



### Main

Range of product	Zelio Control
Product or component type	Monitoring relay
Relay type	Control relay
Network number of phases	3 phases
Relay name	RMNF22
Relay monitored parameters	Phase failure detection Phase sequence Overfrequency and underfrequency Asymmetry Undervoltage detection Overvoltage detection
Supported OS	Android
Software version	V4.4 and above
App for product	Zelio NFC (downloadable from Google Play store)
Product compatibility	NFC enabled mobile device
Time delay type	On-delay 0.1 s...60 min Off-delay 0.1 s...60 min
Switching capacity in VA	2000 VA

### Complementary

NFC operating frequency	13.56 MHz
Maximum RF power transmitted	0.0002 mW
Reset time	1500 ms at maximum voltage
Maximum switching voltage	250 V AC
Minimum switching current	100 mA at 6 V
Maximum switching current	8 A AC
[Us] rated supply voltage	208...480 V AC line to line 120...277 V AC line to neutral
Supply voltage limits	166.4...576 V AC line to line 96...332.4 V AC line to neutral
Power consumption in VA	4 VA at 480 V AC 60 Hz
On-load factor	100 %
Supply frequency	50...60 Hz +/- 10 %
Output contacts	2 C/O

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

Setting accuracy of time delay	+/- 3 % for 10 s...60 min time delay range +/- 300 ms for 0...10 s time delay range
Hysteresis	3 % of fixed for phase failure detection
Alarm threshold	5...150 V adjustable asymmetry 45...66 Hz adjustable overfrequency or underfrequency 166...576 V adjustable overvoltage and undervoltage detection line to line 96...332 V adjustable overvoltage and undervoltage detection line to neutral
Run-up delay at power-up max	650 ms
Measuring cycle	<= 150 ms measurement cycle as true rms value
Repeat accuracy	+/- 3 % for time delay +/- 0.5 % for input circuit
Measurement error	< 0.05 %/HZ with frequency variation < 0.05 %/°C with temperature variation
Response time	<= 300 ms
[Ui] rated insulation voltage	400 V
[Uimp] rated impulse withstand voltage	4 kV during 1.2/50 µs
Dielectric test voltage	2.5 kV, 1 min AC 50 Hz conforming to IEC 60255-27
Mounting position	Any position
Connections - terminals	Screw terminals, clamping capacity: 2 x 0.5...2 x 2.5 mm <sup>2</sup> , AWG 20...AWG 14 solid without cable end Screw terminals, clamping capacity: 2 x 0.5...2 x 1.5 mm <sup>2</sup> , AWG 20...AWG 16 flexible with cable end Screw terminals, clamping capacity: 1 x 0.5...1 x 3.3 mm <sup>2</sup> , AWG 20...AWG 12 solid without cable end Screw terminals, clamping capacity: 1 x 0.5...1 x 2.5 mm <sup>2</sup> , AWG 20...AWG 14 flexible with cable end
Tightening torque	5.3...8.8 lbf.in conforming to IEC 60947-1 0.6...1 N.m conforming to IEC 60947-1
Housing material	Self-extinguishing plastic
Local signalling	Un, green LED: (steady) for power ON R1, amber LED: (steady) for relay energised R1, amber LED: (blinking) for timing in progress R2, amber LED: (steady) for relay energised R2, amber LED: (blinking) for timing in progress PL, red LED: (steady) for alarm phase failure triggered PS, red LED: (blinking) for alarm phase sequence failure triggered UV, red LED: (steady) for alarm undervoltage failure triggered OV, red LED: (blinking) for alarm overvoltage failure triggered UF, red LED: (steady) for alarm underfrequency failure triggered OF, red LED: (blinking) for alarm overfrequency failure triggered ASYM, red LED: (steady) for alarm asymmetry failure triggered
Mounting support	35 mm DIN rail conforming to EN/IEC 60715
Electrical durability	100000 cycles
Mechanical durability	10000000 cycles
Utilisation category	AC-1 conforming to IEC 60947-4-1 DC-1 conforming to IEC 60947-4-1 AC-15 conforming to IEC 60947-5-1 DC-13 conforming to IEC 60947-5-1
[Ith] conventional free air thermal current	8 A
Contacts material	Cadmium free
Width	22.5 mm
Height	90 mm
Depth	99 mm
Product weight	0.125 kg

