

Pump Monitor, EL-FI™ PM

Fan Monitor, EL-FI™ FM



## MAIN BENEFITS

- Stops a pump or fan and/or initiates an alarm when an unacceptable change in motor load is detected.
- Can be used with a frequency inverter.
- Works with up to 10 A motor current without requiring an external current transformer.
- Separate voltage supply.
- Alarm can be set to trigger when the motor current is zero.
- Galvanically-isolated current measurement increases personal safety.
- DIN-rail mounting.
- Monitors and protects simply and economically.
- No external sensor required.
- Function delay times can be entered to eliminate false alarms.
- Alternative alarm functions can be set.
- Easy to install for all sizes of induction motor.
- Reliable and maintenance-free.

The EL-FI PM and EL-FI FM monitor incorporate Emotron's own "phase angle method" to supervise either a centrifugal pump or belt-driven radial fan system respectively. As no external sensor is required, the monitor is connected directly to the drive motor cable to measure the difference in phase angle between the current and voltage. A change in phase angle indicates a change in motor load. When the motor load falls below the preset alarm level, the motor is stopped and/or a system alarm is tripped.

A variable alarm level, representing the load at which an alarm is tripped, can be set on the monitor. An alarm delay time can also be set to suppress relay tripping in the event of a momentary or spurious underload. Alternative alarm functions can be set by means of three DIP-switches located on the control panel.

EL-FI FM/FM monitors suit both large and small asynchronous motors. With motors rated at less than 10A current, the monitor is wired directly into the motor circuit, at a higher current rating it is connected via a standard current transformer.

## APPLICATIONS

**Pump Monitor EL-FI PM.** Stops and/or initiates an alarm when an unacceptable underload is detected on the centrifugal pump motor. This can result, for example, from dry running, a closed valve or a pump failure.

**Fan Monitor EL-FI FM.** Stops and/or initiates an alarm when an unacceptable underload is detected on the radial-flow fan motor. This can result, for example, from a belt failure, a closed damper or a blocked air filter.

TECHNICAL DATA	
Main voltage for motor	100-240 VAC or 380-500 VAC +5%, -10%
Motor frequency	30-65 Hz
Excitation voltage for monitor	100-110 VAC, 200-240 VAC; 380-440 VAC or 460-500 VAC +5%, -10%
Supply voltage frequency	45-65 Hz
Current input	0.1-10A
Current tolerance	60 A in 5 sec
Power consumption	2.5 VA
Response delay time	1-40 s for PM and 1-90 s for FM
Relay contact	5A, 250 VAC1 (1.5 A AC11)
Fuse	Max. 20 A
Terminal wire size	0.2-4.0 mm <sup>2</sup> single core 0.2-2.5 mm <sup>2</sup> flexibel core. Stripped length 8mm.
Accuracy	±10% FS
Repeatability	±1%, 24h, 20°C
Ambient temperature	-20°C till +50°C
Temp. tolerance	≤ ± 0,1%/°C
EMC-immunity	EN50081-1, EN50082-2
Electrical safety	IEC 947-5-1
Protection class, case	IP20
Dimensions (WxHxD)	45 x 90 x 115 mm
Weight	0.30 kg
Data for current transformer	5 A, 1 VA or more, class optional
Emotron AB reserves the right to alter product specifications without prior notification.	

**ALARM FUNCTIONS**

The monitor has three different alarm functions which are selected using the DIP-switches on the front panel.

- Alarm relay normally energized (activated)  
Alarm relay normally de-energized (un-activated)
- No latched alarm  
Latched alarm
- No alarm at no motor current  
Alarm at no motor current

**EL-FI PM/FM**

Reliable and maintenance-free

No external sensor

Asynchronous motor is the sensor

Simple to install

Suits all asynchronous motors

Highly accurate

Measures cos φ

**STOP/ALARM ON**

Dry running (PM)

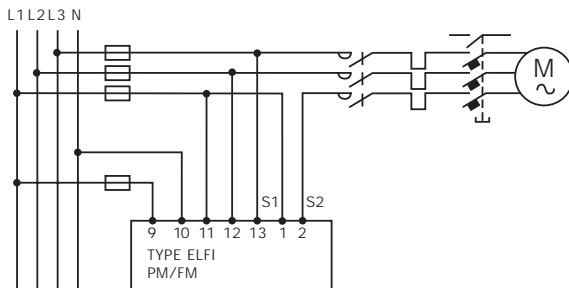
Closed valve (FM)

Drive belt breakage (FM)

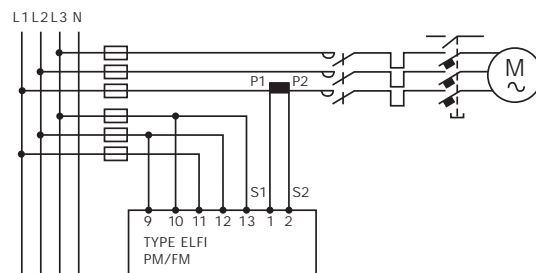
Closed damper (FM)

Blocked filter (FM)

**TYPICAL CONNECTION OF EL-FI PM/FM**



EL-FI PM/FM, 3x380-500/220-240V  
 (Without current transformer <10A)



EL-FI PM/FM, 3x380-500/380-400V  
 (With current transformer >10A)

Emotron AB  
 Mörsaregatan 12  
 Box 222 25  
 S-250 24 Helsingborg, Sweden  
 Phone: +46 42 16 99 00  
 Fax: +46 42 16 99 49