



PROTECTING THE WORLD'S WATER

Start-Up & Operation Guide

Standard TCOM[™] CONTROL PANELS



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How To Use This Manual

This manual contains relevant information for programming and operating the STCOM panel. Along with this, you will find *IMPORTANT* information, *Key Points*, and *Notes* in this manual, marked with easy-to-see visuals:



IMPORTANT — These point out potential hazards to equipment or people during and after the installation.



Key Points — These are critical for a quality installation and are necessary for your installation to be successful.



Notes — These cover useful information and tips that can help make your installation simpler or easier. They may also provide information on variations in components or methods.

Before You Begin

Read this entire manual before attempting to program or operate the STCOM control panel. Also, be sure that these instructions are the most current ones available by checking our online Document Library at www.orenco.com.

Before programming the STCOM panel, make sure that ...

- All necessary system components are wired into the control panel.
- Basic operational checks (float activation, pump run, etc.) have been made by the installer and electrician.
- Power is connected and is available to the panel.
- There's enough water in the system to operate all components throughout the system under "normal" conditions without running the pumps dry.
- You are familiar with the components being controlled by the STCOM panel.



IMPORTANT: *Running pumps below minimum liquid levels or without liquid can result in damage to the pump and false amperage readings.*



Note: *Most settings require some adjustment after start-up, once the system has been in use for 30-60 days.*

Identify System Components, Features, and Characteristics

The STCOM panel is not factory-programmed with project-specific settings. It is vital that you know the project-specific features, incorporated components, and relevant system information before you attempt to enter settings.

Take the necessary time to identify the components, features, and characteristics of the system before continuing.

Primary Tank

- Does the tank use gravity (no pump) or pumping (one to two pumps) to transport effluent?
- How many pumps are there?
- Will the pumping system use demand dosing or timed dosing?
- What is the specified full-load amperage (FLA) of each pump?
- What is the nominal flow rate of each pump in gallons per minute?
- If the tank isn't equipped with pumps, does it have a high-level alarm?

Recirculation Tank

- What recirculation timer mode is best for the treatment system?
- How many pumps are there?
- What is the specified full-load amperage (FLA) of each pump?
- What is the flow rate of each pump in gallons per minute?

Identify System Components, Features, and Characteristics, cont.

Pre-Anoxic Return

- Does the system use a pre-anoxic return pump?
- What timer mode is best for the pre-anoxic return?
- What is the specified full-load amperage (FLA) of the pump?
- What is the flow rate of the pump in gallons per minute?

Discharge Tank

- Does the system have a discharge tank?
- How many pumps are there?
- Will the pumping system use demand dosing or timed dosing?
- What is the specified full-load amperage (FLA) of each pump?
- What is the flow rate of each pump in gallons per minute?

Flow Meter

- Does the system use a flow meter?

Identify Recirculation Timer Mode

Identify the correct recirculation timer mode below for the AdvanTex® Treatment System.

Manual Timer Mode – The operator inputs OFF, ON, OVR OFF (override off), and OVR ON (override on) times.

Estimated Flow Mode – The operator inputs ON and OVR ON times, estimated average and peak daily flows, and the desired recirculation ratio. The panel determines OFF and OVR OFF times based on those inputs.

Auto Timer Mode – The operator inputs ON and OVR ON times, the number of days' worth of data to use in establishing trend average daily flow (typically 3-28 days), and the desired recirculation ratio. The panel determines the trend average day flow based on daily flows during the selected days. The panel then calculates the OFF and OVR OFF times, based on ON time, the trend average day flow, and the recirculation ratio.



Notes:

- *The auto timer mode may not yield the desired treatment results for systems with highly inconsistent flows.*
- *Consult with your Orenco rep before selecting auto timer settings on systems with highly inconsistent flows, such as resorts, RV parks, schools, etc.*
- *The auto timer mode requires that several days' flow data be logged for the timer to be effective – especially with retrofitted existing systems, where flows will be near design at commissioning.*
- *One way to ensure successful operation during the first several days after commissioning is to set the minimum OFF time for the auto timer to handle anticipated flows.*
~ *Another method is to use the manual or estimated flow timer for the first several days of operation, then switch to the auto timer settings once there is enough flow data in the panel to establish an appropriate trend.*

Identify Pre-Anoxic Timer Mode

Choose one of the two timer modes below if the system is equipped with a pre-anoxic return pump (A1).

Manual Timer – The operator inputs ON and OFF times. As long as the recirculation tank bottom float is in the up position, this timer will run on the programmed cycle.

Percentage Run Timer – The panel evaluates flow in gallons from the flow meter or discharge tank pumps at the top of every hour. Then the panel calculates the ON time for the A1 pump and runs the pump for the calculated time, based on the ratio of gallons processed to gallons required to return to the pre-anoxic tank.



Notes:

- The pre-anoxic return pump and the primary tanks can both use the timed-dose feature if the pre-anoxic return plumbing to the pre-anoxic tank is behind the primary tank pumps in the treatment process.
- If the pre-anoxic return pump returns flow in front of the primary tank pumps in the treatment process, adjust the primary tank timer settings to account for this return flow.
- If the pre-anoxic return pump does not return flow in front of the primary tank pumps in the treatment process, the pre-anoxic pump will not affect the operation of the primary tank pumps.
- Primary tank pumps in demand-dose mode should not be affected by the pre-anoxic return pump operation.

Choose Programming Interface

There are two ways to connect with the STCOM panel and navigate its menus: web browser or TCOM viewer.

Web Browser – This interface uses an internet connection to connect to the panel's IP address (listed on the inside of the panel door). Interfacing and navigating with a web browser are similar to navigating through most common websites. This interface allows you to connect to the panel via the Internet while at the site.

