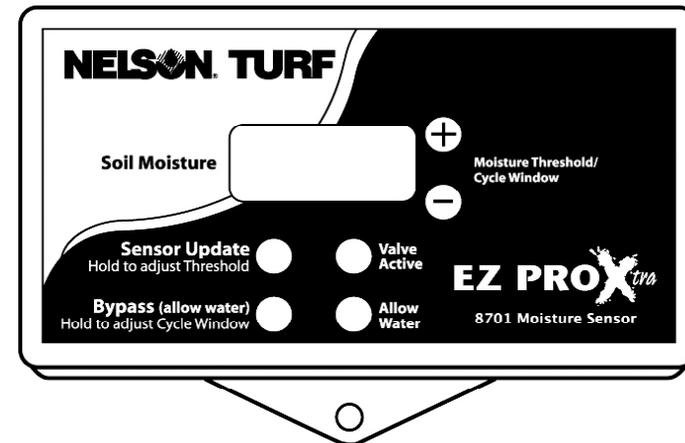


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EZ PRO^Xtra



L.R. Nelson Corporation
One Sprinkler Lane
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INSTALLATION GUIDE AND USER'S MANUAL

LIMITED PRODUCT WARRANTY

Congratulations on your recent purchase of the Nelson EZ PRO™ XTRA, the finest soil moisture sensor irrigation controller on the market. Thank you for joining those interested in conserving water – earth's most important resource.

Your controller is warranted for two years from date of purchase to be free of defective materials and workmanship provided it is used within the working specifications for which the product was designed and under normal use and service. Unless installed by an authorized Nelson trained technician, Nelson assumes no responsibility for installation. Nelson also assumes no responsibility for removal or unauthorized repair. Nelson's liability under this warranty is limited solely to replacement or repair of defective parts, and Nelson will not be liable for any crop or other consequential damages resulting from any defects in design or breach of warranty.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSES and of all other obligations or liabilities of manufacturer. No agent, employee or representative of the manufacturer has authority to waive, alter or add to the provisions of warranty, nor to make representations or warranty not contained herein.

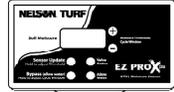
Should you have any claim under this warranty, please contact Nelson's warranty desk by calling 1-888-NELSON-8 (888-635-7668) for prompt assistance.

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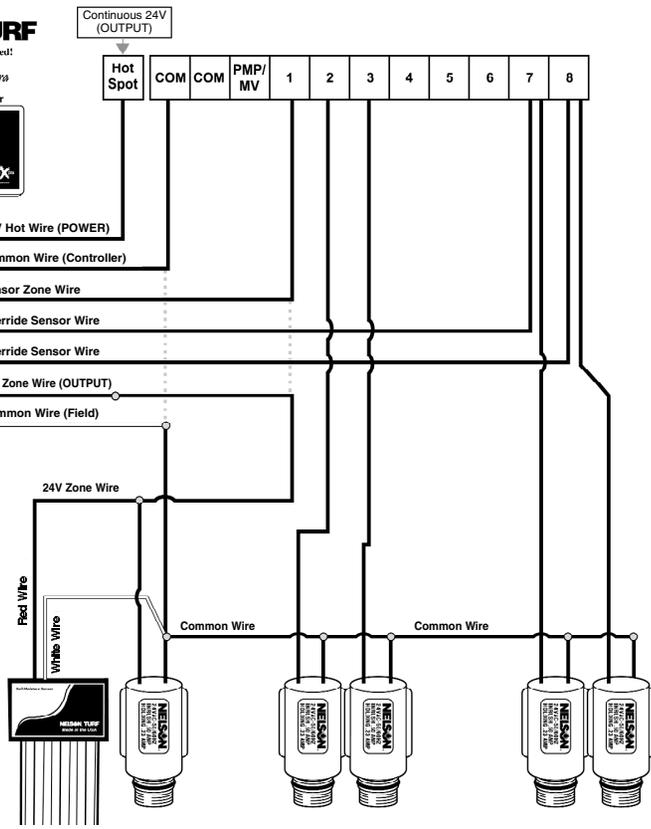
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EZ PRO™ XTRA

8701 Moisture Sensor



- Orange 24V Hot Wire (POWER)
- Black Common Wire (Controller)
- Green Sensor Zone Wire
- Blue Override Sensor Wire
- Brown Override Sensor Wire
- Red 24V Zone Wire (OUTPUT)
- White Common Wire (Field)



IMPORTANT INFO

- Wire connections are the most important part of sensor installation. You must wire the nuts and DBY grease connectors to ensure an adequate connection and for the unit to function properly.
- Sensor needs to be installed in an area that is the most representative of the entire landscape being irrigated and can be connected to ANY ZONE. (Example shows Zone 1)

● Wire Connection Point

Congratulations on selecting the EZ Pro Xtra, the industry's leading soil-moisture sensing unit for residential and small commercial applications.

