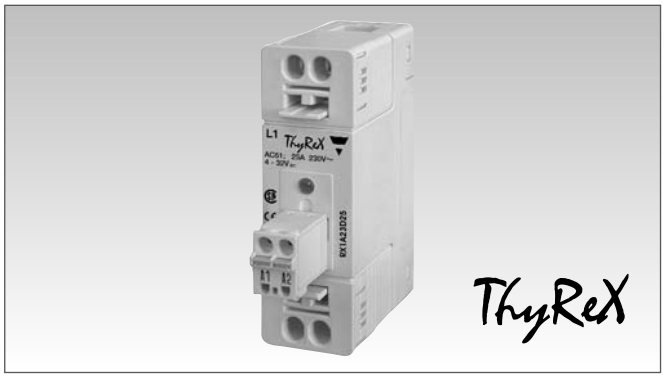
Solid State Relays
Industrial, 1-Phase ZS, Fully Pluggable
Type RX1A



- **Zero switching (RX1A) AC Solid State Relay**
- **Direct copper bonding (DCB) technology**
- **LED indication**
- **IP 20 protection cover**
- **Screw, Spring or FASTON terminal options**
- **Housing free of moulding mass**
- **2 input ranges: 4-32 VDC and 24-275 VAC**
- **Operational ratings up to 32 AACrms and 480 VACrms**
- **Non-repetitive voltage: Up to 1200 V_p**
- **Opto-insulation: > 4000 VACrms**
- **Integrated snubber network**

Product Description

The RX ThyReX is an extremely compact industrial SSR that is fully pluggable to make installation and servicing easy. This zero switching relay can be used for resistive and inductive loads. The position of the M4 mounting holes makes this solution interchangeable with standard hockey-puck relays. The control plug can have either screw or spring terminals. The power connection can be a screw type plug, a spring type plug or an open two-spade FASTON solution that comes with safety covers (no plugs). Both screw and spring type power plugs have a specially designed security leaver to lock/unlock. To facilitate assembly, the RX ThyReX can be ordered with its own thermal pad (optional).

Ordering Key

RX 1 A 48 D 32 M P HT

- **Solid State Relay**
- **Number of poles**
- **Switching mode**
- **Rated operational voltage**
- **Control voltage**
- **Rated operational current**
- **Control plug type**
- **Power plug type**
- **Options**

Type Selection

Switching mode	Rated operational voltage	Control voltage	Rated operational current	Control plug type	Power plug type	Options
A: Zero Switching	23: 230 VACrms 48: 480 VACrms	A: 24-275 VAC D: 4 - 32 VDC	25 : 25 AACrms 32 : 32 AACrms	M: Spring V: Screw	F: Faston C: Screw P: Spring	Blank: Basic HT: Thermal Pad H20: RHS23A* H21: RHS23B*

* Add suffix 'H2x' to RX part no. for mounting of RX unit to heatsink type RHS23A or RHS 23B. For such assemblies, attached derating curve should be consulted for appropriate selection of operational load current. Note that RX1A...25...H21 version is not available.

General Specifications

	RX1A23..	RX1A48..
Operational voltage range	24 to 265 VACrms	42 to 552 VACrms
Non-rep. peak voltage	≥ 650 V_p	≥ 1200 V_p
Zero voltage turn-on	≤ 10 V	≤ 10 V
Operational frequency range	45 to 65 Hz	45 to 65 Hz
Power factor	> 0.5 @ 230 VACrms	> 0.5 @ 480 VACrms
Pollution degree		
RX1A...D...	3	3
RX1A...A...	2	2
Approvals	UL, CSA	UL, CSA
CE-marking	Yes	Yes

Thermal Specifications

Operating temperature	-30° to +70°C (-22° to +158°F)
Storage temperature	-40° to +80°C (-40° to +176°F)
Junction temperature	≤ 125°C (257°F)

Insulation

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

Selection Guide : Plugs with Spring Terminals

Rated operational voltage	Non-rep. voltage	Control voltage	Rated operational current 25 A	32 A
230 VACrms	650Vp	4-32 VDC	**RX1A23D25MP**	**RX1A23D32MP**
		24-275 VAC	**RX1A23A25MP**	**RX1A23A32MP**
480 VACrms	1200Vp	4-32 VDC	**RX1A48D25MP**	**RX1A48D32MP**
		24-275 VAC	**RX1A48A25MP**	**RX1A48A32MP**

