

# Irrigander<sup>®</sup> 4 Expander

## 4 Zone Irrigation Expander

### Installation & User Guide

#### Model 4ZEX V2.0



**Irrigander<sup>®</sup> 4 Expander**  
**4 Zone Irrigation Expander**

**Table of Contents**

Introduction .....	1
Overview .....	2
Installation Instructions.....	3
Installing the Encoder .....	3
Installing the Decoder .....	5
Operation Guide .....	7
Replacing Encoder Fuse .....	8
Troubleshooting Guide .....	9
Specifications .....	10
Expansion capability .....	10
Physical Dimensions.....	10
Power Requirements .....	10
Supported Irrigation Controllers.....	10
Supported Irrigation Valves .....	11
Valves per Zone.....	11
Simultaneous Active Zones.....	11
Encoder Environmental.....	11
Decoder Environmental .....	11
Limited Warranty .....	12

# **Irrigander<sup>®</sup> 4 Expander**

## **4 Zone Irrigation Expander**

### **Introduction**

Congratulations on your purchase of the **Irrigander 4** irrigation expander! The **Irrigander 4** expander can control up to 2 irrigation valves using the wiring required for 1 valve or 4 valves using the wiring for just 2 valves.

The **Irrigander 4** expander operates transparently to the irrigation controller. The 4 valves connected to the **Irrigander 4** expander's Decoder run and operate normally.

Each of the valves controlled by the **Irrigander 4** expander can be individually controlled for easy system maintenance. The **Irrigander 4** expander puts a minimal load on each irrigation controller output to maximize the reliability of the controller. The **Irrigander 4** expander is built to industrial standards and will provide the ultimate reliability in harsh environments.

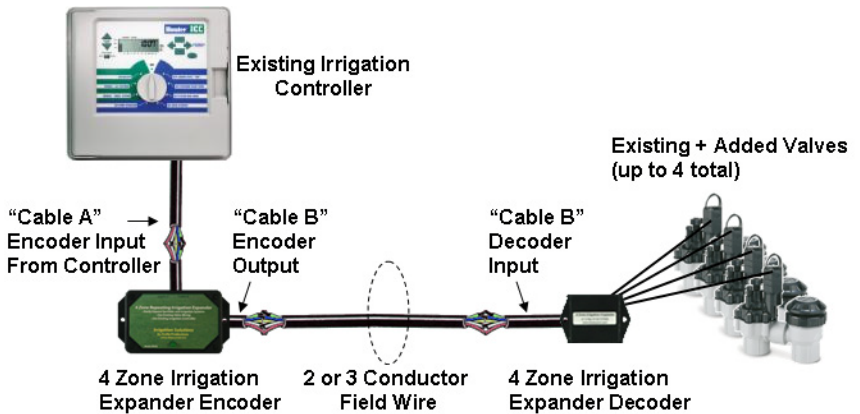
Please read the following information and installation instructions carefully before starting the installation.

# Irrigander<sup>®</sup> 4 Expander

## 4 Zone Irrigation Expander

### Overview

The **Irrigander 4** expander is comprised of two modules: an Encoder that is installed close to or inside the irrigation controller; a Decoder that is installed close to the irrigation valves to be controlled. The Encoder attaches to the irrigation controller using 5 wires: one for each of the 4 zones to be controlled and a common. The Encoder is attached to the Decoder using 1 or 2 wires plus the system common wire. These wires are typically the existing field control wires in the irrigation system to be expanded. The decoder has 4 output wires and a common that are attached to each of the up to 4 valves to be controlled. This will add control of 2 new valves to any existing system with 2 or more valves or control of 1 new valve to an existing 1 valve system. See Figure 1 for a typical installation.



**Figure 1 – Typical Installation**

# Irrigander<sup>®</sup> 4 Expander

## 4 Zone Irrigation Expander

### Installation Instructions

#### Installing the Encoder

The **Irrigander 4** expander can be installed to control 2 zones using 1 field wire and the system common or 4 zones using 2 field wires and the system common. The instructions below describe the two different installation configurations.

1. Mount the Encoder (the larger of the two modules) in an indoor environment close to the irrigation controller. The irrigation controller must have unused outputs to control the added zones. Mount the Encoder such that it can be accessed for service in case an overload causes the protection fuse to open.
2. Disconnect the field wires on the irrigation controller outputs that correspond to the valves to be expanded. The wires identified on the Encoder as “Cable A” connect to the irrigation controller. Connect the Zone Inputs on the Encoder to unused outputs on the irrigation controller. See Table 1 for the color coding of “Cable A”:

**Encoder Cable Color Coding**

<b>Encoder “Cable A” Wire Color</b>	<b>4 Zones</b>	<b>2 Zones</b>
Red	Zone 1	Zone 1
Green	Zone 2	Not Used
Black or Blue	Zone 3	Zone 2
Brown or Yellow	Zone 4	Not Used
White	Common	Common

**Table 1**

The color codes on the cables may vary depending on the particular cable used in production.