The following manual will guide you step-by-step through the installation process. Pages 14-20 contain troubleshooting steps to further assist in your installation. Additional information can be found online at www.lrnelson.com

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Before You Get Started

Read the entire manual before starting. Before installing your new 8701, operate the sprinkler system to ensure the system is functioning properly and all heads are properly adjusted. For best results you will need to know the distribution rate of your sprinklers as this usually varies greatly from zone to zone. Ideally each zone would receive the same amount of water (1/2" to 3/4"). Nelson recommends that, prior to installation, you replace any back-up batteries your timer requires. You may need to refer to the original owner's manual.

Step 7: Changing the Moisture Threshold

The EZ PRO™ XTRA Control Box Moisture Threshold calibration calculates a threshold for an average system. If the distribution uniformity at your site is above or below average it may be necessary to adjust the threshold for fine tuning. It may also be necessary once the roots have grown around the Sensor.

- While the “Sensor Update” button is being held, use (+)/(-) buttons to change the moisture threshold.
- Raising the threshold will result in more frequent watering.
- Lowering the threshold will result in less frequent watering.

Note: Moving the threshold more than 0.2 in every 3 water cycles can cause erratic behavior.

Troubleshooting Error Codes

Er1: Communication Error

- Incorrect Wiring
- Bad Connections
- Damaged Wire

Er2: Over Current

- Bad Valve Solenoid
- Short Circuit Wires

Er3: 24- hour Moisture Threshold Calibration Failed

- This error is accompanied by one of the other five error codes to indicate reason for failure.

Er4: Value Out of Range Warning

- This warning can occur only during 24-hour moisture threshold calibration, and indicates that the Sensor readings fall outside of the expected range. This could be caused by failure to saturate the soil with water in the beginning, or by accidental watering of the site after calibration started or a rain event. If an Er4 occurs the EZ PRO™ XTRA Control Box will determine the best possible moisture threshold based on the measured moisture values and allow the sprinkler system to water based upon this setting. Use Step 7 to fine tune the moisture level.

Er5: Calibration Interrupted Error

- This error can occur only during 24-hour moisture threshold calibration and indicates that something caused the calibration to be delayed too long, such as an open valve. Calibration must complete within a certain amount of time from initial soil saturation to set a correct threshold.

Er6: Low Reading During 24-hour Moisture Threshold Calibration Error

- This error can occur only during 24-hour moisture threshold calibration and indicates that there was a low reading during calibration. To resolve this, follow the instructions under Step 5 on page 19.

Setup Operations: Calibration Cycle (for initial installation or Sensor repositioning)

- Hold the (+)(-) and (Bypass) buttons simultaneously for 3 seconds. The screen will flash between “CAL” “24 H” and the current moisture reading. The “24 H” will count down on the hour until the calibration is complete. Watering is paused during this time.

Communication Test: The EZ PRO™ XTRA Control Box communicates with the Sensor for about two minutes, checking for any potential errors.

- Hold the (+)(-) and (Sensor Update) buttons simultaneously for 3 seconds.

For more information, see Step 1 on page 18 in the Troubleshooting section.

Step 1 Sensor Placement

When planning the Sensor location, take into account variables such as distribution rate, sun exposure and soil type, or other site specific characteristics that may affect water holding capacity or the rate at which plants use water. The location of the Sensor will determine how frequently your sprinkler system is allowed to water. If the Sensor is placed in an area that is generally wetter than average it will cause your system to operate less frequently, possibly causing dry spots. If the Sensor is placed in an area that receives less than average water it will cause the system to operate more frequently.

Note: Sensor should be buried 2”-4” in clay soil or 4” in loam or sandy soil. Do NOT bury too deep. Mark with a valve box to avoid aerators.

Sensor placement recommendations:

- Place the Sensor near the center of a zone (should only receive water from one zone).
- Place the Sensor in an area that receives average to slightly below average water.
- Keep away from sidewalks and driveways to avoid water from car washing or other factors.

Wiring Sensor

To wire up the Sensor, simply attach the Sensor red wire to the hot wire on the nearest valve, then attach the white wire to the valve common wire.

