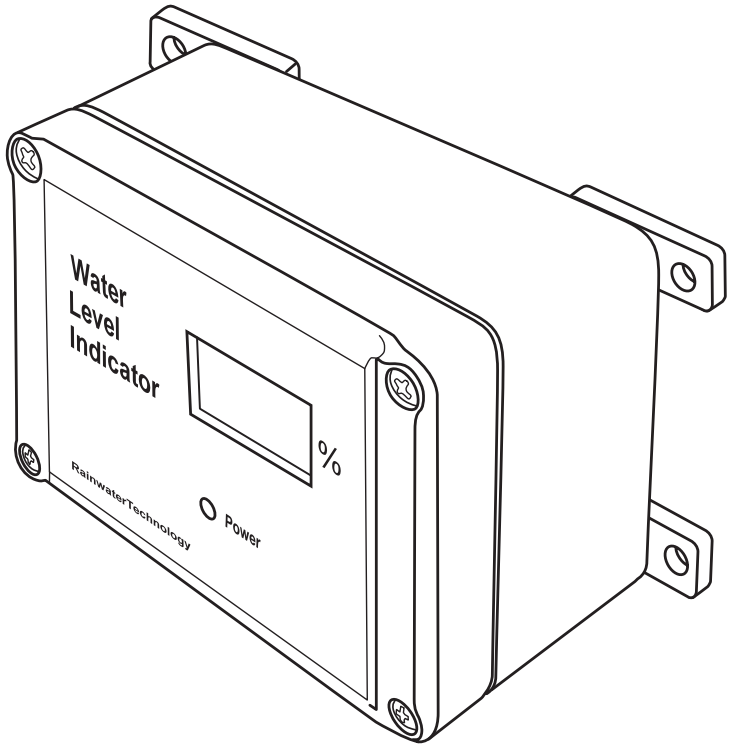
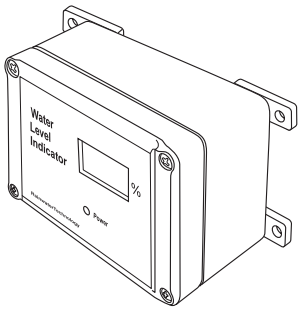
Digital
Water Level Indicator



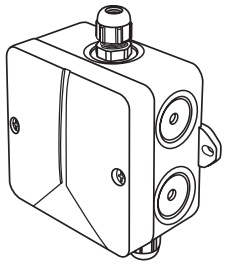
Water Level Indicator

This Digital Water Level Indicator is a microprocessor-based water level measuring device consisting of a tank-mounted sensor system (sensor plus sensor control box) and a remote digital display. The sensor system has been engineered to meet the demands of rainwater storage applications where particulates and turbulence often make other types of level measuring devices unreliable, but is suitable for any water storage application.

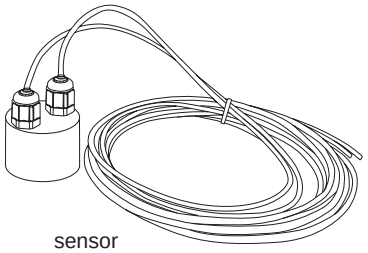
The digital display is attractive enough to be installed in a living space, but is also splashproof for installation in a utility or mechanical room. The standard sensor is designed for tanks up to 10 ft tall (9 ft water level), but a longer version is available for tanks up to 20 ft (19 ft water level). The sensor control box can be located up to 150 feet from the digital display and the two components are connected with standard underground irrigation cable. The entire system is powered by a low-voltage transformer which permits safe and easy installation without an electrician.



