Monitoring relays - KAPPA series

K3YM400VSY20

- Voltage monitoring in 3-phase- and 1-phase mains
- Multifunction
- Monitoring of phase failure and asymmetry
- Monitoring of phase sequence selectable
- Connection of neutral wire optional
- 2 change over contacts
- Plug-in housing
- Width 38mm

Technical data

1. Functions

Voltage monitoring in 3-phase- and 1-phase mains with adjustable thresholds, adjustable tripping delay, monitoring of phase failure, phase sequence and asymmetry with adjustable asymmetry and the following functions (selectable by means of rotary switch):

UNDER	Undervoltage monitoring
UNDER+SEQ	Undervoltage monitoring and monitoring of phase sequence
WIN	Monitoring the window between Min and Max
WIN+SEQ	Monitoring the window between Min and Max and monitoring of phase sequence

2. Time ranges

	Adjustment range	
Start-up suppression time (Start):	-	
Tripping delay (Delay):	0.1s	10s

3. 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

4. Mechanical design

Self-extinguishing plastic housing, IP rating IP40
Mounted on screw terminal socket 11-pols in accordance with IEC 60067-1-18a
Mounting position: any
Sockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20
Tightening torque: max. 1Nm
Terminal capacity:
- 1 x 0.5 to 2.5mm² with/without multicore cable end
- 1 x 4mm² without multicore cable end
- 2 x 0.5 to 1.5mm² with/without multicore cable end
- 2 x 2.5mm² flexible without multicore cable end

5. Input circuit

Supply voltage:	(= measuring voltage)
Pins:	(S10)-S5-S6-S7 / (N)-L1-L2-L3
Rated voltage U_N:	see table ordering information or printing on the unit
Tolerance:	-30% to +30% of U_N
Rated consumption:	9VA (2W)
Rated frequency:	AC 48 to 63Hz
Duration of operation:	100%
Reset time:	500ms
Hold-up time:	-
Drop-out voltage:	>20% of supply voltage
Overvoltage category:	III (in accordance with IEC 60664-1)
Rated surge voltage:	4kV

6. Output circuit

2 potential free change over contacts

Rated voltage:	250V AC
Switching capacity:	1250VA (5A / 250V)
Fusing:	5A fast acting
Mechanical life:	20 x 10^6 operations
Electrical life:	2 x 10^5 operations at 1000VA resistive load
Switching frequency:	max. 6/min at 1000VA resistive load (in accordance with IEC 60947-5-1)
Overvoltage category:	III (in accordance with IEC 60664-1)
Rated surge voltage:	4kV

7. Measuring circuit

Measuring variable:	3(N)~, Sinus, 48 to 63Hz
Measuring input:	(= supply voltage)
Pins:	(S10)-S5-S6-S7 / (N)-L1-L2-L3
Overload capacity:	determined by tolerance specified for supply voltage
Input resistance:	-
Switching threshold U_S:	
Max:	80%...130% of U_N
Min:	70%...120% of U_N
Overvoltage category:	III (in accordance with IEC 60664-1)
Rated surge voltage:	4kV

8. Accuracy

Base accuracy:	±5% of maximum scale value
Adjustment accuracy:	≤5% of maximum scale value
Repetition accuracy:	≤2%
Voltage influence:	-
Temperature influence:	≤1%

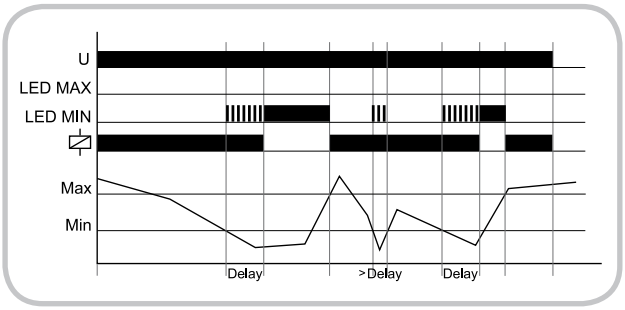
9. Ambient conditions

Ambient temperature:	-25 to +55°C
Storage temperature:	-25 to +70°C
Transport temperature:	-25 to +70°C
Relative humidity:	15% to 85% (in accordance with IEC 60721-3-3 class 3K3)
Pollution degree:	2, if built in 3 (in accordance with IEC 60664-1)

