# Table of Contents

## Chapter 1 – About this Guide
1.1 Introduction .............................................................................................................................1  
1.2 Scope and Purpose ......................................................................................................................1  
1.3 Targeted Audience ......................................................................................................................1  
1.4 Guide Organization ......................................................................................................................1

## Chapter 2 – Introduction
2.1 ATS Monitor System Overview .....................................................................................................2

## Chapter 3 – Operating and Navigation
3.1 Navigating the Setup Menu .............................................................................................................3  
3.2 Exiting a Menu ...............................................................................................................................3  
3.3 Saving selections from the Main Setup Menu ..................................................................................3  
3.4 Verifying a Setting .........................................................................................................................3  
3.5 Time Constraints ............................................................................................................................3

## Chapter 4 – Technician Initial Setup
4.1 Power System ON ..........................................................................................................................4  
4.2 Main Menu Settings: Directions & Menu Overview .....................................................................5  
4.3 Complete Menu Tree .....................................................................................................................6  
4.3.1 Exit & Save Settings ......................................................................................................................7  
4.3.2 Lamp Settings ............................................................................................................................8-9  
4.3.3 UV Probe .....................................................................................................................................9-10  
4.3.4 Temperature Units .....................................................................................................................10  
4.3.5 Water Cooling ............................................................................................................................10  
4.3.6 Flowmeter ..................................................................................................................................10  
4.3.7 Filter .........................................................................................................................................11  
4.3.8 Ozone/ChemPump .......................................................................................................................11  
4.3.9 Energy Saver ................................................................................................................................12  
4.3.10 Set Clock ....................................................................................................................................12  
4.3.11 Software Versions .....................................................................................................................12  
4.3.12 Administration Settings ...........................................................................................................13

## Chapter 5 – Display Status Menus
5.1 Main Display Screen .....................................................................................................................14  
5.2 Main Menus ...................................................................................................................................14  
5.2.1 Exit Main Menu Screen ...............................................................................................................14  
5.2.2 View Status ................................................................................................................................14  
5.2.3 View Alarms ................................................................................................................................14  
5.2.4 Live System Details ...................................................................................................................15

## Chapter 6 – Alarms
6.1 Active Alarms ...............................................................................................................................16  
6.2 Silent Warnings ............................................................................................................................17  
6.3 Alarm Snoozed ..............................................................................................................................17  
6.4 Alarm History ...............................................................................................................................17-18
Chapter 1 – About this Guide

1.1 Introduction
This guide provides a general product overview and description for proper setup of the ATS Monitor. This guide will equip the technician with knowledge to implement the setup procedures required for the ATS Monitor and provide troubleshooting guidance.

1.2 Scope and Purpose
This guide provides the following:
• An overview of the ATS Monitor
• General description and specification for the ATS Monitor System components
• Basic setup of the system
• Operating instructions of the system
• Alarms
• System Upgrades
• Troubleshooting

1.3 Targeted Audience
This guide is designated for trained technicians to perform initial setup of the ATS Monitor.

1.4 Guide Organization
The guide is divided into the following chapters:

Chapter 1 – About this Guide; this chapter provides scope and purpose, targeted audience and contests organization.

Chapter 2 – Introduction; this chapter provides the system configuration, diagram description and other system support features.

Chapter 3 – Operating and Navigation; this chapter provides details of general navigation features and monitor button functions.

Chapter 4 – Technician Initial Setup; this chapter provides a detailed outline of the systems initial setup steps.

Chapter 5 – Display Status Menus; this chapter reviews the display and status menus.

Chapter 6 – Alarms; this chapter reviews the causes of active alarms and silent warnings.
Chapter 2 – Introduction

2.1 ATS Monitor System Overview

The figure below shows the system diagram of the ATS Monitor.

**Front Display**
1. System Status LED – Lights up green when power is supplied to the display.
2. Alarm Status LED – Flashes red when there is an active alarm or silent warning.
3. System Display Screen – Will display setup menus, active alarm messages, status menus and general display information.

**Button Functions**
4. Escape/Back Button – Use this button to exit screens.
5. Enter Button – Use this button to enter screens or to save a setup selection.
6. Navigation Buttons – Use these four buttons to navigate through the setup menus.

**Bottom Panel**
7. Power Switch – Turns power on/off to the monitor.
8. Power Supply Cable – Plugs into a power source.
9. Fuse – All power for the Monitor unit and the three outlets flows through this fuse.
10. UV Lamp – Outlet for the UV Lamp to connect to the Monitor unit.
11. Shutoff Solenoid – Outlet for the Shutoff Solenoid to connect to the Monitor unit.
12. Temperature Solenoid – Outlet for the Temperature Solenoid to connect to the Monitor unit.
13. UV Probe – This is the connection for the UV and temperature probe sensor.
14. RS232 Port – Connection to be made to an external computer.
Chapter 3 – Operating and Navigation

3.1 Navigating the Setup Menu
The technician will navigate through the main setup menus. Each menu selection has multiple setting options. Use the UP and DOWN navigation buttons on the right hand side of the monitor to select the desired menu settings and to scroll through menu options. When the selection arrow is aligned with the desired menu, hit the ENTER button to view sub menus.

