

## Product data sheet

### Characteristics

## RM4JA01F

current measurement relay RM4-J - range  
3..1000 mA - 110..130 V AC



### Main

|                                 |                                                                                                                                                                                         |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Range of product                | Harmony Relay                                                                                                                                                                           |
| Relay type                      | Current measurement relay                                                                                                                                                               |
| Product or component type       | Industrial measurement and control relays                                                                                                                                               |
| Relay name                      | RM4J                                                                                                                                                                                    |
| Relay monitored parameters      | Overcurrent detection                                                                                                                                                                   |
| Time delay                      | Without                                                                                                                                                                                 |
| Maximum power consumption in VA | 3.3 VA AC                                                                                                                                                                               |
| Measurement range               | 0.3...30 mA current AC 50/60 Hz<br>0.3...30 mA current DC<br>10...100 mA current AC 50/60 Hz<br>10...100 mA current DC<br>100...1000 mA current AC 50/60 Hz<br>100...1000 mA current DC |
| Contacts type and composition   | 1 C/O                                                                                                                                                                                   |

### Complementary

|                                                          |                                                                                                                                                        |
|----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| Maximum switching voltage                                | 440 V AC                                                                                                                                               |
| Operating voltage tolerance                              | 0.85...1.1 U <sub>c</sub>                                                                                                                              |
| Output contacts                                          | 1 C/O                                                                                                                                                  |
| Maximum measuring cycle                                  | 80 ms                                                                                                                                                  |
| Internal input resistance                                | 1 Ohm<br>33 Ohm<br>10 Ohm                                                                                                                              |
| Permissible continuous overload                          | 0.05 A<br>0.15 A<br>1.5 A                                                                                                                              |
| Permissible non repetitive overload                      | 5 A<br>0.2 A<br>0.5 A                                                                                                                                  |
| Setting accuracy of the switching threshold              | +/- 5 %                                                                                                                                                |
| Switching threshold drift                                | <= 0.06 % per degree centigrade depending permissible ambient air temperature<br><= 0.5 % within the supply voltage range (0.85...1.1 U <sub>n</sub> ) |
| Setting accuracy of time delay                           | 10 P                                                                                                                                                   |
| Hysteresis                                               | 5...30 % adjustable of current threshold setting                                                                                                       |
| Marking                                                  | CE : LVD 73/23/EEC<br>CE : EMC 89/336/EEC                                                                                                              |
| Overvoltage category                                     | III conforming to IEC 60664-1                                                                                                                          |
| [Ui] rated insulation voltage                            | 500 V conforming to IEC                                                                                                                                |
| Supply disconnection value                               | > 0.1 U <sub>c</sub>                                                                                                                                   |
| Operating position                                       | Any position without derating                                                                                                                          |
| Connections - terminals                                  | Screw terminals, 2 x 1.5 mm <sup>2</sup> flexible with cable end<br>Screw terminals, 2 x 2.5 mm <sup>2</sup> flexible without cable end                |
| Tightening torque                                        | 0.6...1.1 N.m                                                                                                                                          |
| Mechanical durability                                    | 30000000 cycles                                                                                                                                        |
| [I <sub>th</sub> ] conventional free air thermal current | 8 A                                                                                                                                                    |

|                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| [I <sub>e</sub> ] rated operational current | 2 A at 24 V DC-13 conforming to IEC 60947-5-1/1991 70 °C<br>2 A at 24 V DC-13 conforming to VDE 0660 70 °C<br>3 A at 115 V AC-15 conforming to IEC 60947-5-1/1991 70 °C<br>3 A at 115 V AC-15 conforming to VDE 0660 70 °C<br>3 A at 24 V AC-15 conforming to IEC 60947-5-1/1991 70 °C<br>3 A at 24 V AC-15 conforming to VDE 0660 70 °C<br>3 A at 250 V AC-15 conforming to IEC 60947-5-1/1991 70 °C<br>3 A at 250 V AC-15 conforming to VDE 0660 70 °C<br>0.1 A at 250 V DC-13 conforming to IEC 60947-5-1/1991 70 °C<br>0.1 A at 250 V DC-13 conforming to VDE 0660 70 °C<br>0.3 A at 115 V DC-13 conforming to IEC 60947-5-1/1991 70 °C<br>0.3 A at 115 V DC-13 conforming to VDE 0660 70 °C |
| Switching capacity in mA                    | 10 mA at 12 V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Switching voltage                           | 250 V AC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Contacts material                           | 90/10 silver nickel contacts                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Number of cables                            | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Width                                       | 23 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Height                                      | 78 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Depth                                       | 80 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Terminals description ISO n°1               | (A1-A2)CO<br>(15-16-18)OC<br>(C-B1-B2-B3)CO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Output relay state                          | Tripped if A measured > A set<br>Tripped if V measured > V set                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 9 mm pitches                                | 2.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Net weight                                  | 0.172 kg                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

