# Product data sheet Characteristics

# RENF22R2MMW

multifunction relay, Harmony Timer Relays, 8A, 2CO, 0.05s to 999h asymmetrical on delay and off delay 24 to 240V AC DC





Main	
Range of Product	Harmony Timer Relays
Product or Component Type	Multifunction relay
Device short name	RENF22
Supported OS	Android
Software Version	V4.4 and above
App for product	Zelio NFC downloadable from Google Play store)

# Complementary

Discrete output type	Relay
Nominal output current	8 A
Contacts type and composition	2 C/O timed contact, cadmium free 1 C/O timed and instantaneous contact, cadmium free
Time delay type	Power on-delay On-delay and off-delay Pulse delay Asymmetrical on-delay and off-delay Interval Off-delay Symmetrical flashing Safe-guard Star-delta Asymmetrical flashing Bistable
Time delay range	0.05 s999 h
Product Compatibility	NFC enabled mobile device
[Us] rated supply voltage	24240 V AC/DC
Release input voltage	<= 2.4 V
Voltage range	0.851.1 Un
Maximum RF power transmitted	0.0002 mW
NFC operating frequency	13.56 MHz
Supply frequency	5060 Hz +/- 5 %
Connections - terminals	Screw terminals, 1 x 0.51 x 3.3 mm <sup>2</sup> AWG 20AWG 12) solid without cable end Screw terminals, 2 x 0.52 x 2.5 mm <sup>2</sup> AWG 20AWG 14) solid without cable end Screw terminals, 1 x 0.21 x 2.5 mm <sup>2</sup> AWG 24AWG 14) flexible with cable end Screw terminals, 2 x 0.22 x 1.5 mm <sup>2</sup> AWG 24AWG 16) flexible with cable end
Tightening torque	5.318.85 Lbf.In (0.61 N.m) IEC 60947-1 5.38.8 lbf.in (0.600.99 N.m) IEC 60947-1
Housing material	Self-extinguishing
Repeat accuracy	+/- 0.2 % 10 s999 h +/- 0.5 % 100 ms10 s +/- 0.7 % 50100 ms
Temperature Drift	+/- 0.05 %/°C
Voltage drift	+/- 0.2 %/V



