



**EN:** This Datasheet/Document is presented by the manufacturer.

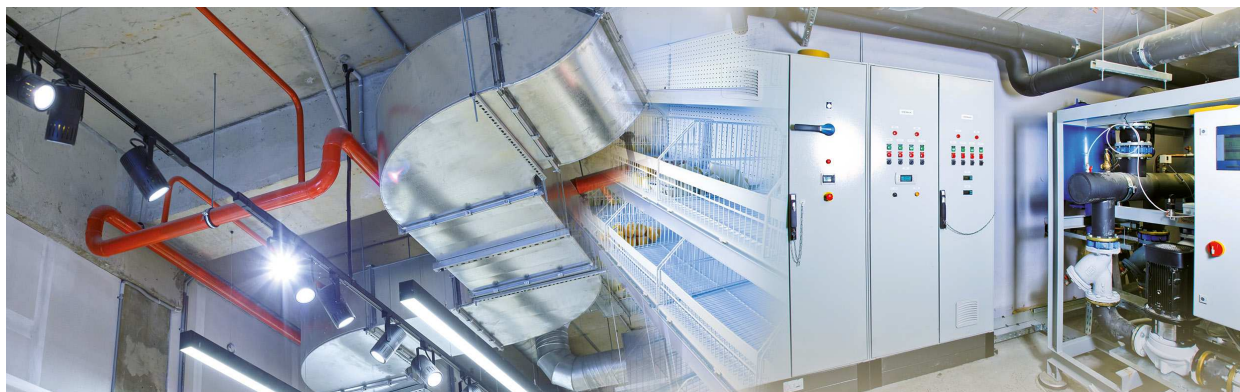
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- Zero-crossing or random-on switching • AC or DC control input
- SCR output (thyristors) • Load current 10...80 A
- Max. load voltage 280, 530, 660 V AC (single-phase)
- Dielectric strength 4 000 Vrms (opto-isolation)
- MOV protection (built-in varistor)
- 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       |                    |                      |
| 48...280 V AC | 90...280 V AC   | 10 A               | 25 A               | 25 A                 |
|               | 4...32 V DC     | <b>RSR52-24A10</b> | <b>RSR52-24A25</b> | <b>RSR52-24D25-R</b> |
| 48...530 V AC | 90...280 V AC   | <b>RSR52-24D10</b> | <b>RSR52-24D25</b> |                      |
|               | 4...32 V DC     | <b>RSR52-48A10</b> | <b>RSR52-48A25</b> | <b>RSR52-48D25-R</b> |
| 48...660 V AC | 90...280 V AC   | <b>RSR52-48D10</b> | <b>RSR52-48D25</b> | <b>RSR52-48D25-R</b> |
|               | 4...32 V DC     |                    | <b>RSR52-60A25</b> |                      |
|               |                 |                    | <b>RSR52-60D25</b> | <b>RSR52-60D25-R</b> |

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

|                                                              | <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<br>(at rated load voltage) | 10 mA                     | 10 mA                      | 10 mA                        |
| Maximum on-state voltage drop<br>(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<br>(at max. rated voltage)           | 500 V/μs                  | 500 V/μs                   | 500 V/μs                     |

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

## Output circuit ❶

|                                                              | 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<br>(at rated load voltage) | 10 mA                        | 10 mA                        |
| Maximum on-state voltage drop<br>(at rated current)          | 1,6 Vrms                     | 1,7 Vrms                     |
| Minimum off-state dV/dt<br>(at max. rated voltage)           | 500 V/μs                     | 500 V/μs                     |

## General data ❷

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

## Mechanical data

|                                 | RSR52-...10...<br>RSR52-...25...                                                                                            | RSR52-...40...<br>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 ❸<br>tightening moment:<br>0,58...0,98 N•m<br>output: screws M4 ❸<br>tightening moment:<br>0,98...1,37 N•m | input: screws M3 ❸<br>tightening moment:<br>0,58...0,98 N•m<br>output: screws M4 ❸<br>tightening moment:<br>0,98...1,37 N•m | input: screws M3 ❸<br>tightening moment:<br>0,58...0,98 N•m<br>output: screws M4 ❸<br>tightening moment:<br>0,98...1,37 N•m |
| Mounting on panel or heatsink ❹ | screws M4<br>tightening moment:<br>0,98...1,37 N•m                                                                          | screws M4<br>tightening moment:<br>0,98...1,37 N•m                                                                          | screws M4<br>tightening moment:<br>0,98...1,37 N•m                                                                          |