The RIGHT and LEFT navigation buttons will also be used to move across menu displays to input information.

It is important to note the up and down arrows located on the right side of certain display screens. These arrows indicate that more menu selections can be found by navigating up or down through the current open menu.

3.2 Exiting a Menu
Pressing the ESC button will navigate back to the previous menu. No settings will be saved. Also see section 3.5 for more information about time restraints while navigating through the menus.

3.3 Saving selections from the Main Setup Menu
Pressing the ENTER button when the selection arrow is at the ‘Enter & save settings’ message will cause the monitor to save all the settings that have just been made and the monitor will run the main program. If the power is turned off at this point instead of exiting as just described, the monitor will not save any of the settings. The selection arrow will appear to the left of the Exit menu option. The selection arrow is circled in the image to the right.

3.4 Verifying a Setting
At any time during the initial setup the technician can navigate through the setup main menu to verify their selections. Upon entry of any setup menu that contains a list of selections, the technician will notice the selection arrow will point to the settings option currently chosen.

3.5 Time Constraints
While navigating through the main setup menu the technician will make several entries into sub menu screens. These sub menus are displayed for approximately 40 seconds. During this time, if no activity is preformed the system will time out and return to the previous menu.

In the example to the left, the selection arrow remains next to the selected menu (Set clock). If there is no activity for an additional 40 seconds after returning to the setup main menu, the selection arrow returns to Exit & Save setting option.

There is no time limit for exiting the last menu (the setup menu). The technician will not be forced out of the setup menu if no activity is performed.
Chapter 4 – Technician Initial Setup

4.1 Power System ON
After power has been supplied to the ATS Monitor, the technician must flip the power switch to the on position. The Main display screen will appear. The location of the power switch is shown in the image to the right.

To go to the Main Setup menu from the main operational menu, the technician must press and hold the UP and LEFT navigation buttons for approximately three seconds, after which the system will display the setup menu.

Power-on Shortcuts:
The buttons indicated below must be pressed and held while the Power button is switched on.

<table>
<thead>
<tr>
<th>Buttons</th>
<th>Shortcut Function</th>
<th>On Screen Display Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enter &amp; Left</td>
<td>I/O Test</td>
<td>I/O TEST -- EXP: 0 0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PRB: 01b51 01A6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IN: 000000 000000 0000000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OUT: 000000000000011</td>
</tr>
<tr>
<td>Enter &amp; Right</td>
<td>No preset function</td>
<td>Normal start up messages</td>
</tr>
<tr>
<td>Enter &amp; Up</td>
<td>Diagnostics</td>
<td>Running diagnostics on serial interface</td>
</tr>
<tr>
<td>Enter &amp; Down</td>
<td>Load Code</td>
<td>Code update started</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Waiting for new firmware...</td>
</tr>
</tbody>
</table>
4.2 Main Menu Settings: Directions & Menu

Overview
There are three system types; Multi-lamp no Probe, UV Intensity Monitor and ATS Control Panel. Setting the system type can only be done in the administration menu. Based on the system type chosen, certain configuration menus are hidden and the corresponding feature is turned off.

As shown below, the ATS Control Panel’s main setup menu incorporates all of the setting options available. The other system types have a limited selection of setup menus options. Throughout the rest of this guide, the directions and examples will be made using the ATS Control Panel Main Setup menu. It is up to the technician to select which system type and which settings are needed for the initial setup of the ATS Monitor.

NOTE: The system type that is chosen is the most fundamental setting. Whenever a system type change takes effect, all of the settings are reset to their factory settings which in essence, turn off all of the features. It is therefore strongly recommended that the system type is the first setting made when configuring the system.

---

System types and corresponding menu options available

<table>
<thead>
<tr>
<th>Exit &amp; save setting</th>
<th>Exit &amp; save setting</th>
<th>Exit &amp; save setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lamp settings</td>
<td>Lamp settings</td>
<td>Lamp settings</td>
</tr>
<tr>
<td>Set clock</td>
<td>UV Settings</td>
<td>UV Settings</td>
</tr>
<tr>
<td>Software versions</td>
<td>Temperature units</td>
<td>Temperature units</td>
</tr>
<tr>
<td>Admin settings</td>
<td>Water cooling</td>
<td>Water cooling</td>
</tr>
<tr>
<td></td>
<td>Energy saver</td>
<td>Energy saver</td>
</tr>
<tr>
<td></td>
<td>Set clock</td>
<td>Set clock</td>
</tr>
<tr>
<td></td>
<td>Software versions</td>
<td>Software versions</td>
</tr>
<tr>
<td></td>
<td>Admin settings</td>
<td>Admin settings</td>
</tr>
</tbody>
</table>
4.3 Complete Menu Tree

