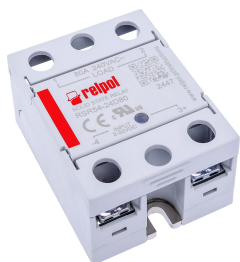





RSR54

single-phase solid state relays, industrial



NEW

- Zero-crossing switching • AC or DC control input
- SCR output (thyristors) • Load current 25...125 A
- Max. load voltage 280, 530, 660 V AC (single-phase)
- Dielectric strength 4 000 Vrms (opto-isolation)
- TVS protection
- LED indicator (red) • Screw terminals
- Mounting on panel or on heatsinks
- Recognitions, certifications, directives: RoHS, REACH,   

Applications

High-low temperature chambers, food processing machinery, plastics processing machinery.

Basic technical data

Load voltage: 24...280 V AC, 24...530 V AC, 24...660 V AC

Control input: AC, DC

Load current: 25 A, 40 A, 60 A, 80 A, 100 A, 125 A

Type		zero-crossing	zero-crossing	zero-crossing
Load voltage	Control voltage	Load current		
24...280 V AC	90...280 V AC	25 A	40 A	60 A
	3...32 V DC	RSR54-24A25	RSR54-24A40	RSR54-24A60
24...530 V AC	90...280 V AC	RSR54-24D25	RSR54-24D40	RSR54-24D60
	3...32 V DC	RSR54-48A25	RSR54-48A40	RSR54-48A60
24...660 V AC	90...280 V AC	RSR54-48D25	RSR54-48D40	RSR54-48D60
	3...32 V DC	RSR54-60A25	RSR54-60A40	RSR54-60A60
		RSR54-60D25	RSR54-60D40	RSR54-60D60

Type		zero-crossing	zero-crossing	zero-crossing
Load voltage	Control voltage	Load current		
24...280 V AC	90...280 V AC	80 A	100 A	125 A
	3...32 V DC	RSR54-24A80	RSR54-24A100	RSR54-24A125
24...530 V AC	90...280 V AC	RSR54-24D80	RSR54-24D100	RSR54-24D125
	3...32 V DC	RSR54-48A80	RSR54-48A100	RSR54-48A125
24...660 V AC	90...280 V AC	RSR54-48D80	RSR54-48D100	RSR54-48D125
	3...32 V DC	RSR54-60A80	RSR54-60A100	RSR54-60A125
		RSR54-60D80	RSR54-60D100	RSR54-60D125

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Load voltage

	RSR54-24...	RSR54-48...	RSR54-60...
Rated load voltage	240 V AC	480 V AC	600 V AC
Rated range of load voltage	24...280 V AC	24...530 V AC	24...660 V AC
Blocking voltage	600 V _{pk}	1 200 V _{pk}	1 200 V _{pk}
Rated frequency	47...63 Hz	47...63 Hz	47...63 Hz
Min. power factor	0,5	0,5	0,5

Control input

	zero-crossing	zero-crossing
	RSR54-...A...	RSR54-...D...
Control voltage range	90...280 V AC 50/60 Hz	3...32 V DC
Must turn-on voltage	90 V AC	3 V DC
Must turn-off voltage	15 V AC	1 V DC
Maximum input current	35 mA 280 V AC, 50 Hz	25 mA 32 V DC
Response time pick-up	40 ms	10 ms
Response time drop-out	20 ms	10 ms

Output circuit ①

	RSR54-...25...	RSR54-...40...	RSR54-...60...
Rated load current	25 A	40 A	60 A
Maximum surge current	300 A 10 ms	500 A 10 ms	500 A 10 ms
I ² t for fusing	450 A ² s 10 ms	1 250 A ² s 10 ms	2 450 A ² s 10 ms
Max. operational current AC-51 rating	25 A	40 A	60 A
Max. operational current AC-53 rating	5 A	8 A	12 A
Min. operational current	≥ 100 mA	≥ 100 mA	≥ 100 mA
Maximum off-state leakage current (at rated load voltage)	3 mA	3 mA	3 mA
Maximum on-state voltage drop (at rated current)	1,5 V _{rms}	1,5 V _{rms}	1,5 V _{rms}
Minimum off-state dV/dt (at max. rated voltage)	500 V/μs	500 V/μs	500 V/μs