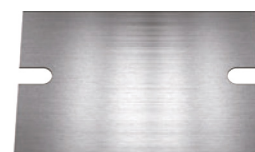
❶ Data given for ambient temperature ≤ 25 °C. Above 25 °C the maximum current decreases - see "Thermal derating curves", page 5.

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

❸ 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**



**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,<br>on 35 mm rail mount | on 35 mm rail mount<br>(with clip RDR-10) | on 35 mm rail mount |

### RH17A



### RH16



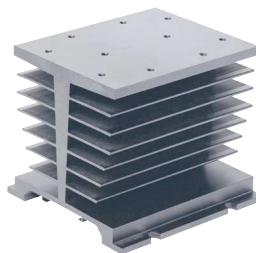
### RH16-F



**RDR-30**

|                        |                                           |                                  |                                  |
|------------------------|-------------------------------------------|----------------------------------|----------------------------------|
| 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<br>(with clip RDR-30) | on panel,<br>on 35 mm rail mount | on panel,<br>on 35 mm rail mount |

### RH08



### RH08-F

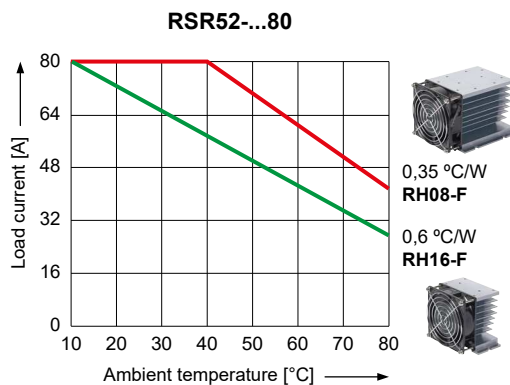
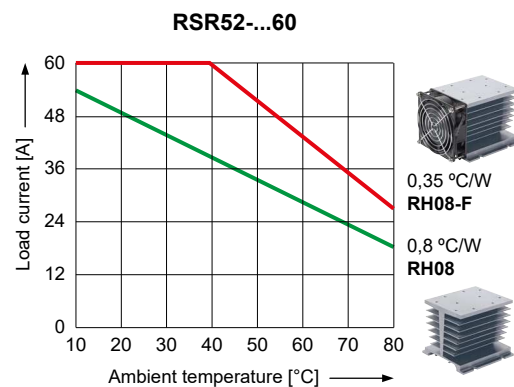
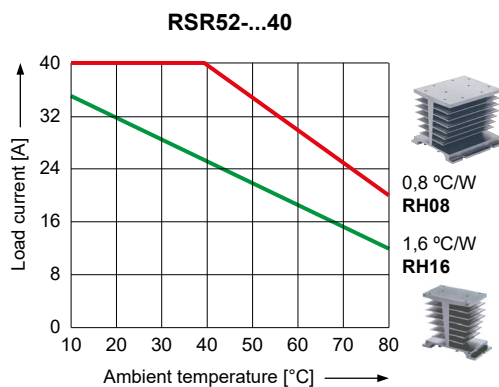
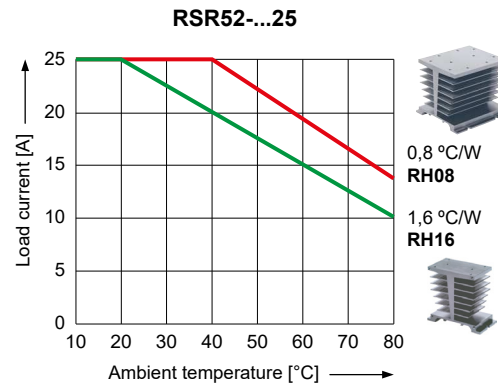
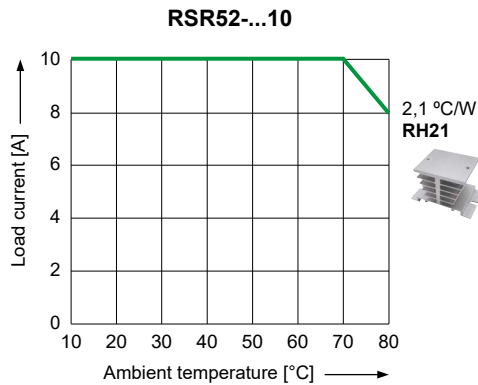