TCOM Viewer – This interface connects directly to the panel using a USB cable between the ATRTU board and the USB port on your laptop. Because you may not be familiar with navigating using TCOM Viewer, basic information is provided below.



Key Point: Be aware that keystrokes are case sensitive.

- The majority of settings and data screens in TCOM Viewer are accessible through the System Screen.
- From the System Screen, you can work your way through the menus listed below and make adjustments to the settings or check on the status of equipment.
- To get to the System Screen from the main screen menu, press “1) System Status”.
- To get to a particular menu from the System Screen, key the corresponding letter for the menu you want to access. This allows you to make adjustments to specific processes.
- To navigate the menu, move the cursor (using the tab or arrow keys) to the desired point.
- For ON/OFF point changes, type O for ON or F for OFF and press “Enter” to make changes.
- For changes to numerical values ...
 - Press “C”
 - Press “Enter”
 - Enter the desired numeric value
 - Press “Enter” again

Log In to Panel at Site

Step 1. Open the panel door.

Step 2. Turn on all circuit breakers associated with system components.

- Refer to the system plan for information on system components.
- Circuit breakers are located along the right-hand side of the panel.

Step 3. Connect to the control panel with a web browser or TCOM Viewer.

Step 4. Log in. The unique login and password are provided with the STCOM paperwork.



Note: For more information, see ATRTU-TCOM Field User Guide, EIN-CP-TCOM-SW-2.

Check Function of Float Switches

Check the operation of the float switches in the Digital Inputs menu that correspond to each of the system's operational processes. The Digital Inputs menu can also be used for troubleshooting faulty floats or problematic wiring after the system has been commissioned.



Notes:

- During startup, each float switch should be tested by removing the float switch assembly, letting all of the switches hang, and checking that the corresponding inputs to the float switches are OFF.
- Once this is verified, each float switch should be lifted to check the signal back to the panel.
- After a short delay when a float switch is lifted, the corresponding input should turn to ON.
- Once the float is dropped, it should return to OFF.

Step 1. Evaluate the float switch inputs in the "Digital Inputs" menu.

- PT- Corresponds to the Primary Tank
- RT- Corresponds to Recirc Tank
- DT- Corresponds to Discharge Tank
- HLA or HLA/Lag should correspond to the top float in the tank.
- OVR/Lead On or OVR should correspond to the next float under the top float.
- Tmr/Pmps Off should correspond to the next float above the bottom float.
- RO/LLA should correspond to the bottom float in the tank.

Step 2. Check that all of the float switch inputs are operating in Automatic. None should be overridden ON or OFF.

- When a float is in the Up position, the current point value should be "ON".
- When the float is in the Down position, the current point value should be "OFF".

Step 3. If any float switch inputs are out of order or are not functioning, consult with the electrician to address wiring concerns.

- Contact your Orenco rep for troubleshooting support if needed.

Gather Pump Amperage Data

Ensure that the amperage of every pump in the system is within its specifications during operation. If it has not been done yet, measure and compare the amperage of each pump to its amperage as read by the STCOM panel. You can do this as you program the panel or before you begin programming.

Step 1. Go to the STCOM panel's Analog Inputs menu and observe the correct point for the pump's current transformer.

- Point 595: P1 pump current transformer
- Point 596: P2 pump current transformer
- Point 598: R1 pump current transformer
- Point 599: R2 pump current transformer
- Point 600: R3 pump current transformer
- Point 601: R4 pump current transformer
- Point 591: A1 pump current transformer
- Point 603: D1 pump current transformer
- Point 604: D1 pump current transformer

Step 2. The current transformer point should read "0."

Step 3. Attach a multimeter to the loop on the appropriate pump's circuit breaker.

Step 4. Activate the pump and compare the multimeter reading to the current transformer point's reading.

- It may take a few seconds for the amperage on the STCOM panel to stabilize.

Step 5. Compare the readings from the multimeter and the current transformer point.

- The amperages for the pump should be within 0.5 amps of one another.
- If they are not within 0.5 amps, contact an Orenco technician.

Step 6. Record both readings on the start-up form and check that the pump's amperage is within specification.

Step 7. Repeat this process for each of the pumps used in the system.

Step 8. For systems using 3-phase pumps, the overload attached to the motor contactor for each pump used will require adjustment based on the pump's operating amperage.

Step 9. For systems using 3-phase pumps, confirm pump motor rotation is in the counter-clockwise direction.

- 3-phase pumps that are wired incorrectly may operate at an amperage outside of the specified operating amperage.

Calibrate Pump Flow Rates

It's important to calibrate and record the flow rates for all pumps in a treatment system during the system start-up.

Use a draw-down test, flow meter, pressure gauge, etc. to determine the actual flow (in gallons per minute) from each pump in the system. You can do this before you begin programming the panel or as you program it.

- If you are unfamiliar with pump flow calibration, consult with your Orenco Rep for assistance.

Calibrate Flow Meter

Use the Calibrate Flow Meter menu to calibrate a magnetic field flowmeter (with a 4-20mA output to the control panel), if the system is equipped with one.

- The factory default for low-flow cut-off is 1 (gpm).
- Most magnetic field flow meters have a digital readout for flow in gallons per minute (gpm).
- If you're not familiar with flow meter calibration or 4-20mA signal operation, consult with your Orenco rep for assistance.

Calibrate Flow Meter, cont.

Step 1. Compare the value at Point 353, “Current Flow,” to the digital readout flow value from the flowmeter.

Step 2. If these readings don't match, calibrate the 4-20mA signal by making adjustments to Point 357 (Flow @ 20mA).

Step 3. Enter a low-flow cut-off value into Point 359 to deter false readings at low flow from the flow meter.

Make (v) Options Menu Selections

From the (v) Options menu, follow the steps below to configure the panel to the system's pump and process options based on the system's design.

