

# Irrigander® 2 Splitter

## 2 Zone Irrigation Expander

### Installation & User Guide

#### Model 2ZES V1.0



**Irrigander<sup>®</sup> 2 Splitter**  
**2 Zone Irrigation Expander**

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# **Irrigander<sup>®</sup> 2 Splitter**

## **2 Zone Irrigation Expander**

### **Introduction**

Congratulations on your purchase of the **Irrigander 2 Splitter** irrigation expander! The **Irrigander 2 Splitter** is a 2 zone expander that allows you to add an additional irrigation valve without adding new field wiring. Simply connect the input to the **Irrigander 2 Splitter** to the field wire connected to the irrigation controller and then connect the **Irrigander 2 Splitter** outputs to the two valves to be controlled. The **Irrigander 2 Splitter** will divide the zone run time equally between the two valves. This makes it simple to add an additional valve to any irrigation system.

The **Irrigander 2 Splitter** is completely solid state and has no moving parts. The expander 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 completely before starting the installation.

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### Overview

The **Irrigander 2 Splitter** is installed close to the irrigation valves to be controlled. The input to the **Irrigander 2 Splitter** is connected to the field wire coming from the irrigation controller and the common connection on the **Irrigander 2 Splitter** is connected to the system common. These wires are typically the existing field control wires in the irrigation system to be expanded. The **Irrigander 2 Splitter** has 2 output wires that are attached to the two valves to be controlled. Since the run times for the valves will be the same it is best to have both valves irrigating the same type of area or sprinkler heads (e.g. both valves operating lawn sprinklers). See Figure 1 for a typical installation.

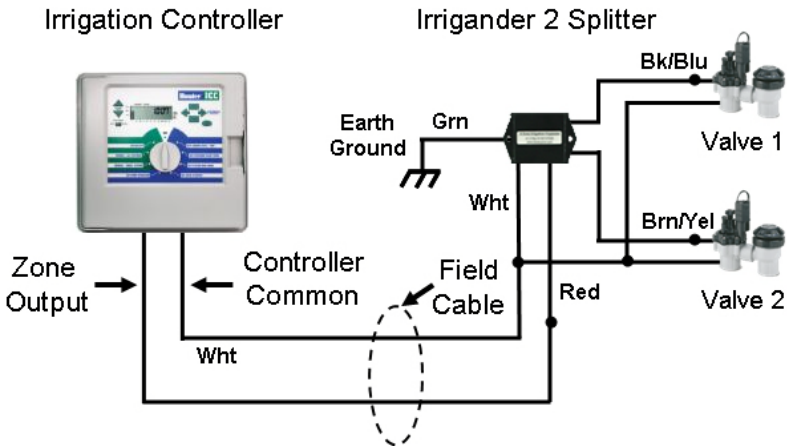


Figure 1 – Typical Installation

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### Installation Instructions

1. Install the **Irrigander 2 Splitter** close to the valves to be controlled. The **Irrigander 2 Splitter** is very rugged and can be buried close to the valves or installed in a valve box. While the **Irrigander 2 Splitter** will operate under water it is best to install the **Irrigander 2 Splitter** where it will not be continuously under water.
2. The wire color coding on the **Irrigander 2 Splitter** is listed in Table 1. The color coding on the **Irrigander 2 Splitter** wires may vary depending on the particular cable used in the manufacturing of the expander:

Wire Color	Use
Red	Expander Input
Green	Earth Ground
White	Common
Black or Blue	Valve 1 Output
Brown or Yellow	Valve 2 Output

**Table 1 - Cable Color Coding**

3. Connect the Common on the **Irrigander 2 Splitter** (White), the field common wire (this is typically a white wire), and one solenoid wire from each of the two valves to be controlled together using a waterproof wire connector (e.g. DryConn<sup>®</sup> Waterproof Connector).
4. Connect the input to the **Irrigander 2 Splitter** (Red) to the field wire coming from the irrigation controller for the zone to be expanded using a waterproof wire connector.
5. Connect each of the two **Irrigander 2 Splitter** outputs (see Table 1) to the second solenoid wire for each of the valves to be controlled using a waterproof wire connector.

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6. Connect the Earth Ground (Green) to a suitable earth ground. The Earth Ground connection is optional but a good Earth Ground will improve the **Irrigander 2 Splitter's** surge protection. See "*Surge Protection*" for more details on properly grounding the **Irrigander 2 Splitter**.

Installation is complete! Test both zones by following the instructions in "*Operating the Irrigander 2 Splitter*".

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### **Surge Protection**

Just like any other field installed electronic device, surge protection is vital to the reliable operation of the **Irrigander 2 Splitter**. The **Irrigander 2 Splitter** uses metal oxide varistor (MOV) surge suppression technology to minimize the potential damage from lightning and other electrical surges. This protection is very reliable however proper installation of the **Irrigander 2 Splitter** 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 2 Splitter** 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 2 Splitter** location, install an 8' copper clad ground rod (not included) close to the **Irrigander 2 Splitter**. Connect the Earth Ground (Green) from the **Irrigander 2 Splitter** 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 enhance the surge suppression and protection from lightning built into the **Irrigander 2 Splitter**.

