

Solid State Relays

Industrial, 1-Phase ZS (IO) w. LED and Built-in Varistor

Types RM 23, RM 40, RM 48, RM 60



- Zero switching (RM1A) or instant-on switching (RM1B) AC Solid State Relay
- Direct copper bonding (DCB) technology
- LED indication
- Built-in varistor
- Clip-on IP 20 protection cover
- Self-lifting terminals
- Housing free of moulding mass
- 2 input ranges: 3-32* VDC and 20-280VAC/22-48VDC
- Operational ratings: Up to 100AACrms and 600VACrms
- Blocking voltage: Up to 1400V_p
- Opto-isolation: > 4000VACrms



Product Description

The industrial, 1-phase relay with antiparallel thyristor output is the most widely used industrial SSR due to its multiple application possibilities. The relay can be used for resistive, inductive and capacitive loads. The zero switching relay switches ON when the sinusoidal curve crosses zero and switches OFF when the current crosses zero.

The instant-on relay with DC control input can be used for phase control. The built-in varistor secures transient protection for the heavy industrial applications, and the LED indicates the status of the control input. The clip-on cover is securing touch protection to IP 20. Protected output terminals can handle cables up to 16mm².

Ordering Key

RM 1 A 23 D 25

- Solid State Relay
- Number of poles
- Switching mode
- Rated operational voltage
- Control voltage
- Rated operational current

Type Selection

| Switching mode | Rated operational voltage | Control voltage | Rated operational current |
|---|---|--|--|
| A: Zero Switching (ZC) | 23: 230VACrms | A: 20-280VAC / 22-48VDC | 25: 25AACrms |
| B: Instant-on switching (IO) (DC Control only) | 40: 400VACrms 48: 480VACrms 60: 600VACrms | D: 3-32VDC* *4 to 32VDC for 400, 480 and 600VAC types *4 to 32VDC for RM1B types | 50: 50AACrms 75: 75AACrms 100: 100AACrms |

Selection Guide

| Rated operational voltage | Blocking voltage | Control voltage | Rated operational current with suitable heatsink | | | |
|---------------------------|--------------------|------------------------------|--|------------------|------------------|-------------------|
| | | | 25A | 50A | 75A | 100A |
| 230VACrms | 650V _p | 3 - 32VDC | RM1A23D25 | RM1A23D50 | RM1A23D75 | RM1A23D100 |
| | | 20 to 280VAC 22 to 48VDC | RM1A23A25 | RM1A23A50 | RM1A23A75 | RM1A23A100 |
| 400VACrms | 850V _p | 4 - 32VDC | RM1A40D25 | RM1A40D50 | RM1A40D75 | RM1A40D100 |
| | | 20 to 280VAC 22 to 48VDC | RM1A40A25 | RM1A40A50 | RM1A40A75 | RM1A40A100 |
| 480VACrms | 1200V _p | 4 - 32VDC | RM1A48D25 | RM1A48D50 | RM1A48D75 | RM1A48D100 |
| | | 20 to 280 VAC 22 to 48VDC | RM1A48A25 | RM1A48A50 | RM1A48A75 | RM1A48A100 |
| 600VACrms | 1400V _p | 4 - 32VDC | RM1A60D25 | RM1A60D50 | RM1A60D75 | RM1A60D100 |
| | | 20 to 280VAC 22 to 48VDC | RM1A60A25 | RM1A60A50 | RM1A60A75 | RM1A60A100 |

General Specifications

| | RM1.23... | RM1.40... | RM1.48... | RM1.60... |
|------------------------------------|------------------------|------------------------|------------------------|------------------------|
| Operational voltage range | | | | |
| RM1A... | 24 to 265VACrms | 42 to 440VACrms | 42 to 530VACrms | 42 to 660VACrms |
| RM1B... | 42 to 265VACrms | 42 to 440VACrms | 42 to 530VACrms | 42 to 660VACrms |
| Blocking voltage | 650V _p | 850V _p | 1200V _p | 1400V _p |
| Zero voltage turn-on | ≤ 10V | ≤ 10V | ≤ 10V | ≤ 10V |
| Operational frequency range | 45 to 65Hz | 45 to 65Hz | 45 to 65Hz | 45 to 65Hz |
| Power factor | > 0.5 @ 230VACrms | > 0.5 @ 400VACrms | > 0.5 @ 480VACrms | > 0.5 @ 600VACrms |
| Approvals | UR, cUR, CSA, CCC, EAC | UR, cUR, CSA, CCC, EAC | UR, cUR, CSA, CCC, EAC | UR, cUR, CSA, CCC, EAC |
| CE-marking | Yes | Yes | Yes | Yes * |
| Isolation | | | | |
| Input to Output | 4000 Vrms | 4000 Vrms | 4000 Vrms | 4000 Vrms |
| input and Output to case | 4000 Vrms | 4000 Vrms | 4000 Vrms | 4000 Vrms |

* Heatsink must be connected to ground

Input Specifications

| | RM1...D.. | RM1...A.. |
|--|------------|-------------------------|
| Control voltage range | | |
| RM1A23... | 3 - 32VDC | 20 - 280VAC, 22 - 48VDC |
| RM1A40... RM1A48... RM1A60... | 4 - 32VDC | 20 - 280VAC, 22 - 48VDC |
| RM1B... | 4 - 32VDC | - |
| Pick-up voltage @ Ta = 25°C | | |
| RM1A23... | 2.5VDC | 18VAC/DC |
| RM1A40... RM1A48... RM1A60... | 3.5VDC | 18VAC/DC |
| RM1B ... | 3.5VDC | - |
| Reverse voltage | 32VDC | - |
| Drop out voltage | 1.2VDC | 6VAC/DC |
| Input current @ max input voltage | | |
| RM1A | ≤12 mA | ≤ 20mA |
| RM1B | ≤15 mA | - |
| Response time pick-up | | |
| RM1A | ≤1/2 cycle | ≤ 12ms |
| RM1B | ≤0.1ms | - |
| Response time drop-out | ≤1/2 cycle | ≤ 40ms |