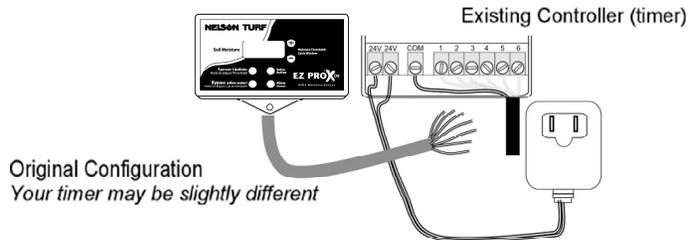
Note: Make sure connections are made water proof.

Note: When installing the Sensor connect it to the most convenient valve. This connection is used for communication.

Step 2 Installing the EZ PRO™ XTRA

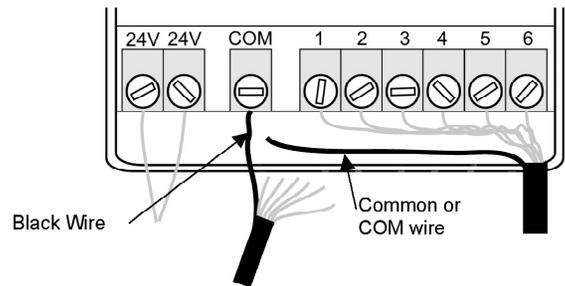
Mount the EZ PRO™ XTRA controller next to your existing sprinkler timer.

The EZ PRO™ XTRA controller must be mounted indoors. If your sprinkler timer is mounted outdoors you should obtain a weatherproof cabinet for the EZ PRO™ XTRA



The cable from the EZ PRO™ XTRA controller has 7 color-coded wires. Five of these wires connect to your timer and the other two connect to the sprinkler wiring.

Step 1) Disconnect the wire or wires that are connected to the COM (or Common) terminal on your timer. Connect the **black** wire from the EZ PRO™ XTRA controller to the COM terminal of your sprinkler system.



Step 2) Connect the **orange** wire from the EZ PRO XTRA to one of the 24 VAC terminals on your timer.

In order to determine which of the 24V terminals to connect the orange wire to touch the orange wire to each of them with the timer power on (AC adapter plugged in). The terminal that causes the EZ PRO™ XTRA 'Power On' light to illuminate is the correct one. Be sure to unplug the power once you determined the correct 24V terminal.

Step 4: Continued

- The Sensor is placed in an area that receives far less than average water. This will cause the system to operate more frequently than desired. If it is determined that the Sensor is not receiving an average to slightly below average amount of water check the performance of all the related system components:

- Check all sprinkler heads affecting the area to ensure they are functioning properly.
- Check the valve operation to ensure that it is opening completely and not limiting water flow and that it is shutting off completely.
- Check system and zone pressure – improper pressures can cause distribution uniformity problems. Refer to the sprinkler head manufacturer for specifications.

If all system components are functioning properly move the Sensor to a more appropriate area and then refer to Step 5: Re-running a 24-hour moisture threshold calibration.

Step 5: Re-running a 24-hour Moisture Threshold Calibration

- 1) Re-saturate the soil. This may take several applications of water to ensure the water has penetrated to the level of the Sensor.
- 2) Compact the soil around and over the Sensor to ensure there are no air pockets around the Sensor. The Sensor is very durable but some care should be taken to not destroy the Sensor. Rock or gravel touching the Sensor directly can also cause a false reading. It may be necessary to remove any rocks that are in direct contact with the Sensor.
- 3) Once you are sure there are no air pockets around the Sensor, take a soil moisture reading by pushing the "Sensor Update" button. This value will vary depending on soil type but should read above 20. A lower reading may mean there are remaining air pockets or rocks touching the Sensor.
- 4) Re-check area to ensure the Sensor location is still well saturated.
- 5) Run the 24-hour moisture threshold calibration: Hold the (+)(-) and (Bypass) buttons simultaneously for 3 seconds. The screen will flash between "CAL" "24H" and the current moisture reading. The "24H" will count down on the hour until the calibration is complete. Watering is paused during this time.

Step 6: Soak Cycles

Soak cycles allow the water to soak into the soil more efficiently, promoting healthier roots and a better looking site. It also reduces the potential for puddling and run-off, and allows the water to soak down to the Sensor, giving more accurate and timely readings. Soak cycles should be extended for sloped areas and denser soil types. When watering a site, it is important to allow enough time for water to soak into the ground. Usually soak times are about 3 times as long as run times. This means that if you run your sprinkler system for 30 minutes, you allow 90 minutes for the water to completely soak into the ground. Refer to the manual for your sprinkler timer for the best way to set up soak cycles.

