

Smart Recirculation Control Thermostatic Upgrade Installation Guide

Congratulations on purchasing the most advanced micro processor controlled, hot water recirculation pump controller made. This system is designed to run the recirculation pump only when you need it thus saving both water and energy. It is designed and built with pride in the USA to provide years of service and savings.

Contents:

- 1 Smart Thermostatic Control with RJ-45 connector



- 1 3/4" or 1" NPT Flow Sensor with JST connector



- 1 Wiring Harness with RJ45 & JST connectors



Needed:

The following items are needed for the installation, but are not included.

PTFE (Teflon) Tape

Wire fasteners for securing wiring to the wall

Please read over the following instructions. If you are not comfortable with any part of them please contact a licensed plumber to perform the installation.

Prior to installation please perform the following system test to ensure the unit is working prior to installing the flow meter.

1. Connect the wiring harness to the controller.
2. Connect the flow meter to the wiring harness.
3. Plug the controller into a wall outlet and ensure that the LED on the side of the controller flashes green 3 times.
5. Gently blow through the flow meter in the direction of the arrow and ensure the controller makes a slight audible click and the red LED turns on for approximately 5 seconds. This test ensures that the controller, flow meter and wiring harness are good and functional. If this test fails, please contact customer support at support@smartrecirculationcontrol.com.

LED Legend:

GREEN LED: will blink 3 times when first plugged in to indicate the unit is functioning correctly

GREEN LED: solid on when a timer is active and pump is not running

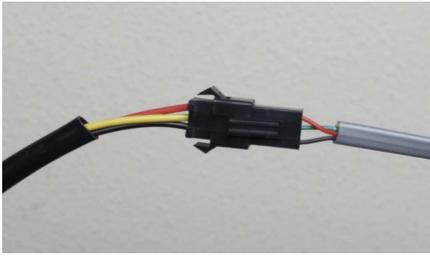
RED LED: solid on when the pump is running whether due to a timer or due to demand

BLUE LED: solid on when connected via the smart phone app

Installation:

1. Note setting of water heater thermostat and then set to lowest temperature setting (do not turn off the pilot light).
2. Shut off the cold water supply to the water heater.
3. Open the closest hot water faucet to the water heater to depressurize the hot water line. When water quits flowing, turn off the faucet.
4. Disconnect the cold water supply line from water heater. Be careful not to bend and crease the supply line when manipulating it. Be prepared with some towels as some water will flow out from the piping and the hookup line. You don't have to drain the tank and as long as all the faucets remain closed you should not get any back flow from the hot water line.
5. Connect the flow meter to the cold water input of water heater using PTFE tape being sure that the arrow on the flow meter is pointing toward the water heater.
6. Connect the cold water supply line to the input side of the flow meter. The supply line uses a rubber washer to seal instead of PTFE tape so you don't need use PTFE tape on this connection. The rubber washer will seal the line to the flow meter. Hand tighten and turn an additional $\frac{1}{4}$ to $\frac{1}{2}$ turn. **DO NOT OVER TIGHTEN!**
7. Turn on cold water supply to water heater and inspect for any leaks.
8. Turn water heater thermostat back to its original temperature setting.





9. Connect the flow meter to the wiring harness via the JST connector.
10. Secure the wires to the wall away from the water heater.



11. Plug the wiring harness into the Smart Thermostatic Control via the RJ-45 connector.



12. Plug the Smart Thermostatic Control into an electrical outlet and plug the recirculation pump into the Smart Thermostatic Control.
13. The green LED on the left side of the unit will blink 3 times if everything is OK.
14. Go to a faucet and turn the hot water on and then off. This will trigger the recirculation pump to turn on and run until the thermostatic crossover valve is up to temperature. The red LED turns on while the pump is running. If the recirculation pump doesn't turn on, turn on the hot water for a bit longer and then turn it off again. If it still doesn't turn on see Smart Thermostatic Control Setup with Smart Phone – Basic Settings – Sensitivity on Page 4.
15. Once the thermostatic crossover valve closes, the flow will stop and the pump will turn off.

Smart Thermostatic Control Setup with Smart Phone:

The Smart Thermostatic Control can be used simply as an on-demand controller for your recirculation pump or, once configured using either an iPhone or Android smart device, it will also work as an advanced timer keeping the hot water line hot between specific times of day and on specific days of the week (up to 10 timers can be set). Even when a timer is active it only runs the pump until the cross over valve closes while continuing to monitor the flow demand. The app uses Bluetooth in order to communicate with the controller so you need to be sure that Bluetooth is enabled on your smart device. The app can be downloaded for free from either the Apple App Store or from Google Play by looking up “Smart Recirc”.

Running the app will connect to the Smart Thermostatic Control and display the timers currently set. The blue LED on the controller will illuminate when the app is connected. If the blue LED doesn't illuminate, press the menu button in the top right of the app and select “Scan for Recirc Control”. NOTE: I have noticed that some smart devices have a harder time connecting than others so if it fails to connect after pressing the “Scan for Recirc Control” menu item, try restarting the app.