Setting accuracy of time delay	+/- 1 % 1999 h 77 °F (25 °C) +/- 2 % 13600 s 77 °F (25 °C) +/- 20 ms 100 ms10 s 77 °F (25 °C) +/- 30 ms 50100 ms 77 °F (25 °C)
Control signal pulse width	100 Ms with load in parallel 60 ms no-load
Insulation resistance	100 MOhm 500 V DC IEC 60664-1
Recovery time	120 ms on de-energisation
Power consumption in VA	3 VA 240 V AC
Power consumption in W	1.5 W 240 V DC
	0.6 W 24 V DC
Switching capacity in VA	2000 VA
Minimum switching current	10 mA 5 V
Maximum switching current	8 A
Maximum switching voltage	250 V
Electrical durability	100000 cycles for resistive load, 8 A at 250 V, AC
Mechanical durability	1000000 cycles
Rated impulse withstand voltage	5 kV 1.2/50 µs IEC 60664-1
Power on delay	100 ms
Creepage distance	4 kV/3 IEC 60664-1
Overvoltage category	III IEC 60664-1
	MTTFd = 227.5 years 100 % duty cycle continuous operating condition at 30 °C
Safety reliability data	
Mounting position	Any position
Mounting support Status LED	35 mm DIN rail conforming to IEC 60715 Un, green LED steady)power ON
	R1, amber LED steady)relay energised R2, amber LED steady)relay energised Pairing, green LED steady)communication status Un, green LED fast blinking)diagnosis mode R1, amber LED blinking)timing in progress R2, amber LED blinking)timing in progress
Maximum communication distance	10 mm
Function available	<ul> <li>A- Power on-delay relay-2 C/O</li> <li>Ac- On-delay and off-delay relay w/ control signal-2 C/O</li> <li>Ad- Pulse delayed relay w/ control signal-2 C/O</li> <li>Ah- Pulse delayed relay (single cycle) w/ control signal-2 C/O</li> <li>Ak- Asymmetrical on-delay and off -delay relay w/ control signal-2 C/O</li> <li>Ak- Asymmetrical on-delay and off -delay relay w/ control signal-2 C/O</li> <li>B- Single interval relay w/ pause/summation (Y1)-2 C/O</li> <li>B- Single interval relay w/ control signal-2 C/O</li> <li>C- Off-delay relay w/ control signal-2 C/O</li> <li>D- Symmetrical flashing relay (starting pulse-off)-2 C/O</li> <li>Di- Symmetrical flashing relay (starting pulse-on)-2 C/O</li> <li>Dit- Symmetrical flashing relay (starting pulse-on) w/ pause/summation (Y1)-2 C/O</li> <li>Dit- Symmetrical flashing relay (starting pulse-on) w/ pause/summation (Y1)-2 C/O</li> <li>H- Interval relay-2 C/O</li> <li>H- Interval relay w/ pause/summation (Y1)-2 C/O</li> <li>Li- Asymmetrical flashing relay (starting pulse-on)-2 C/O</li> <li>Lit- Asymmetrical flashing relay (starting pulse-onf) w/ pause/summation (Y1)-2 C/O</li> <li>Lit- Asymmetrical flashing relay (starting pulse-onf) w/ pause/summation (Y1)-2 C/O</li> <li>N- Safe-guard relay-2 C/O</li> <li>N- Safe-guard relay-2 C/O</li> <li>P- Pulse delayed relay w/ fixed pulse length-2 C/O</li> <li>P- Pulse delayed relay w/ fixed pulse length and pause/summation (Y1)-2 C/O</li> </ul>
	Qt- Star-delta relay (2 CO outputs w/ split common)-2 C/O Qtt- Star-delta relay (2 CO outputs w/ split common) w/ pause/summation (Y1)-2 C/O TI- Bistable relay w/ control signal on-2 C/O Tt- Retriggerable bistable relay w/ control signal on-2 C/O W- Interval relay w/ control signal off-2 C/O L- Asymmetrical flashing relay (starting pulse-off)-2 C/O
Width	Qt- Star-delta relay (2 CO outputs w/ split common)-2 C/O Qtt- Star-delta relay (2 CO outputs w/ split common) w/ pause/summation (Y1)-2 C/O TI- Bistable relay w/ control signal on-2 C/O Tt- Retriggerable bistable relay w/ control signal on-2 C/O W- Interval relay w/ control signal off-2 C/O

# Environment

Immunity to microbreaks	10 ms
Dielectric strength	2.5 KV 1 mA/1 minute 50 Hz between relay output and power supply with basic insulation Basic insulation
Standards	IEC 61000-6-1 IEC 61000-6-2 IEC 61000-6-4 EN 61812-1 IEC 61000-6-3
Directives	2014/35/EU - low voltage directive 2014/53/EU - radio equipment directive 2014/30/EU - electromagnetic compatibility
Product Certifications	CE[RETURN]CSA[RETURN]KC[RETURN]UL[RETURN]CCC[RETURN]EAC[RETURN] GL
Ambient Air Temperature for Operation	-4140 °F (-2060 °C)
Ambient Air Temperature for Storage	-40158 °F (-4070 °C)
IP degree of protection	Housing IP40 IEC 60529 Front face IP40 IEC 60529 Terminals IP20 IEC 60529
Pollution degree	3 IEC 60664-1
Vibration resistance	20 m/s <sup>2</sup> 10150 Hz)IEC 60068-2-6
Shock resistance	15 gn not operating 11 ms IEC 60068-2-27 5 gn in operation 11 ms IEC 60068-2-27
Relative humidity	95 % 77131 °F (2555 °C)
Electromagnetic compatibility	Electrostatic discharge immunity test - test level: 6 kV level 3 (contact discharge) conforming to IEC 61000-4-2 Electrostatic discharge immunity test - test level: 8 kV level 3 (air discharge) conforming to IEC 61000-4-2 Fast transients immunity test - test level: 1 kV level 3 (capacitive connecting clip) conforming to IEC 61000-4-4 Fast transients immunity test - test level: 2 kV level 3 (direct contact) conforming to IEC 61000-4-4 Surge immunity test - test level: 2 kV level 3 (differential mode) conforming to IEC 61000-4-5 Surge immunity test - test level: 2 kV level 3 (common mode) conforming to IEC 61000-4-5 Radiated radio-frequency electromagnetic field immunity test - test level: 10 V level 3 (0.1580 MHz) conforming to IEC 61000-4-6 Electromagnetic field immunity test - test level: 10 V/m level 3 (80 MHz1 GHz) conforming to IEC 61000-4-3 Immunity to microbreaks and voltage drops - test level: 30 % (500 ms) conforming to IEC 61000-4-11 Immunity to microbreaks and voltage drops - test level: 100 % (20 ms) conforming to IEC 61000-4-11 Radiated emission class B conforming to EN 55022 Electromagnetic field immunity test - test level: 3 V/m level 2 (1.4 GHz2 GHz) conforming to IEC 61000-4-3 Electromagnetic field immunity test - test level: 1 V/m level 2 (1.4 GHz2 GHz)

