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# RSR52

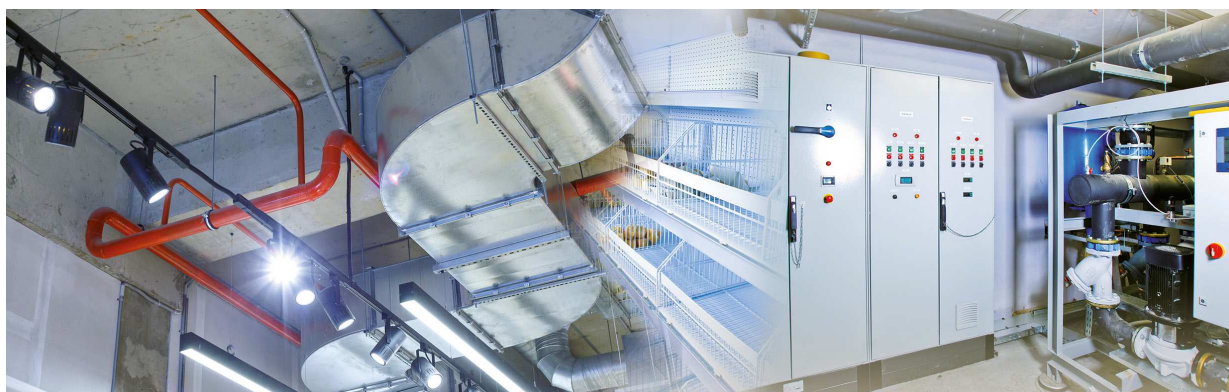
## single-phase solid state relays, industrial



- Zero-crossing or random-on switching • AC or DC control input
- SCR output (thyristors) • Load current 10...80 A
- Max. load voltage 280, 530, 660 V AC (single-phase)
- Dielectric strength 4 000 Vrms (opto-isolation)
- MOV protection (built-in varistor)
- LED indicator (red) • Screw terminals
- Mounting on panel or on heatsinks
- Recognitions, certifications, directives: RoHS, REACH,   

### Applications

Temperature chamber, food processing machinery, injection molding machine, incubator, oiling machines, HVAC, lighting, fountain controller.



### Basic technical data

Load voltage: 48...280 V AC, 48...530 V AC, 48...660 V AC  
 Control input: AC, DC  
 Load current: 10 A, 25 A, 40 A, 60 A, 80 A

Type		zero-crossing	zero-crossing	random-on
Load voltage	Control voltage	Load current		
		10 A	25 A	25 A
48...280 V AC	90...280 V AC	<b>RSR52-24A10</b>	<b>RSR52-24A25</b>	
	4...32 V DC	<b>RSR52-24D10</b>	<b>RSR52-24D25</b>	<b>RSR52-24D25-R</b>
48...530 V AC	90...280 V AC	<b>RSR52-48A10</b>	<b>RSR52-48A25</b>	
	4...32 V DC	<b>RSR52-48D10</b>	<b>RSR52-48D25</b>	<b>RSR52-48D25-R</b>
48...660 V AC	90...280 V AC		<b>RSR52-60A25</b>	
	4...32 V DC		<b>RSR52-60D25</b>	<b>RSR52-60D25-R</b>

Type		zero-crossing	zero-crossing	random-on
Load voltage	Control voltage	Load current		
		40 A	60 A	60 A
48...280 V AC	90...280 V AC	<b>RSR52-24A40</b>	<b>RSR52-24A60</b>	
	4...32 V DC	<b>RSR52-24D40</b>	<b>RSR52-24D60</b>	<b>RSR52-24D60-R</b>
48...530 V AC	90...280 V AC	<b>RSR52-48A40</b>	<b>RSR52-48A60</b>	
	4...32 V DC	<b>RSR52-48D40</b>	<b>RSR52-48D60</b>	<b>RSR52-48D60-R</b>
48...660 V AC	90...280 V AC	<b>RSR52-60A40</b>	<b>RSR52-60A60</b>	
	4...32 V DC	<b>RSR52-60D40</b>	<b>RSR52-60D60</b>	<b>RSR52-60D60-R</b>

Type		zero-crossing	random-on
Load voltage	Control voltage	Load current	
		80 A	80 A
48...280 V AC	90...280 V AC	<b>RSR52-24A80</b>	
	4...32 V DC	<b>RSR52-24D80</b>	<b>RSR52-24D80-R</b>
48...530 V AC	90...280 V AC	<b>RSR52-48A80</b>	
	4...32 V DC	<b>RSR52-48D80</b>	<b>RSR52-48D80-R</b>

### Load voltage

	<b>RSR52-24...</b>	<b>RSR52-48...</b>	<b>RSR52-60...</b>
Rated load voltage	240 V AC	480 V AC	600 V AC
Rated range of load voltage	48...280 V AC	48...530 V AC	48...660 V AC
Blocking voltage	600 V <sub>pk</sub>	1 200 V <sub>pk</sub>	1 600 V <sub>pk</sub>
Rated frequency	47...63 Hz	47...63 Hz	47...63 Hz
Power factor	0,5	0,5	0,5

