VEO

MONITORING RELAY / 3-PHASE VOLTAGE

V2PM400Y/230VS10

Art.Nr.: 2100500

V2PM400Y/230VS10P

Art.Nr.: 2100510

- Multifunction
- Monitoring of phase sequence and phase loss
- Supply voltage 400 V AC
- Supply circuit = measuring circuit
- 1 change-over contact
- Width 22,5 mm

Control elements

- Tripping delay
- Maximum threshold
- Minimum threshold
- Function selector

Status indication

- LED UFail.: Phase sequence failure or phase loss
- LED Max: Overvoltage
- LED Min: Undervoltage
- LED R: Relay status

TECHNICAL DATA

SUPPLY CIRCUIT (=MEASURING CIRCUIT)		
Terminals		L1-L2-L3
Supply voltage		400/230 V AC
Supply voltage tolerance		-35 / +35 %
Rated frequency		16,6 ... 400 Hz
Rated frequency tolerance		16,0 ... 420 Hz
Rated consumption	3 x 400 V AC	typ. 0,45 W / 0,75 VA
Duty-cycle		100 %
Backup power time		< 90 ms
Recovery time		> 700 ms
Drop-out voltage		≥ 12 V

MEASURING CIRCUIT		
Terminals		L1-L2-L3
Measurend		voltage 3-phase
Measuring method		True RMS
Monitoring functions		undervoltage (U), window (W), phase sequence, phase loss
Measuring range		see supply voltage
Frequency		see rated frequency
Overload capacity		see supply voltage tolerance

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MEASURING CIRCUIT

Thresholds	Max	75 ... 130 %
	Min	70 ... 125 %
	Asymmetry	-
Hysteresis		1 %

TIMING CIRCUIT

Start-up delay	fixed	approx. 200ms
Tripping delay	adjustable	0,1 ... 10 s
	phase sequence	approx. 65 ms at 50 Hz

RANGE OF FUNCTIONS

Functions	4	U, W, U+S, W+S

STATUS INDICATION

Relay status	LED R (yellow) on	output relay energized
Voltage monitor	LED MAX (red) on	indication of overvoltage
	LED MAX (red) flashes	indication of tripping delay for overvoltage
	LED MIN (red) on	indication of undervoltage
	LED MIN (red) flashes	indication of tripping delay for undervoltage
	LED UFail. (red) on	indication of phase sequence failure or phase loss
	LED UFail. (red) flashes	indication of tripping delay for phase loss

OUTPUT CIRCUIT

Terminals		15-16-18
Kind of output		Relay
Number of contacts	change-over contact	1
Contact material		AgNi
Rated voltage (IEC 60947-1)		250 V
Maximum switching voltage		400 V AC
Minimum switching voltage / switching current		12 V / 10 mA
Rated current (IEC 60947-5-1)	AC-1	8 A / 250 V
	AC-15	1,5 A / 240 V (B300)
	DC-12	8 A / 24 V

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MEASURING CIRCUIT		
Endurance	mechanical	30 x 10^6 switching cycles
	electrical (AC-1)	100 x 10^3 switching cycles
Rated frequency of operation	with load	6/min
	without load	1200/min
Fuse rating		8 A fast acting

ACCURACY		
Base accuracy		< 2,5 %
Setting accuracy		< 5 % (of full scale)
Repeat accuracy		< 1%
Temperature influence		< 0,01 % / °C
Voltage influence		-
Frequency influence		< 0,003 % / Hz

ENVIRONMENTAL CONDITIONS		
Ambient temperature	operation	-25 ... +60°C
	storage	-40 ... +70°C
Relative humidity		5 ... 95 %
Vibration	EN 60947-1	2 ... 13,2 Hz: 1 mm; 13,2 ... 100 Hz: 7 m/s^2
Shock	EN 60947-1	150 m/s^2 11 ms