## Environment

|                                       |                                                                                                                                                                                                      |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Electromagnetic compatibility         | Electrostatic discharge - test level: 6 kV level 3 (contact discharge) conforming to IEC 61000-4-2<br>Electrostatic discharge - test level: 8 kV level 3 (air discharge) conforming to IEC 61000-4-2 |
| Standards                             | EN/IEC 60255-6                                                                                                                                                                                       |
| Product certifications                | CSA[RETURN]UL[RETURN]GL                                                                                                                                                                              |
| Ambient air temperature for storage   | -40...85 °C                                                                                                                                                                                          |
| Ambient air temperature for operation | -20...65 °C                                                                                                                                                                                          |
| Environmental characteristic          | 3K3                                                                                                                                                                                                  |
| Relative humidity                     | 15...85 % conforming to IEC 60721-3-3                                                                                                                                                                |
| Shock resistance                      | 15 gn for 11 ms conforming to IEC 60255-21-1                                                                                                                                                         |
| IP degree of protection               | IP20 (terminals) conforming to IEC 60529<br>IP50 (casing) conforming to IEC 60529                                                                                                                    |
| Pollution degree                      | 3 conforming to IEC 60664-1                                                                                                                                                                          |
| Dielectric test voltage               | 2.5 kV                                                                                                                                                                                               |
| Non-dissipating shock wave            | 4.8 kV                                                                                                                                                                                               |
| Resistance to electrostatic discharge | 6 kV contact conforming to IEC 61000-4-2 level 3<br>8 kV air conforming to IEC 61000-4-2 level 3                                                                                                     |
| Resistance to electromagnetic fields  | 10 V/m conforming to IEC 61000-4-3 level 3                                                                                                                                                           |
| Resistance to fast transients         | 2 kV conforming to IEC 61000-4-4 level 3                                                                                                                                                             |
| Protection against electric shocks    | 2 kV: level 3 conforming to IEC 61000-4-5                                                                                                                                                            |
| Disturbance radiated/conducted        | CISPR 22 - class A<br>CISPR 11 group 1 - class A                                                                                                                                                     |

## Packing Units

|                              |        |
|------------------------------|--------|
| Unit Type of Package 1       | PCE    |
| Number of Units in Package 1 | 1      |
| Package 1 Height             | 2.7 cm |
| Package 1 Width              | 8.2 cm |
| Package 1 Length             | 8.5 cm |
| Package 1 Weight             | 174 g  |

Contractual warranty

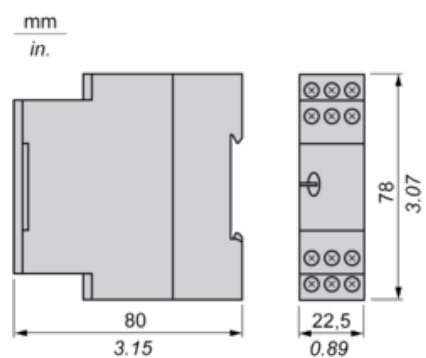
|          |           |
|----------|-----------|
| Warranty | 18 months |
|----------|-----------|

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Current Measurement Relays

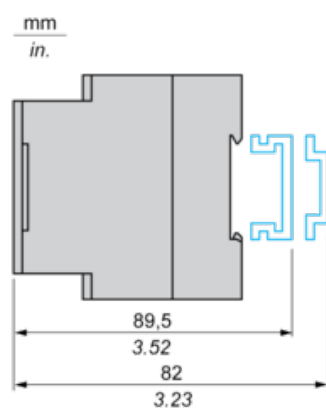
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Dimensions

