

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

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- 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<sub>p</sub>
- Opto-insulation: > 4000 VACrms
- Integrated snubber network

## Preliminary Datasheet

## 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**

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

## General Specifications

	RX1A23..	RX1A48..
Operational voltage range	24 to 265 VACrms	42 to 552 VACrms
Non-rep. peak voltage	≥ 650 V <sub>p</sub>	≥ 1200 V <sub>p</sub>
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

\* Approvals pending

## 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

## 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/DC
Input current @ max input voltage	≤ 12 mA	≤ 15 mA
Response time pick-up	≤ 1/2 cycle	≤ 20 ms
Response time drop-out	≤ 1/2 cycle	≤ 70 ms

## 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	250 A <sub>p</sub>	580 A <sub>p</sub>
Off-state leakage current @ rated voltage and frequency	< 3 mArms	< 3 mArms
I <sup>2</sup> t for fusing t= 1-10 ms	< 310 A <sup>2</sup> s	< 1680 A <sup>2</sup> s
Critical di/dt	≥ 50 A/μs	≥ 100 A/μs
On-state voltage drop	≤ 1.6 Vrms	≤ 1.6 Vrms
Critical dV/dt off-state min.	500 V/μs	500 V/μs

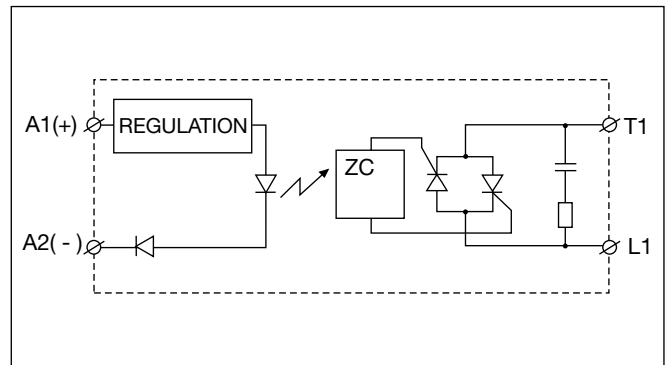
## Housing Specifications

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 <sup>2</sup> (1 x AWG30)
Max. cross-sectional area of cable (stranded)	1 x 2.5mm <sup>2</sup> (1 x AWG12) or 2 x 1.5mm <sup>2</sup> (2 x AWG16)
Control terminal (spring)	
Insulation stripping length	10mm
Min. cross-sectional area of cable (stranded)	1 x 0.2mm <sup>2</sup> (1 x AWG24)
Max. cross-sectional area of cable (stranded)	1 x 2.5mm <sup>2</sup> (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 <sup>2</sup> (1 x AWG16)
Max. cross-sectional area of cable with bootlace ferrule	1 x 6.0mm <sup>2</sup> (1 x AWG10) or 2 x 6.0mm <sup>2</sup> (2 x AWG10)
Power terminal (spring)	
Insulation stripping length	13mm
Min. cross-sectional area of cable (stranded)	1 x 0.5mm <sup>2</sup> (1 x AWG20)
Max. cross-sectional area of cable (stranded)	1 x 6.0mm <sup>2</sup> (1 x AWG10)
Power terminal (FASTON)	
FASTON terminal size	6.3mm
Max. allowable relative humidity (no moisture condensation)	95%
Mounting	
Mounting screws	M4
Mounting torque	1.5 Nm

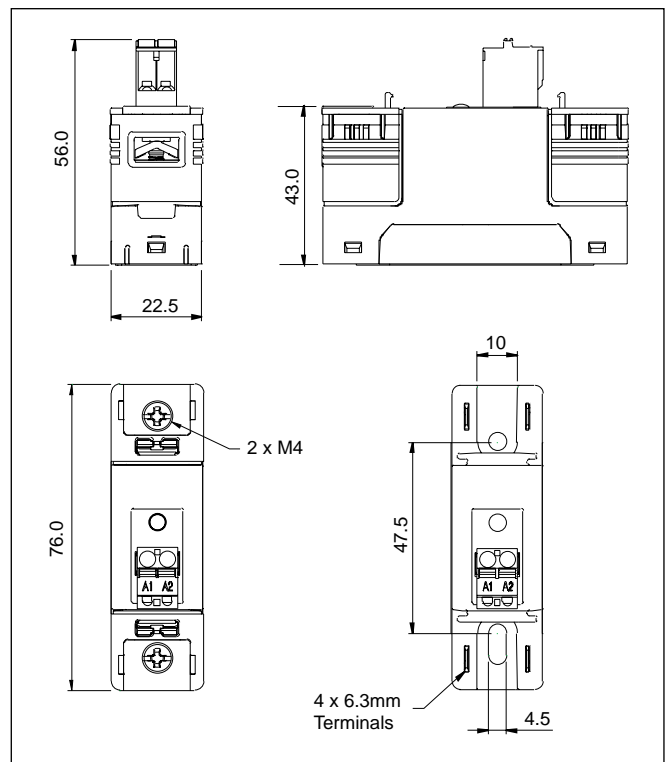
## Accessories

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

## Functional Diagram



## Dimensions



Main module without input or output plugs  
Packet of 10 input plugs with screw terminals  
Packet of 10 input plugs with spring terminals  
Packet of 10 output plugs with screw terminals  
Packet of 10 output plugs with spring terminals

## 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

Surrounding Ambient temperature (°C)

### 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	4.48	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

Surrounding Ambient temperature (°C)

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