digital display

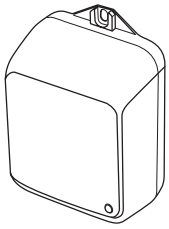


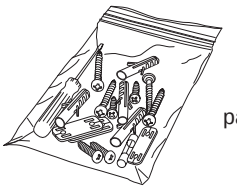
sensor control box



sensor

transformer

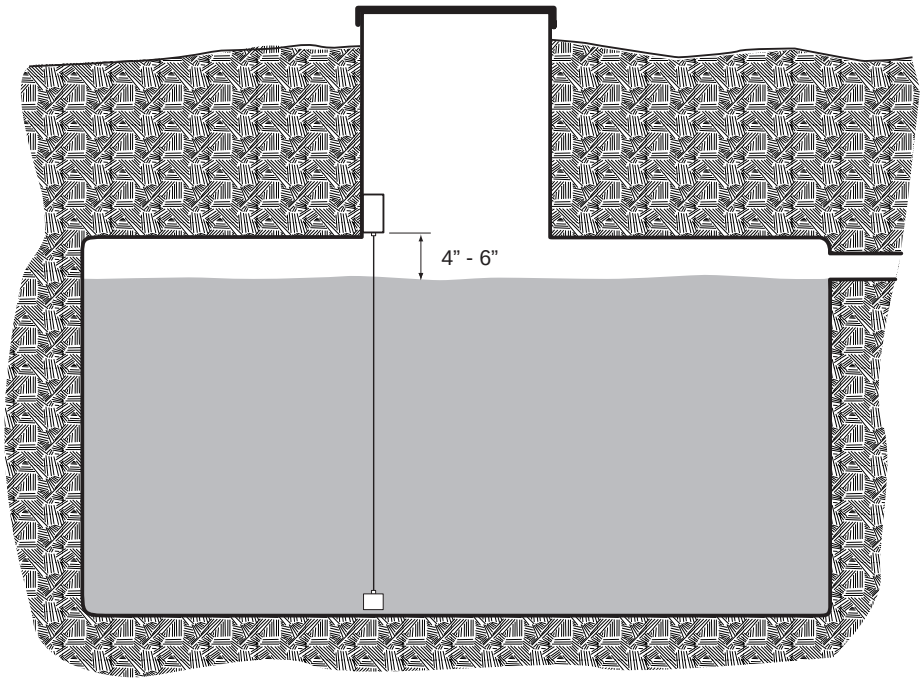




parts bag

INSTALLATION The sensor control box should be mounted 4” to 6” above the overflow level of the water storage tank. Hold the control box at this height so that the side with one wire connector faces up and the side with two wire connectors faces down and drill pilot holes for the mounting screws. Then screw the box in place by hand to avoid damage to the case or mounting feet. NOTE: The sensor wires must be spaced at least 4” from the walls of steel or reinforced concrete tanks and access ports.

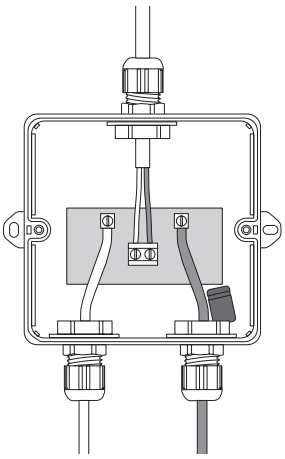
Mount the sensor control box 4” to 6” above the overflow level of the tank. Cut the sensor wires so that the sensor is suspended 1/2” above the bottom of the tank



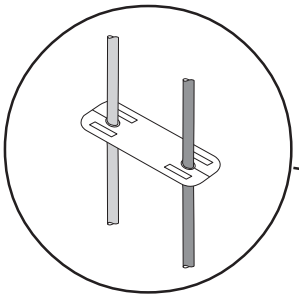
Unscrew the cover from the sensor control box. Cut the red and white sensor wires to length so that the stainless steel probe will hang approximately 1/2" above the bottom of the tank. Strip about 1/4" of insulation from the wires, and attach the wires to the two outer (upper) terminals. The sensor wires should be perfectly straight when they are drawn taught by the weight of the stainless steel probe: work out any kinks or bends that might have been created. Then attach the three plastic spacers uniformly separated as shown.

Run a length of two-conductor underground irrigation cable from the sensor control box to the point where the digital display box will be mounted. Remove the jacket from the end of the cable near the sensor control box, strip about 1/4" of insulation from the wires, and attach the wires to the two inner (lower) terminals. Replace the cover, carefully starting the screws so they don't strip the threads, and securely tighten the screws so that the cover gasket is fully compressed. Then tighten the nuts on the cable clamps so all wire entries are sealed watertight.

