Solid State Relay
System Monitoring Relay (Sense Relay)
Type RA4025L10NCSS00

CARLO GAVAZZI

- System (line and load) monitoring relay
- Zero switching
- Rated operational current: 25 AACrms
- Rated operational voltage: 400 VACrms
- High surge current capability
- Alarm output signal
- LED indication for alarm and supply
- High level immunity against electrical fast transients
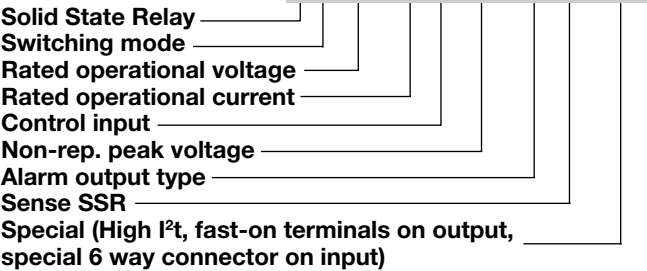 - EN61000-4-4 (4kV on output)

Product Description

The system monitoring solid state relay (sense relay) provides an alarm output in the event of a circuit failure. Internal circuits monitor:
- line voltage/line current
- correct functioning of the SSR
- SSR input status

The relay is designed for applications where immediate fault detection is required.
A red LED indicates an alarm, a green LED indicates DC control supply OK (half LED light intensity) resp. relay switched ON (full LED light intensity).

Ordering Key

RA 40 25 L 10 NC S S00

Solid State Relay
Switching mode
Rated operational voltage
Rated operational current
Control input
Non-rep. peak voltage
Alarm output type
Sense SSR
Special (High I²t, fast-on terminals on output, special 6 way connector on input)

General Specifications

Operational voltage range	150 to 460 VACrms
Non-rep. peak voltage	1200 V_p
Zero voltage turn-on	≤ 15 V
Operational frequency range	45 to 65 Hz
Power factor cos φ	≥ 0.5 @ 400 VACrms
CE-marking	Yes

Output Specifications

Rated operational current	AC 51	≤ 25 Arms
	AC 53a	20 Arms
Min. operational load current		Refer to derating curve
Non-rep. surge current t=20 ms		≤ 1000 A_p
Off-state leakage current @ rated voltage and frequency		≤ 6 mA
I²t for fusing t=1-10 ms		≤ 6500 A²s
Critical dv/dt		≥ 500 V/µs

Control Specifications

Supply voltage range	20 to 32 VDC
Supply current @ 24 VDC	≤ 40 mA DC
Response time pick-up @ 50 Hz	≤ 10 ms
Response time drop-out @ 50 Hz	≤ 10 ms

Active low control input
  Pick-up voltage (Vcc = 24V)
  Drop-out voltage (Vcc = 24V)
  Input current (Vcc = 32 V)
	
	0 - 12 VDC
	19 - 32 VDC
	≤ 4 mA

NPN Alarm output
 	
  Alarm output voltage open
  Alarm output voltage @ 100 mA
  Alarm output current
	
	≤ 32 VDC
	2 VDC
	≤ 100 mA

Sense Specifications

Current
  Sensed load current
  Non-sensed leakage current
	
	≥ 50 mA
	≤ 20 mA

Voltage
  Sensed line voltage
  Non-sensed line voltage
	
	≥ 150 Vrms
	≤ 80 Vrms

Timing
  Voltage dip duration for no alarm
  Response time from fault to alarm output
	
