Zelio Control - Measurement and control relays

Multifunction 3-phase control relays RM22TA, RM22TU, RM22TR, and RM22TG

RM22T●●●

Presentation

RM22 Zelio multifunction control relays monitor the following functions on 3-phase supplies:

Functions	RM22TA	RM22TU	RM22TR	RM22TG
Sequence of phases L1, L2, and L3	■	■	■	■
Phase failure with regeneration	■	■	■	■
Asymmetry	■	□	□	□
Undervoltage	□	■	□	□
Overvoltage and undervoltage	□	□	■	□

■ Function performed
□ Function not performed

Depending on the model RM22T●●● control relays:
- Accept different nominal 3-phase voltages: up to 480 V ∼
- Monitor their own power supply measured as a true rms value
- Are designed for clip-on mounting on DIN rail

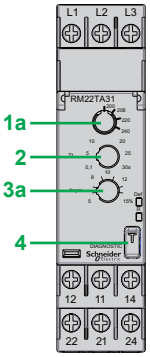
They feature:
- Sealable cover to protect the settings
- Diagnostic button for load circuit testing
- Relay output status LED
- Fault detection indication LED
- Dial pointer LED indicator for relay power ON status
- Relay output On-delay or Off-delay

Applications

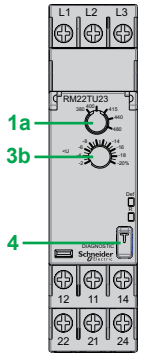
- Control for connection of moving equipment (site equipment, agricultural equipment, refrigerated trucks)
- Control for protection of persons and equipment against the consequences of reverse running (lifting, handling, elevators, escalators, etc.)
- Control of sensitive 3-phase supplies
- Protection against the risk of a driving load (phase failure)
- Normal/emergency power supply switching

Description

RM22TA

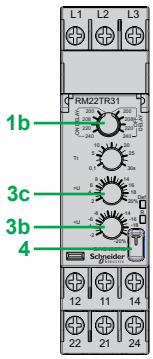


RM22TU

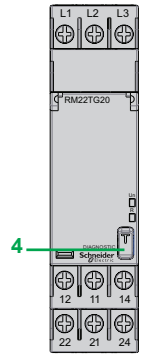


1a Voltage range selector switch
1b Voltage range/On-Off delay selector
2 Time delay adjustment potentiometer **Tt**
3a Asymmetry threshold setting potentiometer **Asym**
3b Undervoltage setting potentiometer **<U**
3c Overvoltage setting potentiometer **>U**
4 Diagnostic button

RM22TR



RM22TG



Un Green LED: indicates that supply to the relay is on
R Yellow LED: indicates relay output state
DEF Yellow LED: indicates fault detection

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Operating principle

Multifunction 3-phase supply control relays monitor:
- Own power supply
- Correct sequencing of phases L1, L2, and L3
- Fault signaling by LED
- Phase failure, including in the case of voltage regeneration
- Undervoltage from - 2…- 20 % of the supply voltage Un
- Overvoltage from 2…20 % of the supply voltage Un
- Asymmetry from 5…15 % of the supply voltage Un

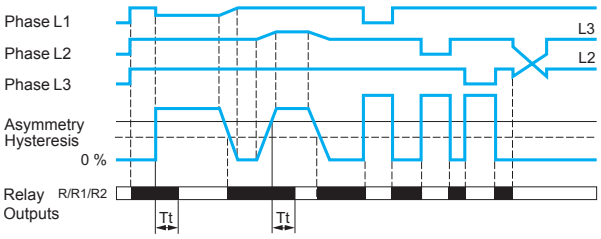
Voltage switch operation:
- Set the switch to 3-phase supply voltage Un.
- The position of this switch is taken into account on energization of the device.
- If the switch position is changed while the device is operating, all the LEDs flash but the product continues to operate normally with the voltage selected at the time of energization preceding the change of position.
- If the switch is returned to the original position selected prior to the last energization, the LEDs return to their normal state.

Phase + asymmetry control relay: RM22TA

- The relay monitors its own supply voltage Un:
  - correct sequence of three phases
  - failure of at least one of the three phases (U measured < 0.7 x Un)
  - asymmetry adjustable from 5…15 % of Un
- If a sequencing or phase failure fault is detected, the relay opens instantly.
- If an asymmetry fault is detected, the relay opens at the end of the time delay set by the user.
- On energization of the device with a detected measured fault, the relay stays open.

Function diagram

- Functions:
  - Sequence of phases L1, L2, L3
  - Phase failure
  - Asymmetry **Asym**



Tt: time delay after crossing of threshold (adjustable on front panel)

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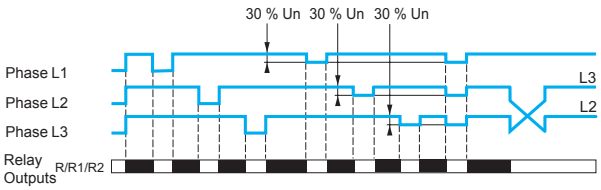
Operating principle (continued)

Phase + undervoltage control relays: RM22TU

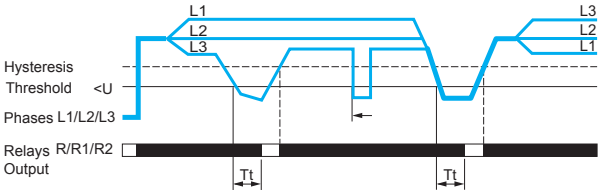
- The relay monitors its own supply voltage Un:
  - correct sequence of the three phases
  - failure of at least one of the three phases (U measured < 0.7 x Un)
  - undervoltage adjustable from - 2…- 20 % of Un
- If a sequencing or phase failure fault is detected, the relay opens instantly.
- If a voltage fault is detected, the relay opens instantly.
- On energization of the device with a detected measured fault, the relay stays open.