Exit & save setting
Lamp settings
  Set lamp type
    No lamps
    STD 12mo (9,000hr)
    HO 16mo (12,000hr)
  Nudge lamp hours
  Lamps per ballast
    1 lamp
    2 lamps
  Start auto detect
    Auto Detect:
    Chan 1 – 18
    Watts
  Review autodetect
    Chan 1, 0 Watts
    Chan 2, 0 Watts
    -----------→
    Chan 18, 0 Watts
UV settings
  UV probe off
  Lamp min @ 60%
  Lamp min @ 70%
  Set 100% point
  Autoset in 100hrs
  Cancel autoset
Temperature units
  Display in °F
  Display in °C
Water cooling
  Water cool off
  Cooling start temp
    85 °F
    90 °F
    95 °F
    100 °F
  Max water on time
    15 secs
    30 secs
    60 secs
Flowmeter
  Flowmeter off
  15 pulses per gal
  60 pulses per gal
  Reset gallons
Filter
  Filter off
  Filter Timer
    Filter timer off
    Alarm in 3 months
    Alarm in 6 months
    Alarm in 12 months
    Reset filter timer

Filter DP Switch
  Filter DP off
  Filter DP on
  Reset filter alarm

Ozone/ChemPump
  O3 off
  O3/timer settings
    Restart interval
    Not run by timer
    Every hr
    Every 2 hrs
    Every 3 hrs
    Running time
      5 min
      10 min
      20 min

O3/sensor settings
  O3 disabled
  Run via flowsensor
  Run via flowmeter
  Run via both
  Sensor settings
    On & no delay off
    On+delay off 5 sec
    On+delay off 10 sec

Energy saver
  Dimming off
  Dim via temp
    No dim via temp
    Dim @ 100 F
    Dim @ 120 F
    Dim @ 140 F
  Dim via flow
    No dim via flow
    Dim via flowmeter
    Dim via flowsensor

Set clock
Software versions
Admin settings
  Set system type
    Multi-lamp no probe
    UV intensity monitor
    ATS control panel
  Set model number
  Set serial number
  Factory reset
  Clear alarm log
  Update software
  Run serial diags
### 4.3.1 Exit & Save Settings

Required system setup for Systems: Multi-lamp no Probe, UV Intensity Monitor & ATS Control Panel Settings

Menu option will prompt:
- Exiting from the initial setup menu to the main display window

It is not recommended that this option is selected until after all settings have been made.

When Exit & Save is selected the technician will return to the main operational mode. All settings must be made before the system will allow you to Exit & save. If critical settings are not saved, the technician will be prompted through a series of notification screens to return to the main setup menu and save the needed settings. Based on certain settings, other options can be skipped, for example if no UV probe is selected, it is no longer necessary to set the UV 100% point.

The chart below indicates which settings are critical.

<table>
<thead>
<tr>
<th>Critical Setting Message Displayed</th>
<th>Required Action</th>
<th>Main Setup Menu Category</th>
<th>System Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Type</td>
<td>Lamp Settings</td>
<td>Multi-lamp no probe</td>
<td>X</td>
</tr>
<tr>
<td>Lamp Type</td>
<td>Select a Lamp Type</td>
<td>Lamp Settings</td>
<td>X</td>
</tr>
<tr>
<td>Lamp per Ballast</td>
<td>Select the number of lamps per ballast</td>
<td>Lamp Settings</td>
<td>X</td>
</tr>
<tr>
<td>Ballast Autodetect</td>
<td>Run and Autodetect</td>
<td>Lamp Settings</td>
<td>X</td>
</tr>
<tr>
<td>Low UV Trip-point</td>
<td>Select lamp minimum UV%</td>
<td>UV Probe</td>
<td>X</td>
</tr>
<tr>
<td>UV 100%</td>
<td>Adjust/set probe reading 100% point</td>
<td>UV Probe</td>
<td>X</td>
</tr>
<tr>
<td>Water Cooling</td>
<td>Select water cooling options</td>
<td>Water Cooling</td>
<td>X</td>
</tr>
<tr>
<td>Clock</td>
<td>Accuracy</td>
<td>Set Clock</td>
<td>X</td>
</tr>
</tbody>
</table>

To return to the settings menu from the main display window:
- Press and hold the RIGHT and UP navigation buttons until the unit beeps (approx. 3 seconds) and the screen returns to the settings menu.
### 4.3.2 Lamp Settings

Required system setup for Systems: Multi-lamp no Probe, UV Intensity Monitor & ATS Control Panel Settings

This Menu option will allow configuring:
- Lamp disable
- Lamp types
- Adjusting lamp months left
- Lamps per ballast
- Auto detect ballast power consumption
- Review auto-detected lamps

Ballast warning: The maximum amount of amperage allowed per ballast is 3 amps. If this limit is exceeded a ballast overload alarm will be generated.

#### Set Lamp Type:

Allows the technician to disable or select the type of lamps installed in the unit. All lamps must be of the same type. The standard lamp (STD) is below minimum UV output after 12 months/9,000hrs and will need to be replaced. The High Output Lamp (HO) is below minimum UV output after 16 months/12,000hrs and will need to be replaced. The lamp life timer can be disabled if there are no lamps installed in the system. If this option is not set before exiting the main setup menu, a critical setting message will appear.

When either the STD or HO lamps are chosen the countdown timer will be activated. When lamps are within 30 days of expiration, an active alarm will notify the user to service the lamps. The technician must replace the lamps and reactivate the lamp life timer after replacing the lamps.

