GUARDIAN™

ULTRAVIOLET MONITOR

Owner's Manual

Digital

Analog

Digital Remote

Installation, Operation & Maintenance

Read and Follow All Safety Instructions. Save these Instructions.

SINCE 1963

ATLANTIC ULTRAVIOLET CORPORATION®

Manufacturers / Engineers / Sales / Service
Germicidal Ultraviolet - Equipment & Lamps

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TABLE OF CONTENTS

These instructions generally describe the installation and operation of the **GUARDIAN**™ Ultraviolet Monitor. Questions that are not specifically answered by these instructions should be directed to the Factory. Atlantic Ultraviolet Corporation® takes all possible precautions when packaging equipment to prevent damage. Carefully inspect and report all damages. Do not install damaged equipment. Follow all instructions on any labels or tags. Carefully inspect all packing materials before discarding to prevent the loss of accessories, mounting hardware, spare parts or instructions.

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SAFETY WARNINGS

- All personnel should be alerted to the potential hazards indicated by the product safety labeling on this unit.
- The following conventions are used to indicate and classify precautions in this manual and on product safety labeling. Failure to observe precautions could result in injury to people or damage to property.

⚠ This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠DANGER Danger indicates an **IMMINENTLY** hazardous situation, which, if not avoided, WILL result in death or serious injury.

⚠WARNING Warning indicates a **POTENTIALLY** hazardous situation, which, if not avoided, **COULD** result in death or serious injury.

⚠CAUTION Caution indicates a **POTENTIALLY** hazardous situation, which, if not avoided, MAY result in minor or moderate injury.

CAUTION Caution used without the safety alert symbol indicates a potentially hazardous situation, which, if not avoided, may result in property damage.


This symbol/pictorial is used to identify an **ELECTRICAL SHOCK** or **ELECTROCUTION** hazard.


This symbol/pictorial is used to identify an **ULTRAVIOLET LIGHT** hazard.


This symbol/pictorial is used to identify the need to wear approved ultraviolet blocking eye-wear.


This symbol/pictorial is used to identify the need to wear approved ultraviolet blocking face shield.


This symbol/pictorial is used to identify the need to wear protective gloves.


This symbol/pictorial is used to identify components which must not be disposed of in trash

SAFETY INSTRUCTIONS

⚠WARNING To guard against injury, basic safety precautions should be observed, including the following:

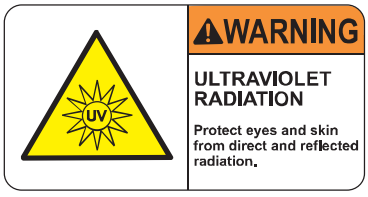
1. Read and follow ALL safety instructions.

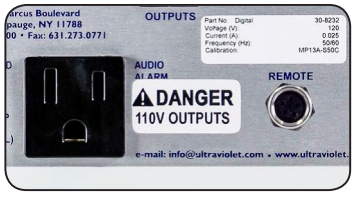

⚠WARNING Avoid exposure to direct or reflected germicidal ultraviolet Rays. Germicidal ultraviolet Rays are harmful to the eyes and skin.

2. Intended for indoor use only.
3. Do not alter design or construction.
4. Do not use this unit for anything other than its intended purpose, as described in this manual.
5. Do not remove any labels or devices.
6. The **GUARDIAN**™ Ultraviolet Monitor should be protected from harsh environments, high humidity, and temperature extremes.
7. **⚠WARNING The GUARDIAN™ Ultraviolet Monitor housing is not waterproof. Serious damage can occur if internal electronics come into contact with water.**
8. **⚠CAUTION** Germicidal ultraviolet rays may break down plastic, rubber or other non-metallic materials, with inadequate resistance to ultraviolet. Shield all plastic, rubber or other non-metallic parts such as; plastic drain pans, wire insulation, flex ducts, humidifiers, filters, etc. which may be exposed to direct or reflected germicidal ultraviolet Rays.
9. Do not operate the monitor if the power cord and/or plug are damaged, or if any other damage to the monitor is visible or suspected.
10. **⚠WARNING Do not operate without proper electrical ground.**
11. Utility power supplied, to the monitor, **MUST** match power requirements listed on the monitor label.
12. **⚠WARNING Always disconnect power, to the monitor and unplug, before performing any service or maintenance**
13. Read and follow all notices and warnings on the unit.
14. **SAVE THESE INSTRUCTIONS.**

SAFETY LABELS

Warnings on 2 sides of each monitor





CAUTION

It is the user's responsibility to determine and validate the suitability of this equipment for use in the user's system or process.

No warranty or representation is made by the manufacturer with respect to suitability or performance of this equipment or to the results that may be expected from its use.

The user should periodically inspect, clean as necessary and confirm the presence and good legibility of the product safety labels. Contact the factory for replacement labels in the event that any of the labels are missing or illegible.

