Operation Manual for
Automatic Colony Counter
COLONY-1200

PLEASE READ THIS MANUAL CAREFULLY BEFORE OPERATION

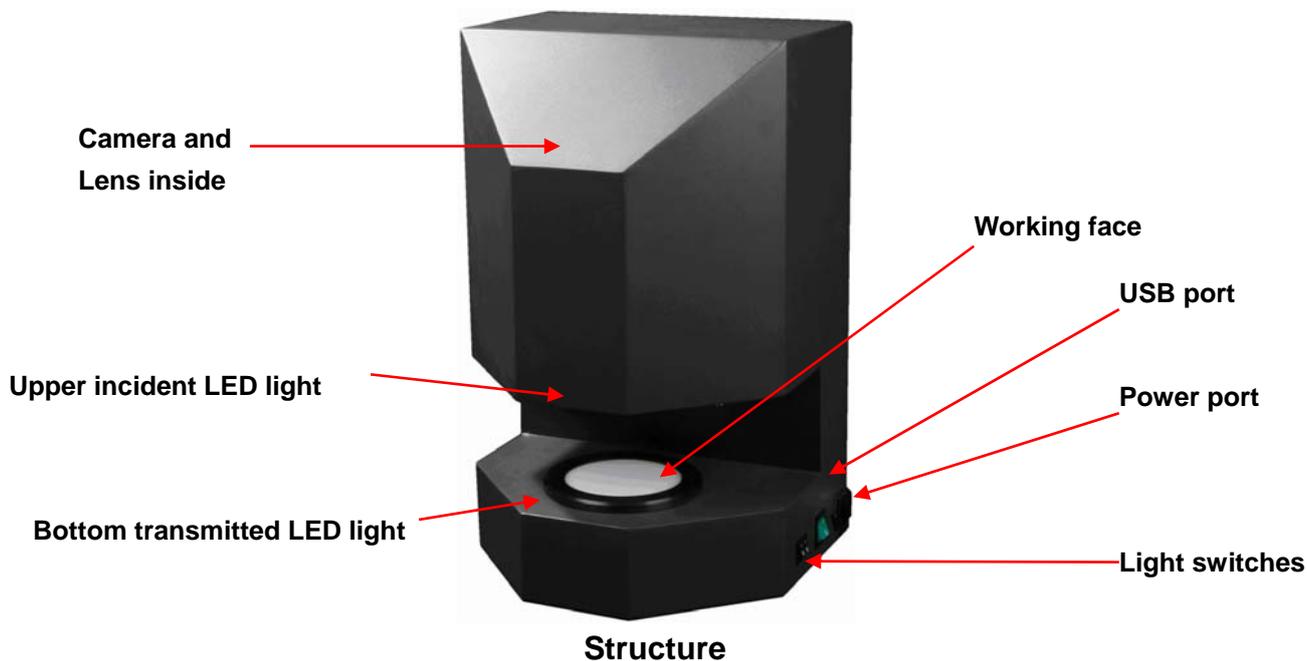3, Hagavish st. Israel 58817 Tel: 972 3 5595252, Fax: 972 3 5594529   mrc@mrclab.com

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Table of Contents

Chapter 1   Introduction

Colony-1200 Automatic colony counter with exclusive resolution digital CCD camera provides fast and accurate colony counting and zone sizing. Typical users can be found widely in laboratories engaged in food, drink and milk testing, drug production and testing and public health departments as well as environmental monitoring departments. It can be used for colony counting (pour/spread/spiral plates or testing slip), inhibition zone measurement, antibiotic susceptibility testing, vitamin potency test and other immunology zone analysis.

Camera and Lens inside

Working face

USB port

Upper incident LED light

Power port

Bottom transmitted LED light

Light switches

Structure

Chapter 2   Specifications

Type	Colony-1200
CCD camera	Color digital CCD camera
Pixels	1.4million
AD	12 bit
Camera Lens	8mm, f1.4~close
Illumination	Long-life upper incident light and bottom transmitted light using LED arrays, with dark field and bright field
Petri dish diameter	50-110 mm
Testing method	Automatic with manual option
Counting time/ Measurement time	Over 300 colonies per sec Over 1 plate per sec
Resolution	Smallest detectable colony: 0.1mm Zone sizing resolution: 0.05mm
Data interface	USB2.0
Power	220V

Chapter 3   Installation

Unpacking

Unwrap all packages carefully and compare contents with the packing list, making sure all items arrived. If any part is missing, contact us or your local distributor. Inspect all components for damage that may have occurred while the unit was in transit. If any part appears damaged, contact the carrier immediately. Be sure to keep all packing material for damage claims or to use for transportation should it become necessary to return the unit.

