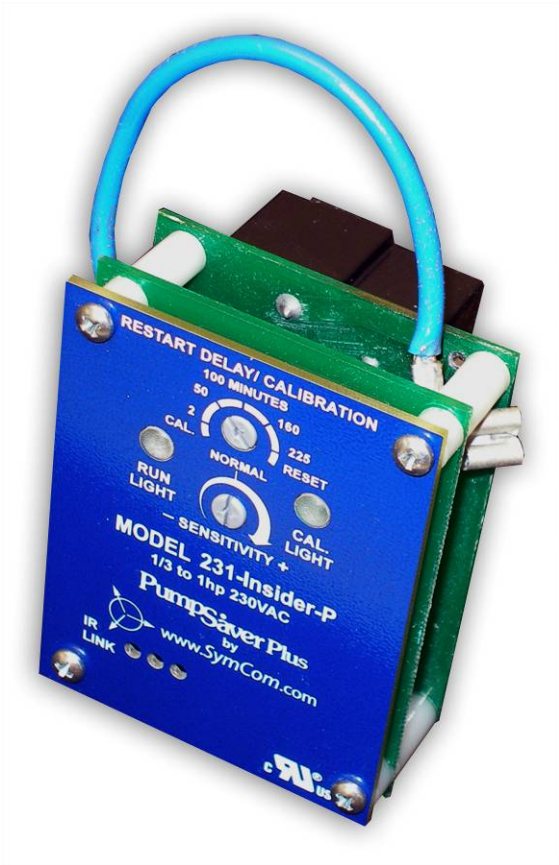
INSTALLATION INSTRUCTIONS

Revision C1
Rapid City, SD, USA, 09/2009

PumpSaver® Plus
ELECTRONIC PUMP CONTROL & PROTECTION

MODEL 231/111-INSIDER-P



II_231-111-INS-P_C1

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...your electronic control & protection specialists

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DANGER!

HAZARDOUS VOLTAGES MAY BE PRESENT DURING INSTALLATION.
Electrical shock can cause death or serious injury.
Installation should be done by qualified personnel following all national, state and local electrical codes.

BE SURE POWER IS DISCONNECTED PRIOR TO INSTALLATION!
FOLLOW NATIONAL, STATE AND LOCAL CODES.
READ THESE INSTRUCTIONS ENTIRELY BEFORE INSTALLATION.

The PumpSaver®Plus Model 231-INSIDER-P fits inside 1/3 – 1hp, 230V Franklin™, Pentek®, or CentriPro™ control boxes. The Model 111-INSIDER-P fits inside 1/3 and 1/2hp, 115VAC Franklin™, Pentek® or CentriPro™ control boxes. PumpSavers are designed to protect single-phase pumps from dry-well, dead-head, rapid-cycling, jammed impeller, and over/undervoltage conditions. Typical applications include residential water wells, commercial water wells, irrigation wells, and golf course and other sprinkler systems.

CONNECTIONS

Refer to specific connection instructions depending on the particular control box being used:

After the PumpSaver®Plus has been installed, place the provided **PumpSaver®Plus Label** on the outside of the control box.

FIGURE 1: PumpSaver®Plus Enclosure Label

***** WARNING *****

PROPER OPERATION REQUIRES FIELD CALIBRATION

FRANKLIN™ CONTROL BOX

CONNECTIONS

1. Remove the cover from the front of the 3-wire Franklin™ control box.
2. Disconnect the ***yellow*** wire from terminal L2 and remove the ***blue*** wire completely from the control box (save the ***blue*** wire for future use).
3. Connect the ***blue*** wire attached to the PumpSaver®Plus to the L1 terminal on the solid-state switch.
4. Press the PumpSaver®Plus onto the L1 and L2 terminals.
5. Reconnect the ***yellow*** wire to L2 on the PumpSaver®Plus.

