

USER GUIDE

life

# Qubit<sup>®</sup> 3.0 Fluorometer

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# About this guide

## Overview

This user guide describes how to operate the Qubit® 3.0 Fluorometer.

## User documentation

The guides listed below are available with the Qubit® 3.0 Fluorometer.

| Guide  | Pub. no.   |
|--|------------|
| <i>Qubit® 3.0 Fluorometer User Guide</i>                 | MAN0010866 |
| <i>Qubit® 3.0 Fluorometer Quick Reference Card (QRC)</i> | MAN0010876 |

Additional resources are available on the Qubit® Technical Resources page. Go to [www.lifetechnologies.com/qubit](http://www.lifetechnologies.com/qubit) to access protocols, application notes, and tutorials.

## Text and keyboard conventions

Text and keyboard conventions used in the *Qubit® 3.0 Fluorometer User Guide* are listed below. For safety alert words and symbols used in Life Technologies™ user documentation, see page 4.

| Convention  | Use   |
|-------------|---|
| <b>Bold</b> | <b>Bold</b> text indicates user action. For example:<br>Click <b>Run</b> .  |
| ▶           | Right arrow symbol (▶) indicates a menu choice, and separates successive commands you execute or select from a drop-down or shortcut menu. For example:<br>Select <b>Settings ▶ Instrument settings</b> . |

## User attention words

Two user attention words appear in Life Technologies™ user documentation. Each word implies a particular level of observation or action as described below.



**Note:** Provides information that may be of interest or help but is not critical to the use of the product.



**IMPORTANT!** Provides information that is necessary for proper instrument operation, accurate installation, or safe use of a chemical.

## Safety alert words

Four safety alert words appear in Life Technologies™ user documentation at points in the document where you need to be aware of relevant hazards. Each alert word—**IMPORTANT**, **CAUTION**, **WARNING**, **DANGER**—implies a particular level of observation or action, as defined below:



**IMPORTANT!** – Provides information that is necessary for proper instrument operation, accurate installation, or safe use of a chemical.

---



**CAUTION!** – Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

---



**WARNING!** – Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury.

---



**DANGER!** – Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations.

---

Except for **IMPORTANT!** safety alerts, each safety alert word in a Life Technologies™ document appears with an open triangle figure that contains a hazard symbol. These hazard symbols are identical to the hazard symbols that are affixed to Life Technologies™ instruments (see “**Safety symbols**” in Appendix C).

## SDSs

The Safety Data Sheets (SDSs) for any chemicals supplied by Life Technologies are available to you free 24 hours a day. For instructions on obtaining SDSs, see “**Safety Data Sheets (SDS)**”.



**IMPORTANT!** For the SDSs of chemicals not distributed by Life Technologies contact the chemical manufacturer.

---

# 1. Product information

## Product contents

The Qubit® 3.0 Fluorometer is shipped with the components listed below:

| Component   | Quantity |
|---|----------|
| Qubit® 3.0 Fluorometer  | 1 each   |
| Universal Power Cord with 4 adaptor plugs<br>(for U.S./E.U./U.K./Australia) | 1 each   |
| USB drive (includes the instruction manual)                                 | 1 each   |
| Qubit® 3.0 USB cable  | 1 each   |
| Qubit® 3.0 Fluorometer Quick Reference Card (QRC)                           | 1 each   |
| Certificate of Conformity (COC)   | 1 each   |
| Qubit 3.0 Screen cleaning cloth   | 1 each   |

The complete instruction manual is also available on our website at [www.lifetechnologies.com/qubit](http://www.lifetechnologies.com/qubit).

See page 6 for the description and specifications of the Qubit® 3.0 Fluorometer.

### Upon receiving the instrument

Examine the instrument carefully for damage incurred during transit. Ensure that all parts of the instrument, including the accessories listed above, are included with the product. Damage claims must be filed with the carrier; the warranty does not cover in-transit damage.

See page 9 for instructions on setting up the Qubit® 3.0 Fluorometer.

### Registering your instrument

Visit [www.lifetechnologies.com/qubit](http://www.lifetechnologies.com/qubit) to register your instrument. You will be asked to supply the serial number, your name, and your contact details. Registering your instrument ensures that you will receive notifications of software upgrades and information on new assays for use with the Qubit® 3.0 Fluorometer.

## Product description

### **Qubit® 3.0 Fluorometer**

The Qubit® 3.0 Fluorometer is a benchtop fluorometer that can be used for the quantitation of DNA, RNA, microRNA, and protein using the highly sensitive and accurate fluorescence-based Qubit® quantitation assays. Additionally, Ion Sphere™ Particle quality can be evaluated on the Qubit® 3.0 Fluorometer using the Ion Sphere™ Quality Control Kit prior to performing a sequencing run on the Ion Personal Genome Machine® (PGM™) Sequencer. You can also use the Qubit® 3.0 Fluorometer to directly measure the fluorescence of samples or to create new assay(s) using the MyQubit software pre-programmed into the instrument.

### **Features**

- Fast and highly accurate quantitation of DNA, RNA, and protein in less than 5 seconds per sample.
- High levels of accuracy using only 1–20 µL of sample, even with very dilute samples.
- Use of dyes selective for dsDNA, RNA, or protein minimizes the effects of contaminants in the sample.
- Stores results from up to 1000 samples.
- Large, state-of-the-art color touch screen for easy workflow navigation.
- Graphically displays up to 20 data points.
- Instrument indicates samples that are in the extended range or out of range in the graph, as well as in the simple sample output screen.
- Saves sample data as a CSV (comma separated value) file.
- Exports data to a USB drive or directly to your computer via a USB cable.
- Allows easy definition and saving of assay preferences.
- Instrument user interface can be personalized to show only the frequently used assays, to add new assays, including user-defined assays created with the MyQubit software and web tool, and to display in the language of your choice including English, French, Spanish, Italian, German, simplified Chinese and Japanese.



# Instrument exterior components

## Front view

The image below shows the location of the various parts of the Qubit® 3.0 Fluorometer.

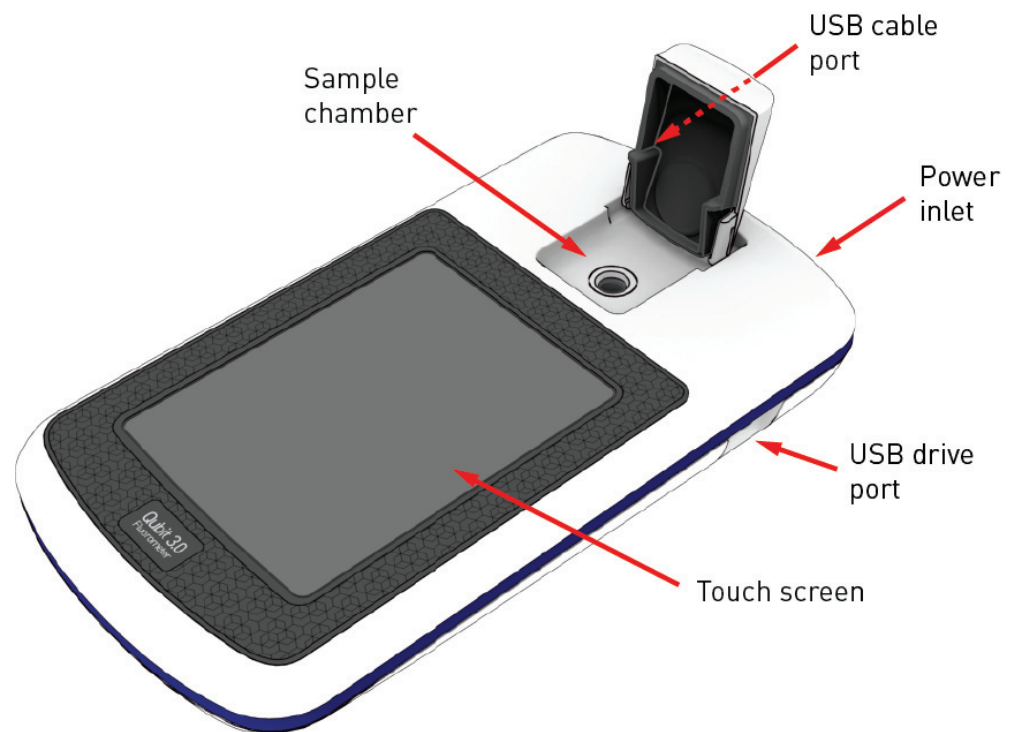
**Power inlet** connects the Qubit® 3.0 Fluorometer to an electrical outlet using the supplied power cord and the appropriate plug, based on the electrical outlet configuration in your country.

**Touch screen** located in the front of the instrument is the user interface containing the buttons for all the functions needed and displays data from the assays.

**Sample chamber** is used to insert the assay tube containing the sample into the fluorometer for analysis.

**USB drive port** allows you to transfer and save data to your computer for record keeping and printing purposes. The USB drive supplied with the instrument or any other similar USB drive can be inserted into the USB drive port for data transfer.

**USB cable port**, located in the back, allows you to transfer your data directly to your computer using the USB cable supplied with the instrument or any other similar USB cable.



## Product specifications

|                            |                               |  |
|----------------------------|-------------------------------|--|
| Physical characteristics   | <b>Instrument type:</b>       | Benchtop fluorometer   |
|                            | <b>Instrument dimensions:</b> | 5.4" (w) × 10" (l) × 2.2" (h)<br>(13.6 cm × 25 cm × 5.5 cm); rectangular shape |
|                            | <b>Weight:</b>                | 26.2 oz (743 g)  |
|                            | <b>Operating power:</b>       | 100–240 VAC, 1.0 A   |
|                            | <b>Frequency:</b>             | 50/60 Hz   |
|                            | <b>Electrical input:</b>      | 12 VDC, 2.5 A  |
|                            | <b>Installation site:</b>     | Indoor use only  |
|                            | <b>Operating temperature:</b> | 10–40°C  |
|                            | <b>Operating humidity:</b>    | 20–80% (non-condensing)  |
|                            | Technical specifications      | <b>Dynamic range:</b>  |
| <b>Processing time:</b>    |                               | ≤ 5 seconds/sample   |
| <b>Light sources:</b>      |                               | Blue LED (max ~470 nm)<br>Red LED (max ~635 nm)                                |
| <b>Excitation filters:</b> |                               | Blue 430–495 nm<br>Red 600–645 nm  |
| <b>Emission filters:</b>   |                               | Green 510–580 nm<br>Red 665–720 nm   |
| <b>Detectors:</b>          |                               | Photodiodes; measurement capability from 300–1000 nm                           |
| <b>Calibration type:</b>   |                               | 2- or 3-point standard   |
| <b>Tube type:</b>          |                               | 0.5-mL Real Time PCR (polypropylene) tubes                                     |
| <b>Warm-up time:</b>       |                               | < 35 seconds   |
| USB drive                  | <b>Capacity:</b>              | 4 Gigabyte   |

## 2. Getting started

### Set up the Qubit<sup>®</sup> 3.0 Fluorometer

#### Set up the instrument

The Qubit<sup>®</sup> 3.0 Fluorometer is a stand-alone instrument that does not require connection to a computer.

1. After unpacking the instrument, place the instrument on a flat, level, dry surface.
2. Plug one end of the supplied power cord into the Qubit<sup>®</sup> 3.0 Fluorometer.
3. Attach the appropriate plug adaptor to the other end of the power cord.
4. Plug the power cord into the electrical outlet.



**Note:** Ensure the plug of power adaptor remains accessible to allow disconnection.

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5. The instrument automatically powers on, first displaying the splash screen, and then the Home screen (see below).
6. To power down the Qubit<sup>®</sup> 3.0 Fluorometer, unplug it.



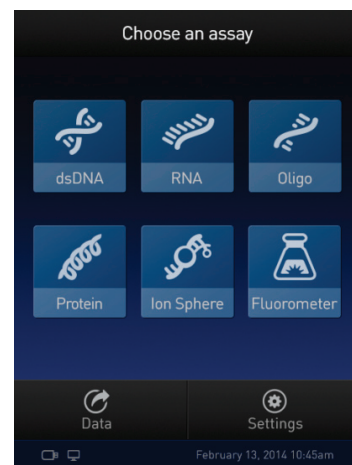
**IMPORTANT!** Use the power cord plug adapter supplied with the instrument that is appropriate for the electrical outlet configuration in your country. Powering the instrument with an unapproved power cord may damage the instrument.

---

#### Home screen

When the instrument is powered on, the *Home* screen is automatically displayed. From the Home screen, you can:

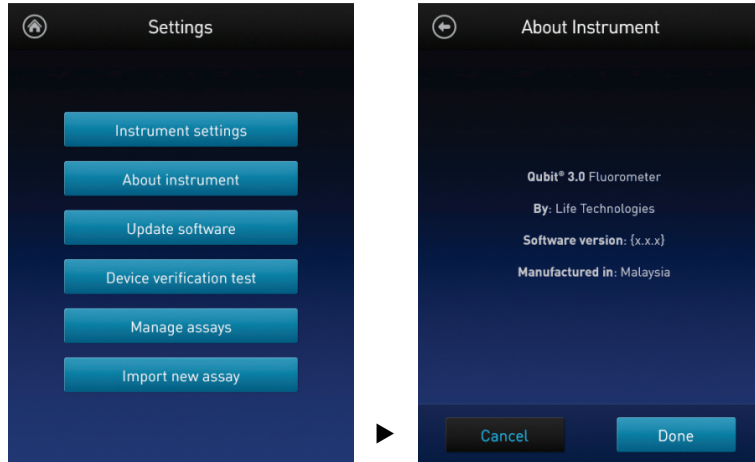
- Select one of the quantitation assays: dsDNA, RNA, oligo (ssDNA), protein, or Ion Sphere™
- Select the Fluorometer mode (the instrument behaves like a mini-fluorometer)
- Access saved data
- Configure instrument settings



## About Instrument screen

The *About instrument* screen displays information about your Qubit® 3.0 Fluorometer, including the currently installed software version. To access the About instrument screen:

1. On the Home screen, touch **Settings**.
2. On the Settings screen, touch **About Instrument** to display the About Instrument screen.