### Control input

	zero-crossing	random-on	
	<b>RSR52-..A...</b>	<b>RSR52-..D...</b>	<b>RSR52-..D..-R</b>
Control voltage range	90...280 V AC 50/60 Hz	4...32 V DC	4...32 V DC
Must turn-on voltage	90 V AC	4 V DC	4 V DC
Must turn-off voltage	10 V AC	1 V DC	1 V DC
Maximum input current	25 mA 280 V AC, 50 Hz	25 mA 32 V DC	25 mA 32 V DC
Response time pick-up	≤ 40 ms	≤ 1/2 cycle + 1 ms	≤ 1 ms
Response time drop-out	≤ 40 ms	≤ 1/2 cycle + 1 ms	≤ 1/2 cycle + 1 ms

### Output circuit ①

	<b>RSR52-...10...</b>	<b>RSR52-...25...</b>	<b>RSR52-...40...</b>
Rated load current	10 A	25 A	40 A
Maximum surge current	120 A 10 ms	250 A 10 ms	500 A 10 ms
I <sup>2</sup> t for fusing	72 A <sup>2</sup> s 10 ms	312 A <sup>2</sup> s 10 ms	1 250 A <sup>2</sup> s 10 ms
Max. operational current AC-51 rating	10 A	25 A	40 A
Max. operational current AC-53 rating	2 A	5 A	8 A
Min. operational current	100 mA	100 mA	100 mA
Maximum off-state leakage current (at rated load voltage)	10 mA	10 mA	10 mA
Maximum on-state voltage drop (at rated current)	1,5 V <sub>rms</sub>	1,5 V <sub>rms</sub>	1,5 V <sub>rms</sub>
Minimum off-state dV/dt (at max. rated voltage)	500 V/μs	500 V/μs	500 V/μs

① Data given for ambient temperature ≤ 25 °C. Above 25 °C the maximum current decreases - see "Thermal derating curves", page 5.

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### Output circuit ①

	RSR52-...60...	RSR52-...80...
Rated load current	60 A	80 A
Maximum surge current	700 A 10 ms	1 000 A 10 ms
I <sup>2</sup> t for fusing	2 450 A <sup>2</sup> s 10 ms	5 000 A <sup>2</sup> s 10 ms
Max. operational current AC-51 rating	60 A	80 A
Max. operational current AC-53 rating	12 A	16 A
Min. operational current	100 mA	100 mA
Maximum off-state leakage current (at rated load voltage)	10 mA	10 mA
Maximum on-state voltage drop (at rated current)	1,6 Vrms	1,7 Vrms
Minimum off-state dV/dt (at max. rated voltage)	500 V/μs	500 V/μs

### General data ①

	RSR52-...
Dielectric strength	input - output: 4 000 Vrms 50/60 Hz input, output - base: 2 500 Vrms 50/60 Hz
Minimum insulation resistance	1 000 MΩ 500 V DC
Ambient temperature (non-condensation and/or icing)	storage: -30...+100 °C operating: -30...+80 °C

### Mechanical data

	RSR52-...10... RSR52-...25...	RSR52-...40... RSR52-...60...	RSR52-...80...
Dimensions (L x W x H)	58,6 x 45,7 x 33,5 mm	58,6 x 45,7 x 33,5 mm	58,6 x 45,7 x 33,5 mm
Weight (typical)	113 g	119 g	170 g
Protection category EN 60529	IP 20	IP 20	IP 20
Connection mode	input: screws M3 ② tightening moment: 0,58...0,98 N•m output: screws M4 ② tightening moment: 0,98...1,37 N•m	input: screws M3 ② tightening moment: 0,58...0,98 N•m output: screws M4 ② tightening moment: 0,98...1,37 N•m	input: screws M3 ② tightening moment: 0,58...0,98 N•m output: screws M4 ② tightening moment: 0,98...1,37 N•m
Mounting on panel or heatsink ③	screws M4 tightening moment: 0,98...1,37 N•m	screws M4 tightening moment: 0,98...1,37 N•m	screws M4 tightening moment: 0,98...1,37 N•m

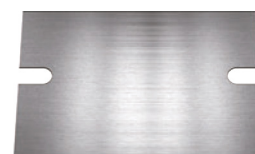
① Data given for ambient temperature ≤ 25 °C. Above 25 °C the maximum current decreases - see "Thermal derating curves", page 5.

② When connection cables to relay: please ensure, screws are torqued down properly.

③ Relay must be mounted to proper sized heatsink, based on "Thermal derating curves". Between relay and heatsink must be used thermal pad.

### Mounting, accessories for relays

Relays **RSR52** are designed for: • direct mounting on panel • mounting on heatsinks **RH**.  
For **RSR52** relays we offer thermal pads **RTP-10**.