Output Specifications

| | RM1....25 | RM....50 | RM1....75 | RM1....100 |
|--|-----------------------|------------------------|------------------------|------------------------|
| Rated operational current | | | | |
| AC51 @ Ta=25°C | 25Arms | 50Arms | 75Arms | 100Arms |
| AC53a @ Ta=25°C | 5Arms | 15Arms | 20Arms | 30Arms |
| Min. operational current | 150mA | 250mA | 400mA | 500mA |
| Rep. overload current t=1 s | < 55AACrms | < 125AACrms | < 150AACrms | < 200AACrms |
| Non-rep. surge current t=10 ms | 325A _p | 600A _p | 1150A _p | 1900A _p |
| Off-state leakage current @ rated voltage and frequency | < 3mArms | < 3mArms | < 3mArms | < 3mArms |
| I²t for fusing t=10 ms | < 525A ² s | < 1800A ² s | < 6600A ² s | <18000A ² s |
| Critical dV/dt off-state min. | 1000V/μs | 1000V/μs | 1000V/μs | 1000V/μs |
| Endurance testing acc. to UL508 | 100,000 cycles | 100,000 cycles | 100,000 cycles | 6,000 cycles |

Note: UL requirement for General Use Endurance testing is 6,000 cycles



Motor Ratings*: HP (UL508)

| | 230VAC | 400VAC | 480VAC | 600VAC |
|----------|--------|--------|--------|--------|
| RM1..25 | 1.5HP | 3HP | 3HP | 5HP |
| RM1..50 | 3HP | 5HP | 7.5HP | 10HP |
| RM1..75 | 5HP | 10HP | 10HP | 15HP |
| RM1..100 | 7.5HP | 15HP | 20HP | 25HP |

* with suitable heatsink

Electromagnetic Compatibility

| | | | |
|--|---|---|------------------------|
| EMC Immunity | EN60947-4-3 | Radiated Radio Frequency Immunity | IEC/EN 61000-4-3 |
| Electrostatic Discharge (ESD) Immunity | IEC/EN 61000-4-2 | 10V/m, 80 - 1000 MHz | Performance Criteria 1 |
| Air discharge, 8kV | Performance Criteria 2 | 10V/m, 1.4 - 2.0GHz | Performance Criteria 1 |
| Contact, 4kV | Performance Criteria 2 | 3 V/m, 2.0 - 2.7GHz | Performance Criteria 1 |
| Electrical Fast Transient (Burst) Immunity | IEC/EN 61000-4-4 | Conducted Radio Frequency Immunity | IEC/EN 61000-4-6 |
| Output: 2kV, 5kHz | Performance Criteria 1 | 10V/m, 0.15 - 80 MHz | Performance Criteria 1 |
| Input: 1kV, 5kHz | Performance Criteria 1 | Voltage Dips Immunity | IEC/EN 61000-4-11 |
| Electrical Surge Immunity | IEC/EN 61000-4-5 | 0% for 0.5, 1 cycle | Performance Criteria 2 |
| Output, line to line, 1kV | Performance Criteria 2 | 40% for 10 cycles | Performance Criteria 2 |
| Output, line to earth, 2kV | Performance Criteria 2 | 70% for 25 cycles | Performance Criteria 2 |
| Input, line to line, 1kV | Performance Criteria 2 | 80% for 250 cycles | Performance Criteria 2 |
| Input, line to earth, 2kV | Performance Criteria 2 | Voltage Interruptions Immunity | IEC/EN 61000-4-11 |
| | | 0% for 5000ms | Performance Criteria 2 |
| EMC Emission | EN60947-4-3 | Radio Interference Field Emission (Radiated) | IEC/EN 55011 |
| Radio Interference Voltage Emission (Conducted) | IEC/EN 55011 | 30 - 1000MHz | Class B |
| 0.15 - 30MHz | Class A (industrial) with filters | | |
| | IEC/EN 60947-4-3 | | |
| | Class A (no filtering needed up to 75AAC) | | |

Notes:

- Control input lines must be installed together to maintain products' susceptibility to Radio Frequency interference.
- Performance Criteria 1: No degradation of performance or loss of function is allowed when the product is operated as intended.
- Performance Criteria 2: During the test, degradation of performance or partial loss of function is allowed. However, when the test is complete the product should return operating as intended by itself.
- Performance Criteria 3: Temporary loss of function is allowed, provided the function can be restored by manual operation of the controls.

