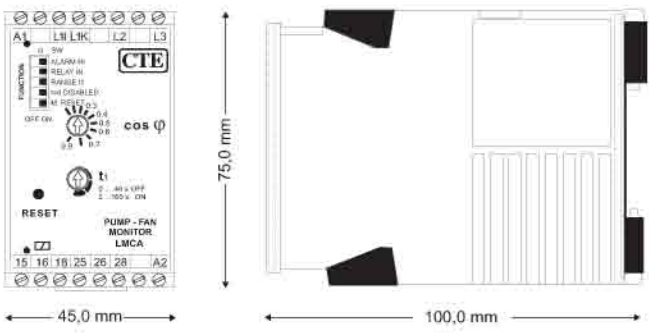


LOAD MONITOR

Power Factor cos φ

Type: LMCA

FEATURES

- **Fan monitoring (V-belt break)**
- **Filter monitoring (filter blockage)**
- **Protection for single and 3-phase lightly loaded motors.**
- **Current transformer may be connected for I_N > 10 A**
- **Suitable for frequency converter**
- **Voltage range: 1-phase 24-230 V, 3-phase 24 - 400 V**
- **Current range 0,5 - 10 A**

Description:
The load monitor determines the phase angle cos φ, which is the phase shift between current and voltage of asynchronous motors. The load monitor is directly connected to the motor and no additional sensors are required.

Because the phase angle depends on motor loading, it represents a directly measurable variable for the motor loading.

The set point cos φ reacts either to an excessive or insufficient freely selectable phase angle. After a set period of time, the relay R switches to failure position and the LED is switched on.

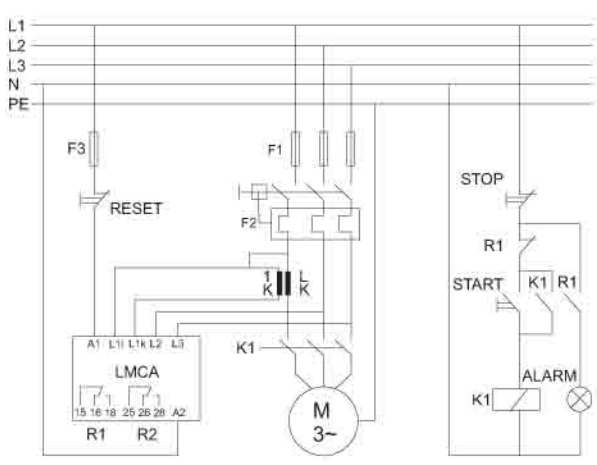
Application:
Load monitoring of pumps and fans and other lightly loaded motors.

Controling the input flow rate at which new material is fed into, for instance, a grinding gear based on the current load status.

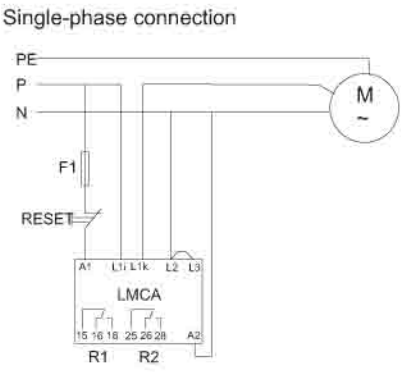
Under load monitoring can recognize power transmission faults (for example, when a V-belt breaks) or flow interruptions to centrifugal pumps and radial fans.

CONNECTION DIAGRAM

Three-phase connection

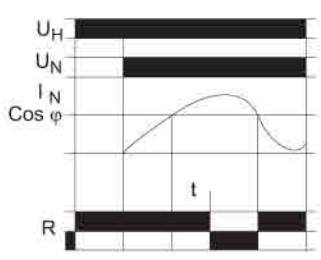


Single-phase connection

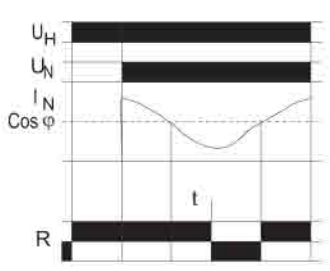


FUNCTION DIAGRAM

Overload monitoring



Underload monitoring



SPECIFICATIONS

INPUT

Rated voltage	1-phase 24 - 230 V 3-phase 24 - 400 V
Rated current	0,5 to 10 A
Phase angle cos φ	0.....0.9 adjustable
Hysteresis	Constant at approx. 3-5%
Operating delay	0.5...160 sec. adjustable

PERFORMANCE PARAMETERS

TIMING	
Reset after failure of supply voltage	>20ms
Recovery time	<1sec (measuring circuit)

OUTPUT

2 changeover contacts for power	
Contact voltage	250V~(max.: 440V~250V-)
Continous current	8 A
Switching capacity	1500 VA (220V-, cos φ = 1)
Mechanical life	> 3 x 10^7 operations
Electrical life	> 3 x 10^5 operations (230V~, 5A, cos φ =1)
Contact material	silver-nickel gold plated

SUPPLY

AC supply range with transformer	24, 42, 48, 110, 127, 230, 380, 400, 440 V AC +10%...15% UN
AC frequency range	48 to 63 Hz
Power consumption	2 VA
Duty cycle	100%, class 1c

GENERAL

Temperature range	- 25 °C to + 55 °C ambient
Humidity	Up to 90 % RH non-condensing
VDE 0435	Test voltage 2000V~
VDE 0110	Group B 250V~

DIN rail installation in accordance with DIN 46277/3 (European std.EN 50022)
Protection class IP 40 in accordance with VDE 0106 and VBG4
Screw terminals up to 4mm², protection rating IP 20
Terminal designation and arrangement in accordance with DIN 46199

Weight 0.14 kg in 45 mm. housing

CE

	International Standards
EMC directive 89/336:	EN50081 - Emission EN50082 - Immunity
Low voltage directive 73/23:	EN60255 - Electrical Relays

ORDERING INFORMATION

EXAMPLE: LMCA M 230 A B 4 C

TYPE
Pump-Fan monitoring relay — LMCA

SUPPLY
AC with transformer — M

SUPPLY VOLTAGE

Excl. transformer module	xxx
From 20 to 28 VAC	024
From 36 to 46 VAC	042
From 41 to 52 VAC	048
From 99 to 140 VAC	110
From 108 to 139 VAC	127
From 198 to 264 VAC	230
From 323 to 418 VAC	380
From 342 to 440 VAC	400
From 374 to 484 VAC	440

ADJUSTMENT
Trimpot and dipswitch adj. — A

HOUSING
Rail mounting.(internal transformer) — B

SIZE
45 mm. 2 C/O — 4

CODE END — C

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