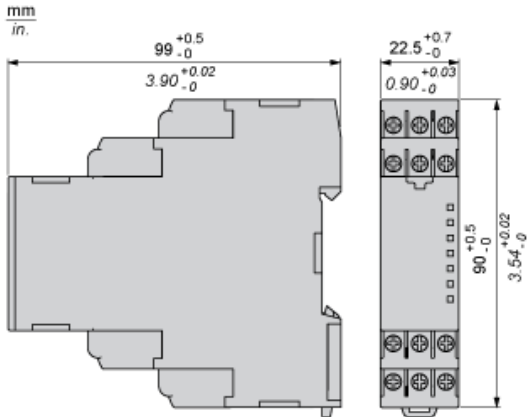
## Environment

Immunity to microbreaks	10 ms
Electromagnetic compatibility	Conducted and radiated emissions class B conforming to CISPR 22 Immunity for residential, commercial and light-industrial environments conforming to EN/IEC 61000-6-1 Conducted and radiated emissions class B group 1 conforming to CISPR 11 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 Radiated radio-frequency electromagnetic field immunity test - test level: 10 V/m level 3 conforming to IEC 61000-4-3

Electrical fast transient/burst immunity test - test level: 4 kV criteria B (direct) conforming to IEC 61000-4-4  
 Surge immunity test - test level: 4 kV level 4 (common mode) conforming to IEC 61000-4-5  
 Surge immunity test - test level: 2 kV level 4 (differential mode) conforming to IEC 61000-4-5  
 Voltage interruptions - test level: 0 % criteria C (250/300 cycles) conforming to IEC 61000-4-29  
 Conducted RF disturbances level 3 conforming to IEC 61000-4-6  
 Magnetic field at power frequency - test level: 30 A/m (continuous)-300 A/m (1-3 s) level 4 conforming to IEC 61000-4-8  
 Voltage dips and interruptions immunity test - test level: 0 % (0.5...25 cycles) conforming to IEC 61000-4-11  
 Voltage dips and interruptions immunity test - test level: 40 % (10/12 cycles) conforming to IEC 61000-4-11  
 Voltage dips and interruptions immunity test - test level: 70 % (25/30 cycles) conforming to IEC 61000-4-11  
 1 MHz damped oscillating wave - test level: 2.5 kV CM, 1 kV DM criteria B conforming to IEC 61000-4-18  
 Conducted EMC (GL section 21)  
 Radiated EMC (GL section 22)  
 Emission standard for industrial environments conforming to EN/IEC 61000-6-4  
 Emission standard for residential, commercial and light-industrial environments conforming to EN/IEC 61000-6-3  
 Immunity for industrial environments conforming to EN/IEC 61000-6-2

Standards	EN/IEC 60255-1
Product certifications	EAC UL CSA RCM CE CCC
Directives	2014/30/EU - electromagnetic compatibility 2014/53/EU - radio equipment directive 2015/863/EU - RoHS directive 2014/35/EU - low voltage directive
Ambient air temperature for storage	-40...70 °C
Ambient air temperature for operation	-20...60 °C
Relative humidity	93...97 % at 25...55 °C conforming to IEC 60068-2-30
Vibration resistance	0.075 mm (f= 10...58.1 Hz) not in operation conforming to IEC 60068-2-6 1 gn (f= 58.1...150 Hz) not in operation conforming to IEC 60068-2-6 0.035 mm (f= 10...58.1 Hz) in operation conforming to IEC 60068-2-6 0.5 gn (f= 10...58.1 Hz) in operation conforming to IEC 60068-2-6
Shock resistance	15 gn 11 ms not in operation IEC 60068-2-27 5 gn 11 ms in operation IEC 60068-2-27
IP degree of protection	IP40 housing conforming to IEC 60529 IP20 terminals conforming to IEC 60529 IP40 front panel conforming to IEC 60529
Pollution degree	3 conforming to IEC 60664-1 3 conforming to UL 508
Overvoltage category	III conforming to UL 508 III conforming to IEC 60664-1

Dimensions



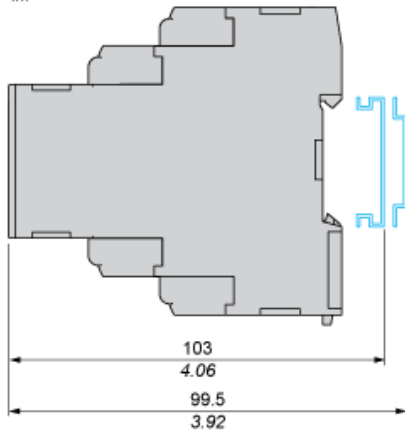
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Mounting and Clearance

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Rail Mounting

mm  
in.



