CE

ADAM CellT

A New Standard of Automated Cell Counter

Instruction Manual

NanoEntek

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

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

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General Description

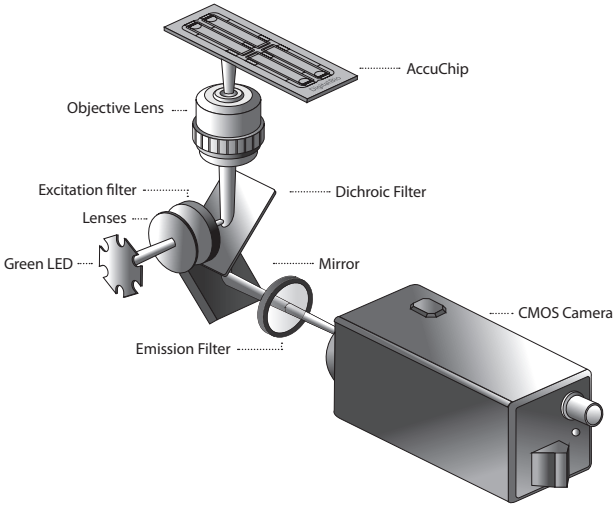
The ADAM-CellT is a benchtop automated cell counter designed to perform cell counting and viability measurements using AccuStain Solution.

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.

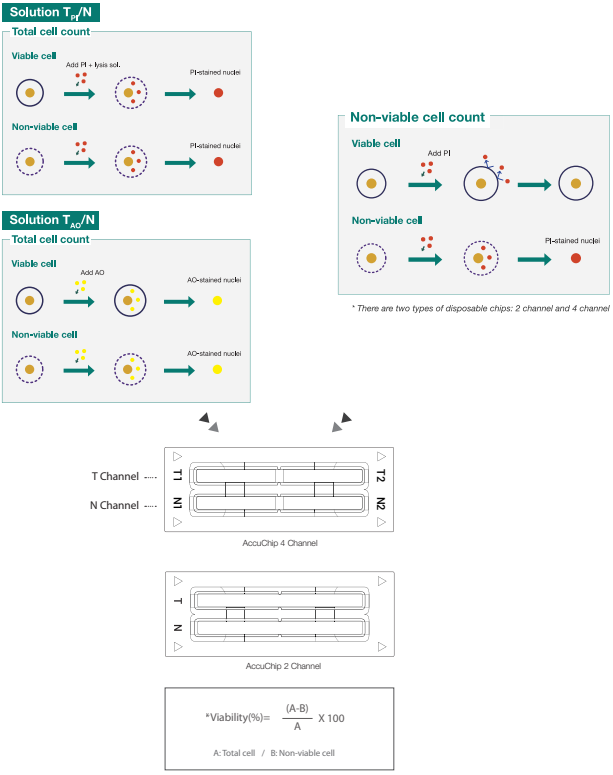
To address these problems, NanoEntek has developed the ADAM-CellT, which is based on a fluorescent microscopy technique for counting cells. The ADAM-CellT utilizes sensitive fluorescence dye staining, LED optics and CMOS detection technologies to make the cell analysis more accurate and reliable.

To count cells using ADAM-CellT, 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-CellT 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.



ADAM-CellT

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

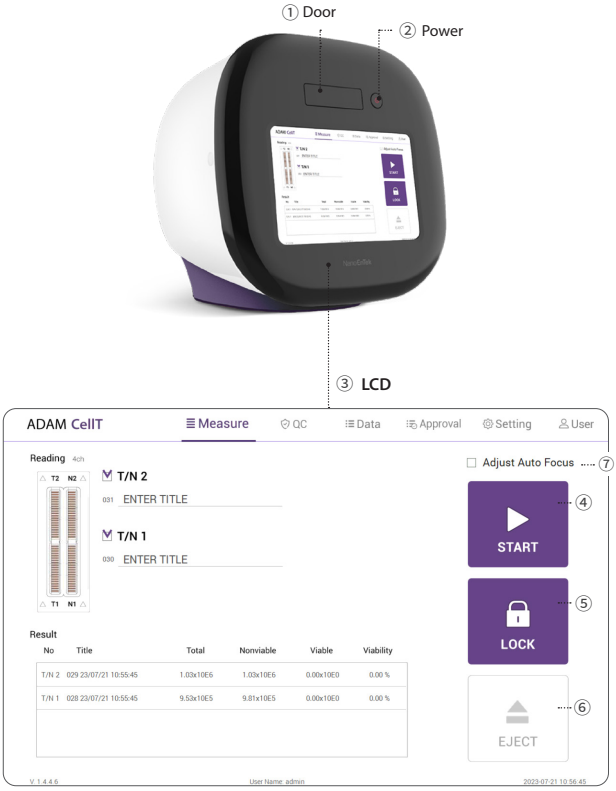
Item	AccuChip2x Kit (Cat. No: AD2K-200)	AccuChip4x Kit (Cat. No: AD4K-200)	AccuStain Solution (Cat. No: ADR-1000)
Disposable Chip	**200pcs (2 channel)**	**200pcs (4 channel)**	**N/A**
Solution T	**12.5 mL x 2ea**	**12.5 mL x 2ea**	**12.5 mL x 4ea**
Solution N	**12.5 mL x 1ea**	**12.5 mL x 1ea**	**12.5 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

