

FluidWatch[®] II

Leak Detection System

Installation and Operation Manual

FWII XX-XXX

PERMALERT

Environmental Specialty Products



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The manual is typically revised at least once a year. The revision date is on the back cover.

The following instructions describe the installation and operating procedures for FluidWatch II Leak Detection Monitoring System.

INTRODUCTION

1. The FluidWatch II system consists of a solid-state electronic monitoring unit connected to a sensor cable.
2. The following general precautions should be observed:
3. Read this manual carefully before beginning installation. Do not use substitute materials or short cut recommended procedures. Understanding and following these instructions is essential to avoid installation problems.
4. Collect the needed quantities of all materials well in advance of scheduled work.
5. Check packing list quantities with received items. Any shortages or damage to materials received should be reported immediately to the delivering carrier.
6. Care must be taken to store all FluidWatch II components in a dry and protected area at all times. Electronic monitoring units should be wrapped and sealed with plastic.
7. Electrical work should be performed by a qualified electrician and conform to all local electrical codes.

THEORY OF OPERATION

The FluidWatch II Leak Detection Monitoring System has been engineered to monitor small areas for water and water-based liquids. Typical applications include unmanned equipment rooms, small raised floor areas, and small tanks. The system continuously monitors the capacitance of the sensor cable and detects changes from the initial value. Just seconds after the coaxial sensor cable contacts water, the unit switches two relays, labeled "Leak/Short".

The sensor cable quickly dries in place after the leak is cleaned up and the system can be put back on-line. If the cable is broken or power is lost, the "Break/No Power" relay will activate.

MONITORING UNIT INSTALLATION

Mount the monitoring unit indoors where it will not be exposed to vibration, shock or temperatures above 122°F (50°C). Mounting holes for the unit can be drilled carefully inside the enclosure. The circuit board can be removed if necessary, so it is not damaged. There are four circuit board supports that hold the board in place (see Figure 1). Refer to the **Power Requirement** section of this manual for wiring instructions. **DO NOT connect power to the monitoring unit yet.**

CABLE INSTALLATION

Each FluidWatch II system is a complete kit that includes a length of sensor cable. The lengths of sensor may be shortened, but normally the excess cable can be positioned out of the way so it will not be damaged. If the cable is shortened, the system should be recalibrated as discussed in the Sensitivity section of this manual. The cable length must be between 15 and 100 feet.

The sensor cable is typically placed around the perimeter of a room or around a piece of equipment that is to be monitored for leaks. **The sensor cable must be protected from damage during installation and operation. It should not contact sharp metal edges or be subjected to crushing loads.** Connect the sensor cable to the external UHF connector on the monitoring unit. The UHF connector should be finger tight or tightened gently with pliers to a snug fit.

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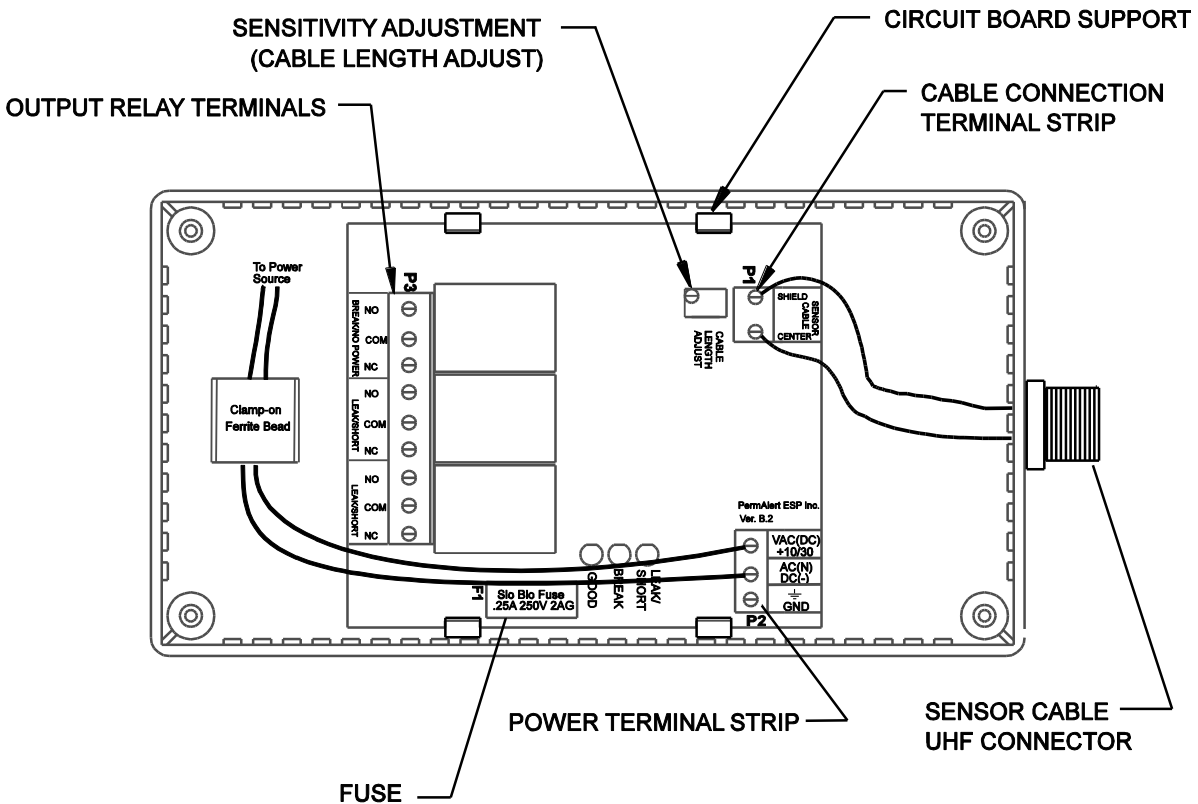


Figure 1

POWER REQUIREMENT

The FluidWatch II Leak Detection System requires either a 10-30 VAC or 10-30 VDC power source. The power supply must be CE approved to maintain the CE approval of the FluidWatch II system. The fused incoming power is connected to terminal strip P2. The incoming power wires must pass through the 3/4" cylindrical ferrite clamp-on bead. This bead must be installed for CE approval. The power input circuit is protected by a 1/4A, 250 VAC, Type 2AG Slo-Blo fuse.