|                        |                               |                               |
|------------------------|-------------------------------|-------------------------------|
| Material               | aluminum                      | aluminum                      |
| Dimensions (L x W x H) | 106 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

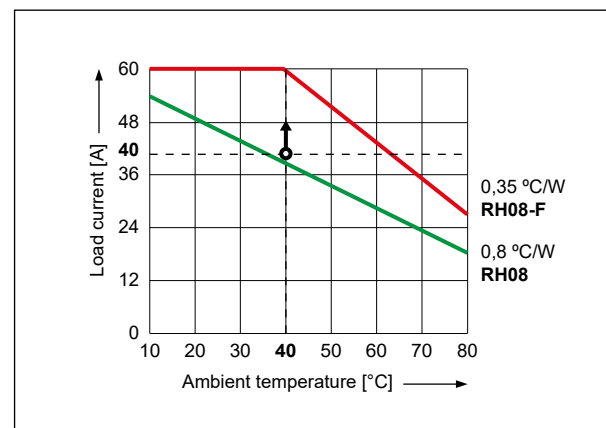


#### To select the proper sized heatsink:

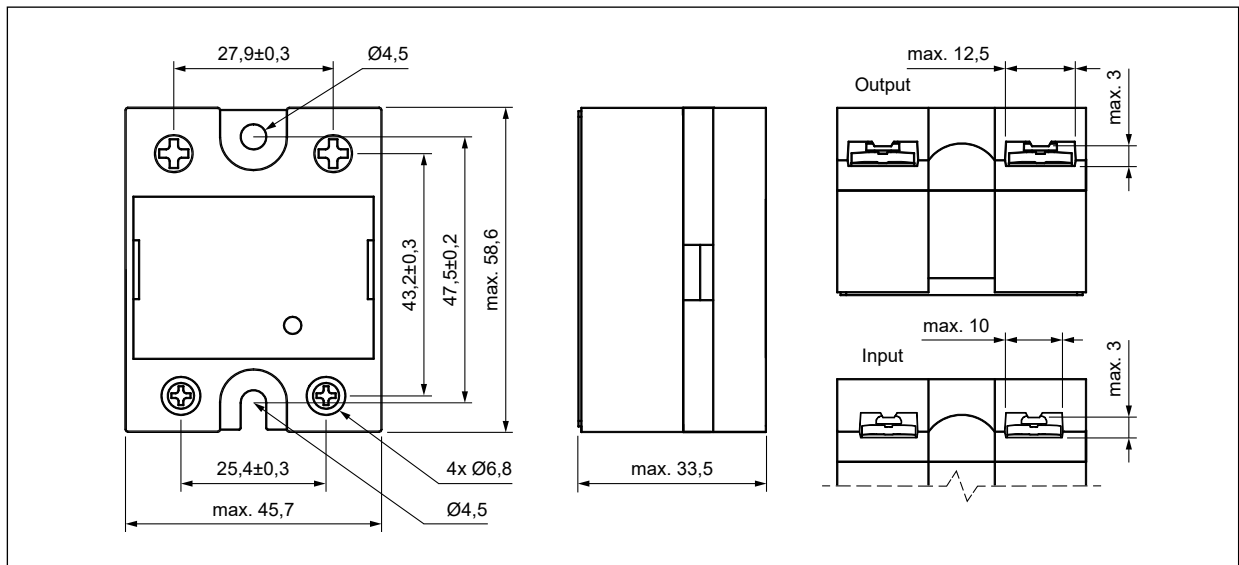
- determine the load current and the maximum ambient temperature the relay will be exposed to,
- use the "Thermal derating curves" (see above).