# Ordering and shipping details

Category	22376-RELAYS-MEASUREMENT(RM4)
Discount Schedule	CP2
GTIN	3606480936203
Returnability	Yes
Country of origin	ID

# **Packing Units**

PCE	
1	
0.94 in (2.4 cm)	
3.17 in (8.05 cm)	
3.72 in (9.45 cm)	

Package 1 Weight	3.66 oz (103.635 g)
Unit Type of Package 2	S02
Number of Units in Package 2	40
Package 2 Height	5.91 in (15.0 cm)
Package 2 Width	11.81 in (30.0 cm)
Package 2 Length	15.75 in (40.0 cm)
Package 2 Weight	10.18 lb(US) (4.616 kg)
Unit Type of Package 3	P06
Number of Units in Package 3	640
Package 3 Height	27.56 in (70.0 cm)
Package 3 Width	23.62 in (60.0 cm)
Package 3 Length	31.50 in (80.0 cm)
Package 3 Weight	185.48 lb(US) (84.13 kg)

# Offer Sustainability

Sustainable offer status	Green Premium product	
California proposition 65	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 www.P65Warnings.ca.gov	
REACh Regulation	REACh Declaration	
EU RoHS Directive	Pro-active compliance (Product out of EU RoHS legal scope)	
Mercury free	Yes	
China RoHS Regulation	China RoHS Declaration	
RoHS exemption information	<b>₽</b> Yes	
Environmental Disclosure	Product Environmental Profile	
Circularity Profile	End Of Life Information	

# Product data sheet Dimensions Drawings

# RENF22R2MMW

# Dimensions



# RENF22R2MMW

Internal Wiring Diagram



# Wiring Diagram



# RENF22R2MMW

#### Function A: Power On-Delay Relay

#### Description

On energisation of power supply, the timing period T starts. After timing, the output(s) R close(s). The second output (R2) can be either timed (when set to "TIMED") or instantaneous (when set to "INST").

#### Function: 2 Output



Function At: Power On-Delay Relay with Pause / Summation Control Signal

#### Description

On energisation of power supply, the timing period T starts. Timing can be interrupted / paused each time Y1 energizes. When the cumulative total of time periods elapsed reaches the pre-set value T, the output(s) R close(s). The second output (R2) can be either timed (when set to "TIMED") or instantaneous (when set to "INST").

#### Function: 2 Output



#### Function Ac: On-Delay and Off-Delay Relay with Control Signal

# Description

After energisation of power supply and energization of Y1 causes the timing period T to start.

At the end of this timing period, the output(s) R close(s).

When deenergization of Y1, the timing T starts.

At the end of this timing period T, the output(s) R revert(s) to its/their initial position.

The second output (R2) can be either timed (when set to "TIMED") or instantaneous (when set to "INST").



# Function Ad : Pulse Delayed Relay with Control Signal

# Description

After energisation of power supply, pulsing or maintaining of energization of Y1 starts the timing T.

At the end of this timing period T, the output(s) R close(s).

The output(s) R reverts to its initial position the next time Y1 is energized in pulsation or permanent energized manner.

The second output (R2) can be either timed (when set to "TIMED") or instantaneous (when set to "INST").

#### Function: 2 Output



# Function Ah : Pulse Delayed Relay (Single Cycle) with Control Signal

#### Description

After energisation of power supply, pulsing or maintaining of energization of Y1 starts the timing T.

A single flashing cycle then starts with 2 timing periods T of equal duration (start with output(s) R in initial position). Output(s) R closes at the end of the first timing period T and reverts to its initial position at the end of the second timing period T.

Re-energizing of Y1, either in pulsation or permanent energized manner, will re-start the single flashing cycle again.

The second output (R2) can be either timed (when set to "TIMED") or instantaneous (when set to "INST").

# Function: 2 Output



# Function Ak: Asymmetrical On-Delay and Off-Delay Relay With Control Signal

#### Description

After energisation of power supply and energization of Y1, timing starts for a period Ta.

At the end of this timing period Ta, the output(s) R closes.

Deenergization of Y1 causes a second timing period Tr to start.

At the end of this timing period Tr, the output(s) R reverts to its initial state.

The second output (R2) can be either timed (when set to "TIMED") or instantaneous (when set to "INST").



# Function B: Single Interval Relay with Control Signal

# Description

After energisation of power supply, pulsing or maintaining of energization of Y1 starts the timing T. The output(s) R close(s) for the duration of the timing period T then revert(s) to its/their initial state. The second output (R2) can be either timed (when set to "TIMED") or instantaneous (when set to "INST").

# Function: 2 Output



# Function Bw : Double Interval Relay with Control Signal

#### Description

After energisation of power supply, transition of Y1 (either from energization to deenergization or vice-versa) will cause the output(s) R close(s) for the duration of the timing period T then revert(s) to its/their initial state.

The second output (R2) can be either timed (when set to "TIMED") or instantaneous (when set to "INST").



#### Function C: Off-Delay Relay with Control Signal

#### Description

After energisation of power supply and energization of Y1 causes output(s) R close(s). When Y1 deenergizes, timing T starts.At the end of this timing period T, the output(s) R revert(s) to its/their initial position. The second output (R2) can be either timed (when set to "TIMED") or instantaneous (when set to "INST").



# Function D: Symmetrical Flashing Relay (Starting Pulse-Off)

# Description

On energisation of power supply, output(s) R starts at its/their initial state for timing duration T then change(s) to output(s) R close(s) for the same timing duration T.This cycle is repeated indefinitely until power supply removal. The second output (R2) can be either timed (when set to "TIMED") or instantaneous (when set to "INST").

# Function: 2 Output



# Function Di: Symmetrical Flashing Relay (Starting Pulse-On)

#### Description

On energisation of power supply, output(s) R starts at output(s) R close(s) for timing duration T then revert(s) to its/their initial state for the same timing duration T.This cycle is repeated indefinitely until power supply removal. The second output (R2) can be either timed (when set to "TIMED") or instantaneous (when set to "INST").

#### Function: 2 Output



#### Function Dt: Symmetrical Flashing Relay (Starting Pulse-Off) With Pause / Summation Control Signal

#### Description

On energisation of power supply, output(s) R starts at its/their initial state for timing duration T and the timing can be interrupted / paused each time Y1 energizes.When the cumulative total of time periods elapsed reaches the pre-set value T, then changes to output(s) R close(s).The output(s) R close state will remain for the same timing duration T and the timing can be interrupted / paused each time Y1 energizes.When the cumulative total of time periods elapsed reaches the pre-set value T, the output(s) R revert(s) to its/their initial state.This cycle is repeated indefinitely until power supply removal.The second output (R2) can be either timed (when set to "TIMED") or instantaneous (when set to "INST").



# Function Dit: Symmetrical Flashing Relay (Starting Pulse-On) With Pause / Summation Control Signal

# Description

On energisation of power supply, output(s) R starts at output(s) R close(s) for timing duration T and the timing can be interrupted / paused each time Y1 energizes.When the cumulative total of time periods elapsed reaches the pre-set value T, then revert(s) to its/their initial state.The output(s) R at initial state will remain for the same timing duration T and the timing can be interrupted / paused each time Y1 energizes.When the cumulative total of time periods elapsed reaches the pre-set value T, the output(s) R change(s) to close state.This cycle is repeated indefinitely until power supply removal.The second output (R2) can be either timed (when set to "TIMED") or instantaneous (when set to "INST").

