

Motor and Pump Protection Relays

233P Series

Single-Phase Pump Monitor



Description

The Littelfuse models 111P (115 volt, $\frac{1}{8}$ to 1hp); 233P-1.5 (230 volt, $\frac{1}{8}$ to 1.5hp); and 233P (230 volt, $\frac{1}{8}$ to 3hp) are single-phase pump monitors used in a variety of applications to protect from dry-well, dead-head, jammed impeller, rapid-cycling, overvoltage, and undervoltage conditions.

Operation

A calibration adjustment allows the unit to be calibrated to your specific pumping applications, which reduces the possibility of false or nuisance tripping. A unique microcontroller-based voltage and current-sensing circuit constantly monitor the incoming power for fluctuations, overcurrent, and undercurrent conditions. When an abnormality, such as loss of suction, is detected, the product deactivates its output relay and directly disconnects the pump motor. The relay then begins its user-selectable restart delay (dry-well recovery) timer. When the timer counts to zero or power is removed and reapplied, the relay reactivates its output relay and turns the pump back on. The infrared LED communicates with a hand-held diagnostics tool called the Informer* (sold separately). The Informer displays parameters including calibration points, trip points, run time and last faults.

There are special considerations for pump cables larger than #10 AWG: In some cases where larger motors are installed with deep-set pumps, pump cables are used that exceed the relay's terminal size. In these conditions, a short splice of #10 AWG or #12 AWG may be a solution at the control box. Note: All local, state, and national electric codes should be followed when applying this solution.

Note: The description and operations apply to Littelfuse models 111P (115 V, $\frac{1}{8}$ to 1 hp); 233P-1.5 (230 V, $\frac{1}{8}$ to 1.5 hp); and 233P (230 V, $\frac{1}{8}$ to 3 hp). These models have a sensitivity adjustment for the dry-well trip point. After calibration is complete, you can adjust the sensitivity for the dry-well/dead-head trip point from 70-90 % of the full load. This makes the unit even more adaptable to varying pumping applications. If you have a very low producing well, you increase the sensitivity closer to the 90 % mark, or if you have a very heavy producing well, you should decrease the sensitivity around the 70 % mark.

*Informer: A hand-held diagnostic tool that uses an infrared receiver to access information that can be helpful for troubleshooting the system.

Features & Benefits

FEATURES	BENEFITS
Proprietary microcontroller-based circuitry	Constant monitoring of voltage, power factor, and current for reliable pump protection
Onboard calibration process	Calibrates unit to your specific individual pumping application and reduces nuisance tripping
Onboard sensitivity adjustment	User-adjustable sensitivity knob makes the unit more adaptable to varying pumping applications

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Applications

- Pumps: submersible, centrifugal, circulating, cooling, environmental
- Waterwells: residential, commercial, irrigation
- Golf course systems
- Sprinkler systems

Specifications

Functional Characteristics

Adjustments/Settings:

Overcurrent	125% of calibration point
Underload (dry-well)	Adjustable (70 to 90% of calibrated run power)
Overvoltage	265VAC
Undervoltage	190VAC
Number of restarts allowed in a 60-sec. period (rapid-cycling)	4

Trip Delay Times

Overcurrent	5 seconds
Dry-well	4 seconds

Restart Delay Times

Over/Undervoltage	2 seconds
All other faults	Manual, 2-225 Minutes

Input Characteristics

Supply Voltage	230VAC
Load Range	
233P-1.5	1/3 – 1.5 hp
233P	1/3 – 3 hp
Frequency	50/60Hz (Note: 50Hz will increase all delay timers by 20%)

Output Characteristics

Output Contact Rating-SPST	
233P-1.5	1.5 hp @ 240 V ac (10 amps max.)
233P	3 hp @ 240 V ac (17 amps max.)

