Moxi Z

The Mini Automated Cell Counter

User Manual OS 4.4+

ORFLO

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Introduction

The ORFLO Moxi Z Mini Automated Cell Counter performs cell count and size measurements for particle sizes of 4 – 34 microns (Type M cassette) and 3 – 26 microns (Type S cassette). It also provides an assessment of mammalian culture cell health using a proprietary software algorithm to report the standardized Moxi Population Index (MPI). It combines the gold standard Coulter Principle with a patented thin-film sensor technology to deliver highly accurate and repeatable results in just 8 seconds (Type M cassette) or 15 seconds (Type S cassette).

The instrument is ultra-small and runs on a rechargeable battery, making it ideal for use in a hood. Cell concentration, average cell volume, average cell diameter, and the Moxi Population Index (MPI) are displayed for each sample. Test results are also displayed in the form of a histogram. The Moxi Z unit can store approximately 500 histograms, and if desired, the data may be downloaded to a PC or Mac via a Bluetooth wireless connection or via USB connectivity (v 4.0 or greater).

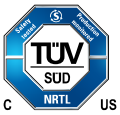
The system is intended for research use only. Not for diagnostic procedures. It has been tested with cell types that are representative of those commonly used.

The Moxi Z Mini Automated Cell Counting system is designed and manufactured by:

Orflo Technologies, a subsidiary of Gemini Bio-Products
P.O. BOX 7438 / 260 Northwood Way
Ketchum, ID 83340
www.gembio.com and www.orflo.com

Symbols Used in This User Guide

The following symbols are used throughout this user guide and/or on product labels. The user is responsible for operating the product in accordance with the indicated requirements:

Symbol / Symbole	Definition / Définition
	Warning alerts you to actions that may cause personal injury or pose a physical threat. La mise en garde vous alerte des actions qui risquent de causer des blessures corporelles ou de constituer une menace physique.
	Do not discard with common solid waste at end of life. Segregate with other waste electrical and electronic equipment (WEEE) and send to an appropriate facility for recycling.
	Affixed in accordance with European Council Directives 2004/108/EC, (electromagnetic compatibility) and 2006/95/EC (safety requirements)
	Safety tested and certified by TÜV SÜD® Product Service Division.

Safety Precautions

Please review and understand the safety instructions below before operating the Moxi Z Cell Counter.

 **WARNINGS:**

- To avoid danger of electric shock, do not install the instrument in an area with a high humidity level, such as a greenhouse or an incubator. Refer to Operating Environmental Conditions in Specifications section.
- Do not touch the USB cable or USB charging adapter with wet hands.
- To avoid a potential shock hazard, choose the correct plug configuration and make sure that the USB cable and USB charging adapter are plugged securely into a properly grounded AC power outlet. Make sure that the connection between the USB cable and the instrument is secure.
- Always ensure that the power supply input voltage matches the voltage available in your location.
- Do not use with flammable or explosive liquids.
- Do not immerse instrument body in liquid, or allow liquid to enter any part of the instrument.

CAUTION:

- Do not expose instrument to vibrations. Vibrations may cause instrument malfunction or damage.
- Do not autoclave or expose to high temperature.
- Use only authorized accessories (universal power adapters, USB cable).
- If the instrument is dropped and broken, disconnect the USB cable and contact Orflo Technologies. Do not attempt to disassemble the instrument.

Consignes de sécurité

Veuillez lire et vous assurer de comprendre les consignes de sécurité ci-dessous avant d'utiliser le compteur Moxi Z Cell.

 **AVERTISSEMENTS :**

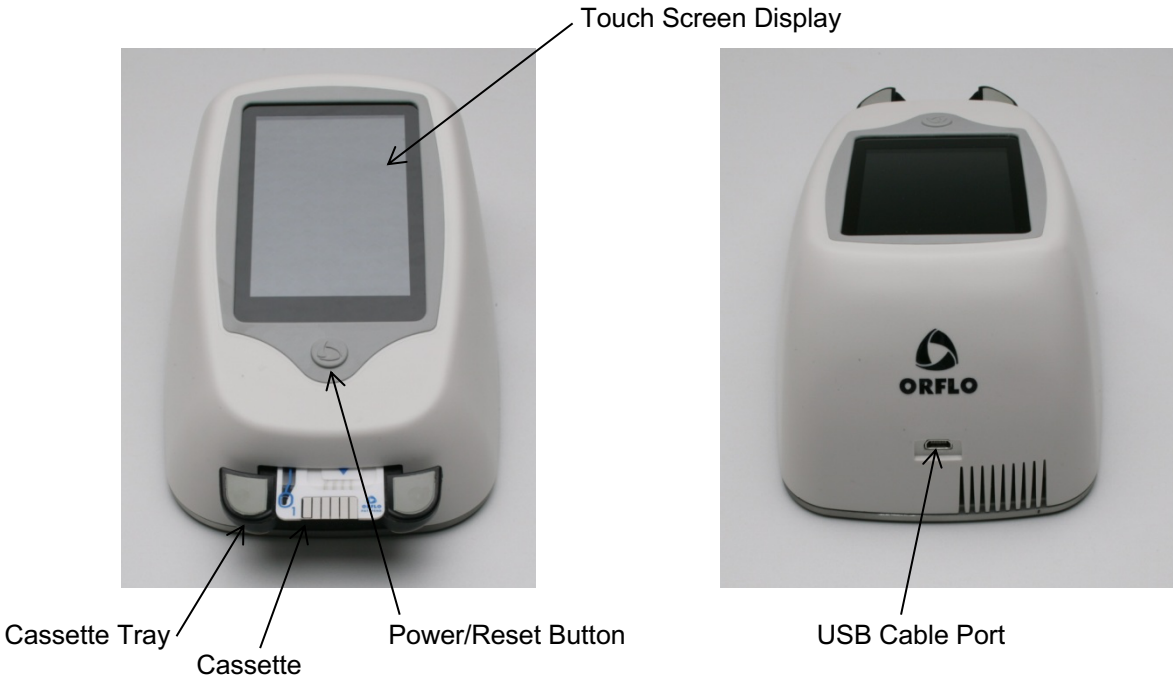
- Afin d'éviter tout danger de choc électrique, ne pas installer l'instrument dans un endroit où le taux d'humidité est élevé, comme dans une serre ou un incubateur. Se reporter à la section sur les spécifications en matière de conditions environnementales d'exploitation.
- Ne pas toucher au câble USB ou à l'adaptateur de charge USB les mains mouillées.
- Afin d'éviter tout risque de choc électrique, choisir la configuration de prise appropriée et s'assurer que le câble USB et l'adaptateur de charge USB sont bien branchés dans une prise de courant CA mise à la terre. S'assurer que la connexion entre le câble USB et l'instrument est bien établie.
- Toujours s'assurer que la tension d'entrée du bloc d'alimentation correspond à la tension disponible dans votre lieu.
- Ne pas utiliser avec des liquides inflammables ou explosifs.
- Ne pas immerger le corps de l'instrument dans du liquide ou permettre à du liquide de pénétrer dans l'instrument.

