

# Dimming Expansion Manual





## Important Safety Instructions

PLEASE READ AND FOLLOW ALL SAFETY INSTRUCTIONS BEFORE PROCEEDING

**DANGER** Discontinue use if any signs of water are present in any electronic/electrical device.

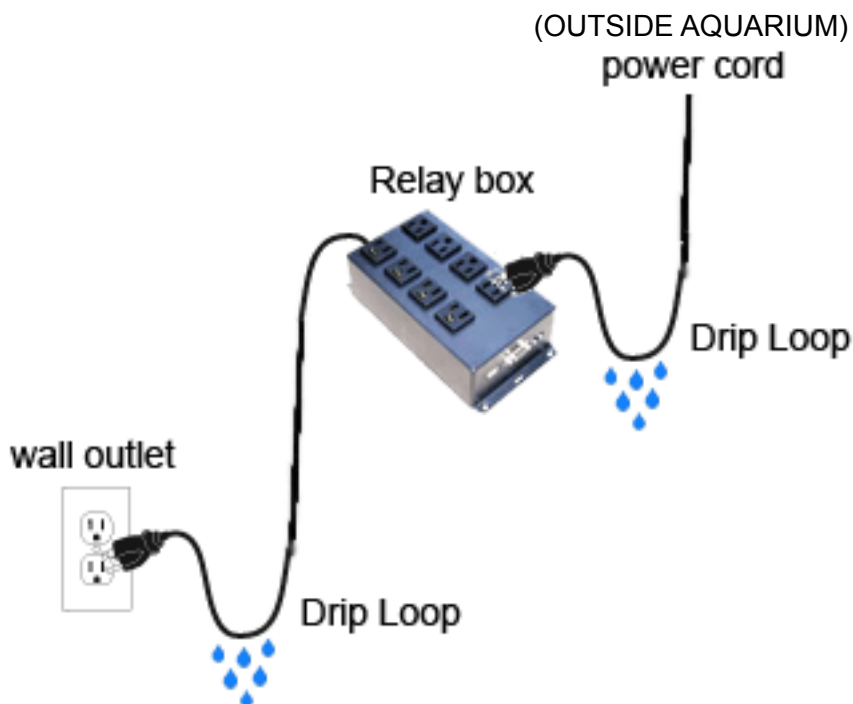
WARNING – To avoid injury to yourself and others, safety precautions should always be observed.

DANGER – Never attempt to service any electronic /electrical equipment before unplugging the device from the outlet. Risk of electrical shock if care is not taken. Special care should always be taken when operating any aquarium equipment. If the plug or receptacle gets wet, NEVER unplug it from the outlet. Always use the fuse or circuit breaker that supplies power to the device. Disconnect it and then examine for water presence.

- If device shows any sign of abnormal appearance, discontinue use.
- Never operate the device if plugs or cords are damaged, torn, ripped or malfunctioning.

NOTE: A “drip loop” should be arranged and position your aquarium stand and tank to the side of the aquarium to avoid the device or power receptacle from getting wet power receptacle. Please refer to Figure 1 below.