Step 1. Select Primary Tank Pump and Process Options

PT Gravity Setting (No Primary Tank Pumps): To discharge by gravity, set Point 337 to OFF; set Point 338 (PT Gravity) to ON.

- Gravity is only used when there are no primary tank pumps.
- This disables the PT pump operation.
- Set Point 564, PT RO/LLA, in the Digital Input menu, to ON.

PT Demand Dosing (Primary Tank Pumps): To discharge by demand dosing, set Point 337 and Point 338 to OFF.

- Primary tank float switches operate as RO, OFF, ON, and High Water/Lag Enable switches (factory set).
- The pumps operate in duplex alternating; only one pump will run during an ON cycle unless the High Water Alarm/Lag Enable float switch activates.

PT Timed Dosing (Activate Primary Tank Pumps): To discharge by timed dosing, set Point 337 to ON; set Point 338 to OFF.

- Primary tank float switches operate as RO, Timer ON/OFF, Override Timer ON/OFF, and High Water Alarm/Lag Pump Enable switches (factory set).
- The timer settings inputs are required for c) Primary Tank Adjustable Settings.
- The pumps operate in duplex alternating; only one pump will run during an ON cycle unless the High Water Alarm/Lag Enable float switch activates.

Step 2. Select Recirculation Tank Pump and Process Options

RT Dup Pump Mode 1: To select this pumping option, set Point 340 to ON; set Points 341, 342, 343, and 344 to OFF.

- This option is for two-pump configurations that need one pump running to fully pressurize the treatment manifold.
- Pumps can be plumbed to separate treatment manifolds or both pumps can be plumbed together.
- R1 and R2 pumps are activated; R3 and R4 pumps are deactivated.
- Only one pump runs during each normal ON/OFF timer cycle in this mode.
- When one ON/OFF timer cycle is complete, the other pump runs during the following ON/OFF cycle.
- Check pump operation and sequence during automatic operation to ensure that settings are appropriate.
- Always validate settings against the project plan set.
- Contact an Orenco representative if you are unsure of appropriate recirc pump settings.

RT Dup Pump Mode 2: To select this pumping option, set Point 341 to ON; set Points 340, 342, 343, and 344 to OFF.

- This option is for two-pump configurations that need both pumps running together to fully pressurize the treatment manifold.
- Pumps have to be plumbed together.
- R1 and R2 pumps are activated; R3 and R4 pumps are deactivated.
- Both R1 and R2 pumps run together during each ON/OFF timer cycle.
- Check operation and sequence of the pumps during automatic operation to ensure settings are appropriate.
- Always validate settings against the project plan set.
- Contact an Orenco representative if you are unsure of appropriate recirc pump settings.

Make (v) Options Menu Selections, cont.

RT Quad Pump Mode 1: To select this pumping option, set Point 342 to ON; set Points 340, 341, 343, and 344 to OFF.

- This option is for four-pump configurations that need two pumps running together to fully pressurize the treatment manifold(s).
- Pumps R1 and R2 are plumbed together; Pumps R3 and R4 are plumbed together.
- Pumps R1, R2, R3, and R4 are activated.
- One pair of pumps runs during a normal ON/OFF timer cycle in this mode.
- When the ON/OFF timer cycle is complete for one set of pumps, the other set of pumps runs during the following ON/OFF cycle.
- Check operation and sequence of the pumps during automatic operation to ensure settings are appropriate.
- Always validate settings against the project plan set.
- Contact an Orenco representative if you are unsure of appropriate recirc pump settings.

RT Quad Pump Mode 2: To select this pumping option, set Point 343 to ON; set Points 340, 341, 342, and 344 to OFF.

- This option is for AdvanTex® AX-Max® systems with four-pump configurations that need all four pumps running together to fully pressurize the treatment manifold(s).
- Pumps R1 and R2 are plumbed together; Pumps R3 and R4 are plumbed together.
- Pumps R1, R2, R3, and R4 are activated.
- Both pairs of pumps run at the same time during a normal ON/OFF timer cycle in this mode.
- Check operation and sequence of the pumps during automatic operation to ensure settings are appropriate.
- Always validate settings against the project plan set.
- Contact an Orenco representative if you are unsure of appropriate recirc pump settings.

RT Quad Pump Mode 3: To select this pumping option, set Point 344 to ON; set Points 340, 341, 342, and 343 to OFF.

- This option is for four-pump configurations that need only one pump running to fully pressurize the treatment manifold(s).
- Pumps can be plumbed to separate treatment manifolds or pairs of pumps can be plumbed together.
- Pumps R1, R2, R3, and R4 are activated.
- Only one pump runs during each normal ON/OFF timer cycle in this mode.
- When one ON/OFF timer cycle is complete, the next pump in the order runs during the following ON/OFF cycles.
- Check operation and sequence of the pumps during automatic operation to ensure settings are appropriate.
- Always validate settings against the project plan set.
- Contact an Orenco representative if you are unsure of appropriate recirc pump settings.

Step 3. Select Pre-Anoxic Return Pump and Process Options

AR Return Pumping (Activate or Deactivate): If there is no pre-anoxic return pump, set Points 349 and 350 to OFF.

- Set Points 209 and 210 in n) A1 Timer Settings/Flow Data to "0."
- Set Point 636, "A1," in the Digital Outputs menu, to OFF.

AR Manual Timer (Pre-Anoxic Pump): To use the manual timer option, set Point 349 and Point 350 to OFF.

- Enter desired manual timer ON setting at Point 209 in n) A1 Timer Settings/Flow Data.
- Enter desired manual timer OFF setting at Point 210 in n) A1 Timer Settings/Flow Data.
- This option is intended for systems with no discharge pumps or flow meter.

AR Percentage Flow Timer (Pre-Anoxic Pump): To use the percentage flow timer, set Point 349 to ON.