Set Lamp type options:
- No lamps
- STD 12mo (9,000hr)
- HO 16mo (12,000hr)

#### Nudge Lamp Hours:

Using the UP and DOWN navigation buttons, the technician can adjust the amount the time left on the lamp life timer. The amount of time can be set for 1 month to 16 months, in half month intervals. This function is used when the monitor is serviced or replaced and it is necessary to manually adjust the amount of lamp life remaining.

#### Lamp per ballast:

The number of lamps per ballast must be selected and saved. Select either 1 or 2 lamps per ballast. A 284 monitor can have no more than 2 ballasts connected with no more than 2 lamps per ballast (more ballasts are available when using a model 283 expander board – contact the factory). If this option is not set before exiting the main setup menu, a critical setting message will appear.

Lamp per ballast options:
- 1 lamp per ballast
- 2 lamps per ballast

#### Start Auto Detect:

When connecting ballasts to a 284 monitor, a single ballast (single or dual bulb) is connected to a single ‘channel’ which in turn is used to monitor bulb performance. When choosing this function, an automatic detection of all channels (1-18) connected to the ATS Monitor will start. It is therefore important that all ballasts and bulbs are illuminated and in their final configuration before starting this function.

This auto detect function will measure ballast amps and calculate wattage used by each channel. If this option is not set before exiting the main setup menu, a critical setting message will appear. An Auto Detect must be performed even when no ballasts are connected.

NOTE: With a standard 284 monitor, only 2 ballasts can be connected. Channels 3-18 can be used when the 283 ballast expander board(s) are installed.
**Ballast / lamp numbering:**
When the system is in its control box configuration and is using 283 expander board(s), sometime due to wiring constraints ballasts may be not be connected to the 284 monitor board and instead they may only be connected to the 283 expander board(s). In this case the lamp assignments may be mapped differently then they are physically. In this case during auto detect and review auto detect, the ballasts wattage readings will be recorded and reviewed as they are physically connected, but during ‘normal’ system operation (vrs the setup menu) lamp #1 is be assigned to the 1st ballast found during auto detect that has non-zero watts recorded. For example if the first ballast is connected to channel #4, then during normal operation that will be regarded as lamp #1.

**Review Auto Detect:**
A review of the previous Auto Detect will be displayed showing all channels (1-18) and the watts used per channel. Use the UP and DOWN navigation buttons to review all channels.

```
Chan 1, 0 Watts  
Chan 2, 0 Watts  
Chan 3, 0 Watts  
Chan 4, 0 Watts  
```

**UV Minimum %:**
The UV probe installed in the UV chamber is used to detect the amount of UV light and measure the temperature at the probe. The probe can be disabled or a minimum level of UV light can be set before an alarm is triggered. When the UV light received by the probe has diminished below the minimum percentage set, then an active alarm will be sounded. If this option is not set before exiting the main setup menu, a critical setting message will appear.

UV Probe options:
- UV Probe Off
- Lamp min @ 60%
- Lamp min @ 70%

**Set 100% Point:**
The technician uses this function to calibrate the probe 100% Point. 100% is usually set when a new system is installed. The 100% point should only be set when all lamps are operating and up to temperature, the chamber is full of clear water, etc. Once the system is operating normally, press the RIGHT navigation arrow to tell the monitor that the current illumination of UV light is considered to be the 100% point.

When setting the 100% point the “Lamp pwr” value must be higher than 2.00mA. If the value is below 2.00mA then a notification message will be displayed of “UV low”.

```
^v,> = Adj, set 100%  
Probe Tmp= 79 ◯ F  
Lamp Pwr= 8.065 mW  
Lamp UV= 0%
```

```
^v,> = Adj, set 100%  
Probe Tmp= 79 ◯ F  
Lamp Pwr= 8.065 mW  
Lamp UV= 0%
```

The technician must hit the RIGHT navigation arrow to set the current UV illumination as the 100% point. The two screens shots below are examples of the recalibrated probe reading. The up and down navigation arrow keys are used to nudge the percentage reading. For example if the system is operating but the bulbs are not up to temperature or the water is a little cloudy, the current setting can be adjusted to reflect current conditions. Use the up and down navigation arrow keys to change the percentage reading. You can press and hold the keys and the auto-repeat function will help during the adjustment.

```
^v,> = Adj, set 100%  
Probe Tmp= 79 ◯ F  
Lamp Pwr= 8.065 mW  
Lamp UV= 0%
```

```
^v,> = Adj, set 100%  
Probe Tmp= 79 ◯ F  
Lamp Pwr= 8.065 mW  
Lamp UV= 0%
```

**Navigation Buttons**

```
  
  
  
  
```

---

**UV Monitor**  
Operations Manual  

Copyright © 2012 Aqua Treatment Service, Inc.  

FAX: (800) 787-0197  
www.aquat.com  

---

9
**Autoset in 100hrs:**
When lamp(s) are installed, they should be “burned in” before determining the 100% point. This allows the lamp(s) to warm up and transmit UV light to the probe. During this time the probe and the lamp(s) will acclimate to each other. Once activated, a preset timer will start at 100 hours and count down. At the end of the 100 hours, the monitor will open a 3 day time window, during this time the highest UV setting during this time will be recorded as the 100% point.

