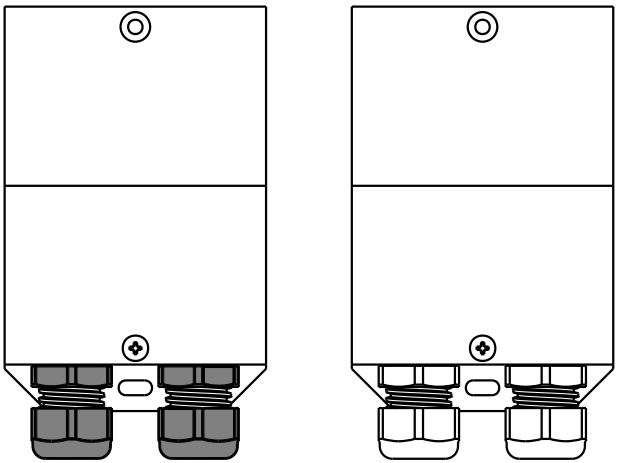
2WR4-TRX

Pluvion®

2-WIRE

Pluvion 2-WIRE System for Residential Irrigation
4-Zone Transmitter (2WR4-TX) and Receiver (2WR4-RX)
Supports Expansion up to 16 Zones



User Instructions and Installation Manual

Document Version 1.20

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Product Description

Thank you for choosing the Pluvion 2·WIRE irrigation system. Our mission is to deliver smarter landscaping solutions that install as easily as plug-and-play.

The Pluvion 2·WIRE 2WR4-TRX is a four-zone transmitter and receiver pair designed for residential irrigation systems. It encodes and decodes zone signals across a standard two-conductor field wire, allowing multiple irrigation zones to operate reliably over a single cable. The system works with any standard 24 VAC sprinkler timer, including internet-connected smart controllers.

Each 2WR4-TRX pair supports up to four irrigation zones. Multiple pairs can be installed on the same two-conductor wire to support a maximum of 16 zones within a single system. The transmitter is installed near the sprinkler timer, while the receiver is placed close to the valves and solenoids.

Key Applications and Benefits

New installations: Build a sprinkler system using low-cost, two-conductor low-voltage landscape wire.

Repairs: Restore functionality to systems with damaged wiring, provided at least two conductors in the existing multi-conductor cable remain usable.

Expansion: Add new zones without replacing or upgrading existing wiring.

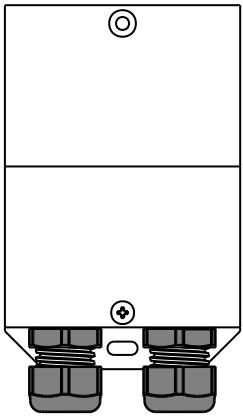
The Pluvion 2·WIRE system is fully compatible with standard 24 VAC sprinkler timers, including internet-connected smart timers. Transmitters are installed near the sprinkler timer, while receivers are placed close to the valves and solenoids.

Important: This is not a wireless product. A field wire and common ground return are required between transmitters and receivers.

