

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 V_p
- 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

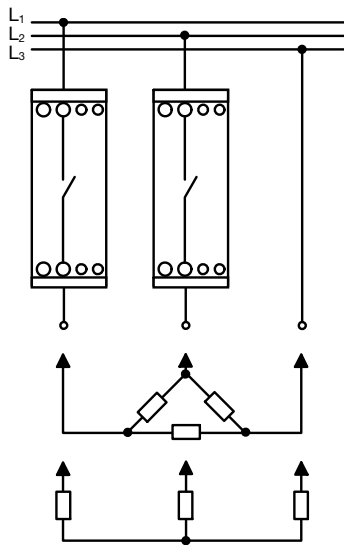
	RJ..45	RJ..50	RJ..75 (With integrated fan)
Rated operational current AC51 @Ta=25°C AC53a @Ta=25°C	45 AACrms 20 AACrms	50 AACrms 30 AACrms	75 AACrms 30 AACrms
Min. operational current	150 mAACrms	150mAACrms	150mAACrms
Rep. overload current t = 1s	< 150 AACrms	<200 AACrms	<200 AACrms
Non rep. surge current 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 A²s	18000 A²s	18000 A²s
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

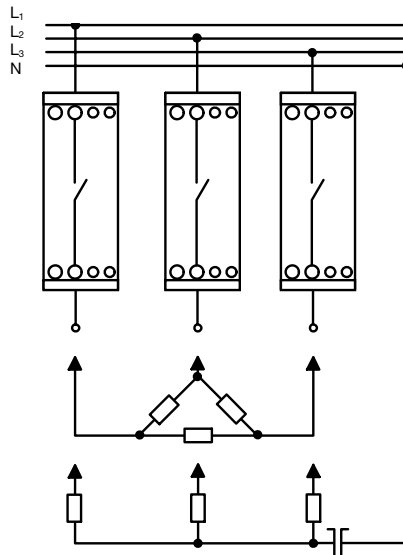
	RJ...D	RJ...A
Operating temperature	-30 to +70°C (-22 to +158°F)	-30 to +70°C (-22 to +158°F)
Storage temperature	-40 to +100°C (-40 to +176°F)	-40 to +100°C (-40 to +176°F)

Applications

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



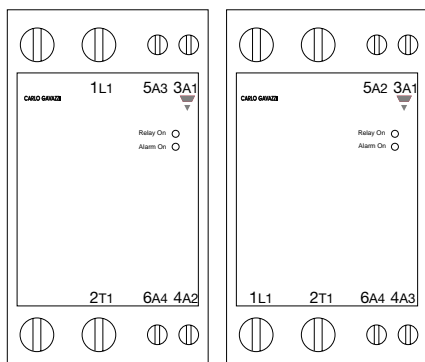
3 single pole relays in
3-phase application
Delta, Star, Star with neutral



