

Moxi^z

The Mini Automated Cell Counter
User Manual **OS**4.0



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Introduction

The ORFLO Moxi Z Mini Automated Cell Counter performs cell count and size measurements for particle sizes of 4 – 25 microns (Type M cassette) and 3 – 20 microns (Type S cassette). It also provides an assessment of mammalian culture viability 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).




The system is intended for research use only and 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 DBA of E.I. Spectra, LLC
130 Airport Circle
Hailey, ID 83333
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 :

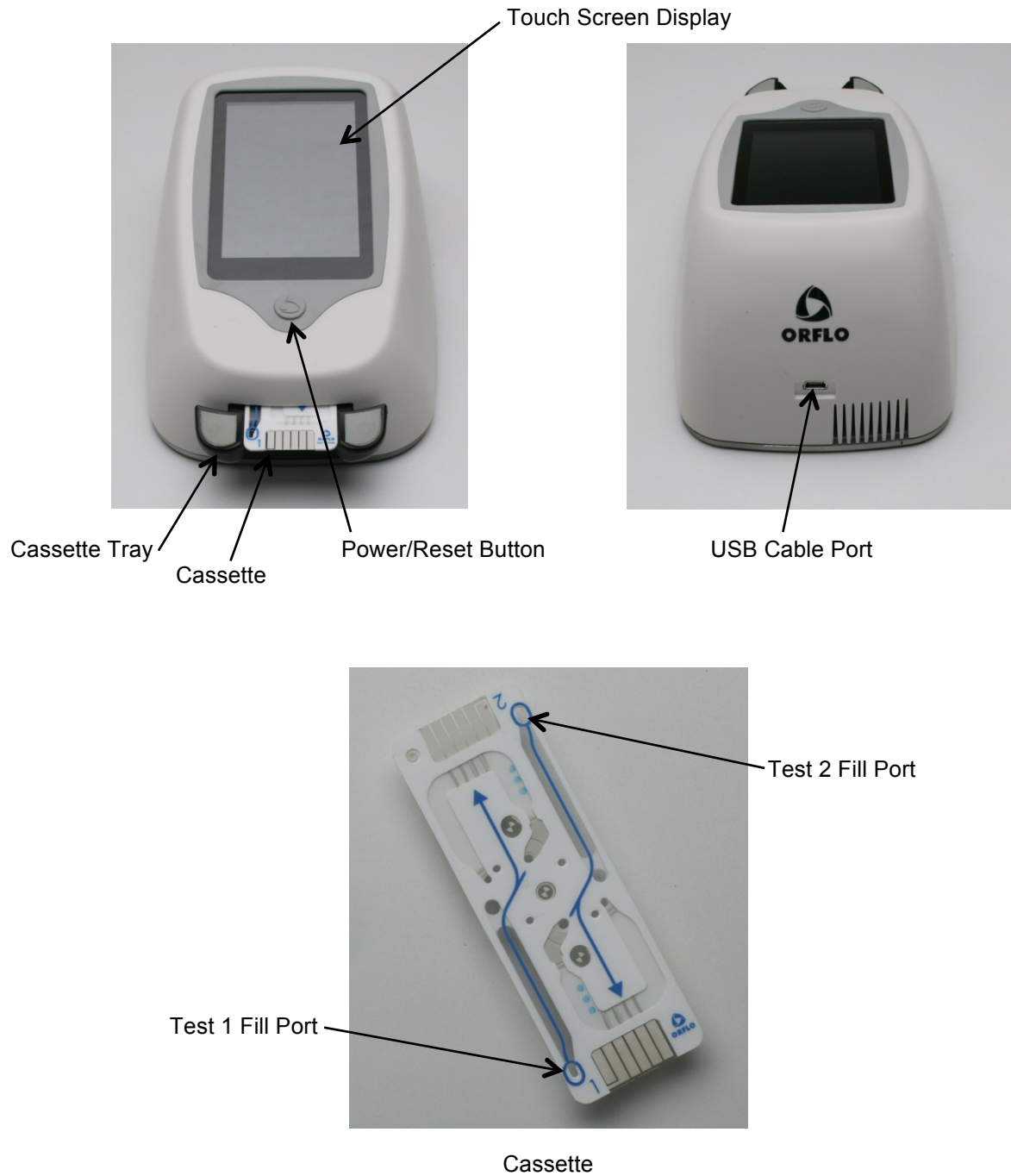
- Afin d'éviter tout danger de choc électrique, ne pas installer l'instrument dans un endroit où le taux d'humidité est élevé, comme dans une serre ou un incubateur. Se reporter à la section sur les spécifications en matière de conditions environnementales d'exploitation.
- Ne pas toucher au câble USB 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, USB Flash Drive with software/user guide and 25 Cassettes (2 tests per cassette).