Table of Contents

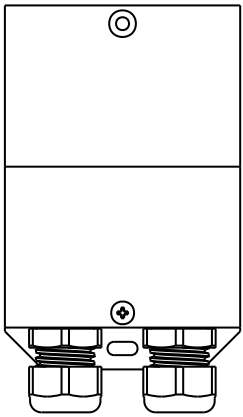
Contents in the Box

2-WIRE Transmitter (2WR4-TX)
Identified by BLACK connectors



Install near sprinkler timer

2-WIRE Receiver (2WR4-RX)
Identified by WHITE connectors



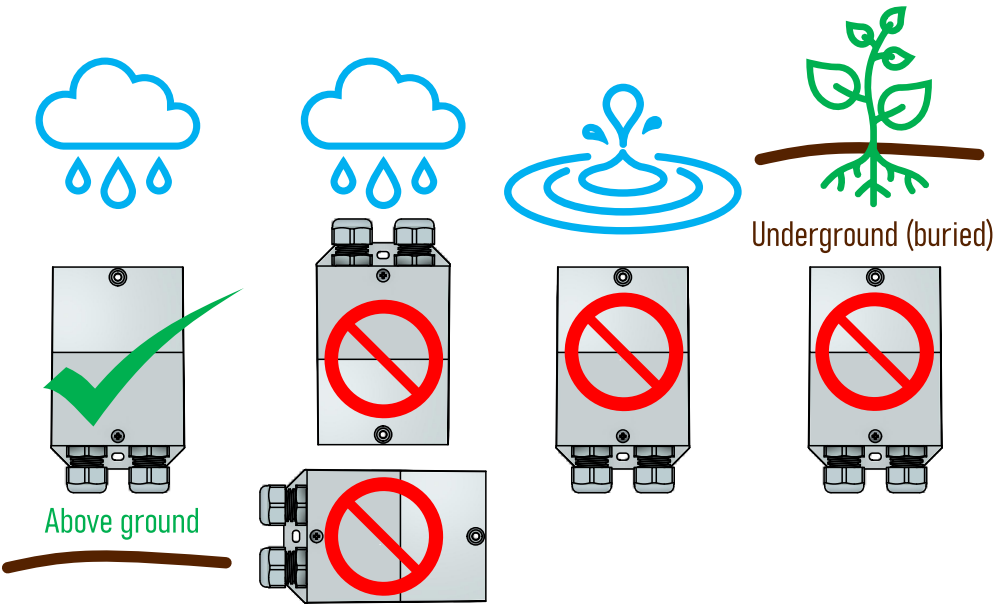
Install near solenoids/valves

Mounting hardware

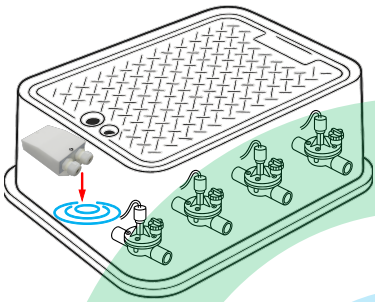
Requirements for Outdoor Installation

The 2WR4-TRX 2-WIRE system may be installed outdoors. The transmitter and receiver are weather-resistant when mounted correctly, as shown below.

When installing outdoors, ensure that all cable connectors are positioned facing downward to prevent water ingress from rain or other sources. Normal outdoor humidity will not harm the electronics. However, the devices should be kept as dry as possible. Exposure to standing water, such as when devices are buried underground or installed where water can pool, is not supported.



The 2WR4-RX receiver is installed near the valves. In case a valve box is used, the receiver may be installed inside it, as long as the device is **always above potential flooding** in the valve box.

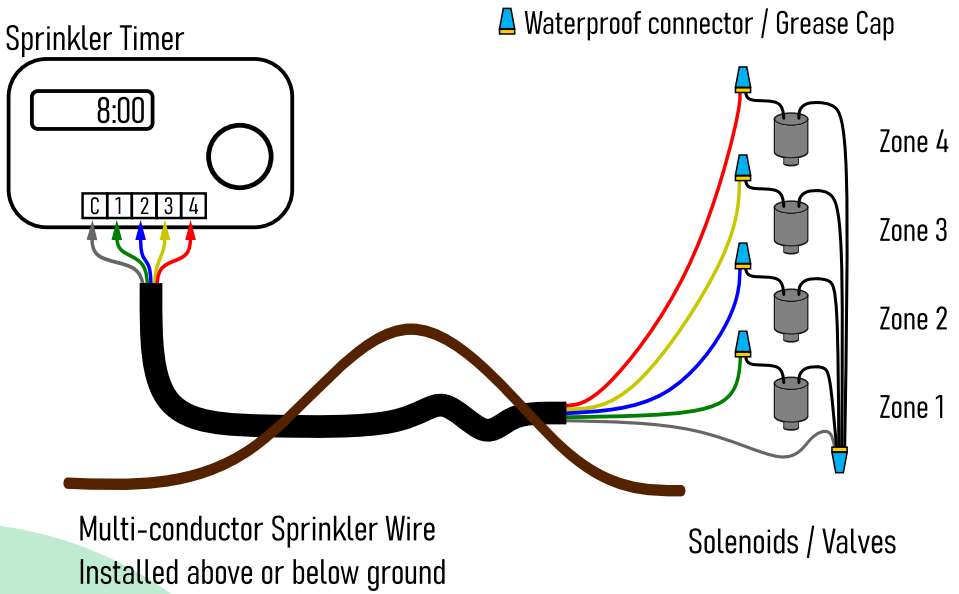


Repair of an Existing System with a Damaged Sprinkler Wire

Pluvion 2·WIRE supports a wide range of applications, including new installations, system repairs, and adding zones. This manual explains how one or more 4-zone transmitter/receiver pairs (2WR4-TRX) can upgrade a conventional irrigation system using only a two-conductor landscape wire, or an existing multi-conductor cable with at least two functional conductors. This section focuses on repairing an irrigation system with damaged conductors.

Each 2WR4-TRX pair supports up to four irrigation zones. Multiple pairs can be installed on the same two-conductor wire to support a maximum of 16 zones, limited by the sprinkler timer's capacity. The transmitter is installed near the sprinkler timer, while the receiver is placed close to the valves and solenoids.