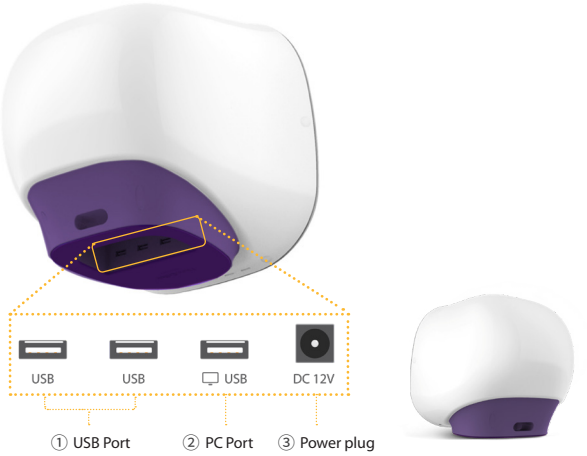
The front view of ADAM-CellT is shown below:



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-CellT

The rear view of ADAM-CellT 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-CellT 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

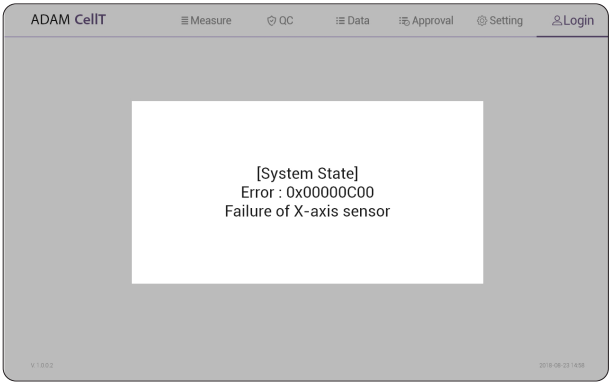
• Do not tilt the device too much in the forward when connecting the power cord.

• 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.

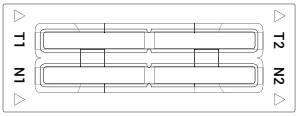
Error code	Cause
0x00000C00	Failure of X-axis sensor
0x00007000	Failure of Y-axis sensor
0x00008000	Failure of Z-axis sensor
0x06000000	Failure of Locking module sensor

Count setting

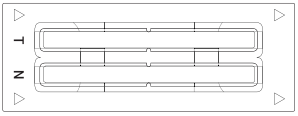
Set the conditions in the 'Setting' tap before counting.

[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))

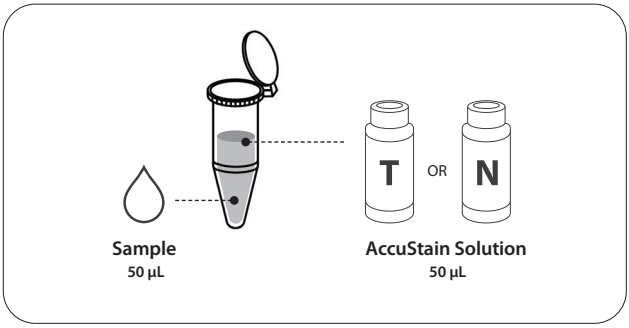
T_{PI}/N T_{AO}/N

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-CellT.

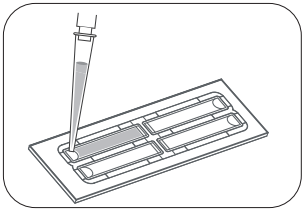
Please check the procedure of sample preparation and testing below.
For more detailed information, please refer to the next page.

1. Mix the sample with AccuStain Solution.

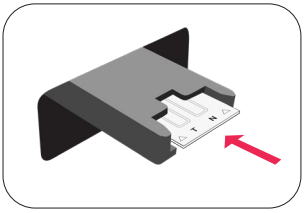


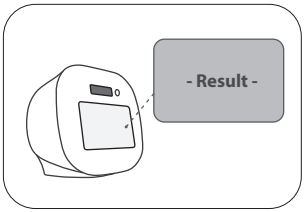
2. Load the mixed sample. Then, wait 1 minute for the sample settling.

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



3. Insert AccuChip. Get the result.





Sample preparation

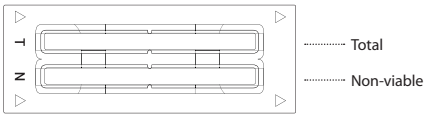
1. Cultivate the required number of cells.
2. Add an appropriate volume of growth media or PBS to dilute to a final concentration of 5 x 10^4 cells/mL to 4 x 10^6cells/mL (T_{PI}/N solution). When using T_{AO}/N solution, prepare to a final concentration of 5 x 10^4 cells/mL to 2 x 10^7 cells/mL.

   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.

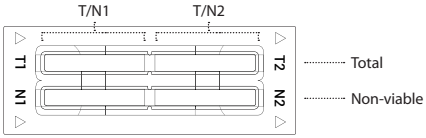
Counting cell

[AccuChip 2x]



Total Cell	Non-viable Cell
1) Add 50 µL of your sample to 50 µL supplied AccuStain Solution **T**.	1) Add 50 µL of your sample to 50 µL supplied AccuStain Solution **N**.
2) Vortex the tube vigorously.	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.	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
1) Add 50 µL of your sample to 50 µL supplied AccuStain Solution **T**.	1) Add 50 µL of your sample to 50 µL supplied AccuStain Solution **N**.
2) Vortex the tube vigorously.	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.	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.*

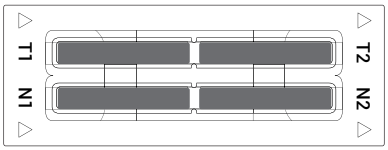
Counting cell

WARNING

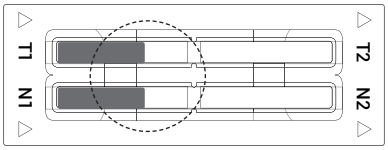
[Sample loading error]

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

Correct volume

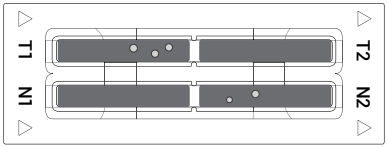


Low volume



CAUTION

Avoid bubbles which may negatively affect the result.