■ 3.1 Set-up

DO NOT ATTEMPT TO CONNECT ANY WIRING WHILE THE EQUIPMENT IS CONNECTED TO ANY POWER SUPPLY.

CAUTION!
Do not install the unit in places with high moisture, dust or high temperature.

1. Place the unit on a stable and level surface. Allow space around the unit for air to circulate freely.
2. Connect the equipment with your computer main board port by the USB cable.
3. Plug the power cord into the main power port at the left-bottom of the unit and into a properly-grounded electrical outlet of the proper voltage rating.

Main power port

Power switch   **Light switch**
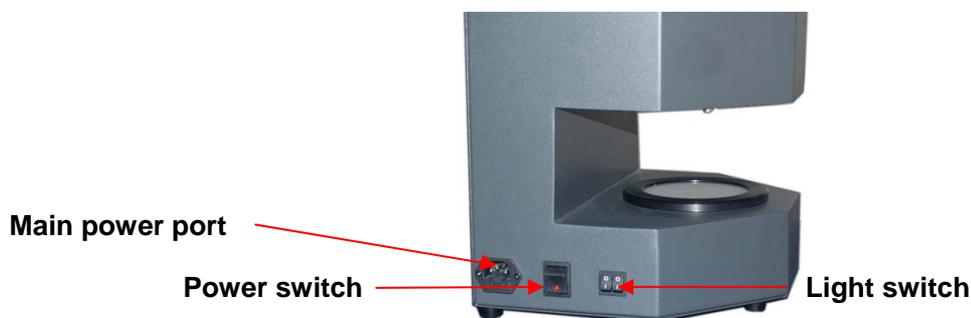
Main power port and switch

Note: Ensure that the system is always turned OFF unless using.

After getting through power, the indicator light on "Power switch" will be on when turning on the power switch.
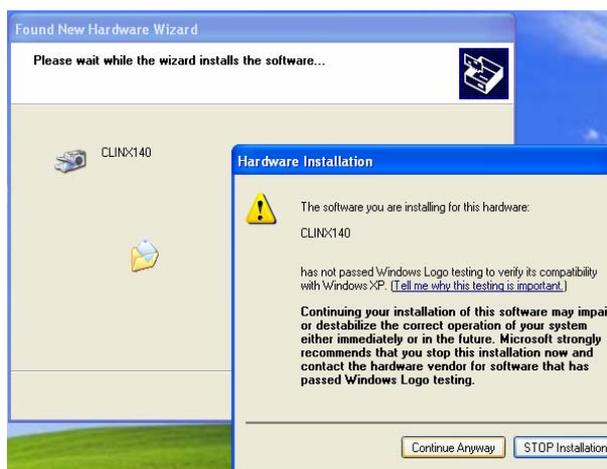
■ 3.2 Drive Installation

Connect USB cable to USB port in your PC. The computer will display "**Found new hardware**" **CCD camera drive installation proceeds as followed.**