Wiring diagram of a conventional residential sprinkler system:



Step-by-Step Installation: Repair of an Existing System

Step 1 › Verify That Existing Wiring Has at Least Two Functional Conductors

The electrical portion of a sprinkler system consists of three main components, and a failure can originate from any of them:

- Sprinkler timer
- Sprinkler wire
- Solenoids/valves

If the sprinkler wire has one or more damaged conductors, Pluvion 2·WIRE can still restore system functionality as long as at least two conductors remain usable. When adding zones, any functional field wire can be repurposed as a 2·WIRE field wire.

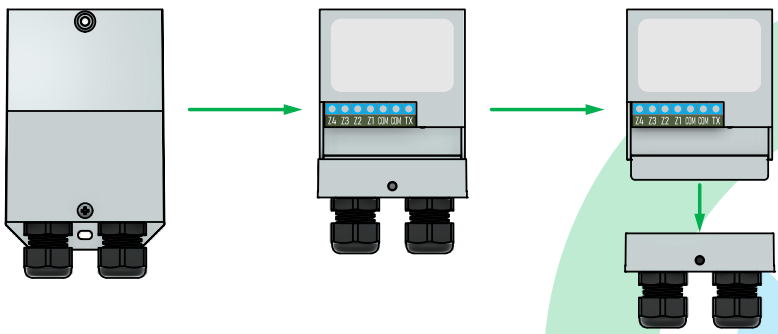
A single 2WR4-TX transmitter supports up to four zones, but it can also operate with only two or three zones, leaving any unused zone terminals unconnected.

Step 2 › Select Conductors for the 2·WIRE Interface

Disconnect the sprinkler timer from its power source. Identify two functional conductors that will serve as the 2·WIRE interface. Although a white conductor is commonly used for the common ground return (**COM/C**), any functional conductor may be used. If the original white **COM** conductor is damaged, simply choose another working conductor to serve as **COM**.

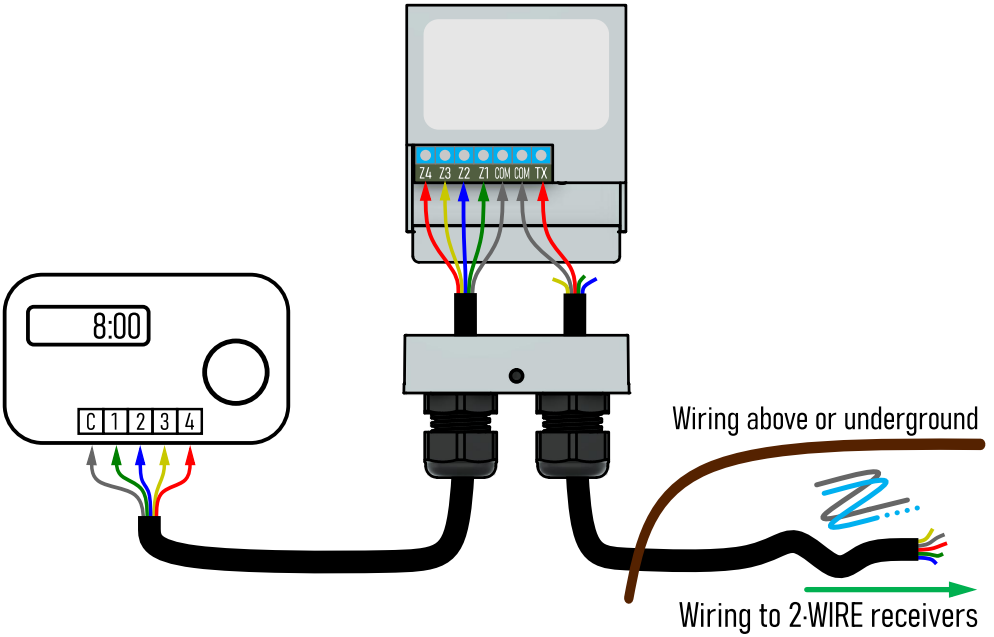
Step 3 › Open the transmitter enclosure

Remove the screw securing the transmitter enclosure and lift off the cover. The transmitter can be identified by its black connectors. After removing the enclosure, gently pull the connector base straight off the board assembly.



Step 4 > Connect the transmitter to the sprinkler timer

Install the transmitter near the sprinkler timer. Cut the existing sprinkler wire approximately 2–3 ft from the timer, and connect the transmitter to the cut wires as shown in the diagram below. The color of the conductors used for the 2-WIRE **TX** and **COM** signals is not important; when using an existing sprinkler cable, any functional conductor may be used.