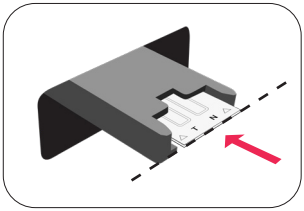


Counting cell

WARNING

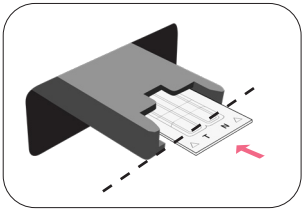
[AccuChip insert error]

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.



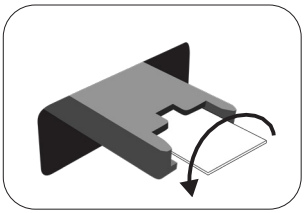
(O)

Correctly inserted



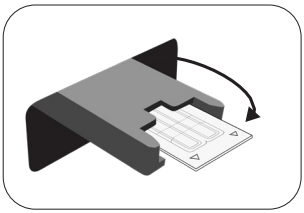
(X)

Not fully inserted



(X)

inserted upside down



(X)

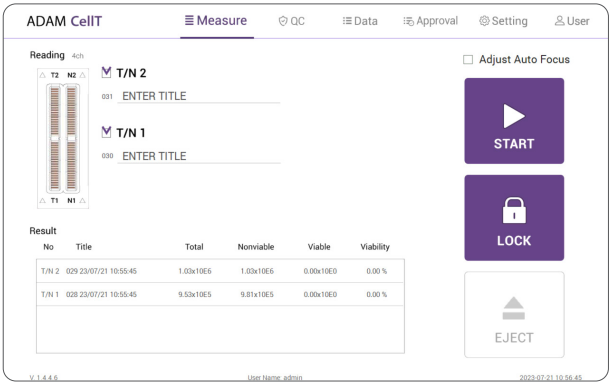
Inserted in opposite direction

CAUTION

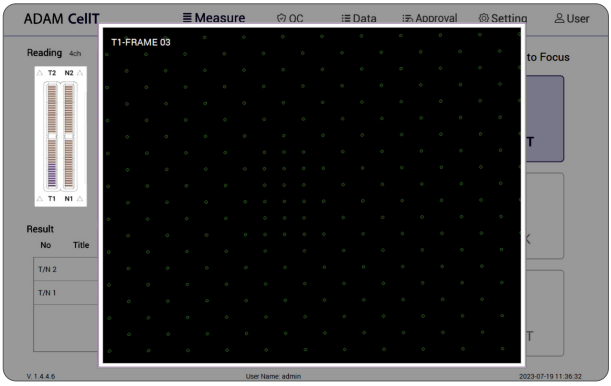
- *Please insert or remove the AccuChip when the slide holder is fully ejected.*
- *When the test is finished, please remove the AccuChip from the slide holder.*

Run Sample

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

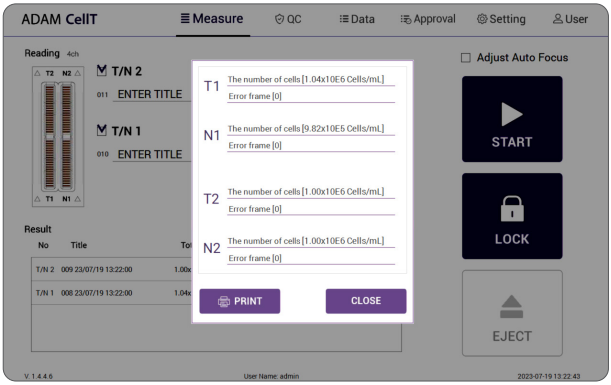


While the test is in progress, you can check the cell images of each channel.



Result Analysis

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



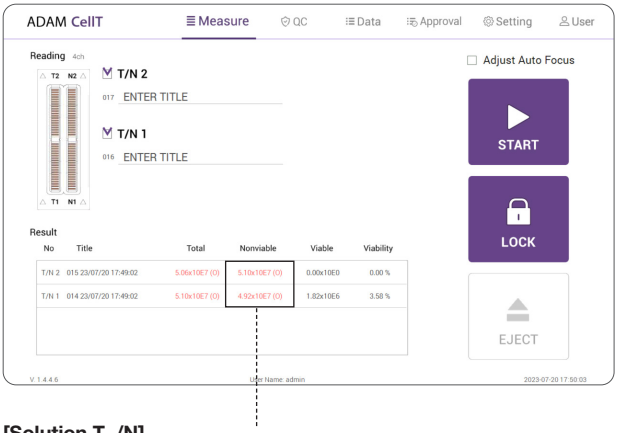
* 1.10E6 = 1.10 X 10^6 cells/mL

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_{AO}/N when the cell concentration is above the range of $4x10^6$ 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 $2X10^7$ 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

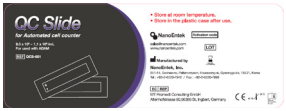
The QC Mode uses QC Slide (optional) to check equipment QC status by date at a glance.

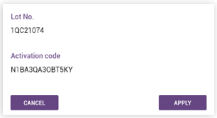
[Activation of QC mode]

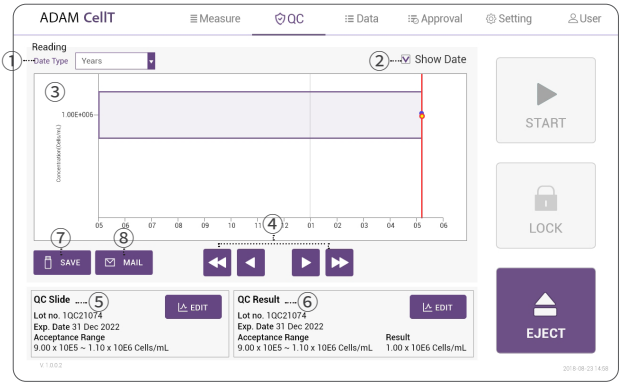
To activate 'QC' mode, an activation code must be entered.