Follow the instructions of installation wizard, which will appear.
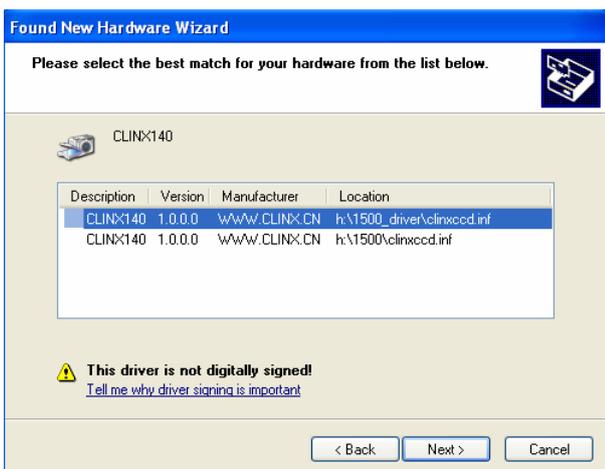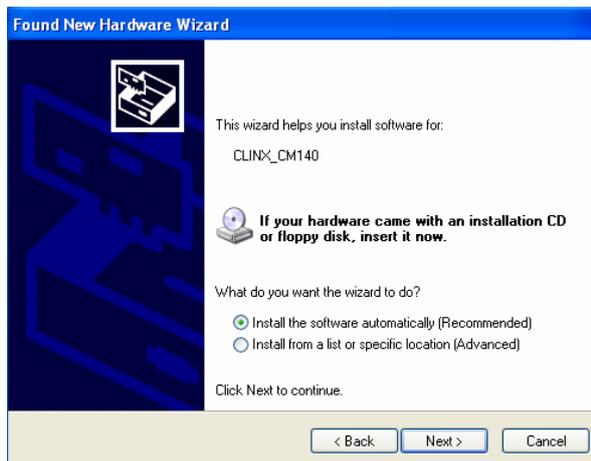
<center>**Next>**</center>

<center>**Continue anyway**</center>
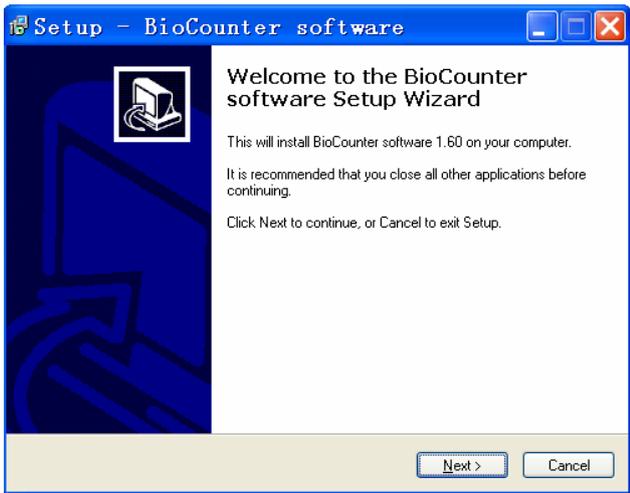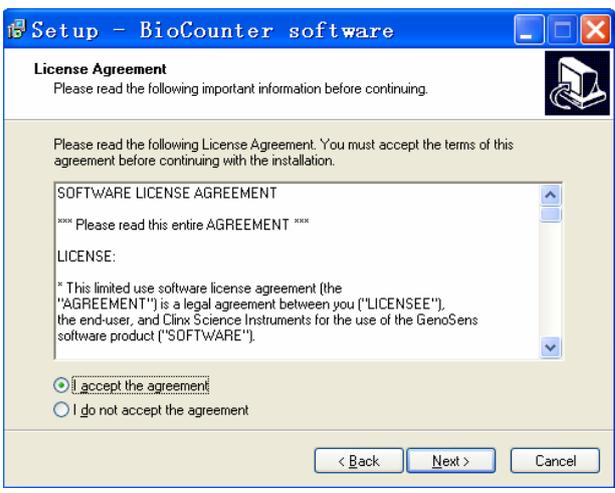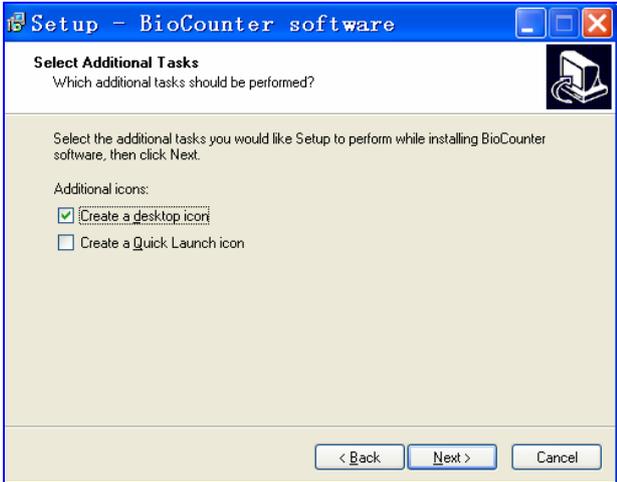
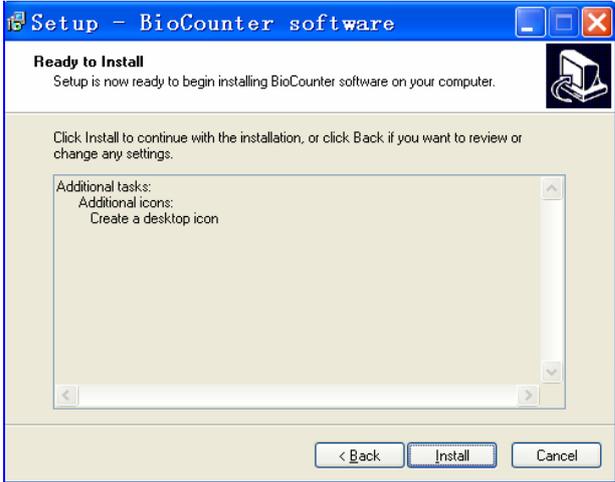<center>Please wait for several seconds</center>