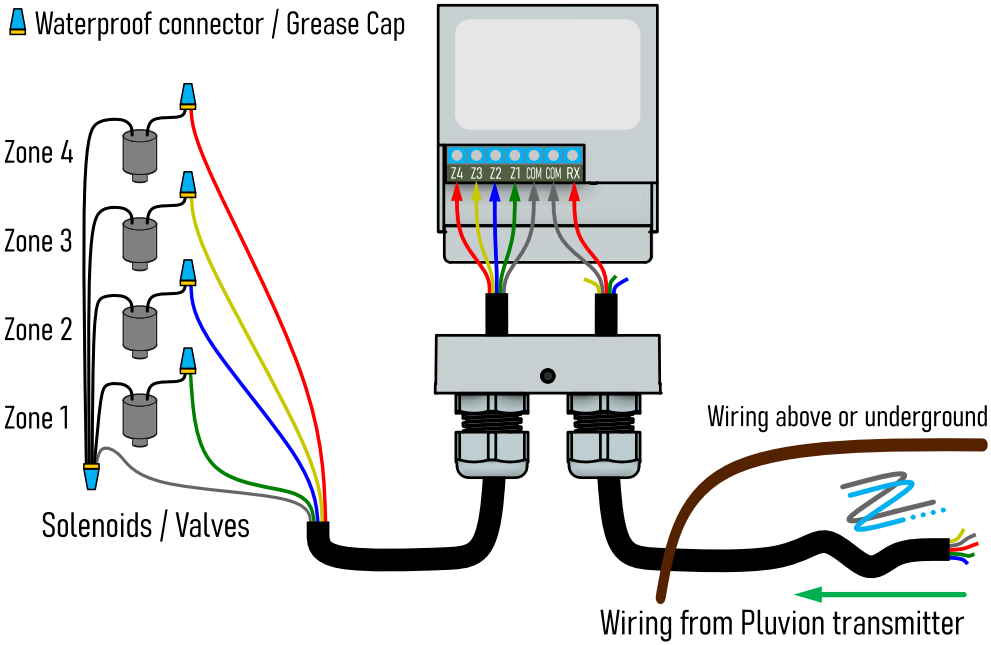


Insert the connector base back into the board assembly. Tighten the wire connectors **after** ensuring a proper fit of the wiring between the base and the terminal block and only once the base is fully inserted into the board assembly.

Notice: depending on the model, your sprinkler timer may offer 4, 6, 8, 12, or 16 zones. Select any four, or less, of these zones and wire them to Z1–Z4 on the transmitter. These selected zones will be delivered to the receivers over the 2-WIRE cable.

Step 5 > Open the receiver enclosure and connect it to the solenoids

Open the receiver by removing the screw that secures the enclosure. The receiver can be identified by its white connectors. After removing the enclosure, pull the connector base straight off the board assembly, as shown in Step 3.



The existing connections to the solenoids and wire connectors may be retained. Cut the sprinkler wire approximately 2–3 ft from the end. The receiver will be connected to the 2-WIRE interface from the transmitter using the **COM** and **RX** terminals, as shown in the diagram above.

Use the same two conductors that were selected at the transmitter and trim any unused conductors. The short section of sprinkler wire attached to the solenoids will be connected to the zone terminals (**Z1**, **Z2**, **Z3**, **Z4**) and the second **COM** terminal. To avoid accidentally swapping zone assignments, it is recommended to keep the original conductor colors. For example, if the red conductor is connected to Zone 1 at the sprinkler timer and to **Z1** at the transmitter, connect the same red conductor to **Z1** at the receiver.

Insert the connector base back into the board assembly. Ensure the wiring between the base and the terminal block is properly seated, then tighten the wire connectors only after the base is fully inserted.

Step 6 > Reinstall enclosures and mount devices

Reinstall the transmitter and receiver enclosures using the single screw on each device. Mount the transmitter on a wall near the sprinkler timer. The receiver may be mounted on a wall near the valve assemblies. If wall mounting is not practical, the receiver may be secured to a PVC irrigation conduit using a snap ring.