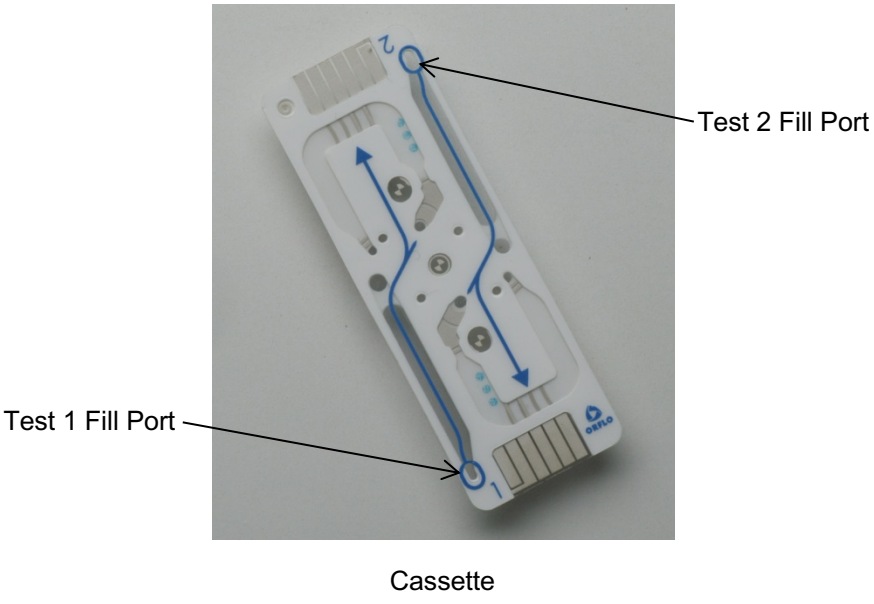
ATTENTION :

- Ne pas exposer l'instrument à des vibrations. Les vibrations peuvent causer le dysfonctionnement de l'instrument ou des dommages à celui-ci.
- Ne pas autoclaver ou exposer à des températures élevées.
- Utiliser uniquement les accessoires autorisés (adaptateurs de courant universels, câble USB).Si l'instrument est échappé et brisé, débrancher le câble USB et communiquer avec Orflo Technologies. Ne pas tenter de désassembler l'instrument.

Moxi Z Mini Automated Cell Counter Kit

The Moxi Z Mini Automated Cell Counter kit includes the Moxi Z instrument, USB Cable, Power Adapter (US and EU versions only), Cassette Dispenser, Calibration Check Beads, and 25 Cassettes (2 tests per cassette).





Cassette

Part	Function
Touch Screen Display	Allows user to interface with instrument. Displays all information needed for operation. Displays test results and histograms with curve fitting, gating, cell volume, concentration, diameter, and Moxi Population Index (MPI).
Power/Reset Button	Turns Moxi Z on and off. **Resets the unit when pressed and held for >10 seconds.**
Cassette Tray	Tray that needs to be pressed down for inserting cassette
USB Cable Port	Connects instrument to USB cable.
Cassette	Disposable used for loading samples. Each cassette contains two ports thereby allowing for two samples to be run per cassette.

Moxi Z Mini Automated Cell Counter Accessories

Cassette Dispenser

USB Cable & Power Adapter

MXA005 Calibration Check Beads

Part	Function
Cassette Dispenser	Stores up to 25 cassettes for convenient dispensing
USB Cable	Connects instrument to PC/Mac or power adapter
Power Adapter (US and EU models only)	Connects USB cable to an AC outlet
Calibration Check Beads	Polystyrene beads for confirming proper system operation and calibration

Installation

The Moxi Z is shipped in a condition ready for initial use with the battery partially charged. If necessary, the battery can be charged by inserting the USB cable into the USB Cable Port and connecting the cable to the power adapter. Insert the plug into an AC outlet (110/220 V). Recharging a fully depleted battery can take 24 hours. The system charges fastest when powered ON and plugged into the AC adapter (not a computer USB port).

Materials Required

Cell sample (diluted and dissociated, if necessary); 75 µL minimum.

