- Industrial design
- Width 55mm
- True power monitoring
- Temperature monitoring of the motor winding (max. 6 PTC)
- Fault latch
- Position of output relay presettable
- 2 change over contacts
- Analogue output 0 to 10V

Technical data

1. Functions

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

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

DIP-Switch 1	under and overload monitoring (OFF) or monitoring of two separate thresholds for overload (ON)
DIP-Switch 2	relay in on-position if fault occurs - n.o. (OFF) or relay in off-position if fault occurs - n.c. (ON)
DIP-Switch 3	relay in on-position if fault occurs - n.o. (OFF) or relay in off-position if fault occurs - n.c. (ON)
DIP-Switch 4	alarm for disconnected consumer (I=0)
DIP-Switch 5	fault latch of threshold P_1 (MEM1)
DIP-Switch 6	fault latch of threshold P_2 (MEM2)
DIP-Switch 7	time range start-up suppression time
DIP-Switch 8	time range of tripping delay for threshold P_1
DIP-Switch 9	time range of tripping delay for threshold P_2

2. Time ranges

	Adjustment range	
Start-up suppression time:	1s	10s
	10s	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	(BW400VDA5X)
12 to 500V AC	terminals A1-A2	(BW500VDA5X)
	(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

1 analog output:	0 to 10V DC / 1mA, terminals U1-U2
2 potential free change over contacts	
Switching capacity:	1200VA (5A / 250V AC)
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. 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
		current:	terminals L1i-L1k1
			terminals L1i-L1k10
	3-phase mains	voltage:	terminals L1i-L2-L3
		current:	terminals L1i-L1k
			terminals L1i-L1k10
Tolerance:			
	1-phase mains	100 to 240V AC	(BW400VDA5X)
		120 to 289V AC	(BW500VDA5X)
	3-phase mains	3~ 100/58 to 415/239V	(BW400VDA5X)
		3~ 120/69 to 500/288V	(BW500VDA5X)
Overload capacity:			
	1-phase mains	256V AC	(BW400VDA5X)
		320V AC	(BW500VDA5X)
	3-phase mains	3~ 450/259V	(BW400VDA5X)
		3~ 550/316V	(BW500VDA5X)
Current range:		0.1 to 1A	terminals L1i-L1k1
		1 to 10A	terminals L1i-L1k10
Overload capacity:		1A:	1.2A
		10A:	12A
Input resistance:		1A:	<130mΩ
		10A:	<20mΩ
Impedance correction R_i:		1A:	0 to 180Ω
		10A:	0 to 18Ω

Switching threshold P_1,P_2: 0% to 99%

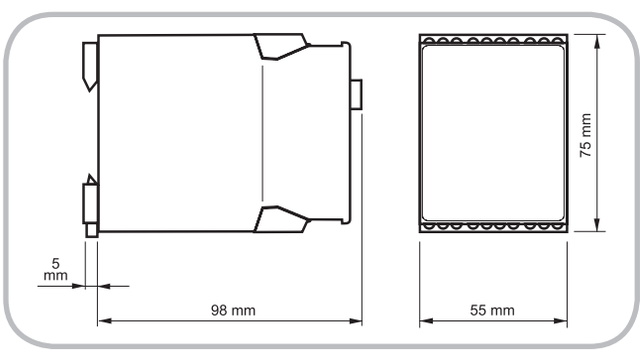
8. Accuracy

Base accuracy:	±2% (of maximum scale value)
Adjustment accuracy:	±2% (of maximum scale value)
Repetition accuracy:	±1%
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



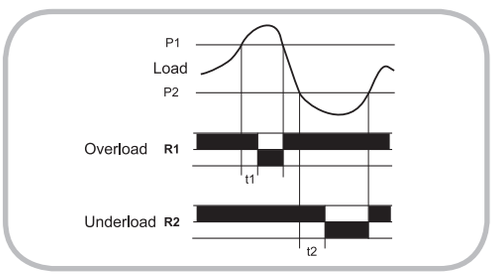
Functions

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

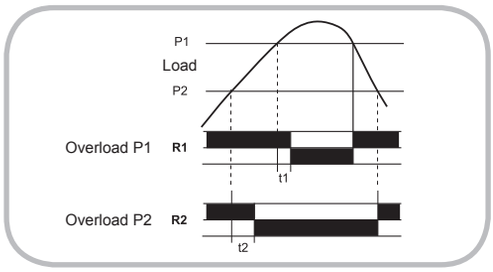
When the supply voltage U is applied, the set interval of the start-up suppression (t_{START}) begins (green LED flashes). Changes of the true power during this period do not affect the state of the output relay R. After the interval has expired the green LED is illuminated steadily.

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-switches RELAY (2/3) are 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 (t_2) begins (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 2 or 3 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.



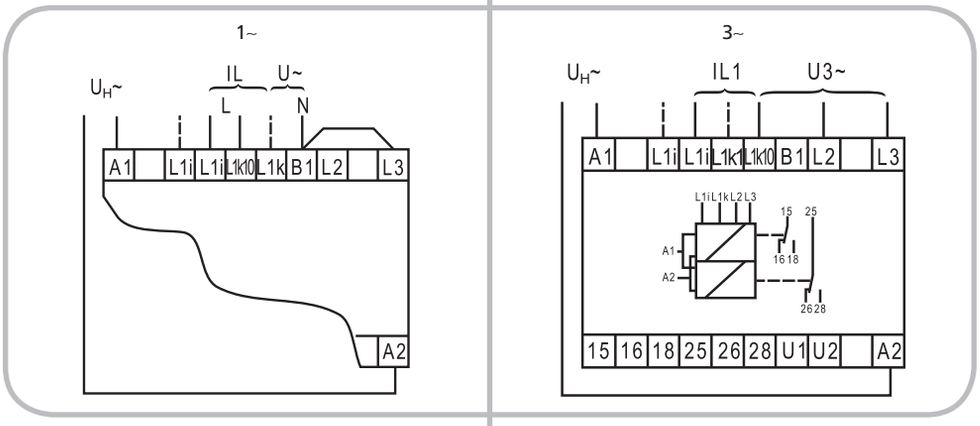
Additional load monitoring of the threshold P_2 (DIP-switch P_2 MAX in the position OFF)
The threshold value set at the P_2-regulator has not necessarily to be greater than the value set at the P_1-regulator.
When the measured value for the true power exceeds the value adjusted at the P_1-regulator, the set interval of the tripping delay (t_1) begins (red LED flashes). After the interval has expired and if the DIP-switches RELAY (2/3) are in the position ON (n.c.), the output relay R1 switches into off-position (red LED illuminated). When the true power exceeds the value adjusted at the P_2-regulator, the set interval of the tripping delay (t_2) 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 one of the regulators, the corresponding output relay again switches into on-position instantaneously (red LED not illuminated).
When the DIP-switch 2 or 3 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-switches RELAY (2/3) are 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_{START}) (green LED flashes).
When the DIP-switch 2 or 3 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.

Latch (DIP-switch MEM1 resp. MEM2 in position ON)
When the DIP-switch MEM1 resp. MEM2 is in the position ON, a short-term error will be stored after the expiration of the tripping delay (t_1 resp. t_2) (red LED illuminated).
The measuring cycle is restarted with the set interval of the start-up suppression (t_{START}) (green LED flashes) after activating the internal reset key or after disconnecting and re-applying the supply voltage.

Connections



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