3. Touch **Done**, **Cancel**, or **Back** (⏪) to return to the Settings screen.

## Optional: Configure Instrument Settings

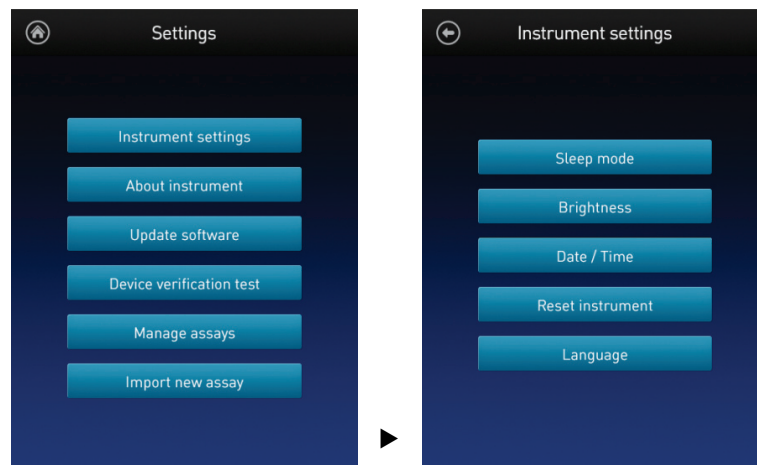
### Introduction

You can configure the following instrument settings for the Qubit® 3.0 Fluorometer:

- Sleep mode (page 12)
- Brightness (page 12)
- Date/Time (page 13)
- Reset instrument (page 14)
- Language (page 15)

### Access the Instrument settings screen

1. On the Home screen, touch **Settings**.
2. On the *Settings* screen, touch **Instrument settings** to display the *Instrument settings* screen.

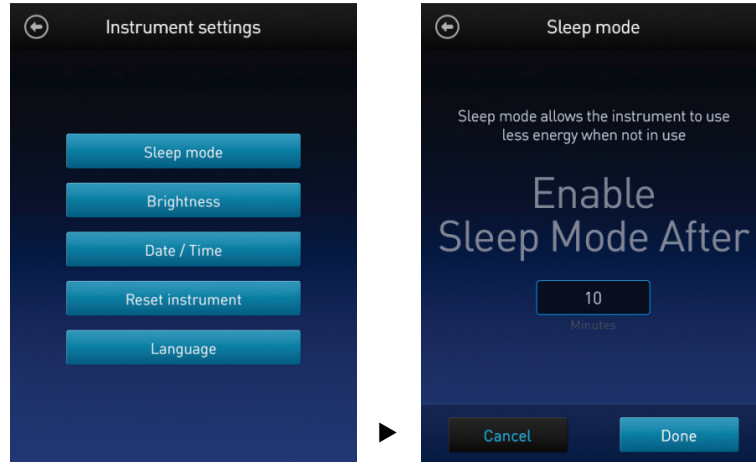


## Adjust the sleep mode

The Qubit<sup>®</sup> 3.0 Fluorometer has a sleep mode (i.e., automatic standby) that is triggered by inactivity.

The system default is 10 minutes of inactivity before the instrument goes into sleep mode. To adjust this time:

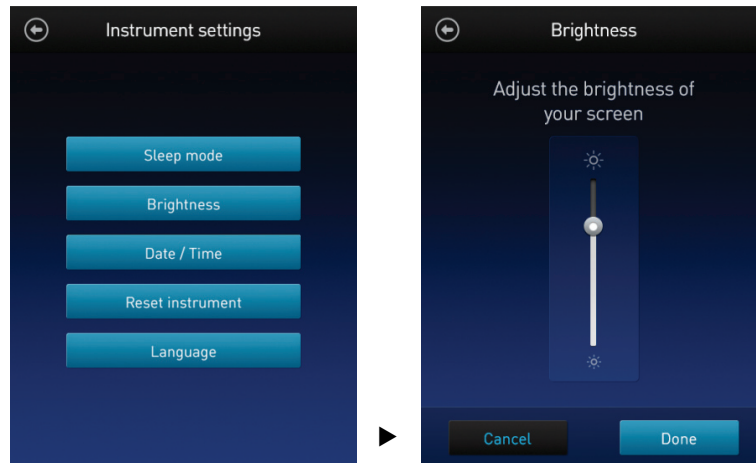
1. On the *Instrument settings* screen (page 11), touch **Sleep mode** to display the *Sleep mode* screen.



2. Enter the time in minutes allowed before the instrument goes into sleep mode by touching the **minutes** text box, then using the pop-up number pad to select a value. The software requires a minimum of 1 minute and a maximum of 60 minutes.
3. Touch **Done** to save the changes and return to the Instrument Settings screen. Touch **Cancel** or **Back** (⏪) to return to the Instrument settings screen without saving the changes.

## Adjust screen brightness

1. On the *Instrument settings* screen (page 11), touch **Brightness** to display the *Brightness* screen.

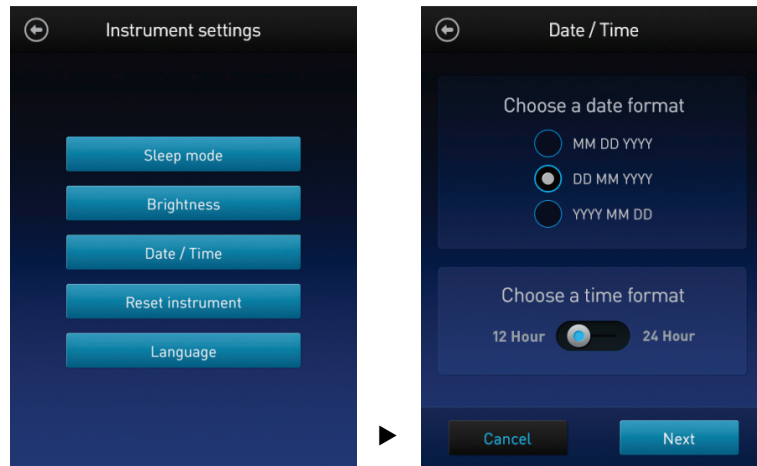


2. Move the slider button up or down to adjust the brightness of the display.
3. Touch **Done** to save the changes and return to the Instrument Settings screen. Touch **Cancel** or **Back** (⏪) to return to the Instrument settings screen without saving the changes.

## Adjust the date and time

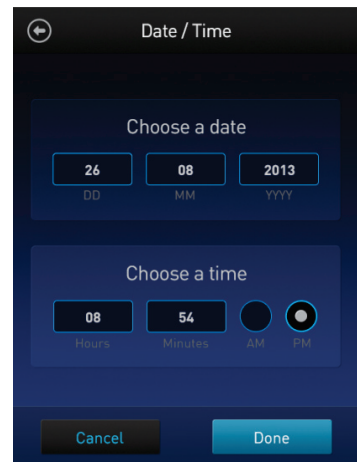
The date and time are preset when you receive the instrument. To adjust the date and time:

1. On the *Instrument settings* screen (page 11), touch **Date/Time**.



2. Select a date format, select a time format, then touch **Next**.
3. Enter the date and time:
  - a. Touch a date field (day, month, or year), then use the pop-up number pad to select a value.
  - b. Touch a time field (hours or minutes), then use the pop-up number pad to select a value.
  - c. Select **AM** or **PM**.
4. Touch **Done** to save the changes and return to the Instrument Settings screen.

Touch **Cancel** or **Back** (⏪) to return to the Instrument settings screen without saving the changes.



## Reset function

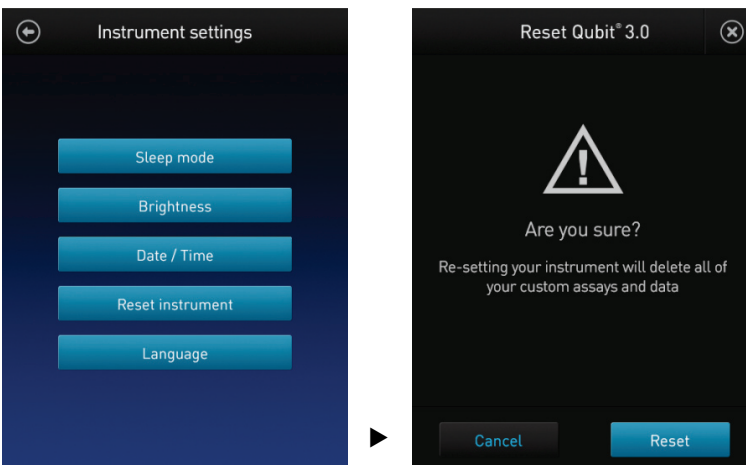
The Reset function returns the Qubit® 3.0 Fluorometer to its default factory settings, **erasing all saved data, user-defined instrument settings, and custom assays.**



**IMPORTANT!** The reset function is not reversible.

To return the instrument to its default factory settings:

1. On the *Instrument settings* screen (page 11), touch **Reset instrument** to display the *Reset Qubit® 3.0* screen.



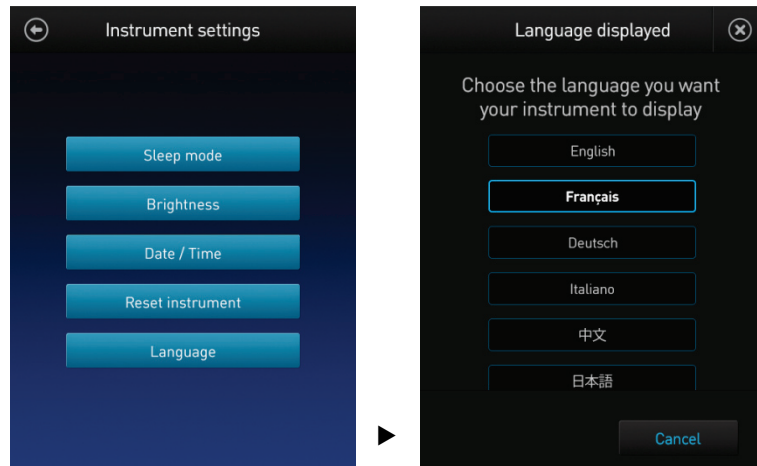
2. Touch **Reset**. After the reset is complete, the Home screen is displayed. All data, user-defined instrument settings, and custom assays are removed. Touch **Cancel** or **Exit** (⊗) to return to the Instrument settings screen without saving the changes.



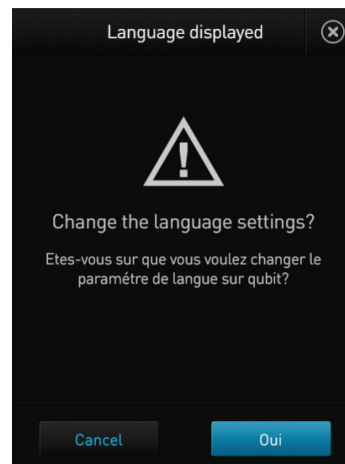
## Change the display language

You can change the language that the Qubit® 3.0 Fluorometer displays to English (default), French, German, Italian, Spanish, simplified Chinese, and Japanese.

1. On the *Instrument settings* screen (page 11), touch **Language** to display the *Language* screen.



2. Select a language, then touch **Next**.
3. Touch **Yes** to confirm the change and return to the Instrument Settings screen. Touch **Cancel** or **Exit** (⊗) to return to the Instrument settings screen without saving the changes.



## Guidelines for using the Qubit® 3.0 Fluorometer

- Recommendations** To obtain the best results, follow the recommendations below. For more information, see “Critical Qubit® Assay Considerations”, page 53.
- Do **not** operate the instrument in direct sunlight.
  - Wear gloves during sample handling.
  - Use the instrument at room temperature only (22–28°C).
  - Store all kit reagents at room temperature and insert all assay tubes into the instrument only for as much time as it takes for the instrument to measure the fluorescence.
  - Do not hold the assay tubes in your hand before performing a measurement.
  - Make sure that you have calibrated the Qubit® 3.0 Fluorometer using the appropriate standards.
  - Incubate the tubes for the Qubit® DNA and RNA assays for 2 minutes after mixing the sample or standard with the working solution.
  - Incubate the tubes for the Qubit® protein assays for 15 minutes after mixing the sample or standard with the working solution.
  - If you are performing multiple readings of a single tube, remove the tube from the instrument and let it equilibrate to room temperature for 30 seconds before taking another reading.
  - Visit [www.lifetechnologies.com/qubit](http://www.lifetechnologies.com/qubit) for additional application notes, technical notes, citations, software updates, and a list of validated Qubit® assays that have been tested using the Qubit® 3.0 Fluorometer.
- Assay tubes for the Qubit® 3.0 Fluorometer** Only thin-wall, clear 0.5-mL PCR tubes are appropriate for use in the Qubit® 3.0 Fluorometer. Acceptable tubes include Qubit® assay tubes (Cat. no. Q32856, 500 tubes) or Axygen PCR-05-C tubes (VWR, part number 10011-830). The minimum assay volume must be 200 µL for an accurate read.

# 3. Perform assays

## Introduction

This section provides instructions for running new calibration standards or for using the last calibration, and for reading the samples using a Qubit® assay kit.

### Materials needed

- A Qubit® assay kit appropriate for quantifying your samples (see page 55 for available Qubit® assay kits and ordering information)
- DNA, RNA, or protein samples
- Qubit® assay tubes or other appropriate 0.5-mL assay tubes
- Appropriate standards for the assay you are performing



**Note:** For instructions on the preparation of these standards, see the instructions that accompany the assay you are using.

- (Optional) USB drive or USB cable for data transfer, supplied with the instrument or available separately

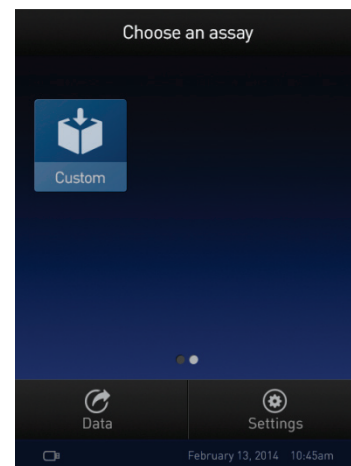
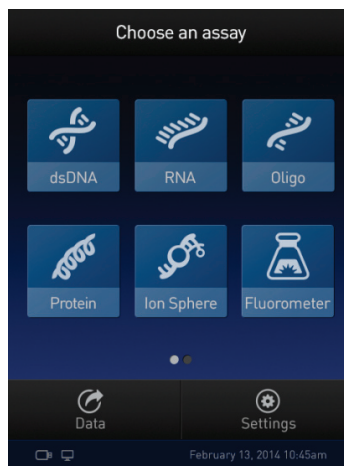
## Calibrate assays on the Qubit® 3.0 Fluorometer

### Introduction

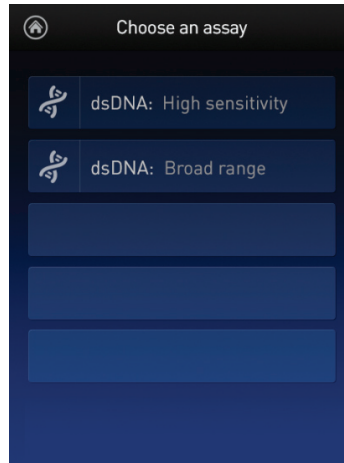
For each assay, you have the choice to run new standards for calibrating the assay on the Qubit® 3.0 Fluorometer or to use the values from the previous calibration (for more information, see “Calibrating the Qubit® 3.0 Fluorometer” on page 54). This section provides instructions for running new calibration standards and for using the last calibration.

