

# ORP 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.

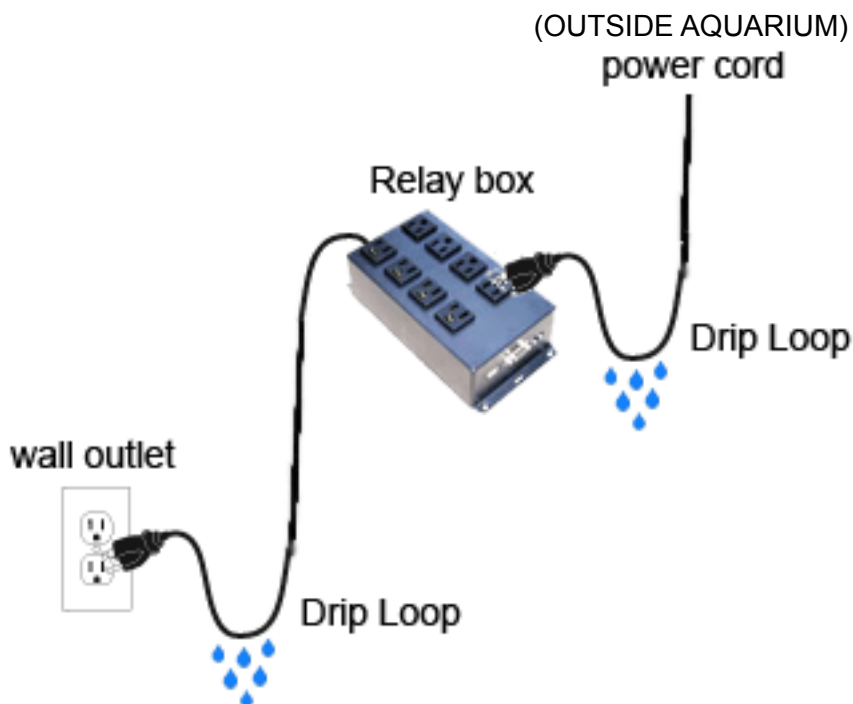
WARNING – To avoid injury to yourself and others, safety precautions should always be observed.

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



## ORP Expansion Module Unit



### Contents:

- ORP Expansion Module
- ORP Probe
- 12V DC Power Supply
- Expansion Bus Cable
- BNC Terminator

ORP Probe



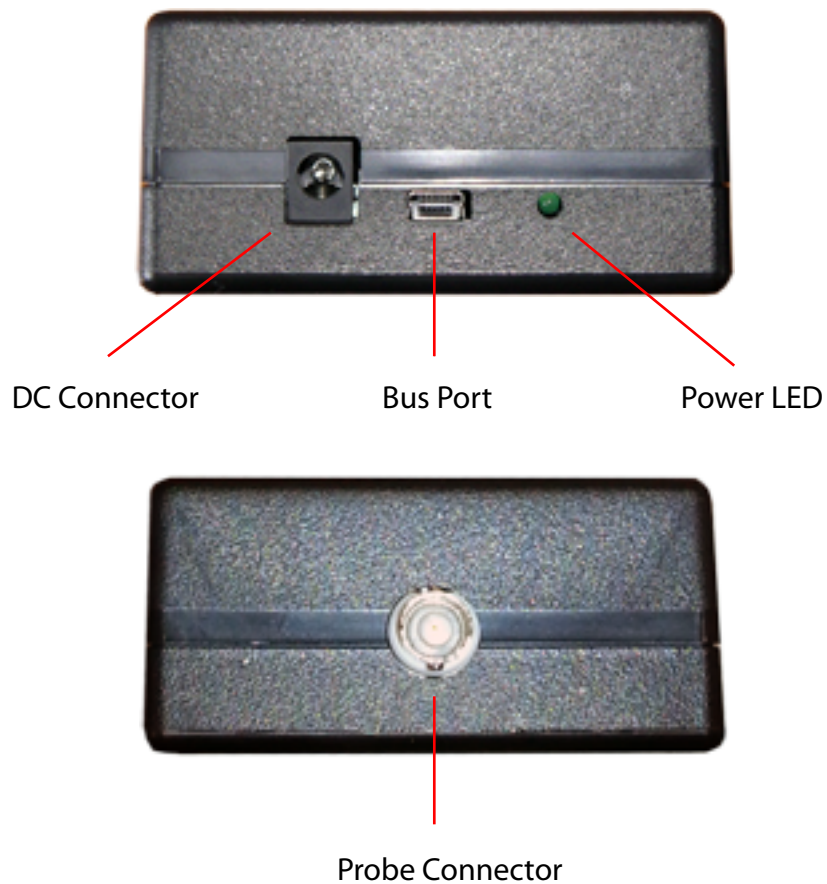
BNC Terminator  
(required for calibration)