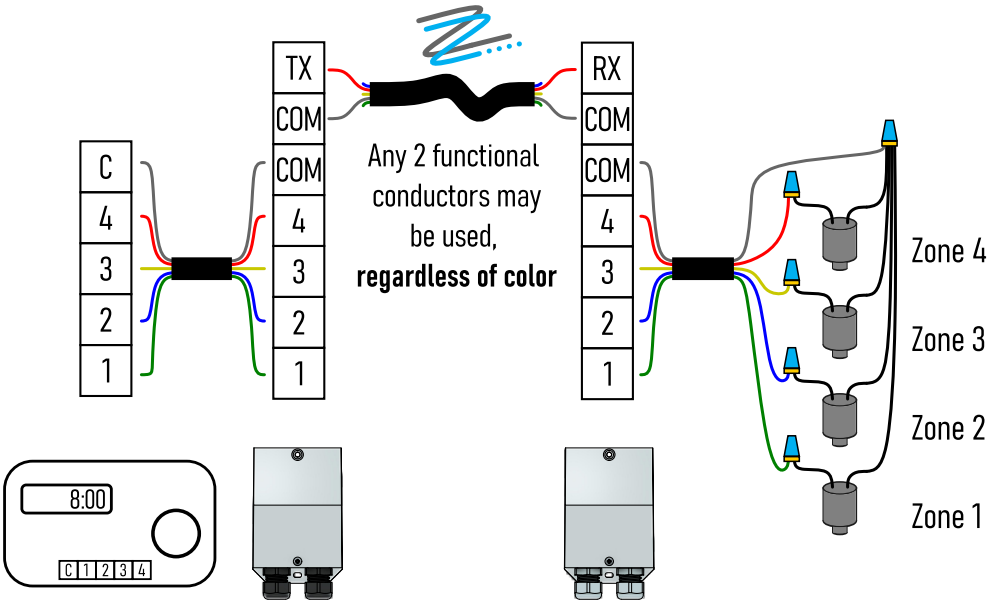
Always install the transmitter and receiver above ground level, away from standing water, with the wire connectors facing downward to maintain proper weather resistance. This is the preferred installation method.

If the receiver must be installed inside a valve box, ensure it is positioned above any potential water line, as exposure to excessive moisture or standing water is not supported. In a valve box, mount the receiver to the lid or as high as possible.

Step 7 > Verify complete system installation and test sprinkler operation

Reconnect the sprinkler timer to its power source. Manually test each zone to confirm correct operation. The transmitter and receiver each include a status LED on the board assembly. During normal operation, the LED indicates the active zone by the number of short flashes. For example, when Zone 3 is active, the LED will blink three times, followed by a short pause, and repeat. This indicator is useful for troubleshooting and may require removing the enclosure for visibility.

For reference, the complete 2-WIRE wiring diagram and system components are shown below:

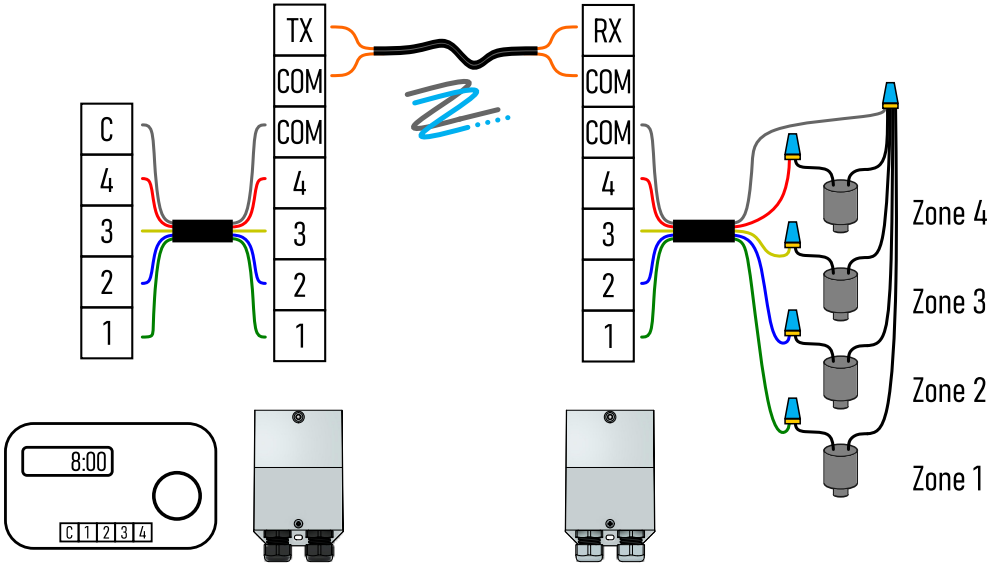


New System Installation Using Low-Cost Landscape Wire

Using Pluvion 2·WIRE, a new sprinkler system may be installed using low-voltage direct-burial 18/2 landscape wire. This provides a simple and low-cost wiring solution between the sprinkler timer and the valve assemblies.

