

Solid State Relays

SOLITRON MIDI - With Integrated Heatsink

Types RJ1A, RJ1B



- AC semiconductor contactor
- Zero switching (RJ1A) or instant-on switching (RJ1B)
- Direct copper bonding (DCB) technology
- LED-indication
- Cage clamp output terminals
- 2 input ranges: 4-32 VDC and 24-275 VAC/24-48VDC
- Operational ratings up to 75 AACrms and 600 VAC¹
- Non-repetitive voltage: Up to 1200 Vp
- Opto-isolation > 4000 VACrms
- Over-temperature safety option²
- Integrated fan option

Product Description

The SOLITRON Midi is a single-phase Solid State Contactor designed to replace electro-mechanical contactors in industrial heating and motor applications, especially when switching is frequent. The product is ready to mount on DIN-rail or chassis and comes with integral heatsink. For current rating of 75AACrms (AC51) convection cooling is used. The standard housing dimensions enable straightforward replacement of alterna-

tive products and the terminal layout allows both contactor (E) and SSR (U) type connection. Cage clamp terminals are used to ensure secure load connection with cable up to 25mm².

An LED indicates the status of the control input. The superior heat-transfer efficiency combined with a robust power management system make this a high reliability product that can meet the most stringent functional requirements.

Ordering Key

RJ 1 A 60 D 50 E P

Solid State Relay _____
 Number of poles _____
 Switching mode _____
 Rated operational voltage _____
 Control voltage _____
 Rated operational current _____
 Terminal layout _____
 Options _____

Type Selection

Switching mode	Rated operational voltage ¹	Control voltage	Rated operational current	Terminal layout	Options
A: Zero switching B: Instant-on switching ³	23: 230 VACrms 60: 600 VACrms	D: 4-32 VDC A: 24-275 VAC/ 24-48 VDC	45: 45 AACrms 50: 50 AACrms 75: 75 AACrms ⁴	U: SSR E: Contactor	P: Over-temp. protection ² V: Integrated Varistor

Selection Guide

Rated operational voltage	Non-rep. voltage	Control voltage	Rated operational current		
			45 A	50 A	75 A (FAN+OTP) ²
230 VACrms	650 V _p	4 - 32 VDC	RJ1A23D45E RJ1A23D45U	RJ1A23D50E RJ1A23D50U	RJ1A23D75EP
		24 - 275 VAC / 24 - 48 VDC	RJ1A23A45E RJ1A23A45U	RJ1A23A50E RJ1A23A50U	RJ1A23A75EP
600 VACrms	1200 V _p	4 - 32 VDC	RJ1A60D45E RJ1A60D45U	RJ1A60D50E RJ1A60D50U	RJ1A60D75EP
		24 - 275 VAC / 24 - 48 VDC	RJ1A60A45E RJ1A60A45U	RJ1A60A50E RJ1A60A50U	RJ1A60A75EP

Notes

- 1 690 VACrms rated operational voltage available on request. Example: RJ1A69D45U
- 2 "P" suffix: Over-temperature protection (OTP), available with type "E" terminals only
- 3 Instant-on versions not available with AC control voltage
- 4 With integrated fan and over-temperature protection - fan will automatically switch on when necessary

General Specifications

	RJ1.23..	RJ1.60..
Operational voltage range	24 to 265 VAC	42 to 660 VAC
Non-rep. peak voltage	650 V _p	1200 V _p
Operational frequency range	45 to 65 Hz	45 to 65 Hz
Power factor	≥ 0.5 @ 230 VACrms	≥ 0.5 @ 600 VACrms
Over-temperature alarm		
I _{max}	50mADC	50mADC
U _{max}	50VDC	50VDC
Approvals	UL, cUL, CSA	UL, cUL, CSA
CE-marking	Yes	Yes
Pollution degree	2	2