GENERAL DATA		
Dimensions	W × H × D	22,5 x 67 x 76 mm
Mounting		DIN rail (EN60715)
Mounting position		any
Housing material		PA 66, self-extinguishing plastic, class V-0
Degree of protection	housing	IP40
	terminals	IP20
Electrical connection	V2PM...10	screw terminal
Wire size	flexible with wire end ferrule	0,5 ... 2,5 mm^2 (20 AWG ... 13 AWG)
	flexible without wire end ferrule	0,5 ... 4 mm^2 (20 AWG ... 12 AWG)
	rigid	0,5 ... 4 mm^2 (20 AWG ... 12 AWG)
Stripping length		8 mm
Tightening torque		max. 1Nm

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GENERAL DATA

Electrical connection	V2PM...10P	Push-in terminal
Wire size	flexible with wire end ferrule	0,25 ... 1,5 mm² (24 AWG ... 16 AWG)
	flexible with plastic ferrule	0,25 ... 0,75 mm² (24 AWG ... 19 AWG)
	flexible without wire end ferrule	0,2 ... 1,5 mm² (24 AWG ... 16 AWG)
	rigid	0,2 ... 1,5 mm² (24 AWG ... 16 AWG)
Stripping length		8 mm
MTTF		-
Weight		86 g

ISOLATION DATA

Pollution degree (IEC 60947-5-1)		2
Overvoltage category (IEC 60947-5-1)		III
Rated insulation voltage (IEC 60947-1)	supply circuit / output circuit	300 V
Rated impulse withstanding voltage (IEC 60947-1)	supply circuit / output circuit	6 kV
Insulation test voltage (IEC 60947-1)	supply circuit / output circuit	3780 V
Degree of protection	supply circuit / output circuit	protective seperation

STANDARDS

Product standard	IEC 60947-5-1
Interference immunity	IEC 61000-6-2
Interference emmision	IEC 61000-6-4
Approvals	

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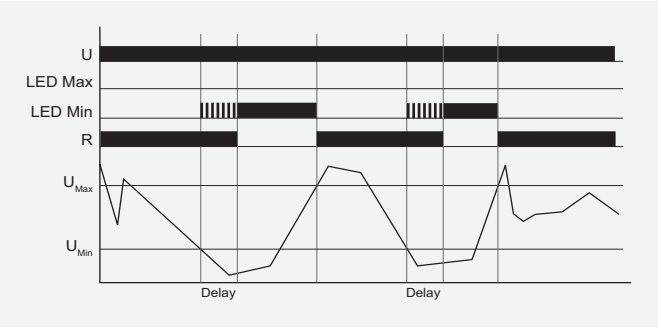
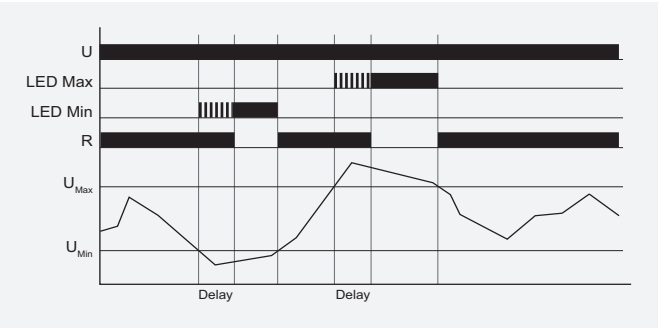
FUNCTIONS

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 relay R remains in off-position and the LED for the corresponding threshold is illuminated.

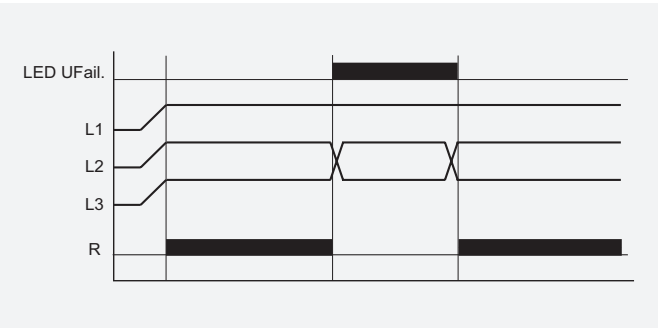
Undervoltage monitoring (U)
When one of the 3 measured voltages (phase-to-phase) falls below the adjusted threshold U_{Min}, the set interval of the tripping delay (DELAY) begins. After the interval has expired, the output relay R switches into off-position. The output relay R switches into on-position again after all of the 3 measured voltages exceed the adjusted threshold U_{Max}.



