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Solid State Relays
SOLITRON MINI
With Integrated Heatsink

CARLO GAVAZZI



- **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 AC1: 10 A AC3: 3 A	Contactor terminal layout AC1: 20 A AC3: 5 A	Standard SSR terminal layout AC1: 10 A AC3: 3 A	Standard SSR terminal layout AC1: 20 A AC3: 5 A
120/230 VAC	5-32 VDC	**RN 1A23D10E**	**RN 1A23D20E**	**RN 1A23D10U**	**RN 1A23D20U**
	24-265 VAC/DC	**RN 1A23A10E**	**RN 1A23A20E**	**RN 1A23A10U**	**RN 1A23A20U**
400/480 VAC	5-32 VDC	**RN 1A48D10E**	**RN 1A48D20E**	**RN 1A48D10U**	**RN 1A48D20U**
	24-265 VAC/DC	**RN 1A48A10E**	**RN 1A48A20E**	**RN 1A48A10U**	**RN 1A48A20U**
600 VAC	5-32 VDC	**RN 1A60D10E**	**RN 1A60D20E**	**RN 1A60D10U**	**RN 1A60D20U**
	24-265 VAC/DC	**RN 1A60A10E**	**RN 1A60A20E**	**RN 1A60A10U**	**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_p	1200 V_p	1400 V_p
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	Semiconductor Contactors		
EN 50082-2	Generic Immunity Standard, Industrial Environment		

Specifications are subject to change without notice (30.06.1999)

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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) Drop-out time max. (50 Hz)	 10 ms 10 ms	 20 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 [1] AC1 @Ta=30°C AC1 @Ta=40°C AC1 @Ta=50°C AC1 @Ta=60°C AC3 @Ta=30°C	 10 A 8.75 A 7.5 A 6.25 A 3 A	 20 A 17.5 A 15 A 12.5 A 5 A	 10 A 8.75 A 7.5 A 6.25 A 3 A	 20 A 17.5 A 15 A 12.5 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_p	200 A_p	230 A_p	300 A_p
Off-state leakage current @ rated voltage and frequency (Tj.=125°C, max.)	< 1 mA	< 1 mA	< 1 mA	< 1 mA
I^2t for fusing t=1 to 10 ms	72 A^2s	200 A^2s	265 A^2s	450 A^2s
Critical dV/dt off-state	250 V/µs	250 V/µs	500 V/µs	500 V/µs

[1] 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 substantialy 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 Min. Mounting torque max.	 4 mm^2 or 2 x 2.5 mm^2 AWG 12 or 2 x AWG 14 0.5 mm^2, AWG 20 0.6 Nm
Heatsink compound used	Dow Corning 340

Insulation

Rated impulse withstand voltage Input to output Output to heatsink	 4000 V_{imp} 4000 V_{imp}

Dimensions

Dimensions (H x W x D)	80 x 22.5 x 100 mm

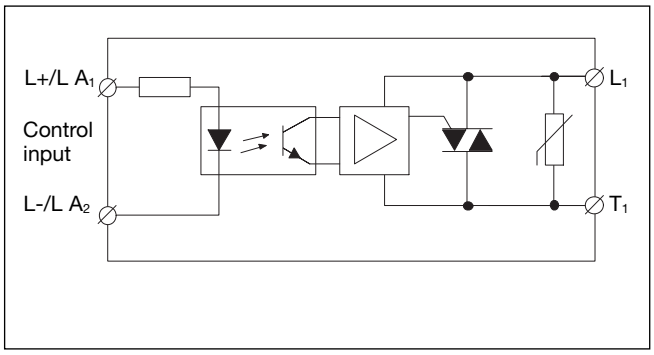
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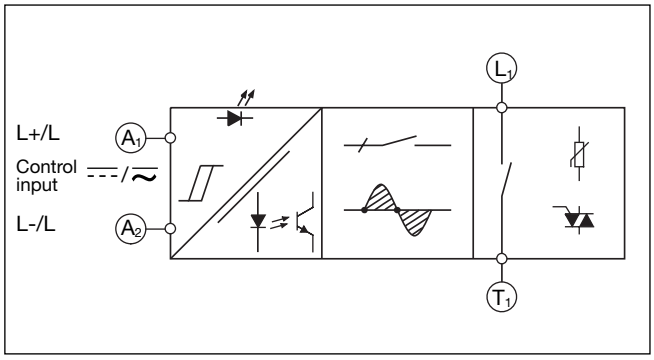
Thermal Specifications

	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

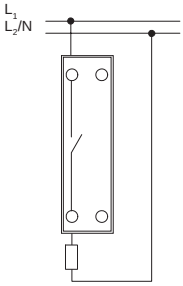


Functional Diagram

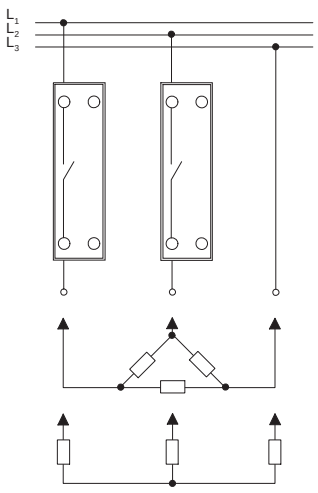


Applications

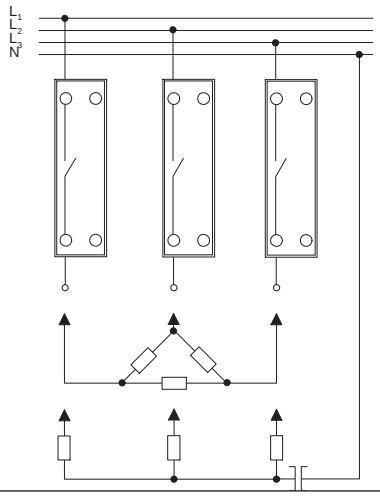
Single pole relay application
Line-Neutral, Line-Line



2 single pole relays in 3-phase application
Delta and star connection (economy switch)

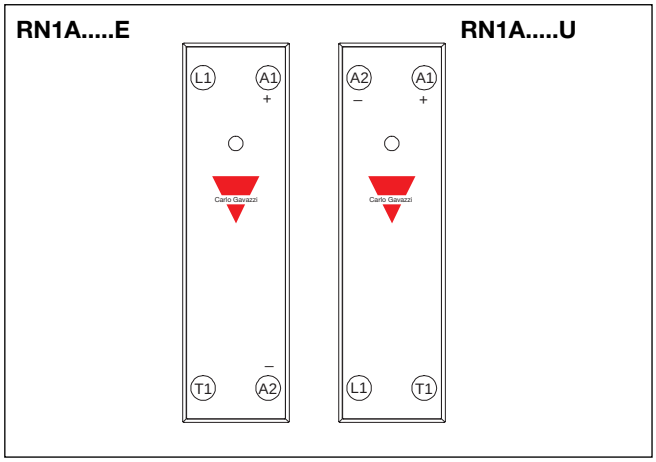


3 single pole relays in 3-phase application
Delta, Star, Star with neutral

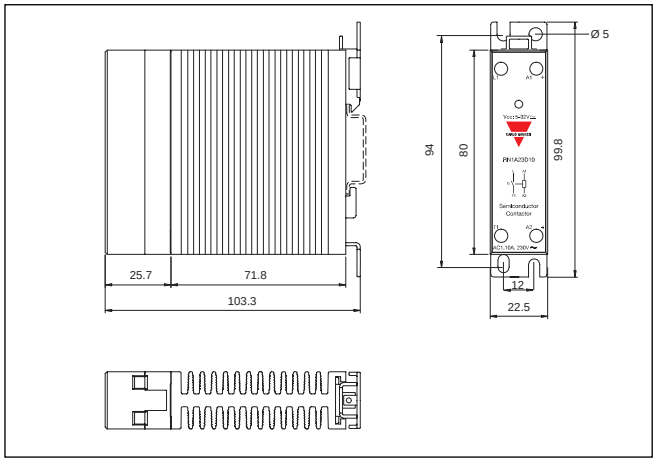


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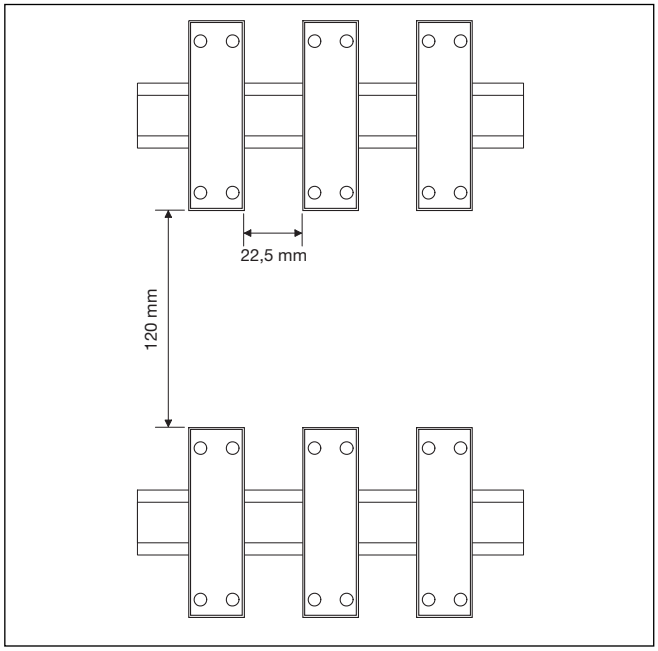
Terminal Layout



Dimensions



Panel Mounting



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