<u>Part</u>	<u>Function</u>
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 >5 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



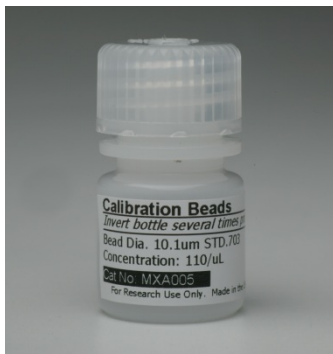
Cassette Dispenser



USB Cable & Power Adapter



USB Flash Drive with software



Calibration Check Beads



Electronic Calibration Cassette (sold separately)

<u>Part</u>	<u>Function</u>
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
USB Flash Drive	Stores Moxi Z software and user manual
Calibration Check Beads	Polystyrene beads for confirming proper system operation and calibration
Electronic Calibration Cassette (sold separately)	Electronic cassette for verifying 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 a computer or power adapter. If using a power adapter, insert the plug into an AC outlet (110/220 V). The battery will be fully charged in approximately four hours.

Note: For optimal cell counting results, perform cell counts with the USB cable disconnected. Although the unit may be operated using AC power, this mode may cause undesirable electrical noise which could result in less accurate small particle counting results and may affect the MPI. When not in use, the Moxi Z should be connected to a charging source so that the battery will maintain a continuous charge and be ready for immediate use. If a low battery warning appears on the display, stop using the instrument and charge the battery or operate the Moxi Z using an AC power source.

General Guidelines

The Moxi Z Mini Automated Cell Counter is used with Moxi Z Cassettes. Refer to the Specifications section for information on the operating ranges for the system.

The sample volume for a test should be 75 µL.

If necessary, prepare dilutions of the sample using ORFLO Diluent (Cat. No. MXA006) or a diluent compatible with the characteristics of the cells. The diluent used should not cause changes in the cell size and should have sufficient conductivity to enable operation of the instrument. Water, hypotonic, or hypertonic solutions are **not** acceptable diluents.

Notes: Detergents may interfere with cell counting.

Additives such as DMSO or serum, will alter solution conductivity and will result in corresponding changes of measured particle size.

Unfiltered media can contribute real particle counts that, depending on size, can overlap and alter cell counts.

Materials Required

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

Pipette and appropriately sized pipette tips

Using the Moxi Z Automated Cell Counter

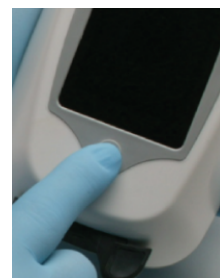
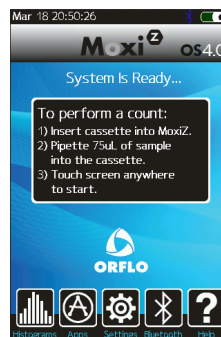
Settings

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 ORFLO Diluent 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 2,500,000 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 1:2 dilution depending on cell type and seeding density. The volume required for an accurate count is approximately 75 μ L.



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 75 μ L Sample...** screen will be displayed.



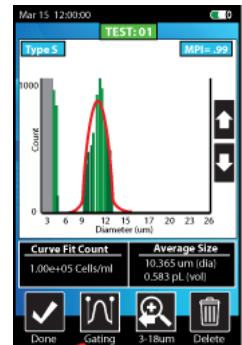
- Pipette a 75 μL sample into the fill port of the cassette (either test 1 or test 2, depending on which end of the cassette was inserted into the instrument).



- For counting most mammalian cells, touch the screen anywhere to start. For counting very small particles ($< 8 \mu\text{m}$ 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 $< 8 \mu\text{m}$** button to initiate the test and run in this mode.