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## ORP Expansion Module

### Getting Started

Connecting your Reef Angel ORP Expansion Module

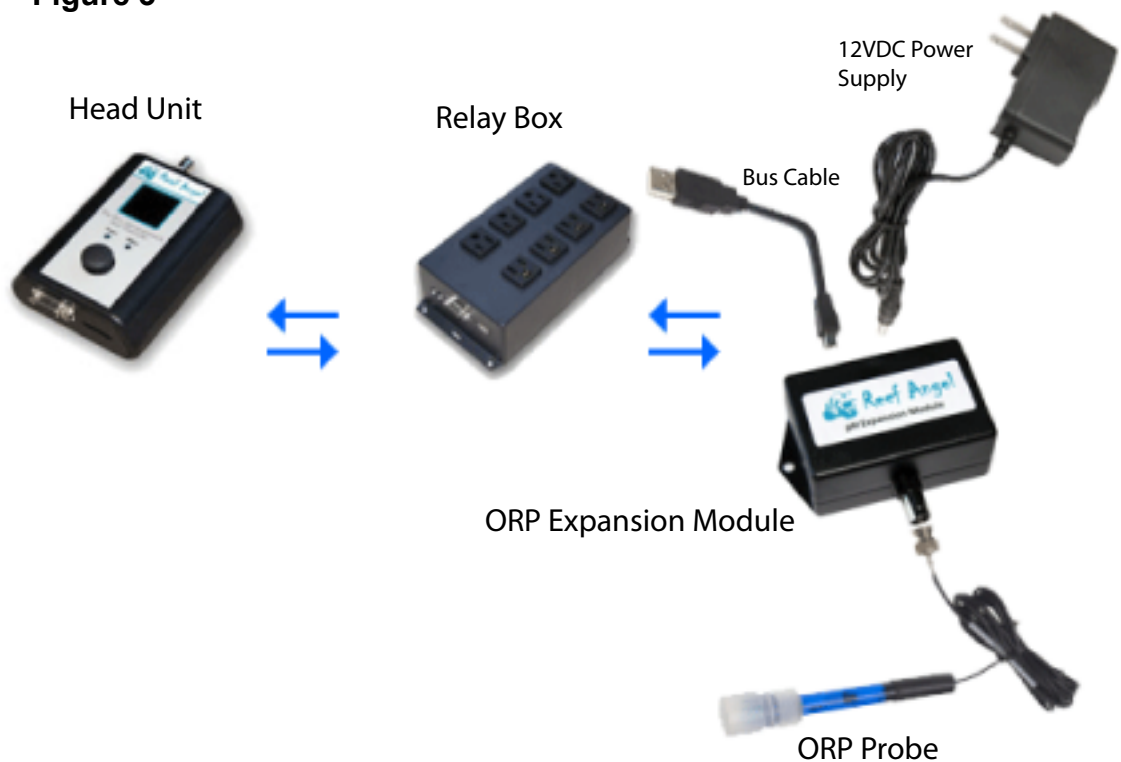


1. 12V DC is required by the ORP Expansion Module to ensure proper functionality. Use the 12V DC power supply and plug it into the DC connector.
2. Plug the probe in the probe connector.
3. Use the bus cable to connect the ORP Expansion Module in to the Reef Angel System.