- To use flow data from the discharge pumps, be sure that Point 350 is set to OFF.
- To use flow data from a flow meter on the system, turn Point 350 to ON.
- Enter calibrated A1 pump flow data at Point 218 in n) A1 Timer Settings/Flow Data.
- Either the discharge pump flow or flow meter information can be used.

Make (v) Options Menu Selections, cont.

Step 4. Select Discharge Tank Pump and Process Options

DT Gravity Setting (No Discharge Tank Pumps): To use discharge by gravity, set Point 346 to OFF; set Point 347 (DT Gravity) to ON.

- Gravity is only used when there are no discharge tank pumps.
- This disables the DT pump operation.
- Set Point 573, DT RO/LLA, in the Digital Input menu, to ON.

DT Demand Dosing (Discharge Tank Pumps): To use demand dosing, set Point 346 and Point 347 to OFF.

- Discharge tank float switches operate as RO, OFF, ON, and High Water/Lag Enable switches (factory set).
- Pumps operate in duplex alternating; only one pump runs during an ON cycle unless the High Water Alarm/Lag Enable float switch activates.

DT Timed Dosing (Discharge Tank Pumps): To use timed dosing, set Point 346 to ON; set Point 347 to OFF.

- Discharge tank float switches operate as RO, Timer ON/OFF, Override Timer ON/OFF, and High Water Alarm/Lag Pump Enable switches (factory set).
- The timer settings inputs are required for q) DT Adjustable Settings.
- Pumps operate in duplex alternating; only one pump runs during an ON cycle unless the High Water Alarm/Lag Enable float switch activates.

Enter or Adjust Settings

Program the panel in the following sequence for initial programming and start-up, based on the flow path of the treatment system. For adjustments made during the course of normal operation, make adjustments to data points as needed.



Note: Some data point changes may require additional adjustments in a different menu.

Step 1. Set or Adjust Primary Tank Pump ON/OFF Timer Cycles



Key Points:

- The ON/OFF timer begins with the OFF cycle, with the tank's timer float switch activated and the RO float switch inactive.
- When the OFF time cycle completes, the ON time cycle begins and the pump runs until the ON time cycle completes.
- If the override float in the primary tank is also ON, the Override OFF cycle acts as the primary timer. Once the Override OFF cycle completes, the LEAD primary tank pump activates and runs for the duration of the programmed Override ON time. The override timer deactivates when the override float is in the OFF position; the normal timer deactivates when the timer float is in the OFF position.

Step 1a: If there is no equipment in the primary tank, turn off all primary tank functions in the (v) Options menu and jump to Step 9.

Step 1b: To adjust the high-level alarm setting in a system with no primary tank pumps, go to Step 2.

Step 1c: Go to the (v) Options menu and set the primary tank's operation configuration to "demand dosing" or "timed dosing."

- Demand dosing – jump to Step 2 and enter the information for Point 38.
- Timed dosing – continue to Step 1d.

Step 1d: Go to the PT Adjustable Settings Menu.

Step 1e: Select Point 33 and enter the desired OFF time, in minutes.

Step 1f: Select Point 34 and enter the desired ON time, in minutes.

Step 1g: Select Point 35 and the desired OVR OFF (override OFF) time, in minutes.

Step 1h: Select Point 36 and enter the desired OVR ON (override ON) time, in minutes.

Enter or Adjust Settings, cont.

Step 2. Set or Adjust Primary Tank High-Level Alarm Delay

Select Point 38 and enter the desired time delay for the primary tank high-level alarm, in seconds.

- The factory setting is 10 seconds.
- This delay applies to the local alarm and the call-out alarm notification.
- If the high-level alarm float switch activates, the alarm delay timer counts down while the switch remains activated.
- The alarm does not activate until the delay time is complete.

Step 3. Set Primary Tank Lag Pump Enable

Select Point 39 and choose ON or OFF.

- The factory setting is ON.
- Turning the lag pump OFF programs the panel to not activate the lag pump if the high-level alarm is activated.
- The LAG PUMP ON feature is tied to the high-level alarm input.
- Although the pumps will alternate during normal operation with the lag pump feature OFF, Orenco recommends leaving Point 39 ON.

Step 4. Set or Adjust Primary Tank Minimum Dose Time

Select Point 40 and enter the minimum pump run time for the primary tank pumps, in seconds.

- The factory setting is 30 seconds.
- This setting keeps pumps from short-cycling.
- Each time a pump in the primary tank activates, it remains active for at least the specified minimum run time, unless the redundant off (RO) float is deactivated.

Step 5. Set or Adjust Primary Tank High-Amp Alarm

Select Point 42 and enter the desired high-amperage alarm point for the panel, in amps.

- Use the measured amperage of the pumps to determine the value for the high-amp setting.
- Orenco recommends setting the high-amp alarm at +3 amps above the corresponding pumps' measured amperage during start-up.
- When the panel activates the pumps, the programming evaluates the operating amperage of the pump called to run.
- If the value input for the high-amp alarm is exceeded by either of the pumps, a "pump failure" alarm activates.

Step 6. Set or Adjust Primary Tank Low-Amp Alarm

Select Point 43 and enter the desired low-amperage alarm point, in amps.

- Use the measured amperage of the pumps to determine the value for the low-amp setting.
- Orenco recommends setting the low-amp alarm setting at -3 amps below the measured amperage from the corresponding pumps during start-up.
- When the panel activates the pumps, the programming evaluates the operating amperage of the pump called to run.
- If the value input for the low-amp alarm is exceeded by either of the pumps, a "pump failure" alarm activates.

Step 7. Set Pump P1 Gallons Per Minute

Select Point 46 and enter the calibrated flow from P1 in gallons per minute (gpm).

Step 8. Set Pump P2 Gallons Per Minute

Select Point 47 and enter the calibrated flow from P2 in gallons per minute (gpm).