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### Theory of Operation

The microcontroller inside the **Irrigander 2 Splitter** records the total run time each time the zone is active. The expander then runs the Valve 1 output for half the recorded time the next time the zone is operated and then switches to Valve 2. To run each valve for 15 minutes the irrigation timer should be set to run the zone connected to the **Irrigander 2 Splitter** for 30 minutes. When the run time on the zone connected to the **Irrigander 2 Splitter** is changed it will take one cycle for the expander to adjust to the new timing. If the new run time is less than half the old run time Valve 2 will not run. See an example sequence of zone run times and the resulting valve times in Table 2.

Sequence	Zone Time	Valve 1 Time	Valve 2 Time
1	30 min	5 min <sup>1</sup>	25 min
2	30 min	15 min	15 min
3	40 min	15 min	25 min
4	40 min	20 min	20 min
5	30 min	20 min	10 min
6	30 min	15 min	15 min
7	10 min	10 min	0 min <sup>2</sup>
8	10 min	5 min	5 min

**Table 2 – Example Valve Timings**

**Notes:**

- <sup>1</sup> - Valve 1 will run for 5 minutes the first time the **Irrigander 2 Splitter** is operated
- <sup>2</sup> - Since the recorded Valve 1 timing was 15 minutes and the zone only ran for 10 minutes, Valve 2 does not run

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### **Operating the Irrigander 2 Splitter**

#### **First Use**

The factory default initial run time for Valve 1 is 5 minutes. Consequently the first time the **Irrigander 2 Splitter** is operated Valve 1 will run for 5 minutes and Valve 2 will run for the remaining time set by the irrigation controller.

#### **Normal Operation**

When the irrigation controller activates the input to the **Irrigander 2 Splitter**, the valve connected to the Valve 1 output on the expander will run for half the previous total zone run time. Once the timing for Valve 1 completes, Valve 2 will run until the irrigation controller turns off the zone connected to the **Irrigander 2 Splitter**. There is a 1 second delay between running Valve 1 and Valve 2 to make sure Valve 1 has completely closed before opening Valve 2. Maximum recorded run time for Valve 1 is 1.2 hours.

#### **Testing Valves 1 and 2**

Running the zone connected to the **Irrigander 2 Splitter** for less than 30 seconds will put the expander into a test mode. Once in test mode, the next time the zone is activated the **Irrigander 2 Splitter** will run Valve 1 for as long as the zone is active. When the zone is activated again the expander will run Valve 2 for as long as the zone is active. Once Valve 2 has run the expander exits test mode. The **Irrigander 2 Splitter** does not record the zone run time during test mode.

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### Specifications

#### Expansion Capability

The **Irrigander 2 Splitter** can control 2 valves. See Table 3 for expansion capability depending on the number of field wires available:

Wires to Valves <sup>1</sup>	2	3
# Valves w/out Expander	1	2
# Valves w/Irrigander 2 Splitter	2	4 <sup>2</sup>

**Table 3 – Expansion Capability**

Notes:

<sup>1</sup> One wire is system common

<sup>2</sup> Using two **Irrigander 2 Splitters**

#### Physical Dimensions

	Width	Height	Depth
Irrigander 2 Splitter	3.0"	2.1"	1.0"

**Table 4 – Dimensions**

Note that the width dimensions include mounting flanges.

#### Power Requirements

- Nominal 24 VAC provided by irrigation controller
- Maximum irrigation controller voltage: 30 VAC
- Power consumption while operating: 0.25 watts max

#### Valves per Zone

Each output from the **Irrigander 2 Splitter** can drive 1 or 2 valves. Connecting more than 2 valves to any single output may cause improper operation.

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### **Supported Irrigation Valves**

Any 24 VAC solenoid activated irrigation valve can be used with the **Irrigander 2 Splitter**. DC low voltage valves will not work and should not be used.

### **Supported Irrigation Controllers**

Virtually any irrigation controller that uses 24 VAC valves and a common connection on the output can be used.

### **Maximum Run Time**

The irrigation controller can run any run time duration on the zone connected to the **Irrigander 2 Splitter** but the expander will record a maximum of 2.4 hours of run time. This limits the run time on Valve 1 to approximately 1.2 hours. If the irrigation controller runs the zone for more than 2.4 hours, the “extra” time will go to Valve 2.

### **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 2 Splitter** 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 2 Splitter** is designed for harsh environments and is suitable for most outdoor conditions including wet environments. However the **Irrigander 2 Splitter** should not be installed where it is operated under water.

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### **Limited Warranty**

DUWA PRODUCTS LLC, hereinafter referred to as the manufacturer, warrants the **Irrigander 2 Splitter** to be free from defects in workmanship and materials for 1 (one) year from the date of sale. In order for this warranty to apply the **Irrigander 2 Splitter** 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 **Irrigander 2 Splitter** is installed with a suitable earth ground as described herein. The use of the **Irrigander 2 Splitter** 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 within 1 (one) year 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.

#### **How to Contact us:**

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