

IRRIGANDER[®] 4 SPLITTER[™] SWITCH

4 Zone Irrigation Valve Switch

Installation & User Guide
Model 4ZES V1.0



IRRIGANDER 4 SPLITTER VALVE SWITCH

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IRRIGANDER 4 SPLITTER VALVE SWITCH

Introduction

Congratulations on your purchase of the **IRRIGANDER 4 SPLITTER** valve switch! The **IRRIGANDER 4 SPLITTER** valve switch is a 4 zone switch that allows you to add up to 3 additional irrigation valves using only one field wire and the system common. Connect the input to the **IRRIGANDER 4 SPLITTER** valve switch to the field wire connected to the irrigation controller and then connect the switch's outputs to the valves to be controlled. The **IRRIGANDER 4 SPLITTER** valve switch detects if 2, 3, or 4 valves are connected. The **IRRIGANDER 4 SPLITTER** valve switch will divide the zone run time equally between the valves:

- If 2 valves are connected each valve will run 50% of the total run time
- If 3 valves are connected each valve will run 33% of the total run time
- If 4 valves are connected each valve will run 25% of the total run time.

This makes it easy to add additional valves to any irrigation system.

The **IRRIGANDER 4 SPLITTER** valve switch has no moving parts. The switch is built to rugged industrial standards and is sealed to provide long life and high reliability in any environment.

Please read the following information and installation instructions before starting the installation.

IRRIGANDER 4 SPLITTER VALVE SWITCH

Overview

The **IRRIGANDER 4 SPLITTER** valve switch is installed close to the irrigation valves to be controlled. The input to the switch is connected to the field wire coming from the irrigation controller. The common connection on the **IRRIGANDER 4 SPLITTER** valve switch is connected to the system common. These wires are typically the existing field wires in the irrigation system to be expanded. The **IRRIGANDER 4 SPLITTER** valve switch has four output wires that are attached to the valves to be controlled. Since the run times for all the valves will be the same it is best to have the valves irrigating the same type of area or sprinkler heads (e.g. all valves operating lawn sprinklers). See Figure 1 for a typical installation.

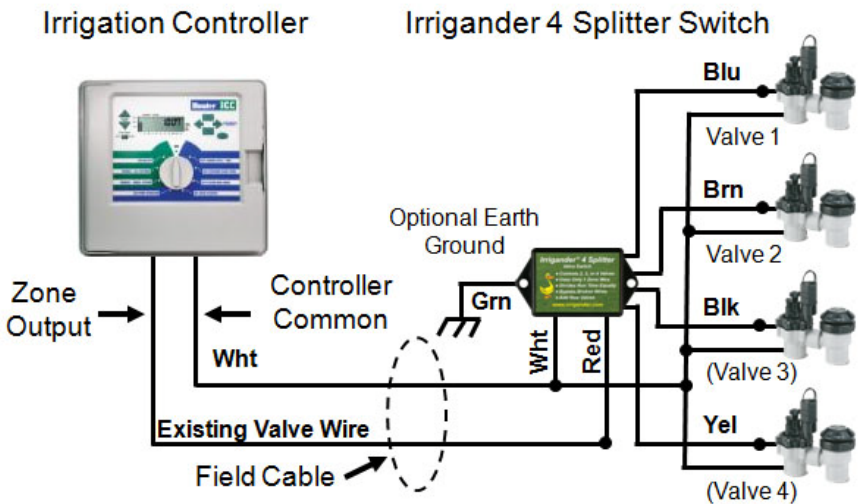


Figure 1 – Typical Installation

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Installation Instructions

1. Install the **IRRIGANDER 4 SPLITTER** valve switch close to the valves to be controlled. The switch is very rugged and can be buried close to the valves or installed in a valve box. While the **IRRIGANDER 4 SPLITTER** valve switch will operate under water it is best to install the switch where it will not be continuously under water.
2. The wire color coding on the **IRRIGANDER 4 SPLITTER** valve switch is listed in Table 1.