Pipette and appropriately sized pipette tips

Sample Preparation Guidelines

1. ***Media Selection***
    - ***a.*** The Moxi Z is designed to run with Phosphate Buffered Saline (PBS). Using osmolarity as a coarse estimator of conductivity: ~300 mOsm is preferred. However, most traditional laboratory formulations of physiological tonicity are sufficient for normal particle mode (e.g. HBSS, and MEM). Small Particle Mode (SPM) should be run with PBS.
    - ***b.*** It is preferable that the media be free of particulate matter that could interfere with the counts of interest. In this regard, sterile solutions that have been filtered at .2 micron are ideal.
    - ***c.*** Solutions with less-conductive additives (e.g. 10% FBS or DMSO) are satisfactory for normal mode but might result in a slight increase in reported diameter due to the additive-induced conductivity change of the solution.

2. ***Generate a single cell suspension of your cell sample in buffer of physiological tonicity (i.e. PBS):***

a. *Adherent Cells*
    i. Detach with suitable dissociation agent in physiological buffer (e.g. StemPro Accutase or Accumax)
    ii. Pipette-triturate detached cell sample to ensure proper cell dissociation
b. *Suspension Cultures*
    i. Triturate sample (if necessary) to break apart cell clusters
    ii. For strongly clustered cells:
        1. Pellet cells (e.g. 250 x g for 5 minutes)
        2. Re-suspend cells in small quantity (e.g. ~4 ml) of dissociation agent (e.g. Accutase)
        3. Let stand at room temperature for 10-30minutes
        4. Pipette-triturate to disrupt cell clusters
c. *Primary Cultures*
    i. Ensure harvested cells are properly dissociated into a single-cell suspension
    ii. Eliminate red blood cell (RBC) contamination. (Density gradient, e.g. Ficoll or Magnetic bead purifications are recommended)
    iii. Remove larger particulate by pipetting sample through a cell strainer (ideally a 40 micron strainer). Incubate at 37°C for several minutes

3. ***Dilute the single cell suspension as appropriate based on the concentration range of the cassette type (Type M or Type S) being used:***
    - Type M cassette: 3,000 – 500,000 cells/ml *(If you don't have a ballpark starting cell density, we suggest a first run with a 10-20x dilution using Orflo Diluent or PBS).*
    - Type S cassette: 3,000 – 1,750,000 cells/ml *(If you don't have a ballpark starting cell density, we suggest a first run with a 5-10x dilution using Orflo Diluent or PBS)*.

4. ***Mix Sample –*** invert tube a several (10x+ recommended) times before pipetting sample to ensure cell homogeneity. Note: Vortexing and shaking are not efficient approaches for dispersing cells.

Using the Moxi Z Automated Cell Counter

Settings

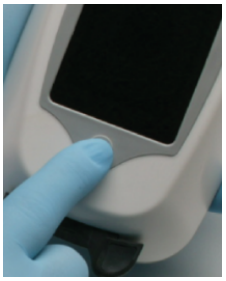
Set the date and time by pressing the **Settings** icon on the main menu of the Moxi Z. Then use the arrow keys and follow the instructions displayed on the screen.

Cell Counting

1. If necessary, dilute a cell suspension with phosphate buffered saline (PBS) or an appropriate diluent so that the cell concentration is within the operating range of the cassette being used (Type M: 3,000 to 500,000 cells/mL, Type S: 3,000 to 1,750,000 cells/ml).

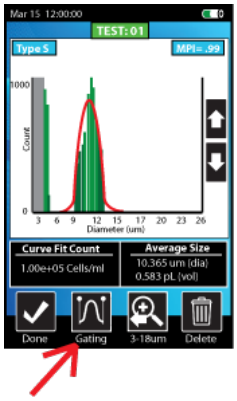
For Type M cassettes, a dilution of 1:5 to 1:20 is recommended for most mammalian cell lines, but the appropriate dilution will depend on cell type and seeding density. Type S cassettes will typically require no to 1:10 dilution depending on cell type and seeding density. The volume required for an accurate count is approximately 75 µL.

2. Turn the Cell Counter on by pressing the power button and the **Home** screen will be displayed.



3. Press the tray down and insert a Cassette into the Moxi Z. The **Pipette 75µL Sample…** screen will be displayed.

4. Pipette a 75 µL sample into the fill port of the cassette (either test 1 or test 2, depending on which end of the cassette was inserted into the instrument).



5. For counting most mammalian cells, touch the screen anywhere to start. For counting very small particles (< 8 µm in diameter), the Moxi Z can be run in **Small Particle Mode (SPM)**. In this mode, Moxi Z sets the diameter scale to 2 to 10 µm as the default and performs the count using optimized parameters for the detection of small cells. Press the **Small Particle Mode < 8 µm** button to initiate the test and run in this mode.

6. The Moxi Z will begin the test and the histogram count results will be complete in approximately 8 seconds (Type M cassette) or 15 seconds (Type S cassette). The Curve Fitting and MPI calculations begin automatically and require only a few additional seconds. The results will then automatically be displayed on the screen. To make **Gating** the default acquisition mode, press the **Curve Fit Count** button to toggle into Gating mode.

Managing the Data

Background

There are two general modes for identifying the cell populations: Curve-fit and Gating. The difference in the gated vs. curve-fit counts is in how the system handles "coincidence" (multiple particles passing though the chamber simultaneously, appearing as one particle).

Gating uses statistics to adjust for multiplets, i.e. as the raw counts are known and the volume of the detection chamber is known, a probability that multiple particles will be in the chamber simultaneously can be predicted/calculated and mathematically adjusted for. The algorithm used by the Moxi Z is one derived from extensive literature on Coulter systems and is similar to that used in other Coulter Principle systems. In gating mode, the user has to manual adjust the left and right gate ranges to include the cell population of interest.

