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NanoDrop Micro Volume UV/Vis Spectrophotometers and Fluorometers

NanoDrop Ultra

User Guide

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ThermoFisher SCIENTIFIC

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http://www.thermofisher.com/NanoDropDistributors

For Research Use Only. This instrument or accessory is not a medical device and is not intended to be used for the prevention, diagnosis, treatment or cure of disease.

WARNING Avoid an explosion or fire hazard. This instrument or accessory is not designed for use in an explosive atmosphere.

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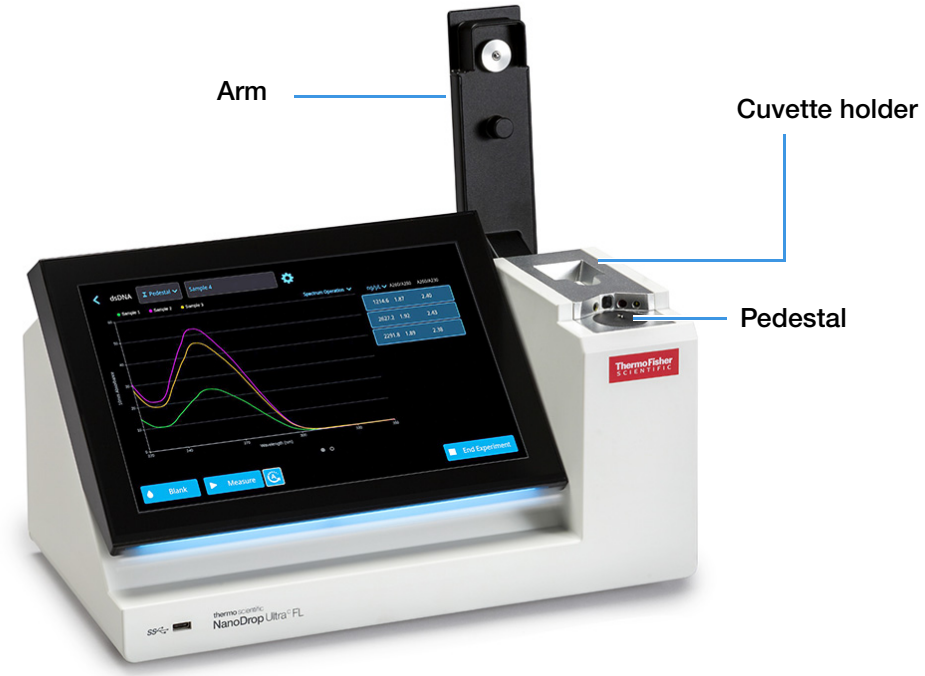
About the Spectrophotometer

NanoDrop Ultra^{C} FL Spectrophotometer and Fluorometer



Note Locate the instrument away from air vents and exhaust fans to minimize evaporation

The Thermo Scientific™ NanoDrop™ Ultra instrument series is composed of compact, stand-alone UV-Visible spectrophotometers and fluorometers developed for micro-volume analysis of a wide variety of analytes. The pioneering sample retention system enables the measurement of highly concentrated samples without the need for dilutions.

The NanoDrop Ultra system comes with preloaded software and a touchscreen display. NanoDrop Ultra PC control software can be installed on a local PC and used to control the instrument and view data. The instrument can be connected to an optional printer with a USB cable or to a remote printer through an Ethernet connection or wireless network using the provided NanoDrop Ultra Wi-Fi and Bluetooth Dongle.

Note Before operating a NanoDrop Ultra instrument, please read the safety and operating precautions and then follow their recommendations when using the instrument.

Features

The NanoDrop Ultra spectrophotometers and fluorometers feature the micro-volume sample retention system. The NanoDrop Ultra^{C} and NanoDrop Ultra^{C} FL models additionally feature a cuvette holder for analyzing dilute samples using standard UV-Visible cuvettes. The NanoDrop Ultra FL and NanoDrop Ultra^{C} FL models are capable of both micro-volume absorbance and fluorescence measurements by including red and blue solid-state light emitting diodes (LED's), which are oriented 90° to the detector.

Touchscreen

The NanoDrop Ultra comes with a built-in, 10-inch, high-resolution touchscreen preloaded with easy-to-use instrument control software. The touchscreen can tilt forward or back for optimal viewing.

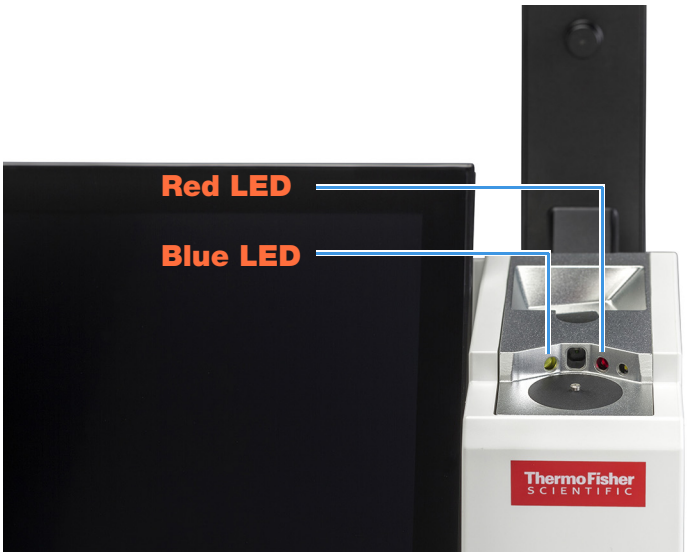
Cuvette Holder

The NanoDrop Ultra^{C} and NanoDrop Ultra^{C} FL include a cuvette holder for measuring dilute samples, colorimetric assays, cell cultures and kinetic studies. The cuvette system has these features:

- extended lower detection limits
- 37 °C heater option for temperature-sensitive samples and analyses
- micro-stirring option to ensure sample homogeneity and support kinetic studies

For details, see Measure a Sample using a Cuvette.

