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

The contactor elements are soldered directly on to the direct cupper bonded sub-strate (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 AC1: 30 A AC3: 6 A	AC1: 50 A AC3: 12 A	AC1: 63 A AC3: 24 A
230 VAC	5-32 VDC	**RN 1A23D30**	**RN 1A23D50**	**RN 1A23D63**
	5-32 VDC	**RN 1B23D30**	**RN 1B23D50**	**RN 1B23D63**
	24-265 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**
	24-265 VAC/DC	**RN 1A48A30**	**RN 1A48A50**	**RN 1A48A63**

Type Selection, 2 Pole

Rated operational voltage	Control voltage	Rated operational current AC1: 30 A Total AC3: 6 A	AC1: 50 A Total AC3: 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**

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General Specifications

	RN..23...	RN..48...
Operational voltage range	24 to 265 VAC	42 to 530 VAC
Non-rep. peak voltage	800 V_p	1200 V_p
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
CE-marking (External filter for EN 50081-1 needed.)	Yes	Yes

Norms fulfilled	IEC 60158-2	Semiconductor Contactors
	EN 50082-2	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)		
RN1A	10 ms	20 ms
RN.B	< 1 ms	-
Drop-out time max. (50 Hz)		
RN.A	10 ms	20 ms
RN.B	10 ms	-
Input-ON indication (LED, green)	Yes	Yes

Output Specifications

			RN.....30	RN.....50	RN.....63
Rated operational current					
RN1A..	AC1	@Ta=30°C	30 A	50 A	63 A
	"	@Ta=40°C	25 A	50 A	60 A
	"	@Ta=50°C	23 A	38 A	55 A
	"	@Ta=60°C	20 A	30 A	50 A
	AC3	@Ta=40°C	6 A	12 A	24 A
RN2A..	AC1	@Ta=30°C	30 A total sum	50 A total sum	-
	"	@Ta=40°C	25 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	-
	AC3	@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 (Tj init.=25°C)			55 AACrms	125 AACrms	150 AACrms
Non-rep. surge current t=10 ms (Tj init.=25°C)			250 A_p	600 A_p	1000 A_p
Off-state leakage current, @ rated voltage and frequency (Tj.=125°C, max.)			< 1 mA	< 1 mA	< 1 mA
I^2t for fusing t=1 to 10 ms			310 A^2s	1800 A^2s	5000 A^2s
Critical dV/dt off-state			500 V/µs	500 V/µs	500 V/µs

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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_{th} 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 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
Power terminals nominal Min. Mounting torque max.	10 mm^2 or 2 x 6 mm^2 AWG 6 or 2 x AWG 10 1 mm^2, AWG 16 2.0 Nm
Heatsink compound used	Dow Corning 340

Insulation

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

Environment Specifications

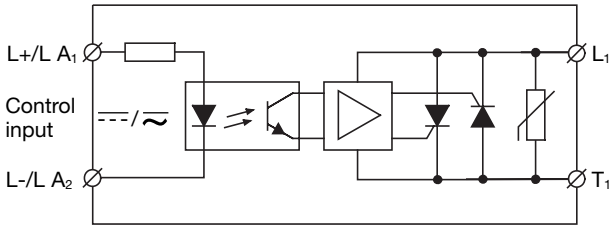
Humidity max.	95%, no condensation

Dimensions

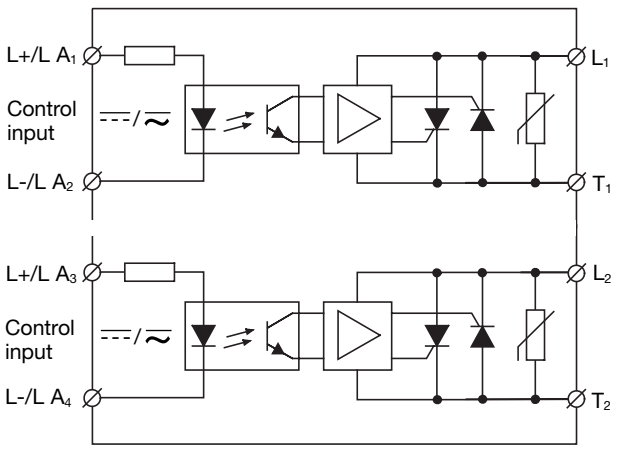
Dimensions with RHN 1 (30 A) (H x W x D)	120 x 45 x 110 mm
Dimensions with RHN 2 (50 A) (H x W x D)	120 x 90 x 110 mm

Wiring Diagrams

1-pole RN...



