Load monitoring

EMR DP22H

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- **Power factor monitoring (cosφ) in 1- or 3-phase mains**
- **Multifunction**
- **Error memory (LATCH)**
- **Recognition of disconnected consumers**
- **Suitable for VFI (10 to 100 Hz)**
- **2 changers**

Functions

Load monitoring (cos φ) in 1- or 3-phase mains with adjustable thresholds, timing for start-up supression and tripping delay separately adjustable and the following functions selectable by means of rotary switch.

OVER	Overload monitoring
OVER+LATCH	Overload monitoring with error memory
UNDER	Unterload monitoring
UNDER+LATCH	Unterload monitoring with error memory
WIN	Monitoring the window between Min and Max
WIN+LATCH	Monitoring the window between Min and Max with error memory

Time ranges

Start-up suppression time: Adjustment range 1 ... 100 s

Tripping delay: Adjustment range 0.1 ... 40 s

Indicators

Green LED ON:	indication of supply voltage
Green LED flashing:	indication of start-up supression time
Yellow LED R ON/OFF:	indication of relay output
Yellow LED I=0 ON/OFF:	indication of disconnected consumers
Red LED ON/OFF:	indication of failure of the corresponding threshold
Red LED flashing:	indication of tripping delay of the corresponding threshold

Output relay

2 potential free change-over contacts

Rated voltage: 250 Vac

Switching capacity (distance <5 mm): 750 VA (3 A / 250 Vac)

Switching capacity (distance >5 mm): 1250 VA (5 A / 250 Vac)

Fusing: 5A fast acting

Connecting voltages

24 ... 240 Vac/dc, Terminals A1-A2 (galvanically separated)

Tolerance: 24 ... 240 Vdc, -20% ... +25% (galvanically separated)

24 ... 240 Vac, -15% ... +10% (galvanically separated)

100% duration of operation

Reference data

Selectron®	EMR	Article no.
DP22H	24 ... 240 Vac/dc	41230008
(Order data see chapter 1)		

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Technical data	
Nominal consumption	4.5 VA / 1 W
Nominal frequency	48 ... 400 Hz (24 ... 240 Vac)
	16 ... 48 Hz (48 ... 240 Vac)
Ripple at dc	10%
Drop-out voltage	>15% of the supply voltage
Base accuracy	±5° (equivalent to 5% at cos φ = 0.8)
Repetition accuracy	±1.8° (equivalent to 1.8% at cos φ = 0.8)
Adjustment accuracy	≤5% (at cos φ = 0.8)
Temperature influence	≤0.1% / °C
Recovery time	500 ms
Measuring circuit:	
Measured variable	ac sine (10 ... 100 Hz)
Measuring-input voltage:	
1-phase mains	40 ... 415 Vac (300 V gegen Erde), terminals L1i-L2/L3
3-phase mains	3~ 23/40 bis 240/415 V, terminals L1i-L2-L3
Overload capacity:	
1-phase mains	500 V
3-phase mains	3~ 289/500 V
Input resistance	>1 MΩ
Measuring-input current	0.5 ... 10 A, terminals L1i-L1k (for I>8 A distance >5 mm)
Overload capacity	12 A permanently
Input resistance	5 mΩ
Switching threshold cos φ	
Max.	0.2 ... 1.0
Min.	0.1 ... 0.99

Type key

EMR D P 2 2 H ...

Construction

D Industrial design 22.5 mm
S pluggable 11 poles

Function

U Voltage
I Current
P CosPhi
T Temperature
S Star-Delta

Output

1 1 changer
2 2 changers
3 1 NC contact / 1 NO contact

Special functions

1 = Additional asymmetry monitoring

Measuring circuit

A No measuring circuit
B 3(N)~115/66 Vac
C 3(N)~230/132 Vac
D 3(N)~400/230 Vac
E 1 ≅ 30/60/300 Vac/dc
F 1 ≅ 100mA/1A/10A ac/dc
G PTC
H CosPhi
I 12 Vdc
J 24 Vdc
K 36 Vdc
L 48 Vdc
M 1~110 Vac
N 1~230 Vac
O 1 A
P 5 A

Connecting voltage

1 Measuring circuit
2 24...240 Vac/dc
3 230 Vac

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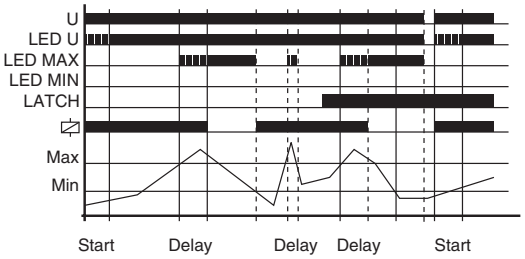
Function description

When the supply voltage U is applied, the output relays switch into on-position (yellow LED R and LED I=0 illuminated) and the set interval of the start-up suppression (START) begins (green LED U flashes). Changes of the measured power factor (cosφ) during this period do not affect the state of the output relay. After the interval has expired the green LED is illuminated steadily.

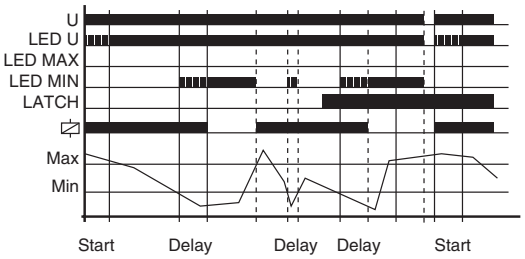
For all the functions the LEDs MIN and MAX are flashing alternating, when the minimum value for the measured power factor was chosen to be greater than the maximum value.



