Current Monitors

Current Monitors have many advantages over voltage monitors because they provide protection against both supply line and load side faults when the motor is running. They protect against single-phasing and current unbalance problems that can be caused by voltage supply problems, bad contactors, loose wiring, bad wires or damaged motors. They also provide very reliable overload and underload protection.

Current monitors are used to detect heater element failure, loss of load, peak power loads, runway and radio tower light failure, feed rate, dull bits and blades, conveyor load jams, current demand level and to keep tooling loads at their most efficient point.

Product Selection Matrix

MODEL	Phase Loss	Phase Reversal	Undercurrent	Overcurrent	Current Unbalance	Rapid Cycling	Diagnostic Display	Trip Delay	RD1 Rapid-Cycle Timer, Power-Up Timer	RD2 Overcurrent Restart Delay Timer	RD3 Undercurrent/Dry-well Restart Delay Timer	#RF Number of Restarts After All Faults (except UC fault*)	#RU Number of Restarts After an UC Fault	Motor Acceleration Time	Remote Manual Reset
520CS-115	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
520CP-115	•	•	•	•	•	•	•	•	•	•	•	•	•		•
520CP-230	•	•	•	•	•	•	•	•	•	•	•	•	•		•
520CP-460	•	•	•	•	•	•	•	•	•	•	•	•	•		•

* Includes UC fault on 520CS units

Current Monitors

Current Monitor

Model 520CS

3-phase current monitor, ***programmable motor acceleration trip delay from 0-50 seconds***

The Model 520CS is a fully-programmable, microcontroller-based, current-sensing device designed to monitor 3-phase pumps. Unlike the Model 520CP which is designed to work with motors that have ramp-up times of 4 seconds or less, the Model 520CS has a programmable motor acceleration time that can be set from 0-50 seconds.

Three external current transformers must be utilized in conjunction with the Model 520CS. The following nine parameters can be set and viewed from the 3-digit alphanumeric display: overcurrent trip point, undercurrent trip point, current unbalance trip point, trip delay, rapid-cycle timer (RD1), overload restart delay (RD2), underload restart delay (RD3), number of starts after a fault and motor acceleration time. Last fault diagnostic is also viewable. When a harmful condition is detected, the MotorSaver's output relay is deactivated after the specified trip delay. The output relay reactivates after the appropriate RD2 or RD3 timer has expired. Overcurrent, undercurrent and current unbalance are ignored during the motor acceleration period; however, if the motor is started on a single-phase or a reverse-phase condition, the Model 520CS deactivates its output relay in 0.5 second.

For more information see:
See Appendix A, page 69, Figure 12 for dimensional drawing.
See Appendix B, page 77, Figure 34 for typical wiring diagrams.

RD1 - restart delay on power-up and rapid-cycle timer
RD2 - restart delay after all faults except undercurrent
RD3 - restart delay after undercurrent

Features:

- Motor acceleration trip delay
- Protects three-phase motors from:
  - Overcurrent
  - Undercurrent
  - Current unbalance
  - Rapid cycling
  - Single phasing
  - Phase reversal

Approvals:

Available Models:

520CS-115

Specifications

Input Characteristics
Control Voltage 100-130VAC
Frequency 50*/60Hz
Functional Characteristics
Maximum Full Scale Current ..... 5 Amps (max.)
Fixed Operating Points
Reverse-Phase Trip Delay ..... 0.5 second
Single-Phase Trip Delay ..... 0.5 second
Output Characteristics
Output Contact Rating (SPDT)
Pilot Duty ..... 480VA at 240VAC
General Purpose 10A
General Characteristics
Temperature Range ..... 0° to 70°C (32° to 158°F)
Repeat Accuracy Trip Point ..... ±2%
Repeat Accuracy Timing ..... ±25%, ±1 second
Maximum Input Power ..... 5 W
Transient Protection (Internal) ..... 2500V for 10 ms
Safety Marks
UL ..... UL508 (File #E68520)
CSA ..... C22.2 (File #46510)
Dimensions ..... 8.25" H x 5.25" W x 3.25" D
(209.55 x 133.35 x 82.55mm)
Weight ..... 2.2 lbs. (35.2 oz., 997.9 g)
Mounting Method ..... Four #10 or #12 screws (3/4"-1" in length)

*Note: 50Hz will increase all delay timers by 20%

Requires external current transformers (sold separately).

