

# Solid State Relays

## PCB, 1-Phase ZS

### Types RP 130 ...-05, RP 130 ...-12, RP 130 ...-24

CARLO GAVAZZI



- AC Solid State Relay for PCB mounting
- Zero switching
- Rated operational current: 3 or 5 AACrms
- Non-repetitive voltage: Up to 850 V<sub>p</sub>
- Rated operational voltage: 240 V or 440 VACrms
- 5 VDC logic compatible input
- 12 and 24 VDC inputs for interfacing PLCs and other controls
- Insulation: OPTO (input-output) 4000 VACrms

## Product Description

The RP Solid State Relays from Carlo Gavazzi feature a very reliable design due to use of optotechnology together with high performance power semiconductors.

Either 3 or 5 A relays are available for AC mains up to 400 VACrms.

The zero switching version will work for resistive and inductive loads.

With snubberless triacs as output devices, dV/dt limiting RC-networks are no longer required when switching inductive loads.

## Ordering Key

**RP 130 240-5-12**

Solid State Relay (PCB)

Mounting type

Switching mode

Rated operational voltage

Rated operational current

Control voltage

## Type Selection

Switching mode	Rated operational voltage	Rated operational current	Control voltage
130: Zero switching	240: 230 VACrms 440: 400 VACrms	3: 3 AACrms 5: 5 AACrms	05: 5 VDC 12: 12 VDC 24: 24 VDC

## Selection Guide

Rated operational voltage	Control voltage	Rated operational current	
		3 AACrms	5 AACrms
230 VACrms	5 VDC	RP 130 240-3-05	RP 130 240-5-05
	12 VDC	RP 130 240-3-12	RP 130 240-5-12
	24 VDC	RP 130 240-3-24	RP 130 240-5-24
400 VACrms	5 VDC	RP 130 440-3-05	RP 130 440-5-05
	12 VDC	RP 130 440-3-12	RP 130 440-5-12
	24 VDC	RP 130 440-3-24	RP 130 440-5-24

## General Specifications

	RP 130 240-.-...	RP 130 440-.-...
Operational voltage range	24 to 280 VACrms	48 to 480 VACrms
Non-rep. peak voltage	$\geq 650 V_p$	$\geq 850 V_p$
Zero voltage turn-on	$\leq 30 V$	$\leq 50 V$
Operational frequency range	45 to 65 Hz	45 to 65 Hz
Power factor	$\geq 0.5 @ 230 VACrms$	$\geq 0.5 @ 400 VACrms$
Approvals	UL, CSA, VDE	UL, CSA, VDE
CE-marking	Yes	Yes

## Input Specifications

	RP 130 .40-.-05	RP 130 .40-.-12	RP 130 .40-.-24
Control voltage range	4 to 8 VDC	8 to 16 VDC	16 to 32 VDC
Control voltage	5 VDC	12 VDC	24 VDC
Pick-up voltage	$\leq 4 VDC$	$\leq 8 VDC$	$\leq 16 VDC$
Drop-out voltage	$\geq 1 VDC$	$\geq 1 VDC$	$\geq 1 VDC$
Input current @ rated voltage	$\leq 10 mADC$	$\leq 10 mADC$	$\leq 10 mADC$
Reverse voltage	$\leq 6 VDC$	$\leq 6 VDC$	$\leq 6 VDC$
Response time pick-up	$\leq 1/2$ cycle	$\leq 1/2$ cycle	$\leq 1/2$ cycle
Response time drop-out	$\leq 1/2$ cycle	$\leq 1/2$ cycle	$\leq 1/2$ cycle

## Output Specifications

	RP 130 .40-3-0	RP 130 .40-5-0
Rated operational current AC 1 AC 3	3 Arms 2.5 Arms	5 Arms 3 Arms
Minimum operational current	20 mArms	20 mArms
Rep. overload current $t=1 s$	$\leq 6 A_p$	$\leq 12 A_p$
Non-rep. surge current $t=20 ms$	$60 A_p$	$90 A_p$
Off-state leakage current @ rated voltage and frequency	$\leq 1 mArms$	$\leq 1 mArms$
$I^2t$ for fusing $t=1-10 ms$	$\leq 18 A^2s$	$\leq 40 A^2s$
Critical $dI/dt$	$\geq 20 A/ms$	$\geq 20 A/ms$
On-state voltage drop @ rated current	$\leq 1.2 Vrms$	$\leq 1.2 Vrms$
Critical $dV/dt$ commutating	$\geq 100 V/\mu s$	$\geq 100 V/\mu s$
Critical $dV/dt$ off-state $\geq 100 V/\mu s$	$\geq 100 V/\mu s$	