Figure 1



## Dimming Expansion Module Unit



### Contents:

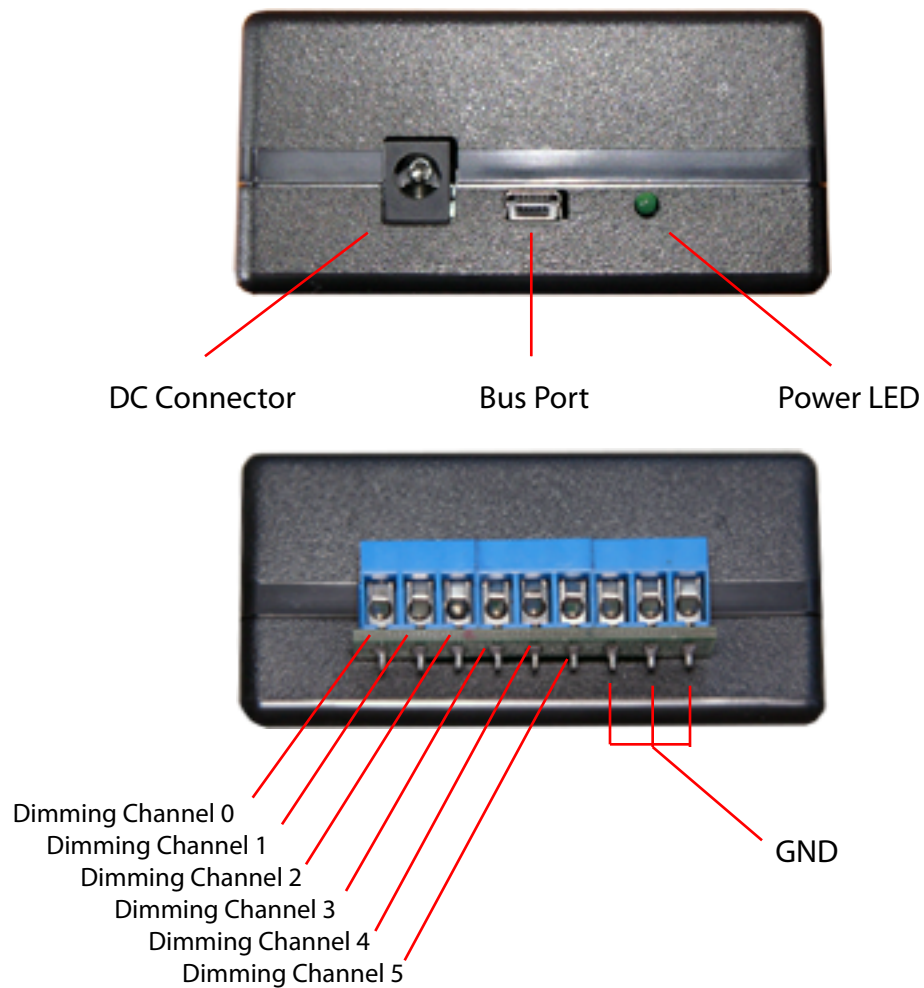
- Dimming Expansion Module
- 12V DC Power Supply
- Expansion Bus Cable
- 6x Jumpers

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## Dimming Expansion Module

### Getting Started

Connecting your Reef Angel Dimming Expansion Module

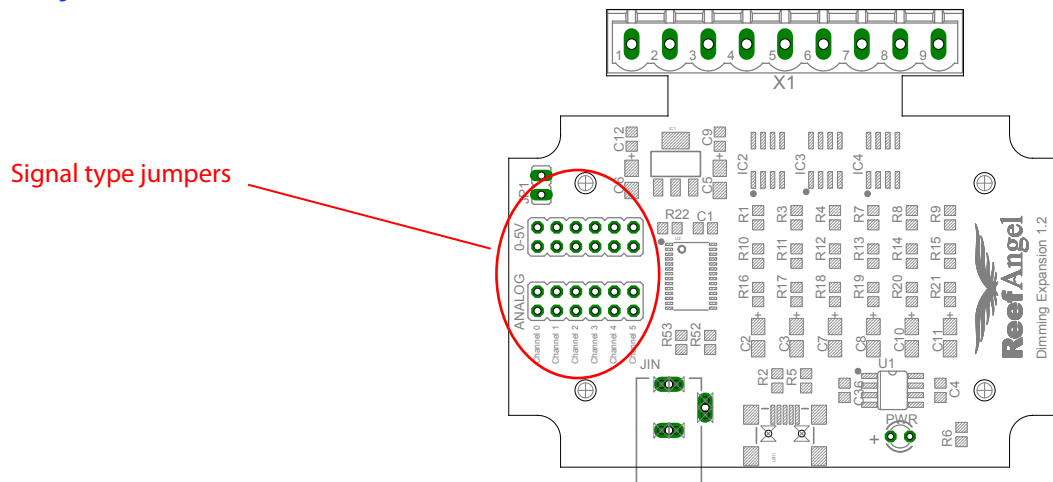


1. 12V DC is required by the Dimming Expansion Module to ensure proper functionality. Use the 12V DC power supply and plug it into the DC connector.
2. Use the bus cable to connect the Dimming Expansion Module in to the Reef Angel System.