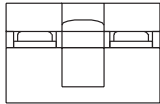
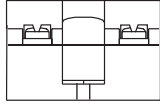
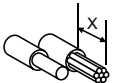



Thermal Specifications

| | RM1...25 | RM1...50 | RM1.60.50 | RM1...75 | RM1...100 |
|-------------------------------------|---------------|---------------|---------------|---------------|---------------|
| Operating temperature range | -20° to 70°C | -20° to 70°C | -20° to 70°C | -20° to 70°C | -20° to 70°C |
| Storage temperature range | -40° to 100°C | -40° to 100°C | -40° to 100°C | -40° to 100°C | -40° to 100°C |
| Junction temperature | ≤ 125°C | ≤ 125°C | ≤ 125°C | ≤ 125°C | ≤ 125°C |
| R _{th} junction to case | ≤ 0.80°C/W | ≤ 0.50°C/W | ≤ 0.72°C/W | ≤ 0.35°C/W | ≤ 0.30°C/W |
| R _{th} junction to ambient | ≤ 20.0°C/W | ≤ 20.0°C/W | ≤ 20.0°C/W | ≤ 20.0°C/W | ≤ 20.0°C/W |

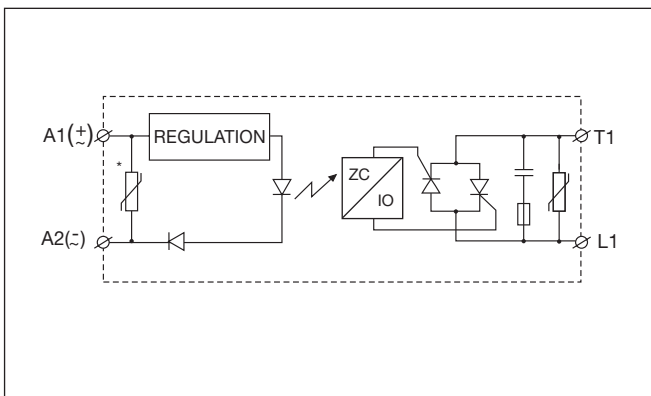
Housing Specifications

| | | | |
|---|------------------------------------|---|-----------------|
| Weight 25A, 50A 75A, 100A | Approx. 60g Approx. 100g | Relay Mounting screws Mounting torque | M5 1.5-2.0Nm |
| Baseplate 25A, 50A 75A, 100A | Aluminium Copper, nickel-plated | Control terminal Mounting screws Mounting torque | M3 x 9 0.5Nm |
| Potting compound | None | Power terminal Mounting screws Mounting torque | M5 x 9 2.4Nm |

Connection Specifications

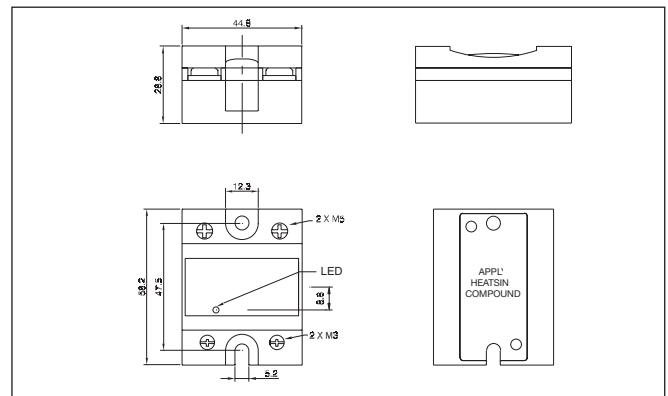
| Connection terminals | L1, T1 | A1, A2 | | | | | | | | | | | | | | | | |
|---|--|---|------------------------------|------------------------------|------------------------------|----------------|------------------------------|----------------|----------------|--|----------------|--|--|--|----------------|--|--|--|
| |  |  | | | | | | | | | | | | | | | | |
| Stripping length (X) | 12 mm | 8 mm | | | | | | | | | | | | | | | | |
| Connection Type | M5 screw with captivated washer | M3 screw with captivated washer | | | | | | | | | | | | | | | | |
| Rigid (solid & stranded) UR rated data |  <table border="1"> <tr> <td>1x 2.5 - 6.0 mm²</td> <td>2x 2.5 - 6.0 mm²</td> <td>1x 0.5 - 2.5 mm²</td> <td>2x 0.5 - 2.5 mm²</td> </tr> <tr> <td>1x 14 - 10 AWG</td> <td>2x 14 - 10 AWG</td> <td>1x 18 - 12 AWG</td> <td>2x 18 - 12 AWG</td> </tr> </table> | 1x 2.5 - 6.0 mm ² | 2x 2.5 - 6.0 mm ² | 1x 0.5 - 2.5 mm ² | 2x 0.5 - 2.5 mm ² | 1x 14 - 10 AWG | 2x 14 - 10 AWG | 1x 18 - 12 AWG | 2x 18 - 12 AWG | | | | | | | | | |
| 1x 2.5 - 6.0 mm ² | 2x 2.5 - 6.0 mm ² | 1x 0.5 - 2.5 mm ² | 2x 0.5 - 2.5 mm ² | | | | | | | | | | | | | | | |
| 1x 14 - 10 AWG | 2x 14 - 10 AWG | 1x 18 - 12 AWG | 2x 18 - 12 AWG | | | | | | | | | | | | | | | |
| Flexible with end sleeve |  <table border="1"> <tr> <td>1x 1.0 - 4.0 mm²</td> <td>2x 2.5 - 4.0 mm²</td> <td>1x 0.5 - 2.5 mm²</td> <td>2x 0.5 - 2.5 mm²</td> </tr> <tr> <td>1x 18 - 12 AWG</td> <td>2x 18 - 14 AWG</td> <td>1x 18 - 12 AWG</td> <td>2x 18 - 12 AWG</td> </tr> <tr> <td></td> <td>2x 14 - 12 AWG</td> <td></td> <td></td> </tr> </table> | 1x 1.0 - 4.0 mm ² | 2x 2.5 - 4.0 mm ² | 1x 0.5 - 2.5 mm ² | 2x 0.5 - 2.5 mm ² | 1x 18 - 12 AWG | 2x 18 - 14 AWG | 1x 18 - 12 AWG | 2x 18 - 12 AWG | | 2x 14 - 12 AWG | | | | | | | |
| 1x 1.0 - 4.0 mm ² | 2x 2.5 - 4.0 mm ² | 1x 0.5 - 2.5 mm ² | 2x 0.5 - 2.5 mm ² | | | | | | | | | | | | | | | |
| 1x 18 - 12 AWG | 2x 18 - 14 AWG | 1x 18 - 12 AWG | 2x 18 - 12 AWG | | | | | | | | | | | | | | | |
| | 2x 14 - 12 AWG | | | | | | | | | | | | | | | | | |
| Flexible without end sleeve |  <table border="1"> <tr> <td>1x 1.0 - 6.0 mm²</td> <td>2x 1.0 - 2.5 mm²</td> <td></td> <td></td> </tr> <tr> <td>1x 18 - 10 AWG</td> <td>2x 2.5 - 6.0 mm²</td> <td></td> <td></td> </tr> <tr> <td></td> <td>2x 18 - 14 AWG</td> <td></td> <td></td> </tr> <tr> <td></td> <td>2x 14 - 10 AWG</td> <td></td> <td></td> </tr> </table> | 1x 1.0 - 6.0 mm ² | 2x 1.0 - 2.5 mm ² | | | 1x 18 - 10 AWG | 2x 2.5 - 6.0 mm ² | | | | 2x 18 - 14 AWG | | | | 2x 14 - 10 AWG | | | |
| 1x 1.0 - 6.0 mm ² | 2x 1.0 - 2.5 mm ² | | | | | | | | | | | | | | | | | |
| 1x 18 - 10 AWG | 2x 2.5 - 6.0 mm ² | | | | | | | | | | | | | | | | | |
| | 2x 18 - 14 AWG | | | | | | | | | | | | | | | | | |
| | 2x 14 - 10 AWG | | | | | | | | | | | | | | | | | |
| Torque specification |  <table border="1"> <tr> <td>Pozidrive 2</td> <td>Pozidrive 1</td> </tr> <tr> <td>2.4 Nm (21.2 lb-in)</td> <td>0.5 Nm (4.4 lb-in)</td> </tr> </table> | Pozidrive 2 | Pozidrive 1 | 2.4 Nm (21.2 lb-in) | 0.5 Nm (4.4 lb-in) | | | | | | | | | | | | | |
| Pozidrive 2 | Pozidrive 1 | | | | | | | | | | | | | | | | | |
| 2.4 Nm (21.2 lb-in) | 0.5 Nm (4.4 lb-in) | | | | | | | | | | | | | | | | | |
| Aperture for termination lug | 12 mm | 7.5 mm | | | | | | | | | | | | | | | | |

