VEO

MONITORING RELAY / 3-PHASE VOLTAGE

V4PF480Y/277VSYTK02

Art.Nr.: 2104200

V4PF480Y/277VSYTK02P

Art.Nr.: 2104210

- Monitoring of phase sequence and phase loss
- Monitoring of asymmetry
- Temperature monitoring (PTC)
- Supply voltage 208-480 V AC
- Supply circuit = measuring circuit
- 2 change-over contacts
- Width 45 mm

Control elements

- Asymmetry

Status indication

- LED U: Supply voltage
- LED UFailure: Mains faults
- LED TFailure: Temperature failure

TECHNICAL DATA

SUPPLY CIRCUIT (=MEASURING CIRCUIT)		
Terminals		L1-L2-L3
Supply voltage		208 / 120 ... 480 / 277 V AC
Supply voltage tolerance		-10 / +10 %
Rated frequency		50 / 60 Hz
Rated frequency tolerance		48 ... 63 Hz
Rated consumption	3 x 480 V AC	typ. 0,6 W / 1 VA
	3 x 208 V AC	typ. 0,35 W / 0,55 VA
Duty-cycle		100 %
Backup power time		< 10 ms
Recovery time		> 500 ms
Drop-out voltage		≥ 121/70 V AC

MEASURING CIRCUIT	
Terminals	L1-L2-L3
Measurand	voltage 3-phase
Measuring method	rectified value
Monitoring functions	phase sequence, phase loss, asymmetry
Measuring range	see supply voltage
Frequency	see rated frequency
Input resistance	3 MOhm
Overload capacity	see supply voltage tolerance

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MEASURING CIRCUIT

Thresholds	Max	-
	Min	-
	Asymmetry	5 ... 25 %, OFF
Hysteresis		-
Terminals		T1-T2-T3
Measurand		temperature (PTC)
Monitoring functions		overtemperature
Switch-off resistance		≥ 3,6 kΩ
Switch-on resistance		≤ 1,8 kΩ
Short-circuit monitoring		terminals T1-T2
	switch-on re-sistance	≤ 20 Ω
No-load voltage	max.	5 V DC
Reset		autoreset

TIMING CIRCUIT

Start-up delay	fixed	approx. 500ms
Tripping delay	mains faults	approx. 200 ms
	temperature failure	approx. 250 ms

STATUS INDICATION

Supply voltage	LED U (green) on	supply voltage applied
Voltage monitor	LED UFailure (red) on	indication of mains fault
Temperature monitor	LED TFailure (red) on	indication of overtemperature

OUTPUT CIRCUIT

Terminals	overtemperature	11-12-14
	mains fault	21-22-24
Kind of output		Relay
Number of contacts	change-over contact	2
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

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OUTPUT CIRCUIT

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
	DC-13	0,1 A / 250 V
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		< 5 % (of full scale)
Setting accuracy		< 5 % (of full scale)
Repeat accuracy		< 1 %
Temperature influence		< 0,05 % / °C
Voltage influence		-
Frequency influence		-

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	45 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	V4PF...TK02	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

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GENERAL DATA

Tightening torque		max. 1Nm
Electrical connection	V4PF...TK02P	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		135 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 cicuit	550 V
	supply circuit / thermistor circuit	550 V
	thermistor circuit / output circuit	550 V
Rated impulse withstanding voltage (IEC 60947-1)	supply circuit / output cicuit	6 kV
	supply circuit / thermistor circuit	4 kV
	thermistor circuit / output circuit	6 kV
Insulation test voltage (IEC 60947-1)	supply circuit / output cicuit	3780 V
	supply circuit / thermistor circuit	1890 V
	thermistor circuit / output circuit	3780 V
Degree of protection	supply circuit / output cicuit	protective seperation
	supply circuit / thermistor circuit	basic insulation
	thermistor circuit / output circuit	protective seperation

STANDARDS

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

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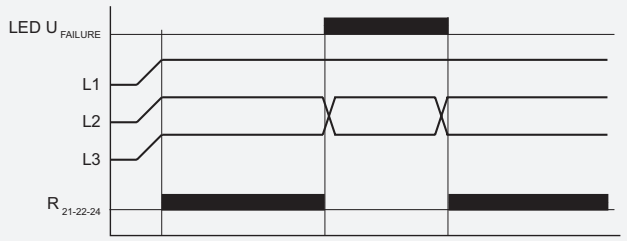
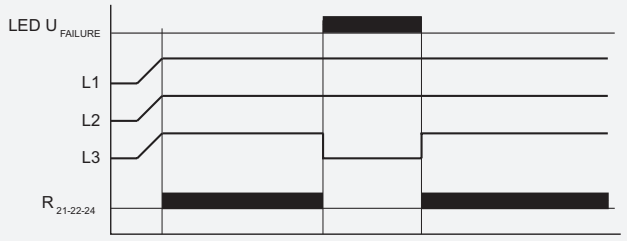
FUNCTIONS

When all the phases are connected in the correct sequence and the measured asymmetry is less than the set value, the output relay $R_{21\text{-}22\text{-}24}$ switches into on-position.

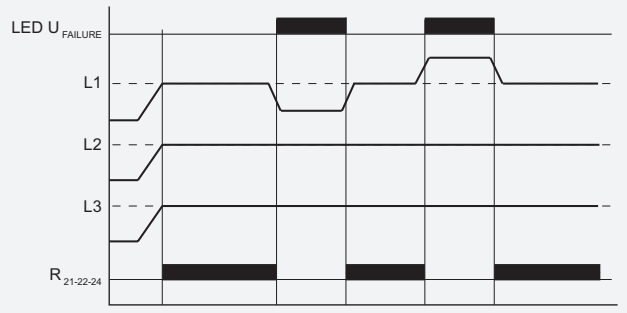
Phase sequence monitoring
When the phase sequence changes, the output relay $R_{21\text{-}22\text{-}24}$ switches into off-position.