- 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

We have found, based on a considerable amount of particle counting research, that using a curve-fitting approach to determine cell counts provides better count results than does a simple gating method. Using a simple gating mode will often result in counts that deviate from “true” counts, particularly at higher concentrations. This is due to the occurrence of “coincidence” events or the simultaneous arrival of two or more particles/cells in the sensing chamber. A coincidence event, despite the presence of multiple particles/cells, is electrically registered as a single spike or count event. Moxi Z has a proprietary software algorithm based on curve-fitting that adjusts for these coincidence events to determine the “true” count in the sample. Data has shown that the Moxi Z coincidence correction algorithm generates

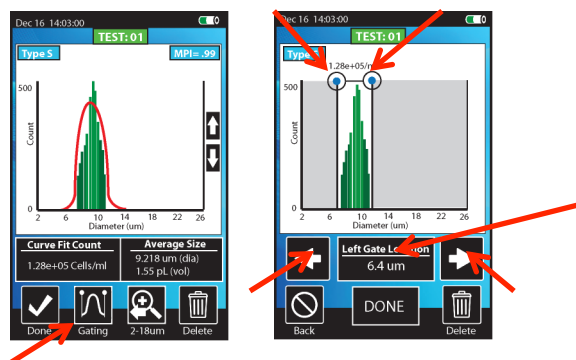
counts that closely correlate to that of the Coulter Z2 which has been widely-regarded as the gold standard in counting technologies. Moxi Z gating-mode does implement elements of the Moxi Z coincidence correction algorithm, but without the full curve-fitting technique, it does not achieve quite the same level of accuracy. As a result, Orflo recommends the use of the curve-fitting count mode over gating mode whenever possible in order to generate the “true” cell count.

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

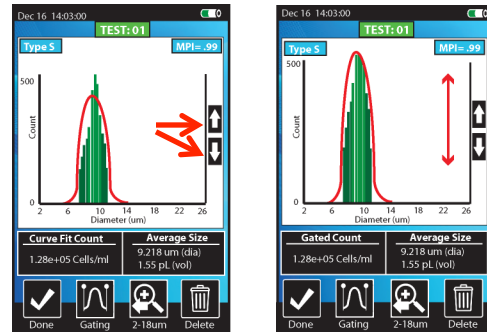
Note: This feature is only available immediately following a cell count. Touching the **Done** icon will save the current histogram with the current scale settings.



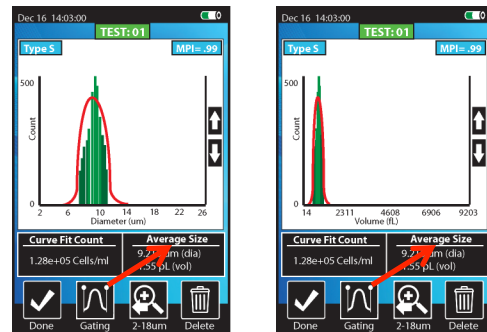
2. The histogram can also be gated manually by touching the **Gating** icon. Gating markers can then be positioned as desired by touching and dragging each blue gating marker independently or by tapping the blue gating markers and using the arrows to adjust the gating ranges. Switching between left and 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 touching the display in the proximity of the desired histogram peak. Touching the **CurveFit** icon will return the display to curve fit mode.



- 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).

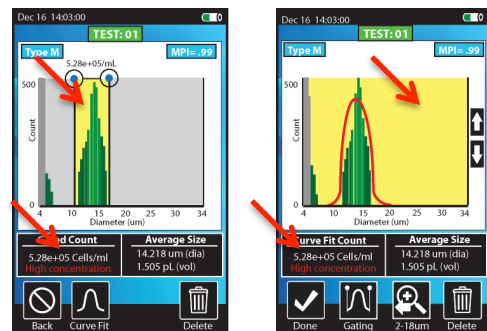


- Tap the “Average Size” black box to toggle between diameter (μm) and volume (fL) scales.