Input Specifications

	RJ1A...D	RJ1B..D	RJ1A...A
Control voltage range	4 - 32 VDC	4.5 - 32 VDC	24-275 VAC/24 - 48 VDC
Pick-up voltage	3.8 VDC	4.25 VDC	22 VAC/DC
Reverse voltage	32 VDC	32 VDC	n/a
Drop-out voltage	1.2 VDC	1.0 VDC	6 VAC/DC
Maximum input current	12 mA	15 mA	17 mA
Response time pick-up	1/2 cycle	1 ms	1 cycle
Response time drop-out	1/2 cycle	1 cycle	1 cycle

Output Specifications

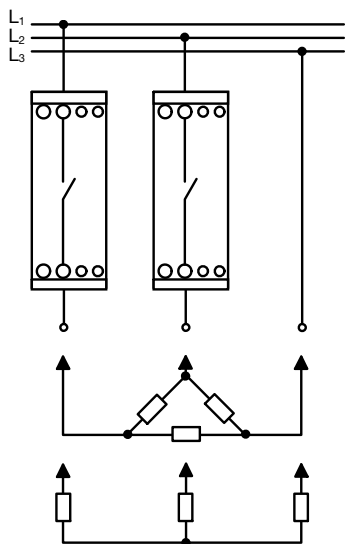
	RJ..45	RJ..50	RJ..75 (With integrated fan)
Rated operational current AC51 @Ta=25°C AC53a @Ta=25°C	45 AACrms 20 AACrms	50 AACrms 30 AACrms	75 AACrms 30 AACrms
Min. operational current	150 mAACrms	150mAACrms	150mAACrms
Rep. overload current t = 1s	< 150 AACrms	<200 AACrms	<200 AACrms
Non rep. surge current Tj(init.) = 25°C and t = 10 ms	1150 A _p	1900 A _p	1900 A _p
Off-state leakage current @ rated voltage and frequency	< 3 mArms	< 3 mArms	< 3 mArms
I ² t for fusing t = 10 ms	6600 A ² s	18000 A ² s	18000 A ² s
Critical dI/dt	≥ 100 A/μs	≥ 100 A/μs	≥ 100 A/μs
On-state voltage drop @ rated current	1.6 Vrms	1.6 Vrms	1.6 Vrms
Critical dV/dt off-state	500 V/μs	500 V/μs	500 V/μs

Thermal Specifications

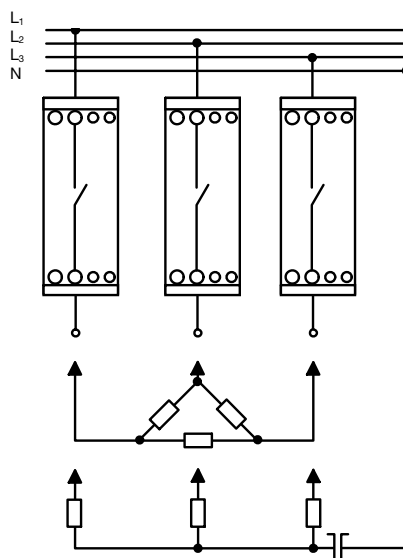
	RJ...D	RJ...A
Operating temperature	-30 to +70°C (-22 to +158°F)	-30 to +70°C (-22 to +158°F)
Storage temperature	-40 to +100°C (-40 to +176°F)	-40 to +100°C (-40 to +176°F)

