



Smart Water Heater Controller

Installation Instructions

Version 1.0

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Introduction

Congratulations on the purchase of your Aquanta Smart Water Heater Controller!

The Aquanta retrofittable water heater controller brings your electric or gas water heater out of the basement and into the palm of your hand to heat water only when you need it. It offers cost savings, and intelligent controls.

This manual describes the physical installation of the Aquanta unit and its unique sensor. It can easily be installed by most homeowners that possess basic plumbing knowledge and tools.

The Aquanta “Enthalpy” sensor “plugs” into the Temperature and Pressure Relief Valve (the “T&P valve”) port via a standard $\frac{3}{4}$ ” threaded brass fitting.

The Aquanta unit will be installed on the top of the water heater tank.

Next power Aquanta, connect it to your home wifi network, and configure your unit and you will now have a smart water heater!



Click the link to the Aquanta installation video here: <https://aquanta.io/installation/>

For the online sign-up instructions go to: <https://portal.aquanta.io/signUp>

Contains transmitter module FCC ID: VPYLBVD

This device complies with Part 15 of FCC Rules and Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of this device.

FCC CAUTION

Changes or modifications not expressly approved by Aquanta could void the user's authority to operate the equipment.

This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.

Tools Needed:

- Phillips screw driver
- Flathead screw driver
- Pipe wrench or large pliers
- Needle nose pliers (may be helpful)
- Cloth or paper towel for clean-up
- Smart phone, tablet or laptop with Wifi

Components That May Be Needed:

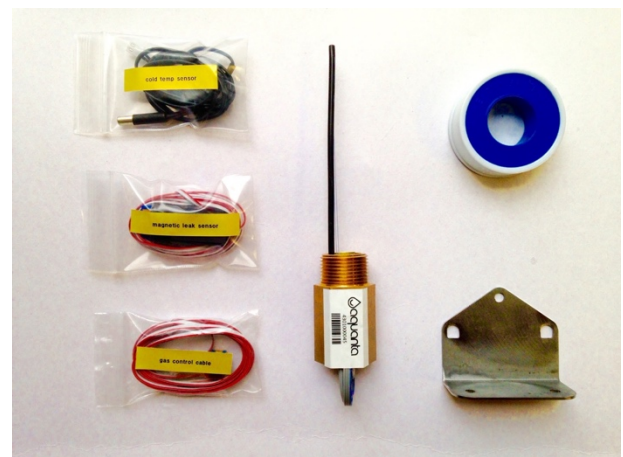
- Replacement Temperature & Pressure Relief Valve (see Part I, section 3)
- Washing machine hose and bucket (see Part I, section 4)
- Hacksaw or other pipe cutter (see Part I, section 5)
- Propane torch/solder (see Part I, section 5)
- Voltage tester (Part II-A)

Parts Included:

1. Aquanta Controller



2. Enthalpy Sensor
3. Cold Water Inlet Temperature Sensor
4. Leak Detection Sensor
5. Communication cable (for Atmospheric Vent (AV) Gas Version Only)
6. Teflon thread-sealant tape
7. Mounting Bracket (Gas Version Only)
8. Self-Drilling Screws (Gas Version Only)
9. Pencil

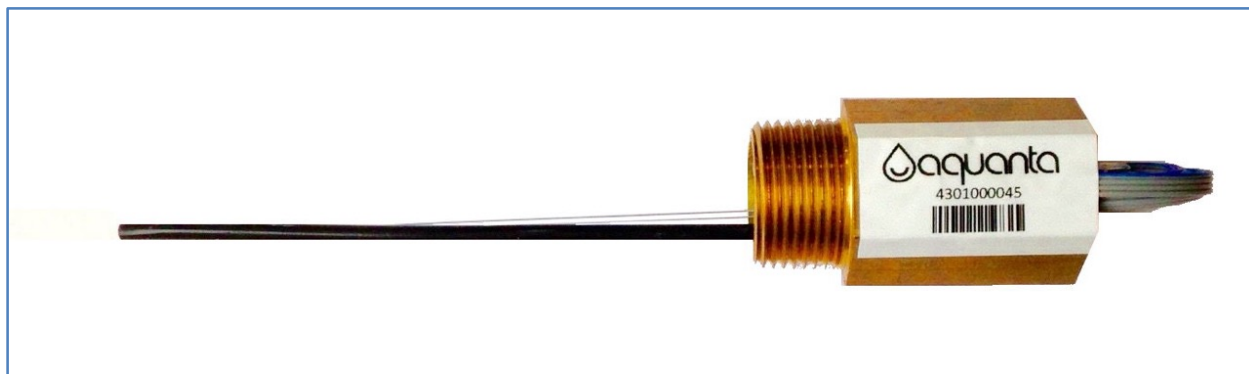


Part I: Enthalpy Sensor Installation

The Enthalpy Sensor is how Aquanta determines the energy used in a water heater. The Sensor is installed between the Temperature and Pressure (T&P) relief valve port and the water heater. The T&P valve is found on the top or the side of nearly every water heater available in North America.