Curve-fitting represents and advancement over that approach in that the system tries to fit a Gaussian curve to the distribution to identify a core "singlet" population. It can then use the mean of the Gaussian to extract the singlet cell volume and determine where doublets and triplets would appear (and adjust the counts accordingly). This is better suited to cells that tend to aggregate and in handling higher concentration values. However, a core assumption is that the cell population is monodisperse (only one cell type is present). For polydisperse samples (e.g. PBMC's), it is necessary to use the gated mode.

Notes:

- *If a singlet population is found by the system, no additional user input (i.e. gating) is required.*
- *The Quality of the Curve-Fit can be qualitately evaluated by how closely the red curve matches the underlying (green) histogram data.*
- *The curve fit isolates the singlet population. Even though counts to the right of that population (i.e. larger particles) are not included in the curve area, they are included in the counts.*

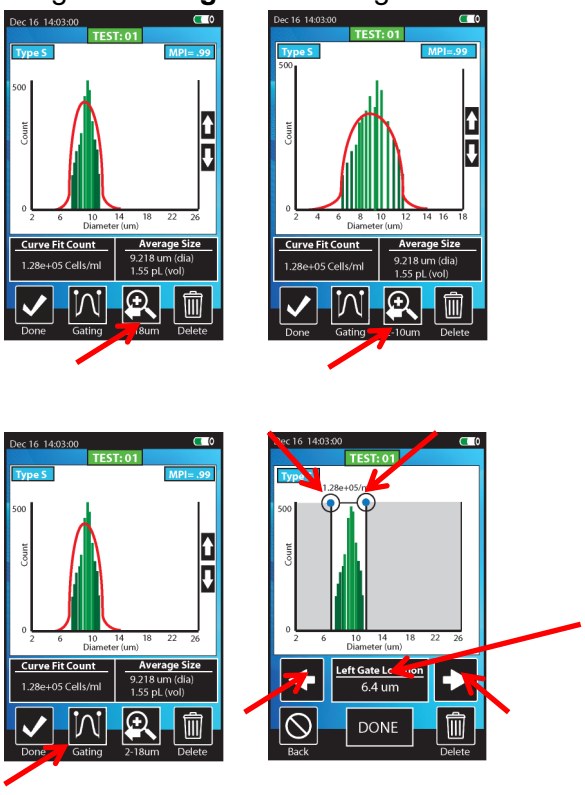
Test Output

1. Except when running in **Small Particle Mode,** the results of a test are initially displayed on a diameter scale of 4-34 µm (Type M cassette) or 3-26 µm (Type S cassette). To Change the x-axis resolution, touch the scaling button (red arrow below). The text below the button indicates the next scale range. Successively pressing the **scaling** icon will cycle the diameter scale through the following ranges:
    a. 4-34, 4-26, 4-20, and 4-10 µm for Type M cassettes
    b. 3-26, 3-18, and 3-10 for Type S cassettes

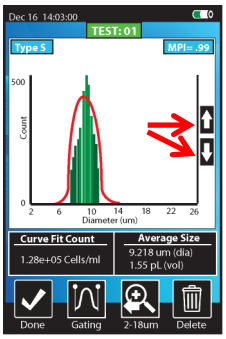
    Notes:

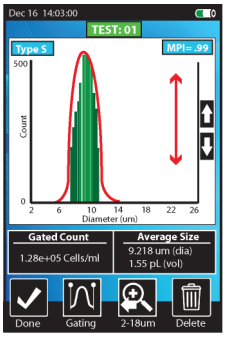
    - ***This feature is only available immediately following a cell count. Touching the Done icon will save the current histogram with the current scale settings.***
    - ***Scaling is "Sticky." I.e. Once a test is saved at a particular scale range, all future tests will be initially displayed at that range (even after rebooting the system). To change that default, a new test must be run, the data rescaled to the desired range, and the test saved.***

2. The histogram can also be gated manually by touching the **Gating** icon. Gating markers can then be positioned as desired by touching and dragging each blue gating marker independently or by tapping the blue gating markers and using the arrows to adjust the gating ranges. Switching between left and right gates can be accomplished by touching the middle black box (with text "Right (or left) gate location") between the gating arrows. Only the cells between the markers are counted. **Auto Gating** to a particular peak can be accomplished by toughing the display in the proximity of the desired histogram peak. Touching the **CurveFit icon** will return the display to curve fit mode.

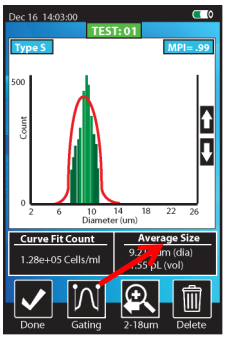


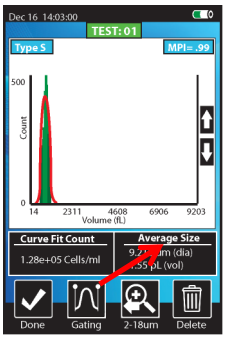
3. Use the arrows to the right of the histogram to change the vertical scale of the histogram. The vertical scale can also be changed by vertically swiping a finger on the display up (to increase) or down (to decrease).





