Aluminum
DIN Rail Clip Material	Zinc Plated Steel
Hardware Finish	Nickel Plating
Input Terminal Screw Torque Range (lb-in/Nm)	5/0.5
Load Terminal Screw Torque Range (lb-in/Nm)	18-20/2.0-2.2
Humidity per IEC 60068-2-78 <sup>(5)</sup>	93%
LED Input Status Indicator	See status chart
Overvoltage Category	III
Impulse Withstand Voltage According to IEC 60664-1	6kV



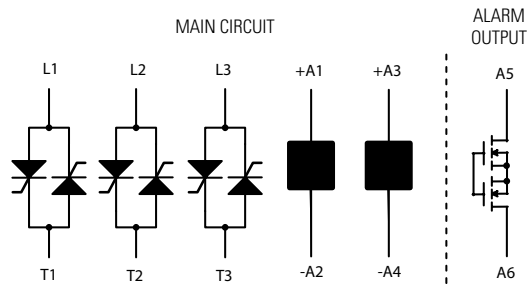
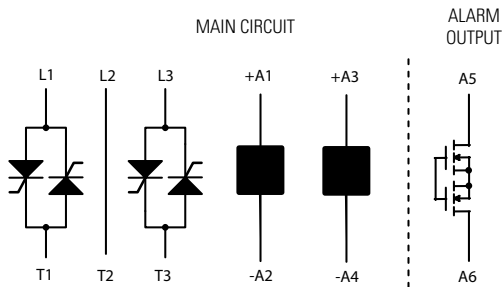
# EQUIVALENT CIRCUIT BLOCK DIAGRAMS/WIRING DIAGRAMS

**DR6760X60**  
**DR6760X75**



DR6760X75  
(2 CONTROLLED LEGS)

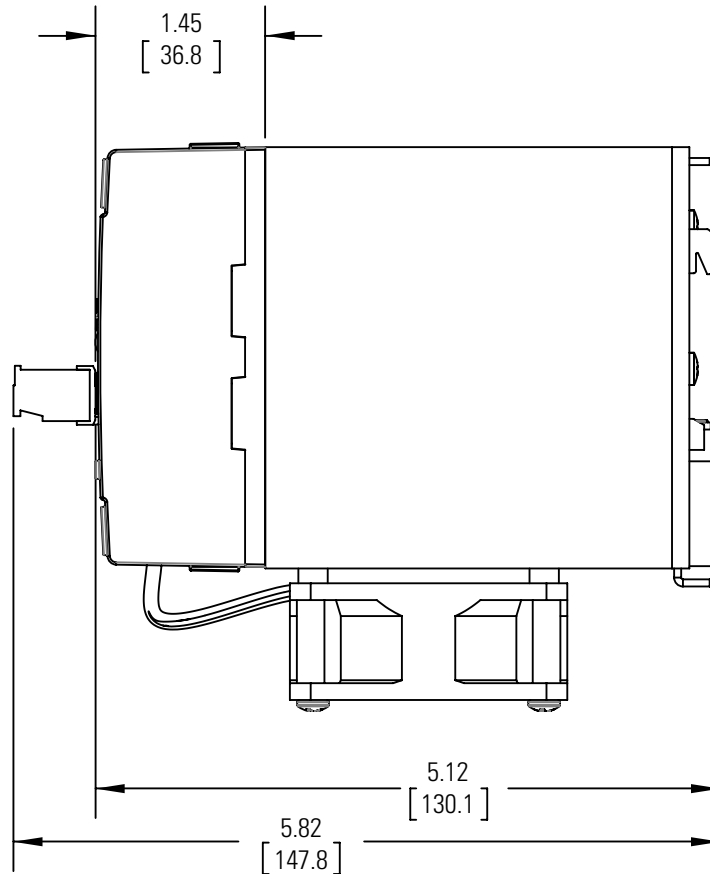
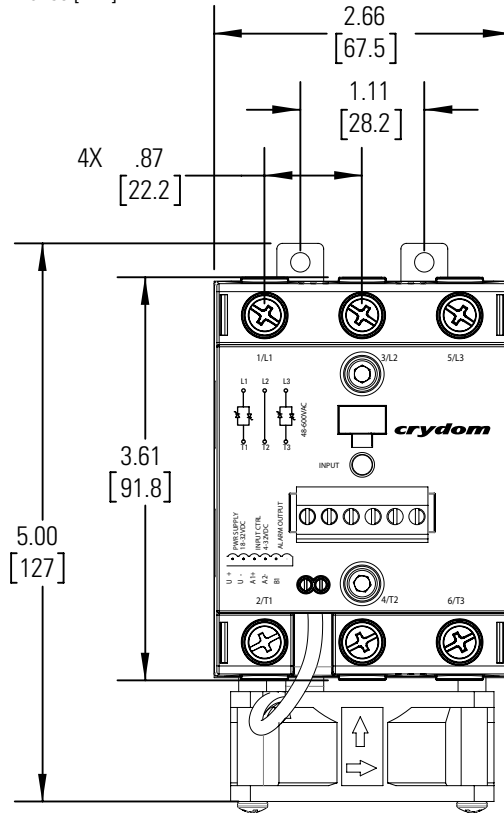
DR6760X60  
(3 CONTROLLED LEGS)