Output circuit ①

	RSR54-...80...	RSR54-...100...	RSR54-...125...
Rated load current	80 A	100 A	125 A
Maximum surge current	800 A 10 ms	1 500 A 10 ms	2 250 A 10 ms
I ² t for fusing	3 200 A ² s 10 ms	11 250 A ² s 10 ms	25 000 A ² s 10 ms
Max. operational current AC-51 rating	80 A	100 A	125 A
Max. operational current AC-53 rating	16 A	20 A	25 A
Min. operational current	≥ 100 mA	≥ 100 mA	≥ 100 mA
Maximum off-state leakage current (at rated load voltage)	3 mA	3 mA	3 mA
Maximum on-state voltage drop (at rated current)	1,5 V _{rms}	1,5 V _{rms}	1,5 V _{rms}
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 4.

RSR54

single-phase solid state relays, industrial

General data ①

	RSR54-...
Dielectric strength	input - output: 4 000 Vrms 50/60 Hz input, output - base: 4 000 Vrms 50/60 Hz
Minimum insulation resistance	100 MΩ 500 V DC
Ambient temperature (non-condensation and/or icing)	storage: -30...+100 °C operating: -30...+80 °C

Mechanical data

	RSR54-...
Dimensions (L x W x H)	58,6 x 45,7 x 29,4 mm
Weight (typical)	80 g
Protection category EN 60529	IP 20
Connection mode	input: screws M3 ② tightening moment: 1,5...1,7 N•m output: screws M4 ② tightening moment: 2...2,2 N•m
Mounting on panel or heatsink ③	screws M4 tightening moment: 2...2,2 N•m

① Data given for ambient temperature ≤ 25 °C. Above 25 °C the maximum current decreases - see "Thermal derating curves", page 4.

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

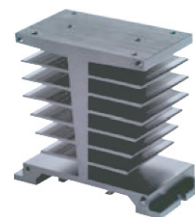
③ Relay must be mounted to proper sized heatsink, based on "Thermal derating curves". Between relay and heatsink must be used thermal pad.

RH21



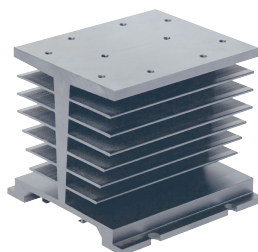
Material	aluminum
Dimensions (L x W x H)	80 x 50 x 50 mm
Weight (typical)	115 g
Thermal resistance	2,1 °C/W
Additional equipment	–
Mounting	on panel, on 35 mm rail mount

RH16



Material	aluminum
Dimensions (L x W x H)	106 x 50 x 96 mm
Weight (typical)	375 g
Thermal resistance	1,6 °C/W
Additional equipment	–
Mounting	on panel, on 35 mm rail mount