Step 9. Set Recirc Trend Data (ON/OFF)

Select Point 113 and enter ON or OFF.



Key Point: This setting is directly tied to Point 129, "Turn Manual Timer ON or OFF."

- The factory default setting is OFF.
- Selecting OFF enables either the manual timer mode or the estimated flow mode.
- Selecting ON enables the use of trend data for the auto timer mode.

Enter or Adjust Settings, cont.

Step 10. Set or Adjust Recirc Ratio

Select Point 115 and enter the desired recirculation ratio value.

- The factory default setting is 4.
- When using either the auto timer mode or estimated flow mode, the recirculation ratio value is what is used for the timer ON/OFF calculations.

Step 11. Set or Adjust Max Off Time (Auto Timer)

Select Point 116 and input the maximum time off for trend operation.

- The factory default is 20 minutes.
- When using the auto timer mode, this value creates a cap in the event of low-flow situations that can cause a longer calculated OFF time than desired.
- Depending on the system type, this value may need to be higher or lower. (Your Orenco rep can provide assistance and recommendations.)

Step 12. Set or Adjust Min Off Time (Auto Timer)

Select Point 117 and enter the maximum time off for trend operation.

- The factory default is 0.5 minutes.
- When using auto timer mode, this value keeps the OFF time from becoming too short if the trend flow is too high.

Step 13. Set or Adjust Number of Days for Average

Select Point 119 and enter the number of days of daily flow data for the panel to use in order to establish an average daily flow (used in timer calculations).

- The factory default setting is 28 days.
- Various system types and conditions may need a different amount of days to look at trending data.
- Orenco recommends using 3 to 28 days' worth of data for trend calculations.

Step 14. Check Auto Timer Information

Check Points 120, 121, 122, and 123 for calculated average flows and calculated timer settings used by the auto timer mode.

- Check these values after the system has been in operation for a few months to ensure they are within expectations of system operations.

Step 15. Set or Adjust Estimated Average Daily Flow

Select Point 125 and enter the estimated average daily flow in gallons per day.

- The factory default setting is 1,000 gpd.
- Point 125 drives the calculations for the recirc OFF time in estimated flow mode.

Step 16. Set or Adjust Estimated Peak Daily Flow

Select Point 126 and enter the estimated peak daily flow in gallons per day.

- The factory default setting is 2,000 gpd.
- Point 126 drives the calculations for the recirc OVR OFF time in estimated flow mode.
- Trend data does not affect the estimated flow values or the timer settings.
- Some systems' flows may be much lower than designed for during the first several months of operation.
- Monitor flows and make adjustments to this setting during normal system operation, as necessary.

Step 17. Check Estimated Timer Flow Information

Check Points 127 and 128 for calculated OFF and OVR OFF times based on the treatment system's recirc ratio (Point 115) and estimated average and peak flow value inputs.

- Check that these values are within expectations of system operation when using the estimated flow timer function.

Enter or Adjust Settings, cont.**Step 18. Set Manual Timer ON or OFF**

Select Point 129 and enter ON or OFF to activate or deactivate the manual timer.

- The factory default setting is ON.
- To activate manual timer mode, make sure Point 113 is OFF before proceeding.
- To activate auto timer mode or estimated flow mode operation, make sure Point 129 is OFF before proceeding.

Step 19. Set or Adjust RT Man Off Time

Select Point 131 and enter the desired OFF time for the recirculation pumps, in minutes.

- The factory default setting is 15 minutes.
- This timer will continue to cycle through OFF and ON times as long as the recirculation tank RO float is in the up position when the manual timer is on.

Step 20. Set or Adjust RT Man OVR Off Time

Select Point 132 and enter the desired OVR OFF time for the recirculation pumps, in minutes.

- The factory default setting is 7.5 minutes.
- The override timer is activated when the OVR float in the recirculation tank is activated, when the manual timer is on. The override timer is deactivated when the OVR float is deactivated.

Step 21. Set or Adjust RT On Time

Select Point 133 and enter the desired Recirculation Pump ON time for the recirculation pumps, in minutes.

- The factory default setting is 1.5 minutes.
- This is the recommended ON time for most commercial AdvanTex systems.
- If a different ON time is desired, consult with your Orenco rep.

Step 22. Set or Adjust RT OVR On Time

Select Point 134 and enter the desired Recirculation Pump OVR ON time for the recirculation pumps, in minutes.

- The factory default setting is 1.5 minutes.
- This is the recommended OVR ON time for most commercial AdvanTex systems.
- If a different OVR ON time is desired, consult with your Orenco rep.

Step 23. Recirculation Tank High-Level Alarm Delay

Select Point 136 and enter the desired time delay for the recirculation tank high-level alarm, in seconds.

- The factory setting is 10 seconds.
- This delay applies to activation of the local alarm and the call-out alarm notification.
- No alarm activates until the delay time is complete.
- If the high-level alarm float switch activates, the alarm delay timer counts down while the switch remains activated.

Step 24. Set or Adjust Recirculation Tank High-Amp Alarm

Select Point 139 and enter the desired high-amperage alarm point, in amps.

- Use the measured amperage of the pumps to determine the value for the high-amp setting.
- Orenco recommends setting the high-amp alarm setting at +3 amps above the measured amperage from the corresponding pumps during start-up.
- When the panel activates the pumps, the programming evaluates the operating amperage of the pump called to run.
- If the value input for the high-amp alarm is exceeded by either of the pumps, a "pump failure" alarm activates.

Enter or Adjust Settings, cont.

Step 25. Set or Adjust Recirculation Tank Low-Amp Alarm

Select Point 140 and enter the desired low-amperage alarm point, in amps.