Functional Diagram



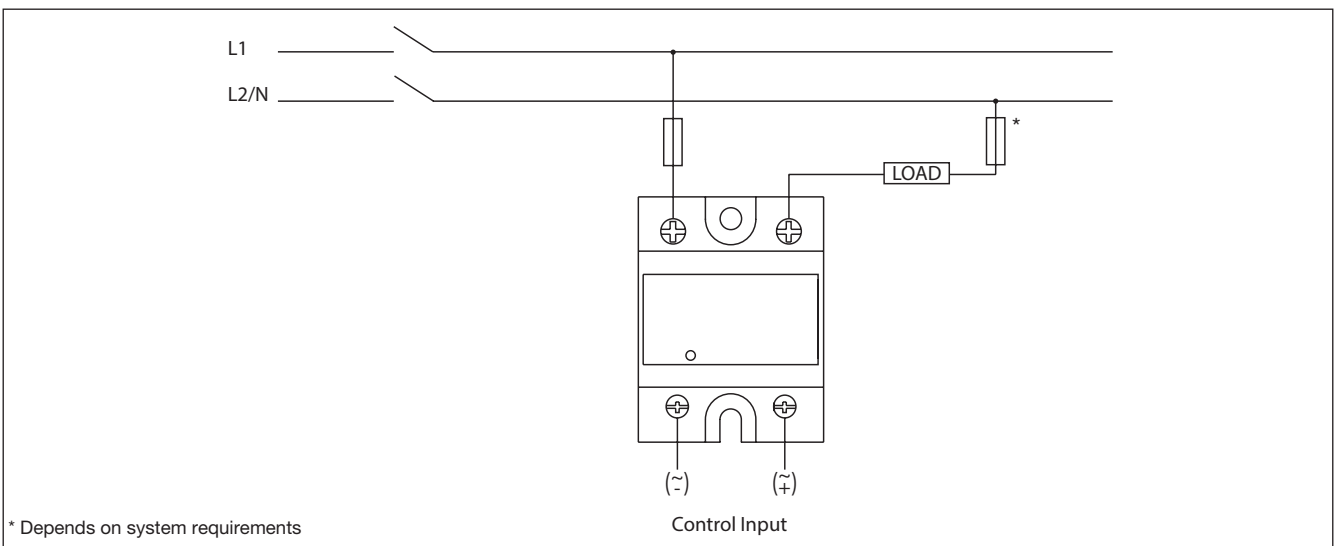
* Varistor across input applies to AC control versions only.

Dimensions



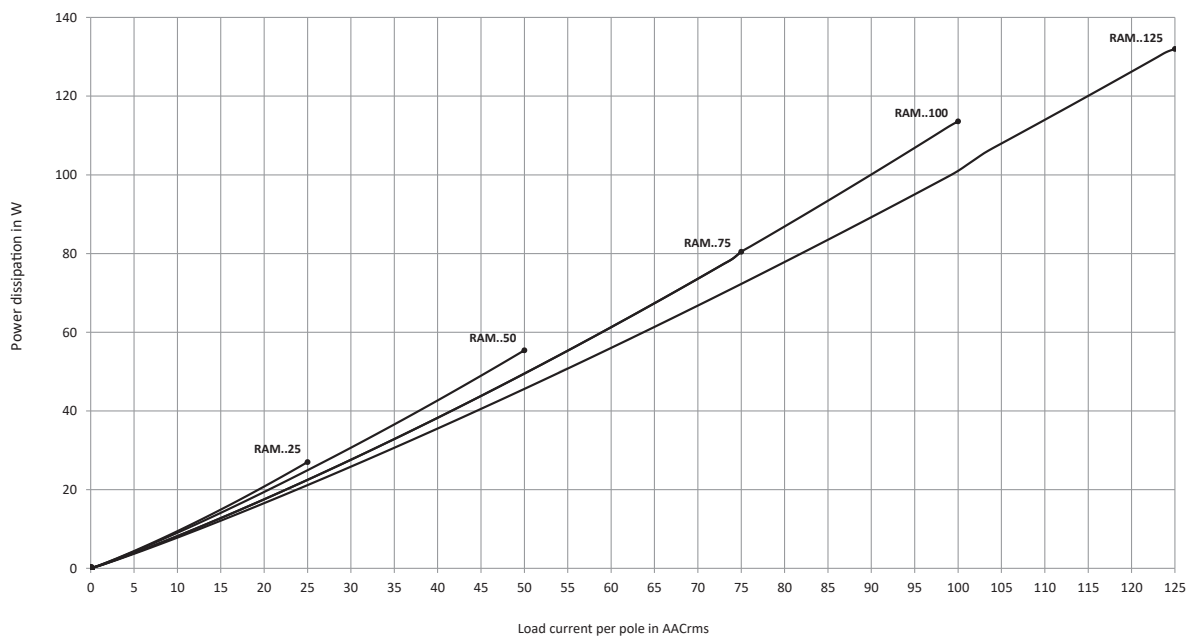
All dimensions in mm

Connection Diagram



* Depends on system requirements

Output Power Dissipation





Heatsink Dimensions (load current versus ambient temperature)

RM..25

| Load current [A] | Thermal resistance [°C/W] | | | | | |
|------------------|---------------------------|------|------|------|------|------|
| | 20 | 30 | 40 | 50 | 60 | 70 |
| 25.0 | 2.70 | 2.34 | 1.98 | 1.61 | 1.25 | 0.89 |
| 22.5 | 3.10 | 2.69 | 2.28 | 1.86 | 1.45 | 1.04 |
| 20.0 | 3.61 | 3.13 | 2.65 | 2.18 | 1.70 | 1.23 |
| 17.5 | 4.26 | 3.70 | 3.14 | 2.59 | 2.03 | 1.47 |
| 15.0 | 5.14 | 4.47 | 3.80 | 3.14 | 2.47 | 1.80 |
| 12.5 | 6.38 | 5.56 | 4.73 | 3.91 | 3.09 | 2.27 |
| 10.0 | 8.25 | 7.19 | 6.14 | 5.08 | 4.02 | 2.97 |
| 7.5 | 11.4 | 9.94 | 8.49 | 7.04 | 5.59 | 4.14 |
| 5.0 | 17.7 | 15.4 | 13.2 | 11.0 | 8.74 | 6.51 |
| 2.5 | - | - | - | - | 18.2 | 13.6 |

RM..50

| Load current [A] | Thermal resistance [°C/W] | | | | | |
|------------------|---------------------------|------|------|------|------|------|
| | 20 | 30 | 40 | 50 | 60 | 70 |
| 50.0 | 1.03 | 0.86 | 0.70 | 0.53 | 0.37 | 0.20 |
| 45.0 | 1.27 | 1.32 | 0.90 | 0.71 | 0.52 | 0.33 |
| 40.0 | 1.54 | 1.59 | 1.10 | 0.89 | 0.67 | 0.45 |
| 35.0 | 1.85 | 1.95 | 1.34 | 1.08 | 0.82 | 0.57 |
| 30.0 | 2.26 | 2.47 | 1.65 | 1.34 | 1.03 | 0.72 |
| 25.0 | 2.85 | 3.24 | 2.08 | 1.70 | 1.32 | 0.94 |
| 20.0 | 3.73 | 3.24 | 2.75 | 2.26 | 1.77 | 1.27 |
| 15.0 | 5.22 | 4.54 | 3.86 | 3.19 | 2.51 | 1.83 |
| 10.0 | 8.21 | 7.16 | 6.11 | 5.05 | 4.00 | 2.95 |
| 5.0 | 17.2 | 15.0 | 12.9 | 10.7 | 8.51 | 6.33 |

| | | |
|---|--------|------|
| Junction to ambient thermal resistance, $R_{th\ j-a}$ | < 20.0 | °C/W |
| Junction to case thermal resistance, $R_{th\ j-c}$ | < 0.80 | °C/W |
| Case to heatsink thermal resistance, $R_{th\ c-s^2}$ | < 0.20 | °C/W |
| Maximum allowable case temperature | 100 | °C |
| Maximum allowable junction temperature | 125 | °C |

| | | |
|---|--------|------|
| Junction to ambient thermal resistance, $R_{th\ j-a}$ | < 20.0 | °C/W |
| Junction to case thermal resistance, $R_{th\ j-c}$ | < 0.50 | °C/W |
| Case to heatsink thermal resistance, $R_{th\ c-s^2}$ | < 0.20 | °C/W |
| Maximum allowable case temperature | 100 | °C |
| Maximum allowable junction temperature | 125 | °C |

RM1.60..50

| Load current [A] | Thermal resistance [°C/W] | | | | | |
|------------------|---------------------------|------|-------|-------|-------|------|
| | 20 | 30 | 40 | 50 | 60 | 70 |
| 50.0 | 0.99 | 0.81 | 0.63 | 0.44 | 0.26 | 0.08 |
| 45.0 | 1.28 | 1.07 | 0.86 | 0.65 | 0.44 | 0.23 |
| 40.0 | 1.64 | 1.40 | 1.15 | 0.91 | 0.67 | 0.42 |
| 35.0 | 2.11 | 1.82 | 1.54 | 1.25 | 0.96 | 0.67 |
| 30.0 | 2.60 | 2.25 | 1.90 | 1.55 | 1.20 | 0.85 |
| 25.0 | 3.30 | 2.86 | 2.43 | 1.99 | 1.55 | 1.11 |
| 20.0 | 4.36 | 3.79 | 3.22 | 2.65 | 2.08 | 1.51 |
| 15.0 | 6.1 | 5.4 | 4.6 | 3.77 | 2.97 | 2.18 |
| 10.0 | 9.76 | 8.52 | 7.3 | 6.0 | 4.8 | 3.54 |
| 5.0 | -- | -- | 15.47 | 12.85 | 10.24 | 7.6 |

RM..75

| Load current [A] | Thermal resistance [°C/W] | | | | | |
|------------------|---------------------------|-------|-------|------|------|------|
| | 20 | 30 | 40 | 50 | 60 | 70 |
| 75.0 | 0.91 | 0.78 | 0.65 | 0.52 | 0.39 | 0.26 |
| 67.5 | 1.10 | 0.96 | 0.81 | 0.66 | 0.51 | 0.36 |
| 60.0 | 1.34 | 1.17 | 1.00 | 0.83 | 0.66 | 0.49 |
| 52.5 | 1.60 | 1.40 | 1.20 | 1.00 | 0.80 | 0.60 |
| 45.0 | 1.93 | 1.68 | 1.44 | 1.20 | 0.96 | 0.72 |
| 37.5 | 2.38 | 2.08 | 1.78 | 1.49 | 1.19 | 0.89 |
| 30.0 | 3.06 | 2.68 | 2.30 | 1.91 | 1.53 | 1.15 |
| 22.5 | 4.21 | 3.68 | 3.16 | 2.63 | 2.10 | 1.58 |
| 15.0 | 6.51 | 5.70 | 4.88 | 4.07 | 3.26 | 2.44 |
| 7.5 | 13.5 | 11.77 | 10.09 | 8.41 | 6.73 | 5.04 |

| | | |
|---|--------|------|
| Junction to ambient thermal resistance, $R_{th\ j-a}$ | < 20.0 | °C/W |
| Junction to case thermal resistance, $R_{th\ j-c}$ | < 0.35 | °C/W |
| Case to heatsink thermal resistance, $R_{th\ c-s^2}$ | < 0.10 | °C/W |
| Maximum allowable heatsink temperature | 100 | °C |
| Maximum allowable junction temperature | 125 | °C |

| | | |
|---|--------|------|
| Junction to ambient thermal resistance, $R_{th\ j-a}$ | < 20.0 | °C/W |
| Junction to case thermal resistance, $R_{th\ j-c}$ | < 0.35 | °C/W |
| Case to heatsink thermal resistance, $R_{th\ c-s^2}$ | < 0.10 | °C/W |
| Maximum allowable heatsink temperature | 100 | °C |
| Maximum allowable junction temperature | 125 | °C |

Heatsink Dimensions (load current versus ambient temperature) cont.

RM..100

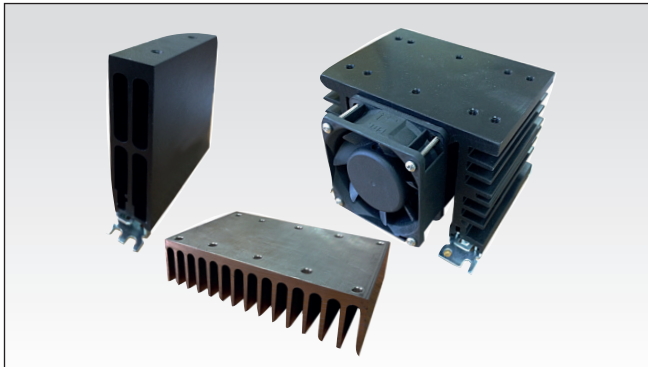
| Load current [A] | Thermal resistance [°C/W] | | | | | |
|------------------|---------------------------|------|------|------|------|------|
| | 20 | 30 | 40 | 50 | 60 | 70 |
| 100.0 | 0.54 | 0.45 | 0.36 | 0.27 | 0.18 | 0.09 |
| 90.0 | 0.68 | 0.58 | 0.47 | 0.37 | 0.27 | 0.17 |
| 80.0 | 0.86 | 0.74 | 0.62 | 0.50 | 0.38 | 0.26 |
| 70.0 | 1.08 | 0.94 | 0.80 | 0.66 | 0.52 | 0.38 |
| 60.0 | 1.37 | 1.20 | 1.03 | 0.85 | 0.68 | 0.51 |
| 50.0 | 1.70 | 1.49 | 1.28 | 1.06 | 0.85 | 0.64 |
| 40.0 | 2.21 | 1.93 | 1.66 | 1.38 | 1.10 | 0.83 |
| 30.0 | 3.06 | 2.68 | 2.30 | 1.91 | 1.53 | 1.15 |
| 20.0 | 4.78 | 4.18 | 3.59 | 2.99 | 2.39 | 1.79 |
| 10.0 | 9.98 | 8.73 | 7.49 | 6.24 | 4.99 | 3.74 |