Step 1: Verify Sensor Communication

- 1) Push the "Sensor Update" button to verify communication. A numeric value should appear. If an Er# appears refer to the Troubleshooting section above.
- 2) Run a Communication Test: Hold (+)(-) and (Sensor Update) buttons simultaneously for 3 seconds. This test will flash alternately between "SEn" and "####." #### will start at 100 then count down to 0, repeatedly communicating with the Sensor. This process takes about two minutes.
- 3) When it finishes it will flash "Err" and a number which is the quantity of errors it encountered in its attempts, 000 to 200. This number is not the error type. This error count will stop displaying after 10 minutes.

Note: To exit this mode early press and hold the "Sensor Update" button for 3 seconds.

- 4) A reading of 000 is good, meaning there are no errors.
- 5) If an error is encountered in this step, it is either an Er1 or Er2. Refer to the top of the Troubleshooting section for specific information.
- 6) Repair wires or connections.
- 7) Repeat Step 1.

Step 2: Check Distribution Rate by Zone

To check the distribution rate of your system use several flat bottom containers placed randomly throughout the zone (tuna cans work well). Run the zone for a period of time long enough to get a measurable amount of water in each catch device. Use the formula below to calculate the new runtime.
Average amount in cans _____ (inches) , Desired amount applied _____ (inches) x Time that zone operated during test _____ (minutes) = New runtime _____ (minutes)

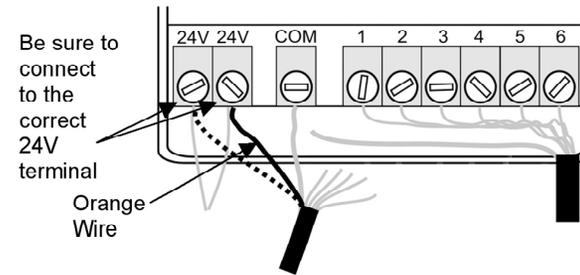
Step 3: Check Distribution Uniformity by Zone

To check the distribution uniformity of your system use several flat bottom containers placed randomly throughout the zone. Run the zone for a period of time long enough to get a measurable amount of water in each catch device. Compare the amounts in each device. Using this information, make adjustments to the sprinkler system in order to get a more uniform water distribution.

Step 4: Check Distribution Uniformity and Rate in the Sensor Zone

To check the distribution rate of the zone the Sensor is buried in, use several flat bottom containers placed randomly throughout the zone (tuna cans work well) making sure at least one catch device is placed directly above the Sensor. Run the zone for a period of time long enough to get a measurable amount of water in each catch device. Use this information to determine the following:

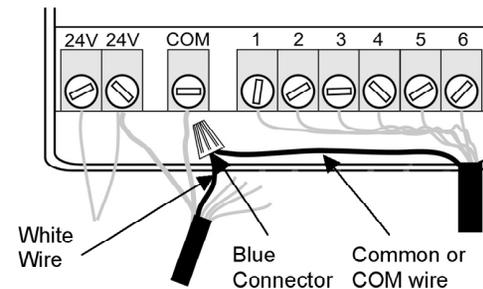
- The Sensor is placed in an area receiving average to slightly below average precipitation within the zone. This is an optimum location for the Sensor.
- The Sensor is placed in an area that is generally wetter than average. This will cause your system to operate less frequently, possibly causing dry spots.



Do not disturb the power supply wires connected to these terminals. Leave them connected as they are.

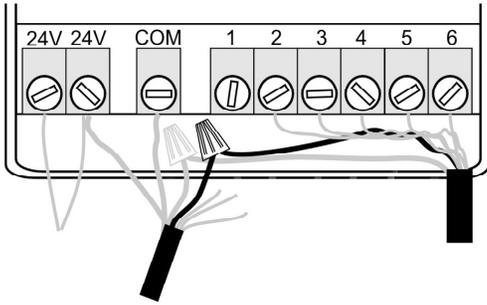
Unplug the AC power supply and secure the orange wire in that terminal along with the existing wire. (Some timers have a terminal marked 'TEST' or 'HOT SPOT' that can be used to connect the orange wire.)

Step 3) Connect the wire or wires you disconnected from the 'COM' terminal to the **white** wire from the EZ PRO™ XTRA cable using a supplied blue wire nut.

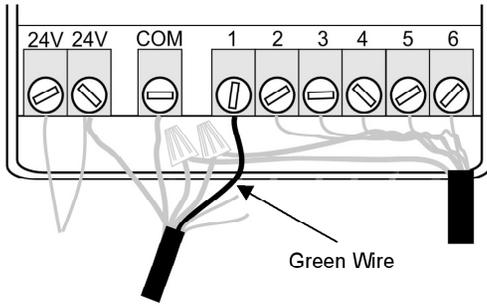


Note: Some timers do not provide internal access to the AC power terminals. In this case a 24 volt AC adapter is available at your local sprinkler supply store. You will need to connect one of the AC adapter wires to the common terminal (which will also have the black wire from the EZ PRO™ XTRA attached) and the other adapter wire connects to the orange wire coming from the EZ PRO™ XTRA.