Fluorescence LEDs



The NanoDrop Ultra FL and NanoDrop Ultra^{C} FL are enhanced with the inclusion of one red LED and one blue LED for fluorescence measurements. This addition allows users to perform fluorescence analysis, providing an extra dimension to the spectrophotometric capabilities of the instrument. The red and blue LEDs serve as excitation sources, enabling the detection of fluorescent emissions from samples that respond to these specific wavelengths. The fluorescence system has these features:

- **High Sensitivity**—more sensitive than absorbance–based quantification with the ability to detect down to 0.1 ng/µL dsDNA
- **Sample Prep Calculator**—integrated reagent calculator determines the amount of dye and buffer needed for the selected NanoDrop Ultra Fluorescence Assay
- **NanoDrop Ultra Fluorescence Assay Kits**—fluorescence assays to be used with built-in software applications for dsDNA and RNA detection

USB-A port

One USB-A port located on the instrument rear panel.

USB-B port

One USB-B port located on instrument rear panel.

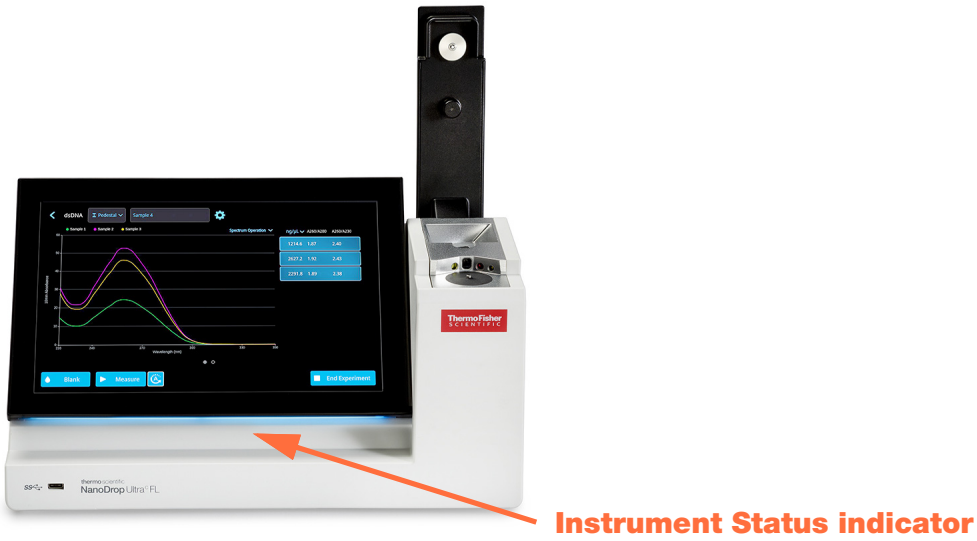
USB-C ports

One USB-C port located on the front of the instrument and one USB-C port dedicated for power, located on the instrument rear panel.

Wi-Fi™ and Bluetooth® Dongle port

One recessed USB-A port located on the instrument rear panel dedicated for Wi-Fi and Bluetooth connectivity. This port also acts as a standard USB-A port in the event that the Wi-Fi and Bluetooth dongle is not used.

Instrument Status Indicator



The instrument status indicator located below the touchscreen will display specific colors and patterns to indicate current status of the instrument.

Indicator	Instrument Status
Off	Powered off/Energy Saver Mode
Breathing white light	Powering on or initializing
Constant white light	Ready/standby
Sweeping blue light	Measuring
Constant blue light	Diagnostic - pass result Measurement does not trigger Acclaro alert or Acclaro contaminant
Constant amber light	Diagnostic - conditional pass result Measurement triggers Acclaro alert or Acclaro contaminant
Blinking amber light	Diagnostic - fail result

Accessories

This section lists the accessories for use with the NanoDrop Ultra instruments.

Note Some accessories listed below are not included with the purchase of NanoDrop Ultra spectrophotometers and fluorometers.

NanoDrop Ultra USB Wi-Fi and Bluetooth Dongle

A USB Wi-Fi and Bluetooth dongle used to enable Wi-Fi and Bluetooth connectivity.

The NanoDrop Ultra USB W-Fi and Bluetooth Dongle is intended to be plugged into the recessed USB-A port in the back of the instrument.

DYMO™ LabelWriter™ 550 USB Label Printer

Prints two 5/16-in x 4-in self-adhesive labels for transferring sample data directly into laboratory notebooks or posting on bulletin boards. The software allows printing of data from each sample measurement or from a group of samples logged and measured together.

The printer connects to the instrument (back panel) via a USB cable (included).

PR-1 Pedestal Reconditioning Kit

Specially formulated conditioning compound that can be applied to the pedestals to restore them to a hydrophobic state (required to achieve adequate surface tension for accurate sample measurements). The kit includes conditioning compound and applicators. For more information, see Reconditioning the Pedestals.

PV-1 Performance Verification Solution

Liquid photometric standard used to check instrument absorbance performance. For more information, see Performance Verification.

FL-1 Fluorescence Verification Kit

Reagent based assay used to check instrument fluorescence performance. For more information, see Fluorescence Performance Check.

NanoDrop Ultra dsDNA BR Fluorescence Assay

An assay kit that provides an accurate and selective method for the quantitation of sensitive double-stranded DNA samples. To be used with the dsDNA Fluorescence application.

NanoDrop Ultra dsDNA HS Fluorescence Assay

An assay kit that provides an accurate and selective method for the quantitation of sensitive double-stranded DNA samples. To be used with the dsDNA Fluorescence application.

NanoDrop Ultra RNA HS Fluorescence Assay

An assay kit that provides an accurate and selective method for the quantitation of sensitive RNA samples. To be used with the RNA Fluorescence application.

NanoDrop Ultra Instrument Dust Cover

Transparent plastic cover protects instrument against dust and any liquid exposure while not in use.

NanoDrop Ultra Microfiber Screen Wipe

Specialized cleaning cloth designed for safely and effectively cleaning the NanoDrop Ultra touch screen.

USB-C Battery Pack

The NanoDrop Ultra instruments are designed to be compatible with USB-C portable chargers (75 Wh provides approximately 8 hours of run time).

