

# Solid State Relays **SOLITRON MINI** With Integrated Heatsink

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- AC Solid State Contactor in 22.5 mm housing
- Zero switching for heating and motor applications
- Rated operational current 10 A and 20 A
- Rated operational voltage 120/230 VAC, 400/480 VAC and 600 VAC
- Transient overvoltage protection
- LED-indication
- IP 20 protection
- DIN-rail and backplate mountable
- Terminal layout as contactor or SSR standard
- Insulation > 4000 V

## Product Description

The *SOLITRON* Mini Solid State Contactor is designed for industrial heating and motor applications. The Solid State Contactor is designed for DIN-rail and backplate mounting with integrated heatsink and overvoltage protection. The heatsink is moved to the back for optimal space-saving in the panel and easy wire mounting at the front of the relay. The limited current rating limits the need for optimal convection

cooling as provided with Solitron 30, 50 and 63 A versions. The contactor elements are integrated on to the ceramic providing more than 4000 V insulation to the heatsink. AC or DC controlled versions are available with terminal layout as the standard for contactors or the US Mil-standard for Solid State Relays. Built-in LED status indication for applied control voltage.

## Ordering Key

**RN 1 A 48 D 20 E**

Solid State Relay  
Number of poles  
Switching type  
Rated operational voltage  
Control voltage  
Rated operational current  
Terminal layout

## Type Selection

Rated operational voltage	Control voltage	Rated operational current: Contactor terminal layout		Standard SSR terminal layout	
		AC1: 10 A AC3: 3 A	AC1: 20 A AC3: 5 A	AC1: 10 A AC3: 3 A	AC1: 20 A AC3: 5 A
120/230 VAC	5-32 VDC 24-265 VAC/DC	RN 1A23D10E RN 1A23A10E	RN 1A23D20E RN 1A23A20E	RN 1A23D10U RN 1A23A10U	RN 1A23D20U RN 1A23A20U
400/480 VAC	5-32 VDC 24-265 VAC/DC	RN 1A48D10E RN 1A48A10E	RN 1A48D20E RN 1A48A20E	RN 1A48D10U RN 1A48A10U	RN 1A48D20U RN 1A48A20U
600 VAC	5-32 VDC 24-265 VAC/DC	RN 1A60D10E RN 1A60A10E	RN 1A60D20E RN 1A60A20E	RN 1A60D10U RN 1A60A10U	RN 1A60D20U RN 1A60A20U

## General Specifications

	RN1A23....	RN1A48....	RN1A60....
Operational voltage range	42 to 265 VAC	42 to 530 VAC	42 to 660 VAC
Non-rep. peak voltage	600 V <sub>p</sub>	1200 V <sub>p</sub>	1400 V <sub>p</sub>
Varistor voltage	275 VAC	510 VAC	625 VAC
Operational frequency range	45 to 65 Hz	45 to 65 Hz	45 to 65 Hz
Power factor at rated voltage	≥ 0.5	≥ 0.5	≥ 0.5
CE-marking (External filter for EN 50081-1 needed.)	Yes	Yes	Yes

Norms fulfilled  
IEC 60158-2  
EN 50082-2

Semiconductor Contactors  
Generic Immunity Standard, Industrial Environment

## Input Specifications

	RN1A..D..	RN1A..A
Rated control voltage range	5 to 32 VDC	24 to 265 VAC/DC
Pick-up voltage	4.5 VDC	14 VAC/DC
Drop-out voltage	1 VDC	4 VAC/DC
Reverse voltage max.	32 VDC	-
Varistor protection	50 VDC	275 VAC
Input current	< 6 mA	< 8 mA
Response time		
Pick-up time max. (50 Hz)	10 ms	20 ms
Drop-out time max. (50 Hz)	10 ms	20 ms
Input-ON indication (LED, green)		Yes    Yes