Wire Color	Use
Red	Switch Input
Green	Earth Ground
White	Common
Blue	Valve 1 Output
Brown	Valve 2 Output
Black	Valve 3 Output
Yellow	Valve 4 Output

Table 1 - Cable Color Coding

3. Connect the Common on the **IRRIGANDER 4 SPLITTER** valve switch (White), the field common wire (typically a white wire), and one solenoid wire from each of the valves to be controlled together using a waterproof wire connector (e.g. DryConn[®] Waterproof Connector).
4. Connect the input to the **IRRIGANDER 4 SPLITTER** valve switch (Red) to the field wire coming from the irrigation controller for the zone to be expanded using a waterproof wire connector.

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5. Connect the valve 1 and valve 2 outputs on the **IRRIGANDER 4 SPLITTER** valve switch to the second solenoid wire for two of the valves to be controlled using waterproof wire connectors.
6. If a 3rd or 4th valve is used connect the valve 3 and valve 4 outputs on the **IRRIGANDER 4 SPLITTER** valve switch to the second solenoid wire on the remaining valves using waterproof wire connectors.
7. Connect the Earth Ground (Green) to a suitable earth ground. The Earth Ground connection is ***optional*** but an Earth ground will improve the **IRRIGANDER 4 SPLITTER** valve switch's resistance to damage from lightning. See "*Lightning Protection*" for more details on properly grounding the **IRRIGANDER 4 SPLITTER** valve switch.

Installation is complete! Test all zones by following the instructions in "*Operating the Irrigander 4 Splitter Valve Switch*".

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Lightning Protection

Lightning protection is vital to the reliable operation of the **IRRIGANDER 4 SPLITTER** valve switch. The switch uses internal surge suppression technology to minimize the potential damage from lightning and other electrical surges. This protection is very reliable. However installation of an Earth ground on the **IRRIGANDER 4 SPLITTER** valve switch will improve the system's surge and lightning protection:

1. Make sure the irrigation controller is properly grounded. See the irrigation controller's installation manual for instructions applicable to your controller. Irrigation controllers installed outside must be grounded per the requirements of the National Electrical Code and local ordinances.
2. If a metal pipe is available at the **IRRIGANDER 4 SPLITTER** valve switch location, connect the Earth Ground connection (Green) to the metal pipe using a suitable grounding clamp. Do not put more than one wire under the clamp.
3. If a suitable ground is not present at the **IRRIGANDER 4 SPLITTER** valve switch location, install an 8' copper clad ground rod (not included) close to the switch. Connect the Earth Ground (Green) from the **IRRIGANDER 4 SPLITTER** valve switch to the ground rod using a copper clamp. Do not put more than one wire under the clamp.

While connecting the Earth ground as outlined above is **optional**, doing so will provide the best protection from lightning for your **IRRIGANDER 4 SPLITTER** valve switch.

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Theory of Operation

The microcontroller inside the **IRRIGANDER 4 SPLITTER** valve switch records the total run time each time the zone is active. The next time the zone is active the switch divides the recorded run time between each of the connected valves. The **IRRIGANDER 4 SPLITTER** valve switch will adjust its timing on the next cycle if the run time on the irrigation controller changes. If the zone timing increased the “extra” time will go to the last valve controlled by the switch. If the zone timing decreases the shortage will reduce the last valve’s run time. Table 2 is an example of valve timings with 3 valves connected to the **IRRIGANDER 4 SPLITTER** valve switch:

Sequence	Zone Time	Valve 1	Valve 2	Valve 3
First time	30 min	7 min ¹	7 min ¹	16 min
2	30 min	10 min	10 min	10 min
3	45 min	10 min	10 min	25 min
4	45 min	15 min	15 min	15 min
5	30 min	15 min	15 min	0 min ²
6	30 min	10 min	10 min	10 min

Table 2 – Example Valve Timings

Notes:

¹ – The default total valve run time value is set to 20 minutes at the factory. Since 3 valves are connected valve 1 & 2 will run for 7 minutes each (20 minutes divided by 3 valves), the remaining run time goes to valve 3.

² - Since the recorded timing from the last watering cycle was 45 minutes, valve 1 & 2 each run for 15 minutes (45 minutes divided by 3 valves) so valve 3 does not run.