Applications

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

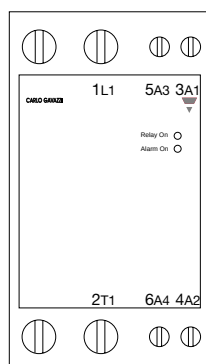


3 single pole relays in
3-phase application
Delta, Star, Star with neutral



Terminal Layout

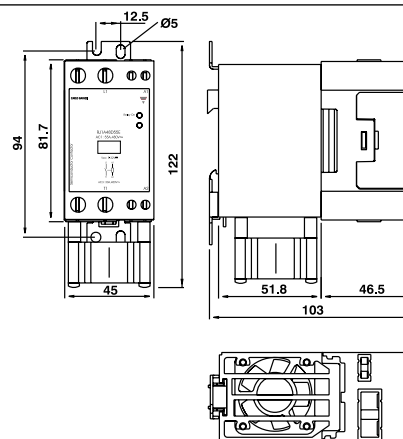
RJ1A.....E



RJ1A.....U

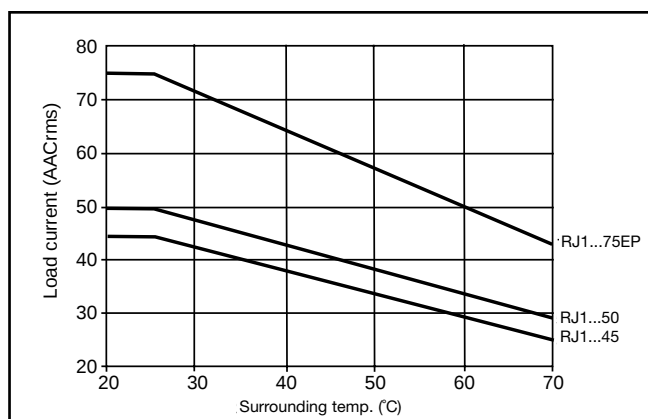


Dimensions

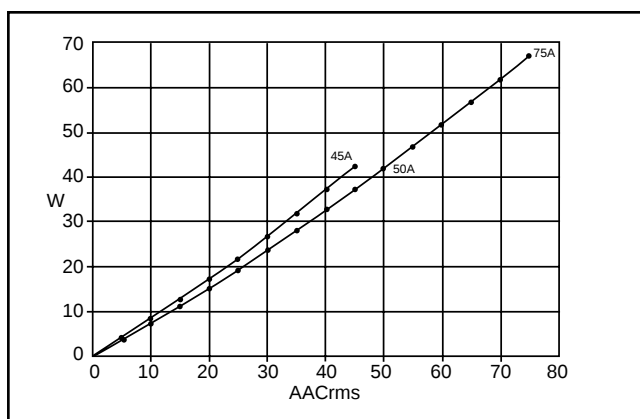


All dimensions in mm

Derating Curve

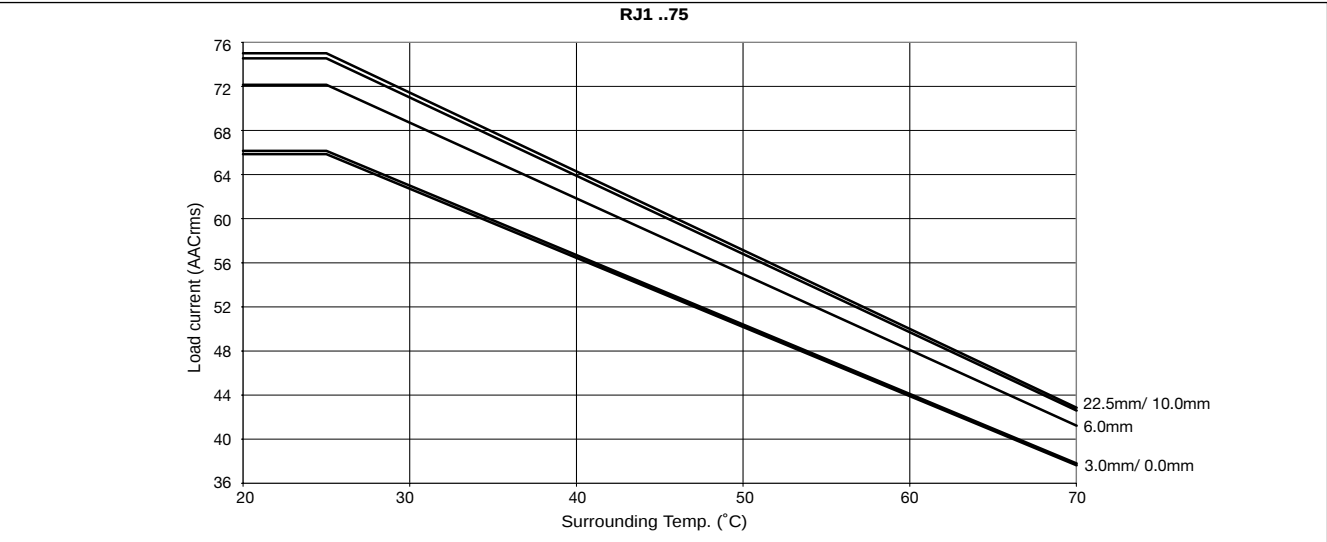
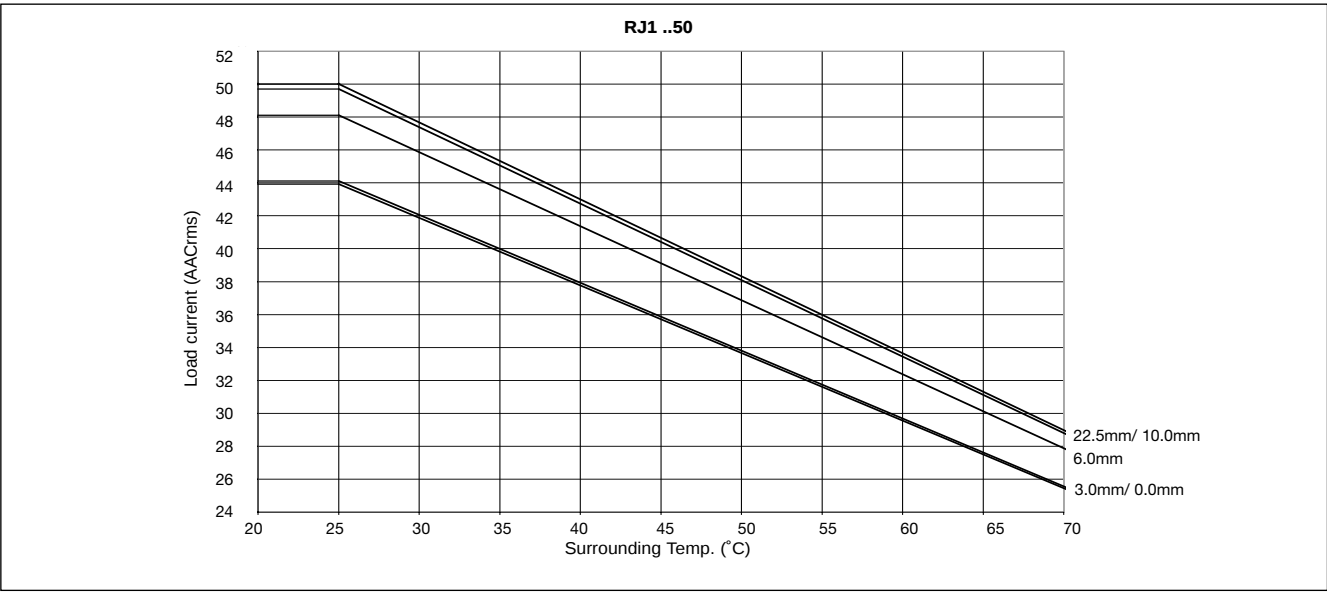
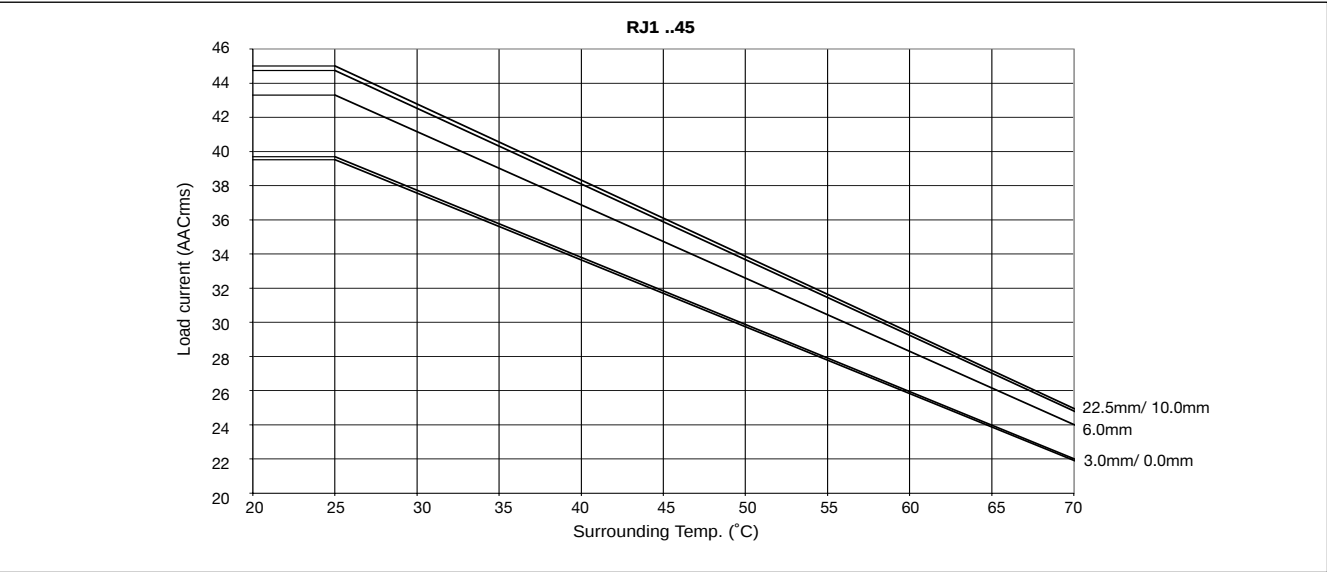