## Output Specifications

	RN1A23.10.	RN1A23.20.	RN1A48.10. RN1A60.10.	RN1A48.20. RN1A60.20.
Rated operational current <sup>1)</sup>				
AC1 @Ta=30°C	10 A	20 A	10 A	20 A
AC1 @Ta=40°C	8.75 A	17.5 A	8.75 A	17.5 A
AC1 @Ta=50°C	7.5 A	15 A	7.5 A	15 A
AC1 @Ta=60°C	6.25 A	12.5 A	6.25 A	12.5 A
AC3 @Ta=30°C	3 A	5 A	3 A	5 A
Zero crossing detection	Yes	Yes	Yes	Yes
Min. operational current	200 mA	200 mA	200 mA	200 mA
Non-rep. surge current t=10 ms (Tj init.=25°C)	120 A <sub>p</sub>	200 A <sub>p</sub>	230 A <sub>p</sub>	300 A <sub>p</sub>
Off-state leakage current @ rated voltage and frequency (Tj.=125°C, max.)	< 1 mA	< 1 mA	< 1 mA	< 1 mA
I <sup>2</sup> t for fusing t=1 to 10 ms	72 A <sup>2</sup> s	200 A <sup>2</sup> s	265 A <sup>2</sup> s	450 A <sup>2</sup> s
Critical dV/dt off-state	250 V/μs	250 V/μs	500 V/μs	500 V/μs

<sup>1)</sup> Remark: When mounting Solid State Contactors side by side, provide a space equivalent to the width of a single contactor between two adjacent Solid State Contactors or reduce the current flow to less than 1/2 of the rated value. Thermal measurements after installation must be made to secure correct ambient temperature. The ambient temperature is the temperature of the air flow just before it reaches the relay. A minimum distance of 120 mm must be kept between two rows of Solid State Contactors. Please refer to the drawing Panel Mounting. The ambient temperature in the top of a panel can be substantially higher than the inlet temperature of the cooling air.

## Housing Specifications

Mounting	DIN-rail 35 mm or backplate
Weight	220 g
Housing material	PBT (Poly Butylene Theraphtalate)
Terminals	Screw with captive wire clamp
Control and power terminals Nominal	4 mm <sup>2</sup> or 2 x 2.5 mm <sup>2</sup> AWG 12 or 2 x AWG 14
Min. Mounting torque max.	0.5 mm <sup>2</sup> , AWG 20 0.6 Nm
Heatsink compound used	Dow Corning 340

## Insulation

Rated impulse withstand voltage	
Input to output	4000 V <sub>imp</sub>
Output to heatsink	4000 V <sub>imp</sub>

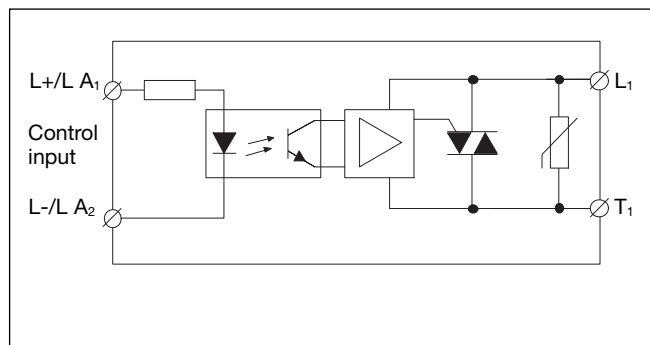
## Dimensions

Dimensions (H x W x D)	80 x 22.5 x 100 mm
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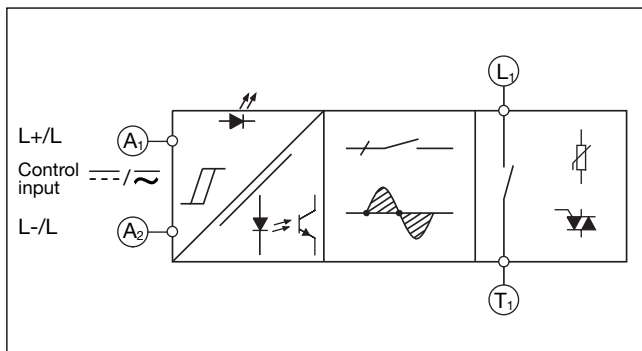
## Thermal Specifications

	RN1A...10.	RN1A...20.
Operational temperature	-20° to +70°C (-4° to +158°F)	-20° to +70°C (-4° to +158°F)
Storage temperature	-40° to +100°C (-40° to +212°F)	-20° to +100°C (-40° to +212°F)