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

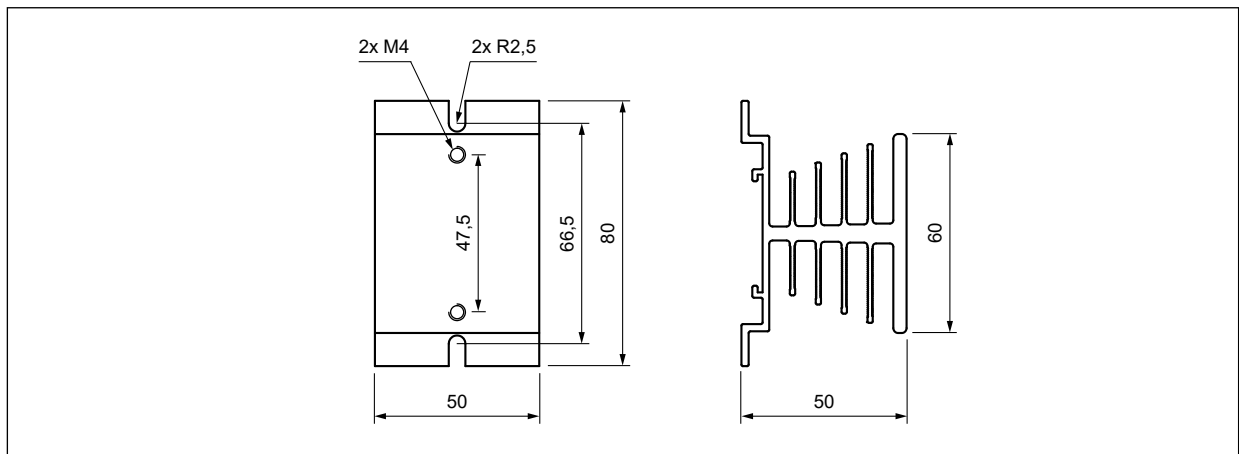
- on the Y axis we find the current value for which we draw a line perpendicular to Y,
- on the X axis we find the ambient temperature for which we draw a line perpendicular to X,
- we determine the intersection of both lines,
- read the heatsink rating – **always choose the rating above your point**: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