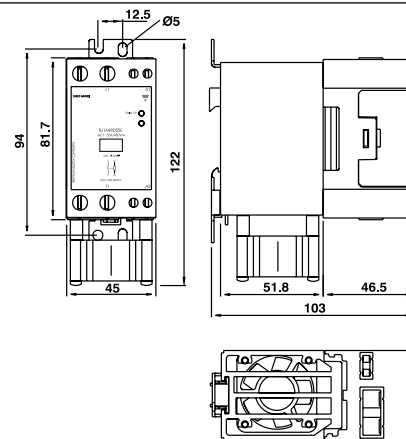
Terminal Layout

RJ1A.....E

RJ1A.....U

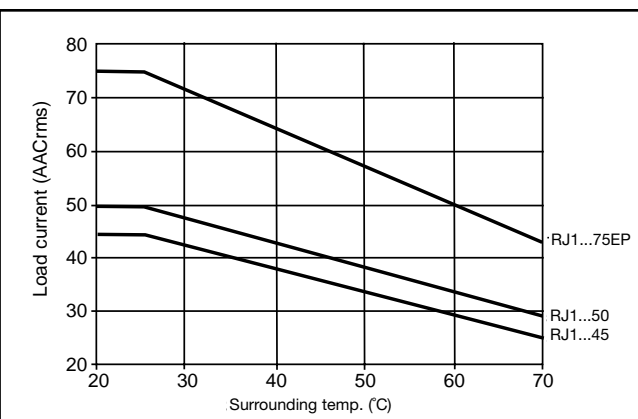


Dimensions

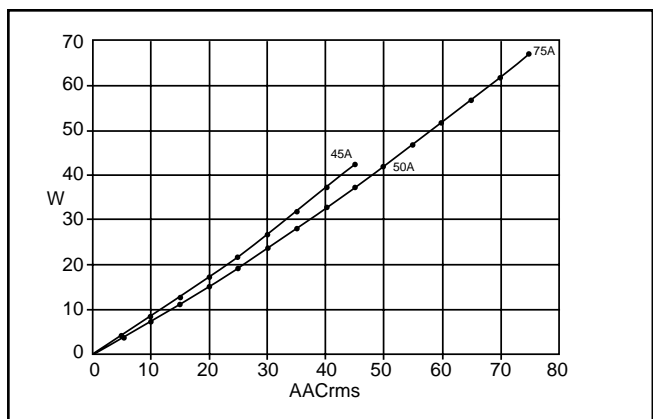