### Read new standards for calibration

1. On the **Home** screen, touch the **assay** for which you wish to read new standards. To go to the second page of available assays, swipe the screen to the right. To return to the first page, swipe the screen to the left.



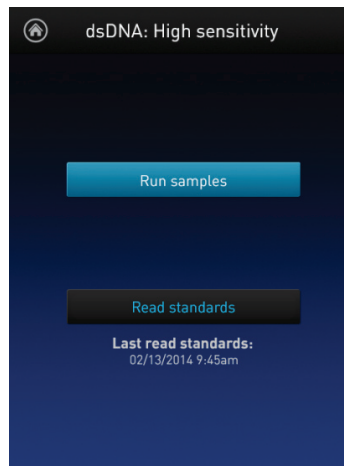
2. Touch the desired assay.



**Note:** The software displays the available assays for the assay type you selected in step 1. The example in step 2 shows the available assays for the dsDNA assay type.

---

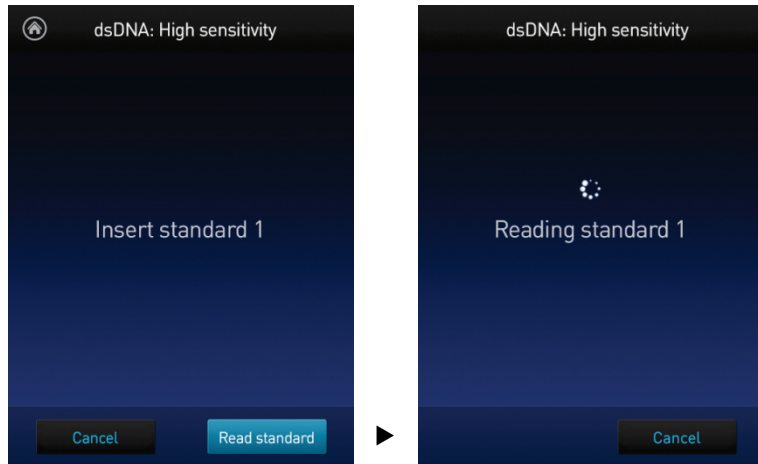
3. If you have already performed a calibration for the selected assay, the software prompts you to choose between reading new standards and running samples using the previous calibration. Touch **Read standards**.



**Note:** To apply the previous calibration to your sample readings, touch **Run samples**. The software prompts you to insert the assay tube containing sample. See “Read samples” on page 21.

---

- At the prompt, insert Standard #1 into the sample chamber and touch **Read standard**. Be sure to use the Standard #1 appropriate for the assay you are performing. The reading takes approximately 3 seconds.



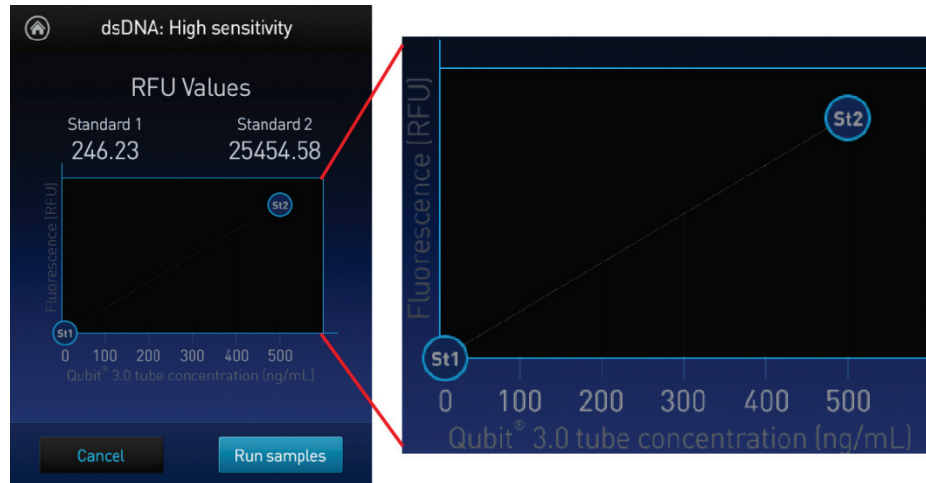
- At the prompt, insert Standard #2 into the sample chamber and touch **Read standard**. Be sure to use the Standard #2 appropriate for the assay you are performing.



- For Qubit® protein assays only:* At the prompt, insert Standard #3 into the sample chamber and touch **Read standard**.
- The calibration is complete after Standard #2 is read (or after Standard #3 is read for the Qubit® protein assay). The software displays the results.

## Calibration results

- If the calibration is successful, the software displays the *Read standard* screen, showing a *Fluorescence vs. Concentration* graph.

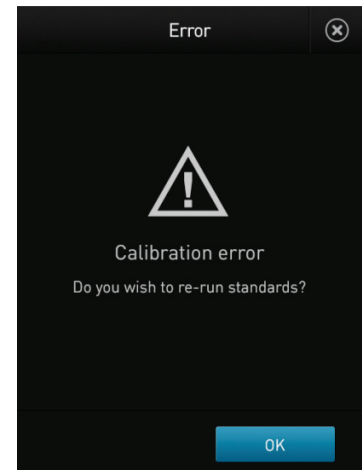


- In the Fluorescence vs. Concentration graph:
  - The standard data points are connected by a line.
  - Open circles represent correct standards.
- If the calibration is not successful, the software displays the “Calibration error” message (page 20).

## Calibration error

If you receive a “Calibration error” message, you can re-run the standards:

1. In the Error screen, touch **OK**.
2. Review the *Read standard* screen (see **Note** below).
3. If you wish to re-run the standards, or run new standards, touch **Read standards**, then repeat the calibration procedure (beginning on page 17.)



**Note:** The Read standard screen displays the raw fluorescence values for Standard #1 and Standard #2 (and Standard #3, if applicable). These values can assist you in making a judgment regarding the calibration results.

For the Qubit® dsDNA BR, Qubit® dsDNA HS, Qubit® ssDNA, Qubit® microRNA, Qubit® RNA, Qubit® RNA BR, and Qubit® protein assays, the reading given by Standard #2 should be at least ten times higher than that of Standard #1.

For the Qubit® protein assay, the reading given by Standard #3 should be at least 40% higher than that of Standard #2.

# Read samples

## Before you begin

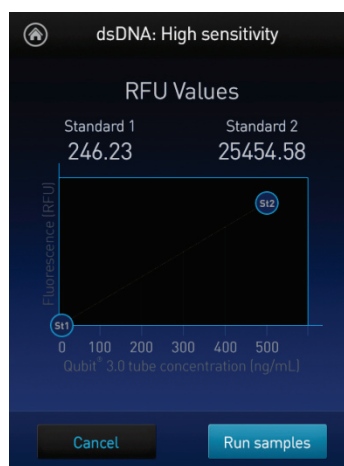
- Calibrate the Qubit® 3.0 Fluorometer according to the procedure on page 17. (Run the appropriate standards or accept the values from the previous calibration.)
- Prepare the samples. Refer to the instructions provided with the assay.



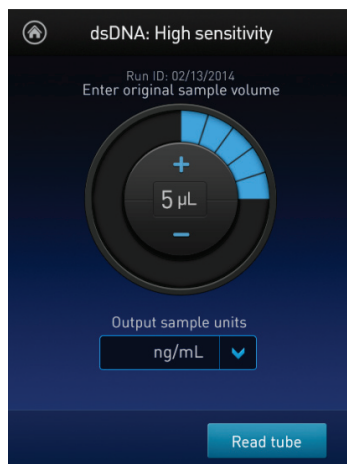
**Note:** Incubate the samples for the appropriate amount of time after mixing them with the working solution (2 minutes for the Qubit® DNA and RNA assays, 15 minutes for the Qubit® protein assay).

## Read samples

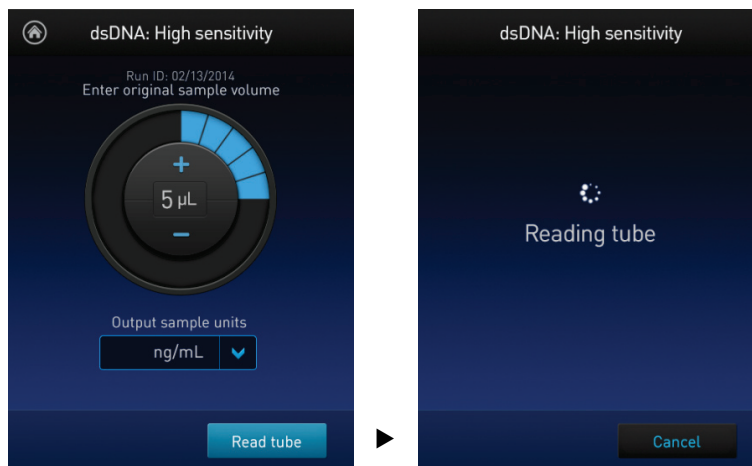
1. In the *Read standard* screen, touch **Run samples**



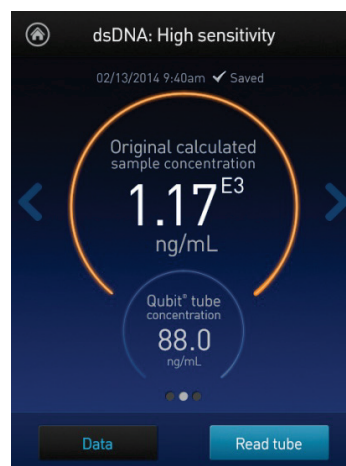
2. In the *Sample volume* screen, select the sample volume and units:
  - a. Touch the + or – buttons on the wheel to select the sample volume added to the assay tube (between 1 and 20  $\mu$ L).
  - b. From the dropdown menu, select the units for the output sample concentration.



3. Insert a sample tube into the sample chamber, close the lid, and then touch **Read tube**. The reading takes approximately 3 seconds.



4. The software displays the results. See “Results screen” on page 23.



### Read multiple samples

To read multiple samples for the same assay:

1. Remove the current sample, and insert a new sample.
2. To change the sample volume, swipe **right** or press the **left arrow**.
3. Touch **Read tube**.
4. Repeat step 2 (page 21) and step 3 (above).

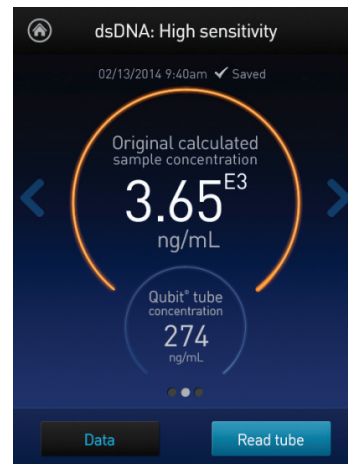


# Results

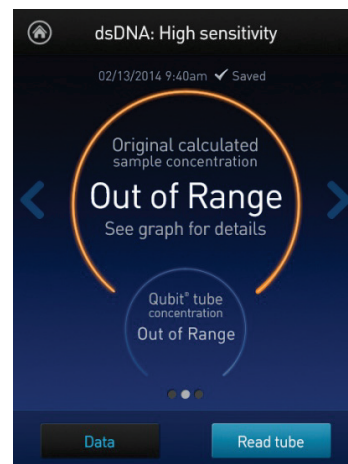
## Results screen

The Results screen displays the results of the sample run.

- If the results are within the assay's range, the concentration values are displayed. The top value (in large font) is the concentration of the original sample. The bottom value is the dilution concentration (the concentration of the sample in the tube inserted into the Qubit® 3.0 fluorometer).



- If the results are outside of the assay's range, an "Out of Range" message is displayed.



- To return to the sample volume screen, **swipe right** or touch the **left arrow**.

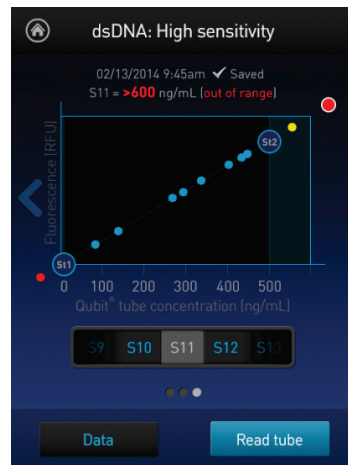
- To view the Fluorescence vs. Concentration graph, **swipe left** or touch the **right arrow**. In the graph:
  - Open circles represent correct standards.
  - The large gray circle represents the most recent sample.
  - Blue circles represent samples that fall within the assay's core range.
  - Yellow circles represent samples that fall within the assay's extended range.
  - Red circles represent samples or standards that fall outside the assay's range.



Single sample



Multiple samples



Out of range high



Out of range low

- To return to the previous screen, **swipe right** or touch the **left arrow**.



**Note:** The Qubit® 3.0 Fluorometer automatically stores numeric data from all reads, but does not store graphic data.

# Fluorometer mode

## Introduction

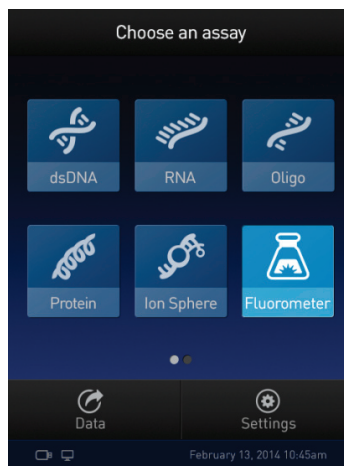
You can use the Qubit<sup>®</sup> 3.0 Fluorometer as a mini-fluorometer by selecting the **Fluorometer mode**.

The Fluorometer mode allows you to choose the excitation light source (blue LED or red LED), while reading fluorescence in both the green and far-red emission channels (for the blue LED) or in the far-red emission channel only (for the red LED).

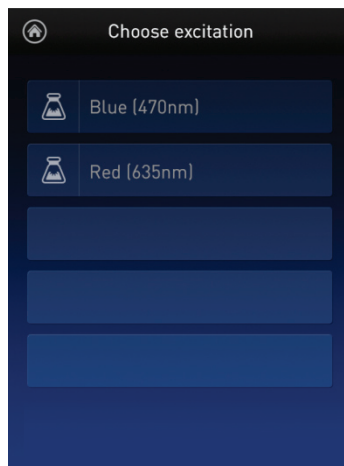
The reading is in raw fluorescence units (RFU).

## Read sample in Fluorometer mode

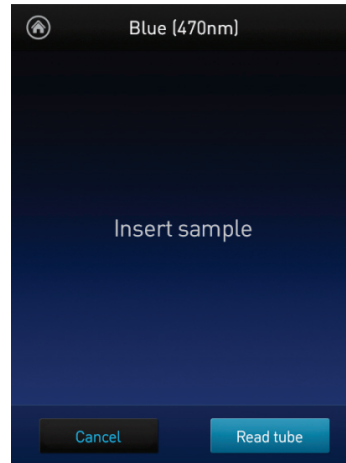
1. On the *Home* screen, touch **Fluorometer**.



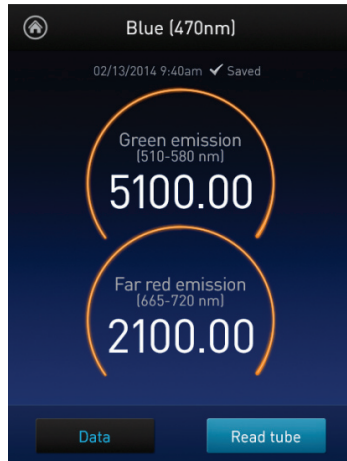
2. On the *Choose excitation* screen, select **Blue (470 nm)** or **Red (635 nm)**.



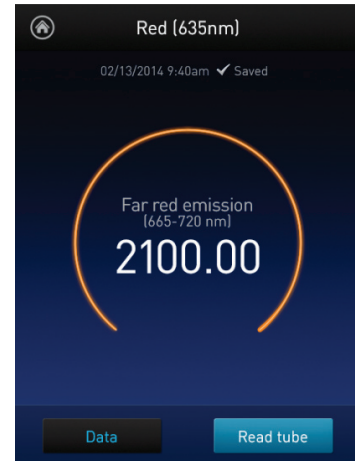
3. Insert the sample, then touch **Read tube**.



4. For Blue excitation, the Qubit<sup>®</sup> 3.0 Fluorometer displays both the green emission and the far red emission of your sample. For Red excitation, the Qubit<sup>®</sup> 3.0 Fluorometer displays only the far red emission of your sample.



Blue (470 nm) excitation



Red (635 nm) excitation

### Read multiple samples in Fluorometer mode

To read multiple samples in the fluorometer mode:

1. Remove the current sample, and insert a new sample.
2. Touch **Read tube**.

# Ion Sphere™ Assay

**Ion Sphere™ Assay** The Ion Sphere™ assay on the Qubit® 3.0 Fluorometer enables quick and easy assessment of Ion Sphere™ Particles (ISPs) prior to performing a sequencing run on the Ion Personal Genome Machine® (PGM™) Sequencer using the Ion Sphere™ Quality Control Kit.

All ISPs bind a complimentary, green-fluorescent Alexa Fluor® 488 dye-labeled oligonucleotide, whereas only those beads that are template positive bind a complementary red-fluorescent Alexa Fluor® 647 dye-labeled oligonucleotide. The Qubit® 3.0 Fluorometer measures the fluorescence emission of each dye conjugate and a Microsoft Excel® file template is used to calculate the percentage of template-positive ISPs from the ratio of the Alexa Fluor® 647 dye signal to the Alex Fluor® 488 dye signal. This quality-control step using the Qubit® Fluorometer determines the likelihood of a successful sequencing run, ultimately saving time and expense during subsequent sequencing.



**Note:** For more information about the Ion Sphere™ Quality Control Kit (Cat. no. 4468656), go to [www.lifetechnologies.com](http://www.lifetechnologies.com) and search for the catalog number.

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## 4. Manage data

### Introduction

The Qubit® 3.0 Fluorometer can save data for up to 1000 samples.

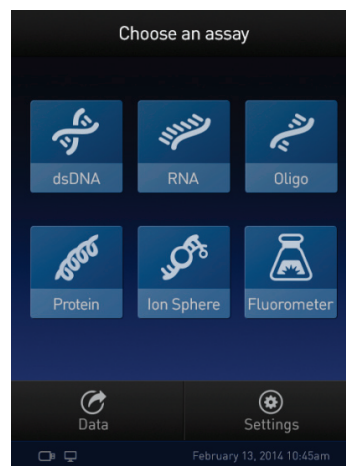
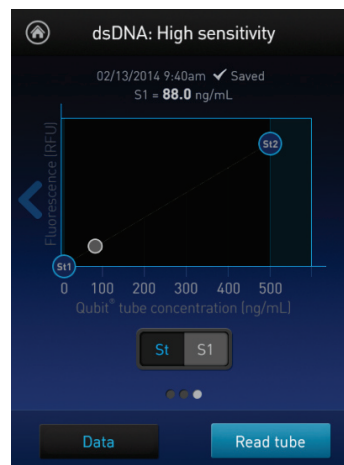
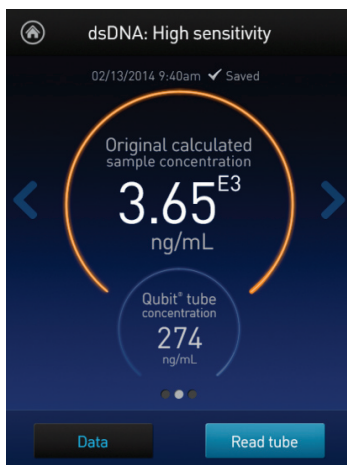
For the saved data, the instrument allows you to:

- View detailed data for each sample (this page).
- Rename data files (page 31).
- Save data as a .CSV (comma separated value) file, and export the .CSV file to a USB drive or directly to your computer (page 32).
- Delete data files (page 35)

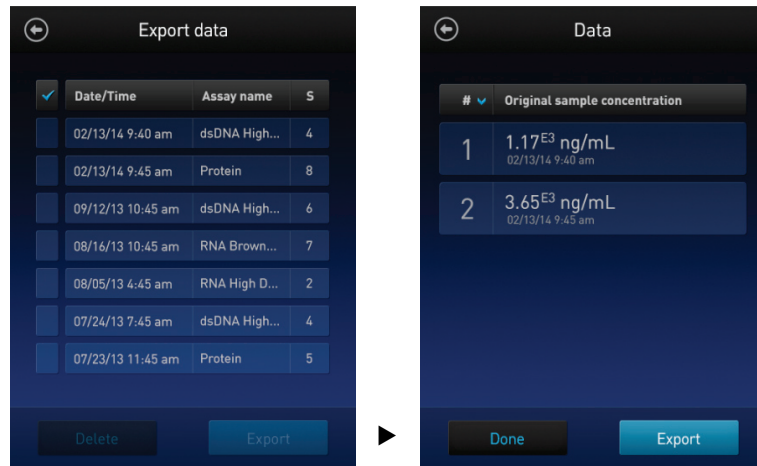
### View detailed sample data


#### View detailed sample data

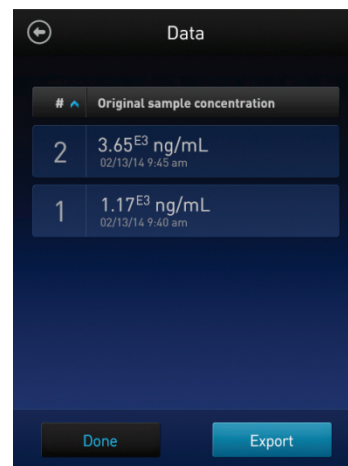
1. From the **Concentration**, **Graph**, or **Home** screens, touch **Data**.



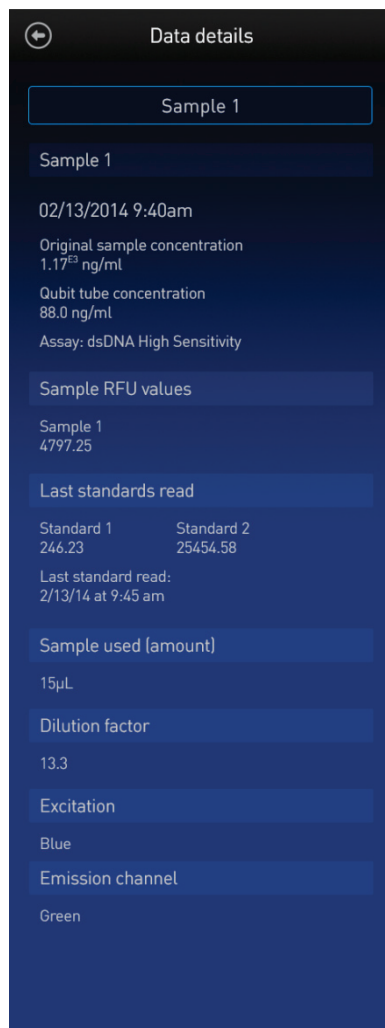
- On the Export data screen, touch the **data set of interest**.  
A *Data* screen displaying a list of data entries for that data set appears. To view additional data entries that do not fit in the screen, scroll up or down.



- To reverse the order in which the data entries appear, press the **blue chevron**  above the sample number column.



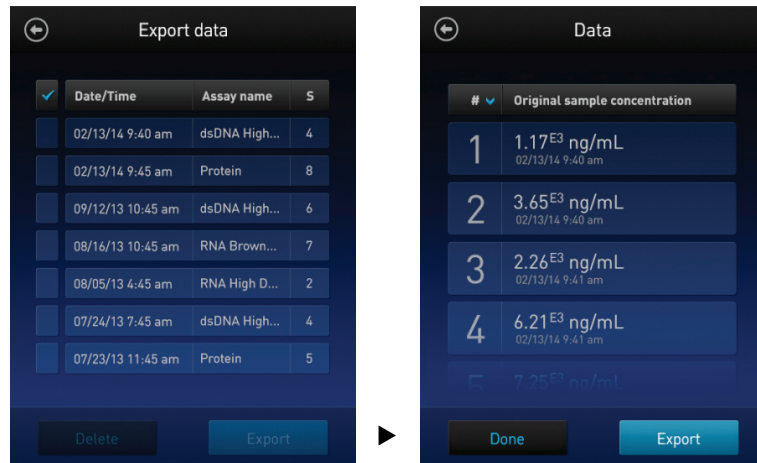
4. To view the sample details, touch the **sample of interest**. A *Data details* screen opens.





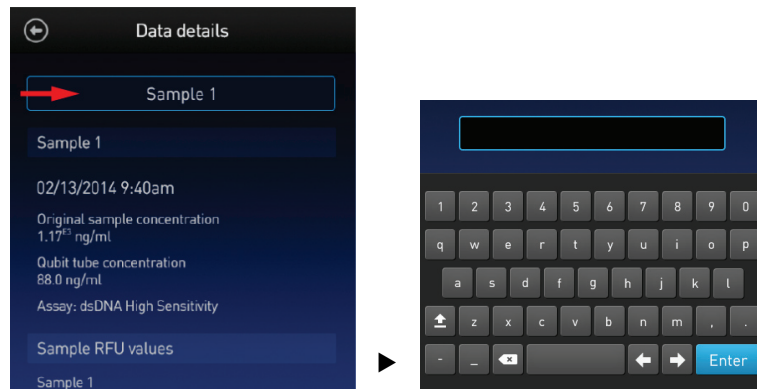
## Rename data files

- Rename data files
1. From the **Concentration**, **Graph**, or **Home** screens, touch **Data**.
  2. On the Export data screen, touch the **data set of interest**.



3. From the list of data entries for the selected data set, touch the **sample of interest** to open the *Data details* screen.
4. On the Data details screen, touch the **Sample #** text box (indicated by the red arrow).

On the keyboard which appears, type in the new name and touch **Enter**.



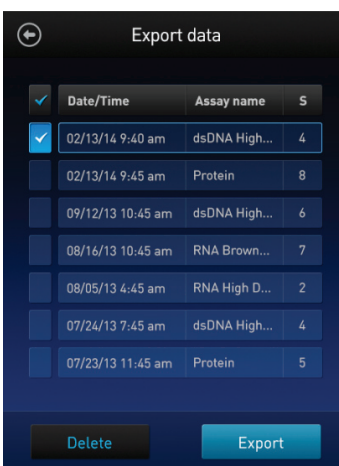
# Export data

## Introduction

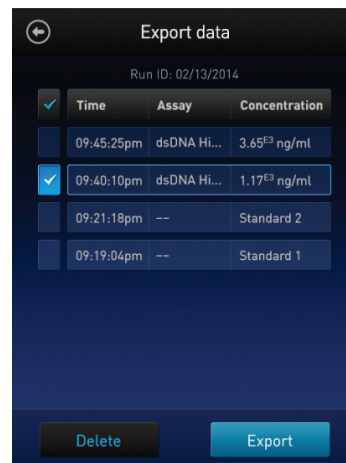
The Qubit® 3.0 Fluorometer is designed for standalone use; it does not require an external computer. However, to archive data and generate reports, you can export the numeric data stored in the .CSV file to a computer either by using the USB drive or by saving directly to the computer using the USB cable. You can then import the file into any spreadsheet program.

## Export data using the USB drive

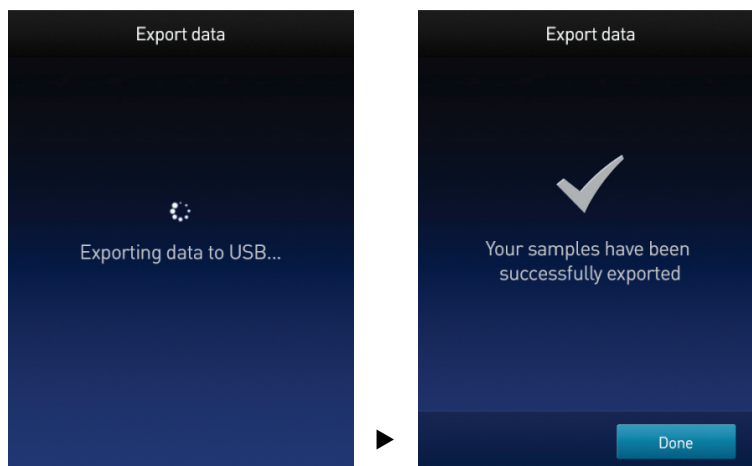
1. Insert the USB drive into the Qubit® 3.0 Fluorometer.
2. From the **Concentration**, **Graph**, or **Home** screens, touch **Data**.
3. On the *Export data* screen, check the **selection box** to the left of each data set you wish to export.



4. To save only individual data entries from a data set, touch the **data set of interest**, and then check the **selection box** to the left of the sample(s) you wish to export.



5. Touch **Export** to export the data. The numeric data is automatically saved as a .CSV file.



6. Transfer the USB drive to the USB drive port on your computer. You can open the .CSV file using any spreadsheet program.

### Export data directly to a computer

Data files may also be exported from the Qubit<sup>®</sup> instrument to a computer using a USB cable such as the one provided with the Qubit<sup>®</sup> instrument. The USB cable must remain connected to both the Qubit<sup>®</sup> instrument and the computer during this process.

To export data directly to a computer:

1. Connect the Qubit<sup>®</sup> instrument to the computer using the USB cable.
2. From the computer, access the Qubit<sup>®</sup> 3.0 Fluorometer as an external device.
3. Access the files saved on the Qubit<sup>®</sup> instrument using the operating system's normal file browsing menus.
4. Copy the desired files to the computer.



**Note:** Files cannot be exported directly to an external computer using the Export workflow on the Qubit<sup>®</sup> instrument.

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Information saved to the .csv file

The screenshot shows a 'Data details' screen with the following fields and descriptions:

- Sample 1** (Sample number)
- 02/13/2014 9:40am** (Date and time)
- Original sample concentration 1.17<sup>E3</sup> ng/ml** (Original sample concentration and units)
- Qubit tube concentration 88.0 ng/ml** (Qubit® tube sample concentration and units)
- Assay: dsDNA High Sensitivity** (Assay name)
- Sample RFU values**
  - Sample 1 4797.25** (RFU value for the sample)
- Last standards read**

| Standard 1 | Standard 2 |
|------------|------------|
| 246.23     | 25454.58   |

 (RFU values for the standards)
- Sample used (amount) 15µL** (Volume of original sample used)
- Dilution factor 13.3** (Dilution factor)
- Excitation Blue** (Excitation)
- Emission channel Green** (Emission channel)

# Delete data

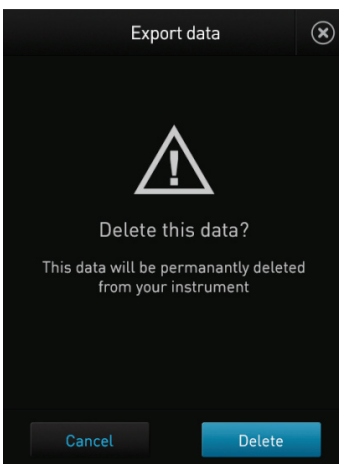
## Delete data files

1. From the **Concentration**, **Graph**, or **Home** screens, touch **Data**.
2. On the *Export data* screen, check the **selection box** to the left of each data set you wish to delete.

To delete only individual data entries from a data set, touch the **data set of interest**, and then check the **selection box** to the left of the sample(s) you wish to delete.



3. Touch **Delete**. A warning screen appears.



4. Touch **Delete** to permanently delete the sample data or data set. Touch **Cancel** to return to the screen previously viewed without deleting any data.

## 5. Manage, import, and create assays

### Introduction

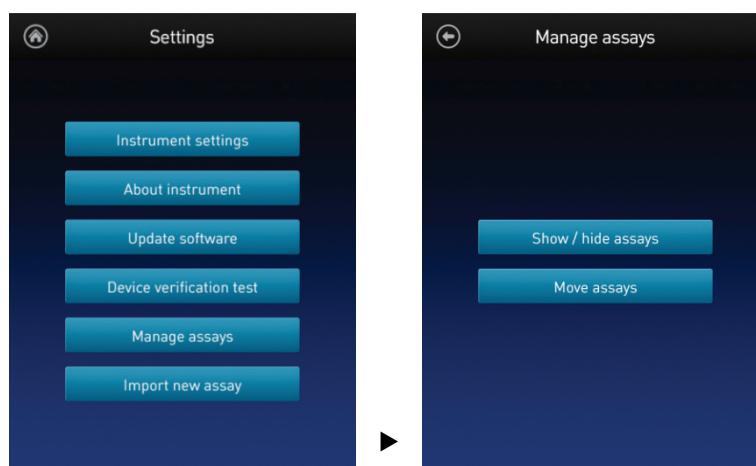
The Qubit® 3.0 Fluorometer allows you to personalize the instrument's user interface to hide and show (unhide) assays or folders and to move them to different locations. In addition, you can add custom MyQubit assays by importing them from our website at [www.lifetechnologies.com/qubit](http://www.lifetechnologies.com/qubit) or create new assays using the MyQubit software and web tool.

### Manage assays

#### Manage assays function

The *Manage assays* function allows you to hide and show (unhide) assays or folders and to move them to different locations.

1. To access the Manage assays function, touch **Settings** on the Home screen.
2. On the Settings screen, touch **Manage assays** to open the *Manage assays* screen. From the Manage assays screen, you can select **Show/hide assays** (page 37) or **Move assays** (page 39).

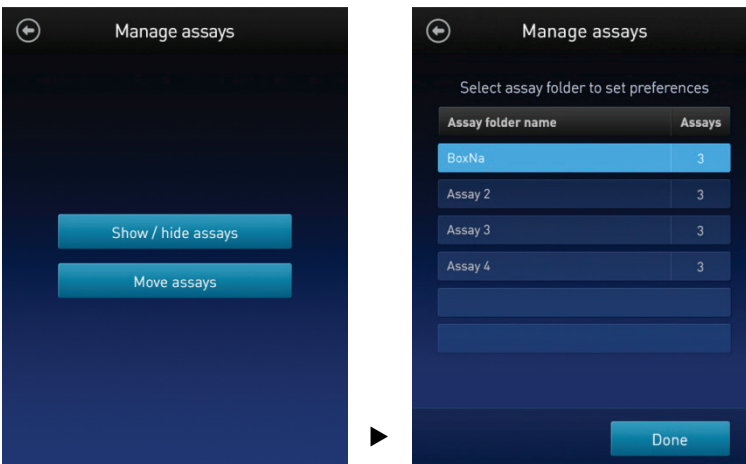


## Show/Hide assays

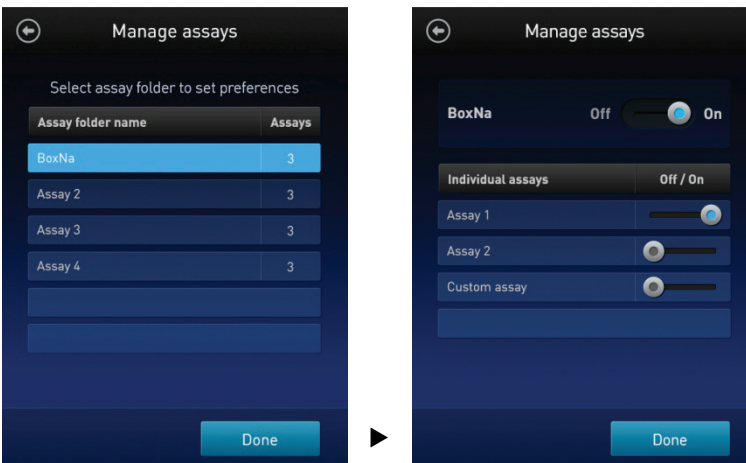
Show/Hide all assays within the assay folder

1. From the **Settings** screen, touch **Manage assays**.
2. On the *Manage assays* screen, touch **Show/hide assays**.

The software displays a list of the existing *assay folders* available on the instrument. Each assay folder contains individual assay(s).



3. Touch the **assay folder** containing the assays you wish to show or hide.  
The software displays a list of existing individual assay(s) within the selected assay folder and the controls for showing and hiding them.

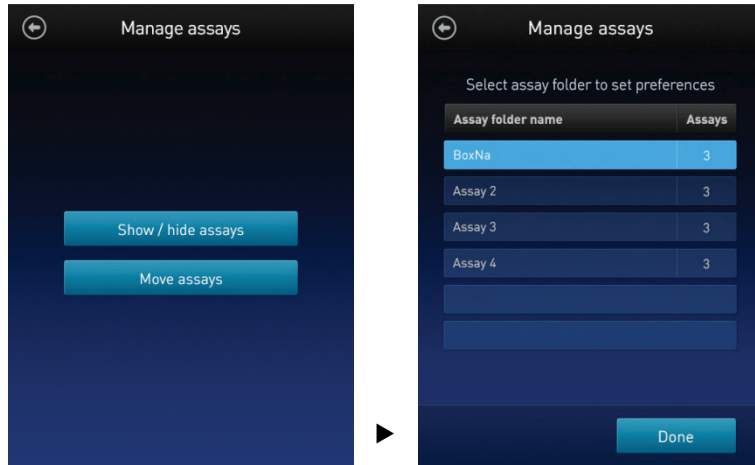


4. To hide all of the assays in the assay folder, swipe the **Assay folder On/Off** switch located to the right of the assay folder name to the **Off** position (to the **left**).  
To show all of the assays in the assay folder, swipe the **Assay folder On/Off** switch to the **On** position (to the **right**).
5. Touch the **Back** button (⏪) to save the changes and return to the previous screen, or touch **Done** to save the changes and return to the Settings screen.

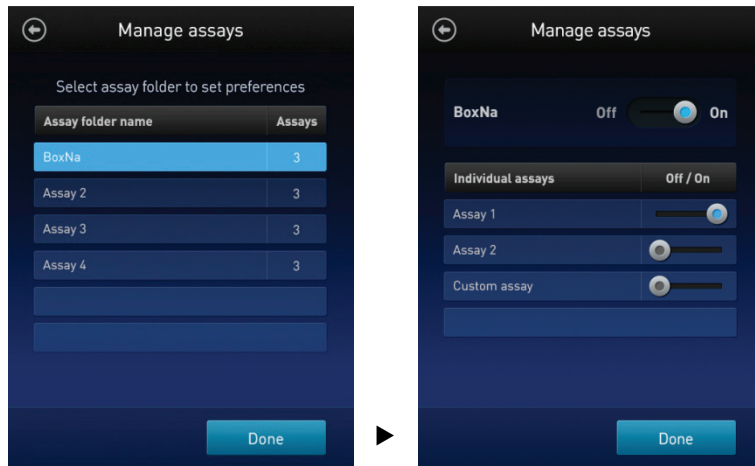
## Show/Hide individual assays

1. From the **Settings** screen, touch **Manage assays**.
2. On the *Manage assays* screen, touch **Show/hide assays**.

The software displays a list of the existing assay folders available on the instrument. Each assay folder contains individual assay(s).



3. Touch the **assay folder** containing the assay(s) you wish to show or hide. The software displays a list of existing individual assay(s) within the selected assay folder and the controls for showing and hiding them.

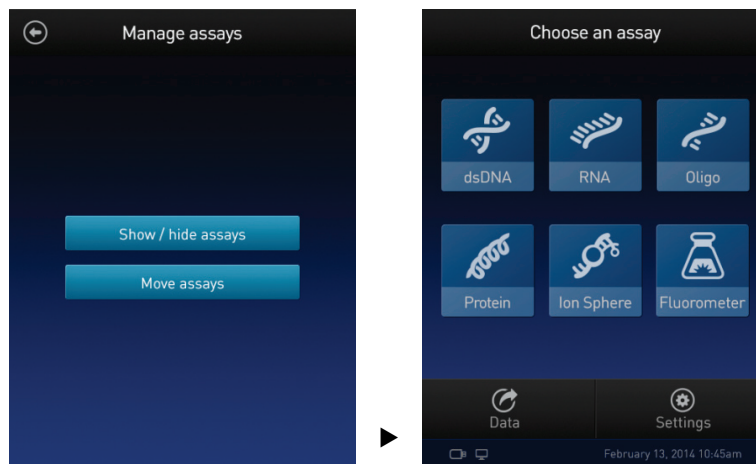


4. To hide an **individual assay**, swipe the **Assay On/Off** switch located to the right of the assay you wish to hide to the **Off** position while keeping the **Folder On/Off** switch in the **On** position. To show an **individual assay**, swipe the respective **Assay On/Off** switch to the **On** position while keeping the **Folder On/Off** switch in the **On** position.
5. Touch the **Back** button (⏪) to save the changes and return to the previous screen, or touch **Done** to save the changes and return to the Settings screen.



## Move assays

- Move assay folders/ individual assays on the Home screen**
1. From the **Settings** screen, touch **Manage assays**.
  2. On the *Manage assays* screen, touch **Move assays**.  
The software displays the Home screen with available assay folders and individual assays, and activates the move function.

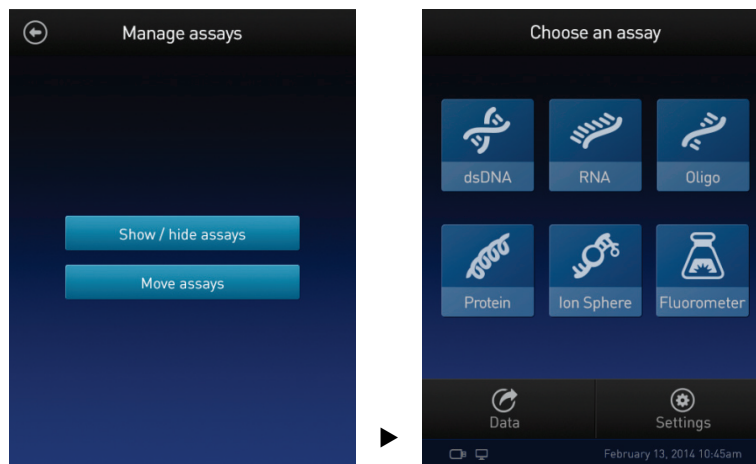


3. Touch and hold on the desired assay folder or individual assay to detach it from its current position and drag it to its new location on the Home screen. To move the selected object to a different Home screen page, drag it up or down to the desired screen.
4. Release the drag to drop the selected assay folder or individual assay in its new location.
5. Touch the **Back** button (⏪) to save the changes and return to the Manage assays screen.

## Move assays between folders

1. From the **Settings** screen, touch **Manage assays**.
2. On the *Manage assays* screen, touch **Move assays**.

The software displays the Home screen with available assay folders and individual assays, and activates the move function.



3. Touch the desired **assay folder** to open the folder's assay screen.
4. Touch and hold the **individual assay** to detach it and drag it over the Home screen icon (🏠).
5. Release the drag to drop the selected assay to the Home screen.
6. Touch the **Home** button (🏠) to return to the Home screen.  
In the Home screen, you can touch and drag the selected assay to another assay folder or location as described in "Move assay folders/ individual assays on the Home screen", page 39.
7. Touch the **Back** button (⏪) to save the changes and return to the Manage assays screen.

## Move assays within folders

1. From the **Settings** screen, touch **Manage assays**.
2. On the *Manage assays* screen, touch **Move assays**.
3. Touch the desired **assay folder** to open the folder's assay screen.
4. Touch and hold the **individual assay** to detach it, and drag and drop it to its new location in the folder.
5. Touch the **Back** button (⏪) to save the changes and return to the Manage assays screen.

## Import assays

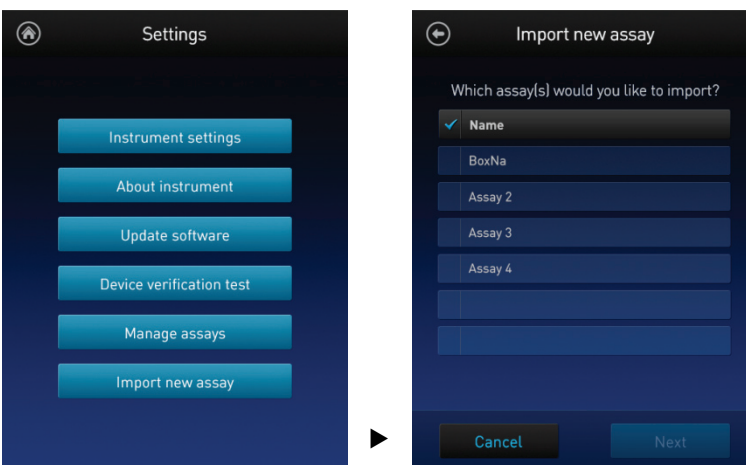
**MyQubit assay files** You add pre-existing MyQubit assays to your Qubit<sup>®</sup> 3.0 Fluorometer by downloading them from [www.lifetechnologies.com/qubit](http://www.lifetechnologies.com/qubit) and then importing them to your instrument directly from a USB drive or from an external computer via a USB cable.



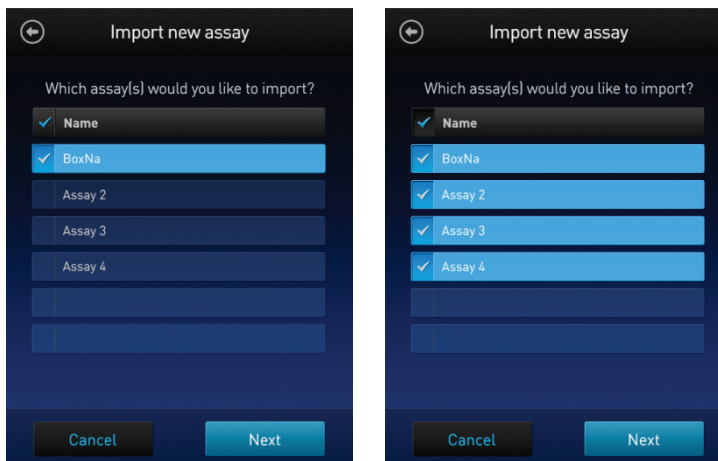
**Note:** MyQubit assay files have the file extension .qbt.

### Import assay(s) from a USB drive

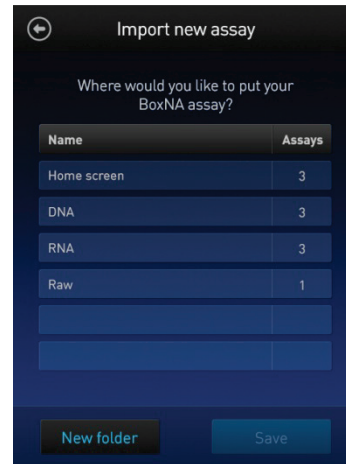
1. To import one or more new assay(s), go to [www.lifetechnologies.com/qubit](http://www.lifetechnologies.com/qubit) and download the MyQubit assay file(s) (.qbt file) you wish to install to the **root directory** of a USB drive.  
Do **not** download the.qbt file(s) to a folder in the USB drive.
2. Insert the USB drive containing the new assay file(s) into the USB drive port of the Qubit<sup>®</sup> 3.0 Fluorometer.
3. Go to the Settings screen and touch **Import new assay**. The instrument searches the USB drive for assay file(s) and the *Import new assay* screen displays the names of the assay(s) found in the USB drive.



4. Touch the assay(s) you wish to import to select. Touching the selected assay a second time deselects it. You can select multiple assays for import.



5. Touch **Next**. The *Import new assay* screen displays the name of the assay being imported (or the first assay, if multiple assays were selected) and lists the destination folders where you can save it.

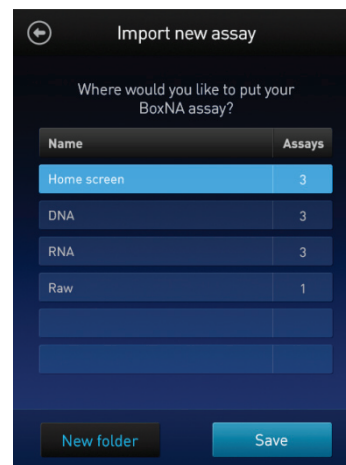


Touch the **Back** button (⏪) or **Cancel** to return to the Settings screen without importing the assay(s).



**Note:** Each assay folder can contain up to 9 individual assays. The Home screen can contain up to 36 assays or folders.

6. Select the destination folder for the new assay and touch **Save**. The *Verification* screen opens (see Step 9, page 43).  
Alternatively, touch **New folder** to create a new destination folder (see Step 8, page 43).

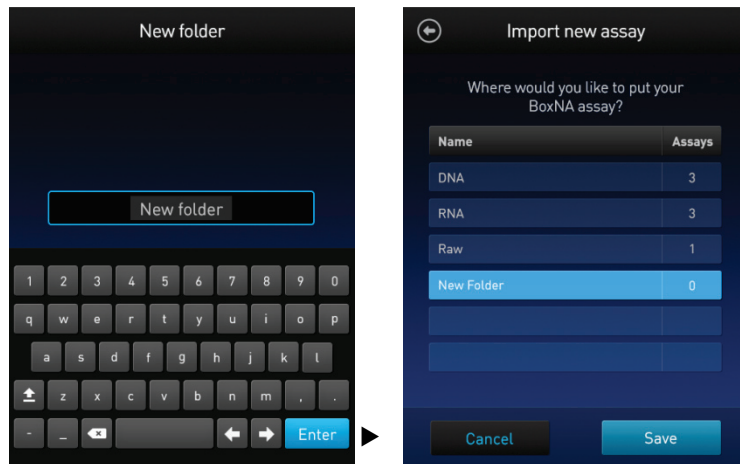


Touch the **Back** button (⏪) or **Cancel** to abort the import process and return to the Settings screen.

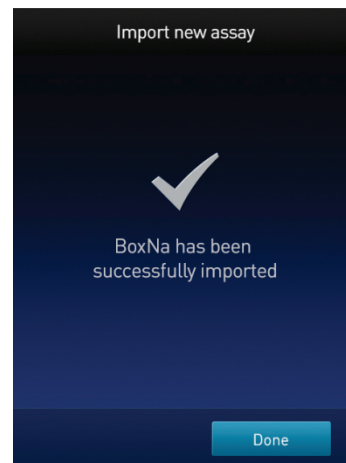
7. In the *New folder* screen, touch the **New folder** text field. A keyboard pops up. Using the **keyboard**, type in the name of the new destination folder. You can use up to 11 characters; spaces at the beginning or the end of the name are not recognized.

Touch **Enter**, and then touch **Done** to return to the *Import new assay – Where* screen. The newly created folder will appear on the list of folders.

Select the new destination folder and touch **Save**. The *Verification* screen opens (see Step 9, below).



8. In the *Verification* screen, touch **Done** to complete the import process. If importing only one assay, you will be returned to the Home screen.

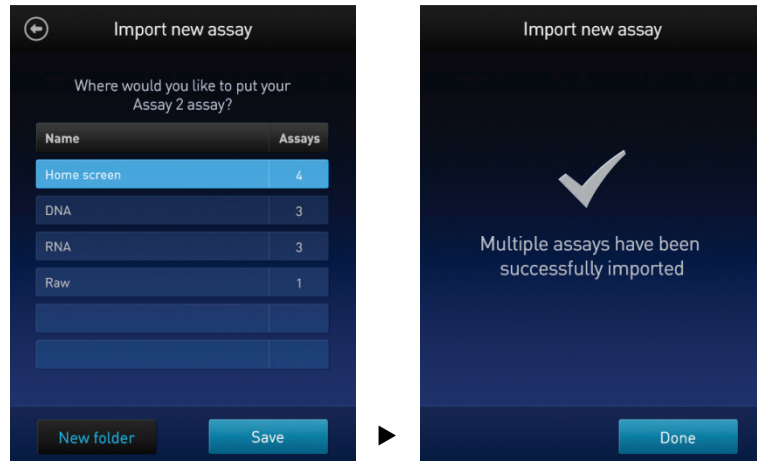


If importing multiple assays, you will be returned to the *Import new assay* screen and prompted to select the destination folder for the next assay in your import queue (see Step 10, page 44).

9. Select the destination folder for the next assay in your import queue and touch **Save**.

Repeat this process until you have imported all the assays you have selected in Step 4 (page 41).

Once all the assays you have selected are imported successfully, the *Verification* screen opens.



10. Touch **Done** to complete the import process and return to the *Home screen*.

## Import assay(s) from a computer

When the Qubit® 3.0 Fluorometer is connected to a computer via a USB cable, MyQubit .qbt assay file(s) can be transferred directly from the computer to the instrument.

1. Go to [www.lifetechnologies.com/qubit](http://www.lifetechnologies.com/qubit) and download the MyQubit assay file(s) (.qbt file) you wish to install.
2. Connect the Qubit® 3.0 Fluorometer from the USB cable port to the computer using a mini-B USB cable. The Qubit® 3.0 Fluorometer should be recognized as an external device by the computer.
3. **Copy and paste** or **click and drag** the .qbt file(s) you wish to import to the Qubit® instrument window on your computer.

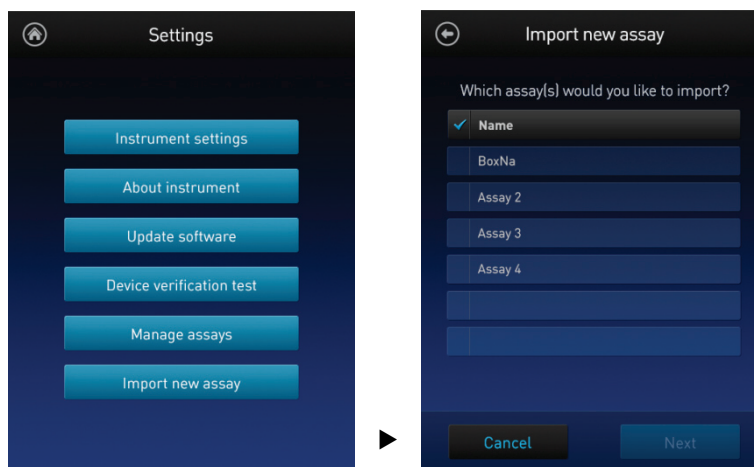


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**Note:** The assay(s) will not be visible on the Qubit® 3.0 Fluorometer until you perform the next step.

---

4. Go to the Settings screen on the Qubit® 3.0 Fluorometer and touch **Import new assay**. The *Import new assay* screen displays the name(s) of the assay(s) found on the computer.



5. Follow Steps 4–11 of the import procedure described in “Import assay(s) from a USB drive”, page 41.



---

**Note:** The USB cable must remain connected to both the Qubit® 3.0 Fluorometer and the computer for the assay to be imported.

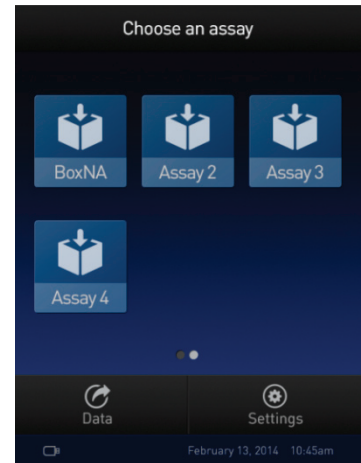
---

## Create your own assay for the Qubit® 3.0 Fluorometer

### Create a MyQubit assay

All Qubit® 3.0 Fluorometers are pre-loaded with MyQubit software, which allows you to create new applications for the Qubit® 3.0 Fluorometer using parameters uploaded to the instrument via a USB drive, without changing the existing assays.

Fluorometer mode allows you to use the Qubit® Fluorometer with any reagent or assay compatible with the optical settings of the instrument. In this way, the device can be used as a mini-fluorometer. With the data gathered in the Fluorometer mode, personalized, custom assays can be created using the guided web tool and the MyQubit EZGuide provided at [www.lifetechnologies.com/qubit](http://www.lifetechnologies.com/qubit).



**Note:** For complete instructions on creating your own assay and access to the web tool, go to [www.lifetechnologies.com/qubit](http://www.lifetechnologies.com/qubit).



## 6. Instrument maintenance

### Maintenance and cleaning

#### Maintenance

The Qubit® 3.0 Fluorometer does not need regular maintenance. To troubleshoot problems with the instrument, contact Technical Support (page 64).

- **Do not** perform any repairs or service on the Qubit® 3.0 Fluorometer to avoid damaging the instrument.
- **Do not expose the Qubit® 3.0 Fluorometer to direct sunlight.**



**CAUTION!** Never disassemble or service the instrument yourself. Do not remove any covers or parts that require the use of a tool. Unauthorized repairs may damage the instrument or alter its functionality, which may void your warranty. Contact your local distributor to arrange for service.

---

#### Clean the Qubit® 3.0 Fluorometer

We recommend cleaning the Qubit® 3.0 Fluorometer periodically to prevent the buildup of dust and dirt that might reduce its performance and cause contamination.



**CAUTION!** To avoid electrical shock, always disconnect the power cable before cleaning or decontaminating the instrument.

---



**IMPORTANT!** Using a cleaning or decontaminating method other than that manufacturer may result in damage to the instrument.

---

- Clean the surface of the Qubit® 3.0 Fluorometer with a damp cloth.
- To clean the touch screen, disconnect the power cable, and clean the touch screen with a soft cloth lightly moistened with LCD (liquid crystal display) cleansing detergent.
- Cleaning the screen with excessive force can damage the touch screen. Wipe the screen dry immediately.
- Do not use abrasive cleaning solutions or material to prevent the touch screen from getting scratched.
- To disinfect the instrument, disconnect the power cable from the Qubit® 3.0 Fluorometer and clean the instrument, including the touch screen, with a soft cloth lightly moistened with 70% ethanol, 70% isopropanol, or 10% bleach (0.6% sodium hypochlorite).
- The cloth included with the instrument is not recommended for use with ethanol or isopropanol.
- Ensure that the cleaning solution does not enter the power button, the power inlet, the sample port, or the USB drive ports.
- Never pour or spray any liquids directly on the instrument to avoid electrical shock when the instrument is plugged in.

# Software updates

## Update the software

To update the Qubit® 3.0 Fluorometer with the latest software from Life Technologies™:

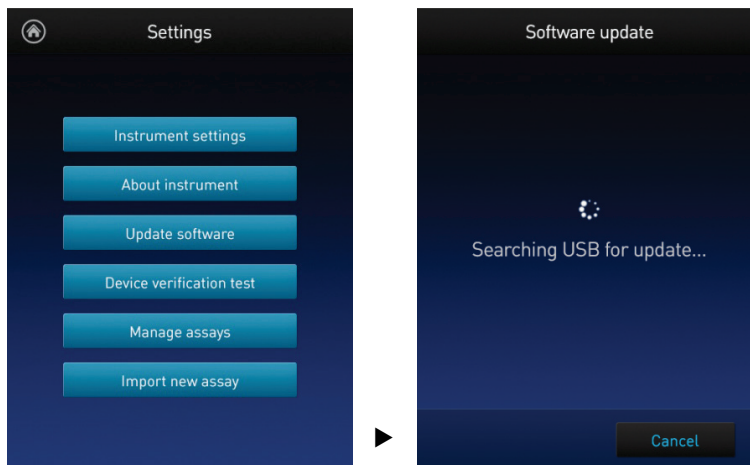
1. Download the latest software to a USB drive or to your computer from [www.lifetechnologies.com/qubit](http://www.lifetechnologies.com/qubit).
2. If using a USB drive, insert the USB drive into the instrument.

