

# Solid State Relays Industrial, 1-Phase ZS w. LED Type RS 25E, RS 40E

CARLO GAVAZZI



- Zero switching AC Solid State Relay
- LED indication
- Clip-on IP 20 protection cover
- Self-lifting terminals
- Housing free of moulding mass
- AC or DC control
- Operational ratings up to 40 AACrms and 480 VAC
- Blocking voltage: Up to 800 V<sub>p</sub>
- Opto-insulation: > 4000 VACrms
- Built-in varistor

## Product Description

The zero switching relay with triac output is an inexpensive solution for resistive loads. The zero switching relay switches ON when the sinusoidal voltage crosses zero

and switches OFF when the current crosses zero. The LED indicates the status of the control input. The clip-on cover is securing touch protection to IP 20.

## Ordering Key

**RS 1 A 40 D 25 E**

Solid State Relay	RS
Number of poles	1
Switching mode	A
Rated operational voltage	40
Control voltage	D
Rated operational current	25
Enhanced	E

## Type Selection

Switching mode	Rated operational voltage	Rated operational current	Control voltage
A: Zero Switching	40: 400 VACrms 48: 480 VACrms	25: 25 AACrms 40: 40 AACrms	D: 3 to 32 VDC A: 80 to 250 VAC

## Housing Specifications

<b>Weight</b>	Approx. 110 g
<b>Housing material</b>	Noryl GFN 1, black
<b>Baseplate</b>	Aluminium
<b>Potting compound</b>	None
<b>Relay</b>	
Mounting screws	M5
Mounting torque	1.5-2.0 Nm
<b>Control terminal</b>	
Mounting screws	M3 x 9
Mounting torque	0.5 Nm
<b>Power terminal</b>	
Mounting screws	M5 x 9
Mounting torque	2.4 Nm

## Isolation

<b>Rated isolation voltage</b>	
Input to output	≥ 4000 VACrms
Input to case	≥ 4000 VACrms
Output to case	≥ 2500 VACrms

## Thermal Specifications

<b>Operating temperature</b>	-20° to 70°C
<b>Storage temperature</b>	-40° to 100°C
<b>Relative Humidity</b>	< 95% non-condensing

## Selection Guide

Rated operational voltage	Blocking voltage	Control voltage	Rated operational current	
			25 A	40 A
400 VACrms	600 V <sub>p</sub>	3-32 VDC	<b>RS1A40D25E</b>	<b>RS1A40D40E</b>
		80-250 VAC/DC	<b>RS1A40A25E</b>	<b>RS1A40A40E</b>
480 VACrms	800 V <sub>p</sub>	3-32 VDC	<b>RS1A48D25E</b>	<b>RS1A48D40E</b>
		80-250 VAC/DC	<b>RS1A48A25E</b>	<b>RS1A48A40E</b>

## General Specifications

	RS1A40...E	RS1A48...E
Operational voltage range	24 - 440 VACrms	24 - 528 VACrms
Blocking voltage	600 V <sub>p</sub>	800 V <sub>p</sub>
Zero voltage turn-on	≤ 15 V	≤ 15 V
Operational frequency range	45 to 65 Hz	45 to 65 Hz
Power factor	≥ 0.95 @ 400 VACrms	≥ 0.95 @ 480 VACrms
CE-marking	Yes	Yes
Approvals	UL, cUL	UL, cUL
Pollution degree	2	2

