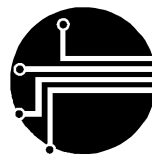


# Water Leak Detection System

## Installation and Operating Manual

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**RODI**  
systems

# Manual Revisions and Copyright

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## Water Leak Detection System (AL-WLD-300A) Installation and Operating Manual

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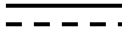






Version 1.03

**RODI Systems Corp.**  
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Issue	Date	Effective Pages	Description of Changes
Version 1.01	08/16/03	-	Original Issue
Version 1.02	01/10/06	4	Terminal Block Description in Fig. 3
Version 1.03	07/05/11	1, 7	Description of Relay Activation; FAQ Added

# Symbols Used

The following symbols may be used in this documentation.

<u>Symbol</u>	<u>Meaning</u>
	Direct current.
	Alternating current.
	Both direct and alternating current.
	Earth (ground) terminal.
	Frame or chassis terminal.
	Caution, risk of electrical shock.
	Caution, refer to installation and operating manual.

## INSTRUCTIONS



- Failure to follow proper instructions may cause one of the following to occur: loss of life, personal injury, property damage, damage to equipment connected to this product, damage to this product, and invalidation of warranty.
- It is the user's responsibility to ensure that he or she has received the proper equipment for his or her application. Verify that this manual corresponds to the product received. Call 1-505-334-5865 if this is not the correct manual.
- Follow all warnings, cautions, instructions, and notices in this manual and marked on the product. Use only qualified personnel to install this product. Ensure that all operators of this product are properly trained in installation, operation, and maintenance.
- Install the equipment following the instructions in this manual. Follow local safety and electrical codes.

## WARNING



- **Installation and maintenance of this product may produce a risk of electrical shock.**
- **Disconnect main power and any power to relay contacts before servicing this product.**
- **Do not energize this equipment with the electrical enclosure door open.**
- **All wiring must be rated for 240 VAC.**
- **The non-metallic enclosure used on this product does not provide grounding via conduit connections. Separate ground connections must be made.**
- **Unused conduit openings or cord strain reliefs must be sealed with NEMA 4X or IP65 plugs.**
- **Installation must be in accordance with the National Electrical Code or any other applicable local codes.**

## Warranty

1. In no event will RODI Systems Corp., or any of its representatives, be responsible or liable for indirect or consequential damages resulting from the use or application of any product. The user and those responsible for applying the product must satisfy themselves with the acceptability of the application.
2. RODI Systems Corp. extends a one (1) year warranty covering parts and labor on any factory manufactured product. Any product which is found to have a defect in workmanship or components shall be replaced or repaired at the option of RODI Systems Corp.
3. A prepaid minimum inspection fee is required for the repair of products not covered by the warranty period. Contact RODI Systems Corp. for repair information and repair rates.
4. RODI Systems Corp. will not be responsible for replacement or repair of any product that was damaged by improper installation, mishandling, or user modifications.
5. All units returned for repair must have a RA (return authorization) number obtained from RODI Systems Corp. This RA number must be included with the returned product and any correspondence regarding the returned product must reference that number. Shipping on all returned products must be pre-paid and insured. RODI Systems Corp. will not be responsible for any shipping damage incurred. Repaired products will be shipped pre-paid and insured.
6. RODI Systems Corp. reserves the right to change any specification or feature of any product at any time. This right also extends to repair fees or any warranty conditions contained herein.

## Important Notice !

**Control systems utilizing microprocessors and software should never be used in applications where the failure of such a system could endanger human life or cause injury. Emergency stops and other fail-safe controls should be hardwired into the control system, not interfaced with microprocessor control systems. If the equipment is not used in a manner as specified in this installation and operating manual, the safety features designed into this product may be impaired.**

# Table of Contents

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## Introduction

The RODI Systems Model WLD 300A is designed to detect leaks of water or other conductive fluids. The WLD 300A is a cost-effective means to monitor for leaks on or near commercial water treatment systems, HVAC units, laundry equipment, or any location where an undetected leak could cause damage. Despite its low cost, the WLD 300A is designed with quality features such as:

- Sensitive Detection Circuit Allows Detection of Low-Conductivity Fluids Such As High Purity Water
- Integral Test Feature Ensures that Monitor is Operating Properly
- 108 dB Alarm Horn and LED Indicators
- Alarm Silence and Alarm Reset Pushbuttons
- Three High Current (10A @ 240 VAC) Relay Outputs
- NEMA 4X Non-Metallic Enclosure
- Two Sensors May Be Connected in Series for Greater Coverage
- Sensor May Be Calibrated for Local Conditions

The WLD 300A is designed with a number of unique features not normally found in low-cost water detection systems.

