

Product datasheet

Specifications



voltage measurement relay RM4-U - range 0.05..5 V - 220..240 V AC

RM4UA31M

 **Discontinued on:** 31 Mar 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 of voltage threshold setting
Internal Input Resistance	71000 Ohm 43000 Ohm 6600 Ohm
Permissible Continuous Overload	20 V 60 V 80 V
Permissible Non Repetitive Overload	100 A for <= 1 s 25 A for <= 1 s 80 A for <= 1 s
Switching Threshold Drift	<= 0.06 % per degree centigrade depending permissible ambient air temperature <= 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 <= 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 conforming to IEC 60664-1
[Ui] Rated Insulation Voltage	500 V conforming to IEC
Supply Disconnection Value	> 0.1 Uc

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 ² flexible with cable end Screw terminals, 2 x 2.5 mm ² flexible without cable end
[Ie] Rated Operational Current	2 A at 70 °C 24 V DC-13 conforming to IEC 60947-5-1/1991 2 A at 70 °C 24 V DC-13 conforming to VDE 0660 3 A at 70 °C 115 V AC-15 conforming to IEC 60947-5-1/1991 3 A at 70 °C 115 V AC-15 conforming to VDE 0660 3 A at 70 °C 24 V AC-15 conforming to IEC 60947-5-1/1991 3 A at 70 °C 24 V AC-15 conforming to VDE 0660 3 A at 70 °C 250 V AC-15 conforming to IEC 60947-5-1/1991 3 A at 70 °C 250 V AC-15 conforming to VDE 0660 0.1 A at 70 °C 250 V DC-13 conforming to IEC 60947-5-1/1991 0.1 A at 70 °C 250 V DC-13 conforming to VDE 0660 0.3 A at 70 °C 115 V DC-13 conforming to IEC 60947-5-1/1991 0.3 A at 70 °C 115 V DC-13 conforming to VDE 0660
Tightening Torque	0.6...1.1 N.m
Mechanical Durability	30000000 cycles
[Ith] Conventional Free Air Thermal Current	8 A
Switching Capacity In Ma	10 mA at 12 V
Contacts Material	90/10 silver nickel contacts
Number Of Cables	2
Width	22.5 mm
Height	78 mm
Depth	80 mm
Terminals Description Iso N°1	(25-26-28)OC (C-B1-B2-B3)CO (A1-A2)CO (15-16-18)OC
Output Relay State	Tripped if A measured > A set
9 Mm Pitches	2.5
Net Weight	0.168 kg

Environment

Electromagnetic Compatibility	Electrostatic discharge - test level: 6 kV level 3 (contact discharge) conforming to IEC 61000-4-2 Electrostatic discharge - test level: 8 kV level 3 (air discharge) conforming to IEC 61000-4-2
Ambient Air Temperature For Operation	-20...65 °C
Vibration Resistance	0.35 ms (f= 10...55 Hz) conforming to IEC 60068-2-6
Shock Resistance	15 gn for 11 ms conforming to IEC 60068-2-27
Standards	EN/IEC 60255-6
Product Certifications	GL UL CSA
Ambient Air Temperature For Storage	-40...85 °C
Relative Humidity	15...85 % 3K3 conforming to IEC 60721-3-3
Ip Degree Of Protection	IP20 (terminals) conforming to IEC 60529 IP50 (casing) conforming to IEC 60529
Pollution Degree	3 conforming to IEC 60664-1
Directives	89/336/EEC - electromagnetic compatibility 73/23/EEC - low voltage directive
Resistance To Electrostatic Discharge	6 kV contact conforming to IEC 61000-4-2 level 3 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 11 group 1 - class A CISPR 22 - class A
Dielectric Test Voltage	2.5 kV
Non-Dissipating Shock Wave	4.8 kV

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	188 g

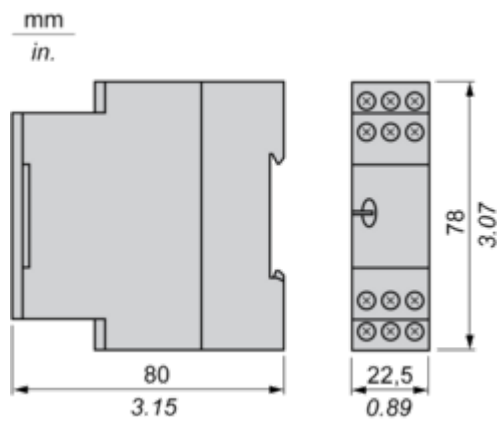
Contractual warranty

Warranty	18 months
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Dimensions Drawings

Voltage Measurement Relays

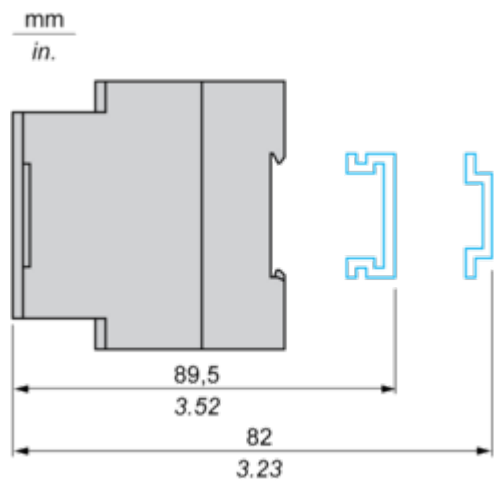
Dimensions



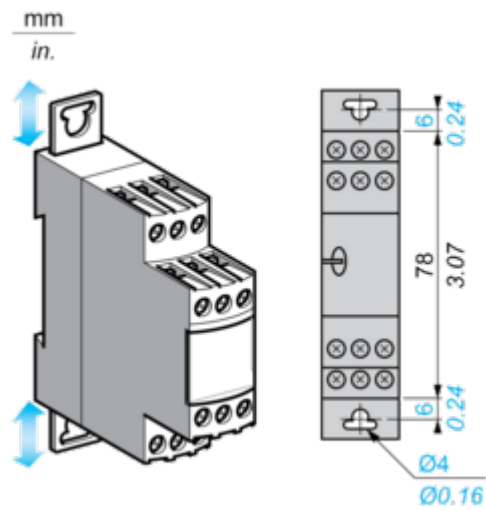
Mounting and Clearance

Voltage Measurement Relays

Rail mounting



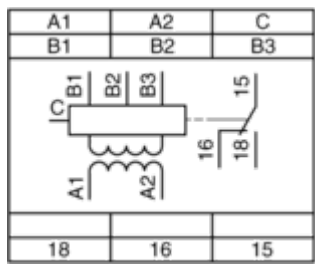
Screw fixing



Connections and Schema

Voltage Measurement Relays

RM4UA01 and RM4UA02 Wiring Diagram

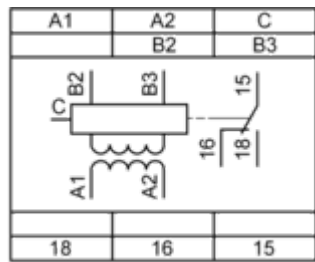


A1-A2 Supply voltage

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

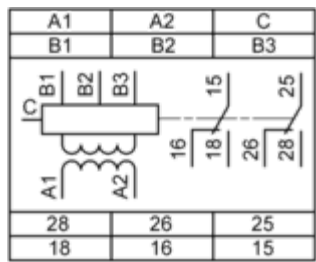


A1-A2 Supply voltage

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

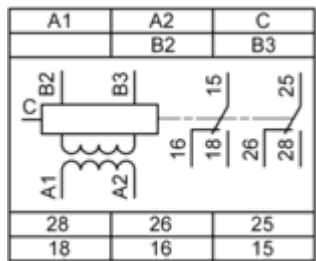


A1-A2 Supply voltage

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

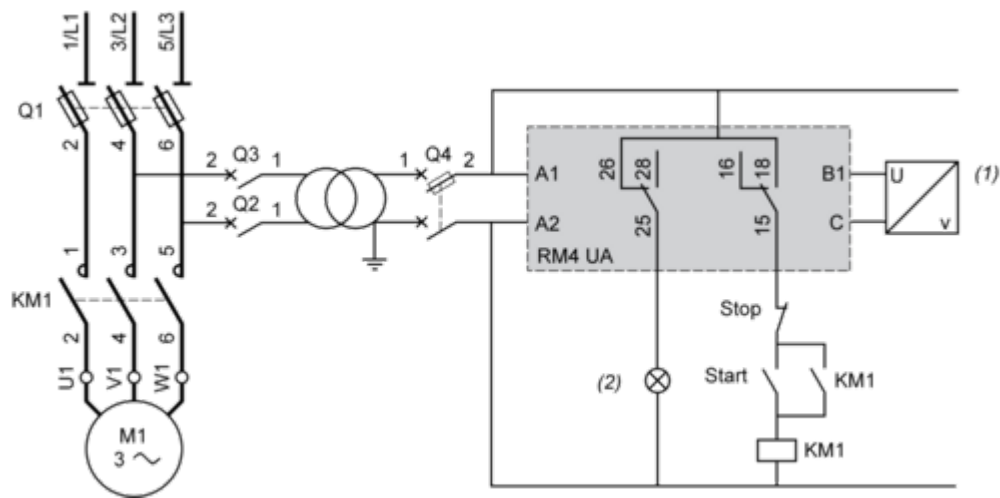
B2, B3, C Voltages to be measured (see table below)

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

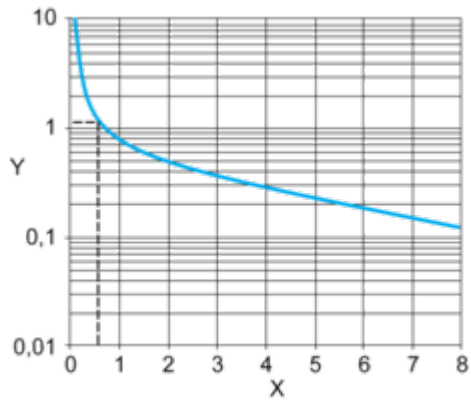
(2) Overspeed

Performance Curves

Electrical Durability and Load Limit Curves

AC Load

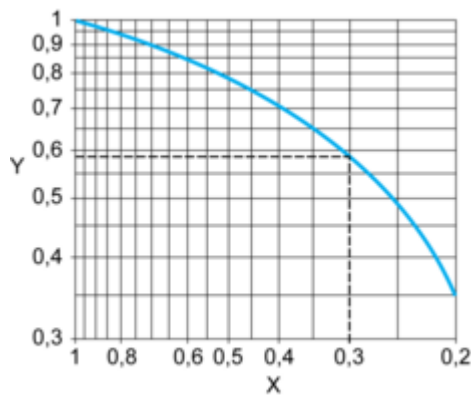
Curve 1: Electrical durability of contacts on resistive load in millions of operating cycles



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)

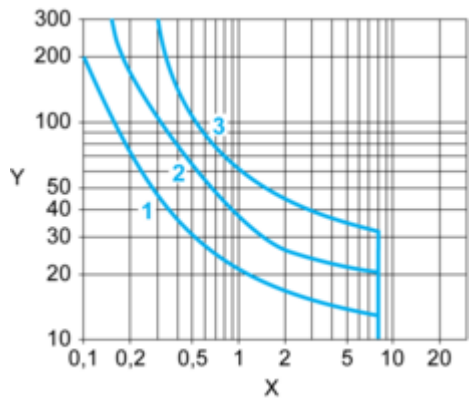


X Power factor on breaking (cos φ)

Y Reduction factor K

DC Load

Load limit curve

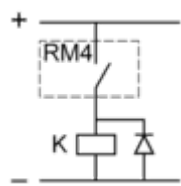


X Current in A

Y Voltage in V

1 L/R = 20 ms

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

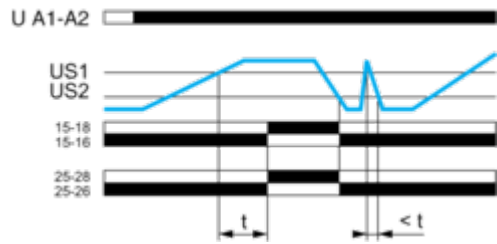


Technical Description

Function Diagram

Overvoltage Control

Function “>”



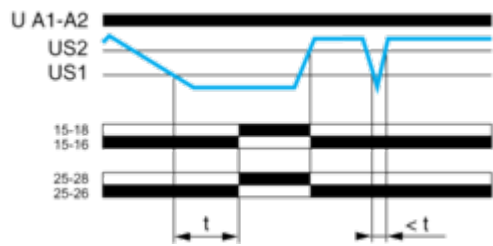
Legend

- 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.