RH08



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

RH08-F

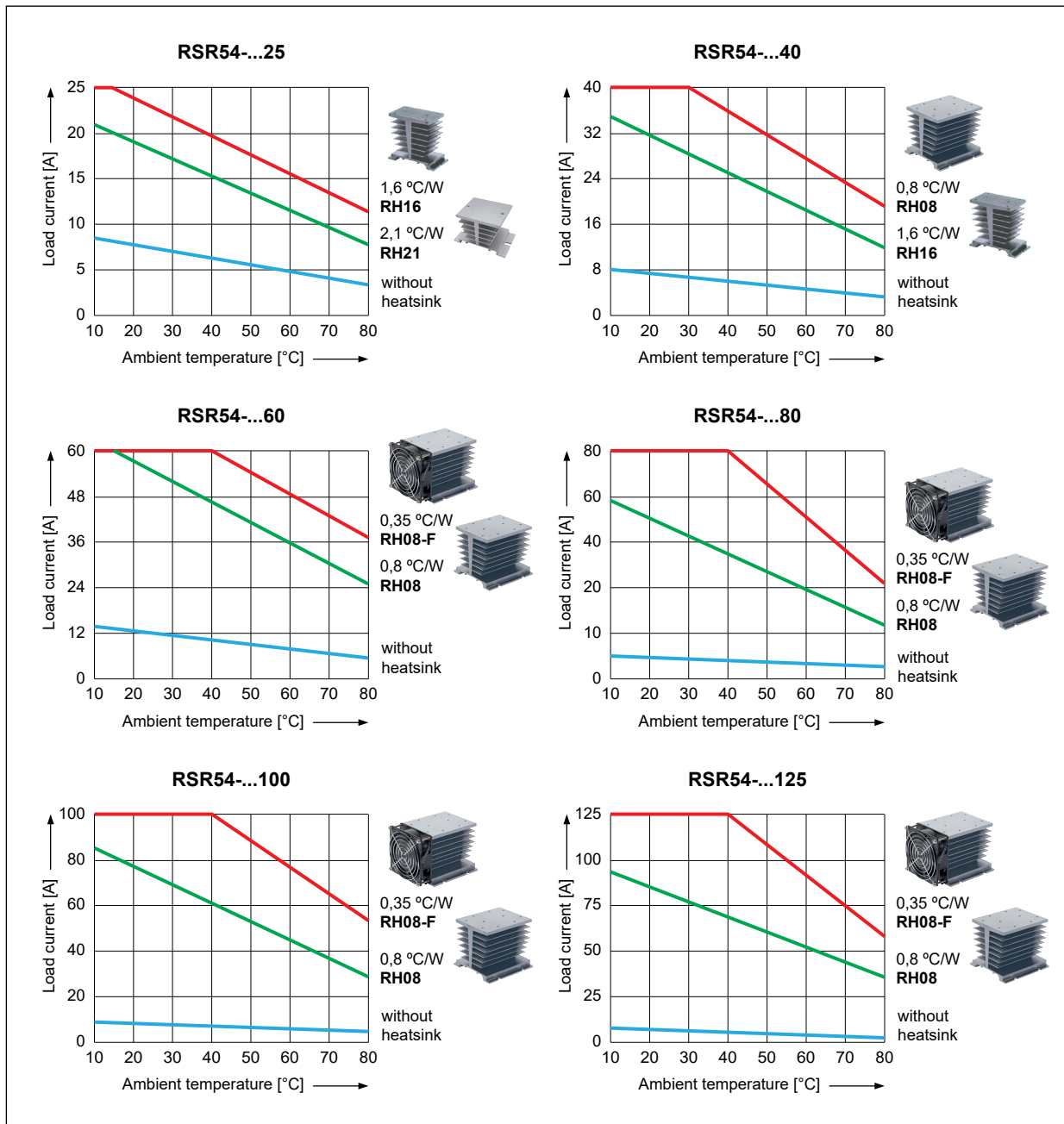


Material	aluminum
Dimensions (L x W x H)	106 x 140 x 96 mm
Weight (typical)	1 095 g
Thermal resistance	0,35 °C/W
Additional equipment	built-in fan
Mounting	on panel, on 35 mm rail mount

RSR54

single-phase solid state relays, industrial

Thermal derating curves

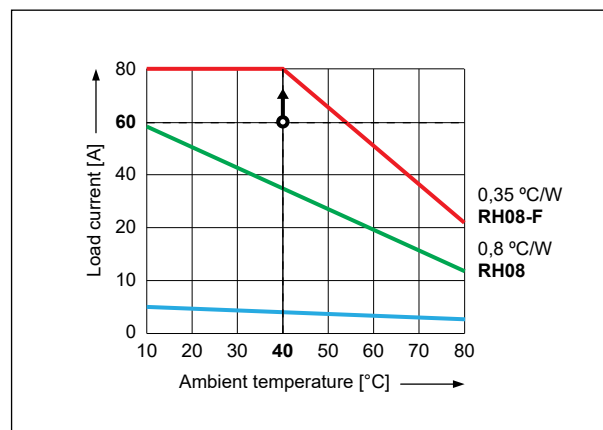


To select the proper sized heatsink:

- 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 **RSR54** 80 A, at 60 A load current and ambient temperature at 40 °C:

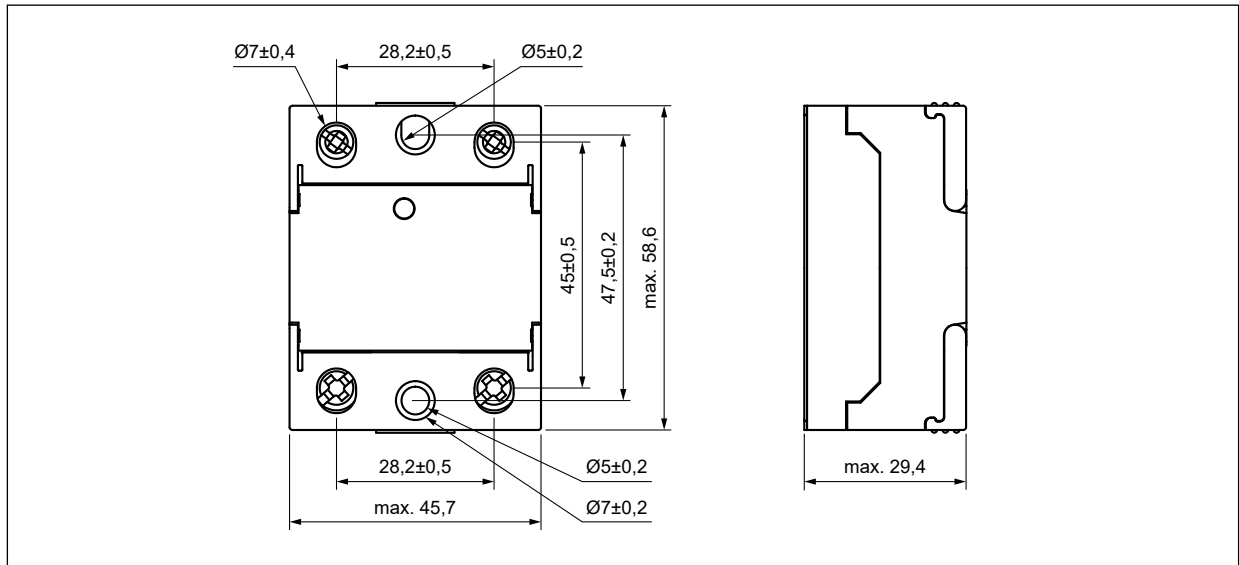
- on the Y axis we find the current value for which we draw a line perpendicular to Y,
- on the X axis we find the ambient temperature for which we draw a line perpendicular to X,
- we determine the intersection of both lines,
- read the heatsink rating – **always choose the rating above your point**: 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.