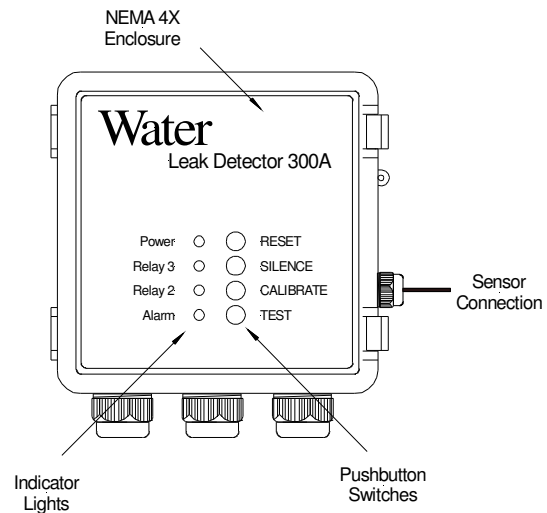


Figure 1. Model AL-WLD-300A Water Leak Detector

## ***Sensitive Detection System***

The WLD 300A is designed with a sensitive detection circuit that allows detection of low conductivity fluids such as high purity water. The unique design of the sensor assembly provides a large contact area for sensing the presence of low conductivity fluids. The use of stainless steel for the sensing electrodes prevents corrosion, which, over time, would decrease the sensitivity of the detection system. An integral test feature allows the user to periodically test the action of the monitor to ensure proper operation. A unique calibration feature allows the sensor to be calibrated to local conditions.

## ***Output Functions***

The WLD 300A is equipped with three SPDT relays capable of switching 10A at 240 VAC (resistive). The Alarm Relay is activated when a leak is detected. The first of the two Control Relays is activated after a 30 second time delay. The second relay is activated 5 seconds later. Both relays are reset with the Alarm Reset pushbutton. The alarm horn is activated upon leak detection. It may be silenced with the Alarm Silence pushbutton. The alarm horn will resound in 180 seconds if the alarm condition is not removed.



### ***Sensor Calibration***

Unlike most other water leak detection systems, the WLD 300A may be calibrated for local conditions. This makes the unit capable of detecting even high purity water on clean surfaces.

### ***Remote Monitoring Via Modem***

The WLD 300A may be interfaced with RODI Systems' DataFlex Remote™ products to provide remote alarm notification via modem.

### ***Electrical Cord Option***

The WLD 300A is available with an optional electrical cord (with standard three-prong plug) for input power and one drop cord (with standard three-prong receptacle) for the load connected to one of the Control Relays. The output receptacle is fused at 8 amps.

## **Specifications**

**Display:** Four LED indicator lights, one for power, one for alarm condition, and two for relay states.

**Controls:** Four pushbutton switches: alarm silence, alarm reset, calibration, and sensor test

**Inputs:** Leak detection sensor

**Outputs:** Alarm relay, DPDT (10 A @ 240 VAC)  
Control relays (2), DPDT (10 A @ 240 VAC)  
Horn, 108 dB

### **Operating**

**Temperature:** 0-50 degrees C; Operating Humidity: 0-95% RH non-condensing

### **Power**

**Supply:** 120 VAC, 4.6 VA, 60 Hz via internal transformer. Does not include loads on output relays.

**Enclosure:** NEMA 4X

### **Dimensions**

**(Overall):** 6.50" x 6.50" x 3.63"

## Installation

Figure 2 shows an overview of the AL-WLD-300A with dimensions. The control unit should be mounted on a vertical surface near the area to be monitored. Mounting brackets are furnished to facilitate installation of the control unit. Plug the unit into a standard 120 VAC receptacle rated at a minimum of 8 amps of current. The power receptacle supplying the control unit must be equipped with a proper ground connection.