Function diagrams

- Functions:
  - Sequence of phases L1, L2, L3
  - Phase failure



- Undervoltage control **<U**



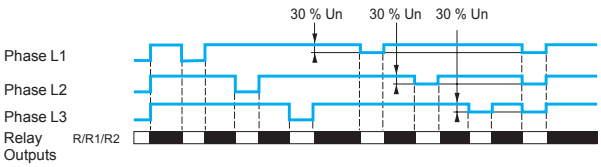
Tt: time delay after crossing of threshold

Phase + undervoltage/overvoltage control relay: RM22TR

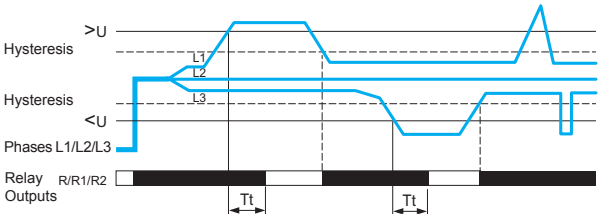
- The relay monitors its own supply voltage Un:
  - phase failure
  - undervoltage and overvoltage
- An adjustable time delay, on crossing the thresholds, provides immunity to transients, and prevents spurious triggering of the output relay.
- If a voltage fault is detected, the relay opens at the end of the time delay set On-delay or Off-delay by the user.
- On energization of the device with a detected measured fault, the relay stays open.
- In the event of phase failure, the relay opens instantly.

Function diagrams

- Functions:
  - Phase failure



- Overvoltage and undervoltage (Off-delay)



Tt: time delay after crossing of threshold (adjustable on front panel)

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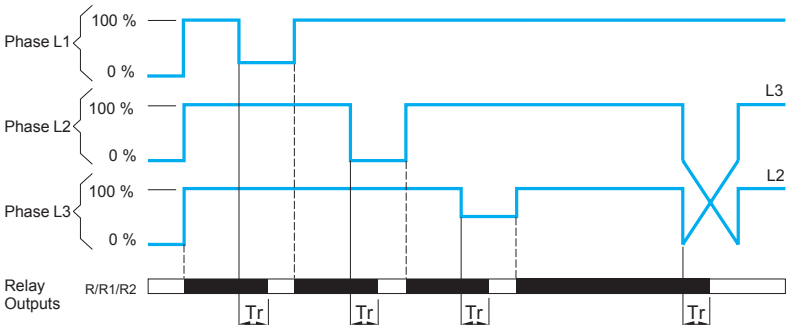
Operating principle (continued)

Phase control relays: RM22TG

- The RM22TG relay monitors:
  - correct sequencing of the three phases
  - total loss of one or more of the phases
- When phase sequence and voltages are correct (> 183 V ∿), the output relays are closed and the yellow LED is on.
- When there is a sequencing fault or total loss of one or more phases (detected as soon as one of the voltages drops below 100 V) the relay opens instantly and the LED goes off.
- On energization of the device with a detected measured fault, the relay stays open.

Function diagram

- Function:
  - Sequence of phases L1, L2, L3
  - Phase failure



Tr: response time on appearance of a fault

References

Function	Rated 3-phase supply voltage	Measurement range	Time delay	Output	Reference	Weight
	V	V				kg/*lb*
■ Phase sequence ■ Phase failure ■ Asymmetry	200…240 ∿	200…240 ∿	Off delay (0.1...30 s)	2 C/O 8 A	**RM22TA31**	0.090/ *0.198*
	380…480 ∿	380…480 ∿	Off delay (0.1...30 s)	2 C/O 8 A	**RM22TA33**	0.090/ *0.198*
■ Phase sequence ■ Phase failure ■ Undervoltage and overvoltage	200…240 ∿	200…240 ∿	On/Off delay (0.1...30 s)	2 C/O 8 A	**RM22TR31**	0.090/ *0.198*
	380…480 ∿	380…480 ∿	On/Off delay (0.1...30 s)	2 C/O 8 A	**RM22TR33**	0.090/ *0.198*
■ Phase sequence ■ Phase failure ■ Undervoltage	200…240 ∿	200…240 ∿	No	2 C/O 8 A	**RM22TU21**	0.090/ *0.198*
	380…480 ∿	380…480 ∿	No	2 C/O 8 A	**RM22TU23**	0.090/ *0.198*
■ Phase sequence ■ Phase failure	208…480 ∿	183…528 ∿	No	2 C/O 8 A	**RM22TG20**	0.090/ *0.198*


RM22TA31


RM22TR31


RM22TG20


RM22TU21