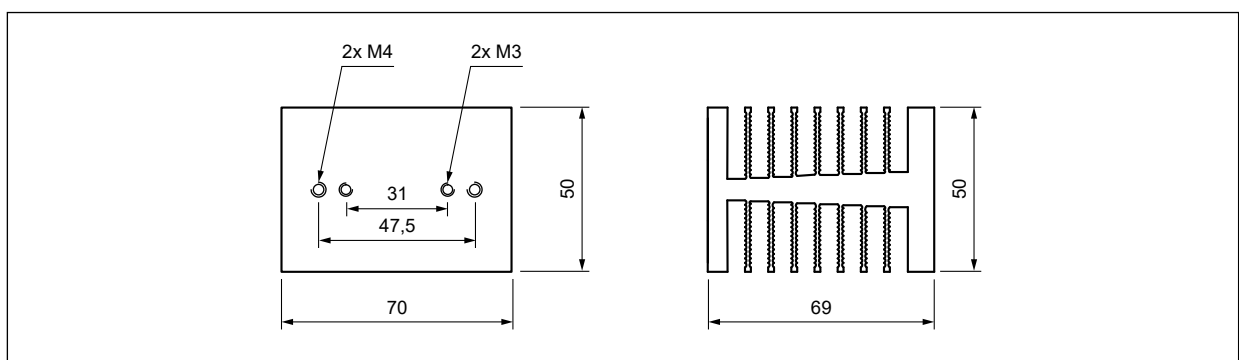
### Dimensions



Solid state relay **RSR52**

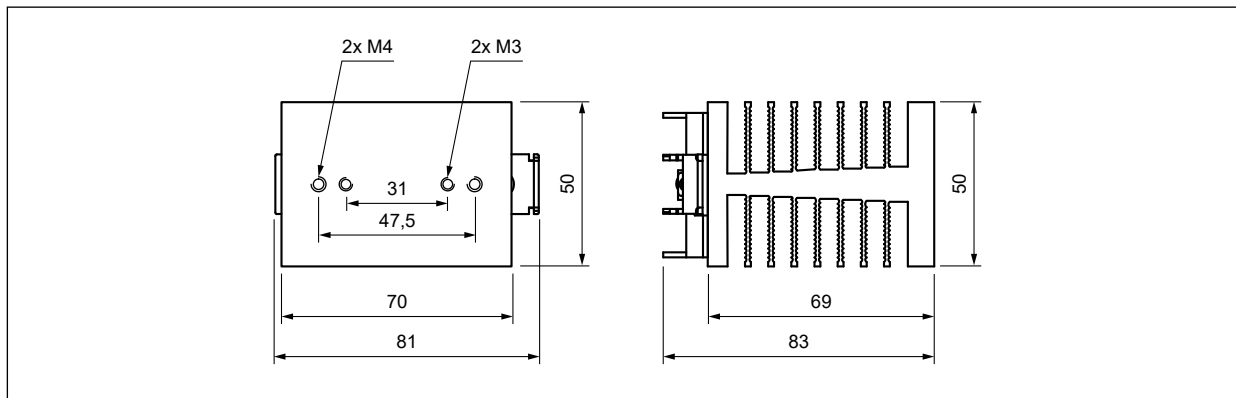


Heatsink **RH21**

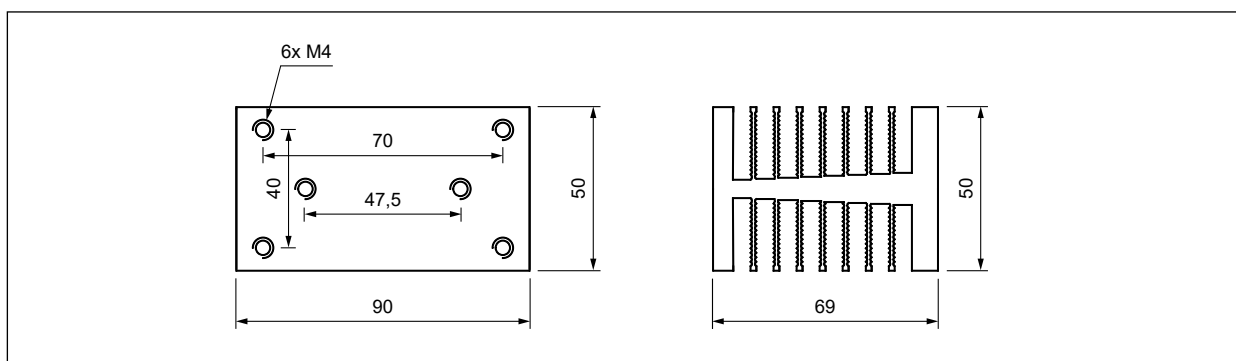


Heatsink **RH19A**