- Use the measured amperage of the pumps to determine the value for the low-amp setting.
- Orenco recommends setting the low-amp alarm setting at -3 amps below the measured amperage from the corresponding pumps during start-up.
- When the panel activates the pumps, the programming evaluates the operating amperage of the pump called to run.
- If the value input for the low-amp alarm is exceeded by the either of the pumps, a “pump failure” alarm activates.

Step 26. Set Pump R1 Gallons Per Minute

Select Point 141 and enter the calibrated flow from R1 in gallons per minute (gpm).

Step 27. Set Pumps R2-R4 Gallons Per Minute

Select each point (142 for R2, 143 for R3, 144 for R4) that corresponds to each additional recirc pump and enter the calibrated flow for each pump in gallons per minute (gpm).

Step 28. Check RT Flow / Timer Calcs

Step 28a. Check Point 161, Estimated Average Flow Rate, for accuracy and to view the average flow rate of active recirc tank pumps, based on the pumps’ calibrated gpm inputs.

- Point 161 is used in timer calculations for the Auto Timer and Estimated Flow Timer.

Step 28b. Check Point 164, 165, 166, 167, and 168 for information on logged data and calculated OFF times for the auto timer mode.

Step 29. Configure Anoxic Return Pump Option

Step 29a: Go to the (v) Options menu.

Step 29b: Select Point 349.

Step 29c: Enter ON or OFF, based on whether or not the system uses an anoxic return pump.

- If the system is equipped with an anoxic return pump, select ON
- If the system is not equipped with an anoxic return pump, select OFF, and ...
 - Set the pre-anoxic manual OFF and ON timers to “0.”
 - Set Point 636 in the Digital Outputs menu to OFF.

Step 30. Adjust Pre-Anoxic Return Manual Timer

Adjust Points 209 and 210, as needed, during regular operation.

- The factory settings are 58 minutes OFF and 1 minute ON.
- This timer is not typically adjusted during start-up.
- The manual timer does NOT adjust to variations in flow.

Step 31. Set or Adjust Pre-Anoxic Manual OFF Time

Select Point 209 and enter the desired OFF time for the A1 pump, in minutes.

Step 32. Set or Adjust Pre-Anoxic Manual ON Time

Select Point 210 and enter the desired ON time for the A1 pump, in minutes.

Step 33. Set or Adjust A1 Pump Flow Rate

Select Point 218 and enter the calibrated pump flow rate for the A1 pump (gpm).

- The calibrated flow rate is important for the return flow calculations used to adjust Point 216.
- This flow rate can provide valuable insight when adjusting system processes.

Enter or Adjust Settings, cont.

Step 34. Set or Adjust Pre-Anoxic Pump (A1) High-Amp Alarm

Select Point 220 and enter the desired high-amperage alarm point, in amps.

- Use the measured amperage of the pumps to determine the value for the high-amp setting.
- Orenco recommends setting the high-amp alarm setting at +3 amps above the measured amperage from the corresponding pumps during start-up.
- When the panel activates the pumps, the programming evaluates the operating amperage of the pump called to run.
- If the value input for the high-amp alarm is exceeded by either of the pumps, a “pump failure” alarm activates.

Step 35. Set or Adjust Pre-Anoxic Pump (A1) Low-Amp Alarm

Select Point 221 and enter the desired low-amperage alarm point, in amps.

- Use the measured amperage of the pumps to determine the value for the low-amp setting.
- Orenco recommends setting the low-amp alarm setting at -3 amps below the measured amperage from the corresponding pumps during start-up.
- When the panel activates the pumps, the programming evaluates the operating amperage of the pump called to run.
- If the value input for the low-amp alarm is exceeded by either of the pumps, a “pump failure” alarm activates.

Step 36. Set or Adjust Discharge Tank Pump ON/OFF Timer Cycles

Step 36a. If there is no discharge tank, no discharge pumps, or no equipment in the primary tank, turn off all discharge tank functions in the (v) Options menu.

Step 36b. To adjust the high-level alarm setting in a system with no discharge tank pumps, go to Step 37.

Step 36c. Go to the (v) Options menu and set the discharge tank’s operation configuration to “demand dosing” or “timed dosing.”

- Demand dosing – jump to Step 37 and enter the information for Point 262.
- Timed dosing – continue to Step 36d.

Step 36d. Go to the DT Adjustable Settings Menu.

Step 36e. Select Point 257 and enter the desired OFF time, in minutes.

Step 36f. Select Point 258 and enter the desired ON time, in minutes.

Step 36g. Select Point 259 and the desired OVR OFF (override OFF) time, in minutes.

Step 36h. Select Point 260 and enter the desired OVR ON (override ON) time, in minutes.



Key Points:

- The ON/OFF timer cycle starts when the tank’s timer float switch activates and triggers the OFF time cycle. When the OFF time cycle completes, the programmed ON time cycle begins running the pump(s) until the ON time cycle completes.
- If the override float in the discharge tank is also ON, the Override OFF cycle acts as the primary timer, and once the Override OFF cycle completes, the LEAD discharge tank pump activates and runs for the duration of the programmed Override ON time.
- The override timer deactivates when the override float is in the OFF position; the normal timer deactivates when the timer float is in the OFF position.

Step 37. Set or Adjust Discharge Tank High-Level Alarm Delay

Select Point 262 and enter the desired time delay for the discharge tank high-level alarm, in seconds.

- The factory setting is 10 seconds.
- This delay applies to the local alarm and the call-out alarm notification.
- If the high-level alarm float switch activates, the alarm delay timer counts down while the switch remains activated
- The alarm does not activate until the delay time is complete.

Enter or Adjust Settings, cont.

Step 38. Set Discharge Tank Lag Pump Enable

Select Point 263 and choose ON or OFF.

- The factory setting is ON.
- Turning the lag pump OFF programs the panel to not activate the lag pump if the high-level alarm is activated.
- The LAG PUMP ON feature is tied to the high-level alarm input.
- Although the pumps will still alternate during normal operation with the lag pump feature OFF, Orenco recommends leaving this feature ON.