Instrument Detection Limits

Absorbance-Based Detection Limits

Measurement Location	Pathlength (mm)	Upper Detection Limit (10 mm Equivalent Absorbance)
Pedestal	1.0	12.5
	0.2	62.5
	0.1	150
	0.05	300
	0.03	550
Cuvette	10	1.5
	5	3
	2	7.5
	1	15

Fluorescence-Based Detection Limits

The fluorescence-based detection limits are dependent on the fluorescence assay used with the instrument. See the kit's protocol for more information.

The NanoDrop Ultra fluorescence kits have been optimized for microvolume measurements. Performance of other fluorescence dyes/reagents on the microvolume pedestal cannot be guaranteed.

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Instrument Set up

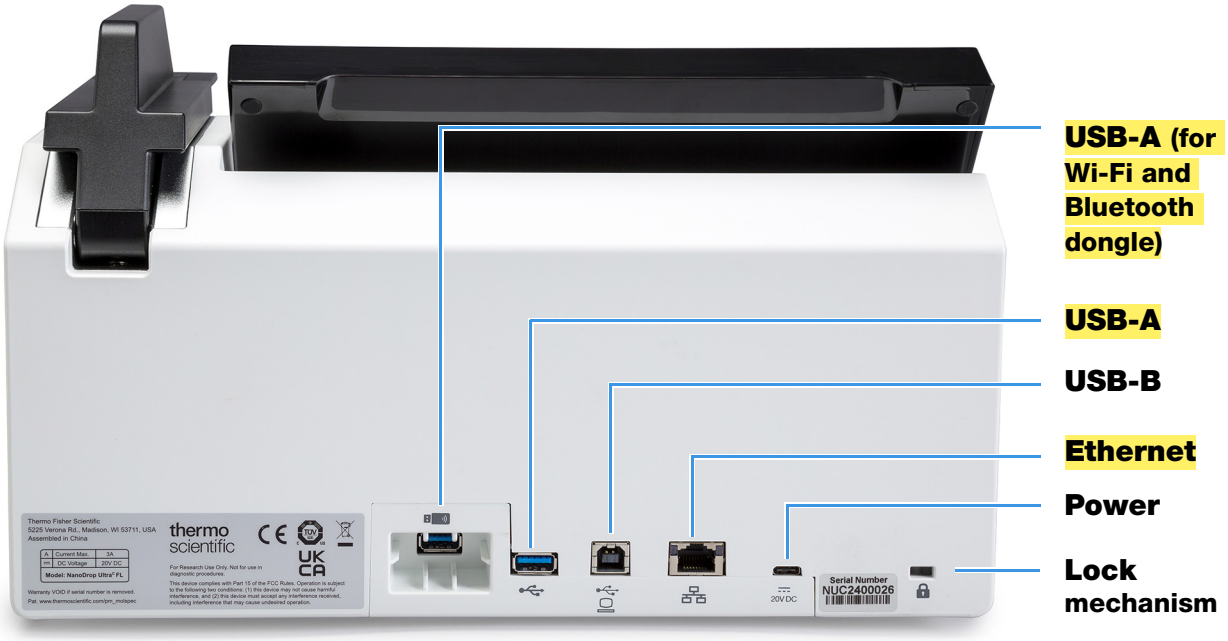
Register Your Instrument

Register your instrument to receive e-mail updates on software and accessories for the NanoDrop Ultra instrument. An Internet connection is required for registration.

To register your instrument

From any PC that is connected to the Internet, use any web browser to navigate to www.thermofisher.com/nanodropsw. On the website, locate the “Register your instrument” button, and follow the instructions to register the instrument.

Set Up Your Instrument



Connect Power

CAUTION Avoid shock hazard. Each wall outlet used must be equipped with a ground. The ground must be a noncurrent-carrying wire connected to earth ground at the main distribution box.

Connect the provided power cord to a grounded wall outlet and then to the designated USB-C port on the back of the instrument. See "Power Cords" on page 388 for more information.

Connect an Accessory

To connect a compatible printer or other compatible accessory such as a USB keyboard and/or mouse to the instrument, use any USB port on the instrument (front or back). See Accessories for information about accessories compatible with the NanoDrop Ultra instruments.

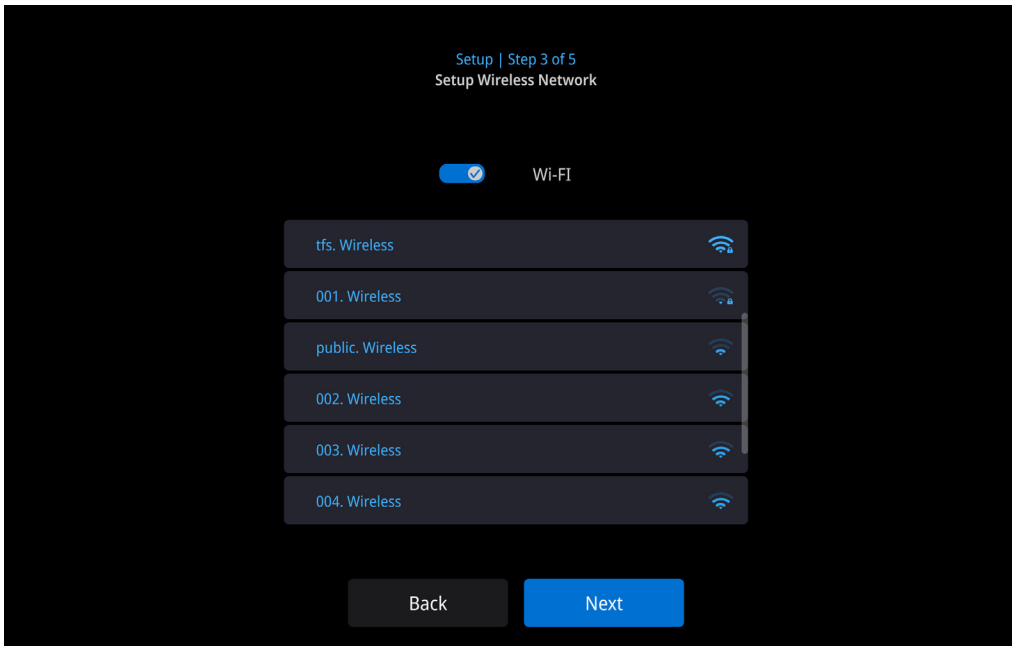
Connect the USB Wi-Fi and Bluetooth Dongle

To connect the provided USB Wi-Fi and Bluetooth Dongle, use the dedicated recessed USB port on the back panel of the instrument. The Wi-Fi and Bluetooth features of this instrument will only function when a USB Wi-Fi and Bluetooth Dongle is connected.