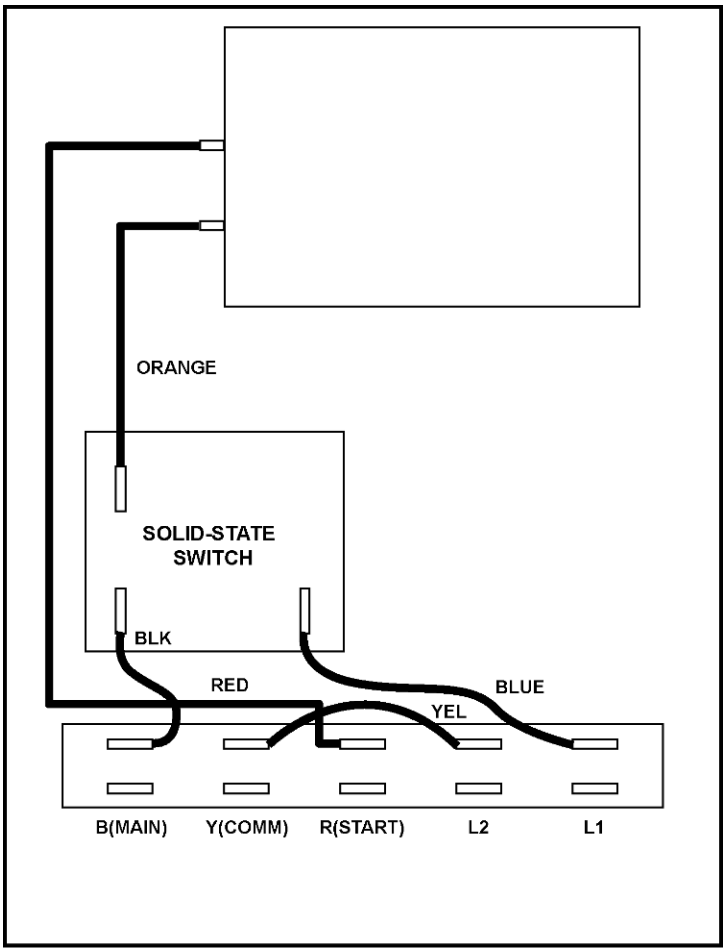

FIGURE 2: Franklin™ Control Box without the PumpSaver®Plus

FRANKLIN™ CONTROL BOX

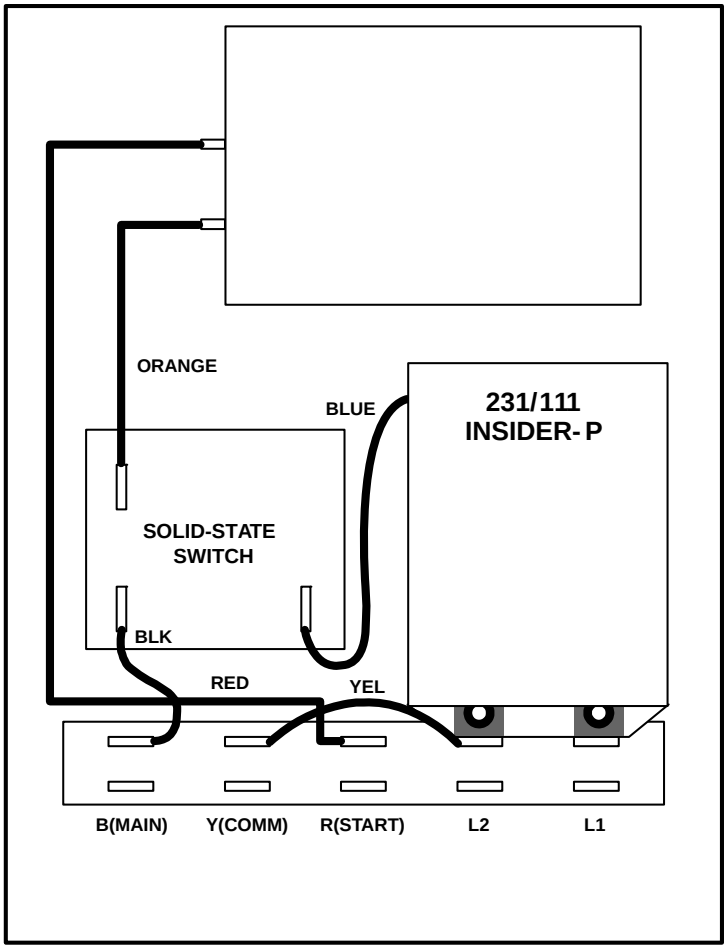

FIGURE 3: Franklin™ Control Box with the PumpSaver®Plus Installed

PENTEK® CONTROL BOX

CONNECTIONS

1. Remove the cover from the front of the 3-wire Pentek® control box.
2. Disconnect the ***yellow*** wire from terminal L2.
3. Cut and remove the ***black*** wire connecting L1 and B (MAIN).
4. Press the PumpSaver®Plus onto the L1 and L2 terminals.
5. Reconnect the ***yellow*** wire to L2 on the PumpSaver®Plus.
6. Connect the ***blue*** wire attached to the PumpSaver®Plus to the dual-lug terminal with the ***black*** wire at the top of the capacitor.

