

VCOM-AX20B /PT UV IB RG Panel Operation

Overview

The VCOM-AXB /PT UV IB RG telemetry-enabled panel is used for remote monitoring and control of the dual pumping operations of time-dosed Recirculating and Discharge pumps with a drip system.

Basic control logic manages the day-to-day functionality of the control panel. The VCOM-AXB /PT UV IB RG system recirculates the blend four to five times; until the recirculating splitter valve (RSV) seats, then small amounts of treated wastewater are pumped into the discharge tank. As the discharge tank fills, effluent is removed through a timed dosing drip system. During peak flow conditions, each tank has more aggressive timer settings to manage the increased demand. The drip system is periodically flushed to prevent clogging.

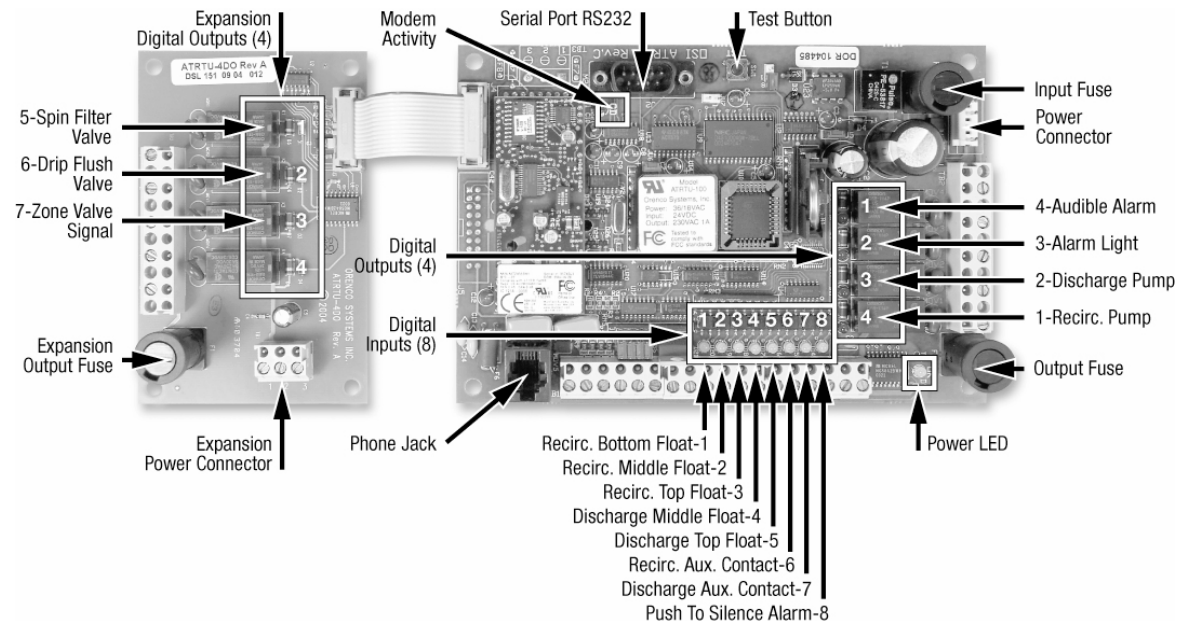
Fault conditions are automatically reported to the VeriComm Monitoring System and not locally at the panel, making the system virtually invisible to the homeowner. However, if fault conditions are not responded to, or the system cannot communicate with the VeriComm Monitoring System, then local alarms may be activated.

To silence local alarms, press the “Hold-To-Silence” button until the audible alarm stops.

The procedures outlined in the remainder of this document are to verify proper installation; they should be conducted in the sequence outlined while in “Test Mode”.

Inputs & Output Definitions

The following inputs and outputs are used with your control panel:



Note:

1. Digital inputs are the yellow LEDs horizontally aligned along the bottom of the controller,
2. Digital outputs are the red LEDs vertically aligned on the right side of the controller, and
3. Inputs and outputs are activated by various events (e.g., Floats are activated when the float is in the up position; “Hold-To-Silence” is activated when the push button, located on the front of the panel is pressed).

Analog Inputs:

1. Analog Input #1 – Discharge Bottom Float (Green indicator light on the float relay).
2. Analog Input #2 – UV Sensor (LED display on the UV current sensor).
3. Analog Input #3 – Rain Sensor (Green indicator light on the rain sensor relay).