If the ATS Monitor should lose power during the autoset time period, the countdown timer will continue where it left off once the power is supplied back to the unit.

**Cancel Autoset:**
This will disable the 100 hour autoset countdown.

### 4.3.4 Temperature Units
Required system setup for: UV Intensity Monitor & ATS Control Panel

This Menu option will allow configuring:
- Fahrenheit or Celsius

**Temperature Units:**
Select a temperature reading of Fahrenheit or Celsius to be used when displaying temperature information.

+ Display in °F
+ Display in °C

### 4.3.5 Water Cooling
Required system setup for: UV Intensity Monitor & ATS Control Panel

This Menu option will allow configuring:
- Water cooling disabled
- Water cooling restart time and water on time
- Water cooling trigger temperature

**Disabling:**
The water cooling options will be disabled if no probe is installed (since temperature sensor is in the probe) or it no water dump valve is installed.

**Water Cool:**
When the probe detects the water temperature has increased above the setpoint then the water cooling valve will turn on. Water will be dumped from the system for an allotted amount of time through a water dump valve or until the temperature drops below the setpoint. Once the water turns off, the water cooling cannot restart for fifteen minutes.

**Water cooling options (setpoints):**
- Water cool off
- On at 85 °F
- On at 90 °F
- On at 95 °F
- On at 100 °F

**Max time:**
Water cooling (water dump) max on-time options:
- Max on 15 secs
- Max on for 30 secs
- Max on for 60 secs

### 4.3.6 Flowmeter
Required system setup for: ATS Control Panel

This Menu option will allow configuring:
- Disable flowmeter
- Setting the number of pulses per gal
- Resetting accumulated gallons

A flowmeter installed in the system, can count the number of gallons of water flow passing through the system. The number of pulses that represent one gallon is configurable. One rotation or “pulse” equals one gallon of water flow. The total number of gallons since reset and the flow rate is displayed under the View Status menu (see section 5.2.2).

**Disabling:**
The flowmeter should be turned off if no flowmeter is installed in the system.

**Pulses per gallon:**
The flowmeter can be set to the amount of pulses per gallon. Contact the factory or dealer to determine the number of pulses for gallon for the flowmeter installed in your system.

**Flowmeter options:**
- 15 Pulses per gal
- 60 Pulses per gal

**Reset Gallons:**
Rest gallons will zero-out the accumulated gallons that have been counted.
4.3.7 Filter
Required system setup for: ATS Control Panel
This Menu option will allow configuring:
- Disable Filter
- Setting the filter timer
- Restarting filter timer
- Setting the filter DP switch on/off/reset alarm

Filter Timer:
The filter countdown timer is used to notify the end user that the filter must be replaced or serviced by a technician. The amount of time set on the timer (in months) will depend on the specifications of the filter, when the filter was last serviced by a technician or the quality of the water (dirty water may require replacements more often). The filter timer should be turned off if no filter is installed to the unit. The reset filter timer option is used when the filter has been replaced or restarted. NOTE: The water quality must remain the same when a new filter (the same type) is installed into the unit. This function will reset the timer without knowing the recommended filter replacement intervals.
Filter Timer options:
- Filter Timer off
- Alarm @ 3 months
- Alarm @ 6 months
- Alarm @ 12 months
- Restart Filter Timer

Filter DP Switch:
The DP (differential pressure) switch is used to detect a filter clog by sensing increased pressure across a filter. The software has a built-in feature that helps prevent false activation that occurs when water is first turned on. There is invariably a short period of time when there would be a differential pressure across the filter at startup. Since the DP switch can only detect a clog when there is water flow, this alarm is latched. The only way to reset the alarm is to select the reset filter alarm setting.
Filter DP Switch options:
- Filter DP off
- Filter DP on
- Reset filter alarm

Reset Filter Alarm:
The technician can reset the filter alarm by selecting and saving this option under the Filter DP Switch once the active alarm has been resolved.

4.3.8 Ozone/ChemPump
Required system setup for: ATS Control Panel
This Menu option will allow configuring:
- Disable O3
- Time settings will set frequency and length of Ozone/chemical administration
- Sensor settings will set administration of Ozone/chemical based from a sensor
This setting allows application of chemicals to be fed through a feed pump based on a timer or a sensor detecting water flow. If ozone or chemical injection is not used in the system then both settings (timer and sensor) must be disabled.