Selection Guide : Plugs with Screw Terminals

Rated operational voltage	Non-rep. voltage	Control voltage	Rated operational current 25 A	32 A
230 VACrms	650Vp	4-32 VDC	**RX1A23D25VC**	**RX1A23D32VC**
		24-275 VAC	**RX1A23A25VC**	**RX1A23A32VC**
480 VACrms	1200Vp	4-32 VDC	**RX1A48D25VC**	**RX1A48D32VC**
		24-275 VAC	**RX1A48A25VC**	**RX1A48A32VC**

Selection Guide : Plugs with Screw (Control)- FASTONS (Power)

Rated operational voltage	Non-rep. voltage	Control voltage	Rated operational current 25 A	32 A
230 VACrms	650Vp	4-32 VDC	**RX1A23D25VF**	**RX1A23D32VF**
		24-275 VAC	**RX1A23A25vF**	**RX1A23A32VF**
480 VACrms	1200Vp	4-32 VDC	**RX1A48D25VF**	**RX1A48D32VF**
		24-275 VAC	**RX1A48A25VF**	**RX1A48A32VF**

Selection Guide : Plugs with Spring (Control)- FASTONS (Power)

Rated operational voltage	Non-rep. voltage	Control voltage	Rated operational current 25 A	32 A
230 VACrms	650Vp	4-32 VDC	**RX1A23D25MF**	**RX1A23D32MF**
		24-275 VAC	**RX1A23A25MF**	**RX1A23A32MF**
480 VACrms	1200Vp	4-32 VDC	**RX1A48D25MF**	**RX1A48D32MF**
		24-275 VAC	**RX1A48A25MF**	**RX1A48A32MF**

Note: It is possible to have units with output Spring Terminals and input Screw Terminals and vice-versa, i.e., output Screw Terminals and input Spring Terminals.

Input Specifications

	RX1A...D...	RX1A...A...
Control voltage range	4-32 VDC	24 - 275 VAC
Pick-up voltage	3.5 VDC	18 VAC
Reverse voltage	32 VDC	-
Drop out voltage	1.2 VDC	6 VAC
Input current @ max input voltage	≤ 12 mA	-
RMS input current	-	≤ 36 mA
Avarege rectified input current	-	≤ 12 mA
Response time pick-up	≤ 10 ms	≤ 20 ms
Response time drop-out	≤ 10 ms	≤ 70 ms

Data specified @ Ta=25˚C

Output Specifications

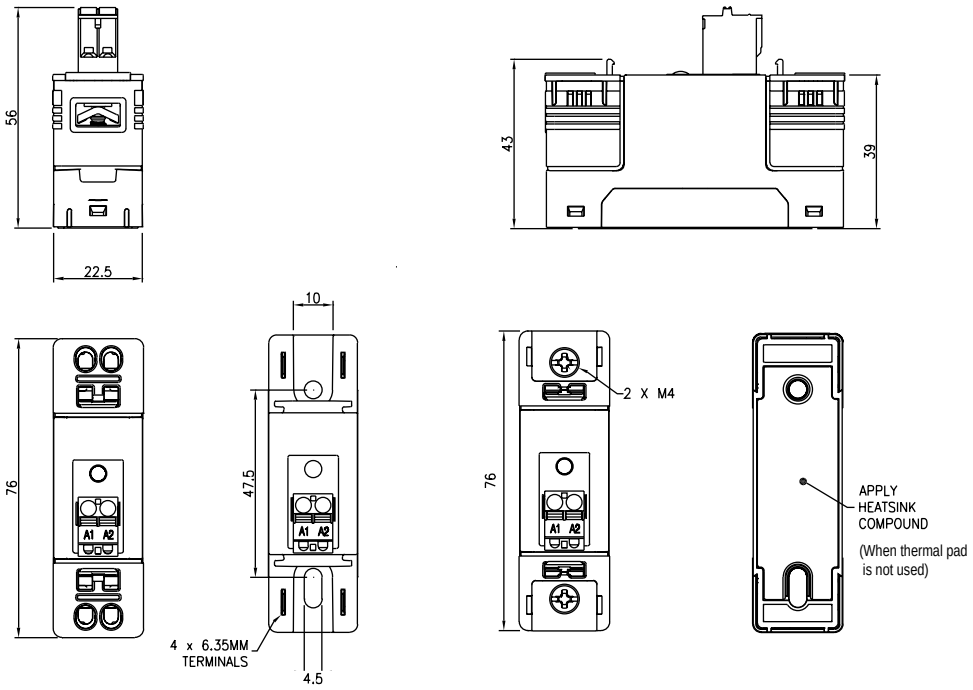
	RX1A...25...	RX1A...32...
Rated operational current		
AC51 @ Ta=25°C	25 Arms	32 Arms
AC53a @ Ta=25°C	5 Arms	15 Arms
Min. operational current	350 mA	150 mA
Rep. overload current t=1 s	< 35 AACrms	< 125 AACrms
Non-rep. surge current t=10 ms	300 A_p	580 A_p
Off-state leakage current @ rated voltage and frequency	< 3 mArms	< 3 mArms
I^2t for fusing t= 1-10 ms	< 450 A^2s	< 1680 A^2s
Critical dI/dt	≥ 50 A/µs	≥ 50 A/µs
On-state voltage drop	≤ 1.6 Vrms	≤ 1.6 Vrms
Critical dV/dt off-state min.	500 V/µs	500 V/µs