## Irrigander<sup>®</sup> 4 Expander

### 4 Zone Irrigation Expander

3. Connect the Common on the Encoder to any of the common points on the irrigation controller.
4. Attach the wires in the cable marked “Cable B” to the field cable running to the valves using wire nuts. **It is critical that the wires from the Encoder are attached to the proper wires on the Decoder.** Record the color of each wire used in Table 2 or Table 3.

#### 4 Zone Encoder/Decoder Cable Color Coding

“Cable B” Wire Color	Field Cable Wire Use	Field Cable Wire Color
Red	Output/Input 1	
Green or Blue	Output/Input 2	

**Table 2**

#### 2 Zone Encoder/Decoder Cable Color Coding

“Cable B” Wire Color	Field Cable Wire Use	Field Cable Wire Color
Red	Output/Input 1	
Green or Blue	Output/Input 2	Not Used

**Table 3**

# Irrigander<sup>®</sup> 4 Expander

## 4 Zone Irrigation Expander

### Installing the Decoder

1. Install the Decoder close to the valves to be controlled. Disconnect all of the valve wires from the field cable connections.
2. Disconnect the valve wires from the field cable connections used in step 4 of “*Installing the Encoder*” (Table 2 or 3). Disconnect these valves from the common connection.
3. The wires identified on the front of the Decoder as “Cable B” connect to the Encoder through the field wires. Match the Decoder input wire colors on the Decoder’s “Cable B” to the field cable wire colors that were connected to the “Cable B” Encoder outputs in step 4 of “*Installing the Encoder*” (Table 2 or 3). Note that the “Cable B” inputs on the Decoder have the same color code as the “Cable B” outputs from the Encoder. Connect the Decoder inputs to the field wires connected to the Encoder outputs using waterproof wire connectors (e.g. DryConn<sup>®</sup> Waterproof Connector). **The wires from the Decoder must be attached to the proper wires in the field cable running from the Encoder for proper operation.**
4. Connect the “Cable B” White wire to a system common connection (typically the white wire) using waterproof wire nuts or splices.
5. Connect one side of all the valves to be controlled by the Decoder together and to the white “Output Common” wire on the Decoder using a waterproof wire nut. Connect each of the Decoder outputs to the other wire on each of the valves to be controlled (Table 4).

# **Irrigander<sup>®</sup> 4 Expander**

## **4 Zone Irrigation Expander**

### **Decoder Cable Color Coding**

<b>Decoder “Cable A” Wire Color</b>	<b>4 Zones</b>	<b>2 Zones</b>
Red	Zone 1 output	Zone 1 Output
Green	Zone 2 output	Not Used
Black or Blue	Zone 3 output	Zone 2 Output
Brown or Yellow	Zone 4 output	Not Used
White	Common	Common

**Table 4**

Note that the “Cable B” White (common) connection is connected to the “Cable A” White (common) connection inside the Decoder.

Installation is now complete! Test each zone by manually cycling the irrigation controller.

# **Irrigander<sup>®</sup> 4 Expander**

## **4 Zone Irrigation Expander**

### **Operation Guide**

The irrigation controller will operate normally with the **Irrigander 4** expander added to the system. Each zone is controlled independently allowing the maximum flexibility in irrigation programs. All features and functions of the irrigation controller will still operate as they had before installation of the **Irrigander 4** expander including activation of pumps.

Note that only one zone attached to an **Irrigander 4** expander input can operate at a time. Most irrigation controllers will insure that only one zone will operate at a time. Check the operator's manual for the irrigation controller being used. If the irrigation controller allows multiple zones to operate simultaneously, programming must be used to insure that only one zone will be active at a time. Activation of multiple zones simultaneously will cause erratic operation and may cause an overload resulting in the Encoder protection fuse opening.