	≤ 30ms
	
	≤ 100 ms

Short-circuit of semiconductor	Will be sensed

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Thermal Specifications

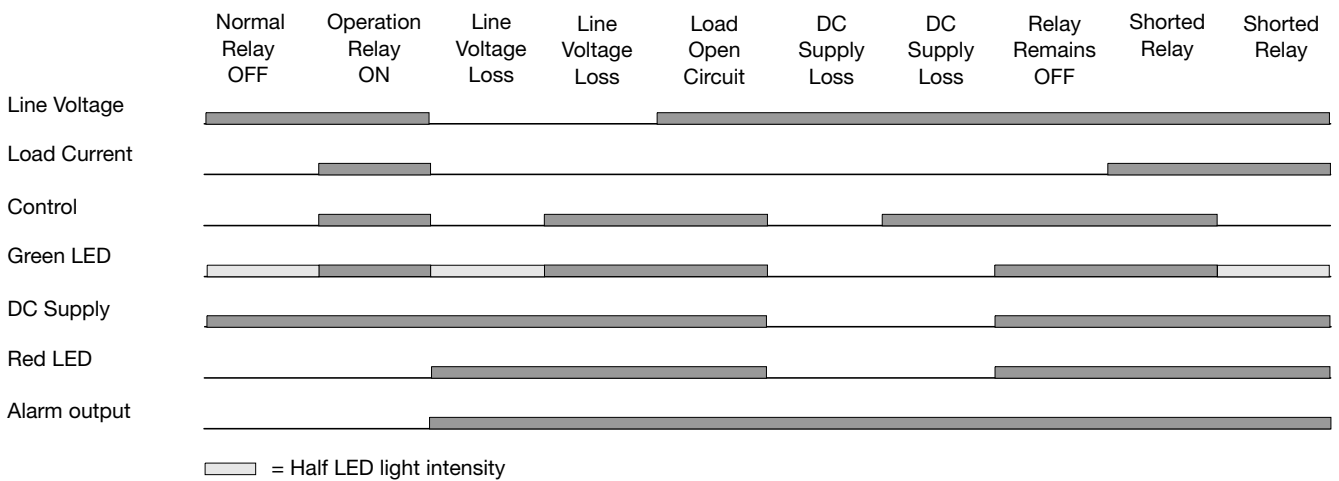|	
Operating temperature	-20° to +80°C (-4° to +176°F)
Storage temperature	-40° to +100°C (-40° to +212°F)
Junction temperature	≤ 125°C (257°F)

Insulation

Rated insulation voltage Input to output	≥ 4000 VACrms
Rated insulation voltage Output to case	≥ 4000 VACrms

Housing Specifications

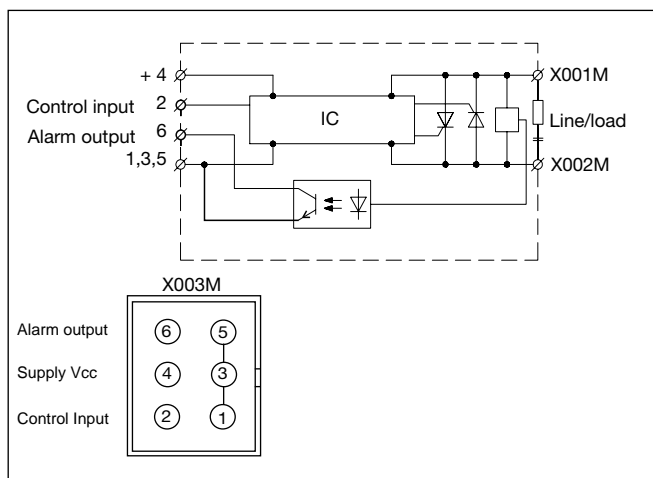|	
Weight	Approx. 85 g
Base plate	Aluminium, nickel-plated
Potting compound	None
Relay Mounting screws Mounting torque	M5 ≤ 1.5 Nm
Power terminal Faston terminals	2 x 6.3 mm
Control connector	6 pole, centre distance 2.54 mm

Operation Diagram

	Normal Relay OFF	Operation Relay ON	Line Voltage Loss	Line Voltage Loss	Load Open Circuit	DC Supply Loss	DC Supply Loss	Relay Remains OFF	Shorted Relay	Shorted Relay
Line Voltage										
Load Current										
Control										
Green LED										
DC Supply										
Red LED										
Alarm output										

