

6.6.3 UV Disinfection System – Automatic Operation

The UV disinfection system is controlled for automatic operation from the local UV system control panel located in the UV Building. This panel communicates with the plant PLC located in the UV Electrical Room that communicates with the SCADA System.

UV Disinfection System Control Screens

The UV disinfection System is monitored on two SCADA screens. The main UV screen provides for control of samplers and the influent flow splitting valves.

UV Disinfection System Main Screen

The UV operates automatically in response to MBR plant flow and UV Transmittance to maintain a specific UV Dose. These functions are monitored by SCADA on the UV System screen as shown in **Figure 6.6.3-1**. The UV screen provides monitoring and input of the UV Dose <1>, monitoring of the UV Transmittance and operating status of the UV modules. Clicking on the UV Channel Icon <2> will go to the UV Channel screen that shows the status of each of the modules and lights within the module. The 4 boxes that represent the UV modules change color to indicate if any lamps are on in each module. Green indicates that no lamps are on and red indicates that lamps are on in that module. Clicking on the inlet flow valve icon <3> will provide access to the valve controls. The screen also provides access to the MBR effluent and Mixing Box effluent sampler controls <4>, the effluent temperatures <5> and the UV effluent box gates <6>.

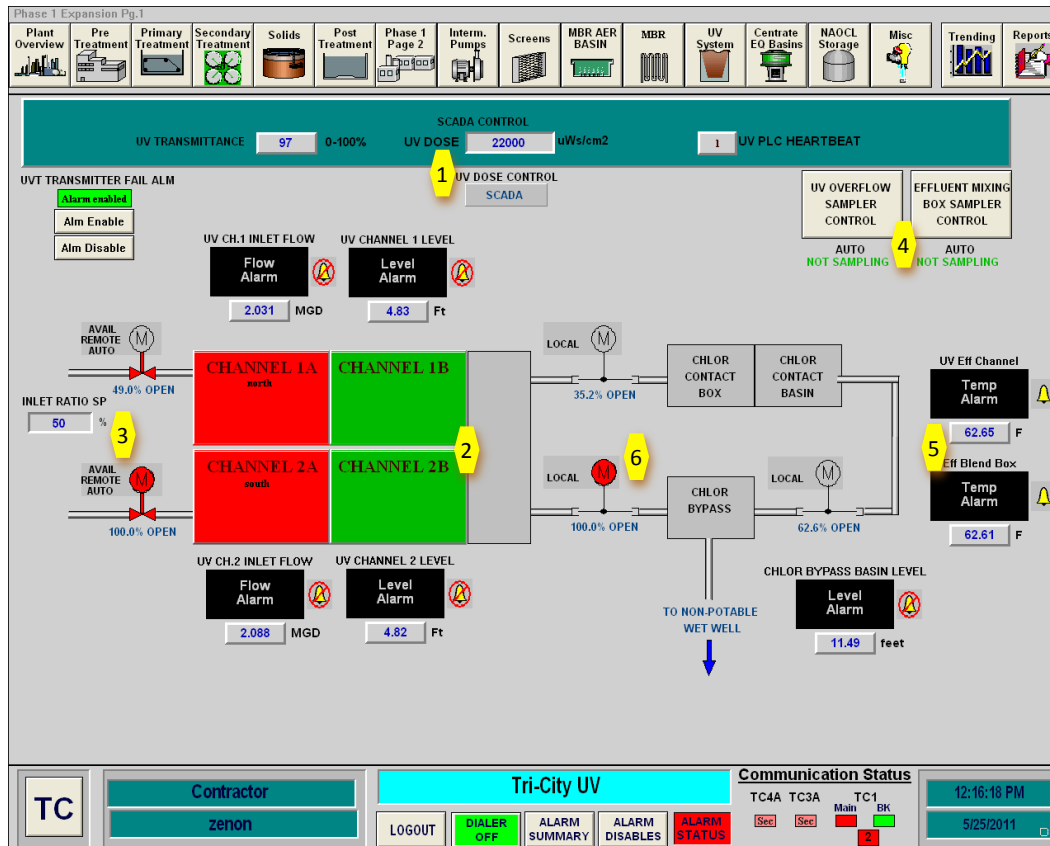


Figure 6.6.3-1 – UV System Main Screen

UV Dose Control

The only function that can be changed on the UV main screen is the UV Dose. There is no required dose in the permit, but the design criteria established by Oregon DEQ requires a UV Dose of 30,000 $\mu\text{Ws}/\text{cm}^2$. The flow from the UV system varies as the membranes are relaxed and backpulsed. From operating experience it has been determined that a set-point UV Dose of 22,000 $\mu\text{Ws}/\text{cm}^2$ will provide the required UV Dose of 30,000 $\mu\text{Ws}/\text{cm}^2$. The UV dose entered into the SCADA main screen will be communicated to and used by the UV control system.

To change the UV Dose, click in the UV Dose box to enter the UV Dose set point. This value is sent to the UV control panel. SCADA will only allow you to enter a dose set point if the UV Dose Control is in SCADA mode. This mode is set locally on the touch screen at the UV System control panel (this mode is indicated on the graphic above). To enable SCADA dose control mode, you must go to the local control screen at the UV control panel and select the dose control to be Remote. After doing this you can enter a dose set point on SCADA.

UV Inlet Flow Control Valves

To operate the UV Inlet Flow Control Valves clicking on either valve will display the valve control screen where you can set the mode of the valve or operate it manually. If both of these valves are in AUTO, the control system will split the flow to each UV channel according to the Inlet Ratio Set Point. The graphic above shows that system set up to split the flow equally between the channels (50% to each channel).

UV Module Monitoring Screen

Click on any of the 4 UV Channel icons boxes on the main screen to display the UV Module Monitoring screen as shown in **Figure 6.6.3-2**. This screen shows each of the four modules and the 40 lamps in each of the modules. The green icon indicates that lamp is off and red indicates that lamps are on in that channel **<7>**.

On the right side of the UV Module Monitoring screen are boxes showing the status of the system for each channel.

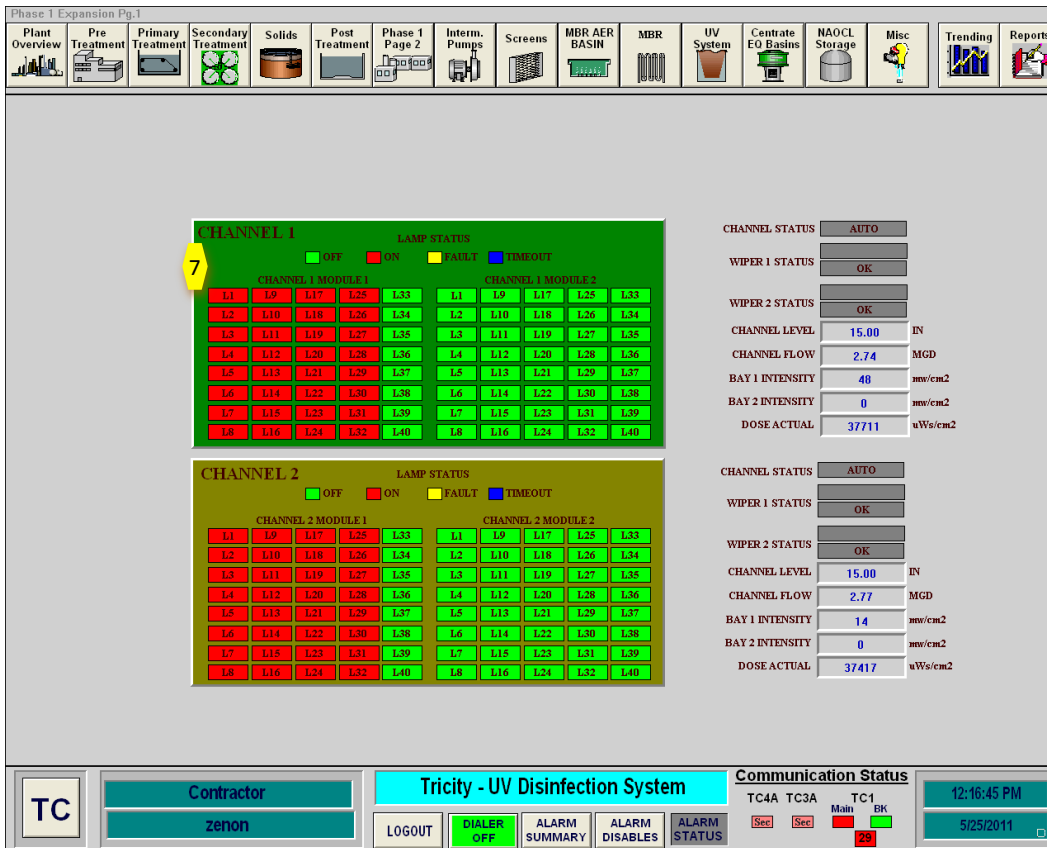


Figure 6.6.3-2 – UV Module Monitoring Screen

Effluent Temperature Displays

This area shows the water temperature in the UV Effluent Channel and the Effluent Drop Box. The temperature data is stored by the system. Clicking on either box will display the Analog Alarm Configuration screen for the temperature alarms. These will be discussed in the alarm section of the manual.

UV PLC Heartbeat

This displays a value that toggles between 0 and 1. It is 30 seconds on and 30 seconds off. If the value does not change, an alarm will trigger to tell the operator that communication with the UV PLC has been lost. If communication is lost to the UV PLC the UV system must be controlled using the HMI at the local control panel.

Samplers

UV Main Screen is the access point for control of the MBR effluent and Mixing Box effluent samplers located in the UV Building. The operation of these samplers is discussed in the sampler section of the manual.

Reuse Disinfection Gate Controls

There are two operating modes for the reuse disinfection gates. One is for providing treated effluent to the non-potable water wet well when off-site reuse is not in operation. The other is to provide additional disinfection when the off-site reuse system is in operation. The operation of these gates will be discussed in the section on W3 Water pumping.

The gate control popup box is the same for each of the gates in the treatment plant. To operate the gates from SCADA, the gate must be placed in REMOTE at the gate operator. Once, the gate is in remote, the gate can be operated from the SCADA popup box.

UV Disinfection System Process Startup Sequence

To start up the UV Disinfection Process in Automatic Mode, follow the following sequence. This sequence is for a cold startup of the system. If the system is operating, confirmation that the equipment is off may not be necessary.

Step	Action	Location
	Confirm Equipment is in Off	
1	Verify that all circuit breakers within the UV System Control Panel are in the Open position	UV Building UV Room
2	Verify that the circuit breakers on each UV module is in the Open position	UV Building UV Room
	Ready Equipment	
3	Close the breakers on one of the UV Modules	UV Building UV Room
4	Wait five (5) minutes for the module to fully stabilize	UV Building UV Room
5	Confirm all system are good	UV Building UV Room
6	Repeat steps 3 – 5 for the other three modules	UV Building UV Room
7	Input desired UV Dose on the UV Main Screen in SCADA	MBR Control Room
8	Set the UV Dose Setpoint to SCADA	UV System Control Panel UV Dosage Screen
9	Start up the UV Transmittance Meter	UV Building UV Room
9	Set the UV Transmittance selector to UV Transmittance Analyzer control	UV System Control Panel UV Dosage Screen
10	Confirm UV system is operating properly	