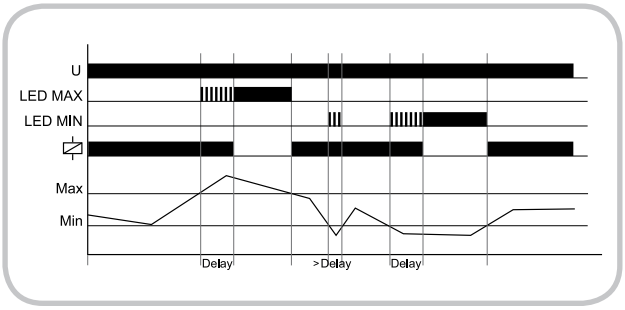
Functions

For all functions the LED's Min and Max are fl ashing alternating (the relay is fallen off), 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 remains in off-position and the LED for the corresponding threshold is illuminated.
The device includes seperately every phase voltage (L-N) and monitors it according to the selected function (UNDER or WINDOW).

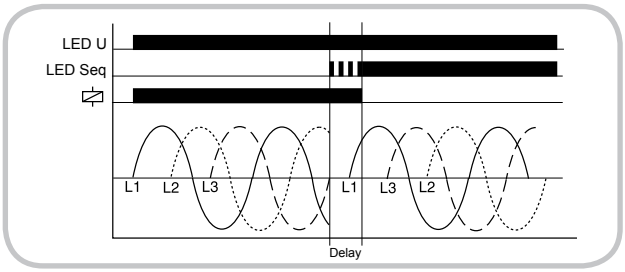
Undervoltage monitoring (UNDER, UNDER+SEQ)
When the measured voltage (one of the phase voltages) falls below the value adjusted at the Min-regulator, the set interval of the tripping delay (Delay) begins (red LED Min fl ashes). After the interval has expired (red LED Min illuminated), the output relay R switches into off-position (yellow LED not illuminated). The output relay R switches into on-position again (yellow LED illuminated), when the measured voltage (all phase voltages) exceeds the value adjusted at the Max-regulator.



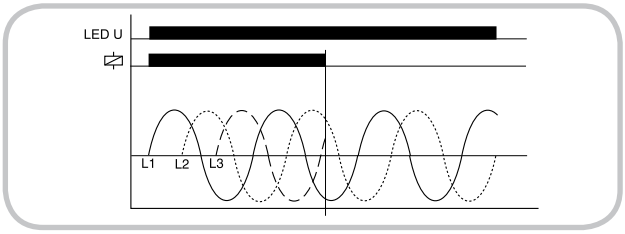
Window function (WIN, WIN+SEQ)
The output relay R switches into on-position (yellow LED illuminated), when the measured voltage (all phase voltages) exceeds the value adjusted at the Min-regulator. When the measured voltage (one of the phase voltages) exceeds the value adjusted at the Max-regulator, the set interval of tripping delay (Delay) begins (red LED Max fl ashes). After the interval has expired (red LED Max illuminated) the output relay R switches into off-position (yellow LED not illuminated). The output relay switches into on-position again (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 (one of the phase voltage) falls below the value adjusted at the Min-regulator, the set interval of tripping delay (Delay) begins again (red LED Min fl ashes). After the interval has expired (red LED Min illuminated), the output relay R switches into off-positon (yellow LED not illuminated).