If using a computer, connect the Qubit® instrument to the computer using a USB cable. The Qubit® Fluorometer will be recognized as an external device by the computer.



**Note:** The connection between the computer and the Qubit® instrument must be maintained until the transfer and update (described in the next steps) are complete.

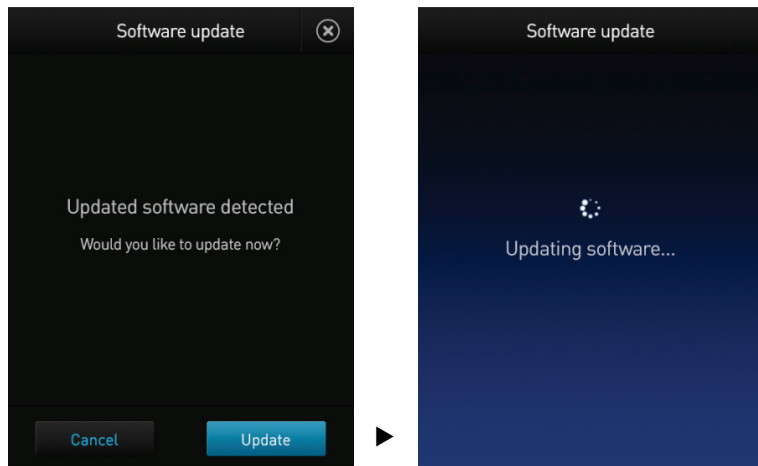
- a. On your computer, find the Qubit® software update file that you wish to upload.
  - b. Copy and paste or click and drag the software file to the Qubit® instrument drive. This will save the software file to the root directory of your Qubit® instrument; however, the software file transfer will not be visible on the Qubit® instrument.
3. On the Home screen, touch **Settings**.
  4. On the Settings screen, touch **Update software**. The instrument searches the USB drive or the computer for the update.



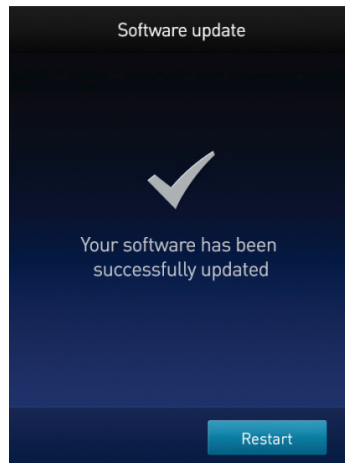
**Note:** If the USB drive is not inserted into the USB drive port or the instrument does not recognize the USB drive, a warning message is displayed.

To proceed with the software update, insert the correct USB drive into the instrument, then touch **Close**.

6. When the appropriate files are detected, the Software update screen is displayed. Touch **Update** to update the software.



7. When prompted, touch **Restart** to complete the software update.

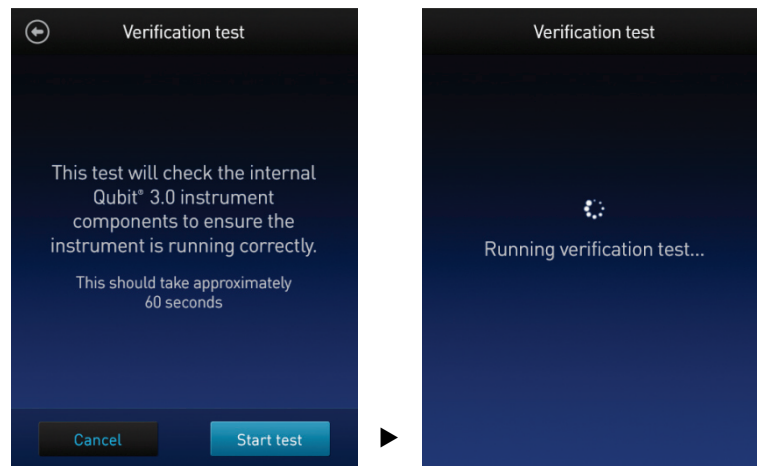


## Device verification test

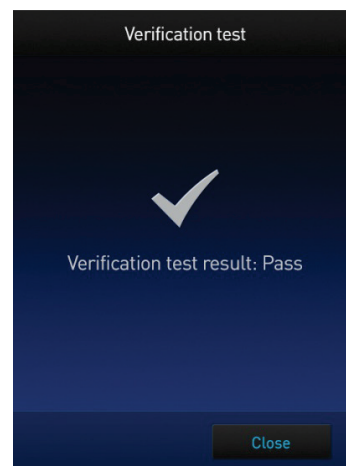
### Perform Device verification test

The device verification test checks the internal components of the Qubit® 3.0 Fluorometer. Perform the device verification test when a problem with the instrument is suspected. It is not necessary to perform verification testing on a regular basis.

1. On the Home screen, touch **Settings**.
2. On the Settings screen, touch **Device verification test**. *Verification test* screen opens.
3. On the Verification test screen, touch **Start test**.



4. When the test is complete, the software displays the error status.
  - If no errors are found, touch **Close** to return to the Settings screen.



- If errors are found, a *Failed message* appears. Be sure the test was run with the lid closed. If the Failed message persists with the lid closed, contact Technical Support for help (page 64).

# Appendix A: Troubleshooting

## Troubleshooting

### Handling samples

- The calibration standards included in the Qubit<sup>®</sup> microRNA, Qubit<sup>®</sup> RNA HS, and Qubit<sup>®</sup> RNA BR Assay Kits are high-quality RNA standards. The integrity and concentration of these standards is critical to the optimal performance of the Qubit<sup>®</sup> RNA assays. We highly recommend treating the rRNA standards as you would any other precious RNA. Use appropriate RNase-free handling techniques, including RNase-free gloves, pipette tips, and tubes. Keep the tube lids closed whenever possible; do not touch the pipet to the inside wall of the tube when withdrawing a sample, and return the RNA standard to the refrigerator as soon as possible after use.
- Ensure that the assay tubes are at room temperature at the time the reading is taken. Do not hold assay tubes in your hand and do not leave assay tubes in the Qubit<sup>®</sup> 3.0 Fluorometer for longer than it takes to read the fluorescence. See “Assay temperature” on page 54.
- Be careful not to spill sample into the sample chamber. Promptly wipe any spills.
- The Qubit<sup>®</sup> assays are very sensitive and even small amounts of material from a previous sample may result in errors. Use a clean 0.5-mL PCR tube for each reading.
- The tube **must be clean and dry** on the outside when taking readings. Moisture and condensation on the tube surface can lead to reading errors.
- Minute bubbles in samples will cause errors in readings. Be sure not to introduce bubbles into samples. Slight tapping on the tube wall or brief centrifugation will often help dissipate bubbles.

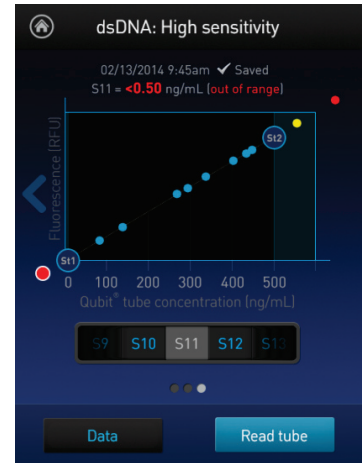
### High reading

- The sample is out of range. Use a sample that is less concentrated.
- View the Fluorescence vs. Concentration graph in the Results screen to confirm that the values for the samples fall between the values of the standards (see page 24).
- Ensure that the lid is closed while reading standards and samples.
- Prepare samples and standards according to the instructions in the Qubit<sup>®</sup> assay kit you are using.
- Ensure that the assay is performed entirely at room temperature.



## Low reading

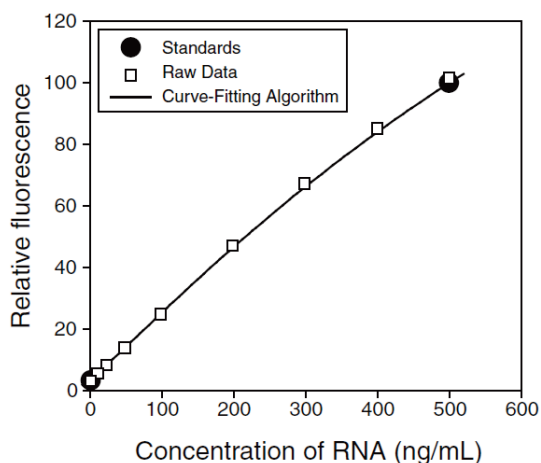
- The sample is out of range. Use a sample that is more concentrated or use a lower dilution (for example, 20  $\mu\text{L}$  in 180  $\mu\text{L}$  instead of 10  $\mu\text{L}$  in 190  $\mu\text{L}$ ).
- View the Fluorescence vs. Concentration graph in the Results screen to confirm that the values for the samples fall between the values of the standards (see page 24).
- Ensure that you have prepared the Qubit<sup>®</sup> working solution correctly (1:200 dilution using the buffer provided in the kit).
- Ensure that you have prepared the standard tubes correctly (10  $\mu\text{L}$  of each standard in 190  $\mu\text{L}$  of Qubit<sup>®</sup> working solution).
- Ensure that the standard and sample tubes are filled to 200  $\mu\text{L}$ .
- Protect the Qubit<sup>®</sup> reagent and working solutions from light.
- Select the correct Qubit<sup>®</sup> 3.0 Fluorometer assay for the Qubit<sup>®</sup> assay you are performing and calibrate the fluorometer correctly. Standards must be used in the correct order.
- Ensure that the assay is performed entirely at room temperature.



## Critical Qubit<sup>®</sup> Assay Considerations

### How the Qubit<sup>®</sup> 3.0 Fluorometer calculates concentration

The Qubit<sup>®</sup> 3.0 Fluorometer generates concentration data based on the relationship between the two Standards used in calibration (three for the Qubit<sup>®</sup> protein assay). The plot below shows the line corresponding to the curve-fitting algorithm (a modified Hill plot) used in the calculation of concentration data for the Qubit<sup>®</sup> RNA assay. For reference, the positions of the Standards and a set of data points from an actual experiment are shown superimposed onto the line. This plot demonstrates that the curve-fitting algorithm gives accurate values for quantitation.



**Figure 1.** The curve-fitting algorithm used to determine concentration in the Qubit<sup>®</sup> RNA assay. Data for other Qubit<sup>®</sup> assays are generated by similar algorithms.

### Incubation time

To allow the Qubit<sup>®</sup> assay to reach maximum fluorescence, incubate the tubes for the DNA and RNA assays for 2 minutes after mixing the sample or standard with the working solution. After this incubation period, the fluorescence signal is stable for 3 hours at room temperature, for all nucleic acid assays except the Qubit<sup>®</sup> ssDNA assay, which is stable for up to 30 minutes.

The Qubit<sup>®</sup> protein assay requires 15 minutes of incubation for a stable signal. For greatest accuracy of the protein assay, the incubation time of the samples should be within 10 minutes of the incubation time of the standards.

### Photobleaching of Qubit<sup>®</sup> reagents

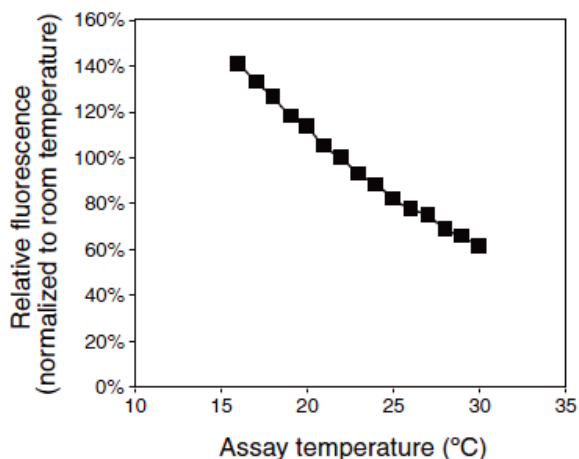
The Qubit<sup>®</sup> reagents exhibit high photostability in the Qubit<sup>®</sup> 3.0 Fluorometer, showing <0.3% drop in fluorescence after 9 readings and <2.5% drop in fluorescence after 40 readings. It is important to remember, however, that if the assay tube remains in the Qubit<sup>®</sup> 3.0 Fluorometer for multiple readings, a temporary reduction in fluorescence will be observed as the solution increases in temperature (see Figure 2 in “Assay temperature” on page 54).

Note that the temperature inside the Qubit<sup>®</sup> 3.0 Fluorometer may be as much as 3°C above room temperature after 1 hour. For this reason, if you want to perform multiple readings of a single tube, remove the tube from the instrument and let it equilibrate to room temperature for 30 seconds before taking another reading.

## Assay temperature

The Qubit® assays were designed to be performed at room temperature (22–28°C), and temperature fluctuations can influence the accuracy of the assay.

To minimize temperature fluctuations, store all kit reagents at room temperature and insert all assay tubes into the Qubit® 3.0 Fluorometer only for as much time as it takes for the instrument to measure the fluorescence, because the Qubit® 3.0 Fluorometer can raise the temperature of the assay solution significantly, even over a period of a few minutes. Do not hold the assay tubes in your hand before a measurement, because holding the tubes warms the solution and results in a low reading.



**Figure 2.** Effect of temperature on the Qubit® dsDNA BR assay. Qubit® dsDNA HS, Qubit® ssDNA, Qubit® RNA, Qubit® RNA BR, and Qubit® protein assays show similar sensitivities over the same range.

## Calibrating the Qubit® 3.0 Fluorometer

For each assay, you have the choice to run a new calibration or to use the values from the previous calibration. As you first use the instrument, you should perform a new calibration each time. As you become familiar with the assays, the instrument, your pipetting accuracy, and significant temperature fluctuations within your laboratory, you should determine the level of comfort you have using the calibration data stored from the last time the instrument was calibrated. Remember also that the fluorescence signal in the tubes containing the standards and the samples is stable for not longer than 3 hours. See Figure 1 in “How the Qubit® 3.0 Fluorometer calculates concentration” on page 53 for an example of the calibration curve used to generate the quantitation results.