4. Tap the “Average Size” black box to toggle between diameter (μm) and volume (fL) scales.

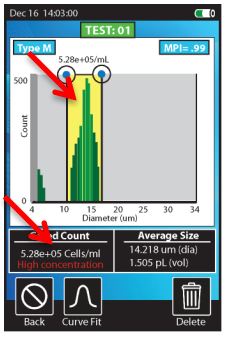


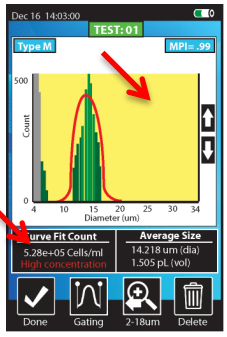


5. Press the **Delete** icon at any time to permanently delete the results of the test.

6. Press the **Done** icon to save the results and return to the **Home** screen.

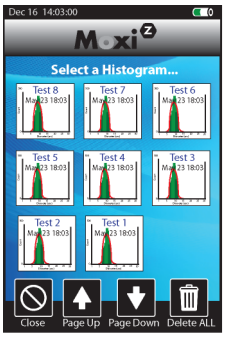
*Note: If the **total** particle count of the test exceeds the concentration range of the cassette being used (Type M: 500,000 cells/ml, Type S: 1,750,000 cells/ml) then a warning will be provided in the form of yellow background and red “High Concentration” text in the counts box (see arrows).*



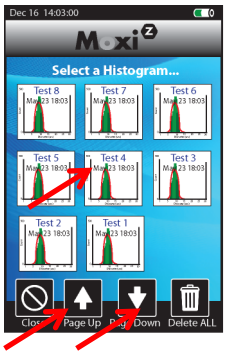


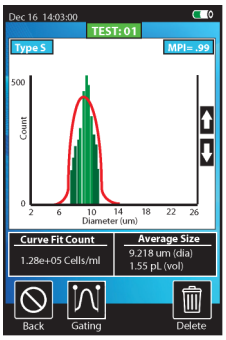
Retrieving and Deleting Data

1. To open a saved test, press the Histogram icon on the **Home** screen.

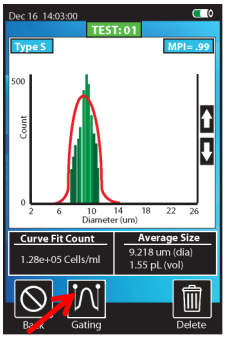


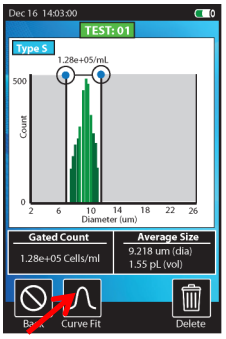
2. Icons for up to nine saved histograms will be displayed on the screen. Press the appropriate icon for the test of interest or press the **Page Up** or **Page Down** icon to view more test results.



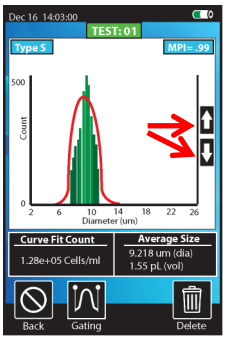


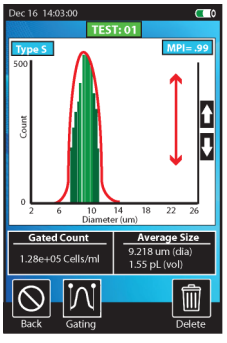
3. Each histogram will be opened in either the **Curve Fit Count** mode or **Gated Count** mode, depending on how it was saved. In **Gated Count** mode, gating markers can be positioned as desired by sliding each blue gating marker independently. **Auto Gate** by touching on the desired peak. Toggle between the **Gated Count** and **Curve Fit Count** modes by pressing the button indicated by the red arrow.



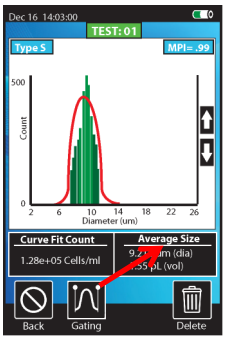


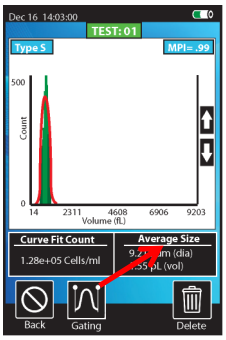
4. Use the arrows to the right of the histogram to change the vertical scale of the histogram. The vertical scale can also be changed by vertically swiping a finger on the display up (to increase) or down (to decrease).



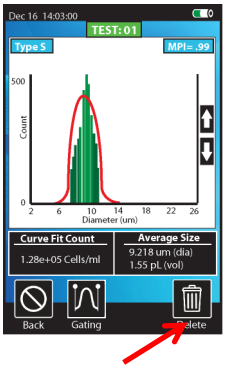


5. Tap the “Average Size” black box to toggle between diameter (μm) and volume (fL) scales.

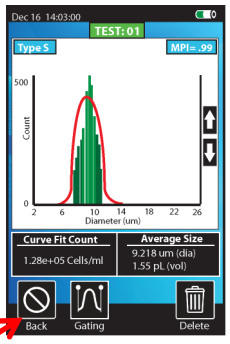


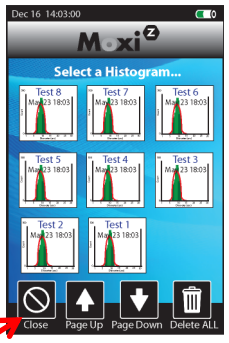


6. Press the **Delete** icon to permanently delete the results of the test.



7. Press the **Back** icon to close the test results and return to the **Histogram viewer** screen. Press the **Close** icon to return to the **Home** screen. (note: changes to histogram view will not be saved)





Moxi Z Performance Test Using Calibration Check Beads

A 5 mL sample of Calibration Check Beads (Cat. No. MXA005) is included with each MOXI Z Automated Cell Counter. The calibration check beads consist of polymer microspheres of a known size in solution at a known concentration. The beads can be used to test the system as well as for practice and troubleshooting. For a certificate of analysis (COA) for the beads, please email Orflo Technical Support (tech_support@orflo.com) with your bead lot number.