# MECHANICAL SPECIFICATIONS

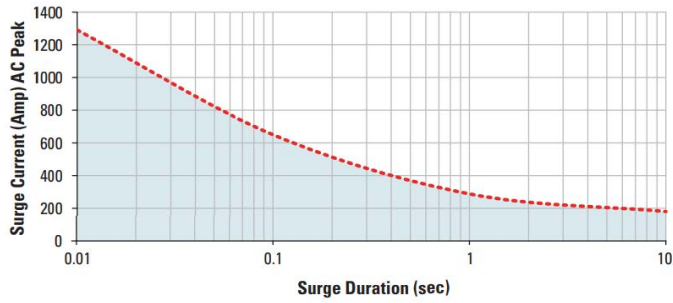
Tolerances:  $\pm 0.02$  in / 0.5 mm  
All dimensions are in inches [mm]





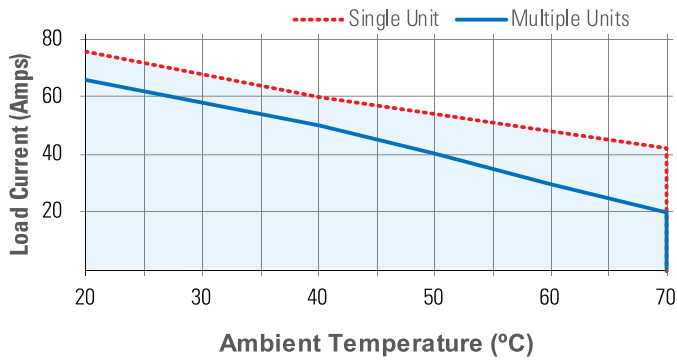
# SURGE CURRENT INFORMATION <sup>(6)</sup>