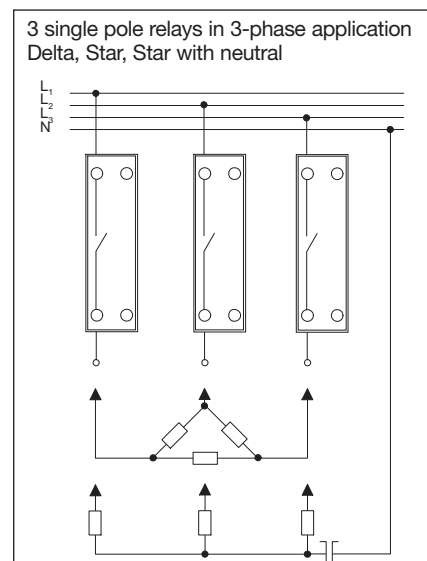
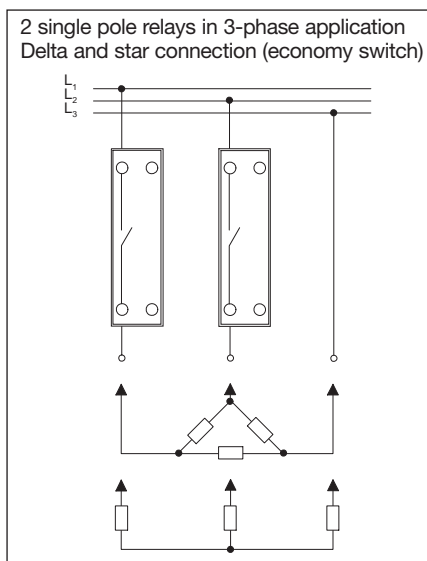
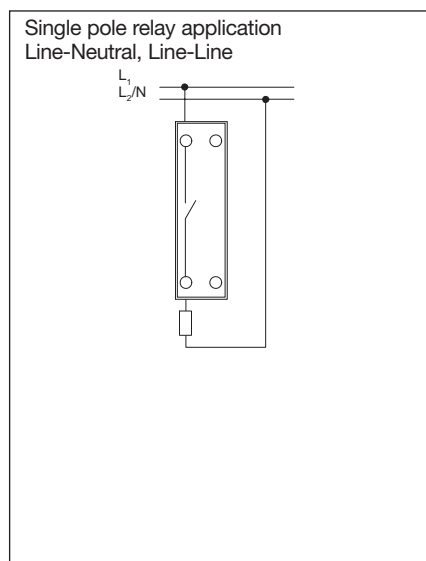
## Wiring Diagram



## Functional Diagram

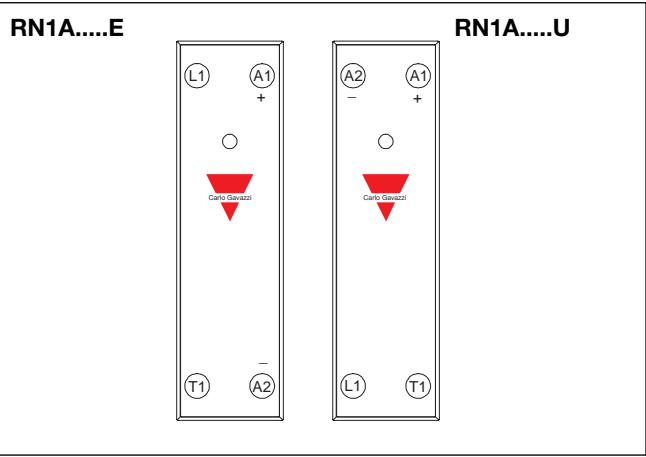


## Applications

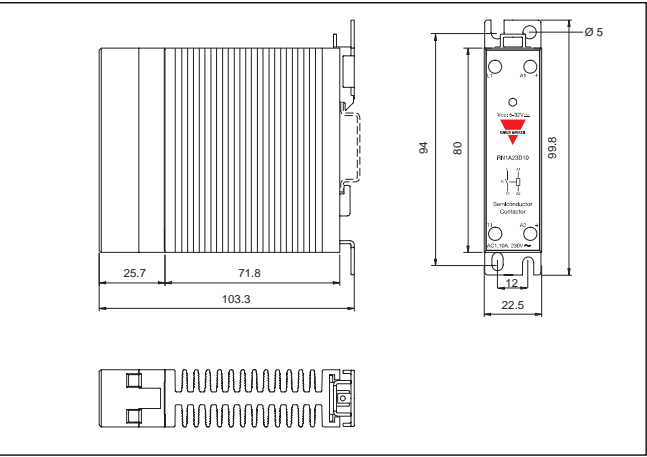




Terminal Layout



Dimensions



Panel Mounting

