

# Solid State Relays 1- and 2 Pole **SOLITRON** With Integrated Heatsink

CARLO GAVAZZI



- AC Solid State Contactor, 1- and 2 poles
- Zero switching for heating and motor applications
- Instant-on switching
- Rated operational current 30 A, 50 A and 63 A
- Rated operational voltage 230 VAC, 400/480 VAC
- Transient overvoltage protection built-in
- LED-indication
- IP 20 protection
- DIN-rail mountable

## Product Description

The **SOLITRON** Solid State Contactor is designed for industrial heating and motor control applications.

The heatsink is moved to the front for optimal convection cooling in the panel. Cable ducting system will not stop the airflow.

The Solid State Contactor is capable of switching 1-, 2-, and 3-phase applications with loads up to 63 A AC1 load and up to 24 A AC3 load. The Solid State Contactor is designed for DIN-rail mounting with integrated heatsink and overvoltage

The contactor elements are soldered directly on to the direct copper bonded substrate (DCB-technology). AC or DC controlled versions are available. Built-in LED status indication for applied control voltage.

## Ordering Key

**RN 1 A 23 A 50**

- Solid State Relay
- Number of poles
- Switching type
  - A: Zero switching
  - B: Instant on switching
- Rated operational voltage
- Control voltage
- Rated operational current

## Type Selection, 1 Pole

Rated operational voltage	Control voltage	Rated operational current		
		AC51: 30 A AC53a: 6 A	AC51: 50 A AC53a: 12 A	AC51: 63 A AC53a: 24 A
230 VAC	5-32 VDC	RN 1A23D30	RN 1A23D50	RN 1A23D63
	5-32 VDC	RN 1B23D30	RN 1B23D50	RN 1B23D63
	24-230 ± 15% VAC/DC	RN 1A23A30	RN 1A23A50	RN 1A23A63
400/480 VAC	5-32 VDC	RN 1A48D30	RN 1A48D50	RN 1A48D63
	5-32 VDC	RN 1B48D30	RN 1B48D50	RN 1B48D63
	24-230 ± 15% VAC/DC	RN 1A48A30	RN 1A48A50	RN 1A48A63

## Type Selection, 2 Pole

Rated operational voltage	Control voltage	Rated operational current	
		AC51: 30 A Total AC53a: 6 A	AC51: 50 A Total AC53a: 12 A
230 VAC	5-32 VDC	RN 2A23D30	RN 2A23D50
	5-32 VDC	RN 2B23D30	RN 2B23D50
	24-265 VAC/DC	RN 2A23A30	RN 2A23A50
400/480 VAC	5-32 VDC	RN 2A48D30	RN 2A48D50
	5-32 VDC	RN 2B48D30	RN 2B48D50
	24-265 VAC/DC	RN 2A48A30	RN 2A48A50

## General Specifications

	RN..23...	RN..48...
Operational voltage range	24 to 265 VAC	42 to 530 VAC
Non-rep. peak voltage	800 V <sub>p</sub>	1200 V <sub>p</sub>
Varistor voltage	275 VAC	510 VAC
Operational frequency range	45 to 65 Hz	45 to 65 Hz
Power factor at rated voltage	≥ 0.5	≥ 0.5
Approvals	UL, cUL, CSA	UL, cUL, CSA
CE-marking	Yes	Yes

Norms fulfilled HD 419.2S1  
EN 50082-2

Low-voltage controlgear semiconductor contactors  
Generic Immunity Standard. Industrial Environment

## Input Specifications

	RN....D	RN....A..
Rated control voltage range		
RN1	5 to 32 VDC	24 to 265 VAC/DC
RN2	2 x 5 to 32 VDC	2 x 24 to 265 VAC/DC
Pick-up voltage	4 VDC	14 VAC/DC
Drop-out voltage	3 VDC	6 VAC/DC
Reverse voltage max.	32 VDC	-
Input current		
RN1	< 9 mA	< 12 mA
RN2	< 9 mA per pole	< 12 mA per pole
Response time		
Pick-up time max. (50 Hz)		
<b>RN1A</b>	10 ms	20 ms
<b>RN.B</b>	< 1 ms	-
Drop-out time max. (50 Hz)		
<b>RN.A</b>	10 ms	20 ms
<b>RN.B</b>	10 ms	-
Input-ON indication (LED, green)	Yes	Yes

