

## Frequently Asked Questions

### General

**Q. How does the QUANTOM Tx™ count cells?**

A. The QUANTOM Tx™ counts fluorescence-stained microbial cells through automated fluorescence imaging and analysis.

**Q. What kinds of cells does the QUANTOM Tx™ count?**

A. The QUANTOM Tx™ is optimized to count bacterial cells, but may be able to count other cell types.

**Q. How long does the QUANTOM Tx™ take to count?**

A. It takes ~1 minute per sample when capturing and analyzing 20 images.

**Q. What size cells can the QUANTOM Tx™ detect?**

A. Cells ~0.3-50 µm can be counted.

**Q. What is the QUANTOM Tx™ counting range?**

A. The QUANTOM Tx™ can count samples with concentrations in the range of  $1 \times 10^5$  to  $1 \times 10^9$  cells/mL. The optimal range is  $5 \times 10^5$  to  $5 \times 10^8$  cells/mL.

**Q. Can I buy the QUANTOM Tx™ without the QUANTOM™ Centrifuge?**

A. The QUANTOM™ Centrifuge is crucial for distributing cells along a single plane for accurate counting with the QUANTOM Tx™.

**Q. Can I use different slides with the QUANTOM Tx™?**

A. No. Bacteria are small and need to be loaded into special chambers for even distribution. QUANTOM™ M50 Cell Counting Slides have been designed specifically for microbes for use with the QUANTOM Tx™ and the QUANTOM™ Centrifuge.

**Q. Can I do viability measurements with the QUANTOM Tx™?**

A. No. To obtain viability information, two separate counts will have to be performed with two different stains and calculations be made by hand.

**Q. What is the magnification of the objective used in the QUANTOM Tx™?**

A. 10X.

**Q. What are the excitation/emission spectra of the QUANTOM Tx™?**

A. Ex 470/30 nm, Em 530/50 nm.

**Q. What kind of image sensor is in the QUANTOM Tx™?**

A. It is a highly sensitive 1/3" CMOS sensor.

**Q. What is the counting area and volume of the QUANTOM Tx™?**

A. When capturing and analyzing 20 images, the QUANTOM Tx™ counts cells within 3.46 mm<sup>2</sup>. As the QUANTOM™ M50 Cell Counting Slide has a chamber height of 50 µm, the measuring volume of 20 images is approximately 0.17 µL.

**Q. How many fields of view are captured for image analysis?**

A. 1-20 different fields of view can be captured. This can be adjusted as desired in the Settings: Counting Options.

**Q. How often do I have to calibrate the QUANTOM Tx™?**

A. The QUANTOM Tx™ comes precalibrated so it does not need to be calibrated again before use. Calibrate the instrument after each software update.

## Frequently Asked Questions

### Sample Prep

**Q. How can I avoid bubbles in my sample being counted as cells?**

A. Mix cells and loading buffer gently to avoid creating bubbles.

**Q. What is the purpose of the QUANTOM™ Cell Loading Buffer I?**

A. QUANTOM™ Cell Loading Buffer I is a viscous solution that immobilizes cells upon centrifugation.

**Q. Why does it take so long to load the sample into the QUANTOM™ M50 Cell Counting Slide?**

A. This is most likely due to the viscosity of the loading buffer. Leave the slide for 20-30 seconds after loading and try again. If it takes more than one minute, you may need to use a fresh batch of QUANTOM™ M50 Cell Counting Slides.

**Q. What do I do if the slide is only partially full?**

A. Load more of the sample into the slide (e.g. total 5.5-6.0 µL). If the slide does not fill completely with the increased volume, you may need to use a fresh batch of QUANTOM™ M50 Cell Counting Slides.

**Q. What do I do if my cells aren't all in the same focal plane? Some are in focus and some aren't.**

A. Increase centrifugation speed or time with the QUANTOM™ Centrifuge.

**Q. What do I do if my cells are in the same focal plane but cell distribution is not even?**

A. Lower centrifugation speed or time with the QUANTOM™ Centrifuge.

**Q. Why did my cells clump after staining?**

A. Increased dye incubation time can cause cell aggregation. Reduce incubation time and proceed quickly to counting.

## Frequently Asked Questions

### Cell counting

**Q. What bacteria have been tested on the QUANTOM Tx™?**

A. *Alcaligenes faecalis*, *Bacillus amyloliquefaciens*, *Bacillus circulans*, *Bacillus coagulans*, *Bacillus lentus*, *Bacillus lichenformis*, *Bacillus megaterium*, *Bacillus mycoides*, *Bacillus pumulis*, *Bacillus sphaericus*, *Bacillus subtilis*, *Comamonas terrigena*, *Enterobacter aerogenes*, *Enterobacter cloacae*, *Escherichia coli*, *Lactobacillus casei*, *Pseudomonas fluorescens*, *Proteus mirabilis*, *Pseudomonas putida*, *Pseudomonas stutzeri*, and *Serratia marcescens*. This is just a partial list. We are continually testing additional microbes.