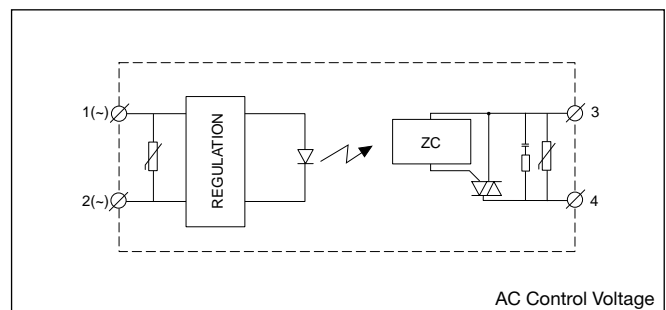
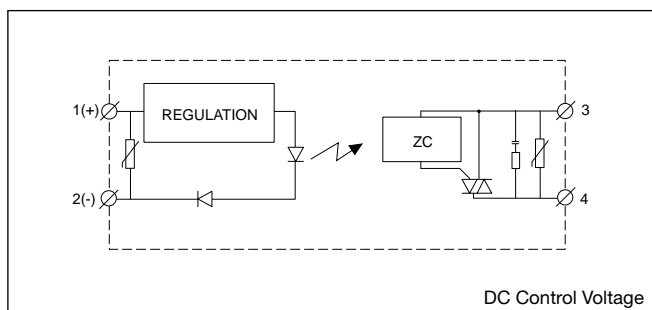
## Input Specifications

	RS1A...D..E	RS1A...A..E
Control voltage	3 - 32 VDC	80 - 250 VAC
Pick-up voltage	3 VDC	70 VAC
Reverse voltage	≤ 32 VDC	-
Drop out voltage	1.2 VDC	15 VAC
Input current @ max input voltage	≤ 13 mA	≤ 10 mA
Response time pick-up	≤ 1/2 cycle	≤ 1 cycle
Response time drop-out	≤ 1/2 cycle	≤ 2 cycles

## Output Specifications

	RS1A...25E	RS1A...40E
Rated operational current AC51 @ Ta=25°C	25 Arms	40 Arms
Min. operational current	250 mA	400 mA
Non-rep. surge current t=20 ms	175 A <sub>p</sub>	280 A <sub>p</sub>
Off-state leakage current @ rated voltage and frequency	< 2 mArms	< 2 mArms
I <sup>2</sup> t for fusing t=10 ms	≤ 215 A <sup>2</sup> s	≤ 560 A <sup>2</sup> s
On-state voltage drop @ rated current	≤ 1.6 Vrms	≤ 1.6 Vrms
Critical dV/dt off-state	≥ 1000 V/μs	≥ 1000 V/μs

## Functional Diagram

[www.sztianwei.net](http://www.sztianwei.net)


# Heatsink Dimensions (load current versus ambient temperature)

## RS..25E

Load current [A]	Thermal resistance [K/W]						Power dissipation [W]
	20	30	40	50	60	70	
25.0	1.02	0.70	0.37	0.05	-	-	31
22.5	1.39	1.04	0.68	0.32	-	-	27.9
20.0	1.86	1.46	1.06	0.65	0.25	-	24.8
17.5	2.47	2.00	1.54	1.08	0.62	0.16	21.7
15.0	3.27	2.73	2.19	1.66	1.12	0.58	18.6
12.5	4.39	3.75	3.10	2.46	1.81	1.17	15.5
10.0	6.08	5.28	4.47	3.66	2.86	2.05	12.4
7.5	8.89	7.82	6.74	5.67	4.59	3.50	9.3
5.0	13.7	12.0	10.4	8.82	7.20	5.59	6.2
2.5	-	-	-	17.7	14.5	11.2	3.1

Ambient temp. [°C]

