

3-phase voltage monitoring relay (Multifunction)

EMR SU31C1, SU31D1

| Technical data | | |
|--|--------------------------------|---|
| Nominal consumption | 3(N) ~230/132 V, 6 VA (2 W) | |
| | 3(N) ~400/230 V, 9 VA (2 W) | |
| Nominal frequency | 48 ... 63 Hz | |
| Drop-out voltage | >20% of the nominal voltage | |
| Base accuracy | ±5% (of maximum nominal value) | |
| Adjustment accuracy ±5% (of maximum nominal value) | | |
| Repetition accuracy | ≤2% (of maximum nominal value) | |
| Temperature influence | ≤0.1% / °C | |
| Recovery time | 500 ms | |
| Measuring circuit: | Measured variable | ac sine (48 ... 63 Hz) |
| | Input: | |
| | 3(N) ~132/230 V | Terminals (N)-L1-L2-L3 |
| | 3(N) ~230/400 V | Terminals (N)-L1-L2-L3 |
| | Overload capacity: | |
| | 3(N) ~132/230 V | -30% ... +30% |
| | 3(N) ~230/400 V | -30% ... +30% |
| | Input resistance: | |
| | 3(N) ~132/230 V | according to nominal voltage 6 VA / 2 W |
| | 3(N) ~230/400 V | according to nominal voltage 9 VA / 2 W |
| | Switching threshold: | |
| | Max: | 80% ... 130% of U_N |
| | Min: | 70% ... 120% of U_N |
| | Asymmetry: | 5% ... 30% |

Type key

| EMR S U 3 1 C 1 | |
|--------------------------------------|-------------------------------------|
| Construction | Special functions |
| D Industrial design 22.5 mm | 1 = Additional asymmetry monitoring |
| S pluggable 11 poles | |
| Function | Measuring circuit |
| U Voltage | A No measuring circuit |
| I Current | B 3(N)~115/66 Vac |
| P CosPhi | C 3(N)~230/132 Vac |
| T Temperature | D 3(N)~400/230 Vac |
| S Star-Delta | E 1≅30/60/300 Vac/dc |
| | F 1≅100mA/1A/10A ac/dc |
| | G PTC |
| | H CosPhi |
| Output | Connecting voltage |
| 1 1 changer | 1 Measuring circuit |
| 2 2 changers | 2 24...240 Vac/dc |
| 3 1 NC contact / 1 NO contact | 3 230 Vac |
| | I 12 Vdc |
| | J 24 Vdc |
| | K 36 Vdc |
| | L 48 Vdc |
| | M 1~110 Vac |
| | N 1~230 Vac |
| | O 1 A |
| | P 5 A |

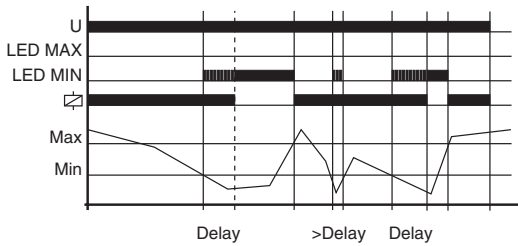
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Function description

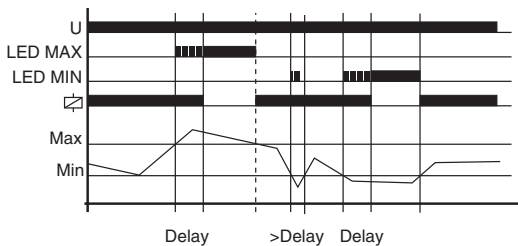
For all the functions the LEDs MIN and MAX are flashing alternating, when the minimum value for the measured voltage was chosen to be greater than the maximum value.

If a failure already exists when the device is activated, the output relays remain in off-position and the LED for the corresponding threshold is illuminated.