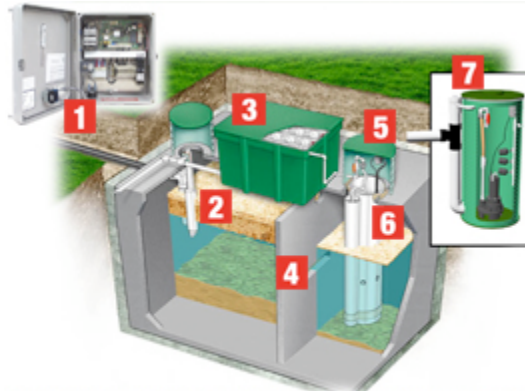
Verify System Status

- ❑ Ensure that the panel installation instructions have been completed.
- ❑ Verify that the circuit breakers are in the on position.
- ❑ Verify controller status. The “Power LED” located on the controller (see Fig. 1, pg. 1) will either be:
 - Blinking – indicates that the controller is operating normally, or
 - Solid Off (when power is applied) – indicates that there is a possible problem with:
 1. The input fuse (F1) on the PC board,
 2. The main fuse located inside the panel,
 3. The controls circuit breaker located inside the panel, or
 4. The incoming line voltage.

Enable Test Mode

While in test mode, the alarm light will be flashing if there is NOT an alarm condition present. During an alarm condition the alarm light will be steady.

- ❑ Hold the “Hold-To-Silence” button on the front of the panel until the audible alarm sounds (approximately 15 seconds) to enable test mode.
 - Digital input #8 should be illuminated when the button is held in.
 - When the audible alarm sounds to indicate that the panel is in test mode, release the button.
- ❑ While in test mode, the panel will operate in the following manner.
 - The Call Home function is disabled,
 - Local audible and visual alarms are activated as alarm conditions occur,
 - System Data Logs are suspended, and
 - Timer cycles are shortened.



1. Control Panel 2. Recirculating Splitter Valve 3. AdvanTex™ Filter
4. Processing Tank 5. Splice Box 6. BioTube® Pump Vault
(Float Assembly, Filter, Pump) 7. Pump Basin (Float Assembly, Pump)

Manual Pump Test

- ❑ Verify that the Recirc pump is submerged in water before continuing. If the RO (bottom) float drops, the alarm will sound.
- ❑ Press down the spring-loaded “MAN/AUTO” switch for the Recirc pump located inside the panel. The Recirc pump should immediately activate. For verification:
 - Digital input #6 should illuminate (see Fig. 1, pg. 1), indicating that the Recirc auxiliary contact is on.
- ❑ Verify that the Discharge pump is submerged in water before continuing. If the RO (bottom) float drops, the alarm will sound.
- ❑ Press down the spring-loaded “MAN/AUTO” switch for the Discharge pump located inside the panel. The Discharge pump should immediately activate. For verification:
 - Digital input #7 should illuminate (see Fig. 1, pg. 1), indicating that the Discharge auxiliary contact is on.

Combined Pump Test

- ❑ Verify that the Recirc and Discharge pumps are submerged in water before continuing.
- ❑ Press down the spring-loaded “MAN/AUTO” switch for both pumps. Digital inputs #6 & #7 should illuminate (see Fig. 1, pg. 1), indicating that the auxiliary contacts are on for both pumps.
- ❑ Measure the voltage and amperage of the pump.
 - Measure the voltage at each of the pump terminals in the panel while both pumps are running. A low voltage condition could indicate that the site wiring is improperly sized.
 - Using a loop ammeter, place the ammeter clamp around the loop of wire located above the pump circuit breaker. (This should be done for each pump.) The amperage should be within the specifications of the pump.

UV Light Status

- ❑ Ensure the UV light has been installed correctly.
- ❑ Turn on the UV circuit breaker and verify that the UV light is ON.
- ❑ Verify that the LED readout on the current sensor has a non-zero value and is not flashing.
- ❑ Verify that all float alarms are cleared.
 - The recirculation RO float is up (digital input #1 should be illuminated).
 - The recirculation high level alarm float is down (digital input #3 should NOT be illuminated).
 - The discharge high level alarm float is down (digital input #5 should NOT be illuminated)

- The Discharge low level alarm float is up (the float relay indicator light is illuminated).
 - The Rain Sensor input is made (the rain sensor relay indicator light is illuminated).
- ❑ Force the UV light to fail. This is done by switching the UV circuit breaker to OFF.
 - The LED display on the UV current sensor should begin blinking and display a value of zero.
 - ❑ The alarm light on the front of the panel should change from flashing to steady.
 - If the alarm did not change state there is a possible problem with:
 1. The UV light, or
 2. The setpoint on the current sensor, or
 3. The current sensor itself.
 - ❑ The discharge pump will not be cut-off while in test mode. The discharge pump WILL be cut-off during normal operation. If the Discharge pump should NOT be cut-off when the UV light fails,
 - The VCOM board will need to be connected to directly or through the web, and
 - Point #58 will need to be changed from Y to N.
 - ❑ Turn on the UV circuit breaker

Rain Sensor Test

- ❑ Verify that all other alarms are cleared.
 - The Recirc. RO float is up (digital input #1 should be illuminated).
 - The Recirc. high level alarm float is down (digital input #3 should NOT be illuminated).
 - The Discharge high level alarm float is down (digital input #5 should NOT be illuminated).

