

# Thermo Scientific Orion AquaMate 8000 UV-Vis and AquaMate 7000 Vis Spectrophotometers

New spectrophotometers for water and wastewater analysis

The new Orion® AquaMate spectrophotometers offer the accuracy, dependability and ease of use your lab requires. The compact design, intuitive operation and innovative features of AquaMate spectrophotometers ensure your lab will have the ideal instrument for water analysis and beyond. Choose the AquaMate 7000 Vis Spectrophotometer for 325 to 1100 nm wavelengths or AquaMate 8000 UV-Vis with full 190 to 1100 nm wavelengths for the most extensive measurement options.



These high quality, reliable spectrophotometers are designed to meet the needs of water and wastewater analysis laboratories and incorporate advanced features and functions for the ultimate flexibility in operation.

AquaMate spectrophotometers include over 260 preprogrammed methods for easy and convenient measurements using Orion AQUAfast, Merck, CHEMetrics or Hach chemistries. Preprogrammed methods can also be adapted for new chemistries or operators can create their own custom methods. The instruments allow a one point adjustment on any preprogrammed method to correct for variations in batch reagent chemistries. A wide variety of vials sizes can be used, including 10 mm square vials, 20 mm and 50 mm rectangular vials and an adjustable round vial holder that accommodates 13 mm, 16 mm and 24 mm round vials.

AquaMate instruments feature three USB connections, providing the options to store methods and data to a USB memory stick, transfer data to a computer and print hard copy data to an external printer. The instruments are compatible with ink jet and laser printers with HP PCL 5 or greater.

AquaMate spectrophotometers include performance verification tests that ensure wavelength accuracy and instrument functionality. In accordance with GLP and GMP, each verification report gives the time, date and instrument serial number. The built-in wavelength accuracy test is compatible with either the internal lamp or external calibrated standards. The xenon lamp of the AquaMate 8000 UV-Vis spectrophotometer provides an internal standard for wavelength accuracy verification. To validate the instrument performance further, built-in test methods for stray light, noise and resolution are available.

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### AquaMate Test Methods

AquaMate spectrophotometers include over 260 preprogrammed test methods that allow simple, accurate analysis of acid capacity, alkalinity, aluminum, ammonia, ammonium, antimony, AOX, arsenic, BOD, boron, bromine, cadmium, calcium, chloride, chlorine, chlorine dioxide, chromate, chromium, COD, color, copper, cyanide, cyanuric acid, DEHA, detergents, dissolved oxygen, ethanol, fluoride, formaldehyde, gold, hardness, hydrazine, hydrogen peroxide, iodine, iron, lead, magnesium, manganese, mercury, molybdate, molybdenum, monochloramine, nickel, nitrate, nitrite, nitrogen, oxygen, oxygen scavengers, ozone, palladium, pH, phenol, phosphate, platinum, potassium, silica, silver, sodium, sulfate, sulfide, sulfite, surfactants, suspended solids, tin, TOC, volatile organic acids and zinc using Orion AQUAfast, Merck, CHEMetrics or Hach reagents and assorted vial sizes. All preprogrammed methods are stored on the included USB memory stick, allowing operators to load only the methods of interest on their instrument and add or remove methods as needed. AquaMate instruments also allow custom test methods to be easily entered and saved to the instrument or USB stick, so additional parameters and test methods can be added at any time.

Visit [www.thermoscientific.com/water](http://www.thermoscientific.com/water) for the most current list of US EPA compliant reagent chemistry methods.

**The AquaMate 8000 xenon lamp can save an average of \$4,400 in maintenance costs over five years**

### AquaMate Cell Holder Options

AquaMate spectrophotometers allow the ultimate flexibility in vial sizes and accommodate a wide range of round, square and rectangular vials with three cell holder options. Each cell holder can be easily installed and replaced in the instrument sample compartment.

The 3 Cell Holder includes one adjustable holder for 13 mm to 25 mm round vials, one holder for 20 or 50 mm rectangular vials and one holder for 10 mm square vials. The 6 Cell Holder is ideal for multi-sample measurements in 10 mm square vials. With one position reserved for a blank, the 6 Cell Holder allows the automated analysis of up to five samples. The 1 Cell Holder accommodates a single 10 mm square vial.