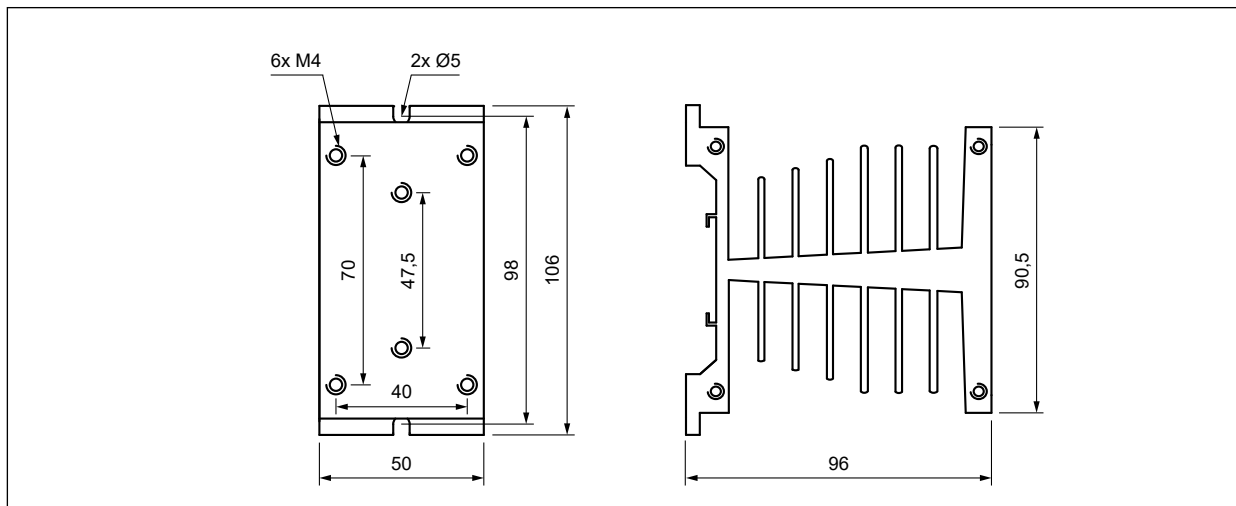
### Dimensions



Heatsink **RH19B**

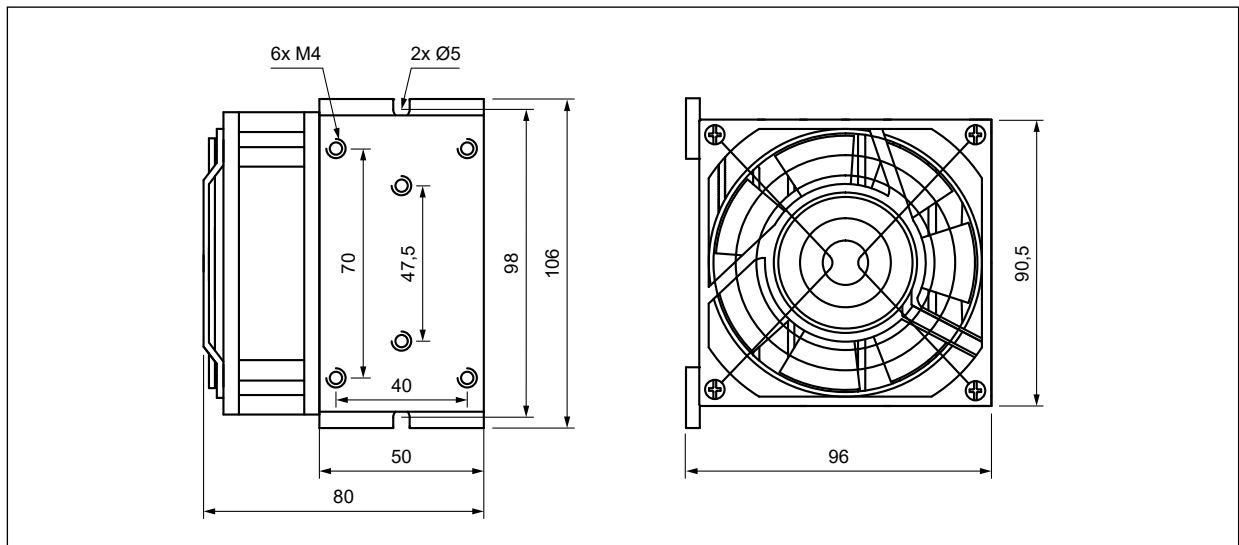


Heatsink **RH17A**

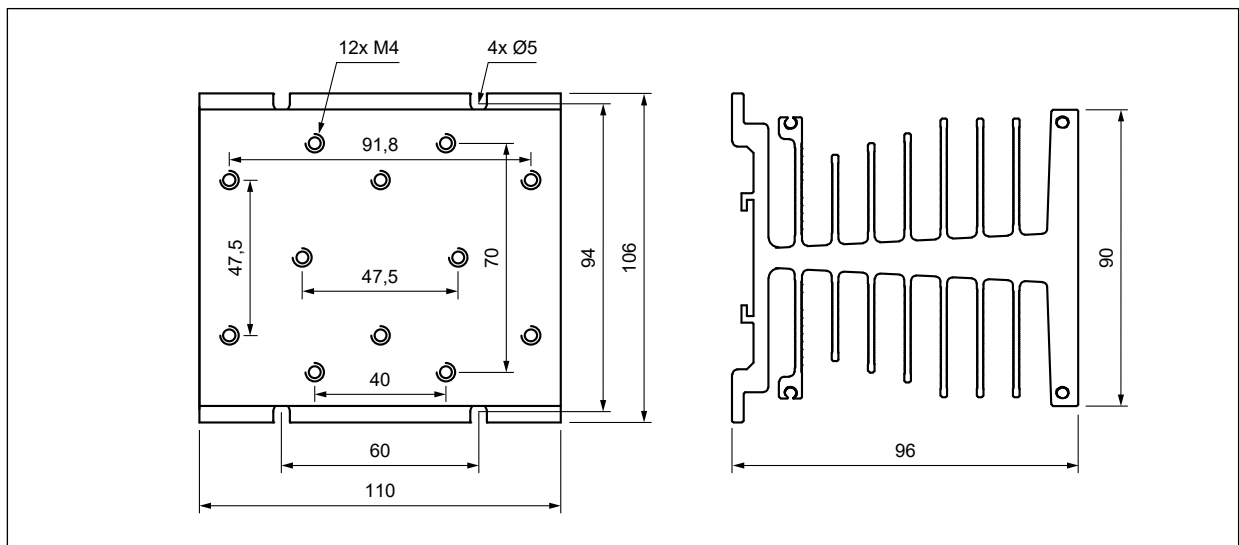


Heatsink **RH16**

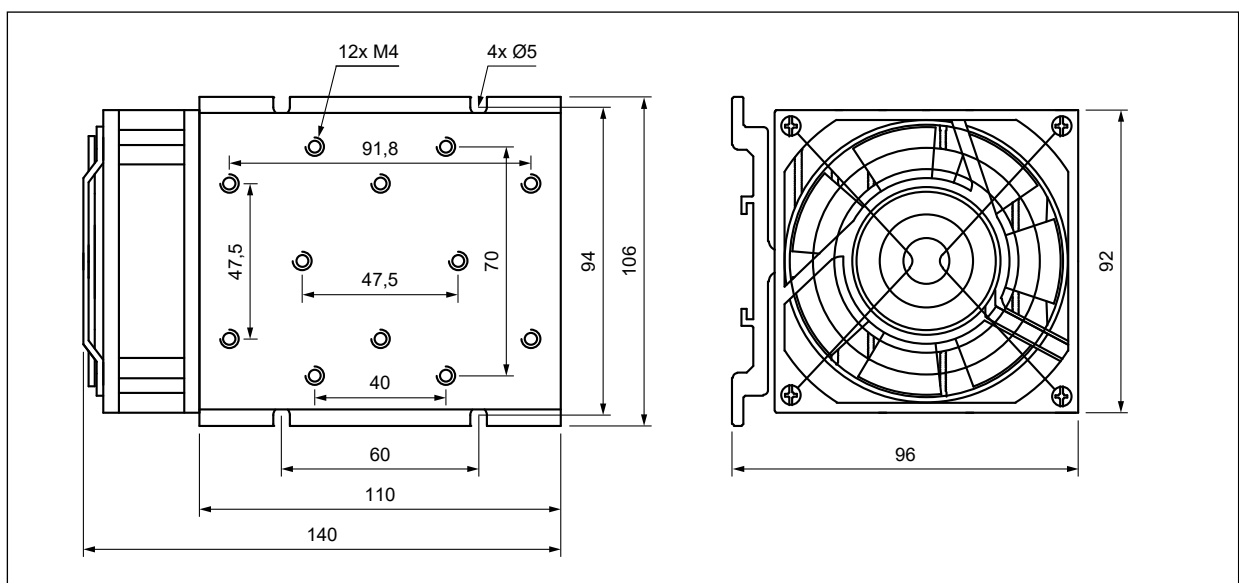
