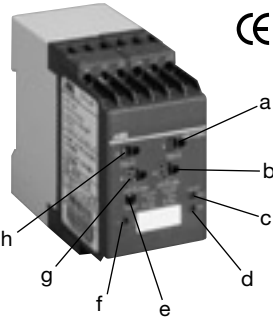


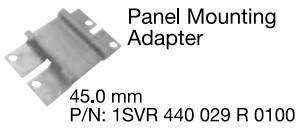
Motor Load Monitors (Power Factor) CM-LWN 2 SPDT Relay Outputs



- a Response delay "Time R"
 - b Threshold for load limit "cos φ min."
 - c cos φ max: red LED - cos φ max exceeded
 - d cos φ min: red LED - below cos φ min
 - e Reset button
 - f U: green LED - supply voltage
 - g Threshold for load limit "cos φ max."
 - h Starting delay "Time S"
- Power factor monitoring for asynchronous motors
 - Under and overload monitoring in one unit
 - Adjustable starting delay
 - Direct measurement of currents up to 20 A
 - Adjustable trip delay
 - Separate SPDT outputs for over and under load
 - 3 LEDs for status indication

Approvals: UL LISTED

Accessories



See accessory pages for specifications.

Description

The CM-LWN module monitors the power factor of inductive loads.

The primary application is the monitoring of single or three-phase asynchronous motors (squirrel cage) under varying load conditions. The electronic circuitry monitors the phase shift (φ) between the voltage and the current in one phase.

The phase difference is inversely proportional to the load. Therefore, cos φ , measured relatively from 0 to 1, measures the relationship of effective power to apparent power. A value towards 0 indicates low load and a value towards 1 indicates high load.

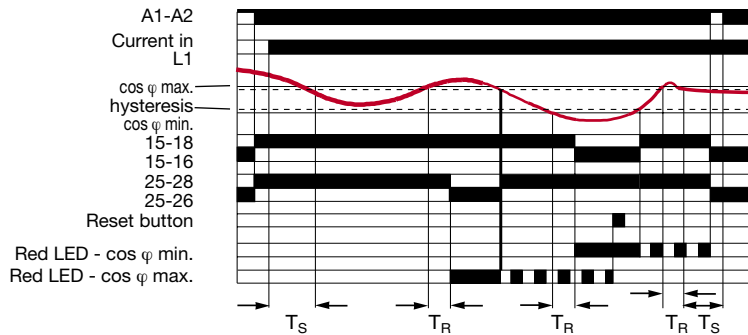
Threshold values can be set individually for cos φ max and cos φ min. If the set threshold value is reached, an LED lights up and one relay de-energizes. If cos φ returns to the acceptable limits (plus the hysteresis), the relay energizes and the LED flashes permanently to indicate the occurrence of the trip event. This flashing LED can be stopped by pressing the reset button or by switching off the supply voltage.

A time delay (Time S) of 0.3 to 30 s can be set to allow starting of the motor. It is also possible to set a response delay time (Time R) of 0.2 to 2 s to stop nuisance tripping due to unavoidable short load changes during normal operation.

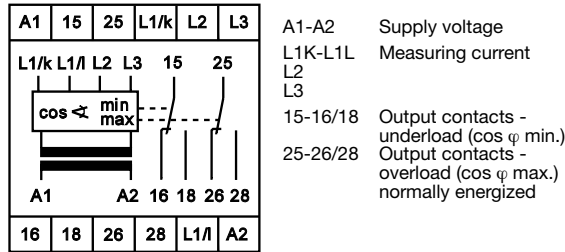
To guarantee correct operation of the response delay (Time R), the adjusted value for cos φ max. has to be higher than the value for cos φ min. plus the hysteresis. Consequently, the overload and underload indication must not be active at the same time.

Due to the internal electrical isolation of the supply circuit and the measuring circuit, it is also possible to use the device in systems with different supply voltages.