For best results, follow the Moxi Z System Check Bead Protocol. This procedure describes the use of ultrasonication and vortexing to disrupt bead adhesion to the container walls. And, it describes the use of inversion mixing of the bottle as the only consistent way to disperse the beads, ensuring homogeneity. These steps should be followed before use. Load a 75 µL sample using the standard procedure described in the section entitled **Cell Counting** (page 8). The particle diameter and concentration results recorded by the Moxi Z should be approximately equivalent to that specified on the label of the calibration check bead bottle. If the results differ significantly, repeat the test. If repeated tests continue to generate discrepant results, contact your distributor or ORFLO Technologies for assistance.

It is recommended that calibration tests are run at 25ºC. For long-term storage, the Calibration Check Beads should be stored at 2-8ºC. Avoid freezing.

Moxi Z Help

1. For help with operation of the Moxi Z, press the Help icon on the **Home** screen. Visual instructions for inserting a cassette will be presented.

2. Press the **Next** icon to view the next visual instruction that demonstrates how to pipette a sample into the cassette.

3. Press the **Next** icon to proceed to the next instruction screen or press the **Previous** icon to return to the previous screen.

4. Press the **Done** icon to exit the help screens and return to the **Home** screen.

   For additional help, see the **Troubleshooting** table (page 18).

Connecting to Moxi Z via USB (requires Moxi Z OS v4.0 or greater)

1. Unplug the USB cable from the Moxi Z power adaptor.

2. Plug the wide end of the cable into your computer's USB port.

3. Plug the small end of the cable into the back of the Moxi Z

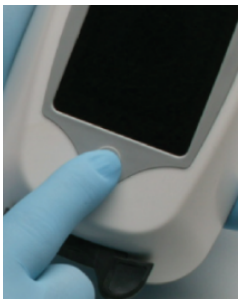
4. Make sure the Moxi Z is powered on and wait for the Moxi Z to appear as a disk (or flash) drive in your computer's file system (File/Windows Explorer for PC's or Finder for Mac). Note: Upon power-up, the Moxi Z will display a notification on the home screen that it is "Exporting files to disk" (see image). The Moxi Z disk will be mounted to (appear as a drive on) the computer following completion of this file export process.

5. Open the Moxi Z drive folder and copy the files to your computer (drag and drop or copy and paste)

Updating Moxi Z Firmware via USB (requires Moxi Z OS v4.0 or greater)

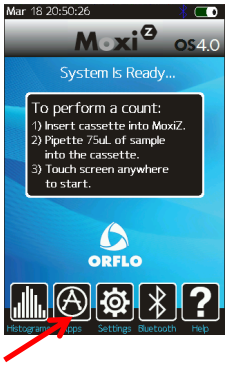
The Moxi Z firmware can be updated through a USB connection. For this method of update, the user must connect the Moxi Z to the computer's USB port via the provided cable. (Note: The cable is part of the AC power adaptor). Unplug the power adapter to expose the USB connector for the computer. Next, the user needs to put the Moxi Z into a firmware update mode. This can be done in either of the following two ways:

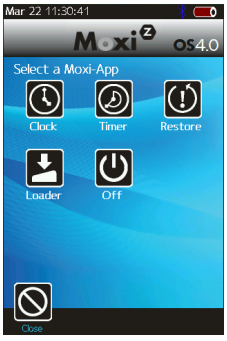
With the unit powered off, quickly press the power/reset button 4-5 times. When successful, the black Moxi Z "OS Loader" screen will display with text under the Moxi Z logo that indicates the system is in firmware update mode. If unsuccessful, turn the power off and retry.



Plug the system into your computer. The system should appear as an external drive (same as a flash drive). The firmware files can then be cut-and-paste or drag-and-dropped to that drive. Following copying of the files, safe eject the system from the computer and touch "OK" on the Moxi Z screen to start the firmware load. The system will shut off automatically when completed.

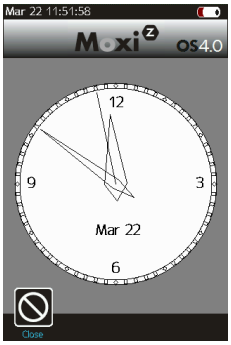
Moxi Apps

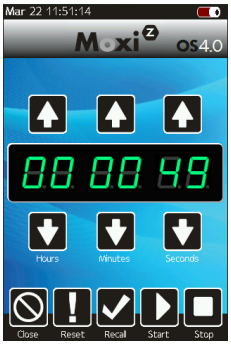




Moxi Z applications can be entered from touching the **Apps** icon on the home screen. Included applications in version 4.4 are:

- Clock
- Programmable timer (with sound notification)
- Restore – restores unit to factory settings
- Loader – Puts unit is Firmware/OS loader mode
- Off – powers the unit off.