- Press the **Delete** icon at any time to permanently delete the results of the test.
- 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: 2,500,000 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).*

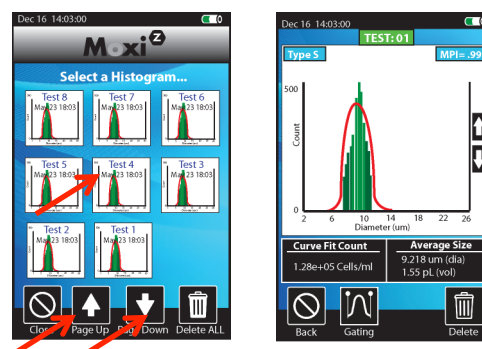


Retrieving and Deleting Data

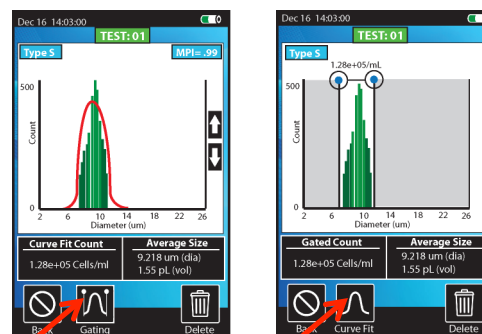
1. To open a saved test, press the Histogram icon on the **Home** screen.



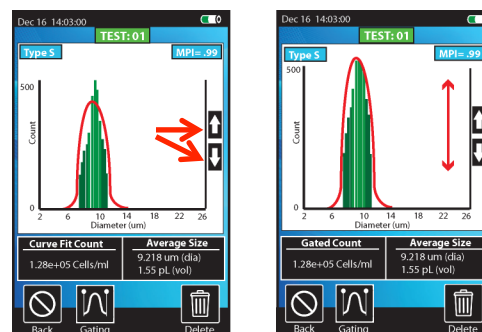
2. Icons for up to nine saved histograms will be displayed on the screen. Press the appropriate icon for the test of interest or press the **Page Up** or **Page Down** icon to view more test results.



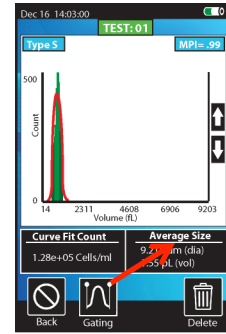
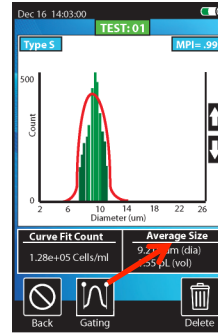
3. Each histogram will be opened in either the **Curve Fit Count** mode or **Gated Count** mode, depending on how it was saved. In **Gated Count** mode, gating markers can be positioned as desired by sliding each blue gating marker independently. **Auto Gate** by touching on the desired peak. Toggle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



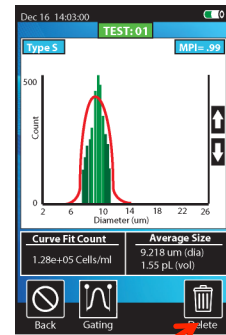
4. Use the arrows to the right of the histogram to change the vertical scale of the histogram. The vertical scale can also be changed by vertically swiping a finger on the display up (to increase) or down (to decrease).



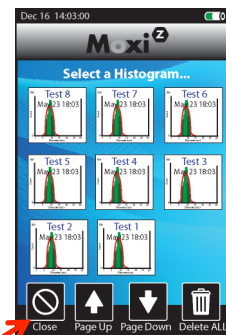
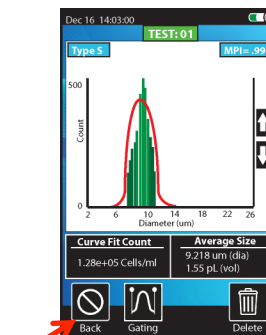
5. Tap the “Average Size” black box to toggle between diameter (μm) and volume (fL) scales.



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

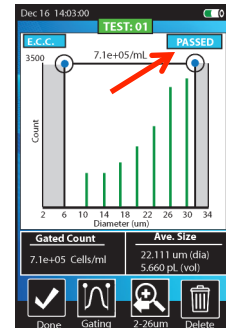
A 5 mL sample of Calibration Check Beads (Cat. No. MXA005) is included with each MOXI Z Automated Cell Counter. The calibration check beads consist of polymer microspheres of a known size in solution at a known concentration. The beads can be used to test the system as well as for practice and troubleshooting.