Housing Specifications

Weight	
without plugs	Approx. 64 g
with plugs	Approx. 86 g
Housing material	PA, grey
Baseplate	Aluminium
Control terminal (screw)	
Terminal tightening screws	M3
Max. terminal tightening torque	0.8 Nm with Philips bit
Min. cross-sectional area of cable (stranded)	1 x 0.05mm² (1 x AWG30)
Max. cross-sectional area of cable (stranded)	1 x 2.5mm² (1 x AWG12) or 2 x 1.5mm² (2 x AWG16)
Control terminal (spring)	
Insulation stripping length	10mm
Min. cross-sectional area of cable (stranded)	1 x 0.2mm² (1 x AWG24)
Max. cross-sectional area of cable (stranded)	1 x 2.5mm² (1 x AWG12)

Power terminal (screw)	
Terminal screws	M4
Maximum tightening torque	2 Nm with Posidriv 2 bit
Min. cross-sectional area of cable with bootlace ferrule	1 x 1.5mm² (1 x AWG16)
Max. cross-sectional area of cable with bootlace ferrule	1 x 6.0mm² (1 x AWG10) or 2 x 6.0mm² (2 x AWG10)
Power terminal (spring)	
Insulation stripping length	13mm
Min. cross-sectional area of cable (stranded)	1 x 0.5mm² (1 x AWG20)
Max. cross-sectional area of cable (stranded)	2 x 6.0mm² (2 x AWG10)
Power terminal (FASTON)	
FASTON terminal size	6.3 x 0.8mm
Max. allowable relative humidity (no moisture condensation)	95%
Mounting	
Mounting screws	M4
Mounting torque	1.5 Nm

Dimensions

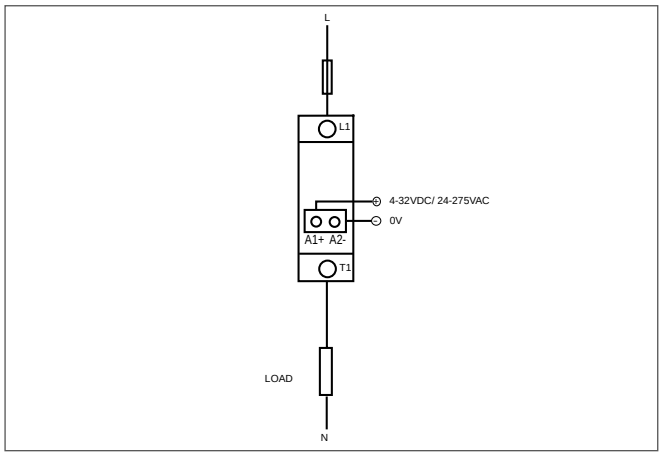


All dimensions in mm

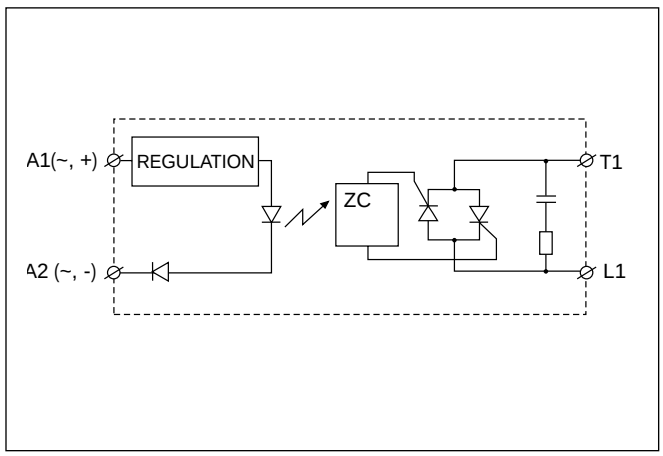
Accessories

RX1A....25, RX1A....32	Main module without input or output plugs
RCV 25	Packet of 20 input plugs with screw terminals
RCM 25	Packet of 20 input plugs with spring terminals
RPC 60	Packet of 10 output plugs with screw terminals
RPP 60	Packet of 10 output plugs with spring terminals
RPFCAP	Packet of 10 FASTON touch protection covers

Wiring Diagram



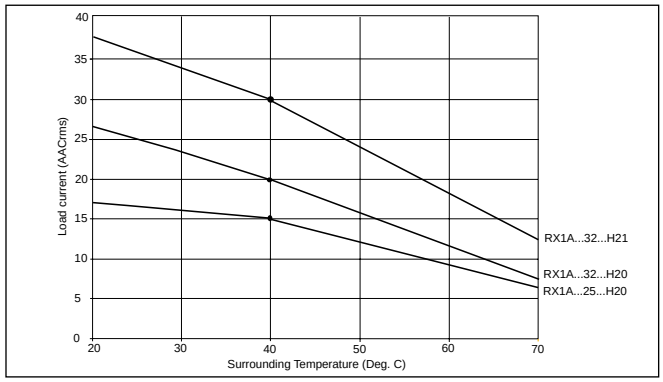
Functional Diagram



Derating Curves (RX assembled to heatsink types RHS23x)

RX1A....H20

RX1A....H21



Heatsink Dimensions (load current versus ambient temperature)

25A

Load Current (A)	Thermal Resistance [K/W]					Power Dissipation (W)
25.0	1.61	1.30	0.98	0.51	0.05	-	**32**
22.5	2.10	1.74	1.38	0.87	0.33	-	**28**
20.0	2.73	2.31	1.89	1.33	0.68	0.06	**24**
17.5	3.55	3.05	2.56	1.95	1.16	0.41	**20**
15.0	4.66	4.06	3.46	2.83	1.83	0.89	**17**
12.5	6.24	5.49	4.74	3.98	2.83	1.59	**13**
10.0	8.65	7.67	6.68	5.70	4.46	2.72	**10**
7.5	12.7	11.3	9.97	8.60	7.23	4.79	**7**
5.0	-	18.8	16.6	14.5	12.3	9.8	**5**
2.5	-	-	-	-	-	-	**2**
	20	**30**	**40**	**50**	**60**	**70**	

Surrounding Ambient temperature (°C)

32A

Load Current (A)	Thermal Resistance [K/W]					Power Dissipation (W)
32.0	2.79	2.38	1.92	1.46	1.01	0.57	**38**
28.0	3.41	2.97	2.41	1.86	1.33	0.80	**32**
24.0	4.24	3.77	3.09	2.42	1.76	1.12	**26**
20.0	5.42	4.84	4.09	3.22	2.39	1.58	**21**
16.0	7.21	6.45	5.68	4.50	3.37	2.28	**17**
12.0	10.2	9.17	8.13	6.78	5.10	3.52	**12**
8.0	16.2	14.6	13.0	11.4	8.96	6.19	**8**
4.0	-	-	-	-	-	16.2	**4**
	20	**30**	**40**	**50**	**60**	**70**	

Surrounding Ambient temperature (°C)

Notes:

1. Device must be mounted on a heatsink or plate with both mounting screws fastened for correct operation.

2. Thermal resistance values indicated above are valid for assemblies using thermal paste Electrolube HTS or thermal pad Graftech HT010A, i.e., Rth_{cs}=0.16K/W. For thermal paste/pads with a higher Rth, manufacturer should be consulted for selection of appropriate heatsinking.