## 60A & 75A

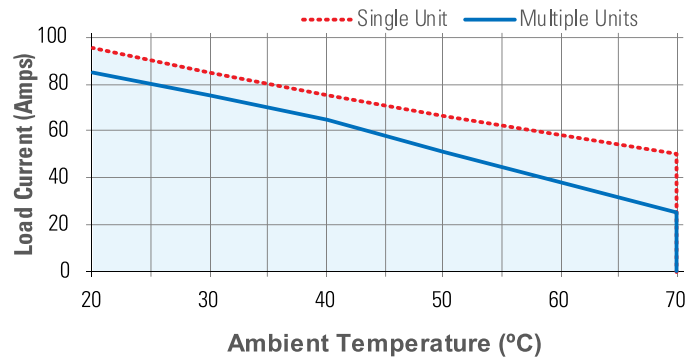


# THERMAL DERATE INFORMATION

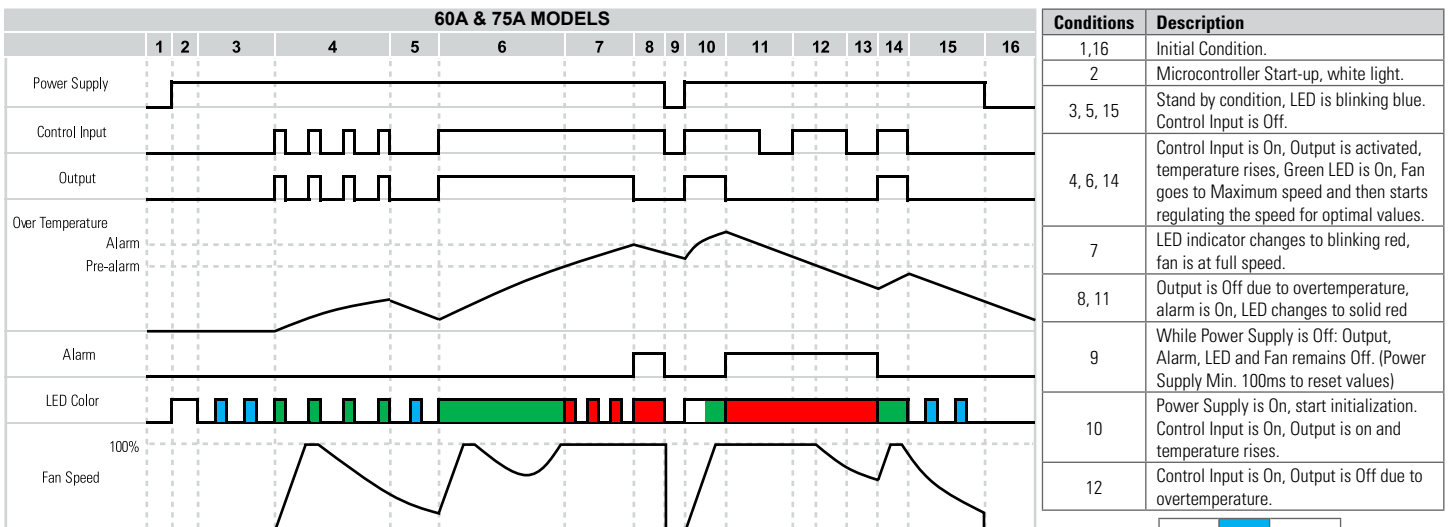
## DR6760x60



## DR6760x75



# STATUS CHART



Conditions	Description
1,16	Initial Condition.
2	Microcontroller Start-up, white light.
3, 5, 15	Stand by condition, LED is blinking blue. Control Input is Off.
4, 6, 14	Control Input is On, Output is activated, temperature rises, Green LED is On, Fan goes to Maximum speed and then starts regulating the speed for optimal values.
7	LED indicator changes to blinking red, fan is at full speed.
8, 11	Output is Off due to overtemperature, alarm is On, LED changes to solid red
9	While Power Supply is Off: Output, Alarm, LED and Fan remains Off. (Power Supply Min. 100ms to reset values)
10	Power Supply is On, start initialization. Control Input is On, Output is on and temperature rises.
12	Control Input is On, Output is Off due to overtemperature.

LED Color	Blue	Standby mode
	Green	Output On
	Red	Alarm
	White	Initialization



# INSTALLATION INSTRUCTIONS

## Mounting on DIN Rail

- Locate rail and align with non moveable end of DR67 DIN clip.
- Using reasonable force, push DR67 in the direction of the arrow (as shown in fig.1).
- For removal pull release tag by moving blade of screwdriver in direction of arrow and pull it away from DIN rail.
- For models with integrated fan removal tool must be inserted from the side (as shown in fig. 2)

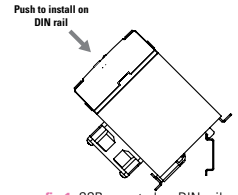


fig.1 SSR mounted on DIN rail

## Wiring Instructions

- Recommended wire sizes as shown in TABLE 1
- Maximum terminal screw torque input terminal 5 lb-in (0.5 Nm) (screw terminal only)
- Maximum terminal screw torque load terminal 18-20 lb-in (2.0-2.2 Nm)
- Strip length for input terminals: Per manufacturer specifications
- Strip length for load terminals: 10mm min.
- Use only copper conductors rated for 75°C
- If multiple units are installed be sure to follow derating curves.

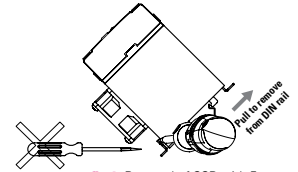


fig.2 Removal of SSR with Fan

## WARNING!!

- Removing product from 35mm Rail incorrectly by not using the appropriate tool, would damage the latching system.

