Smart Countdown Control 32
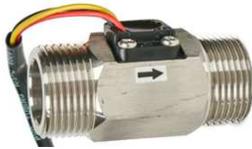## Installation Guide

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 Countdown Control 32 with RJ-45 connector

    1   ¾" or 1" NPT Flow Sensor with JST connector

    1   Wiring Harness with RJ-45 & 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 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. It will stay on for approximately 5 minutes but you don't need to wait for it to turn off. The test was to ensure that the flow meter can turn on the controller.

If this test fails, inspect the wires connecting to the flow meter to ensure they are not broken or loose. Reconnect the connection ensuring it snaps tightly and re-test.

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. If installing in hard copper piping it is recommend to install the flow meter using a union fitting.

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 will turn on and run for approximately 5 minutes.

If the pump fails to turn on see Trouble Shooting on page 6, item 1.

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
GREEN LED: will blink every 10 seconds when no other LED is lit (e.g. no timer active, pump 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

DETAILED INSTRUCTIONS

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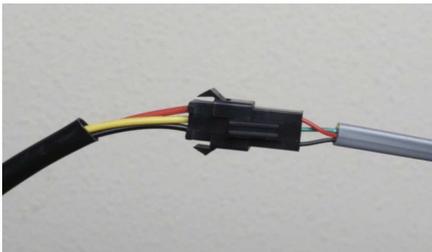
Prior to installation you must perform the system test at the beginning of the Quickstart Guide on page 2.

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. 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 the 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 washer to seal so you don't need use PTFE tape on this connection. Hand tighten and turn an additional ¼ to ½ turn. DO NOT OVER TIGHTEN!
7. Turn on the cold water supply to the 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 ensuring it snaps together securely.
10. Secure the wires to the wall away from the water heater.

11. Plug the wiring harness into the Smart Countdown Control 32 via the RJ-45 connector ensuring it snaps in securely.

12. Plug the recirculation pump into the Smart Countdown Control 32 and plug the Smart Countdown 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 the pump on and run for the duration of the countdown time (default 5 minutes). The red LED turns on while the pump is running.
15. Once the time is up, the pump will turn off and won't turn on again until the dormant interval has expired (default 10 minutes).
16. If the pump fails to turn on when a faucet is fully opened for 1 second, see Trouble Shooting page 6, item 1.

Smart Countdown Control 32 Setup with Smart Phone

The Smart Countdown Control 32 can be used simply as an on demand controller for your recirculation pump or it can be configured to run on a timer via an iPhone or Android smart device so that it will keep the recirculation loop 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 recirculation loop has heated up and then it shuts the pump off while continuing to monitor the recirculation loop temperature.

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 searching for "Smart Recirculation Control 32". Do not "pair" the Bluetooth device, running the app will find and connect to the Smart Recirculation Control 32 and display the "Live Flow"$_{TM}$. The blue LED on the controller will illuminate when the app is connected.

Live Flow $_{TM}$ (initial screen displayed):
This screen displays the flow meter value and whether the pump is running or there is a timer active. There is also a "Trigger Pump" button to activate the controller from the app. This screen is useful for trouble shooting and configuration of the controller. For example, if you find that the controller isn't turning on when hot water is drawn from a faucet, if the flow value on this screen is less than the Sensitivity setting, the controller will not turn on. If the flow is greater than the Sensitivity setting and the controller doesn't turn on then the controller has run within the last dormant interval and won't run again until the dormant interval has expired.

Settings:
This screen provides for controlling all the settings of the firmware. There is 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. 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, you would decrease this value to make the controller more sensitive to flow (require fewer pulses 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 pulses to turn the controller on).

Run Time – This setting allows you to set the amount of time the controller will run the pump when it is triggered. It is configurable up to 15 minutes with the default being 5 minutes.

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 Recirculation Control 32 implements "Smart Timers"$_{TM}$ which, regardless of this setting, will automatically disable if no hot water usage is detected within 24 hours. The timers are re-enabled as soon as hot water flow is detected or the controller is connected to via the app.

