

Smart Thermostatic Control 32 for Tankless Water Heaters - Installation Guide

QUICKSTART GUIDE SEE PAGE 2

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 32 with RJ-45 connector



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



- 1 Wiring Harness with R-J45 & 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

QUICKSTART GUIDE

Prior to installation perform the following system test.

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.
4. 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.

If this test fails, disconnect all connections and inspect the wires to ensure they are not broken or loose and that the pins are not bent. Reconnect all connections ensuring they snap together tightly and re-test. If this test still fails, contact customer support at support@smartrecirculationcontrol.com or 831-761-8659.

1. Install the flow meter at the cold water input to the water heater ensuring the arrow on the flow meter points in the direction of flow. NOTE: PTFE tape is necessary when connecting to a female NPT connector. PTFE tape is NOT necessary when connecting to a flexible hook up line as they have a washer that creates the seal.
2. Connect the flow meter to the wiring harness and plug the wiring harness into the controller.
3. Plug the controller into an outlet and plug the pump into the controller.
4. Turn a hot water faucet fully on for 1 second and the pump should turn on for at least the initial run time of 5 seconds. If the hot water line is cold the pump should continue to run until hot water reaches the thermostatic cross over valve causing it to close and the flow to be cut off. When this happens the controller will turn the pump off.

If the pump fails to turn on or fails to stay on past the initial 5 seconds or continues to run after you have hot water at the faucet(s) where the crossover valve(s) is (are) installed, see Trouble Shooting on page 7.

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

NO LED: normal behavior after initial boot up – no timer is active and pump is not running

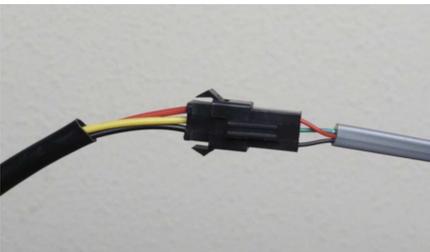
DETAILED INSTRUCTIONS

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

Prior to installation you must perform the system test at the beginning of the Quickstart Guide on page 2.

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 of 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 flexible cold water supply line to the input side of the flow meter. The flexible supply line uses a washer to seal so you don't need use PTFE tape on this connection. Hand tighten and turn an additional $\frac{1}{4}$ to $\frac{1}{2}$ turn. **DO NOT OVER TIGHTEN!**
7. Turn on the cold water supply to the water heater and inspect for 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 ensuring the connector snaps together securely.
10. Secure the wires to the wall away from the water heater.
11. Plug the wiring harness into the Smart Thermostatic Control 32 via the RJ-45 connector ensuring it snaps in securely.



12. Plug the recirculation pump into the Smart Thermostatic Control 32 and Plug the Smart Thermostatic Control 32 into an electrical outlet.
13. The green LED on the side of the controller will blink 3 times if everything is OK.
14. Turn a hot water faucet fully on for 1 second. 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.
15. Once the thermostatic crossover valve heats up and closes, the flow will stop and the pump will turn off.

16. If the pump fails to turn on when a faucet is fully opened for 1 second, see Trouble Shooting page 7, item 1.
17. If the pump fails to stay on past the initial 5 seconds, see Trouble Shooting page 7, item 2.
18. If the pump continues to run after you have hot water at the faucet(s) where the crossover valve(s) is (are) installed, see Trouble Shooting page 7, item 3.

Smart Thermostatic Control 32 Setup with Smart Phone

The Smart Thermostatic Control 32 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 crossover 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 Recirculation Control”.

There is no need to “pair” the Bluetooth device, running the app will find and connect to the Smart Thermostatic Control 32 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:** We have noticed that some Android devices can sometimes have a hard time connecting so if it fails to connect after pressing the “Scan for Recirc Control” menu item a couple of times, 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.

The real time clock in the Smart Thermostatic Control 32 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 32 turns the pump on, the LED will change from green to red. When the hot water line is up to temperature and the thermostatic crossover valve closes, the pump will shut off and the LED will change back from red to green.

When connected to the controller via the smart phone app, the blue LED will always be lit. To know if the pump is running or a timer is active, select “Live Flow”TM from the menu and it will provide the status of the pump and timers.

The Smart Thermostatic Control 32 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 32.

The clock does not adjust for daylight savings time so when the time changes you will need to connect to the Smart Thermostatic Control 32 with your smart device and the time will be set to the time of your smart device.