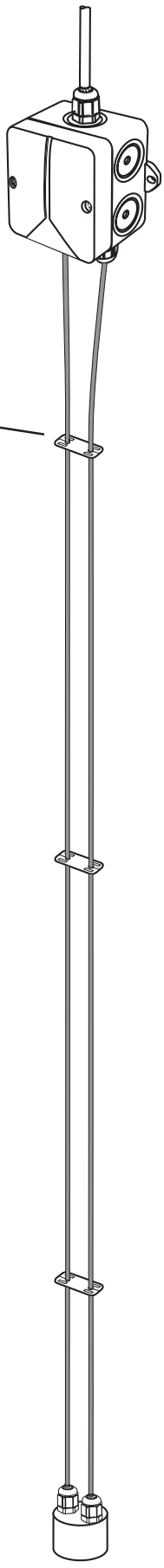
The transformer can plug into any unused receptacle within the building where the digital display box will be mounted. Determine the most suitable location and run a two-conductor #18 cable to the point where the digital display box will be mounted. Do not attach the transformer yet!



interior of sensor control box



sensor wire spacer



sensor system showing sensor control box and sensor

Hold the digital display box in the desired position and drill pilot holes for the mounting screws (note that the mounting feet can be re-positioned so that they project from the sides of the box, if desired, or they can be removed entirely). Remove the cover plate and let it hang by its four wires. If the cables are to run behind the wall, mark the wall through the rubber grommets and drill holes for the cables. Then pass the cables from the sensor control box and the transformer through the grommets and screw in the box by hand to avoid damage to the case or mounting feet. Remove the jacket from the ends of both cables, strip about 1/4" of insulation from the wires, and insert the wires into the terminal block as marked. Tighten the terminal screws securely using the supplied screwdriver.

Leave the cover hanging. Attach the power cable to the transformer and plug in the transformer. The power light on the digital display box should now be lit.

CALIBRATION When the power is connected, several numbers will display during the initialization and error-checking procedure. After the display stops changing, the system can be calibrated. The simplest and most accurate calibration method requires that the tank be filled to the overflow or 100% level. If it is feasible to wait until the tank is filled, follow this simple procedure:

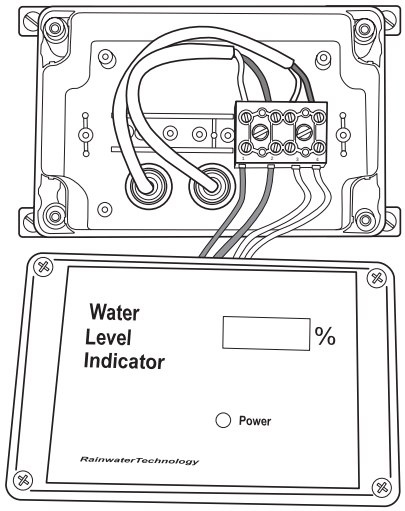
1. Press and hold the white calibration button on the rear of the digital display cover until the number "901" appears.

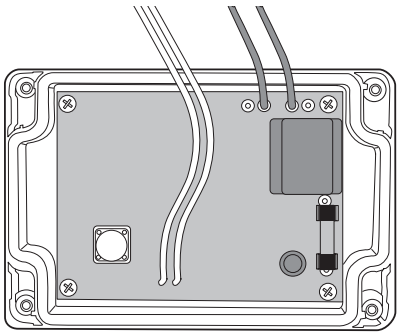
2. Release the calibration button and wait a few seconds until the number "902" appears.

3. Without delay, press the calibration button again, then release the button. The number "903" appears briefly to confirm that the measurement was saved.