Inside the Enthalpy Sensor there is a wire wound around a spool. The sensor wire will unfurl inside of the water heater after the fitting is installed into the water heater as described later in these instructions. The wire will hang from the “stick” inside the water heater.

CAUTION: do not remove the spool from the inside of the Enthalpy Sensor. Doing so could damage the sensor wire.





1. **CAUTION:** Turn off the electricity to the water heater by switching the circuit breaker “OFF”. For electric water heaters, this is typically a double breaker.
2. Turn “OFF” the house (cold) main water valve. Just turning off the inlet valve to the water heater usually does not allow fast tank draining, as cold water will flow via mixing valves elsewhere in the house.
3. To verify proper operation of the T&P valve prior to Enthalpy Sensor installation, we recommend testing it by opening the lever several times and catch the hot water in a bucket if necessary.

CAUTION: Beware of hot water exiting the drain pipe.

It is not uncommon for the T&P valve to continue to drip afterwards, especially with older valves. In that instance, it will need to be cleaned or replaced with a new T&P valve available at most hardware stores.



<p>4. Drain sufficient water from the water heater such that the water level is below the level of the T&P valve. This is typically 7 gallons for side-mounted T&P valves and only a few gallons for top-mounted T&P valves. There are generally two ways to drain the water:</p>	
<p>a) If there is a drain pan attached to a drain, just open the water heater drain valve and make sure that the water falls into the pan and drains.</p>	
<p>b) If no drain pan exists, connect a hose to the drain valve (such as the washing machine hose or garden hose) and drain water into a bucket.</p>	
<p>Tip: To drain the water heater, open the lever on the T&P valve and listen for a “glug” sound as air enters. When the “glug” sound stops, the water level is at the level of the T&P valve. Keep draining a little more water to make sure the water level is below the T&P valve opening.</p>	
<p>5. With a pipe wrench or large pliers, remove the drain pipe connected to the T&P valve. Note that in some situations this will require de-soldering or cutting the drain pipe. Then remove, inspect and clean the T&P valve. A clogged T&P valve should be replaced.</p>	
<p>6. Add 4 wraps of the supplied pipe sealing tape (clockwise) to the male threads of both the Enthalpy Sensor and the T&P valve.</p>	
<p>7. Thread the Enthalpy Sensor into the water heater where the T&P valve was removed. Hand-tighten the Enthalpy Sensor into place; final tightening is best done when the T&P valve is also tightened in place.</p> <p>CAUTION: Avoid gripping the Enthalpy Sensor on the face with the flat cable to avoid risk of damaging the sensor. Do not use excessive force when tightening.</p>	
<p>8. The sensor wire is wrapped around a spool inside the Enthalpy Sensor. Insert the eraser-end of the supplied Aquanta pencil into the Enthalpy Sensor and gently push the spool into the tank. The sensor wire will unfurl once it is free inside tank and listen for a metallic tick to be heard when the spool reaches the bottom of the tank. Then remove the pencil from the Enthalpy Sensor.</p>	
<p>9. Thread the T&P valve into the female end of the Enthalpy Sensor fitting and firmly tighten into place using the pipe wrench or pliers (typically) until the T&P outlet should be pointing downwards. Re-attach the drain piping to the T&P valve.</p>	
<p>10. Open the main water valve and open a “hot water” faucet elsewhere to let air escape out of the partially emptied tank. Check the enthalpy sensor and T&P valve fittings to ensure that there are no water leaks.</p>	


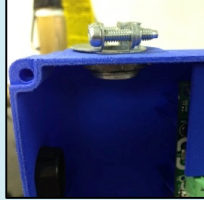

Part II: Aquanta Controller Installation

The Aquanta Controller is the brain of the system, containing the electronics, sensor connectors and wifi communications module. The Aquanta Controller is available in two versions: one for electric water heaters (shown on the left below) and one for gas water heaters (shown on the right below). For electric water heaters, please proceed to Part II-A. For gas water heaters, please proceed to Part II-B.

