

# Product data sheet

Specifications



## Harmony, NFC 3-phase monitoring relay, 8 A, 2CO, multifunction, 208...480 V AC

RMNF22TB30

### Main

Range of product	Harmony Control Relays
Product or component type	3-phase control relay
Relay type	Control relay
Network number of phases	3 phases
Relay name	RMNF22
Relay monitored parameters	Phase sequence Phase failure detection Overvoltage detection Undervoltage detection Overfrequency and underfrequency Asymmetry
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 voltage frequency	50...60 Hz +/- 10 %

<b>Output contacts</b>	2 C/O
<b>Setting accuracy of the switching threshold</b>	+/- (1.5 % + 1 V)
<b>Setting accuracy of time delay</b>	+/- 3 % for 10 s...60 min time delay range +/- 300 ms for 0...10 s time delay range
<b>Hysteresis</b>	3 % of fixed for phase failure detection
<b>Alarm threshold</b>	166...576 V adjustable overvoltage and undervoltage detection (line to line) 96...332 V adjustable overvoltage and undervoltage detection (line to neutral) 5...150 V adjustable asymmetry 45...66 Hz adjustable overfrequency or underfrequency
<b>Run-up delay at power-up max</b>	650 ms
<b>Maximum measuring cycle</b>	150 ms measurement cycle as true rms value
<b>Repeat accuracy</b>	+/- 0.5 % for input circuit +/- 3 % for time delay
<b>Setting accuracy of the switching threshold</b>	+/- (1.5 % + 1 V)
<b>Measurement error</b>	< 0.05 %/Hz with frequency variation < 0.05 %/°C with temperature variation
<b>Response time</b>	<= 300 ms
<b>Insulation resistance</b>	> 100 MOhm at 500 V DC conforming to IEC 60255-27
<b>[Ui] rated insulation voltage</b>	400 V
<b>[Uimp] rated impulse withstand voltage</b>	4 kV during 1.2/50 µs
<b>Dielectric test voltage</b>	2.5 kV, 1 min AC 50 Hz conforming to IEC 60255-27
<b>Mounting position</b>	Any position
<b>Connections - terminals</b>	Screw terminals, 2 x 0.5...2 x 2.5 mm <sup>2</sup> (AWG 20...AWG 14) solid without cable end Screw terminals, 2 x 0.5...2 x 1.5 mm <sup>2</sup> (AWG 20...AWG 16) flexible with cable end Screw terminals, 1 x 0.5...1 x 3.3 mm <sup>2</sup> (AWG 20...AWG 12) solid without cable end Screw terminals, 1 x 0.5...1 x 2.5 mm <sup>2</sup> (AWG 20...AWG 14) flexible with cable end
<b>Tightening torque</b>	0.6...1 N.m conforming to IEC 60947-1 0.60...0.99 N.m conforming to IEC 60947-1
<b>Housing material</b>	Self-extinguishing plastic
<b>Local signalling</b>	LED Un: (steady), green for power ON LED R1: (steady), amber for relay energised LED R1: (blinking), amber for timing in progress LED R2: (steady), amber for relay energised LED R2: (blinking), amber for timing in progress LED PL: (steady), red for alarm phase failure triggered LED PS: (blinking), red for alarm phase sequence failure triggered LED UV: (steady), red for alarm undervoltage failure triggered LED OV: (blinking), red for alarm overvoltage failure triggered LED UF: (steady), red for alarm underfrequency failure triggered LED OF: (blinking), red for alarm overfrequency failure triggered LED ASYM: (steady), red for alarm asymmetry failure triggered
<b>Mounting support</b>	35 mm DIN rail conforming to EN/IEC 60715
<b>Electrical durability</b>	100000 cycles
<b>Mechanical durability</b>	10000000 cycles
<b>Utilisation category</b>	AC-15 conforming to IEC 60947-5-1 DC-13 conforming to IEC 60947-5-1 AC-1 conforming to IEC 60947-4-1 DC-1 conforming to IEC 60947-4-1
<b>[Ith] conventional free air thermal current</b>	8 A
<b>Contacts material</b>	Cadmium free
<b>Width</b>	22.5 mm
<b>Height</b>	90 mm
<b>Depth</b>	99 mm
<b>Contacts type and composition</b>	2 C/O

Net weight	0.125 kg
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## Environment

