Torque monitor MP92

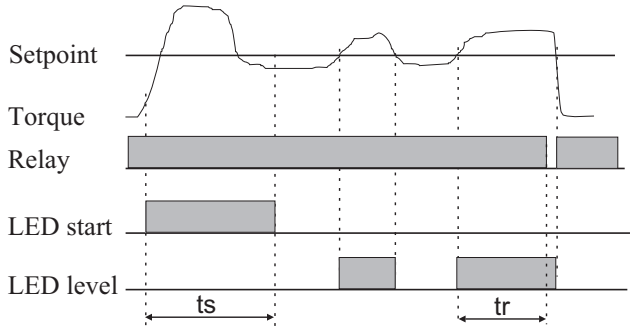
Monitoring of engine torque for 3phase motors
Frequency range 10-400 Hz
Very suitable in connection with frequency converters
Analogue and relay output
Adjustable start-up time, reaction time and setpoint
Selectable current ranges: 1A, 2,5A, 5A and 10A
Produced in accordance with CE and EMC regulations

C-mac® torque monitor type MP92 is used for monitoring of the engine torque on 3-phase motors.
The unit is particularly suitable in connection with frequency converters, and it can be used on all converters using the PWM principle.
Contrary to motors connected directly to the mains frequency, it is not possible to monitor the mechanical load on a motor which is connected via a frequency converter, by means of a standard power monitoring unit, because both voltage, current, phase angle and frequency must be calculated, and MP92 is developed particularly for this purpose.
The torque monitoring principle indicates the correct mechanical load of the motor, independant of the rotation speed, thereby making it suitable in connection with machine monitoring and process control applications.
MP92 can be connected directly to motors with a nominal load current up to 10 A, corresponding to approx. 5 kW.
In order to get the maximum metering accuracy you can select between 4 different current- and 2 voltage ranges by means of DIP-switches.
The unit is supplied with a 0-10 V output, indicating the actual torque in percentage of the metering range, and a 1-pole relay output, which switches if the adjusted setpoint is exceeded.

Technical data:

Supply voltage:	24 VAC/DC +/- 10%
Power consumption:	3,5 VA
Operating temp.:	-20°C to +60°C
Humidity:	0-90%, non-condensing
Ranges, current:	0-1A, 0-2,5A, 0-5A and 0-10A
voltage:	0-250VAC and 0-500VAC
frequency:	10-400 Hz
Accuracy:	<5% (absolute), <1% (repeating)
Adjustments:	
Start-up delay:	0,2 - 20 seconds
Reaction delay:	0 - 20 seconds
Setpoint:	10 - 100%
Indications:	
Red LED, Load:	Relay active
Red LED. Level:	Set limit exceeded
Red LED, Start:	Start-up delay active
Outputs:	
Relay, setpoint:	max. load 5A / 250V

Functional diagram:



Functional description:
When the supply voltage is connected, the relay is activated.
When the motor starts, and the torque exceeds 5% of the maximum torque, the start-up delay is activated, and in this period the relay will remain activated, no matter if the torque exceeds the adjusted setpoint.
At the end of the start-up time the LED "Level" will indicate a possible exceeding of the set-point, and if the reaction delay "tr" is exceeded, the relay releases.
Please note, that the relay activates again, when the load is below the set limit, which means you must use the relay output in connection with a latch circuit for the motor, if you want the unit to disconnect the motor in case of an overload.

Selection of metering range:
The current range must be selected in such a way, that the normal operation current of the motor equals a metering signal of 50-80% (5-8 volt on the output), in this way you will get the best accuracy.
You can check the operation range by means of a voltmeter, or you can adjust on the level potentiometer to find the operation level. If you do not want the relay to switch during this test, you can set the reaction delay to max.

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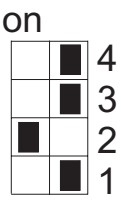
Selection of metering range:

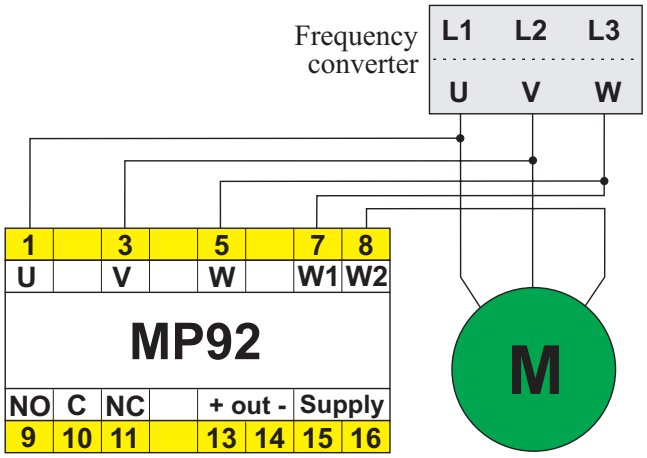
Behind the frontplate you will find a DIP-switch, which is used to select the current and voltage ranges, see table below:

Metering voltage max 250 V: DIP 1 ON
Metering voltage max 500 V: DIP 1 OFF



	DIP-switch		
Current	4	3	2
0 - 1 A	ON	OFF	OFF
0 - 2,5 A	OFF	ON	OFF
0 - 5 A	OFF	OFF	ON
0 - 10 A	OFF	OFF	OFF

Connection diagram:



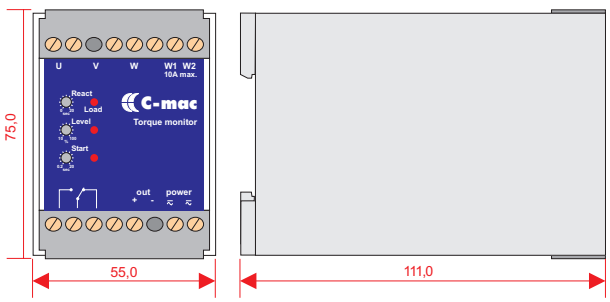
Supply voltage 24 VAC/DC is connected on pins 15-16.
Output signal 0-10 VDC on pins 13-14.

Note: Supply voltage, analogue output and metering inputs are galvanically separated.

Ordering guide:

MP92-024

Mechanical dimensions:



MP92, in brief:

- Torque monitoring with large speed variations (10 - 400 Hz).
- Monitoring directly on the motor connections eliminates errors because of disturbances and losses before and in the frequency converter.
- Possibility for separate torque monitoring on individual motors, controlled by the same frequency converter.
- Simple to install, also in existing installations, without extra mechanical components. Can be installed directly in the switchboard.
- Galvanically separated 24 VAC/DC supply.
- Both analogue and relay output in the same unit.
- Max. 10 A metering current directly on the unit.
- Protection of all mechanical parts, like gears, couplings, chains, belts and the motor itself against overload.
- Most suitable for conveyors, pumps, stirrers, lifts, etc.

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