



ADAM-MC

A New Standard of
Automated Cell Counter



USER MANUAL

NESMU-AMC-001E (V.6.1)

All the materials in this user guide are protected by Korean and international copyright laws. They cannot be reproduced, translated, published or distributed without the permission of the copyright owner.

ADAM-MC, User's Manual

Website : www.nanoentek.com

E-mail : sales@nanoentek.com

Manufactured by

NanoEntek Inc.

851-14, Seohae-ro, Paltan-myeon, Hwaseong-si, Gyeonggi-do, 18531, Korea

Tel: +82-2-6220-7942

Fax: +82-2-6220-7999

NanoEntek America, Inc.

220 Bear Hill Road, Suite 102, Waltham, MA 02451, USA

Tel: +1-781-472-2558

Fax: +1-781-790-5649

The information in this manual is described as correctly as possible and is applicable to the latest firmware and software versions, but it may be changed without prior consent or notification.

Copyright 2008, by NanoEntek, Inc.

All rights reserved. Published in Korea.

Documentation : **NESMU-AMC-001E (V.6.1)**

Revision History :

V.0.0	October 2008
V.1.5	February 2009
V.2.0	June 2009
V.3.0	September 2009
V.3.5	January 2010
V.4.0	November 2010
V.5.0	February 2012
V.5.1	March 2014
V.6.0	June 2020
V.6.1	July 2021

Table of contents

Product contents	4
Safety information	5-7
Product specifications	8
Description of ADAM-MC	9-10
<hr/>	
Introduction	11-12
Overview	11
Basic principals of counting	12
<hr/>	
Getting started	13-19
Environmental requirement	13
Installation	14
Start-up Screen	15
Error message during booting	16
Menu setting	17
System information	17
Chip selection	18
Counting method	19
<hr/>	
General operation	20-25
Introduction	20
Preparing cell	20
Counting cell	20
Operating ADAM-MC	21
Icon function	22
Result analysis	23
Error code	24
Maintenance and cleaning	25
<hr/>	
Software installation	26-33
Introduction	26
Getting started	26
Installation	27-28
Function guide	29
Function buttons	30
Data list	31
Information	31
Graph	32
Sample image of error message	33
<hr/>	
Trouble shooting	34
Warranty	35
Product list	36

Product Contents

ADAM-MC

The contents of the ADAM-MC are listed below:

Item	Quantity
Main device	1
User manual	1
USB Cable	1
Installation CD	1
Key Pad	1
Power Cord	1
Fuse	2
External video monitor (Optional)	1

AccuChip kit

The contents of the ADAM AccuChip Kit are listed below :

Item	Accuchip2x Kit (Cat. No:AD2K-200)	Accuchip4x Kit (Cat. No: AD4K-200)	AccuStain solution (Cat. No:ADR-1000)
Disposable Chip	200pcs (2 channel)	200pcs (4 channel)	N/A
Solution T	2 x 12.5ml	2 x 12.5ml	4 x 12.5ml
Solution N	1 x 12.5ml	1 x 12.5ml	2 x 12.5ml
Available test Q'ty	Min.200 test/kit Max.400 test/kit (Only total cell count)	Min.400 test/kit Max.800 test/kit (Only total cell count)	

Upon receiving the instrument

- Examine the instrument carefully for any damage incurred during transit.
- Ensure that all parts of the instrument including accessories listed above are included with the product.
- Any damage claims must be filed with the carrier.
- The warranty does not cover in-transit damage.
- See the 13 page to install the instrument.
- Upon receipt, store AccuStain solution at room temperature.

Safety information







Safety precautions

1. Always ensure that the power supply input voltage matches the voltage available in your location.
2. For operation environment, See page 12.
3. This machine is air-cooled so its surfaces become hot during operation. When installing it, leave a space of more than 10 cm (4 inches) around it.
4. Never insert metallic objects into the air vents of the instrument as this could result in electrical shock, personal injury and equipment damage.
5. Always set the main switch on the power supply unit to off before connecting the power cord to the wall outlet.
6. Always ensure that the grounding terminal of the instrument and that of the wall outlet are properly connected. The power cord should be connected to a grounded, 3-conductor power outlet.
7. To avoid potential shock hazard, make sure that the power cord is properly grounded.
8. Do not position the equipment in a position that is difficult to disconnect the equipment.
9. Be sure to set the main switch to off, unplug the power cord and lock the stage before moving.
10. If the instrument is broken or dropped, disconnect the cord and contact an authorized service person. Do not disassemble the instrument.
11. Use only authorized accessories.
12. Use this equipment only as specified in this manual and as specified in any documentation associated with its components. Any use of the equipment in an unspecified manner is strongly discouraged and may result in damage or injury as cautioned by signed warnings.

Safety information

Safety symbols

The symbols used in the ADAM-MC and the manual are explained below:

Symbol	Meaning
	The Caution symbol denotes a risk of safety hazard.
	ON (Power)
	Protective earth (Ground)
	The CE mark symbolizes that the product conforms to all applicable European Community provisions for which this marking is required. Operation of the ADAM automated cell counter is subject to the conditions described in this manual. The protection provided by the device may be impaired if the instrument is used in a manner not specified by the manufacturer.
	Caution, Biohazard Protective measures must be used in dealing with biologically hazardous materials such as carcinogenic reagents.
	Disposal of your old appliance 1. When this crossed-out wheeled bin symbol is attached to a product, it means the product is covered by the European Directive 2012/19/EU. 2. All electrical and electronic products should be disposed of separately from the municipal waste stream via designated collection facilities appointed by the government or the local authorities. 3. The correct disposal of your old appliance will help prevent potential negative consequences for the environment and human health. 4. For more detailed information about disposal of your old appliance, please contact your city office, waste disposal service or visit our web-site, www.nanoentek.com .

Safety information

Warnings

Battery inside device

- Risk of explosion if battery is replaced by an incorrect type.
- This battery is not replaceable by a user.
- Refer to a qualified personnel.

Cover

- Do not remove a cover or disassemble a case.
- There is no adjustable components inside the instrument.
- If malfunction is found, refer to a service personnel.

Manual

- Do not attempt to service the equipment unless this manual has been consulted and is understood.
- This manual is available in English only.
- Failure to heed this warning may result in injury to service provider, operator from electric shock, mechanical or other hazards.

Sample handling

- Wear gloves during sampling. User's sample may have the infectious biohazardous substance.

Waste

- After using AccuChips, appropriately dispose it as biohazardous waste.
- Do not reuse the AccuChips.

Operator

- Must have the general knowledge of cell counting procedure and bio safety to handle the sample that may have the infectious biohazardous substance.

Product specifications

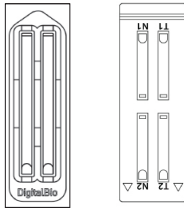
ADAM-MC



Voltage	100-240V~, 50/60 Hz
Current	max. 1.8A, max 100W
Fuse	F3.15AL250V
Objective lens	4 X
LED	Green LED
CCD camera	B/W CCD
Filter	Excitation filter Dichroic filter Emission filter
Weight	9 kg
Size (W x L x H)	220 x 375 x 250 mm
Degree of protection	IPX0

AccuChip

AccuChip 2x AccuChip 4x



Measuring range	5×10^4 to 4×10^6 cells/mL
Analysis time	45 sec. ~ 2min./test
Loading sample vol. per test	20 μ L/test (AccuChip2x) 13 μ L/test (AccuChip4X)
Measuring sample vol. per test	8.5 μ L/test (AccuChip2X) 3 μ L/test (AccuChip4X)

AccuStain Solution T,N



PI (Propidium Iodide) staining of total cells (T) and non-viable cells (N).

Accessories



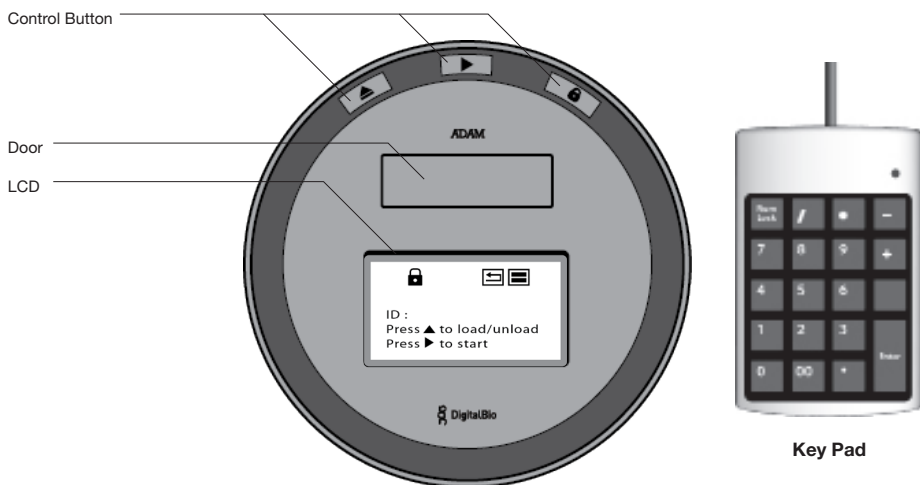
Power cord	1.5 m
Fuse	250 VAC, 3 A; F3.15AL250V
Keypad	USB Type / 1.3 m

Description of ADAM-MC

Front view of ADAM-MC

The ADAM-MC, an automated cellcounter, is a benchtop automated cell counter that performs cell count and viability measurements using AccuStain solution.

The front view showing various parts of the ADAM-MC is shown below:



Control buttons

- ▲ Eject : Ejects the chip holder from the ADAM-MC.
- Start : Performs all procedures of automatic counting
- 🔒 Lock : Protects the alignment of stage from external shock when the ADAM-MC is moved to the other places.

It is strongly recommended to lock ADAM-MC before turning it off.

Door : Chip holder comes out here.

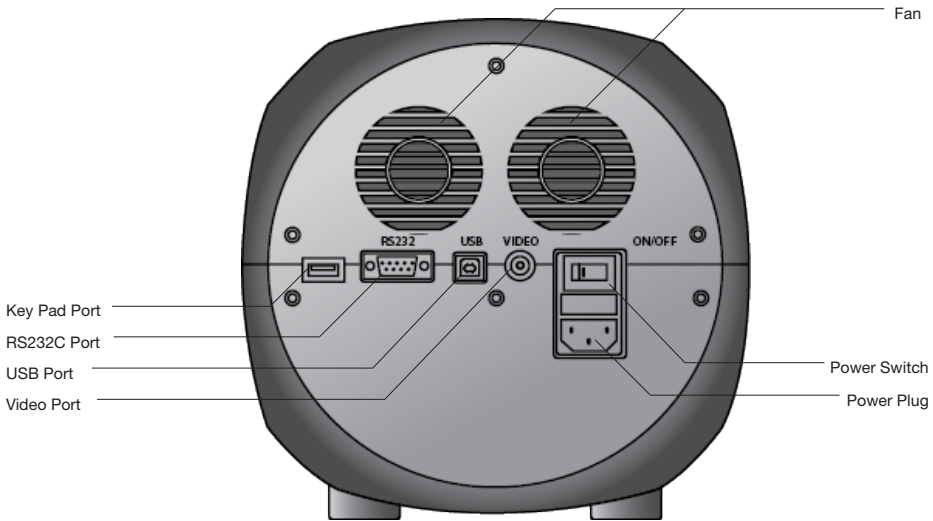
LCD : Displays the process and the result.

keypad : Inputs the sample number less than 3 characters and press 'Enter' button.

Description of ADAM-MC

Front view of ADAM-MC

The rear view showing various parts of the ADAM-MC.



Fan : Cooling fan

Power switch : Main power on/off switch

Power plug : ADAM-MC power cord connection plug

USB port : Connect to computer with USB Cable

RS232C port : Not connect (Port for only QC and Service)

Key pad port : Keypad connection port

Video Port : External video monitor port

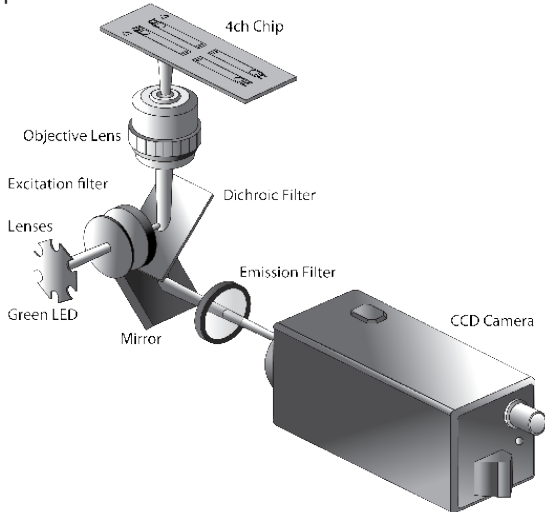
Introduction

Overview

Until now, cell counting and viability measurement for many types of cells have been performed manually using hemocytometer with TrypanBlue exclusion method, which is to distinguish viable cells from non-viable cells. One drawback of this method, however, is the propensity for the staining of artifacts; another drawback is that the naked eye can only differentiate between cells in a limited concentration range in the hemocytometer chamber. This combined with the potential problem of cell aggregation and limited sample volume leads to the common variation of counts normally associated with this method.

To address these problems, NanoEntek has developed the ADAM-MC, which is based on a fluorescent microscopy technique for counting cells. The ADAM-MC utilizes sensitive fluorescence dye staining, LED optics and CCD detection technologies to make the cell analysis more accurate and reliable. To count cells using ADAM-MC, the cells are mixed with a Propidium Iodide (PI) stain and directly pipetted on to a disposable plastic chip. The chip is then loaded onto a precision stage. An ADAM-MC system is automatically focused onto the chip and cells that have been stained are recorded by a sensitive CCD camera. The image results are automatically processed generating the cell count which is displayed on the front of the instrument.

Simple. Fast. Accurate. Reliable.



Introduction

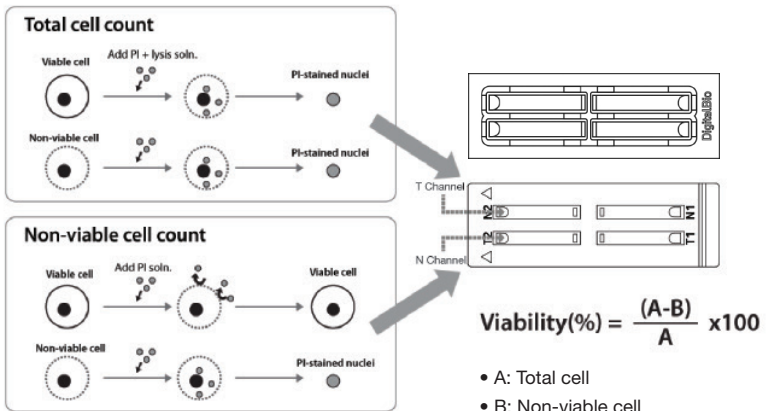
Basic principals of counting

ADAM-MC is based on staining mammalian cell DNA with a fluorescent dye, Propidium Iodide (PI). PI does not enter cells with intact cell membranes or active metabolism. In contrast, cells with damaged membranes or with inactive metabolism are unable to prevent PI entering the cell. As a result, the nuclei of non-viable cells will only be stained. The ADAM-MC provides two kinds of staining solutions. AccuStain Solution T for the total cell counting is composed of the fluorescent dye (PI) and lysis solution. AccuStain solution N for the non-viable cell counting is composed of the fluorescent dye and PBS.

In order to measure the total concentration of cells, the plasma membranes of all the cells must be disrupted to stain all the Nuclei with PI. The process of disrupting and staining is achieved by treatment with AccuStain Solution T.

In the second solution, live cells remain intact and are not stained.

Only the non-viable cells are stained and detected. After treatment, the prepared cells will be loaded into the chip. The viability will be automatically calculated in the ADAM-MC software after each measurement of the total cells and the non-viable cells.



Getting started

Environmental requirements

To obtain the best results, install the ADAM-MC in a location following conditions:

1. Room temperature between 20 and 35 °C.
 - Not recommended for cold room use (≤ 4 °C).
 - At low temperature (≤ 10 °C), warm up the ADAM-MC for 10 min.
2. Not exposed to direct sun light.
3. Not subject to direct or continuous vibration.
4. Not subject to intense magnetic or electromagnetic fields.
5. Relative humidity between 0–95 %.
6. Area free from corrosive gases or other corrosive substances.
7. Area with very little dust or other airborne particles.
8. Allow a 10cm minimum space around the instrument for proper air flow.
9. Not allow to put heavy material on top of ADAM-MC.

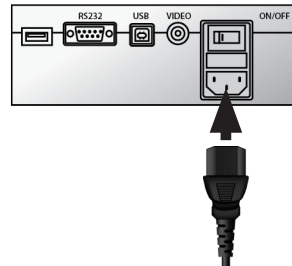
Getting started

Installation

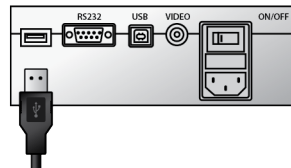
1. Remove all components of ADAM-MC from their box.



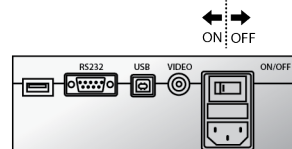
2. Place the instrument in a flat level and dry surface.
3. Plug to power cord into the electrical outlet.
 - Be sure to use only the power cord supplied with your instrument.
 - Powering the instrument with an unapproved power cord may damaged the instrument.



4. Plug to Keypad.



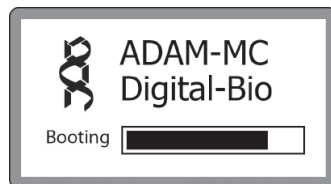
5. Turn on the power switch.
 - Make sure that the main power switch is In the “ I ” (ON) position.



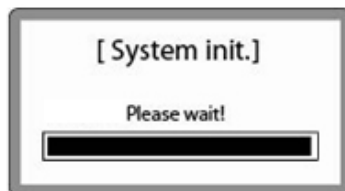
Getting started

Start-up screen

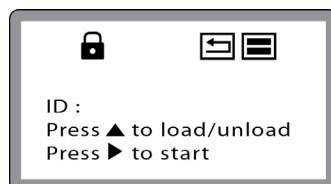
1. System booting.



2. System will go through self diagnostic tests.
 - If you get an error message, please contact your local distributor or sales@nanoentek.com



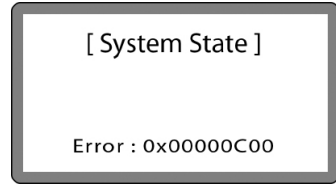
3. The home screens will be displayed as the image, no errors are detected.



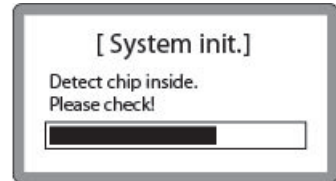
Getting started

Error message during booting

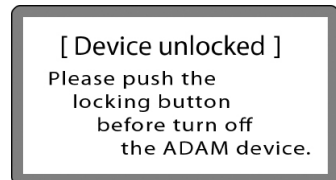
1. It appears when booting not working properly.
2. Turn off main power and restart device.
3. If this message still appears after restart, contact your local distributor or sales@nanoentek.com



1. It appears when a chip is inserted during start up.
2. Remove the chip from a device, and do not turn on the device with a chip.
3. If this message continues to display when no chip is inserted, contact your local distributor or sales@nanoentek.com



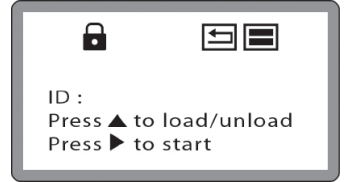
1. It appears when turning off without locking device.
2. Push the lock button before turn off the device. If this message still appears after restart, contact your local distributor or sales@nanoentek.com



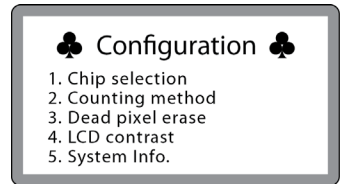
Getting started

Menu setting

1. You can set the menu as you press the “*” button on the keypad from the screen for inputting sample numbers.

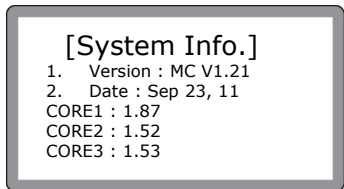
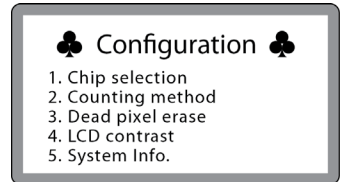


2. You can select the number from the menu.



System information

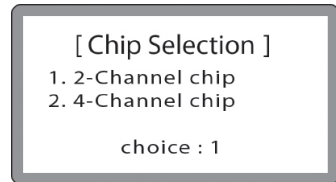
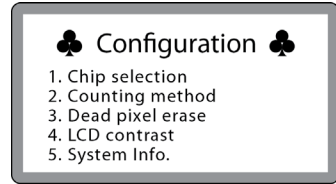
1. Check the device versions and date which have been installed in the device.
2. Select number 4 key from the menu, and press the ‘Enter’ key.
3. The screen will return to the menu screen automatically.



Getting started

Chip selection

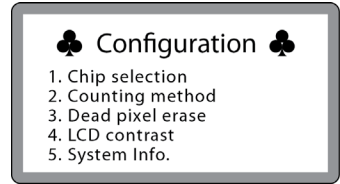
1. Press '1' for chip selection.
 - You can select the number from the menu.
2. User can select the 2 kinds of chip type.
 - '1' : Two channel chip (AccuChip2X)
 - '2' : Four channel chip (AccuChip4X).
3. Press '1' or '2', and Enter key.
4. After pressing the 'Enter' key, the screen will return to the menu screen automatically.



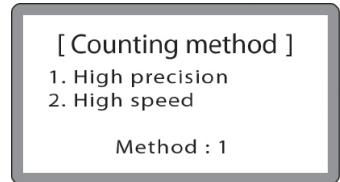
Getting started

Counting method

1. Press '2' for counting method. You can change the capture frame mode.



2. You can select the 60 or 30 frames in 2CH mode and 22 or 11 frames in 4CH mode for counting as well.



- **2CH**

High Precision : 60 frames capture

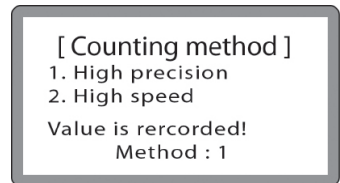
High Speed : 30 frames capture

- **4CH**

High Precision : 22 frames capture

High Speed : 11 frames capture

3. Press '1' or '2' and 'Enter' key.



4. After pressing the 'Enter' key, the screen will return to the menu screen automatically.

General operation

Introduction

Instruction is provided in this section for preparing the cell sample with AccuStain solution for use with disposable AccuChip for automated cell count using the ADAM-MC.

Preparing cell

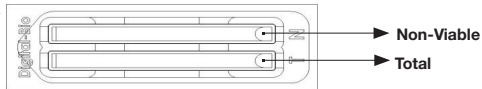
1. Cultivate the required number of cells.
2. Add an appropriate volume of growth media or PBS to dilute to a final concentration of 5×10^4 cells/mL to 4×10^6 cells/mL.

Note : Concentration out of this range will result in errors.
Refer to page 23 for more information about errors.

3. Thoroughly mix the cell pellet by vortexing.
4. Check visually if any cell clumps or agglomerates are remained.

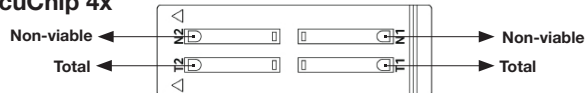
Counting cell

• AccuChip 2x



Total Cell	Non-viable Cell
1. Add 50 μ L of your sample to 50 μ L supplied AccuStain solution T .	1. Add 50 μ L of your sample to 50 μ L supplied AccuStain solution N .
2. Mix gently by pipetting up and down.	2. Mix gently by pipetting up and down.
3. Load 20 μL sample mixture to the AccuChipon T channel.	3. Load 20 μL sample mixture to the AccuChipon N channel.

• AccuChip 4x

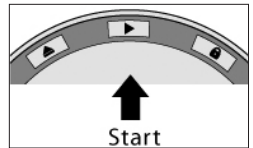
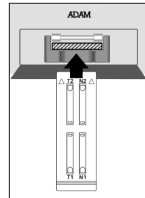
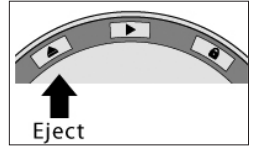


Total Cell	Non-viable Cell
1. Add 50 μ L of your sample to 50 μ L supplied AccuStain solution T .	1. Add 50 μ L of your sample to 50 μ L supplied AccuStain solution N .
2. Mix gently by pipetting up and down.	2. Mix gently by pipetting up and down.
3. Load 13 μ L sample mixture to the AccuChip on T1 or T2 channel.	3. Load 13 μ L sample mixture to the AccuChip on N1 or N2 channel.

General operation

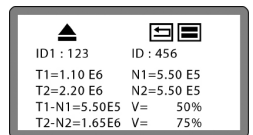
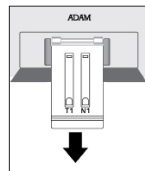
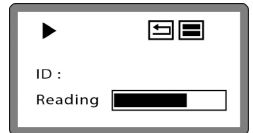
Operating ADAM-MC

1. Press “**Eject(▲)**” button on the main device to eject the chip holder.
2. Insert the chip loaded with the sample onto the chip holder.
3. Press the “**Start(▶)**” button on the main device.



Note :Automatic focus will be carried out at the first time the device is booted.
Once ADAM-MC has done the auto focus process and on the following time, focusing process will be skipped.

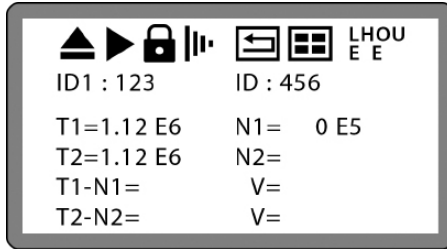
4. The instrument takes approximately 90 seconds to count sample.
5. After calculating the cell number, the chip will be ejected automatically. Then chip can be removed.
6. The calculated cell number per 1ml will be displayed on the screen automatically.



7. For another experiment, repeat the process from steps 1 ~ 5.

General operation

Icon function



1. Display a status of the performance such as Start, Eject, Lock or Insert.

Eject		Shows the Chip Holder is ejected. (After pressing the Start button).
Start		Shows when cell counting is running. (After pressing the Eject button).
Lock		Shows the Chip Holder is parked. (After pressing the Lock button).
Insert		Shows the Chip Holder is inserted. (After pressing the Eject button with AccuChip).

2. Display menu setting

	Shows that performance setting is high precision. ADAM-MC scans 22 fields in each chamber, representing a total volume of 3.1 μ L.
	Shows that ADAM-MC reads 4 Channel chip.
	Shows that ADAM-MC reads 2 Channel chip.

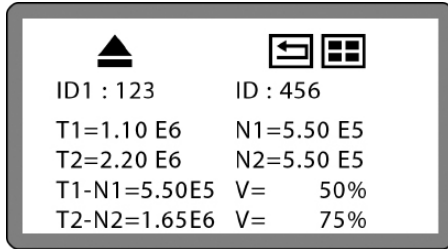
3. Display menu setting

LHOUEE	Error code. (-> go to page 23.)
--------	------------------------------------

General operation

Result analysis

Press the ‘*’ key after menu setting. Once inputted, the screen will return to the counting mode automatically.

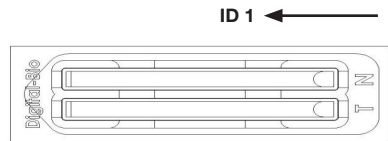


	Sample name	Number of Total cell	Number of Non-Viable cell	Viability
ID1	123	T1 (1.10E6)	N1 (5.50E5)	50%
ID2	456	T2 (2.20E6)	N2 (5.50E5)	75%

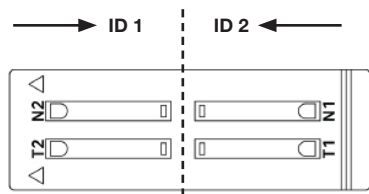
$1.10E6 = 1.10 \times 10^6$ cells/mL

- The viability will be automatically calculated by the ADAM-MC software after each measurement of the total cells and the non-viable cells.
- First, the total cell number and second, non-viable cell number were measured and then the cell viability is calculated as subtracting non-viable cell counting numbers from total cell counting.

• AccuChip 2x



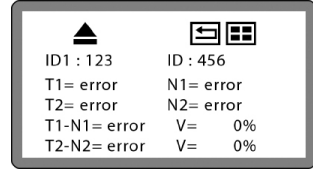
• AccuChip 4x



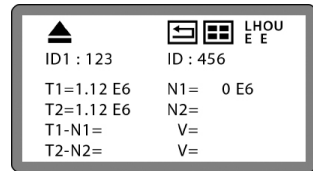
General operation

Error code

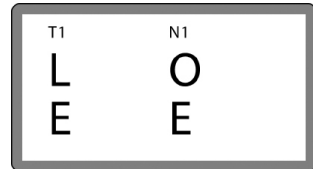
1. Check a chip is inside of device when turning on the device.
2. Removing the chip first, then rebooting the device.
3. If this message come up again after removing a chip, contact your local distributor or sales@nanoentek.com



E : Frames with errors are over 50% of total counting frame. Frame with error is a frame that contains cells whose diameter is larger than 30 μ m.



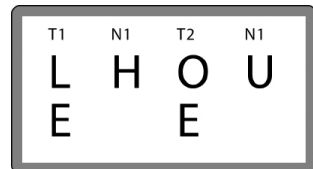
O : Cells are more than 4X10⁶ cells/mL. “**Over detection range**” will be shown on report program. Cells are more than 2X10⁶ cells/mL.



[2 channel]

H : “**High concentration cells**” will be shown on report program.

L : Cells are less than 4X10⁵ cells/mL. “**Low concentration cells**” will be shown on report program.



[4 channel]

U : Cells are less than 5X10⁴ cells/mL. “**Under detection range**” will be shown on report program.

General operation

Maintenance and cleaning

1. ADAM-MC does not need regular maintenance.
2. ADAM-MC has no replacement of consumable materials.
3. Clean the exposed outer surface of ADAM-MC using a soft cloth and isopropyl alcohol or deionizers water.

CAUTION

- Dispose of wipes in an appropriately labeled solvent contaminated waste container.

Software installation

Introduction

ADAM-MC software program is designed to manage and report all results from ADAM-MC.

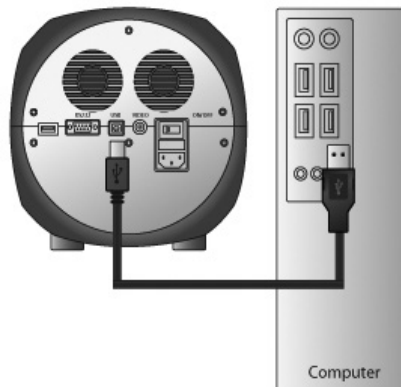
- All measurement results are saved on the memory of ADAM-MC, automatically.
- User can download the data from the memory of ADAM-MC and export it to **Excel (*.xls) format**.
- User can delete data from memory of ADAM-MC or can save captured images into desktop or laptop hard drive.
- The data list window consists of the sample number, chip, date, time, total, nonviable, viable, viability counting result in %.

CAUTION

- Before running the program, check the connection of USB cable between the ADAM-MC and the laptop or desktop computer.

Getting started

The following steps are guide for connecting USB cable:



1. Connect the USB cable to ADAM-MC.
2. Connect the USB cable to desktop or laptop computer.
3. Turn on ADAM-MC and desktop computer.

Software installation

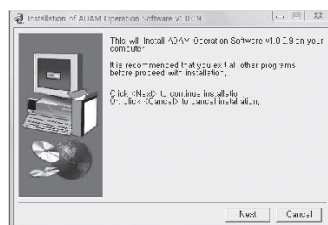
Installation

To install the ADAM-MC operation software, follow the directions as below:

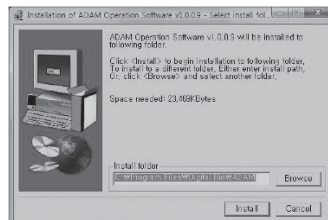
1. Insert the installation CD-ROM into the computer.
Then open the file **“Setup_ADAM_v1.x.x.x.exe”**.
 - Report program can be installed in Windows 2000, XP or higher version.



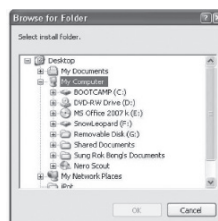
2. The start-up dialogue of the software, as shown like left image, will appear.



3. Click **“Next”** to start installation.



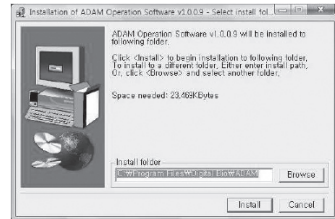
4. If you want to change installation folder, click **“Browse”** and choose the location that you want.



Software installation

Installation

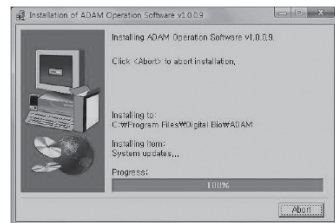
5. After choosing installation folder, click **“Install”** to proceed with the installation.



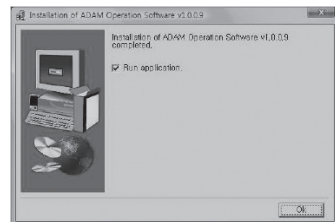
6. The computer activates the **“Installation of the Software”**.

➔ Initial installation folder is **“C:\Program Files\Digital Bio\ADAM”**.

7. Report program will be installed automatically.



8. Click **“Ok”** to finish the installation.



9. If the installation was successful, the report program can be found at start > All Program > ADAM.



Software installation

Function guide

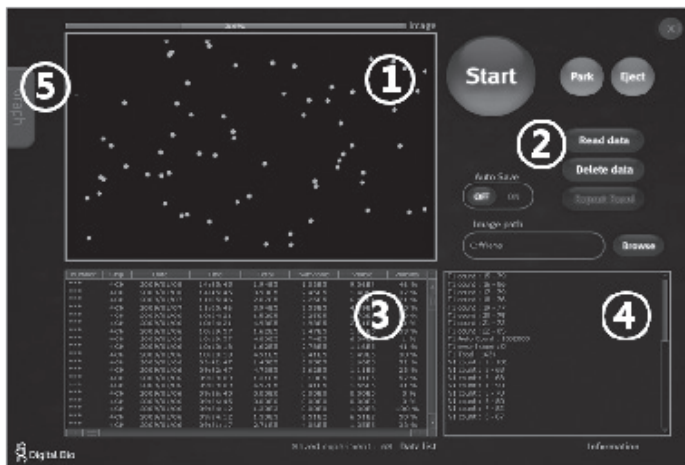


Image frame

Image captured by ADAM-MC will be shown here.

Function Buttons

Start cell counting, saving images, exporting data, and all function of Report Program are handled by using these buttons. (see p.29 for more detailed information of each button)

Data List

All saved data in ADAM-MC will be loaded and shown in data list section.

Information









Operation and counting results of each frame will be displayed here.

Graph

Analysis of results including cell size and frame by frame counting will be shown in graph section.

Software installation

Function buttons

	Start cell counting
	Park (Lock) stage of ADAM-MC
	Eject chip holder out of ADAM-MC
	Load the experiment data from the memory of the main device.
	Delete all of the loaded data and memory of the main device.
	Transfer the data list to Excel format and saves it.
	Turn on or off automatic image save option.
	<p>Default image save folder is "C:\Program Files\Digital Bio\ADAM\Images". Images will be saved until your hard drive has no more capacity to save.</p> <p>Be sure to set Auto Save off, unless you need to save images.</p> <p>Example of saved image file: 081221(yymmdd)-203482(hhmmss)-N1(channel name)-002.bmp</p>
	Choose folder to save images automatically.

Software installation

Data list

Number	Chip	Date	Time	Total	Nonviable	Viable	Viability
***	4CH	2008/12/14	18:34:58	6.37E4	5.65E4	7.24E3	11 %
***	4CH	2008/12/14	18:34:58	5.73E4	7.16E4	1.43E4	20 %
***	4CH	2008/12/11	11:08:09	7.76E4	2.71E5	1.93E5	71 %
***	4CH	2008/12/11	11:08:09	3.17E5	8.39E4	2.33E5	73 %
***	4CH	2008/12/09	20:23:01	3.62E4	3.59E5	3.22E5	89 %
***	4CH	2008/12/09	20:23:01	4.08E5	6.00E4	3.48E5	85 %
***	4CH	2008/12/09	20:20:15	4.29E4	3.65E5	3.22E5	88 %
***	4CH	2008/12/09	20:20:15	4.02E5	6.75E4	3.35E5	83 %
***	4CH	2008/12/09	20:17:30	3.45E4	3.60E5	3.26E5	90 %
***	4CH	2008/12/09	20:17:30	4.01E5	7.16E4	3.30E5	82 %
***	4CH	2008/12/09	20:14:44	3.96E4	3.56E5	3.17E5	88 %
***	4CH	2008/12/09	20:14:44	4.13E5	6.96E4	3.43E5	83 %
***	4CH	2008/12/09	20:11:12	3.11E4	3.15E5	2.84E5	90 %
***	4CH	2008/12/09	20:11:12	4.09E5	6.16E4	3.47E5	84 %
***	4CH	2008/12/09	20:09:31	2.69E4	3.06E5	2.79E5	91 %
***	4CH	2008/12/09	20:09:31	4.11E5	6.18E4	3.49E5	84 %
***	4CH	2008/12/09	20:07:49	3.45E4	3.08E5	2.73E5	88 %
***	4CH	2008/12/09	20:07:49	4.03E5	5.80E4	3.45E5	85 %
***	4CH	2008/12/09	20:06:08	3.62E4	3.07E5	2.71E5	88 %

Saved experiment : 120 Data list

Data list shows data stored in ADAM-MC memory.

Total amount of stored results are indicated at bottom of list as “**Saved experiment**”. Up to 200 counting results are automatically saved to ADAM-MC memory.

When memory of ADAM-MC is full, new counting result will replace old data. These data can be exported as Excel Sheet (*.xls) and stored in personal computer or can be erased from ADAM-MC memory.

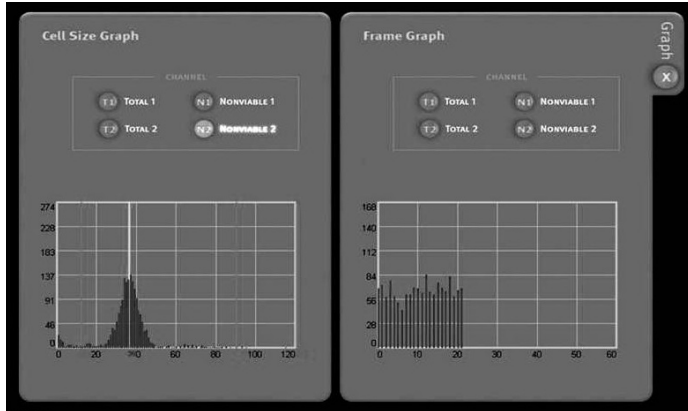
Information

```
T1 count : 12 - 68
T1 count : 13 - 71
T1 count : 14 - 69
T1 count : 15 - 79
T1 count : 16 - 83
T1 count : 17 - 83
T1 count : 18 - 75
T1 count : 19 - 76
T1 count : 20 - 78
T1 count : 21 - 71
T1 count : 22 - 72
T1 Auto Count : 1030504
T1 error frame : 0
T1 Total : 1604
N1 count : 1 - 95
N1 count : 2 - 64
N1 count : 3 - 64
N1 count : 4 - 92
N1 count : 5 - 69
N1 count : 6 - 91
```

This section shows information regarding operation of ADAM-MC. If cell counting is started through report program, the counting results of each frame that ADAM-MC captures will be shown here.

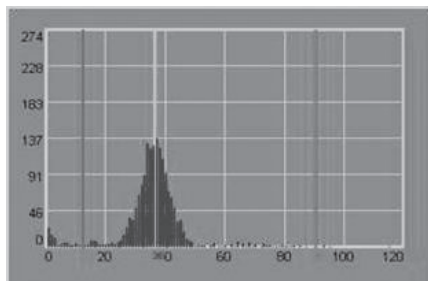
Software installation

Graph



This section shows information of cell size distribution and counting results of each frame that ADAM-MC captured. Through cell size graph, you can figure out whether there are cell clumps or aggregates. In case of counting evenly distributed cells without any aggregation, there should be a single peak on distribution of cell size.

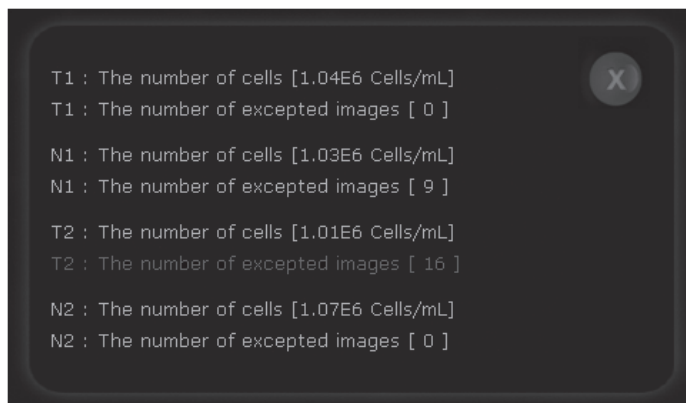
- The size of cell in graph is not real size of cell. It is the size of pixels in fluorescence image captured by ADAM-MC. And the size information is only to judge if there is a lot of aggregated cells.



Vertical red line indicates the cut-off size. Counting results between first and second red line are counted as single cell and those between second and third line are counted as 2 cell, and so on. Any results before first red line will not be counted as cell.

Software installation

Sample image of error message



Trouble shooting

Problem	Cause	Solution
ADAM-MC does not power up	<ul style="list-style-type: none"> · Power switch in off position. · No power from outlet. · Bad power cord. 	<ol style="list-style-type: none"> 1. Check power switch on back of unit. 2. Check power source. 3. Replace.
Inaccurate result	<ul style="list-style-type: none"> · Cell number may be out of range. · AccuStain Solution has expired. · Too high clumped cells. 	<ol style="list-style-type: none"> 1. Adjust the number of cells between 5×10^5 ~ 4×10^6 cells/mL (refer to page 21). 2. Check the expired date. 3. Try again after vortexing the cells.
Software does not work	<ul style="list-style-type: none"> · PC setup incorrect/wrong instruct mode. · Cable's not fully connected/wrong adaptor. 	<ol style="list-style-type: none"> 1. Check program setup. 2. Check all connections.
When error message is shown (For information on each error message, see page 23.)	<ul style="list-style-type: none"> · When there are too many frames with errors (Error message: E) 	<ol style="list-style-type: none"> 1. Check the suspension of cells if all cells are fully dissociated into single cells. 2. If contaminants except cells are found, prepare sample again.
	<ul style="list-style-type: none"> · When too many cells are loaded (Error message: H) 	<ol style="list-style-type: none"> 1. Check if concentration of cell is too high. 2. Dilute the sample and count again.
	<ul style="list-style-type: none"> · Low concentration of cells (Error message: O) 	<ol style="list-style-type: none"> 1. Check if concentration of cell is high or not. 2. Dilute sample and count again.
	<ul style="list-style-type: none"> · Low concentration of cells (Error message: L) · Under detection range (Error message: U) 	<ol style="list-style-type: none"> 1. Check if concentration of cell is too low. 2. Use concentrated sample and count again.

Warranty

Warranty

NanoEntek warrants that the ADAM-MC will be free from defects in material and workmanship for a period of one (1) year from date of purchase.

If any defects occur in the ADAM-MC during this warranty period, NanoEntek will repair or replace the defective parts at its discretion without charge.

The following defects, however, are specifically excluded:

- Defects caused by improper operation.
- Repair or modification done by anyone other than NanoEntek or an authorized agent.
- Damage caused by substituting alternative parts.
- Use of fittings or spare parts supplied by anyone other than NanoEntek.
- Damage caused by accident or misuse.
- Damage caused by disaster.
- Corrosion caused by improper solvent or sample.

For your protection, items being returned must be insured against possible damage or loss.

NanoEntek cannot be responsible for damage incurred during shipment of a repair instrument; It is recommend that you save the original packing material in which the instrument was shipped.

This warranty should be limited to the replacement of defective products.

For any inquiry or request for repair service, contact sales@nanoentek.com or your local distributor.

Product list

Additional product list

Cat. No.	Product	Contents	Quantity
ADM-001	External video monitor (optional)	7" LCD Monitor	1
AD2K-200	AccuChip2X Kit	200 pcs AccuChip2X	1
		12.5 ml AccuStain solution T	2
		12.5 ml AccuStain solution N	1
AD4K-200	AccuChip4X Kit	200 pcs AccuChip4X	1
		12.5 ml AccuStain solution T	2
		12.5 ml AccuStain solution N	1
ADR-1000	AccuStain	12.5 ml AccuStain solution T	4
		12.5 ml AccuStain solution N	2

* AD2K-200: Please consult your distributor or manufacture for availability.

Contact Information

E-mail : sales@nanoentek.com

Website : www.nanoentek.com

Developed and Manufactured by NanoEntek, Inc.

NanoEntek, Inc.

851-14, Seohae-ro, Paltan-myeon, Hwaseong-si, Gyeonggi-do, 18531, Korea

Tel: +82-2-6220-7940, Fax: +82-2-6220-7999

NanoEntek America, Inc.

220 Bear Hill Road, Suite 102, Waltham, MA 02451, USA

Tel: +1-781-472-2558 Fax: +1-781-790-5649



ADAM MC2

A NEW Standard of Automated Cell Counter

Instruction Manual



All the materials in this user manual are protected by Korean and international copyright laws. They cannot be reproduced, translated, published or distributed without the permission of the copyright owner.

ADAM-MC2 Instruction Manual

Website : www.nanoentek.com

E-mail : sales@nanoentek.com

Manufactured by

NanoEntek, Inc.

851-14, Seohae-ro, Paltan-myeon, Hwaseong-si, Gyeonggi-do, 18531, Korea

Tel. +82-2-6220-7940

Fax. +82-2-6220-7999

The information in this manual is described as accurately as possible.

Firmware and software changes and updates may change without prior consent or notification.

Copyright © 2018 by NanoEntek Inc.

All rights reserved. Published in Korea.

Documentation: **NESMU-AMC2-001E**

Revision history: V.0.0 DEC 2018

V.0.3 JAN 2021

V.0.4 SEP 2022

V.0.5 AUG 2023

Table of contents

Introduction

General description	2
Technology	3
Basic principle of counting	4

Product Contents

ADAM-MC2	5
AccuChip kit	5
Upon receiving the instrument	5

Product Description

Front view of ADAM-MC2	6
Rear view of ADAM-MC2	7

Getting Started

Environmental requirements	8
Power on and initial display	8
Error messages during booting	9
Count setting	10

General Operation

Introduction	11
Sample preparation	12
Counting cell	12

Measure

Run sample	15
Result analysis	16
Result analysis -Error code	17

Data

Data list	18
Edit	19
Image	20
Save	21
Mail	22

Setting

Setting	23
Wifi	24
Remote support	24
Update	25

Power off

Lock	26
Power off	26

Maintenance and cleaning	27
Trouble shooting	28
Warranty	29
Technical specifications	30
Product list	31
Accessories	31
Safety precautions	32
Safety symbols	33
Warnings	34
Technical Support	35

General Description

The ADAM-MC2 is a benchtop automated cell counter that performs cell counting and viability measurements using AccuStain Solution.



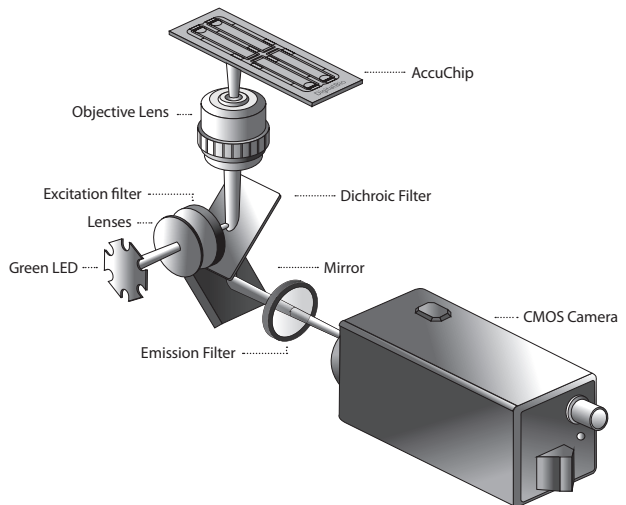
Technology

Until now, cell counting and viability measurement for many types of cells have been performed manually using hemocytometer with Trypan Blue exclusion method, which is to distinguish viable cells from non-viable cells.

One drawback of this method, however, is the propensity for the staining of artifacts; another drawback is that the naked eye can only differentiate between cells in a limited concentration range in the hemocytometer chamber. This combined with the potential problem of cell aggregation and limited sample volume leads to the common variation of counts normally associated with this method.

To address these problems, NanoEntek has developed the ADAM-MC2, which is based on a fluorescent microscopy technique for counting cells. The ADAM-MC2 utilizes sensitive fluorescence dye staining, LED optics and CMOS detection technologies to make the cell analysis more accurate and reliable.

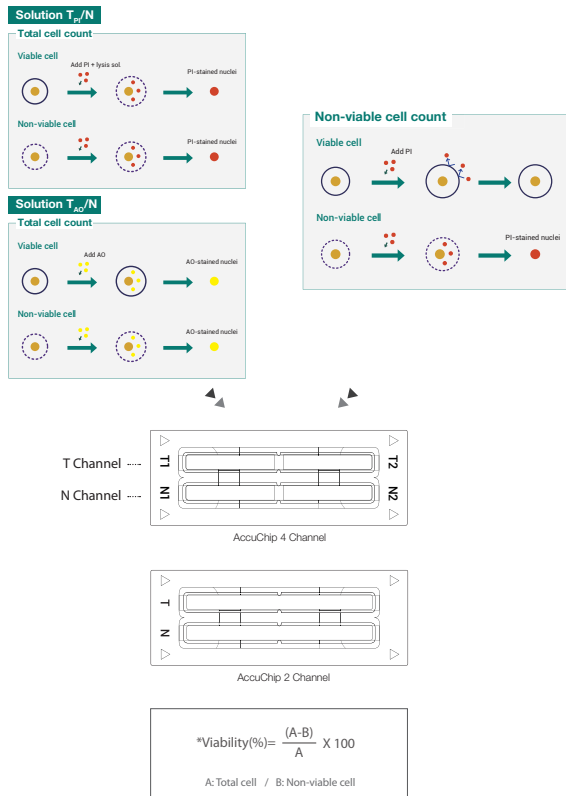
To count cells using ADAM-MC2, the cells are mixed with a Propidium Iodide (PI) stain or Acridine Orange (AO) stain and directly pipetted onto a disposable plastic chip. The chip is then loaded onto a precision stage. An ADAM-MC2 system automatically focuses on the chip and cells that have been stained are recorded by a sensitive CMOS camera. The image results are automatically processed generating the cell count which is displayed on the front of the instrument. Simple. Fast. Accurate. Reliable.



Basic principle of counting

ADAM-MC2 is an instrument which counts mammalian cell DNA by staining with a fluorescent dye, Propidium Iodide (PI) or Acridine Orange (AO). PI does not enter cells with intact membranes or active metabolism. In contrast, cells with damaged membranes or cells with inactive metabolism are unable to prevent PI entering the cell. As a result, the nuclei of cell membrane-damaged normal cells or non-viable cells will be stained. Solution T_{PI} is composed of the PI and cell membrane lysis buffer. Since lysis buffer in Solution T_{PI} changes intact cell membrane to damaged cell membrane condition, both viable cells and non-viable cells can be stained. AO included in Solution T_{AO} is permeable dye which permeates cell membrane and stains DNA. Regardless of the condition of the cell membrane or active metabolism, AO can stain both viable cells and non-viable cells.

The ADAM-MC2 provides two kinds of staining solutions: AccuStain Solution T for the total cell counting and AccuStain Solution N for the non-viable cell counting. AccuStain Solution T is categorized into Solution T_{PI} and Solution T_{AO}. AccuStain Solution N for the non-viable cell counting is composed of the PI alone. After staining samples, the prepared cells will be loaded into the chip. The viability will be automatically calculated in the ADAM-MC2 software after each measurement of the total cells and the non-viable cells.



ADAM-MC2

The contents of the ADAM-MC2 are listed below:

Item	Quantity
Main device	1
Instruction manual	1
USB hub	1
Wifi dongle	1
Power cord	1
Adapter	1
AccuChip Kit	1
Calibration Bead	1
Printer (optional)	1

AccuChip kit

The contents of the ADAM-MC2's AccuChip Kit are listed below:

Item	AccuChip2x Kit (Cat. No: AD2K-200)	AccuChip4x Kit (Cat. No: AD4K-200) (Cat. No: AD4K-200AO*)	AccuStain Solution (Cat. No: ADR-1000) (Cat. No: ADR-1000AO)
Disposable Chip	200pcs (2 channel)	200pcs (4 channel)	N/A
Solution T	12.5 mL x 2ea	12.5 mL x 2ea	12.5 mL x 4ea
Solution N	12.5 mL x 1ea	12.5 mL x 1ea	12.5 mL x 2ea
Available test Q'ty	Min. 200 test/kit	Min. 400 test/kit	
	Max. 400 test/kit (Only total cell count)	Max. 800 test/kit (Only total cell count)	

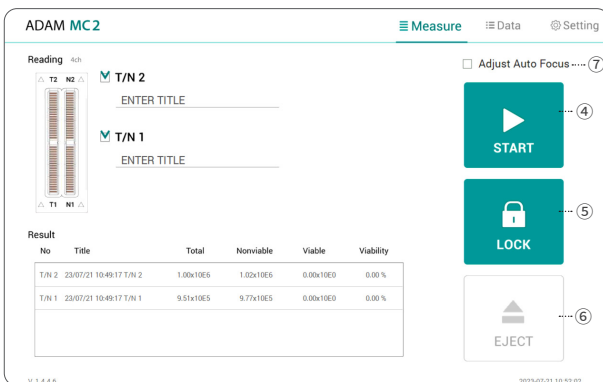
* *Acridine orange (AO) based Solution T*
(AO is suitable for counting high density samples > 4X10⁶ cells/mL.
Please refer to the Technical Specifications in Page 30.)

Upon receiving the instrument

- Examine the instrument carefully for any damage incurred during transit.
- Ensure that all parts of the instrument including accessories listed above are included with the product.
- Any damage claims must be filed with the carrier.
- The warranty does not cover in-transit damage.
- Upon receipt, store AccuChip at room temperature. AccuStain Solution should be stored at 2~8°C

Front view of ADAM-MC2

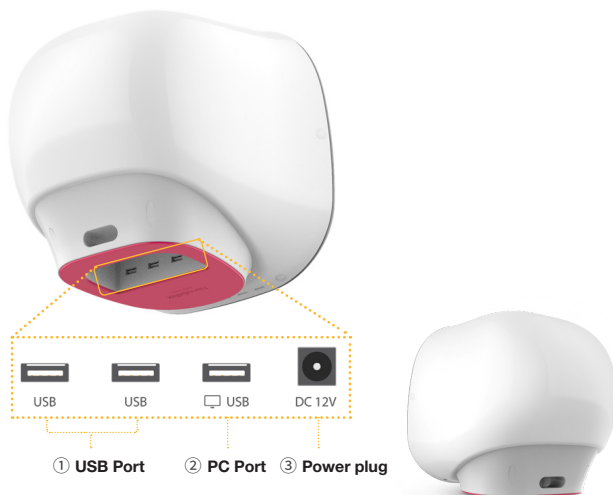
The front view showing various parts of the ADAM-MC2 is shown below:



Control buttons	Description
① Door	Slide holder is inserted and ejected.
② Power	Power on / off.
③ LCD	Display processes and results.
④ START	Performs all procedures of automatic counting.
⑤ LOCK	Protects the alignment of stage from external shock when ADAM-MC2 is being moved. Lock ADAM-MC2 before turning it off or moving it.
⑥ EJECT	Ejects the slide holder from ADAM-MC2. Functions as unload.
⑦ Auto Focus	Turn on/off the auto focus function. (If the auto focus function is turned off, the autofocus is only activated for the first measurement.)

Rear view of ADAM-MC2

The rear view showing various parts of the ADAM-MC2.



Port	Description
① USB Port	Port for software update and save the data.
② PC port	Connects with PC.
③ Power Plug	Connects ADAM-MC2 power cord to wall outlet.

⚠ CAUTION

Do not use the ② PC port. This port does not recognize USB.

Environmental requirements

ⓘ CAUTION

At low temperature (≤ 10 °C), allow the device to warm up for 10 minutes at ambient temperature before use.

To ensure correct operation and stable performance, install the ADAM-MC2 in a location which meets the following conditions:

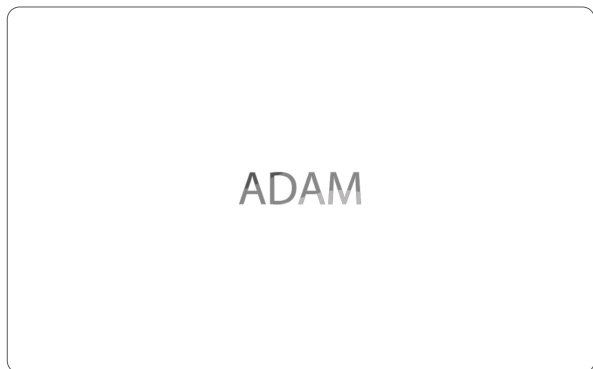
1. Use at room temperature between 20 and 35 °C
 - Not recommended for cold room use (≤ 4 °C).
2. Do not expose the device to direct sunlight.
3. Do not subject the device to direct or continuous vibration.
4. Do not subject the device to intense magnetic or electromagnetic fields.
5. Do not install the device in high-humidity environment.
6. Location of device should be free from corrosive gases or other corrosive substances.
7. Ensure minimal contact with dust or other airborne particles.
8. Allow a 10 cm (4 inches) minimum space around the device for proper airflow.
9. Do not place any objects on the device.

Power on and Initial Display

1. Check the connection of ADAM-MC2 and power cord.
2. Press the power button for 2–3 seconds.

If you get an error message, please contact your local distributor or sales@nanoentek.com.

If booting is successful and no errors are detected, the home screens will be displayed as below.

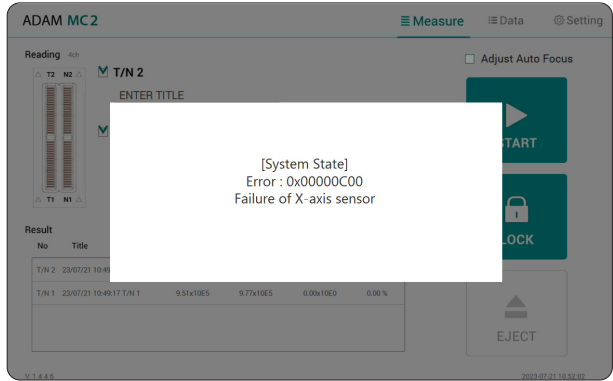


ⓘ CAUTION

- Do not tilt the device too much in the forward when connecting the power cord.
- Do not move the device after connecting power cord.
When you connect the power cord to ADAM-MC2 even without power on the device, it will go through self diagnostic tests.

Error Messages during booting

[System State]



It appears when booting is not working properly.
Turn off main power and restart device.

If this message still appears after restarting,
contact your local distributor or sales@nanoentek.com.

Error code	Cause
0x00000C00	Failure of X-axis sensor
0x00007000	Failure of Y-axis sensor
0x00008000	Failure of Z-axis sensor
0x06000000	Failure of Locking module sensor

Count setting

[AccuChip]

Set the AccuChip according to you are using.

Accuchip

4Ch 2Ch



Accuchip

4Ch 2Ch



[Cell size]

Set the minimum and maximum size of cell.

Cell size

Min 5 Max 80

[Dilution factor]

When diluting sample, set the Dilution factor.

CAUTION

Factor values for the AccuStain Solution is already applied.

Dilution factor

1.0

[Solution type]

Select appropriate AccuStain solution type.

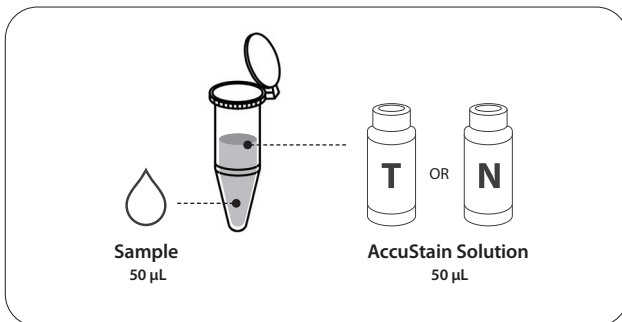
T_{PI}/N T_{AC}/N

Instruction

Instruction is provided in this section for preparing the sample with AccuStain Solution for use with disposable AccuChip for automated cell count using the ADAM-MC2.

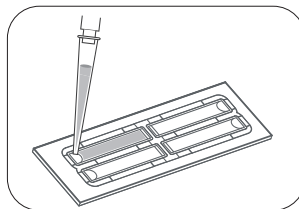
Please check the procedure of sample preparation and testing below. For more detailed information, please refer to the next page.

1. Mix the sample with AccuStain Solution.

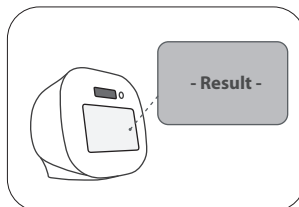
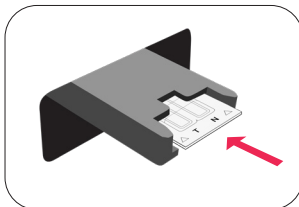


2. Load the mixed sample. Then, wait 1 minute for the sample settling.

- [2 channel: 23 μ L
- [4 channel: 13 μ L
- [T channel: Total cell
- [N channel: Non-viable cell



3. Insert AccuChip. Get the result.



Sample preparation

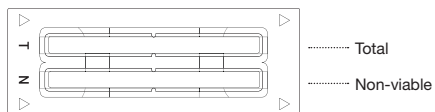
1. Cultivate the required number of cells.
2. Add an appropriate volume of growth media or PBS to dilute to a final concentration of 5×10^4 cells/mL to 4×10^8 cells/mL (T_{Pr}/N solution).
When using T_{AO}/N solution, prepare to a final concentration of 5×10^4 cells/mL to 2×10^7 cells/mL.

NOTE Concentration out of this range will result in errors.
Refer to page 17 for more information about errors.

3. Thoroughly mix the cell pellet by vortexing.
4. Check visually if any cell clumps or agglomerates remain.

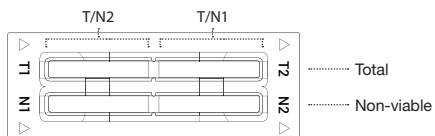
Counting cell

[AccuChip 2x]



Total Cell	Non-viable Cell
<ol style="list-style-type: none"> 1) Add 50 μL of your sample to 50 μL supplied AccuStain Solution T. 2) Vortex the tube vigorously. 3) Load 23 μL sample mixture to the AccuChip on T channel. Then, wait 1 minute for the sample settling. 	<ol style="list-style-type: none"> 1) Add 50 μL of your sample to 50 μL supplied AccuStain Solution N. 2) Vortex the tube vigorously. 3) Load 23 μL sample mixture to the AccuChip on N channel. Then, wait 1 minute for the sample settling.

[AccuChip 4x]



Total Cell	Non-viable Cell
<ol style="list-style-type: none"> 1) Add 50 μL of your sample to 50 μL supplied AccuStain Solution T. 2) Vortex the tube vigorously. 3) Load 13 μL sample mixture to the AccuChip on T1 or T2 channel. Then, wait 1 minute for the sample settling. 	<ol style="list-style-type: none"> 1) Add 50 μL of your sample to 50 μL supplied AccuStain Solution N. 2) Vortex the tube vigorously. 3) Load 13 μL sample mixture to the AccuChip on N1 or N2 channel. Then, wait 1 minute for the sample settling.

NOTE When you load of the sample mixture to the AccuChip, please be careful not to make bubbles.

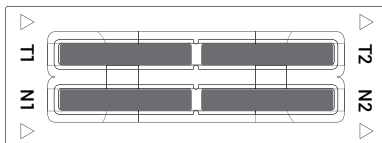
Counting Cell

⚠ WARNING

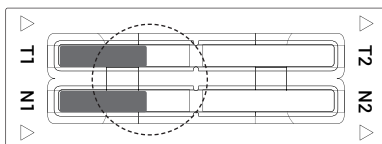
[Sample loading error]

Be cautious of loading the correct volume of the sample into AccuChip. The instrument will not detect low or high sample volumes.

Correct volume

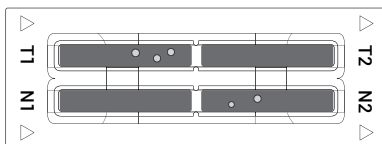


Low volume



⚠ CAUTION

Avoid bubbles which may negatively affect the result.

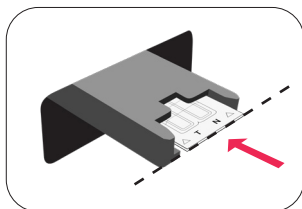


Counting Cell

⚠ WARNING

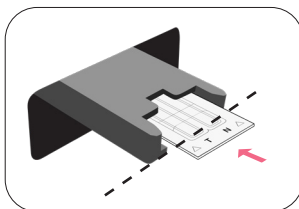
[AccuChip insert error]

Completely insert AccuChip face up, in the direction of the arrow on the slide. The instrument will not detect if slides are inserted incorrectly. See pictures below for proper insertion.



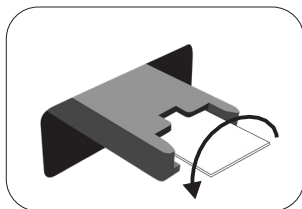
(O)

Correctly inserted



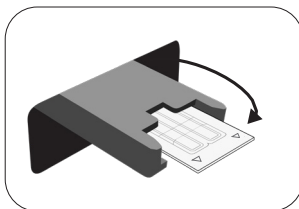
(X)

Not fully inserted



(X)

Inserted upside down



(X)

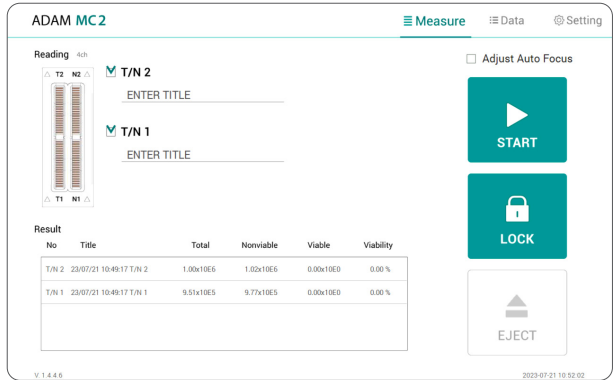
Inserted in opposite direction

⚠ CAUTION

- Please insert or remove the AccuChip when the slide holder is fully ejected.
- When the test is finished, please remove the AccuChip from the slide holder.

Run Sample

Start counting process by pressing 'START'.
It may take about 2 minutes longer for auto focus at the initial test.

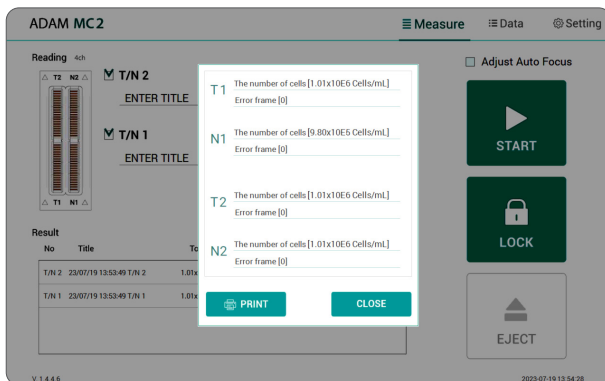


While the test is in progress, you can check the cell images of each channel.



Result Analysis

The result will be displayed after being automatically calculated by ADAM-MC2 software.

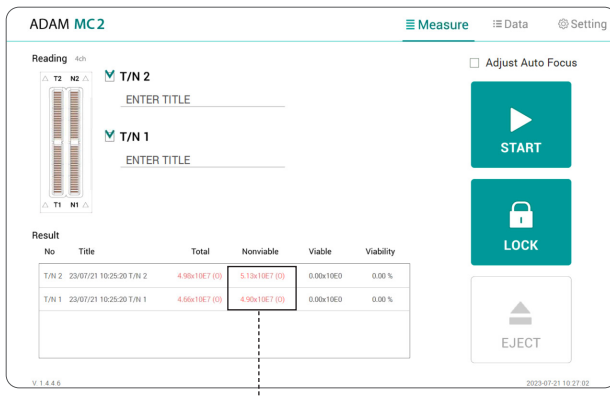


*1.10E6 = 1.10 X 10⁶ cells/mL

Title	Number of Total cell	Number of Non-Viable cell	Viability
HeLa_300µM H2O2	T1 (1.10E6)	N1 (5.50E5)	50%
HeLa_100µM H2O2	T2 (2.20E6)	N2 (5.50E5)	75%

- The viability will be automatically calculated by the ADAM-MC2 software after each measurement of the total cells and the non-viable cells.
- First, the total cell number and second, non-viable cell number are measured and then the cell viability is calculated as subtracting non-viable cell counting numbers from total cell counting.

Result Analysis - Error code



[Solution T_{PI}/N]

Error code	Cause
E	Frames with errors are over 50% of total counting frame.
O	Cells are more than 4×10^6 cells/mL.
H	Cells are more than 2×10^6 cells/mL.
L	Cells are less than 4×10^5 cells/mL.
U	Cells are less than 5×10^4 cells/mL.
Error frame [#]	Frame with error that contains cells whose diameter is larger than $100 \mu\text{m}$. When this error shown in result window, please check the image.

- Please use the solution T_{AC}/N when the cell concentration is above the range of 4×10^6 cells/mL.

[Solution T_{AO}/N]

Error code	Cause
E	Frames with errors are over 50% of total counting frame.
O	Cells are more than 2×10^7 cells/mL.
H	Cells are more than 1×10^7 cells/mL.
L	Cells are less than 4×10^5 cells/mL.
U	Cells are less than 5×10^4 cells/mL.
Error frame [#]	Frame with error that contains cells whose diameter is larger than $100 \mu\text{m}$. When this error shown in result window, please check the image.

Data list

ADAM MC2 Measure Data Setting

Data List

All	No	CH	S/N	Sample	DateTime	Total	Viability	Nonviable	Viable
<input checked="" type="checkbox"/>	0018	CH4	PI	23/07/20 14:45:51 T/N/2	2023-07-20 14:45:51	1.01x10E5	0.00%	1.02x10E6	0.00x10E0
<input type="checkbox"/>	0017	CH4	PI	23/07/20 14:45:51 T/N/1	2023-07-20 14:45:51	1.01x10E5	2.66%	9.83x10E5	2.58x10E4
<input type="checkbox"/>	0016	CH4	PI	23/07/20 13:11:40 T/N/2	2023-07-20 13:11:40	9.94x10E5	0.00%	1.02x10E6	0.00x10E0
<input type="checkbox"/>	0015	CH4	PI	23/07/20 13:11:40 T/N/1	2023-07-20 13:11:40	1.05x10E5	9.69%	9.96x10E5	5.95x10E4
<input type="checkbox"/>	0014	CH4	PI	23/07/20 09:27:22 T/N/2	2023-07-20 09:27:22	1.00x10E5	0.00%	1.02x10E6	0.00x10E0
<input type="checkbox"/>	0013	CH4	PI	23/07/20 09:27:22 T/N/1	2023-07-20 09:27:22	1.03x10E5	4.58%	9.83x10E5	4.72x10E4
<input type="checkbox"/>	0012	CH4	PI	23/07/19 15:24:39 T/N/2	2023-07-19 15:24:39	2.49x10E7 (O)	0.00%	2.54x10E7 (O)	0.00x10E0
<input type="checkbox"/>	0011	CH4	PI	23/07/19 15:24:39 T/N/1	2023-07-19 15:24:39	2.46x10E7 (O)	0.23%	2.46x10E7 (O)	5.61x10E4
<input type="checkbox"/>	0010	CH4	PI	23/07/19 13:53:49 T/N/2	2023-07-19 13:53:49	1.01x10E5	0.11%	1.01x10E5	1.12x10E3
<input type="checkbox"/>	0009	CH4	PI	23/07/19 13:53:49 T/N/1	2023-07-19 13:53:49	1.01x10E5	3.32%	9.80x10E5	3.37x10E4
<input type="checkbox"/>	0008	CH4	PI	23/07/19 13:50:15 T/N/2	2023-07-19 13:50:15	1.01x10E5	0.00%	1.02x10E6	0.00x10E0

Start Date: 2023 / 07 / 14
End Date: 2023 / 07 / 20

SEARCH

EDIT

IMAGE

SAVE

PRINT

MAIL

DELETE

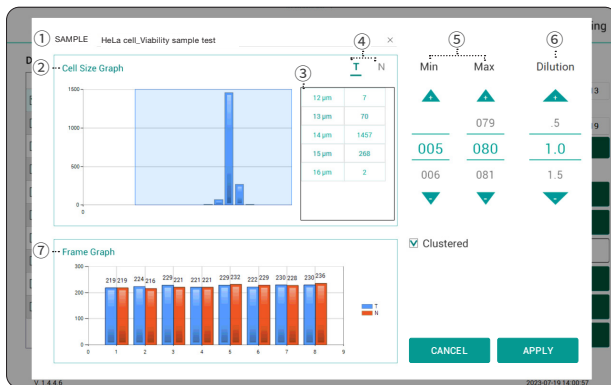
V 1.4.4.0 2023-07-20 16:04:26

Control buttons	Description
① ALL	Select all data in Data List.
② SEARCH	Display the data of the selected date.
③ EDIT	View and edit the data. Multiple data can be edited with the same settings.
④ IMAGE	Check the cell images of each channel.
⑤ SAVE	Save the selected data to USB(PDF, Excel, Image).
⑥ PRINT (optional)	Prints the selected data.
⑦ MAIL	Send the Excel, PDF, and Image files of selected data to e-mail. Delete the selected data.
⑧ DELETE	Delete the selected data.

④ **NOTE**

'PRINT' button will be automatically activated when portable printer (optional) is connected.

EDIT



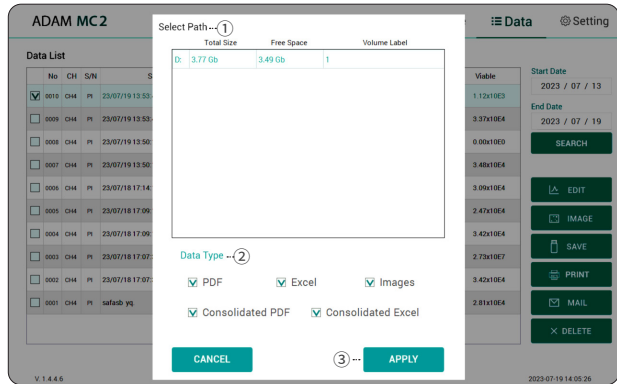
Control buttons	Description
① Sample	Edit the sample name.
② Cell size graph	Allows to view the cell size graph for each channel (T/N).
③ Cell size table	Allows to view the number of cells in each cell size.
④ Channel	Selects channel (T/N).
⑤ Cell size setting	Set the min/max size of the cell.
⑥ Dilution Factor	Set the dilution factor of sample. (Factor values for the AccuStain Solution is already applied.)
⑦ Frame graph	Allows to view the counted cell number of each frame.

IMAGE



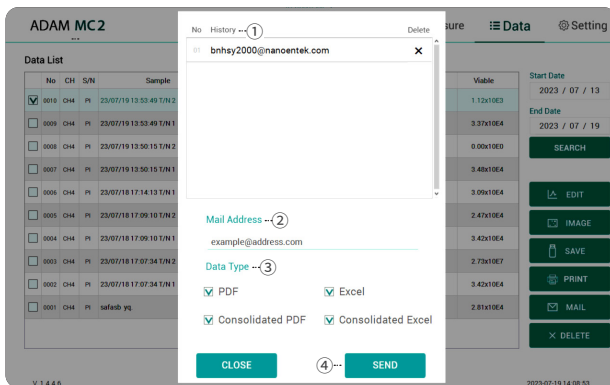
Control buttons	Description
① Channel	Select a channel.
② Original	Check the original image.
③ Counted	Check the counted cell image.
④ Frame	Select a frame number of the channel.
⑤ Zoom-in/out	Zoom in and out to check the cell image.

SAVE



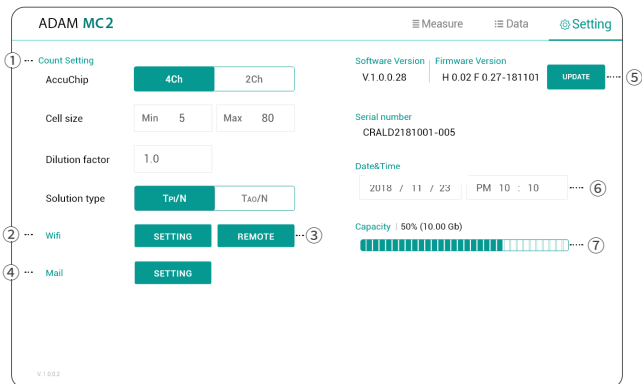
Control buttons	Description
① Select Path	Selects save path from the list to send the selected data.
② Data Type	Selects which data type to save.
③ Apply	Exports the files to a selected save path <i>Files can be sent to only one save path at a time.</i>

MAIL



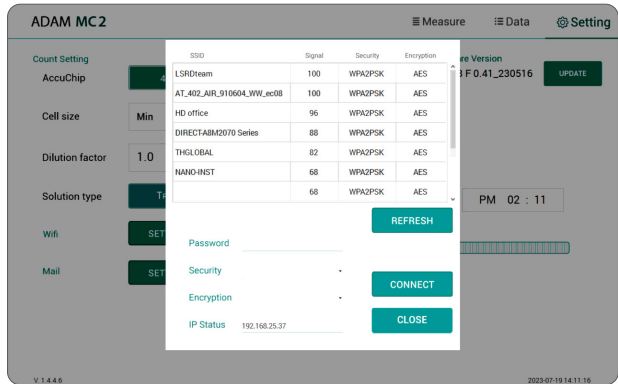
Control buttons	Description
① History	Selects e-mail address from the list to send data. <i>The e-mail address where data has been sent will be saved.</i>
② Mail Address	To send files to new e-mail, enter the applicable e-mail address.
③ Data type	Selects which data type to send via e-mail.
④ Send	Send the files to selected e-mail. <i>Files can be sent to only one e-mail at a time.</i>

Setting



Control buttons	Description
① Count setting	Set the conditions in the setting tap before counting. Refer to page 10 for more information.
② Wifi	Set the wifi to use the e-mail function.
③ Remote support	Connects to remote support software.
④ Mail	Do not change the setting in mail.
⑤ Update	Firmware or Software update through the USB.
⑥ Date&Time	Set the current date and time.
⑦ Capacity	Check remaining capacity .

Wifi

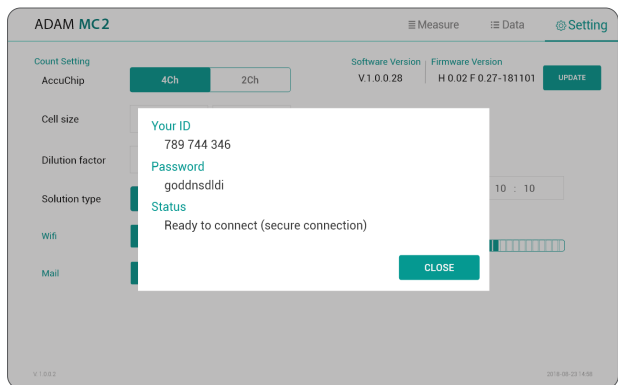


1. Click the Refresh button.
2. Select the wifi.
3. Insert the password of selected wifi.
4. Click the Connect button.

⚠ CAUTION

If connection error occurs, please contact a laboratory facility manager.

Remote support



1. Connect to wifi.
2. Click 'Remote support' button.
3. Share your ID and password to NanoEntek.

⚠ NOTE

The remote support feature is to be used for maintenance only by request of NanoEntek.

⚠ WARNING

If you do not see your Remote Support ID and Password, click the 'Close' and 'Remote Support' button again until they appear.

Update

1. Prepare the USB with update file.
2. Insert the USB.
3. Click the UPDATE button.

ⓘ CAUTION

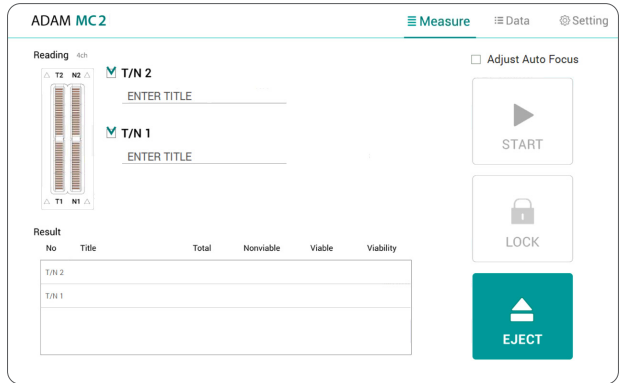
- *The 'AdamUpdate' folder must exist in the root path of the USB folder.*
- *ADAM-MC2 can be updated only when the firmware or software file exists in the 'AdamUpdate' folder. The 'ADAM MC2.exe' file should be in the 'AdamUpdate' folder.*
- *Do not rename the 'AdamUpdate' folder. The folder name should be 'AdamUpdate'.*

Lock

Press  LOCK before turning off the device.

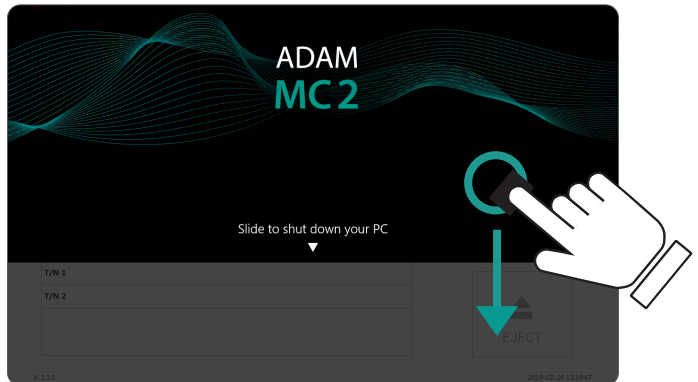
If there is no operation for 1 minutes, the lock function will be activated automatically.

When the device is locked, the screen will be changed as shown below.



Power off

If you press the power button 2~3 seconds, then 'Slide to shut down your PC' message will appear. Slide down the screen to turn off the power.



Maintenance and cleaning

1. ADAM-MC2 does not need regular maintenance.
2. ADAM-MC2 has no replacement of consumable materials.
3. Please clean the exposed surface of ADAM-MC2 frequently or before testing, using a soft cloth and isopropyl alcohol or deionized water.

ⓘ CAUTION

Dispose of wipes in an appropriately labeled solvent contaminated waste container.

Trouble shooting

Problem	Description	Solution
ADAM-MC2 does not power up	<ul style="list-style-type: none"> No power from outlet Bad power cord. 	<ul style="list-style-type: none"> Check power source. Replace.
Inaccurate result	<ul style="list-style-type: none"> Cell number may be out of range. AccuStain Solution has expired. Too high clumped cells. 	<ul style="list-style-type: none"> Adjust the number of cells to recommended concentration (refer to page 12). Discard AccuStain that have expired. Purchase the AccuStain (refer to page 29). Try again after vortexing the cells.
When error message is shown (For information on each error message, see page 17)	<ul style="list-style-type: none"> When frames with errors are over 50% of total counting frame. (Error message: E) 	<ul style="list-style-type: none"> Check the suspension of cells if all cells are fully dissociated into single cells. If contaminants except cells are found, prepare sample again.
	<ul style="list-style-type: none"> High concentration of cells (Error message: H) Over detection range (Error message: O) 	<ul style="list-style-type: none"> Check if concentration of cell is too high. Dilute the sample and count again.
	<ul style="list-style-type: none"> Low concentration of cells (Error message: L) Under detection range (Error message: U) 	<ul style="list-style-type: none"> Check if concentration of cell is too low. Use concentrated sample and count again.

Warranty

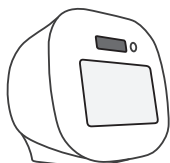
If any defects occur in the ADAM-MC2 during one(1) year warranty period, NanoEntek will repair or replace the defective parts at its discretion without charge. The following defects, however, are specifically excluded:

1. Defects caused by improper operation.
2. Repair or modification done by anyone other than NanoEntek or an authorized agent.
3. Damage caused by substituting alternative parts.
4. Use of fittings or spare parts supplied by anyone other than NanoEntek.
5. Damage caused by accident or misuse.
6. Damage caused by disaster.
7. Corrosion caused by improper solvent or sample.

For your protection, items being returned must be insured against possible damage or loss. NanoEntek cannot be responsible for damage incurred during shipment of a repair instrument. It is recommend that you save the original packing material in which the instrument was shipped. This warranty should be limited to the replacement of defective products.

For any inquiry or request for repair service,
Contact sales@nanoentek.com or your local distributor.

Technical Specifications



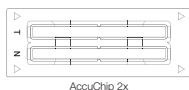
ADAM-MC2	
Measuring range	5x10 ⁴ ~ 4x10 ⁹ cells/mL (PI) 5x10 ⁴ ~ 2x10 ⁷ cells/mL (AO/PI)
Optimal range	4x10 ⁵ ~ 2x10 ⁹ cells/mL (PI) 4x10 ⁵ ~ 1x10 ⁷ cells/mL (AO/PI)
Analysis time	< 25~50 sec/test (For initial test, max. 2 min/test)
Voltage	DC12V
Current	5A
Objective lens	4 X
LED	4W Green LED
Camera	CMOS camera
Filter	Excitation filter, Dichroic filter, Emission filter
Weight	7 kg
Size (W×L×H)	277 × 276 × 270 mm
Degree of protection	IPX0

Operating environment condition

Temperature	5°C ≤ Temperature ≤ 40°C
Humidity	20% ≤ Humidity ≤ 80%
Altitude	Altitude ≤ 2,000 m

Transportation & storage environment condition

Temperature	5°C ≤ Temperature ≤ 40°C
Humidity	20% ≤ Humidity ≤ 80%



AccuChip 2x



AccuChip 4x



AccuChip Kit

AccuChip

Loading sample vol. per test	23 μL/test (AccuChip 2X) 13 μL/test (AccuChip 4X)
Measuring sample vol. per test	8.6 μL/test (AccuChip 2X) 3.4 μL/test (AccuChip 4X)

Solutions

AccuStain Solution	12.5 mL Total cells (T), Non-viable cells (N)
--------------------	--

Storage temperature

AccuChip	0 – 30 °C
AccuStain Solution	2 – 8 °C

Expiration date

AccuChip	2 year
AccuStain Solution	1 year

Product List

Cat. No.	Product	Contents	Quantity
AD2K-200	AccuChip2X Kit*	200 pcs AccuChip 2X	1
		12.5 mL AccuStain Solution T	2
		12.5 mL AccuStain Solution N	1
AD4K-200	Accuchip 4x Kit (PI)	200 pcs AccuChip 4X	1
		12.5 mL AccuStain Solution T (T_{PI})	2
		12.5 mL AccuStain Solution N	1
AD4K-200AO	Accuchip 4x Kit (AO/PI)	200 pcs AccuChip 4X	1
		12.5 mL AccuStain Solution T (T_{AO})	2
		12.5 mL AccuStain Solution N	1
ADR-1000	Accustain Solution (PI solution)	12.5 mL AccuStain Solution T (T_{PI})	4
		12.5 mL AccuStain Solution N	2
ADR-1000AO	Accuchip 4x Kit (AO/PI solution)	12.5 mL AccuStain Solution T (T_{AO})	4
		12.5 mL AccuStain Solution N	2
ADB-500	ADAM Calibration Bead	5 mL Calibration Bead	1

*AccuChip 2x: please consult your distributor or manufacture for availability.

NOTE

AD4K-200: Total cell is counted by PI with lysis buffer.

ADR-1000: Total cell is counted by PI with lysis buffer.

Accessories

Cat. No.	Product	Quantity
ADAM MC2 printer	Portable printer (optional)	1









Safety Precautions

Review and follow the safety instructions below :

- Always ensure that the power supply input voltage matches the voltage available at your location.
- To avoid the danger of electric shock, install the instrument per the environmental specifications located in "Technical Specifications". If water or other material enters the instrument, the adaptor, or power inlet, disconnect the power cord and contact a service person.
- Do not touch the main plug or power cord with wet hands.
- This machine is air-cooled so its surfaces become hot during operation. During installation and use, leave more than 10 cm (4 inches) free around the device.
- Do not install the instrument on a slant or a place prone to vibrations or the risk of instrument malfunction or damage to the instrument will increase.
- Never insert any objects (especially metallic) into the air vents of the instrument as this could result in electrical shock, personal injury, and equipment damage.
- Always set the main switch on the power supply unit to OFF before connecting the power cord to the wall outlet.
- To avoid a potential shock hazard, always connect the grounding terminal of the instrument and that of the wall outlet properly. The power cord should be connected to a grounded, 3-conductor power outlet.
- Position the device so that there is sufficient length for the cables and their respective connections.
- Set the main switch to " O " (OFF), unplug the power cord, and lock the stage before moving.
- If the instrument is broken or dropped, disconnect the power cord and contact an authorized service person. Do not disassemble the instrument.
- Only use authorized accessories.
- Use this equipment only as specified in this manual and as specified in any documentation associated with its components. Use of the equipment in an unspecified manner may result in damage to the device or injury to the user.

Safety Symbols

The following symbols are found on the instrument and this document. Always use the equipment in the safest possible manner.

Symbol	Meaning
	Caution & Warning
	ON (Power)
	This instrument and consumables conforms to the Declaration of Conformity.
	<i>Caution: BIOHAZARD</i> Protective measures must be used in dealing with biologically hazardous materials such as carcinogenic reagents.
	USB Connection
	LED
	Disposal of your old appliance <ol style="list-style-type: none"> 1. When this crossed-out wheeled bin symbol is attached to a product, it means the product is covered by the European Directive 2012/19/EU. 2. All electrical and electronic products should be disposed of separately from the municipal waste stream via designated collection facilities appointed by the government or the local authorities. 3. The correct disposal of your old appliance will help prevent potential negative consequences for the environment and human health. 4. For more detailed information about disposal of your old appliance, please contact your city office, waste disposal service or visit our web-site, www.nanoentek.com.
	This product conforms to UL 61010-1, CAN/CSA C22.2 No.61010-1 "Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use, Part I: General Requirements." Instruments bearing the TUV symbol are certified by TUV Product Services to be in conformance with the applicable safety standard for the US and Canada.

Warnings

1. After using device, please turn off main power.

If not, it may cause malfunction or may reduce product life.

2. When turning off the device, be sure to lock the device with Lock button.

If not, it may cause mechanical problem or error message when device is booting.

Item	Warning
Battery inside device	<ul style="list-style-type: none"> • Risk of explosion if battery is replaced incorrectly. • This battery is not replaceable by user. Refer to an authorized service person.
Cover	<ul style="list-style-type: none"> • Do not remove cover or disassemble case. There are no adjustable components inside the instrument. • If a malfunction is found, refer to an authorized service person.
Manual	<ul style="list-style-type: none"> • Do not attempt to service the equipment. • This manual is only available in English. • Failure to heed warnings may result in injury to service provider or operator.
Sample handling	<ul style="list-style-type: none"> • Wear personal protective equipment during sampling and testing. • Sample may contain infectious or bio-hazardous agents. • Use capped tubes and lint free wipes. Lint free wipes to be used one time and discarded.
Waste	<ul style="list-style-type: none"> • After using AccuChip, appropriately dispose as bio-hazardous waste. • Do not reuse AccuChip.

Technical Support

Visit the our Website at www.nanoentek.com for :



- Technical resources, including manuals, FAQs, etc.
- Technical support contact information
- Additional product information and special offers.

For more information or technical assistance, please call or email.

NanoEntek

NanoEntek, Inc.

851-14, Seohaero-ro, Paltan-myeon, Hwaseong-si, Gyeonggi-do, 18531, Korea

Tel. +82-2-6220-7940

Fax. +82-2-6220-7999

Email

sales@nanoentek.com

Website

www.nanoentek.com

ADAM MC2

NESMU-AMC2-001E (V.0.5)



NanoEntek, Inc.

851-14, Seohae-ro, Paltan-myeon, Hwaseong-si,
Gyeonggi-do, 18531, Korea
Tel: +82-2-6220-7940
Fax: +82-2-6220-7999

NanoEntek America, Inc.

220 Bear Hill Road, Suite 102, Waltham, MA 02451, USA
Tel: +1-781-472-2558
Fax: +1-781-790-5649

EC Representative

MT Promedt Consulting GmbH
Ernst-Heckel-Straße 7, 66386 St. Ingbert, Germany

Email

sales@nanoentek.com

Website

www.nanoentek.com

ADAM™ MC Plus

User Manual



All the materials in this user manual are protected by Korean and international copyright laws. They cannot be reproduced, translated, published or distributed without the permission of the copyright owner.

ADAM MC Plus Instruction Manual

Website: www.nanoentek.com

E-mail: sales@nanoentek.com

NanoEntek, Inc.

851-14, Seohae-ro, Paltan-myeon, Hwaseong-si, Gyeonggi-do, 18531, Korea

Tel. +82-2-6220-7940

Fax. +82-2-6220-7999

NanoEntek America, Inc.

220 Bear Hill Road, Suite 102, Waltham, MA 02451, USA

Tel. +1-781-472-2558

Fax. +2-781-790-5649

The information in this manual is described as accurately as possible.
Firmware and software changes and updates may change without prior consent or notification.

Copyright © 2023 by NanoEntek, Inc.

All rights reserved. Published in Korea.

Documentation: **NESMU-ACTP11-001E (V.1.0)**

Revision history: V.0.0 JUN 2023

V.0.1 NOV 2023

V.1.0 DEC 2024

Table of Contents

Introduction	8
General Description	8
Technology	9
Basic principle of counting	10
Product contents	11
ADAM™ MC Plus	11
AccuPlus Slide & Reagent	11
Upon receiving the instrument	11
Product Description	12
Front view of ADAM™ MC Plus	12
Rear view of ADAM™ MC Plus	13
Graphical User Interface of ADAM™ MC Plus	14
Getting started	15
Environmental requirements	15
Power on and Initial Display	15
Error messages during booting	16
Count setting	17
General Operation	18
Quick Guide	18
Sample preparation	19
Cell counting	19
Measure	22
Run sample	22
Result analysis	23
Result Analysis - Error code	24
Data	25
EDIT	26
IMAGE	27
SAVE	28
MAIL	29
Setting	30
Wifi	31
Remote support	31
Update	32
Power off	33

Lock	33
Power off	33
Maintenance and cleaning	34
Trouble shooting	35
Warranty	36
Technical specifications	37
Product list	38
Safety precautions	39
Mesures de sécurité	40
Safety symbols	41
Warnings	43
Technical support	44

Introduction

General Description

The ADAM™ MC Plus is a highly accurate dual fluorescence cell counter that uses AO (acridine orange) and DAPI to count total and dead cells and also provides a bright field channel for cell size measurement.



Introduction

Technology

Measuring the number of cells and their viability is an essential part of biological experiments and biopharmaceutical procedures. Traditionally, the hemocytometer and trypan blue exclusion method have been used to quantifying total cells, dead cells, and cellular viability. These manual methods have been widely adopted as a standard for cell counting, however, they have limitations.

Non-cellular debris, such as dust or tissue residues, can be miscounted as cells, and the trypan blue exclusion method is known to overestimate cellular viability. Additionally, manual counting is prone to user-to-user variability, impacting consistency and accuracy.

To address these challenges, NanoEntek has developed ADAM™ MC Plus, an image-based fluorescence cell counter. It captures bright field images to quantify cell sizes while using two fluorescence images to quantify the number of total cells and dead cells.

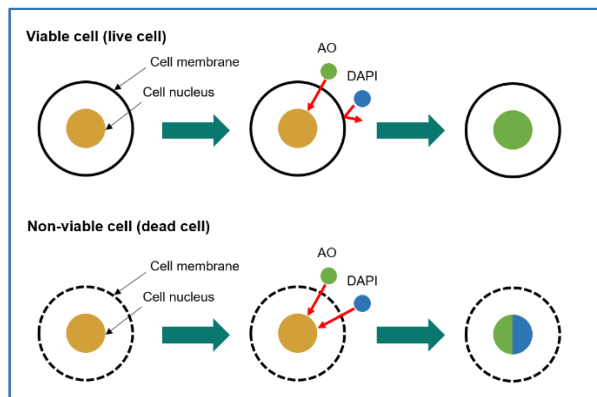
ADAM™ MC Plus is designed to provide accurate, simple, and reliable results.

Introduction

Basic principle of counting

ADAM™ MC Plus uses Acridine Orange (AO) and 4',6-diamidino-2-phenylindole (DAPI) to count total number of cells and number of dead cells, respectively. AO is a cell-membrane permeable dye that stains nucleus of every cells regardless of the cell's condition. Therefore, it is used to count total number of cells. DAPI is a cell-membrane impermeable dye that only stains nucleus of cells with damaged membranes or cells with inactive metabolism. Therefore, it is used to count number of dead cells. Schematics of counting principal is shown below. From total cell counts and dead cell counts, viability of cells is calculated as below;

Principle (Total cell count)



$$*Viability(\%) = \frac{(A-B)}{A} \times 100$$

A: Total cell / B: Non-viable cell

Product contents

ADAM™ MC Plus

ADAM™ MC Plus is shipped in a carton box containing followings:

Item	Quantity
Main device	1
User manual	1
USB hub	1
Wifi dongle	1
Power cord	1
Adapter	1
Printer (optional)	1
QC slide (optional)	1

AccuPlus Slide & Reagent

AccuPlus Slide has following supplies:

Item	AccuPlus Slide (Cat. No: AP4S-100)	Cell viability reagent (Cat. No: APAD-400)
Disposable Slide	100 pcs (4 channel)	N/A
Reagent	N/A	20 mL x 1 bottle
Available test Q'ty	400 test	

**These supplies are sold separately.*

Upon receiving the instrument

- Examine the instrument carefully for any damage incurred during transit.
- Ensure that all parts of the instrument including accessories listed above are included with the product.
- Any damage claims must be filed with the carrier.
- The warranty does not cover in-transit damage.
- Upon receipt, store AccuPlus Slide at room temperature.
- Cell viability reagent should be stored at 2~8°C

Product Description

Front view of ADAM™ MC Plus

The front view of the ADAM™ MC Plus is shown below:

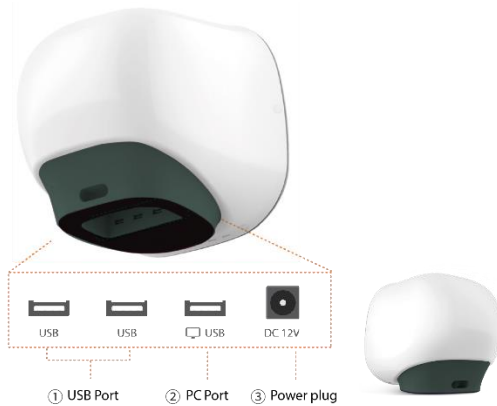


Control buttons	Description
① Door	Allows the slide holder to move in and out of the instrument.
② Power	Turns the instrument on / off.
③ LCD	Serves as the main user interface for operating the instrument and viewing progress and results.

Product Description

Rear view of ADAM™ MC Plus

The rear view showing various parts of the ADAM™ MC Plus.:



Port	Description
① USB Port	Port for software update and save the data.
② PC port	Connects with PC.
③ Power Plug	Connects the adapter plugged into a 12V power outlet to the ADAM MC Plus

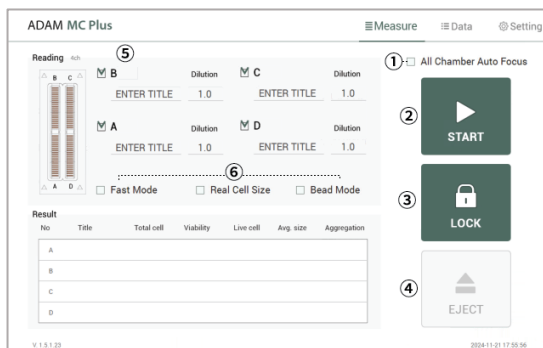
⚠ CAUTION

Do not use the ② PC port with a flash drive. This port does not recognize a flash drive.

Product Description

Graphical User Interface of ADAM™ MC Plus

The graphic user interface of the ADAM™ MC Plus is shown below:



Control buttons	Description
① Auto Focus	Turn on/off the auto focus function. (If the auto focus function is turned off, the autofocus is only activated for the first measurement.)
② START	Performs all procedures of automatic counting.
③ LOCK	Protects the alignment of stage from external shock when ADAM™ MC Plus is being moved. Lock ADAM™ MC Plus before turning it off or moving it.
④ EJECT	Ejects the slide holder from ADAM™ MC Plus. Functions as unload.
⑤ Sample	Check the sample to be measured and enter the name. Also enter the dilution factor.
⑥ Mode	Select the measurement mode. The default mode is 13 frames for fluorescence and the fast mode is 6 frames. Real cell size mode is a mode for measuring bright field images. Bead mode is for QC.

Getting started

Environmental requirements

⚠ CAUTION

At low temperature (≤ 10 °C), allow the device to warm up for 10 minutes at ambient temperature before use. Not recommended for cold room use (≤ 4 °C).

To ensure correct operation and stable performance, install the ADAM™ MC Plus in a location which meets the following conditions:

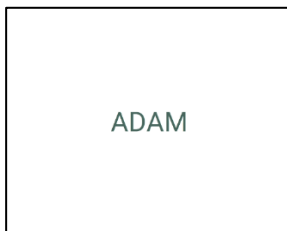
1. Use at room temperature between 20 and 35 °C
2. Do not expose the device to direct sunlight.
3. Do not subject the device to direct or continuous vibration.
4. Do not subject the device to intense magnetic or electromagnetic fields.
5. Do not install the device in high-humidity environment.
6. Location of device should be free from corrosive gases or other corrosive substances.
7. Ensure minimal contact with dust or other airborne particles.
8. Allow a 10 cm (4 inches) minimum space around the device for proper airflow.
9. Do not place any objects on top of the device.

Power on and Initial Display

1. Plug 12V power supply to the power port at the back of the instrument.
2. Press the power button in the front for 2–3 seconds to turn the instrument on.

If you get an error message, please contact your local distributor or sales@nanoentek.com.

If booting is successful and no errors are detected, the home screens will be displayed as below.



⚠ CAUTION

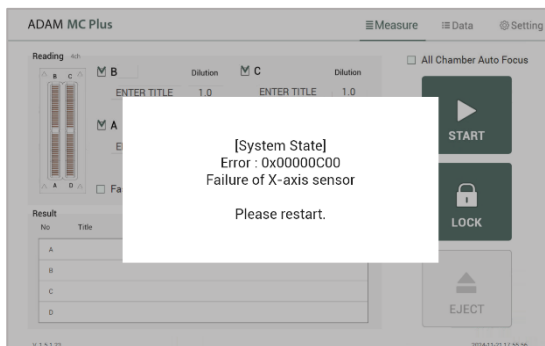
- Do not tilt the device too much in the forward when connecting the power cord.
- Do not move the device after connecting power cord.

When you connect the power cord to ADAM™ MC Plus even without power on the device, it will go through self diagnostic tests.

Getting started

Error messages during booting

[System State : Error]



If the "System State" error message appears, it indicates that the boot process was not completed properly.

To resolve this, press and hold the power button for at least 5 seconds to turn off the instrument. Wait until the instrument is completely turned off, and turn it back on by pressing and holding the power button for 2–3 seconds.

If this message still appears after restarting, contact your local distributor or sales@nanoentek.com.

Error code	Cause
0x0000C00	Failure of X-axis sensor
0x00007000	Failure of Y-axis sensor
0x00008000	Failure of Z-axis sensor
0x0600000	Failure of Locking module sensor

Getting started

Count setting

[Cell size]

The initial counting range is set between 3 and 80, but the size can be adjusted to customize the counting range.

Cell size

Min 3

Max 80

[Dilution factor]

If the sample was diluted before mixing with the MC Plus reagent, set the dilution factor here. For example, if the sample was diluted 3-fold, enter "3" as the dilution factor.

! CAUTION

Factor values for the Cell viability reagent is already applied.

Dilution factor

1.0

! CAUTION

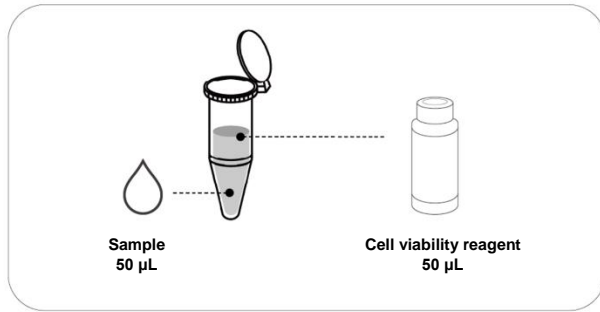
In Bead mode and QC mode, adjustments to [Cell size] and [Dilution factor] will not be applied.

General Operation

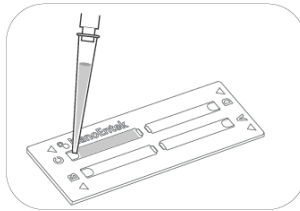
Quick Guide

Instruction is provided in this section for preparing the sample with Cell viability reagent for use with disposable AccuPlus Slide for automated cell count using the ADAM™ MC Plus. Please follow these steps to prepare samples and run tests. For more detailed information, please refer to the next page.

1. Mix the sample and the cell viability reagent at a 1:1 ratio. The recommended ratio is mixing 50µL of the sample with 50µL of the cell viability reagent. Then, mix thoroughly.



2. Take 15µL of the mixed sample and load it into each chamber of the AccuPlus slide. Wait for 1 minute on a flat surface to allow cells to settle.

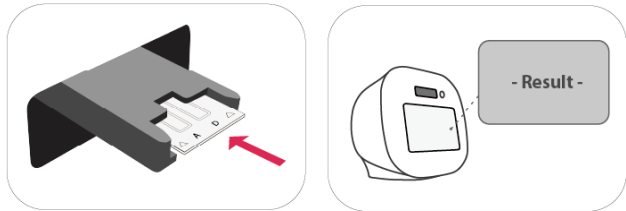


⚠ CAUTION

1. This waiting step is essential for ensuring accurate measurements.
2. A chamber that has been loaded with a sample cannot be reused.

General Operation

3. Insert the AccuPlus Slide into the slide holder. Press the START button to begin the measurement and obtain the results.



Sample preparation

1. Cultivate the required number of cells.
NOTE Concentration out of this range will result in errors. Refer to page 20 for more information about errors.
2. Thoroughly mix the cell pellet by vortexing or pipetting.
3. Check visually if any cell clumps or agglomerates remain.

Cell counting



[AccuPlus Slide 4 ch]

Counting cell

- 1) Add 50 μL of your sample to 50 μL supplied Cell viability reagent.
 - 2) Pipette or vortex the tube vigorously.
 - 3) Load 15 μL sample mixture to the AccuPlus Slide A,B,C or D channel.
Then, wait 1 minute for settling down
-

- NOTE** When you load of the sample mixture to the AccuPlus Slide, take care to avoid creating bubbles.

General Operation

Cell counting

! WARNING

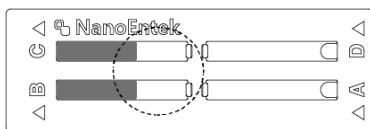
[Sample loading error]

When loading the sample into the AccuPlus Slide, ensure the correct volume of 15 μ L is used. Incorrect sample volumes, either too low or too high, may result in inaccurate results.

Correct volume

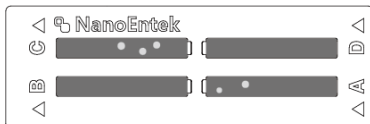


Low volume



! CAUTION

Avoid bubbles which may negatively affect the result.



General Operation

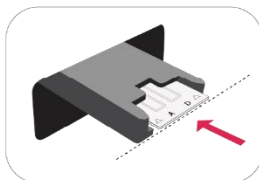
Cell counting

⚠ **WARNING**

[AccuPlus Slide insert error]

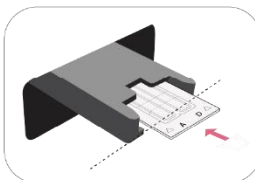
Completely insert AccuPlus Slide face up, in the direction of the arrow on the slide. The instrument will not detect if slides are inserted incorrectly.

See pictures below for proper insertion.



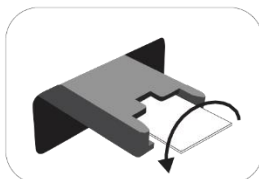
(O)

Correctly inserted



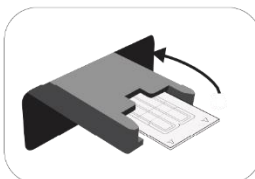
(X)

Not fully inserted



(X)

Upside down inserted



(X)

Wrong direction inserted

⚠ **WARNING**

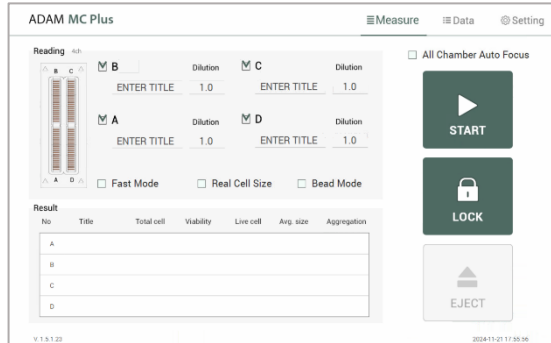
- Please insert or remove the AccuPlus Slide when the slide holder is fully ejected.
- When the test is finished, please remove the AccuPlus Slide from the slide holder.

Measure

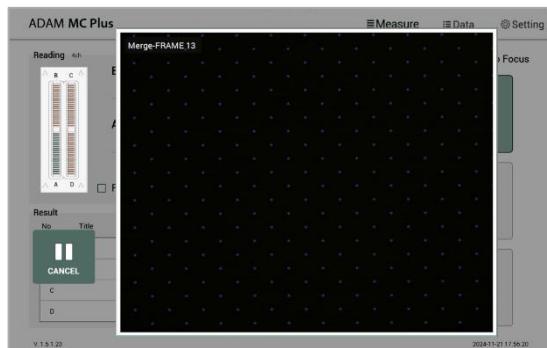
Run sample

Start counting process by pressing 'START'.

Upon the first measurement after turning on the instrument, the auto-focus function is applied automatically. If the "All Chamber Auto Focus" option is selected, it may take approximately 3 minutes or longer to find the optimal focus for all chambers.



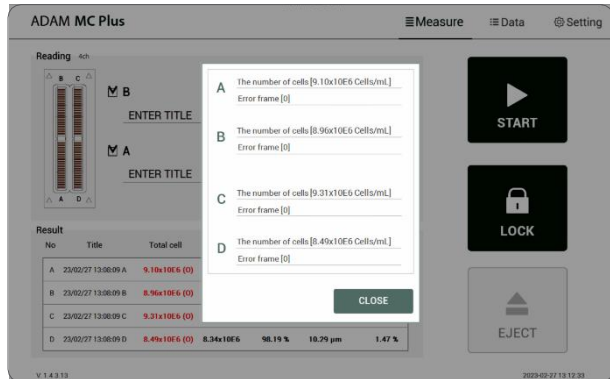
While the test is in progress, the merged channel image can be viewed in real time.



Measure

Result analysis

Based on the captured images, the ADAM™ MC Plus software automatically calculates the results and displays them in a simple pop-up.



* Examples of Results

Title	Number of Total cell	Number of Non-Viable cell	Viability
Viability 01	1.10E6	5.50E5	50%
Viability 02	2.20E6	5.50E5	75%

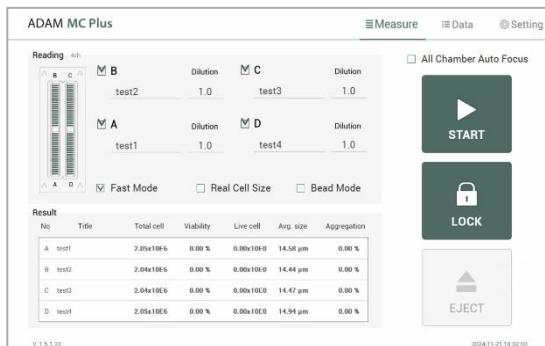
- The viability will be automatically calculated by the ADAM™ MC Plus software after each measurement of the total cells and the non-viable cells.
- First, the total cell count is measured, followed by the non-viable cell count. The cell viability is then calculated by subtracting the non-viable cell count from the total cell count.

NOTE

'Print' button will be automatically activated when portable printer (optional) is connected.

Measure

Result Analysis - Error code



Error code	Cause
E	Frames with errors are over 50% of total counting frame.
O	Cells are more than 2×10^7 cells/mL.
H	Cells are more than 4×10^8 cells/mL.
L	Cells are less than 4×10^5 cells/mL.
U	Cells are less than 5×10^4 cells/mL.
Error frame [#]	Frame with error that contains cells whose diameter is larger than 100µm. When this error shown in result window, please check the image.

Data

Data list

All	No	CH	Slide	Sample	Total	Date/Time	Viability	Live	Dead	Avg. size
<input type="checkbox"/>	0020	CH4	D	23/06/22 14:05:35 D	1.47x10 ⁰⁵	2023-06-22 14:05:35	81.14%	1.20x10 ⁰⁵	9.79x10 ⁰⁵ (L)	16.80µm
<input type="checkbox"/>	0018	CH4	C	23/06/22 14:05:35 C	1.17x10 ⁰⁵	2023-06-22 14:05:35	89.57%	9.43x10 ⁰⁵	2.23x10 ⁰⁵ (L)	17.25µm
<input type="checkbox"/>	0019	CH4	B	23/06/22 14:05:35 B	9.33x10 ⁰⁵	2023-06-22 14:05:35	93.98%	8.78x10 ⁰⁵	0.71x10 ⁰⁴ (L)	17.32µm
<input type="checkbox"/>	0017	CH4	A	23/06/22 14:05:35 A	1.04x10 ⁰⁵	2023-06-22 14:05:35	95.80%	1.22x10 ⁰⁵	0.54x10 ⁰⁴ (L)	17.52µm
<input type="checkbox"/>	0010	CH4	A	23/06/22 14:02:00 A	1.11x10 ⁰⁵	2023-06-22 14:02:00	77.61%	8.65x10 ⁰⁵	2.45x10 ⁰⁵ (L)	16.91µm
<input type="checkbox"/>	0013	CH4	C	23/06/22 14:00:40 C	1.25x10 ⁰⁵	2023-06-22 14:00:40	81.19%	9.73x10 ⁰⁵	2.25x10 ⁰⁵ (L)	16.89µm
<input type="checkbox"/>	0014	CH4	B	23/06/22 13:59:50 B	1.01x10 ⁰⁵	2023-06-22 13:59:50	91.07%	9.25x10 ⁰⁵	8.35x10 ⁰⁴ (L)	16.97µm
<input type="checkbox"/>	0013	CH4	A	23/06/22 13:58:22 A	1.12x10 ⁰⁵	2023-06-22 13:58:22	79.21%	8.73x10 ⁰⁵	2.45x10 ⁰⁵ (L)	17.14µm
<input type="checkbox"/>	0012	CH4	C	23/06/22 13:56:52 C	1.11x10 ⁰⁵	2023-06-22 13:56:52	85.08%	9.60x10 ⁰⁵	1.41x10 ⁰⁵ (L)	21.65µm
<input type="checkbox"/>	0011	CH4	B	23/06/22 13:52:04 B	1.25x10 ⁰⁵	2023-06-22 13:52:04	89.68%	1.12x10 ⁰⁵	1.36x10 ⁰⁵ (L)	16.46µm
<input type="checkbox"/>	0010	CH4	A	23/06/22 13:52:04 A	1.85x10 ⁰⁵	2023-06-22 13:52:04	94.79%	1.78x10 ⁰⁵	9.65x10 ⁰⁴ (L)	19.04µm

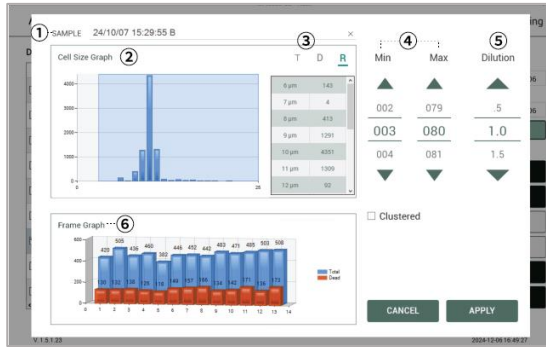
Control buttons	Description
① All	Select all data in Data List.
② SEARCH	Display the data of the selected date.
③ EDIT	View and edit the data. Multiple data can be edited with the same settings.
④ IMAGE	Check the cell images of each channel.
⑤ SAVE	Save the selected data to USB(PDF, Excel, Image).
⑥ PRINT (optional)	Prints the selected data.
⑦ MAIL	Send the Excel, PDF, and Image files of selected data to e-mail. Delete the selected data.
⑧ DELETE	Delete the selected data.

① NOTE

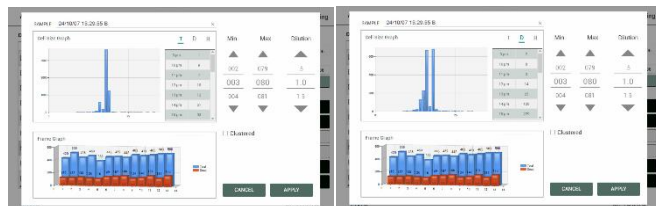
"PRINT" button will be automatically activated when portable printer (optional) is connected

Data

EDIT



Control buttons	Description
① Sample	Edit the sample name.
② Cell size graph	Allows to view the cell size graph for each channel.
③ Cell size table	Allows to view the number of cells in each cell size. T=Total cell (AO), D=Dead cell (DAPI), R=Real cell size(Bright)
④ Cell size setting	Set the min/max size of the cell.
⑤ Dilution Factor	Set the dilution factor of sample. (Factor values for the Cell viability reagent is already applied.)
⑥ Frame graph	Allows to view the counted cell number of each frame.

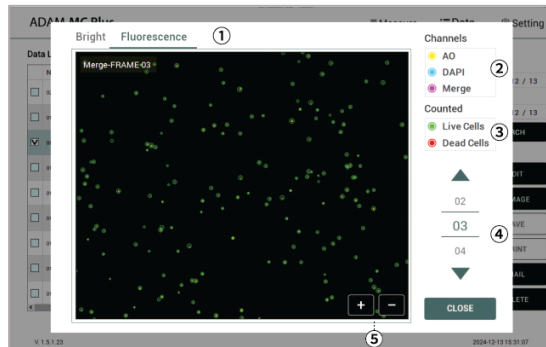


NOTE

After measurement, size range adjustment is available only in the R channel when Bead mode or Real size mode is selected. If neither mode is selected, adjustment is only available in the T (AO) channel. Cells excluded by the size range adjustment are highlighted with yellow squares in the image.

Data

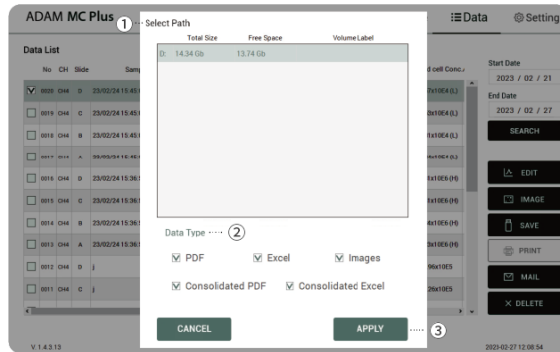
IMAGE



Control buttons	Description
① Select images	Select images measured in bright field or fluorescence.
② Original	Turn on/off AO, DAPI, and Merge to check channel image.
③ Counted	Turn on/off Live, Dead cells to check counted cell image.
④ Frame	Select a frame number of the channel.
⑤ Zoom-in/out	Zoom in and out to check the cell image.

Data

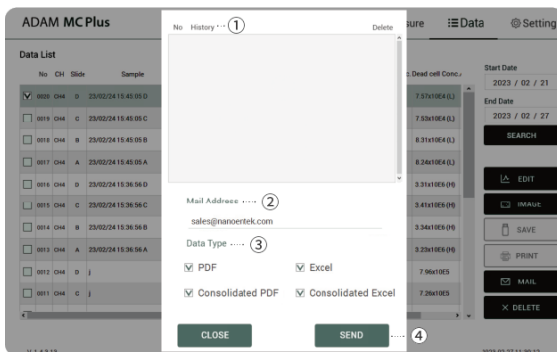
SAVE



Control buttons	Description
① Select Path	Selects save path from the list to send the selected data.
② Data Type	Selects which data type to save.
③ Apply	Exports the files to a selected save path <i>Files can be sent to only one save path at a time.</i>

Data

MAIL



Control buttons	Description
① History	Selects e-mail address from the list to send data. <i>The e-mail address where data has been sent will be saved.</i>
② Mail Address	To send files to new e-mail, enter the applicable e-mail address.
③ Data type	Selects which data type to send via e-mail.
④ Send	Send the files to selected e-mail address. <i>Files can be sent to only one e-mail at a time.</i>

Setting

Setting

ADAM MC Plus

Measure Data Setting

Count Setting

① AccuChip 4Ch 2Ch

② Cell size Min 3 Max 80

③ Dilution factor 1.0 ⑤

④ Wifi SETTING REMOTE

⑥ Mail SETTING

Software Version V. 1.5.1.23 Firmware Version H 0.04 F 0.04_240411 ⑦ UPDATE

Serial number CRALDP230305-005

Date&Time ⑧ 2024 / 12 / 05 PM 04 : 52

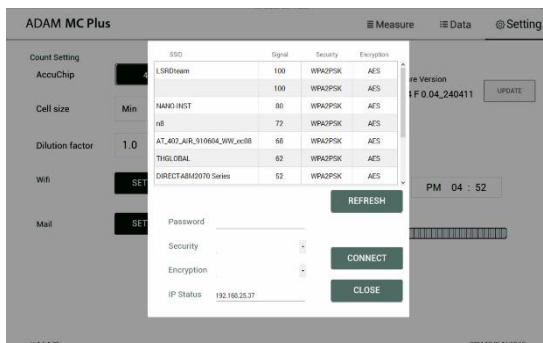
Capacity 7.7% ⑨

V. 1.5.1.23 2024-12-06 16:52:33

Control buttons	Description
① AccuChip	Select AccuPlus slide type (2ch, 4ch) to use.
② Cell size	Set default values of cell size.
③ Dilution factor	Set default values of dilution factor.
④ Wifi	Sets the Wi-Fi to use the e-mail or remote support function.
⑤ Remote	Connects to remote support software.
⑥ Mail	For the sender's email address, DO NOT change the setting in mail.
⑦ Update	Updates firmware or software through USB. (Refer to page 37)
⑧ Date&Time	Sets current date and time.
⑨ Capacity	Checks remaining capacity.

Setting

Wifi

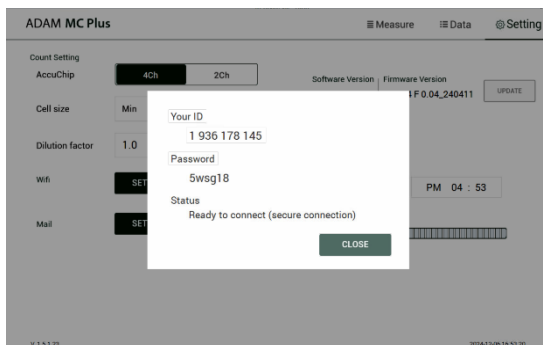


1. Click the Refresh button.
2. Select the wifi.
3. Insert the password of selected wifi.
4. Click the Connect button.

⚠ CAUTION

If connection error occurs, please contact a laboratory facility manager

Remote support



1. Connect to wifi.
2. Click 'Remote support' button.
3. Share your ID and password to NanoEntek.

⚠ NOTE

The remote support feature is to be used for maintenance only by request of NanoEntek.

⚠ WARNING

If you do not see your Remote Support ID and Password, click the 'Close' and 'Remote Support' button again until they appear.

Setting

Update


1. Prepare the USB with update file.
2. Insert the USB.
3. Click the UPDATE button.

! **CAUTION**

- The 'AdamUpdate' folder must exist in the root path of the USB folder.
- ADAM™ MC Plus can be updated only when the firmware or software file exists in the 'AdamUpdate' folder. The 'ADAM™ MC Plus.exe' file should be in the 'AdamUpdate' folder.
- Do not rename the 'AdamUpdate' folder. The folder name should be 'AdamUpdate'.

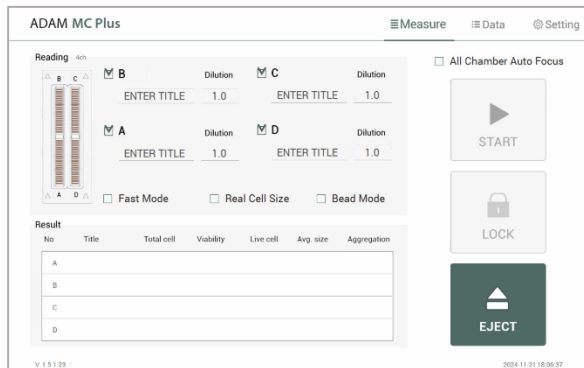
Power off

Lock

Press  LOCK before turning off the device.

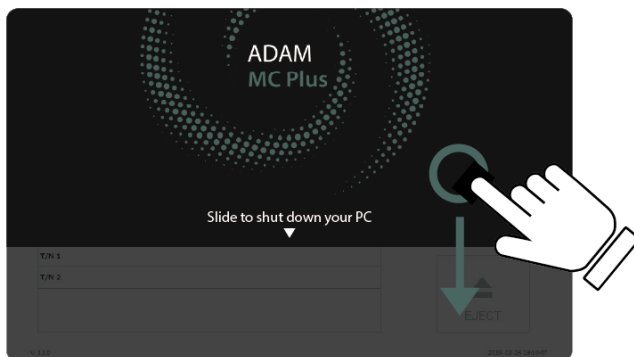
If there is no operation for 1 minute, the lock function will be activated automatically.

When the device is locked, the screen will be changed as shown below.



Power off

If you press the power button 2~3 seconds, then 'Slide to shut down your PC' message will appear. Slide down the screen to turn off the power.



Maintenance and cleaning

Maintenance and Cleaning

1. ADAM™ MC Plus does not need regular maintenance.
2. ADAM™ MC Plus has no replacement of consumable materials.
3. Please clean the exposed surface of ADAM™ MC Plus frequently or before testing, using a soft cloth and isopropyl alcohol or deionized water.

ⓘ CAUTION

Dispose of wipes in an appropriately labeled solvent contaminated waste container.

Trouble shooting

Trouble shooting

Problem	Description	Solution
ADAM™ MC Plus does not power up	<ul style="list-style-type: none"> No power from outlet Bad power cord. 	<ul style="list-style-type: none"> Check power source. Replace.
Inaccurate result	<ul style="list-style-type: none"> Cell number may be out of range. Cell viability reagent has expired. Too high clumped cells. 	<ul style="list-style-type: none"> Adjust the number of cells to recommended concentration (refer to page 33). Discard Cell viability reagent that have expired. Purchase the Cell viability reagent (refer to page 33). Try again after vortexing the cells.
When error message is shown (For information on each error message, see page 20)	<ul style="list-style-type: none"> When frames with errors are over 50% of total counting frame. (Error message: E) 	<ul style="list-style-type: none"> Check the suspension of cells if all cells are fully dissociated into single cells. If contaminants except cells are found, prepare sample again.
	<ul style="list-style-type: none"> High concentration of cells (Error message: H) Over detection range (Error message: O) 	<ul style="list-style-type: none"> Check if concentration of cell is too high. Dilute the sample and count again.
	<ul style="list-style-type: none"> Low concentration of cells (Error message: L) Under detection range (Error message: U) 	<ul style="list-style-type: none"> Check if concentration of cell is too low. Use concentrated sample and count again.

Warranty

Warranty

If any defects occur in the ADAM™ MC Plus during one (1) year warranty period, NanoEntek will repair or replace the defective parts at its discretion without charge. The following defects, however, are specifically excluded:

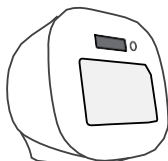
1. Defects caused by improper operation.
2. Repair or modification done by anyone other than NanoEntek or an authorized agent.
3. Damage caused by substituting alternative parts.
4. Use of fittings or spare parts supplied by anyone other than NanoEntek.
5. Damage caused by accident or misuse.
6. Damage caused by disaster.
7. Corrosion caused by improper solvent or sample.

For your protection, items being returned must be insured against possible damage or loss. NanoEntek cannot be responsible for damage incurred during shipment of a repair instrument. It is recommended that you save the original packing material in which the instrument was shipped. This warranty should be limited to the replacement of defective products.

For any inquiry or request for repair service,
Contact sales@nanoentek.com or your local distributor.

Technical specifications

Technical Specifications



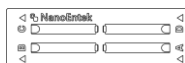
ADAM™ MC Plus	
Measuring range	5x10 ⁴ ~ 2x10 ⁷ cells/mL
Optimal range	4x10 ⁵ ~ 4x10 ⁶ cells/mL
Analysis time*	Please refer to following table.
Voltage	DC12V
Current	5A
Objective lens	4 X
LED	Green, Blue, UV
Camera	CMOS camera
Filter	Excitation filter, Dichroic filter, Emission filter
Weight	7 kg
Size (WxLxH)	277 x 276 x 270 mm
Degree of protection	IPX0

► Analysis time*

Mode (channel)	All Chamber Auto Focus (on)	All Chamber Auto Focus (off)	Captured Frames
Bead mode (BF/AO/DAPI)	8 min/slide		13 frames
Accuracy mode (AO/DAPI, Default)	3 min 30 sec/slide	1 min 30 sec/slide	13 frames
Real + Accuracy (BF/AO/DAPI)	6 min 30 sec/slide	5 min/slide	13 frames
Fast mode (AO/DAPI)	3min/slide	1 min/slide	6 frames

Operating environment condition

Temperature	5 °C ≤ Temperature ≤ 40 °C
Humidity	20 % ≤ Humidity ≤ 80 %
Altitude	Altitude ≤ 2,000 m



AccuPlus Slide	
Loading sample vol.	15 µL/test
Measuring sample vol.	3.2 µL/test

Solutions

Cell viability Reagent	20 mL / bottle
------------------------	----------------

Storage temperature

AccuPlus Slide	0 ~ 30 °C
Cell viability reagent	2 ~ 8 °C

Expiration date

AccuPlus Slide	2 years
Cell viability reagent	1 year 2 months after opening

Product list

Product list

Cat. No.	Description	Contents
ADAM-MC Plus	Fluorescence cell counter	<ul style="list-style-type: none">• Main device• User manual
APAD-400	Cell viability reagent	<ul style="list-style-type: none">• 20 ml x 1 bottle (400 Tests) : Acridine orange (AO) & 4',6-diamidino-2-phenylindole (DAPI) stain
AP4S-100	AccuPlus Slide 4ch	<ul style="list-style-type: none">• 4ch. Slide 100ea

► Accessories

Cat. No.	Description	Q'ty
QCS-002	QC slide (Optional)	1

Safety precautions

Review and follow the safety instructions below:

- 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.
- Do not touch the main plug or power cord with wet hands.
- Always ensure that the power supply input voltage matches the voltage available at your location.
- This instrument is air-cooled and its surfaces may become hot during operation. When installing, leave a space of more than 10 cm (4 inches) around the instrument and do not place any objects between the instrument and walls.
- Do not install an instrument on a slant or a place prone to vibrations, which induces the risk of malfunction or damage of the instrument.
- Never insert any objects into the air vents of the instrument as this can result in electric shock, personal injury, and equipment damage.
- Plug the power cord firmly into the wall outlet and AC adapter.
- To avoid potential shock hazard, make sure that the power cord is properly grounded.
- Be sure to position the instrument such that it is easy to disconnect.
- Turn off an instrument before unplugging the power cord and/or moving the instrument.
- If an instrument is dropped or broken, disconnect the power cord and contact a service person. The warrant will be void in case of disassembly.
- Use only authorized accessories (adaptor, power cord, and USB drive).



WARNING

Class A equipment is intended for use in an industrial environment. In the documentation for the user, a statement shall be included drawing attention to the fact that there may be potential difficulties in ensuring electromagnetic compatibility in other environments, due to conducted as well as radiated disturbances.

Mesures de sécurité

Examiner et suivre les instructions en matière de sécurité ci-dessous:

- Si de l'eau ou d'autres matières entrent dans l'instrument, l'adaptateur, ou l'entrée de la prise, débrancher le cordon d'alimentation et contacter un technicien de service. Pour l'environnement d'exploitation, se reporter aux Spécifications du Produit.
- Ne pas toucher la prise principale ou le cordon d'alimentation avec les mains mouillées.
- S'assurer toujours que la tension d'alimentation correspond à la tension disponible à votre localisation.
- Cet instrument est refroidi à l'air et ses surfaces peuvent devenir chaudes pendant le fonctionnement. Lors de l'installation, laisser un espace de plus de 10 cm (4 pouces) autour de l'instrument et ne placer aucun objet entre l'instrument et les murs.
- Ne pas installer d'instrument sur une pente ou un endroit sujet aux vibrations, qui entraînent un risque de défaillance ou de détérioration de l'instrument.
- Ne jamais insérer d'objets dans les événements d'air de l'instrument, car cela peut causer des chocs électriques, des blessures corporelles et des dommages de l'instrument.
- Mettre le cordon d'alimentation fermement dans la prise murale et l'adaptateur courant alternatif.
- Pour éviter tout risque de choc, s'assurer que le cordon d'alimentation est correctement mis à la terre.
- S'assurer de positionner l'instrument de telle sorte qu'il soit facile à débrancher.
- Éteindre l'instrument avant de débrancher le cordon d'alimentation et/ou de le déplacer.
- En cas de chute ou de rupture d'un instrument, débrancher le cordon d'alimentation et contacter un technicien de service. La garantie sera annulée en cas de démontage.
- Utiliser uniquement les accessoires autorisés (adaptateur, cordon d'alimentation et clé USB).



AVERTISSEMENT













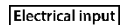
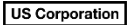

L'équipement de classe A est destiné à être utilisé dans un environnement industriel. Dans la documentation pour l'utilisateur, une déclaration doit être incluse pour attirer l'attention sur le fait qu'il peut y avoir des difficultés à assurer la compatibilité électromagnétique dans d'autres environnements, en raison de perturbations aussi bien conduites que radiées.










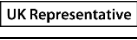


Safety symbols

Safety symbols

The following symbols are found on the instrument and this document.

Always use the equipment in the safest possible manner.

Symbol	Meaning
	Caution & Warning
	Protective earth (Ground)
	Power On/Off
	The moving parts symbol indicates areas of the medical device in which moving parts can cause injuries. Do not operate the medical device with the door open.
	This instrument has been tested and found to comply with the limits for a Class A digital medical device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the instrument is operated in a commercial environment. This instrument generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this instrument in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.
	This instrument and consumables conforms to the EC Declaration of Conformity.
	USB Connection
	This product conforms to UL 61010-1, CAN/CSA C22.2 No.61010-1 "Safety Requirements for Electrical Instrument for Measurement, Control, and Laboratory Use, Part I: General Requirements." This instrument bearing the TÜV symbol are certified by TÜV Product Services to be in conformance with the applicable safety standard for the US and Canada.
	Catalogue number/Reference number
	Serial number
	Manufacturer
	European Corporation
	Electrical input
	US Corporation
 www.nanoentek.com/eifu.php	Consult Instructions for Use An electronic instructions for us (eLFU) indicator (website address) may accompany the symbol when used to indicate an instruction to consult an eLFU.

	<p>Disposal of your old appliance</p> <ol style="list-style-type: none"> 1. When this crossed-out wheeled bin symbol is attached to a product it means the product is covered by the European Directive 2012/19/EU. 2. All electrical and electronic products should be disposed of separately from the municipal waste stream via designated collection facilities appointed by the government or the local authorities. 3. The correct disposal of your old appliance will help prevent potential negative consequences for the environment and human health. 4. For more detailed information about disposal of your old appliance, please contact local distributor, waste disposal service or call the number listed in the manual.
	LED
	<p>Physician. Keep dry Keep away from rain</p>
	Fragile, handle with care
	This way up
	General symbol for recover/recyclable
	Team lift
	US Corporation
	Authorized representative in the European community
	Authorized representative in United Kingdom
	Authorized representative in Switzerland
	Authorized representative in Brazil

Warnings

Warning

1. After using device, please turn off main power.

If not, it may cause malfunction or may reduce product life.

2. When turning off the device, be sure to lock the device with Lock button.

If not, it may cause mechanical problem or error message when device is booting.

Item	Warning
Battery inside device	<ul style="list-style-type: none">• Risk of explosion if battery is replaced incorrectly.• This battery is not replaceable by user. Refer to an authorized service person.
Cover	<ul style="list-style-type: none">• Do not remove cover or dissemble case. There are no adjustable components inside the instrument.• If a malfunction is found, refer to an authorized service person.
Manual	<ul style="list-style-type: none">• Do not attempt to service the equipment.• This manual is only available in English.• Failure to heed warnings may result in injury to service provider or operator.
Sample handling	<ul style="list-style-type: none">• Wear personal protective equipment during sampling and testing.• Sample may contain infectious or bio-hazardous agents.• Use capped tubes and lint free wipes. Lint free wipes to be used one time and discarded.
Waste	<ul style="list-style-type: none">• After using AccuPlus Slide, appropriately dispose as bio-hazardous waste.• Do not reuse AccuPlus Slide.

Technical support

Visit our Website at www.nanoentek.com for:



- Technical resources, including manuals, FAQs, etc.
- Technical support contact information
- Additional product information and special offers

For more information or technical assistance, please call or email.

NanoEntek, Inc.

851-14, Seohaero, Paltan-myeon, Hwaseong-si,
Gyeonggi-do, 18531, Korea
Tel: +82-2-6220-7940
Fax: +82-2-6220-7999

NanoEntek America, Inc.

220 Bear Hill Road, Suite 102, Waltham, MA 02451, USA
Tel: +1-781-472-2558
Fax: +1-781-790-5649

Email

sales@nanoentek.com

Website

www.nanoentek.com

ADAM MC Plus

NESMU-AMCP-001E(V.1.0)



NanoEntek, Inc.

851-14, Seohae-ro, Paltan-myeon, Hwaseong-si
Gyeonggi-do, 18531, Korea
Tel: +82-2-6220-7940
Fax: +82-2-6220-7999

US Corporation

NanoEntek America, Inc.

220 Bear Hill Road, Suite 102, Waltham, MA 02451, USA
Tel: +1-781-472-2558
Fax: +1-781-790-5649

European Corporation

NanoEntek Europe | med-tech supplies GmbH

Lochhamerstr. 4a, 82152 Martinsried, Germany
Tel: +49-89-21-55-38-43 / Fax: +49-89-99-95-46-60

E-mail

sales@nanoentek.com

Website

www.nanoentek.com

ADAM CellIT

A New Standard of Automated Cell Counter

Instruction Manual



All the materials in this instruction manual are protected by Korean and international copyright laws. They cannot be reproduced, translated, published or distributed without the permission of the copyright owner.

ADAM-CellIT Instruction Manual

Website : www.nanoentek.com

E-mail : sales@nanoentek.com

Manufactured by

NanoEntek, Inc.

851-14, Seohae-ro, Paltan-myeon, Hwaseong-si, Gyeonggi-do, 18531, Korea

Tel. +82-2-6220-7940

Fax. +82-2-6220-7999

NanoEntek America, Inc.

220 Bear Hill Road, Suite 102, Waltham, MA 02451, USA

Tel: +1-781-472-2558

Fax: +1-781-790-5649

The information in this manual is described as accurately as possible.

Firmware and software changes and updates may change without prior consent or notification.

Copyright © 2019 by NanoEntek Inc.

All rights reserved. Published in Korea.

Documentation: **NESMU-ACT-001E**

Revision history: V.0.0 OCT 2019
V.0.1 DEC 2021
V.0.5 AUG 2022
V.0.6 SEP 2022
V.0.7 AUG 2023

Table of contents

Introduction

General description	6
Technology	7
Basic principle of counting	8

Product Contents

ADAM-CellT	9
AccuChip kit	9
Upon receiving the instrument	9

Product Description

Front view of ADAM-CellT	10
Rear view of ADAM-CellT	11

Getting Started

Environmental requirements	12
Power on and initial display	12
Error messages during booting	13
Count setting	14

General Operation

Introduction	15
Sample preparation	16
Counting cell	16

Measure

Run sample	19
Result analysis	20
Result analysis -Error code	21

Data

QC mode	22
QC slide edit	23
QC slide result edit	24
QC slide result	25
Data list	26
Edit	27

Image	28
Save	29
Mail	30
Approval	31

Setting

Setting	35
Wifi	36
Remote support	36
Update	37
Auto logout	37
Backup	37
Recovery	38

User

User	39
User manage	40
Privilege	41
Password option	42
Log manage	43
Document manage	44
Deleted list	45

Power off

Lock	46
Power off	46

Maintenance and cleaning	47
Trouble shooting	48
Warranty	49
Technical specifications	50
Product list	51
Accessories	51
Safety precautions	52
Safety symbols	53
Warnings	54
Technical Support	55

General Description

The ADAM-CellIT is a benchtop automated cell counter designed to perform cell counting and viability measurements using AccuStain Solution.

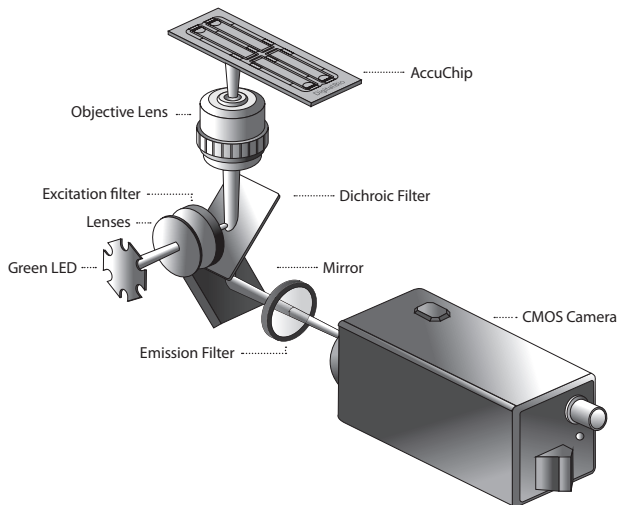


Technology

Until now, cell counting and viability measurement for many types of cells have been performed manually using hemocytometer with Trypan Blue exclusion method, which is to distinguish viable cells from non-viable cells. One drawback of this method, however, is the propensity for the staining of artifacts; another drawback is that the naked eye can only differentiate between cells in a limited concentration range in the hemocytometer chamber. This combined with the potential problem of cell aggregation and limited sample volume leads to the common variation of counts normally associated with this method.

To address these problems, NanoEntek has developed the ADAM-CellIT, which is based on a fluorescent microscopy technique for counting cells. The ADAM-CellIT utilizes sensitive fluorescence dye staining, LED optics and CMOS detection technologies to make the cell analysis more accurate and reliable.

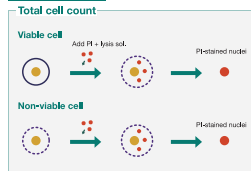
To count cells using ADAM-CellIT, the cells are mixed with Propidium Iodide (PI) stain/ Acridine Orange (AO) and directly pipetted on to a disposable plastic chip. The chip is then loaded onto a precision stage. An ADAM-CellIT system is automatically focused onto the chip and cells that have been stained are recorded by a sensitive CMOS camera. The image results are automatically processed generating the cell count which is displayed on the front of the instrument. Simple. Fast. Accurate. Reliable.



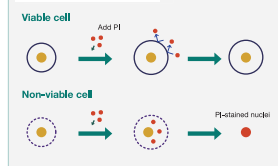
Basic principle of counting

ADAM-CellT is an instrument which counts mammalian cell DNA by staining with a fluorescent dye, Propidium Iodide (PI) or Acridine Orange (AO). PI does not enter cells with intact membranes or active metabolism. In contrast, cells with damaged membranes or cells with inactive metabolism are unable to prevent PI entering the cell. As a result, the nuclei of cell membrane-damaged normal cells or non-viable cells will be stained. Solution T_{PI} is composed of the PI and cell membrane lysis buffer. Since lysis buffer in Solution T_{PI} changes intact cell membrane to damaged cell membrane condition, both viable cells and non-viable cells can be stained. AO included in Solution T_{AO} is permeable dye which permeates cell membrane and stains DNA. Regardless of the condition of the cell membrane or active metabolism, AO can stain both viable cells and non-viable cells. The ADAM-CellT provides two kinds of staining solutions: AccuStain Solution T for the total cell counting and AccuStain Solution N for the non-viable cell counting. AccuStain Solution T is categorized into Solution T_{PI} and Solution T_{AO}. AccuStain Solution N for the non-viable cell counting is composed of the PI alone. After staining samples, the prepared cells will be loaded into the chip. The viability will be automatically calculated in the ADAM-CellT software after each measurement of the total cells and the non-viable cells.

Solution T_{PI}/N

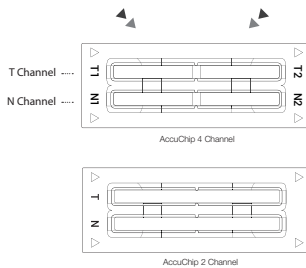
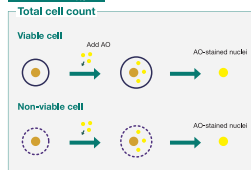


Non-viable cell count



* There are two types of disposable chips: 2 channel and 4 channel

Solution T_{AO}/N



$$^* \text{Viability}(\%) = \frac{(A - B)}{A} \times 100$$

A: Total cell / B: Non-viable cell

ADAM-CellIT

The contents of the ADAM-CellIT are listed below:

Item	Quantity
Main device	1
Power cord	1
USB hub	1
Adapter	1
User's manual	1
Support for 21 CFR Part 11 Compliance	1
AccuChip Kit	1
USB Wifi dongle	1
External Hard disk	1
Calibration Bead	1
Labeling	1
Inspection Sheet	1
Printer (optional)	1
QC slide (optional)	1
PC (only PC Mode)	1

AccuChip kit

The contents of the ADAM-CellIT's AccuChip Kit are listed below:

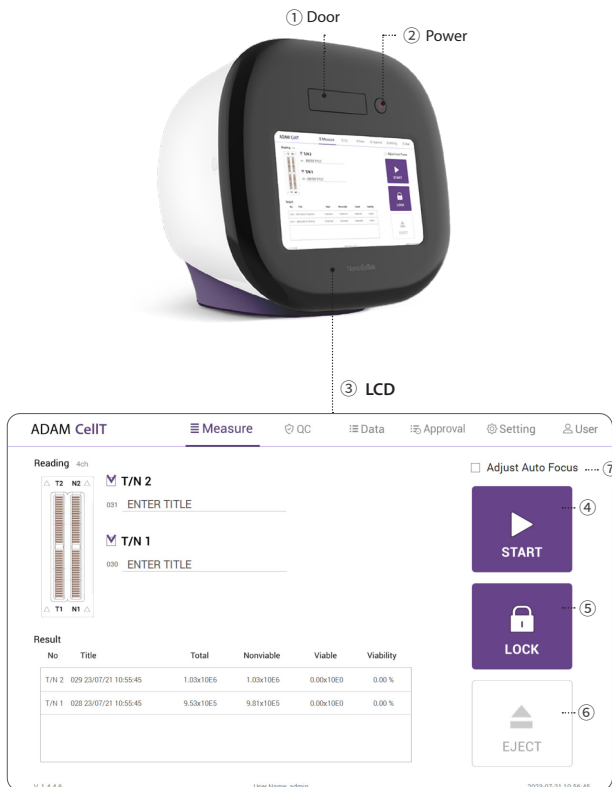
Item	AccuChip2x Kit (Cat. No: AD2K-200)	AccuChip4x Kit (Cat. No: AD4K-200)	AccuStain Solution (Cat. No: ADR-1000)
Disposable Chip	200pcs (2 channel)	200pcs (4 channel)	N/A
Solution T	12.5 mL x 2ea	12.5 mL x 2ea	12.5 mL x 4ea
Solution N	12.5 mL x 1ea	12.5 mL x 1ea	12.5 mL x 2ea
Available test Q'ty	Min. 200 test/kit	Min. 400 test/kit	
	Max. 400 test/kit (Only total cell count)	Max. 800 test/kit (Only total cell count)	

Upon receiving the instrument

- Examine the instrument carefully for any damage incurred during transit.
- Ensure that all parts of the instrument including accessories listed above are included with the product.
- Any damage claims must be filed with the carrier.
- The warranty does not cover in-transit damage.
- Upon receipt, store AccuChip at room temperature. AccuStain Solution should be stored at 2~8°C

Front view of ADAM-CellT

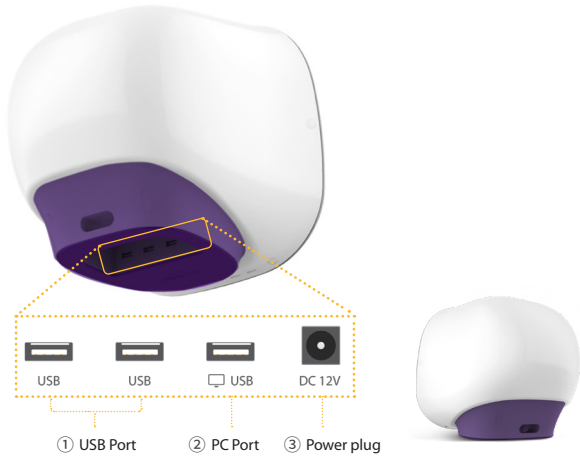
The front view of ADAM-CellT is shown below:



Control buttons	Description
① Door	Slide holder is inserted and ejected.
② Power	Power on / off.
③ LCD	Display processes and results.
④ START	Performs all procedures of automatic counting.
⑤ LOCK	Protects the alignment of stage from external shock when ADAM-CellT is being moved. Lock ADAM-CellT before turning it off or moving it.
⑥ EJECT	Ejects the slide holder from ADAM-CellT. Functions as unload.
⑦ Auto Focus	Turn on/off the auto focus function. (If the auto focus function is turned off, the autofocus is only activated for the first measurement.)

Rear view of ADAM-CellIT

The rear view of ADAM-CellIT is shown below:



Port	Description
① USB Port	Port for software update and save the data.
② PC port	Connects with PC (Only PC mode).
③ Power Plug	Connects ADAM-CellIT power cord to wall outlet.

⚠ CAUTION

Do not use the ②PC port. This port does not recognize USB.

Environmental requirements

ⓘ CAUTION

At low temperature (≤ 10 °C), allow the device to warm up for 10 minutes at ambient temperature before use.

To ensure correct operation and stable performance, install the ADAM-CellT in a location which meets the following conditions:

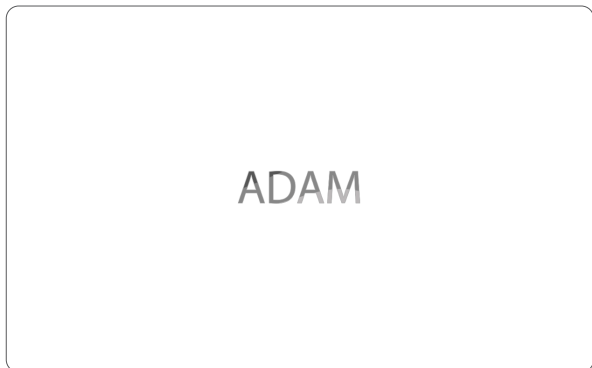
1. Use at room temperature between 20 and 35 °C
 - Not recommended for cold room use (≤ 4 °C).
2. Do not expose the device to direct sunlight.
3. Do not subject the device to direct or continuous vibration.
4. Do not subject the device to intense magnetic or electromagnetic fields.
5. Do not install the device in high-humidity environment.
6. Location of device should be free from corrosive gases or other corrosive substances.
7. Ensure minimal contact with dust or other airborne particles.
8. Allow a 10 cm (4 inches) minimum space around the device for proper airflow.
9. Do not place any objects on the device.

Power on and Initial Display

1. Check the connection of ADAM-CellT and power cord.
2. Press the power button for 2~3 seconds. (PC Mode: Double click the "ADAM CellT icon" to execute the software)

If you get an error message, please contact your local distributor or sales@nanoentek.com.

If booting is successful and no errors are detected, the home screens will be displayed as below.

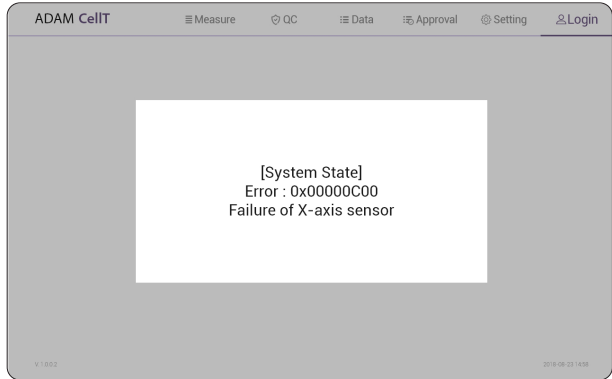


ⓘ CAUTION

- Do not tilt the device too much in the forward when connecting the power cord.
- Do not move the device after connecting power cord.
- When you connect the power cord to ADAM-CellT even without power on the device, it will go through self diagnostic tests.

Error Messages during booting

[System State]



It appears when booting is not working properly.
Turn off main power and restart device.

If this message still appears after restarting,
contact your local distributor or sales@nanoentek.com.

Error code	Cause
0x00000C00	Failure of X-axis sensor
0x00007000	Failure of Y-axis sensor
0x00008000	Failure of Z-axis sensor
0x06000000	Failure of Locking module sensor

Count setting

Set the conditions in the 'Setting' tap before counting.

[AccuChip]

Set the AccuChip according to you are using.

Accuchip

4Ch 2Ch



Accuchip

4Ch 2Ch



[Cell size]

Set the minimum and maximum size of cell.

Cell size

Min 5 Max 80

[Dilution factor]

When diluting sample, set the Dilution factor.

! CAUTION

Factor values for the AccuStain Solution is already applied.

Dilution factor

1.0

[Solution type]

Set the AccuStain Solution type (Propidium iodide (PI) or Acridine orange (AO))

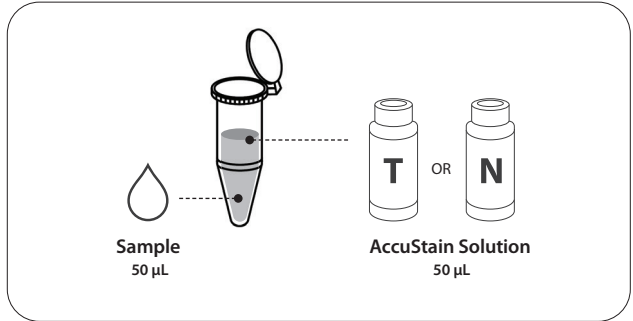
T_{PI}/N T_{AO}/N

Introduction

Instruction is provided in this section for preparing the sample with AccuStain Solution for use with disposable AccuChip for automated cell count using the ADAM-CellIT.

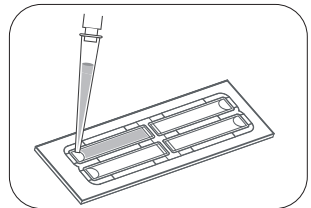
Please check the procedure of sample preparation and testing below. For more detailed information, please refer to the next page.

1. Mix the sample with AccuStain Solution.

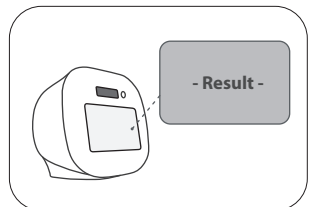
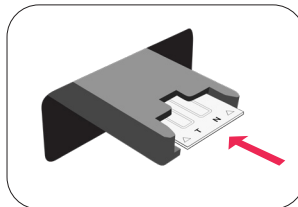


2. Load the mixed sample. Then, wait 1 minute for the sample settling.

- [2 channel: 23µL
- [4 channel: 13µL
- [T channel: Total cell
- [N channel: Non-viable cell



3. Insert AccuChip. Get the result.



Sample preparation

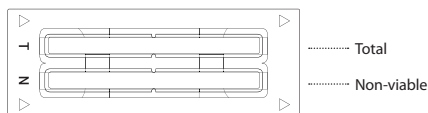
1. Cultivate the required number of cells.
2. Add an appropriate volume of growth media or PBS to dilute to a final concentration of 5×10^4 cells/mL to 4×10^6 cells/mL (T_{PI}/N solution).
When using T_{AC}/N solution, prepare to a final concentration of 5×10^4 cells/mL to 2×10^7 cells/mL.

NOTE Concentration out of this range will result in errors.
Refer to page 21 for more information about errors.

3. Thoroughly mix the cell pellet by vortexing.
4. Check visually if any cell clumps or agglomerates are remained.

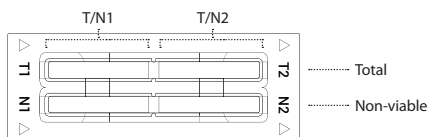
Counting cell

[AccuChip 2x]



Total Cell	Non-viable Cell
1) Add 50 μ L of your sample to 50 μ L supplied AccuStain Solution T.	1) Add 50 μ L of your sample to 50 μ L supplied AccuStain Solution N.
2) Vortex the tube vigorously.	2) Vortex the tube vigorously.
3) Load 23 μ L sample mixture to the AccuChip on T channel. Then, wait 1 minute for the sample settling.	3) Load 23 μ L sample mixture to the AccuChip on N channel. Then, wait 1 minute for the sample settling.

[AccuChip 4x]



Total Cell	Non-viable Cell
1) Add 50 μ L of your sample to 50 μ L supplied AccuStain Solution T.	1) Add 50 μ L of your sample to 50 μ L supplied AccuStain Solution N.
2) Vortex the tube vigorously.	2) Vortex the tube vigorously.
3) Load 13 μ L sample mixture to the AccuChip on T1 or T2 channel. Then, wait 1 minute for the sample settling.	3) Load 13 μ L sample mixture to the AccuChip on N1 or N2 channel. Then, wait 1 minute for the sample settling.

NOTE When you load of the sample mixture to the AccuChip, please be careful not to make bubbles.

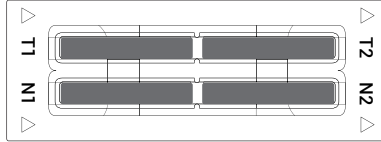
Counting cell

⚠ WARNING

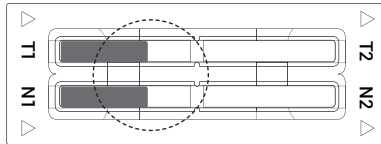
[Sample loading error]

Be cautious of loading the correct volume of the sample into AccuChip. The instrument will not detect low or high sample volumes.

Correct volume

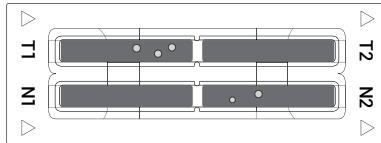


Low volume



⚠ CAUTION

Avoid bubbles which may negatively affect the result.

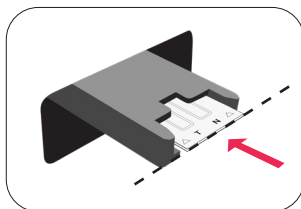


Counting cell

⚠ WARNING

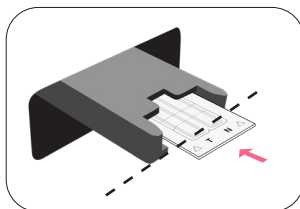
[AccuChip insert error]

Completely insert AccuChip face up, in the direction of the arrow on the slide. The instrument will not detect if slides are inserted incorrectly. See pictures below for proper insertion.



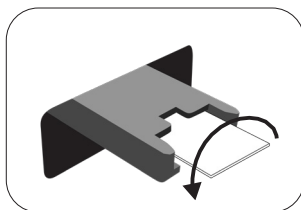
(O)

Correctly inserted



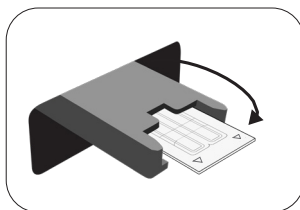
(X)

Not fully inserted



(X)

inserted upside down



(X)

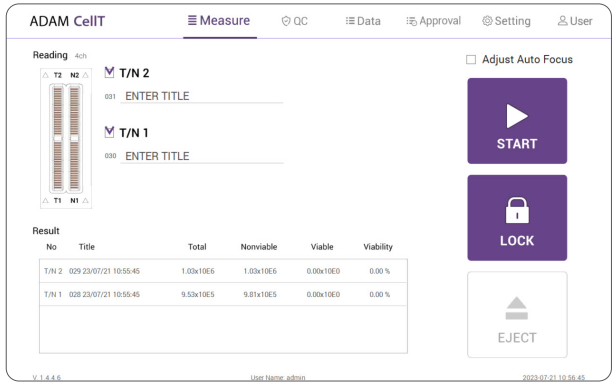
Inserted in opposite direction

⚠ CAUTION

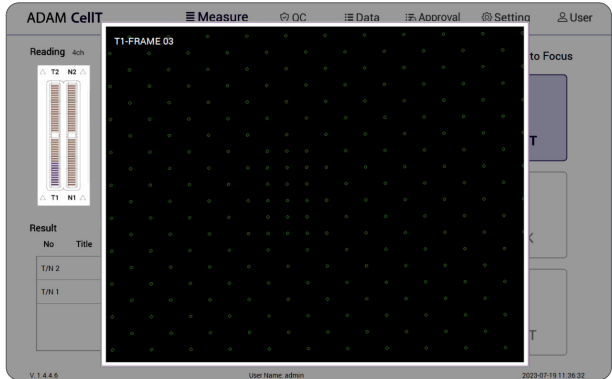
- Please insert or remove the AccuChip when the slide holder is fully ejected.
- When the test is finished, please remove the AccuChip from the slide holder.

Run Sample

Start counting process by pressing 'START'
It may take about 2 minutes longer for auto focus at the initial test.

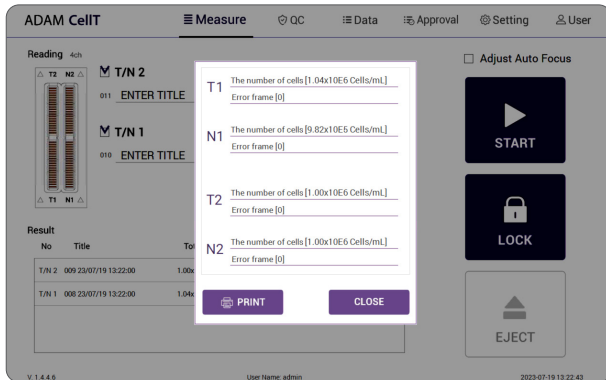


While the test is in progress, you can check the cell images of each channel.



Result Analysis

The result will be displayed after being automatically calculated by ADAM-CELLT software.



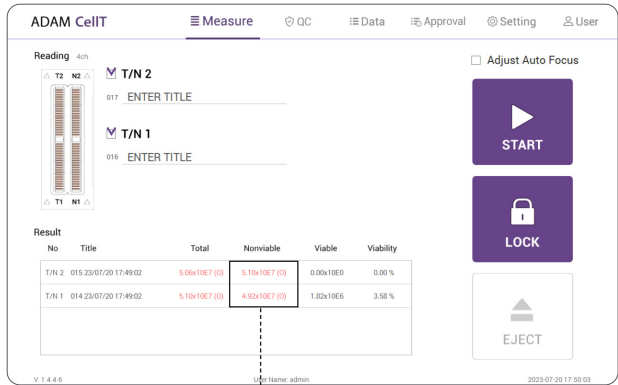
* 1.10E6 = 1.10 X 10⁶ cells/mL

Title	Number of Total cell	Number of Non-Viable cell	Viability
Viability 01	T1 (1.10E6)	N1 (5.50E5)	50%
Viability 02	T2 (2.20E6)	N2 (5.50E5)	75%

- The viability will be automatically calculated by the ADAM-CELLT software after each measurement of the total cells and the non-viable cells.
- First, the total cell number and second, non-viable cell number were measured and then the cell viability is calculated as subtracting non-viable cell counting numbers from total cell counting.

NOTE 'PRINT' button will be automatically activated when portable printer (optional) is connected.

Result Analysis - Error code



[Solution T_{PI}/N]

Error code	Cause
E	Frames with errors are over 50% of total counting frame.
O	Cells are more than 4X10 ⁶ cells/mL.
H	Cells are more than 2X10 ⁶ cells/mL.
L	Cells are less than 4X10 ⁵ cells/mL.
U	Cells are less than 5X10 ⁴ cells/mL.
Error frame [#]	Frame with error that contains cells whose diameter is larger than 100µm. When this error shown in result window, please check the image.

- Please use the solution T_{AC}/N when the cell concentration is above the range of 4x10⁶ cells/ml.

[Solution T_{AC}/N]

Error code	Cause
E	Frames with errors are over 50% of total counting frame.
O	Cells are more than 2X10 ⁷ cells/mL.
H	Cells are more than 1X10 ⁷ cells/mL.
L	Cells are less than 4X10 ⁵ cells/mL.
U	Cells are less than 5X10 ⁴ cells/mL.
Error frame [#]	Frame with error that contains cells whose diameter is larger than 100µm. When this error shown in result window, please check the image.

QC Mode

The QC Mode uses QC Slide (optional) to check equipment QC status by date at a glance.

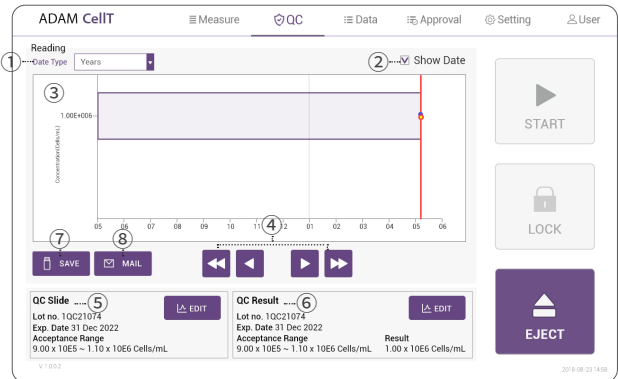
[Activation of QC mode]

To activate 'QC' mode, an activation code must be entered.

1. Select 'QC' tab from top menu.
2. Enter lot no. and activation code. Then, click 'APPLY' button.
Slide lot no. and activation code can be found on the plastic package label. See below for details.



NOTE A unique activation code is given for each instrument, and its authenticity can be checked by registering activation code.

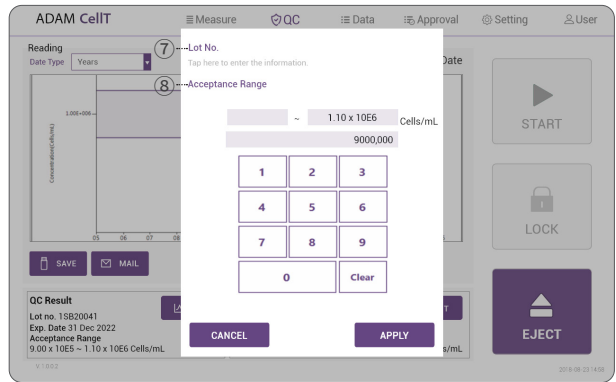
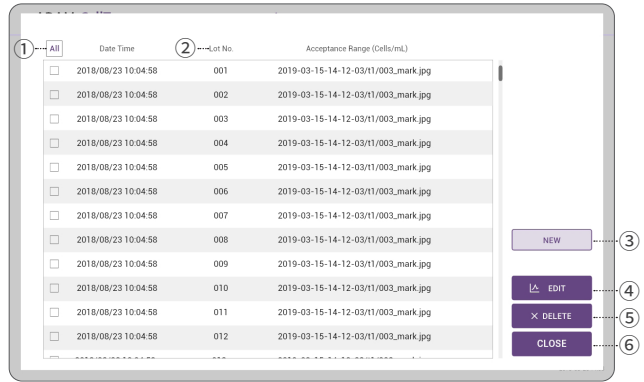


Control buttons	Description
① Data Type	QC result graph unit (Years, Months, Days, No.[Index])
② Show Data	Displays the date of QC progress on the graph
③ QC Result Graph	Graph left/right (QC date, number) movement button
④ Arrow Button	Graph left/right (QC date, number) movement button
⑤ QC Slide	QC Slide Lot. information and editing (create, edit, delete) functions
⑥ QC Result	QC result information and editing (whether or not graph is displayed, deleted) function
⑦ SAVE	Saves the QC Result Report to USB
⑧ MAIL	Sends the QC Result Report to e-mail

WARNING
QC Mode must use the QC Slide (optional), and the result without using the QC Slide is unreliable.

QC Slide Edit

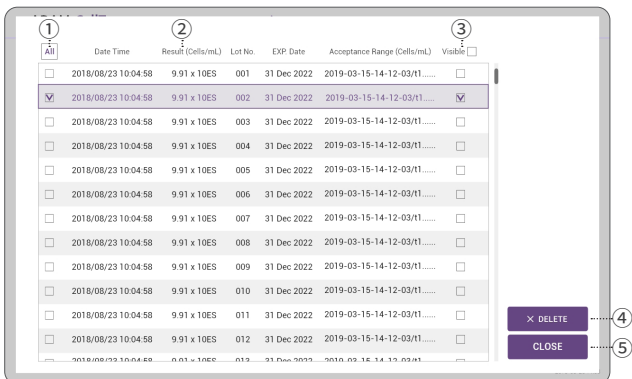
The QC Mode uses QC Slide (optional) to check equipment QC status by date at a glance.



Control buttons	Description
① All	Selects all QC Slide lot to delete from the QC Slide lot List
② QC Slide List	Provides registered QC Slide lot information list
③ New	Registers new QC Slide lot
④ Edit	Edits selected QC Slide lot
⑤ Delete	Deletes selected QC Slide lot
⑥ Apply/Close	Applies function or closes selected QC Slide lot
⑦ Lot No. (New/Edit)	QC Slide Lot No. input field to create new or edit lot number
⑧ Acceptance Range (New/Edit)	QC Slide acceptance range input field to enter new or edit range values

- ❗ **NOTE**
- The QC Slide lot and Acceptance Range can be found at the top of the QC Slide.
 - Expired QC Slide cannot be selected.

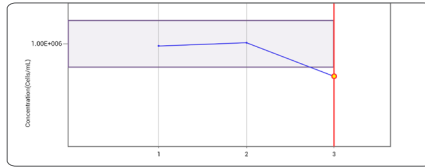
QC Slide Result Edit



Control buttons	Description
① All	Selects all QC result to delete from the QC result List
② QC Result List	QC result information list
③ Visible	Selects all QC result to display graph from the QC result List.
④ Delete	Deletes selected QC result
⑤ Apply/Close	Applies visible function or closes QC result

QC Slide Result

QC result acceptance criteria:



Experiment Date Time :	2022-07-05, 03:36 PM
Slide Lot :	ssssssss
Exp date :	2022-07-06, 03:30 PM
Acceptance Range :	9.00 x 10E5 - 1.10 x 10E6 Cells/mL
Acceptance Slide Peak Size :	13~16 um
Concentration :	8.45 x 10E5 Cells/mL
Slide Peak Size :	15 um
Result :	Fail

•The QC Slide result acceptance criteria include the acceptance range (different for each QC Slide lot) and the acceptance slide peak size (13~16 um).

NOTE

- The acceptance range of the selected QC slide lot is displayed on the graph as a purple area.
- Acceptance slide peak size results can be found in the ADAM-CellIT Test report.

WARNING

Contact sales@nanoentek.com or your local distributor if the QC result does not come within the acceptance criteria.

Data list

ADAM CellIT

Measure 📍 Data 🗑️ Approval ⚙️ Setting 👤 User

Data List

All	No	CH	S/N	Sample	Exp. Name	DateTime	Total	Viability	Nonviable	Viable
<input checked="" type="checkbox"/>	0014	CH4	PI	013 23/07/20 09:13:29	admin	2023-07-20 09:13:29	1.01x10E5	0.00%	1.02x10E5	0.00x10E0
<input type="checkbox"/>	0013	CH4	PI	012 23/07/20 09:13:29	admin	2023-07-20 09:13:29	1.01x10E5	2.72%	9.84x10E5	2.75x10E4
<input type="checkbox"/>	0012	CH4	PI	011 23/07/19 14:41:39	admin	2023-07-19 14:41:39	1.02x10E5	1.37%	1.01x10E5	1.40x10E4
<input type="checkbox"/>	0011	CH4	PI	010 23/07/19 14:41:39	admin	2023-07-19 14:41:39	1.01x10E5	2.75%	9.81x10E5	2.75x10E4
<input type="checkbox"/>	0010	CH4	PI	009 23/07/19 13:22:00	admin	2023-07-19 13:22:00	1.00x10E5	0.49%	1.00x10E5	4.49x10E3
<input type="checkbox"/>	0009	CH4	PI	008 23/07/19 13:22:00	admin	2023-07-19 13:22:00	1.04x10E5	6.92%	9.82x10E5	6.29x10E4
<input type="checkbox"/>	0008	CH4	PI	007 23/07/19 13:19:36	admin	2023-07-19 13:19:36	1.00x10E5	0.00%	1.02x10E5	0.00x10E0
<input type="checkbox"/>	0007	CH4	PI	006 23/07/19 13:19:36	admin	2023-07-19 13:19:36	1.05x10E5	6.18%	9.81x10E5	6.46x10E4
<input type="checkbox"/>	0006	CH4	PI	005 23/07/19 11:36:06	admin	2023-07-19 11:36:06	1.01x10E5	0.00%	1.02x10E5	0.00x10E0
<input type="checkbox"/>	0005	CH4	PI	004 23/07/19 11:36:06	admin	2023-07-19 11:36:06	1.03x10E5	4.92%	9.81x10E5	4.43x10E4
<input type="checkbox"/>	0004	CH4	PI	003 23/07/18 17:47:53	admin	2023-07-18 17:47:53	1.01x10E5	2.99%	9.82x10E5	3.02x10E4

Start Date: 2023 / 07 / 14
End Date: 2023 / 07 / 20

SEARCH

EDIT

IMAGE

SAVE

PRINT

MAIL

DELETE

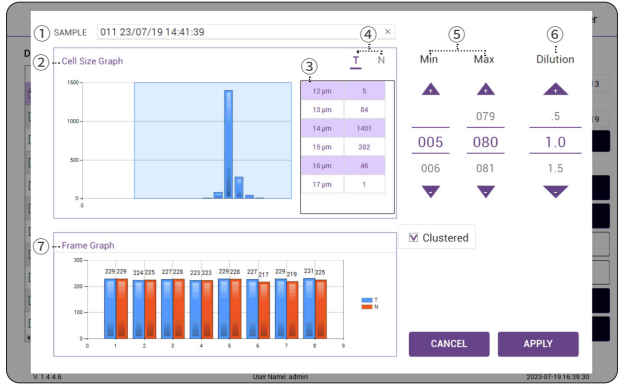
V 1.4.4.6 User Name: admin 2023-07-20 15:58:18

Control buttons	Description
① All	Select all data in Data List.
② SEARCH	Display the data of the selected date.
③ EDIT	Allows to view and edit the data (Multiple data can be edited with the same settings)
④ IMAGE	Allows to check the cell images of each channel
⑤ SAVE	Saves the selected data to USB
⑥ PRINT(optional)	Prints the selected data
⑦ MAIL	Sends the selected data to e-mail
⑧ DELETE	Deletes the selected data

① NOTE

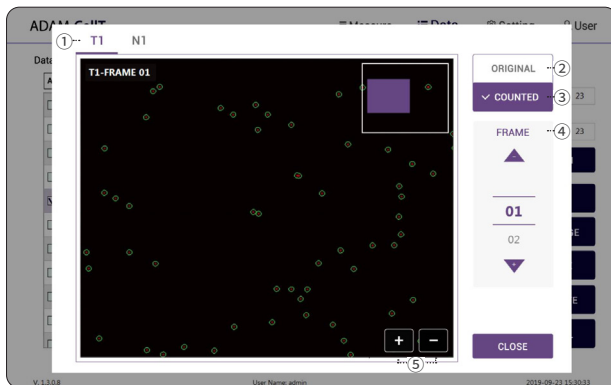
'PRINT' button will be automatically activated when portable printer (optional) is connected.

EDIT



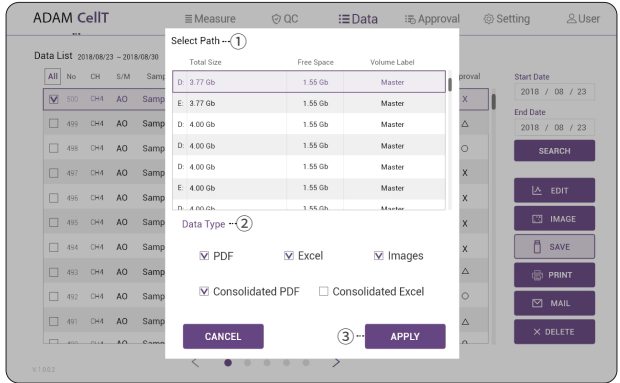
Control buttons	Description
① Sample	Edit the sample name.
② Cell size graph	Allows to view the cell size graph each channel (T/N)
③ Cell size table	Allows to view the number of cells in each cell size
④ Channel	Select a channel(T/N).
⑤ Cell size setting	Set the min/max size of the cell.
⑥ Dilution Factor	Set the dilution factor of sample. (Factor values for the AccuStain Solution is already applied.)
⑦ Frame graph	Allows to view the counted cell number of each frame

IMAGE



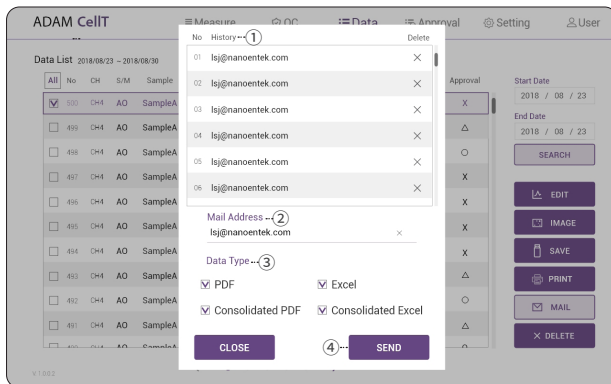
Control buttons	Description
① Channel	Select a channel.
② Original	Check the original image.
③ Counted	Check the counted cell image.
④ Frame	Select a frame number of the channel.
⑤ Zoom-in/out	Zoom in and out to check the cell image.

SAVE



Control buttons	Description
① Select Path	Selects a save path from the list to send the selected data
② Data Type	Selects which data type to save
③ Apply	Exports the files to a selected save path <i>Files can be sent to only one save path at a time.</i>

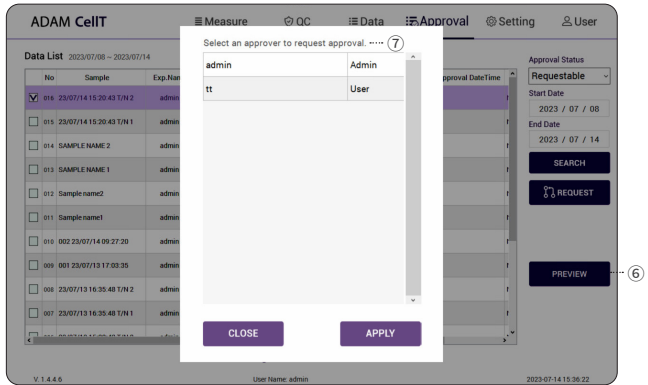
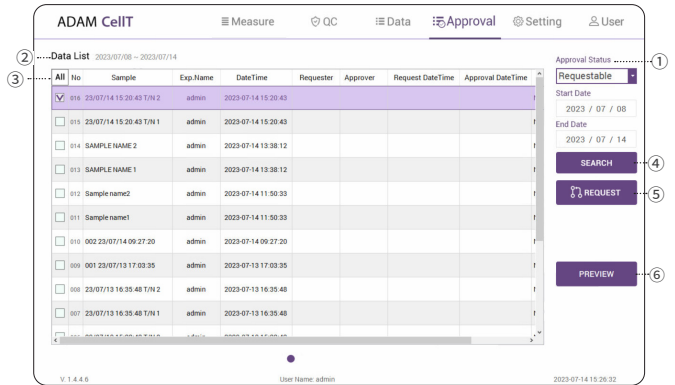
MAIL



Control buttons	Description
① History	Selects e-mail address from the list to send data <i>The e-mail address where data has been sent will be saved.</i>
② Mail Address	To send files to new e-mail, enter the applicable e-mail address.
③ Data Type	Selects which data type to send via e-mail
④ Send	Send the files to a selected e-mail address. <i>Files can be sent to only one e-mail at a time.</i>

Approval

Requestable:



Control buttons	Description
① Approval Status	Settings tab related to data approval such as Requestable, Requesting, Approvable, and Approved.
② Data List	List of data that can check status information related to approval.
③ All	Select all data in Data List
④ Search	Display the data of the selected date.
⑤ Request	Request approval of selected data.
⑥ Preview	Select Preview to check the results before approval or requesting approval. (Providing preview in a PDF format)
⑦ Select approval	Select an approval to request approval.

④ **NOTE**

- Approval can only be done by an approver who has been granted Approval authority in the Privilege setting.
- Approved data displays approval status on Data Tab (Approval: O/ Approval in progress: Δ/ Not approved X).
- Data in the process of approval cannot be edited or deleted.
- Approved data cannot be edited.

Approval

Requesting:

Control buttons	Description
① Approval Status	Settings tab related to data approval such as Requestable, Requesting, Approvable, and Approved.
② Data List	List of data that can check status information related to approval.
③ All	Select all data in Data List
④ Search	Display the data of the selected date.
⑤ Cancel	Cancel approval of selected data in the process of approval
⑥ Approval	Direct approval by only entering the approver's password without approver login.
⑦ Preview	Select Preview to check the requesting approval results. (Providing preview in a PDF format)

Approval

Approvable:

ADAM CellIT Measure QC Data **Approval** Setting User

② Data List 2023/07/15 - 2023/07/31

All	No	Sample	Exp. Name	DateTime	Requester	Approver	Request DateTime	Approval DateTime
<input checked="" type="checkbox"/>	011	033 23/07/25 14:02:27	admin	2023-07-25 14:02:27	admin	admin	2023-07-31 16:21:48	
<input type="checkbox"/>	010	022 23/07/25 14:01:09	admin	2023-07-25 14:01:09	admin	admin	2023-07-31 16:21:48	
<input type="checkbox"/>	009	031 23/07/25 13:57:10	admin	2023-07-25 13:57:10	admin	admin	2023-07-31 16:21:48	
<input type="checkbox"/>	008	030 23/07/25 13:57:10	admin	2023-07-25 13:57:10	admin	admin	2023-07-31 16:21:48	
<input type="checkbox"/>	007	029 23/07/21 10:55:45	admin	2023-07-21 10:55:45	admin	admin	2023-07-31 16:21:48	
<input type="checkbox"/>	006	028 23/07/21 10:55:45	admin	2023-07-21 10:55:45	admin	admin	2023-07-31 16:21:48	
<input type="checkbox"/>	005	027 23/07/21 10:05:40	admin	2023-07-21 10:05:40	admin	admin	2023-07-31 16:21:48	
<input type="checkbox"/>	004	026 23/07/21 10:05:40	admin	2023-07-21 10:05:40	admin	admin	2023-07-31 16:21:48	
<input type="checkbox"/>	003	025 23/07/21 10:03:07	admin	2023-07-21 10:03:07	admin	admin	2023-07-31 16:21:48	
<input type="checkbox"/>	002	024 23/07/21 10:03:07	admin	2023-07-21 10:03:07	admin	admin	2023-07-31 16:21:48	

Approval Status: Approvable

Start Date: 2023 / 07 / 15

End Date: 2023 / 07 / 31

SEARCH

REJECT

APPROVAL

PREVIEW

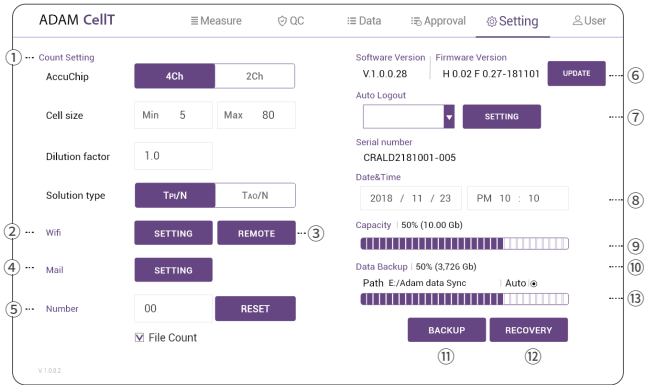
Control buttons	Description
① Approval Status	Settings tab related to data approval such as Requestable, Requesting, Approvable, and Approved.
② Data List	List of data that can check status information related to approval.
③ All	Select all data in Data List
④ Search	Display the data of the selected date.
⑤ Reject	Reject approval of selected data in the process of approval.
⑥ Approval	Approval of the data selected during the approval process.
⑦ Preview	Select Preview to check the approvable approval results. (Providing preview in a PDF format)

Approval

Approved:

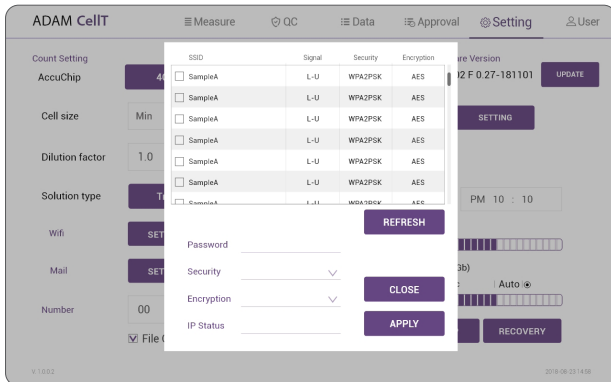
Control buttons	Description
① Approval Status	Settings tab related to data approval such as Requestable, Requesting, Approvable, and Approved.
② Data List	List of data that can check status information related to approval.
③ All	Select all data in Data List
④ Search	Display the data of the selected date.
⑤ Preview	Select Preview to check the approved approval results. (Providing preview in a PDF format)
⑥ Save	Save the selected approval data to USB.
⑦ Mail	Send the selected approval data to e-mail.

Setting



Control buttons	Description
① Count setting	Set the conditions in the setting tap before counting. Refer to page 14 for more information.
② Wifi	Sets the wifi to use the e-mail or remote support function (PC Mode: Use internet (Windows) to use the e-mail or remote support function)
③ Remote support	Connects to remote support software
④ Mail	DO NOT change the setting in mail.
⑤ Number	Selects auto-numbering
⑥ Update	Updates firmware or software through USB
⑦ Auto Logout	Sets auto logout time
⑧ Date&Time	Sets current date and time
⑨ Capacity	Checks remaining capacity
⑩ Data Backup	Allows to view the storage path of additional data backup
⑪ Backup	Sets backup (automatic, manual) function
⑫ Recovery	Runs recovery (automatic, manual) function
⑬ Auto Backup Information	Allows to view the working automatic backup information. (Sync=O, SDMS=, Sync+SDMS=O)

Wifi



1. Click 'Refresh' button.
2. Select the wifi.
3. Insert the password of selected wifi.
4. Click 'Connect' button.

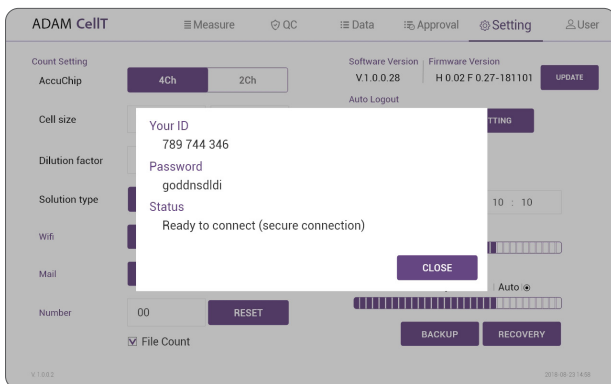
⚠ CAUTION

If connection error occurs, please contact a laboratory facility manager.

⚠ NOTE

In PC Mode, please use internet (Windows).

Remote support



1. Connect to wifi.
2. Click 'Remote support' button.
3. Share your ID and password to NanoEntek.

⚠ NOTE

The remote support feature is to be used for maintenance only by request of NanoEntek.

⚠ WARNING

If you do not see your Remote Support ID and Password, click the Close and Remote Support button again until you see them.

Update

1. Prepare the USB with update file.
2. Insert the USB.
3. Click the UPDATE button.

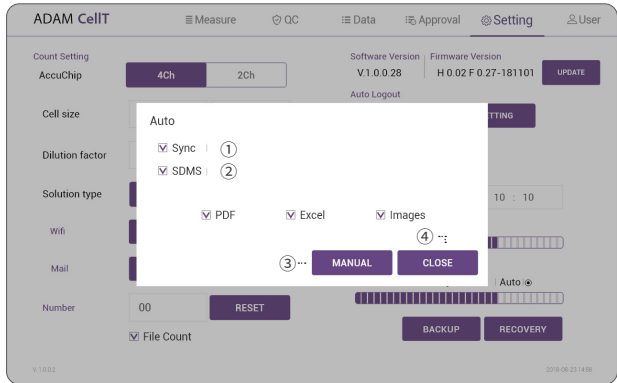
CAUTION

- The 'AdamUpdate' folder must exist in the root path of the USB folder.
- ADAM-CellT can be updated only when the firmware or software file exists in the 'AdamUpdate' folder. The 'ADAM CellT.exe' file should be in the 'AdamUpdate' folder.
- Do not rename the 'AdamUpdate' folder. The folder name should be 'AdamUpdate'.

Auto logout

The auto logout time can be set to 5, 15, 30, 45, or 60 minutes.

Backup



Control buttons	Description
① Auto-Sync	Real-time automatic backup of counted data required for automatic recovery
② Auto-SDMS	Real-time automatic backup of counted data required for SDMS (Scientific Data Management System) interworking
③ Manual	To manually back up the counted data required for manual recovery
④ Apply/Close	Apply the selected backup types or close backup.

NOTE

Auto-SDMS backup is available only for approved data.

CAUTION

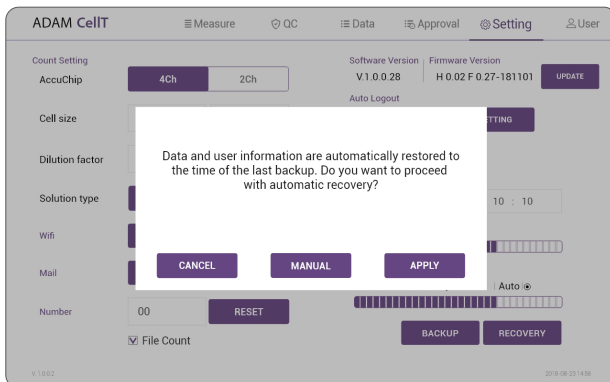
Please be cautious as data may be lost when Auto Backup (Sync) is turned off.

WARNING

- DO NOT remove an external hard drive for backup at any time as it may cause data loss.
- If you change backup data path, auto backup function becomes inactive. DO NOT change data path as it may cause backed up data loss.

We are NOT responsible for such error or problem mentioned above.

Recovery



- Restore counted data to the point of the last automatic backup (Sync).
- Manual recovery restores manually backup counted data.

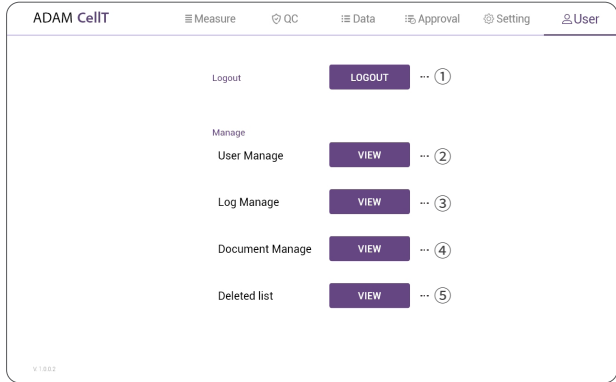
NOTE

The automatic backup function is turned off after recovery, please re-enable the automatic backup function.

CAUTION

Please be careful with manual recovery, because counted data that is not manually backed up will be lost.

User



Control buttons	Description
① Logout	To logout
② User manage	To register user
③ Log manage	Tracks user access records
④ Document manage	Tracks management document records
⑤ Deleted list	Tracks deleted data records

- ADAM-CellIT provides a comprehensive solution to comply with the requirements of the 21 CFR Part 11 rule.
- Please see the appendix for more information on these features.

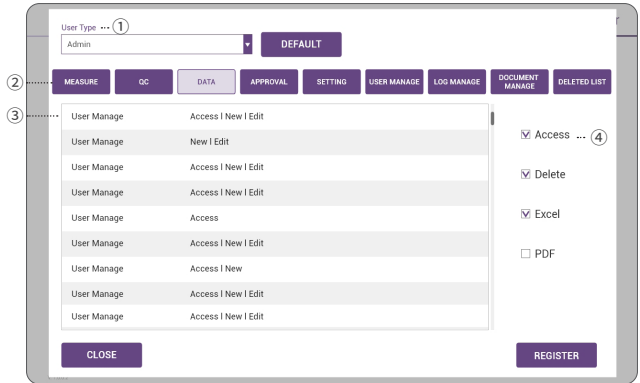
User manage

The screenshot displays the 'User manage' interface. On the left, a table lists existing users with columns for 'User Name', 'Permission', 'Unlock', and 'Delete'. The users listed are: admin (Admin), b (Supervisor), s (User), good (User), j (User), a (User), tt (User), and as (Supervisor). On the right, the 'New Registration' form includes fields for 'User Name', 'Password', and 'Confirm Password', a 'Digital Signature' area with a 'PRIVILEGE' dropdown menu, and a 'Supervisor Permission' checkbox. At the bottom, there are control buttons: 'SAVE', 'CLOSE', 'P/W OPTION', 'PRIV. DEFAULT', and 'REGISTER'. Numbered callouts (1-7) point to specific UI elements: 1 (User Name), 2 (Permission), 3 (New Registration), 4 (Privilege), 5 (Supervisor Permission), 6 (P/W OPTION), and 7 (PRIV. DEFAULT).

Control buttons	Description
① User Name	To view the registered user list
② Permission	To view the user access authority
③ New Registration	To register new user
④ Privilege	Option for permission setting
⑤ Supervisor Permission	To register as a supervisor
⑥ Password Option	To set password
⑦ Privilege Default	Option for default permission setting (Supervisor, User)

Privilege

The Admin can grant or release access to functions when creating or editing new users (Supervisor, User)



Control buttons	Description
① User Type&Default	Selects account level and sets default permissions
② Tab	Tab for permission Settings
③ Function list	Detailed functions for each permission setting tab
④ Detailed function	List of possible permission settings for each function

NOTE

Granting basic access rights for each user (For the default access rights for each user, refer to the ADAM-CelIT SW 21 CFR PART11 requirement support appendix).

Password Option

ADAM CellT Measure QC Data Approval Setting User

Password management rules

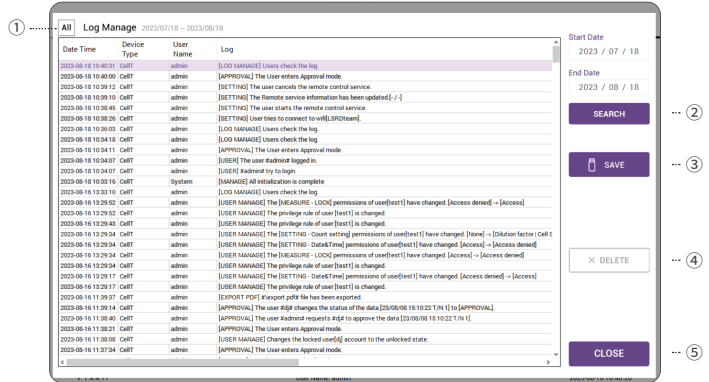
- ① Change cycles: 90 Days
- ② Account lock: ≤5 times
- ③ Minimum length: ≤3
- ④ Reuse: ≤30 Days
- ⑤ Special characters: Enable
- ⑥ Uppercase and lowercase: Disable

CLOSE APPLY

V 1.002 2019-08-23 14:58

Control buttons	Description
① Change cycles	Set password change interval (30, 90, 180 days).
② Account lock	Number of incorrect passwords in account lockout (≤ 3, 5, 10, 15).
③ Minimum length	Minimum length of password (≤3, 5, 10, 15).
④ Reuse	Prohibition of using the same password for a certain period of time (≤30, 90, 180, >180 days).
⑤ Special characters	Use at least one special character.
⑥ Uppercase and lowercase	Use at least one uppercase letter.

Log manage



Control buttons	Description
① All	Select all data in Data List.
② SEARCH	Display the data of the selected date.
③ SAVE	Save the selected data to USB.
④ DELETE	Delete the selected data. (DELETE is not activated in all user types.)
⑤ CLOSE	Close the log manage.

① NOTE(Except PC Mode)

The search period is limited to 90 days (Except PC Mode).

Document manage

The screenshot displays the 'Document Manage' window. At the top, there is a header with 'All Document Manage' and a date range '2023/07/18 ~ 2023/08/18'. Below the header is a table with the following columns: Date Time, Device Type, User Name, File Name, and Doc No. The table contains 20 rows of data, all with 'test1' as the user name and 'IMAGE' as the file type. The file names are 'Sample' files with various IDs and dates. To the right of the table, there are five numbered control buttons: 1. All, 2. SEARCH, 3. SAVE, 4. DELETE, and 5. CLOSE. The interface also shows 'Start Date' and 'End Date' filters at the top right.

Control buttons	Description
① All	Select all data in Data List.
② SEARCH	Display the data of the selected date.
③ SAVE	Save the selected data to USB.
④ DELETE	Delete the selected data. (DELETE is not activated in all user types.)
⑤ CLOSE	Close the document manage.

① NOTE(Except PC Mode)

The search period is limited to 90 days (Except PC Mode).

Deleted list

① All Deleted result list Manage 2023/08/18 - 2023/08/18

Deleted Date Time	Deleted Reason	Name	Sample Index	Test Date Time	Total	Dead	Live	Viability	Chip Type	User
2023-08-18 11:00:00	041 23/08/08 14:00:38		2	2023-08-08 14:00:38	1 02010E5	1 30010E5	2 23010E4	2 19%	CH4	name0
2023-08-18 11:00:02	040 23/08/08 14:00:55		1	2023-08-08 14:00:55	1 02010E5	9 80010E5	1 48010E4	1 48%	CH4	name0
2023-08-18 11:00:02	23/08/08 14:30:43 7.01		1	2023-08-08 14:30:43	1 011010E	9 80010E5	2 281010E4	2 78%	CH4	name0
2023-08-18 11:00:01	23/08/08 14:30:43 7.01		2	2023-08-08 14:30:43	1 02010E5	1 30010E5	0 00010E0	0 00%	CH4	name0
2023-08-18 11:00:01	23/08/08 14:30:43 7.01		1	2023-08-08 14:30:43	9 80010E5	9 79010E5	7 30010E3	0 90%	CH4	test1
2023-08-18 11:00:00	23/08/08 14:35:48 7.01		2	2023-08-08 14:35:48	1 02010E5	1 02010E5	0 00010E0	0 00%	CH4	test1
2023-08-18 11:00:59	23/08/08 14:35:37 7.01		1	2023-08-08 14:35:37	8 77010E5	8 77010E5	0 00010E0	0 00%	CH2	name0
2023-08-18 11:00:58	23/08/08 14:35:00 7.01		1	2023-08-08 14:35:00	8 79010E5	8 80010E5	0 00010E0	0 00%	CH2	name0
2023-08-18 11:00:57	23/08/08 14:35:13 7.01		1	2023-08-08 14:35:13	9 411010E	9 79010E5	0 00010E0	0 00%	CH4	name0
2023-08-18 11:00:57	23/08/08 14:35:13 7.01		2	2023-08-08 14:35:13	9 79010E5	1 02010E5	0 00010E0	0 00%	CH4	name0
2023-08-18 11:00:56	002 23/08/08 16:54:32		1	2023-08-08 16:54:32	9 90010E5	9 79010E5	1 48010E4	1 47%	CH4	name0
2023-08-18 11:00:56	003 23/08/08 16:54:32		2	2023-08-08 16:54:32	1 011010E	9 94010E5	2 20010E4	1 99%	CH4	name0
2023-08-18 11:00:55	004 23/08/08 17:01:20		1	2023-08-08 17:01:20	1 02010E5	9 77010E7	4 72010E4	4 00%	CH4	name0
2023-08-18 11:00:55	005 23/08/08 17:01:20		2	2023-08-08 17:01:20	1 02010E5	1 02010E5	0 00010E0	0 00%	CH4	name0
2023-08-18 11:00:54	006 23/08/08 13:07:47		1	2023-08-08 13:07:47	9 90010E5	9 90010E5	1 48010E4	1 47%	CH4	name0
2023-08-18 11:00:53	007 23/08/08 13:07:47		2	2023-08-08 13:07:47	1 02010E5	9 90010E5	9 94010E3	0 95%	CH4	name0
2023-08-18 11:00:53	008 23/08/08 13:12:54		1	2023-08-08 13:12:54	9 90010E5	9 90010E5	7 30010E3	0 74%	CH4	name0
2023-08-18 11:00:52	009 23/08/08 13:12:54		2	2023-08-08 13:12:54	1 04010E5	1 02010E5	2 30010E4	2 22%	CH4	name0
2023-08-18 11:01:52	23/08/08 14:34:19 7.01		1	2023-08-08 14:34:19	9 80010E5	9 80010E5	0 00010E0	0 00%	CH4	test1
2023-08-18 11:01:51	23/08/08 14:34:19 7.01		2	2023-08-08 14:34:19	1 02010E5	1 01010E5	1 30010E4	1 28%	CH4	test1
2023-08-18 11:01:51	23/08/08 14:10:22 7.01		1	2023-08-08 14:10:22	9 90010E5	9 90010E5	0 00010E0	0 00%	CH4	test1

② SEARCH

③ SAVE

④ DELETE


⑤ CLOSE

Control buttons	Description
① All	Select all data in Data List.
② SEARCH	Display the data of the selected date.
③ SAVE	Save the selected data to USB.
④ DELETE	Delete the selected data. (DELETE is not activated in all user types.)
⑤ CLOSE	Close the deleted list.

① **NOTE(Except PC Mode)**

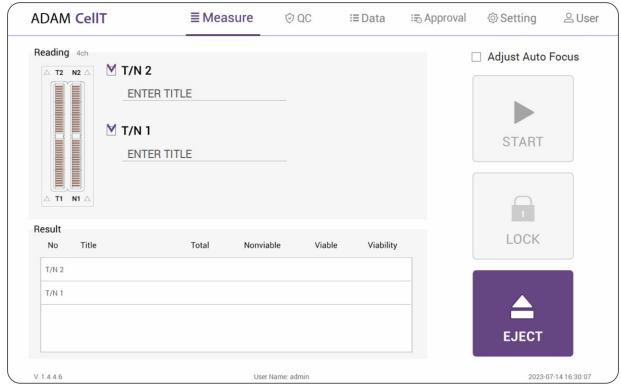
The search period is limited to 90 days (Except PC Mode).

Lock

Press  LOCK before turning off the device.

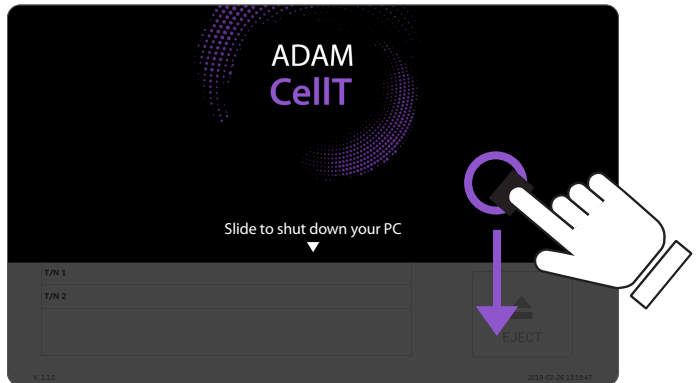
If there is no operation for 1 minutes, the lock function will be activated automatically.

When the device is locked, the screen will be changed as shown below.



Power off

If you press the power button for 2~3 seconds, then 'Slide to shut down your PC' message will appear. Slide down the screen to turn off the power.



NOTE

In PC mode, press the "X button (quit)" to turn off the power.

Maintenance and cleaning

1. ADAM-CellIT does not need regular maintenance.
2. ADAM-CellIT has no replacement of consumable materials.
3. Please clean the exposed surface of ADAM-CellIT frequently or before testing, using a soft cloth and isopropyl alcohol or deionized water.

ⓘ CAUTION

Dispose of wipes in an appropriately labeled solvent contaminated waste container.

Trouble shooting

Problem	Description	Solution
ADAM-CellT does not power up	<ul style="list-style-type: none"> No power from outlet Bad power cord. 	<ul style="list-style-type: none"> Check power source. Replace.
Inaccurate result	<ul style="list-style-type: none"> Cell number may be out of range. AccuStain Solution has expired. Too high clumped cells. 	<ul style="list-style-type: none"> Adjust the number of cells to recommended concentration (refer to page 50). Discard AccuStain that have expired. Purchase the AccuStain(ADR-1000). Try again after vortexing the cells.
When error message is shown (For information on each error message, see page 21)	<ul style="list-style-type: none"> When frames with errors are over 50% of total counting frame. (Error message: E) 	<ul style="list-style-type: none"> Check the suspension of cells if all cells are fully dissociated into single cells. If contaminants except cells are found, prepare sample again.
	<ul style="list-style-type: none"> When over 100µm diameter of cells are included. (Error message: Error frame [#]) 	<ul style="list-style-type: none"> Check fully dissociated into single cells.
	<ul style="list-style-type: none"> High concentration of cells (Error message: H) Over detection range (Error message: O) 	<ul style="list-style-type: none"> Check if concentration of cell is too high. Dilute the sample and count again.
	<ul style="list-style-type: none"> Low concentration of cells (Error message: L) Under detection range (Error message: U) 	<ul style="list-style-type: none"> Check if concentration of cell is too low. Use concentrated sample and count again.

Warranty

If any defects occur in the ADAM-CellIT during one(1) year warranty period, NanoEntek will repair or replace the defective parts at its discretion without charge. The following defects, however, are specifically excluded:

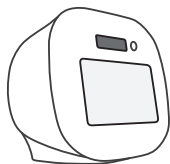
1. Defects caused by improper operation.
2. Repair or modification done by anyone other than NanoEntek or an authorized agent.
3. Damage caused by substituting alternative parts.
4. Use of fittings or spare parts supplied by anyone other than NanoEntek.
5. Damage caused by accident or misuse.
6. Damage caused by disaster.
7. Corrosion caused by improper solvent or sample.

For your protection, items being returned must be insured against possible damage or loss. NanoEntek cannot be responsible for damage incurred during shipment of a repair instrument. It is recommended that you save the original packing material in which the instrument was shipped. This warranty should be limited to the replacement of defective products.

For any inquiry or request for repair service,
Contact sales@nanoentek.com or your local distributor.

For extended warranty purchase, contact sales@nanoentek.com.

Technical Specifications



ADAM-CellT	
Measuring range	5x10 ⁴ ~ 4x10 ⁶ cells/mL (PI)
	5x10 ⁴ ~ 2x10 ⁷ cells/mL (AO/PI)
Optimal range	4x10 ⁵ ~ 2x10 ⁶ cells/mL (PI)
	4x10 ⁵ ~ 1x10 ⁷ cells/mL (AO/PI)
Analysis time	< 25~50 sec/test <small>For initial test, max 2 min/test</small>
Voltage	DC12V
Current	5A
Objective lens	4 X
LED	4W Green LED
Camera	CMOS camera
Filter	Excitation filter, Dichroic filter, Emission filter
Weight	7 Kg
Size (WxLxH)	227 × 276 × 270 mm
Degree of protection	IPX0
Desktop Computer	CPU: Intel i5, 9 generation or over spec.
	OS: Windows® 10 Pro 64 bit
	RAM: 16 GB
	Hard drive: 2 TB

NOTE

Other PC which has similar specification can be used as an alternative.

Operating environment condition

Temperature	5°C ≤ Temperature ≤ 40°C
Humidity	20% ≤ Humidity ≤ 80%
Altitude	Altitude ≤ 2,000 m

Transportation & storage environment condition

Temperature	5°C ≤ Temperature ≤ 40°C
Humidity	20% ≤ Humidity ≤ 80%

AccuChip Kit

AccuChip

Loading sample vol. per test	23 µL/test (AccuChip 2X)
	13 µL/test (AccuChip 4X)
Measuring sample vol. per test	8.6 µL/test (AccuChip 2X)
	3.4 µL/test (AccuChip 4X)



AccuChip 2x



AccuChip 4x



Solutions

AccuStain Solution	12.5 mL
	Total cells (T), non-viable cells (N)

Storage temperature

AccuChip	0 – 30 °C
AccuStain Solution	2 – 8 °C

Shelf-life

AccuChip	2 year
AccuStain Solution	1 year

Product List

Cat. No.	Product	Contents	Quantity
AD2K-200	AccuChip2X Kit*	200 pcs AccuChip 2X	1
		12.5 mL AccuStain Solution T	2
		12.5 mL AccuStain Solution N	1
AD4K-200	Accuchip 4x Kit (PI)	200 pcs AccuChip 4X	1
		12.5 mL AccuStain Solution T (T _{PI})	2
		12.5 mL AccuStain Solution N	1
AD4K-200AO	Accuchip 4x Kit (AO/PI)	200 pcs AccuChip 4X	1
		12.5 mL AccuStain Solution T (T _{AO})	2
		12.5 mL AccuStain Solution N	1
ADR-1000	Accustain Solution (PI solution)	12.5 mL AccuStain Solution T (T _{PI})	4
		12.5 mL AccuStain Solution N	2
ADR-1000AO	Accuchip 4x Kit (AO/PI solution)	12.5 mL AccuStain Solution T (T _{AO})	4
		12.5 mL AccuStain Solution N	2
ADB-500	ADAM Calibration Bead	5 mL Calibration Bead	1

*AccuChip 2x: please consult your distributor or manufacture for availability.

NOTE

AD4K-200: Total cell is counted by PI with lysis buffer.

ADR-1000: Total cell is counted by PI with lysis buffer.

Accessories

Cat. No.	Product	Quantity
ADAM-CellT PC	PC (Only PC mode)	1
QCS-001	QC slide (optional)	1
ADAM-CellT printer	Portable printer (optional)	1









Safety Precautions

Review and follow the safety instructions below :

- Always ensure that the power supply input voltage matches the voltage available at your location.
- To avoid the danger of electric shock, install the instrument per the environmental specifications located in "Technical Specifications". If water or other material enters the instrument, the adaptor, or power inlet, disconnect the power cord and contact a service person.
- Do not touch the main plug or power cord with wet hands.
- This machine is air-cooled so its surfaces become hot during operation. During installation and use, leave more than 10 cm (4 inches) free around the device.
- Do not install the instrument on a slant or a place prone to vibrations or the risk of instrument malfunction or damage to the instrument will increase.
- Never insert any objects (especially metallic) into the air vents of the instrument as this could result in electrical shock, personal injury, and equipment damage.
- Always set the main switch on the power supply unit to OFF before connecting the power cord to the wall outlet.
- To avoid a potential shock hazard, always connect the grounding terminal of the instrument and that of the wall outlet properly. The power cord should be connected to a grounded, 3-conductor power outlet.
- Position the device so that there is sufficient length for the cables and their respective connections.
- Set the main switch to "O" (OFF), unplug the power cord, and lock the stage before moving.
- If the instrument is broken or dropped, disconnect the power cord and contact an authorized service person. Do not disassemble the instrument.
- Only use authorized accessories.
- Use this equipment only as specified in this manual and as specified in any documentation associated with its components. Use of the equipment in an unspecified manner may result in damage to the device or injury to the user.

Safety Symbols

The following symbols are found on the instrument and this document. Always use the equipment in the safest possible manner.

Symbol	Meaning
	Caution & Warning
	ON/OFF (Power)
	This instrument and consumables conforms to the EC Declaration of Conformity.
	Caution: BIOHAZARD Protective measures must be used in dealing with biologically hazardous materials such as carcinogenic reagents.
	USB Connection
	LED
	Disposal of your old appliance
	<ol style="list-style-type: none"> 1. When this crossed-out wheeled bin symbol is attached to a product it means the product is covered by the European Directive 2012/19/EU. 2. All electrical and electronic products should be disposed of separately from the municipal waste stream via designated collection facilities appointed by the government or the local authorities. 3. The correct disposal of your old appliance will help prevent potential negative consequences for the environment and human health. 4. For more detailed information about disposal of your old appliance, please contact your city office, waste disposal service or visit our web-site, www.nanoentek.com.
	This product conforms to UL 61010-1, CAN/CSA C22.2 No.61010-1 "Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use, Part 1: General Requirements." Instruments bearing the TUV symbol are certified by TUV SUD America Inc. to be in conformance with the applicable safety standard for the US and Canada.

Warnings

1. After using device, please turn off main power.

If not, it may cause malfunction or may reduce product life.

2. When turn off the device, be sure to lock the device with Lock button.

If not, it may cause mechanical problem or error message when device is booting.

Item	Warning
Battery inside device	<ul style="list-style-type: none"> • Risk of explosion if battery is replaced incorrectly. • This battery is not replaceable by user. Refer to an authorized service person.
Cover	<ul style="list-style-type: none"> • Do not remove cover or dissemble case. There are no adjustable components inside the instrument. • If a malfunction is found, refer to an authorized service person.
Manual	<ul style="list-style-type: none"> • Do not attempt to service the equipment. • This manual is only available in English. • Failure to heed warnings may result in injury to service provider or operator.
Sample handling	<ul style="list-style-type: none"> • Wear personal protective equipment during sampling and testing. • Sample may contain infectious or bio-hazardous agents. • Use capped tubes and lint free wipes. Lint free wipes to be used one time and discarded.
Waste	<ul style="list-style-type: none"> • After using AccuChip, appropriately dispose as bio-hazardous waste. • Do not reuse AccuChip.

Technical Support

Visit the our Website at www.nanoentek.com for :



- Technical resources, including manuals, FAQs, etc.
- Technical support contact information
- Additional product information and special offers.

For more information or technical assistance, please call or email.

NanoEntek, Inc.

851-14, Seohae-ro, Paltan-myeon, Hwaseong-si, Gyeonggi-do, 18531, Korea
Tel. +82-2-6220-7940
Fax. +82-2-6220-7999

NanoEntek America, Inc.

220 Bear Hill Road, Suite 102, Waltham, MA 02451, USA
Tel. +1-781-472-2558
Fax. +1-781-790-5649

EC Representative

MT Promedt Consulting GmbH Ernst-Heckel-Straße 7,
66386 St. Ingbert Germany

Email

sales@nanoentek.com

Website

www.nanoentek.com

ADAM CellT

NESMU-ACT-001E (V.0.7)



NanoEntek, Inc.

851-14, Seohae-ro, Paltan-myeon, Hwaseong-si,
Gyeonggi-do, 18531, Korea
Tel: +82-2-6220-7940
Fax: +82-2-6220-7999

NanoEntek America, Inc.

220 Bear Hill Road, Suite 102, Waltham, MA 02451, USA
Tel: +1-781-472-2558
Fax: +1-781-790-5649

EC Representative

MT Promedt Consulting GmbH Ernst-Heckel-Straße 7,
66386 St. Ingbert Germany

Email

sales@nanoentek.com

Website

www.nanoentek.com

ADAM™ CellIT Plus

A New Standard of Automated Cell Counter

Instruction Manual



All the materials in this user manual are protected by Korean and international copyright laws. They cannot be reproduced, translated, published or distributed without the permission of the copyright owner.

ADAM™ CellT Plus Instruction Manual

Website : www.nanoentek.com

E-mail : sales@nanoentek.com

NanoEntek, Inc.

851-14, Seohaero, Paltan-myeon, Hwaseong-si, Gyeonggi-do, 18531, Korea

Tel. +82-2-6220-7940

Fax. +82-2-6220-7999

NanoEntek America, Inc.

220 Bear Hill Road, Suite 102, Waltham, MA 02451, USA

Tel. +1-781-472-2558

Fax. +2-781-790-5649

The information in this manual is described as accurately as possible.

Firmware and software changes and updates may change without prior consent or notification.

Copyright © 2023 by NanoEntek, Inc.

All rights reserved. Published in Korea.

Documentation: **NESMU-ACTP-001E (V.1.0)**

Revision history: **V.0.0 DEC 2023**

V.1.0 DEC 2024

Table of Contents

Introduction	5
General Description	5
Technology	6
Basic principle of counting	7
Product contents	8
ADAM™ CellIT Plus	8
AccuPlus Slide & Reagent	8
Upon receiving the instrument	8
Product Description	9
Front view of ADAM™ CellIT Plus	9
Rear view of CellIT Plus	10
Graphical User Interface of ADAM™ CellIT Plus	11
Getting started	12
Environmental requirements	12
Power on and Initial Display	12
Error messages during booting	13
Count setting	14
General Operation	15
Quick Guide	15
Sample preparation	16
Cell counting	16
Measure	19
Run sample	19
Result analysis	20
Result Analysis - Error code	21
QC	22
QC Mode	22
QC Slide Edit	23
QC Slide Result Edit	24
QC Slide Result	25
Data	26
Data list	26
EDIT	27
IMAGE	28
SAVE	29

MAIL.....	30
Approval.....	31
Requestable	31
Requesting.....	32
Approvable.....	33
Approved.....	34
Setting.....	35
Setting.....	36
Wifi.....	36
Remote support.....	36
Update	37
Auto logout.....	37
Backup	37
Recovery	38
User	39
User	39
User manage.....	40
Privilege	41
Password Option	42
Log manage	43
Document manage.....	44
Deleted list	45
Power off	46
Lock	46
Power off	46
Maintenance and cleaning	47
Trouble shooting	48
Warranty.....	49
Technical specifications	50
Product list	51
Safety precautions	52
Mesures de sécurité.....	53
Safety symbols.....	54
Warnings.....	56
Technical support.....	57

Introduction

General Description

The ADAM™ CellT Plus is a highly accurate dual fluorescence cell counter that uses AO (acridine orange) and DAPI to count total and dead cells and also provides a bright field channel for cell size measurement.



Introduction

Technology

Measuring the number of cells and their viability is an essential part of biological experiments and biopharmaceutical procedures. Traditionally, the hemocytometer and trypan blue exclusion method have been used to quantifying total cells, dead cells, and cellular viability. These manual methods have been widely adopted as a standard for cell counting, however, they have limitations.

Non-cellular debris, such as dust or tissue residues, can be miscounted as cells, and the trypan blue exclusion method is known to overestimate cellular viability. Additionally, manual counting is prone to user-to-user variability, impacting consistency and accuracy.

To address these challenges, NanoEntek has developed ADAM™ CellT Plus, an image-based fluorescence cell counter. It captures bright field images to quantify cell sizes while using two fluorescence images to quantify the number of total cells and dead cells.

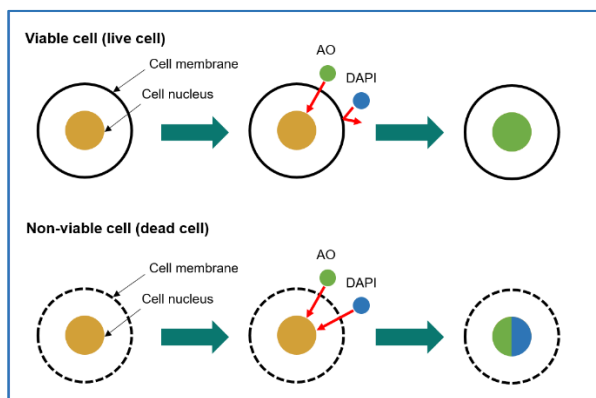
ADAM™ CellT Plus is designed to provide accurate, simple, and reliable results.

Introduction

Basic principle of counting

ADAM™ CellIT Plus uses acridine orange (AO) and 4',6-diamidino-2-phenylindole (DAPI) to count total number of cells and number of dead cells, respectively. AO is a cell-membrane permeable dye that stains nucleus of every cells regardless of the cell's condition. Therefore, it is used to count total number of cells. DAPI is a cell-membrane impermeable dye that only stains nucleus of cells with damaged membranes or cells with inactive metabolism. Therefore, it is used to count number of dead cells. Schematics of counting principal is shown below. From total cell counts and dead cell counts, viability of cells is calculated as below;

Principle (Total cell count)



$$*Viability(\%) = \frac{(A-B)}{A} \times 100$$

A: Total cell / B: Non-viable cell

Product contents

ADAM™ CellT Plus

ADAM™ CellT Plus is shipped in a carton box containing followings;

Item	Quantity
Main device	1
User manual	1
USB hub	1
Wifi dongle	1
Power cord	1
Adapter	1
External Hard disk	1
Test Bead	1
QC slide (optional)	1
PC (only PC Mode)	1
Printer (optional)	1

AccuPlus Slide & Reagent

AccuPlus Slide and reagent has following supplies:

Item	AccuPlus Slide (Cat. No: AP4S-100)	Cell viability reagent (Cat. No: APAD-400)
Disposable Slide	100 pcs (4 channel)	N/A
Reagent	N/A	20 mL x 1 bottle
Available test Q'ty	400 test	

**These supplies are sold separately.*

Upon receiving the instrument

- Examine the instrument carefully for any damage incurred during transit.
- Ensure that all parts of the instrument including accessories listed above are included with the product.
- Any damage claims must be filed with the carrier.
- The warranty does not cover in-transit damage.
- Upon receipt, store AccuPlus Slide at room temperature. Cell viability reagent should be stored at 2~8°C

Product Description

Front view of ADAM™ CellT Plus

The front view of the ADAM™ CellT Plus is shown below:

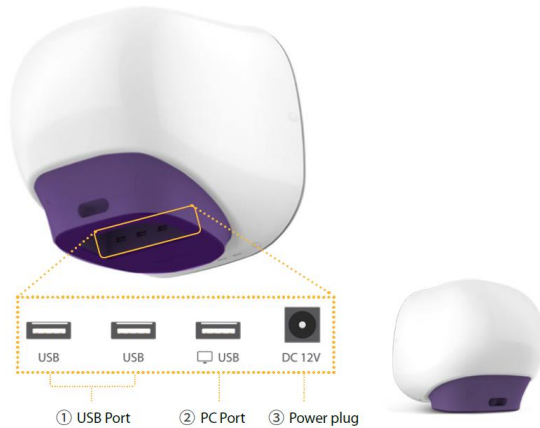


Components	Description
① Door	Allows the slide holder to move in and out of the instrument.
② Power	Turns the instrument on / off.
③ LCD	Serves as the main user interface for operating the instrument and viewing progress and results.

Product Description

Rear view of ADAM™ CellIT Plus

The rear view showing various parts of the ADAM™ CellIT Plus.:



Ports	Description
① USB Port	Port for software update and save the data.
② PC port	Connects with PC (Only PC Mode).
③ Power Plug	Connects the adapter plugged into a 12V power outlet to the ADAM CellIT Plus.

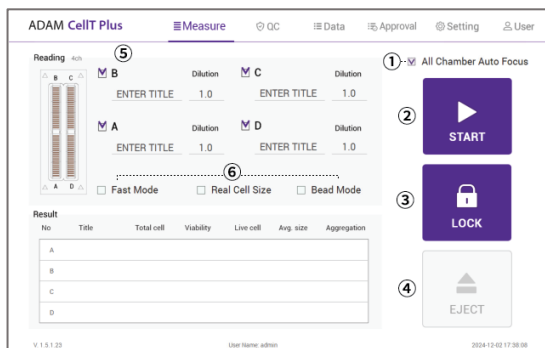
ⓘ **CAUTION**

Do not use the ② PC port with a flash drive. This port does not recognize a flash drive.

Product Description

Graphical User Interface of ADAM™ CellT Plus

The graphic user interface of the ADAM™ CellT Plus is shown below:



Control buttons	Description
① Auto Focus	Turn on/off the auto focus function. (If the auto focus function is turned off, the autofocus is only activated for the first measurement.)
② START	Performs all procedures of automatic counting.
③ LOCK	Protects the alignment of stage from external shock when ADAM™ CellT Plus is being moved. Lock ADAM™ CellT Plus before turning it off or moving it.
④ EJECT	Ejects the slide holder from ADAM™ CellT Plus. Functions as unload.
⑤ Sample	Check the sample to be measured and enter the name. Also enter the dilution factor.
⑥ Mode	Select the measurement mode. The default mode is 13 frames for fluorescence and the Fast mode is 6 frames. Real cell size mode is a mode for measuring bright field images. Bead mode is for QC.

Getting started

Environmental requirements

⚠ CAUTION

At low temperature (≤ 10 °C), allow the device to warm up for 10 minutes at ambient temperature before use. Not recommended for cold room use (≤ 4 °C).

To ensure correct operation and stable performance, install the ADAM™ CellT Plus in a location which meets the following conditions:

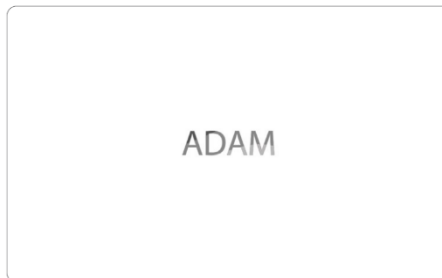
1. Use at room temperature between 20 and 35 °C
2. Do not expose the device to direct sunlight.
3. Do not subject the device to direct or continuous vibration.
4. Do not subject the device to intense magnetic or electromagnetic fields.
5. Do not install the device in high-humidity environment.
6. Location of device should be free from corrosive gases or other corrosive substances.
7. Ensure minimal contact with dust or other airborne particles.
8. Allow a 10 cm (4 inches) minimum space around the device for proper airflow.
9. Do not place any objects on top of the device.

Power on and Initial Display

1. Plug 12V power supply to the power port at the back of the instrument.
2. Press the power button in the front for 2~3 seconds to turn the instrument on.

If you get an error message, please contact your local distributor or sales@nanoentek.com.

If booting is successful and no errors are detected, the home screens will be displayed as below.



⚠ CAUTION

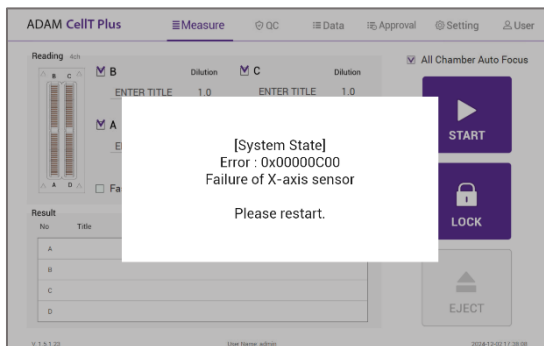
- Do not tilt the device too much in the forward when connecting the power cord.
- Do not move the device after connecting power cord.

When you connect the power cord to ADAM™ CellT Plus even without power on the device, it will go through self diagnostic tests.

Getting started

Error messages during booting

[System State : Error]



If the "System State" error message appears, it indicates that the boot process was not completed properly.

To resolve this, press and hold the power button for at least 5 seconds to turn off the instrument. Wait until the instrument is completely turned off, and turn it back on by pressing and holding the power button for 2–3 seconds.

If this message still appears after restarting, contact your local distributor or sales@nanoentek.com.

Error code	Cause
0x00000C00	Failure of X-axis sensor
0x00007000	Failure of Y-axis sensor
0x00008000	Failure of Z-axis sensor
0x06000000	Failure of Locking module sensor

Getting started

Count setting

[Cell size]

The initial counting range is set between 3 and 80, but the size can be adjusted to customize the counting range.

Cell size

Min 3

Max 100

[Dilution factor]

If the sample was diluted before mixing with the CellT Plus reagent, set the dilution factor here. For example, if the sample was diluted 3-fold, enter "3" as the dilution factor.

! CAUTION

Factor values for the Cell viability reagent is already applied.

Dilution factor

1.0

! CAUTION

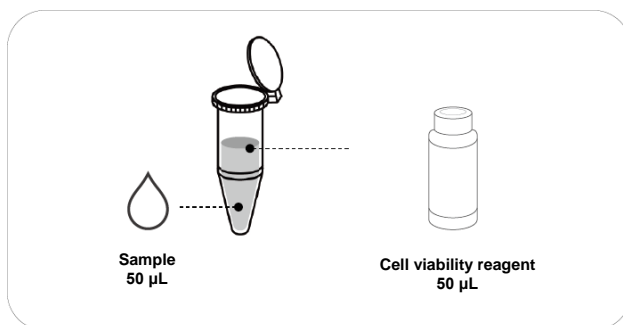
In Bead mode and QC mode, adjustments to [Cell size] and [Dilution factor] will not be applied.

General Operation

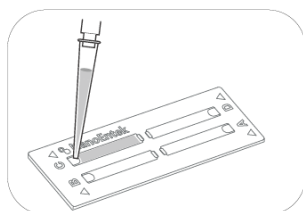
Quick Guide

Instruction is provided in this section for preparing the sample with Cell viability reagent for use with disposable AccuPlus Slide for automated cell count using the ADAM™ CellIT Plus. Please follow these steps to prepare samples and run tests.

1. Mix the sample and the cell viability reagent at a 1:1 ratio. The recommended ratio is mixing 50 μ L of the sample with 50 μ L of cell viability reagent. Then, mix thoroughly.



2. Take 15 μ L of the mixed sample and load it into each chamber of the AccuPlus slide. Wait for 1 minute on a flat surface to allow cells to settle.

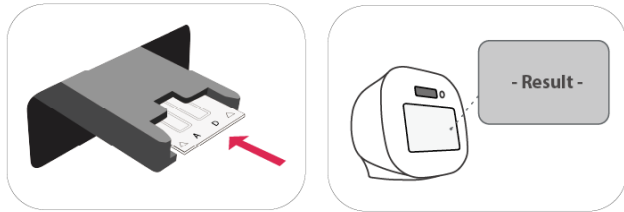


ⓘ CAUTION

1. This waiting step is essential for ensuring accurate measurements.
2. A chamber that has been loaded with a sample cannot be reused.

General Operation

3. Insert the AccuPlus Slide into the slide holder. Press the START button to begin the measurement and obtain the results.



Sample preparation

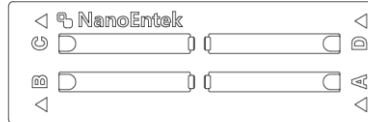
1. Cultivate the required number of cells.

NOTE

Concentration out of this range will result in errors. Refer to page 20 for more information about errors.

2. Thoroughly mix the cell pellet by vortexing or pipetting.
3. Check visually if any cell clumps or agglomerates remain.

Cell counting



[AccuPlus Slide 4 ch]

Counting cell

- 1) Add 50 μL of your sample to 50 μL supplied Cell viability reagent.
- 2) Pipette or vortex the tube vigorously.
- 3) Load 15 μL sample mixture to the AccuPlus Slide A,B,C or D channel.
Then, wait 1 minute for settling down.

NOTE

When loading the sample mixture to the AccuPlus Slide, take care to avoid creating bubbles.

General Operation

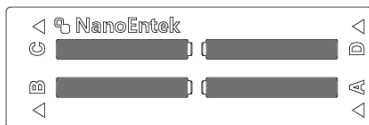
Cell counting

⚠ **WARNING**

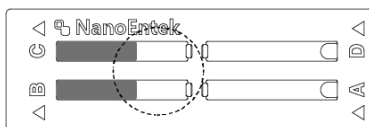
[Sample loading error]

When loading the sample into the AccuPlus Slide, ensure the correct volume of 15µL is used. Incorrect sample volumes, either too low or too high, may result in inaccurate results.

Correct volume

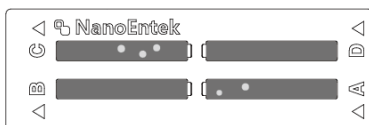


Low volume



⚠ **CAUTION**

Avoid bubbles which may negatively affect the result.



General Operation

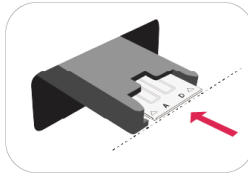
Cell counting

ⓘ WARNING

[AccuPlus Slide insert error]

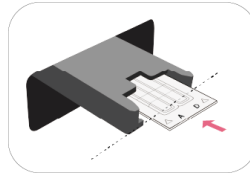
Completely insert AccuPlus Slide face up, in the direction of the arrow on the slide. The instrument will not detect if slides are inserted incorrectly.

See pictures below for proper insertion.



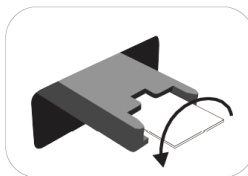
(O)

Correctly inserted



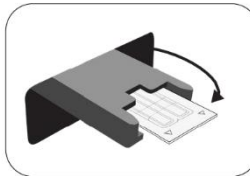
(X)

Not fully inserted



(X)

Upside down inserted



(X)

Wrong direction inserted

ⓘ WARNING

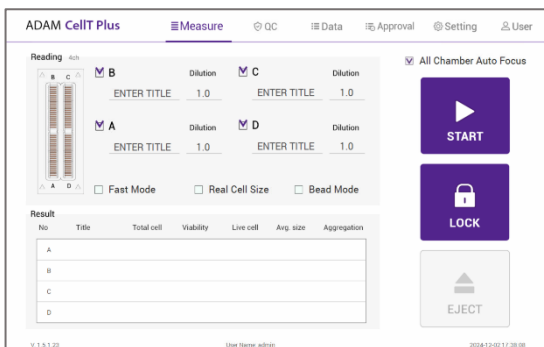
- Please insert or remove the AccuPlus Slide when the slide holder is fully ejected.
- When the test is finished, please remove the AccuPlus Slide from the slide holder.

Measure

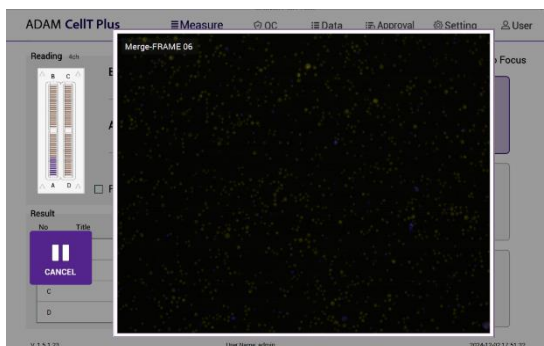
Run sample

Start counting process by pressing 'START'.

Upon the first measurement after turning on the instrument, the auto-focus function is applied automatically. If the "All Chamber Auto Focus" option is selected, it may take approximately 3 minutes or longer to find the optimal focus for all chambers.



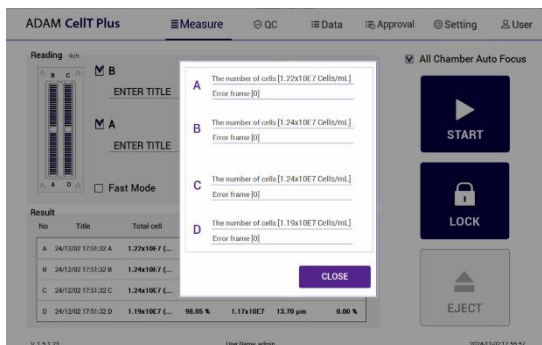
While the test is in progress, the merged channel image can be viewed in real time.



Measure

Result analysis

Based on the captured images, the ADAM™ CellIT Plus software automatically calculates the results and displays them in a simple pop-up.



* Examples of Results

Title	Number of Total cell	Number of Non-Viable cell	Viability
Viability 01	1.10E6	5.50E5	50%
Viability 02	2.20E6	5.50E5	75%

- The viability will be automatically calculated by the ADAM™ CellIT Plus software after each measurement of the total cells and the non-viable cells.
- First, the total cell count is measured, followed by the non-viable cell count. The cell viability is then calculated by subtracting the non-viable cell count from the total cell count.

! NOTE

'Print' button will be automatically activated when portable printer (optional) is connected.

Measure

Result Analysis - Error code

All	No	CH	Side	Sample	Exp. Name	Date/Time	Total	Viability	Live	Dead	Avg. cfu
<input type="checkbox"/>	0041	CH1	D	055 23/10/13 14.41	admin	2023-10-13 14:41:09	2.59e1197 (0)	79.82%	1.83e10E7	7.55e10E6	9.79e7
<input type="checkbox"/>	0008	CH1	C	094 23/10/13 14.41	admin	2023-10-13 14:41:09	1.20e1167 (0)	79.62%	9.17e10E5	2.01e10E6	9.79e7
<input type="checkbox"/>	0050	CH1	B	052 23/10/13 14.41	admin	2023-10-13 14:41:09	3.21e10E5	71.28%	2.29e10E5	9.21e10E5	9.89e7
<input type="checkbox"/>	0030	CH1	A	052 day1	admin	2023-10-13 14:41:09	3.29e10E5	78.98%	2.33e10E5	6.59e10E5	9.79e7
<input type="checkbox"/>	0057	CH1	D	051 23/10/13 14.34	admin	2023-10-13 14:34:10	2.22e10E5	70.30%	2.29e10E5	9.56e10E5	9.79e7
<input type="checkbox"/>	0056	CH1	C	050 23/10/13 14.34	admin	2023-10-13 14:34:10	3.22e10E5	78.82%	2.29e10E5	6.41e10E5	9.79e7
<input type="checkbox"/>	0050	CH1	B	049 23/10/13 14.34	admin	2023-10-13 14:34:10	3.14e10E5	78.58%	2.21e10E5	6.23e10E5	9.79e7
<input type="checkbox"/>	0054	CH1	A	048 day1	admin	2023-10-13 14:34:10	3.24e10E5	71.82%	2.33e10E5	9.14e10E5	9.79e7
<input type="checkbox"/>	0050	CH1	D	047 23/10/13 14.27	admin	2023-10-13 14:27:41	3.16e10E5	71.62%	2.24e10E5	6.11e10E5	9.79e7
<input type="checkbox"/>	0050	CH1	C	046 23/10/13 14.27	admin	2023-10-13 14:27:41	3.24e10E5	71.68%	2.30e10E5	6.41e10E5	9.79e7
<input type="checkbox"/>	0051	CH1	B	045 23/10/13 14.27	admin	2023-10-13 14:27:41	3.19e10E5	71.52%	2.21e10E5	6.01e10E5	9.79e7

Error code	Cause
E	Frames with errors are over 50% of total counting frame.
O	Cells are more than 2×10^7 cells/mL.
H	Cells are more than 4×10^6 cells/mL.
L	Cells are less than 4×10^5 cells/mL.
U	Cells are less than 5×10^4 cells/mL.
Error frame [#]	Frame with error that contains cells whose diameter is larger than 100µm. When this error shown in result window, please check the image.

QC

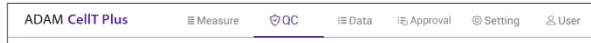
QC Mode

The QC Mode uses QC Slide (optional) to check equipment QC status by date at a glance.

[Activation of QC mode]

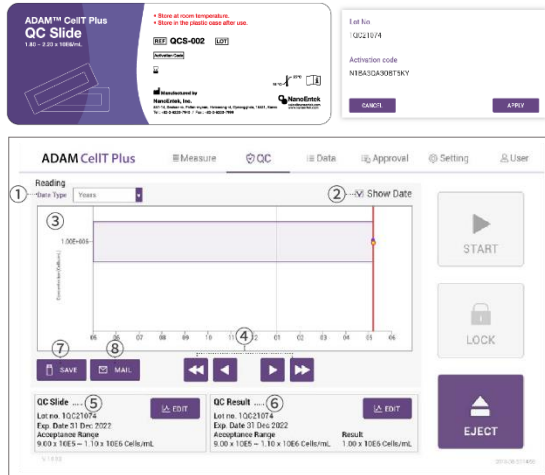
To activate 'QC' mode, an activation code must be entered.

1. Select 'QC' tab from top menu.
2. Enter lot no. and activation code. Then, click 'APPLY' button. Slide lot no. and activation code can be found on the plastic package label. See below for details.



NOTE

A unique activation code is given for each instrument, and its authenticity can be checked by registering activation code.



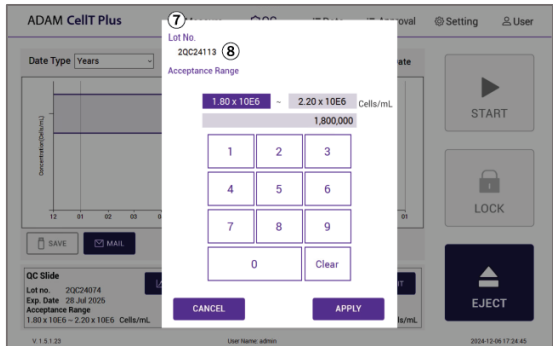
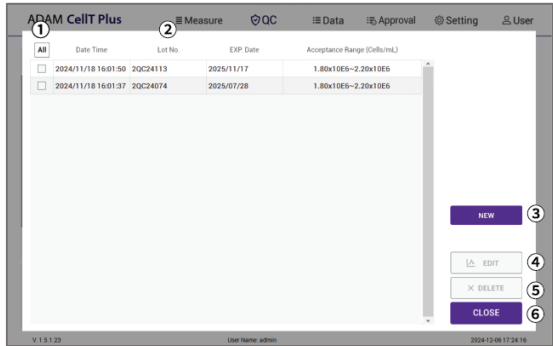
Control buttons	Description
① Data Type	QC result graph unit (Years, Months, Days, No.[Index])
② Show Data	Displays the date of QC progress on the graph
③ QC Result Graph	Graph left/right (QC date, number) movement button
④ Arrow Button	Graph left/right (QC date, number) movement button
⑤ QC Slide	QC Slide Lot. information and editing (create, edit, delete) functions
⑥ QC Result	QC result information and editing (whether or not graph is displayed, deleted) function
⑦ SAVE	Saves the QC Result Report to USB
⑧ MAIL	Sends the QC Result Report to e-mail

WARNING

QC Mode must use the QC Slide (optional), and the result without using the QC Slide is unreliable.

QC Slide Edit

The QC Mode uses QC Slide (optional) to check equipment QC status by date at a glance.

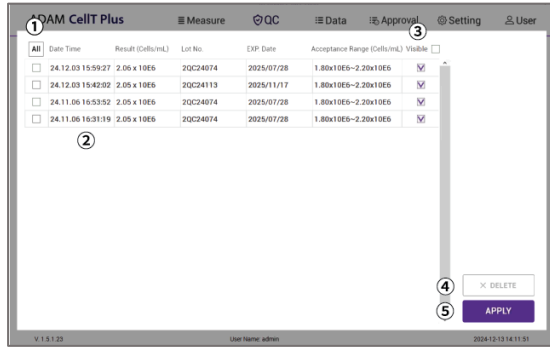


Control buttons	Description
① All	The checkbox is used to activate the 'DELETE' button. Select all QC Slide lots to be deleted from the QC Slide lot list.
② QC Slide List	Provides registered QC Slide lot information list
③ New	Registers new QC Slide lot
④ Edit	Edits selected QC Slide lot
⑤ Delete	Deletes selected QC Slide lot
⑥ Apply/Close	Applies function or closes selected QC Slide lot
⑦ Lot No. (New/Edit)	QC Slide Lot No. input field to create new or edit lot number
⑧ Acceptance Range (New/Edit)	QC Slide acceptance range input field to enter new or edit range values

- NOTE**
- The QC Slide lot and Acceptance Range can be found at the top of the QC Slide.
 - Expired QC Slide cannot be selected.

QC

QC Slide Result Edit

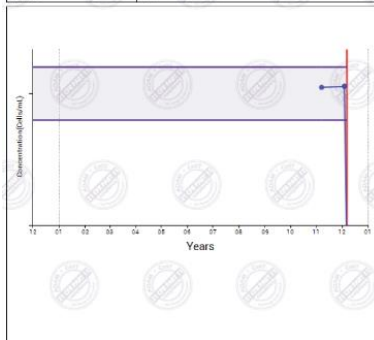


Control buttons	Description
① All	The checkbox is used to activate the 'DELETE' button. Select all QC Slide lots to be deleted from the QC Slide lot list.
② QC Slide List	QC result information list
③ Visible	Selects all QC result to display graph from the QC result List.
④ Delete	Deletes selected QC result
⑤ Apply/Close	Applies visible function or closes QC result

QC Slide Result

QC result acceptance criteria:

Experiment Date Time:	2024-12-06, 05:21 PM
Slide Lot:	20C24113
Exp. Date:	17 Nov 2025
Acceptance Range:	1.60x10 ⁵ – 2.20x10 ⁵ Cells/mL
Acceptance Slide Peak Size:	13–16 μ m
Concentration:	6.94x10 ⁵ Cells/mL
Slide Peak Size:	12 / 12 μ m
Result:	Fail



•The QC Slide result acceptance criteria include the acceptance range (different for each QC Slide lot) and the acceptance slide peak size (13 ~ 16 μ m)

NOTE

- The acceptance range of the selected QC slide lot is displayed on the graph as a purple area.
- Acceptance slide peak size results can be found in the ADAM™ CellIT Plus Test report.

WARNING

Contact sales@nanoentek.com or your local distributor if the QC result does not come within the acceptance criteria.

Data

Data list

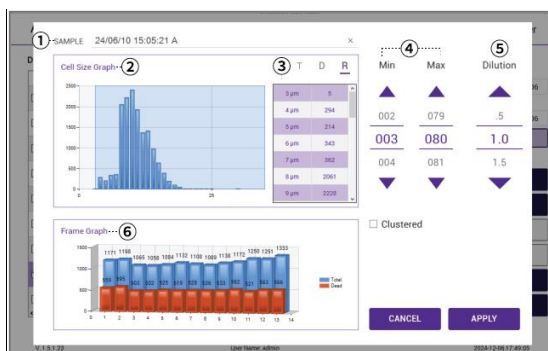
All	No	CH	Side	Sample	Exp. Name	DateTime	Total	Viability	Live	Dead	Avg. sd
<input checked="" type="checkbox"/>	0002	CH4	D	050.230/15/13 14.41	admin	2023-10-13 14:41:09	3.236150E5	70.80%	2.236150E5	9.444130E5	9.76µm
<input type="checkbox"/>	0010	CH4	C	050.230/15/13 14.41	admin	2023-10-13 14:41:09	3.236150E5	70.80%	2.236150E5	9.530130E5	9.76µm
<input type="checkbox"/>	0018	CH4	B	050.230/15/13 14.41	admin	2023-10-13 14:41:09	3.214150E5	71.20%	2.236150E5	9.214130E5	9.86µm
<input type="checkbox"/>	0017	CH4	A	040.040†	admin	2023-10-13 14:41:09	3.236150E5	70.80%	2.236150E5	9.530130E5	9.76µm
<input type="checkbox"/>	0016	CH4	D	051.230/15/13 14.34	admin	2023-10-13 14:34:10	3.236150E5	70.30%	2.236150E5	9.566130E5	9.76µm
<input type="checkbox"/>	0015	CH4	C	050.230/15/13 14.34	admin	2023-10-13 14:34:10	3.236150E5	70.80%	2.236150E5	9.414130E5	9.76µm
<input type="checkbox"/>	0014	CH4	B	049.230/15/13 14.34	admin	2023-10-13 14:34:10	3.146150E5	70.50%	2.214150E5	9.234130E5	9.77µm
<input type="checkbox"/>	0013	CH4	A	040.040†	admin	2023-10-13 14:34:10	3.244150E5	71.80%	2.236150E5	9.146130E5	9.76µm
<input type="checkbox"/>	0012	CH4	D	047.230/15/13 14.27	admin	2023-10-13 14:27:40	3.154150E5	71.00%	2.246150E5	9.156130E5	9.76µm
<input type="checkbox"/>	0011	CH4	C	046.230/15/13 14.27	admin	2023-10-13 14:27:40	3.236150E5	71.00%	2.236150E5	9.414130E5	9.76µm
<input type="checkbox"/>	0010	CH4	B	045.230/15/13 14.27	admin	2023-10-13 14:27:40	3.104150E5	71.50%	2.214150E5	8.814130E5	9.76µm

Control buttons	Description
① All	Select all data in Data List.
② SEARCH	Display the data of the selected date.
③ EDIT	View and edit the data. Multiple data can be edited with the same settings.
④ IMAGE	Check the cell images of each channel.
⑤ SAVE	Save the selected data to USB (PDF, Excel, Image).
⑥ PRINT (optional)	Prints the selected data.
⑦ MAIL	Send the Excel, PDF, and Image files of selected data to e-mail. Delete the selected data.
⑧ DELETE	Delete the selected data.

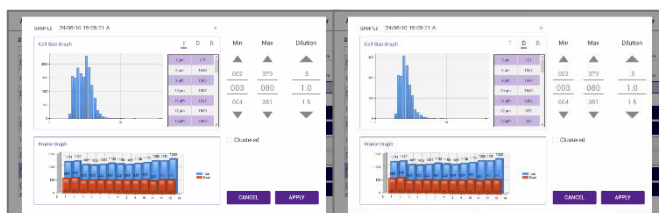
① **NOTE**
'PRINT' button will be automatically activated when portable printer (optional) is connected.

Data

EDIT



Control buttons	Description
① Sample	Edit the sample name.
② Cell size graph	Allows to view the cell size graph for each channel.
③ Cell size table	Allows to view the number of cells in each cell size. T=Total cell (AO), D=Dead cell (DAPI), R=Real cell size(Bright)
④ Cell size setting	Set the min/max size of the cell.
⑤ Dilution Factor	Set the dilution factor of sample. (Factor values for the Cell viability reagent is already applied.)
⑥ Frame graph	Allows to view the counted cell number of each frame.

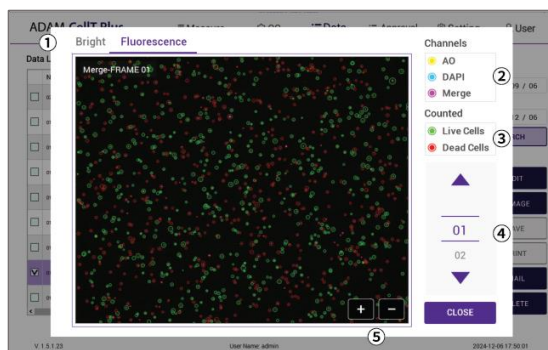


① NOTE

After measurement, size range adjustment is available only in the R channel when Bead mode or Real size mode is selected. If neither mode is selected, adjustment is only available in the T (AO) channel. Cells excluded by the size range adjustment are highlighted with yellow squares in the image.

Data

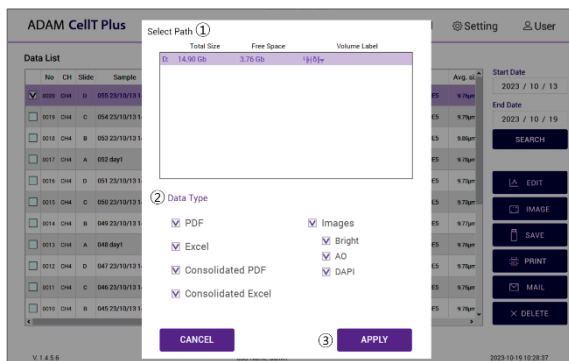
IMAGE



Control buttons	Description
① Channel	Select images measured in bright field and fluorescence channel.
② Original	Turn on/off AO, DAPI, and Merge to check channel image.
③ Counted	Turn on/off Live, Dead cells to check counted cell image.
④ Frame	Select a frame number of the channel.
⑤ Zoom-in/out	Zoom in and out to check the cell image.

Data

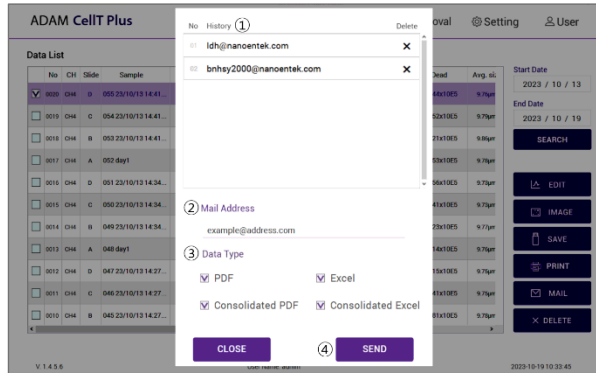
SAVE



Control buttons	Description
① Select Path	Selects a save path from the list to send the selected data.
② Data Type	Selects which data type to save.
③ Apply	Exports the files to a selected save path Files can be sent to only one save path at a time.

Data

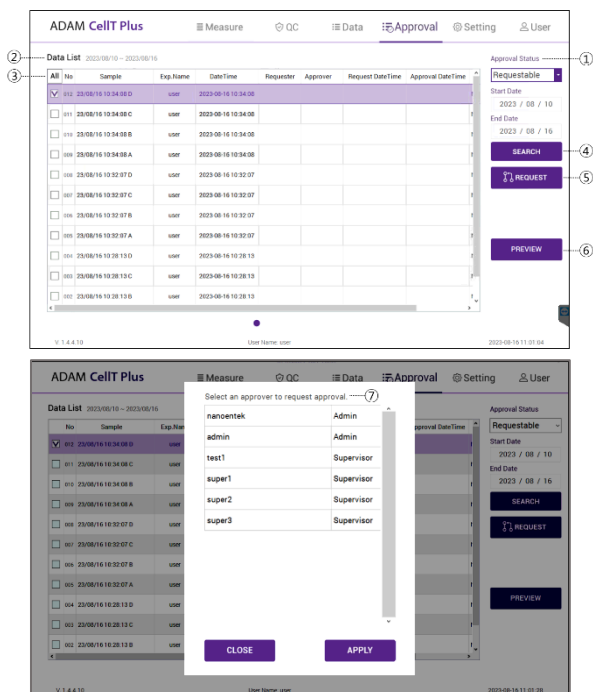
MAIL



Control buttons	Description
① History	Selects e-mail address from the list to send data The e-mail address where data has been sent will be saved.
② Mail Address	To send files to new e-mail, enter the applicable e-mail address.
③ Data Type	Selects which data type to send via e-mail
④ Send	Send the files to a selected e-mail address. Files can be sent to only one e-mail at a time.

Approval

Requestable



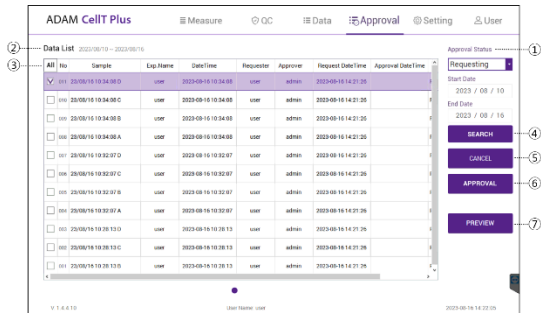
Control buttons	Description
① Approval Status	Settings tab related to data approval such as Requestable, Requesting, Approvable, and Approved.
② Data List	List of data that can check status information related to approval.
③ All	Select all data in Data List
④ Search	Display the data of the selected date.
⑤ Request	Request approval of selected data.
⑥ Preview	Select Preview to check the results before approval or requesting approval. (Providing preview in a PDF format)
⑦ Select approval	Select an approval to request approval.

NOTE

- Approval can only be done by an approver who has been granted Approval authority in the Privilege setting.
- Approved data displays approval status on Data Tab. (Approval: O / Approval in progress: Δ / Not approved X).
- Data in the process of approval cannot be edited or deleted.
- Approved data cannot be edited.

Approval

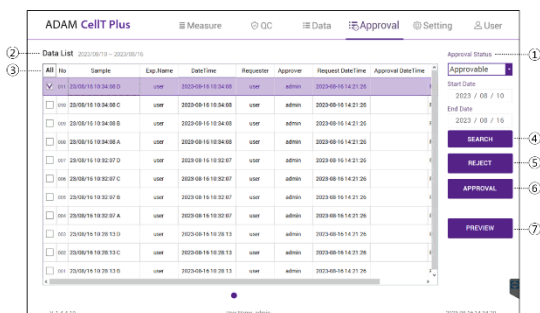
Requesting



Control buttons	Description
① Approval Status	Settings tab related to data approval such as Requestable, Requesting, Approvable, and Approved.
② Data List	List of data that can check status information related to approval.
③ All	Select all data in Data List
④ Search	Display the data of the selected date.
⑤ Cancel	Cancel approval of selected data in the process of approval.
⑥ Approval	Direct approval by only entering the approver's password without approver login.
⑦ Preview	Select Preview to check the results before approval or requesting approval. (Providing preview in a PDF format)

Approval

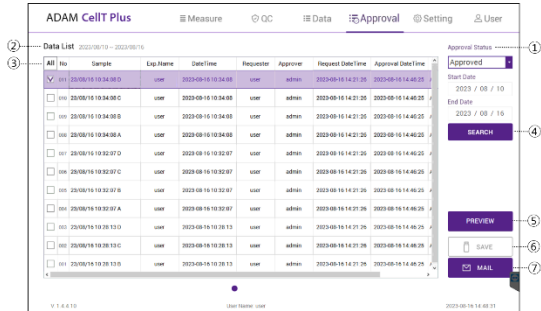
Approvable



Control buttons	Description
① Approval Status	Settings tab related to data approval such as Requestable, Requesting, Approvable, and Approved.
② Data List	List of data that can check status information related to approval.
③ All	Select all data in Data List
④ Search	Display the data of the selected date.
⑤ Reject	Reject approval of selected data in the process of approval.
⑥ Approval	Approval of the data selected during the approval process.
⑦ Preview	Select Preview to check the approvable approval results. (Providing preview in a PDF format.)

Approval

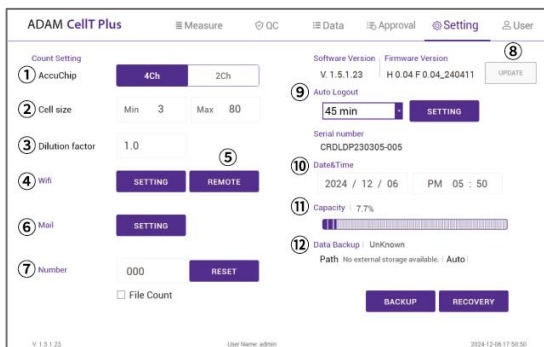
Approved



Control buttons	Description
① Approval Status	Settings tab related to data approval such as Requestable, Requesting, Approvable, and Approved.
② Data List	List of data that can check status information related to approval.
③ All	Select all data in Data List
④ Search	Display the data of the selected date.
⑤ Preview	Select Preview to check approved results. (Providing preview in a PDF format)
⑥ SAVE	Save the selected approved data to USB.
⑦ MAIL	Send the selected approved data to e-mail.

Approval

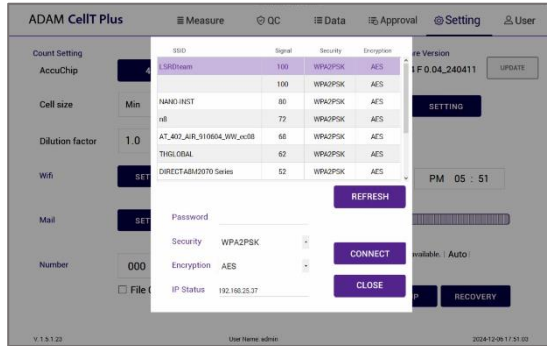
Setting



Control buttons	Description
① AccuChip	Select AccuPlus slide type (2ch, 4ch) to use.
② Cell size	Set default values of cell size.
③ Dilution factor	Set default values of dilution factor.
④ Wifi	Sets the Wi-Fi to use the e-mail or remote support function.
⑤ Remote	Connects to remote support software.
⑥ Mail	For the sender's email address, DO NOT change the setting in mail.
⑦ Number	Using the data list counter function, select auto-numbering in the title.
⑧ Update	Updates firmware or software through USB. (Refer to page 37)
⑨ Auto Logout	Sets auto logout time. (Refer to page 37)
⑩ Date & Time	Sets current date and time.
⑪ Capacity	Checks remaining capacity.
⑫ Data Backup	Allows to view the storage path of additional data backup.
⑬ Backup	Sets backup (automatic, manual) function. (Refer to page 37)
⑭ Recovery	Runs recovery (automatic, manual) function. (Refer to page 38)
⑮ Auto Backup Informations	Allows to view the working automatic backup information. (Sync=O, SDMS=-, Sync+SDMS=○)

Setting

Wifi



1. Click the 'Refresh' button.
2. Select the wifi.
3. Insert the password of selected wifi.
4. Click the 'Connect' button.

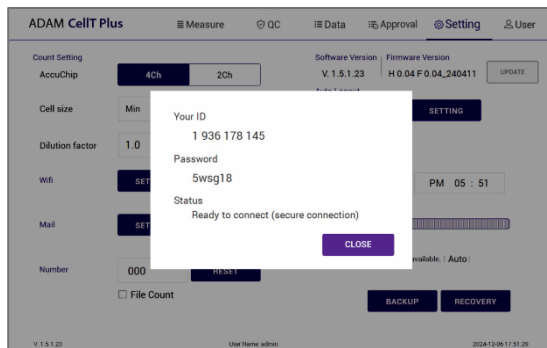
! **CAUTION**

If connection error occurs, please contact a laboratory facility manager.

! **NOTE**

In PC Mode, please use internet (Windows).

Remote support



1. Connect to wifi.
2. Click 'Remote support' button.
3. Share your ID and password to NanoEntek.

! **NOTE**

The remote support feature is to be used for maintenance only by request of NanoEntek.

! **WARNING**

If you do not see your Remote Support ID and Password, click the 'Close' and 'Remote Support' button again until they appear.

Setting

Update

1. Prepare the USB with update file.
2. Insert the USB.
3. Click the UPDATE button.

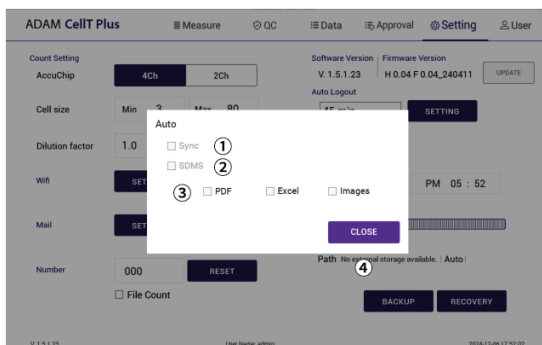
! CAUTION

- The 'AdamUpdate' folder must exist in the root path of the USB folder.
- ADAM™ CellIT Plus can be updated only when the firmware or software file exists in the 'AdamUpdate' folder. The 'ADAM™ CellIT Plus.exe' file should be in the 'AdamUpdate' folder.
- Do not rename the 'AdamUpdate' folder. The folder name should be 'AdamUpdate'.

Auto logout

Backup

The auto logout time when not in use can be set to 5, 15, 30, 45, or 60 minutes.



Control buttons	Description
① Auto-Sync	Real-time automatic backup of counted data required for automatic recovery
② Auto-SDMS	Real-time automatic backup of counted data required for SDMS (Scientific Data Management System) interworking
③ Manual	To manually back up the counted data required for manual recovery
④ Close	Applies function to the selected lists.

! NOTE

Auto-SDMS backup is available only for approved data.

! CAUTION

Please be cautious as data may be lost when Auto Backup (Sync) is turned off.

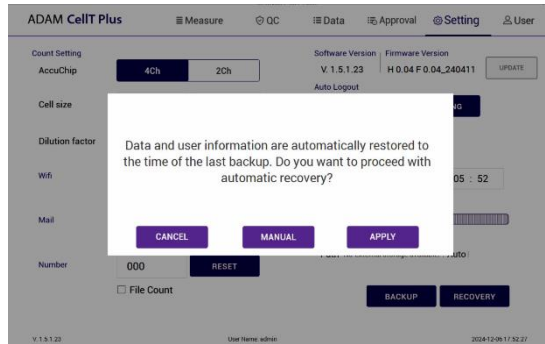
! WARNING

- DO NOT remove an external hard drive for backup at any time as it may cause data loss.
- If you change backup data path, auto backup function becomes inactive. DO NOT change data path as it may cause backed up data loss.

We are NOT responsible for such error or problem mentioned above.

Setting

Recovery



- Restore counted data to the point of the last automatic backup (Sync).
- Manual recovery restores manually backup counted data.

! **NOTE**

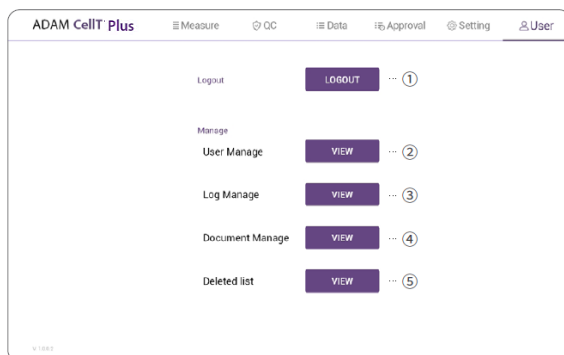
The automatic backup function is turned off after recovery, please re-enable the automatic backup function.

! **CAUTION**

Please be careful with manual recovery, because counted data that is not manually backed up will be lost.

User

User



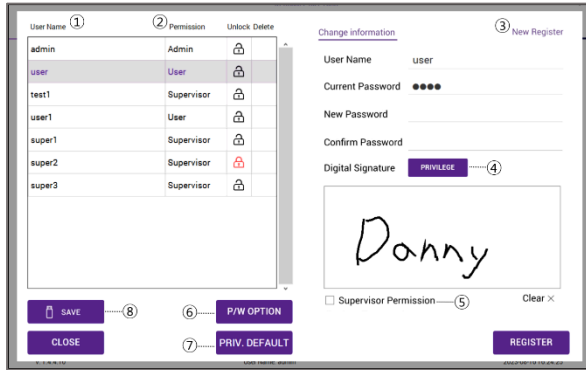
Control buttons	Description
① Logout	To logout
② User manage	To register a user and modify account settings
③ Log manage	Tracks user access records
④ Document manage	Tracks management document records
⑤ Deleted list	Tracks deleted data records

ADAM™ CellIT Plus provides a comprehensive solution to comply with the requirements of the 21 CFR Part 11 rule.

Please see the appendix for more information on these features.

User

User manage

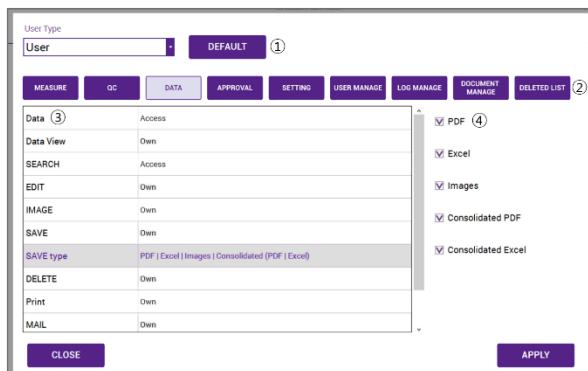


Control buttons	Description
① User Name	To view the registered user list.
② Permission	To view the user access authority
③ New Registration	To register new user
④ Privilege	Option for permission setting
⑤ Supervisor Permission	To register as a supervisor
⑥ Password Option	To set password
⑦ Privilege Default	Option for default permission setting (supervisor, User)
⑧ Save	Download the permissions of users in the user list as an Excel file.

User

Privilege

The Admin can grant or release access to functions when creating or editing new users (Supervisor, User).



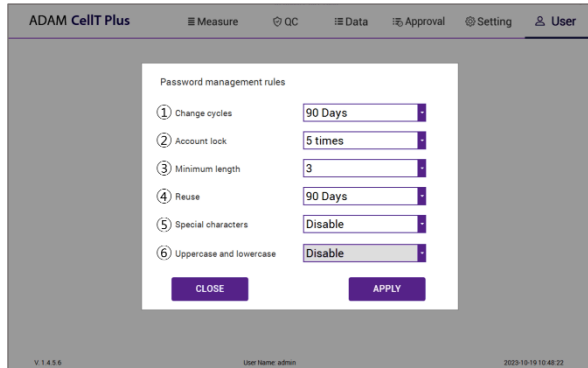
Control buttons	Description
① User Type & Default	Selects account level and sets default permissions
② Tab	Tab for permission Settings
③ Function list	Detailed functions for each permission setting tab
④ Detailed function	List of possible permission settings for each function

! **NOTE**

Granting basic access rights for each user (For the default access rights for each user, refer to the ADAM™ CellIT Plus SW 21 CFR PART11 requirement support appendix).

User

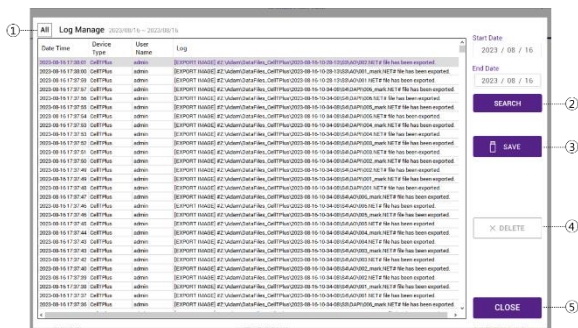
Password Option



Control buttons	Description
① Change cycles	Set password change interval (30, 90, 180 days).
② Account lock	Number of incorrect passwords in account lockout ($\leq 3, 5, 10, 15$).
③ Minimum length	Minimum length of password ($\leq 3, 5, 10, 15$).
④ Reuse	Prohibition of using the same password for a certain period of time ($\leq 30, 90, 180, >180$ days).
⑤ Special characters	Use at least one special character.
⑥ Uppercase and lowercase	Use at least one uppercase letter.

User

Log manage

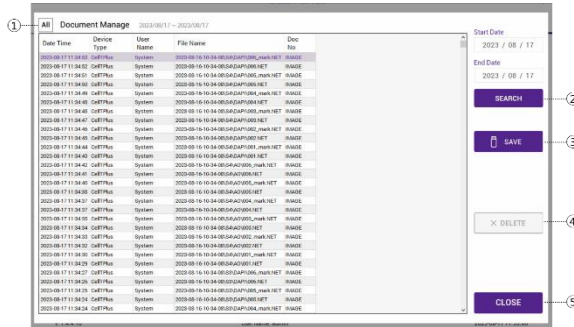


Control buttons	Description
① ALL	Select all data in Data List.
② SEARCH	Display the data of the selected date.
③ SAVE	Save the selected data to USB.
④ DELETE	Delete the selected data.
⑤ CLOSE	Close the log manage.

NOTE
The search period is limited to 90 days (Except PC Mode).

User

Document manage




Control buttons	Description
① ALL	Select all data in Data List.
② SEARCH	Display the data of the selected date.
③ SAVE	Save the selected data to USB.
④ DELETE	Delete the selected data.
⑤ CLOSE	Close the document manage.

NOTE
The search period is limited to 90 days (Except PC Mode).

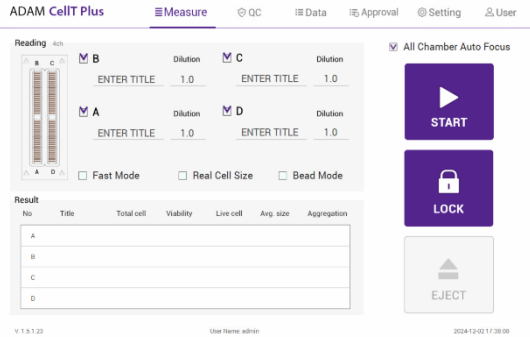
Power off

Lock

Press  LOCK before turning off the device.

If there is no operation for 1 minute, the lock function will be activated automatically.

When the device is locked, the screen will be changed as shown below.



Power off

If you press the power button 2~3 seconds, then 'Slide to shut down your PC' message will appear. Slide down the screen to turn off the power.



NOTE

In PC mode, press the 'X button (quit)' to turn off the power.

Maintenance and cleaning

Maintenance and cleaning

1. ADAM™ CellIT Plus does not need regular maintenance.
2. ADAM™ CellIT Plus has no replacement of consumable materials.
3. Please clean the exposed surface of ADAM™ CellIT Plus frequently or before testing, using a soft cloth and isopropyl alcohol or deionized water.

ⓘ CAUTION

Dispose of wipes in an appropriately labeled solvent contaminated waste container.

Trouble shooting

Trouble shooting

Problem	Description	Solution
ADAM™ CellIT Plus does not power up	<ul style="list-style-type: none"> No power from outlet Bad power cord. 	<ul style="list-style-type: none"> Check power source. Replace.
Inaccurate result	<ul style="list-style-type: none"> Cell number may be out of range. Cell viability reagent has expired. Too high clumped cells. 	<ul style="list-style-type: none"> Adjust the number of cells to recommended concentration (refer to page 50). Discard Cell viability reagent that have expired. Purchase the Cell viability reagent (refer to page 50). Try again after vortexing the cells.
When error message is shown (For information on each error message, see page 20)	<ul style="list-style-type: none"> When frames with errors are over 50% of total counting frame. (Error message: E) 	<ul style="list-style-type: none"> Check the suspension of cells if all cells are fully dissociated into single cells. If contaminants except cells are found, prepare sample again.
	<ul style="list-style-type: none"> High concentration of cells (Error message: H) Over detection range (Error message: O) 	<ul style="list-style-type: none"> Check if concentration of cell is too high. Dilute the sample and count again.
	<ul style="list-style-type: none"> Low concentration of cells (Error message: L) Under detection range (Error message: U) 	<ul style="list-style-type: none"> Check if concentration of cell is too low. Use concentrated sample and count again.

Warranty

Warranty

If any defects occur in the ADAM™ CellIT Plus during one (1) year warranty period, NanoEntek will repair or replace the defective parts at its discretion without charge. The following defects, however, are specifically excluded:

1. Defects caused by improper operation.
2. Repair or modification done by anyone other than NanoEntek or an authorized agent.
3. Damage caused by substituting alternative parts.
4. Use of fittings or spare parts supplied by anyone other than NanoEntek.
5. Damage caused by accident or misuse.
6. Damage caused by disaster.
7. Corrosion caused by improper solvent or sample.

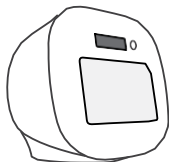
For your protection, items being returned must be insured against possible damage or loss. NanoEntek cannot be responsible for damage incurred during shipment of a repair instrument. It is recommend that you save the original packing material in which the instrument was shipped. This warranty should be limited to the replacement of defective products.

For any inquiry or request for repair service,
Contact sales@nanoentek.com or your local distributor.

For extended warranty purchase, contact sales@nanoentek.com.

Technical specifications

Technical Specifications



ADAM™ CellIT Plus	
Measuring range	$5 \times 10^4 - 2 \times 10^7$ cells/mL
Optimal range	$4 \times 10^5 - 4 \times 10^6$ cells/mL
Analysis time*	Please refer to following table.
Voltage	DC12V
Current	5A
Objective lens	4 X
LED	Green, Blue, UV
Camera	CMOS camera
Filter	Excitation filter, Dichroic filter, Emission filter
Weight	7 kg
Size (WxLxH)	277 x 276 x 270 mm
Degree of protection	IPX0

► Analysis time*

Mode (channel)	All Chamber Auto Focus (on)	All Chamber Auto Focus (off)	Captured Frames
Bead mode (BF/AO/DAPI)	8 min/slide		13 frames
Accuracy mode (AO/DAPI, Default)	3 min 30 sec/slide	1 min 30 sec/slide	13 frames
Real + Accuracy (BF/AO/DAPI)	6 min 30 sec/slide	5 min/slide	13 frames
Fast mode (AO/DAPI)	3min/slide	1 min/slide	6 frames

Operating environment condition

Temperature	$5\text{ °C} \leq \text{Temperature} \leq 40\text{ °C}$
Humidity	$20\% \leq \text{Humidity} \leq 80\%$
Altitude	Altitude $\leq 2,000\text{ m}$



AccuPlus Slide	
Loading sample vol.	15 μL /test
Measuring sample vol.	3.2 μL /test

Solutions

Cell viability Reagent	20 mL / bottle
------------------------	----------------

Storage temperature

AccuPlus Slide	0 ~ 30 °C
Cell viability reagent	2 ~ 8 °C

Expiration date

AccuPlus Slide	2 years
Cell viability reagent	1 year 2 months after opening

Product list

Product list

Cat. No.	Description	Contents
ADAM CellIT Plus	Fluorescence cell counter	<ul style="list-style-type: none">• Main device• User manual
APAD-400	Cell viability reagent	<ul style="list-style-type: none">• 20 ml x 1 bottle (400 Tests): Acridine orange (AO) & 4',6-diamidino-2-phenylindole (DAPI) stain
AP4S-100	AccuPlus Slide 4ch.	<ul style="list-style-type: none">• 4ch. Slide 100ea

► Accessories

Cat. No.	Description	Q'ty
QCS-002	QC slide (Optional)	1

Safety precautions

Review and follow the safety instructions below:

- 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.
- Do not touch the main plug or power cord with wet hands.
- Always ensure that the power supply input voltage matches the voltage available at your location.
- This instrument is air-cooled and its surfaces may become hot during operation. When installing, leave a space of more than 10 cm (4 inches) around the instrument and do not place any objects between the instrument and walls.
- Do not install an instrument on a slant or a place prone to vibrations, which induces the risk of malfunction or damage of the instrument.
- Never insert any objects into the air vents of the instrument as this can result in electric shock, personal injury, and equipment damage.
- Plug the power cord firmly into the wall outlet and AC adapter.
- To avoid potential shock hazard, make sure that the power cord is properly grounded.
- Be sure to position the instrument such that it is easy to disconnect.
- Turn off an instrument before unplugging the power cord and/or moving the instrument.
- If an instrument is dropped or broken, disconnect the power cord and contact a service person. The warrant will be void in case of disassembly.
- Use only authorized accessories (adaptor, power cord, and USB drive).



WARNING

Class A equipment is intended for use in an industrial environment. In the documentation for the user, a statement shall be included drawing attention to the fact that there may be potential difficulties in ensuring electromagnetic compatibility in other environments, due to conducted as well as radiated disturbances.

Mesures de sécurité

Examiner et suivre les instructions en matière de sécurité ci-dessous:

- Si de l'eau ou d'autres matières entrent dans l'instrument, l'adaptateur, ou l'entrée de la prise, débrancher le cordon d'alimentation et contacter un technicien de service. Pour l'environnement d'exploitation, se reporter aux Spécifications du Produit.
- Ne pas toucher la prise principale ou le cordon d'alimentation avec les mains mouillées.
- S'assurer toujours que la tension d'alimentation correspond à la tension disponible à votre localisation.
- Cet instrument est refroidi à l'air et ses surfaces peuvent devenir chaudes pendant le fonctionnement. Lors de l'installation, laisser un espace de plus de 10 cm (4 pouces) autour de l'instrument et ne placer aucun objet entre l'instrument et les murs.
- Ne pas installer d'instrument sur une pente ou un endroit sujet aux vibrations, qui entraînent un risque de défaillance ou de détérioration de l'instrument.
- Ne jamais insérer d'objets dans les événements d'air de l'instrument, car cela peut causer des chocs électriques, des blessures corporelles et des dommages de l'instrument.
- Mettre le cordon d'alimentation fermement dans la prise murale et l'adaptateur courant alternatif.
- Pour éviter tout risque de choc, s'assurer que le cordon d'alimentation est correctement mis à la terre.
- S'assurer de positionner l'instrument de telle sorte qu'il soit facile à débrancher.
- Éteindre l'instrument avant de débrancher le cordon d'alimentation et/ou de le déplacer.
- En cas de chute ou de rupture d'un instrument, débrancher le cordon d'alimentation et contacter un technicien de service. La garantie sera annulée en cas de démontage.
- Utiliser uniquement les accessoires autorisés (adaptateur, cordon d'alimentation et clé USB).















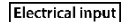


AVERTISSEMENT








L'équipement de classe A est destiné à être utilisé dans un environnement industriel. Dans la documentation pour l'utilisateur, une déclaration doit être incluse pour attirer l'attention sur le fait qu'il peut y avoir des difficultés à assurer la compatibilité électromagnétique dans d'autres environnements, en raison de perturbations aussi bien conduites que radiées.

Safety symbols

Safety symbols

The following symbols are found on the instrument and this document. Always use the equipment in the safest possible manner.

Symbol	Meaning
	Caution & Warning
	Protective earth (Ground)
	Power On/Off
	The moving parts symbol indicates areas of the medical device in which moving parts can cause injuries. Do not operate the medical device with the door open.
	This instrument has been tested and found to comply with the limits for a Class A digital medical device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the instrument is operated in a commercial environment. This instrument generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this instrument in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.
	This instrument and consumables conforms to the EC Declaration of Conformity.
	USB Connection
	This product conforms to UL 61010-1, CAN/CSA C22.2 No.61010-1 "Safety Requirements for Electrical Instrument for Measurement, Control, and Laboratory Use, Part I: General Requirements." This instrument bearing the TÜV symbol are certified by TÜV Product Services to be in conformance with the applicable safety standard for the US and Canada.
	Catalogue number/Reference number
	Serial number
	Manufacturer
	European Corporation
	Electrical input
	US Corporation
 www.nanosentek.com/eLFU.php	Consult Instructions for Use An electronic instructions for us (eLFU) indicator (website address) may accompany the symbol when used to indicate an instruction to consult an eLFU.

	<p>Disposal of your old appliance</p> <ol style="list-style-type: none"> 1. When this crossed-out wheeled bin symbol is attached to a product it means the product is covered by the European Directive 2012/19/EU. 2. All electrical and electronic products should be disposed of separately from the municipal waste stream via designated collection facilities appointed by the government or the local authorities. 3. The correct disposal of your old appliance will help prevent potential negative consequences for the environment and human health. 4. For more detailed information about disposal of your old appliance, please contact local distributor, waste disposal service or call the number listed in the manual.
	LED
	<p>Physician. Keep dry Keep away from rain</p>
	Fragile, handle with care
	This way up
	General symbol for recover/recyclable
	Team lift
<div style="border: 1px solid black; padding: 2px; display: inline-block;">US Corporation</div>	US Corporation
<div style="border: 1px solid black; padding: 2px; display: inline-block;">EC REP</div>	Authorized representative in the European community
<div style="border: 1px solid black; padding: 2px; display: inline-block;">UK Representative</div>	Authorized representative in United Kingdom
<div style="border: 1px solid black; padding: 2px; display: inline-block;">CH REP</div>	Authorized representative in Switzerland
<div style="border: 1px solid black; padding: 2px; display: inline-block;">BRH</div>	Authorized representative in Brazil

Warnings

Warning

1. After using device, please turn off main power.

If not, it may cause malfunction or may reduce product life.

2. When turning off the device, be sure to lock the device with Lock button.

If not, it may cause mechanical problem or error message when device is booting.

Item	Warning
Battery inside device	<ul style="list-style-type: none">• Risk of explosion if battery is replaced incorrectly.• This battery is not replaceable by user. Refer to an authorized service person.
Cover	<ul style="list-style-type: none">• Do not remove cover or disassemble case. There are no adjustable components inside the instrument.• If a malfunction is found, refer to an authorized service person.
Manual	<ul style="list-style-type: none">• Do not attempt to service the equipment.• This manual is only available in English.• Failure to heed warnings may result in injury to service provider or operator.
Sample handling	<ul style="list-style-type: none">• Wear personal protective equipment during sampling and testing.• Sample may contain infectious or bio-hazardous agents.• Use capped tubes and lint free wipes. Lint free wipes to be used one time and discarded.
Waste	<ul style="list-style-type: none">• After using AccuPlus Slide, appropriately dispose as bio-hazardous waste.• Do not reuse AccuPlus Slide.

Technical support

Visit our Website at www.nanoentek.com for:



- Technical resources, including manuals, FAQs, etc.
- Technical support contact information
- Additional product information and special offers

For more information or technical assistance, please call or email.

NanoEntek, Inc.

851-14, Seohae-ro, Paltan-myeon, Hwaseong-si,
Gyeonggi-do, 18531, Korea
Tel: +82-2-6220-7940
Fax: +82-2-6220-7999

NanoEntek America, Inc.

220 Bear Hill Road, Suite 102, Waltham, MA 02451, USA
Tel: +1-781-472-2558
Fax: +1-781-790-5649

Email

sales@nanoentek.com

Website

www.nanoentek.com

ADAM™ CellT Plus

NESMU-ACTP-001E (V.1.0)



NanoEntek, Inc.

851-14, Seohae-ro, Paltan-myeon, Hwaseong-si
Gyeonggi-do, 18531, Korea
Tel: +82-2-6220-7940
Fax: +82-2-6220-7999

US Corporation

NanoEntek America, Inc.

220 Bear Hill Road, Suite 102, Waltham, MA 02451, USA
Tel: +1-781-472-2558
Fax: +1-781-790-5649

European Corporation

NanoEntek Europe | med-tech supplies GmbH

Lochhamerstr. 4a, 82152 Martinsried, Germany
Tel: +49-89-21-55-38-43 / Fax: +49-89-99-95-46-60

E-mail

sales@nanoentek.com

Website

www.nanoentek.com

ADAM SCC

A New Standard of
Somatic Cell Counter



INSTRUCTION MANUAL


NESMU-ASC-001E(V.4.0)

All the materials in this manual are protected by Korean and international copyright laws. They cannot be reproduced, translated, published or distributed without the permission of the copyright owner.

ADAM-SCC, Instruction Manual

Website : www.nanoentek.com

E-mail : sales@nanoentek.com

 **Manufactured by**

NanoEntek, Inc.

851-14, Seohae-ro, Paltan-myeon, Hwaseong-si, Gyeonggi-do, 18531, Korea

Tel. +82-2-6220-7940 Fax. +82-2-6220-7999

NanoEntek America, Inc.

220 Bear Hill Road, Suite 102, Waltham, MA 02451, USA

Tel: +1-781-472-2558 , Fax: +1-781-790-5649



MT Promedt Consulting GmbH

Altenhofstrasse 80, 66386 St. Ingbert, Germany

The information in this manual is described as correctly as possible and is applicable to the latest firmware and software versions, but it may be changed without prior consent or notification.

Copyright 2008, by NanoEntek Inc.

All rights reserved. Published in Korea.

Documentation: **NESMU-ASC-001E (V.4.0)**

Revision history:

V.0.0	Oct 2008
V.1.0	May 2010
V.1.5	Jan 2012
V.2.0	Feb 2012
V.2.5	Mar 2012
V.3.0	July 2012
V.3.5	Feb 2013
V.3.6	Jan 2014
V.3.7	June 2015
V.3.8	Mar 2016
V.3.9	Sep 2017
V.4.0	July 2021

Table of contents

Product Contents	4
Safety Information	5 ~ 7
Product Specifications	8
Description of Adam Somatic Cell Counter	9 ~ 10
<hr/>	
Introduction	11 ~ 12
- Overview: ADAM SCC	11
- Overview: SCC Kit	12
<hr/>	
Getting Started	13 ~ 17
- Environmental Requirements	13
- Installation	14
- Start-Up Screen	15
- Error message during booting	16
- Menu Setting & System Information	17
<hr/>	
General Operation	18 ~ 23
- Introduction	18
- Preparing cell	18
- Operating the ADAM	19
- Icon Function	20
- Result Analysis	21
- Error Message & Maintenance and Cleaning	22 ~23
<hr/>	
Software Installation	24 ~ 33
- ADAM Report Program: Introduction & Getting started	24
- ADAM Report Program: Installation	25 ~ 26
- ADAM Report Program: Function guide	27
- ADAM Report Program: Function Buttons	28 ~ 29
- ADAM Report Program: Dilution Factor & Information	30
- ADAM Report Program: Data List & Data retrieval	31
- ADAM Report Program: Data Export	32
- ADAM Report Program: Data path & Turn off the S/W	33
<hr/>	
Printer Installation	34~36
- Printer	34~36
<hr/>	
Trouble shooting	37
Warranty	38
Additional Product list	39

Product Contents

ADAM Somatic Cell Counter

The contents of the ADAM somatic cell counter are listed below :

Item	Quantity
Main device	1
Instruction Manual	1
USB Cable	1
Installation CD	1
KeyPad	1
Power Cord	1
Fuse	2
Standard Beads solution	1
Barcode scanner	1
External video monitor (Optional)	1
External Printer (Optional)	1

SomaChip Kit

The contents of the ADAM Soma Chip Kit are listed below :

Item	Soma Chip4x Kit (Cat. No: CRS-K02)
Disposable Chip	100pcs (4 channel)
Solution	25mL x 2ea
Available test Q'ty	400 test/kit

Upon Receiving the Instrument

- Examine the instrument carefully for any damage incurred during transit.
- Ensure that all parts of the instrument including accessories listed above are included with the product.
- Any damage claims must be filed with the carrier.
- The warranty does not cover in-transit damage.
- See the 14 page to install the instrument.
- Upon receipt, store somatic stain solution at room temperature.

Safety Information

Safety Precautions

1. Always ensure that the power supply input voltage match the voltage available in your location.
2. For operation environment, See page 13.
3. This machine is air-cooled so its surfaces become hot during operation. When installing it, leave a spaces of more than 10 cm (4 inches) around it.
4. Never insert metallic objects into the air vents of the instrument as this could result in electrical shock, personal injury and equipment damage.
5. Always set the main switch on the power supply unit to off before connecting the power cord to the wall outlet.
6. Always ensure that the grounding terminal of the instrument and that of the wall outlet are properly connected. The power cord should be connected to a grounded, 3-conductor power outlet.
7. To avoid potential shock hazard, make sure that the power cord is properly grounded.
8. Do not position the equipment so that it is difficult to operate the disconnecting device.
9. Be sure to set the main switch to off, unplug the power cord and lock the stage before moving.
10. If the instrument is broken or dropped, disconnect the cord and contact a authorized service person. Do not disassemble the instrument.
11. Use only authorized accessories.
12. Use this equipment only as specified in this manual and as specified in any documentation associated with its components. Any use of the equipment in an unspecified manner is strongly discouraged and may result in damage or injury as cautioned by signed warnings.

Safety Information

Safety Symbols

The symbols used on the ADAM somatic cell counter and in the manual are Explained below :



The Caution symbol denotes a risk of safety hazard.



ON (Power)



Protective earth (Ground)



The CE mark symbolizes that the product conforms to all applicable European Community provisions for which this marking is required. Operation of the Adam automated cell counter is subject to the conditions described in this manual.

The protection provided by the device may be impaired if the instrument is used in a manner not specified by the manufacturer.



Caution, Biohazard

Protective measures must be used in dealing with biologically hazardous materials such as carcinogenic reagents.



Disposal of your old appliance

1. When this crossed-out wheeled bin symbol is attached to a product it means the product is covered by the European Directive 2012/19/EC.
2. All electrical and electronic products should be disposed of separately from the municipal waste stream via designated collection facilities appointed by the government or the local authorities.
3. The correct disposal of your old appliance will help prevent potential negative consequences for the environment and human health.
4. For more detailed information about disposal of your old appliance, please contact your city office, waste disposal service or visit our website, www.NanoEntek.com

Safety Information

Warnings

Battery inside device

- Risk of explosion if battery is replaced by an incorrect type.
- This battery is not replaceable by a user.
- Refer to a qualified personnel.

Cover

- Do not remove a cover or disassemble a case.
- There is no adjustable components inside the instrument.
- If malfunction is found, refer to a service personnel.

Manual

- Do not attempt to service the equipment unless this manual has been consulted and is understood.
- This manual is available in English only.
- Failure to heed this warning may result in injury to service provider, operator from electric shock, mechanical or other hazards.

Sample handling

- Wear gloves during sampling and testing. User's sample may have the infectious biohazardous substance.

Waste

- After using Soma Chip, appropriately dispose it as biohazardous waste.
- Do not reuse the Soma Chip.

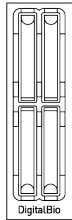
Product Specifications

ADAM SCC



Voltage	AC100~240 V, 50~60 Hz
Current	max. 1.8 A, max 100 W
Fuse	T250V 3.15AL
Objective lens	4 X
LED	4W Green LED
CCD camera	B/W CCD
Filter	Excitation filter Dichroic filter Emission filter
Weight	9Kg
Size (W x L x H)	220 x 375 x 250 mm
Degree of protection	IPX0

Soma Chip



Soma Chip 4x

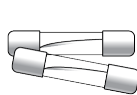
Measuring range	0.05 ~ 1.15 x 10 ⁶ cells/mL
Analysis time	2 ~ 2.5 min/test
Loading sample vol. per test	12 µL (for Soma Chip 4X)
Measuring sample vol. per test	3 µL (for Soma Chip 4X)

Stain Solution



PI (Propidium Iodide) staining of Somatic cells

Accessories



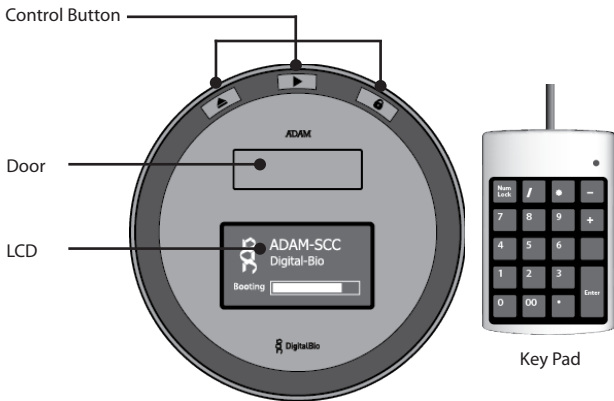
Power cord	1.5 m
Fuse	250 VAC, 3 A; T250V 3.15AL
Barcode scanner	
Standard Beads solution	5mL, 1 bottle
Keypad	USB Type / 1.3 m



Description of ADAM Somatic Cell Counter

Front view of ADAM Somatic Cell Counter

The front view showing various parts of the ADAM Somatic cell counter is shown below :



Control Buttons :

- Eject** : Ejects the chip holder from the ADAM.
- Start** : Performs all procedures of automatic counting.
- Lock** : Protects the alignment of stage from external shock when the ADAM is moved to the other places.

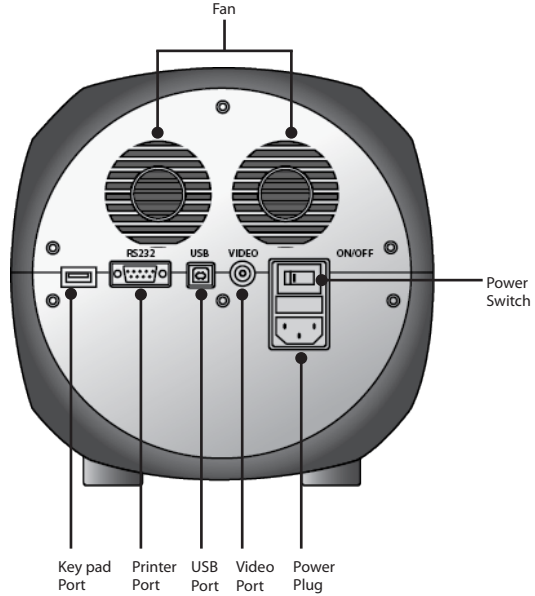
“It is strongly recommended to lock ADAM before turning it off.”

- Door** : Chip holder comes out here.
- LCD** : Displays the test process and the result.
- Keypad** : Inputs the sample number less than 3 characters. Refer to page 17.

Description of ADAM Somatic Cell Counter

Rear view of ADAM Somatic Cell Counter

The rear view showing various parts of the ADAM Somatic cell counter.

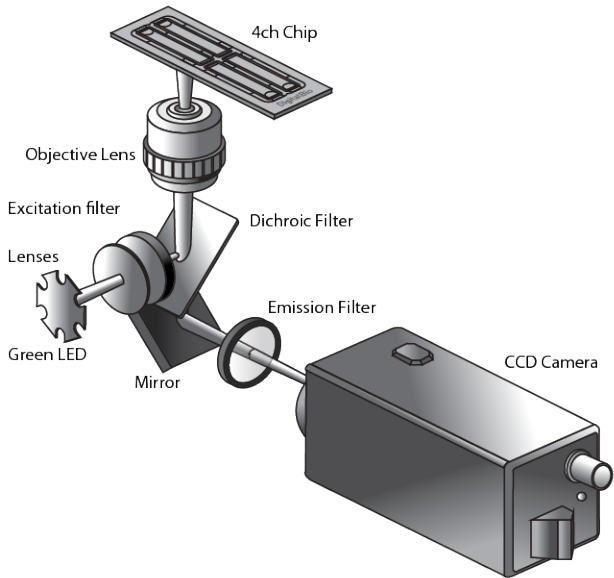


- **Fan** : Cooling fan
- **Power switch** : Main power on/off switch
- **Power plug** : ADAM power cord connection plug
- **USB port** : Connect to computer with USB Cable
- **Printer port** : Connect to Printer port
- **Key pad port** : Keypad connection port
- **Video port** : External video monitor port

Introduction

Overview : ADAM-SCC

High levels of somatic cells cause disagreeable taste and reduce storage life in dairy products. These somatic cell counts (SCC) are accepted as an international standard for measurement of milk quality. For this reason, somatic cell counts are readily available to dairy farmer in most of the countries. Current reference method for enumeration of somatic cells in raw milk is the direct microscopic somatic cell count (DMSCC). However, It needs the training and skill of analysts for accuracy, precision, and reproducibility of this method. The ADAM-SCC system is fully compatible to the DMSCC. It is composed of the disposable plastic microchips and staining solutions, a fluorescence microscopic optics equipped with a CCD (Charge Coupled Device), and an image analysis system. It utilizes the capillary flow of micro-fluidic chamber by the surface modification of hydrophilicity. Micro-fluidic technology of disposable microchips provides the low reagent consumption and combining with the ready-to-use reagent makes daily work easy. The ADAM-SCC system is not only easy to use but offers the same repeatability and accuracy as the conventional expensive device. Therefore, the ADAM-SCC system can be used an ideal equipment for dairies, smaller labs and veterinary establishments working with somatic cell analysis because most of procedures are carried out automation. It will be helpful to the implementation of milk quality control, which favors farmers who want to supply milk with the desired properties and improved quality.



Introduction

Overview : SCC Kit

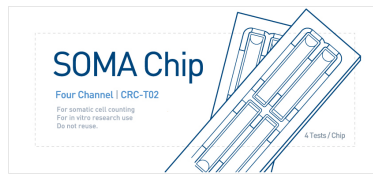
SCC Kit (CRS-K02) is composed of Propidium Iodide (PI) for counting somatic cells. SCC Kit can be used without diluting raw milk.

Measuring range of cell density is $0.05 \sim 1.15 \times 10^6$ cells/ mL.

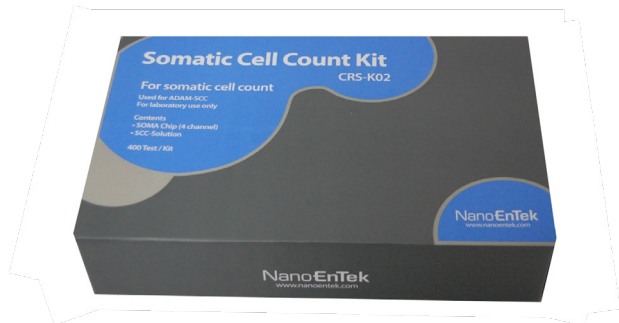
Each bottles has 25 mL reagent of somatic stain solution. Simply add 100 μ L volume of the raw milk sample and 100 μ L stain solution in the 1.5 mL tube. Once the experiment is complete the results can be printed with the optional thermal print. Printed number indicates cell concentration (x1000/ mL) in each channel.

- Soma Chip 4X : Load 12 μ L/Channel, 4 test/Chip

Store kit box upright and at room temperature. Expiration date of stain solution is written on the bottom of the kit box (yy-mm-dd). Be sure to check the expiration date before using. Follow the exact steps detailed in the Instructions for Use section.



<Soma Chip 4X>



<Soma Chip 4X Kit>

Getting Started

Environmental Requirements

To obtain the best results, install the ADAM-SCC in a location following conditions:

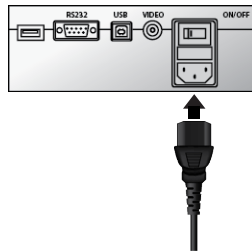
1. Room temperature between 20 and 35 °C.
 - Not recommended for cold room use (≤ 4 °C).
 - At low temperature (≤ 10 °C), warm up the ADAM for 10 min.
2. Not exposed to direct sun light.
3. Not subject to direct or continuous vibration.
4. Not subject to intense magnetic or electromagnetic fields.
5. Relative humidity between 0–95 %.
6. Area free from corrosive gases or other corrosive substances.
7. Area with very little dust or other airborne particles.
8. Allow a 10 cm minimum space around the instrument for proper air flow.
9. Not allow to put heavy material on top of ADAM-SCC.

Getting Started

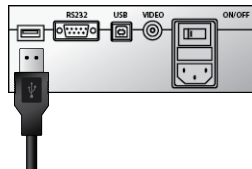
Installation



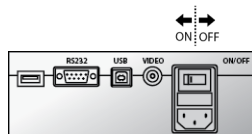
1. Remove all components of ADAM-SCC from their box.
2. Place the instrument in a flat, level, dry surface.



3. Plug to power cord into the electrical outlet.
 - Be sure to use only the power cord supplied with your instrument.
 - Powering the instrument with an unapproved power cord may damaged the instrument.



4. Plug to Keypad.



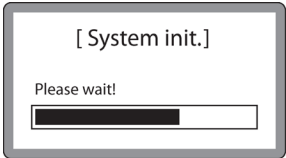
5. Turn on the power switch.
 - Make sure that the main power switch is In the " I " (ON) position.

Getting Started

Start-Up Screen

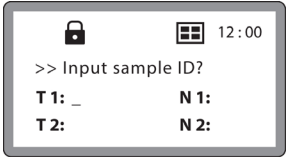


1. System booting.



2. System will go through self diagnostic tests.

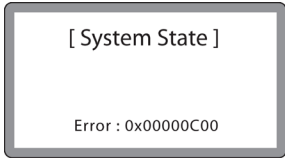
- If you get an error message, please contact your local distributor or sales@NanoEntek.com.



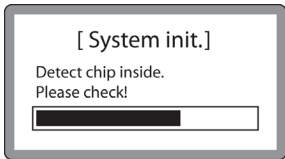
3. The home screens will be displayed as the image, no errors are detected.

Getting Started

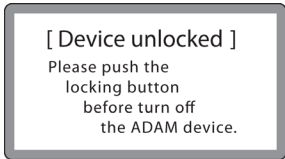
Error message during booting



1. It appears when booting not working properly.
2. Turn off main power and restart device.
3. If this message still appears after restart, contact your local distributor or sales@NanoEntek.com.



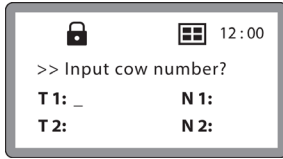
1. It appears when a chip is inserted during Start up.
2. Remove the chip from a device, and Do not turn on the device with a chip.
3. If this message continues to display when no chip is inserted, contact your local distributor or sales@NanoEntek.com.



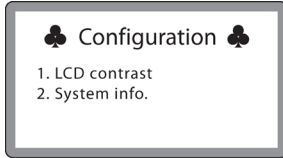
1. It appears when turning off without locking device.
2. Remove the chip from a device, and Do not turn on the device with a chip.
3. Push the lock button before turn off the device. If this message still appears after restart, contact your local distributor or sales@NanoEntek.com.

Getting Started

Menu Setting

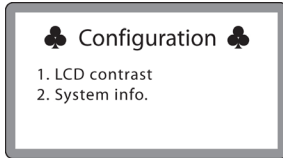


1. You can set the menu as you press the '*' button on the keypad from the screen for inputting cow numbers.



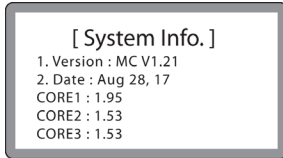
2. You can select the number from the Menu.

System Information



1. Check the device versions and date which have been installed in the device.

2. Select number 2 key from the MENU, and Press the 'Enter' key.



3. The screen will return to the Menu screen automatically.

General Operation

Introduction

Instruction are provided in this section for preparing the cell sample with SCC stain solution for use with disposable Soma Chip for automated somatic cell count using the ADAM.

Preparing cell

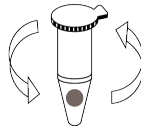
1. Prepare some raw milk sample, SCC kit, tube, Pipette and tips.



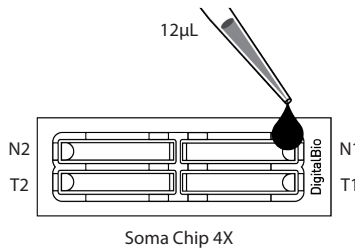
2. Add 100 μL of the raw milk sample and Kit solution in tube. (1:1 ratio)



3. Mix the sample by turning the tube upside down 3-5 times.

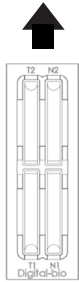


4. Load the cell sample onto the chip.
"Ensure that no bubbles enter each channel."

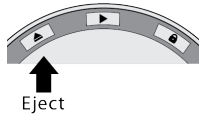


General Operation

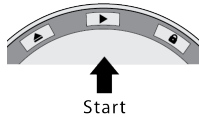
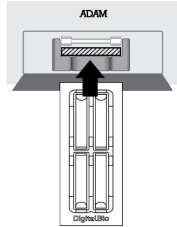
Operating the ADAM



[Outside]



Eject



Start

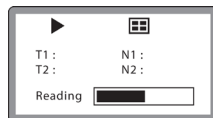
1. Press "Eject (▲)" button on the main device to eject the chip holder.

2. Insert the Chip loaded with the sample onto the chip holder.

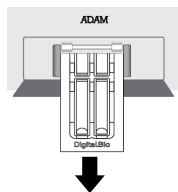
3. Press "Start (▶)" button on the main device.

Note: Automatic Focus will be carried out at the first time the device is booted.

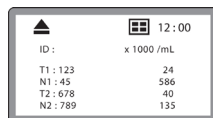
Once ADAM have done the Auto Focus process and on the following time, focusing process will be skipped.



4. The instrument takes approximately 2 min. to count sample.



5. After calculating the cell number, the chip will be ejected automatically. Then chip can be removed.

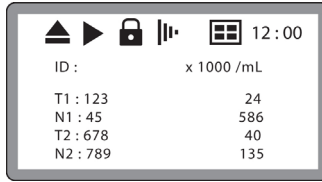


6. The calculated cell number per 1mL will be displayed on the screen automatically.

7. For another experiment, repeat the process from steps 1 ~ 5.

General Operation

Icon Function



1. Display a status of the performance such as Start, Eject, Lock or Insert.

Eject		Shows the Chip Holder is ejected . (After you press the eject button)
Start		Shows when cell counting is running. (After you press the run button)
Lock		Shows the Chip Holder is parked . (After you press the park button)
Insert		Shows the Chip Holder is inserted.

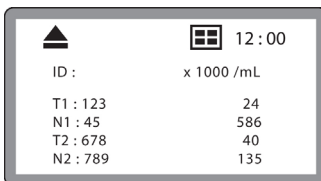
2. Display menu setting.

	Shows that ADAM reads 4 Channel chip.
12 : 00	Shows that the system time.

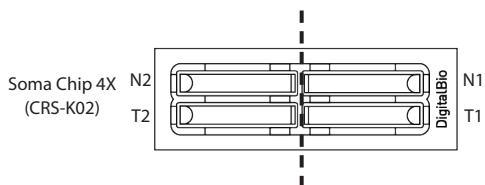
General Operation

Result Analysis

Press the '▶' key. Once inputted, the screen will return to the counting mode automatically.



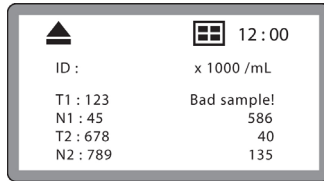
	Sample name	Number of Somatic cells
T1	123	(24x1000/mL)
N1	45	(586x1000/mL)
T2	678	(40x1000/mL)
N2	789	(135x1000/mL)



General Operation

Error message

If the density of sample is over-range, you may see "Sample error!".
 "Range over!" or "Result error!" message at display monitor.

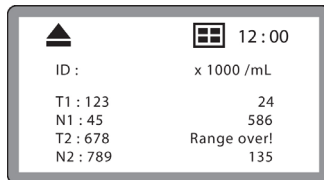


< In case of "Sample error!" >

1. Check sample contamination, or Chip with dust or other materials.
2. Check mixture of sample and reagent. It has to be mixed well.
3. Check test tip whether stained with something.

If you have problems that mentioned above, you will get a result sheet like below.

Date	Time	CowID	Barcode	Total	Chip	Channel
2017-05-18	14:45:57	233	0	1082	4	N2
2017-05-18	14:45:57	232	0	1045	4	T2
2017-05-18	14:45:57	231	0	772	4	N1
2017-05-18	14:45:57	230	0	Sample error	4	T1
2017-05-18	14:43:15	229	0	1087	4	N2
2017-05-18	14:43:15	228	0	1171	4	T2
2017-05-18	14:43:15	227	0	692	4	N1



< In case of "Range over!" >

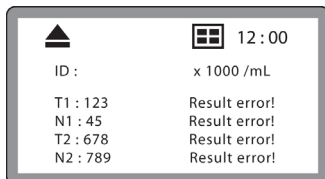
1. In case of the result of cell-counting is over 4000[X1000mL]
2. Check mixture of sample and agent. It has to be mixed well.

If you have problems that mentioned above, you will get a result sheet like below.

Date	Time	CowID	Barcode	Total	Chip	Channel
2017-07-14	15:32:01	108	123325	1069	4	N1
2017-07-14	15:32:01	107	123325	947	4	T1
2017-07-14	15:28:12	106	88012063	Range over	4	N2
2017-07-14	15:28:12	105	88012063	1045	4	T2
2017-07-14	15:28:12	104	88012063	1070	4	N1
2017-07-14	15:28:12	103	88012063	993	4	T1

General Operation

Error message



< In case of "Result error!" >

1. Check a chip is inside of device when turning on the device.
2. Removing the chip first, then rebooting the device.

If you have problems that mentioned above, you will get a result sheet like below.

Date	Time	CowID	Barcode	Total	Chip	Channel	
2017-07-14	16:25:21	125	88012063	984	4	T2	
2017-07-14	16:25:21	124	88012063	816	4	N1	
2017-07-14	16:25:21	123	88012063	431	4	T1	
2017-07-14	16:22:14	122	88012063	Result error	4	N2	
2017-07-14	16:22:14	121	88012063	1017	4	T2	
2017-07-14	16:22:14	120	88012063	886	4	N1	
2017-07-14	16:22:14	119	88012063	459	4	T1	
2017-07-14	16:12:22	118	88012063	1025	4	N2	

Maintenance and Cleaning

1. ADAM-SCC does not need regular maintenance.
2. ADAM-SCC has no replacement of consumable materials.
3. Clean the exposed outer surface of ADAM using a soft cloth and alcohol or deionized water.

CAUTION:

Dispose of wipes in an appropriately labeled solvent contaminated waste container.

Software Installation

ADAM-SCC Report Program: Introduction

ADAM-SCC Report Program is designed to manage and report all results from ADAM-SCC.

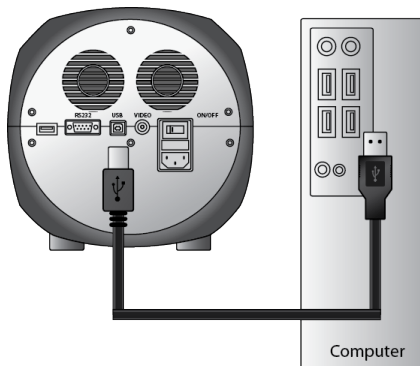
- All measurement results are saved on the memory of ADAM-SCC, automatically.
- User can download the data from the memory of ADAM-SCC and export it to Excel (*.xls) format.
- User can delete data from memory of ADAM-SCC or can save captured images into Desktop or Laptop hard drive.
- The data list window consists of the sample number, type of chip, date, time.

⚠ CAUTION:

Before running the program, check the connection of USB cable between the ADAM-SCC and the laptop or desktop computer.

ADAM-SCC Report Program: Getting started

The following steps are guide for connecting USB cable:



1. Connect the USB cable to ADAM-SCC.
2. Connect the USB cable to Desktop or Laptop computer.
3. Turn on ADAM-SCC and Desktop computer.

Software Installation

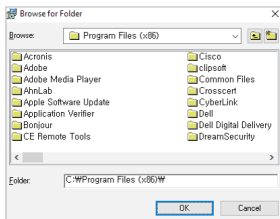
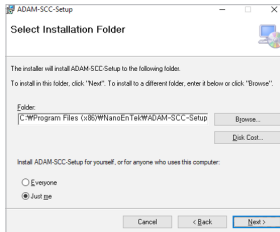
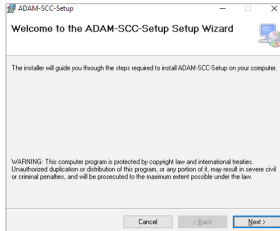
ADAM-SCC Report Program: Installation

To install the ADAM-SCC Report software, follow the directions as below :



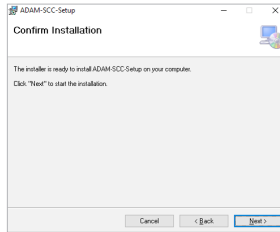
1. Insert the installation CD-ROM into the computer. Then open the file "Setup_ADAM_v1.x.x.x.exe".

※ *Report program can be installed in Windows 7 or higher version, and recommended in net.framework 3.0 or higher version.*
2. The start-up dialogue of the software, as shown like left image, will appear.
3. Click "Next" to start installation.
4. If you want to change installation folder, click "Browse" and choose the location that you want.

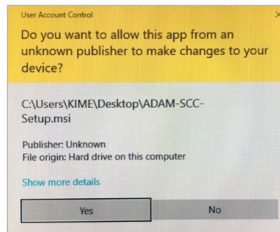


Software Installation

ADAM-SCC Report Program: Installation

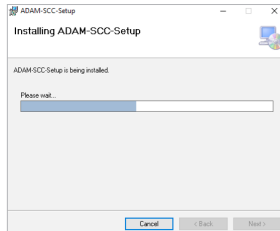


5. After choosing installation folder, click "Next" to proceed with the installation.

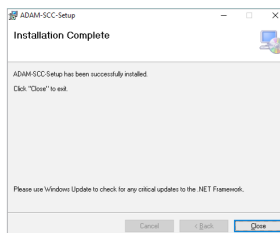


6. Click "Yes" to grant administrator privileges.

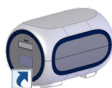
Note: Initial installation folder is "C:\Program Files(x86)\NanoEntek\ADAM-SCC-Setup\"



7. Report Program will be installed automatically.



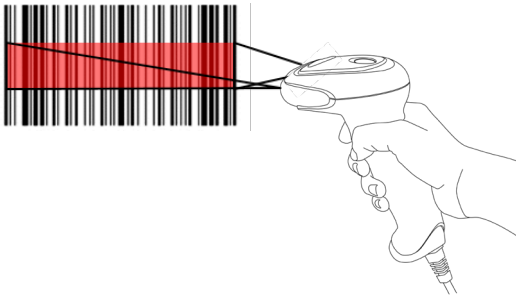
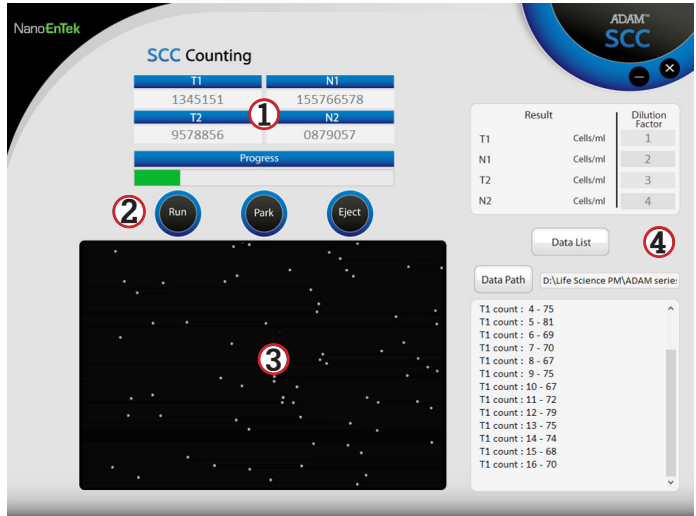
8. Click "Close" to finish the installation.



9. If the installation was successful, the report program can be found at Start>All Program>ADAM_SCC.

Software Installation

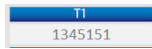
ADAM-SCC Report Program: Function Guide



- ① **Sample ID** Each scanned barcode number is recorded.
- ② **Function buttons** Start cell counting, saving images and, exporting data, all functions of Report Program are handled by using these buttons. (see p.28, 29 for more detailed information of each button)
- ③ **Image frame** Image captured by ADAM-SCC will be shown here.
- ④ **Information** Operation and counting results of each frame will be displayed here.

Software Installation

ADAM-SCC Report Program: Function Buttons



Entered the scanned barcode



Start cell counting.



Park (Lock) stage of ADAM.



Eject chip holder out of ADAM.



Select data path



Loads the experiment data from the memory of the main device.

The screenshot shows the ADAM-SCC software interface. At the top left, the NanoEnTek logo is visible. The main title is "SCC Counting". Below the title is a data table with two columns: T1 and N1. The values are: T1: 1345151, N1: 155766578, T2: 9578856, N2: 0879057. Below the table is a "Progress" bar with a green indicator. At the bottom of the interface are three circular buttons: "Run", "Park", and "Eject". On the right side, there is a "Result" table with columns for "Result" and "Dilution Factor". The results are: T1 (Cells/ml) with Dilution Factor 1, N1 (Cells/ml) with Dilution Factor 2, T2 (Cells/ml) with Dilution Factor 3, and N2 (Cells/ml) with Dilution Factor 4. Below the result table is a "Data List" button and a "Data Path" field containing "D:\Life Science PM\ADAM series:". At the bottom right, there is a scrollable list of "T1 count" entries ranging from 4-75 to 16-70.

T1	N1
1345151	155766578
T2	N2
9578856	0879057

Result	Dilution Factor
T1 Cells/ml	1
N1 Cells/ml	2
T2 Cells/ml	3
N2 Cells/ml	4

Data Path: D:\Life Science PM\ADAM series:

T1 count : 4 - 75
 T1 count : 5 - 81
 T1 count : 6 - 69
 T1 count : 7 - 70
 T1 count : 8 - 67
 T1 count : 9 - 75
 T1 count : 10 - 67
 T1 count : 11 - 72
 T1 count : 12 - 79
 T1 count : 13 - 75
 T1 count : 14 - 74
 T1 count : 15 - 68
 T1 count : 16 - 70

Software Installation

ADAM-SCC Report Program: Function Buttons

Sample ID	Enter barcode for search
DATE	Select the date and start the search
Search	
Show all date	Represent all the data in the PC database.
READ	Reading DataList stored in the instrument into the PC database
Delete	Delete all data in the instrument <i>(* Not in PC data)</i>
Delete PC DB	Delete all data in the PC database <i>(* Not in instrument data)</i>
Export excel	Export all datalists from the PC database to excel file

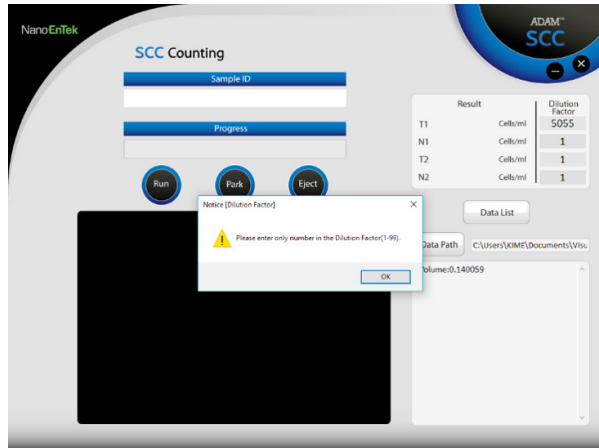
The screenshot shows the ADAM SCC software interface. On the left, a table titled "DataList : 24" displays the following data:

Date	Time	Sample ID	Total (Cell/ml)	Channel
2017-08-22	18:29:25	7519887	3072(3)	T2
2017-08-22	18:29:25	7519887	7968(6)	T1
2017-08-22	18:29:25	7519887	2192(2)	N2
2017-08-22	18:29:25	7519887	6114(6)	N1
2017-08-22	18:26:17	112478	6180(6)	T2
2017-08-22	18:26:17	112478	4955(5)	T1
2017-08-22	18:26:17	112478	9792(9)	N2
2017-08-22	18:26:17	112478	13273(13)	N1
2017-08-22	18:23:21	56749847	1029	T2
2017-08-22	18:23:21	56749847	44685(45)	T1
2017-08-22	18:23:21	56749847	13032(12)	N2
2017-08-22	18:23:21	56749847	35805(35)	N1
2017-08-22	18:13:19	5288763123	100254(98)	T2
2017-08-22	18:13:19	5288763123	22839(23)	T1
2017-08-22	18:13:19	5288763123	79424(73)	N2
2017-08-22	18:13:19	5288763123	58928(58)	N1
2017-08-22	18:02:27	5288763123	101520(98)	T2
2017-08-22	18:02:27	5288763123	22793(23)	T1
2017-08-22	18:02:27	5288763123	79132(73)	N2
2017-08-22	18:02:27	5288763123	58638(58)	N1
2017-08-22	17:59:34	783454563	46755(45)	T2

On the right side of the interface, there are several control buttons: "Sample ID" (input field), "DATE" (dropdown menu showing "2017-08-22"), "Search", "Show all date", "READ", "Delete", "Delete PC DB", and "Export excel".

Software Installation

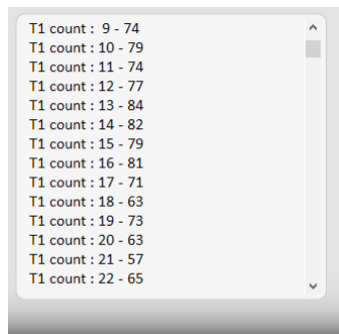
ADAM-SCC Report Program: Dilution Factor



If you enter more than 2 digits or enter letters such as an alphabet and press 'Start' button, an alert window will appear.

** Please enter only numbers in the Dilution Factor(1-99)*

ADAM-SCC Report Program: Information



This section shows information regarding operation of ADAM. If cell counting starts through Report Program, the counting results of each will be shown here.

Software Installation

ADAM-SCC Report Program: Data List

DataList : 24				
Date	Time	Sample ID	Total (Cell/ml)	Channel
2017-08-22	18:29:25	7519887	3072(3)	T2
2017-08-22	18:29:25	7519887	7968(8)	T1
2017-08-22	18:29:25	7519887	2192(2)	N2
2017-08-22	18:29:25	7519887	6114(6)	N1
2017-08-22	18:26:17	112478	6180(6)	T2
2017-08-22	18:26:17	112478	4955(5)	T1
2017-08-22	18:26:17	112478	9792(9)	N2
2017-08-22	18:26:17	112478	13273(13)	N1
2017-08-22	18:23:21	56749847	1029	T2
2017-08-22	18:23:21	56749847	44685(45)	T1
2017-08-22	18:23:21	56749847	13032(12)	N2
2017-08-22	18:23:21	56749847	35805(35)	N1

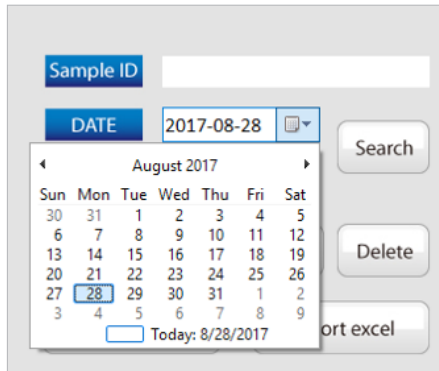
DataList shows data stored in the ADAM memory.
Total amount of stored results is shown on the right of the title, DataList.
Up to 1000 counting results are automatically saved to ADAM memory.

When memory of ADAM is full, new counting result will replace old data.

These data can be exported as Excel Sheet (*.xls) and stored in personal computer or can be erased from ADAM memory.

** You can sort the data by clicking "Date" or "Time".*

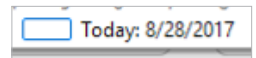
ADAM-SCC Report Program: Data retrieval



You can also find the data by specifying a date range and clicking 'Search' to find the data or entering barcode and clicking 'Search'.

You can also combine barcodes and dates to find data.

If you want to go back to the most current day, check the below box.



Software Installation

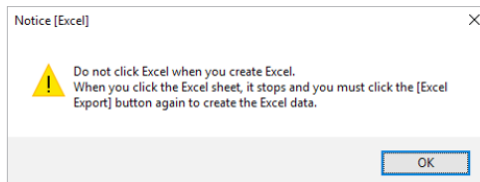
ADAM-SCC Report Program: Data export

	A	B	C	D	E	F
1	Date	Time	Sample ID	Total (Cell/ml)	Channel	
2	2017-08-22	18:29:25	7519887	3072(3)	T2	
3	2017-08-22	18:29:25	7519887	7968(8)	T1	
4	2017-08-22	18:29:25	7519887	2192(2)	N2	
5	2017-08-22	18:29:25	7519887	6114(6)	N1	
6	2017-08-22	18:26:17	112478	6180(6)	T2	
7	2017-08-22	18:26:17	112478	4955(5)	T1	
8	2017-08-22	18:26:17	112478	9792(9)	N2	
9	2017-08-22	18:26:17	112478	13273(13)	N1	
10	2017-08-22	18:23:21	56749847	1029	T2	
11	2017-08-22	18:23:21	56749847	44685(45)	T1	
12	2017-08-22	18:23:21	56749847	13032(12)	N2	
13	2017-08-22	18:23:21	56749847	35805(35)	N1	
14	2017-08-22	18:13:19	5288763123	100254(98)	T2	
15	2017-08-22	18:13:19	5288763123	22222(22)	T1	

This section shows information of result such as Date, Time, Barcode, and counting results of each frame.

Choose a folder to save the excel file.

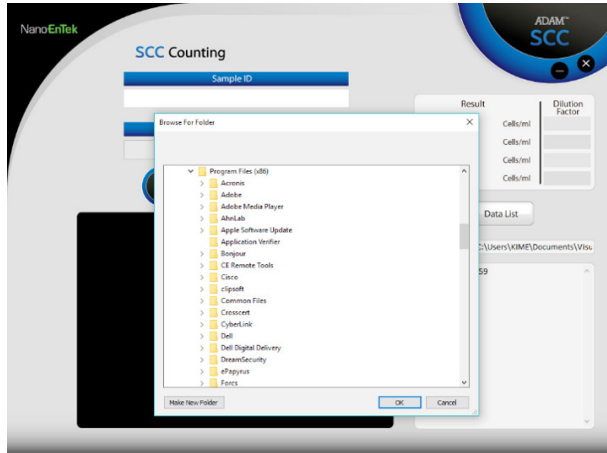
** The results are displayed with the dilution factor applied.*



** Notice: When exporting data to an Excel, please wait until data loading is completed. Otherwise, the data load stops prematurely.*

Software Installation

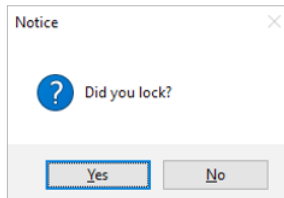
ADAM-SCC Report Program: Data path



To change the data path, you can click on “Data path” to save it to a different path or create a new folder.
The resulting data is saved in a newly created folder for each project in the image folder.

** Default data path: The image is saved in the path where the program was first installed.*

ADAM-SCC Report Program: Turn off the software



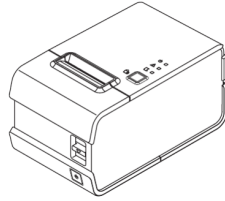
When you turning off the software, this alert message is shown.

Before turning off the software, please remove the SOMA chip from the instrument and press the ‘park’ button of the instrument or software.