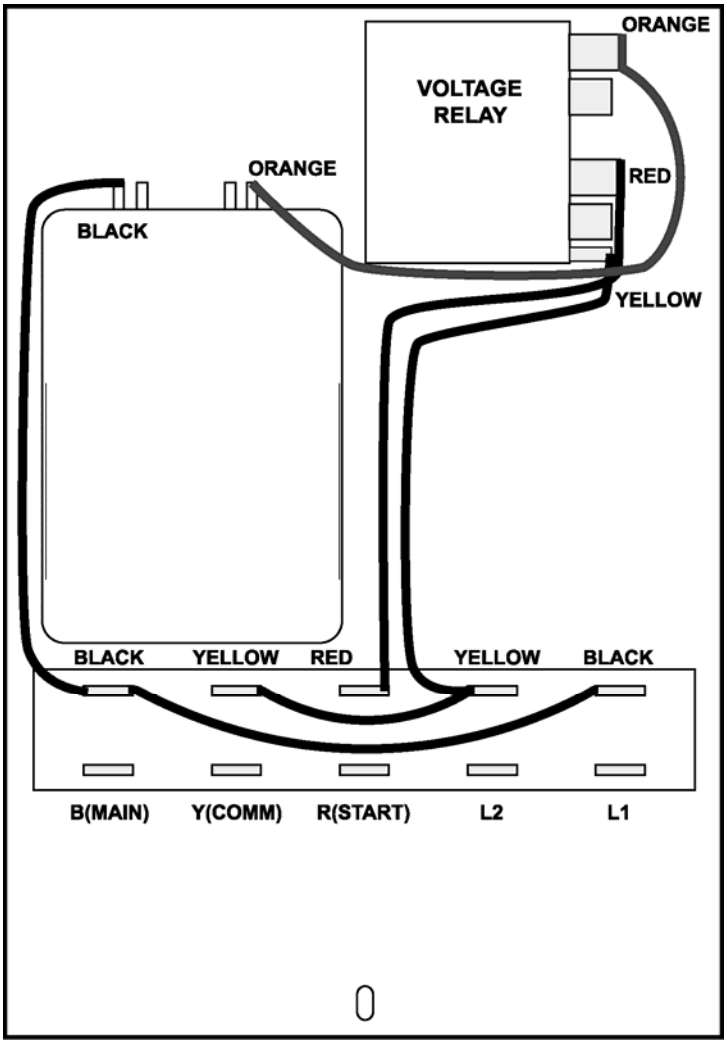

FIGURE 4: Pentek® Control Box without the PumpSaver®Plus Installed

PENTEK® CONTROL BOX

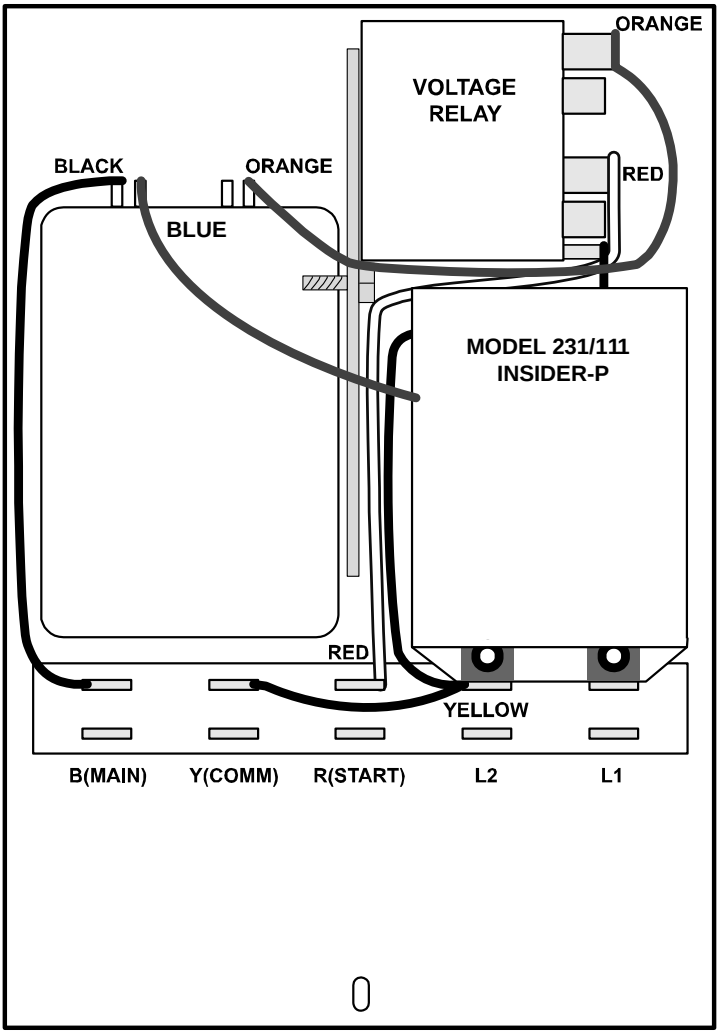

FIGURE 5: Pentek® Control Box with the PumpSaver®Plus Installed

CENTRIPRO™ CONTROL BOX

CONNECTIONS

1. Remove the cover from the front of the 3-wire CentriPro™ control box.
2. Disconnect the *yellow* wire from terminal L2.
3. Remove the *black* wire connecting L1 and the capacitor completely from the box (save the *black* wire for future use).
4. Press the PumpSaver®Plus onto the L1 and L2 terminals.
5. Reconnect the *yellow* wire to L2 on the PumpSaver®Plus.
6. Connect the *blue* wire attached to the PumpSaver® Plus to the dual-lug terminal (with the *black* wire) of the capacitor.