Figure 1A - Analog Monitor: Meter Instrument Face

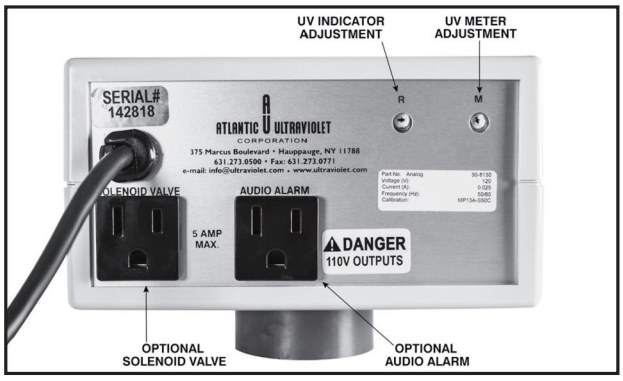


Figure 2A - Rear View of Analog **GUARDIAN**™

Figure 1B -Digital Monitor: LED Instrument Face

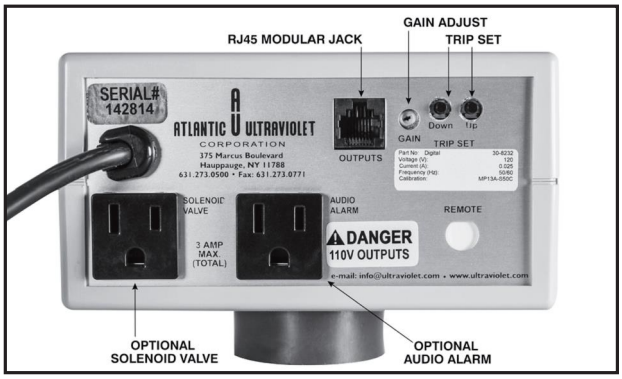


Figure 2B - Rear View of Digital **GUARDIAN**™

Figure 1C - Remote Digital **GUARDIAN**™ Monitor Face

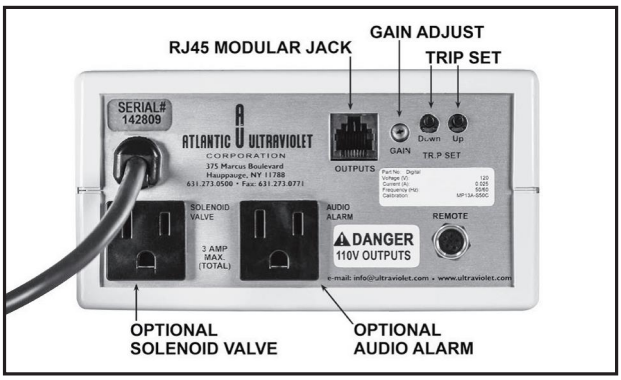


Figure 2C - Rear View of Remote Digital **GUARDIAN**™

Figure 3 - Standard Probe

Figure 4 - Remote Probe

PRODUCT APPLICATION CONT.

CONSTRUCTION

The **GUARDIAN**™ is available in three models; an Analog **GUARDIAN**™ Model which has a Meter Instrument Face (**See Figure 1A**), or a Digital **GUARDIAN**™ Model which has an LED Meter Instrument Face (**See Figure 1B**) and a Remote Digital **GUARDIAN**™ Model (**See Figure 1C**). The Analog **GUARDIAN**™ model provides two NEMA 5-15 output sockets located on the rear of the monitor. One is marked '**SOLENOID VALVE**" and is for the operation of an optional **Promate**™ solenoid valve or time delay/solenoid valve combination. The other is marked "**AUDIO ALARM**" and is for an optional **Promate**™ audio alarm. The Analog **GUARDIAN**™ is rated to provide 5 amps total at the same voltage of your Monitor, either 120v or 220v (**See Figure 2A**)

The Digital **GUARDIAN**™ model provides the same two NEMA 5-15 output sockets, rated for 3 amps total and matches the voltage of your monitor, either 120v or 220v. In addition the monitor has another output, known as a RJ45 connector for remote monitoring of the purifiers operation. (**See Figure 2C**) This output includes several types of data:

- 4-20mA Output: Provides current for remote display of ultraviolet intensity.
- Dry Contact: Provides contacts for remote indication of ultraviolet trip levels.
- 12v DC Output: Provides power for a low-voltage audio alarm.

- Each **GUARDIAN**™ is accompanied with a high quality precisely machined Sensor Probe made from Stainless Steel Type 316 which contains a highly polished quartz optical rod. Two types of Sensor Probes are available, the Standard Sensor Probe (**See Figure 3**) and the Remote Sensor Probe (**See Figure 4**). The Remote Sensor Probe is only available for Digital **GUARDIAN**™ Models. Sensor Probes are installed directly to a purifier by means of a Sensor Probe Fitting also known as a Sight Port Fitting.
- The **GUARDIAN**™ Ultraviolet Monitor is designed to mount directly to the Sensor Probe on the purifier, or in the case of a Remote **GUARDIAN**™, near the unit with a provided cable between the Remote Sensor Probe and the **GUARDIAN**™.
- The **GUARDIAN**™ is fabricated from UL Approved ABS Fire Retardant Plastic with a clearly marked silk screened anodized aluminum instrument face to ensure long life and resist corrosion and wear.

PRINCIPLE OF OPERATION

The **GUARDIAN**™ Ultraviolet Monitor visually indicates the level of germicidal ultraviolet energy that penetrates the quartz sleeve and water within the purifier. The monitor will detect reduction of ultraviolet levels due to:

- Fouling or deposits on the quartz sleeve.
- Fouling or deposits on the face of the sensor probe.
- Poor ultraviolet transmission through the water. **Note that color, turbidity, and organic or other impurities in the water can reduce or interfere with the transmission of ultraviolet rays.**
- Lamp outage, component or power failure.
- Depreciation of the lamp output due to usage or other cause. **Note, lamp output gradually depreciates with use.**

When the **GUARDIAN**™ Ultraviolet Monitor detects a germicidal ultraviolet energy level which is acceptable it will:

- Light a Green LED on the front of the instrument panel with the heading "**NORMAL**."
- Provide output power to the NEMA 5-15 Socket with the Heading "**SOLENOID**." If an Optional **Promate**™ Solenoid Valve was purchased from Atlantic Ultraviolet Corporation® and is present in your plumbing circuit and connected to this output, the solenoid valve will continue to allow water to flow through your purifier.
- In the case of an Analog **GUARDIAN**™ Monitor the meter on the instrument face should display a number between .3 and 1.0. In the case of a Digital **GUARDIAN**™ Monitor the LED Display should read between 30 and 120.

When the **GUARDIAN**™ Ultraviolet Monitor detects a germicidal ultraviolet energy level which is unacceptable it will:

- Light a Red LED on the front of the instrument panel with the heading "**LOW**."
- Provide output power to the NEMA 5-15 Socket with the heading "**AUDIO ALARM**." If an Optional **Promate**™ Audio Alarm is present and connected to this output, the alarm will sound. If an Optional **Promate**™ Solenoid Valve is present in your plumbing circuit and connected to the "**SOLENIOD**" output, the solenoid valve will de-energize and stop the flow of water flow through your purifier. In the case of an Analog **GUARDIAN**™ Monitor the Meter on the instrument face should display a number below .3. In the case of a Digital **GUARDIAN**™ Monitor the LED Display should display and number lower than 30.

PRODUCT APPLICATION CONT.

LIMITATION OF USE

The **GUARDIAN**™ Monitors are intended to be used on the **SANITRON**® and **Mighty★Pure**® Ultraviolet Water Purifiers or other models made specifically by Atlantic Ultraviolet Corporation® located in Hauppauge New York. Using this product on any other product not recommended or recognized by Atlantic Ultraviolet Corporation® may result in a false sense of security and can lead to improperly treated water.

UNPACKING

- Remove the **GUARDIAN**™ Monitor from its shipping carton.
- Atlantic Ultraviolet Corporation® takes all possible precautions when packing this unit to prevent damage. Carefully inspect the unit, power cord and plug as well as the sensor probe and other contents of the carton for damage. Report all damage immediately. Do not assemble or operate if there is any damage.
- Carefully inspect all packing materials to prevent the loss of accessories, spare parts or instructions.
- Do not discard packing materials until unit is assembled, checked and confirmed in working order.
- The **GUARDIAN**™ Monitor includes a Sensor Probe (either a standard or a remote) and a 5/64" Allen Wrench and a remote cable.

INSTALLATION

LOCATION

- The **GUARDIAN**™ Monitor is intended for indoor use only. Sensor Probes are installed directly to a purifier by means of a Sensor Probe Fitting also known as a Sight Port Fitting. The **GUARDIAN**™ Monitor should be protected from environments, high humidity, and temperature extremes or dripping water.
- The electrical power supplied to the **GUARDIAN**™ Monitor **MUST** match the power requirements listed on the water purifier to be installed on. Use of voltage surge protectors is recommended.

CONVENTIONAL INSTALLATION

IN ORDER TO PERFORM THIS TASK, BE SURE TO WEAR THE FOLLOWING SAFETY EQUIPMENT: SAFETY GOGGLES OR A FACE SHIELD, AS WELL AS GLOVES

⚠WARNING **Always disconnect power to all devices before performing any service or maintenance.**

- Each monitor is calibrated with its accompanying sensor probe. The serial number engraved on the sensor probe must match the serial number of the monitor. If installing more than one monitor, **DO NOT** interchange sensor probes.
- Newer **GUARDIAN**™ monitors have been calibrated for use with updated sensor probes and cannot be used with earlier model probes without factory recalibration.
- Voltage of the monitor and purifier does not have to be the same, although we highly recommend that they do operate at the same voltage. However, if using optional **Promate**™ Solenoid Valve and/or **Promate**™ Audio Alarm, the voltage of each **MUST** be the same as the monitor input.
- Older model water purifiers may require a reducing bushing to properly mount the newer sensor probes. If you are unsure whether the reducing bushing is required, contact the factory.

Figure 5 - Removal of Sight Port Plug

Figure 6 - Installing a Standard Probe into Sight Port Fitting

Figure 7 - Mounting the Monitor on the Probe

1. ⚠ **⚠WARNING** Unplug the water purifier from electrical outlet.
2. If the purifier has been in service, shut off water supply to the purifier via the inlet and outlet shut off valves.
3. Remove the translucent sight port plug from the center, sight port fitting of the chamber. **(See Figure 5)**
4. Insert Sensor Probe into the center Sight Port Fitting of the purifier chamber and tighten securely. The use of thread sealing tape, sealing compounds, or hand tools for tightening, are not required. Note that a Standard Probe is being installed and that the Remote Probe would be installed in the same manner. **(See Figure 6)**

CAUTION **The quartz rod protrudes out past the probe cap, be careful not to strike rod against fitting when installing the probe.**

5. Slowly restore water supply to the water purifier, pressurize (keeping outlet valve closed), and check for leaks. Once it is determined that there are no leaks, the inlet valve can be fully opened.
6. Mount the monitor on top of the Sensor Probe; position the monitor as desired, and secure by tightening the set screws in the aluminum collar using the supplied 5/64" Allen Wrench. **(See Figure 7)**
7. Any optional accessories such as, **Promate**™ Audio Alarm, **Promate**™ Solenoid Valve, Remote Probe or Digital Output Cables can now be connected to the appropriate sockets on the rear of the monitor. **(See Figure 2A, 2B & 2C)**
8. With the monitor switch in the "Off" position, plug the monitor into an electrical outlet. **Note that the electrical power outlet of the optional Promate™ Audio Alarm and/or Promate™ Solenoid Valve must match power requirements listed on the monitor label.**
9. Plug the water purifier into electrical outlet and restore power. Allow purifier to warm up for approximately 10 minutes. Warm up period allows germicidal lamp to reach full output.
10. Switch the monitor "**ON**". The solenoid valve (if installed) should open and the "**NORMAL**" indicator light should come on. The analog meter should read between .3 and 1.00, or the digital meter should read between 30 and 120.
11. Open outlet valve.
    - If for any reason the ultraviolet intensity falls to an inadequate level, the display will indicate in the trip area, (generally less than .3 on the analog meter or 30 on the digital), the "**LOW**" indicator light will light, the optional **Promate**™ Audio Alarm (if installed) will sound, and the optional **Promate**™ Solenoid Valve (if installed) will close.

Figure 8 - Example of a Conventional Installation

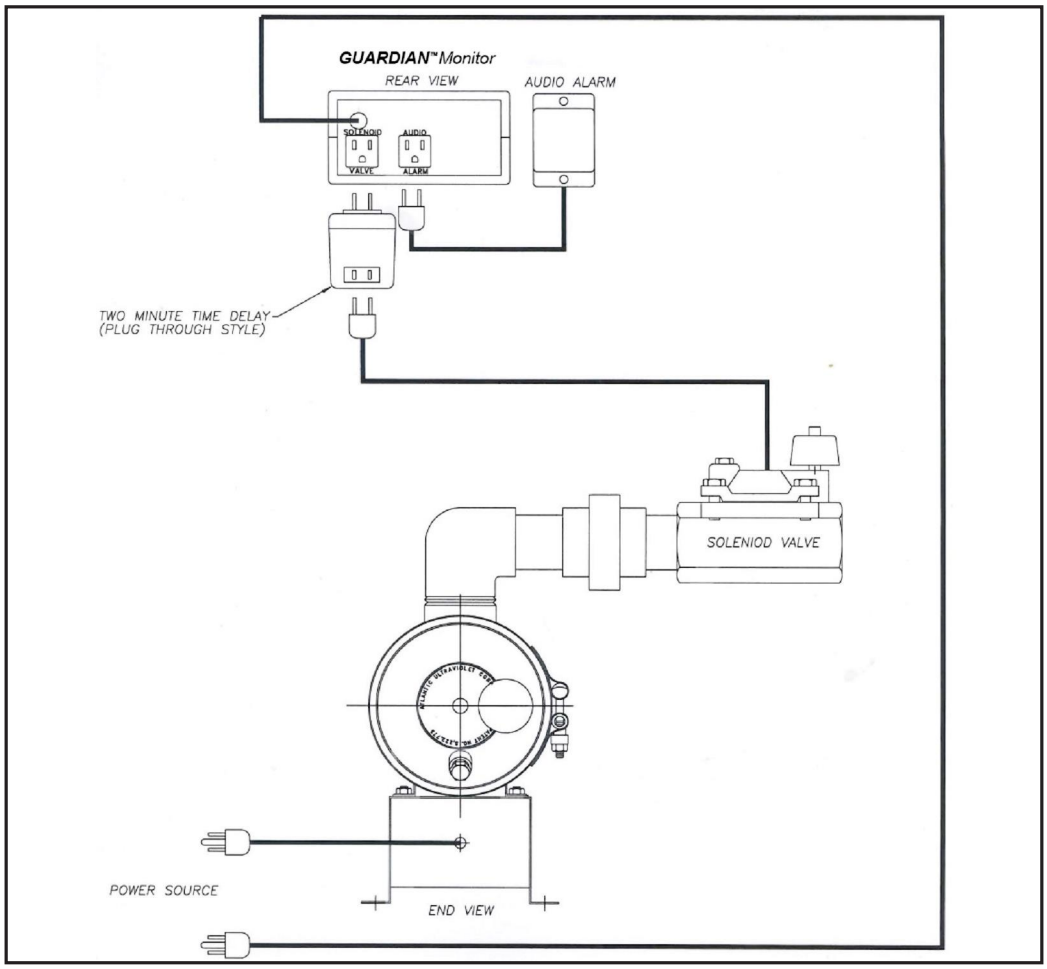
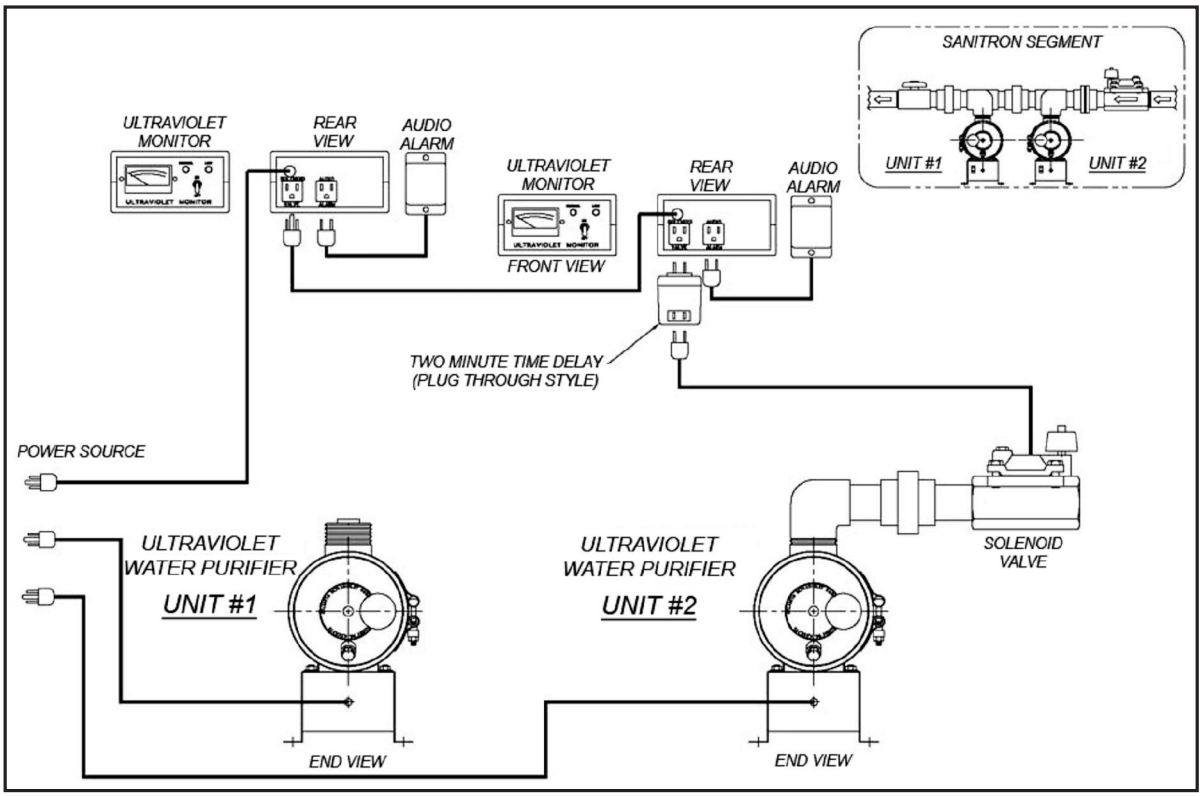


Figure 9 - Example of SANITRON® Model S5,000 and Larger Installation



*Note: Analog Monitors Shown Above in Example. **Note Digital Monitors would be hooked up the same way.**

GUARDIAN™ CONNECTIONS FOR SANITRON® MODELS S5,000 AND LARGER

Both Analog and Digital **GUARDIAN**™ Monitors can be installed on **SANITRON**® Model S5,000 and larger. If **Promate**™ Optional Accessories are present, as shown in **Figure 9**, **Promate**™ Solenoid Valves and ultraviolet monitors operate in series; if the ultraviolet intensity in either purifier falls below normal operating limits, the **Promate**™ Solenoid Valve will close, stopping flow in that circuit. Example shows two Analog **GUARDIAN**™ Monitors (**See Figure 9**). If two or more Digital **GUARDIAN**™ monitors are used in the same type of circuit, contact our technical support staff.

TRIP SET POINT

- The Analog **GUARDIAN**™ is calibrated at the factory to the ultraviolet output of the lamp, and the water purifier for which the monitor will be used. The monitor adjustments on the rear of the Analog **GUARDIAN**™ Monitor (**See Figure 2A**) should not be changed, except where necessary for wastewater applications. Contact the factory with specific requirements.
- Two adjustments located on the rear of the Analog **GUARDIAN**™ Monitor marked "R" for Relay and "M" for Meter allow the user to adjust the trip set point. (**See Figure 2A**) The set point is a selected number at which the indicator lights change from red to green, or vice versa, on monitors front Instrument Panel and power going to the **Promate**™ Solenoid Valve and **Promate**™ Audio Alarm Output on the rear of the monitor change from supplying power to the **Promate**™ Solenoid Valve to the **Promate**™ Audio Alarm or vice versa.
- The Digital **GUARDIAN**™ is calibrated at the factory to the ultraviolet output of the lamp, and the water purifier for which the monitor will be used. The gain located on the rear of the **GUARDIAN**™ Digital Monitor (**See Figure 2B**) should not be changed, except where necessary for wastewater applications, contact the factory with specific requirements.
- Two push buttons located on the rear of the Digital **GUARDIAN**™ Monitor marked Up and Down allow the user to adjust the trip set point. (**See Figure 2B**) The set point is a selected number at which the indicator lights change from red to green, or vice versa, on monitors front Instrument Panel and power going to the **Promate**™ Solenoid Valve and **Promate**™ Audio Alarm Output on the rear of the **GUARDIAN**™ Monitor change from supplying power to the **Promate**™ Solenoid Valve to the **Promate**™ Audio Alarm or vice versa.
- The digital display on the front of the **GUARDIAN**™ Monitor will show the relative ultraviolet intensity (0 to 120%). After pushing either "**UP**" or "**DOWN**" button on the back of the monitor for less than a second, the display will show the trip set point before returning to the normal display.
- For wastewater applications, the operator may wish to adjust the trip set point. Pressing and holding the "**UP**" button allows the operator to increase the trip set point while pushing and holding the "**DOWN**" button allows the operator to decrease the trip set point The lowest trip point setting on the Digital **GUARDIAN**™ Monitor is 30%

OUTPUTS

DIGITAL GUARDIAN™ REMOTE MONITOR 50 FOOT RJ45 CONNECTOR

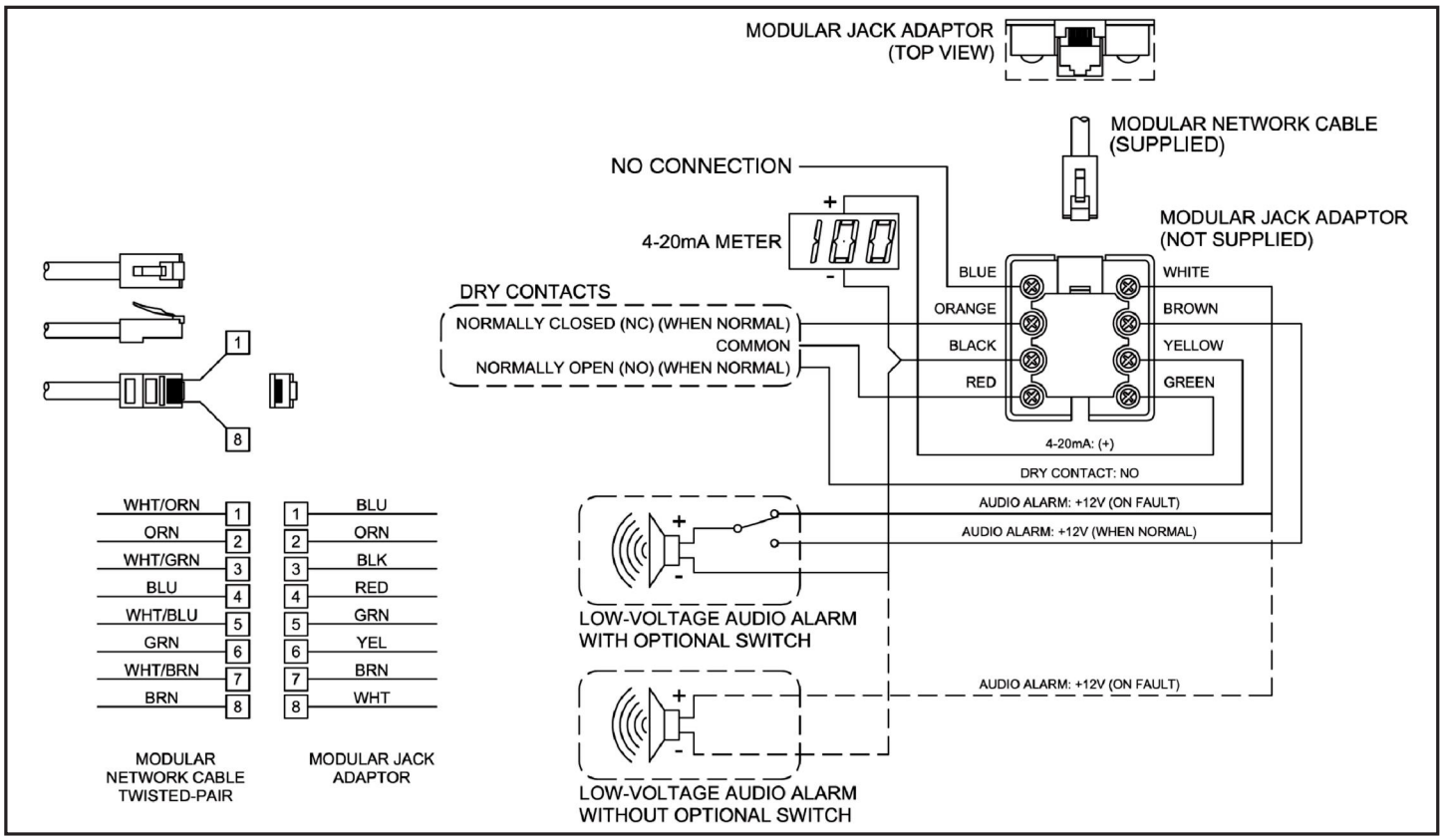
The digital **GUARDIAN**™ Ultraviolet Monitor is capable of supplying outputs for remote monitoring of the water purifiers operation. An RJ45 connector, located on the back of the monitor, is provided to access these outputs. (See Figure 2C) A 50 foot long RJ45 cable is provided with the **GUARDIAN**™ Digital Monitor. This will allow you to connect your Digital **GUARDIAN**™ Monitor to a remote monitoring device. In addition an Optional Modular RJ45 Jack is available from the factory, see "**Promate**™ **Accessories**" section of this manual or contact the factory with specific requirements.

Table 1 - Digital GUARDIAN™ Modular Remote Options Connection

Wire No.	Application	Modular Jack Wire Color	Modular Network Cable Wire Color
1	No Connection	Blue	White/Orange
2	Dry Contact - Normally Closed (NC)(UV "Normal") A	Orange	Orange
3	Output Current/Low-Voltage Audio Alarm-Common Negative	Black	White/Green
4	Dry Contact-Common	Red	Blue
5	Output Current - 4-20mA(+)	Green	White/Blue
6	Dry Contact - Normally Open (NO)(UV "NORMAL") A	Yellow	Green
7	Low-Voltage Audio Alarm -+12v (UV "NORMAL") A	Brown	White/Brown
8	Low-Voltage Audio Alarm -+12v (UV "LOW") B	White	Brown

A. UV "**NORMAL**": Ultraviolet lamp operating, ultraviolet intensity above trip set point and "**NORMAL**" indicator light, lit.
B. UV "**LOW**": Ultraviolet lamp may or may not be operating, ultraviolet intensity below trip set point and "**LOW**" indicator light, lit.

Figure 10 - Digital GUARDIAN™ Modular Remote Options Connection



AVAILABLE OUTPUTS DIGITAL GUARDIAN™ REMOTE MONITOR RJ45 CONNECTOR

4-20mA Output

The 4-20mA output supplies an output corresponding to the intensity meter, converted to a current between 4 and 20mA The output is unaffected by reasonable line resistances, but the output must be displayed by a PLC, computer, or 4-20mA meter which can interpret the signal. A 4mA output will be displayed as 0% ultraviolet intensity and 20mA will be displayed as 120%.

Dry Contacts

The Dry Contact output provides a Single Pole Double Throw (SPDT) output corresponding to the "NORMAL" or "LOW" intensity of the germicidal lamp. The contacts are rated at 50v 100mA maximum.

OUTPUTS CONT.

- "Common" will connect to "Normally Closed" (NC) when the display value is above the trip set point and the green "NORMAL" indicator light is lit.
- "Common" will connect to "Normally Open" (NO) when the display value is below the trip set point and the red "LOW" indicator light is lit.

REMOTE LOW-VOLTAGE PROMATE™ AUDIO ALARM

A 12v DC 50mA maximum output is provided to power a remote low-voltage audio alarm. An optional Single Pole Double Throw (SPDT) switch can be installed with the low-voltage **Promate**™ Audio Alarm in a way that allows the audio alarm to be silenced during an alarm condition. The audio alarm will sound again when the normal condition is restored; this prevents the alarm from being accidentally disabled by the switch.

TROUBLESHOOTING

"LOW" INTENSITY READINGS

If, during the normal operation of the purifier, the intensity readings fall to an inadequate "**LOW**" level, take the following steps:

Verify Lamp Life

1. Lamp Replacement is recommended every 10,000 hours of operation, which is approximately 12 months of continuous service. Verify that your lamp has less than 10,000 hours of use on it.
2. Replace ultraviolet lamp in your water purifier with a new one or exchange the current ultraviolet lamp in your water purifier with a known good lamp. Follow instructions on how this task is performed in your Water Purifiers Owner's Manual. If after performing this task, no improvement in the intensity reading is achieved, continue following the Troubleshooting Section of this manual.

Clean Quartz Sleeve in Water Purifier

1. Clean the quartz sleeve; see the Owner's Manual supplied with the water purifier for the proper cleaning method, and note whether the intensity readings improve.
2. If after cleaning the quartz sleeve, there is no significant improvement in the intensity readings, it may be necessary to clean the quartz rod in the sensor probe, continue following the "**Troubleshooting"** Section of this manual to clean the sensor probe quartz rod

Cleaning the Sensor Probe

The Sensor Probe contains a small quartz rod which allows the UV rays from the lamp into the **GUARDIAN**™ Ultraviolet Monitor. After a period of time, dirt or sediment built up on the end of the quartz rod can stop the UV rays from passing into the ultraviolet monitor. Follow this section to clean the quartz rod in your sensor probe.

IN ORDER TO PERFORM THIS TASK, BE SURE TO WEAR THE FOLLOWING SAFETY EQUIPMENT: SAFETY GOGGLES OR A FACE SHIELD, AS WELL AS GLOVES

As a precaution, consult your Owner's Manual supplied with the water purifier to properly disconnect all power to your purifier and stop all water flow into and out of the unit before proceeding to the next step.

⚠WARNING Disconnect power to water purifier.

⚠ **⚠WARNING Germicidal ultraviolet rays are harmful to eyes and skin. DO NOT look directly at the germicidal lamp.**

1. Shut off water supply to the water purifier via the inlet and outlet shut off valves. Remove drain fitting and drain the chamber. Once the chamber is drained, remove any old sealing tape from the threads of the drain plug, re-wrap with 1/2" wide Teflon® thread sealing tape, reinstall and tighten the drain plug.
2. Disconnect power to the **GUARDIAN**™ Ultraviolet Monitor; remove from chamber by loosening the two set screws on the aluminum collar and lifting it free from probe body. (**See Figure 7**)
3. Unscrew the sensor probe by hand and remove from the chamber. (**See Figure 6**) . ***NOTE: It is recommended, when servicing the sensor probe, to work in a clean, dry area.**
4. Take care not to damage the quartz rod, O-Ring or the threads of the probe body. Once the sensor probe has been removed from the purifier, inspect the end of the probe which faces into the purifier where the quartz rod protrudes out from the end cap. Make sure the quartz rod has not been damaged. Clean the end of the quartz rod with alcohol or a mild detergent, and rinse with clean water. Stubborn stains usually can be removed with a dilute hydrochloric acid. Make sure the end face is completely clear and free of all deposits. ***NOTE: Follow all manufacturer's instructions and precautions when handling chemicals**

TROUBLESHOOTING CONT.

5. After cleaning, inspect the sensor probe, by making sure you can see directly down through the quartz rod to the other side. If it appears the top of the probe is also dirty follow steps (**7,8&9**) to clean the whole quartz rod. If all appears clean, skip to **Step 10**.
6. In order to clean the whole quartz rod, you must remove the quartz rod from the sensor probe. **Upon this disassembly, it is highly recommended to change the O-Ring which seals the end of the quartz rod between the probe cap and probe body, since it may have deformed over time. Contact Factory for Part Number and pricing.**

Figure 11 - Removing Quartz Rod from Standard Probe

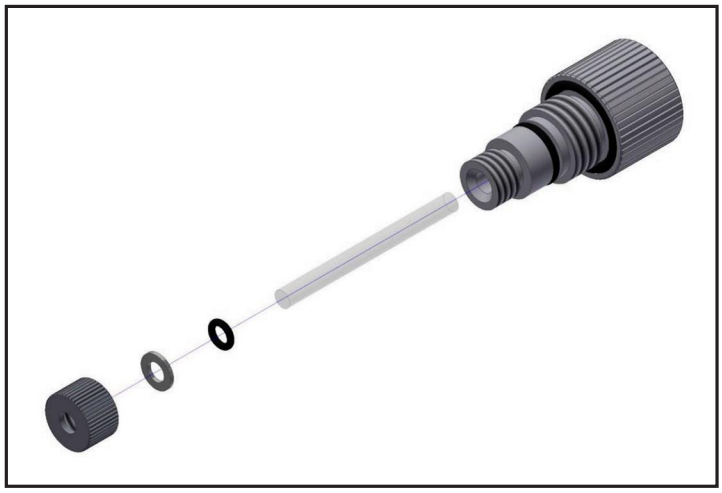
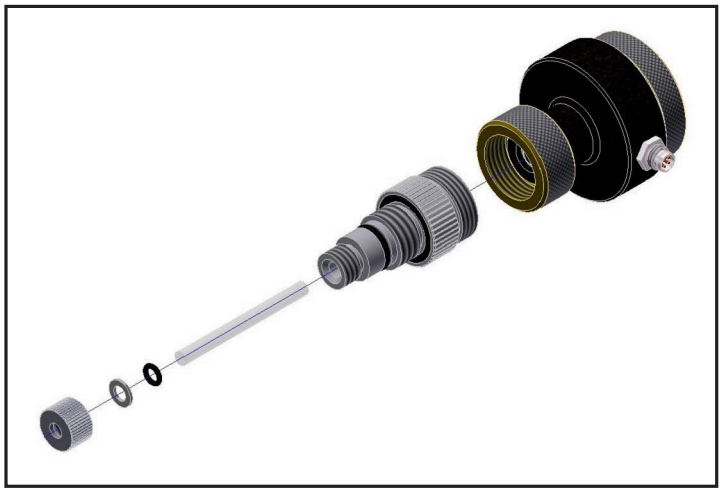


Figure 12 - Removing Quartz Rod from Remote Probe



7. Remove the quartz rod sensor probe cap from the probe body. Take care not to damage the quartz rod, O-Ring or the threads of the probe body. ***Note: It is recommended, when servicing the sensor probe, to work in a clean, dry area.** **(See Figure 11&12)**
8. Once the quartz rod is removed, clean with alcohol or a mild detergent, and rinse with clean water. Stubborn stains usually can be removed with a dilute hydrochloric acid. Make sure both end faces are complete clear and free of all deposits. ***NOTE: Follow all manufacturer's instructions and precautions when handling chemicals.** Once the quartz rod has been cleaned, handle the rod by the sides, to avoid getting fingerprints on the quartz rod faces.
9. Clean the probe body, by removing any dirt or deposits on all surfaces. The two outside o-rings should be inspected and can be replaced if worn or damaged.
10. Reassemble, all parts making sure each o-ring seats correctly in place as it was prior to disassembly. Make sure that the quartz rod is gently seated against the rear of the probe body, then secure the o-ring in the correct position between probe body and cap and tighten the probe cap by hand only. **DO NOT USE HAND TOOLS.** Tightening with hand tools may damage the quartz rod or O-Ring seal.
11. Reinstall sensor probe into the center fitting of the chamber and hand tighten.
12. **Slowly** restore water supply to the water purifier, pressurize, and check for leaks. Once it is determined that there are no leaks, inlet valve can be fully opened.
13. Reposition Ultraviolet Monitor on probe body and tighten set screws.
14. Restore power to the water purifier and **GUARDIAN**™ Ultraviolet Monitor. If after the cleaning of the quartz rod, there is still no significant improvement in the ultraviolet intensity, as shown on the intensity meter, proceed to the "**Troubleshooting**" section of this manual.

Verify Water Quality

⚠ **⚠WARNING Disconnect power to water purifier and monitor.**

1. Shut off water supply to the water purifier via the inlet and outlet shut off valves. Remove drain fitting and drain the chamber. Once the chamber is drained, remove any old sealing tape from the threads of the drain plug. Re-wrap with 1/2" wide Teflon® thread sealing tape. Reinstall and tighten the drain plug.

⚠WARNING Germicidal ultraviolet rays are harmful to eyes and skin. DO NOT look directly at the germicidal lamp.

2. With the water purifier empty of water, restore power to the water purifier and **GUARDIAN**™ Ultraviolet Monitor. With no water in the purifier check the readings on the ultraviolet monitor. If the intensity readings have now improved, consider having your water's UV Transmission level re-tested since this may indicate a change in your water quality.
3. If you are still unable to correct the problem of "LOW" intensity reading, consult our technical support staff.

TROUBLESHOOTING CONT.

MONITOR NOT OPERATING

A 5A, 5mm x 20mm, fuse protects the monitor from damage in the event that the **Promate**™ Audio Alarm or **Promate**™ Solenoid Valve outputs are short-circuited. The fuse can only be replaced by opening the case. **NOTE: Opening the case may void the warranty, and should only be attempted after contacting our technical support staff.**

TECHNICAL SPECIFICATIONS

Table 2- Technical Specifications

	General Specifications	
Voltage:	120v or 220v +/- 10%	
Frequency:	50/60/Hz (all models)	
Output:	5 Amps max. on Analog / 3 Amps max. on Digital	
Case Dimensions:	6″ wide x 4″ high x 3 3/4″ deep	
Case Materials:	UL Rated ABS Plastic	
Weight:	2lbs (approximate)	
	GUARDIAN™ Analog Version	**GUARDIAN**™ Digital Version
Current: (No Load)	0.015A (120v) 0.0075 (220v)	0.025A (120v) 0.0125A (220v)
Wattage:	1.8 Watts	3 Watts
4-20mA Output:	NA	Sourced from **GUARDIAN**™
Dry Contact Rating:	NA	50 AC or DC. 100mA
Low-Voltage Audio Alarm:	NA	12v DC 50mA

OPTIONAL ACCESSORIES

Table 3- Accessories

Part Number	Description
25-0844A	RJ45 Modular Cable, 50 foot long, (8-Conductor) with Male RJ45 Connectors Each End.
30-0122	RJ45 Modular Jack Adapter (8-Conductor) Surface Mount with terminal screws.
35-1878	Remote Probe Extra Long Cable (5-Conductor x 10 Meters Long)
30-0173	**Promate**™ Audio Alarm: 120 - 240 VAC 50/60Hz
30-0172	**Promate**™ Audio Alarm: 12v DC with 6 ft. long lead.
30-1369B	**Promate**™ Time Delay: 120v 50/60Hz 2-Minute (For Analog Guardians only).
30-0012B	**Promate**™ Time Delay: 220v 50/60Hz 2-Minute (For Analog Guardians only).

USER ASSISTANCE

Atlantic Ultraviolet Corporation® makes every effort to ensure that the **GUARDIAN™** Ultraviolet Monitor is a product of superior quality and workmanship. This manual describes the installation, operation and maintenance of the **GUARDIAN™** Ultraviolet Monitor. Please read and become familiar with the contents of this manual before installing or using the **GUARDIAN™**. If after reading the manual, you still have questions or concerns regarding the installation or use of the **GUARDIAN™**, contact our offices weekdays between 8:30 am and 5:00 pm Eastern Time, at:

Atlantic Ultraviolet Corporation®
375 Marcus Boulevard
Hauppauge, New York, 11788

Tel: 631.273.0500
Fax: 631.273.0771

E-mail: info@ultraviolet.com
Website: Ultraviolet.com
BuyUltraviolet.com

PRODUCT REGISTRATION

Please REGISTER your product immediately - you can do this in a number of ways. Go online to Ultraviolet.com and on the bottom left of each page either click on "Fill out Warranty Reg. Form on-line!" complete and hit submit or click on "Download a PDF of the Warranty Reg. card" which you can print, fill out and mail in.
If you prefer to register over the telephone please call 631-273-0500.

Atlantic Ultraviolet Corporation® takes all possible precautions when packaging equipment to prevent damage. Carefully inspect and report all damage. Do not install damaged equipment. Follow all instructions on any labels or tags. Carefully inspect all packing materials before discarding to prevent the loss of accessories, mounting hardware, spare parts or instructions.
For your convenience, record the following information below. The model and serial number can be found on a label located on the **GUARDIAN™** Ultraviolet Monitor. Keep this manual, along with proof of purchase, handy when contacting our offices.

For your convenience, record the following information below. The model and serial number can be found on a label located on the **GUARDIAN™** Ultraviolet Monitor. Keep this manual, along with proof of purchase handy when contacting our offices.

Purchased From:	Date:
Model:	Serial No.:

WARRANTY

We warrant that this product will be free from defects in material and workmanship for a period of one year from the date of shipment thereof or the product's total rated life, whichever first occurs. Within the warranty period we shall repair or replace such products, which are returned to us with shipping charges prepaid, and which are determined by us to be defective. This warranty will not apply to any product, which has been subjected to misuse, negligence, or accident; or misapplied; or modified; or repaired by unauthorized persons; or improperly installed.

The Buyer shall inspect the product promptly after receipt and shall notify us at our main office in writing of claims, including claims of breach of warranty, within thirty (30) days after the Buyer discovers or should have discovered the facts upon which the claim is based. Failure of the Buyer to give written notice of a claim within the time period shall be deemed to be a waiver of such claim.

The provisions of the above warranty are our sole obligation and exclude all other remedies or warranties, expressed or implied, including warranties of merchantability and fitness for a particular purpose, whether or not purposes or specifications are described herein. We further disclaim any responsibility whatsoever to the customer, or to any person, for injury to person, damage to, or loss of property or value caused by any product which has been subjected to misuse, negligence, accident; or modified or repaired by unauthorized persons; or improperly installed.

Under no circumstances shall the Atlantic Ultraviolet Corporation® be liable for any incidental, consequential or special damages, losses or expenses arising from the contract for this product, or in connection with the use of, or inability to use, our product for any purpose whatsoever.

PATENT NOTICE

No attempt has been made to determine the patent status of applications illustrated or described in this publication. Inclusion in this publication of any design or method of use, which may be patented, is not to be construed as promoting or sanctioning unauthorized use.