- The Discharge low level alarm float is up (the rain sensor relay indicator is illuminated).
 - The UV system is operating correctly.
- ❑ Force the rain sensor to output as if water has been detected (the rain sensor relay indicator light should NOT be illuminated).
 - ❑ The alarm light, on the front of the panel should change from flashing to steady.
 - If the alarm did not change state there is a possible problem with the rain sensor.
 - ❑ The discharge pump will not be cut-off while in test mode. The discharge pump WILL be cut-off during normal operation. If the Discharge pump should NOT be cut-off by the rain sensor,
 - The VCOM board will need to be connected to directly or through the web, and
 - Point #55 will need to be changed from Y to N.
 - ❑ If connection to a rain sensor can not be made immediately, then an insulated jumper wire will need to be installed between terminals #17 and #18 before continuing.

Recirc Float Test

While in test mode, the Recirc floats will function as described:

High Level Alarm (top float): This float activates the alarm light (steady) and audible alarm when lifted. Pressing and holding the illuminated “Hold-To-Silence” button on the front of the control panel will silence the audible alarm. The alarm light will remain steady until the float is lowered.

Override On/Off (middle float): This float activates the override timer when lifted. The override timer controls the pump during high flow conditions. The override timer function will remain active until

the set minimum number of override cycles has been completed and the float has lowered.

Redundant Off & Low Level Alarm (bottom float):

This float enables the timer function when lifted. The timer function controls the pump during normal flow conditions. Note: The timer will start with its off cycle. This float disables the pump and activates the alarm light (steady) and the audible alarm when lowered. The audible alarm may be silenced by pressing the illuminated “Hold-To-Silence” button on the front of the control panel. The alarm light will remain steady until the float is lifted.

To perform the following test, sufficient effluent is required. If there is not enough effluent in the Recirc Tank, turn the Recirc pump circuit breaker off.

To test the functionality of the Recirc floats and ensure that the panel is installed correctly, follow the steps below:

1. RO/Low Level Alarm Float Test

- ❑ Pull the Recirc float assembly out of the pump vault and position it so that all the floats are in the down position.
- ❑ If the Discharge high level (top) float is lifted (digital input #5 is illuminated), then pull the Discharge float assembly out of the pump vault and position it so the bottom float is up and the other floats are down.
 - Digital inputs #1, #2, #3, and #5 should NOT be illuminated.
 - The alarm light (steady) and audible alarm should activate.
- ❑ Lift and secure the bottom float in the up position.
 - Digital input #1 should be illuminated.

- Within a few seconds, the audible alarm should shut off and the alarm light should be flashing.
- The Recirc pump will start to cycle in approximately 36 second intervals, starting with the off cycle.
- Digital output #1 and digital input #6 should be illuminated during the on cycle.

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2. Override Timer Float Test

- ❑ Lift and secure the middle float in the up position.
 - Digital inputs #1 and #2 should be illuminated.
 - The Recirc pump cycle will shorten to 24 second intervals.
 - Digital output #1 and digital input #6 should illuminate when the Recirc pump is on.

3. High Level Alarm Float Test

- ❑ Lift and secure the top float in the up position.
 - Digital inputs #1, #2, and #3 should be illuminated.
 - The audible alarm and alarm light (steady) should activate. Digital outputs #3, and #4 should illuminate.
- ❑ Drop the top float and ensure that it is in the down position.
 - Within a few seconds, the audible alarm should shut off and the alarm light should be flashing.
 - Digital output #4 should NOT be illuminated.
 - The Recirc pump should continue cycling as indicated by digital output #1, and input #6 being illuminated.

4. Returning To Normal Cycle Time

- ❑ Drop the middle float and ensure that it is now in the down position.

- The Recirc pump should complete the minimum override cycles (default is three) and then return to its normal cycle time.
- The Recirc pump should continue cycling as indicated by digital output #1, and input #6 being illuminated.
- Digital input #1 should remain illuminated, indicating that the bottom float is in the up position.

- ❑ Reinstall the Recirc float assembly into the pump vault. Ensure that the floats are free from entanglements (e.g., float cords, etc).
- ❑ Ensure that the tank has enough water to maintain the RO (bottom) float in the up position (Required for Cut-off Test).
- ❑ The Recirc pump should continue to cycle during the Discharge test.