Advanced Settings

Dormant Interval – The dormant interval is the number of minutes that the controller lies dormant after sensing flow and heating up the water line. As long as there is hot water flow within the dormant interval the dormant interval timer is reset. The dormant interval is also the number of minutes that the controller waits when a timer is active between pump runs. If you want the pump to turn on more quickly while a timer is active or more quickly between pump runs when you draw hot water you would reduce this value. The default value is 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 the controller counts the number of pulses that occur in the flow meter. If the number of pulses counted is above the sensitivity threshold then the controller deems that there is flow in the hot water line. The default value is 75 hundredths of a second which is fine for most installations.

Bluetooth Advertising Power – This is the power at which the Bluetooth radio advertises it's presence. The app searches for this signal when connecting. The higher this value the further away from the controller the app can find and connect to the controller. The default value is 5.

Bluetooth Transmission Power – This is the power at which the Bluetooth radio communicates with the app once its presence is detected. The higher this value the further away from the controller the app can be taken once the app is connected. The default value is 5.

Reset to Factory – This will reset the Smart Recirculation Control 32 back to the factory defaults. If the controller isn't operating as expected, resetting to the factory defaults is a good thing to try to resolve the issue. You must type "yes" when prompted in order for the factory reset to take place.

Timers:

This screen displays the timers. They are black when the timers are enabled. If they are gray then they are disabled. Tap the timer to edit or delete it. To add a new timer tap the Add Timer button.

The real time clock in the Smart Recirculation Control 32 is set when you connect to the controller with your smart phone. The Smart Recirculation Control 32 has a built in power backup that will keep the clock's time for approximately 48 hours without power. 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 Recirculation Control 32.

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

Log:

Displays a rolling log of the last 341 controller activations.

Firmware:

The firmware of the Smart Recirculation Control 32 can be updated via the smart phone app. The app will notify when you first connect if there is a new firmware available and selecting OK will navigate you to the Firmware screen. By default only the firmware your type of controller will be displayed and if there is an update available it will be enabled. Tap on the firmware and then tap the "Update Firmware" button and the controller will begin the update process. Do not allow the application to go to the background or the phone to sleep while the firmware update is running. If the firmware is already installed it will be gray and not able to be selected.

There is an option on this screen to "Show All Firmware Versions" which will display the firmware from our entire product line. The sensor requirements are different for the different firmware versions 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: 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 sensitivity value is set too high for the controller to detect the flow provided by your faucet.
   RESOLUTION: Open the smart phone app to the "Live Flow"$_{TM}$ view. This will show what flow value the controller is sensing. Turn the 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 sensitivity value to be less than the maximum value you observed. **NOTE:** If you are seeing very low flow at the faucet it is possible the aerator in the faucet is clogged. Removing it and tapping it to remove any accumulated sediment can restore the flow, but they are inexpensive so replacing it is recommended.

2. **SYMPTOM:** Pump turns on when no hot water is being drawn.
   ISSUE: Pressure spikes in the cold water supply line caused by abrupt turning on or off of the cold water (for instance when a toilet fills or a sprinkler system turns on or by fluctuations in the feed from the utility company) can cause the Smart Recirculation Control 32 to trigger the hot water recirculation pump to turn on.
   RESOLUTION: The sensitivity value of the Smart Thermostatic Control 32 is too low and should be adjusted higher. The default value of 20 works well, but can be susceptible to these false triggers. It is recommended to increase it by 5 pulses at a time to filter out these anomalies.

3. **SYMPTOM:** No flow is seen on the "Live Flow"$_{TM}$ screen when a faucet is opened.
   ISSUE 1: A wire connecting the flow meter is broken.
   RESOLUTION: Inspect the wiring harness where it connects to the flow meter to ensure none of the three wires appear broken. If they are contact Leridian Dynamics to get a replacement harness. If it looks good see ISSUE 2.
   ISSUE 2: Sediment or scale is blocking the flow meter.
   RESOLUTION: To ensure that this is indeed the issue perform the following test. Remove the sensor from the flow meter that is held on with 2 small silver screws (don't worry, it won't leak water when the sensor is removed). Start the smart phone app, view the "Live Flow"$_{TM}$ screen and quickly wave a magnet back and forth over the sensor. You should see the flow value change. The flow meter works by spinning a magnet on a turbine that is read by the sensor. If you see a flow value in the smart phone app

then the flow meter is blocked with sediment or scale and will need to be removed and cleaned. If you do not see a flow value then there is an issue with the sensor and/or the wiring harness and it will have to be replaced.

If you need further support please contact:

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