For best results, invert the bottle containing the calibration check beads several times immediately before use. Load a 75 μ L sample using the standard procedure described in the section entitled **Cell Counting** (page 7). 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. Alternatively, Moxi Z performance can be evaluated using the Electronic Calibration Cassette (sold separately) which may be helpful in cases where you suspect the calibration check beads have become contaminated. Use of the Electronic Calibration Cassette is described in the next section (see page 14).

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

Moxi Z Performance Test Using Electronic Calibration Cassette

The Electronic Calibration Cassette (Cat. No. MXA004) is an optional accessory that can be used to verify proper operation of the MOXI Z. Simply insert the Electronic Calibration Cassette (ECC) into the MOXI Z and the test will begin automatically. The ECC will generate data that simulates various cell sizes and concentrations. Upon completion of the test, a pass or fail result will be displayed as shown. If repeated tests continue to generate a failed result, contact your distributor or ORFLO Technologies for assistance.



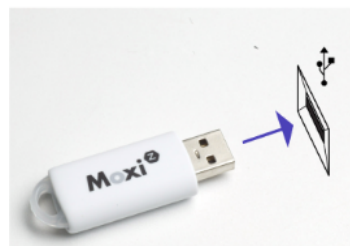
Moxi Z Help

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.

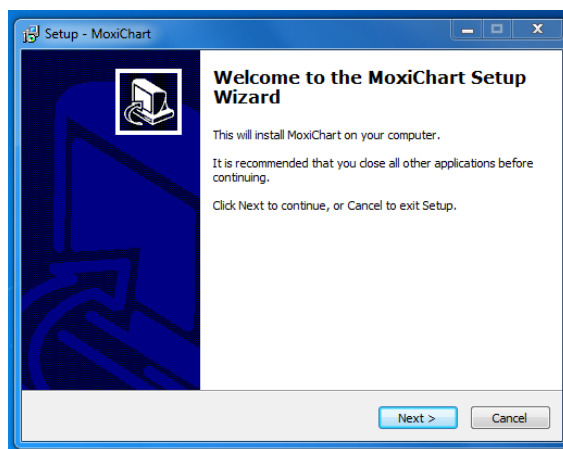
For additional help, see the **Troubleshooting** table (page 20).

Installing MoxiChart Software on a PC

1. Insert Moxi Z flash drive into a USB port on your computer.

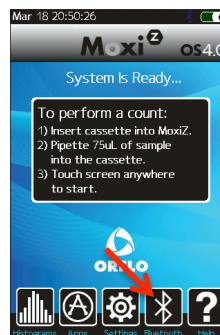


2. If prompted to run **MoxiChart Install**, click **YES** and follow the on screen instructions. Otherwise, open ORFLO DISK folder and double click on the file **MoxiChart_Win_Install.exe**. Complete the setup by following the instructions of the MoxiChart Setup Wizard.



Connecting to Moxi Z via Bluetooth with a PC

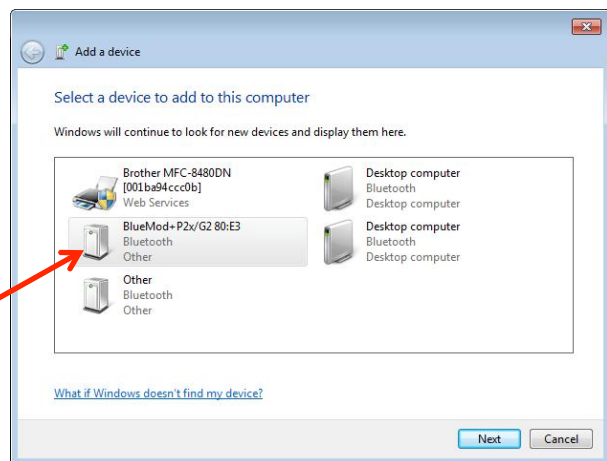
1. Press the **Bluetooth** icon to display the unit's Bluetooth I.D.