SENSITIVITY

Sensitivity is adjusted with "Cable Length Adjustment" potentiometer (see Figure 1). To adjust the sensitivity, follow the steps below:

1. Connect the sensor cable to the FluidWatch II.
2. Turn on power to the panel.
3. Turn the Cable Length Adjustment pot slowly clockwise until the red (LEAK) LED turns on, if it is not initially on. Then turn the pot counter-clockwise until the green LED turns on. Note the position of the potentiometer slot.
4. Next, continue turning the pot slowly counter-clockwise until the yellow (BREAK) LED turns on. This will be approximately 1/2 to 1-1/2 additional revolutions, depending on the cable length. Again note the position of the slot.
5. Finally turn the pot clockwise to the approximate midpoint between the two points determined in steps 3 and 4. When it is adjusted properly the green (GOOD) LED will be on.

This procedure will set the system to a nominal sensitivity for a given cable length. The sensitivity can be increased or decreased by an adjustment of the pot. Turn it slightly clockwise to make it more sensitive (less wet cable to trigger an alarm) and counter-clockwise to make it less sensitive. If the pot is

turned too far, the system will go into alarm, either "LEAK" or "BREAK" depending on the direction it is turned. If this happens, simply turn the pot in the opposite direction until the green LED turns on. The following chart lists the approximate values of wet cable required to activate an alarm for different sensitivity settings. Note the length of wet cable required is the length of "submerged" cable. If the cable is only half-submerged in water, approximately twice the length will be required.

FluidWatch II Sensitivity Settings			
Length of Cable – ft.(m)	Wet Cable Required - in.(cm)		
	Minimum	Nominal	Maximum
15 (5)	1.5 (4)	4 (10)	6 (15)
25 (7.5)	3 (8)	7 (18)	12 (30)
60 (18)	9 (23)	18 (46)	28 (71)
100 (30)	13 (33)	28 (71)	46 (117)

OUTPUT RELAYS

There are three SPDT output relays. The "BREAK/NO POWER" relay is normally energized. It de-energizes when the FluidWatch II system goes into break alarm or loses power. The other two relays are normally de-energized. When a leak or short is detected, the relays energize. The relays are rated 10A @ 125 VAC, 6A @ 277 VAC or 5A @ 30 VDC and are wired to terminal strip P3. The terminal NC, COM and NO refer to normally-closed, common and normally-open contacts for each relay in the power-off condition.

OPERATING

The FluidWatch II switches one relay when a break occurs and two relays when a leak or short occurs. When power is supplied to the unit, the "Break/Power" relay will energize and close contacts labeled NO-COM after a second. If there is a cable break or water is in contact with the sensor cable, the appropriate relays will switch and close contacts NO-COM (leak relay) or contacts NC-COM (break relay).

Take action to verify this and notify responsible personnel. Once the water has been cleaned up the sensor cable will dry quickly and the relays will switch to their original condition.

If the cable is dry and the red "Leak/Short" LED is still lit, check the cable for a short. Equipment may have been placed on the cable and damaged the cable. An ohmmeter can be used to make sure the center conductor of the cable is not in contact with the cable shield. Disconnect the UHF connector at the panel and connect the ohmmeter leads to the center pin and the housing of the cable connector. The reading should show an open circuit (O.L).

TEST

Disconnect the UHF connector at the bottom of the panel to verify that the system is operating properly. This will activate the "BREAK" relay. Use an ohmmeter or continuity meter to check the state of the relay contacts. When the UHF connector is reconnected, the unit will reset after 3 or 4 seconds. If FluidWatch II fails to respond as expected, recheck all connections on the monitoring unit. Check the wires connected to terminal strip P1. If further assistance is needed, contact PermAlert ESP.

WARRANTY

Seller warrants that the FluidWatch[®] II Leak Detection System (the "System") will be free from defects in materials and workmanship for a period of one year from the date of shipment by Seller to Buyer. Seller is not responsible for damage to the System occurring in transit or arising from the installation, alteration or repair of the System by persons other than Seller's employees, or from any abnormal or improper use of, negligence with respect to or accident affecting the System. Expendable service parts are not warranted by Seller. Seller's sole obligation and liability, and Buyer's sole remedy, under this warranty shall be the repair or replacement, at Seller's election, by Seller of any defective materials or workmanship covered by this warranty, without the charge to Buyer. Repaired or replacement materials shall be delivered to Buyer f.o.b. Seller's plant or f.o.b. such other location as Seller shall designate. Seller shall not be responsible for any product returned to Seller without Seller's prior express consent. No claim shall be permitted under the warranty contained herein unless Buyer notifies Seller in writing within ten (10) days after Buyer first hears of facts giving rise to any such claim and unless notice is given within the one-year term of this warranty. In order to be valid, any notice sent to Seller in connection with said claim under this warranty must reasonably specify the defect, which is the subject of such claim. Buyer shall be responsible for testing and inspecting the System promptly after receipt and thereafter at such intervals as are reasonably prudent so as to inform Buyer of any defects which exist in the System. Notwithstanding the filing of a claim hereunder, this warranty shall expire after one year from the original date of shipment of the System in respect to materials and workmanship, which are not then the subject of a proper claim.

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