**Q. Can the QUANTOM Tx™ count irregular or elongated cells?**

A. Yes, but you may need to optimize the roundness levels in the protocol parameters to find the right setting for your type.

**Q. Can the QUANTOM Tx™ count clumped or chains of cells?**

A. Yes, but you may need to optimize the declustering levels in the protocol parameters to find the right setting for your type.

**Q. Do I have to set specific parameters for specific cell types?**

A. Specific cell types may require protocol parameter adjustments depending on their morphology and arrangements.

**Q. Can the QUANTOM Tx™ count both gram negative and positive cells?**

A. Yes, the QUANTOM Tx™ can count both gram negative and positive cells.

**Q. Can the QUANTOM Tx™ count spores?**

A. It depends on dye penetration. Most spores are resistant to dye penetration.

**Q. Can the QUANTOM Tx™ count live cells?**

A. Yes. Stain cells with QUANTOM™ Live Cell Staining Dye to count live cells.

**Q. Can the QUANTOM Tx™ be used for mycoplasma testing?**

A. No. Mycoplasma are too small to be detected with the QUANTOM Tx™.

## Frequently Asked Questions

### Dyes/Detection

**Q. Can dyes other than the QUANTOM™ dyes be used with the QUANTOM Tx™?**

A. SYTO® 9 stain may be used but since its signal intensity is different, light intensity levels should be optimized prior to counting.

**Q. If my samples are fluorescent bacteria, do I still need to stain them?**

A. It depends on the signal's excitation/emission spectrum and intensity. If the spectrum falls within the instrument's spectral capacities and the signal is strong enough, the sample may be counted without staining.

**Q. How do the QUANTOM™ dyes work?**

A. QUANTOM™ Total Cell Staining Dye is a fluorescent DNA binding dye. QUANTOM™ Live Cell Staining Dye permeates cells and is converted to a fluorescent product upon hydrolysis within viable cells.

**Q. Can I use LIVE/DEAD BacLight Bacterial Viability Kits?**

A. LIVE/DEAD BacLight Bacterial Viability Kits are composed of SYTO® 9 stain and propidium iodide. As the QUANTOM Tx™ has just one fluorescence channel, only the SYTO® 9 signal is detectable.

**Q. Can QUANTOM™ Total Cell Staining Dye label cells other than bacteria?**

A. Yes. QUANTOM™ Total Cell Staining Dye is a fluorescent DNA binding dye, so it can label any cells with DNA.

**Q. What is the QUANTOM™ Live Cell Staining Dye?**

A. QUANTOM™ Live Cell Staining Dye is a Calcein AM derivative. In viable cells, cellular esterases hydrolyze the dye into a fluorescent protein which is retained in intact cell membranes.

**Q. Can I use fluorescein diacetate (FDA) or its derivatives for live cell counting?**

A. Most bacterial cells cannot generate sufficient fluorescence with FDA to be detected by the QUANTOM Tx™.

## Frequently Asked Questions

### Data

**Q. What kinds of files does the QUANTOM Tx™ generate?**

A. A PDF data report, raw and tagged TIF cell images, and numerical data in CSV format.

**Q. Can I customize the data reports?**

A. Yes, you can insert your own logo. Upload your logo in Settings: Saving Options.

**Q. I just saved my count results and can't find my files. Where are they?**

A. When you press Save, your files are saved to the internal SSD drive. Access them directly by going to the Review screen.

**Q. How do I transfer files from the QUANTOM Tx™?**

A. In Review: Review Images, use the file manager and command keys to transfer files saved on the SSD drive to USB drives. Alternatively, connect the QUANTOM Tx™ to a wireless network, install QUANTOM™ Utility software on a compatible PC, and download data through the wireless network. For detailed instructions, refer to the user manual.

**Q. Is a computer required?**

A. Only if you want to access your data wirelessly.

**Q. What can I connect to the QUANTOM Tx™?**

A. You can connect a keyboard, a mouse, the provided WiFi dongle, and USB drives to the QUANTOM Tx™.

**Q. Do I need to load software on my computer?**

A. Only if you want to access your data wirelessly. Download and install QUANTOM™ Utility software to access files saved on the QUANTOM Tx™ through a wireless network.