

3-phase voltage monitoring relay (Multifunction)

EMR SU31C1, SU31D1



EMR SU31C1



EMR SU31D1

- Voltage monitoring in 3-phase mains
- Measuring range 230/132 / 400/230 Vac 3Ph
- Multifunction
- Monitoring of phase sequence and phase failure
- Additional asymmetry monitoring
- Connection of neutral wire optional
- 1 NC contact / 1 NO contact

Functions

Voltage monitoring in 3-phase mains with adjustable thresholds, adjustable tripping delay, monitoring of phase sequence and phase failure, monitoring of asymmetry with adjustable threshold and the following functions (selectable by means of rotary switch)

- Undervoltage monitoring
- Undervoltage monitoring and monitoring of phase sequence
- Monitoring of window between Min and Max
- Monitoring the window between Min and Max and monitoring of phase sequence.

Time ranges

Start-up suppression time: -

Tripping delay: Adjustment range 0.1 ... 10 s

Indicators

- Red LED ON/OFF: indication of failure of the corresponding threshold
- Red LED flashes: indication of tripping delay of the corresponding threshold
- Yellow LED ON/OFF: indication of relay output

Output relay

1 NC contact / 1 NO contact

Rated voltage: 250 Vac

Switching capacity: 1250 VA (5 A / 250 Vac)

Fusing: 5A fast acting

Connecting voltages

3 (N) ~ 230/132 V, terminals (N)_L1_L2_L3 (= Measuring voltage)

3 (N) ~ 400/230 V, terminals (N)_L1_L2_L3 (= Measuring voltage)

100% duration of operation

Reference data

Selectron® EMR	Article no.
SU31D1 400/230 Vac 3Ph	41230018
SU31C1 230/132 Vac 3Ph	41230017

(Order data see chapter 1)

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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

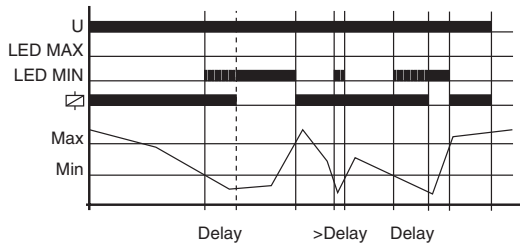
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Function description

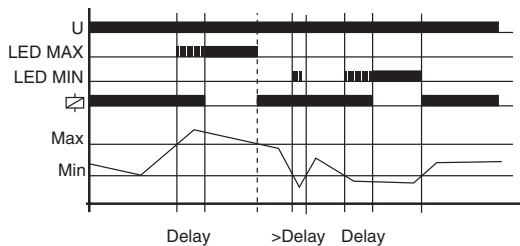
For all the functions the LEDs MIN and MAX are flashing alternating, when the minimum value for the measured voltage was chosen to be greater than the maximum value.

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.



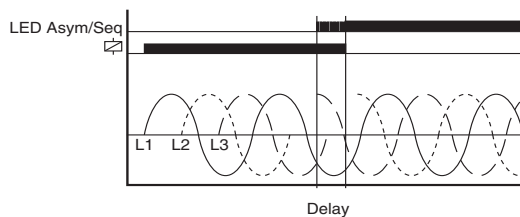
Under voltage monitoring (UNDER, UNDER+SEQ)

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)

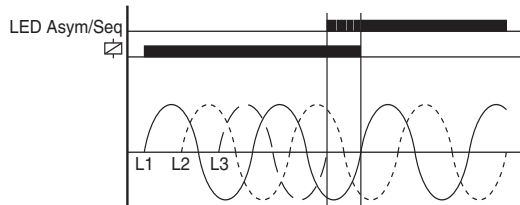
The output relays switch into on-position (yellow LED illuminated) when the measured voltage (one of the phase voltages) exceeds the value adjusted at the MIN-regulator. When the measured voltage exceeds the value adjusted at the MAX-regulator, the set interval of the tripping delay (DELAY) begins (red 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.

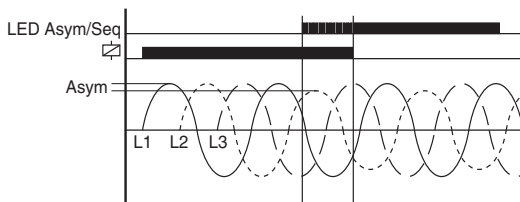
If a change in phase sequence is detected (red LED Asym./SEQ flashes), the output relays switch into off-position after the interval has expired (yellow LED not illuminated, red LED Asym./SEQ illuminated).



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.



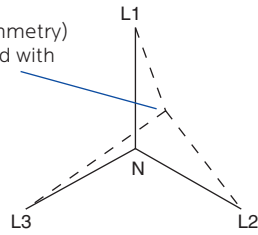
Asymmetry monitoring

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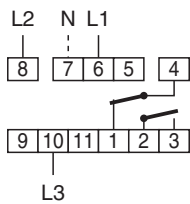
Shift of the star-point (asymmetry) through unequal phase-load with missing neutral wire



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