O3/Timer settings:
The administration of chemicals can be set by a timer. The timer is programmed to turn on at pre-programmed hour intervals, and can be set for a certain length of time. O3/ Timer Settings options:
1. Reset Interval:
   - Not run by timer
   - Every hr
   - Every 2 hrs
   - Every 3 hrs
2. Running Time:
   - 5 min
   - 10 min
   - 20 min

O3/Sensor settings:
The administration of chemicals can be triggered when the sensor detects water flow. The sensor can be a flow sensor or a flowmeter, or detecting using both. When water flow is detected by a sensor, chemicals will be administered for as long as flow is detected. When the sensor(s) detect no flow, then the ozone/chemicals will be turned off with or without an off delay. Chemicals by sensor are in addition to chemicals enabled by timer except that if chemicals is enabled by sensor, it will reset the timer (if enabled). This is to prevent the application of chemicals too often.
O3/ Sensor Setting options:
- Sensor Disabled
- Run via flowsensor
- Run via flowmeter
- Run via both
- Sensor Settings
  - No flow sensor trip
  - On & no delay off
  - On+delay off 5 secs
  - On+delay off 10 secs
4.3.9 Energy Saver
Required system setup for: ATS Control Panel
This Menu option will allow configuring:
• Dimming off
• Dim the lamp via temp
• Dim the lamp via flow

Energy Saver:
The energy saver feature is a lamp dimmer that dims the lamps when there is no water flow through the chamber. In order to use this feature the necessary lamp dimming hardware must be installed. When dimmed the bulbs will use less power, last longer and run cooler. If the dim via temperature option is enabled, then dimming will occur when the temperature exceeds the selected temperature. If the dim via flow option is enabled, then dimming will occur when no flow is detected. If both options are enabled then there is a failsafe option that will turn on even if the temperature exceeds the set point.

Dim via Temp:
• No dim via temp
• Dim @ 100 °F
• Dim @ 120 °F
• Dim @ 140 °F

Dim via Flow:
• No dim via flow
• Dim via flowmeter
• Dim via flowsensor

4.3.10 Set Clock
Required system setup for: Multi-lamp no Probe, UV Intensity Monitor & ATS Control Panel
This Menu option will allow configuring:
• Setting the internal clock.
The internal clock will display the current time and date. This information is used when recording alarms in alarm log.

Set Time & Date:
The LEFT and RIGHT navigation buttons will move the cursor back and forth across the time & date line, stopping at each field.
To change the time or date settings move the cursor to the correct field then use the up or down navigation buttons to change the value at that field. Once the data is correct move to the next field or press the ESC key to exit the clock setting function.

4.3.11 Software Versions
Required system setup for: Multi-lamp no Probe, UV Intensity Monitor & ATS Control Panel
This menu option is used to display all current software versions installed on the monitor. No information can be updated or changed from this menu. Examples of the three screens are shown below. Pressing the enter key while at any screen will skip to the next screen, otherwise the screen will automatically advance to the next in a few seconds.

Power for the on-board clock is supplied by a Super Capacitor that is installed on the RLC284 (ATS Monitor board). This Super Cap stores power for about a week. The monitor must remain on for a about 10 minutes for the capacitor to fully charge.
4.3.12 Administration Settings
Required system setup for: Multi-lamp no Probe, UV Intensity Monitor & ATS Control Panel

The password combination to enter this menu:
ATS WILL SUPPLY THIS INFORMATION
This Menu option will allow configuring:
• Selecting the desired system type
• Entering the model and serial number
• Factory reset of all settings
• Erase the alarm log
• Update software
• Run serial diagnostics

Set System Type:
The system can be configured to be one of three system types. The difference between the three systems types are outlined in the beginning of Chapter 4 (section 4.2). THE TECHNICIAN MUST SELECT AND SAVE A SYSTEM TYPE IN ORDER TO PROCEED WITH THE REST OF THE INITIAL SETUP. This should be considered as step #1 for the initial setup process when choosing any of the ATS Monitor systems.

System types:
• Multi-lamp no probe
• UV intensity monitor
• ATS control panel

After the system type has been selected and saved it is important to note that all other settings will be returned to the factory default (most options disabled). Continue to navigate through the administration settings to set the model and serial numbers

Set Model Number:
Use the LEFT and RIGHT navigation buttons to move the cursor to the next free space after the dash in “ATS-”. Use the UP and DOWN navigation buttons to enter the correct model number.
• Symbols available: space, dash, period, slash
• Letters available: A-Z
• Numbers available: 0-9
NOTE: Hit the ESC button to save and exit this menu.

Set Serial Number:
Use the UP and DOWN navigation buttons to enter the correct model number. Use the LEFT and RIGHT navigation buttons to move the cursor from side to side to the next free space.
• Symbols available: space, dash, period, slash
• Letters available: A-Z
• Numbers available: 0-9
NOTE: Hit the ESC button to save and exit this menu.

Factory Reset:
When this selection is made the ATS Monitor automatically resets to the default setting of Multi-lamp no Probe and will clear out all saved settings. The screen shot below will be displayed as the system is being reset. The unit will make two chirp sounds when the factory reset starts and one chirp when reset is complete.

NOTE: The technician will have to repeat navigating the initial setup menus starting with Administration Settings: Set system type (unless Multi-lamp no Probe is the desired system type). Any information entered into the system, such as model or serial number will also be erased when factory reset is selected.

Clear alarm log:
This option will clear any saved messages stored in the Alarm History menu (section 5.2.3).

Update Software:
Additional equipment can be connected to the ATS Monitor by plugging into the RS232 Port. Refer to Chapter 7 – Firmware Upgrade for extensive information and detailed step-by-step instructions for upgrading the firmware.

The following message will display when the technician enters the Update Software menu:

Run Serial Diags:
This function is used for manufacturing and ATS personnel. This function will not be used by the end user.
Chapter 5 – Display Status Menus

This section allows the technician to quickly review operation status, alarms and technician details. Both technician and the end user have control to view these menus. No setting changes or updates can be made to the ATS UV Monitor from these menus.