2. Run **MoxiChart** application and click on Bluetooth icon in upper right corner.



3. If the screen to the right is displayed, simply choose the device that corresponds to the Moxi Z.



4. If a Moxi Z unit is not detected (above screen is not displayed), your Bluetooth radio most likely requires Bluetooth device pairing (Windows) and, on Windows XP systems, a Bluetooth serial port connection to be established. As this process is specific to each Bluetooth manufacturer, please follow their instructions to set this connection up. Once established, MoxiChart will automatically connect to that device on clicking the Bluetooth icon (no device selection required).
5. Select a folder to upload data files to.

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

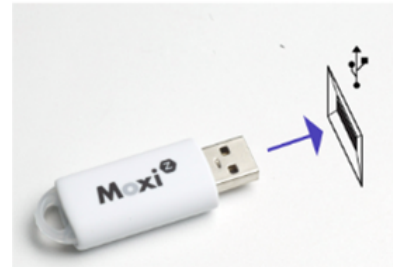
1. Unplug the USB cable from the Moxi Z power adaptor.
2. Plug the wide end of the cable into your computer's USB port.
3. Plug the small end of the cable into the back of the Moxi Z
4. Make sure the Moxi Z is powered on and wait for the Moxi Z to appear as a disk (or flash) drive in your computer's file system (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)

Installing MoxiChart Software on a Mac

1. Insert Moxi Z flash drive into a USB port on your computer.



2. Open the folder for the USB drive.
3. Double click on the on the file **MoxiChartInstaller.dmg**
4. Drag and drop **MoxiChart** into your applications folder.



5. From the applications folder, select **MoxiChart** to launch the application.

Connecting to Moxi Z via Bluetooth with a Mac

The procedure for connecting Moxi Z via Bluetooth with a Mac is the same as that for a PC. See the section entitled “Connecting to Moxi Z via Bluetooth with a PC” on pages 15-16.

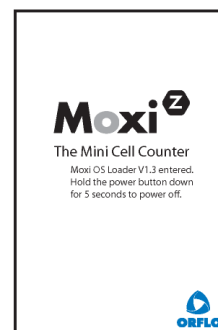
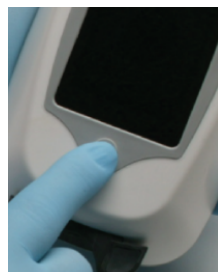
Instrument Firmware and Software Upgrades

This User Manual describes OS version 4.0 of the Moxi Z Automated Cell Counter firmware. The Moxi Z firmware and software may be updated periodically. For information on the most up-to-date firmware and software, contact ORFLO Technologies at www.orflo.com. Register your instrument in order to receive notification about relevant firmware and software upgrades.

Updating Moxi Z Firmware via Bluetooth (Moxichart)

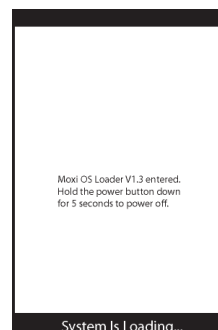
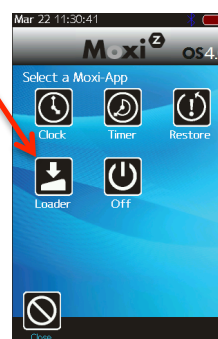
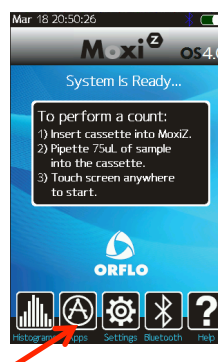
The Moxi Z firmware can be updated through a Bluetooth connection. The user first needs to put the Moxi Z into a firmware update mode. This can be done in either of the following two ways:

With the unit powered off, quickly press the power/reset button four times. When successful, the white Moxi Z 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.



OR:

Alternatively in v4.0 (or greater), the firmware update mode can be entered from the Applications screen. From the home screen touch the **Apps** icon and then touch the **Loader** icon. If successful a white, "System is loading..." screen and the system is ready for updating.

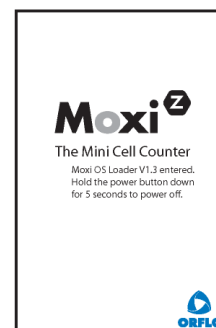
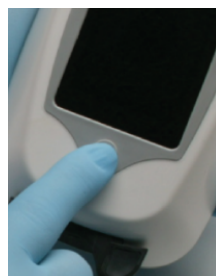


From here, open MoxiChart and select **Update Firmware** from the **Tools** menu. Follow the instructions in the installation wizard to complete the firmware update.