Immunity to microbreaks	10 ms
Electromagnetic compatibility	<p>Voltage dips and interruptions immunity test - test level: 70 % (25/30 cycles) conforming to IEC 61000-4-11</p> <p>Electrostatic discharge - test level: 6 kV level 3 (contact discharge) conforming to IEC 61000-4-2</p> <p>Conducted and radiated emissions class B group 1 conforming to CISPR 11</p> <p>Conducted and radiated emissions class B conforming to CISPR 22</p> <p>Radiated radio-frequency electromagnetic field immunity test - test level: 10 V/m level 3 conforming to IEC 61000-4-3</p> <p>Immunity for industrial environments conforming to EN/IEC 61000-6-2</p> <p>1 MHz damped oscillating wave - test level: 2.5 kV CM, 1 kV DM criteria B conforming to IEC 61000-4-18</p> <p>Voltage dips and interruptions immunity test - test level: 0 % (0.5...25 cycles) conforming to IEC 61000-4-11</p> <p>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</p> <p>Surge immunity test - test level: 2 kV level 4 (differential mode) conforming to IEC 61000-4-5</p> <p>Immunity for residential, commercial and light-industrial environments conforming to EN/IEC 61000-6-1</p> <p>Voltage dips and interruptions immunity test - test level: 40 % (10/12 cycles) conforming to IEC 61000-4-11</p> <p>Voltage interruptions - test level: 0 % criteria C (250/300 cycles) conforming to IEC 61000-4-29</p> <p>Electrical fast transient/burst immunity test - test level: 4 kV criteria B (direct) conforming to IEC 61000-4-4</p> <p>Emission standard for industrial environments conforming to EN/IEC 61000-6-4</p> <p>Emission standard for residential, commercial and light-industrial environments conforming to EN/IEC 61000-6-3</p> <p>Surge immunity test - test level: 4 kV level 4 (common mode) conforming to IEC 61000-4-5</p> <p>Electrostatic discharge - test level: 8 kV level 3 (air discharge) conforming to IEC 61000-4-2</p> <p>Conducted RF disturbances level 3 conforming to IEC 61000-4-6</p>
Standards	EN/IEC 60255-1
Product certifications	<p>CE</p> <p>UL</p> <p>CSA</p> <p>CCC</p> <p>EAC</p> <p>RCM</p>
Directives	<p>2014/30/EU - electromagnetic compatibility</p> <p>2014/35/EU - low voltage directive</p> <p>2014/53/EU - radio equipment directive</p>
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	<p>0.075 mm (f= 10...58.1 Hz) not in operation conforming to IEC 60068-2-6</p> <p>1 gn (f= 58.1...150 Hz) not in operation conforming to IEC 60068-2-6</p> <p>0.035 mm (f= 10...58.1 Hz) in operation conforming to IEC 60068-2-6</p> <p>0.5 gn (f= 58.1...150 Hz) in operation conforming to IEC 60068-2-6</p>
Shock resistance	<p>15 gn (duration = 11 ms) for not in operation conforming to IEC 60068-2-27</p> <p>5 gn (duration = 11 ms) for in operation conforming to IEC 60068-2-27</p>
IP degree of protection	<p>IP20 (terminals) conforming to IEC 60529</p> <p>IP40 (housing) conforming to IEC 60529</p> <p>IP40 (front panel) conforming to IEC 60529</p>
Pollution degree	<p>3 conforming to IEC 60664-1</p> <p>3 conforming to UL 508</p>
Overvoltage category	<p>III conforming to IEC 60664-1</p> <p>III conforming to UL 508</p>

## Packing Units

Unit Type of Package 1	PCE
Number of Units in Package 1	1
Package 1 Weight	136 g
Package 1 Height	9.6 cm
Package 1 width	2.5 cm
Package 1 Length	10.8 cm

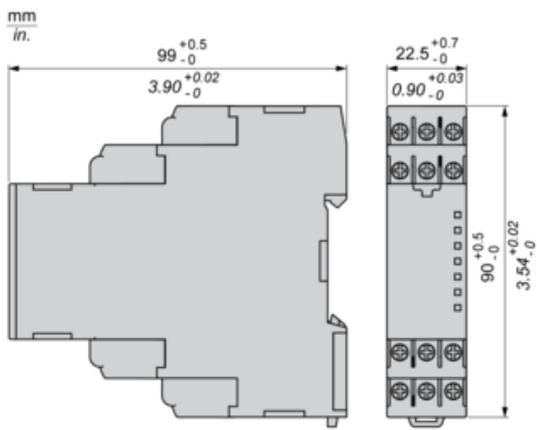
<b>Unit Type of Package 2</b>	S02
<b>Number of Units in Package 2</b>	36
<b>Package 2 Weight</b>	5.578 kg
<b>Package 2 Height</b>	15 cm
<b>Package 2 width</b>	30 cm
<b>Package 2 Length</b>	40 cm

