

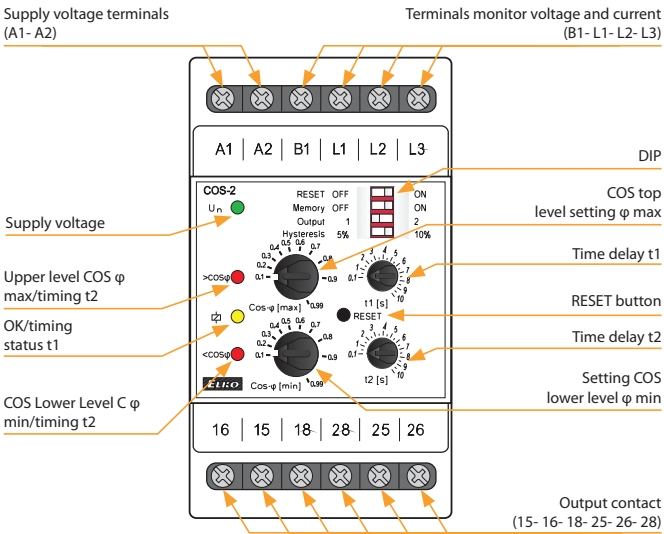
COS-2 | Power factor (cos φ) monitoring relay



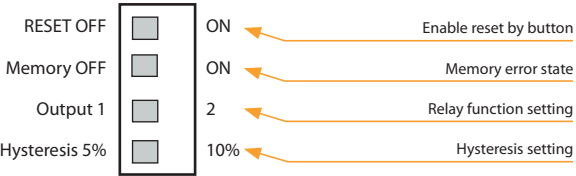
EAN code
COS-2/230V: 8595188155434
COS-2/110V: 8595188152280
COS-2/400V: 8595188152365
COS-2/24V: 8595188155441

- Relay monitors phase shift between current and voltage in 3-phase or 1-phase networks - evaluates COS φ (replacement COS-1).
- The relay is designed to monitor overload/relieve the motors.
- Relay is designed for 3 x 400/230 V circuits.
- Galvanically isolated power supply AC 230 V, AC 110 V, AC 400 V or AC/DC 24 V.
- Adjustable upper and lower level COS φ.
- Possibility to extend the current range using a current transformer.
- Two output relays (for each level independent).
- Adjustable delay eliminating engine start-up.

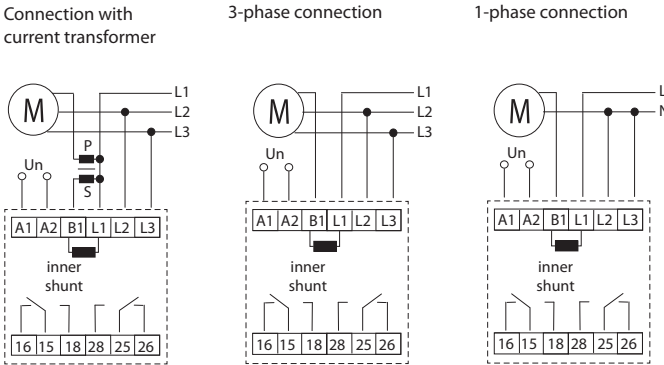
Description



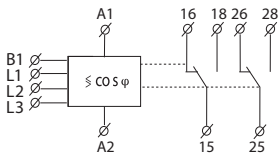
Description and importance of DIP switches