Ambient temp. [°C]

| | | |
|---|--------|------|
| Junction to ambient thermal resistance, $R_{th\ j-a}$ | < 20.0 | °C/W |
| Junction to case thermal resistance, $R_{th\ j-c}$ | < 0.35 | °C/W |
| Case to heatsink thermal resistance, $R_{th\ c-s^2}$ | < 0.10 | °C/W |
| Maximum allowable heatsink temperature | 100 | °C |
| Maximum allowable junction temperature | 125 | °C |

2. Thermal resistance case to heatsink valves are applicable upon application of a fine layer of silicon based thermal paste HTS02S from Electrolube between SSR and heatsink.

Heatsink Selection



Heatsink Range Overview:

http://www.productselection.net/PDF/UK/ssr_accessories.pdf

Heatsink Selector Tool:

<http://www.productselection.net/heatsink/heatsinkselector.php?LANG=UK>

Ordering Key

RHS..

- Heatsinks and fans
- 5.40°C/W to 0.12°C/W thermal resistance
- DIN, panel or thru wall mounting
- Single or multiple SSR mounting

Short Circuit Protection

Protection Co-ordination, Type 1 vs. Type 2:

Type 1 protection implies that after a short circuit, the device under test will no longer be in a functioning state. In type 2 co-ordination the device under test will still be functional after the short circuit. In both cases, however, the short circuit has to be interrupted. The fuse between enclosure and supply shall not open. The door or cover of the enclosure shall not be blown open. There shall be no damage to conductors of terminals and the conductors shall not separate from terminals. There shall be no breakage or cracking of insulating bases to the extent that the integrity of the mounting of live parts is impaired. Discharge of parts or any risk of fire shall not occur.

The product variants listed in the table hereunder are suitable for use on a circuit capable of delivering not more than 65,000A rms Symmetrical Amperes, 600Volts maximum when protected by fuses. Tests at 65,000A were performed with Class J, fast acting: please refer to the table below for maximum allowed ampere rating of the fuse. Use fuses only.

Co-ordination type 1 (UL508)

| Part No. | Prospective short circuit current [kArms] | Max. fuse size [A] | Class/ Model | Voltage [VAC] |
|------------|---|--------------------|-----------------|---------------|
| RM1..25.. | 65 | 30 | J or CC | 600 |
| RM1..50.. | 65 | 30 | J | 600 |
| | | 20 | HSJ20 (Mersen*) | 600 |
| RM1..75.. | 65 | 80 | J | 600 |
| | | 60 | HSJ60 (Mersen*) | 600 |
| RM1..100.. | 65 | 80 | J | 600 |
| | | 60 | HSJ60 (Mersen*) | 600 |

Co-ordination type 2 (IEC/EN60947-4-3)

| Part No. | Prospective short circuit current [kArms] | Max. fuse size [A] | Brand | Model | Size |
|--------------------------------------|---|--------------------|---------|------------------------|-----------|
| RM1.xx.25.. (xx = 23, 40 or 48) | 10 | 25 | Mersen* | 6.9 gRB 10-25 | 10.3 x 38 |
| RM1.60.25.. | 10 | 20 | Mersen* | 6.9 gRB 10-20 | 10.3 x 38 |
| RM1.xx.50.. (xx = 23 or 40) | 10 | 50 | Mersen* | 6.9zz CP gRC 14x51/50 | 14 x 51 |
| RM1.xx.50.. (xx = 48 or 60) | 10 | 50 | Mersen* | 6.9zz CP gRC 22x58/50 | 22 x 58 |
| RM1.xx.75.. (xx = 23, 40, 48 or 60) | 10 | 63 | Mersen* | 6.9zz CP gRC 22x58/63 | 22 x 58 |
| RM1.xx.100.. (xx = 23, 40, 48 or 60) | 10 | 100 | Mersen* | 6.9zz CP gRC 22x58/100 | 22 x 58 |

zz = 00, without fuse trip indication

zz = 21, with fuse trip indication

* Formerly Ferraz Shawmut

Type 2 Protection with Miniature Circuit Breakers (M.C.B.s)