Step 4) Disconnect the sensor zone "hot wire" identified in step 2 of Connecting the Sensor from its terminal in your sprinkler timer. Connect it to the **red** wire of the EZ PRO™ XTRA controller with a blue wire nut.



Step 5) Connect the green wire from the EZ PRO™ XTRA controller to your sensor zone terminal, where the “hot wire” was formerly connected.



Optional wiring for Xeriscape or Flower Bed Zones

You may have zones you wish to water regardless of the moisture sensor, for example a flower bed or a desert landscaping zone. The EZ PRO™ XTRA can accommodate up to two such zones.

How to connect them

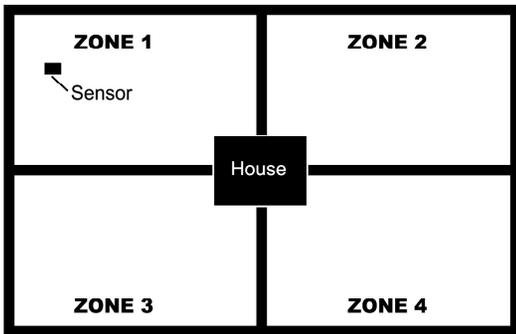
- Identify the zone(s) that fit into this category. Note which terminal(s) they are connected to on your sprinkler system.
- Loosen the screw that connects each such zone wire to your sprinkler timer.
- Connect the **blue** wire from the EZ PRO™ XTRA controller to the same terminal as the zone wire. There will now be two wires connected to this terminal, one going to the EZ PRO™ XTRA controller and one going to the valve.
- If you have a second zone to run independently of the moisture sensor, connect the brown wire from the EZ PRO™ XTRA Controller to the second terminal

Troubleshooting Lawn Conditions

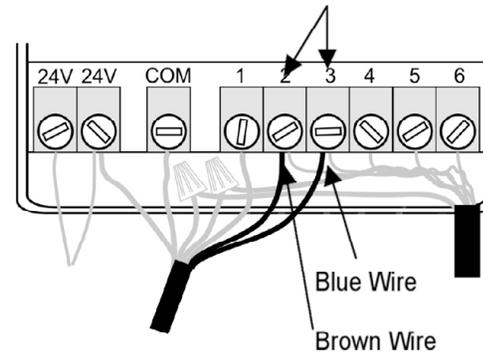
Lawn Condition	Possible Causes	Solution
Entire lawn is dry	System Malfunction	Check the overall system functions. Ensure the master valve is operating correctly, that the system is not shut down, etc...
	Run times on all zones are too short	Check the distribution rate of all zones as per Step 2 on page 18. Adjust the run times accordingly
	Moisture Threshold is too low	Refer to Step 7 on page 20
Entire lawn is too wet	Heavy rain fall immediately after or during a watering cycle	N/A
	Run times on all zones are too long	Check the distribution rate of all zones as per Step 2 on page 18. Adjust the run time accordingly
	Moisture Threshold is too high	Refer to Step 7 on page 20
Sensor is receiving adequate water, other areas are dry	Water distribution is not uniform	Refer to Step 3 on page 18
	Sensor is buried in an area that receives above average watering	Make sure the Sensor is placed within an area that follows the guidelines on page 5. If it does, check to see if the Sensor is receiving any water from an alternative source (An example being your neighbors sprinklers)
Sensor is receiving adequate water, other areas are wet	Water distribution is not uniform	Refer to Step 3 on page 18
	Sensor is buried in an area that receives significantly below average watering	Make sure the Sensor is placed within an area that follows the guidelines on page 5. If it does, check to see if the Sensor is not receiving any water due to an obstruction (For example a bush obstructing a sprinkler head)
Zones 1, 3 and 4 are receiving adequate water. Zone 2 has dry or wet areas	Water distribution in zone 2 is not uniform	Refer to Step 3 on page 18