## Dimming Expansion Module

### Getting Started

Changing the signal type (optional)  
Only available on Rev 1.2



You may change the signal type of your Reef Angel Dimming Expansion module to match the signal type required to control your controllable powerheads or dimmable LED fixtures.

For maximum flexibility, you can change each channel individually. Simply insert the provided jumpers into the board to change the signal for each channel.

Example for Channel 0

0-10 VDC PWM signal (default)



0-5 VDC PWM signal



0-10 VDC Analog signal



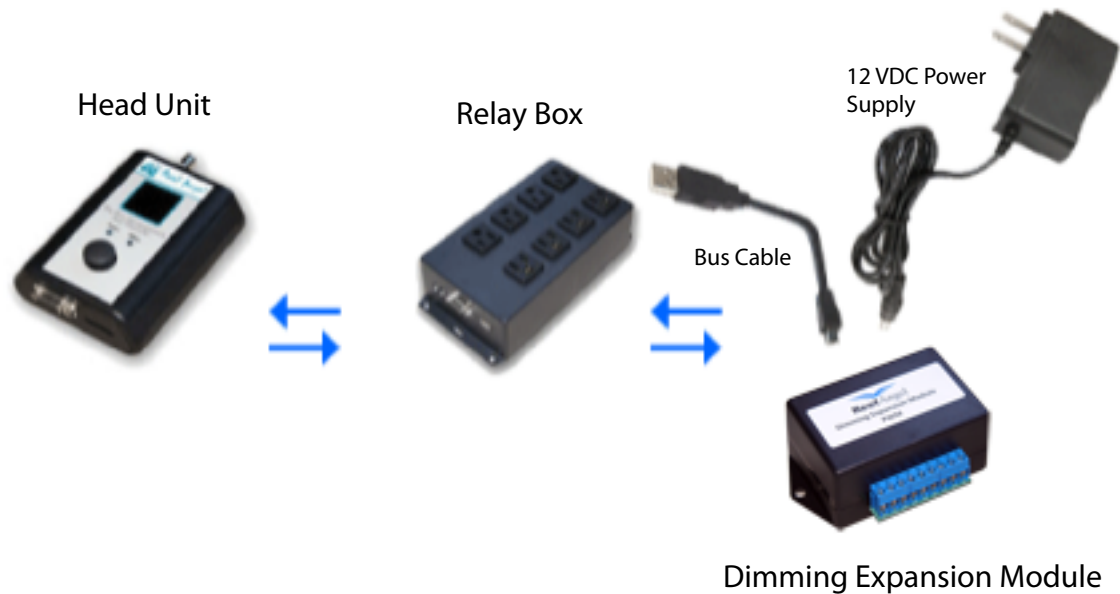
0-5 VDC Analog signal



## Adding your Dimming Expansion Module directly on your Reef Angel Relay Box

1. Plug the bus cable to the bus port of the Dimming Expansion module.
2. If you are only using one expansion module you can plug the other end of the bus cable straight into the expansion port of the main relay box. Please refer to Figure 3 below.