Out-of-Box Experience

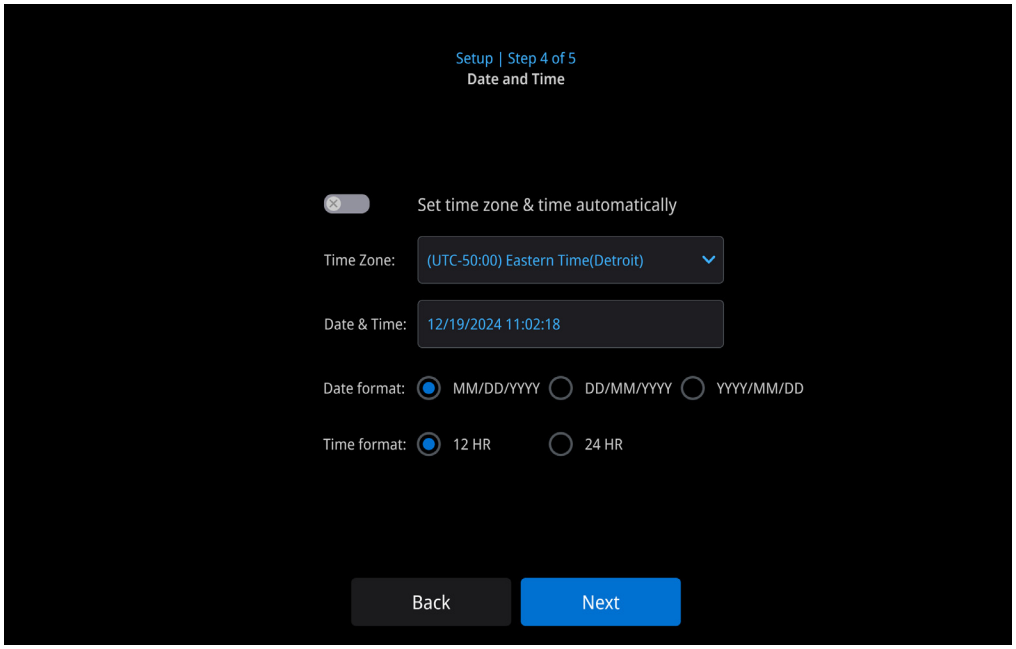
The Out-of-Box Experience (OOBE) is the initial setup process that you encounter when you first start a NanoDrop Ultra instrument. It is designed to help you configure essential settings, personalize your environment, and get your device ready for use.

1. Power on the instrument for the first time.
2. Read and **Accept** the End User License Agreement (EULA).
3. Select the desired language for the software from the provided drop-down menu and select **Next**.
4. If it is desired to setup a Wi-Fi connection at this time, select the toggle button next to Wi-Fi to move it to the right, it will turn blue and a checkmark will be displayed.
5. Select from the list of available Wi-Fi networks (input password if required, then select **OK**) then select **Next**.



See Instrument Settings in the Learning Center chapter for more information on how to connect to a Wi-Fi network.

7. If it is not desired to connect to a Wi-Fi network at this time, select **Next** without enabling Wi-Fi.
8. Select the desired date and time settings from the appropriate menus then select **Next**.



See Instrument Settings in the Learning Center chapter for more information on how to configure the date and time settings.

10. Select **Finish** to complete the OOBE setup. the instrument must restart for the changes to take effect.

Set Up Bluetooth Connections

Use Bluetooth to connect the instrument to one or more Bluetooth (wireless) input devices such as a Bluetooth keyboard, mouse or barcode scanner.

Note Make sure the device is labeled “Bluetooth” and not just “wireless.” All Bluetooth devices are wireless but not all wireless devices will run with Bluetooth.

Ensure the NanoDrop Ultra Wi-Fi and Bluetooth Dongle is connected to the instrument before proceeding with setup. See “Connect the USB Wi-Fi and Bluetooth Dongle” on page 22.

See the section on bluetooth connectivity for additional details on connecting to a Bluetooth device

Set up Wireless Connection

Ensure the NanoDrop Ultra USB Wi-Fi and Bluetooth Dongle is connected to the instrument before proceeding with setup. See “Connect the USB Wi-Fi and Bluetooth Dongle” on page 22.

See the section on Wi-Fi connectivity additional details on connecting to a Wi-Fi network.

Set Up Cloud Connection

If the instrument is connected to a Cloud account, you can export data files to the following Cloud services: Thermo Fisher Connect, Google Drive, and Microsoft OneDrive. Multiple Cloud accounts can be added to the instrument allowing the operator the ability to select from the available list when exporting data.

Note An ethernet or Wi-Fi connection to a network with internet access is required for this feature.

See the section on cloud connectivity for additional details on connecting to a Cloud platform.

Set Up Ethernet Connection

The instrument Ethernet port can be used to set up a wired connection between the instrument and an active network wall jack.

If the instrument is connected to a network wall jack, you can export data files to a network location, for example, in order to transfer them to another computer. You can define multiple network paths that the operator can select from when exporting data. See Export Settings for details. If the connected network has internet access, the ability to setup Cloud exporting and use online software updates are enabled.

Parts needed:

- Shielded (straight through) Ethernet cable (CAT5e or newer is recommended)

Set up Ethernet connection

1. Connect one end of Ethernet cable to the Ethernet port on the instrument back panel.

2. Connect the other end of the Ethernet cable to an active network wall jack.
3. When connected to a network via an Ethernet connection, the Ethernet Connectivity icon will appear at the top of the screen.