#### Function: 2 Output



#### Function H: Interval Relay

#### Description

On energisation of power supply, output(s) R close(s) and timing period T starts. At the end of the timing period T, the output(s) R revert(s) to its/their initial state. The second output (R2) can be either timed (when set to "TIMED") or instantaneous (when set to "INST").

#### Function: 2 Output



#### Function Ht: Interval Relay With Pause / Summation Control Signal

#### Description

On energisation of power supply, output(s) R close(s) and timing period T starts. The timing can be interrupted / paused each time Y1 energizes. When the cumulative total of time periods elapsed reaches the pre-set value T, the output(s) R revert(s) to its/their initial state. The second output (R2) can be either timed (when set to "TIMED" or instantaneous (when set to "INST").



# Function L: Asymmetrical Flashing Relay (Starting Pulse-Off)

# Description

On energisation of power supply, output(s) R starts at its/their initial state for timing duration Tr then change(s) to output(s) R close(s) for the another timing duration Ta.

This cycle is repeated indefinitely until power supply removal.

The second output (R2) can be either timed (when set to "TIMED") or instantaneous (when set to "INST").

#### Function: 2 Output



# Function Li: Asymmetrical Flashing Relay (Starting Pulse-On)

#### Description

On energisation of power supply, output(s) R starts at output(s) R close(s) for timing duration Ta then change(s) to its/their initial state for timing duration Tr.

This cycle is repeated indefinitely until power supply removal.

The second output (R2) can be either timed (when set to "TIMED") or instantaneous (when set to "INST").

#### Function: 2 Output



# Function Lt: Asymmetrical Flashing Relay (Starting Pulse-Off) With Pause / Summation Control Signal

#### Description

On energisation of power supply, output(s) R starts at its/their initial state for timing duration Tr and the timing can be interrupted / paused each time Y1 energizes. When the cumulative total of time periods elapsed reaches the pre-set value Tr, then changes to output(s) R close(s).

The output(s) R close state will remain for the same timing duration Ta and the timing can be interrupted / paused each time Y1 energizes. When the cumulative total of time periods elapsed reaches the pre-set value Ta, the output(s) R revert(s) to its/their initial state.

This cycle is repeated indefinitely until power supply removal.

The second output (R2) can be either timed (when set to "TIMED") or instantaneous (when set to "INST").



# Function Lit: Asymmetrical Flashing Relay (Starting Pulse-On) With Pause / Summation Control Signal

#### Description

On energisation of power supply, output(s) R starts at output(s) R close(s) for timing duration Ta and the timing can be interrupted / paused each time Y1 energizes. When the cumulative total of time periods elapsed reaches the pre-set value Ta, the output(s) R revert(s) to its/their initial state.

The output(s) R at initial state will remain for timing duration Tr the timing can be interrupted / paused each time Y1 energizes. When the cumulative total of time periods elapsed reaches the pre-set value Tr, then changes to output(s) R close(s)

This cycle is repeated indefinitely until power supply removal.

The second output (R2) can be either timed (when set to "TIMED") or instantaneous (when set to "INST").

# Function: 2 Output



#### Function N : Safe-Guard Relay

#### Description

After energisation of power supply and on energization of Y1 cause the output(s) R close(s) and starts the timing T.

If the duration interval between 2 consecutive energization of Y1 is greater than the pre-set value T, the output(s) R close(s) at the end of the timing period.

If the duration interval between 2 consecutive energization of Y1 is less than the pre-set value T, the output(s) R remain(s) closed and timing restarted base on the last energization of Y1.

The second output (R2) can be either timed (when set to "TIMED") or instantaneous (when set to "INST").

#### Function: 2 Output



Function O : Delayed Safe-Guard Relay

# Description

On energisation of power supply, the timing T starts.

At the end of this timing period, the output(s) R close(s).

On energization of Y1, the output(s) R revert(s) to its/their initial state and the timing T restarts.

