NanoDrop One/One^c Microvolume UV-Vis Spectrophotometers

Frequently Asked Questions

How are NanoDrop spectrophotometers different from traditional cuvette-based instruments?

NanoDrop spectrophotometers use a patented* microvolume sample retention system to minimize sample consumption and eliminate the need for cuvettes. A variable, auto-range pathlength feature allows users to measure up to 366x higher sample concentrations than can be measured in a 10 mm cuvette making dilution steps unnecessary.

How are the Thermo Scientific™ NanoDrop™ One Spectrophotometers different from the NanoDrop 2000?

The NanoDrop One is the next generation instrument in the NanoDrop series of microvolume UV-Vis spectrophotometers. The NanoDrop One does everything that its predecessors can and more, including:

• On-board instrument control via a touch screen display

• A broader dynamic range (up to 27,500 ng/µL dsDNA)

• Expanded connectivity and data management options

• Enhanced sample analysis and technical support with Acclaro Sample Intelligence technology

What is Acclaro Sample Intelligence technology?

Thermo Scientific™ Acclaro™ Sample Intelligence technology enhances user understanding of sample quality while delivering accurate quantitative measurements. There are three parts to Acclaro:

1. Data analysis algorithms that provide contaminant identification and corrected concentrations

2. An embedded sensor and digital image analysis that monitors the sample column for bubbles to ensure measurement integrit

3. Sample information alerts and on-demand technical support for guided troubleshooting

Which contaminants does Acclaro detect?

In DNA samples, Acclaro detects the following contaminants: proteins, phenol, Guanidine HCl and Guanidine Isothiocyanate. In protein samples (direct A280 measurements) Acclaro can detect nucleic acids and phenol. More contaminants will be offered in future software updates.

How does Acclaro help you troubleshoot?

When the user taps the information icon on the measurement screen, a popup box will report the sample issue detected and offer possible causes and solutions. If the user wants to "Learn More" they will be guided through a cascade of information, from fundamentals to the specifics. This is best explained with an example. When Acclaro detects a low A260/A280result, a popup box will inform that the ratio is outside acceptable limits for pure DNA sample and that this could be due to a poor blank or a contaminant. The user will then see information on common contaminants that can affect this ratio, and other resources starting with an animation that explains "What is a purity ratio." If protein is the more likely contaminant, s/he can look at spectra of DNA/protein samples and how increasing protein levels can affect the purity ratios of a DNA sample. Is another contaminant more likely?

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What is the difference between the NanoDrop One and the NanoDrop One^c?

Both models have the patented* microvolume sample retention capability (pedestal). NanoDrop One^c has built-in cuvette capability which allows for pedestal applications plus cuvette measurements to support kinetics applications and dilute sample measurements. The cuvette position can be used with the arm up or down and comes with temperature control and stirring features.

What pre-configured applications are included in the NanoDrop One/One^c?

Nucleic Acid A260 (ds DNA, ssDNA, oligo DNA, oligo RNA, custom factor) , A260/280, A260/230 and Microarray (labeled nucleic acids); Protein A280 and A205, Protein Pierce 660, Protein Bradford, Protein BCA, Protein Lowry, Proteins and labels; OD600; Kinetics, UV-Vis and custom methods.

Is there an ability to create and save custom methods?

Yes. Methods can be built with customized analysis wavelengths, factors, extinction coefficients and more. Fluorescent labels can be saved in the Dye Chromophore editor and new protein methods can be saved in the Protein Editor.

Can I measure purified and unpurified proteins on the NanoDrop One/One^c?

Purified proteins can be measured directly using the A280 or A205 pre-configured applications. Choose the most suitable extinction coefficient from the pre-defined protein sample types (BSA, IgG, Lysozyme) from our drop-down list or add your own custom protein using the Protein Editor feature. For unpurified proteins or cell lysates, a selection of pre-configured colorimetric assay applications is available.

What sort of measurement performance should I expect with these instruments?

The photometric accuracy is within 3% at 0.97A at 302 nm. Typical measurement reproducibility is 0.002A (1.0 mm path) or 1% CV, whichever is greater.

Is simply wiping the pedestal surfaces enough to prevent carryover?

Yes. The highly polished quartz and stainless steel surfaces of the sample retention system are resistant to sample adherence, making the use of dry lab wipes very effective in removing the sample.

Can I verify that my instrument is calibrated and running accurately?

Yes. While most users will never need to recalibrate their NanoDrop One, we recommend verifying instrument performance using the NanoDrop One performance verification solution (PV-1) every 6 months. PV-1 is available from Thermo Fisher Scientific and authorized dealers.

Does the NanoDrop One/One^c require a computer to operate?

No. These instruments feature an on-board, high resolution touchscreen control with an Android-based operating system and 32 GB flash memory. USB, Ethernet and Wi-Fi connectivity options allow seamless data transfer to an external computer with Windows® 7 or 10, 64-bit operating systems. The instrument can only be controlled from the touchscreen. Customers can download the NanoDrop One PC software from our website to view and analyze their data, and explore Acclaro support features at their desks.

*Patents US6628382 and US6809826

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