

# Product data sheet

Specifications



## voltage measurement relay RM4-U - range 1..100 V - 220..240 V AC

RM4UA32M

⚠ Discontinued on: Mar 31, 2022

⚠ Discontinued

### Main

|                               |                                           |
|-------------------------------|-------------------------------------------|
| Range Of Product              | Harmony Relay                             |
| Relay Type                    | Voltage measurement relay                 |
| Product Or Component Type     | Industrial measurement and control relays |
| Relay Name                    | RM4U                                      |
| Relay Monitored Parameters    | Overvoltage or undervoltage detection     |
| Time Delay                    | Adjustable 0.05...30 s                    |
| Contacts Type And Composition | 2 C/O                                     |

### Complementary

|                                             |                                                                                                                                            |
|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Maximum Switching Voltage                   | 440 V AC                                                                                                                                   |
| Operating Voltage Tolerance                 | 0.85...1.1 Uc                                                                                                                              |
| Power Consumption In Va                     | 2.7...3.4 VA AC                                                                                                                            |
| Output Contacts                             | 2 C/O                                                                                                                                      |
| Hysteresis                                  | 5...30 % adjustable voltage threshold setting                                                                                              |
| Internal Input Resistance                   | 112000 Ohm<br>225000 Ohm<br>23000 Ohm                                                                                                      |
| Permissible Continuous Overload             | 90 V<br>150 V<br>300 V                                                                                                                     |
| Permissible Non Repetitive Overload         | 100 A <= 1 s<br>200 A <= 1 s<br>400 A <= 1 s                                                                                               |
| 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 Un)  |
| Setting Accuracy Of Time Delay              | 10 P                                                                                                                                       |
| Time Delay Drift                            | <= 0.07 % per degree centigrade depending on the rated operational temperature<br><= 0.5 % within the supply voltage range (0.85...1.1 Un) |
| Quality Labels                              | CE                                                                                                                                         |
| Setting Accuracy Of The Switching Threshold | +/-5 %                                                                                                                                     |
| Operating Position                          | Any position without derating                                                                                                              |
| Overvoltage Category                        | III IEC 60664-1                                                                                                                            |
| [UI] Rated Insulation Voltage               | 500 V IEC                                                                                                                                  |
| Supply Disconnection Value                  | > 0.1 Uc                                                                                                                                   |

Price is "List Price" and may be subject to a trade discount – check with your local distributor or retailer for actual price.

Disclaimer: This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications

|                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| [Ie] Rated Operational Current              | 2 A 158 °F (70 °C) 24 V DC-13 IEC 60947-5-1/1991<br>2 A 158 °F (70 °C) 24 V DC-13 VDE 0660<br>3 A 158 °F (70 °C) 115 V AC-15 IEC 60947-5-1/1991<br>3 A 158 °F (70 °C) 115 V AC-15 VDE 0660<br>3 A 158 °F (70 °C) 24 V AC-15 IEC 60947-5-1/1991<br>3 A 158 °F (70 °C) 24 V AC-15 VDE 0660<br>3 A 158 °F (70 °C) 250 V AC-15 IEC 60947-5-1/1991<br>3 A 158 °F (70 °C) 250 V AC-15 VDE 0660<br>0.1 A 158 °F (70 °C) 250 V DC-13 IEC 60947-5-1/1991<br>0.1 A 158 °F (70 °C) 250 V DC-13 VDE 0660<br>0.3 A 158 °F (70 °C) 115 V DC-13 IEC 60947-5-1/1991<br>0.3 A 158 °F (70 °C) 115 V DC-13 VDE 0660 |
| Tightening Torque                           | 5.31...9.74 lbf.in (0.6...1.1 N.m)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Mechanical Durability                       | 30000000 cycles                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| [Ith] Conventional Free Air Thermal Current | 8 A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Switching Capacity In Ma                    | 10 mA 12 V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Contacts Material                           | 90/10 silver nickel contacts                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Number Of Cables                            | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Width                                       | 0.89 in (22.5 mm)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Height                                      | 3.07 in (78 mm)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Depth                                       | 3.15 in (80 mm)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Terminals Description Iso N°1               | (C-B1-B2-B3)CO<br>(25-26-28)OC<br>(A1-A2)CO<br>(15-16-18)OC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Output Relay State                          | Tripped if A measured > A set                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 9 Mm Pitches                                | 2.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Net Weight                                  | 0.37 lb(US) (0.168 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 |
| Ambient Air Temperature For Operation | -4...149 °F (-20...65 °C)                                                                                                                                                                            |
| Vibration Resistance                  | 0.35 ms 10...55 Hz)IEC 60068-2-6                                                                                                                                                                     |
| Shock Resistance                      | 15 gn 11 ms IEC 60068-2-27                                                                                                                                                                           |
| Standards                             | EN/IEC 60255-6                                                                                                                                                                                       |
| Product Certifications                | GL<br>CSA<br>UL                                                                                                                                                                                      |
| Ambient Air Temperature For Storage   | -40...185 °F (-40...85 °C)                                                                                                                                                                           |
| Relative Humidity                     | 15...85 % 3K3 IEC 60721-3-3                                                                                                                                                                          |
| Ip Degree Of Protection               | IP20 IEC 60529 terminals)<br>IP50 IEC 60529 casing)                                                                                                                                                  |
| Pollution Degree                      | 3 IEC 60664-1                                                                                                                                                                                        |
| Directives                            | 73/23/EEC - low voltage directive<br>89/336/EEC - electromagnetic compatibility                                                                                                                      |
| Resistance To Electrostatic Discharge | 6 kV contact IEC 61000-4-2 level 3<br>8 kV air IEC 61000-4-2 level 3                                                                                                                                 |