## Offer Sustainability

<b>Sustainable offer status</b>	Green Premium product
<b>REACH Regulation</b>	<a href="#">REACH Declaration</a>
<b>EU RoHS Directive</b>	Pro-active compliance (Product out of EU RoHS legal scope) <a href="#">EU RoHS Declaration</a>
<b>Mercury free</b>	Yes
<b>RoHS exemption information</b>	<a href="#">Yes</a>
<b>China RoHS Regulation</b>	<a href="#">China RoHS declaration</a>
<b>Environmental Disclosure</b>	<a href="#">Product Environmental Profile</a>
<b>Circularity Profile</b>	<a href="#">End of Life Information</a>
<b>WEEE</b>	The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins
<b>California proposition 65</b>	WARNING: This product can expose you to chemicals including: Nickel compounds, which is known to the State of California to cause cancer, and Di-isodecyl phthalate (DIDP), which is known to the State of California to cause birth defects or other reproductive harm. For more information go to <a href="http://www.P65Warnings.ca.gov">www.P65Warnings.ca.gov</a>

## Dimensions

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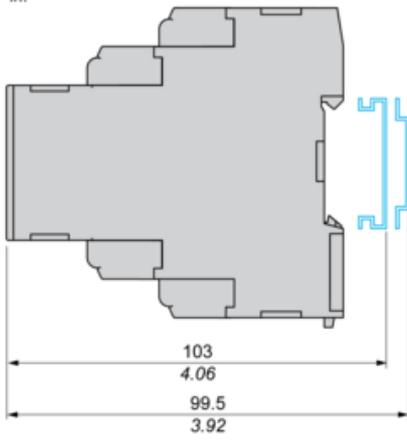


**Mounting and Clearance**

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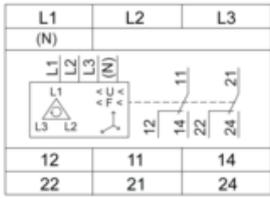
**Rail Mounting**

mm  
in.



**3-Phase Control Relay**

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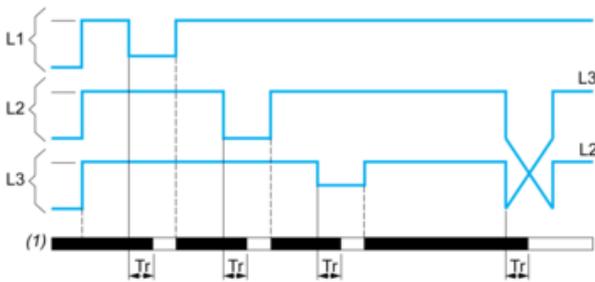
**L1, L2, L3, (N)** : Supply to be monitored (with or without neutral)

**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**



$T_r$  : Response after crossing of threshold (< 300ms)

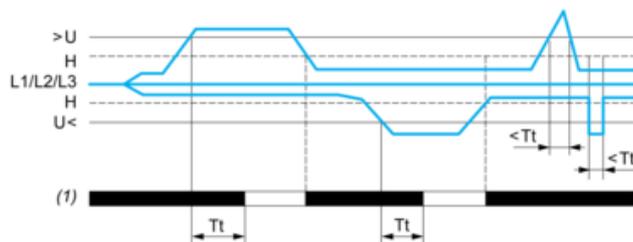
L1, L2, L3 : Phases of the supply voltage monitored

**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

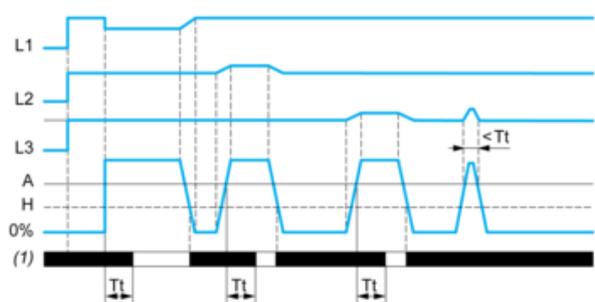
$T_t$  : Time delay after crossing of threshold (adjustable on app)

**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

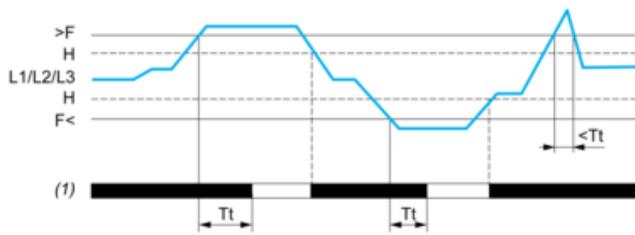
$T_t$  : Time delay after crossing of threshold (adjustable on app)

**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