Connection



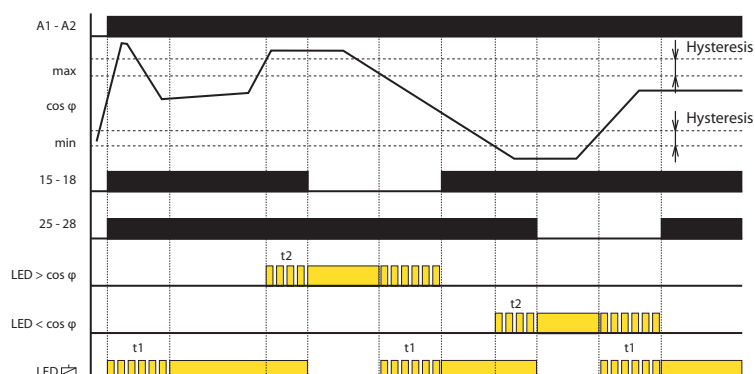
Symbol



Technical parameters	
COS-2	
Supply	
Supply terminals:	A1 - A2
Voltage range:	AC 230 V, AC 110 V, AC 400 V or AC/DC 24 V (AC 50/60 Hz)
Burden max.:	2.5 W/5 VA (AC 110 V, AC 230 V, AC 400 V), 1.4 W/2 VA (AC/DC 24 V)
Max. dissipated power (Un + terminals):	4 W
Operating range:	-15 %; +10 %
Measuring	
Voltage set:	3x 400 V/230 V (50/60 Hz)
Terminals:	L1, L2, L3, B1
Upper level cos-φ:	adjustable 0.1 - 0.99
Bottom level cos-φ:	adjustable 0.1 - 0.99
Max. permanent voltage:	(input L1, L2, L3) AC 3x 460 V
Current range:	0.1 - 16 A
Current overloading:	20 A (< 3 sec.)
Hysteresis:	adjustable 5 % or 10 %
Time delay t1:	adjustable 0.1 - 10 s
Time delay t2:	adjustable 0.1 - 10 s
Accuracy	
Accuracy setting (mechanical):	5 %
Accuracy of repetition:	< 1 %
Temperature dependence:	< 0.1 %/°C (°F)
Limit values tolerance:	5 %
Output	
Number of contacts:	2x changeover/SPDT (AgNi/Silver Alloy)
Current rating:	16 A/AC1
Breaking capacity:	4000 VA/AC1, 384 W/DC
Inrush current:	20 A/< 3 s
Switching voltage:	250 V AC/24 V DC
Output indication:	yellow LED
Mechanical life:	30.000.000 operations
Electrical life (AC1):	70.000 operations
Other information	
Operating temperature:	-20 °C to 55 °C (-4 °F to 131 °F)
Storage temperature:	-30 °C to 70 °C (-22 °F to 158 °F)
Dielectrical strength:	4 kV (supply - output)
Operating position:	any
Mounting:	DIN rail EN 60715
Protection degree:	IP40 from front panel/IP20 terminals
Overvoltage category:	III.
Pollution degree:	2
Max. cable size (mm²):	max. 1x 2.5, max. 2x1.5/ with sleeve max. 1x 1.5 (AWG 12)
Dimensions:	90 x 52 x 65 mm (3.5" x 2" x 2.6")
Weight:	243 g/8.6 oz (230 V, 110 V, 400 V); 141 g/5 oz (24 V)
Standards:	EN 60255-1, EN 60255-26, EN 6255-27

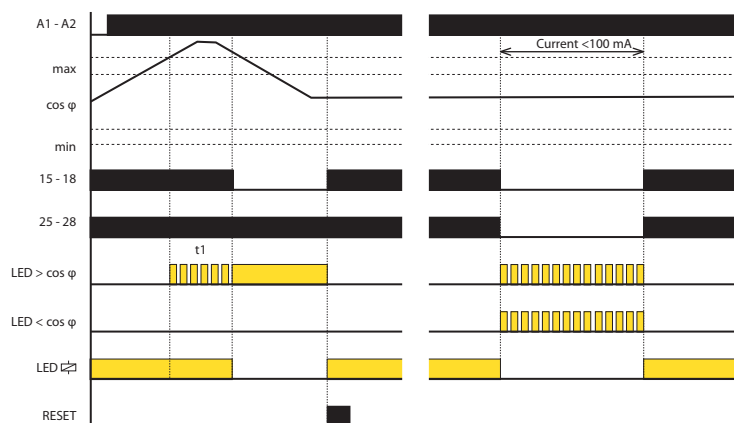
Function

Status after switching on power, two relay mode



Memory on, two relay mode

decrease (loss) of current



After powering on, the device sets the delay time t_1 and yellow LED flashes. Both relays are switched on. The delay serves to eliminate a faulty state when starting the motor. After the time delay t_1 begins monitoring $\cos \varphi$ only.

If the $\cos \varphi$ is in the band between the upper and lower limits set, both relays are switched on and the yellow LED is on.

If the $\cos \varphi$ is outside the set limits ($> \cos \varphi$ max or $< \cos \varphi$ min), an error condition occurs - the time t_2 is delayed while the red LED corresponding to the $\cos \varphi$ blinks at the same time. After the time delay t_2 red LED lights and the corresponding relay remains off.

When the $\cos \varphi$ returns to set limits, the time t_1 is delayed and the yellow LED flashes at the same time as the corresponding red LED. After the time delay stops blinking yellow LED, the corresponding red LED turns off and the relay switches on.

At low wattage (< 100 mA) or with a power failure, an error is reported by the simultaneous blinking of both red LEDs. After resuming the voltage or the current being watched, the relay returns to the normal state where the $\cos \varphi$ value is monitored.

When the memory is turned off (DIP switch 2 OFF) and the allowable reset (DIP switch 1 ON), the pressing state is reached after the power is turned on, i.e. flashing yellow LED, both relays are switched on, with time delay t_1 .

When the memory (DIP switch 2 ON) is in an error state (high or low value for $\cos \varphi$) it should be reset (by pressing the RESET button).