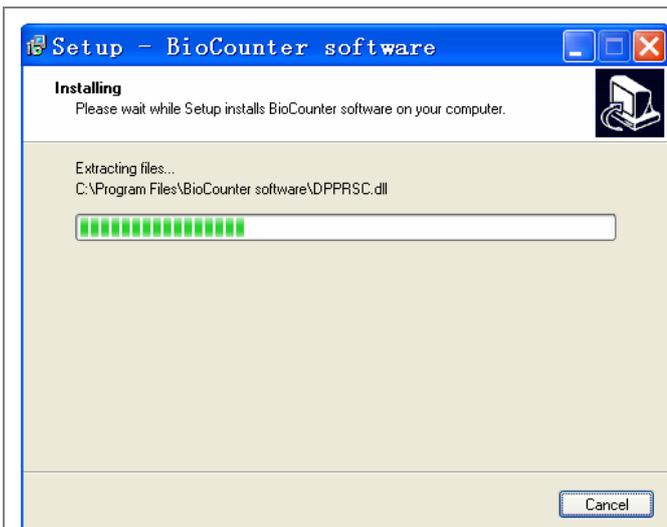<center>Completing camera drive setup--**Finish**</center>

■ 3.3 Setup of BioCounter Analysis Software

Note: BioCounter automatic colony counting System includes two application software: BioCounter Automatic colony counting and BioCounter Zone Analysis.

◆ Setup of BioCounter software:

1. Close all Window-programs.

2. Insert the BioCounter CD in to the CD-ROM drive or if you have received our setup file, simply double click **setup_Colony-1200_en.exe** from where you saved the file download.

3. Follow the instructions of installation wizard, which will appear.

BioCounter softeware setup wizard **Next>**	Select "**I accept the agreement**" **Next>**
Tick on "Create a desktop icon" Next>	**Install**

Setup – BioCounter software **Installing** Please wait while Setup installs BioCounter software on your computer. Extracting files... C:\Program Files\BioCounter software\DPPRSC.dll [progress bar] [Cancel]	**Setup – BioCounter software** **Information** Please read the following important information before continuing. When you are ready to continue with Setup, click Next. Automatic Colony Counting allows remote operation and capture colony image. It allows you to easily perform live view colony image, direct storage images on your computers hard drive, freely view or edit the colony image and then to easy count the colony. Inhibition Zone Measurement is the easily use software that enables detailed and in-depth to Zone Measurement. After intall the software. You must register to Clinx Science Instruments to get full version of this SOFTWARE. System Requirement: Windows 2000/XP/Vista [Next >]
BioCounter automatic colony counting software is being installing. Waiting for several seconds…	Read the important information before continuing **Next>**
Setup – BioCounter software **Completing the BioCounter software Setup Wizard** Setup has finished installing BioCounter software on your computer. The application may be launched by selecting the installed icons. Click Finish to exit Setup. [✓] Launch BioCounter Colony Counting [< Back] [Finish]	
Finish> Tick on the option to launch automatic colony counting or not.	
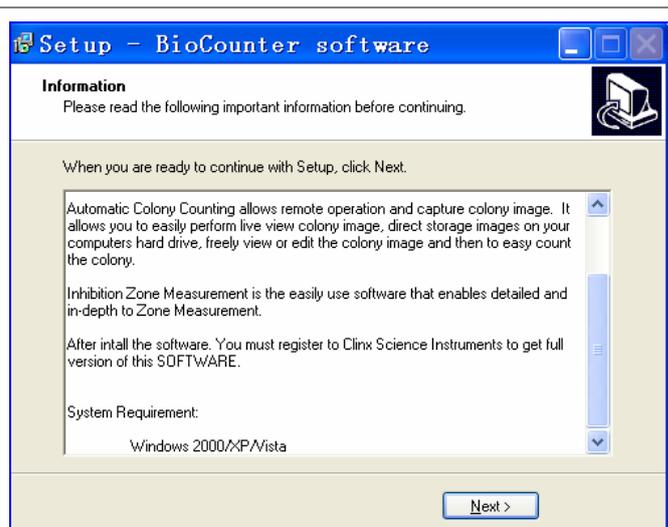
◆ **After installed, plug the software Dongle in the computer USB interface and click the desktop icon to start the program.**