Overload monitoring (OVER, OVER+LATCH)

When the measured power factor exceeds the value adjusted at the MAX-regulator, the set interval of the tripping delay (DELAY) begins (red LED MAX flashes). After the interval has expired (red LED MAX illuminated), the output relays switch into off-position (yellow LED R not illuminated). The output relays again switch into on-position (yellow LED R illuminated), when the measured power factor falls below the value adjusted at the MIN-regulator (red LED MAX not illuminated).

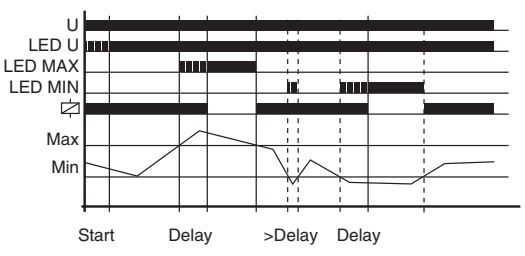
If the error memory is activated (OVER+LATCH) and the measured power factor remains above the MAX-value longer than the set interval of the tripping delay, the output relays remain in the off-position even if the measured power factor falls below the value adjusted at the MIN-regulator. After resetting the failure (interrupting and re-applying the supply voltage), the output relays switch into on-position and a new measuring cycle begins with the set interval of the start-up suppression (START).



Underload monitoring (UNDER, UNDER+LATCH)

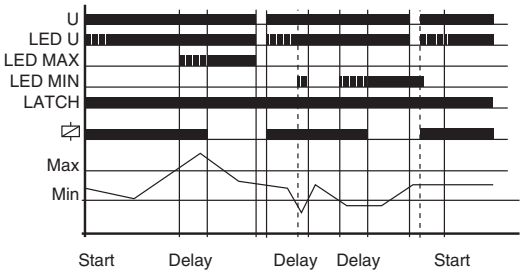
When the measured power factor falls below the value adjusted at the MIN-regulator, the set interval of the tripping delay (DELAY) begins (red LED MIN flashes). After the interval has expired (red LED MIN illuminated), the output relays switch into off-position (yellow LED R not illuminated). The output relays again switch into on-position (yellow LED R illuminated), when the measured power factor exceeds the value adjusted at the MAX-regulator.

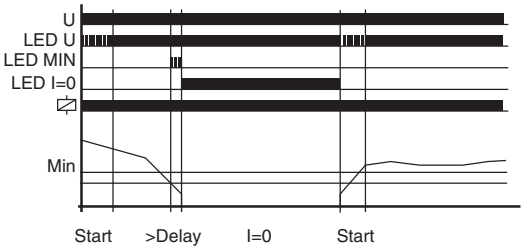
If the error memory is activated (UNDER+LATCH) and the measured power factor remains below the MIN-value longer than the set interval of the tripping delay, the output relays remain in the off-position even if the measured power factor exceeds the value adjusted at the MAX-regulator. After resetting the failure (interrupting and re-applying the supply voltage), the output relays switch into on-position and a new measuring cycle begins with the set interval of the start-up suppression (START).



Window function (WIN, WIN+LATCH)

The output relays switch into on-position (yellow LED R illuminated) when the measured power factor exceeds the value adjusted at the MIN-regulator. When the measured power factor exceeds the value adjusted at the MAX-regulator, the set interval of the tripping delay (DELAY) begins (red LED MAX flashes). After the interval has expired (red LED MAX illuminated), the output relays switch into off-position (yellow LED R not illuminated). The output relays again switch into on-position (yellow LED R illuminated) when the measured power factor falls below the value adjusted at the MAX-regulator (red LED





MAX not illuminated). When the measured power factor falls below the value adjusted at the MIN-regulator, the set interval of the tripping delay (DELAY) begins again (red LED MIN flashes). After the interval has expired (red LED MIN illuminated), the output relays switch into off-position (yellow LED R not illuminated).

If the error memory is activated (WIN+LATCH) and the measured power factor remains below the MIN-value longer than the set interval of the tripping delay, the output relays remain in the off-position even if the measured power factor exceeds the value adjusted at the MIN-regulator. If the measured power factor remains above the MAX-value longer than the set interval of the tripping delay, the output relays remain in the off-position even if the measured power factor falls below the value adjusted at the MAX-regulator. After resetting the failure (interrupting and re-applying the supply voltage), the output relays switch into on-position and a new measuring cycle begins with the set interval of the start-up suppression (START).

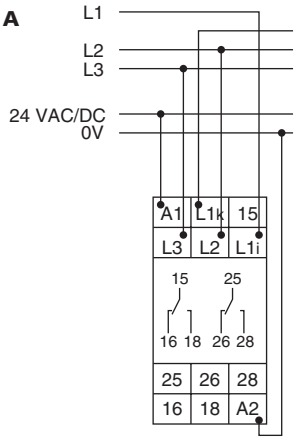
Recognition of disconnected consumers

When the current flow between L1i and L1k is interrupted for a time that is shorter than the minimum (< 100 ms) or set triggering delay, it is assumed that the consumer has been switched off deliberately and that no fault is present (yellow LED I=0 illuminated), output relays remain picked up (yellow LED R illuminated).

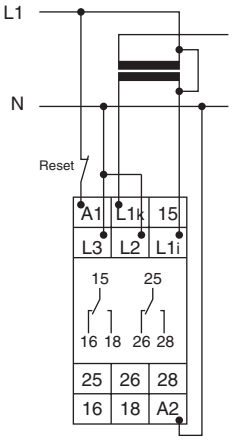
When the current flow is restored (consumer is switched back on), the measuring cycle is restarted with the set interval of the start-up suppression (START).

Connection

I_N<10 A



I_N>10 A



Dimensions