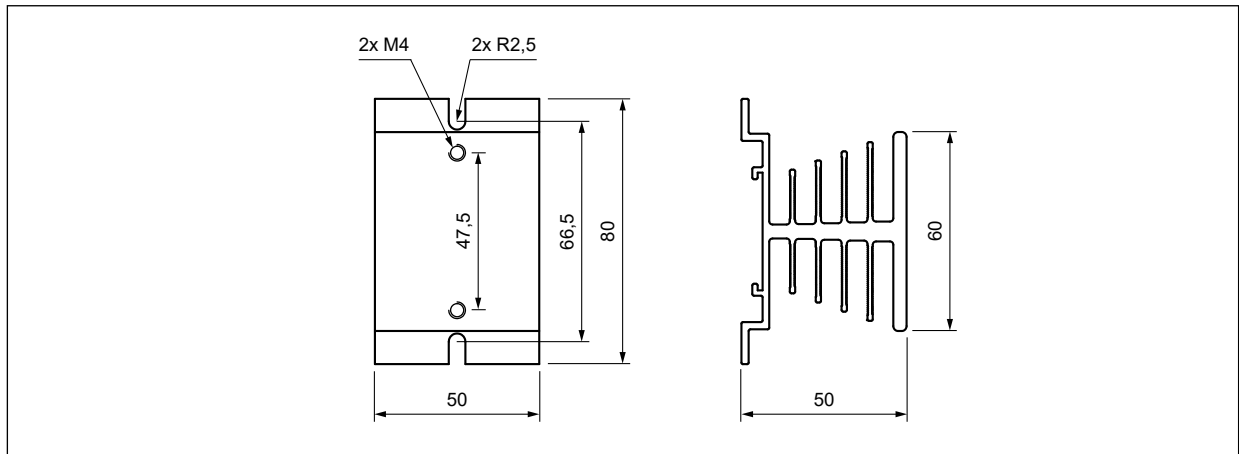
RSR54

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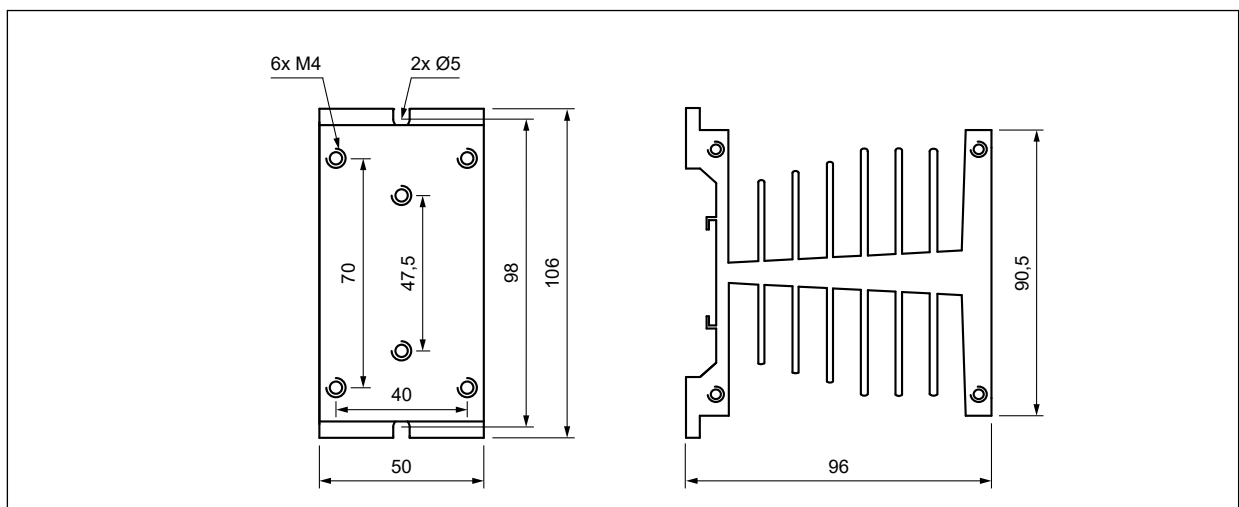
Dimensions