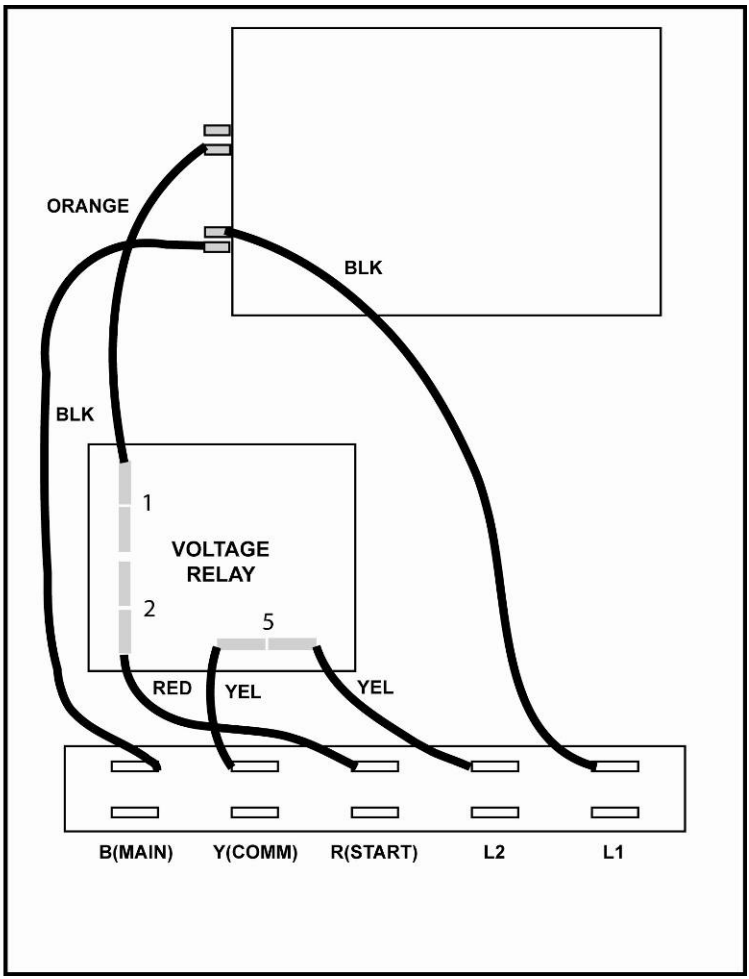

FIGURE 6: CentriPro™ Control Box without the PumpSaver®Plus Installed

CENTRIPRO™ CONTROL BOX

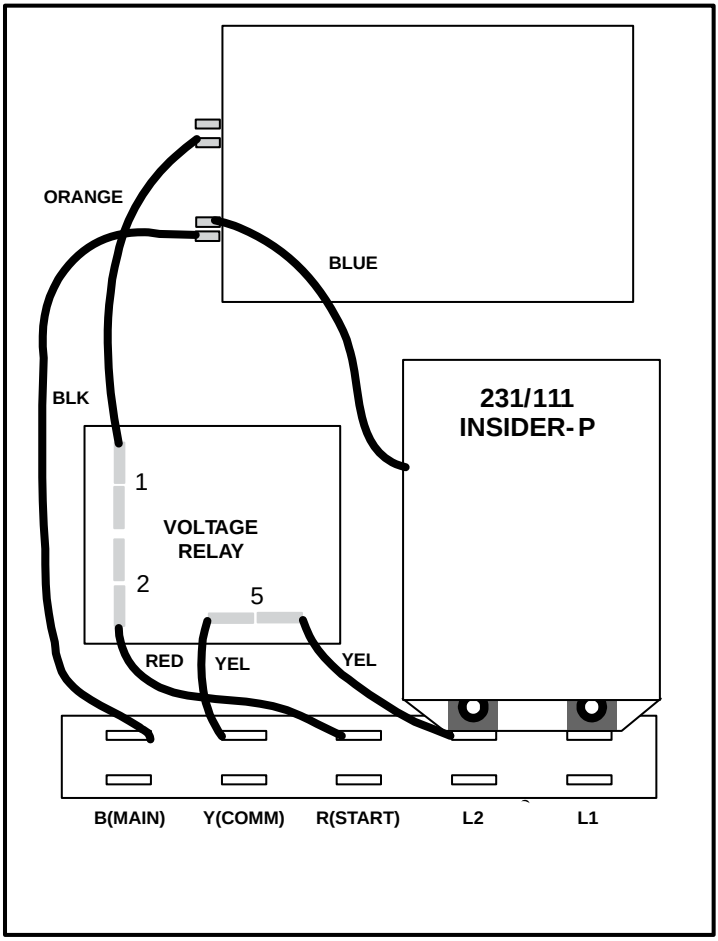

FIGURE 7: CentriPro™ Control Box with the PumpSaver®Plus Installed

OPERATION

The PumpSaver®Plus monitors pump load in amps and kilowatts. When the current (amps) exceeds approximately 125% of calibrated current, or power (kW) drops below the adjustable underload trip point, the PumpSaver®Plus —after the trip delay—will turn off the pump. The PumpSaver®Plus will automatically restart the pump after the selected restart delay time. The calibration is stored in permanent memory. **The PumpSaver®Plus does not need to be recalibrated if power is lost.**

CALIBRATION / SETTINGS

1. Turn **RESTART DELAY/ CALIBRATION** to the **CAL.** position and close the box cover.
2. Apply power to the system. The pump should run for approximately 10 seconds and then shut off—this indicates the PumpSaver®Plus has calibrated.
3. Remove power from the system. Open the control box and set the appropriate dry-well recovery time with the **RESTART DELAY/ CALIBRATION** knob**.**
4. Shut the control box and re-apply power to the system.

SENSITIVITY

The PumpSaver®Plus has an adjustment knob to set the underload trip sensitivity. Setting **SENSITIVITY** to the middle position (straight up) is equivalent to SymCom's standard underload trip level. Adjust the **SENSITIVITY** knob to increase/decrease underload sensitivity up to approximately ±10% of the standard trip. It may be necessary to increase the sensitivity if the PumpSaver®Plus does not trip on dry-run or dead-head or it is known that the water level in the well is very low relative to the pump's capabilities.

WARNING: Decreasing the SENSITIVITY may compromise the PumpSaver's ability to detect dry-run and/or dead-head conditions.

RUN HOURS / FAULT HISTORY

The PumpSaver®Plus records pump run hours and fault history, which can be displayed by a PumpSaver® Informer (see **USING AN INFORMER** section).

RAPID CYCLING

Rapid cycling is defined as more than 4 restarts in a 60-second period. The PumpSaver®Plus is capable of detecting a rapid-cycle condition and will lock-out, preventing damage to the pump*.