|                                      |                                                  |
|--------------------------------------|--------------------------------------------------|
| Resistance To Electromagnetic Fields | 9.14 V/m (10 V/m) IEC 61000-4-3 level 3          |
| Resistance To Fast Transients        | 2 kV IEC 61000-4-4 level 3                       |
| Protection Against Electric Shocks   | 2 kV level 3 IEC 61000-4-5                       |
| Disturbance Radiated/Conducted       | CISPR 11 group 1 - class A<br>CISPR 22 - class A |
| Dielectric Test Voltage              | 2.5 kV                                           |
| Non-Dissipating Shock Wave           | 4.8 kV                                           |

## Ordering and shipping details

|                   |                               |
|-------------------|-------------------------------|
| Category          | 22376-RELAYS-MEASUREMENT(RM4) |
| Discount Schedule | CP2                           |
| Gtin              | 3389110336320                 |
| Returnability     | No                            |
| Country Of Origin | ID                            |

## Packing Units

|                              |                  |
|------------------------------|------------------|
| Unit Type Of Package 1       | PCE              |
| Number Of Units In Package 1 | 1                |
| Package 1 Height             | 1.06 in (2.7 cm) |
| Package 1 Width              | 3.23 in (8.2 cm) |
| Package 1 Length             | 3.35 in (8.5 cm) |
| Package 1 Weight             | 6.60 oz (187 g)  |