Solid state relay **RSR54**

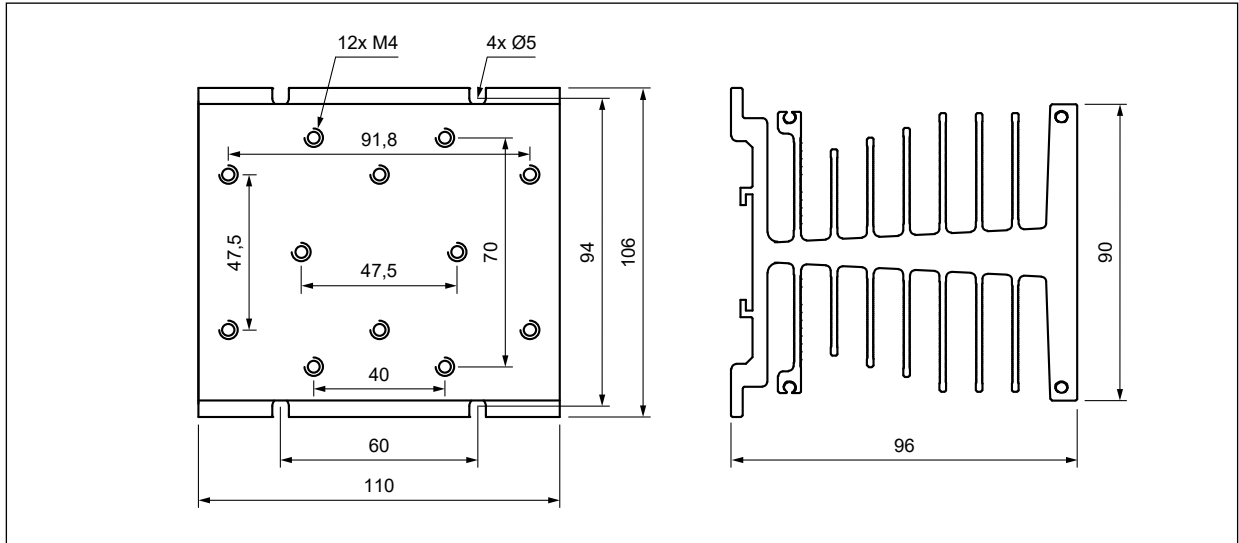


Heatsink **RH21**

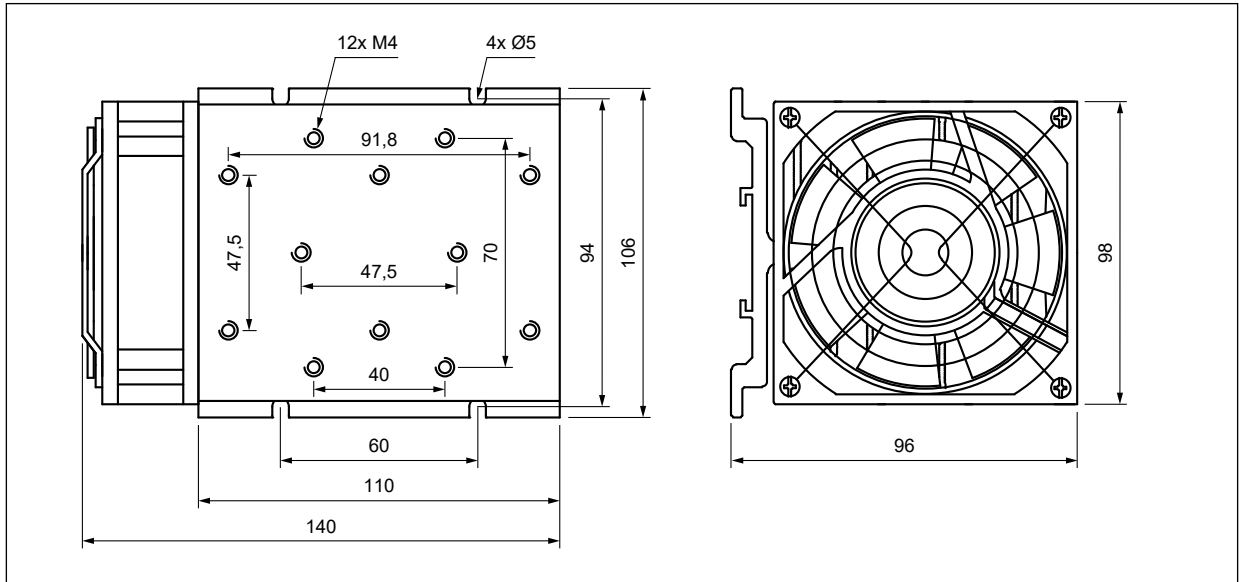


Heatsink **RH16**

Dimensions

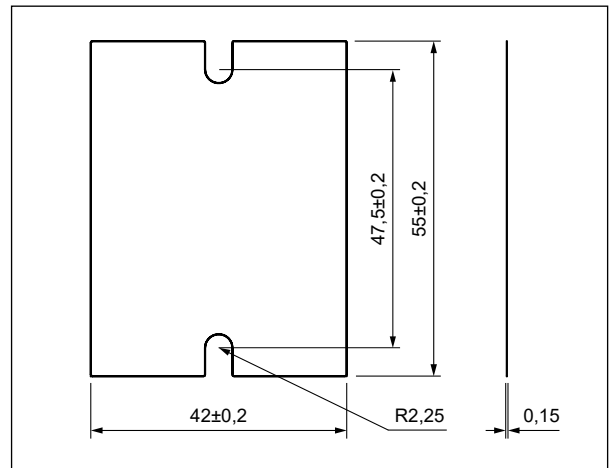
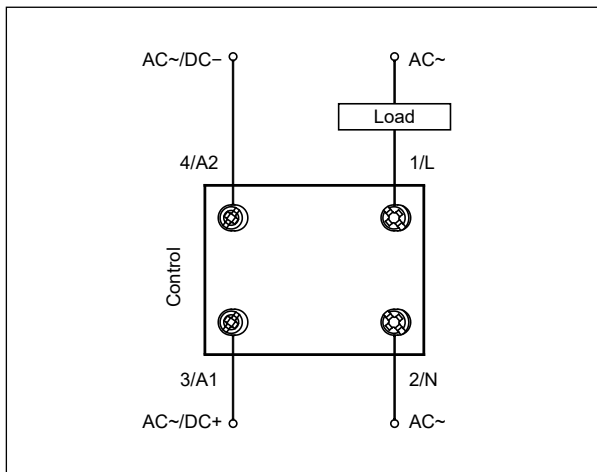