Step 39. Set or Adjust Discharge Tank Minimum Dose Time

Select Point 264 and enter the minimum pump run time for the discharge tank pumps, in seconds.

- The factory setting is 30 seconds.
- This setting keeps pumps from short-cycling.
- Each time a pump in the primary tank activates, it remains active for at least the specified minimum run time, unless the redundant off (RO) float is deactivated.

Step 40. Set or Adjust Discharge Tank High-Amp Alarm

Select Point 267 and enter the desired high-amperage alarm point, in amps.

- Use the measured amperage of the pumps to determine the value for the high-amp setting.
- Orenco recommends setting the high-amp alarm setting at +3 amps above the measured amperage from the corresponding pumps during start-up.
- When the panel activates the pumps, the programming evaluates the operating amperage of the pump called to run.
- If the value input for the high-amp alarm is exceeded by either of the pumps, a “pump failure” alarm activates.

Step 41. Set or Adjust Discharge Tank Low-Amp Alarm

Select Point 268 and enter the desired low-amperage alarm point, in amps.

- Use the measured amperage of the pumps to determine the value for the low-amp setting.
- Orenco recommends setting the low-amp alarm setting at -3 amps below the measured amperage from the corresponding pumps during start-up.
- When the panel activates the pumps, the programming evaluates the operating amperage of the pump called to run.
- If the value input for the low-amp alarm is exceeded by either of the pumps, a “pump failure” alarm activates.

Step 42. Set or Adjust Pump D1 Gallons Per Minute

Select Point 270 and enter the calibrated flow from D1 in gallons per minute (gpm).

Step 43. Set or Adjust Pump D2 Gallons Per Minute

Select Point 271 and enter the calibrated flow from D2 in gallons per minute (gpm).

Select Alarm Settings

The Alarm Settings menu allows adjustments to how alarms and notifications can be made from the STCOM panel.



Key Points:

- It's important to set these options based on how the operator will be able to respond to alarm conditions.
- If remote connectivity isn't possible, minimize local alarm delays to help on-site personnel respond to the alarm more quickly.

Step 1. Select Point 449, Audible Delay, to adjust the desired delay for the local audible alarm during an alarm condition, if needed.



Note: The panel must stay in an alarm condition for the entire input time before the audible alarm activates.

Select Alarm Settings, cont.

Step 2. Select Point 450, Audible Reactivation, to adjust the time to reactivation for the audible local alarm, if needed.

- The factory default setting is 720 minutes.
- Audible reactivation controls the timer for reactivating the audible alarm after the panel's push-to-silence button has been pressed, if the alarm condition is still active once the silence time is up.
- The local audible alarm will remain on during the audible reactivation cycle, even if repeatedly silenced, until the alarm condition ceases.

Step 3. Select Point 451, Page Interval, to adjust the interval for the STCOM panel to call out when the alarm condition persists, if needed.

Step 4. Select Point 452, Current Alarm Delay, and adjust the time in which pump amperage is ignored, in seconds, if needed.

- The factory default is 20 seconds.

Set Up Mailbox Configuration

Points 461-464 activate the desired mailboxes to be used to notify the operator of alarm conditions. If none of the mailboxes are enabled, the panel will not send remote notifications of alarm conditions.

To receive remote notifications, the mailboxes must be set up to direct alarm notifications.

Step 1. Select Point 461, Mailbox 1, and enter the email address(es) to receive alarm notifications.

- One or more email addresses can be entered, however, a maximum of 150 characters can be used.

Step 2. Continue selecting Points 462-464, Mailboxes 2-4, as needed to assign additional email addresses.

Change Analog/Digital Inputs and Digital Outputs



Key Points:

- Do not make permanent changes in the Analog Inputs, Digital Inputs, or Digital Outputs menus unless it is necessary for normal system operation.
- When manually overriding an input or output during testing and evaluation, be careful not to make permanent changes.
- Use the "Timed Override" action to prevent overrides used during troubleshooting and evaluation from becoming permanent.
- Unless the "Timed Override" action is used, manually overridden points will remain overridden until manually changed.

Analog Inputs

This menu shows the current signal condition of all components in the system that send an analog (value) signal to the panel. Analog input values can be overridden; however, this should only be done on a temporary basis for testing and evaluation.

Digital Inputs

This menu shows the current signal condition of all components in the system that send a digital (ON/OFF) signal to the panel. The ON or OFF signals from each component can be manually overridden in the Digital Inputs menu. This is helpful for evaluating and troubleshooting the operation of pumps and float switches.

Digital Outputs

This menu shows the ON/OFF outputs from the TCOM board. The ON or OFF signals from the STCOM panel can be manually overridden in this menu. This is helpful for evaluating pump outputs during troubleshooting or testing.

- If the treatment system is NOT using an Anoxic Return pump, selecting Point 636 "A1" and setting it to OFF will turn off the A1 pump option.
- If the treatment system is NOT using a Vent Fan, selecting Point 637 "Fan" and setting it to OFF will turn off the vent fan function.

Guide to Informational Menus

A1 Pump Data

The remaining menu points give information regarding cycles, run times, and daily flow for the pre-anoxic return pump. This information is useful when evaluating system processes, especially when making adjustments after analyzing performance data.

Alarm Codes

These menu(s) are a list of all alarm conditions and the status of those alarm conditions. If any of these alarms are activated, they'll typically be shown in the System Status screen; however, you can evaluate if a specific alarm condition has recently changed through these menus. This can be helpful when troubleshooting intermittent alarm conditions.

Alarm Logic

This menu gives the status of the alarm settings.

Anoxic Pump (A1) Status

This menu displays information specific to the Pre-Anoxic return pump. Use the information on this page to check that the timer mode is correct and to look at calculated times when using the Flow Percentage return timer.