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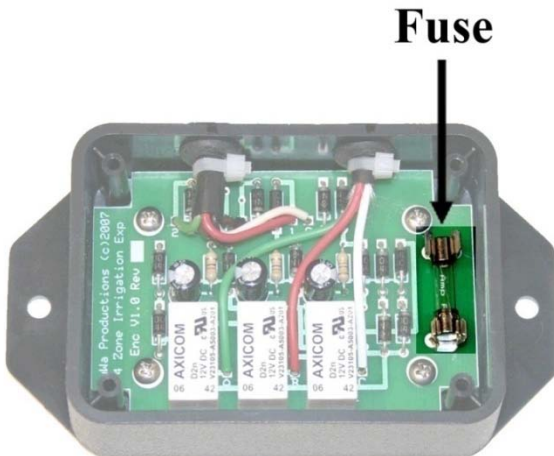
## 4 Zone Irrigation Expander

### Replacing Encoder Fuse

The Encoder is equipped with a protection fuse that will open in case of overload in one of the valve circuits. To replace the fuse:

1. Remove power from the irrigation controller
2. Remove the 4 screws on the front cover of the Encoder and remove the cover.
3. Remove the old fuse and replace with a fuse of identical rating (1 amp, 5mm x 20mm). See Figure 2 below for the fuse location.
4. Replace the cover on the front of the Encoder.
5. Restore power to the irrigation controller

The fuse is a standard size and is commonly available but if you have difficulty locating a source for a replacement fuse, email us at [support@irrigander.com](mailto:support@irrigander.com).



**Figure 2 – Fuse Location**

# Irrigander<sup>®</sup> 4 Expander

## 4 Zone Irrigation Expander

### Troubleshooting Guide

<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
The Irrigation Controller will not turn on any valves connected to the Irrigander 4 expander, other zones work OK	Short circuit or overload has opened the protection fuse in the Encoder	Diagnose the short circuit or overload and correct. Replace fuse according to directions above.
	Multiple zones are operating at the same time, causing the protection fuse in the Encoder to open.	Reprogram the irrigation controller to only allow one zone connected to the expander to operate at a time.
The Irrigation Controller can control some valves attached to the Irrigander 4 expander but not all.	“Cable B” mis-wired at the Encoder or Decoder	Make sure that the field cable wires connected to “Cable B” on the Encoder and Decoder “Cable B” match.
	Incorrect zone connection in a 2 zone configuration	Double check that the decoder outputs are connected to the correct zone as indicated in Table 2 or 3
Valve activation does not match zone programming on the irrigation controller	Multiple zones are operating at the same time	Reprogram the irrigation controller to only allow one zone connected to an Irrigander 4 expander to operate at a time.

# Irrigander<sup>®</sup> 4 Expander

## 4 Zone Irrigation Expander

### Specifications

**Expansion capability:**

The **Irrigander 4** expander can control from 2 to 4 zones depending on the number of field wires in the existing installation. Example installations:

Wires to Valves <sup>1</sup>	2	3	4	5
# Valves w/out Expander	1	2	3	4
# Valves w/Irrigander 4/8	2	4	5 <sup>2</sup>	8 <sup>3</sup>

**Notes:**

- <sup>1</sup> One wire is the system wide common
- <sup>2</sup> Using one **Irrigander 4** expander (connected to 2 field wires) and one valve connected directly to the remaining 1 field wire, all valves connected to shared common
- <sup>3</sup> Using two **Irrigander 4** expanders

**Physical Dimensions:**

	Width	Depth	Height
Encoder	4.4"	2.4"	1.0"
Decoder	3.0"	2.0"	0.9"

**Power Requirements:**

24 VAC provided by the irrigation controller

**Supported Irrigation Controllers**

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

# **Irrigander<sup>®</sup> 4 Expander**

## **4 Zone Irrigation Expander**

### **Supported Irrigation Valves**

Virtually any 24 VAC irrigation valve can be used with the **Irrigander 4** expander.

### **Valves per Zone**

The Decoder is designed to drive a maximum of one valve per output.

### **Simultaneous Active Zones**

The **Irrigander 4** expander can only have one output active at a time.

### **Encoder Environmental**

Operating: 0°C to +50°C (+32°F to +122°F)

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

The Encoder is not waterproof; enclose the Encoder unit in a suitable weather proof enclosure if installed outdoors.

### **Decoder Environmental**

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

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

The Decoder is designed for harsh environments and is suitable for most outdoor conditions including wet environments. However the decoder should not be placed where it is continuously under water.

# **Irrigander® 4 Expander**

## **4 Zone Irrigation Expander**

### **Limited Warranty**

DUWA PRODUCTS LLC, hereinafter referred to as the manufacturer, warrants the **Irrigander 4 Expander** 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 4 Expander** 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 4 Expander** is installed with a suitable earth ground as described herein. The use of the **Irrigander 4 Expander** 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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