Heatsink RH08



Heatsink RH08-F

Connection diagram



Thermal pad RTP-10

RSR54

single-phase solid state relays, industrial

Mounting, accessories for relays

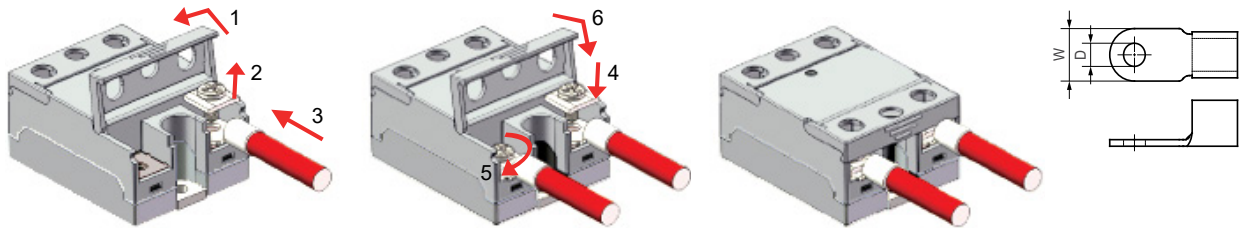
Relays **RSR54** are designed for: • direct mounting on panel • mounting on heatsinks **RH**. For **RSR54** relays we offer thermal pads **RTP-10**.

Note: the product's side panels may be hot, allow the product to cool before touching; disconnect all power before installing or working with this equipment; verify all connections and replace all covers before turning on power.



Thermal pad **RTP-10**

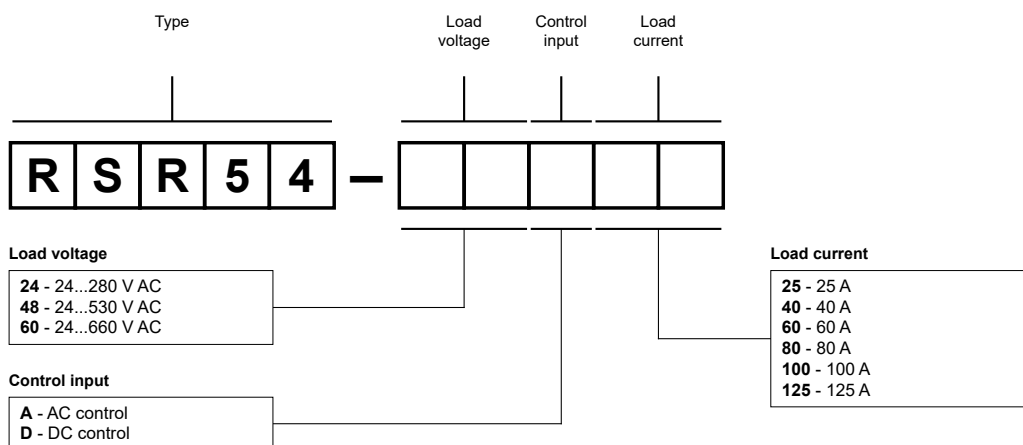
Wire connection



Load current [A]	Cross section area of wire [mm ²] ④	Wire size [AWG]	DIN 46234 terminal model	Terminal mounting hole size D [mm]	Terminal width W [mm]
15...20	2,5	12	4...6	4,3	8
			5...6	5,3	10
20...35	4	10	4...6	4,3	8
			5...6	5,3	10
25...32	6	10	4...6	4,3	8
			5...6	5,3	10
32...50	10	8	5...10	5,3	10
50...65	16	6	5...16	5,3	11
65...85	25	4	5...25	5,3	12

④ When use the wire cross-sectional area greater than 25 mm², we suggest to break it in to two smaller wires and connect them back to back superimposed.

Ordering codes



Examples of ordering codes ⑥:

RSR54-24A25 relay **RSR54**, zero-crossing switching, AC control, load voltage 24...280 V AC (single-phase), load current 25 A

RSR54-60D125 relay **RSR54**, zero-crossing switching, DC control, load voltage 24...660 V AC (single-phase), load current 125 A

⑥ Ordering codes **RSR54** are specified in tables "Type" on page 1.