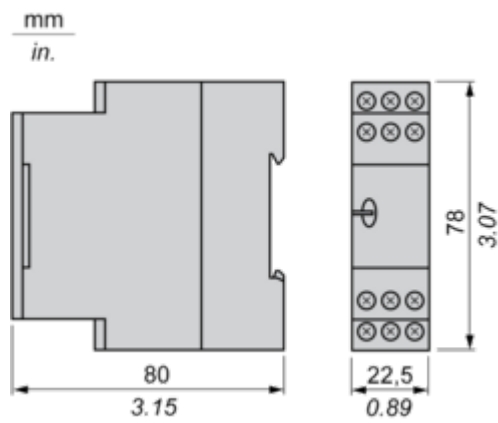
## Contractual warranty

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

Dimensions Drawings

Voltage Measurement Relays

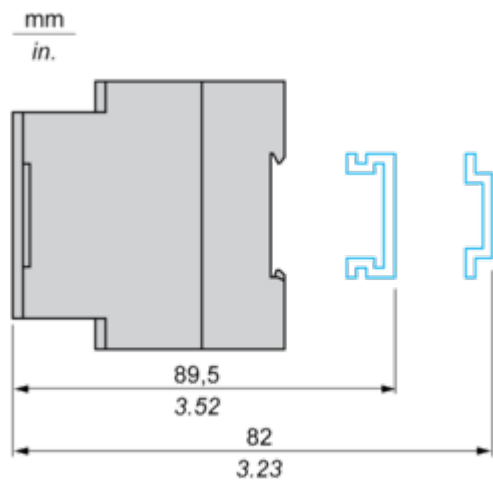
Dimensions



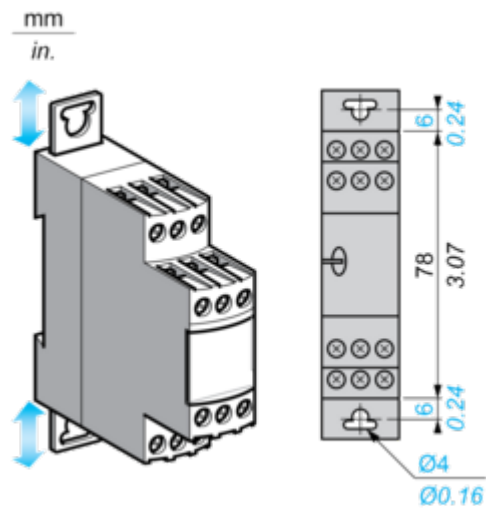
Mounting and Clearance

Voltage Measurement Relays

Rail mounting



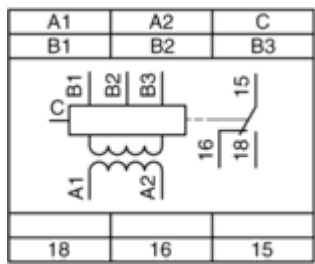
Screw fixing



Connections and Schema

Voltage Measurement Relays

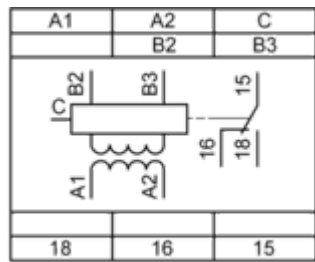
RM4UA01 and RM4UA02 Wiring Diagram



A1-A2 Supply voltage  
B1, B2, B3, C Voltages to be measured (see table below)

| Connection and current values to be measured |      |              |
|----------------------------------------------|------|--------------|
| RM4UA•1                                      | B1-C | 0.05...0.5 V |
|                                              | B2-C | 0.3...3 V    |
|                                              | B3-C | 0.5...5 V    |
| RM4UA•2                                      | B1-C | 1...10 V     |
|                                              | B2-C | 5...50 V     |
|                                              | B3-C | 10...100 V   |

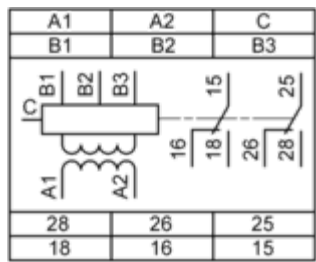
RM4UA03 Wiring Diagram



A1-A2 Supply voltage  
B2, B3, C Voltages to be measured (see table below)

| Connection and current values to be measured |            |
|----------------------------------------------|------------|
| B2-C                                         | 30...300 V |
| B3-C                                         | 50...500 V |

RM4UA31 and RM4UA32 Wiring Diagram

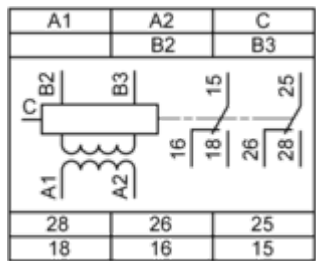


A1-A2 Supply voltage

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

| Connection and current values to be measured |      |              |
|----------------------------------------------|------|--------------|
| RM4UA•1                                      | B1-C | 0.05...0.5 V |
|                                              | B2-C | 0.3...3 V    |
|                                              | B3-C | 0.5...5 V    |
| RM4UA•2                                      | B1-C | 1...10 V     |
|                                              | B2-C | 5...50 V     |
|                                              | B3-C | 10...100 V   |

RM4UA33 Wiring Diagram



A1-A2 Supply voltage

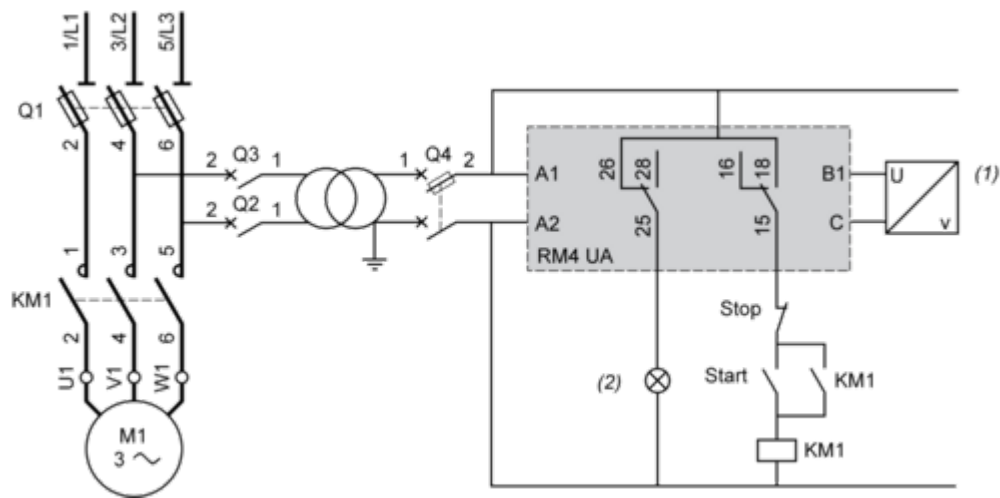
B2, B3, C Voltages to be measured (see table below)

| Connection and current values to be measured |            |
|----------------------------------------------|------------|
| B2-C                                         | 30...300 V |
| B3-C                                         | 50...500 V |