5.1 Main Display Screen
When all initial setup settings have been saved by the technician (Chapter 4) and the Exit & save settings option (section 4.2.1) has been selected, then the ATS system will switch to the Main Display Screen similar to the one shown to the right.

The Main Screen will display the following information:
- ATS Model #
- Current probe UV reading (this percent will vary) – only displayed when UV probe is enabled
- Lamp Timer Countdown – only displayed when lamp timer is enabled

5.2 Main Menus
The current status, alarm status and technician details menus can be displayed by hitting the ENTER button when the Main Display Screen is shown. These status menus will time out and return to the main display messages if no activity is taken. When the status menus are open the system does not process additional alarms, temperature or dimming controls, etc.

5.2.1 Exit Main Menu screen
Selecting this option will exit the technician or the end user back to the Main Display Screen.

5.2.2 View Status
The information displayed on the Status screen will depend on which system type was chosen and which settings were enabled in the initial setup. Refer to the beginning of Chapter 4 for more information pertaining to system types and initial setup. This menu will time out in 1 minute unless any key is pressed and while this menu is open the system does not process additional alarms, temperature or dimming controls, etc.

View Status Menu will display:
- Review Software (selecting this will cycle through software information)
- Current time and date
- Number of lamps on & total lamps at configuration
- Time left on the 100hr timer
- Lamp life remaining timer
- Water cooling restart timer
- Change filter timer
- Ozone restart timer
- Alarm snooze timer

NOTE: Except for the review software item, Navigating the selection arrow to any line of information in this menu and hitting ENTER will NOT display more current data. Hit the ESC button to exit this menu.

5.2.3 View Alarms
The information displayed on the Alarm screen will vary depending on which system type was chosen and which settings were saved by the Technician during the initial setup. Refer to the Chapter 4 for more information pertaining to system types and initial setup. To correct active alarms refer to Chapter 6 – Alarms. This menu will time out in 1 minute unless any key is pressed and while this menu is open the system does not process additional alarms, temperature or dimming controls, etc.

NOTE: When an active alarm is audible from the unit, the display screen will prompt to press the ENTER button. Pressing ENTER will snooze the alarm; NOT correct the issue causing the alarm and the alarm LED will continue to flash red. When the alarm is snoozed it will not sound again for another 72 hours unless another alarm occurs. If the event creating the alarm is corrected during the 72 hours, the red alarm LED will stop flashing and the active alarm message will disappear. If another alarm should occur during the snooze period, the audible alarm will again start sounding.

When alarms are generated they are recorded in an alarm log which is available at all times. It is the responsibility of the technician or the end user whom discovers the active alarm notification to take measurements to correct the issue creating the active alarm. A list of active alarm messages and recorded alarms is available in chapter 6.
5.2.4 Live System Details
Selecting this option will display a menu of additional choices. The live screens are different than the other screen and menus in that they have a 5 minutes timeout and the system keeps processing alarms, valves, temperature and dimming controls, etc while these menus are open.

Exit Tech Menu:
Selecting this option will return the technician to the Main Menu.

UV Info:
Information displayed:
- AC In voltage
- Wattage used by the all the lamps
- Current Probe temperature
- Water cooling status
- Lamp power in milliwatts per cm²
- Current Probe % reading of the Lamp

Ballast info:
Information displayed:
- Power (in watts) consumed by each ballast connected to the system.

Flowmeter Info:
Information displayed:
- Total Gallons
- Flowrate in GPM
- If the flowsensor detects flow
- If the DP sensor detects a clog

System Info:
Information displayed:
- Current time and date
- Internal box temperature
- Unit on-time lifetime counter

AC In: 116v 0w
Probe Tmp= 83°F
Lamp Pwr= 3.152 Mw
Lamp UV= 112%

Chan 1, 0 watts
Chan 2, 0 watts
Chan 3, 0 watts
Chan 4, 0 watts

Total Gal 2546
Flowrate 12gpm
Flow Sensor off
DP Sensor off

10:00A 08-Feb-12
Box Temp 68°F
On time 0y 0m 10d
Chapter 6 – Alarms

This section is designed to easily troubleshoot alarms after the initial programming and setup of the ATS Monitor System. There are two different types of alarms that are present in the ATS Monitor: Active alarms and Silent warnings. Both types can be reviewed under the Alarm History menu.

6.1 Active alarms
Alarms are setup to notify the technician and the end user that an event has occurred that requires immediate attention. When an alarm occurs the red alarm LED will blink red and the alarm beeper will sound. All alarms will be recorded in the Alarm History log. To silence and alarm, snooze it by pressing the enter key and the beeper will stop and a message will appear indicating that the current alarm(s) have been snoozed. Refer to section 6.3 – Alarm Snoozed, for more information.

The following list in this section is the active alarms and suggestions of events that will cause the alarm to activate:

Probe Disconnect Alarm:
The probe is enabled but the system cannot communicate with it this alarm will be activated. Probe settings are explained in section 4.3.3 UV Remote Probe.

