

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

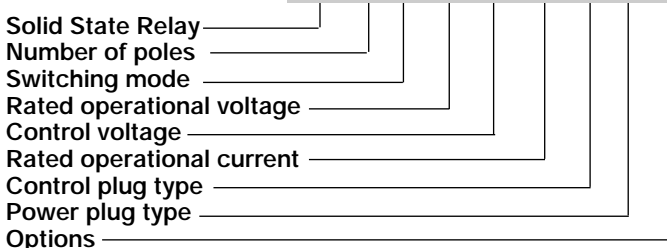
Product Description

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 termi-

nals. 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 lever 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



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 24-275 VAC	RX1A23D25MP RX1A23A25MP	RX1A23D32MP RX1A23A32MP
480 VACrms	1200Vp	4-32 VDC 24-275 VAC	RX1A48D25MP RX1A48A25MP	RX1A48D32MP 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 24-275 VAC	RX1A23D25VC RX1A23A25VC	RX1A23D32VC RX1A23A32VC
480 VACrms	1200Vp	4-32 VDC 24-275 VAC	RX1A48D25VC RX1A48A25VC	RX1A48D32VC 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 24-275 VAC	RX1A23D25VF RX1A23A25vF	RX1A23D32VF RX1A23A32VF
480 VACrms	1200Vp	4-32 VDC 24-275 VAC	RX1A48D25VF RX1A48A25VF	RX1A48D32VF 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 24-275 VAC	RX1A23D25MF RX1A23A25MF	RX1A23D32MF RX1A23A32MF
480 VACrms	1200Vp	4-32 VDC 24-275 VAC	RX1A48D25MF RX1A48A25MF	RX1A48D32MF 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

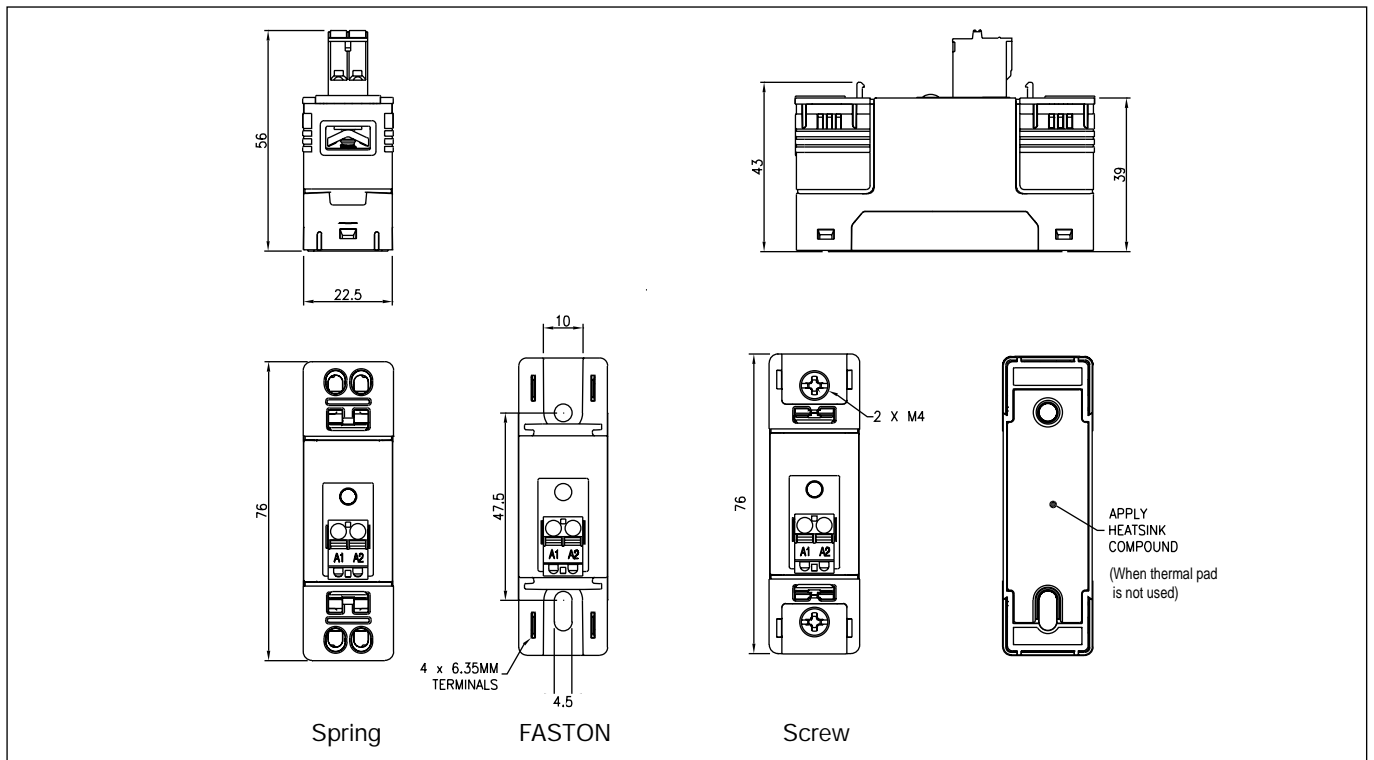
Output Specifications

	RX1A...25...	RX1A...32...
Rated operational current AC51 @ Ta=25°C AC53a @ Ta=25°C	25 Arms 5 Arms	32 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 ² t for fusing t= 1-10 ms	< 450 A ² s	< 1680 A ² s
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 with plugs	Approx. 64 g 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 0.05mm ² (1 x AWG30)		
Max. cross-sectional area of cable (stranded)	1 x 2.5mm ² (1 x AWG12) or 2 x 1.5mm ² (2 x AWG16)		
Control terminal (spring)			
Insulation stripping length	10mm		
Min. cross-sectional area of cable (stranded)	1 x 0.2mm ² (1 x AWG24)		
Max. cross-sectional area of cable (stranded)	1 x 2.5mm ² (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 1.5mm ² (1 x AWG16)		
Max. cross-sectional area of cable with bootlace ferrule	1 x 6.0mm ² (1 x AWG10) or 2 x 6.0mm ² (2 x AWG10)		
Power terminal (spring)			
Insulation stripping length	13mm		
Min. cross-sectional area of cable (stranded)	1 x 0.5mm ² (1 x AWG20)		
Max. cross-sectional area of cable (stranded)	2 x 6.0mm ² (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



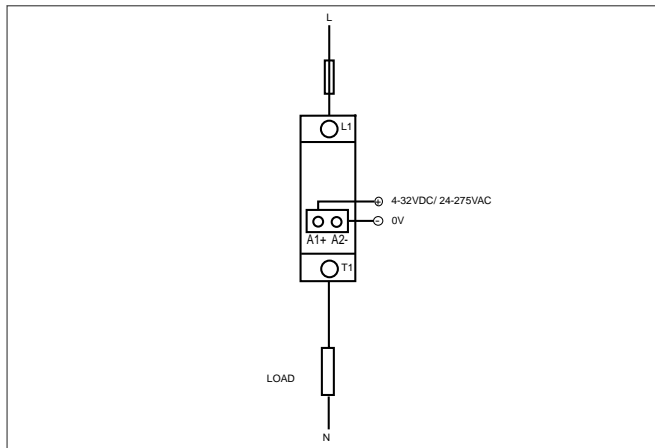
All dimensions in mm

Accessories

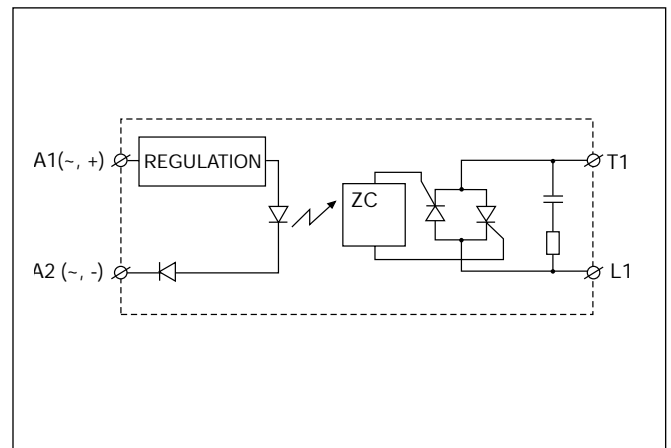
RX1A....25, RX1A....32
RCV 25
RCM 25
RPC 60
RPP 60
RPFCAP

Main module without input or output plugs
Packet of 20 input plugs with screw terminals
Packet of 20 input plugs with spring terminals
Packet of 10 output plugs with screw terminals
Packet of 10 output plugs with spring terminals
Packet of 10 FASTON touch protection covers

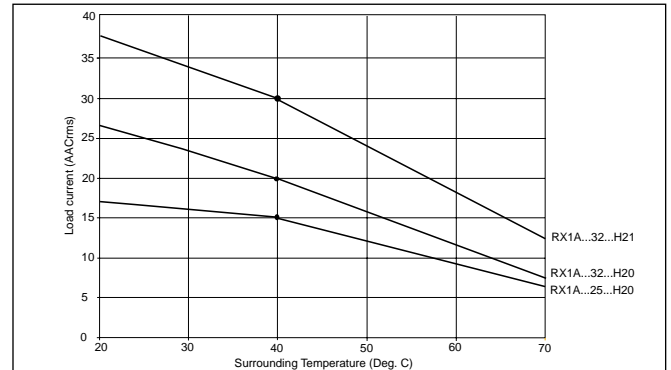
Wiring Diagram



Functional Diagram



Derating Curves (RX assembled to heatsink types RHS23x)



Heatsink Dimensions (load current versus ambient temperature)

25A

Load Current (A)	Thermal Resistance [K/W]						Power Dissipation (W)
	20	30	40	50	60	70	
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

32A

Load Current (A)	Thermal Resistance [K/W]						Power Dissipation (W)
	20	30	40	50	60	70	
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

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.