All dimensions in mm

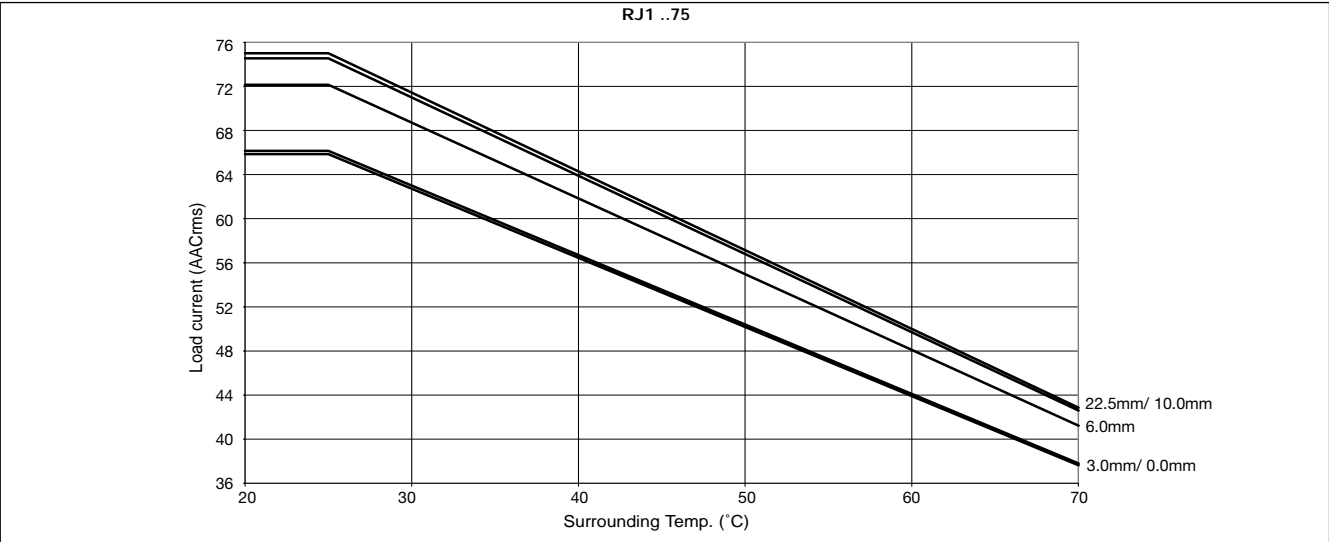
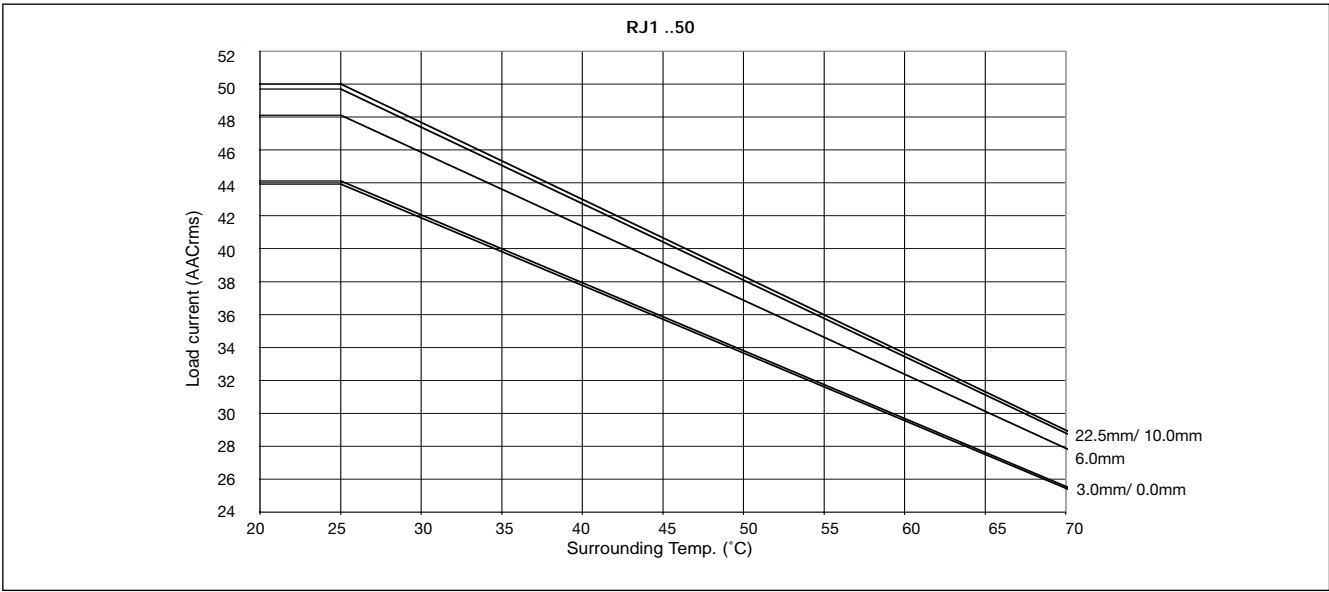
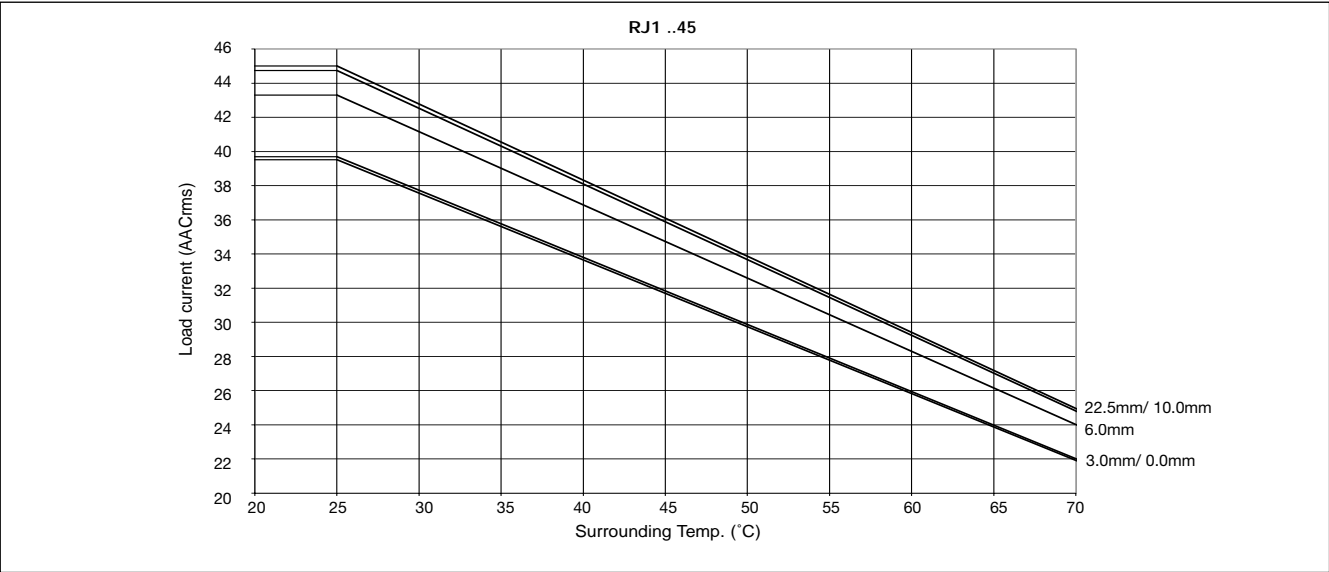
Derating Curve