Set Up USB Connection

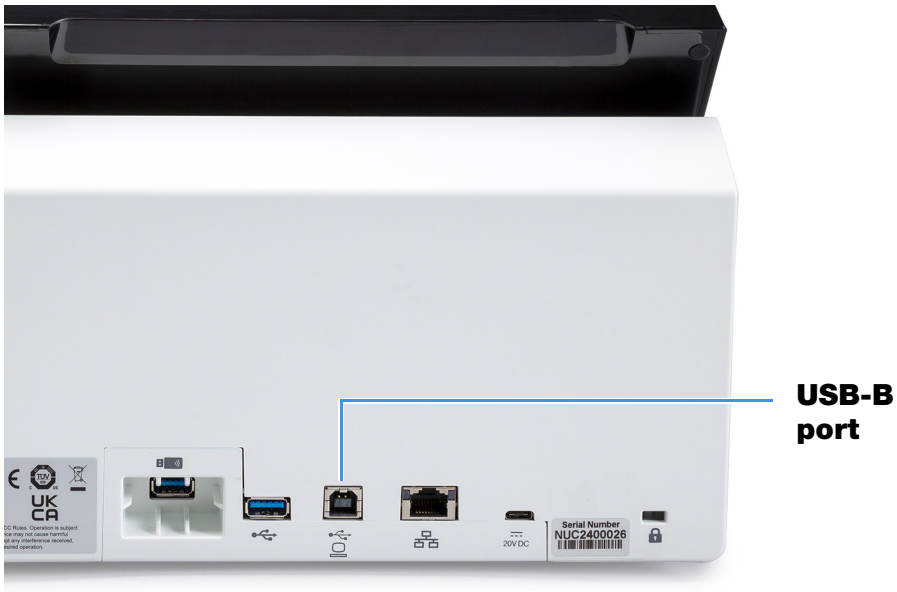
The instrument USB-B port can be used to set up a wired connection between the instrument and a personal computer (PC) or to connect to a USB printer.

Parts needed:

- Standard USB-A to USB-B cable (not supplied)

Set up USB connection

1. Connect the USB-B end of USB cable to the USB-B port on the instrument back panel.



2. Connect the USB-A end of the USB cable to either the computer or printer USB-A port.
3. When connected to a printer via a USB connection, a printer icon will appear at the top of the screen.

Assess Instrument Connectivity

Use the System Status icon at the top right of the instrument home screen to quickly assess the instrument's connectivity status including Bluetooth and Wi-Fi. "System Status" on page 296 for more details.

Operating Specifications

The instrument operates reliably when the room environment meets these specifications:

- operating temperatures: 5 °C - 35 °C (41 °F - 95 °F)
- relative humidity (non-condensing): 20-80%

Locate the instrument away from air vents and exhaust fans to minimize evaporation.

Note If operating the instrument at the low end of the recommended humidity range, use adequate sample volume to avoid evaporation.

Computer Requirements

When controlling the instrument through a connected computer as opposed to the local touch screen, use the information below to select a compatible computer to operate the software.

Required Windows Operating System

- Windows 10/11 Enterprise or Professional, build 1607 or greater

Minimum hardware configuration

- 2.0 GHz dual-core processor enabled
- 4 GB RAM with system managed memory enabled
- 5 GB available on drive C
- Display resolution 1366 x 768

Recommended hardware configuration

- 2.33 GHz 4-core processor enabled (or greater)
- 8 GB RAM with system managed memory enabled (or greater)
- 200 GB available on drive C (or greater)

Update Software

Quickly and easily download and install the latest NanoDrop Ultra software and release notes from our website. Follow the steps to update or upgrade the software on your local instrument and/or install or update the NanoDrop Ultra software on a personal computer (PC). A PC with an Internet connection is required to download software.

See “Update Software” on page 350 for information on updating the NanoDrop Ultra software.

Technical Support

For U.S./Canada Support, please contact:

Thermo Fisher Scientific
3411 Silverside Road
Tatnall Building, Suite 100
Wilmington, DE 19810 U.S.A.

Telephone: 302 479 7707
Toll Free: 1 877 724 7690 (U.S. & Canada only)
Fax: 302 792 7155
E-mail: nanodrop@thermofisher.com
Website: www.thermofisher.com/nanodrop

For International Support, please contact:

Contact your local distributor. For contact information go to:

http://www.thermofisher.com/NanoDropDistributors

If you are experiencing an issue with your system, refer to the troubleshooting information. If the issue persists, contact us. If you are outside the U.S.A. and Canada, please contact your local distributor.

If your instrument requires maintenance or repair, contact us or your local distributor.

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Application Measurement Ranges

Detection Limits for All Applications

Note Absorbance-based detection limits provided in the tables below are approximate and apply to micro-volume measurements only; they are based on the instrument's photometric absorbance range (10 mm equivalent) of 0–550 A. For measurements with 10 mm pathlength cuvettes, the photometric absorbance range is 0–1.5 A.

Detection limits for absorbance-based applications

Sample Type	Lower Detection Limit	Upper Detection Limit	Typical Reproducibility[a]
dsDNA (pedestal)	1.0 ng/µL (pedestal) 0.20 ng/µL (cuvette)	27,500 ng/µL (pedestal) 75 ng/µL (cuvette)	±1.0 ng/µL for sample concentrations between 1.0 and 100 ng/µL samples; ±2% for samples >100 ng/µL
ssDNA	0.66 ng/µL (pedestal) 0.13 ng/µL (cuvette)	18,150 ng/µL (pedestal) 49.5 ng/µL (cuvette)	±0.66 ng/µL for sample concentrations between 0.66 and 100 ng/µL samples; ±2% for samples >100 ng/µL