## RS..40E

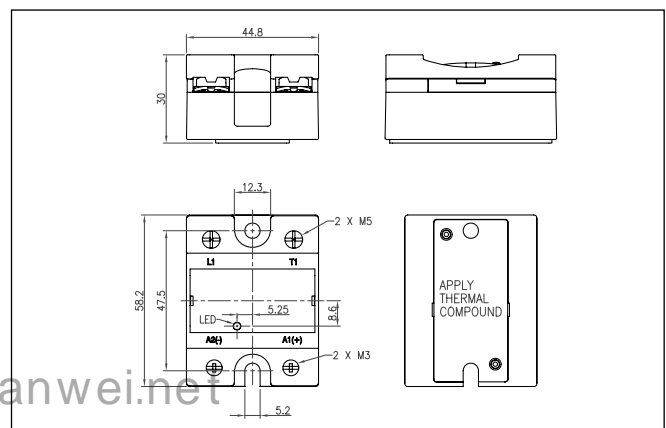
Load current [A]	Thermal resistance [K/W]						Power dissipation [W]
	20	30	40	50	60	70	
40.0	0.36	0.16	-	-	-	-	50.5
36.0	0.60	0.38	0.16	-	-	-	45.5
32.0	0.89	0.65	0.40	0.15	-	-	40.4
28.0	1.27	0.99	0.71	0.43	0.14	-	35.4
24.0	1.78	1.45	1.12	0.79	0.46	-	30.3
20.0	2.50	2.10	1.70	1.31	0.91	0.28	25.3
16.0	3.56	3.07	2.57	2.08	1.58	0.80	20.2
12.0	5.34	4.68	4.02	3.36	2.71	1.66	15.2
8.0	8.36	7.37	6.38	5.39	4.40	3.39	10.1
4.0	16.8	14.8	12.8	10.8	8.85	6.87	5.1

Ambient temp. [°C]

## Heatsink Selection

Carlo Gavazzi Heatsink (see Accessories)	Thermal resistance...	...for power dissipation
No heatsink required	---	N/A
RHS 300	5.00 K/W	> 0 W
RHS 100	3.00 K/W	> 25 W
RHS 45C	2.70 K/W	> 60 W
RHS 45B	2.00 K/W	> 60 W
RHS 90A	1.35 K/W	> 60 W
RHS 45C plus fan	1.25 K/W	> 0 W
RHS 45B plus fan	1.20 K/W	> 0 W
RHS 112A	1.10 K/W	> 100 W
RHS 301	0.80 K/W	> 70 W
RHS 90A plus fan	0.45 K/W	> 0 W
RHS 112A plus fan	0.40 K/W	> 0 W
RHS 301 plus fan	0.25 K/W	> 0 W
Consult your distribution	> 0.25 K/W	N/A
Infinite heatsink - No solution	---	N/A

## Dimensions



All dimensions in mm

## Faston terminals



- Fast-on tabs
- Tab dimensions according to DIN 46342 part 1
- Pure tin-plated brass

## Ordering Key

### Screw mounted Faston terminals

**RS1A48D25E F 4\***

RS, RM Solid State Relay

Faston terminals

Tab orientation

Input Tab width: 4.8mm

Output Tab width: 6.3mm

### Faston terminals in packs of 20

**RM48\*\* F4\***

RS, RM Solid State Relay

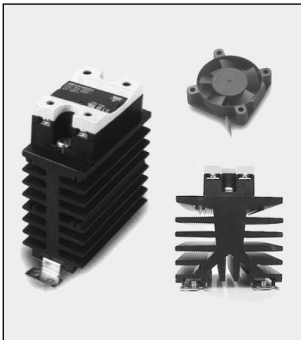
Tab orientation

\* 0: Flat (0°)

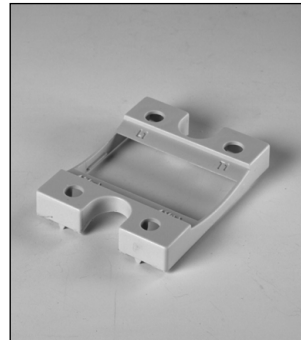
4: Angled (45°)

\*\* 48: 4.8mm faston for input  
63: 6.3mm faston for output

## Other Accessories



- Heatsinks and fans
- Type RHS....
- 0.25 to 5.00 k/W
- Single and dual relay types



- Touch safety cover
- Type RMIP20
- IP20 protection degree
- Pack size: 20 pieces

All accessories can be ordered pre-assembled with Solid State Relays.  
Other accessories include DIN rail adaptors, fuses, varistors and spacers.  
For further information refer to Accessories datasheets.

[www.sztianwei.net](http://www.sztianwei.net)