**Table 1. Wire Size & Pull Out Strength**

Terminal Configuration	Recommended Wire Size (Solid/Stranded)	Wire Pull-Out Strength (lb)[N]*	
Output	1 x 18 AWG (1 mm <sup>2</sup> ) [minimum]	20 [88]	
	1 x 8 AWG (10 mm <sup>2</sup> )	75 [333]	
	2 x 8 AWG (10 mm <sup>2</sup> )	65 [289]	
	1 x 3 AWG (26.67 mm <sup>2</sup> ) <sup>(1)</sup>	90 [400]	
Input	Screw	30 AWG (0.05 mm <sup>2</sup> ) [minimum]	4.5 [20]
		12 AWG (3.3 mm <sup>2</sup> ) [maximum]	30 [133]

\*Tests performed on Stranded wire

<sup>(1)</sup> Maximum wire size 1 x 2 AWG (35mm<sup>2</sup>), torque 24 lb-in (2.7 Nm) & strip length 12.7mm min.



# ACCESSORIES

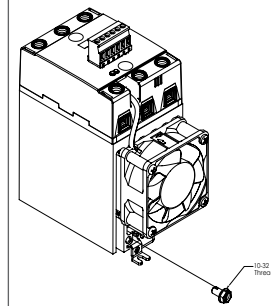
## Recommended Accessories



### ID Marker

- CNLB
- CNLN
- CNL2

## Protective Earth Connection








Protective earth (PE) screw type recommended is 10-32 UNC standard not provided with SSR.


Through the use of a DIN rail ground (protective conductor) terminal block, the DIN rail itself can be used as the grounding bus bar. In this case, the zinc plated steel material used for the DIN rail clip of DR67 models, permits a secure path to ground and avoid the need of a further PE connection.



## AGENCY APPROVALS & CERTIFICATIONS

Approvals (Tested and Certified According To)	
 E116949	 40047491
UL 508 and C22.2 No. 14	EN 62314

CONFORMANCES			ENVIRONMENTAL		
<b>Vibration Resistance IEC 60068-2-6<sup>(7)</sup></b>	<b>Shock Resistance IEC IEC 60068-2-27<sup>(7)</sup></b>	<b>Resistances to heat and fire</b>			
Amplitude Range: 10-55 Hz, Displacement 0.75mm	Peak Acceleration: 15g, Duration 11ms.	IEC 60335-1, Section 30	Directive 2006/95/EC	Directive 2011/65/EU	GBT 26572-2011

Electromagnetic Compatibility					
Generic Standard	Immunity Tests	Test Specification Level		Performance	
 IEC 61000-6-2 Immunity for Industrial Environments"	Electrostatic Discharge IEC 61000-4-2	8kV air discharge		Criterion A	
		6kV contact discharge		Criterion A	
	Fast transient (burst) IEC 61000-4-4	Output	2kV, 5kHz, 100kHz		Criterion B
		Input	1kV, 5kHz, 100kHz		Criterion B
	Surge IEC 61000-4-5	Output	1kV Line to Line		Criterion B
			2kV Line to Earth		Criterion B
		AC Input Option	1kV Line to Line		Criterion A
			2kV Line to Earth		Criterion A



## GENERAL NOTES

- (1) All parameters at 25°C unless otherwise specified per Channel.
- (2) Output will self trigger between 900-1200 Vpk, not suitable for capacitive loads.
- (3) Turn-on time for Instantaneous turn-on versions is 0.3 msec.
- (4) When protected with the appropriate class and rated fuse. For detailed info please contact Sensata Technical Support.
- (5) No freezing or condensation allowed.
- (6) For single surge pulse Tc=25°C; Tj=125°C. For AC Output SSRs, AC RMS value of surge current equals the peak value divided by 2 (1.414).
- (7) Test conditions: Din Rail stoppers side by side between a single SSR.





## WARNINGS



### RISK OF MATERIAL DAMAGE AND HOT ENCLOSURE

- The product's side panels may be hot, allow the product to cool before touching
- Follow proper mounting instructions including torque values
- Do not allow liquids or foreign objects to enter this product

**Failure to follow these instructions can result in serious injury, or equipment damage.**



### HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Disconnect all power before installing or working with this equipment
- Verify all connections and replace all covers before turning on power

**Failure to follow these instructions will result in death or serious injury.**

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