

# 235P

## 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 impeller, rapid-cycle and overvoltage and undervoltage conditions.

A calibration adjustment allows the 235P to be calibrated to your specific pumping applications, thereby 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.

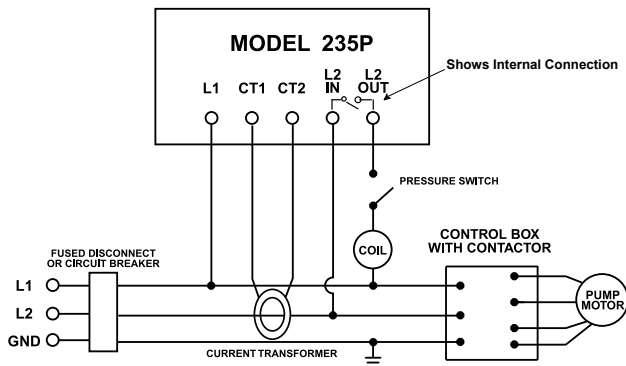
The 235P communicates with a hand-held diagnostics tool called the Informer (sold separately). The Informer displays parameters including calibration points, trip points, run time and last faults.

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, you increase the sensitivity closer to the 90 % mark, or if you have a very heavy producing well, you would decrease the sensitivity around the 70 % mark.

### Wiring Diagram



### 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

### Features & Benefits

FEATURES	BENEFITS
<b>Proprietary microcontroller based circuitry</b>	Constant monitoring of voltage and current protects pumps from dry-well, dead-head, jammed impeller, rapid cycling, and voltage faults
<b>Onboard sensitivity adjustment</b>	Allows user to adjust the current sensitivity for the dry-well / dead-head trip point from 70 % - 90 % of the full load.
<b>Adjustable restart delay</b>	Allows user to select well recovery time delay after a dry-well condition occurs, or to select manual reset
<b>Built in IR communications link</b>	Used with the Informer, allows user to see stored faults, run time, and also troubleshoot the pump while it's running
<b>LED indication</b>	Provides status and diagnostics for troubleshooting

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## 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.

## Specifications

### Functional Specifications

#### Adjustments/Settings

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

#### Number of restarts allowed

**in a 60-sec. period (rapid-cycling)** 4

#### Trip Delay Times

<b>Overcurrent</b>	5 seconds
<b>Dry-well</b>	4 seconds

#### Restart Delay Times

<b>Over/undervoltage</b>	2 seconds
<b>All other faults</b>	Manual, 2-225 minutes

### Input Characteristics

<b>Supply Voltage</b>	230 V ac
<b>Load Range</b>	5 - 15 hp (external current transformer required)
<b>Frequency</b>	50/60 Hz ( <i>Note: 50 Hz will increase all delay timers by 20 %</i> )

### Output Characteristics

**Output Contact Rating-SPST** A300, 720 VA @ 240 V ac (10 A max.)

### General Characteristics

<b>Operating Temperature</b>	-40 °C to 55 °C (-40 °F to 131 °F)
<b>Maximum Input Power</b>	5 W
<b>Wire Gauge</b>	Solid or Stranded 10 - 22 AWG
<b>Terminal Torque</b>	13 in.-lbs.

### Safety Marks

**cULus Listed** UL 508, C22.2 No. 14

**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