Thermal pad **RTP-10**

# RSR52

single-phase solid state relays, industrial



RDR-10

## RH21



## RH19A

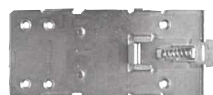


## RH19B



Material	aluminum	aluminum	aluminum
Dimensions (L x W x H)	80 x 50 x 50 mm	70 x 50 x 69 mm	81 x 50 x 83 mm
Weight (typical)	115 g	275 g	335 g
Thermal resistance	2,1 °C/W	1,9 °C/W	1,9 °C/W
Additional equipment	–	RDR-10 ④	–
Mounting	on panel, on 35 mm rail mount	on 35 mm rail mount (with clip RDR-10)	on 35 mm rail mount

## RH17A



RDR-30



## RH16



## RH16-F



Material	aluminum	aluminum	aluminum
Dimensions (L x W x H)	90 x 50 x 69 mm	106 x 50 x 96 mm	106 x 80 x 96 mm
Weight (typical)	350 g	375 g	645 g
Thermal resistance	1,7 °C/W	1,6 °C/W	0,6 °C/W
Additional equipment	RDR-30 ⑤	–	built-in fan
Mounting	on 35 mm rail mount (with clip RDR-30)	on panel, on 35 mm rail mount	on panel, on 35 mm rail mount

## RH08



## RH08-F

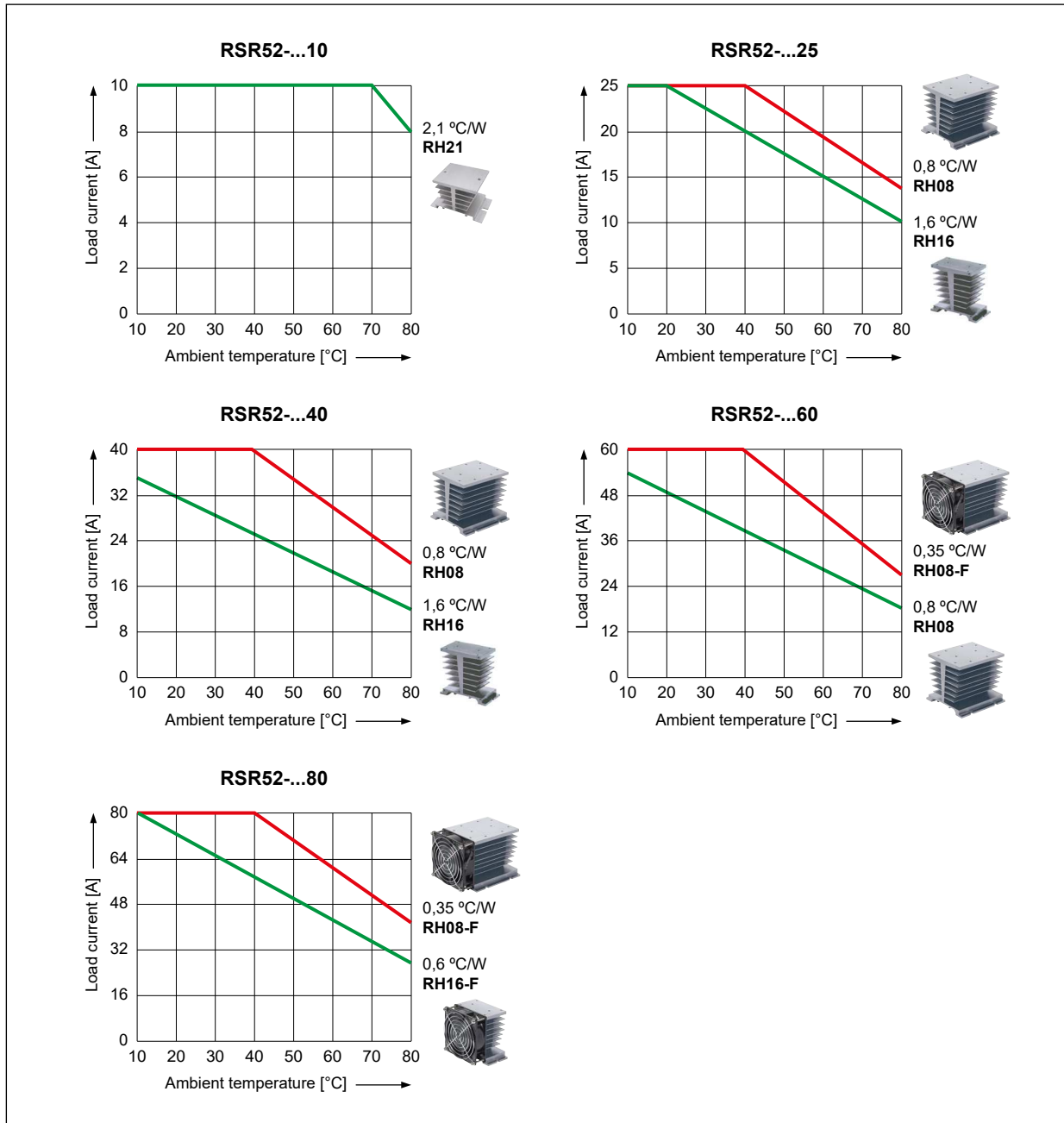


Material	aluminum	aluminum
Dimensions (L x W x H)	106 x 110 x 96 mm	106 x 140 x 96 mm
Weight (typical)	825 g	1 095 g
Thermal resistance	0,8 °C/W	0,35 °C/W
Additional equipment	–	built-in fan
Mounting	on panel, on 35 mm rail mount	on panel, on 35 mm rail mount

④ Clip RDR-10 for heatsink RH19A: for mounting on 35 mm rail mount (including 6 holes on M4 screws).