Troubleshooting Lawn Conditions

Use this diagram in reference to the zones in this Troubleshooting section



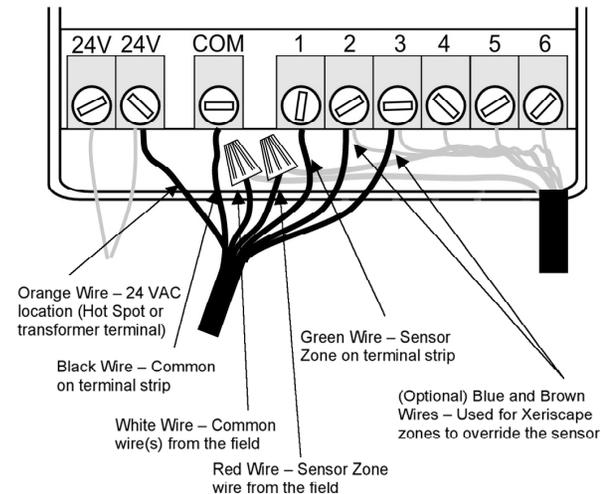
Optional Xeriscape Zones



Lawn Condition	Possible Causes	Solution
Area around the Sensor is dry but the lawn is wet	Plugged head over Sensor	Check the area around the Sensor. Fix any problems with the irrigation system that would cause the area around the Sensor to not receive water. In addition remove any obstructions that may have been placed over where the Sensor is buried
	Broken or missing head near Sensor	
	Object was placed over the Sensor	
Area around the Sensor is wet but the lawn is dry	Broken or leaky head near the Sensor causing water to pool around the Sensor	Replace or repair parts as needed
	Broken line causing water to leak into the soil surrounding the Sensor	
Zone 1 is wet, remaining lawn is dry	Run time on zones 2-4 are too short	Check the distribution rate of zones 2-4 as per Step 2 on page 18. Adjust the run time accordingly
	Cycle window is not long enough	Check the duration of your cycle window. Refer to Step 3 on page 10
Zone 1 is dry, remaining lawn is wet	Run time on zone 1 is too short	Check the distribution rate of zone 1 as per Step 2 on page 18. Adjust the run time accordingly
Zones 1-3 have adequate water, Zone 4 is drying out	Disruption causing the valve to not operate correctly	Check the wiring between the valve box and the valve. Make any necessary repairs. Check Zone 4 Run Time.

Now these two zones will run independently of the output of the moisture sensor. You may notice that there is up to a 60 second delay from the start times of these zones and when the sprinklers begin delivering water. This is perfectly normal.

Wiring Diagram



Step 3 Setup Sprinkler Timer and Set Cycle Window

1. Set your sprinkler timer to apply 1/2” to 3/4” of water to each zone each day. This will allow the in-ground moisture Sensor to choose the best possible days to water. For instructions on how to check distribution rate, see Step 2 on page 15 of the Troubleshooting section. (If needed, refer to the sprinkler timer’s manual for operational instructions).

2. The cycle window is the time allowed to complete a water cycle once your soil moisture has reached your moisture threshold. The EZ PRO™ XTRA Control Box comes preset with a 12 hour window. This works well for most applications and there may be no need to re-set this value.

Reasons to re-set the cycle window:

- If your system needs more than twelve hours to complete a watering cycle once the Sensor zone has been watered.
- If you choose to water your lawn several times per day (this can result in poor root development).

To set the cycle window hold the “Bypass” button for 2 seconds. This will display the current cycle window. Use (+)/(-) buttons while holding the “Bypass” button to change the cycle window to a value between 0 and 24 hours.

Step 4 Connect the Sensor

NOTE: It is very important that you use waterproof connectors after all connections have been verified in Step 7.

1. Before burying the Sensor, verify communications by pressing the “Sensor Update” button. A numeric reading indicates success. A display of Er1 or Er2 indicates a wiring error. Consult the Troubleshooting section on pages 13-15.

2. Manually run the station to which you connected the Sensor to verify connection.

3) Once connections have been verified, disconnect the Sensor from the valve as this simplifies burial.

Troubleshooting for Initial Installation

Problem	Cause	Solution
The 8701 is reading a value under 20 when soil appears wet	There may be air pockets around the Sensor	<ul style="list-style-type: none"> • Rebury the Sensor as per Step 6 on page 8. When reburying the Sensor be especially careful that there are NO rocks touching the blade of the Sensor as this can lead to false readings
Controller does not have access to 24VAC	Some older mechanical controllers	<ul style="list-style-type: none"> • Some older sprinkler controllers do not have available access to 24VAC; for more information on this go to www.lrnelson.com

Operational Troubleshooting & Adjustments

Main Problem	Specifics	Solution
Er1 is displayed	The EZ PRO™ XTRA Control Box cannot communicate with the Sensor	<ul style="list-style-type: none"> • Check the wiring and connections to the Sensor • Connections need to be waterproof and free of corrosion • Check Sensor wires for damage • Check Sensor for damage • After making repairs follow the “Verify Sensor Communication” instructions under Step 1 at the end of this section
Er2 is displayed	The EZ PRO™ XTRA Control Box has detected excessive current while trying to communicate with the Sensor	<ul style="list-style-type: none"> • Double-check the wiring and connections to the Sensor • Verify connections inside valve box are water tight • Check for a faulty valve solenoid • Check for lightning damage
Display is blank. LED’s are off	EZ PRO™ XTRA Control Box is not receiving 24 VAC	<ul style="list-style-type: none"> • Make sure the 24VAC transformer is plugged in and receiving power • Check that the two 24VAC lines and the common from the EZ PRO™ XTRA Control Box are wired correctly
There are puddles forming during irrigation		<ul style="list-style-type: none"> • Follow the instructions under Step 6 at the end of this section