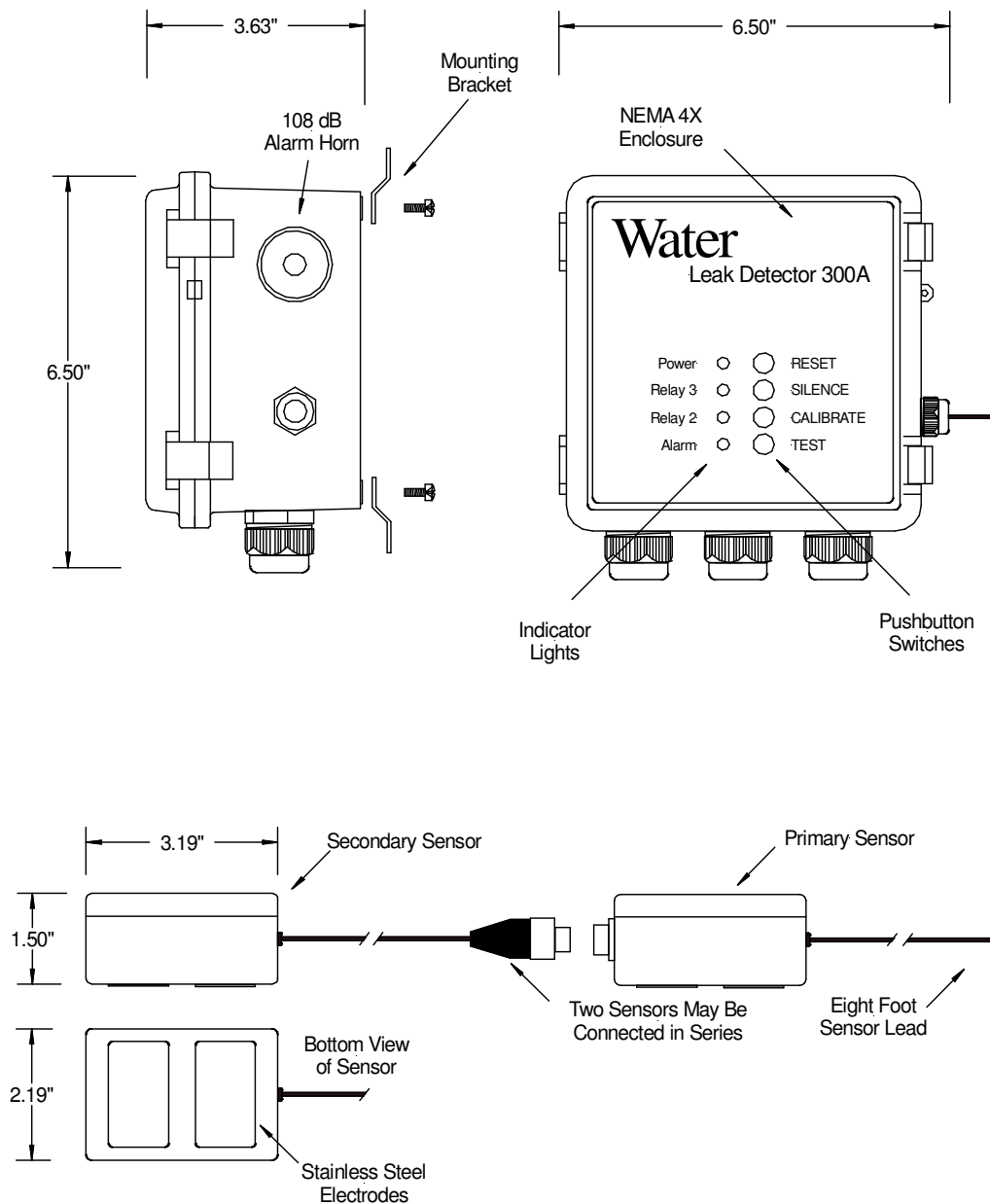


Figure 2. Overall View of AL-WLD-300A

## Sensors

The AL-WLD-300A is furnished with one primary sensor attached to the control unit. An optional secondary sensor is available to extend the monitored area. The secondary sensor is plugged into the watertight jack on the primary sensor (see Fig 2). Place the sensors on a clean, smooth surface to be monitored. If it is necessary to monitor a rough or uneven surface, better results may be obtained if the sensor is placed on top of a dry sponge resting on the surface to be monitored. When installing sensors, make sure the sensor lies flat on the surface and that the sensor is oriented so the electrodes of the sensor face downward.