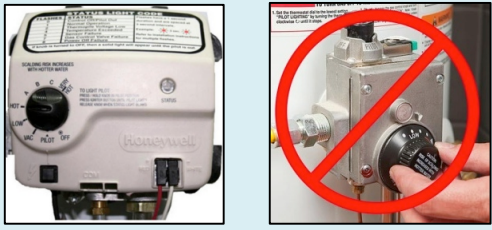
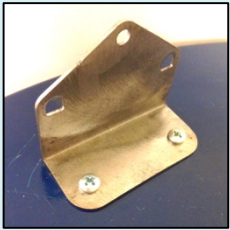
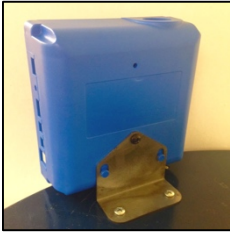



Part II-A: Electric Water Heater Version




1. **CAUTION:** Turn off the electricity to the water heater by switching the circuit breaker “OFF”. For electric water heaters, this is typically a double breaker.
TIP: It is recommended to test if the electricity is off at the water heater by using a voltage tester.
2. Using a screwdriver, remove the water heater’s top cover plate, then remove wire nuts from copper wires. Remove wire or conduit clamp from cover plate.
3. Straighten any wires with bent ends, and cut so a straight $\frac{1}{4}$ ” section of bare copper remains. Shape them pointing upwards.
4. Open the Aquanta unit by removing the 4 Philips-head screws and then remove the cover.

<p>5. Option 1: Mount the cover plate onto the conduit fitting at the bottom of the Aquanta Controller, orient the Controller and tighten the nut. Next, lower the Controller over the 2 copper wires coming from the water heater and then secure the cover plate with the screws. The Controller is now mounted on the tank and the ground contact is established.</p>	
<p>Option 2: If above method is not possible, the conduit fitting can be taken from the Controller. Mount conduit nipple using nut (provided) on cover plate so threads extend upward, and pull wires up through nipple. Replace cover plate and screw down. Next, mount Aquanta on nipple, placing the grounding bracket (with green screw) over nipple, and secure down by tightening nut by hand. You can secure even tighter by pushing on nut with a screw driver.</p>	
<p>6. Mount your existing wire/conduit clamp into the Aquanta top opening.</p>	
<p>7. Starting with the wires connected to the water heater, secure them into the lower terminal block. There is no strict polarity, but we recommend to follow the wire colors as shown in the photo.</p>	
<p>8. On the incoming wires, measure how far down the ground wire (typically bare copper) needs to go to reach the grounding bracket, but do not clamp in place yet, but first connect the two incoming wires into top terminal block (there is no polarity). Next, attach the ground wire last for to allow most flexibility in accessing the terminal blocks.</p>	
<p>Screw the Aquanta cover back onto the unit using a Phillips screw driver.</p>	

Part II-B: Natural Gas Tank Versions

<p>1. Verify that your gas valve is an electronic style, such as the picture on the left. Aquanta cannot interface with the older mechanical style valves (picture on right).</p>	
<p>2. CAUTION: For <u>Atmospheric</u> vented tanks, turn the knob on your gas valve to OFF. For <u>Power</u>-vented tanks, unplug the tank from the power outlet.</p>	
<p>3. Find a spot for the Controller on top of your tank, within 2 feet of the T&P valve. The Enthalpy Sensor, installed in to the T&P valve port, has a 30" cable that needs to reach the Controller.</p>	
<p>4. Holding the Mounting Bracket in place, mark the locations of the two screw holes, and drill two 1/8" pilot holes.</p>	
<p>5. Use the two 1/2" Phillips head screws (silver colored, included) to secure the Mounting Bracket in place.</p>	
<p>6. Place the Controller on the bracket as shown into the plastic tabs, and use the black colored Phillips screw to secure the box in place.</p>	
<p>7. For <u>Atmospheric</u> vented tanks, attach the included 3 pins communication cable from Aquanta's top port to the port on the gas control valve marked "COM".</p> <p>For <u>Power</u> vented tanks, no communication cable is necessary. But make sure to plug in the Power Vent Tank Power cable (120 VAC) into the 120 VAC socket at the left side of the Aquanta Unit. This will allow Aquanta ON/OFF control for the Power Vented Gas Tank.</p>	
	