Troubleshooting: 1) The probe becomes disconnected from the unit. 2) Probe has malfunctioned.

Probe Overload Alarm:
The UV lamp brightness is beyond the calibrated range of the probe. Probe settings are explained in section 4.3.3 - UV Remote Probe.

Troubleshooting: 1) Make sure there is water in the chamber. 2) Make sure the probe quartz tube is not cracked. 3) The probe has malfunctioned. 4) Contact the factory for a new probe that is designed to handle higher UV output.

Lamp(s) Out Alarm:
This occurs when the channel wattage drops to less than 80% of the initial wattage captured during autodetect. Autodetect is described in section 4.3.2 Lamp Life. This alarm indicates that there is a problem with the lamp(s) or a ballast. For more information, click on the lamp alarm message in the menu. Additionally, real-time wattage information is available in the alarm live system details menu, and in the setup menu under lamps setting, review autodetect.

Troubleshooting: 1) One or more of the lamps installed in the system may be completely burnt out, turned off or disconnected. Service to the lamps will need to be performed by the technician.

Lamp Expired Alarm:
This occurs when the lamp(s) have been powered on past the manufacture’s recommended lamp life span. It is important to note that sterilization may be compromised when this alarm is active and the lamp(s) must be replaced. Lamp settings are explained in section 4.3.2 Lamp Life.

Troubleshooting: 1) The lamp life timer has expired past the set amount of time. To reset the timer go into the lamp settings menu and re-select the lamp type used (standard or high output) and the timer will reset.

Low UV Output Alarm:
This occurs when the UV read at the probe is below the preset minimum. It is important to note that sterilization may be compromised when this alarm is active. When this alarm is active the water valve (if connected) is shut off so un-sterilized water cannot leave the chamber. UV settings are explained in section 4.3.3 UV Remote Probe.

Troubleshooting: 1) Check for cloudy water due to impurities or bubbles. 2) The bulbs are cold (during initial turn-on). 3) Quarts sleeve(s) or the probe surface is dirty/contaminated. 4) Voltage to the ballasts is low. 5) Lamp have past their expiration date and have dimmed. 6) Ballasts are bad. 7) The bulbs have prematurely aged due to overheating. 8) The quarts sleeve(s) are cracked and the bulbs are wet or cold. 9) Probe may need re-calibration.

Filter Clog Alarm:
This alarm occurs when the DP (differential pressure) switch indicates that there is a difference of pressure across a filter or other barrier for more than a few seconds. The DP switch is explained in section 4.3.8 DP Switch Filter.

Troubleshooting: 1) Possible clog in the filter that backs up the water flow past the DP switch. To reset the alarm go into the filter setup menu and select filter DP switch then select reset filter alarm from the menu.
6.2 Silent Warnings
Silent warnings are used to notify the technician and the end user of information warnings that are not immediate problems. The difference between alarms and warnings is a warning does not active the audible beeper, where a warning keeps silent. In the case of a warning the alarm LED will blink, an alarm message will appear and be recorded in the alarm history log.

Lamp Life < 30 Days:
This warning occurs when the lamp(s) are less than 30 days away from expiration. This warning will disappear of the timer is reset or when, after 30 days, the Lamp Expired Alarm is activated.

Hi Temp & Low UV:
This warning occurs when the UV is low but the water supply value remains open due to the following conditions:
- All lamps are illuminated
- No lamps are beyond their rated life
- The water temperature is above 99°F
- The UV output is above 20%

System Started:
This warning is written to the log whenever the system is powered up

System Setup Menu:
This warning is written to the log whenever the setup menu is exited

Clock Set:
This warning is written to the log whenever the time is changed

Pick 100%:
This warning is written to the log whenever the set 100% point is chosen from the UV probe menu. The value written to the log is the illumination value in mW/cm² that was chosen as the 100% point.

100hr Set:
This warning is written to the log whenever the 100hr timer expires and the system picks the 100 UV value. The value written to the log is the illumination value in mW/cm² that was chosen as the 100% point.

6.4 Alarm History
All active alarms and silent warnings are captured and recorded in an Alarm History Log. To access the log, press the ENTER button to view the main menu. Next navigate the selection arrow to view alarms, then navigate to Review Alarm History and press ENTER.

The Alarm History menu will store up to 100 of the most current events causing alarms and warnings. The most recent log entry will be shown in the number 100 position in the menu. As you review older alarms (use the DOWN navigation arrow key) the alarm number will decrement. Conversely use the UP navigation arrow key to review newer alarms and the alarm number will increment.
When an alarm event has been corrected, a follow-up message will be captured stating the alarm has been cancelled. See the example below.

**Event causing an Active**

| Alarms #009 | 12:44P 0-Feb-12 | Low UV output 28% |

**Alarm cancelled message**

| Alarm #100 | 12:44P 0-Feb-12 | Low UV output 28% |

Once the alarm log becomes full, the older alarms will be dropped off the end and the most recent alarms will be stored, with the newest alarm always being #100.

The Alarm History can be cleared at any time by selecting the Clear Alarms Log from the Admin menu. Refer to section 4.3.11 for more information.

**Notes:**

---

---

---

---

---
Notes: