

- Industrial design
- Width 55mm
- True power monitoring
- Fault latch
- Position of output relay presettable
- 2 change over contacts



Technical data

1. Functions

True power monitoring (overload and underload) for 1- and 3-phase motors with adjustable thresholds, adjustable tripping delay for both thresholds and adjustable start-up suppression

The following functions can be selected by means of DIP-switches:

DIP-Switch 1,2,3	selection of current range
DIP-Switch 4	underload and overload monitoring (OFF) or two separate thresholds for overload monitoring (ON)
DIP-Switch 5	relay in on-position if fault occurs - n.o. (OFF) or relay in off-position if fault occurs - n.c. (ON)
DIP-Switch 6	alarm for disconnected consumer (I=0)
DIP-Switch 7	fault latch of threshold P ₁ (MEM1)
DIP-Switch 8	fault latch of threshold P ₂ (MEM2)
DIP-Switch 9	time range of start-up suppression time
DIP-Switch 10,11	time range of tripping delay

2. Time ranges

Start-up suppression time:	Adjustment range
	1s 20s
	5s 100s
Tripping delay:	0.1s 5s
	1s 50s

3. Indicators

Green LED ON:	indication of supply voltage
Green LED flashes:	indication of start-up suppression time
Red LED flashes:	indication of tripping delay of the corresponding threshold
Red LED ON:	indication of fault of the corresponding threshold
All LEDs flashing:	indication of disconnected consumer (if I=0)

4. Mechanical design

Self-extinguishing plastic housing, IP rating IP40
 Mounted on DIN-Rail TS 35 according to EN 50022
 Mounting position: any
 Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20
 Initial 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:	12 to 440V AC	terminals A1-A2 (galvanically separated) selectable via transformer modules TR3
Tolerance:		-15% to +10%
Rated frequency:		48 to 63Hz
Rated consumption:		4VA (3W)
Duration of operation:		100%
Reset time:		<1s
Residual ripple for DC:		-
Drop-out voltage:		>30% of the supply voltage

6. Output circuit

2 potential free change over contacts
 Switching capacity: 1200VA (5A / 250V AC)
 Fusing: 5A fast acting
 Mechanical life: 20 x 10⁶ operations
 Electrical life: 2 x 10⁵ operations at 1000VA resistive load

Switching frequency:	max. 60/min at 100VA resistive load max. 6/min at 1000VA resistive load (according to IEC 947-5-1)
Insulation voltage:	250V AC (according to IEC 664-1)
Surge voltage:	4kV, overvoltage category III (according to IEC 664-1)

7. Measuring circuit

Input:	1-phase mains	voltage:	terminals L1i-B1
	3-phase mains	current:	terminals L1i-L1k
		voltage:	terminals L1i-L2-L3
		current:	terminals L1i-L1k
Tolerance:			
	1-phase mains		0 to 230V AC
	3-phase mains		3~ 0 to 3~400/230V
Overload capacity:			
	1-phase mains		256V AC
	3-phase mains		3~ 450/259V
Current range:			1 to 10A
Overload capacity:			12A
Input resistance:			<20mΩ
Switching threshold P ₁ , P ₂ :			10% to 100%

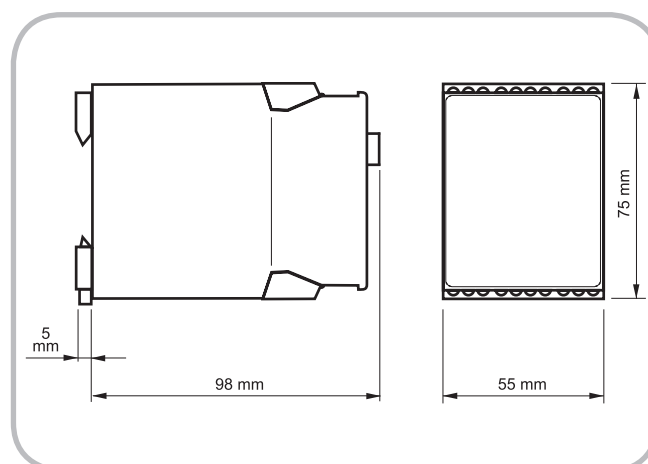
8. Accuracy

Base accuracy:	±5% (of maximum scale value)
Adjustment accuracy:	±5% (of maximum scale value)
Repetition accuracy:	±2%
Voltage influence:	-
Temperature influence:	≤0.03% / °C

9. Ambient conditions

Ambient temperature:	-25 to +55°C (according to IEC 68-1)
Storage temperature:	-25 to +70°C
Transport temperature:	-25 to +70°C
Relative humidity:	15% to 85% (according to IEC 721-3-3 class 3K3)
Pollution degree:	3 (according to IEC 664-1)