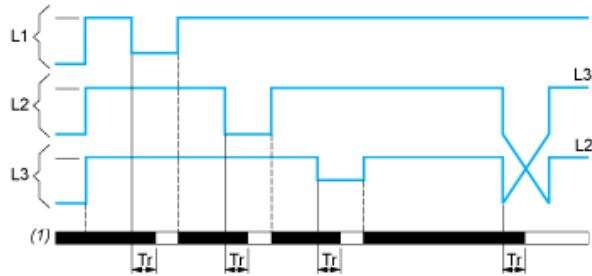
3-Phase Control Relay



L1, L2, L3(N) to be monitored (with or without neutral)  
 12, 11, 14 1st C/O contact of output relay  
 22, 21, 24 2nd C/O contact of output relay

Function Diagrams

Phase Loss and Phase Sequence



Tr : Response after crossing of threshold (< 300ms)

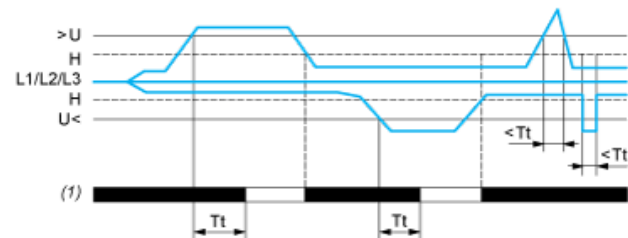
L1, L2, L3 : Phases of the supply voltage monitored

Alarm status:

- White color: Alarm triggered
- Black color: Alarm not triggered

(1) : Alarm

Overvoltage & Undervoltage



>U : Overvoltage threshold

H : Hysteresis

U< : Undervoltage threshold

L1, L2, L3 : Phases of the supply voltage monitored

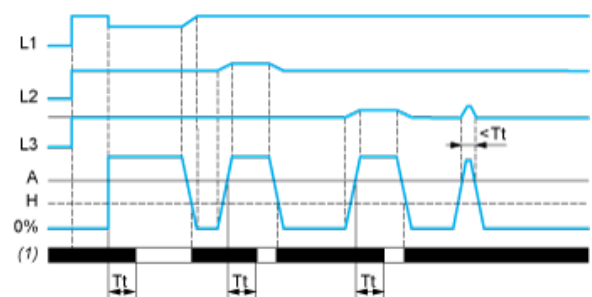
Tt : Time delay after crossing of threshold (adjustable on app)

Alarm status:

- White color : Alarm triggered
- Black color : Alarm not triggered

(1) : Alarm

Asymmetry



L1, L2, L3 : Phases of the supply voltage monitored

A : Asymmetry threshold (adjustable from 5...150V of the nominal supply voltage)

H : Hysteresis

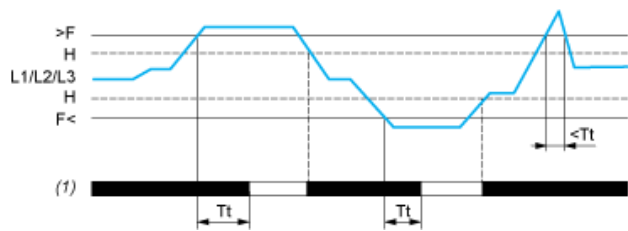
Tt : Time delay after crossing of threshold (adjustable on app)

Alarm status:

- White color : Alarm triggered
- Black color : Alarm not triggered

(1) : Alarm

## Over Frequency & Under Frequency



>F : Over frequency threshold

H : Hysteresis

F< : Under frequency threshold

L1, L2, L3 : Line frequency

Tt : Time delay after crossing of threshold (adjustable on app)

Alarm status:

- White color : Alarm triggered
- Black color : Alarm not triggered

(1) : Alarm