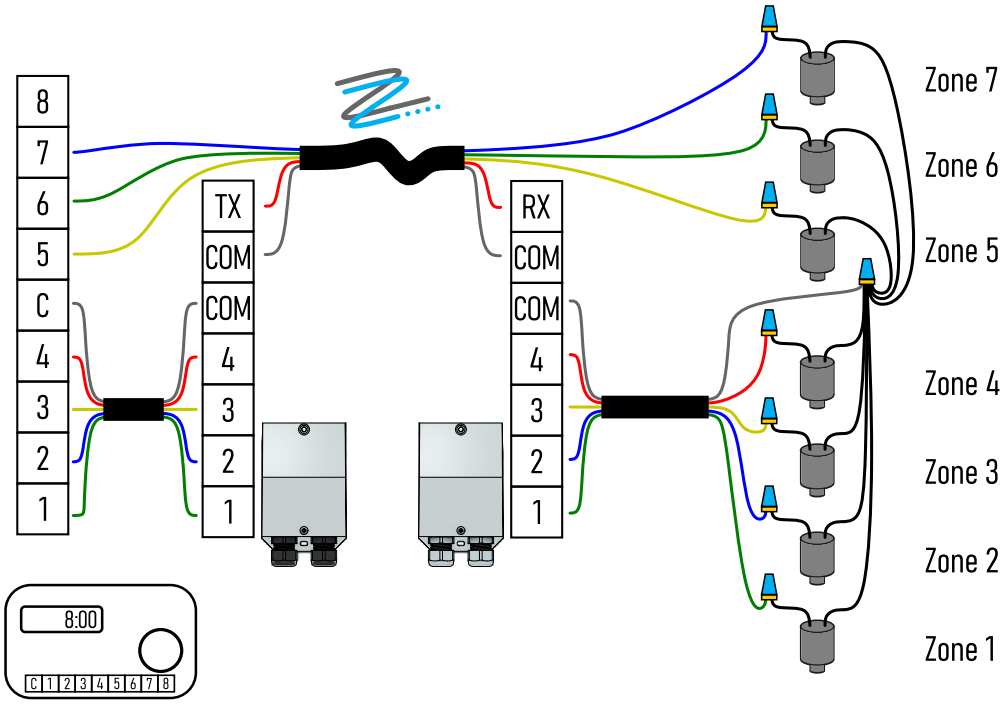
To connect the sprinkler timer to the transmitter, and the receiver to the solenoids, it is recommended to use a short (2–3 ft) section of 5-conductor sprinkler wire as a jumper.

Follow the same installation steps described in the previous section, using low-voltage 18/2 landscape wire for the 2·WIRE interface between the transmitter and the receiver:



Adding Zones Using an Existing Sprinkler Wire

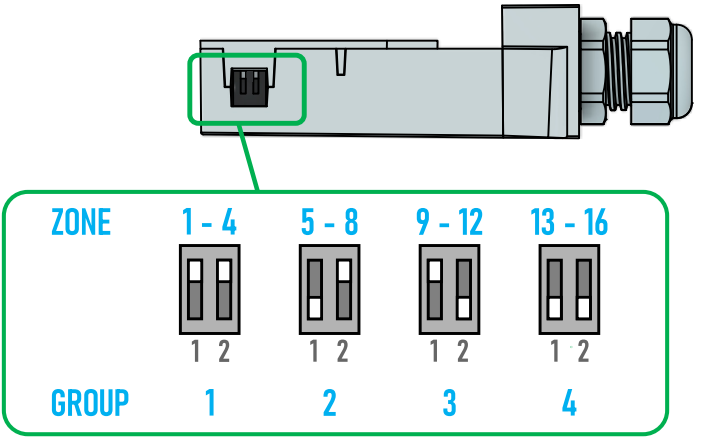
Adding zones to an existing sprinkler system usually requires replacement of the wire between the sprinkler timer and the valve assemblies. Pluvion 2-WIRE provides an efficient solution to expand the number of zones, while re-using the existing sprinkler wire that is already installed in the landscape area. For example, when upgrading the sprinkler timer from a 4-Zone to 8-Zone timer, an existing 5-conductor sprinkler wire can be used to control 7 Zones by adding a Pluvion transmitter and receiver to the system. **A wiring diagram for this expanded system is as follows:**



Multiple Transmitters and Receivers for up to 16 Zones

Up to four transmitters and receivers may be combined in a single sprinkler system to support up to 16 zones using the 2-WIRE interface. This can be done using either existing wiring or new wiring, with only two conductors required for the 2-WIRE path.