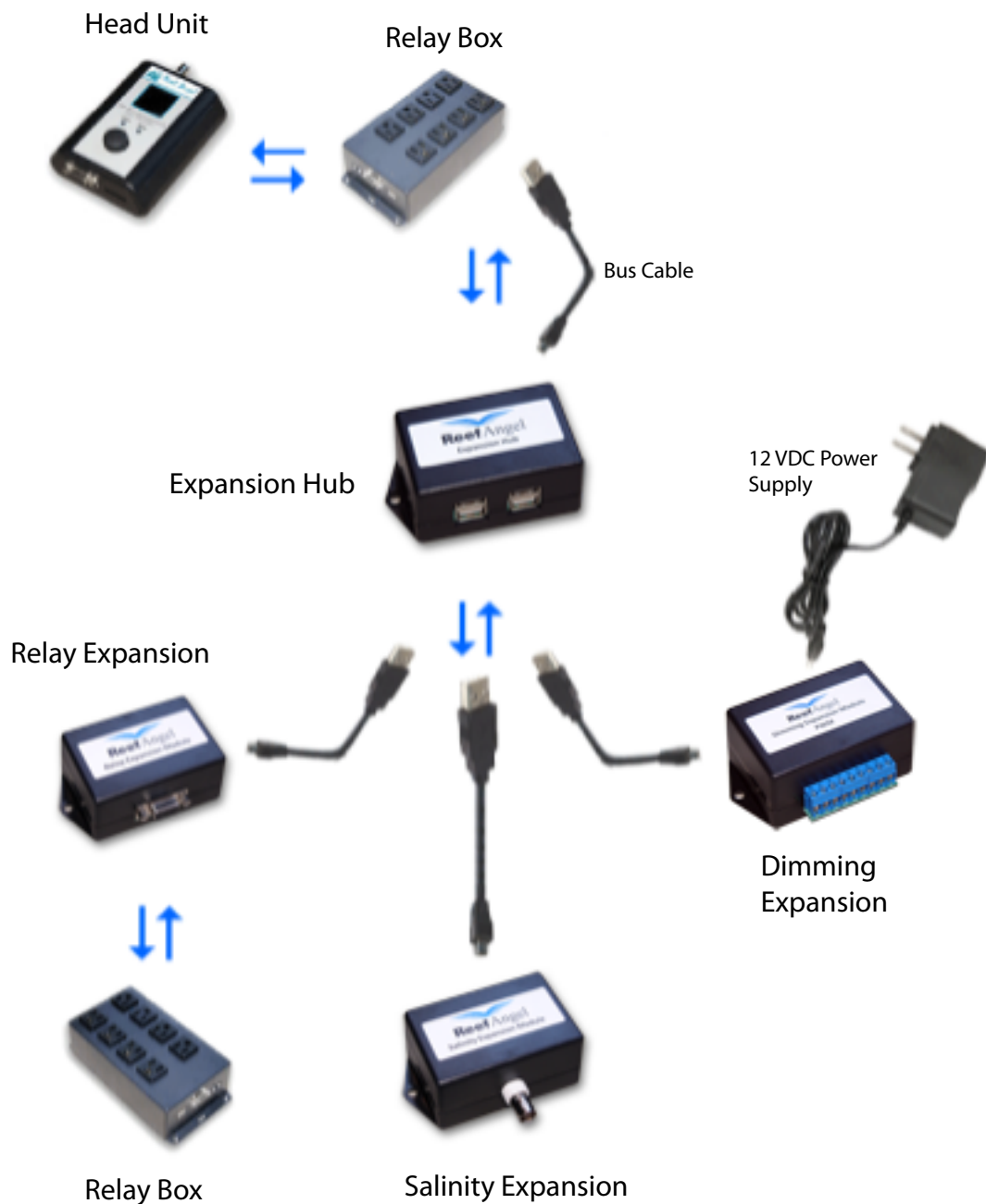
**Figure 3**



## Adding your Dimming Expansion Module with other Reef Angel Devices.

3. If you are connecting more than one expansion module, you will need an expansion hub, which offers 8 additional usb ports to connect more expansion modules. Please refer to Figure 4 below.

Figure 4



## Preparing and uploading the code to the Reef Angel controller.

1. Start your Arduino Software using your computer.
2. Open the Dimming Expansion test code by going to the menu **File -> Example Codes** and selecting **CustomMainScreen\_DimmingExpansion**.
3. Upload the code to your Reef Angel Controller.