Rapid cycling of the PumpSaver®Plus may be caused by several naturally occurring conditions which are indistinguishable from true rapid cycling. For this reason, once tripped, the PumpSaver®Plus will wait 30 minutes and restart. If any restart is successful (pump runs for more than one minute), the rapid cycle counter will reset to zero. If the PumpSaver®Plus encounters rapid cycle 4 times without a successful restart, it will lock-out and require a manual reset. To reset the PumpSaver®Plus, remove and re-apply power.

*Protection against line-side rapid cycling is disabled by default. Read the following instructions fully before performing the procedure to enable this feature.

WARNING: ENSURE POWER IS DISCONNECTED PRIOR TO PERFORMING THE FOLLOWING PROCEDURE.

To Enable Line-Side Rapid-Cycle Protection: (to disable, follow the same procedure and replace the jumper on the PumpSaver®Plus)

1. Locate the Rapid-Cycle Jumper in the upper-right corner behind the faceplate of the PumpSaver®Plus. See Figure 8 for location of jumper.
2. Remove the Rapid-Cycle Jumper (See Figure 8). The jumper may be removed before or after initial installation.
3. Save the removed jumper.
4. If the PumpSaver®Plus is not already installed, install as described in the CONNECTIONS section.
5. Re-apply power.

NOTE: THE RAPID-CYCLE JUMPER MUST BE SAVED IN CASE IT IS NECESSARY TO DISABLE RAPID CYCLING AT A FUTURE DATE.

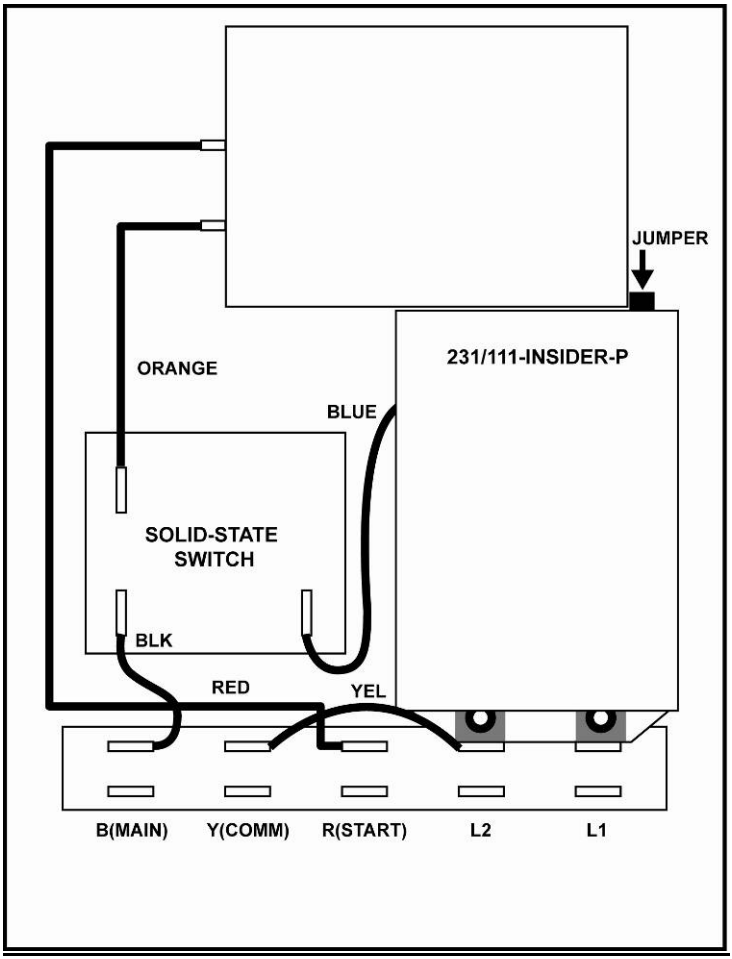

Figure 8: Location of Rapid-Cycle Jumper

USING AN INFORMER

PumpSaver®Plus products are equipped with an infrared LED that will communicate to a SymCom Informer—a handheld, battery-operated, diagnostic tool. The Informer—when directed at the PumpSaver®Plus—will display the model number; real-time voltage, current and power; dry-well and overcurrent trip points; calibration voltage; restart delay setting and current restart delay time; pump starts and total run time; last 20 faults; voltage, current, power, and total run time at the time of each fault; highest/lowest voltage and current since calibration; and the CT size if applicable. The Informer can be used on any single-phase PumpSaver®Plus equipped with an infrared LED transmitter. Contact SymCom for more information at 800-843-8848 or visit our website: www.symcom.com.