Discharge Float Test

While in test mode, the Discharge floats will function as described:

High Level Alarm/Override Timer On/Off (top float): This float activates the alarm light (steady) and audible alarm when lifted. Pressing and holding the illuminated “Hold-To-Silence” button on the front of the control panel will silence the audible alarm. The alarm light will remain steady until the float is lowered. This float also activates the override timer when lifted. The override timer controls the pump during high flow conditions. The override timer function will remain active until the set minimum number of override cycles has been completed and the float has lowered.

Timer On/Off (middle float): This float enables the timer function when lifted. The timer function controls the pump during normal flow conditions.

Note: The timer will start with its off cycle.

Redundant Off & Low Level Alarm (bottom float): This float turns off the Discharge pump when lowered. This float is a secondary off float, which will operate if the Timer On & Off float fails. This float also activates the alarm light (steady) and audible alarm when lowered. The audible alarm may be silenced by pressing the illuminated “Hold-To-Silence” button on the front of the control panel. The alarm light will remain steady until the float is lifted.

Pump & Valve Operation (for Test Mode Only):

The pump dosing cycles will be controlled by the timer. During high flow conditions, the pump dosing cycles will be controlled by the override timer. A complete cycle of the Discharge pump will operate as follows:

- Off Cycle; pump is deactivated.
- On Cycle; pump is activated.
- Drip Flush; activated simultaneously during first minute of on cycle.
- Spinfilter Flush; pump remains activated while the spinfilter valve is open at the end of the on cycle to allow for spinfilter flushing.

To perform the following test, sufficient effluent is required. If there is not enough effluent in the Discharge Tank, turn the Discharge pump circuit breaker off.

To test the functionality of the Discharge floats and ensure that the panel is installed correctly, follow the steps below:

1. RO/Low Level Alarm Float Test

- ❑ Pull the Discharge float assembly out of the pump vault and position it so that all the floats are in the down position.
 - The bottom float relay indicator light and digital inputs #4, and #5 should NOT be illuminated.
 - The alarm light (steady) and audible alarm should activate.

2. Timer Float Test

- ❑ Lift and secure the bottom and middle floats in the up position.
 - The bottom float relay indicator light and digital input #4 should be illuminated.
 - Within a few seconds, the audible alarm should shut off and the alarm light should be flashing.
 - The Discharge pump will start in the off cycle (1 min) and then turn on for the on cycle (5 min). Digital output #2 and digital input #7 should be illuminated during the on cycle.
 - During the on cycle, the drip flush valve should be activated to flush the system (1 min). Digital input #7 and outputs #2 and #6 should be illuminated.
 - After the on cycle is complete, the spinfilter valve will open to allow for a spinfilter flush (factory default: 30 sec). Digital input #7 and outputs #2 and #5 should be illuminated during this flush.

3. High Level Alarm (Recirc. Pump Cut-off)/Override Timer On/Off Float Test

- ❑ Lift and secure the top float in the up position.
 - The bottom float relay indicator light and digital inputs #4, and #5 should be illuminated.
 - The audible alarm and alarm light (steady) should activate. Digital outputs #3, and #4 should illuminate.
 - The Discharge pump off cycle will shorten to 30 seconds. The zone should be dosed and flushed in the same sequence and time intervals as during the 'Timer Float Test'.
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- ❑ The Recirc. pump should stop cycling.
 - Digital input #6 and output #1 should NOT be cycling. (Wait a few minutes to verify.)

- ❑ Drop the top float and ensure that it is in the down position.
 - Within a few seconds, the audible alarm should shut off and the alarm light should be flashing.
 - The Discharge pump should complete the cycle and then return to its normal cycle time.
- ❑ Drop the middle and then the bottom float.
 - The bottom float relay indicator light and digital input #4 should NOT be illuminated.
- ❑ Reinstall the Discharge float assembly into the pump vault. Ensure that the floats are free from entanglements (e.g., float cords, etc).
- ❑ Ensure that the tank has enough water to maintain the RO (bottom) float in the up position and the bottom float relay indicator light is illuminated).

Communication Test

- ❑ Press and release the "Hold-To-Silence" button 15 times within a one-minute period. This instructs the panel to call the VeriComm Monitoring System.
 - A red LED (see Fig. 1, pg. 1 - Modem Activity) should illuminate, indicating that the controller has established communication with the host (this may take a couple of minutes).
 - Once the communication session has ended, the modem will automatically disconnect.
 - If the LED does not illuminate within the specified time, verify that the phone line has a dial tone. This can be done by hooking up a phone to the line that is going into the panel.

Disable Test Mode (optional)

- ❑ The panel will automatically disable test mode and return to normal operation after 30 minutes. To disable test mode immediately, hold the "Hold-To-Silence" button on the front of the panel until the audible alarm sounds (approximately 15 seconds).
 - Digital input #8 should be illuminated when the "Hold-To-Silence" button is held in.
 - When the audible alarm sounds to indicate that the panel is no longer in test mode, release the button.