Each transmitter or receiver is assigned to one of four groups, and each group controls four zones. The board assembly of both the transmitter and receiver includes a DIP switch used to set the device's group number:



Wiring Warning: Transmitters Must Share the Same TX and COM Lines

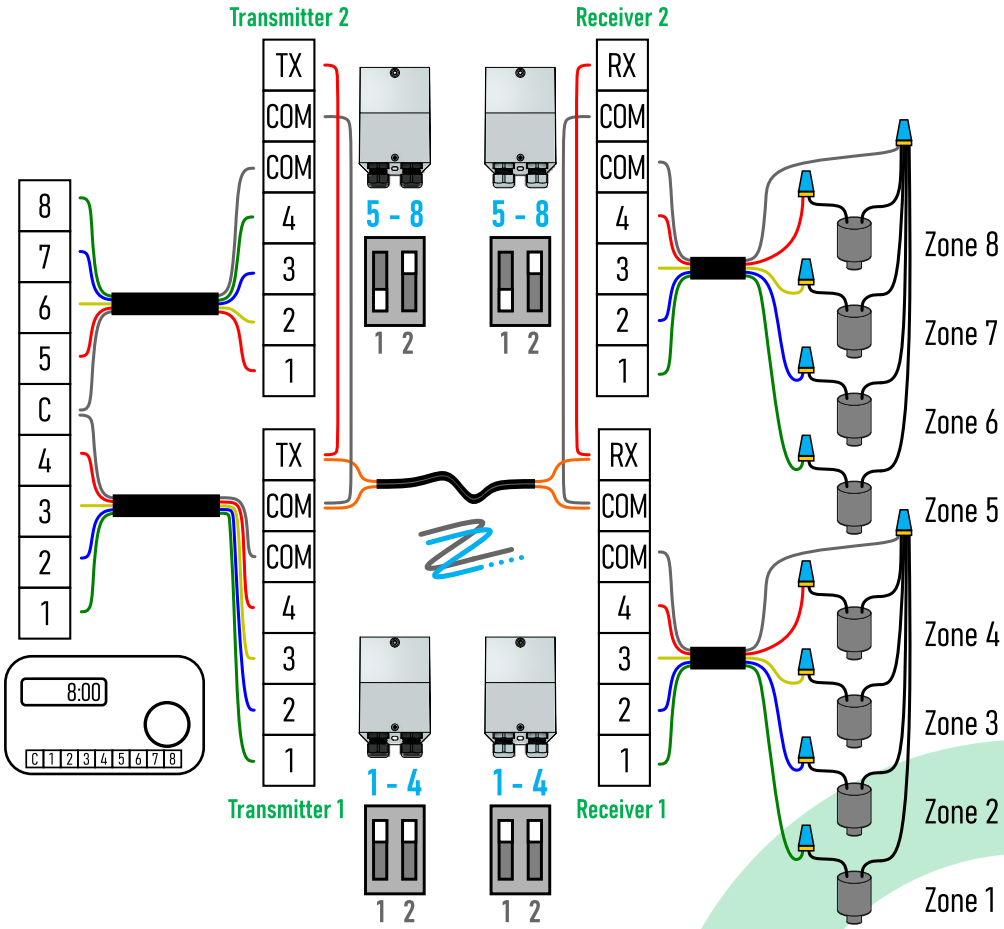
When using multiple transmitters in one 2-WIRE system, **all TX terminals must be tied together and all COM terminals must be tied together. These lines must never be crossed.** If the **TX** output of one transmitter is connected to the **COM** terminal of another (and vice-versa), the system's AC wiring will be effectively shorted, causing the entire irrigation system to shut down and preventing all components from operating.

Multiple transmitters can be used in combination **with a single sprinkler timer only**. Using more than one sprinkler timer may damage the system.

Each transmitter **must** be assigned a unique group number, and each receiver **must** also have a unique group number. Using more than one transmitter or more than one receiver with the same group number may cause malfunction or damage.

A transmitter and receiver set to the same group will communicate with each other.

After assigning unique group numbers, wire the system as shown below. The example illustrates an 8-zone system; it can be expanded to 12 or 16 zones by adding one or two additional transmitter/receiver sets.



Wiring Warning: Transmitters Must Share the Same TX and COM Lines

Maximum Wiring Distance in a Pluvion 2-WIRE System

The following table shows the maximum allowable wiring distance for Pluvion 2-WIRE systems as a function of wire gauge.