Function



Connection



Ordering Table

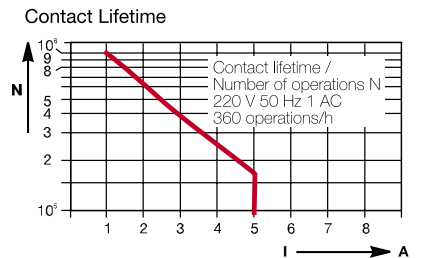
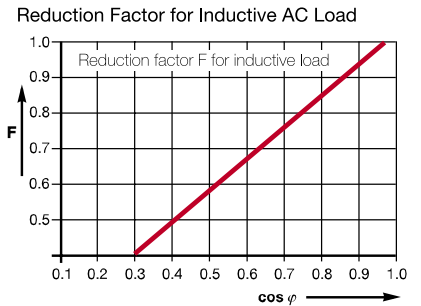
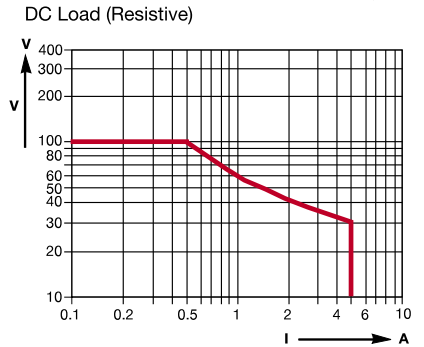
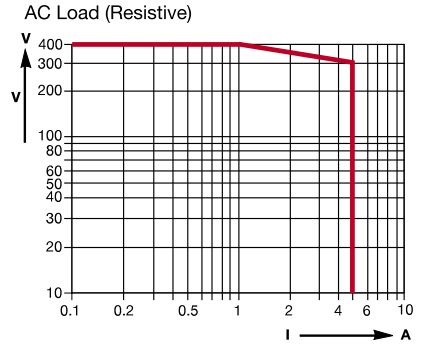
Supply voltage	Part Number
Current ranges: 0.5...5 A;	
24...240 V AC/DC	1SVR 450 335 R 0000
110...130 V AC	1SVR 450 330 R 0000
220...240 V AC	1SVR 450 331 R 0000
380...440 V AC	1SVR 450 332 R 0000
480...500 V AC	1SVR 450 334 R 0000
Current ranges: 2...20 A;	
24...240 V AC/DC	1SVR 450 335 R 0100
110...130 V AC	1SVR 450 330 R 0100
220...240 V AC	1SVR 450 331 R 0100
380...440 V AC	1SVR 450 332 R 0100
480...500 V AC	1SVR 450 334 R 0100

Motor Load Monitors (Power Factor) CM-LWN 2 SPDT Relay Outputs

Technical Data

Input		
Supply voltage - power consumption	A1-A2	24...240 V AC/DC - 8.4 VA
	A1-A2	110...130 V AC - 3.6 VA
	A1-A2	220...240 V AC - 3.6 VA
	A1-A2	380...440 V AC - 3.6 VA
	A1-A2	480...500 V AC - 3.6 VA
Tolerance of supply voltage		-15 % ... +10 %
Supply voltage frequency AC versions		50...60 Hz
Supply voltage frequency 24...240 V AC/DC version		15...400 Hz
Time Delay		
Timing error over the supply voltage range		Starting time (Time S) and (response) time delay (Time R) ≤ 0.5 %
Timing error over the temperature range		≤ 0.06 % / °C
Measuring Circuit		
Measuring circuit inputs		L1, L2, L3
Voltage range		24...240 V AC/DC, 110...500 V AC in 5 ranges
Measuring current input - output		L1/k - L1/l
		Version 5 A Version 20 A
Current range		0.5...5 A 2...20 A
Possible overload current input		25 A for 3 s 100 A for 3 s
Hysteresis (referring to the j angle, in °)		4°
Response time		≤300 ms
Display of Operating Status		
Supply voltage		LED, green
cos φ min.		LED, red
cos φ max.		LED, red
Output		
	15-16/18, 25-26/28	2 relays, each with SPDT contacts for cos φ min. and cos φ max., normally energized
Rated voltage	VDE 0110, IEC 947-1	400 V
Rated switching voltage max.		400 V AC
Rated switching current	AC 12 (resistive)	4 A (at 230 V)
	AC 15 (inductive)	3 A (at 230 V)
	DC 12 (resistive)	4 A (at 24 V)
	DC 13 (inductive)	2 A (at 24 V)
Mechanical life		30 x 10 ⁶ operations
Electrical life (acc. to AC 12 / 230 V / 4 A)		1 x 10 ⁵ operations
Short-circuit proof, max. fuse rating		5 A / fast acting
General Data		
Rated impulse withstand voltage V _{imp}		4 kV
Operating temperature		-25°C ... +65°C
Storage temperature		-40°C ... +85°C
Mounting to DIN rail (EN 50022)		Snap-on mounting/Screw mounting using an adapter
Wire size stranded with wire end ferrule		2 x 14 AWG (2 x 2.5 mm ²)
Weight		Approx. 0.66 lb (300 g)

Load Limit Curves



Mechanical View