Sample Type	Lower Detection Limit	Upper Detection Limit	Typical Reproducibility[a]
RNA (pedestal)	0.8 ng/µL (pedestal) 0.16 ng/µL (cuvette)	22,000 ng/µL (pedestal) 60 ng/µL (cuvette)	±0.8 ng/µL for sample concentrations between 0.8 and 100 ng/µL samples; ±2% for samples >100 ng/µL
DNA Microarray (ssDNA)	0.66 ng/µL (pedestal) 0.13 ng/µL (cuvette)	495 ng/µL (pedestal) 49.5 ng/µL (cuvette)	±0.66 ng/µL for sample concentrations between 0.66 and 100 ng/µL samples; ±2% for samples >100 ng/µL
Purified BSA by Protein A280 IgG by Protein A280	0.03 mg/mL (pedestal) 0.006 mg/mL (cuvette) 0.02 mg/mL (pedestal) 0.003 mg/mL (cuvette)	820 mg/mL (pedestal) 402 mg/mL (pedestal)	±0.03 mg/mL (for 0.03–10 mg/mL samples); ±2% for samples >10 mg/mL
Purified BSA by Proteins & Labels	0.06 mg/mL (pedestal) 0.006 mg/mL (cuvette)	19 mg/mL (pedestal)	±0.06 mg/mL for 0.06–10 mg/mL samples
Protein BCA	0.125 mg/mL (20:1 reagent/sample volume) 0.02 mg/mL (1:1 reagent/sample volume)	2.0 mg/mL 0.20 mg/mL	2% over entire range 0.01 mg/mL over entire range
Protein Lowry	0.2 mg/mL	1.5 mg/mL	2% over entire range
Protein Bradford	100 µg/mL (30:1 reagent/sample volume) 15 µg/mL (1:1 reagent/sample volume)	1000 µg/mL 100 µg/mL	±25 µg/mL for 100–500 µg/mL samples ±5% for 500–1000 µg/mL samples ±4 µg/mL for 15–50 µg/mL samples ±5% for 50–100 µg/mL samples
Protein Pierce 660	50 µg/mL (15:1 reagent/sample volume) 25 µg/mL (7.5:1 reagent/sample volume)	2000 µg/mL 1000 µg/mL	±3 µg/mL for 50–125 µg/mL samples ±2% for samples > 125 µg/mL ±3 µg/mL for 25–125 µg/mL samples ±2% for samples >125 µg/mL

[a] Based on five replicates (SD=ng/µL; CV=%)

Note To minimize instrument error with highly concentrated samples, make dilutions to ensure that measurements are made within these absorbance limits:

- For micro-volume measurements, maximum absorbance at 260 nm (for nucleic acids) or 280 nm (for proteins) should be less than 62.5 A.
- For measurements with 10 mm pathlength cuvettes, maximum absorbance at 260 nm (or 280 nm for proteins) should be less than 1.5 A, which is approximately 75 ng/µL dsDNA.

Detection limits (absorbance) for pre-defined fluorescent dyes

Sample Type	Lower Detection Limit	Upper Detection Limit[a]	Typical Reproducibility[b]
Cy3, Cy3.5, Alexa Fluor 555, Alexa Fluor 660	0.2 pmol/µL (pedestal)	100 pmol/µL (pedestal)	±0.20 pmol/µL for sample concentrations between 0.20 and 4.0 pmol/µL; ±2% for samples >4.0 pmol/µL
Cy5, Cy5.5, Alexa Fluor 647	0.12 pmol/µL (pedestal)	60 pmol/µL (pedestal)	±0.12 pmol/µL for sample concentrations between 0.12 and 2.4 pmol/µL; ±2% for samples >2.4 pmol/µL
Alexa Fluor 488, Alexa Fluor 594	0.4 pmol/µL (pedestal)	215 pmol/µL (pedestal)	±0.40 pmol/µL for sample concentrations between 0.40 and 8.0 pmol/µL; ±2% for samples >8.0 pmol/µL
Alexa Fluor 546	0.3 pmol/µL (pedestal)	145 pmol/µL (pedestal)	±0.30 pmol/µL for sample concentrations between 0.30 and 6.0 pmol/µL; ±2% for samples >6.0 pmol/µL

[a] Values are approximate

[b] Based on five replicates (SD=ng/µL; CV=%)

Detection Limits for Fluorescence-based Applications

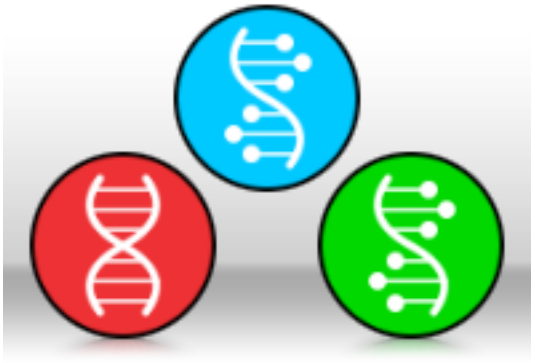
The fluorescence-based detection limits are dependent on the fluorescence assay used with the instrument. See the kit's protocol for more information.

Note The NanoDrop Ultra Fluorescence Assays have been optimized for microvolume measurements. Performance of other fluorescence dyes / reagents on the microvolume pedestal cannot be guaranteed.

Nucleic Acid Applications

dsDNA, ssDNA or RNA

Measures the concentration of purified dsDNA, ssDNA or RNA samples that absorb at 260 nm.



Measure dsDNA, ssDNA or RNA

Reported Results

Settings

Kit Editor

Detection Limits

Calculations

Best practices for nucleic acid measurements

- Isolate and purify nucleic acid samples before measurement to remove impurities. Depending on the sample, impurities could include DNA, RNA, free nucleotides, proteins, some buffer components and dyes. See Preparing Samples for more information.

Note Extraction reagents such as guanidine, phenol, and EDTA contribute absorbance between 230 nm and 280 nm and will affect measurement results if present in samples (even residual amounts).

- Ensure the sample absorbance is within the instrument's absorbance detection limits.
- Blank with the same buffer solution used to resuspend the analyte of interest. The blanking solution should be a similar pH and ionic strength as the analyte solution.