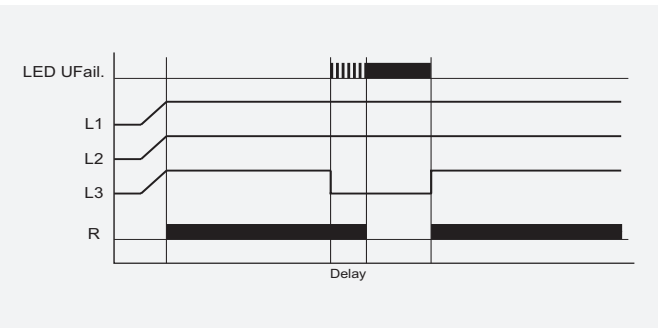
Window function (W)
When one of the 3 measured voltages (phase-to-phase) falls below the adjusted threshold U_{Min}, the set interval of the tripping delay (DELAY) begins. After the interval has expired, the output relay R switches into off-position. The output relay R switches into on-position again after all of the 3 measured voltages exceed the adjusted threshold U_{Min}. When one of the 3 measured voltages (phase-to-phase) exceeds the adjusted threshold U_{Max}, the set interval of the tripping delay (DELAY) begins. After the interval has expired, the output relay R switches into off-position. The output relay R switches into on-position again after all of the 3 measured voltages fall below the adjusted threshold U_{Max}.



Phase sequence monitoring
Phase sequence monitoring is selectable for all functions.
If a change in phase sequence is detected, the output relay R switches into off-position immediately.



Phase failure monitoring
If one of the 3 phases fails, the set interval of the tripping delay (DELAY) begins. After the interval has expired, the output relay R switches into off-position.



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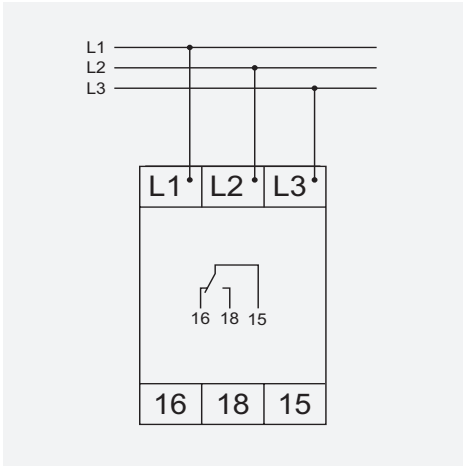
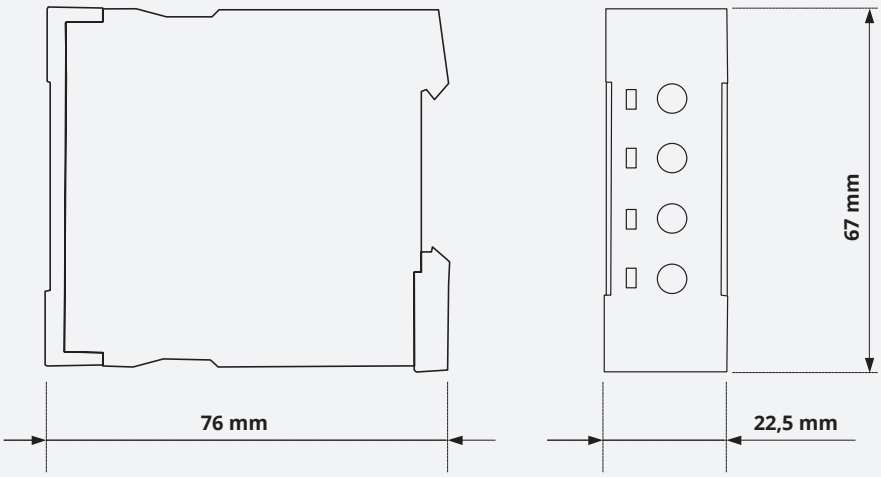
CONNECTIONS



DIMENSIONS



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