General Characteristics

Operating Temperature	-40° to 55° C (-40° to 131° F)
Maximum Input Power	5 W
Wire Gauge	Solid or Stranded 10 - 22AWG
Terminal Torque	13 in.-lbs.
Dimensions	H 73.66 mm (2.9"); W 133.35 mm (5.25"); D 73.99 mm (2.913")
Weight	14 oz.
Mounting Methods	#8 screws

Certification & Compliance

cULus

Listed UL508, C22.2 No. 14

Accessories

Informer

A hand-held diagnostic tool that uses an infrared receiver to access information which can be helpful for troubleshooting the system.

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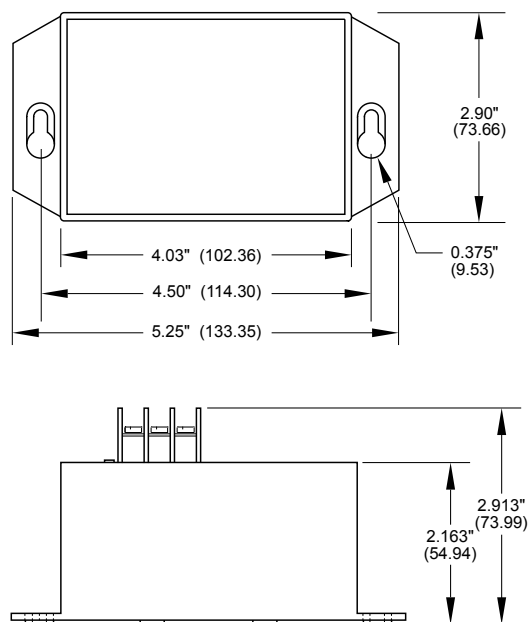
Ordering Information

MODEL	LINE VOLTAGE	DESCRIPTION
233P	230 V ac	Load Range: 1/3 - 3 hp
233P-ENCL	230 V ac	233P with NEMA3R enclosure
233P-1.5	230 V ac	Load Range: 1/3 - 1.5 hp
233P-1.5-ENCL	230 V ac	233P-1.5 with NEMA3R enclosure

PART*	SIZE	CURRENT (A)	CT CURRENT RATIO
CT-0050-D10	5 - 7 1/2 HP	27.5 - 42.1	50:5
CT-0075-D10	10 HP	51	75:5
CT-0100-D10	15 HP	75	100:5

* Current transformer sold separately

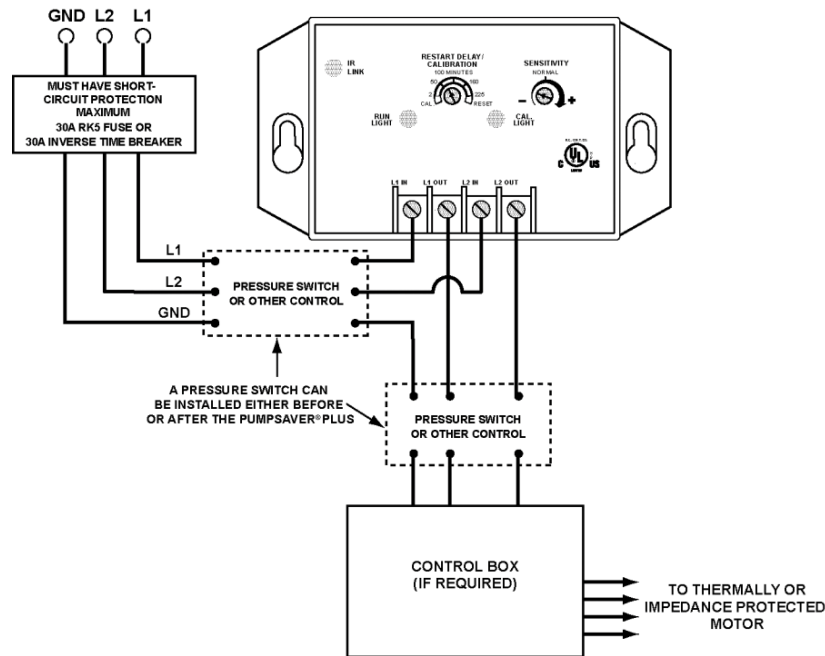
Dimensions Inches (mm)



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Simplified Wiring Diagram



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