For Quick Reference Schematic, see page 22

Troubleshooting for Initial Installation

Problem	Cause	Solution
Er1 is displayed	The EZ PRO™ XTRA Control Box cannot communicate with the Sensor	<ul style="list-style-type: none"> • Check the wiring and connections to the Sensor • Make sure the correct valve wire and common wire are used • After making repairs follow the "Verify Sensor Communication" instructions under Step 1 at the end of this section
Er2 is displayed	The EZ PRO™ XTRA Control Box has detected excessive current while trying to communicate with the Sensor	<ul style="list-style-type: none"> • Double-check the wiring and connections to the Sensor • Make sure the common and Sensor wires are correctly connected • Check for a faulty valve solenoid • Test Sensor w/Valve disconnected • After making repairs follow the "Verify Sensor Communication" instructions under Step 1 at the end of this section
Er3 is displayed along with another error	There was a problem during the EZ PRO™ XTRA Control Box 24-hour moisture threshold calibration	<ul style="list-style-type: none"> • This error is accompanied by one of the other Er# for possible solutions • Refer to the other Er# for possible solutions
Er4 is displayed (This is a warning message, pressing "Sensor Update" will clear this)	Unexpected reading during 24-hour moisture threshold calibration, final reading was not substantially different from first (please refer to the Er4 code on page 20)	<ul style="list-style-type: none"> • Follow the instructions under Step 5 at the end of this section • Make sure no extra water is applied to the Sensor after calibration starts or the EZ PRO™ XTRA Control Box may set a non-optimal threshold
Er5 is displayed	An interruption of the 24-hour moisture threshold calibration occurred due to attempted valve activation	<ul style="list-style-type: none"> • Check the valve the Sensor is connected to for proper operation • After making repairs follow the instructions under Step 5 at the end of this section (turn off controller during 24-hour moisture threshold calibration)
Er6 is displayed	Unexpectedly low reading during 24-hour moisture threshold calibration	<ul style="list-style-type: none"> • Follow the instructions under Step 5 at the end of this section
Display is blank LED's are off	EZ PRO™ XTRA Control Box is not receiving 24 VAC	<ul style="list-style-type: none"> • Make sure the 24VAC transformer is plugged in • Check that the two 24VAC lines and the common from the EZ PRO™ XTRA Control Box are wired correctly
Display flashes random segments or 88.8	The EZ PRO™ XTRA Control Box common is not connected correctly	<ul style="list-style-type: none"> • Make sure the common from the EZ PRO™ XTRA Control Box is connected to the valve common of the sprinkler controller

Step 5 Sensor Installation

The Sensor has several burial requirements. There must be good contact between the soil and the Sensor, and it needs to be buried lying on its side. If buried flat, the Sensor readings can be wrong due to moisture pooling on the surface of the Sensor. The Sensor should be buried 2" to 4" inches deep in turf areas and deeper for planters and tree areas (root zones). **Note: Sensor should be buried 2"-4" in clay soil or 4" in loam or sandy soil. Do NOT bury too deep.**

(Option A)

1. Using a shovel or edger cut out a piece of sod approximately 1-foot long by 6-inches wide in the area where you plan to bury the Sensor.
2. Carefully remove the sod and try to keep the roots intact.
3. Dig a small trench the length of the Sensor in the exposed dirt.
4. Insert the Sensor into the trench, burying it on its long edge. If buried flat, Sensor readings can be wrong due to moisture pooling on surface of the Sensor. **Note: Sensor should be buried 2"-4" in clay soil or 4" in loam or sandy soil.**

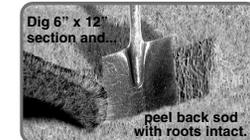
Do NOT bury too deep.

5. Remove any rocks or gravel that are touching the surface of the Sensor to ensure there are no air pockets.
6. Cut a slit back to the valve box for the communication wires. Take care to bury them deep enough to avoid damage from aeration or other activities. **Note: Mark with a valve box to avoid aerators.**
7. Using a bucket of water saturate the soil surrounding the Sensor and compact the soil around it tightly.
8. Refill hole, replace sod and saturate the area thoroughly. Once saturated, compact soil firmly around the Sensor. The Sensor must make good contact with the surrounding soil.