- Run a blanking cycle to assess the absorbance contribution of your buffer solution. If the buffer exhibits strong absorbance at or near the analysis wavelength (typically 260 nm), you may need to choose a different buffer or application. See Choosing and Measuring a Blank for more information.
- For micro-volume measurements:
  - Ensure pedestal surfaces are properly cleaned and conditioned.
  - If possible, heat highly concentrated or large molecule samples, such as genomic or lambda DNA, to 63 °C (145 °F) and gently (but thoroughly) vortex before taking a measurement. Avoid introducing bubbles when mixing and pipetting.
  - Follow best practices for micro-volume measurements.
  - Use a 1-2 µL sample volume. See Recommended Sample Volumes for more information.
- For cuvette measurements (NanoDrop Ultra^{C} and NanoDrop Ultra^{C} FL instruments only), use compatible cuvettes and follow best practices for cuvette measurements.

Related Topics

- Measure a Micro-Volume Sample
- Measure a Sample Using a Cuvette
- Best Practices for Micro-Volume Measurements
- Best Practices for Cuvette Measurements
- Prepare Samples and Blanks
- Basic Instrument Operations

Measure dsDNA, ssDNA or RNA

Use the dsDNA, ssDNA and RNA applications to quantify purified double-stranded (ds) or single-stranded (ss) DNA or RNA samples. These applications report nucleic acid concentration and two absorbance ratios (A260/A280 and A260/A230). A single-point baseline correction can also be used.

Before you begin...

Before taking pedestal measurements with the NanoDrop Ultra instrument, lift the instrument arm and clean the upper and lower pedestals. At a minimum, wipe the pedestals with a new laboratory wipe. For more information, see Cleaning the Pedestals.

NOTICE

- Do not use a squirt or spray bottle on or near the instrument as liquids will flow into the instrument and may cause permanent damage.
- Do not use hydrofluoric acid (HF) on the pedestals. Fluoride ions will permanently damage the quartz fiber optic cables.

Procedure

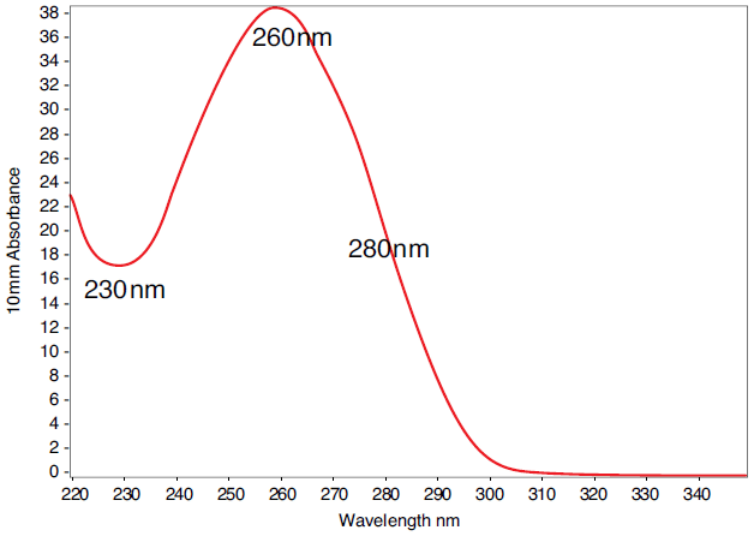
1. From the home screen, select the **Nucleic Acids** tab, then select **dsDNA, ssDNA or RNA**, depending on the samples to be measured.
2. Configure any of the setup options if desired and select **Save**.
3. If using a NanoDrop Ultra^{C} or NanoDrop Ultra^{C} FL model, select the correct measurement pathway.
   - When using a cuvette, select **Cuvette** from the drop-down menu at the top of the screen, this will present the cuvette settings. Select desired pathlength, stir speed, and heating then close the drop-down menu.
   - When using the pedestal for measurement, leave **Pedestal** as the selected setting at the top of the screen.
4. Pipette 1–2 µL blanking solution onto the lower pedestal and lower the arm, or insert the blanking cuvette into the cuvette holder.

   Tip: If using a cuvette, make sure to align the cuvette light path with the instrument light path.
5. Select **Blank** and wait for the measurement to complete.

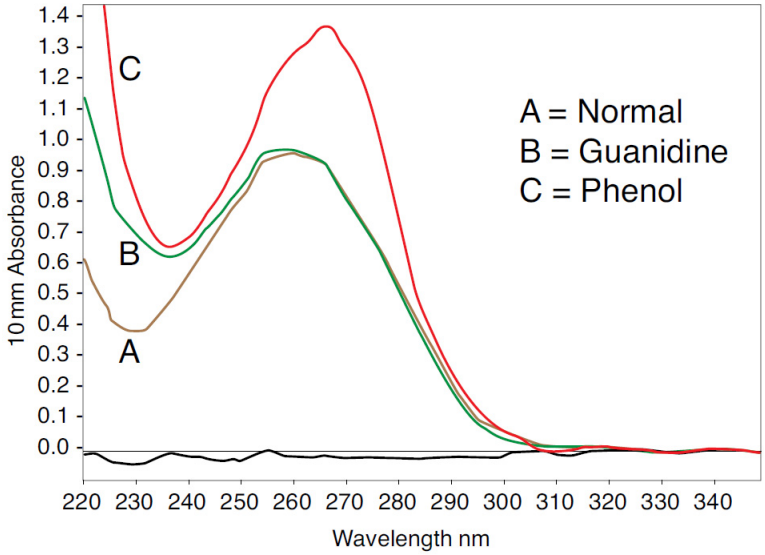
   Tip: If Auto-Blank is On, the blank measurement starts automatically after you lower the arm. (This option is not available for cuvette measurements.)
6. Lift the arm and clean both pedestals with a new laboratory wipe, or remove the blanking cuvette.
7. Pipette 1-2 µL sample solution onto the pedestal, or insert the sample cuvette into the cuvette holder.
8. Start the sample measurement:
   - Pedestal: If Auto-Measure is On, lower arm; if Auto-Measure is Off, lower arm and select **Measure**.
   - Cuvette: Select **Measure**.