Troubleshooting

Symptom	Cause	Corrective Action
Questionable concentration	Concentration of cell sample is too high or too low	Make sure concentration of cell sample is within recommended guidelines. Refer to Sample Preparation Guidelines section.
	Wrong diluent	Use a diluent that is compatible with cells being counted. PBS (e.g. GIBCO 10010023) or equivalent
	Cell clumping	Ensure the cells are in a single-cell suspension. Break clumps by pipetting up and down with a standard pipette. ORFLO recommends Accutase, Accumax, or equivalent.
Questionable cell diameter	Wrong diluent	Use a diluent that is compatible with cells being counted. PBS (e.g. GIBCO 10010023) or equivalent
	Cell clumping	Ensure the cells are in a single-cell suspension. Break clumps by pipetting up and down with a standard pipette. ORFLO recommends Accutase or equivalent.
Peak of interest indistinct	Cell concentration too low	Try running the cell sample at a higher concentration. Refer to Managing the Data section for instructions on adjusting the Y-axis.
	Cells not viable	
Instrument stops responding	Internal firmware issue due to instrument malfunction or high level of external interference	Reset instrument by pressing and holding the power button for at least 5 seconds. If problem persists, return instrument for service.
Battery will not fully charge	Battery is faulty or has surpassed its service life	Return instrument for battery replacement
Incomplete Test	Insufficient fluid (<75 µL)	Adjust pipette to ensure sufficient volume for the test. For improperly calibrated pipettes, this might require a setting > 75 µL
	Cells too large	Make certain that the cell type is within the specified size range of the cassettes being used
	Highly/strongly aggregated cells clogging filter and blocking flow	Try breaking apart cells using pipette trituration and/or protease treatment.

Error/Warning Messages --- **Messages d'erreur/de mise en garde**	**Cause** --- **Cause**	**Corrective Action** --- **Mesure corrective**
Lost start	Sample volume too small or air bubble in test cassette	Make sure sample volume is 75 µL.
Lost sensor - detect	Sensor not properly inserted into cell counter	Do not remove cassette from Cell Counter before completion of counting cycle. Ensure cassette is properly inserted.
Warning High Concentration --- Mise en garde - concentration élevée	Concentration of cell sample is too high --- La concentration de l'échantillon de cellules est trop élevée	Make sure concentration of cell sample is within recommended guidelines. Refer to General Guidelines section. --- S'assurer que la concentration de l'échantillon de cellules se situe dans la fourchette recommandée. Se reporter à la section « Recommandations générales ».
Start open Stop open Start/stop short Electrode short	Issue detected upon test cassette insertion	Reinsert sensor. If problem persists, return instrument for service.
Used cassette	Previously used sensor detected	Do not reuse sensors.
Low battery	Battery needs to be recharged	Recharge instrument overnight and/or use instrument with AC power.
Disk full	Instrument has exceeded maximum storage capacity of ~500 histograms	Delete histograms or download to computer.
Disk now full	After histogram is recorded and saved, there is no more space on the disk drive	Delete files.
Unhandled exception	Internal firmware issue due to instrument malfunction or high level of external interference	Clear error by turning instrument off and then on again. Remove cell counter from sources of external interference. If problem persists, return instrument for service.
SPI timeout	Instrument malfunction	If problem persists, return instrument for service.
Corrupt filesys	Instrument malfunction	If problem persists, return instrument for service.
Defaults loaded	Instrument has detected corruption or new version of firmware and reset all settings to factory defaults	If problem persists, return instrument for service.
False start False stop	Sensor malfunction	Use new sensor.

Error/Warning Messages ---------- Messages d'erreur/de mise en garde	Cause ---------- Cause	Corrective Action ---------- Mesure corrective
Incorrect x-axis scale range	Small Particle Mode selected	User touched the black "Small Particle Mode <8 µm" box to start the test. Re-run test touching the main part of the start screen.
	User rescaled test	Tests can only be rescaled immediately after the run. If it is immediately after a run, the user can cycle through the scale ranges by pressing the scale range icon (see "Managing your data" section)
	Type S cassette run on Moxi Z Firmware 3.5 or earlier	Upgrade Moxi Z system firmware to v3.6 or later

Maintenance and Storage

Storage

Store the Moxi Z Cell Counter and Moxi Z Test Cassettes at room temperature in a dry environment.

Avoid exposure to ultraviolet light as it may discolor and/or damage the instrument.

Charging the Battery

The Moxi Z Automated Cell Counter contains a 3.7 V lithium ion battery which can be charged for approximately 500 cycles. The battery may be charged at any time in the discharge cycle and can be charged continuously without damage, using a PC/Mac or the power adapter. Refer to the Installation section for information on how to charge the battery.

CAUTION: To prevent battery damage, use ONLY the specified power adapter (Cat. No. MXA002 or MXA003) or the USB port of a computer.

MISE EN GARDE : Pour éviter d'endommager la pile, utiliser UNIQUEMENT l'adaptateur spécifié (Réf. n^{o} MXA002 ou MXA003) ou le port USB d'un ordinateur.

The battery life is typically 5+ years depending on use. Lithium ion batteries discharge even if they are not in use. To prevent battery damage from self-discharge, charge the battery at least once every two months.

Cleaning/Sanitizing

The Moxi Z Cell Counter is **NOT** autoclavable. Extreme heat will damage the battery, touch screen display, and other electronic components.

The external surfaces of the Moxi Z Cell Counter body and touch screen display can be sanitized by wiping with a soft, nonabrasive cloth moistened with 70% isopropyl alcohol (IPA) or 70% ethanol. Do not clean the instrument with any more aggressive solutions.

CAUTION: When sanitizing, make certain that no liquid enters any internal cavities of the instrument.

MISE EN GARDE : Lors de la décontamination, s'assurer qu'aucun liquide ne pénètre dans les cavités internes de l'instrument.

Maintenance

There is no routine maintenance required for the Moxi Z Automated Cell Counter. In addition, there are no user serviceable parts. Instrument repairs must be carried out by authorized personnel only.