### AquaMate 8000 UV-Vis Spectrophotometer—Research Quality Measurements with Routine Simplicity

The AquaMate 8000 UV-Vis spectrophotometer delivers unsurpassed data quality throughout the entire UV to near-IR region of the spectrum by utilizing dual-beam optical geometry and a high-intensity xenon lamp that fires pulses of light only when taking a measurement.

Accurate, reliable and easy to use—Orion AquaMate spectrophotometers make taking measurements simple



### Dual-Beam Optics for More Accurate Measurements

The light from the xenon lamp is very intense, allowing a beam splitter to extract and measure a small portion of light to an internal reference detector without a loss of performance in sample measurement. This provides simultaneous measurement of the sample with real-time reference beam correction for each flash of the lamp.

The dual beam optical configuration ensures each measurement is as accurate as possible with reference beam correction on each data point, no drift over long measurements and no peak shift with scan speed changes.

### Instant-On and Maintenance-Free Xenon Lamp

The xenon lamp in the AquaMate 8000 UV-Vis spectrophotometer provides excellent performance over the entire wavelength range of 190 to 1100 nm. It also provides intense light in the UV region of the spectrum adding sensitivity for life science, environmental and organic chemistry applications.

The xenon lamp typically provides five to seven years of maintenance-free performance, since it runs only when taking a measurement. This saves an average of **\$4,400** in maintenance costs over five years compared with a traditional light instrument.

The xenon lamp requires no warm-up for instant measurements. It will not damage sensitive samples since it does not continuously expose samples to intense UV light and ensures sample temperature stability, since it does not change the compartment temperature.

### Flexible 1.8 nm Bandwidth

The AquaMate 8000 UV-Vis balances regulatory compliance with sensitivity. A 1.8 nm spectral bandwidth provides optimal system resolution. The 1.8 nm bandwidth permits more light energy to reach the sample resulting in lower detection limits and superior signal-to-noise performance.

### Fast Wavelength Scanning

The AquaMate 8000 UV-Vis spectrophotometer is equipped with enhanced wavelength scanning technology that acquires high quality spectral data quickly. The instrument accelerates through wavelength scans at speeds up to 4,200 nm per minute. The exceptionally large photometric range allows accurate measurements of small absorbance changes even when using highly absorbing blank samples. Scan data can be analyzed to determine peak and valley wavelengths and to perform peak height and 3-point net calculations for a sloping baseline. The scan data can also be saved to the USB memory stick.

### AquaMate 7000 Vis Spectrophotometer—Cost-Effective Visible Only Measurements

The AquaMate 7000 Vis spectrophotometer offers similar performance and features as the AquaMate 8000 in a visible-only configuration. These spectrophotometers offer great value and many features for their relatively small footprint and lightweight design.

Leverage the power of a traditional, grating-based spectrophotometer to analyze most water and wastewater parameters. The user interface is easy to use and the 5.0 nm spectral bandwidth is ideal for most routine concentration measurements.

**AquaMate spectrophotometers include a one year warranty against defects in material and workmanship**

When high resolution is not required to resolve closely spaced peaks, the added energy throughput extends the sensitivity of the analysis and increases the signal-to-noise ratio for dilute samples. Precision electronics and a simple, single-beam optical geometry provide accurate results.



A high intensity xenon lamp and dual beam optical geometry allow the AquaMate 8000 UV-Vis spectrophotometer to deliver unsurpassed data quality throughout the entire UV-Visible range

#### 1. Xenon Flash Lamp

Long lifetime lamp provides 3 to 5 years of continuous use.

#### 2. Patented Out-of-Plane Monochromator Configuration

Enables maximum performance with a minimum footprint.

#### 3. Reference Detector

Ensures the most accurate data is measured from each flash of the lamp.

#### 4. Integrated 6-Cell Changer

Increase your sample throughput with the automation of this integrated cell changer (standard with AquaMate 8000 and optional with AquaMate 7000).

#### 5. Sample Detector

Precision silicon detectors allow measurements from the UV to the near-IR.