3-Phase Voltage Monitor

Model 520CP

3-phase current monitor, ***for use with motors having ramp up times of 4 seconds or less,***
second relay optional on 115VAC version

The Model 520CP is a fully-programmable, microcontroller-based, current-sensing device designed to monitor 3-phase pumps or systems with ramp-up times of 4 seconds or less. Applications include submersible pumps, booster pumps, reverse osmosis systems, centrifugal pumps, vertical turbine pumps, oil well pumps, chemical pumps or other similar systems.

Three external current transformers must be utilized in conjunction with the Model 520CP. The following nine setpoints can be set and viewed from the 3-digit alphanumeric display: overcurrent trip point, undercurrent trip point, current unbalance trip point, trip delay, rapid-cycle timer (RD1), overload restart delay (RD2), underload restart delay (RD3), number of starts after an overload and number of restarts after an underload fault. Last fault diagnostic is also viewable. When a harmful condition is detected, the MotorSaver's output relay is deactivated after the specified trip delay. The output relay reactivates after the appropriate RD2 or RD3 timer has expired. If the pump is started on a single-phase or a reverse-phase condition, the Model 520CP deactivates its output relay in 0.5 second.

520CP-115-RX-30 - The 520CP unit has two output relays that work independently of each other. The right relay energizes on start up and the left relay energizes on a fault after all restart attempts are exhausted. (RD1 in minutes)

520CP-115-RX-56 - This 520CP unit has two output relays that work in unison. Unit displays 'nc'(no current) when the current of the motor equals '0' for more than 4 seconds. (RD1 in minutes)

For more information see:
See Appendix A, page 69, Figure 12 for dimensional drawing.
See Appendix B, page 77, Figure 34 for typical wiring diagrams.

RD1 - restart delay on power-up and rapid-cycle timer
RD2 - restart delay after all faults except undercurrent
RD3 - restart delay after undercurrent

Features:

- Protects three-phase motors from:
  - Overcurrent
  - Undercurrent
  - Current unbalance
  - Rapid cycling
  - Single phasing
  - Phase reversal

Approvals:

Available Models:

520CP-115
520CP-230
520CP-460
520CP-115-RX-30
520CP-115-RX-56

Specifications

Input Characteristics
Control Voltage
520CP-115 . . . . . .100-130VAC
520CP-230 . . . . . .200-250VAC
520CP-460 . . . . . .400-500VAC
Frequency 50*/60Hz
Functional Characteristics
Maximum full scale current . . . . . .5 Amps (max.)
Fixed Operating Point
Reverse & Single-Phase Trip Delay. . . . . .0.5 second
Trip Point Accuracy. . . . . .±2%
Timing Accuracy . . . . . .±25%, ±1 second
Temperature Range . . . . . .0º to 70ºC
Output Characteristics
Output Contact Rating (SPDT)
520CP-115, 520CP-230
Pilot Duty . . . . . .480VA @ 240VAC
General Purpose. 10A
520CP-460
Pilot Duty . . . . . .470VA @ 600VAC

General Characteristics
Temperature Range . . . . . .0° to 70°C (32° to 158°F)
Maximum Input Power. . . . . .5 W
Transient Protection (Internal). . . . . .2500V for 10 ms
Safety Marks
UL. . . . . .UL508 (File #E68520)
CSA. . . . . .C22.2 (File #46510)
Dimensions . . . . . .8.25" H x 5.25" W x 3.25" D
(209.55 x 133.35 x 82.55mm)
Weight . . . . . .2.2 lbs. (35.2 oz., 997.9 g)
Mounting Method . . . . . .Four #10 or #12 screws (3/4"-1" in length)

Options (additional cost) . . . . . .DPDT Relay Contacts

*Note: 50Hz will increase all delay timers by 20%

Requires external current transformers (sold separately).