### Dimensions



Heatsink RH16-F

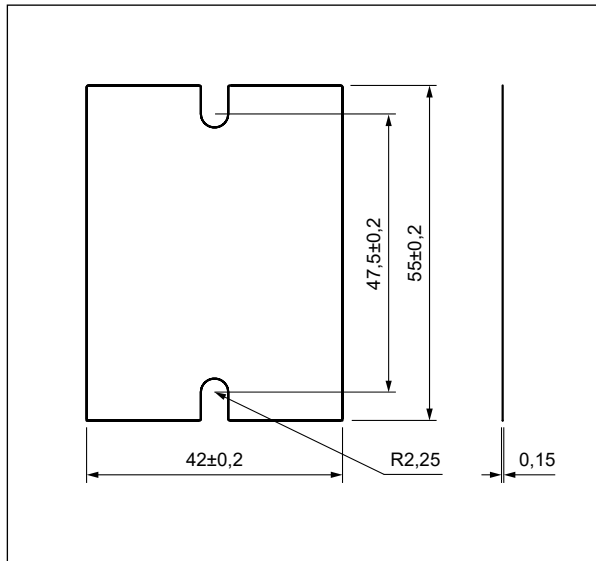


Heatsink RH08



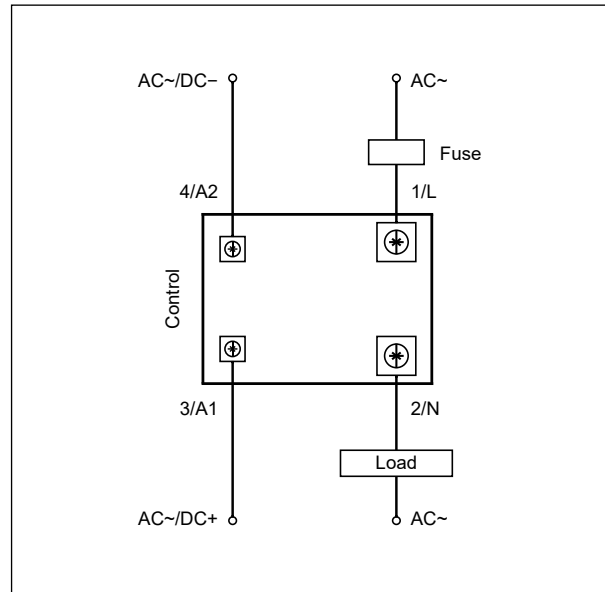
Heatsink RH08-F

### Dimensions

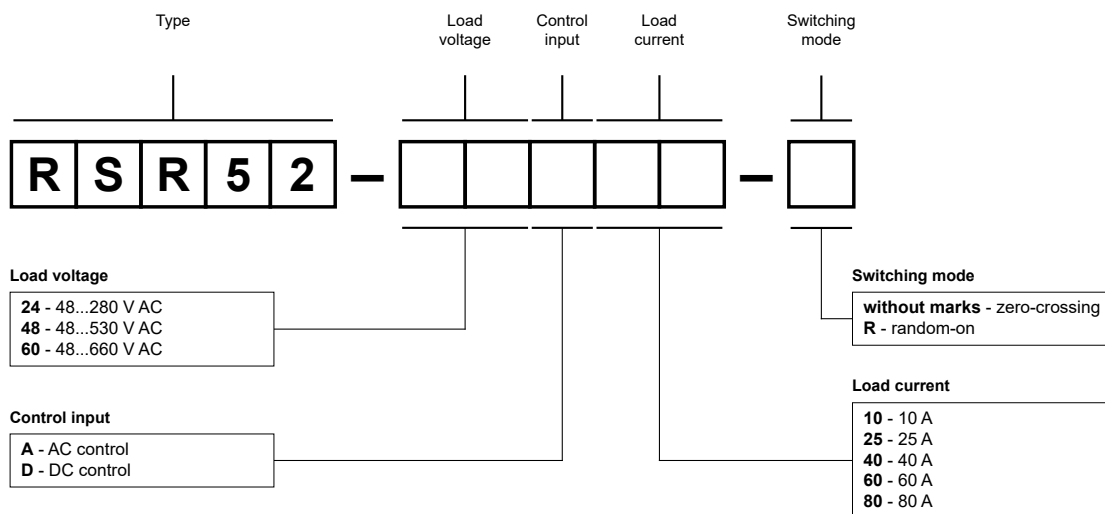


Thermal pad **RTP-10**

### Connection diagram



### Ordering codes



Examples of ordering codes ③:

- 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

③ Ordering codes **RSR52** are specified in tables "Type" on pages 1, 2.