A fiber-optic cable is included to allow the Informer to be used without removing the control box cover. This cable can be plugged into the three holes in the Insider's faceplate labeled IR LINK. The other end of the cable can be routed through a hole in the bottom of the steel enclosure and left hanging. The Informer can be used by aiming the hanging end of the fiber-optic cable at it. See FIGURE 9.

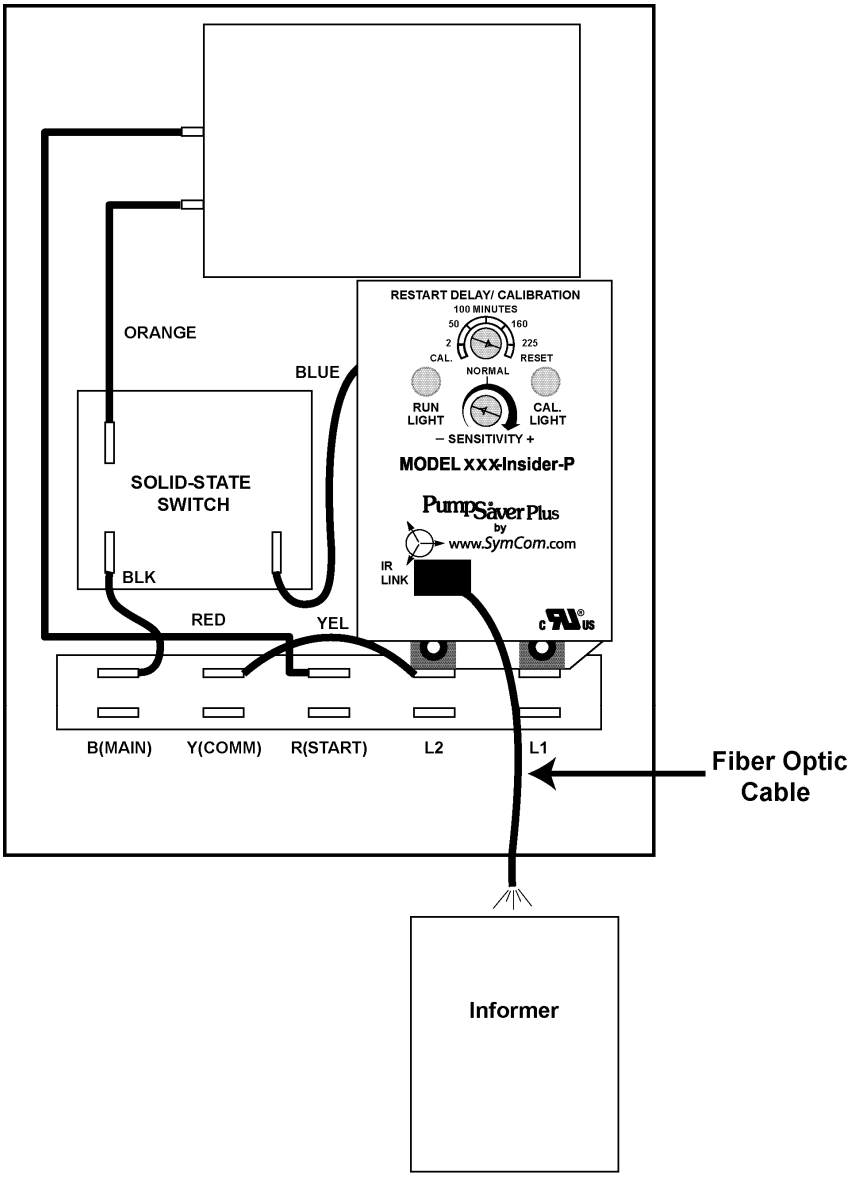

FIGURE 9: Using the fiber-optic cable to communicate with an Informer

TROUBLESHOOTING

RUN LIGHT	CAL. LIGHT	PROBLEM or FUNCTION	CORRECTIVE ACTION
On Steady	Off	**RUN:** Pump is running—or ready to run—no problems in operation	If pump is not running, check for loose wiring and ensure proper function of pressure or float switches.
On Steady	On Steady	**CAL:** The PumpSaver®Plus is in the calibration process.	None
Off	On Steady	**CAL COMPLETE:** The PumpSaver®Plus has calibrated, the **RESTART DELAY/ CALIBRATION** knob was left in the **CAL.** position. Pump is off.	Pump will restart as soon as the **RESTART DELAY/ CALIBRATION** knob is rotated out of the **CAL.** position.
Off	Off	**OFF / MANUAL RESTART:** The pump is not running. Either the PumpSaver®Plus has tripped on dry-run, dead-head, or overcurrent while the **RESTART DELAY/ CALIBRATION** knob was in the **RESET** position or source power is not present.	If knob is in the **RESET** position, rotate out of **RESET**—If the **CAL.** light blinks, check for an overcurrent condition. If the **RUN** light blinks, look for a dry-run or dead-head condition. If no lights come on, check incoming power for adequate voltage.
Blinking	Off	**DRY RUN / DEAD HEAD:** The PumpSaver®Plus has shut the pump off due to a dry run or dead head condition. The unit is timing through the restart delay and will try to restart.	Check for restricted flow or inadequate supply of liquid.
Off	Blinking	**OVERCURRENT:** The PumpSaver®Plus has shut the pump off due to an overcurrent condition. The unit is timing through the restart delay and will try to restart if line voltage is at an acceptable level.	Check for low or high voltage or jammed pump impellers. If these conditions do not exist, recalibrate the unit while it is drawing higher current (amps should not exceed SFA).