Once connected you can tap any of the existing timers to edit or delete them or press the Add Timer button to

add a new one. You must close the app to disconnect and enable the Smart Thermostatic Control . Sending the app to the background does not disconnect it and the Smart Thermostatic Control will not run when the app is connected. The app is connected if the blue LED is lit.

The real time clock in the Smart Thermostatic Control is set when you connect to the controller with your smart phone. When a timer is active the green LED will light. When the Smart Thermostatic Control turns the pump on, the LED will change from green to red. When the loop is up to temperature the pump will shut off and the led will change back from red to green.

The Smart Thermostatic Control has a built in power backup that will keep the clock's time for approximately 48 hours after which the clock will lose its time and the controller's timers won't function until the time is set by running the app and connecting to the Smart Thermostatic Control .

The clock does not adjust for daylight savings time so when the time changes you will need to connect to the Smart Thermostatic Control with your smart device and the time will be set to the time of your smart device.

Smart Thermostatic Control Settings:

The app also allows for controlling all the settings of the firmware of the Smart Thermostatic Control . To access the settings press the menu button in the top right of the app and select "Settings". There will be a list of basic settings and the ability to expand the settings to "Show Advanced Settings".

Basic Settings:

Sensitivity – The sensitivity setting allows the user to set how many clicks of the flow meter are required to turn the controller on and when the flow falls below this level, the controller turns the pump off. The default value is 20 which is fine for most installations. If you find that the controller is not turning on when you turn a faucet on and off or the controller won't run the pump longer than the Initial Pump Run Time (Advanced Settings), you would decrease this value to make the controller more sensitive to flow (require fewer clicks to turn the controller on). Correspondingly, if you find that the controller is turning on when there is no timer active and no hot water being drawn, you would increase this number to make the unit less sensitive to fluctuations in flow (require more clicks to turn the controller on).

Timers Enabled – This setting will disable the timers for when you are away on vacation and don't want the pump to run while you are gone.

Advanced Settings:

Dormant Interval – The dormant interval is the number of minutes that the controller lies dormant after having run the pump and gotten the hot water line up to temperature. This setting prevents fast cycling of the pump when hot water is being turned on and off over a short period of time. This is also the number of minutes that the controller waits when a timer is active after turning the pump off before turning the pump on again to check if the thermostatic valve has opened. If you want the pump to turn on more often while a timer is active or more quickly between pump runs when you draw hot water you would reduce this value. This value is set to 10 minutes which is fine for most installations.

Flow Meter Delay – The flow meter delay is the amount of time in hundredths of a second during which time the controller counts the number of clicks that occur in the flow meter. If the number of clicks is above the sensitivity threshold then the controller deems that there is flow in the hot water line. This value is set to 75 hundredths of a second which is fine for most installations.

Initial Pump Run Time – The initial pump run time is the number of seconds that the pump runs when it first senses flow IF the pump hasn't run in the last dormant interval. This is to ensure that the pump has turned on and starts moving water through the thermostatic valve. When a timer is active the pump will turn on every dormant interval for the length of the initial pump run time in order to check thermostatic valve. This value is set to 5 seconds which is fine for most installations, but some pumps have electronic controls requiring longer for the pump to start running once power is connected so this value may have to be increased.

Reset to Factory – This will reset the Smart Thermostatic Control back to the factory defaults. If you experience strange behavior of the controller, resetting to the factory defaults would be a good thing to try to resolve the issue. This will also reset all the timers back to the 4 factory default timers so if you have changed the timers you will need to reset them after performing a factory reset. You must type “yes” when prompted in order for the factory reset to take place.

Trouble Shooting:

1. SYMPTOM: Pump won't turn on when hot water is drawn from a faucet.

ISSUE: The pump has run within the last dormant interval and therefore won't turn on until the dormant interval has expired.

RESOLUTION: Unplug the Smart Thermostatic Control from the wall outlet, wait 10 seconds and plug it back in. Go to the faucet and turn on the hot water and see if the pump turns on for the Initial Pump Run Time and then turns off. If it does, then the unit is functioning correctly. If it doesn't, then the sensitivity of the Smart Thermostatic Control needs to be adjusted. Please see Basic Settings – Sensitivity on Page 4.

2. SYMPTOM: Pump won't continue running after the initial run time even when the thermostatic valve is cold.

ISSUE: The sensitivity setting is set too high so the controller isn't registering flow and is shutting off.

RESOLUTION: Lower the sensitivity setting. Please see Basic Settings – Sensitivity on Page 4.

3. SYMPTOM: Pump turns on when no hot water is being drawn.

ISSUE: Pressure spikes in the cold water supply line caused by abrupt turning off of the cold water (for instance when a toilet fills) or caused by fluctuations in the feed from the utility company can cause the Smart Thermostatic Control to trigger the hot water recirculation pump to turn on.

RESOLUTION: The sensitivity setting is too low. Please see Basic Settings – Sensitivity on Page 4.

If you need further support please contact:

Leridian Dynamics, Inc.
support@smartrecirculationcontrol.com
or 831-761-8659