2-pole RN...



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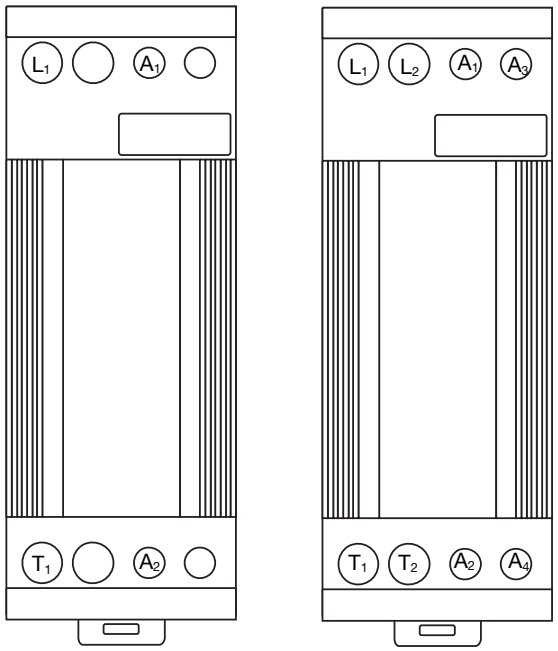
Terminal Layout

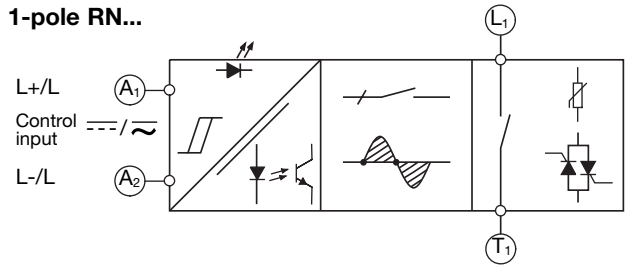
1-pole RN.. **2-pole RN..**



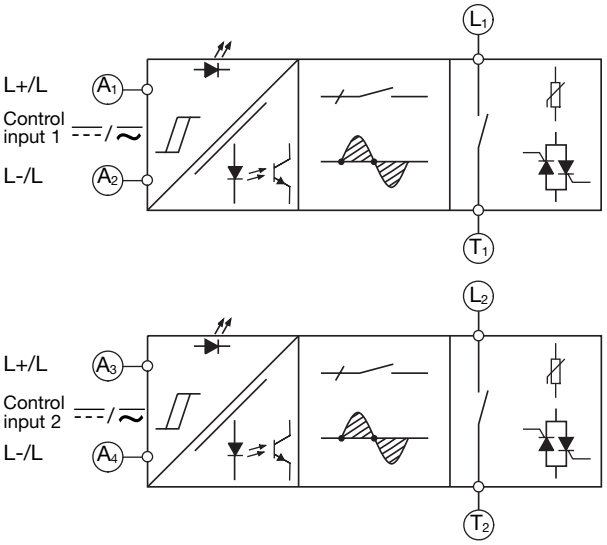
Shown with RHN1

Functional Diagrams

1-pole RN...

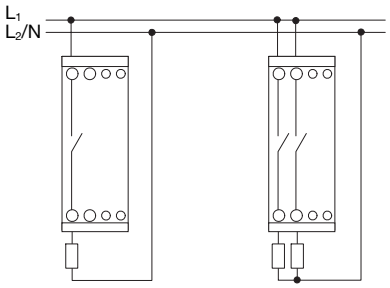


2-pole RN...

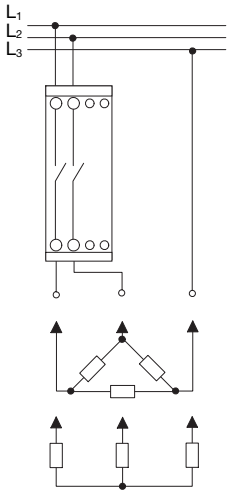


Applications

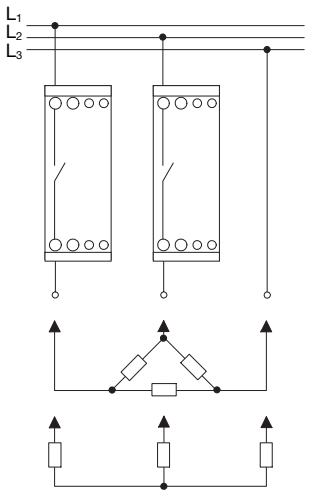
Single and double pole relay application
Line-Neutral
Line-Line



Double pole relay in
3-phase application
Delta and star application
(Economy Switch)



Two single pole relays in
3-phase application
Delta and star.
(Economy Switch)



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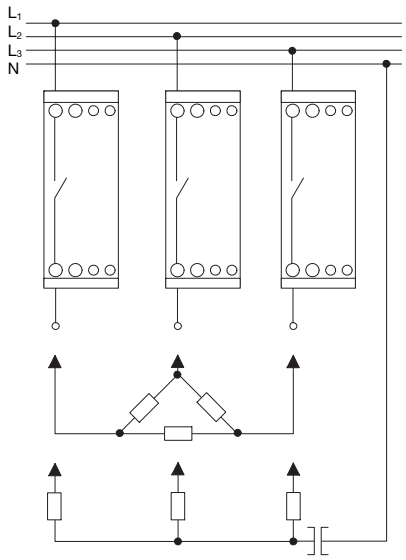
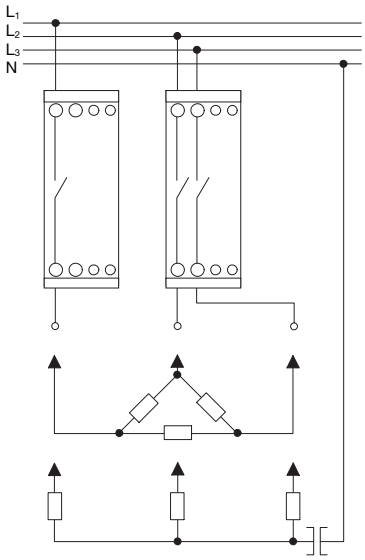
Applications (cont.)

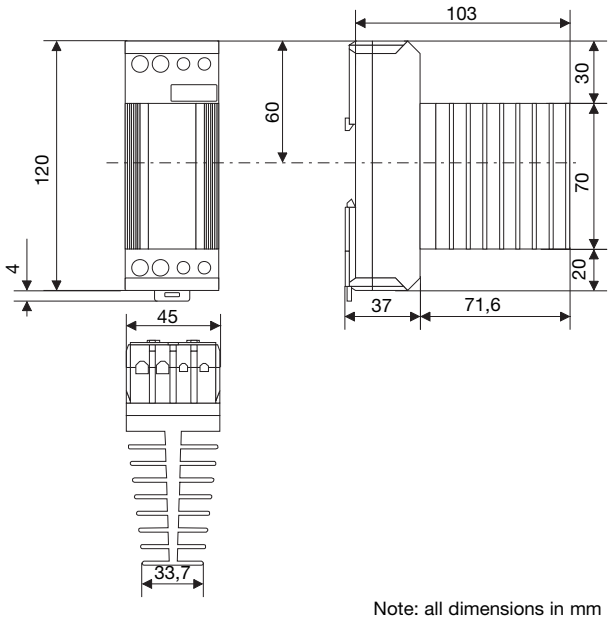
3 single pole relays in
3-phase application
Delta, Star, Star with neutral



Single and double pole relay in
3-phase application
Delta, Star, Star with neutral

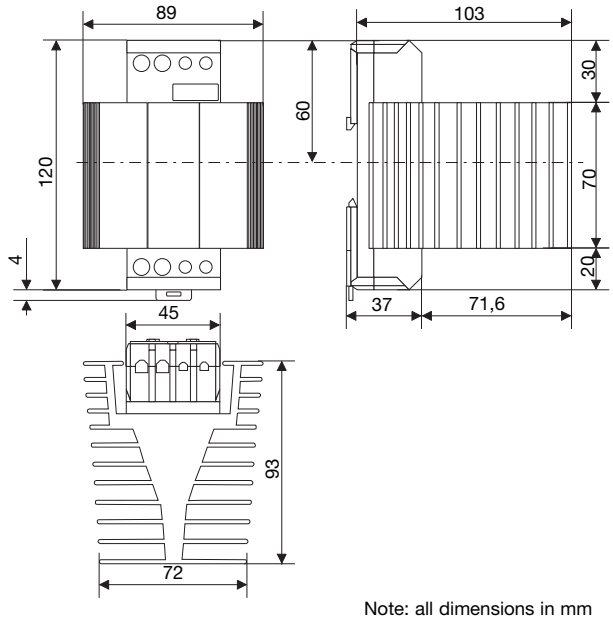


Dimensions



Note: all dimensions in mm

RHN 1



Note: all dimensions in mm

RHN 2