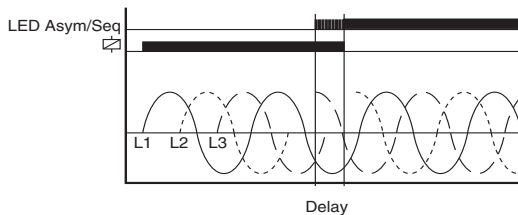
Under voltage monitoring (UNDER, UNDER+SEQ)

When the measured voltage (one of the phase voltages) falls below the value adjusted at the MIN-regulator, the set interval of the tripping delay (DELAY) begins (red LED MIN flashes). After the interval has expired (red LED MIN illuminated), the output relays switch into off-position (yellow LED not illuminated). The output relays again switch into on-position (yellow LED illuminated), when the measured voltage exceeds the value adjusted at the MAX-regulator.



Window function (WIN, WIN+SEQ)

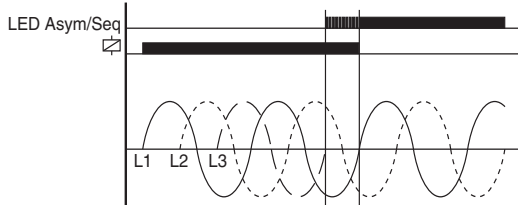
The output relays switch into on-position (yellow LED illuminated) when the measured voltage (one of the phase voltages) exceeds the value adjusted at the MIN-regulator. When the measured voltage exceeds the value adjusted at the MAX-regulator, the set interval of the tripping delay (DELAY) begins (red LED MAX flashes). After the interval has expired (red LED MAX illuminated), the output relays switch into off-position (yellow LED not illuminated). The output relays again switch into on-position (yellow LED illuminated) when the measured voltage falls below the value adjusted at the MAX-regulator (red LED MAX not illuminated). When the measured voltage falls below the value adjusted at the MIN-regulator, the set interval of the tripping delay (DELAY) begins again (red LED MIN flashes). After the interval has expired (red LED MIN illuminated), the output relays switch into off-position (yellow LED not illuminated).



Phase sequence monitoring (SEQ)

Phase sequence monitoring is selectable for all functions.

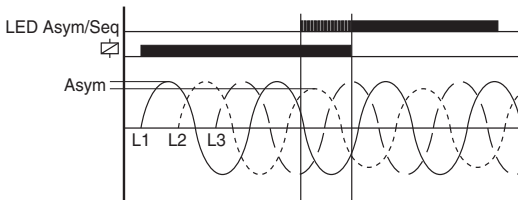
If a change in phase sequence is detected (red LED Asym./SEQ flashes), the output relays switch into off-position after the interval has expired (yellow LED not illuminated, red LED Asym./SEQ illuminated).



Phase failure monitoring (SEQ)

If one of the phase voltages fails, the set interval of the tripping delay (DELAY) begins (red LED SEQ flashes). After the interval has expired (red LED SEQ illuminated), the output relays switch into off-position (yellow LED not illuminated).

Reverse voltages of a consumer (e.g. a motor which continues to run on two phases only) do not effect the disconnection but can be monitored by using a proper value for the asymmetry.



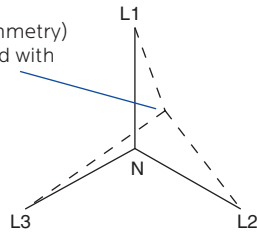
Asymmetry monitoring

If the asymmetry between the phases exceeds the value set at the ASYM-regulator, the set interval of the tripping delay (DELAY) begins (red LED ASYM flashes). After the interval has expired (red LED ASYM illuminated), the output relays switch into off-position (yellow LED not illuminated).

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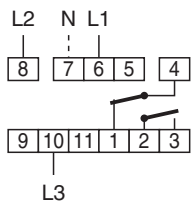
Shift of the star-point (asymmetry) through unequal phase-load with missing neutral wire



Loss of neutral wire by means of evaluation of asymmetry

A break of the neutral wire between power line and machinery is detected as soon as asymmetry between phase-to-phase voltage and neutral wire occurs. If the asymmetry exceeds the value set at the ASYM-regulator, the set interval of the tripping delay (DELAY) begins (red LED ASYM flashes). After the interval has expired (red LED ASYM illuminated), the output relays switch into off-position (yellow LED not illuminated). A break of the neutral wire between our device and the machinery can not be detected.

Connection



Measuring range 3 (N) 400/230 Vac
Supply voltage = measuring range

Dimensions