⑤ Clip RDR-30 for heatsink RH17A: for mounting on 35 mm rail mount (including 6 holes on M3 screws).

### Thermal derating curves

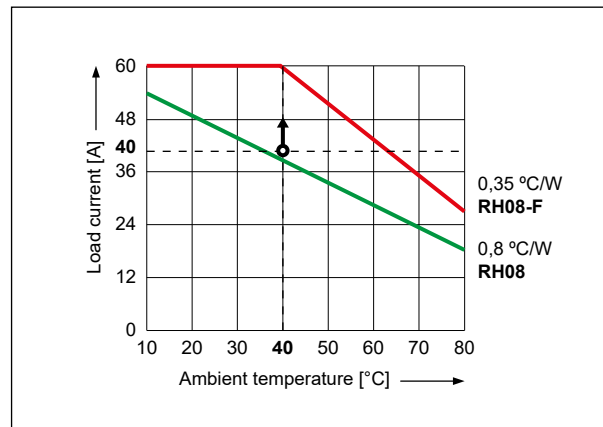


#### To select the proper sized heatsink:

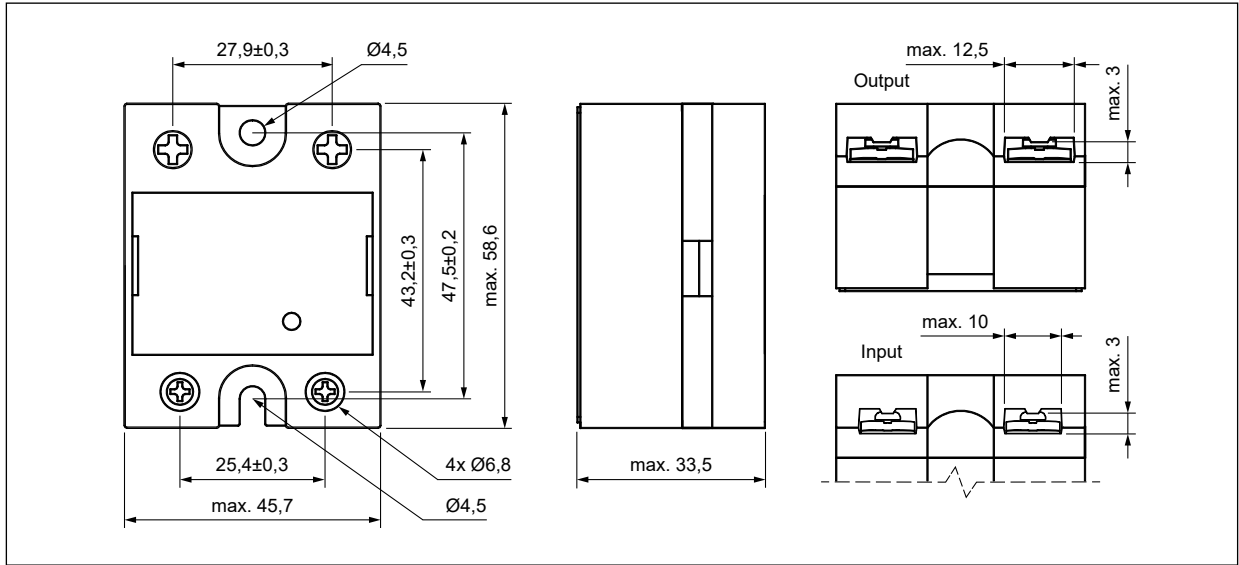
- determine the load current and the maximum ambient temperature the relay will be exposed to,
- use the "Thermal derating curves" (see above).

Example: for a single-phase **RSR52** 60 A, at 40 A load current and ambient temperature at 40 °C:

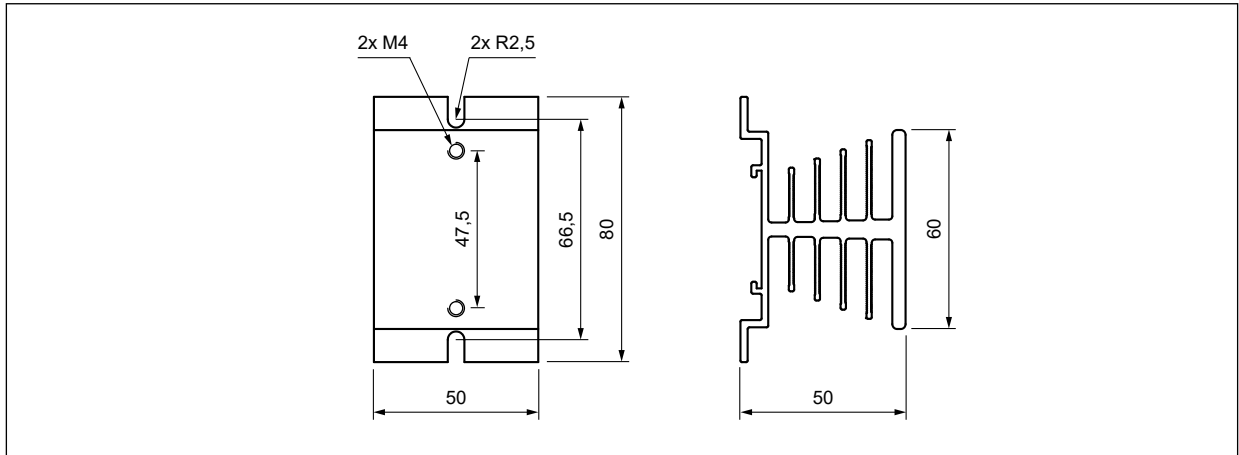
- on the Y axis we find the current value for which we draw a line perpendicular to Y,
- on the X axis we find the ambient temperature for which we draw a line perpendicular to X,
- we determine the intersection of both lines,
- read the heatsink rating – **always choose the rating above your point**: we need a 0,35 °C/W sized heatsink, since the 0,8 °C/W heatsink will not ensure sufficient cooling of the solid state relay.