4. The display will cycle through a few numbers and should show 100% when it stops.

interior of digital display box





rear of digital display panel showing white calibration button

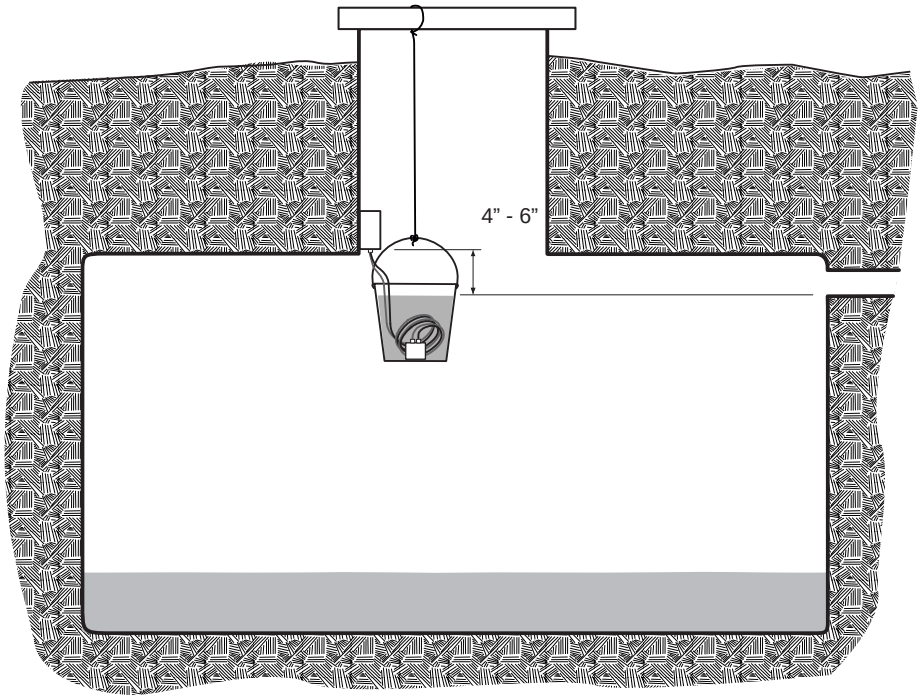
If it is not feasible to wait until the water tank is filled before calibrating, follow this alternate procedure:

1. Determine the overflow level of the tank and mark it on the wires with a felt-tipped marker or a small piece of tape.

2. Suspend a bucket from a 2x4 spanning the tank access port and coil the sensor in the bucket. Fill the bucket with water to the point where the sensor wires are submerged up to the mark. Make certain that the wire above the mark is out of the water and dry.

3. Follow the calibration procedure above. For best results, re-calibrate later when the tank is filled.

If the tank cannot be calibrated when full, drop the sensor into a bucket of water suspended by a rope from a 2x4. Fill the bucket to the overflow level of the tank.



TROUBLESHOOTING: In the event of problems, read the following before calling for assistance

• If the green power indicator on the display box is off, first check the green power indicator on the transformer. If the transformer power indicator is also off, check for power in the receptacle. If the transformer power indicator is lit, check the power cable connections on the transformer and inside the display box. If these are secure, try changing the fuse on the rear of the front panel of the display box. If the power indicator is still not lit, disconnect the power cable and check for continuity in the wires.

• If the display does not cycle through a few numbers and show 100% at the end of the calibration procedure, it is possible that too much time elapsed after "902" appeared and before the calibration button was pressed the second time. Try repeating the calibration procedure.

• If the calibration button is held too long, the error code "602" will appear. Try repeating the calibration procedure.

• If the sensor is not sending a signal, the error code "701" will appear. Check the sensor wire terminal connections in the display box and all terminal connections in the sensor control box. If there are no problems, disconnect the power, disconnect both ends of the cable running between the display box and the sensor control box, and check for continuity in the wires. If no problems are detected and the "701"code is still showing, lift the sensor completely from the tank without disconnecting it from the sensor control box. Then contact us for assistance.

SPECIFICATIONS:

Power: 24VAC, 3 watts
Fuse: T50mA
Sensor: 12VAC, 200 Hz - 20 kHz
Maximum Tank Depth: 9 ft with standard sensor, 19 ft with optional sensor
Measurements (width x height x depth): Display Box 4-3/4" x 3-1/8" x 2-3/8" Sensor Box 3-1/2" x 3-1/8" x 2"
Construction: Display box is sealed and splash-resistant with splash-resistant cable grommets. Control box is sealed and water-resistant with epoxy encapsulated electronics and watertight cable clamps.