Smart Thermostatic Control 32 Settings:

The app also allows for controlling all the settings of the firmware of the Smart Thermostatic Control 32. 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 pulses of the flow meter are required to turn the controller on and off. When the controller senses flow greater than the high value it turns the pump on. When the flow falls below the low value, the controller turns the pump off. The default on value is 20 and off value is 5 which is fine for most installations. If you find that the controller is not turning on when you turn a faucet on and off, see Trouble Shooting on page 7, item 1. If the controller isn’t turning off when the plumbing is hot, see Trouble Shooting on page 7, item 3.

Timers Enabled – This switch enables and disables the timers. This can be used to turn the timers off when you go away on vacation or to simply turn them off if you just want to use the on demand feature of the controller. The Smart Thermostatic Control 32 implements “Smart Timers”™ which, regardless of this setting, will automatically disable themselves if no hot water usage is detected within 24 hours. The timers are re-enabled as soon as hot water flow is detected.

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 pulses that occur in the flow meter. If the number of pulses 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 time to get up to speed and start moving water through the thermostatic valve before checking the flow value. 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 32 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.

Firmware

The firmware of the Smart Countdown Control 32 can be updated via the smart phone app. To check if there is new firmware available go to the menu and select Firmware. If there is new firmware available it will be displayed and the selection will be enabled. Select the firmware and click the “Update Firmware” button. The update can take up to 5 minutes to complete. Do not allow the application to go to the background or the phone to sleep while the firmware update is running or the update will fail. The system is designed to only switch to the new firmware if the update is successful so if this does happen simply attempt the firmware update again.

There is an option on this screen to “Show All Firmware Version” which will display the firmware from our entire product line. The sensor requirements for the different firmware versions are different so updating to a different product without understanding the implications may provide unexpected results. Please see our web site for a description of the different products.

Trouble Shooting:

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

ISSUE 1: If the controller has run within the dormant interval, the pump won't automatically turn on when flow is detected.

RESOLUTION 1: Unplug the controller from power for 10 seconds and plug it back in. This will reset the controller and it will now turn on automatically when it detects flow. Turn a hot water faucet fully on for 1 second and then turn it off. If it still doesn't turn on see ISSUE 2.

ISSUE 2: The high sensitivity value is set to high for the controller to detect the flow provided by the faucet.

RESOLUTION 2: Open the smart phone app and go to the menu and select "Live Flow"TM. This will show you what the controller is sensing. Turn a hot water faucet fully on and watch the flow value. If it goes greater than 20 then the pump will turn on. If it doesn't go greater than 20 then you will need to reduce the high sensitivity setting to be less than the maximum value you observed. For example, if the Flow Meter value went to 15, then set your high sensitivity to 13 and try this test again.

2. SYMPTOM: Pump won't continue running after the initial pump run time expires.

ISSUE 1: The thermostatic crossover valve(s) is (are) already heated up and aren't allowing flow.

RESOLUTION 1: Check the temperature of the water at the location of the crossover valve(s) and see if the water is 95F. If it is, wait for the water to cool off and test it again. If it is not 95F, see ISSUE 2.

ISSUE 2: The low sensitivity value is set too high and the controller isn't registering enough flow to keep the pump running.

RESOLUTION 2: Unplug the controller from power, wait 10 seconds and plug it back in. Open the smart phone app and go to Settings → Advanced Settings and set the Initial Pump Run Time to 30 seconds. Go back to the menu and select "Live Flow"TM. Turn a hot water faucet fully on for 1 second and then turn it off. The pump will now run for 30 seconds and you should see the flow value that the pump is pushing through the thermostatic crossover valve(s). If this value is 0 then the crossover valve(s) is (are) closed and not allowing flow. If this value is not 0, then set the low value in Settings → Sensitivity to be less than this value and the pump will continue to run when triggered. Don't forget to go back to Settings → Advanced Settings and set the Initial Pump Run Time back to 5 seconds.

3. SYMPTOM: Pump continues to run after hot water is detected at the faucet(s) where the thermostatic crossover valve(s) is (are) installed.

ISSUE: The thermostatic crossover valve(s) is (are) not up to 95F and therefore still allowing flow.

RESOLUTION: Check the temperature of the water at the location of the crossover valve(s) and see if the water is 95F. If it is 95F, see ISSUE 2.

ISSUE 2: The low sensitivity value is set below the flow value the controller is registering and therefore keeping the pump running.

RESOLUTION 2: Open the smart phone app and go to the menu and select "Live Flow"TM. The flow

value that the controller is registering will be displayed. Go into Settings → Sensitivity and set the low value to be greater than this value and the pump will turn off.

4. 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 32 to trigger the hot water recirculation pump to turn on.

RESOLUTION: The high sensitivity value is too low. Open the smart phone app and go to the menu and go into Settings → Sensitivity and set the high value higher by 5 and see if the issue persists.

If you need further support please contact:

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