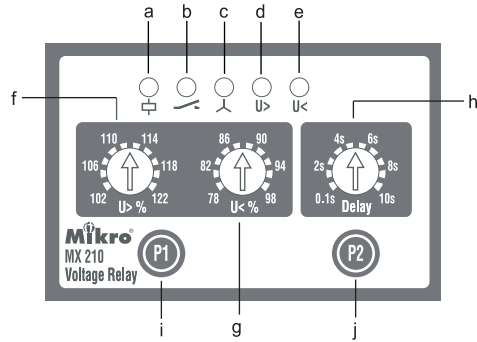


# MX210 3-Phase/Single-Phase Voltage Relay User Manual



Front panel overview

- a – Power supply LED
- b – Contact output LED
- c – Phase error LED
- d – Overvoltage LED
- e – Undervoltage LED
- f – Overvoltage setting
- g – Undervoltage setting
- h – Delay setting
- i – P1 (Program 1) Button
- j – P2 (Program 2) Button

## 1. General Description

MX210 is a voltage relay that combines overvoltage, undervoltage, phase loss, phase sequence and delay start functions.

Contact output R1 is On under normal operating condition, off during trip state.

During power up, Power supply LED on, condition is normal, contact output on after 3 seconds delay and Contact output LED on.

## 2. Settings

### a) 3-Phase, Single-Phase Setting

Press and hold P1 button for longer than 2 seconds during power up to set MX210 to Single-phase mode. Only overvoltage and undervoltage is available in Single-Phase mode.

Press and hold P2 button for longer than 2 seconds during power up to set MX210 to 3-phase mode which monitors all 3 phases with phase loss and phase sequence detection.

### b) Nominal Voltage Setting

To set nominal voltage, P1 and P2 buttons can be pressed for longer than 2 seconds during normal operation. Contact output LED will blink for a while to indicate the setting if no tripping:

Button	Setting	Contact Output LED
P1	380V/220V	Blink once
P2	400V/230V	Blink twice
P1+P2	415V/240V	Blink 3 times

## 3. Protection

### 3.1 Undervoltage

Undervoltage pickup occurs when any phase voltage is less than [nominal voltage - U< %], Undervoltage LED blinks during pickup. Relay trips when delay time is elapsed, Undervoltage LED on.

### 3.2 Overvoltage

Undervoltage pickup occurs when any phase voltage is more than [nominal voltage + U> %], Overvoltage LED blinks during pickup. Relay trips when delay time is elapsed, Overvoltage LED on.

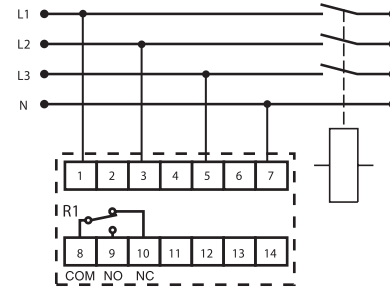
### 3.3 Phase Error

**Phase Sequence** trip occurs when the phase sequence in any 2 or all of the lines are reversed for 0.5s.

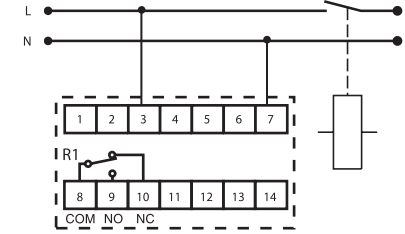
**Phase Loss** trip occurs when any voltage is less than 60% of nominal for 0.5s.

When any of the above detect, relay trips and Phase error LED on.

## 4. Typical Application Diagram



3-Phase System



Single-Phase System

## 5. Technical Data

### Power Supply Input

#### 3-Phase

Phase to phase voltage : 380V(-25%) to 415V(+20%) AC

#### Single-Phase

Phase to neutral voltage : 220V(-25%) to 240V(+20%) AC

Frequency range : 45Hz to 65Hz

Power consumption : 3 VA maximum

### Output Contacts

Rated voltage : 250V AC

Contact rating : 5A

Expected electrical life : 100,000 operations at rated current

Expected mechanical life : 5 x 10<sup>6</sup> operations

### Setting Ranges

Undervoltage : 78% - 98%

Overvoltage : 102% - 122%

Delay time : 0.1 - 10s

Nonimal voltage : 380, 400, 415Vpp, 220, 230, 240Vpn

3 Phase/Single-Phase

### Accuracy

Protection thresholds : ± 3%

Hysteresis : 1%

Delay time : 0-0.5s, ± 15%, 40ms minimum, 0.5s and above, ± 3%

Measurements : ± 3%

### Indicators

Power supply On : Green indicator

Output On : Green indicator

Undervoltage : Red indicator

Overvoltage : Red indicator

Phase error : Red indicator

### Environmental Conditions

Temperature : -5°C to +55°C

Humidity : 56 days at 93% RH and 40°C non-condensing

### Mechanical

Mounting : DIN rail

Dimension (mm) : 71(w) x 85(h) x 70(d)

Approximate weight : 0.3kg

### Case Dimensions