## Appendix B: Ordering information

### Qubit® 3.0 Fluorometer and accessories


The following products can be used with the Qubit® 3.0 Fluorometer and are available separately from Life Technologies. For more information, visit [www.lifetechnologies.com](http://www.lifetechnologies.com) or contact Technical Support (page 64).

| Product   | Quantity                 | Cat. no.         |
|---|--------------------------|------------------|
| Qubit® 3.0 Fluorometer  | 1 each                   | Q33216           |
| Qubit® 3.0 Starter Kit  | 1 kit                    | Q33217           |
| Qubit® 3.0 NGS Starter Kit                                      | 1 kit                    | Q33218           |
| Qubit® 3.0 USB Flash Drive                                      | 1 each                   | Q46009           |
| Qubit® 3.0 Fluorometer International Power Supply (replacement) | 1 each                   | Q46018           |
| Qubit® Assay Tubes  | 500 tubes                | Q32856           |
| Qubit® RNA BR Assay Kit *20–1,000 ng*                           | 100 assays<br>500 assays | Q10210<br>Q10211 |
| Qubit® ssDNA Assay Kit *1–200 ng*                               | 100 assays               | Q10212           |
| Qubit® dsDNA BR Assay Kit<br>*2–1,000 ng*                       | 100 assays<br>500 assays | Q32850<br>Q32853 |
| Qubit® dsDNA HS Assay Kit *0.2–100 ng*                          | 100 assays<br>500 assays | Q32851<br>Q32854 |
| Qubit® RNA HS Assay Kit *5–100 ng*                              | 100 assays<br>500 assays | Q32852<br>Q32855 |
| Qubit® Protein Assay Kit *0.25–5 µg*                            | 100 assays<br>500 assays | Q33211<br>Q33212 |
| Qubit® microRNA Assay Kit *0.5–100 ng*                          | 100 assays<br>500 assays | Q32880<br>Q32881 |



## Appendix C: Safety

### Symbols on instruments


**Electrical symbols** The following table describes the electrical symbols that may be displayed.

| Symbol  | Description   |
|---|---|
|  | Indicates a terminal that can receive or supply alternating current or voltage. |

**Safety symbols** The following table describes the safety symbols that may be displayed. Each symbol may appear by itself or in combination with text that explains the relevant hazard (see “Safety labels on instruments”). These safety symbols may also appear next to DANGERS, WARNINGS, and CAUTIONS that occur in the text of this and other product-support documents.



| Symbol  | Description   |
|---|---|
|   | Indicates that you should consult the manual for further information and to proceed with appropriate caution. |
|  | Indicates the presence of an electrical shock hazard and to proceed with appropriate caution.                 |

**Environmental symbols** The following symbol applies to all Life Technologies™ electrical and electronic products placed on the European market after August 13, 2005.

| Symbol  | Description  |
|---|--|
|  | <p><b>Do not dispose of this product as unsorted municipal waste.</b> Follow local municipal waste ordinances for proper disposal provisions to reduce the environmental impact of waste electrical and electronic equipment (WEEE).</p> <p><b>European Union customers:</b><br/>Call your Customer Service representative for equipment pick-up and recycling. See <a href="http://www.lifetechnologies.com">www.lifetechnologies.com</a> for a list of customer service offices in the European Union.</p> |

## Safety labels on instruments

The following CAUTION, WARNING, and DANGER statements may be displayed on Life Technologies™ instruments in combination with the safety symbols described in the preceding section.

| Hazard symbol   | English  | Français   |
|---|--|--|
|  | <p><b>CAUTION!</b> Hazardous chemicals. Read the Safety Data Sheets (SDSs) before handling.</p>  | <p><b>ATTENTION!</b> Produits chimiques dangereux. Lire les fiches techniques de sûreté de matériels avant toute manipulation de produits.</p>   |
|   | <p><b>CAUTION!</b> Hazardous waste. Refer to SDS(s) and local regulations for handling and disposal.</p>   | <p><b>ATTENTION!</b> Déchets dangereux. Lire les fiches techniques de sûreté de matériels et la régulation locale associées à la manipulation et l'élimination des déchets.</p>  |
|  | <p><b>DANGER!</b> High voltage.</p>  | <p><b>DANGER!</b> Haute tension.</p>   |
|   | <p><b>WARNING!</b> To reduce the chance of electrical shock, do not remove covers that require tool access. No user-serviceable parts are inside. Refer servicing to Thermo Fisher Scientific qualified service personnel.</p> | <p><b>AVERTISSEMENT!</b> Pour éviter les risques d'électrocution, ne pas retirer les capots dont l'ouverture nécessite l'utilisation d'outils. L'instrument ne contient aucune pièce réparable par l'utilisateur. Toute intervention doit être effectuée par le personnel de service qualifié venant de chez Thermo Fisher Scientific.</p> |

## General instrument safety



**WARNING! PHYSICAL INJURY HAZARD.** Use this product only as specified in this document. Using this instrument in a manner not specified may result in personal injury or damage to the instrument.

---

### Operating the instrument

Ensure that anyone who operates the instrument has:

- Received instructions in both general safety practices for laboratories and specific safety practices for the instrument.
- Read and understood all applicable Safety Data Sheets (SDSs). See “Safety Data Sheets (SDS)”.

### Safety precautions

- Do not install the instrument in heavy humidity such as a greenhouse or an incubator to avoid a danger of electric shock. If water or other material enters the instrument, the adaptor, or power inlet, disconnect the power cord and contact a service person. For operating environment, refer to “Product specifications” (page 8).
- Do not touch the main plug or power cord with wet hands.
- Always ensure that the power supply input voltage matches the voltage available in your location.
- Do not install the instrument on a slant or a place prone to vibrations, which induces the risk of instrument malfunction or damage of the instrument.
- Plug the power cord firmly into the wall outlet and the instrument.
- To avoid potential shock hazard, make sure that the power cord is properly grounded.
- Be sure to position the equipment such that it is easy to disconnect the instrument.
- If the instrument is broken or dropped, disconnect the power cord and contact technical services. Do not disassemble the instrument.
- Use only authorized accessories (adaptor, power cord, and USB drive).
- For operating environment, see “Product specifications” (page 8).
- If the instrument emits smoke, disconnect the power cord from the wall outlet and contact technical services.

### Cleaning or decontaminating the instrument



**CAUTION!** Using cleaning or decontamination methods other than those recommended by the manufacturer may compromise the safety or quality of the instrument.

---

### Removing covers or parts of the instrument



**CAUTION! PHYSICAL INJURY HAZARD** The instrument is to be serviced only by trained personnel or vendor specified in the user guide. Do not remove any covers or parts that require the use of a tool to obtain access to moving parts.

---

## Chemical safety

### Chemical hazard warning



**WARNING! CHEMICAL HAZARD.** Before handling any chemicals, refer to the Safety Data Sheet (SDS) provided by the manufacturer, and observe all relevant precautions.

---



**WARNING! CHEMICAL STORAGE HAZARD.** Never collect or store waste in a glass container because of the risk of breaking or shattering. Reagent and waste bottles can crack and leak. Each waste bottle should be secured in a low-density polyethylene safety container with the cover fastened and the handles locked in the upright position. Wear appropriate eyewear, clothing, and gloves when handling reagent and waste bottles.

---

### General safety guidelines

To minimize the hazards of chemicals:

- Read and understand the Safety Data Sheets (SDSs) provided by the chemical manufacturer before you store, handle, or work with any chemicals or hazardous materials. (See “Safety Data Sheets (SDS)”)
- Minimize contact with chemicals. Wear appropriate personal protective equipment when handling chemicals (for example, safety glasses, gloves, or protective clothing). For additional safety guidelines, consult the SDS.
- Minimize the inhalation of chemicals. Do not leave chemical containers open. Use only with adequate ventilation (for example, fume hood). For additional safety guidelines, consult the SDS.
- Check regularly for chemical leaks or spills. If a leak or spill occurs, follow the manufacturer’s cleanup procedures as recommended in the SDS.
- Comply with all local, state/provincial, or national laws and regulations related to chemical storage, handling, and disposal.

## Chemical waste safety

### Chemical waste hazard



**CAUTION! HAZARDOUS WASTE.** Refer to Safety Data Sheets (SDSs) and local regulations for handling and disposal.

---

### Chemical waste safety guidelines

To minimize the hazards of chemical waste:

- Read and understand the Safety Data Sheets (SDSs) provided by the manufacturers of the chemicals in the waste container before you store, handle, or dispose of chemical waste.
- Provide primary and secondary waste containers. (A primary waste container holds the immediate waste. A secondary container contains spills or leaks from the primary container. Both containers must be compatible with the waste material and meet federal, state, and local requirements for container storage.)
- Minimize contact with chemicals. Wear appropriate personal protective equipment when handling chemicals (for example, safety glasses, gloves, or protective clothing). For additional safety guidelines, consult the SDS.
- Minimize the inhalation of chemicals. Do not leave chemical containers open. Use only with adequate ventilation (for example, fume hood). For additional safety guidelines, consult the SDS.
- Handle chemical wastes in a fume hood.
- After emptying the waste container, seal it with the cap provided.
- Dispose of the contents of the waste tray and waste bottle in accordance with good laboratory practices and local, state/provincial, or national environmental and health regulations.

### Waste disposal

If potentially hazardous waste is generated when you operate the instrument, you must:

- Characterize (by analysis, if necessary) the waste generated by the particular applications, reagents, and substrates used in your laboratory.
- Ensure the health and safety of all personnel in your laboratory.
- Ensure that the instrument waste is stored, transferred, transported, and disposed of according to all local, state/provincial, and/or national regulations.



**IMPORTANT!** Radioactive or biohazardous materials may require special handling, and disposal limitations may apply.

---

## Electrical safety



**DANGER! ELECTRICAL SHOCK HAZARD.** Severe electrical shock can result from operating the Qubit® 3.0 Fluorometer without its instrument panels in place. Do not remove instrument panels. High-voltage contacts are exposed when instrument panels are removed from the instrument.

---

### Power



**DANGER! ELECTRICAL HAZARD.** Grounding circuit continuity is vital for the safe operation of equipment. Never operate equipment with the grounding conductor disconnected.

---



**DANGER! ELECTRICAL HAZARD.** Use properly configured and approved line cords for the voltage supply in your facility.

---



**DANGER! ELECTRICAL HAZARD.** Plug the system into a properly grounded receptacle with adequate current capacity.

---

### Overvoltage rating

The Qubit® 3.0 Fluorometer has an installation (overvoltage) category of II, and is classified as portable equipment.

## Biological hazard safety



**WARNING! BIOHAZARD.** Biological samples such as tissues, body fluids, and blood of humans and other animals have the potential to transmit infectious diseases. Follow all applicable local, state/provincial, and/or national regulations. Wear appropriate protective eyewear, clothing, and gloves. Read and follow the guidelines in these publications.

**ATTENTION! BIOHAZARD.** Les échantillons biologiques tels que les tissus, les fluides corporels et le sang des humains et d'autres animaux ont la possibilité de transmettre des maladies infectieuses. Suivre tous les règlements municipaux, provinciaux/provincial et / ou nationales en vigueur. Porter des lunettes de protection approprié, des vêtements et des gants.

---

### In the U.S.:

- U.S. Department of Health and Human Services guidelines published in *Biosafety in Microbiological and Biomedical Laboratories* (stock no. 017-040-00547-4; [www.cdc.gov/OD/ohs/biosfty/bmb14/bmb14toc.htm](http://www.cdc.gov/OD/ohs/biosfty/bmb14/bmb14toc.htm))
- Occupational Safety and Health Standards, Bloodborne Pathogens (29 CFR§1910.1030; [www.access.gpo.gov/nara/cfr/waisidx\\_01/29cfr1910a\\_01.html](http://www.access.gpo.gov/nara/cfr/waisidx_01/29cfr1910a_01.html))
- Your company's/institution's Biosafety Program protocols for working with/handling potentially infectious materials.
- Additional information about biohazard guidelines is available at: [www.cdc.gov](http://www.cdc.gov)

### In the EU:

- Check your local guidelines and legislation on biohazard and biosafety precaution, and the best practices published in the World Health Organisation (WHO) Laboratory Biosafety Manual, third edition [www.who.int/csr/resources/publications/biosafety/WHO\\_CDS\\_CSR\\_LYO\\_2004\\_11/en/](http://www.who.int/csr/resources/publications/biosafety/WHO_CDS_CSR_LYO_2004_11/en/)



# Safety and Electromagnetic Compatibility (EMC) standards

This section provides information on:

- U.S. and Canadian safety standards
- European safety and EMC standards
- Australian EMC standards

## U.S. and Canadian Safety Standards



The Qubit<sup>®</sup> 3.0 Fluorometer has been tested to and complies with standard: UL 61010-1/CSA C22.2 No. 61010-1, "Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use, Part 1: General Requirements."

## European Safety and EMC Standards



### Safety

This instrument meets European requirements for safety (Low Voltage Directive 2006/95/EC). This instrument has been tested to and complies with standards:

IEC/EN 61010-1:2001, "Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use, Part 1: General Requirements."

IEC/EN 61010-2-081:2003, "Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 2-081: Particular requirements for automatic and semi-automatic laboratory equipment for analysis and other purposes"

### EMC

This instrument meets European requirements for emission and immunity (EMC Directive 2004/108/EC). This instrument has been tested to and complies with standard IEC/EN 61326 (Group 1, Class B), "Electrical Equipment for Measurement, Control and Laboratory Use – EMC Requirements."

## Australian EMC standards



This instrument has been tested to and complies with standard AS/NZS CISPR 11, "Limits and Methods Measurement of Electromagnetic Disturbance Characteristics of Industrial, Scientific, and Medical (ISM) Radio-frequency Equipment."

# Documentation and support

## Obtaining support

**Technical support** For the latest services and support information for all locations, go to [www.lifetechnologies.com](http://www.lifetechnologies.com).

At the website, you can:

- Access worldwide telephone and fax numbers to contact Technical Support and Sales facilities
- Search through frequently asked questions (FAQs)
- Submit a question directly to Technical Support ([techsupport@lifetech.com](mailto:techsupport@lifetech.com))
- Search for user documents, SDSs, vector maps and sequences, application notes, formulations, handbooks, certificates of analysis, citations, and other product support documents
- Obtain information about customer training
- Download software updates and patches

**Safety Data Sheets (SDS)** Safety Data Sheets (SDSs) are available at [www.lifetechnologies.com/sds](http://www.lifetechnologies.com/sds).



**IMPORTANT!** For the SDSs of chemicals not distributed by Life Technologies™ contact the chemical manufacturer.

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**Limited product warranty**

Life Technologies Corporation and/or its affiliate(s) warrant their products as set forth in the Life Technologies' General Terms and Conditions of Sale found on Life Technologies' website at [www.lifetechnologies.com/termsandconditions](http://www.lifetechnologies.com/termsandconditions).

If you have any questions, please contact Life Technologies at [www.lifetechnologies.com/support](http://www.lifetechnologies.com/support).

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