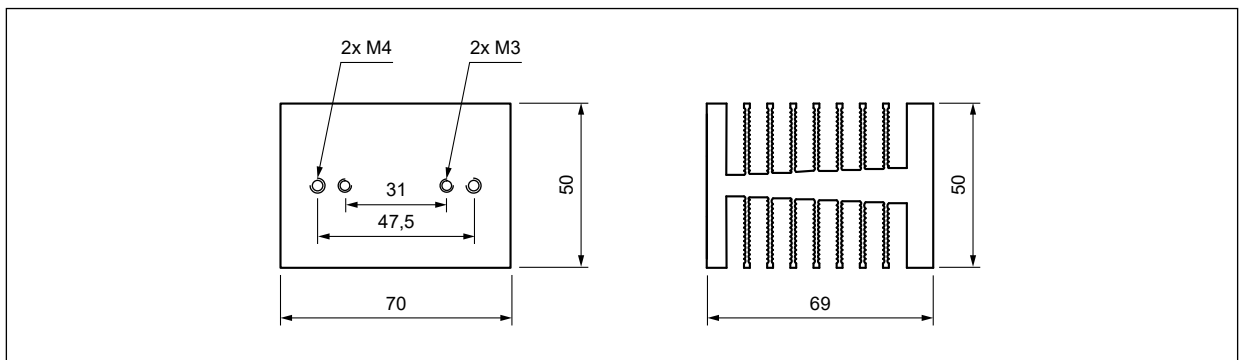
### Dimensions



Solid state relay **RSR52**



Heatsink **RH21**

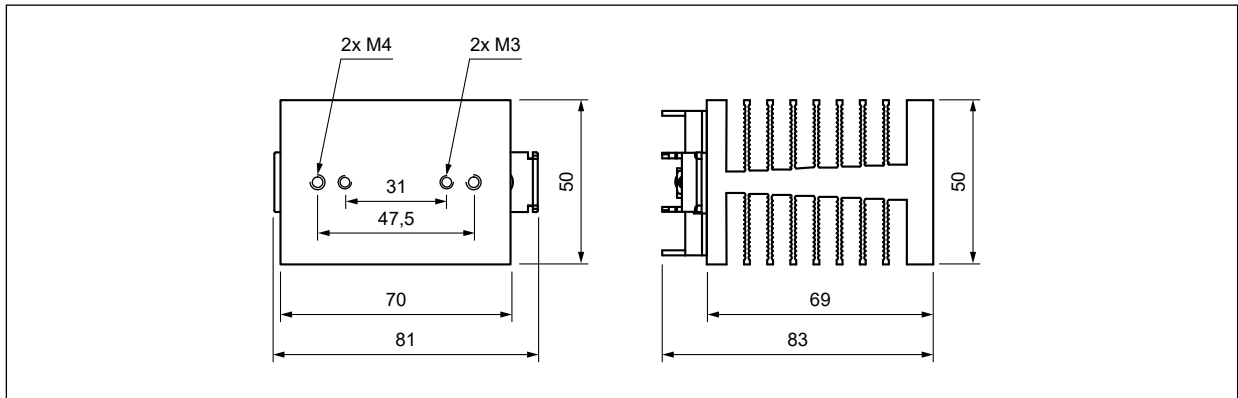


Heatsink **RH19A**

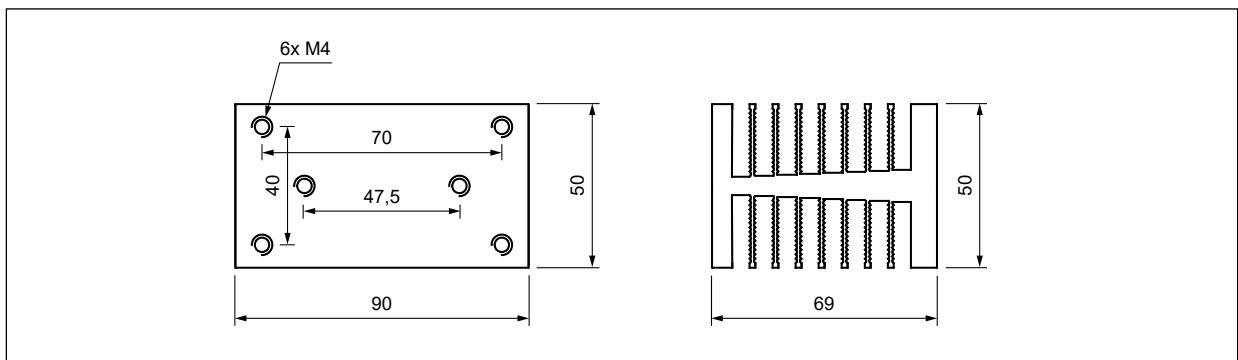
# RSR52

single-phase solid state relays, industrial

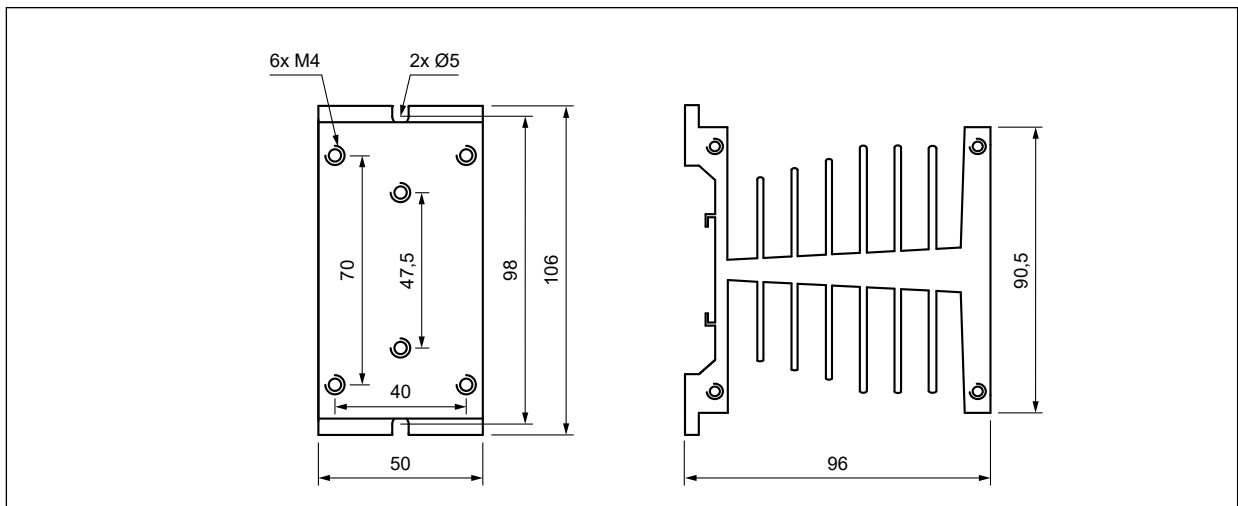
## Dimensions



Heatsink RH19B



Heatsink RH17A



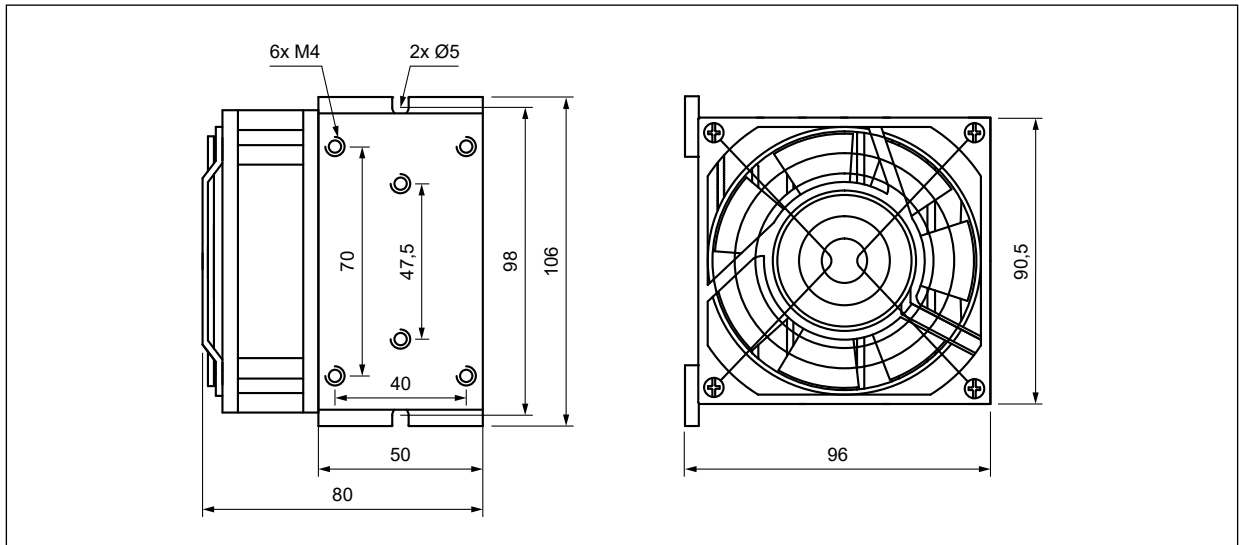
Heatsink RH16



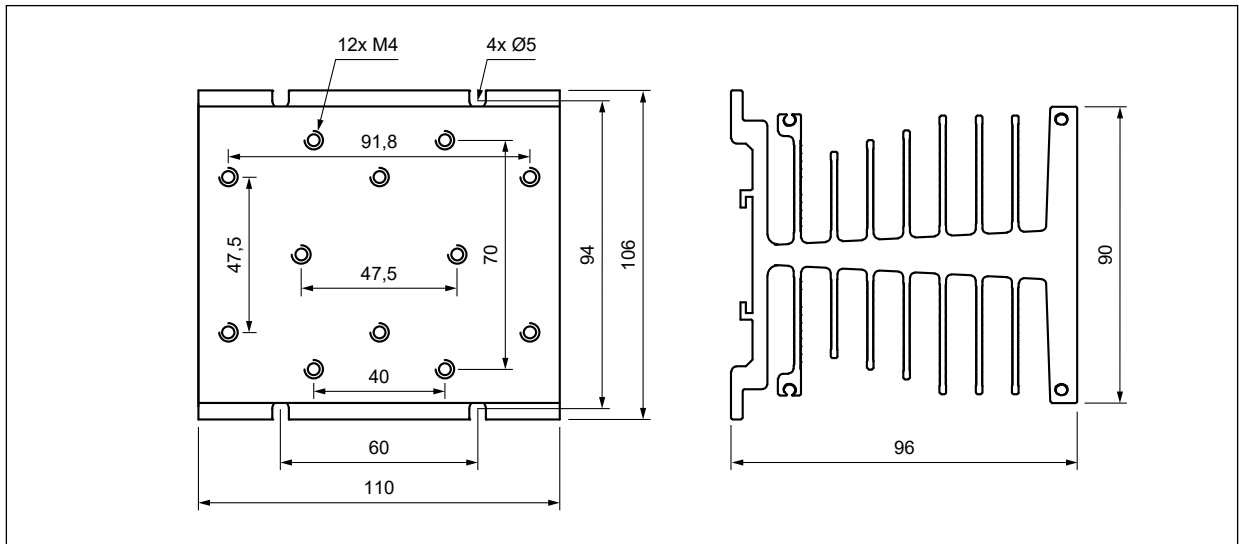