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

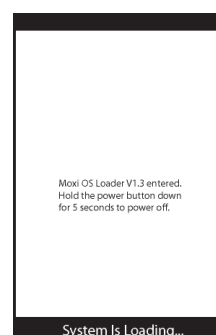
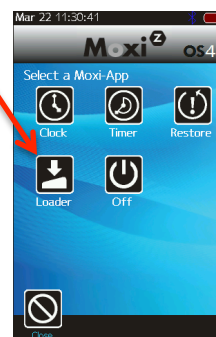
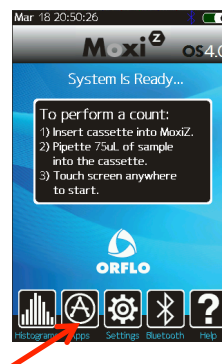
The Moxi Z firmware can be updated through a USB connection. For this method of update, the user must connect the Moxi Z to the computer's USB port via the provided cable. (Note: The cable is part of the AC power adaptor). Unplug the power adaptor to expose the USB connector for the computer. Next, the 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 four times. When successful, the white Moxi Z 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.



OR:

Alternatively in v4.0 (or greater), the firmware update mode can be entered from the Applications screen. From the home screen touch the **Apps** icon and then touch the **Loader** icon. If successful a white, "System is loading..." screen and the system is ready for updating.

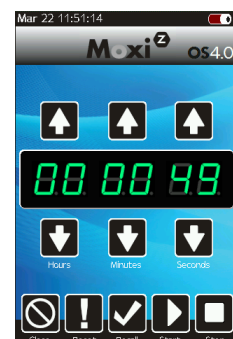
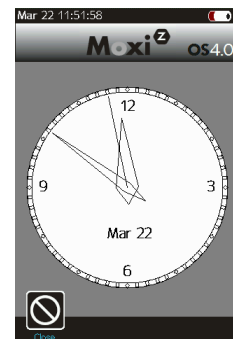
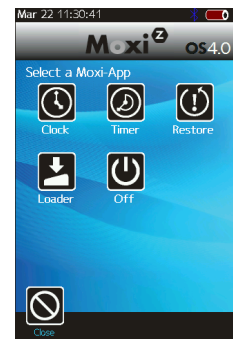


From here, open MoxiChart and select **Update Firmware** from the **Tools** menu. Follow the instructions in the installation wizard to complete the firmware update.

Moxi Apps

Moxi Z applications can be entered from touching the **Apps** icon on the home screen. Included applications in version 4.0 are:

- Clock
- Programmable timer (with sound notification)
- Restore – restores unit to factory settings
- Loader – Puts unit in 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 General Guidelines section.
	Wrong diluent	Use a diluent that is compatible with cells being counted. ORFLO Diluent (Cat No. MXA006) 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.
Questionable cell diameter	Wrong diluent	Use a diluent that is compatible with cells being counted. ORFLO Diluent (Cat No. MXA006) 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 for a minimum of 4 hours 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° MXA002 ou MXA003) ou le port USB d'un ordinateur.

The battery life is about 2 to 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	2 - 34 µm
Average Cell Size	4 - 25 µm diameter (Type M cassette) 3 - 20 µm diameter (Type S cassette)
Average Cell Volume	34 - 8,180 fL (Type M cassette) 14 - 4,200 fL (Type S cassette)
Cell Concentration	3,000 - 500,000 cells/mL (Type M cassette) 3,000 - 2,500,000 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)

Software

PC or Mac compatible; requires Windows XP, Windows Vista, Windows 7, or Mac OS X operating system (v 10.6 or greater)

Moxi Z Firmware (OS)

Version 4.0 (as of 3/15/2012)
Version 3.6 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, 4400 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 μ L
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.

<u>Product Description</u>	<u>Cat. No.</u>	<u>Quantity/Pack</u>
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
Electronic Calibration Cassette	MXA004	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) or email us at info@orflo.com.

Warranty

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