

# TidalWave

PUMP PROTECTOR

## Operating Manual



**Product: Pump Protector  
Model: TWPP14**

**Features:**

- Pump motor is protected from operating when system is dry
- Provides pump protection from certain cavitations due to decreased water flow
- Protection from excessive line currents
- 14 amp / 1HP maximum at 120 VAC operation
- Reset/calibration push button for fast commissioning
- Works with existing ground fault circuits
- No wiring; just plug in the unit and pump

**Description:**

The Pump Protector is an electronic control module designed to help protect pump motor damage due to sudden restriction in water flow or when system is dry. The product monitors subtle line power changes that are created by the pump during changing load conditions, and therefore does not need level sensors which can plug during operation.

When line current changes exceed the product's internal threshold, the power to the pump is switched off until the user pushes the reset button. The product also has calibration means to set the lower and upper current threshold specific to each pump size to protect during abnormal power changes.

<b>ELECTRICAL</b>	
Supply Voltage	105-132 AC
Supply Voltage Frequency	50Hz, 60Hz
Burden Current	<12mA
Output Type	Relay Form A
Output Current (Maximum)	14 Amp AC, 1 HP
Over Current Circuit Protection	125% of Programmed Current, < 10 sec response time
Under Current Circuit Protection	75% of Programmed Current, <10 sec response time
Overload Current Protection	15 amp +/- 20%, <10 AC cycles
Cavitations Current Protection	Adaptive, <10 sec response
Pump Dry	Shut down < 10 seconds

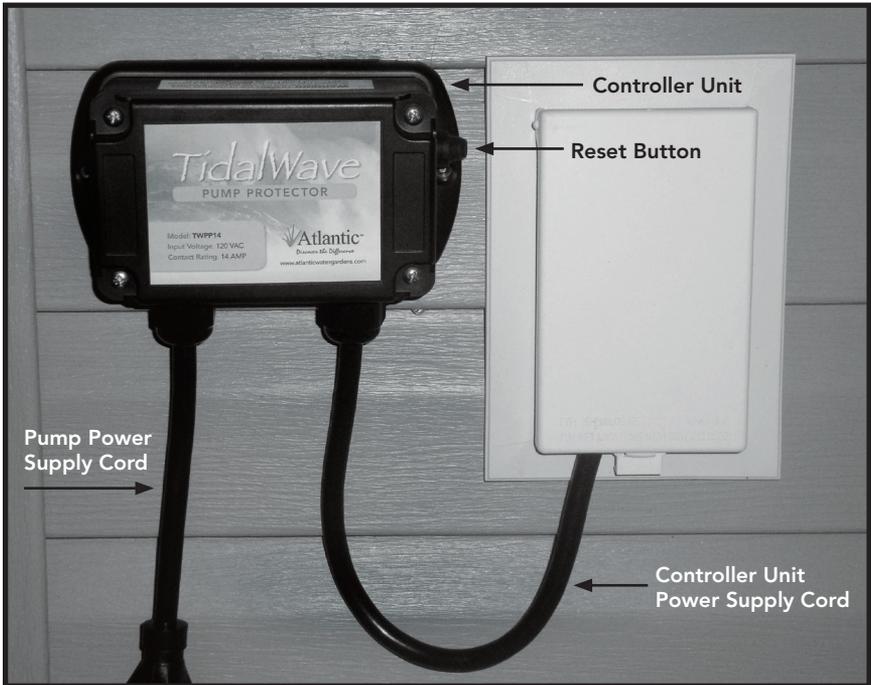
<b>ENVIRONMENTAL</b>	
Sealing	IP64, Dust protection and water spray
Shock	10G
Temperature	-25° to 50°C

<b>MECHANICAL</b>	
Package Material	ASA, Black
Dimensions (LxWxD)	L 5.18", Q 3.25", H 2.12" w/o base plate
Mounting Holes	2 x 0.125"

## Installation Instructions:

1. Attach the mounting plate to the back of the Pump Protector with the four screws provided.
2. Choose a spot near the GFCI outlet to mount the Pump Protector.
3. Attach the Pump Protector to a post or structure using two exterior screws (not included).

**Note:** Make sure that the Pump Protector is high enough that the Pump Power Supply Cord ( figure 1) is not lying on the ground. The Pump Protector can either be mounted horizontally or vertically.



**FIGURE 1**

## To Improve The Reliability of Your Pump Protecting System:

1. Provide adequate wiring to the Pump Protector to ensure that load switching from other appliances do not change line voltage more than 10% during abrupt load changes.
2. Calibrate the Pump Protector only after verification that the pump liquid flow is adequate.
3. Connect only one pump to the Pump Protector.
4. Regularly check the conveyance system for slow build up of deposits that can affect water flow over time.
5. Some pumps inherently have cavitation due to pump design and may intermittently shut down.

## Instructions - Quick Set Up:

1. Connect pump motor to the pump power supply cord. (See figure 1.)
2. Plug the controller power supply cord into GFCI protected outlet. The pump should start and buzzer will sound. (See figure 1.)
3. Ensure water flow is adequate in the conveyance lines and wait until the buzzer stops.
4. Press the reset button once – the internal buzzer will pulse.
5. During the time between buzzer pulse 2 and pulse 5, press the reset button once – this auto calibrates the unit to a power change range of plus or minus 10%. These settings will be permanently stored.  
**NOTE:** Some pumps require a wider power change. Push the reset button twice for a range of plus or minus 15%.
6. The buzzer will increase in tone frequency to acknowledge button depression.
7. The above process can be repeated if pump is changed or operating conditions change.

## Application Summary

The Pump Protector is designed to help reduce damage to water pumps like those used in outdoor ponds and pond-free water features. Pumps need water flowing through the chamber in order to cool the motor windings. If water flow is impeded, the pump can overheat, resulting in permanent damage. Water also lubricates moving parts and therefore a loss of water flow can also damage these internal parts.

Excessive water bubbles or a quick reduction in water flow creates small changes in the line current to the pump. Additionally, a blockage from debris on either the inlet or outlet side also causes small line current changes. The Pump Protector control module is designed to detect these small changes and take action to help protect the pump. Upon fault detection the control circuit will switch off the power to the pump to protect it from over heating. Once tripped, the user needs to inspect the water system to ensure adequate water flow is established to the pump. Pressing the reset button on the control module once will restart the pump.

The Pump Protector also has a calibration feature, which sets a high and low protection threshold for each pump. To implement this feature, press the reset button once and the buzzer will beep. Then press the button once between the second and fifth beep from the buzzer. The unit will acknowledge by increasing the tone of the buzzer. The control module is now calibrated to your pump. It is critical that the water flow is checked for adequate movement before calibrating the system to ensure that trip thresholds are set to normal operating conditions. Some motors have thermal protection built in to help protect the pump. The thermal protection will turn off the pump when hot but after cooling the pump will automatically restart. Therefore the pump can get into a continuous on-off cycle, which can result in permanent pump damage. The control circuit will detect a thermal shutdown as a low current fault and switch off the pump to eliminate cycling.