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Operating the Irrigander 4 Splitter Valve Switch

Normal Operation

When the irrigation controller activates the input to the **IRRIGANDER 4 SPLITTER** valve switch, the valve connected to the valve 1 output on the switch will run followed by the other valves in sequence. There is a one second delay between running each valve to make sure the previous valve has completely closed before opening the next valve.

Testing Connected Valves

Running the zone connected to the **IRRIGANDER 4 SPLITTER** valve switch for more than 1 second but less than 15 seconds will put the switch into test mode. Once in test mode, the next time the zone is activated the switch will run valve 1 for as long as the zone is active. When the zone is activated again the switch will run valve 2 for as long as the zone is active. This process continues until all connected valves have been tested. There is no minimum or maximum run time when testing the valve. Once the last valve has run the switch exits test mode. The **IRRIGANDER 4 SPLITTER** valve switch does not record any zone run times during test mode. Be sure to exercise all valves when doing a test so that the switch is in normal operation when the next watering cycle starts.

Ignoring Short Zone Cycles

Some irrigation controllers will turn on a zone for less than a second to test if the valve is functioning correctly. The **IRRIGANDER 4 SPLITTER** valve switch will activate valve 1 for this short period but will not record the run time.

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Specifications

Physical Dimensions

- Width: 2.9" (74 mm) including mounting flanges
- Height: 1.5" (38 mm)
- Depth: 1.0" (25 mm)
- Lead length: 12" (305 mm)

Power Requirements

- Nominal 24 VAC provided by irrigation controller
- Maximum irrigation controller voltage: 30 VAC
- Power consumption while operating: 0.5 watts max

Valves per Zone

Each output from the **IRRIGANDER 4 SPLITTER** valve switch can drive 1 or 2 valves. Connecting more than 2 valves to any single output may cause improper operation.

Supported Irrigation Valves

Any 24 VAC solenoid activated irrigation valve can be used with the **IRRIGANDER 4 SPLITTER** valve switch. DC low voltage valves will not work and should not be used.

Supported Irrigation Controllers

Irrigation controllers that use 24 VAC valves and a common connection on the output can be used with the **IRRIGANDER 4 SPLITTER** valve switch.

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Operating Distance

Follow the recommendation of the manufacturer of the irrigation controller for the maximum distance from the irrigation controller to the valves. The valves to be controlled can be up to 100 feet from the **IRRIGANDER 4 SPLITTER** valve switch using 18 gauge irrigation wire.

Environmental Specifications

Operating: -20°C to +50°C (-4°F to +122°F)

Non-Operating: -40°C to +70°C (-40°F to +158°F)

The **IRRIGANDER 4 SPLITTER** valve switch is designed for harsh environments and is suitable for outdoor conditions including wet environments. For maximum life the switch should not be installed where it is continuously operated under water.

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Limited Warranty

DUWA PRODUCTS LLC, hereinafter referred to as the manufacturer, warrants the **IRRIGANDER 4 SPLITTER** valve switch, hereinafter referred to as the product, to be free from defects in workmanship and materials for 1 (one) year from the date of purchase. In order for this warranty to apply the product must be installed and used according to the installation instructions herein and cannot be altered in any way. This warranty covers damage from electrical surge (including lightning) providing that the product is installed with a suitable earth ground as described herein. The use of the product for any purpose for which it was not intended voids this warranty. Purchaser's rights under this warranty shall consist solely of requiring manufacturer to repair, or in manufacturer's sole discretion replace, free of charge, F.O.B. factory, any defective items received at said factory and determined by manufacturer to be defective. To exercise your warranty, return the unit to your dealer with a copy of the sales receipt.

This warranty is in lieu of all other warranties, expressed, implied, or statutory as to merchantability, fitness for purpose sold, description, quality, or any other matter and limits the manufacturer's liability for damages to the cost of the product. In no event shall manufacturer be liable for special or consequential damages or for delay in performance of this warranty. This warranty gives the purchaser specific legal rights, and the purchaser may have other rights, which vary from state to state.

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