

Motor and Pump Protection Relays

235P Series

Single-Phase Pump Monitor



Description

The Littelfuse 235P is designed to protect 5-15 hp, 230 V, single-phase pumps from dry-well, dead-head, jammed impellers, rapid-cycle, and overvoltage and undervoltage conditions. A calibration adjustment allows the 235P to be calibrated to your specific pumping applications, reducing the possibility of false or nuisance tripping. A unique microcontroller-based voltage and current-sensing circuit constantly monitors the incoming power for fluctuations causing overcurrent and undercurrent. When an abnormality such as loss of suction is detected, the 235P deactivates its output relay and directly disconnects the pump motor. The 235P 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. An external current transformer is required for operation (sold separately).

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 235P model has a sensitivity adjustment for the dry-well trip point. After calibration is done, 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, increase the sensitivity closer to the 90 % mark, or if you have a very heavy producing well, decrease the sensitivity around the 70 % mark.

Features & Benefits

FEATURES	BENEFITS
Proprietary microcontroller-based circuitry	Constant monitoring of voltage and current for reliable pump protection
Onboard sensitivity adjustment	User-adjustable sensitivity knob makes the unit more adaptable to varying pumping applications
Adjustable restart delay	Allows user to select well recovery time delay after a dry-well condition occurs, or to select manual reset
Built-in IR communications link	When used with the Informer, allows user to see stored faults, run time, and troubleshoot the pump while it's running
LED indication	Provides status and diagnostics for troubleshooting
Flexible reset	Reset can be done through a push button on the relay or remotely with optional 777-MRSW or OL-Reset remote reset kit

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Applications

- Used for single-phase pump protection needs

Specifications

Functional Specifications

Adjustments/Settings:

Overcurrent	125 % of calibration point
Underload (dry-well)	Adjustable (70 to 90 % of calibrated run power)
Overvoltage	265 V ac
Undervoltage	190 V ac

Number of restarts allowed in a 60-sec. period (rapid-cycling)	4
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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	230 V ac
Load Range	5–15 hp (external current transformer required)
Frequency	50/60 Hz (<i>Note: 50 Hz will increase all delay timers by 20 %</i>)

Output Characteristics

Output Contact Rating-SPST	A300, 720VA @240 V ac (10 Amps max.)
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General Characteristics

Operating Temperature	-40 °C to 55 °C (-40 °F to 131 °F)
Maximum Input Power	5 W
Wire Gauge	Solid or Stranded 10–22 AWG
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

UL 508, 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. Includes the Informer IR Kit-12

Informer IR Kit-12

12" infrared adapter cable attaches to the face of the unit to provide remote diagnostics without opening the panel. Included with the Informer

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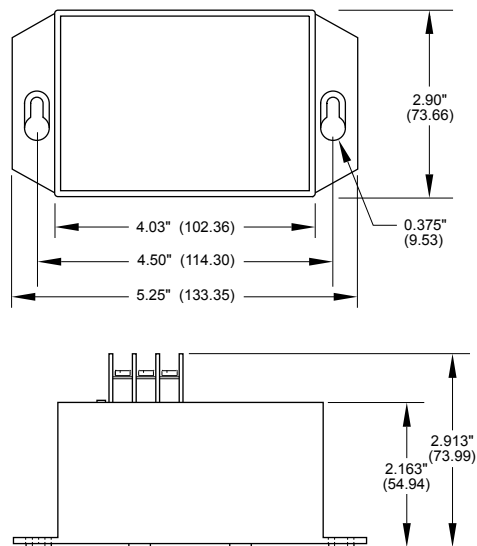
Ordering Information

MODEL	LINE VOLTAGE	DESCRIPTION
235P	230 V ac	5–15 hp
235P-ENCL	230 V ac	233P with NEMA3R enclosure

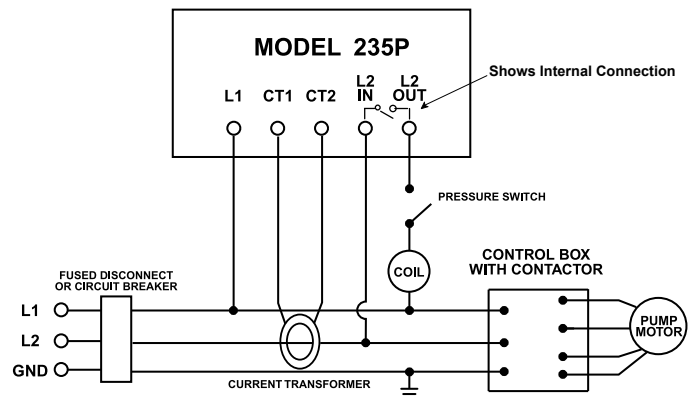
PART*	SIZE	CURRENT (A)	CT CURRENT RATIO
CT-0050-D10	5 - 7½ hp	27.5–42.1	50:5
CT-0075-D10	10 hp	51	75:5
CT-0100-D10	15 hp	75	100:5

* Current transformer sold separately

Dimensions Inches (mm)



Simplified Wiring Diagram



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