Dissipation Curve

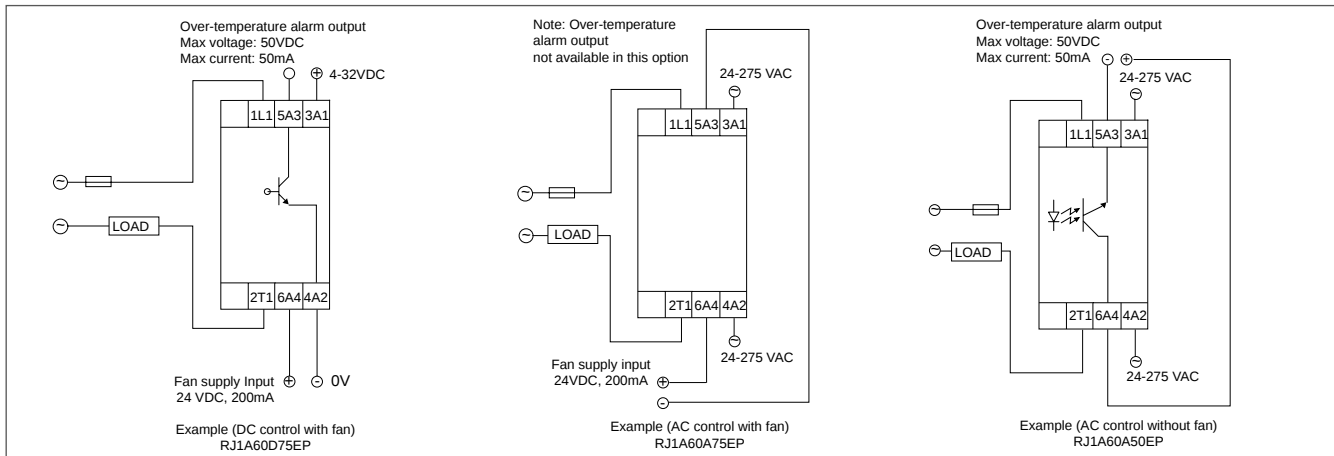


Specifications are subject to change without notice (27.06.2006)

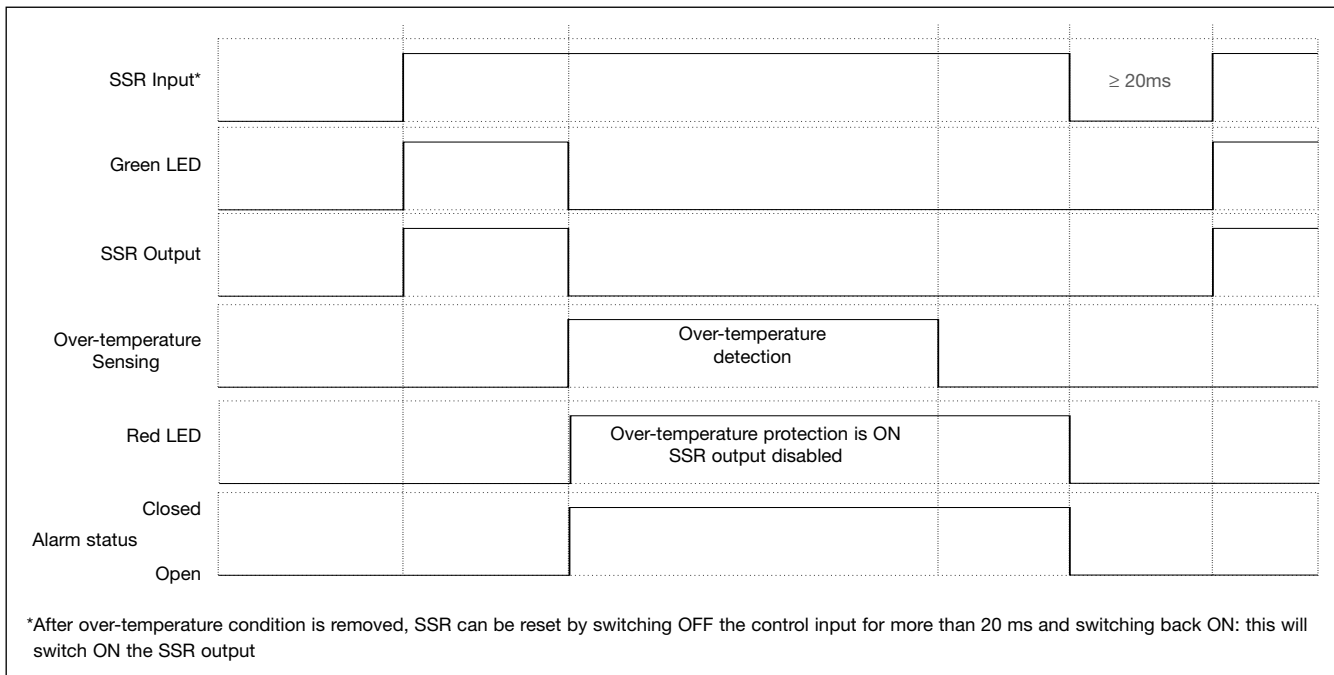
Derating vs spacing curves



Connection Examples



Over-temperature Protection (Option: ...P)



Housing Specifications

Weight	
RJ MIDI	Approx. 430g
RJ MIDI w. fan	Approx. 460g
Housing material	PBT Flame retardant
Control terminal cable size	
Min	1 x 0.5 mm ² (1 x AWG20)
Max	1 x 4.0 mm ² (1 x AWG12) or 2 x 2.5 mm ² (2 x AWG14)
Mounting torque max.	0.6 Nm with Posidrive 0 bit
Control terminal screws	M3
Power terminal cable size	
Min	1 x 4 mm ² (1 x AWG12)
Max	1 x 25 mm ² (1 x AWG3) or 2 x 10 mm ² (2 x AWG6)
Mounting torque max.	2.5 Nm with Posidrive 2 bit
Power terminal screws	M5

Insulation

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