Part III: Sensor Connections

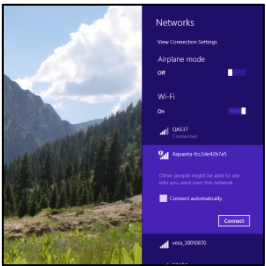

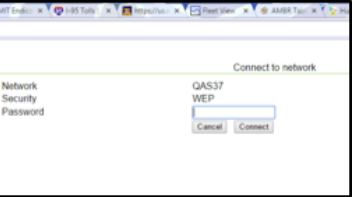
<p>1. Place the leak sensor near bottom of tank, which has double-sided tape so it can be easily attached to the side of the tank near the bottom, preferably directly below the T&P valve.</p>	
<p>2. Attach the temperature sensor to the incoming/cold water pipe as far from the water heater tank as possible by stretch-wrapping it with (included) pipe-sealing tape.</p>	
<p>3. Plug all included sensors into the Aquanta box. From top to bottom they are:</p> <ul style="list-style-type: none"> • Communication cable (atmospheric-vented tanks only) • Leak sensor (4-pins) – Aquanta will also beep upon a detected leak. • Misc Temp sensor (2-pins, normally not used) • Cold water temperature sensor (2-pins) • Enthalpy sensor (4-pins RJ jack) 	
<p>4. Turn the electricity back “ON” at the circuit breaker. The LED should come on the Aquanta Controller; it will blink indicating network connection still needs to be established.</p>	

Part IV: Wifi Setup

The Aquanta contains Transmitter Module FCC ID: VPYLBYD.

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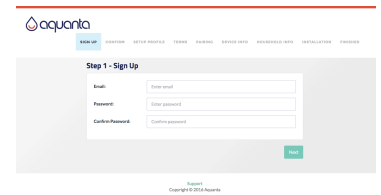
<p>1. Verify Aquanta is powered and ready to connect, shown by a blinking green light when powered on.</p>	
<p>2. On your smart phone or other connected device, find your Wifi networks icon (as if you were at a coffee shop logging onto a new network), and select the network called "Aquanta xxxxxxxx".</p>	
<p>3. On many devices (including iOS devices), a web page automatically appears with the available Wifi networks. If the web page to the right does NOT appear, open an internet browser, type 192.168.0.1 in the web address bar, and you will see this web page.</p> <p>Click "Connect" by selecting <u>your own home</u> Wifi network.</p>	
<p>4. Enter the Wifi password for <u>your home Wifi</u> router. Aquanta will now save this password and use it to connect your Wifi network. The light on the Aquanta Controller should turn solid green, indicating it is connected and in monitoring mode. Green LED means that the tank is activated/powerd.</p> <p>NOTE: your phone or laptop should return to your home Wifi network once Aquanta reboots. If for some reason it does not, try disconnecting from the Aquanta Wifi network or rebooting your computer.</p>	
<p>5. You are now finished with the Aquanta unit installation!</p>	

6. Next go to the Aquanta portal to register a user account and connect to the Aquanta unit. Go to:

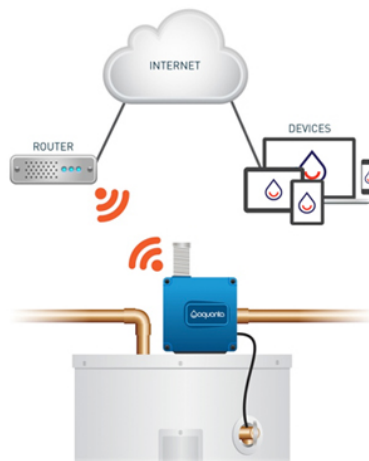
<https://portal.aquanta.io/signUp>

To login to your account, go to:

<https://portal.aquanta.io/login>



Thanks and enjoy your Aquanta unit!



Aquanta Network Configuration

Tips:

1. You can always force Aquanta to activate your tank at any time by pushing the blue mode button for 5 seconds. This will be indicated by a changed LED color (typically green).
2. **RESET:** Aquanta can be reset by pushing a paperclip in the small hole in the top center of the Aquanta unit.
3. Aquanta can be put into Wifi-reconfiguration mode (aka AP-mode) by keeping the blue mode button pushed for at least 10 seconds immediately after resetting the Aquanta unit. This may be needed after your home wifi network (router, SSID or Password) was changed.
4. Please check <https://aquanta.io/faqs/> for questions, troubleshooting, etc.



The Intelligent, Retrofittable
Water Heater Controller

Heat water when you
need it, **save money**
when you don't

Bringing **water heaters**
into the modern grid



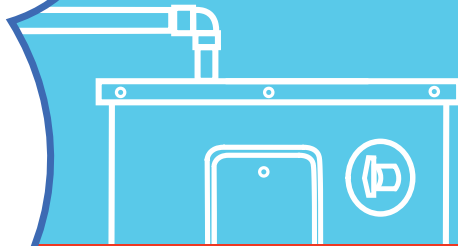
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