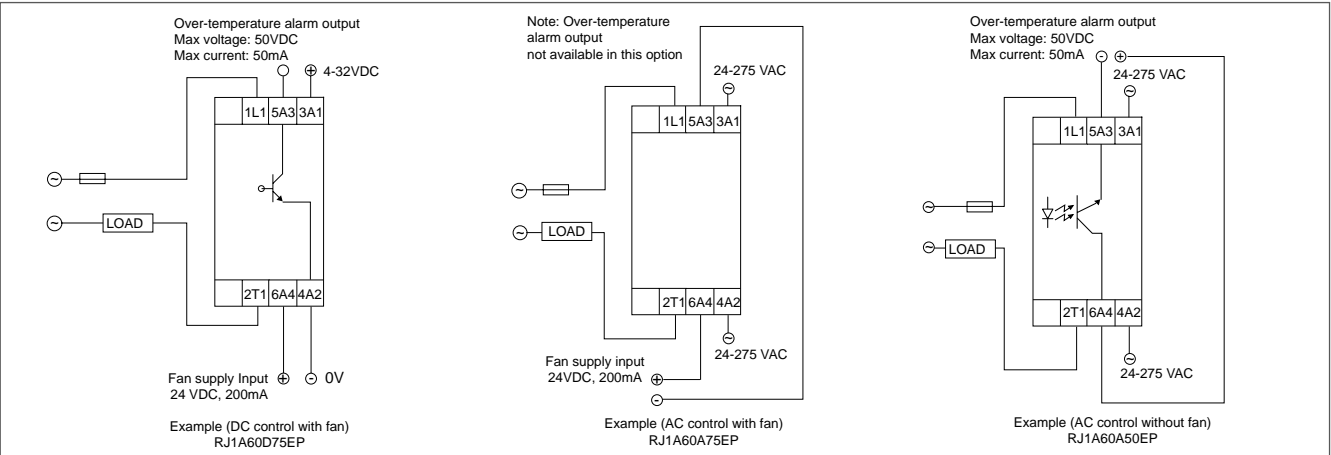
Dissipation Curve



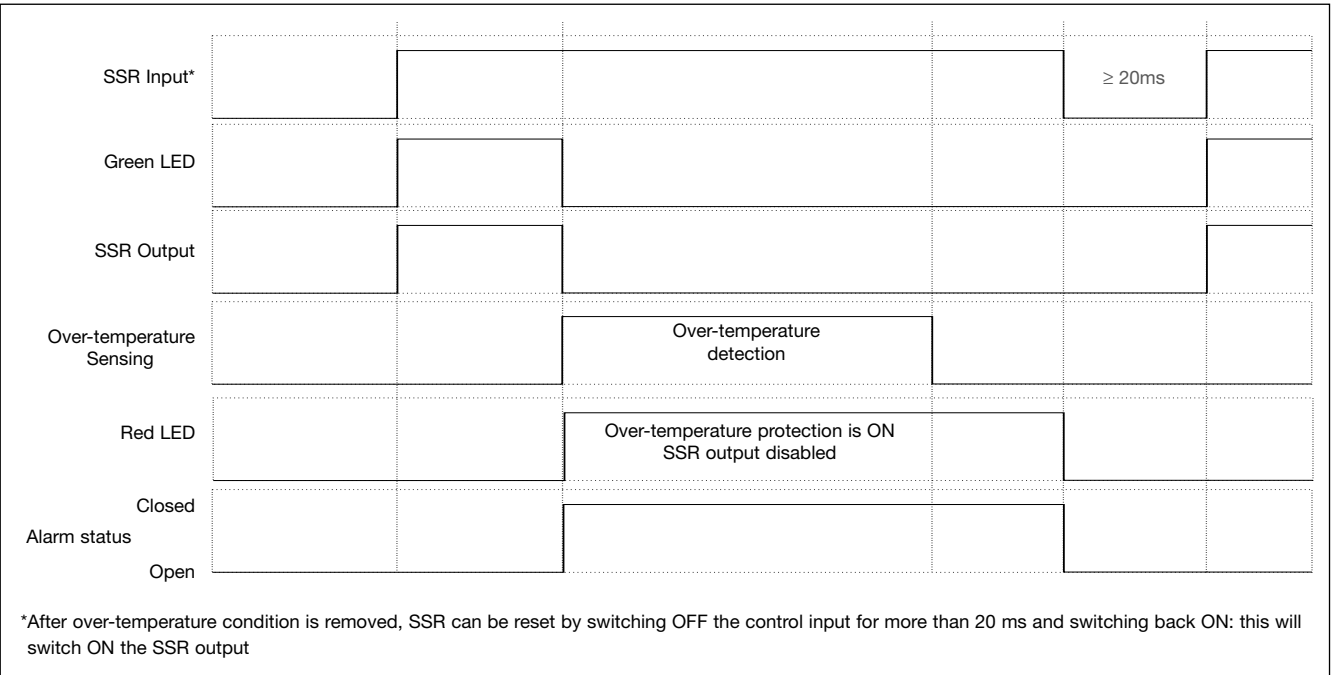
Derating vs spacing curves



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