## Specifications

	AquaMate 8000 UV-Vis Spectrophotometer	AquaMate 7000 Vis Spectrophotometer
<b>Optical Design</b>	Dual beam—internal reference detector	Single beam
<b>Spectral Bandwidth</b>	1.8 nm	5.0 nm
<b>Light Source (Typical Lifetime)</b>	Xenon flash lamp (5 years)	Tungsten-halogen lamp (1000 hours)
<b>Detector</b>	Dual silicon photodiodes	Silicon photodiode
<b>Wavelength</b>		
Range	190 to 1100 nm	325 to 1100 nm
Accuracy	±1.0 nm	±1.0 nm
Repeatability	±0.5 nm	±0.5 nm
Slew Speed	11,000 nm/min	11,000 nm/min
Scanning Speed	10 to 4,200 nm/min	10 to 4,200 nm/min
Data Interval	0.2, 0.5, 1.0, 2.0, 3.0, 5.0 nm	1.0, 2.0, 3.0, 5.0 nm
<b>Photometric</b>		
Measurement Modes	Absorbance, % transmittance, concentration	Absorbance, % transmittance, concentration
Range	-0.5 to 5.0 A ; -1.5 to 125 %T ; ±9999 C	-0.1 to 3.0 A ; -0.3 to 125 %T ; ±9999 C
Linearity	Up to 3.5 A at 260 nm	Up to 3.0 A at 340 nm
Accuracy	±0.005 A at 1.0 A, <0.00025 at 0.0 A	0.5 % or ±0.005 A, whichever is greater up to 2 A
Noise	<0.00050 at 1.0 A, <0.00080 at 2.0 A	<0.001 A at 0.0 A, <0.002 A at 2.0 A
Drift	RMS at 260 nm <0.0005 A/hr	Peak-to-peak at 340 nm 0.002 A/hr after warm-up
<b>Stray Light</b>	<0.08 %T at 220 nm and 340 nm, <0.1 %T at 340 nm and 400 nm, <1.0 %T at 198 nm	<0.08 %T at 220 nm and 340 nm, <0.1 %T at 340 nm and 400 nm, <1.0 %T at 198 nm
<b>Display</b>	Graphical with LCD backlight— 9.7 x 7.1 cm (3.8 x 2.8 in)	Graphical with LCD backlight— 9.7 x 7.1 cm (3.8 x 2.8 in)
<b>Keypad</b>	Sealed membrane with tactile response keys	Sealed membrane with tactile response keys
<b>Connectivity</b>	USB type A port for USB stick (front panel), USB type B port for computer (rear panel), USB type A port for printer (rear panel)	USB type A port for USB stick (front panel), USB type B port for computer (rear panel), USB type A port for printer (rear panel)
<b>Dimensions</b>	30 W x 40 D x 25 H cm (11.8 x 15.7 x 9.8 in)	30 W x 40 D x 25 H cm (11.8 x 15.7 x 9.8 in)
<b>Weight</b>	8.6 kg (19 lb.)	8.6 kg (19 lb.)
<b>Power Requirements</b>	100 to 240 V ; 50 to 60 Hz	100 to 240 V ; 50 to 60 Hz

Visit [www.thermoscientific.com/water](http://www.thermoscientific.com/water) for a complete list of Orion AQUAfast reagent chemistries.



Thermo Fisher Scientific  
Water Analysis Instruments  
Chelmsford, MA USA  
Quality Management System  
Registered to ISO 9001

## Ordering Information

Description	Part Number
AquaMate 8000 UV-Vis Spectrophotometer, includes methods on USB memory stick, 6-position cell holder, 3-position cell holder, 1-position cell holder, user documentation, dust cover, USB cable, and 110 V and 220 V power cords	AQ8000
AquaMate 7000 Vis Spectrophotometer, includes methods on USB memory stick, 3-position cell holder, user documentation, dust cover, USB cable, and 110 V and 220 V power cords	AQ7000
AquaMate 6-position cell holder	AQ006C
AquaMate 3-position cell holder	AQ003C
AquaMate 1-position cell holder	AQ001C
AquaMate methods, USB memory stick	AQ0USB
AquaMate power cord, 240 V UK plug	AQ240V
AquaMate power cord, 220 V Euro plug	AQ220V
AquaMate power cord, 110 V US plug	AQ110V
24 mm round vials, 12 pack	AC2V24

[thermoscientific.com/water](http://thermoscientific.com/water)

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