If the duration interval between 2 consecutive energization of Y1 is greater than the pre-set value T, the output(s) R close(s) at the end of the timing period.

If the duration interval between 2 consecutive energization of Y1 is less than the pre-set value T, the output(s) R remain(s) at its/their initial state and timing restarted base on the last energization of Y1.

The second output (R2) can be either timed (when set to "TIMED") or instantaneous (when set to "INST").

# Function: 2 Output



# Function P : Pulse Delayed Relay with Fixed Pulse Length

# Description

On energisation of power supply, the timing T starts.

At the end of this period, the output(s) R close(s) for a fixed time P then revert(s) to its/their initial state.

The second output (R2) can be either timed (when set to "TIMED") or instantaneous (when set to "INST").

# Function: 2 Output



# Function Pt : Pulse Delayed Relay With Fixed Pulse Length and Pause / Summation Control Signal

#### Description

On energisation of power supply, the timing T starts.

The timing can be interrupted / paused each time Y1 energizes.

When the cumulative total of time periods elapsed reaches the pre-set value T, the output(s) R close(s) for a fixed time P then revert(s) to its/ their initial state.

The second output (R2) can be either timed (when set to "TIMED") or instantaneous (when set to "INST").

#### Function: 2 Output



# Description

On energisation of power supply, the output R3 & R4 initializes at its initial state such that energizes STAR CONTACTOR + MAIN CONTACTOR and the timing T starts (STAR connection time duration starts). At the end of the timing period T, the output R3 closes such that deenergizes STAR CONTACTOR and causes t transition time starts. At the end of the transition time, the output R4 closes such that energizes DELTA CONTACTOR. Diagnostic feature not available.

# Function: 2 Output



# Function Qtt: Star-Delta Relay (2 CO Outputs With Split Common) with Pause / Summation Control Signal

# Description

On energisation of power supply, the output R3 & R4 initializes at its initial state such that energizes STAR CONTACTOR + MAIN CONTACTOR and the timing T starts (STAR connection time duration starts).During STAR connection time, the timing can be interrupted / paused each time Y1 energizes.When the cumulative total of time periods elapsed reaches the pre-set value T, the output R3 closes such that deenergizes STAR CONTACTOR and causes t transition time starts.At the end of the transition time, the output R4 closes such that energizes DELTA CONTACTOR. Diagnostic feature not available.

# Function: 2 Output



#### Function TL : Bistable Relay with Control Signal On

# Description

After energisation of power supply and on energization of Y1 cause the output(s) R close(s). The subsequent on energization of Y1 cause the output(s) R revert(s) to its/their initial state.

This cycle is repeated indefinitely until power supply removal.

The second output (R2) can be either timed (when set to "TIMED") or instantaneous (when set to "INST").

# Function: 2 Output



Function Tt : Retriggerable Bistable Relay with Control Signal On

# Description

After energisation of power supply and on energization of Y1 cause the output(s) R close(s) and starts the timing T.

If the duration interval between 2 consecutive energization of Y1 is greater than the pre-set value T, the output(s) R will toggle from its/their present status the end of the timing period.

If the duration interval between 2 consecutive energization of Y1 is less than the pre-set value T, the output(s) R toggle from its/their present status as soon as Y1 energizes without completing T duration.

The second output (R2) can be either timed (when set to "TIMED") or instantaneous (when set to "INST").

#### Function: 2 Output



# Function W: Interval Relay with Control Signal Off

#### Description

After energisation of power supply and on energization of Y1 following by denergization of Y1, the output(s) R close(s) and starts the timing T.At the end of the timing period, the output(s) R revert(s) to its/their initial state. The second output (R2) can be either timed (when set to "TIMED") or instantaneous (when set to "INST").

# Function: 2 Output



#### Legend

Relay de-energised

Relay energised

Output open

Output closed

U -	Supply
R1/R2 -	2 timed outputs
Та -	Adjustable On-delay
Tr -	Adjustable Off-delay
Y1 -	Retrigger / Restart control
R2 inst	The second output is instantaneous if the right position is selected
Τ-	Timing period
R4 -	Delta contact output
t -	Delay to switch ON Delta contact output
R3 -	Star-Delta contact output