Blinking alternately with the **CAL. LIGHT**	Blinking alternately with the **RUN LIGHT**	**VOLTAGE FAULT:** The PumpSaver®Plus is preventing the pump from starting due to voltage problems. The voltage is being interrogated and the unit will remain in this mode until the voltage is at an acceptable level.	If the unit remains in this state for more than 5 seconds, check for high or low voltage.
Blinking in unison with the **CAL. LIGHT**	Blinking in unison with the **RUN LIGHT**	**RAPID CYCLE:** The PumpSaver®Plus has shut down on rapid cycling. Power must be removed and reapplied to reset the unit.	Check for a broken bladder in the pressure tank (if used), or check for a defective pressure or float switch.

SPECIFICATIONS

Functional Specifications	
Adjustments/Settings	
Overcurrent	125% of calibration point
Underload (dry-well)	Adjustable (70-90% of calibrated run power)
Overvoltage	
231-INSIDER-P	265VAC
111-INSIDER-P	132.5VAC
Undervoltage	
231-INSIDER-P	190VAC
111-INSIDER-P	95VAC
Number of restarts allowed in 60 second 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	
231-INSIDER-P	230VAC
111-INSIDER-P	115VAC
Load Range	
231-INSIDER-P	1/3 – 1hp
111-INSIDER-P	1/3 – 1/2hp
Frequency	50/60 Hz (note: 50Hz will increase all delay timers by 20%)
Output Characteristics	
Output Contact Rating-SPST	
231-INSIDER-P	1hp @ 240VAC (17 Amps max.)
111-INSIDER-P	1/2hp @ 120VAC (17 Amps max.)
General Characteristics	
Operating Temperature	-40° to 55°C (-40° to 131°F)
Maximum Input Power	5 W
Standards Passed	
Electrostatic Discharge (ESD)	IEC 61000-4-2, Level 2, 4kV contact, 6kV air
Surge Immunity	IEC 61000-4-5, Level 4, 4kV line-to-line and line-to-ground
Safety Marks	
cUR*	UL508, C22.2 No.14
Weight	10 oz.
Mounting Methods	Inside a Franklin™, Pentek®, or CentriPro™ control box

*The 231-Insider-P and 111-Insider-P are approved by UL for use in the Franklin™, Pentek®, and CentriPro™ type 3R control boxes when installed as described in these instructions. The 231-Insider-P and 111-Insider-P are not intended to provide overload protection, and should be used with thermally or impedance protected motors only.

NOTES

For warranty information, please see **Terms and Conditions** at
www.symcom.com

Visit us at www.symcom.com to see our complete product listing!

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