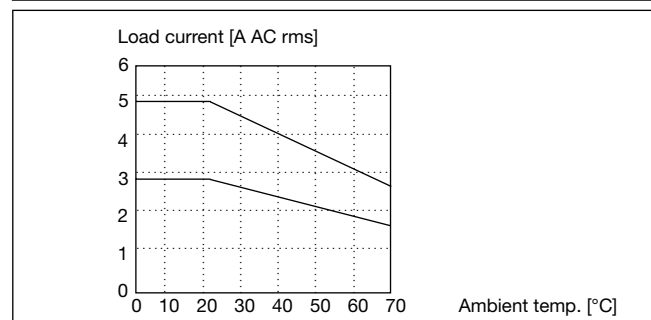
## Thermal Specifications

	RP 13. .40-3-0	RP 13. .40-5-0
Operating temperature	$-20^\circ C$ to $+70^\circ C$ ( $-4^\circ F$ to $+158^\circ F$ )	$-20^\circ C$ to $+70^\circ C$ ( $-4^\circ F$ to $+158^\circ F$ )
Storage temperature	$-40^\circ C$ to $+100^\circ C$ ( $-40^\circ F$ to $+212^\circ F$ )	$-40^\circ C$ to $+100^\circ C$ ( $-40^\circ F$ to $+212^\circ F$ )
Junction temperature	$\leq 125^\circ C$ ( $\leq 257^\circ F$ )	$\leq 125^\circ C$ ( $\leq 257^\circ F$ )
$R_{th}$ junction to case	$\leq 20.5 K/W$	$\leq 15.6 K/W$
$R_{th}$ junction to ambient	$\leq 33 K/W$	$\leq 21 K/W$

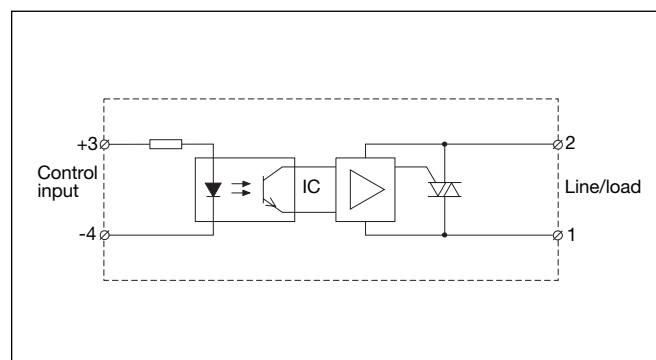
## Insulation Input - Output

Rated insulation voltage	$\geq 4000$ VACrms
Insulation resistance	$\geq 10^{10} \Omega$
Insulation capacitance	$\leq 8$ pF
Reference voltage according to VDE 0110 B Insulation group C	500 VACrms, 600 VDC

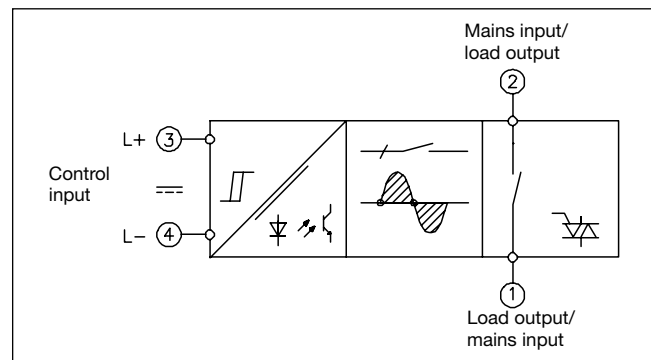
## Derating Curve



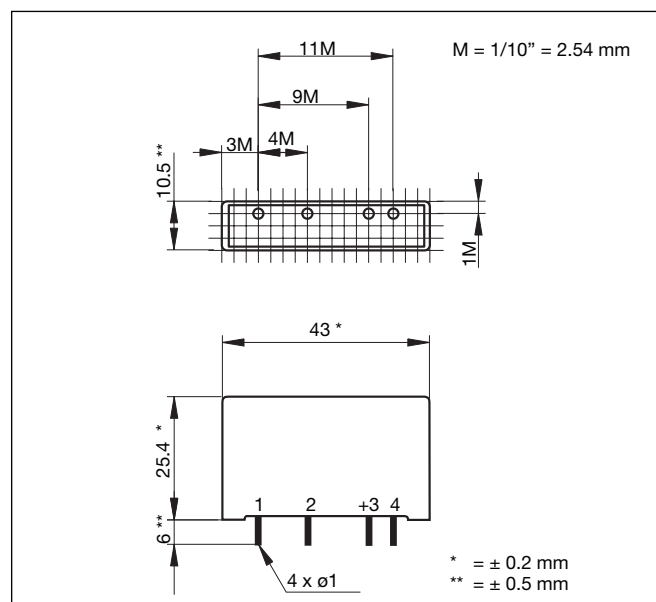
## Wiring Diagram



## Functional Diagram



## Dimensions



## Housing Specifications

Weight	Approx. 10 g
Housing material	Noryl GFN 1, black
Terminals	Copper, tin-plated
Potting compound	Flame-retardant polyurethane

## Applications

These relays can be used to switch heaters, motors, lights, valves or solenoids. When used at full load current, the relays must be placed

vertically. If more than one relay is mounted, please allow a minimum distance of 20 mm in between for sufficient air cooling.

## Accessories

Varistors  
Fuses  
For further information refer to "General Accessories".