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.*







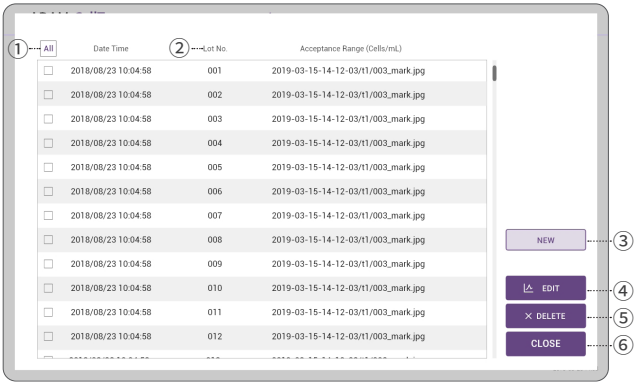
Control buttons	Description
① **Data Type**	QC result graph unit (Years, Months, Days,No.[Index])
② **Show Data**	Displays the date of QC progress on the graph
③ **QC Result Graph**	Graph left/right (QC date, number) movement button
④ **Arrow Button**	Graph left/right (QC date, number) movement button
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

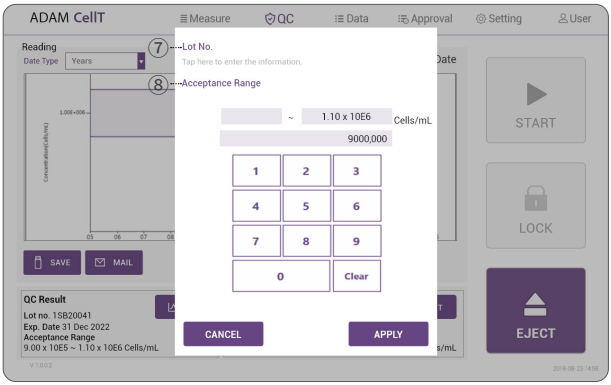
WARNING

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.

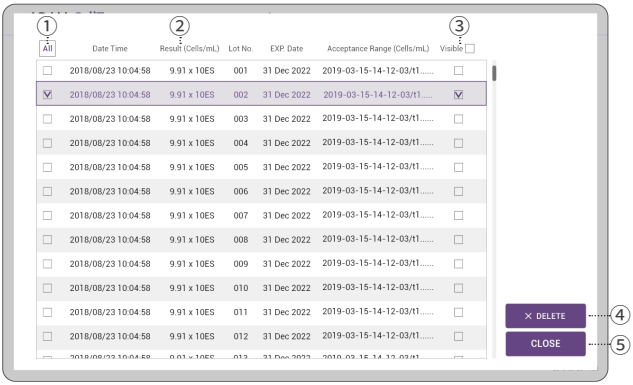




Control buttons	Description
① **All**	Selects all QC Slide lot to delete from the QC Slide lot List
② **QC Slide List**	Provides registered QC Slide lot information list
③ **New**	Registers new QC Slide lot
④ **Edit**	Edits selected QC Slide lot
⑤ **Delete**	Deletes selected QC Slide lot
⑥ **Apply/Close**	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.*

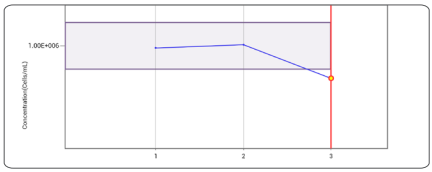
QC Slide Result Edit



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 10ES ~ 1.10 x 10E6 Cells/mL
Acceptance Slide Peak Size :	13~16 um
Concentration :	8.45 x 10ES 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

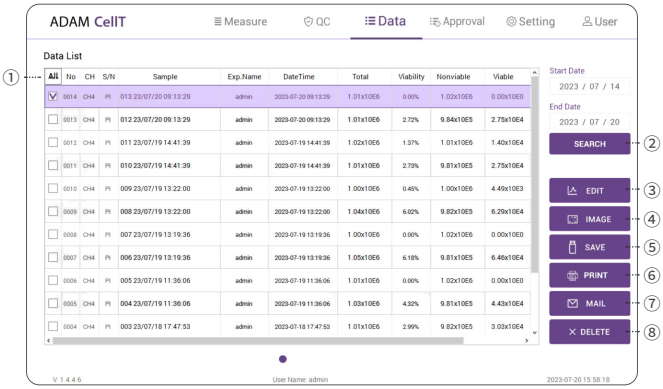
•The acceptance range of the selected QC slide lot is displayed on the graph as a purple area.

•Acceptance slide peak size results can be found in the ADAM-CellT Test report.