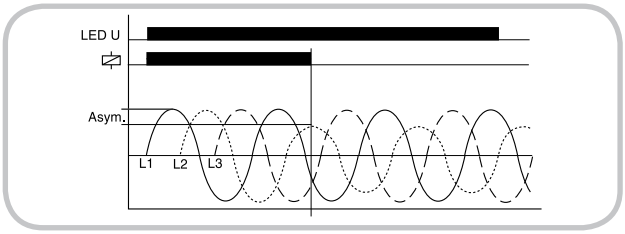
Phase sequence monitoring (SEQ)
Phase sequence monitoring is selectable for all functions.
In single phase circuit, the phase sequence monitoring must be disconnected. If a change in phase sequence is detected (red LED SEQ illuminated), the output relay R switches into off-position after the set interval of tripping delay (Delay) has expired (yellow LED not illuminated).



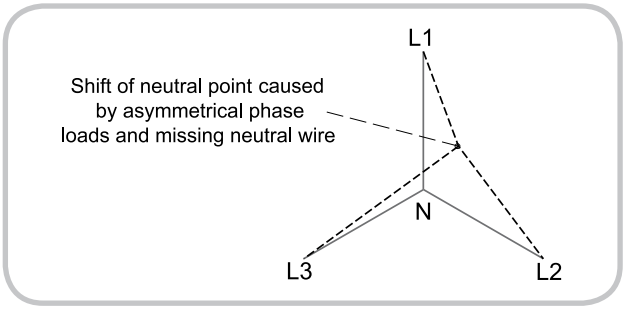
Phase failure monitoring
The output relay R switches into off-position (yellow LED not illuminated), when one of the three phases fails.



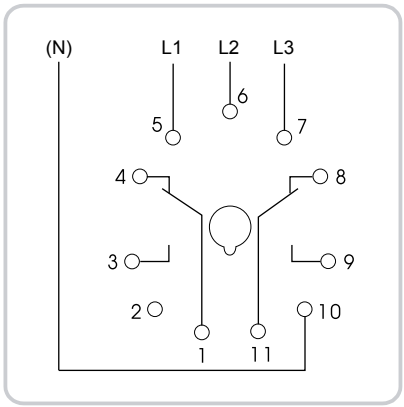
Asymmetry monitoring
The output relay R switches into off-position (yellow LED not illuminated) when the asymmetry exceeds the value set at the ASYM-regulator.
Reverse voltages of a consumer (e.g. a motor which continues to run on two phases only) do not effect the disconnection.



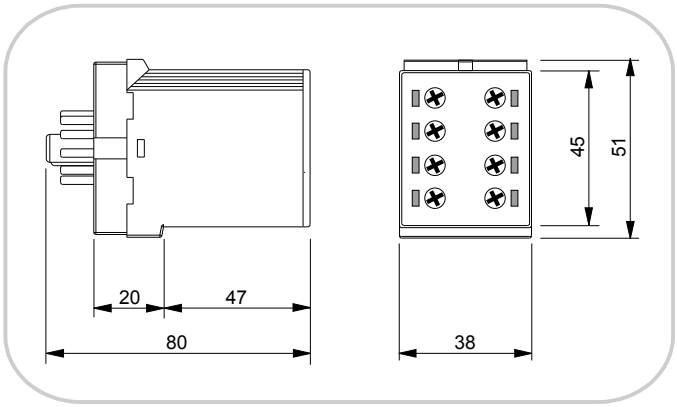
Neutral wire break
The device monitors every phase (L1, L2 and L3) against the neutral wire N.
A shift of neutral point occurs by an asymmetrical phase load if the neutral wire breaks in the power line. If one of the phase voltages exceeds the value adjusted at the trip point, the set interval of tripping delay (Delay) begins (red LED Min or Max flashes). After the interval has expired (red LED Min or Max illuminated), the output relay switches into off-position (yellow LED not illuminated).



Connections



Dimensions



Ordering information

Type	Rated voltage U_N	Functions	Switching threshold U_S	Tripping delay (Delay)	Part Nr. (PQ 1)
K3YM400VSY20	3(N)~ 400/230V	U, U+Seq, Win, Win+Seq	Max: 80% to 130% of U_N Min: 70% to 120% of U_N Asymmetry: 5%...30%	0,1s to 10s	1380402