## Wiring

The AL-WLD-300A is furnished with a power cord pre-wired to the control unit. The control unit is also available with one drop cord receptacle pre-wired into the control unit. If so, the receptacle will be wired to the NC contacts of relay 3. Two additional relays are available for control of other devices. These may be wired as shown in Figure 3. A factory wiring diagram (including the optional drop cord receptacle) for the control unit is shown in Figure 4.

## IMPORTANT



The relays in the AL-WLD-300A control unit are dry contact relays and are not provided with internal circuit protection. It is the user's responsibility to provide circuit protection for these outputs.

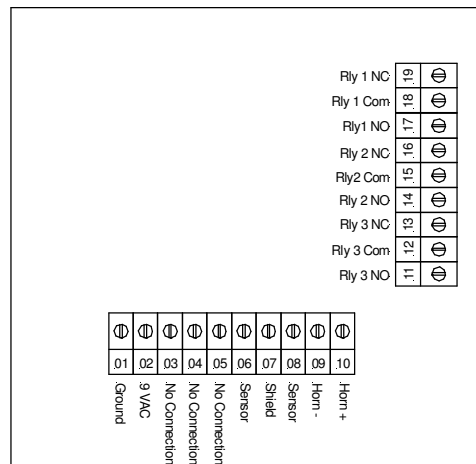


Figure 3. Circuit Board Terminal Connections

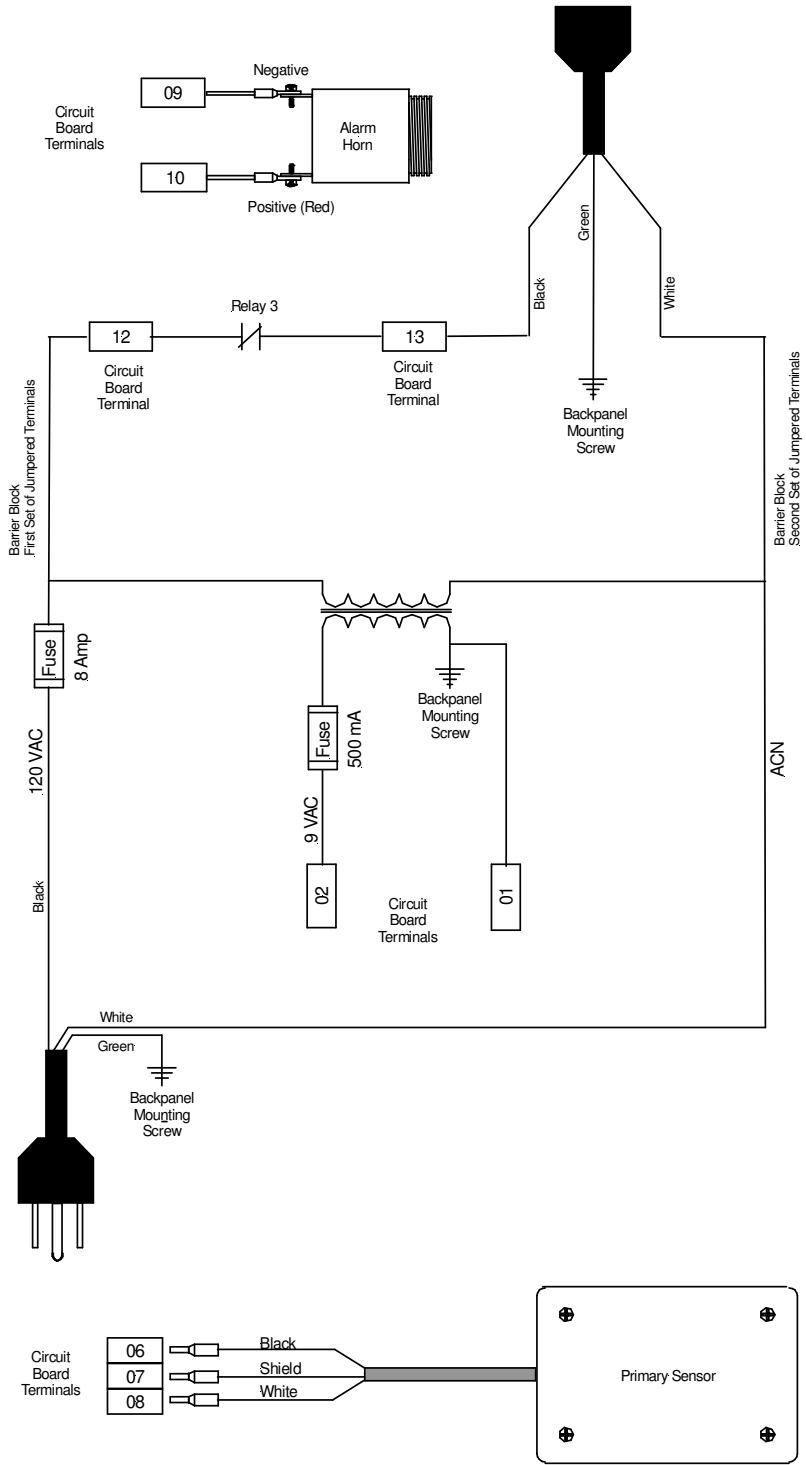


Figure 4. Overall Wiring Diagram

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## Operation

Operation procedures for the AL-WLD-300A are listed below.

### ***Calibration Procedure***

- Place the sensor face down on a DRY surface to be monitored.
- Press CAL
- The LED's will ALL turn on, then quickly blink twice (this means the unit is attempting calibration).
- If the calibration is successful, the three status LED's will stay off. The calibration value is saved, and reloaded whenever the power is cycled, or if the reset button is pressed.
- If the calibration is not successful, the three status LED's will blink in sequence. At this point the unit is not functional. A power failure or reset will only cause the unit to go back to the same blinking sequence, until a proper calibration value is obtained. A calibration is determined to be invalid if 1) The probe is not connected, (i.e., there is no feedback, a value between 0 and 30 on a scale of 0-255; or 2) The probe is shorted, wet, or dirty (i.e., there is too much feedback, a value between 128 and 255).
- The calibration value is the threshold at which the alarm will trigger. It is calculated as double the value of the reading at the time of calibration.