WARNING

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

Data list

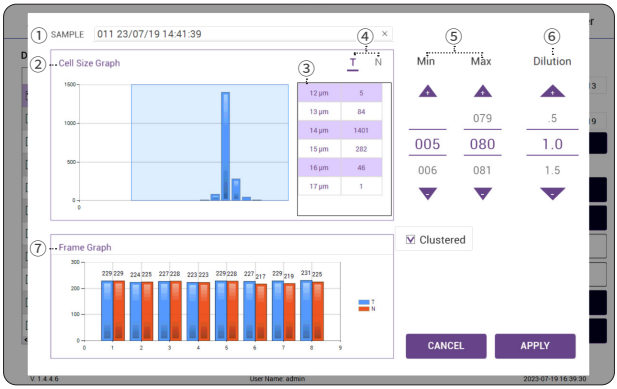


Control buttons	Description
① **All**	Select all data in Data List.
② **SEARCH**	Display the data of the selected date.
③ **EDIT**	Allows to view and edit the data **(Multiple data can be edited with the same settings)**
④ **IMAGE**	Allows to check the cell images of each channel
⑤ **SAVE**	Saves the 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

NOTE

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

EDIT

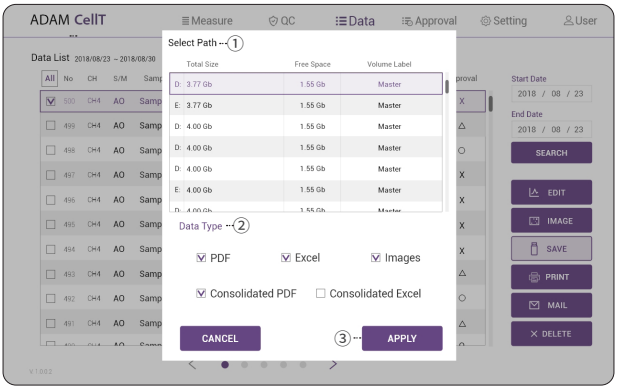


Control buttons	Description
① **Sample**	Edit the sample name.
② **Cell size graph**	Allows to view the cell size graph each channel (T/N)
③ **Cell size table**	Allows to view the number of cells in each cell size
④ **Channel**	Select a channel(T/N).
⑤ **Cell size setting**	Set the min/max size of the 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

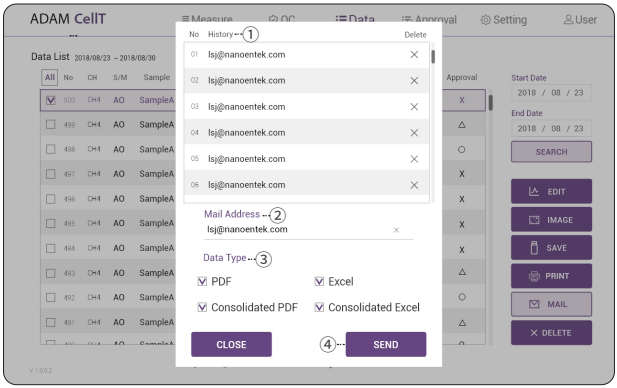
Control buttons	Description
① **Channel**	Select a channel.
② **Original**	Check the original image.
③ **Counted**	Check the counted cell image.
④ **Frame**	Select a frame number of the channel.
⑤ **Zoom-in/out**	Zoom in and out to check the cell image.

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 *Files can be sent to only one save path at a time.*

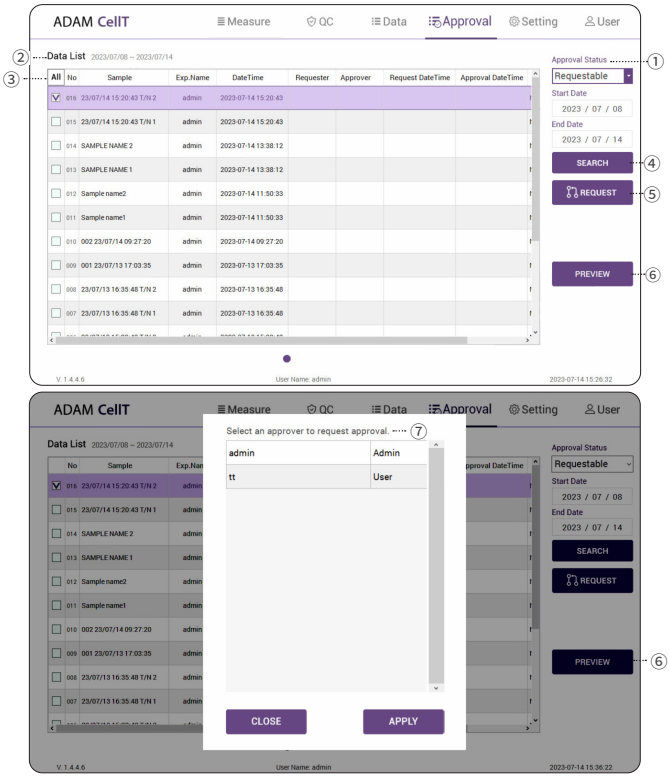
MAIL



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:



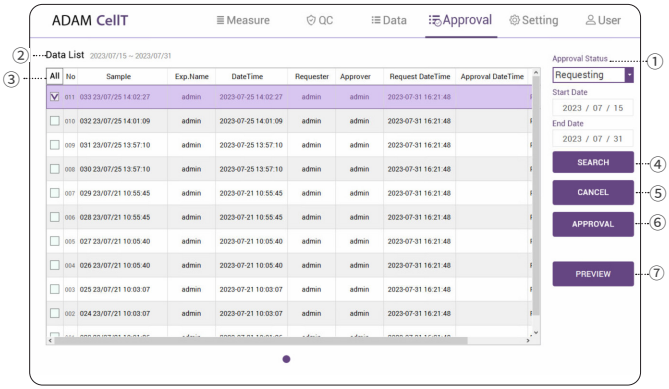
Control buttons	Description
① **Approval Status**	Settings tab related to data approval such as Requestable, Requesting, Approvable, and Approved.
② **Data List**	List of data that can check status information related to approval.
③ **All**	Select all data in Data List
④ **Search**	Display the data of 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:○/ Approval in progress: △/ Not approved X).*
- *Data in the process of approval cannot be edited or deleted.*
- *Approved data cannot be edited.*

Approval

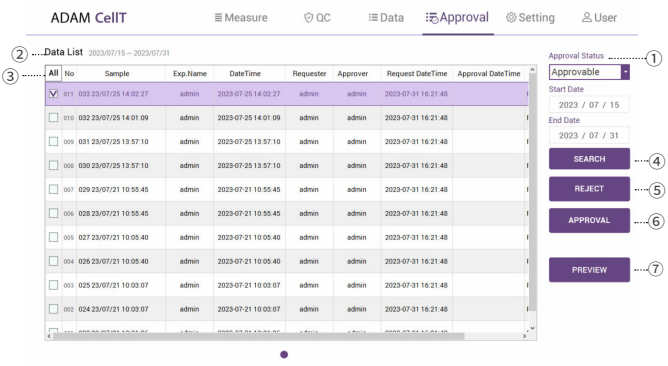
Requesting:



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

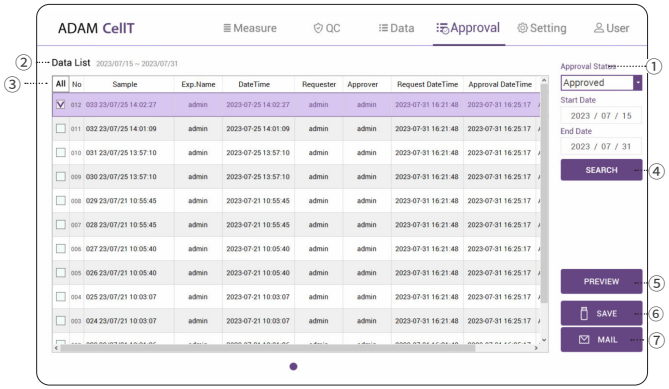
Approvable:



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)

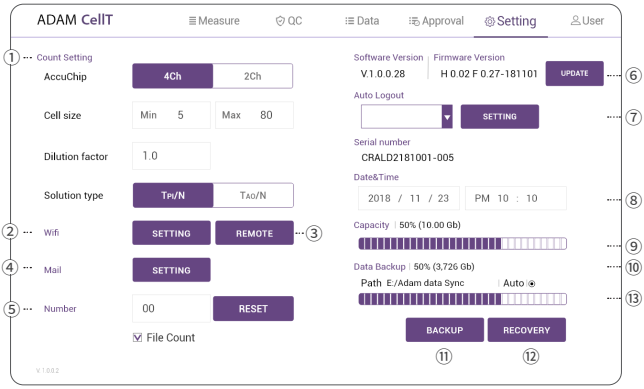
Approval

Approved:



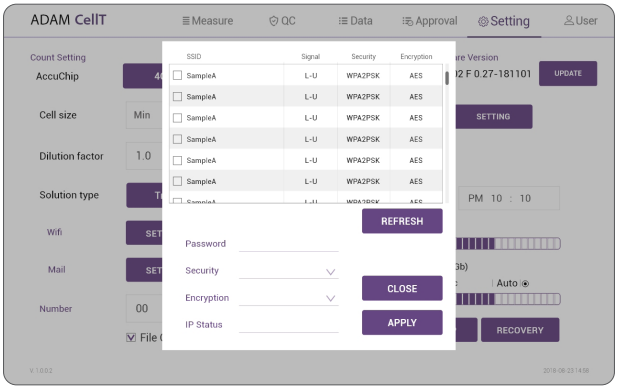
Control buttons	Description
① **Approval Status**	Settings tab related to data approval such as Requestable, Requesting, Approvable, and Approved.
② **Data List**	List of data that can check status information related to approval.
③ **All**	Select all data in Data List
④ **Search**	Display the data of 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=⊙)

Wifi



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

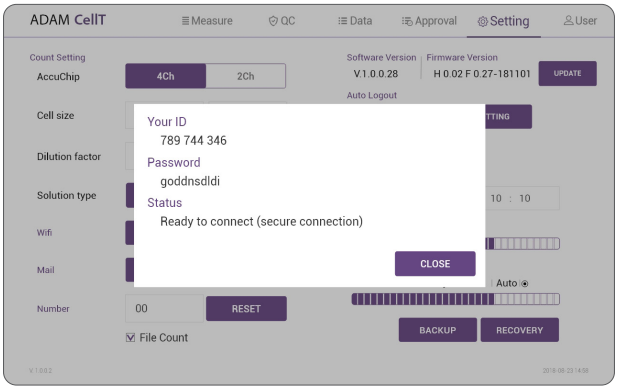
CAUTION

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.

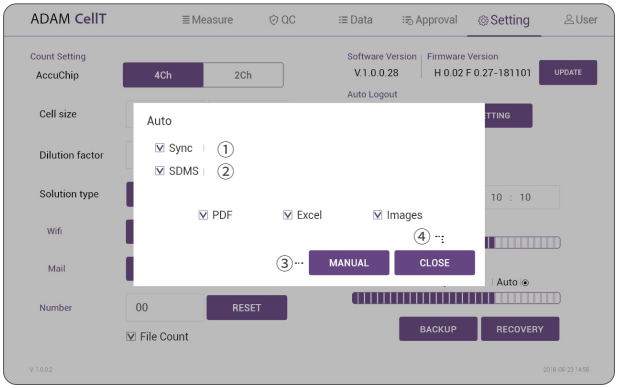
CAUTION

- *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

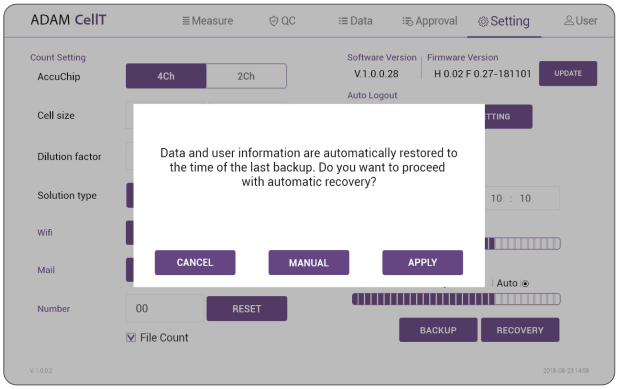
Please be cautious as data may be lost when Auto Backup (Sync) is turned off.

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.

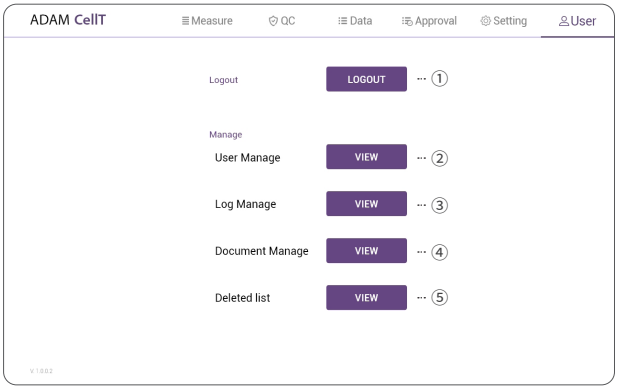
NOTE

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

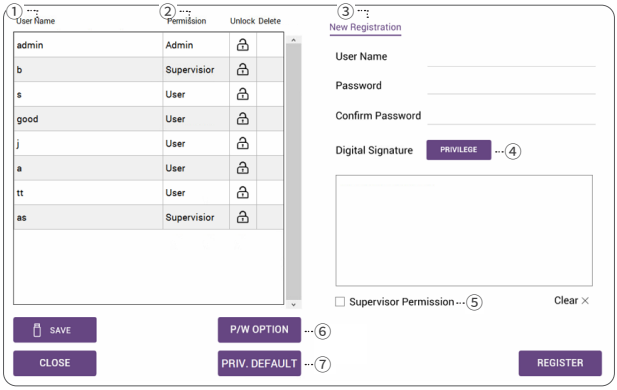


Control buttons	Description
① **Logout**	To logout
② **User manage**	To register user
③ **Log manage**	Tracks user access records
④ **Document manage**	Tracks management document records
⑤ **Deleted list**	Tracks deleted data records

• ADAM-CellT 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.

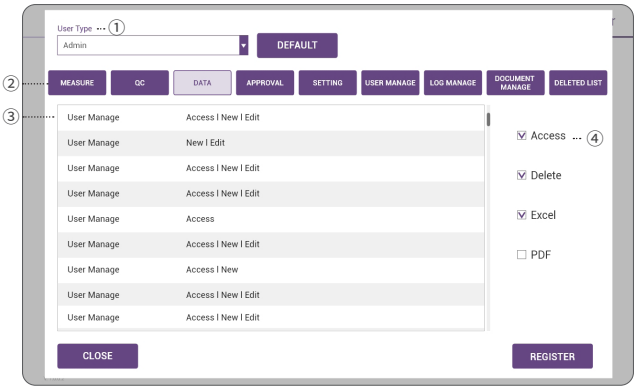
User manage



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)

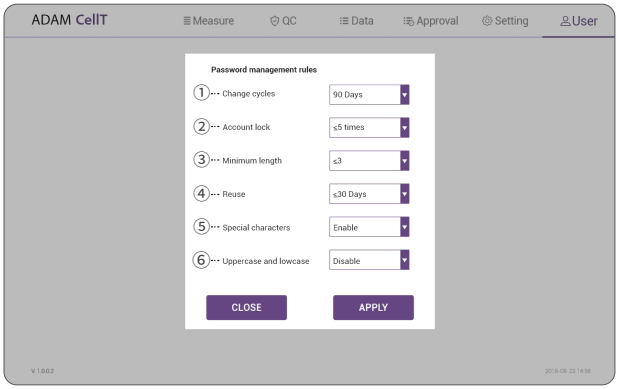


Control buttons	Description
① **User Type&Default**	Selects account level and sets default permissions
② **Tab**	Tab for permission Settings
③ **Function list**	Detailed functions for each permission setting tab
④ **Detailed function**	List of possible permission settings for each function

NOTE

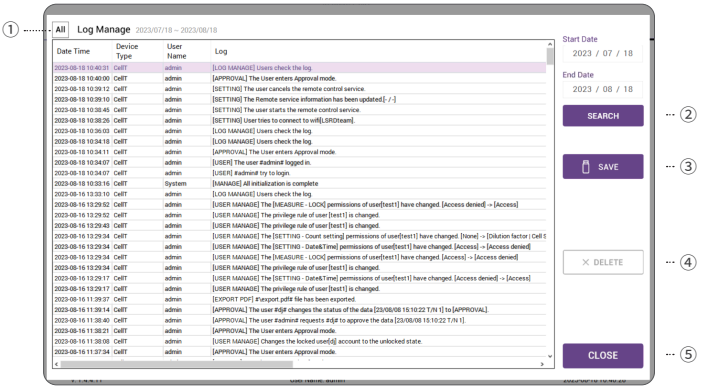
Granting basic access rights for each user (For the default access rights for each user, refer to the ADAM-CellT SW 21 CFR PART11 requirement support appendix).

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 (≤ 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

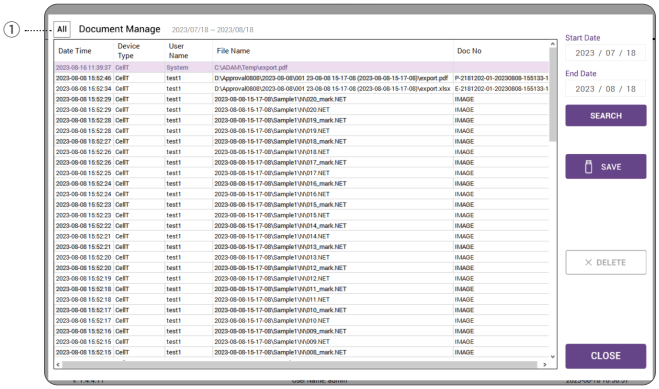


Control buttons	Description
① **All**	Select all data in Data List.
② **SEARCH**	Display the data of the selected date.
③ **SAVE**	Save the selected data to USB.
④ **DELETE**	Delete the selected data. (DELETE is not activated in all user types.)
⑤ **CLOSE**	Close the log manage.

NOTE(Except PC Mode)

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

Document manage

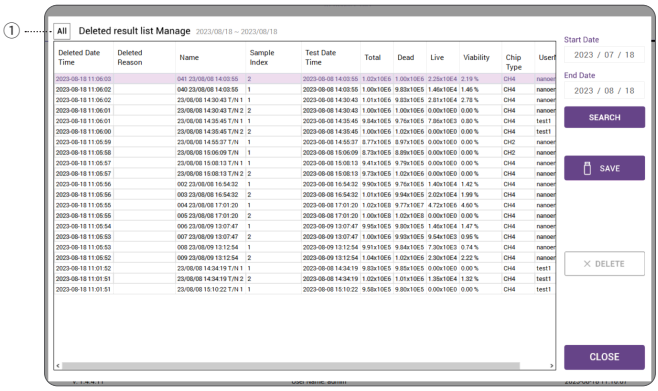


Control buttons	Description
① **All**	Select all data in Data List.
② **SEARCH**	Display the data of the selected date.
③ **SAVE**	Save the selected data to USB.
④ **DELETE**	Delete the selected data. (DELETE is not activated in all user types.)
⑤ **CLOSE**	Close the document manage.

NOTE(Except PC Mode)

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

Deleted list



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.

NOTE(Except PC Mode)

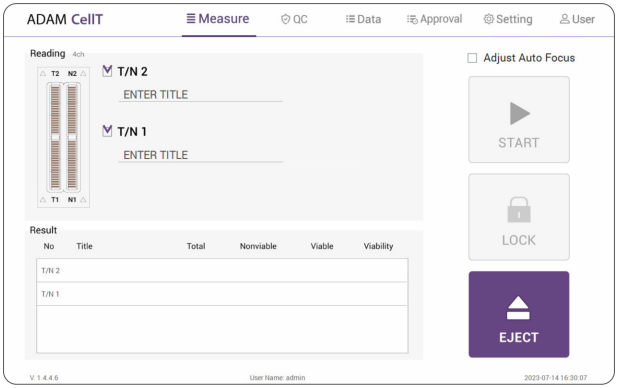
The search period is limited to 90 days (Except PC Mode).

Lock

Press LOCK before turning off the device.

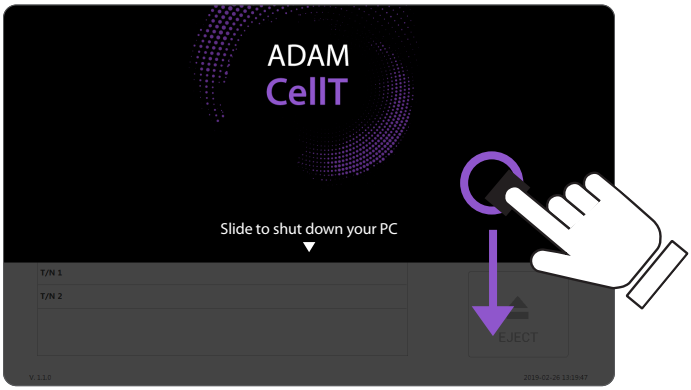
If there is no operation for 1 minutes, the lock function will be activated automatically.

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-CellT does not need regular maintenance.
2. ADAM-CellT has no replacement of consumable materials.
3. Please clean the exposed surface of ADAM-CellT 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	• No power from outlet • Bad power cord.	• Check power source. • Replace.
Inaccurate result	• Cell number may be out of range. • AccuStain Solution has expired. • Too high clumped cells.	• 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)	• When frames with errors are over 50% of total counting frame. **(Error message: E)**	• Check the suspension of cells if all cells are fully dissociated into single cells. • If contaminants except cells are found, prepare sample again.
	• When over 100μm diameter of cells are included. **(Error message: Error frame [#])**	• Check fully dissociated into single cells.
	• High concentration of cells **(Error message: H)** • Over detection range **(Error message: O)**	• Check if concentration of cell is too high. • Dilute the sample and count again.
	• Low concentration of cells **(Error message: L)** • Under detection range **(Error message: U)**	• Check if concentration of cell is too low. • Use concentrated sample and count again.

Warranty

If any defects occur in the ADAM-CellT 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:

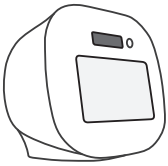
1. Defects caused by improper operation.
2. Repair or modification done by anyone other than NanoEntek or an authorized agent.
3. Damage caused by substituting alternative parts.
4. Use of fittings or spare parts supplied by anyone other than NanoEntek.
5. Damage caused by accident or misuse.
6. Damage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



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 · 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
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

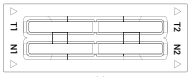
Temperature	5°C ≤ Temperature ≤ 40°C
Humidity	20% ≤ Humidity ≤ 80%
Altitude	Altitude ≤ 2,000 m

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 ℃
AccuStain Solution	2 – 8 ℃

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 in crease.
- 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 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	• Risk of explosion if battery is replaced incorrectly. • This battery is not replaceable by user. Refer to an authorized service person.
Cover	• 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	• 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	• 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	• 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.

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ADAM CellT

NESMU-ACT-001E (V.0.7)

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