(Option B)

1. With a flat blade shovel, cut a slit in the grass where the Sensor will be placed. Widen slit with a back and forth motion.
2. Place the Sensor in the slit horizontally so the top of the Sensor is 2"-4" deep. **Note: Sensor should be buried 2"-4" in clay soil or 4" in loam or sandy soil. Do NOT bury too deep.**
3. Remove any rocks or gravel that are touching the Sensor to ensure there are no air pockets.
4. Cut a slit back to the valve box for the communication wires. Take care to bury them deep enough to avoid damage from aeration or other activities.
5. Using a bucket of water saturate the soil surrounding the Sensor and compact the soil around it tightly.

OPTION A



OPTION B



Note: It is critical that the soil is well saturated with water, otherwise the moisture threshold calibration in Step 8 will fail. It is also important that you complete Step 8 within one hour of saturating soil.

Step 6 Verify All Connections

Reconnect Sensor to desired valve. Verify that all connections are functioning properly after the Sensor has been buried.

1. Verify communications with Sensor by pressing the "Sensor Update" button. A numeric reading indicates success. A display of Er1 or Er2 indicates a wiring error. Consult the Troubleshooting section on page 13-15 if you receive an error.
2. If the numeric reading is below 20, the Sensor has excessive air pockets around it. If this occurs, rebury the Sensor as per Step 6 taking extra care to ensure the soil is well compacted around the Sensor.
3. Manually run the station connected to the Sensor. This will verify connection.

Note: All connections need to be water-tight. There are several products on the market that will accomplish this. Follow the manufacturer's instructions for the product you choose.

Step 7 24 Hour Moisture Threshold Calibration

The EZ PRO™ XTRA Control Box comes with an auto-calibration capability that will set the moisture threshold based on your soil type. This is useful for new installations. Before running the moisture threshold calibration; ensure that the soil around the Sensor is heavily saturated with water as instructed in Step 6. If not properly saturated, the calibration will fail. Write down the current date, time and sensor reading to be used as a reference point.

Date _____ Time _____ Sensor Reading _____

1. Hold the (+)(-) and (Bypass) buttons simultaneously for 3 seconds. The screen will flash between "CAL" "24H" and the current moisture reading. The "24H" will count down on the hour until the calibration is complete. Watering is paused during this time. It is important that the Sensor does not receive any water during calibration. This process will fail or provide false feedback if it does.
2. If the calibration succeeds, the moisture threshold will be automatically set, and the system will allow watering when soil moisture drops below this threshold.

If an error occurs during calibration, the screen will flash "Er3" indicating calibration failed, and then another "Er#". This # represents the reason for failure. See Troubleshooting for information on the various error messages. The EZ PRO™ XTRA Control Box will need to be re-calibrated. In addition, in the event of a failure, the EZ PRO™ XTRA Control Box will go into "bypass" mode allowing for normal timer-based watering.

Note: If you need to exit this mode early, hold the "Sensor Update" button for 3 seconds.

Note: If the Sensor receives water during this 24 hour period, or was not saturated during Step 6, the calibration will either fail entirely or set an incorrect threshold for your lawn. If this happens, you will need to resaturate the soil and restart Step 8.

Future Adjustments

Manual Threshold Adjustment As the grass roots grow back around the Sensor, the threshold may need to be adjusted. Observe lawn conditions and then adjust the threshold as needed. To manually adjust your moisture threshold begin by taking a Sensor reading (after a watering cycle) by pressing the "Sensor Update" button. Next set your threshold slightly above or below this value (An adjustment of 0.1 – 0.2 points is all that should be necessary).

- Raising the threshold will result in more frequent watering.
- Lowering the threshold will result in less frequent watering.

Automatic Moisture Threshold Calibration If you need to re-calibrate your moisture threshold, simply begin by re-saturating the ground surrounding the Sensor. The dirt surrounding the Sensor needs to be holding as much water as it can, it may take a few applications of water to accomplish this. Once saturated, repeat Step 8 of this manual to automatically calibrate your moisture threshold.

How to Get a Beautiful Lawn

Watering SMART is a critical step towards a beautiful and healthy lawn.

Water Less Frequently

- Using the EZ PRO™ XTRA to determine which days to water will promote deep roots and will water only when needed, conserving water (and saving you money).
- Watering too often promotes a shallow root structure and washes nutrients from the roots.

Water Deeply

- Set your sprinkler timer to apply 1/2" to 3/4" of water (determine water application rate for each zone and calculate the run time to apply 3/4" of water—use cups or cans to catch water for a fixed time to determine application rate). Each zone could have a different water run time.