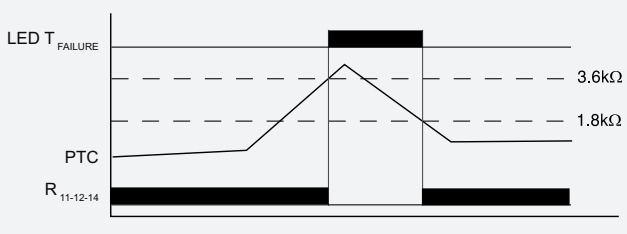
Phase failure monitoring
When one of the three phases fails, the output relay $R_{21\text{-}22\text{-}24}$ switches into off-position.



Asymmetry monitoring
When the asymmetry exceeds the value at the ASYM-regulator, the output relay $R_{21\text{-}22\text{-}24}$ switches into off-position. Reverse voltages of a consumer (e.g. a motor which continues to run on two phases only) do not effect the disconnection.



Temperature monitoring
If the supply voltage U is applied and the cumulative resistance of the PTC-circuit is less than 3.6kΩ (standard temperature of the motor), the output relay $R_{11\text{-}12\text{-}14}$ switches into on-position. When the cumulative resistance of the PTC-circuit exceeds 3.6kΩ, the output relay $R_{11\text{-}12\text{-}14}$ switches into off-position. The output relay $R_{11\text{-}12\text{-}14}$ switches into on-position again after the cumulative resistance falls below 1.8kΩ.



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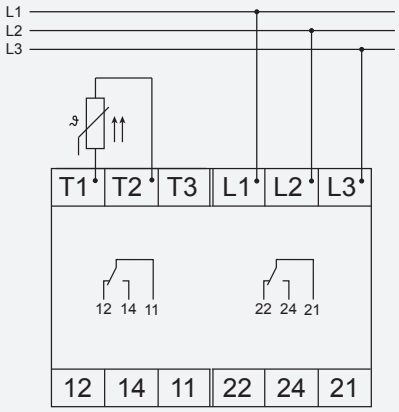
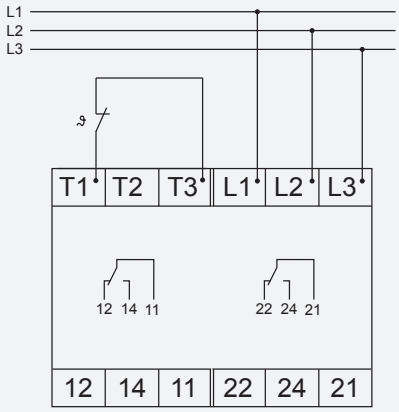
CONNECTIONS

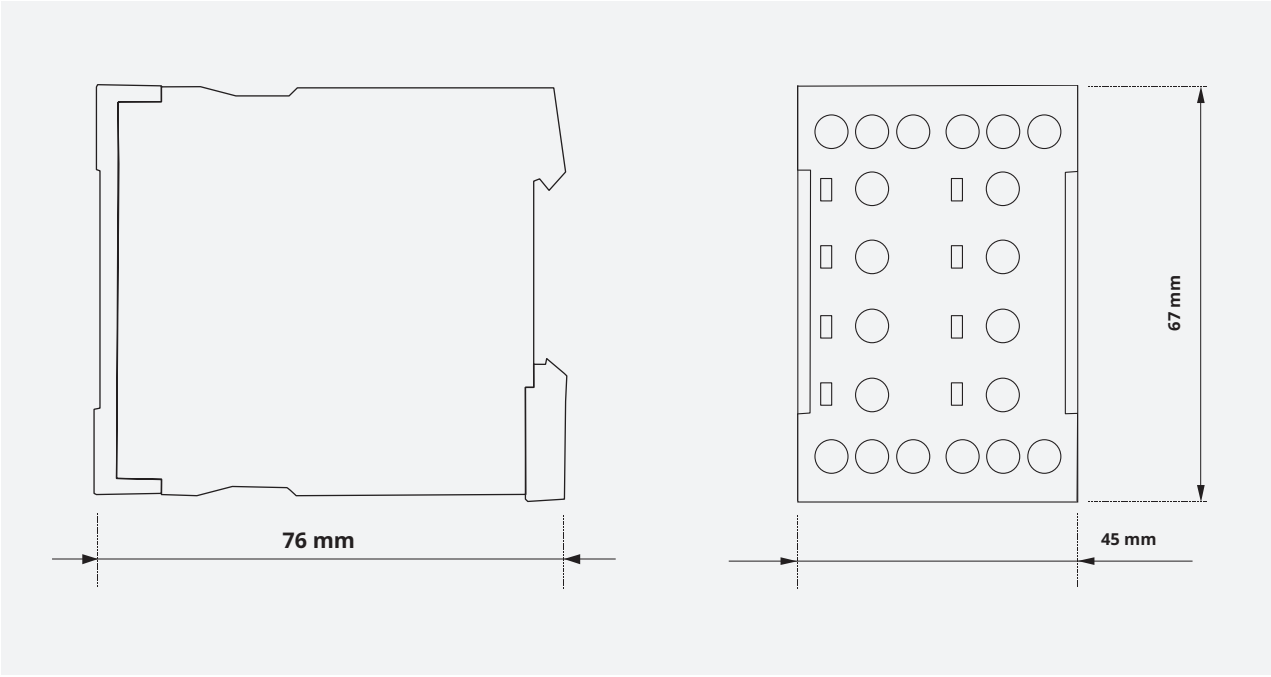
Voltage monitoring with PTC



Voltage monitoring with thermal contact



DIMENSIONS



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