| Solid State Relay type | ABB Model no. for Z - type M. C. B. (rated current) | ABB Model no. for B - type M. C. B. (rated current) | Wire cross sectional area [mm ²] | Minimum length of Cu wire conductor [m] | |
|------------------------|---|---|--|---|------|
| RM1..25.. | 1-pole | | | | |
| | S201-Z4 (4A) | S201-B2 (2A) | 1.0 | 21.0 | |
| | S201-Z6 UC (6A) | S201-B2 (2A) | 1.0 | 21.0 | |
| | | | 1.5 | 31.5 | |
| RM1..50.. | 1-pole | | | | |
| | S201-Z10 (10A) | S201-B4 (4A) | 1.0 | 7.6 | |
| | | | 1.5 | 11.4 | |
| | | | 2.5 | 19.0 | |
| | S201-Z16 (16A) | S201-B6 (6A) | 1.0 | 5.2 | |
| | | | 1.5 | 7.8 | |
| | | | 2.5 | 13.0 | |
| | | | 4.0 | 20.8 | |
| | S201-Z20 (20A) | S201-B10 (10A) | 1.5 | 12.6 | |
| | | | 2.5 | 21.0 | |
| | S201-Z25 (25A) | S201-B13 (13A) | 2.5 | 25.0 | |
| | | | 4.0 | 40.0 | |
| | 2-pole | S202-Z25 (25A) | S202-B13 (13A) | 2.5 | 19.0 |
| 4.0 | | | | 30.4 | |
| RM1..75.. | 1-pole | | | | |
| | S201-Z20 (20A) | S201-B10 (10A) | 1.5 | 4.2 | |
| | | | 2.5 | 7.0 | |
| | | | 4.0 | 11.2 | |
| | S201-Z32 (32A) | S201-B16 (16A) | 2.5 | 13.0 | |
| | | | 4.0 | 20.8 | |
| | | | 6.0 | 31.2 | |
| | 2-pole | S202-Z20 (20A) | S202-B10 (10A) | 1.5 | 1.8 |
| | | | | 2.5 | 3.0 |
| | | | | 4.0 | 4.8 |
| | S202-Z32 (32A) | S202-B16 (16A) | 2.5 | 5.0 | |
| | | | 4.0 | 8.0 | |
| | | | 6.0 | 12.0 | |
| 10.0 | | | 20.0 | | |
| S202-Z50 (50A) | S202-B25 (25A) | 4.0 | 14.8 | | |
| | | 6.0 | 22.2 | | |
| | | 10.0 | 37.0 | | |
| RM1..100.. | 1-pole | | | | |
| | S201-Z50 (50A) | S201-B25 (25A) | 4.0 | 4.8 | |
| | | | 6.0 | 7.2 | |
| | | | 10.0 | 12.0 | |
| | | | 16.0 | 19.2 | |
| | S201-Z63 (63A) | S201-B32 (32A) | 6.0 | 7.2 | |
| | | | 10.0 | 12.0 | |
| 16.0 | | | 19.2 | | |

* Between MCB and Load (including return path which goes back to the mains).

Note: A prospective current of 6kA and a 230/400V power supply system is assumed for the above suggested specifications. For cables with different cross section than those mentioned above please consult Carlo Gavazzi's Technical Support Group.



Environmental Information

The declaration in this section is prepared in compliance with People's Republic of China Electronic Industry Standard SJ/T11364-2014: Marking for the Restricted Use of Hazardous Substances in Electronic and Electrical Products.

| Part Name | Toxic or Harardous Substances and Elements | | | | | |
|---|--|--------------|--------------|------------------------------|--------------------------------|---------------------------------------|
| | Lead (Pb) | Mercury (Hg) | Cadmium (Cd) | Hexavalent Chromium (Cr(VI)) | Polybrominated biphenyls (PBB) | Polybrominated diphenyl ethers (PBDE) |
| Power Unit Assembly | x | 0 | 0 | 0 | 0 | 0 |
| 0: Indicates that said hazardous substance contained in homogeneous materials for this part are below the limit requirement of GB/T 26572. X: Indicates that said hazardous substance contained in one of the homogeneous materials used for this part is above the limit requirement of GB/T 26572. | | | | | | |

环境特性

这份申明根据中华人民共和国电子工业标准 SJ/T11364-2014：标注在电子电气产品中限定使用的有害物质

| 零件名称 | 有毒或有害物质与元素 | | | | | |
|--|------------|--------|--------|--------------|-------------|--------------|
| | 铅 (Pb) | 汞 (Hg) | 镉 (Cd) | 六价铬 (Cr(VI)) | 多溴化联苯 (PBB) | 多溴联苯醚 (PBDE) |
| 功率单元 | x | 0 | 0 | 0 | 0 | 0 |
| 0: 此零件所有材料中含有的该有害物低于GB/T 26572的限定。 X: 此零件某种材料中含有的该有害物高于GB/T 26572的限定。 | | | | | | |



FASTON terminals



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

Ordering Key

Screw mounted Faston terminals

RM1A48D25 | **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

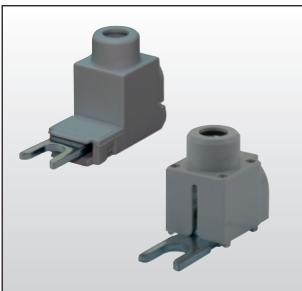
RM48** | **F4***

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

Fork Terminals



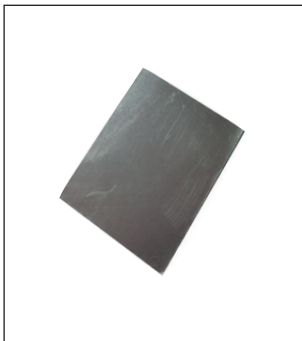
- Terminal adaptors for 35mm² cable
- Type RM635FK
- Pack size: 10 pieces

Ordering Key

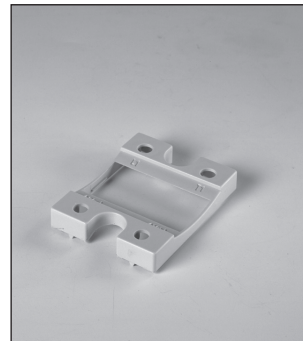
RM635FK | **P**

RM terminal adaptor _____
 Touch protected (optional) _____

Other Accessories



- Graphite thermal pad with adhesive on one side
- Type KK071CUT
- Dimensions: 35 x 43 x 0.25mm
- Packing quantity: 50pcs.



- 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 at:
www.productselection.net/PDF/UK/SSR_Accessories.pdf