Ultraviolet
Monitoring
System

Part Numbers
UV/MS-1 V3420
UV/MS50-1 V3420
UV/MS-2 V3420
UV/MS50-2 V3420

Installation and Operations Manual

System Description

The Wyckomar UV Monitor measures true UV intensity at 254 nm, which is the effective germicidal wavelength for UV treatment of drinking water. It continuously monitors lamp output inside the chamber, regardless of whether or not water is flowing through the system. UV intensity is constantly displayed in real-time on the meter face. When the UV intensity emitted by the lamp drops below the alarm-set point (70% of new lamp UV output - this level is factory pre-set), the audible alarm will sound and the output relay is de-energized. The UV sensor will remain active. The factory setting for the output relay is N/O (normally open), this is used to operate a solenoid valve. The output can be reversed with a jumper setting to N/C (normally closed) for use with a remote alarm.

The system consists of 3 basic components: the sensor (with lead and connector), the controller and the 4-20 mA ouput cable. The system is also shipped with a compression nut that replaces the existing view-port compression nut on the sterilizer.

Sensor

There are two sensor ports on the monitor. Each sensor is inserted into the view-port of the reaction chamber and held in place by a compression nut. For single lamp systems, only sensor port #1 on the monitor is used, in this case sensor port #2 remains empty and is deactivated.

In dual lamp systems (such as the UV-5000 and UV-6000), both sensors are plugged into the monitor; the meter reading displays the UV output of the least powerful lamp (not the sum of the two lamps). This is important when determining when to change the lamps.

The cable provided with the sensor (senor lead) is approx. 6 feet long (8 feet extension cable available). All sensor components are hermetically sealed. Do not attempt to remove the lead from the sensor, this will influence the factory pre-set calibration and will void the warranty.

Controller

The controller is inside an enclosure and has been designed to operate indoors. It has a standard IEC-320 input power port (120 or 240 Volt, 50/60 Hz), supplied with the appropriate power cord, 2 sensor input ports, and an analogue intensity meter face on the front. The cable for the 4-20 mA output is connected to an external PLC or building management system. The provided 4-20 mA output cable comes with a connector with 2 pins (see page 6.) These have to match the holes in the plug on the controller.

If the monitor is exposed to adverse conditions (humidity, dust, fire hazard), it has to be enclosed in a properly sealed enclosure.

Installation

WARNING - Unplug the power cable of the UV system from the outlet and drain the UV chamber before installing the UV monitor.

1. Mount the controller in a suitable location above the UV unit on the wall, away from possible water sources, and close enough to the UV reaction chamber for the sensor cable to reach. Create a drip-loop with the cable to prevent moisture to enter into the cable-ties (see graphic on P. 5)

2. Remove the compression nut from the view-port of the UV reaction chamber.

3. Remove all parts inside the view-port. There is a plastic compression bushing, a glass disc and two seals. The original compression nut and all the content of the view-port can be put aside, they are not needed any more. Save these parts in case the sensor needs to be serviced.

4. Insert the sensor into the view-port, making sure that the o-ring is sitting properly in the groove. Screw down the provided compression nut (hand tight, do not over-tighten). This assembly has to be sealed properly.

5. Attach the sensor cable to the appropriate sensor port on the controller. In single lamp units, this is port #1. Port #2 is used for a second lamp in multi-lamp UV systems.

6. Connect the power cable to the Input port on the controller and into a nearby outlet. The alarm will sound and the UV intensity meter will read approx. 20% if the UV system is off.

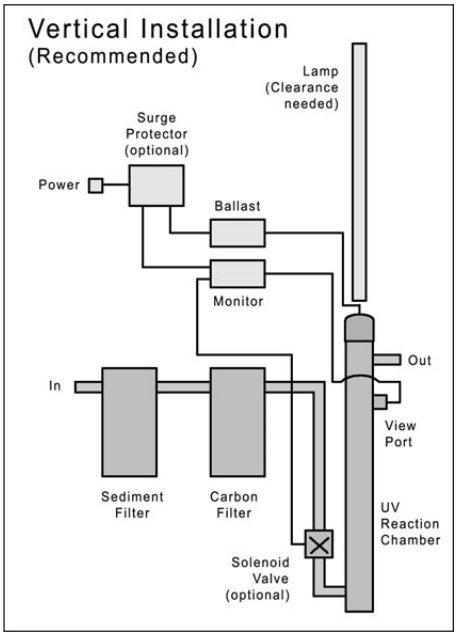
7. Plug in the power of the ballast(s) to start up the lamp(s). The alarm in the monitor should stop 1-2 minutes after the lamp(s) come(s) on. The meter face on the monitor should indicate full scale (assuming the reaction chamber is equipped with a new lamp).

8. Turn the water back on and check that the view-port assembly is properly sealed.

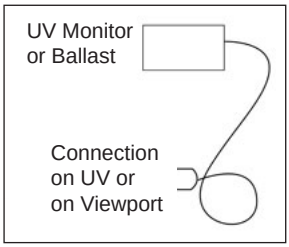
Installation

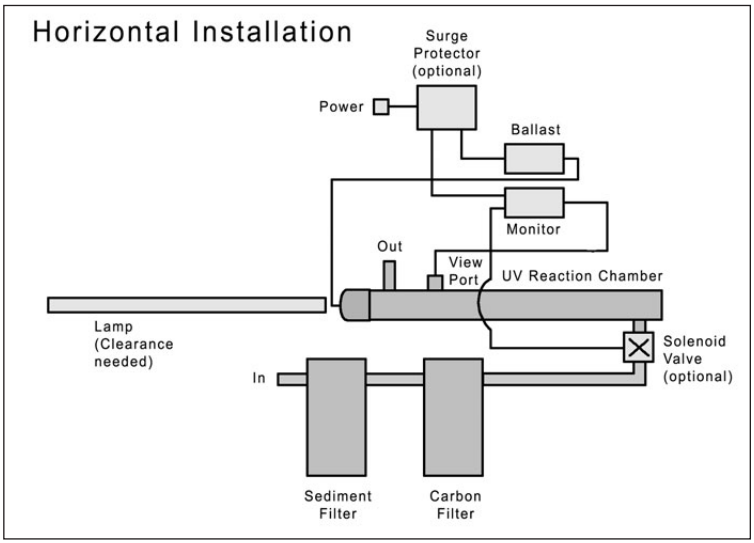
Please note that all electronic devices (ballast, monitor) should be mounted above the UV system with a drip loop in the connecting cables, in order to keep moisture away from the electronics if there is a leak or during maintenance.

Handle sensor with care - UV sensors damaged at installation or while cleaning are not covered under warranty.



Cable with Drip-Loop





4-20 mA Output Setup

Please refer to Figure 1 for how to assemble the connector. The solder connectors at the back of the connector will easily accommodate #20 AWG wire. This connector is meant only for low power devices.

There is a small black dot (Figure 2) beside one of the pins on the front side of the connector. The pin is for the red (hot) wire. The other pin is for the black (neutral) wire. Once the wires are soldered, the strain relief (center section) snaps into the connector. Squeeze the two “wings” (see arrow) together with pliers and pull the rubber boot over the assembly.

Figure 1 - Connector Assembly

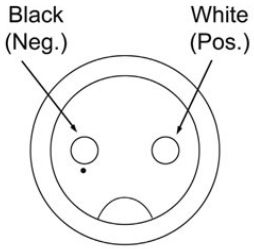


Figure 2 - Front View Male Remote Connector

Frequently Asked Questions

Q: “The alarm sounds when no water is flowing.”
A: This can be due to the water inside the reaction chamber of the UV unit heating up – the output of UV light decreases in hot water.

Solution: Run water through the system until it returns to normal temperature **or:** Install a Thermal Relief Valve (purge valve) at the out-port of the UV unit.

Q: “I’m not getting more than 20%.”
A: 20% is equivalent to no reading. This indicates that the monitor is working, but the sensor is not detecting any light.

Solution: Check that the UV light is on, check all electrical connections between sensor and monitor. Check if there is scale buildup on the sensor. This can be removed by carefully sliding the bottom part of the sensor over fine sandpaper. If this does not solve the problem the sensor has to be replaced.

Q: “The monitor reads less than 70%, although there is a new lamp in the UV unit.”
A: (1) The sleeve may be coated with scale deposits.
A: (2) The UV unit could have been mounted with the view-port at the top and now air bubbles are collecting in the view-port.
A: (3) The pre-filtration may not be adequate (iron in the water or turbidity too high, both are known to obstruct the UV transmittance)..

Solution:
(1) Clean the quartz sleeve with vinegar, then rubbing alcohol; or install new sleeve.
(2) Mount the UV unit so that the view-port is not the highest spot (see page 5)
(3) Install proper pre-filtration.

System Specifications

Display: analog 0-100% UV intensity (254 nm)
Operating Temperature Range: 0 to 41º C (32 to 105º F)
Input Power: 115 VAC (+- 10%)
or 240 V VAC (+- 8%), 50/60 Hz (+- 2%)
Output: DPDT relay contacts
(max. 3-1/2 Amps / 115 VAC or 230 VAC)
Remote Output: 4-20 mA
Fuse: 3.5 Amps MDL 250 VAC 1/4" x 1-1/4" Replaceable
Alarm indication: High-pitch noise

Parts List

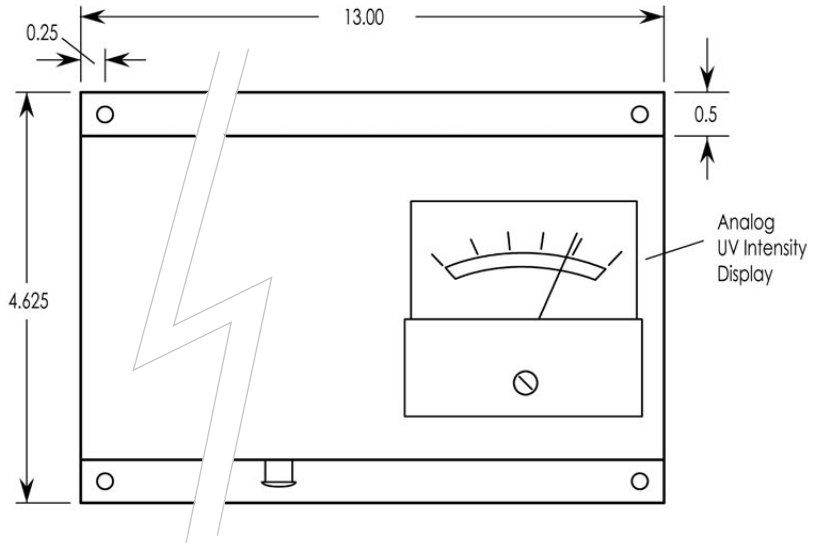
Monitor	# 4-UV/MS-1 V3420 (120 Volt 50/60 Hz)
	# 4-UV/MS-2 V3420 (240 Volt 50/60 Hz)
Monitor f. UV-5000	# 4-UV/MS50-1 V3420 (120 Volt 50/60 Hz)
	# 4-UV/MS50-2 V3420 (240 Volt 50/60 Hz)
Sensor assbly. (1 or 2)	# 4-35-3
Power Cord	indicate country of origin for part #
O-ring	# 11-6

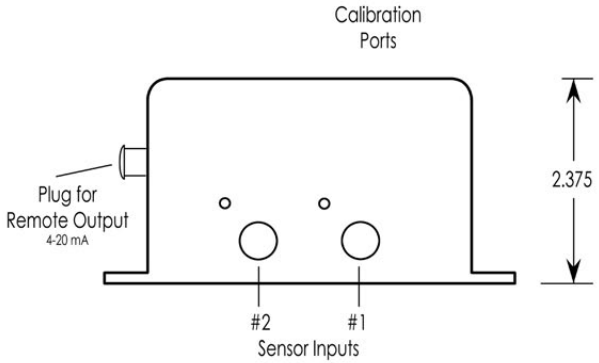
Options

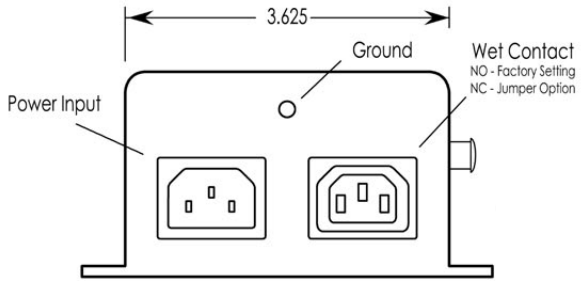
8' Extension Cable	# 4-EC8FT
Solenoid Valve	# 4-SVP
Thermal Relief Valve	# 10-PV-BF-T
	(T-Fitting additional)

Parts and Service available from Authorized Dealers
(please contact manufacturer for list of dealers)

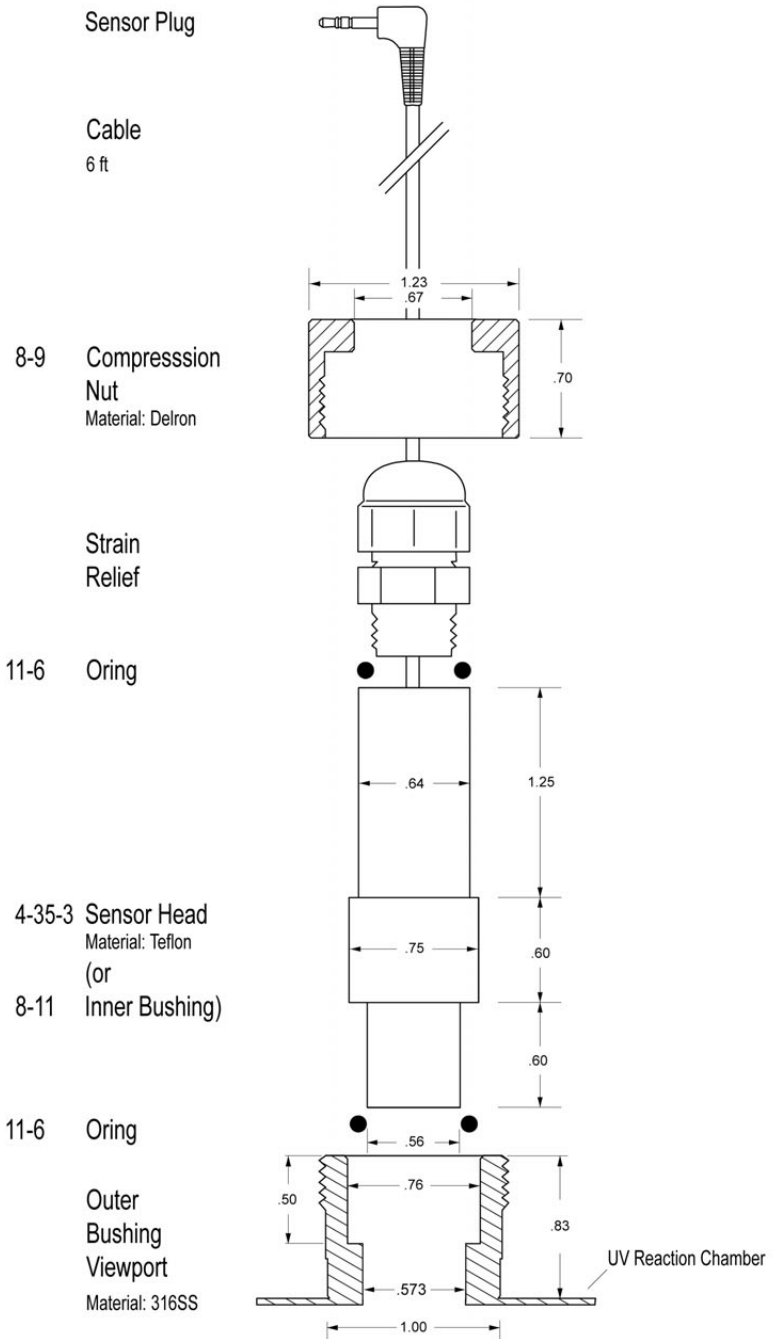
Drawings


0.25
13.00
0.5
4.625
Analog
UV Intensity
Display


Calibration
Ports
Plug for
Remote Output
4-20 mA
2.375
#2
#1
Sensor Inputs


3.625
Ground
Wet Contact
NO - Factory Setting
NC - Jumper Option
Power Input

Drawings


Sensor Plug
Cable
6 ft
1.23
.67
8-9
Compresssion
Nut
Material: Delron
.70
Strain
Relief
11-6
Oring
.64
1.25
4-35-3
Sensor Head
Material: Teflon
(or
8-11
Inner Bushing)
.75
.60
.60
11-6
Oring
.56
.50
.76
.83
Outer
Bushing
Viewport
Material: 316SS
UV Reaction Chamber
.573
1.00

Notes

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