** If you turn off the unit without turning it on and turn it on again, a message such as ‘Please push the locking button before turn off the ADAM device’ will appear on the LCD window.*

Printer Installation

Printer



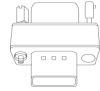
Serial Cable
(ELLIX10U)



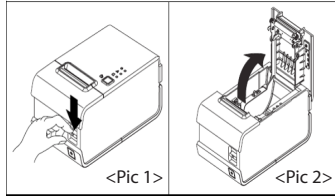
Roll paper



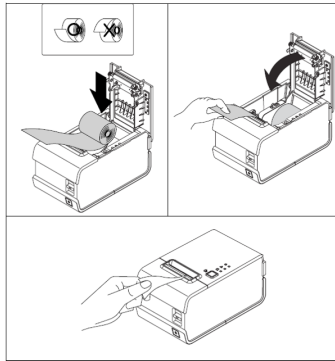
Power-cord



Serial Gender



1. To open the case, press button as <Pic 1>

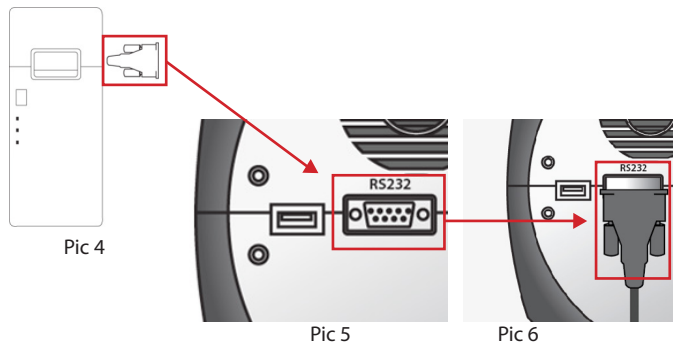
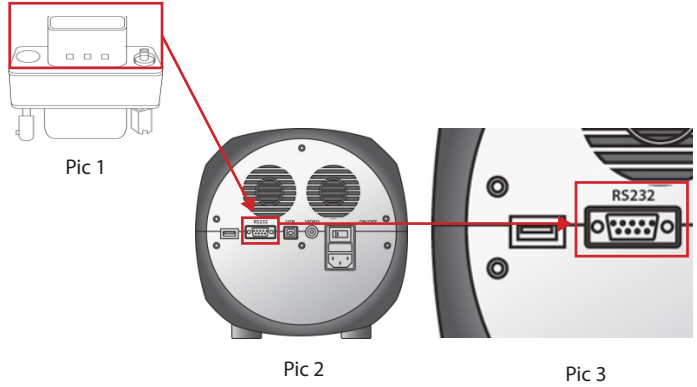


2. Insert paper as picture.
3. Close the case.

Printer Installation

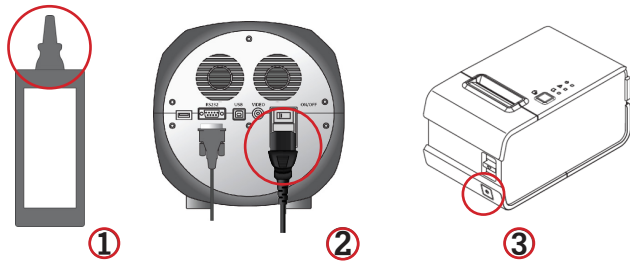
Printer

Connect serial cable & gender to ADAM-SCC

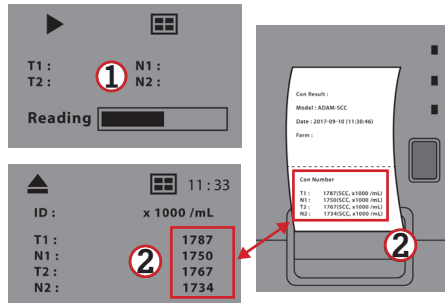


Printer Installation

Printer



1. Connect power cable to Adapter.
2. Connect power cable to ADAM-SCC.
3. Power on both ADAM-SCC and printer



1. Reading sample
2. Result shown on LCD is printed automatically

Trouble shooting

Problem	Cause	Solution
ADAM-MC does not power up	<ul style="list-style-type: none"> · Power switch in off position. · No power from outlet. · Bad power cord. 	<ol style="list-style-type: none"> 1. Check power switch on back of unit. 2. Check power source. 3. Replace.
Inaccurate result	<ul style="list-style-type: none"> · Cell number may be out of range. · AccuStain Solution has expired. · Too high clumped cells. 	<ol style="list-style-type: none"> 1. Adjust the number of cells between $0.05 \sim 1.15 \times 10^6$ cells/mL. 2. Check the expired date. 3. Try again after vortexing the cells.
Software does not work	<ul style="list-style-type: none"> · PC setup incorrect/wrong instruct mode. · Cable's not fully connected/wrong adaptor. 	<ol style="list-style-type: none"> 1. Check program setup. 2. Check all connections.

Warranty

NanoEntek warrants that the ADAM-SCC will be free from defects in material and workmanship for a period of one (1) year from date of purchase.

If any defects occur in the ADAM-SCC during this warranty period, NanoEntek will repair or replace the defective parts at its discretion without charge.

The following defects, however, are specifically excluded:

- Defects caused by improper operation.
- Repair or modification done by anyone other than NanoEntek or an authorized agent.
- Damage caused by substituting alternative parts.
- Use of fittings or spare parts supplied by anyone other than Digital Bio.
- Damage caused by accident or misuse.
- Damage caused by disaster.
- Corrosion caused by improper solvent or sample.

For your protection, items being returned must be insured against possible damage or loss.

NanoEntek cannot be responsible for damage incurred during shipment of a Repair instrument; It is recommend that you save the original packing material in which the instrument was shipped.

This warranty should be limited to the replacement of defective products.

For any inquiry or request for repair service, contact sales@NanoEntek.com or your local distributor.

Product List

Additional Product List

Cat. No.	Product	Contents	Quantity
ADM-001	External video monitor (optional)	7" LCD Monitor	1
CRS-K02	Soma Chip4X Kit	4 channel Soma chip	100
		25 mL Stain solution 2ea	400 test
ADB-500	Calibration Bead	5 mL Beads solution	1
ADP-001	External Printer (optional)	Thermal Printer	1

ADAM SCC

A New Standard of Somatic Cell Counter

NESMU-ASC-001E(V.4.0)



 **Manufactured by**

NanoEntek, Inc.

851-14, Seohae-ro, Paltan-myeon, Hwaseong-si, Gyeonggi-do, 18531, Korea
Tel :+82-2-6220-7942 , Fax:+82-2-6220-7999

NanoEntek America, Inc.

220 Bear Hill Road, Suite 102, Waltham, MA 02451, USA
Tel: +1-781-472-2558 , Fax: +1-781-790-5649



MT Promedt Consulting GmbH

Altenhofstrasse 80, 66386 St. Ingbert, Germany

Email : sales@NanoEntek.com

Website : www.NanoEntek.com

ADAM SCC2

Automated Somatic Cell Counter

Instruction Manual



All the materials in this user manual are protected by Korean and international copyright laws. They cannot be reproduced, translated, published or distributed without the permission of the copyright owner.

ADAM-SCC2 Instruction Manual

Website : www.nanoentek.com

E-mail : sales@nanoentek.com

Manufactured by

NanoEntek, Inc.

851-14, Seohaeh-ro, Paltan-myeon, Hwaseong-si, Gyeonggi-do, 18531, Korea

Tel. +82-2-6220-7942

Fax. +82-2-6220-7999

NanoEntek America, Inc.

220 Bear Hill Road, Suite 102, Waltham, MA 02451, USA

Tel. +1-781-472-2558

Fax. +1-781-790-5649

The information in this manual is described as accurately as possible.

Firmware and software changes and updates may change without prior consent or notification.

Copyright © 2019 by NanoEntek Inc.

All rights reserved. Published in Korea.

Documentation: **NESMU-ASC2-001E**

Revision history: V.0.0 AUG 2019

V.1.0 DEC 2019

V.1.1 OCT 2021

V.1.2 DEC 2022

Table of contents

Introduction

General description	2
Technology	3
Somatic Cell Count Kit	4

Product Contents

ADAM-SCC2	5
SOMA Chip kit	5
Upon receiving the instrument	5

Product Description

Front view of ADAM-SCC2	6
Rear view of ADAM-SCC2	7

Getting Started

Environmental requirements	8
Power on and initial display	8
Error messages during botting	9
Count setting	10

General Operation

Introduction	11
Sample preparation	12
Counting cell	12

Measure

Run sample	15
Result analysis	16
Result analysis -Error code	17

Data

Data list	18
Edit	19
Image	20
Save	21
Mail	22

Setting

Setting	23
Wifi	24

Power off

Update	25
Lock	25
Power off	25

Maintenance and cleaning

Trouble shooting	27
------------------	----

Warranty

Technical specifications	29
--------------------------	----

Product list

Safety precautions	31
--------------------	----

Safety symbols

Warnings	33
----------	----

Technical Support

Technical Support	34
-------------------	----

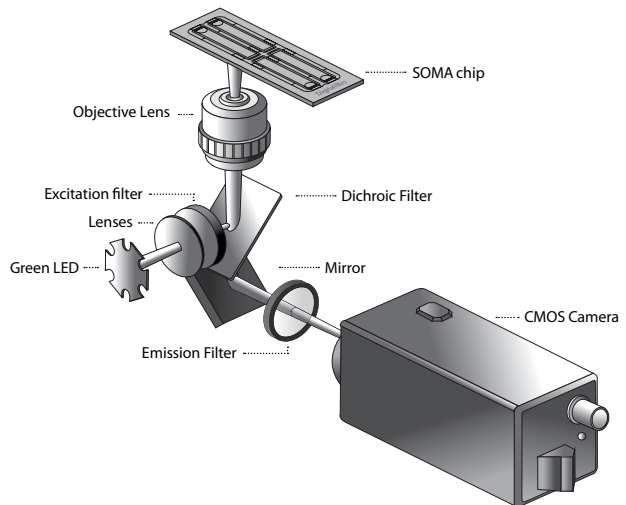
General Description

ADAM-SCC2 is an automated somatic cell counter integrated with fluorescence optic and image analysis software. ADAM-SCC2 counts the number of somatic cells to determine the quality of raw milk with unique image cytometer technology. ADAM-SCC2 can be used as an ideal equipment in the research field, dairy farms, milk manufacturing facilities, and veterinary institutes working with somatic cell analysis. It will be helpful to manage the milk quality to provide the best grade of milk.



Technology

High levels of somatic cells cause disagreeable taste and reduce storage life in dairy products. These somatic cell counts (SCCs) are accepted as an international standard for the measurement of milk quality. For this reason, somatic cell counts are readily available to a dairy farmer in most countries. Standard reference method for enumeration of somatic cells in raw milk is the direct microscopic somatic cell count (DMSCC). However, it needs the training and skill of analysts for accuracy, precision, and reproducibility of this method. ADAM-SCC2 is fully compatible with the DMSCC. It is composed of the disposable plastic microchips and staining solutions, a fluorescence microscopic optics equipped with a CMOS camera, and an image analysis system. It utilizes the capillary flow of the microfluidic chamber by the surface modification of hydrophilicity. Microfluidic technology of disposable microchips provides low reagent consumption and combining with the ready-to-use reagent makes daily work easy. ADAM-SCC2 is not only easy to use but offers the same repeatability and accuracy as the conventional expensive device.



Somatic Cell Count Kit

Somatic Cell Count Kit of ADAM-SCC2 is composed of Propidium Iodide (PI) for counting somatic cells. It can be used without diluting raw milk.

Measuring range of cell density is $0.05 \sim 1.15 \times 10^6$ cells/mL.

Each SCC-Solution has 25 mL reagent of somatic stain solution. Simply add 100 μ L volume of the raw milk sample and 100 μ L stain solution in the 1.5 mL tube. Once the experiment is complete the results can be printed through the optional thermal print. Printed number indicates cell concentration (x 1000/mL) in each channel.

- SOMA Chip 2X : Load 23 μ L/Channel, 2 test/Chip
- SOMA Chip 4X : Load 13 μ L/Channel, 4 test/Chip

Store kit box upright and at room temperature. Expiration date of stain solution is written on the bottom of the kit box (yy-mm-dd). Be sure to check the expiration date before using. Follow the exact steps detailed in the Instructions for Use section.



ADAM-SCC2

The contents of the ADAM-SCC2 are listed below:

Item	Quantity
Main device	1
Instruction manual	1
USB hub	1
Wifi dongle	1
Power cord	1
Adapter	1
SOMA Chip Kit	1
Calibration Bead	1
Barcode scanner	1
Printer (optional)	1

SOMA Chip kit

The contents of the ADAM-SCC2's Somatic Cell Count Kit are listed below:

Item	SOMA Chip 2x Kit (Cat. No: CRS-K01)	SOMA Chip 4x Kit (Cat. No: CRS-K02)
Disposable Chip	50pcs (2 channel)	100pcs (4 channel)
SCC-Solution	25 mL x 1ea	25 mL x 2ea
Available test Q'ty	100 test/kit	400 test/kit

Upon receiving the instrument

- Examine the instrument carefully for any damage incurred during transit.
- Ensure that all parts of the instrument including accessories listed above are included with the product.
- Any damage claims must be filed with the carrier.
- The warranty does not cover in-transit damage.
- Upon receipt, store SOMA Chip at room temperature.
- SCC-Solution should be stored at 2~8°C.

Front view of ADAM-SCC2

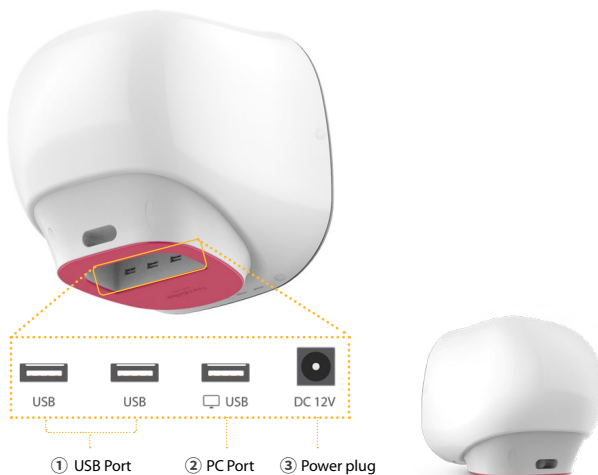
The front view showing various parts of the ADAM-SCC2 is shown below:



Control buttons	Description
① Door	Slide holder is inserted and ejected.
② Power	Power on / off.
③ LCD	Display processes and results.
④ START	Performs all procedures of automatic counting.
⑤ LOCK	Protects the alignment of stage from external shock when ADAM-SCC2 is being moved. Lock ADAM-SCC2 before turning it off or moving it.
⑥ EJECT	Ejects the slide holder from ADAM-SCC2. Functions as unload.

Rear view of ADAM-SCC2

The rear view showing various parts of the ADAM-SCC2.



Port	Description
① USB Port	Port for software update and save the data.
② PC port	Connects with PC
③ Power Plug	Connects ADAM-SCC2 power cord to wall outlet

⚠ CAUTION

Do not use the ② PC port. This port does not recognize USB.

Environmental requirements

ⓘ CAUTION

At low temperature ($\leq 10^{\circ}\text{C}$), allow the device to warm up for 10 minutes at ambient temperature before use.

To ensure correct operation and stable performance, install the ADAM-SCC2 in a location which meets the following conditions:

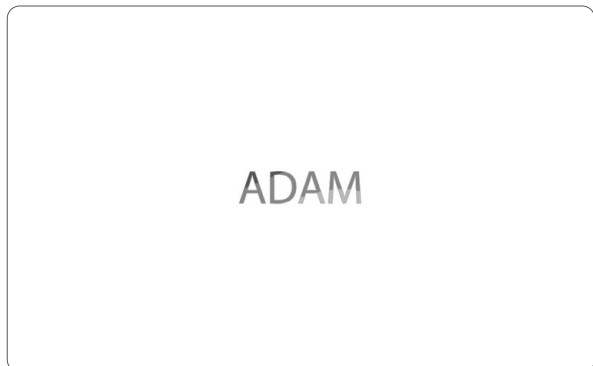
1. Use at room temperature between 20 and 35 °C.
 - Not recommended for cold room use ($\leq 4^{\circ}\text{C}$).
2. Do not expose the device to direct sunlight.
3. Do not subject the device to direct or continuous vibration.
4. Do not subject the device to intense magnetic or electromagnetic fields.
5. Do not install the device in high-humidity environment.
6. Location of device should be free from corrosive gases or other corrosive substances.
7. Ensure minimal contact with dust or other airborne particles.
8. Allow a 10 cm (4 inches) minimum space around the device for proper airflow.
9. Do not place any objects on the device.

Power on and Initial Display

1. Check the connection of ADAM-SCC2 and power cord.
2. Press the power button for 2~3 seconds.

If you get an error message, please contact your local distributor or sales@nanoentek.com.

If booting is successful and no errors are detected, the home screens will be displayed as below.

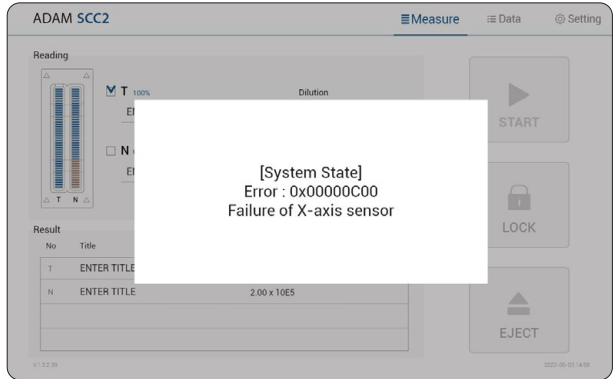


ⓘ CAUTION

- Do not tilt the device too much in the forward when connecting the power cord.
- Do not move the device after connecting power cord.
- When you connect the power cord to ADAM-SCC2 even without power on the device, it will go through self diagnostic tests.

Error Messages during booting

[System State]



It appears when booting is not working properly.
Turn off main power and restart device.

If this message still appears after restarting,
contact your local distributor or sales@nanoentek.com.

Error code	Cause
0x00000C00	Failure of X-axis sensor
0x00007000	Failure of Y-axis sensor
0x00008000	Failure of Z-axis sensor
0x06000000	Failure of Locking module sensor

Count setting

Set the conditions in the 'Setting' tap before counting.

[SOMA Chip]

Set the SOMA Chip according to you are using.

Somachip

4Ch 2Ch



Somachip

4Ch 2Ch



[Cell size]

Set the minimum and maximum size of cell.

Cell size

Min 5 Max 80

[Dilution factor]

When diluting sample, set the Dilution factor.

! CAUTION

Factor values for the SCC-Solution is already applied.

Dilution factor

1.0

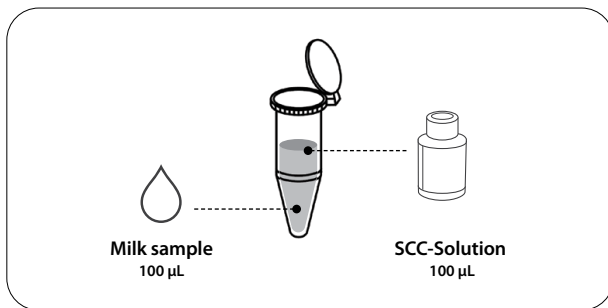
Introduction

Instructions are provided in this section for preparing the sample with SCC-Solution for use with disposable SOMA Chip for automated somatic cell count using the ADAM-SCC2.

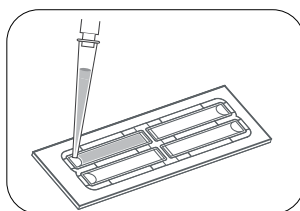
Please check the procedure of sample preparation and testing below.

For more detailed information, please refer to the next page.

1. Mix the raw milk sample with SCC-Solution.

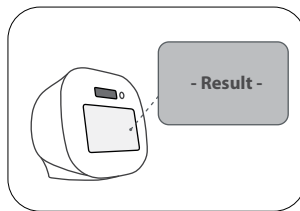
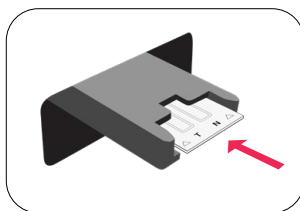


2. Load the mixed sample. Then, wait 1 minute for the sample settling.



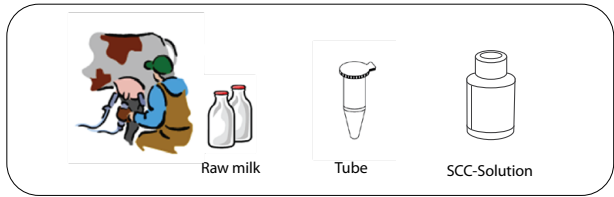
- 2 channel: 23µL
- 4 channel: 13µL

3. Insert SOMA Chip. Get the result.



Sample preparation

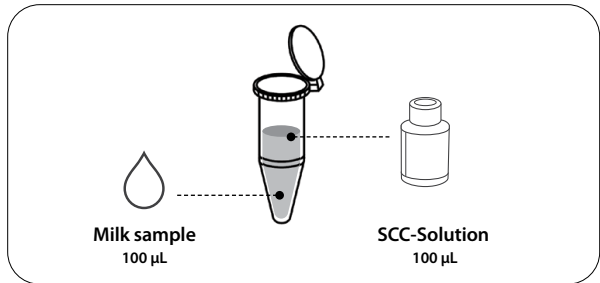
1. Prepare some raw milk sample, SCC-Solution, tube, pipette, and tips.



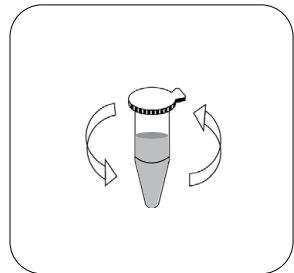
2. Thoroughly mix the raw milk sample.

Counting Cell

1. Add 100 μL of raw milk sample and 100 μL of SCC-Solution in the tube. (1:1 ratio)



2. Mix the raw milk sample and SCC-Solution by turning the tube upside down 3-5 times.

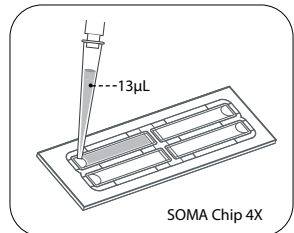


3. Load the cell sample onto the chip. Then, wait 1 minute for the sample settling.

- 2 channel: 23 μL
- 4 channel: 13 μL

NOTE

Ensure that no bubbles enter each channel.



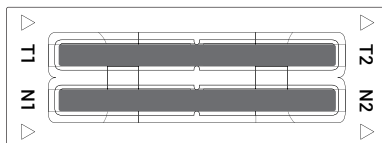
Counting cell

⚠ WARNING

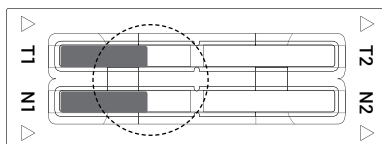
[Sample loading error]

Be cautious of loading the correct volume of the sample into SOMA Chip. The instrument will not detect low or high sample volumes.

Correct volume

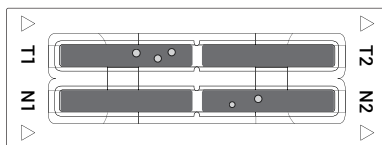


Low volume



⚠ CAUTION

Avoid bubbles which may negatively affect the result.

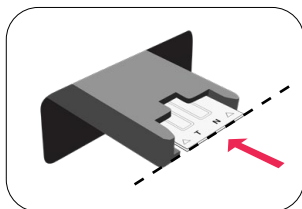


Counting cell

⚠ WARNING

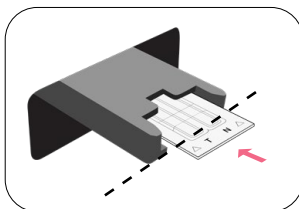
[SOMA Chip insert error]

Completely insert SOMA Chip face up, in the direction of the arrow on the slide. The instrument will not detect if slides are inserted incorrectly. See pictures below for proper insertion.



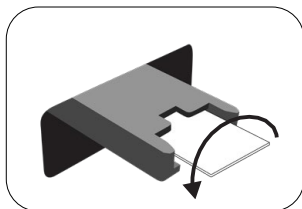
(O)

Correctly inserted



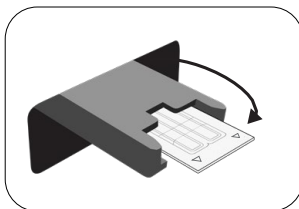
(X)

Not fully inserted



(X)

Upside down inserted



(X)

Wrong end inserted

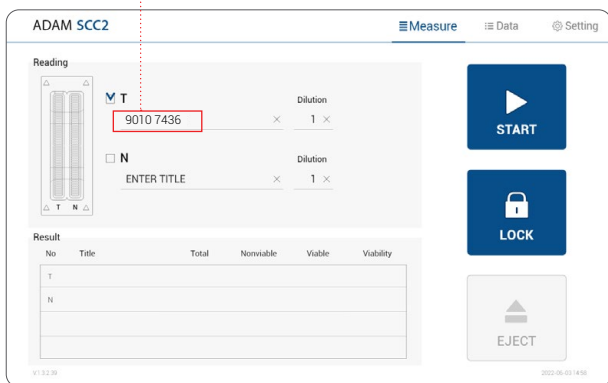
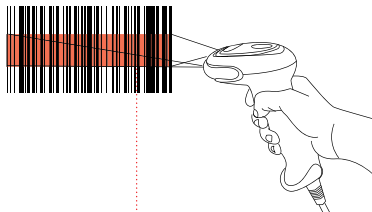
⚠ CAUTION

- Please insert or remove the SOMA Chip when the slide holder is fully ejected.
- When the test is finished, please remove the SOMA Chip from the slide holder.

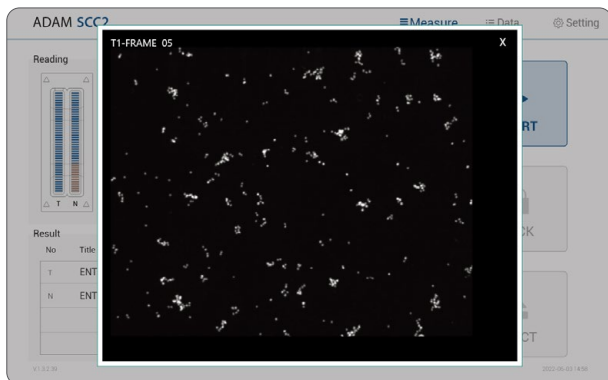
Run Sample

Enter a title for each channel of the slide.
 Click the title section, then scan the cow ID with a barcode scanner to automatically enter as the title.

Start counting process by pressing 'START'.
 It may take about 2 minutes longer for auto focus at the initial test.

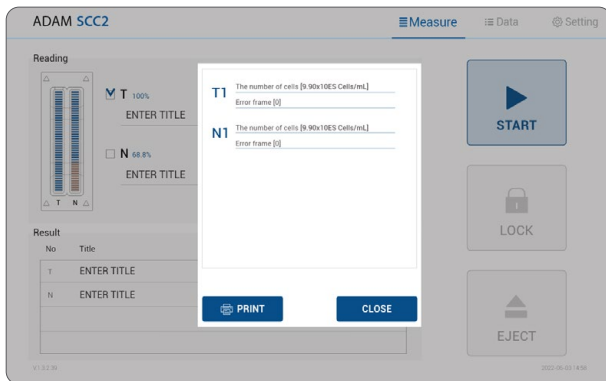


While the test is in progress, you can check the cell images of each channel.



Result Analysis

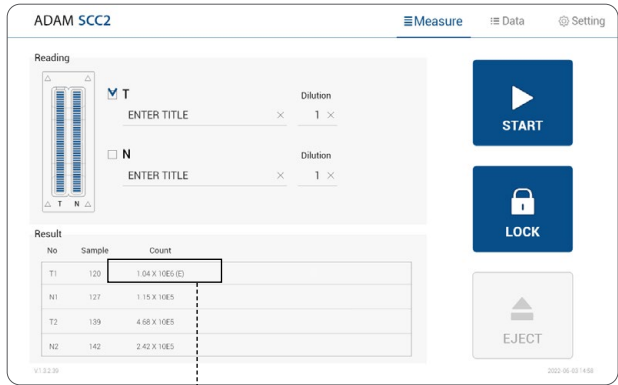
The result will be displayed after being automatically calculated by ADAM-SCC2 software.



No	Title	Count
T1	120	1.04 x 10E6
N1	125	1.15 x 10E5
T2	130	4.68 x 10E5
N2	143	2.42 x 10E5

NOTE 'PRINT' button will be automatically activated when portable printer (optional) is connected.

Result Analysis - Error code



Error code	Cause
E	Frames with errors are over 50% of total counting frame.
Error frame [#]	Frame with error is a frame that contains cells whose diameter is larger than 100µm. When this error shown in result window, please check the image.

Data list

ADAM SCC2

Measure Data Setting

Data List 2018/08/23 - 2018/08/20

No.	Sample	Date	Time	Count
458	SampleA	2018/08/23	10:04:58	2.00 x 10E5
459	SampleA	2018/08/23	10:04:58	2.00 x 10E5
460	SampleA	2018/08/23	10:04:58	2.00 x 10E5
461	SampleA	2018/08/23	10:04:58	2.00 x 10E5
462	SampleA	2018/08/23	10:04:58	2.00 x 10E5
463	SampleA	2018/08/23	10:04:58	2.00 x 10E5
464	SampleA	2018/08/23	10:04:58	2.00 x 10E5
465	SampleA	2018/08/23	10:04:58	2.00 x 10E5
466	SampleA	2018/08/23	10:04:58	2.00 x 10E5
467	SampleA	2018/08/23	10:04:58	2.00 x 10E5

Start Date: 2018 / 08 / 23

End Date: 2018 / 08 / 23

SEARCH

EDIT

IMAGE

SAVE

PRINT

MAIL

DELETE

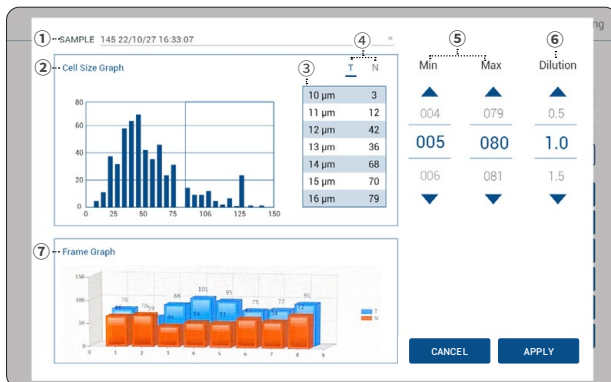
V1.12.20 2022-06-03 14:58

Control buttons	Description
① All	Select all data in Data List.
② SEARCH	Display the data of the selected date.
③ EDIT	View and edit the data. Multiple data can be edited with the same settings.
④ IMAGE	Check the cell images of each channel.
⑤ SAVE	Save the selected data to USB(PDF, Excel, Image).
⑥ PRINT(optional)	Prints the selected data.
⑦ MAIL	Send the Excel, PDF, and Image files of selected data to e-mail.
⑧ DELETE	Delete the selected data.

❗ **NOTE** 'PRINT' button will be automatically activated when portable printer (optional) is connected.

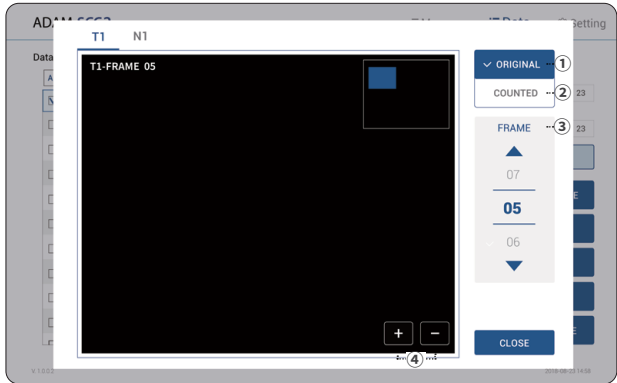
❗ **NOTE** The list will be sorted when you click the columns.

EDIT



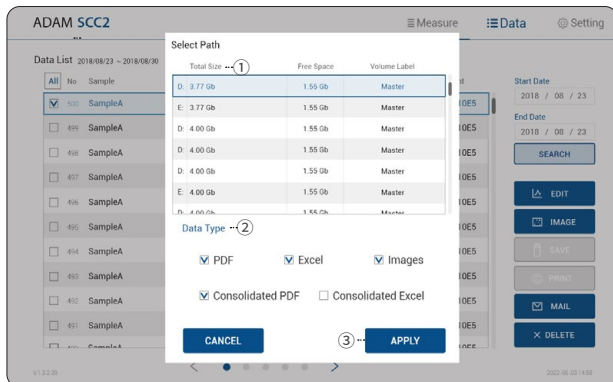
Control buttons	Description
① Sample	Edit the sample name.
② Cell size graph	Allows to view the cell size graph each channel (T/N).
③ Cell size table	Allows to view the number of cells in each cell size.
④ Channel	Select a channel(T/N).
⑤ Cell size setting	Set the min/max size of the cell.
⑥ Dilution Factor	Set the dilution factor of sample. (Factor values for the AccuStain Solution is already applied.)
⑦ Frame graph	Allows to view the counted cell number of each frame.

IMAGE



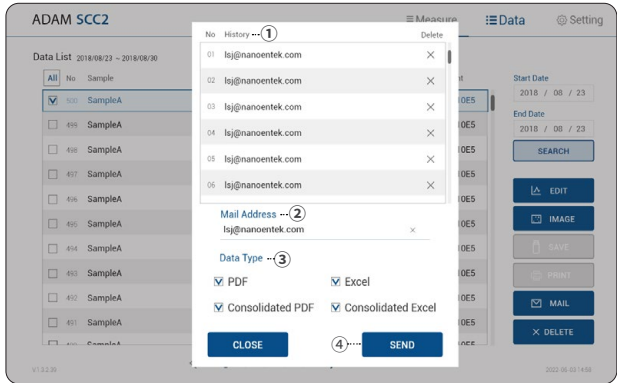
Control buttons	Description
① Original	Check the original image.
② Counted	Check the counted cell image.
③ Frame	Select a frame number of the channel.
④ Zoom-in/out	Zoom in and out to check the cell image.

SAVE



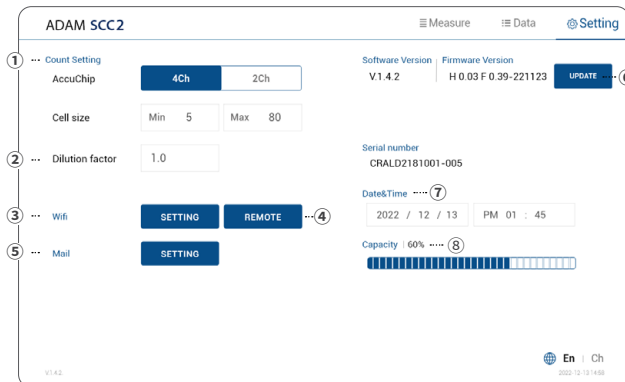
Control buttons	Description
① Select Path	Selects a save path from the list to send the selected data
② Data Type	Selects which data type to save
③ Apply	Exports the files to a selected save path <i>Files can be sent to only one save path at a time.</i>

MAIL



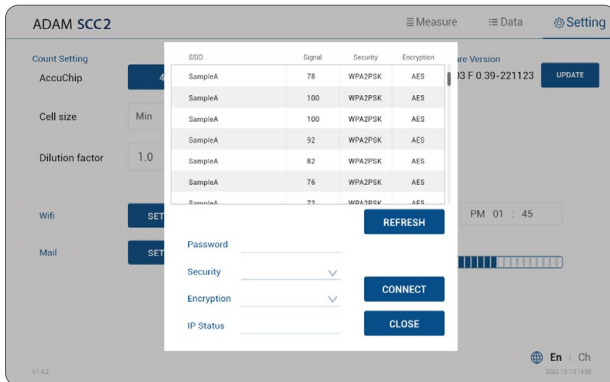
Control buttons	Description
① History	Selects e-mail address from the list to send data <i>The e-mail address where data has been sent will be saved.</i>
② Mail Address	To send files to new e-mail, enter the applicable e--mail address.
③ Data Type	Selects which data type to send via e-mail
④ Send	Send the files to a selected e-mail address. <i>Files can be sent to only one e-mail at a time.</i>

Setting



Control buttons	Description
① Count setting	Set the conditions in the setting tap before counting. Refer to page 10 for more information.
② Dilution factor	Set the dilution concentration of the sample.
③ Wifi	Set the wifi to use the e-mail function.
④ Remote support	Connects to remote support software.
⑤ Mail	Do not change the setting in mail.
⑥ Update	Software update through the USB.
⑦ Date&Time	Sets current date and time.
⑧ Capacity	Check remaining capacity.

Wifi

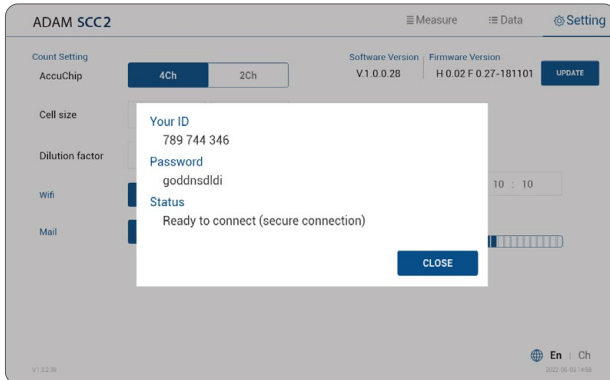


1. Click the Refresh button.
2. Select the wifi.
3. Insert the password of selected wifi.
4. Click the Connect button.

CAUTION

If connection error occurs, please contact a laboratory facility manager.

Remote support



1. Connect to wifi.
2. Click 'Remote support' button.
3. Share your ID and password to NanoEntek.

NOTE

The remote support feature is to be used for maintenance only by request of NanoEntek.

WARNING

If you do not see your Remote Support ID and Password, click the 'Close' and 'Remote Support' button again until they appear.


Update

1. Prepare the USB with update file.
2. Insert the USB.
3. Click the UPDATE button.

ⓘ CAUTION

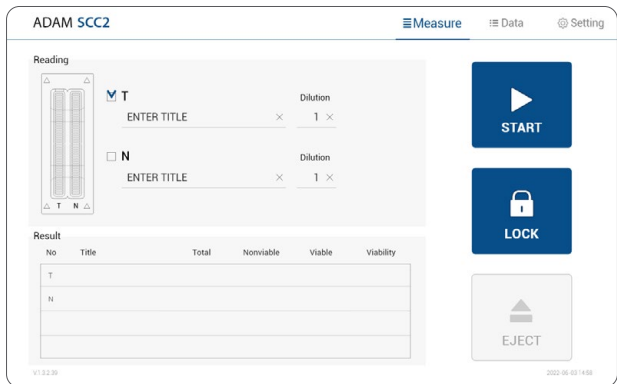
- The 'AdamUpdate' folder must exist in the root path of the USB folder.
- ADAM-SCC2 can be updated only when the firmware or software file exists in the 'AdamUpdate' folder. The 'ADAM SCC2.exe' file should be in the 'AdamUpdate' folder.
- Do not rename the 'AdamUpdate' folder. The folder name should be 'AdamUpdate'.

Lock

Press LOCK  before turning off the device.

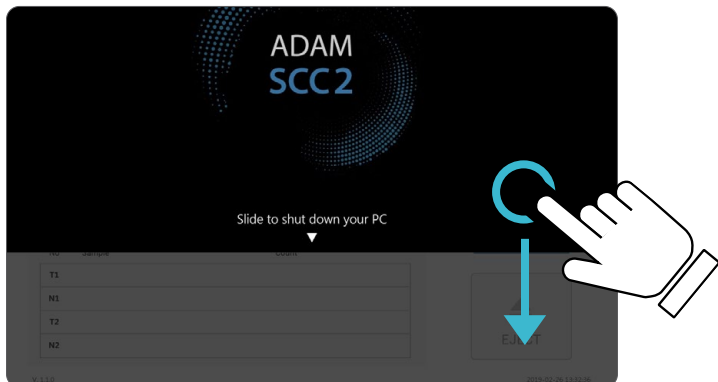
If there is no operation for 3 minutes, the lock function will be activated automatically.

When the device is locked, the screen will be changed as shown below.



Power off

If you press the power button 2~3 seconds, then 'Slide to shut down your PC' message will appear. Slide down the screen to turn off the power.



Maintenance and cleaning

1. ADAM-SCC2 does not need regular maintenance.
2. ADAM-SCC2 has no replacement of consumable materials.
3. Please clean the exposed surface of ADAM-SCC2 frequently or before testing, using a soft cloth and isopropyl alcohol or deionized water.

ⓘ CAUTION

Dispose of wipes in an appropriately labeled solvent contaminated waste container.

Trouble shooting

Problem	Description	Solution
ADAM-SCC2 does not power up	<ul style="list-style-type: none"> • No power from outlet. • Bad power cord. 	<ul style="list-style-type: none"> • Check power source. • Replace.
Inaccurate result	<ul style="list-style-type: none"> • Cell number may be out of range. • SCC-Solution has expired. • Too high clumped cells. 	<ul style="list-style-type: none"> • Adjust the number of cells between 0.05 ~ 1.15 x 10⁶ cells/mL (refer to page 4). • Check the expired date. • Try again after vortexing the cells.
When error message is shown (For information on each error message, see page 17)	<ul style="list-style-type: none"> • When there are too many frames with errors (Error message: E) 	<ul style="list-style-type: none"> • Check the suspension of cells if all cells are fully dissociated into single cells. • If contaminants except cells are found, prepare sample again.
	<ul style="list-style-type: none"> • Error frame 	<ul style="list-style-type: none"> • Prepare sample again except contamination.

Warranty

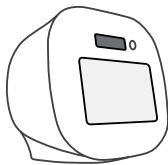
If any defects occur in the ADAM-SCC2 during one(1) year warranty period, NanoEntek will repair or replace the defective parts at its discretion without charge. The following defects, however, are specifically excluded:

1. Defects caused by improper operation.
2. Repair or modification done by anyone other than NanoEntek or an authorized agent.
3. Damage caused by substituting alternative parts.
4. Use of fittings or spare parts supplied by anyone other than NanoEntek.
5. Damage caused by accident or misuse.
6. Damage caused by disaster.
7. Corrosion caused by improper solvent or sample.

For your protection, items being returned must be insured against possible damage or loss. NanoEntek cannot be responsible for damage incurred during shipment of a repair instrument. It is recommend that you save the original packing material in which the instrument was shipped. This warranty should be limited to the replacement of defective products.

For any inquiry or request for repair service,
Contact sales@nanoentek.com or your local distributor.

Technical Specifications



ADAM-SCC2	
Measuring range	0.05 ~ 1.15 x 10 ⁶ cells/mL
Analysis time	< 13 ~ 25 sec/test : For initial test, max 2 min/test
Voltage	DC12V
Current	5A
Objective lens	4 X
LED	4W Green LED
Camera	CMOS camera
Filter	Excitation filter, Dichroic filter, Emission filter
Weight	7 Kg
Size (W×L×H)	227 × 276 × 270 mm
Degree of protection	IPX0

Operating environment condition

Temperature	0 °C ≤ Temperature ≤ 40 °C
Humidity	10 % ≤ Humidity ≤ 90 %
Altitude	Altitude ≤ 2,000 m

Transportation & storage environment condition

Temperature	-30 °C ≤ Temperature ≤ 60 °C
Humidity	10 % ≤ Humidity ≤ 90 %



SOMA Chip 2x



SOMA Chip 4x



Somatic Cell Count Kit

SOMA Chip

Loading sample vol. per test	23 µL/test (SOMA Chip 2X)
	13 µL/test (SOMA Chip 4X)
Measuring sample vol. per test	8.6 µL/test (SOMA Chip 2X)
	3.4 µL/test (SOMA Chip 4X)

*SOMA Chip 2x Kit: please consult your distributor or manufacture for availability.

Solutions

SCC-Solution	25 mL
--------------	-------

Storage temperature

SOMA Chip	0 – 30 °C
SCC-Solution	2 – 8 °C

Expiration date

SOMA Chip	2 years
SCC-Solution	1 year

Product List

Cat. No.	Product	Contents	Quantity
CRS-K01	SOMA Chip 2X Kit	50 pcs SOMA Chip 2X	1
		25 mL SCC-Solution	1
CRS-K02	SOMA Chip 4X Kit	100 pcs SOMA Chip 4X	1
		25 ml SCC-Solution	2
ADB-500	ADAM Calibration Bead	5 mL Calibration Bead	1

**SOMA Chip 2x Kit: please consult your distributor or manufacture for availability.*









Safety Precautions

Review and follow the safety instructions below :

- Always ensure that the power supply input voltage matches the voltage available at your location.
- To avoid the danger of electric shock, install the instrument per the environmental specifications located in "Technical Specifications". If water or other material enters the instrument, the adaptor, or power inlet, disconnect the power cord and contact a service person.
- Do not touch the main plug or power cord with wet hands.
- This machine is air-cooled so its surfaces become hot during operation. During installation and use, leave more than 10 cm (4 inches) free around the device.
- Do not install the instrument on a slant or a place prone to vibrations or the risk of instrument malfunction or damage to the instrument will increase.
- Never insert any objects (especially metallic) into the air vents of the instrument as this could result in electrical shock, personal injury, and equipment damage.
- Always set the main switch on the power supply unit to OFF before connecting the power cord to the wall outlet.
- To avoid a potential shock hazard, always connect the grounding terminal of the instrument and that of the wall outlet properly. The power cord should be connected to a grounded, 3-conductor power outlet.
- Position the device so that there is sufficient length for the cables and their respective connections.
- Lock the stage before moving, turn off the power button and unplug the power cord.
- If the instrument is broken or dropped, disconnect the power cord and contact an authorized service person. Do not disassemble the instrument.
- Only use authorized accessories.
- Use this equipment only as specified in this manual and as specified in any documentation associated with its components. Use of the equipment in an unspecified manner may result in damage to the device or injury to the user.

Safety Symbols

The following symbols are found on the instrument and this document. Always use the equipment in the safest possible manner.

Symbol	Meaning
	Caution & Warning
	ON (Power)
	This instrument and consumables conforms to the Declaration of Conformity.
	Caution: BIOHAZARD Protective measures must be used in dealing with biologically hazardous materials such as carcinogenic reagents.
	USB Connection
	LED
	<p>Disposal of your old appliance</p> <ol style="list-style-type: none"> 1. When this crossed-out wheeled bin symbol is attached to a product it means the product is covered by the European Directive 2012/19/EU. 2. All electrical and electronic products should be disposed of separately from the municipal waste stream via designated collection facilities appointed by the government or the local authorities. 3. The correct disposal of your old appliance will help prevent potential negative consequences for the environment and human health. 4. For more detailed information about disposal of your old appliance, please contact your city office, waste disposal service or visit our web-site, www.nanoentek.com.
	This product conforms to UL 61010-1, CAN/CSA C22.2 No.61010-1 "Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use, Part I: General Requirements." Instruments bearing the TUV symbol are certified by TUV SUD America Inc to be in conformance with the applicable safety standard for the US and Canada.

Warnings

1. After using device, please turn off main power.

If not, it may cause malfunction or may reduce product life.

2. When turn off the device, be sure lock the device with Lock button.

If not, it may cause mechanical problem or error message when device is booting.

Item	Warning
Battery inside device	<ul style="list-style-type: none"> • Risk of explosion if battery is replaced incorrectly. • This battery is not replaceable by user. Refer to an authorized service person.
Cover	<ul style="list-style-type: none"> • Do not remove cover or dissemble case. There are no adjustable components inside the instrument. • If a malfunction is found, refer to an authorized service person.
Manual	<ul style="list-style-type: none"> • Do not attempt to service the equipment. • This manual is only available in English. • Failure to heed warnings may result in injury to service provider or operator.
Sample handling	<ul style="list-style-type: none"> • Wear personal protective equipment during sampling and testing. • Sample may contain infectious or bio-hazardous agents. • Use of capped tubes and lint free wipes. Lint free wipes to be used one time and discarded.
Waste	<ul style="list-style-type: none"> • After using SOMA Chip, appropriately dispose as bio-hazardous waste. • Do not reuse SOMA Chip.

Technical Support

Visit the our Website at www.nanoentek.com for :



- Technical resources, including manuals, FAQs, etc.
- Technical support contact information.
- Additional product information and special offers.

For more information or technical assistance, please call or email.

NanoEntek, Inc.

851-14, Seohae-ro, Paltan-myeon,
Hwaseong-si, Gyeonggi-do, 18531, Korea
Tel. +82-2-6220-7942
Fax. +82-2-6220-7999

NanoEntek America, Inc.

220 Bear Hill Road, Suite 102, Waltham, MA 02451, USA
Tel. +1-781-472-2558
Fax. +1-781-790-5649

Email

sales@nanoentek.com

Website

www.nanoentek.com

ADAM SCC2

NESMU-ASC2-001E (V.1.2)



NanoEntek, Inc.

851-14, Seohae-ro, Paltan-myeon, Hwaseong-si,
Gyeonggi-do, 18531, Korea

Tel :+82-2-6220-7942
Fax:+82-2-6220-7999

NanoEntek America, Inc.

220 Bear Hill Road, Suite 102, Waltham, MA
02451, USA

Tel: +1-781-472-2558
Fax: +1-781-790-5649

Email

ivdst@nanoentek.com

Website

www.nanoentek.com