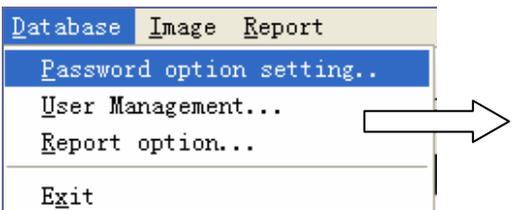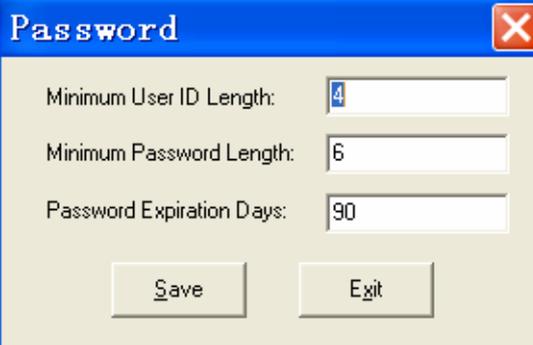# Chapter 4   Operating instructions

■ 4.1 Quick Guide

1. Connect the power and connect the USB cable to your computer.
2. Put the Petri dish on the working face.
3. Turn on the power switch.
4. Turn on the light switch. Choose upper light or bottom light.
5. Open the software which has been installed on your computer.
6. Access by entering your "User ID" and "Password".
   (See **User management** in Chapter 4)
7. Capture image photo of the Petri dish by entering image capture mode. (See **Image capture** in Chapter 4)
8. Make colony counting by entering image analysis mode. (See **Image analysis** in Chapter 4)

■ 4.2 Operation of the software

Double-Click the icon BioCounter Colony ... or BioCounter Zone An... to start the software of colony counting or zone analyis. Login window is as followed:

User Login User ID: admin Password: ×××××× Login Exit	An Administrator has been preset with User ID "admin" and Password "111111". Administrator can change password after first login. Administrator can assign each user a unique user ID.

◆ Password

Database Image Report
    Password option setting..
    User Management...
    Report option...
    Exit
 	
Minimum User ID Length: Reset minimum user ID Length
Minimum Password Length: Reset minimum password length
Password expiration days: Reset password expiration days
	Password
	
	Minimum User ID Length: 4
	
	Minimum Password Length: 6
	
	Password Expiration Days: 90
	
	Save Exit

◆ **User management**

Only administrators have access to user management and do actions like add/delete user, Edit user's information and access control.

Database Image Report Password option setting.. User Management... Report option... Exit **Standard User:** The user in this group can read and modify his data only. **Administrator:** The user in this group can modify users' access information.	User Management Access Control ◉ Standard User ○ Administrator User ID test Description: test Password: **** Confirm Password: ****

Toolbar:

Page up and page down to each user's information

Edit the user's information in the current page

Assign a new user (Read only/Standard User/Administrator)

Delete the user shown in the current page

Assign a new user: User Management Access Control ◉ Standard User ○ Administrator User ID Description: Password: Confirm Password: ☐ User must change password at first logon ☐ Password never expires	1. Choose user group: Standard User/Administrator. 2. Fill in the information including User ID, description, password, confirm password. 3. If tick on "User must change password at first logon", user can change his password at first logon. Or not. 4. If tick on" Password never expires", user's password will be always available. Or the password will expire after 90 days. 5. Save or cancel .

◆ **Report option**

Database Image Report
  Password option setting..
  User Management...
  Report option...
  Exit
 	
⟹
 	
Company: Fill in the company name
Department: Fill in the test Department name
	Report option ✕
	Company: [Company]
	Department: [Department]
	[OK] [Cancel]

Chapter 5   Automatic Colony Counting Software Tutorial

Introduction

BioCounter Automatic colony counting is the attached software for Automatic colony counter. It includes three modules - Image Capture and Image Analysis as well as basic image database function for export, save, delete, search or print

■ 5.1 Main Interface -- Image Database

■ 5.2 Image Capture

To enter the image capture interface, Click on the button on the "Image Database" interface.
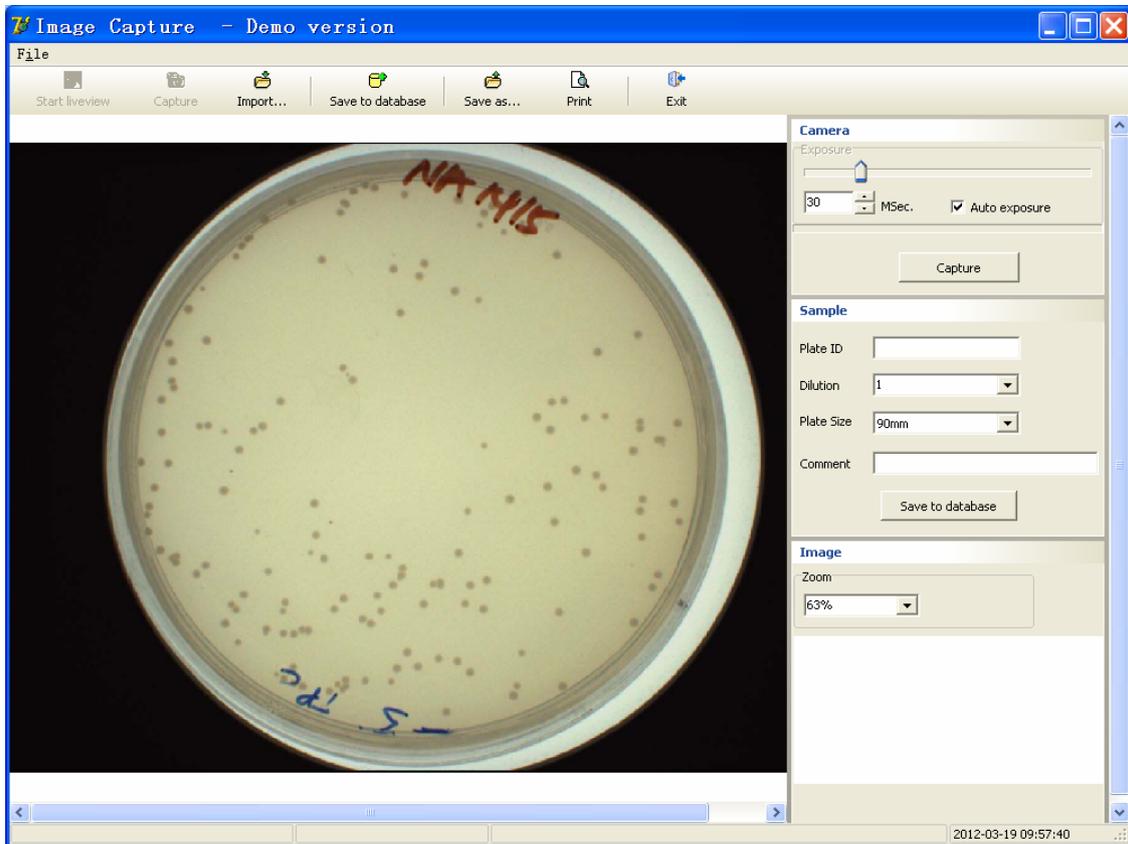
◆ Simple steps for image capture:
· Setting the exposure time.
· Click to preview
· Click to capture.
· If you don't get satisfied image, redo setting and capture until you get optimal image.

Save the image to the database or anywhere on your computer
· If you want to save the image to the database of the software in order to analyze it, the information of the Sample including **Plate ID, Dilution and Plate Size** must be filled(Comment can be filled optionally):

◆ Camera setting

Click **Capture** to capture.