Voltage Measurement Relays

Application Scheme

Example: overspeed monitoring (undervoltage function)



(1) Tachogenerator

(2) Overspeed

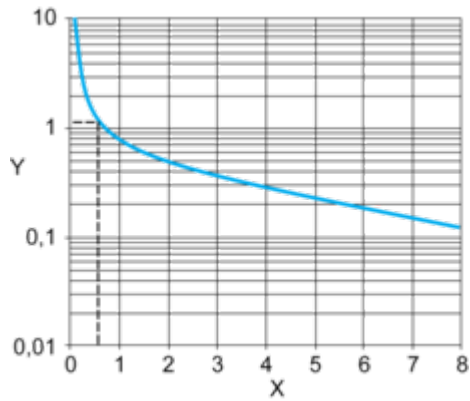


Performance Curves

Electrical Durability and Load Limit Curves

AC Load

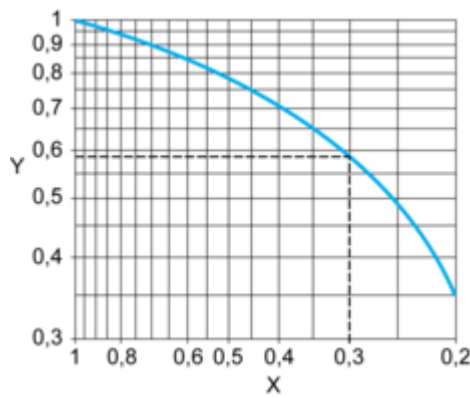
Curve 1: Electrical durability of contacts on resistive load in millions of operating cycles



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)

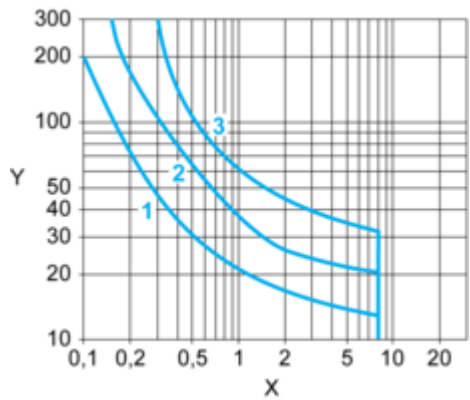


X Power factor on breaking (cos φ)

Y Reduction factor K

DC Load

Load limit curve

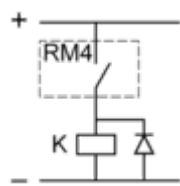


X Current in A

Y Voltage in V

1 L/R = 20 ms

- 2 L/R with load protection diode
- 3 Resistive load

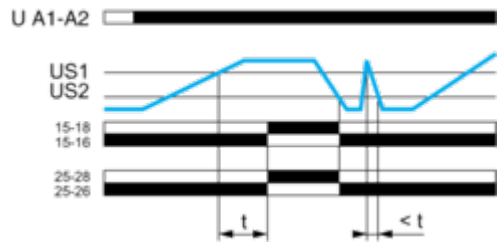


Technical Description

Function Diagram

Overvoltage Control

Function “>”



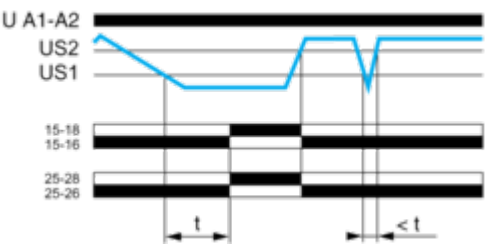
Legend

- t Time delay
- U A1-A2 Supply voltage
- US1 Setting voltage threshold
- US2 Voltage measured
- 15-18, 15-16; 25-28, 25-26 Output relays connections
- Relay status: black color = energized.

Function Diagram

Undervoltage Control

Function “<”



Legend

t Time delay

U A1-A2 Supply voltage

US1 Setting voltage threshold

US2 Voltage measured

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

Relay status: black color = energized.