### ***Triggering an Alarm***

- To trigger an alarm, press the Test button, or place the sensor in a wet area.
- If an alarm is triggered, Relay 1 and the Horn will turn on immediately.
- 30 Seconds later Relay 2 will close, followed by Relay 3, 5 seconds later.

### ***Silencing the Alarm***

- When the silence button is pressed, the Horn will turn off.
- If the unit is not reset, with the water condition corrected, the horn will resound, 180 seconds later.
- If the Silence button is held for 3 seconds, the unit will be disabled indefinitely, until Reset is pressed.

### ***Resetting the Control Unit***

- While the unit is resetting, the LED's will turn on and stay on.
  - When the unit has rearmed itself, the LED's will turn out and stay out.
  - If the calibration value is determined invalid, the LED's will blink in sequence.
-

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## FAQ

The LED status lights are blinking in sequence?

- The unit has either been disabled by the user, or an incorrect calibration value was obtained.
- If the user held the silence button for 3 seconds, hit reset button to reactivate the control unit.
- If an incorrect calibration was obtained, clean the probe, check connections, and repeat the calibration procedure.

The LED's are all OUT?

- The unit does not have power. Whenever the unit has power, the green power LED will be on.

The Power LED is on, and the rest are off?

The unit is armed and functioning.

Power is connected to the relay common terminals. Why do I measure voltage at both the NO and NC terminals?

The relay outputs are equipped with RC snubber circuits to suppress spikes from inductive loads. If no load is connected to the NO output, the RC circuit will conduct a small amount of current. Since most volt meters have large input impedance, the meter will indicate current at the NO terminal even if the relay is not energized.

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