Wire (AWG)	Recommended Maximum Distance (ft.)
18	800
16	1250
14	2000
12	3200

The maximum distances in the table are based on ideal electrical conditions and a standard 24 VAC operating environment. In real installations, **several factors can increase or reduce the allowable distance**:

Controller Output Voltage: Although labeled 24 VAC, transformer output varies by manufacturer. Some controllers deliver up to 28 VAC, increasing distance headroom, while older or budget models may drop below 24 VAC under load.

Solenoid Current Requirements: Distances assume a standard solenoid with a 0.3 A draw. High-efficiency solenoids allow longer runs; older or heavy-duty solenoids with higher inrush current reduce the maximum distance.

Splices and Connection Quality: Each splice adds resistance. High-quality waterproof connectors are essential to maintain expected performance.

Corrosion and Wire Aging: Over time, copper can oxidize, especially if the jacket is damaged or the wire is not direct-burial rated. Increased resistance shortens the effective distance.

Wire Material and Purity: Values assume solid-core annealed copper. Copper-clad aluminum (CCA) or lower-grade alloys have higher resistance and must be derated accordingly.

Troubleshooting

The troubleshooting steps in this section apply to a single transmitter/receiver system. For systems using multiple transmitter/receiver pairs, follow the same step-by-step process for each device in the system.

If any zone does not turn on as expected, **begin by checking the operation of the transmitter**:

1. Remove the transmitter enclosure.
2. Manually turn on **Zone 1** at the sprinkler timer and observe the LED at the right hand side of the transmitter board assembly. A **brief burst** of the LED indicates communication between the transmitter and the receiver. After this burst, the transmitter works properly if the LED blinks a single time, followed by a short pause, repeated while the zone is active.
   The transmitter includes a short-circuit detection. In case the wiring or solenoid has a short circuit the LED will be constantly on, and the system will shut down.
3. Repeat this process by manual activation of **Zone 2, 3, and 4**. The LED will blink 2, 3, or 4 times, followed by a short pause for Zone 2, 3, and 4 respectively, repeated while the zone is active.
4. If the transmitter LED does not show activity status for any or some of the zones, verify the wiring between the sprinkler timer and the transmitter. It is recommended to use an AC voltage meter to ensure that an active zone shows approximately **24 VAC** between the zone terminal and **COM**.

Once the transmitter has been confirmed to operate correctly and the system still malfunctions, **proceed by removing the receiver enclosure**:

5. Verify that the DIP switch group matches the group set at the transmitter.
6. Manually activate **Zone 1** at the sprinkler timer and observe the LED on the right side of the receiver board. A **brief LED burst** indicates communication between the transmitter and receiver. After this burst, proper operation is shown by a single blink, followed by a short pause, repeating while the zone remains active. If the LED burst is present but no blinking follows, check the solenoid for proper operation or replace it.

7. Repeat this test for **Zones 2, 3, and 4**. After the initial burst, the LED will blink 2, 3, or 4 times respectively, each followed by a short pause, repeating while the zone is active.
8. If the receiver LED does not show the expected activity for one or more zones, verify the 2-WIRE connection to the **COM** and **RX** terminals. When any zone is active, approximately 24 VAC should be present between **RX** and **COM**.
   If no voltage is measured at the receiver, check that 24 VAC is present between the transmitter's **TX** and **COM** terminals. If voltage is present at the transmitter but not at the receiver, confirm that the two conductors used for the 2-WIRE interface are intact and that the same color conductors are used at both ends.

Limited Warranty

Pluvion Technology Inc. warrants that its products will be free from defects in materials and workmanship for one (1) year from the date of original purchase.

Pluvion Technology Inc. will repair or replace any product found to be defective under normal use during this one-year period. Proof of purchase is required. This warranty does not cover damage resulting from modification, attempted repair, or any other alteration by the owner. Damage caused by water ingress due to incorrect installation is also excluded.

Pluvion Technology Inc. is not responsible for any consequential or incidental costs or damages arising from product failure. Liability under this limited warranty is strictly limited to the repair or replacement of the defective product.

To obtain warranty service, contact info@pluviontech.com for further instructions.

This warranty is the sole and exclusive warranty offered. No employee, dealer, or other representative is authorized to modify this warranty or provide any additional warranties on behalf of Pluvion Technology Inc.

Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions:

This device may not cause interference, and
This device must accept any interference received, including interference that may cause undesired operation.

Modifications not expressly approved by the responsible party could void the user's authority to operate this equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.
If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment on and off, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This digital apparatus complies with Canadian ICES-003(B).
Cet appareil numerique est conforme a la norme NMB-003(B) du Canada.

Please Recycle

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Designed and assembled in Canada using domestic and imported parts

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