DT Flow Data

This menu gives information corresponding to run times for both the D1 and D2 pumps. This menu is helpful during system operations and troubleshooting. It also contains information that can be used to calculate flow rates into the system.

DT Pumps Hourly Info/Hourly Flow

This menu gives information on hourly flows from the D1 and D2 pumps. This information is useful for troubleshooting and to evaluate last-hour flow in correspondence with the pre-anoxic return flow pace timer.

Logs

This menu can be accessed to view system flows, alarm logs, etc., once the system has been placed into operation. Select the Logs menu and select log type.

- Alarm Log allows the user to view alarms over the selected time frame.
- User Logs allows the user to select process logs over the selected timeframe. This is useful for evaluating flows and reporting.

PT Flow Data

This menu gives information corresponding to run times for both the P1 and P2 pumps. This menu is helpful during system operations and troubleshooting. It also contains information that can be used to calculate flow rates into the system.

Recirc Tank (RT) Status Menu/1

This menu gives status details on the recirculation tank settings, modes, and alarms.

Recirc Tank (RT) Status Menu/2

This menu displays information on the status and amperage of the recirculation tank pumps.

RT Flow Rate

This menu gives information corresponding to run times and flow information for pumps R1, R2, R3, and R4. It is helpful during system operations and troubleshooting.

System Status Menu

This menu shows the status of the various activities and processes in the treatment system.

- Turn off all unused features while going through the panel start-up.
- There may be many high-level alarm, low-level alarm, or pump failure indications when the STCOM panel first powers up.
- If a low-level alarm occurs during start-up testing, calibrating, etc., check the liquid level in the tank associated with the alarm to ensure the pumps are not running below their minimum liquid level (MLL).

Guide to Settable Programming Points**(v) Options Menu**

- Point 337 – enables pump functions in the primary tank (ON/OFF)
- Point 338 – enables gravity discharge functions in the primary tank (ON/OFF)
- Point 340 – RT Duplex 1 Pumping Mode (ON or OFF)
- Point 341 – RT Duplex 2 Pumping Mode (ON or OFF)
- Point 342 – RT Quad 1 Pumping Mode (ON or OFF)
- Point 343 – RT Quad 2 Pumping Mode (ON or OFF)
- Point 344 – RT Quad 3 Pumping Mode (ON or OFF)
- Point 349 – anoxic return pump (ON or OFF)
- Point 350 – use flow meter (ON/OFF)

Primary Tank

- Point 33 – normal OFF time (minutes)
- Point 34 – normal ON time (minutes)
- Point 35 – OVR OFF time (minutes)
- Point 36 – OVR ON time (minutes)
- Point 38 – high-level alarm delay (seconds)
- Point 39 – lag pump enable (ON or OFF)
- Point 40 – minimum dose time (seconds)
- Point 42 – high-amp alarm setting (amps)
- Point 43 – low-amp alarm setting (amps)
- Point 46 – pump P1 gallons per minute (gpm)
- Point 47 – pump P2 gallons per minute (gpm)

Recirculation Tank

- Point 113 – recirc trend data (ON or OFF)
- Point 115 – recirc ratio (ratio value)
- Point 116 – max off time, auto timer (minutes)
- Point 117 – min off time, auto timer (minutes)
- Point 119 – number of days for average (days)
- Point 125 – estimated average daily flow (gpd)
- Point 126 – estimated peak daily flow (gpd)
- Point 129 – recirculation tank manual timer ON/OFF (ON or OFF)
- Point 131 – recirculation tank pump manual OFF timer (minutes)
- Point 132 – recirculation tank pump manual Override timer (minutes)
- Point 133 – recirculation tank pump ON time (minutes)
- Point 134 – recirculation tank pump Override ON time (minutes)
- Point 136 – recirculation tank high-level alarm delay (seconds)
- Point 139 – recirculation tank high-amp alarm setting (amps)
- Point 140 – recirculation tank low-amp alarm setting (amps)
- Point 141 – pump R1 gallons per minute (gpm)
- Point 142-144 – pumps R1-R4 gallons per minute (gpm)

Guide to Settable Programming Points, cont.

Pre-Anoxic Return

- Point 209 – pre-anoxic manual OFF time (minutes)
- Point 210 – pre-anoxic manual ON time (minutes)
- Point 215 – dosing frequency value (doses per hour)
- Point 218 – A1 pump flow rate (gpm)
- Point 220 – pre-anoxic pump (A1) high-amp alarm (amps)
- Point 221 – pre-anoxic pump (A1) low-amp alarm (amps)

Discharge Tank

- Point 257 – normal OFF time (minutes)
- Point 258 – normal ON time (minutes)
- Point 259 – OVR OFF time (minutes)
- Point 260 – OVR ON time (minutes)
- Point 262 – discharge tank high-level alarm delay (seconds)
- Point 263 – discharge tank lag pump enable (ON/OFF)
- Point 264 – discharge tank minimum dose time (seconds)
- Point 267 – discharge tank high-amp alarm (amps)
- Point 268 – discharge tank low-amp alarm (amps)
- Point 270 – pump D1 gallons per minute (gpm)
- Point 271 – pump D2 gallons per minute (gpm)

Alarm Settings

- Point 449 – audible delay (minutes)
- Point 450 – audible reactivation (minutes)
- Point 451 – page interval (minutes)
- Point 452 – current alarm delay (seconds)

Mailbox Enable

- Point 461-464 – mailbox activation

Digital Outputs

- Point 636 – A1 pump option (ON or OFF)
- Point 637 – vent fan option (ON or OFF)

System Notes, cont.

Lined area for system notes, consisting of approximately 25 horizontal lines.



PROTECTING THE WORLD'S WATER

Start-Up & Operation Guide

Standard TCOM[™] CONTROL PANELS

