



Commercial status

Discontinued: 31 December 2016

End-of-service: 31 December 2016

RM4UA31MW has not been replaced. Please contact your customer care centre for more information.

Main

Range of product	Zelio Control
Product or component type	Industrial measurement and control relays
Relay type	Voltage measurement relay
Relay name	RM4U
Relay monitored parameters	Overvoltage or undervoltage detection
Time delay	Adjustable 0.05...30 s
Power consumption in VA	1.5...3.3 VA AC
Measurement range	0.05...0.5 V voltage AC 50/60 Hz 0.3...3 V voltage AC 50/60 Hz 0.5...5 V voltage AC 50/60 Hz 0.05...0.5 V voltage DC 0.3...3 V voltage DC 0.5...5 V voltage DC

Complementary

Maximum switching voltage	440 V AC
[Us] rated supply voltage	24...240 V AC 50/60 Hz +/- 5 % 24...240 V DC
Maximum power consumption in W	1.2 W DC
Output contacts	2 C/O
Internal input resistance	71000 Ohm 43000 Ohm 6600 Ohm
Permissible continuous overload	80 V 20 V 60 V
Permissible non repetitive overload	100 A for <= 1 s 25 A for <= 1 s 80 A for <= 1 s
Setting accuracy of the switching threshold	+/-5 %
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)

Hysteresis	5...30 % adjustable of voltage threshold setting
Quality labels	CE
Overvoltage category	III conforming to IEC 60664-1
[Ui] rated insulation voltage	500 V conforming to IEC
Operating voltage tolerance	0.85...1.1 Uc
Supply disconnection value	> 0.1 Uc
Operating position	Any position without
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
Tightening torque	0.6...1.1 N.m
Mechanical durability	30000000 cycles
[Ith] conventional free air thermal current	8 A
[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
Switching capacity in mA	10 mA at 12 V
Switching voltage	250 V AC
Contacts material	90/10 silver nickel contacts
Width	22.5 mm
Net weight	0.08 kg
Compatibility code	RM4

Environment

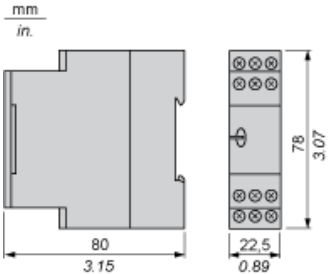
Electromagnetic compatibility	Electrostatic discharge - test level: 6 kV level 3 (contact discharge) conforming to IEC 61000-4-2 Electrostatic discharge - test level: 8 kV level 3 (air discharge) conforming to IEC 61000-4-2
Standards	EN/IEC 60255-6
Product certifications	GL UL CSA
Directives	73/23/EEC - low voltage directive 89/336/EEC - electromagnetic compatibility
Ambient air temperature for storage	-40...85 °C
Ambient air temperature for operation	-20...65 °C
Relative humidity	15...85 % 3K3 conforming to IEC 60721-3-3
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
IP degree of protection	IP20 (terminals) conforming to IEC 60529 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 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 CISPR 11 group 1 - class A

Contractual warranty

Warranty	18 months
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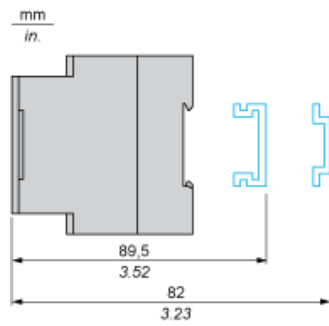
Voltage Measurement Relays

Dimensions

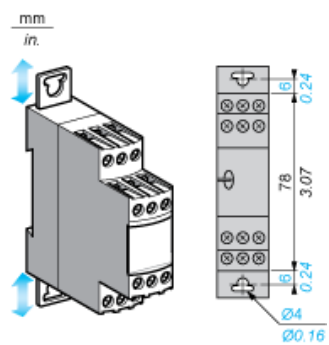


Voltage Measurement Relays

Rail mounting

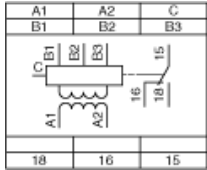


Screw fixing



Voltage Measurement Relays

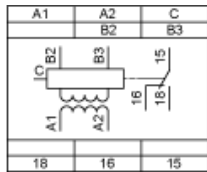
RM4UA01 and RM4UA02 Wiring Diagram



A1-A2 Supply voltage
B1, B2, B3 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

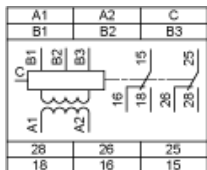
RM4UA03 Wiring Diagram



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

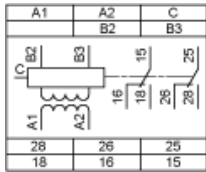


A1-A2 Supply voltage
B1, B2, B3 Voltages to be measured (see table below)

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

Connection and current values to be measured		
	B2-C	5...50 V
	B3-C	10...100 V

RM4UA33 Wiring Diagram



A1-A2 Supply voltage

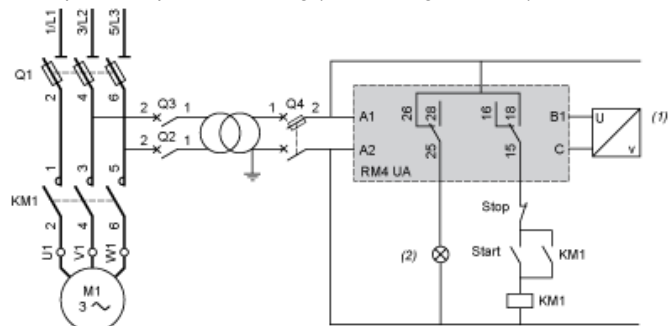
B2, B3, C Voltages to be measured (see table below)

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)

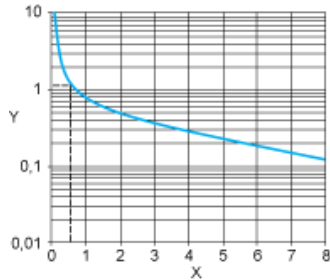


- (1) Tachogenerator
- (2) Overspeed

Electrical Durability and Load Limit Curves

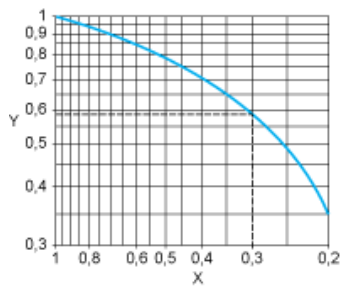
AC Load

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



X Current broken in A
Y Millions of operating cycles

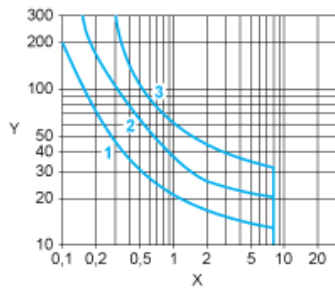
Curve 2: Reduction factor k for inductive loads (applies to values taken from durability Curve 1)



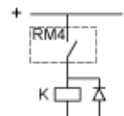
X Power factor on breaking (cos φ)
Y Reduction factor K

DC Load

Load limit curve



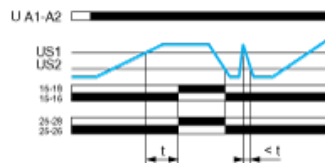
X Current in A
Y Voltage in V
1 L/R = 20 ms
2 L/R with load protection diode
3 Resistive load



Function Diagram

Overvoltage Control

Function ">"



Legend

t Time delay

U A1-A2 Supply voltage

US1 Setting voltage threshold

US2 Voltage measured

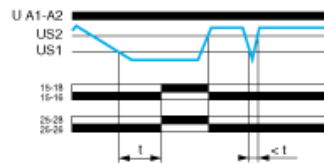
15-18, 15-16; 25-28, 25-26 Output relays connections

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.