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

1. Plug the bus cable to the bus port of the ORP 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.

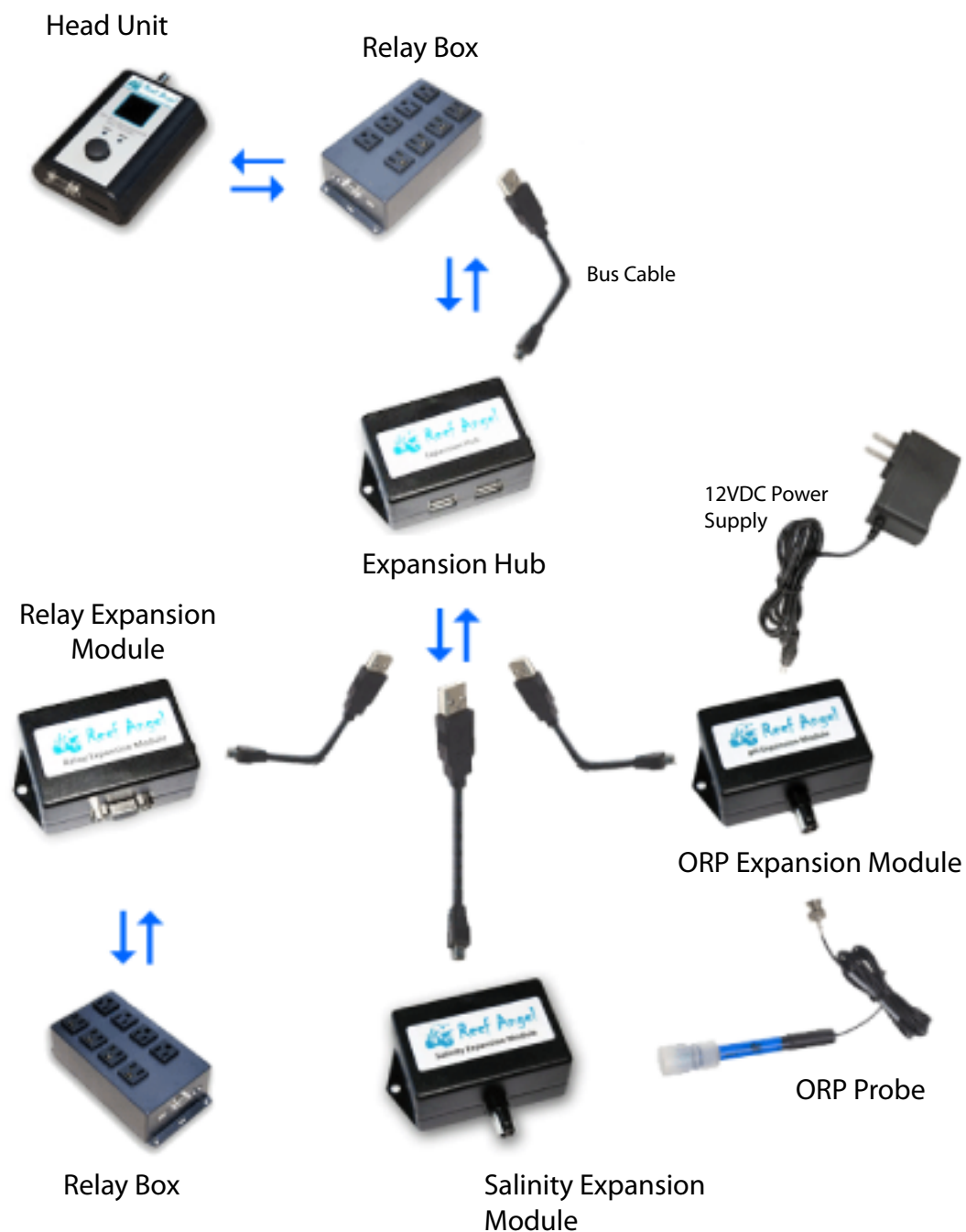
**Figure 3**



## Adding your ORP 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 pH Expansion test code by going to the **menu File -> Example Codes and selecting CustomMainScreen\_ORP**.
3. Upload the code to your Reef Angel Controller.

## Calibrating Your Reef Angel ORP Expansion Module

1. Using the joystick, navigate to "ORP Calibration".
2. The screen will show 0mV and the calibration number.
3. Connect the provided BNC terminator and press "Ok" button.
4. Disconnect the BNC terminator and connect the ORP probe.
5. Place the ORP probe into a standard solution of 470mV.
6. Let the probe stabilize and press the "Ok" button.

Note: ORP probes require to break-in in order to start reading accurately. It usually takes about 2 weeks and any control using ORP readings is not recommended during this period.