# RSR52

single-phase solid state relays, industrial

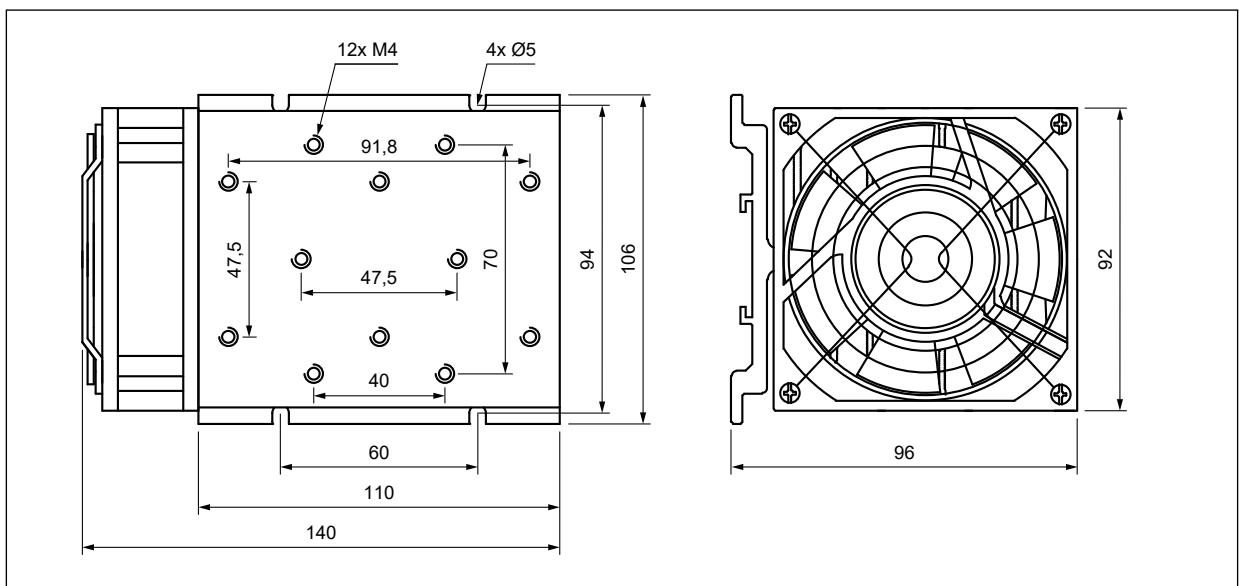
## Dimensions



Heatsink RH16-F

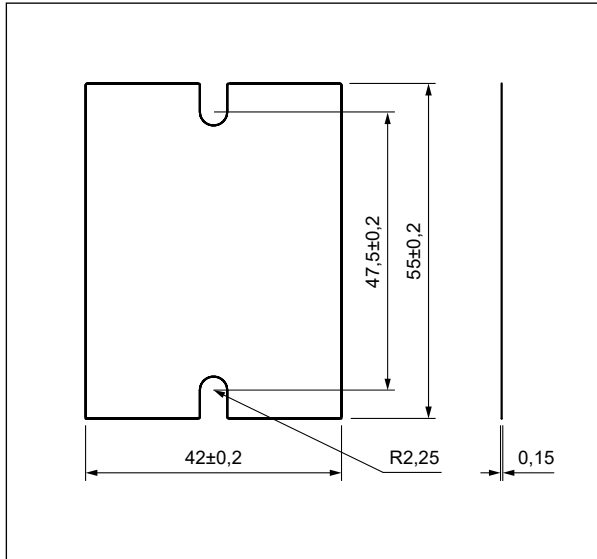


Heatsink RH08



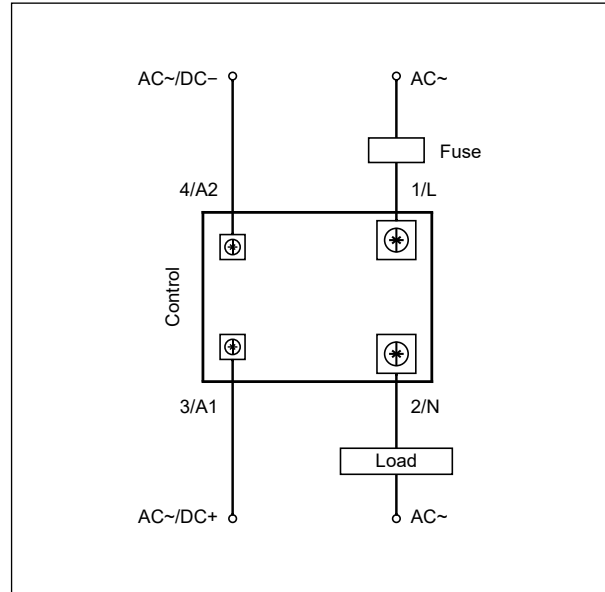
Heatsink RH08-F

### Dimensions

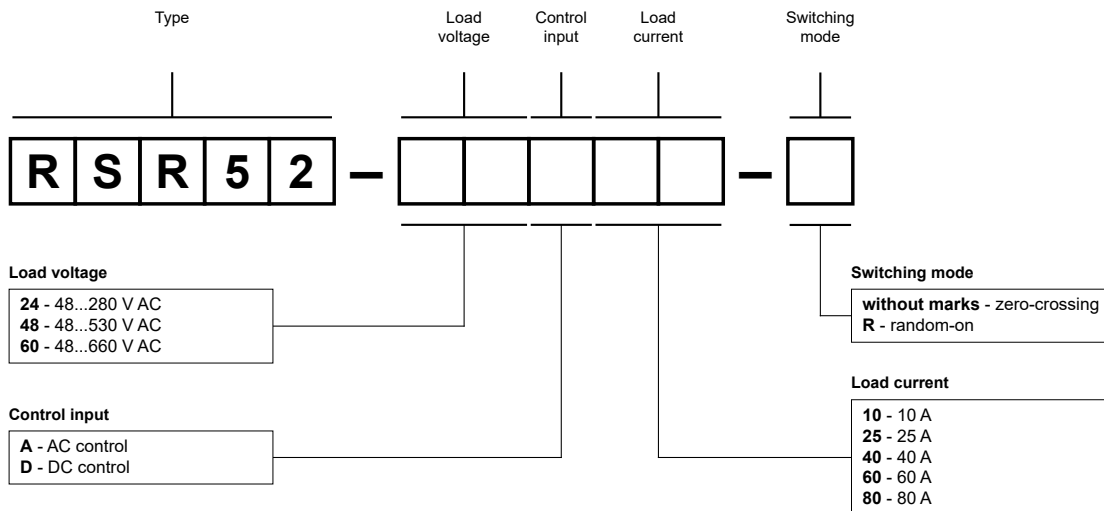


Thermal pad RTP-10

### Connection diagram



### Ordering codes



Examples of ordering codes ⑩:

- RSR52-24A10** relay **RSR52**, zero-crossing switching, AC control, load voltage 48...280 V AC (single-phase), load current 10 A
- RSR52-48D40** relay **RSR52**, zero-crossing switching, DC control, load voltage 48...530 V AC (single-phase), load current 40 A
- RSR52-60D60-R** relay **RSR52**, random-on switching, DC control, load voltage 48...660 V AC (single-phase), load current 60 A

⑩ Ordering codes **RSR52** are specified in tables "Type" on pages 1, 2.