



Aquafine® Corporation

Aquafine's UV and Temperature Monitoring System™

Aquafine Corporation's integrated UV and Temperature Monitoring System will accurately monitor UV intensity and process water temperature of your HX UV treatment equipment. The system includes a NIST traceable option for ISO certified and other critical processes. One of the key benefits is improved liability protection. The new design surpasses the performance and reliability of competing systems. The state-of-the-art detector employs a Gallium Nitride (GaN) photodiode and a semiconductor temperature sensor in a single package, along with its on-board electronics for remote and local operation. The monitoring system features:

- 💧 Detector: UV and temperature sensors in a single housing
- 💧 Optional NIST-traceable UV sensor calibration with certificate upon request
- 💧 No optical filters, no degradation
- 💧 Withstands non-operating temperatures of 250°F (121°C) for steam sterilization at a maximum pressure of 250psi (17.2 bar)
- 💧 Complete on-board electronics for UV and temperature
- 💧 Absolute and percent UV readout options
- 💧 Less power consumption:
 - Aquafine Sensor - 3 mW
 - Other Commercial Sensors – at least 500 mW
- 💧 "70 times" more sensitive to 254 nm:
 - Aquafine Sensor – 0...5 mW/cm²
 - Other Commercial Sensors – 0...350 mW/cm²
- 💧 10 times larger photodiode sensitive area
- 💧 1 mm thick scratch resistant sapphire window
- 💧 Detector Cable: Water-resistant axial connector and cabling
- 💧 IP Rating of the connector: IP65
- 💧 No diffuser, therefore no UV solarization
- 💧 Temperature sensor and controller does not require calibration
- 💧 Detector can be used for UV Monitoring Station and Aqualogic 2000 system



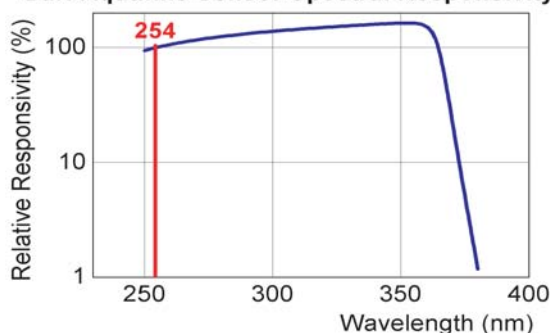
UV Monitoring Station™



Detector

Pharmaceutical-grade 316L stainless steel axial detector connector houses the electronics and sapphire window in one watertight, humidity-free package. The sapphire window material is an extremely hard single crystal form that is resistant to radiation darkening and most chemicals including strong acids. Window is bio compatible, cleaner, clearer and has better optical performance.

GaN Aquafine Sensor Spectral Responsivity



Sensors are assembled in a controlled-air environment (to prevent moisture buildup). Units are subjected to a 24-hour dry oven treatment that completely eliminates moisture before closing sensor enclosures. Sealing of the sensor housing is done hermetically under dry-nitrogen flush.

Sensor chart outlines the spectral responsivity of the GaN Aquafine UV sensor to a low-pressure mercury (Hg) lamp lines.

UV - MONITORING SYSTEM

Property **Aquafine UV and Temperature Detector**

HOUSING

Materials:

- o Sensor Body Pharmaceutical-grade 316L stainless steel.
- o Window Scratch resistant sapphire (single crystal Al₂O₃) window.
- o O-Ring Viton

Assembly All the sensor components are hermetically sealed in a stainless steel housing. Before closing sensor enclosures, units are subjected to 24-hour dry oven treatment that completely eliminates moisture. The assembly of the unit is done under dry nitrogen gas to eliminate the presence of oxygen and water.

UV Sensor

- Sensor material Gallium Nitride (GaN) p-i-n photodiode
- Sensitive area 0.0315 in (0.80 mm) diameter
- Photodiode diameter 0.185 in (4.7 mm).
- Sensor response at 254 nm 0.06 amp/watt
- NIST - traceable calibration YES (Optional)
- Display irradiance range 0 - 5000 μW/cm²

TEMPERATURE SENSOR

- Temperature sensor Precision integrated circuit
- Display temperature range 32 - 212 °F (0 - 100 °C)

ENVIRONMENTAL

- Controller operating temperature 32 - 122 °F (0 - 50 °C)
- Sensor operating temperature 32 - 176 °F (0 - 80 °C)
- Sensor non-operating temperature 250 °F (121 °C) for steam sterilization
- Maximum water pressure 250 psi (17.2 bar)



Property **Aquafine UV and Temperature Detector**

DIMENSIONS

Detector housing:

- o Overall length (OL) 2.72 in (69 mm)
- o Outer diameter (OD) 1 in (25 mm)
- o Inner diameter (ID) 0.310 in (8 mm)

Detector window (dia x thickness) 0.197 in x 0.0394 in (5mm x 1 mm)

Monitoring Station (W x H x D) 6 in x 3.5 in x 1.5 in (152 mm x 89 mm x 38 mm)

CABLE

- Cable type 6 shielded wire
- Cable size 22 gauge
- Cable Length 10 ft (3 m) Standard
Option up to 30 ft (10m) maximum
- Cable Option Water-resistant IP65 rated axial connector

OTHER

- Power requirement 5 VDC
- Output * 1 V for 1 mW/cm² at 254 nm
* 0.5 V for 1 mW/cm² at 254 nm
* 10 mV for 1 deg Fahrenheit
- Angular response 55 deg
- Spectral range 210 to 360 nm
- Stability ± 5 percent / 24 months
- Sensor-to-sensor repeatability ± 3 percent
- Patent Patent Pending



Aquafine[®]

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