## Output Specifications

	RN.....30	RN.....50	RN.....63
Rated operational current			
<b>RN1A..</b> AC51 @Ta=30°C	30 A	50 A	63 A
" @Ta=40°C	30 A	50 A	50 A
" @Ta=50°C	23 A	38 A	40 A
" @Ta=60°C	20 A	30 A	30 A
AC53a @Ta=40°C	6 A	12 A	24 A
<b>RN2A..</b> AC51 @Ta=30°C	30 A total sum	50 A total sum	-
" @Ta=40°C	30 A total sum	50 A total sum	-
" @Ta=50°C	23 A total sum	38 A total sum	-
" @Ta=60°C	20 A total sum	30 A total sum	-
AC53a @Ta=40°C	6 A	12 A	-
Zero crossing detection	Yes	Yes	Yes
Min. operational current	200 mA	200 mA	200 mA
Rep. overload current t=1 s (T <sub>j</sub> init.=25°C)	55 AACrms	125 AACrms	150 AACrms
Non-rep. surge current t=10 ms (T <sub>j</sub> init.=25°C)	250 A <sub>p</sub>	600 A <sub>p</sub>	1000 A <sub>p</sub>
Off-state leakage current, @ rated voltage and frequency (T <sub>j</sub> =125°C, max.)	< 1 mA	< 1 mA	< 1 mA
I <sup>2</sup> t for fusing t=1 to 10 ms	310 A <sup>2</sup> s	1800 A <sup>2</sup> s	5000 A <sup>2</sup> s
Critical dV/dt off-state	500 V/μs	500 V/μs	500 V/μs

## Thermal Specifications

	RN.....30	RN.....50	RN.....63
Operational temperature	-20 to +70°C (-4 to +158°F)	-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)	-40 to +100°C (-40 to +212°F)	-40 to +100°C (-40 to +212°F)
Junction temperature	< 125°C (257°F)	< 125°C (257°F)	< 125°C (257°F)
R <sub>th</sub> junction to ambient (AC load)	2.8 K/W	1.7 K/W	1.5 K/W

## Housing Specifications

Mounting	DIN-rail 35 mm
Weight with RHN1	470 g
Weight with RHN2	780 g
Housing material	Glass reinforced noryl SE1GFN1
LED window material	PC Lexan 141R
Base plate	Aluminium, nickel-plated
Potting compound	Polyurethane, Casco Nobel
Terminals	Screw with captive wire clamp
Control 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
Power terminals nominal	10 mm <sup>2</sup> or 2 x 6 mm <sup>2</sup> AWG 6 or 2 x AWG 10
Min. Mounting torque max.	1 mm <sup>2</sup> , AWG 16 2.0 Nm
Heatsink compound used	Dow Corning 340