▭ = Half LED light intensity

Wiring Diagrams

+ 4		X001M
Control input	2	IC
Alarm output	6	Line/load
1,3,5		X002M

X003M

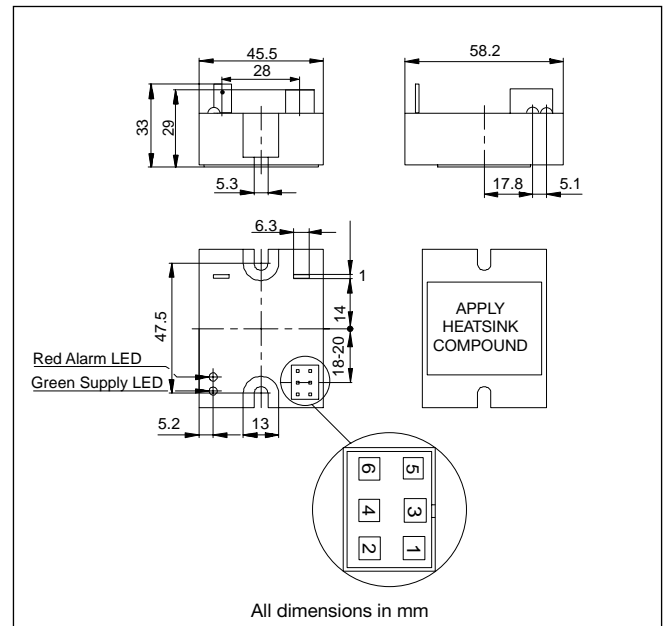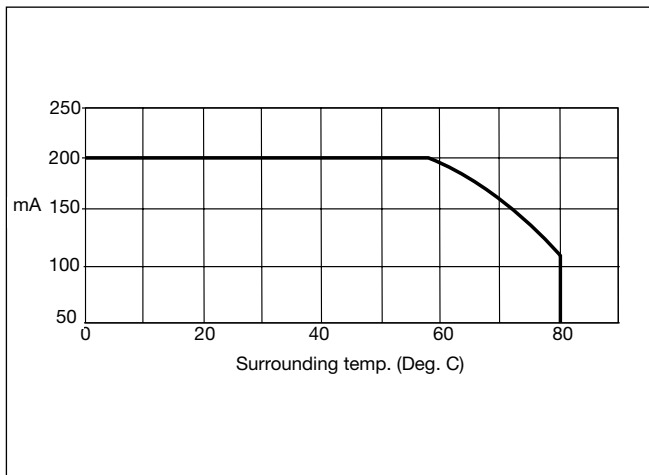|		
Alarm output	⑥	⑤
Supply Vcc	④	③
Control Input	②	①

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Heatsink Dimensions

Load current [A]	Thermal resistance [K/W]						Power dissipation [W]	
25	3.70	3.24	2.77	2.31	1.85	1.39	0.92	**22**
22.5	4.16	3.64	3.12	2.60	2.08	1.56	1.04	**19**
20	4.73	4.14	3.55	2.96	2.37	1.78	1.18	**17**
17.5	5.47	4.79	4.11	3.42	2.74	2.05	1.37	**15**
15	6.46	5.66	4.85	4.04	3.23	2.42	1.02	**12**
12.5	7.85	6.87	5.89	4.91	3.93	2.94	1.96	**10**
10	9.94	8.70	7.45	6.21	4.97	3.73	2.48	**8**
7.5	13.42	11.74	10.06	8.39	6.71	5.03	3.35	**6**
5	-	-	-	12.74	10.19	7.64	5.10	**4**
2.5	-	-	-	-	-	-	10.32	**2**
	20	**30**	**40**	**50**	**60**	**70**	**80**	T_A

Ambient temp. [°C]

Dimensions

All dimensions in mm

Minimum Operational Load Current

Note: Derating curve up to 200 mA AC51 (according to optocoupler derating)

Front Label