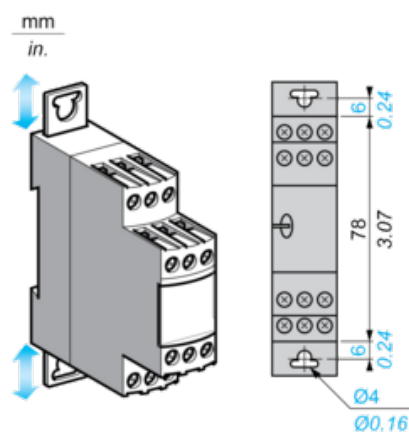


## Current Measurement Relays

### Rail mounting

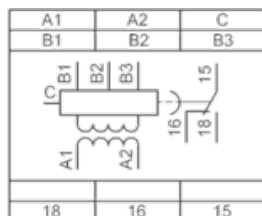


### Screw fixing



## Current Measurement Relays

### RM4JA01 Wiring Diagram

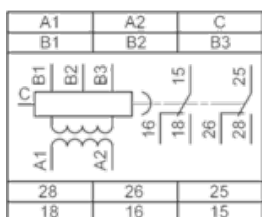


A1-A2 Supply voltage

B1, B2, B3, C Currents to be measured (see table below)

| Connection and current values to be measured |             |
|----------------------------------------------|-------------|
| B1-C                                         | 3...30 mA   |
| B2-C                                         | 10...100 mA |
| B3-C                                         | 0.1...1 A   |

### RM4JA31 Wiring Diagram

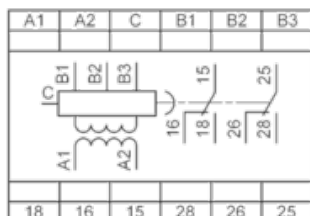


A1-A2 Supply voltage

B1, B2, B3, C Currents to be measured (see table below)

| Connection and current values to be measured |             |
|----------------------------------------------|-------------|
| B1-C                                         | 3...30 mA   |
| B2-C                                         | 10...100 mA |
| B3-C                                         | 0.1...1 A   |

### RM4JA32 Wiring Diagram



A1-A2 Supply voltage

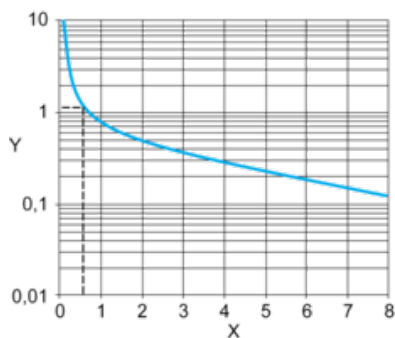
B1, B2, B3, C Currents to be measured (see table below)

| Connection and current values to be measured |             |
|----------------------------------------------|-------------|
| B1-C                                         | 0.3...1.5 A |
| B2-C                                         | 1...5 A     |
| B3-C                                         | 3...15 A    |

## Electrical Durability and Load Limit Curves

### AC Load

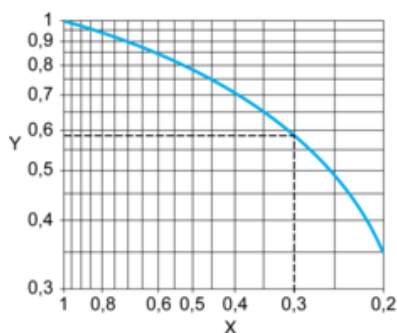
Curve 1: Electrical durability of contacts on resistive load in millions of operating cycles



X Current broken in A

Y Millions of operating cycles

Curve 2: Reduction factor k for inductive loads (applies to values taken from durability Curve 1)

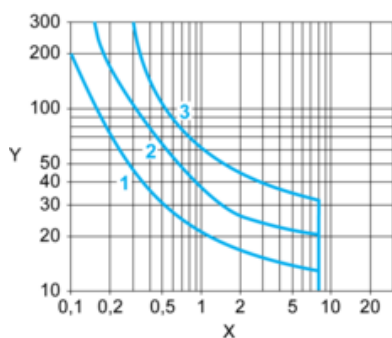


X Power factor on breaking ( $\cos \varphi$ )

Y Reduction factor K

### DC Load

Load limit curve



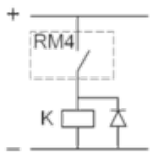
X Current in A

Y Voltage in V

1 L/R = 20 ms

2 L/R with load protection diode

3 Resistive load



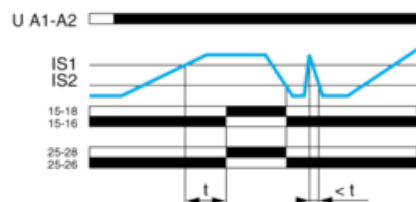
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## Function Diagram

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### Overcurrent Detection

Function ">"



### Legend

t Time delay

U A1-A2 Supply voltage

IS1 Setting current threshold

IS2 Current measured

15-18, 15-16; 25-28, 25-26 Output relays connections

Relay status: black color = energized.