10. Dimensions



Functions

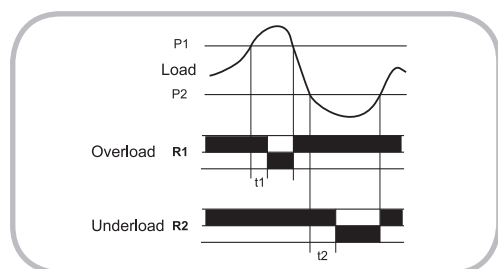
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When the supply voltage U is applied, the set interval of the start-up suppression (t_2) begins (green LED flashes). Changes of the true power during this period do not affect the state of the output relay R. After the interval has expired the green LED is illuminated steadily.

The following functions can be selected by means of DIP-switches:

Window function (DIP-switch P_2 MAX in position OFF):

When the measured value for the true power exceeds the value adjusted at the P_1 -regulator, the set interval of the tripping delay (t_1) begins (red LED flashes). After the interval has expired and if the DIP-switch RELAY (5) is in the position ON (n.c.), the output relay R1 switches into off-position (red LED illuminated). When the measured value for the true power again falls below the set value, the output relay R1 switches into on-position (red LED not illuminated). The set interval of the tripping delay begins again (red LED flashes), when the value for the true power falls below the value adjusted at the P_2 -regulator. After the interval has expired, the output relay R2 switches into off-position (red LED illuminated). The output relay R2 again switches into on-position, when the measured value for the true power exceeds the set value (red LED not illuminated). When the DIP-switch 5 is in the position OFF (n.o.), the mode of operation of the device remains unchanged, but the operation of the output relay is inverted.



Additional overload monitoring of the threshold P_2 (DIP-switch P_2 MAX in position ON)

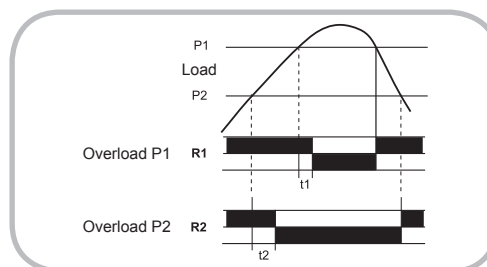
The threshold value set at the P_2 -regulator has not necessarily to be greater than the value set at the P_1 -regulator.

When the measured value for the true power exceeds the value adjusted at the P_1 -regulator and the DIP-switch 5 is in the position ON (n.c.), the output relay R1 switches into off-position instantaneously (red LED illuminated). When the true power exceeds the value adjusted at the P_2 -regulator, the set interval of the tripping delay (t_1) begins (red LED flashes). After the interval has expired (red LED illuminated) the output relay R2 switches into off-position. When the measured value for the true power falls below the value adjusted at

the P_2 -regulator, the output relay R2 again switches into on-position instantaneously (red LED not illuminated).

The fault stored for the threshold P_1 is not erased automatically when the measured value for the true power falls below the value adjusted at the P_1 -regulator. It is erased (red LED not illuminated) and the output relay R1 again switches into on-position after activating the internal reset key or after disconnecting and re-applying the supply voltage. The measuring cycle is restarted with the set interval of the start-up suppression (t_2) (green LED flashes).

When the DIP-switch 5 is in the position OFF (n.o.), the mode of operation of the device remains unchanged, but the operation of the output relay is inverted.



Disconnected consumer (DIP-switch $I=0$ in position ON)

When the current in the phase L1 is less than 5% of the nominal value of the selected current range and the DIP-switch RELAY (5) is in the position ON (n.c.), both output relays switch into off-position (irrespective of the actual position) and all three LEDs flash.

When the current flow is restored, the measuring cycle is restarted with the set interval of the start-up suppression (t_2) (green LED flashes).

When the DIP-switch RELAY (5) is in the position OFF (n.o.), the mode of operation of the device remains unchanged, but the operation of the output relay is inverted.

Fault latch threshold P_1 (DIP-switch MEM1 in position ON)

When the DIP-switch MEM1 is in the position ON, a short-term fault will be stored after the expiration of the tripping delay (t_1) (red LED illuminated).

The measuring cycle is restarted with the set interval of the start-up suppression (t_2) (green LED flashes) after activating the internal reset key or after disconnecting and re-applying the supply voltage.

Fault latch threshold P_2 (DIP-switch MEM2 in position ON)

When the DIP-switch MEM2 is in the position ON, a short-term fault will be stored after the expiration of the tripping delay (t_1) (red LED illuminated).

The measuring cycle is restarted with the set interval of the start-up suppression (t_2) (green LED flashes) after activating the internal reset key or after disconnecting and re-applying the supply voltage.

Connections