Specifications for the Moxi Z Automated Cell Counter

Performance

Sample Volume Required	75 µL
Dynamic Range	
Particle Sizes	4 - 34 µm diameter (Type M cassette) 3 - 26 µm diameter (Type S cassette)
Particle Volume	34 – 20,580 fL(Type M cassette) 14 - 9,203 fL (Type S cassette)
Cell Concentration	3,000 - 500,000 cells/mL (Type M cassette) 3,000 - 1,750,000 cells/ml (Type S cassette)
Test Time	8 seconds (Type M cassette) 15 seconds (Type S cassette)
Health assessment for mammalian cultures	Moxi Population Index (MPI)

Moxi Z Firmware (OS)	Version 4.4 (as of 12/27/2017) Version 4.3 or greater required for Type S cassettes

Dimensions

Length	7.6 in. (19.3 cm)
Width	4.3 in. (13.5 cm)
Height	2.8 in. (7.1 cm)
Weight	1.5 lbs (680 g)

Electrical Specifications

Internal Battery	Rechargeable 3.7 V, 4500 mAh lithium ion battery
AC Power Adapters (US and EU types)	Input: 100-240 VAC (50/60 Hz), 0.2 A Output: 5 V, 1 A CE certified

Operating Environmental Conditions

Temperature	15-30°C
Maximum Relative Humidity	20-80% (non-condensing)

Moxi Z Cassette Specifications (Type M and Type S)

Material	Polyester
Aspiration Volume	75 µL
Dimensions	Length: 3.3 in. (8.4 cm) Width: 1.2 in. (3.0 cm) Height: 0.035 in. (0.90 mm)
Weight	0.1 oz. (2.3 g)

Ordering Information

This section lists catalog numbers for the Moxi Z Automated Cell Counter and related products. You can purchase Orflo products through a regional distributor or on-line at www.orflo.com. See the Technical Assistance section for information about contacting Orflo.

Product Description	Cat. No.	Quantity/Pack
Moxi Z Mini Automated Cell Counter Kit, U.S. Version. (includes Cell Counter, Cassette Dispenser, USB Cable, USB Power Adapter, Calibration Beads, Cassettes (25/pk), and flash drive with software and manual.	MXZ001	1
Moxi Z Mini Automated Cell Counter Kit, E.U. Version. (includes Cell Counter, Cassette Dispenser, USB Cable, USB Power Adapter, Calibration Beads, Cassettes (25/pk), and flash drive with software and manual.	MXZ002	1
Moxi Z Mini Automated Cell Counter Kit, International Version. (includes Cell Counter, Cassette Dispenser, USB cable, Calibration Beads, Cassettes (25/pk), and flash drive with software and manual.	MXZ003	1
Cassettes, Type M	MXC001 MXC001-25 MXC001-50 MXC001-75 MXC001-100	25/pk (50 tests) 25 x 25/pk (1250 tests) 50 x 25/pk (2500 tests) 75 x 25/pk (3750 tests) 100 x 25/pk (5000 tests)
Cassettes, Type S	MXC002 MXC002-25 MXC002-50 MXC002-75 MXC002-100	25/pk (50 tests) 25 x 25/pk (1250 tests) 50 x 25/pk (2500 tests) 75 x 25/pk (3750 tests) 100 x 25/pk (5000 tests)
Cassettes, Type M Sterile	MXC003 MXC003-100	25/pk (50 tests) 100 x 25/pk (5000 tests)
Cassettes, Type S Sterile	MXC004 MXC004-100	25/pk (50 tests) 100 x 25/pk (5000 tests)
Cassette Dispenser	MXA001	1
USB Cable and Power Adapter (US version)	MXA002	1

USB Cable and Power Adapter (EU version)	MXA003	1
Calibration Check Bead Kit (5 mL)	MXA005	1
ORFLO Diluent (100 ml)	MXA006	1
USB Power Cable	MXA007	1

Technical Service

For technical service, contact ORFLO Technologies at 855-TRY-MOXI (855-879-6694, option 1) or email us at tech_support@orflo.com.

Warranty

ORFLO Technologies ("Orflo") warrants that its products will meet their applicable published specifications when used in accordance with their applicable instructions for a period of one year. **ORFLO MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED. THERE IS NO WARRANTY OR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.** The warranty provided herein and the data, specifications, and descriptions of Orflo products appearing in Orflo's product literature may not be altered except by expressed written agreement signed by an officer of Orflo. Representations, oral or written, which are inconsistent with this warranty or such publications are not authorized and if given, should not be relied upon.

In the event of a breach of the foregoing warranty, Orflo's sole obligation shall be to repair or replace, at its option, the applicable product or part thereof, provided the customer notifies Orflo promptly of any such breach. If after exercising reasonable efforts, Orflo is unable to repair or replace the product or part, then Orflo shall refund to the customer all monies paid for such applicable product or part. **ORFLO SHALL NOT BE LIABLE FOR CONSEQUENTIAL, INCIDENTAL, SPECIAL, OR ANY OTHER DAMAGES RESULTING FROM ECONOMIC LOSS OR PROPERTY DAMAGE SUSTAINED BY ANY CUSTOMER FROM THE USE OF ITS PRODUCTS.**

Applicable Patents

The following core patents apply to the Moxi Z and cassettes. This is not intended to be an all-encompassing list of related patents.

- U.S. Patent # 7,520,164
- U.S. Patent # 8,171,778
- U.S. Patent # 8,182,635
- U.S. Patent # 8,608,891
- U.S. Patent # 9,293,311