   When the sample measurement is completed, the spectrum and reported values are displayed (see the next section).

9. When you are finished measuring samples, select **End Experiment**.
10. Lift the arm and clean both pedestals with a new wipe, or remove the sample cuvette.



Typical nucleic acid spectrum

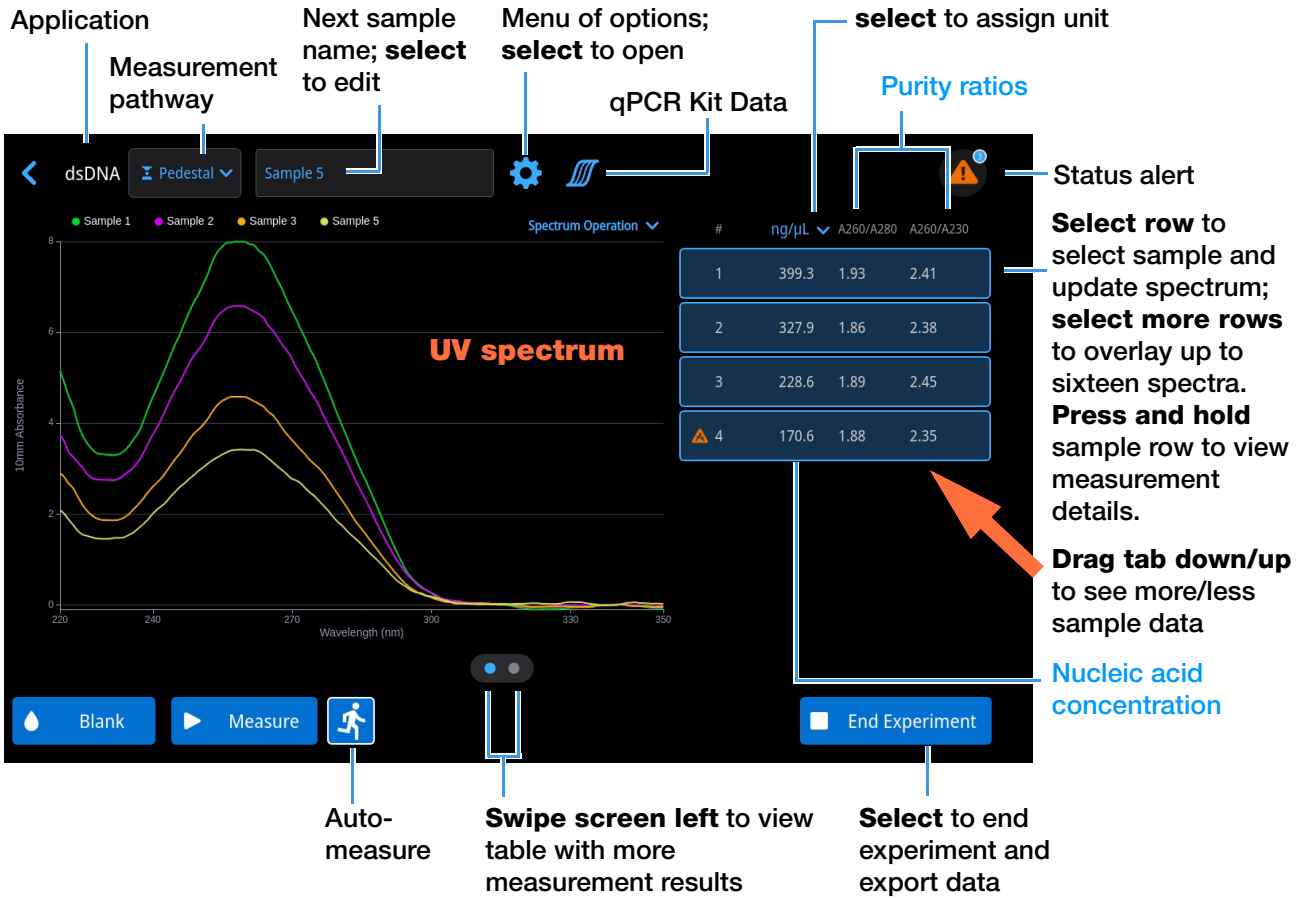


Comparison of nucleic acid spectra with and without two common contaminants

Reported Results

dsDNA measurement screen (local control)

For each measured sample, the dsDNA, ssDNA and RNA applications show the UV absorbance spectrum and a summary of the results. The following is an example of the measurement screen of the NanoDrop Ultra local control software:



Note Micro-volume absorbance measurements and measurements taken with nonstandard cuvettes are normalized to a 10.0 mm pathlength equivalent.

dsDNA measurement screen (PC control)

For each measured sample, the dsDNA, ssDNA and RNA applications show the UV absorbance spectrum and a summary of the results. The layout of the measurement screen of the PC control software differs slightly from the local control. See “Measurement Screen Display Options” on page 301 for an example.

qPCR Kit Data

The NanoDrop Ultra software includes an integrated qPCR calculator designed to swiftly determine the precise amount of your sample required for downstream qPCR reactions. When selecting the qPCR Kit Data icon at the top of the measurement screen, a summary of the calculations will be displayed, these calculations are specific to the Kit that was selected during setup. The following is an example of the qPCR Kit Data screen on the NanoDrop Ultra local control software screen:

Dilution Required

If it necessary to dilute the nucleic acid before adding it to the reaction mix, follow the recommended dilution scheme outlined in the **Dilution Required** section.

If the **Dilution Required** section is empty, no dilution is needed before adding the nucleic acid to the reaction mix.

Kit Reaction

Follow recommended volumes in the **Kit Reaction** section to achieve the desired Final Template Concentration in the kit reaction.

Note Final Template Concentration may be modified.

If a dilution is required in the Dilution Required section, the Nucleic Acid Volume called for in the Kit Reaction section will indicate the required amount of the diluted nucleic acid product to add to the reaction.

If a dilution is not required in the Dilution Required section, the Nucleic Acid Volume called for in the Kit Reaction section will indicate the required amount of the original nucleic acid sample to add to the reaction.