## Insulation

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

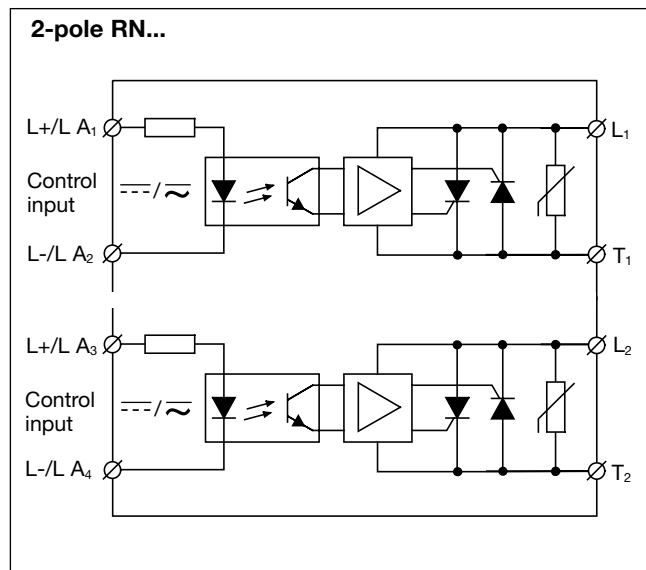
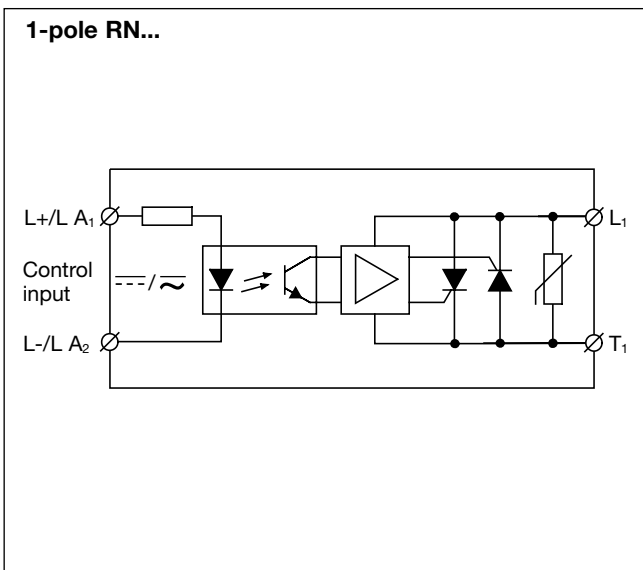
## Environment Specifications

Humidity max.	95%, no condensation
---------------	----------------------

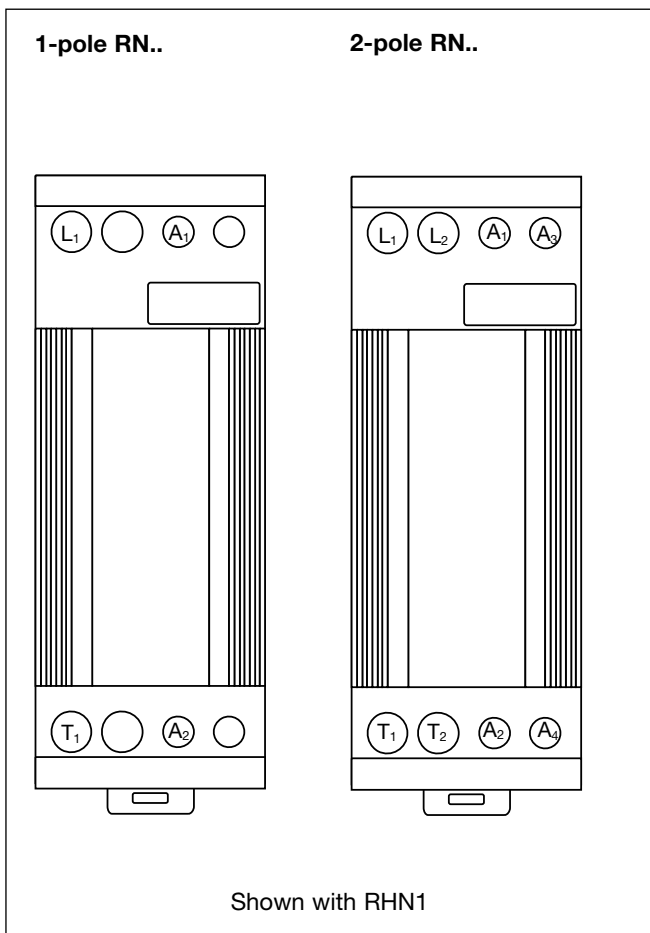
## Dimensions

Dimensions with RHN 1 (30 A) (H x W x D)	120 x 45 x 110 mm
Dimensions with RHN 2 (50, 63 A) (H x W x D)	120 x 90 x 110 mm

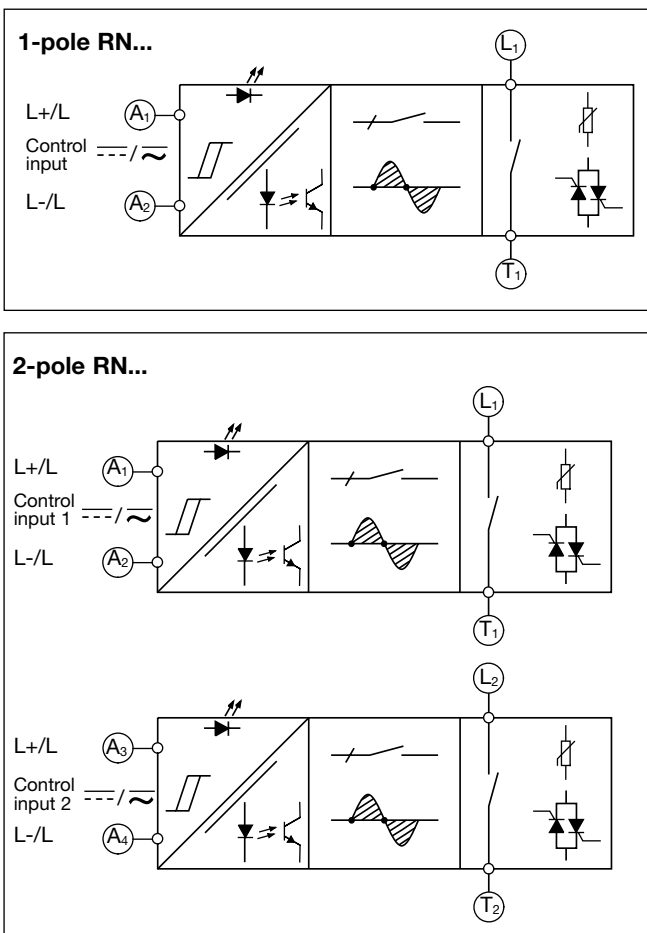
## Wiring Diagrams



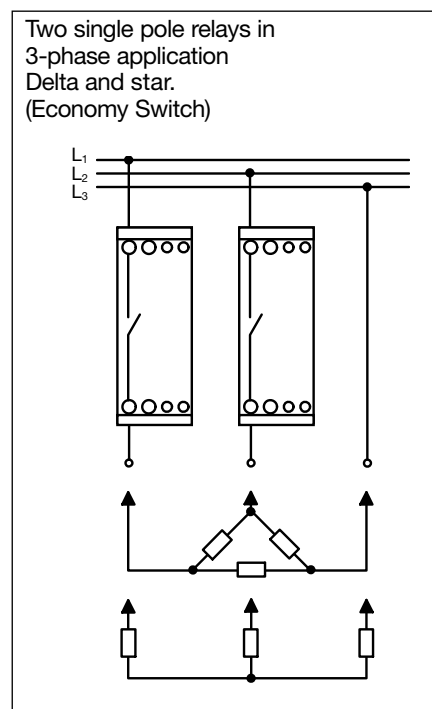
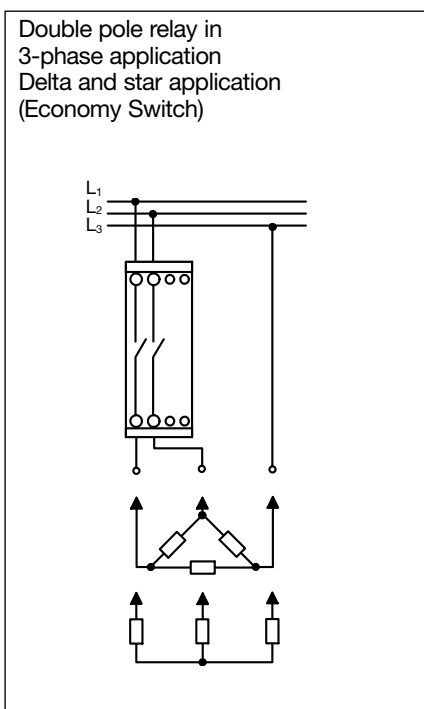
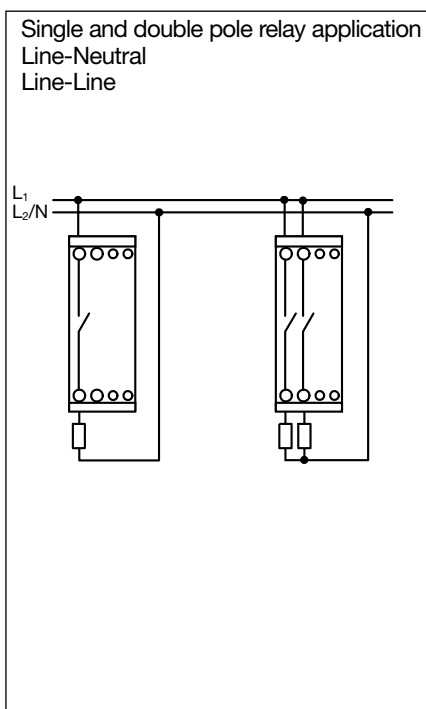
### Terminal Layout



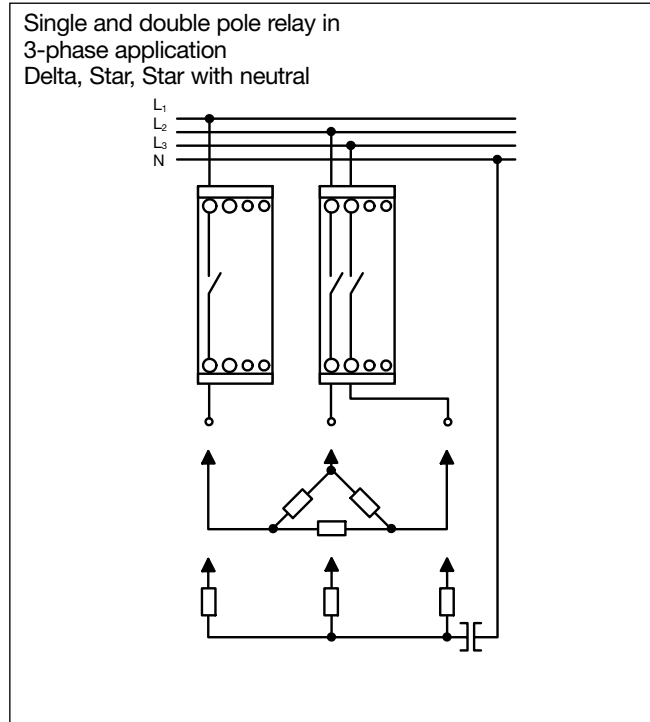
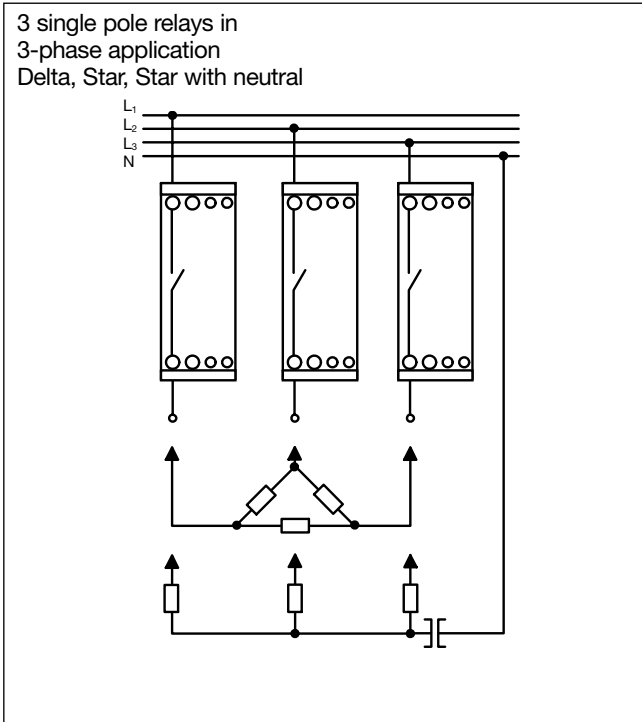
### Functional Diagrams



### Applications



## Applications (cont.)



## Dimensions