Exposure time

You can adjust the exposure time that how long the camera should expose to, by input the exposure time in

30 MSec., or set the position of arrow . If you want to get a sharp image, it's better for you

to set a specific exposure time according to your sample. The exposure time for capture and preview can be

set separately.

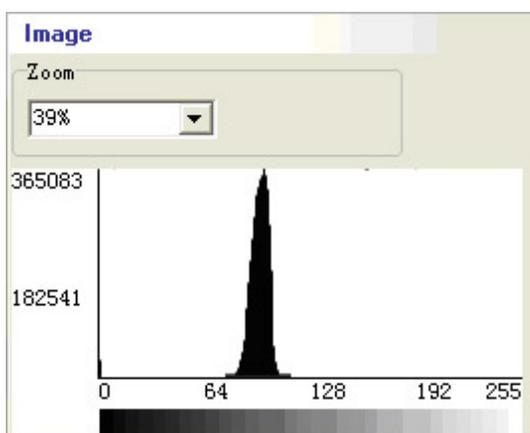If you don't know the appropriate exposure time for your sample, you can choose auto exposure
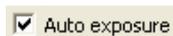
☑ Auto exposure, then set the estimated right exposure time until you get sharp images.

◆ Sample
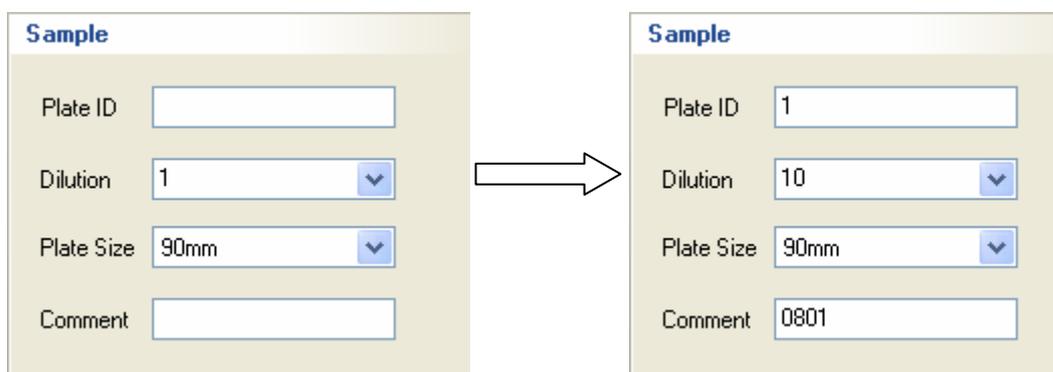
◆ Image

The image can be zoomed in or zoomed out.

◆ Menu bar

Left click on the icon of "File" opens a menu bar with the following options:

File
Preview image
Capture image
Save to database
Save as...
Print
Exit
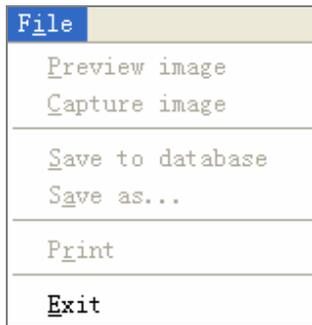
Preview image: Preview the gel image.

Capture image: Capture the gel image.

Save to database: Save the gel image photo to the database。

Save as: Save the gel image photo to anywhere on your computer.

Print: Print the image photo

Exit: Close Image Capture and return to main interface "Image Database"

◆ Toolbar

To preview the gel image click on the icon

To capture the gel image click on the icon

To import another image from a file

To save the gel image to the datab

ase click the icon

To save the gel image to anywhere on your computer click the icon

To preview the printing image click on the icon

To exit the image capture software
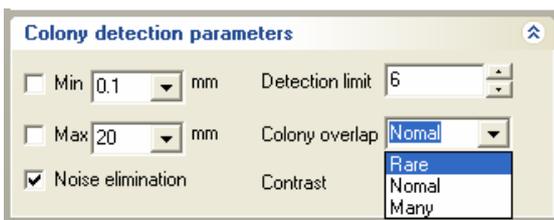
■ 5.3 Image Analysis (Colony Counting)

To enter the image analysis interface, Click on the button on the "Image Analysis" interface.
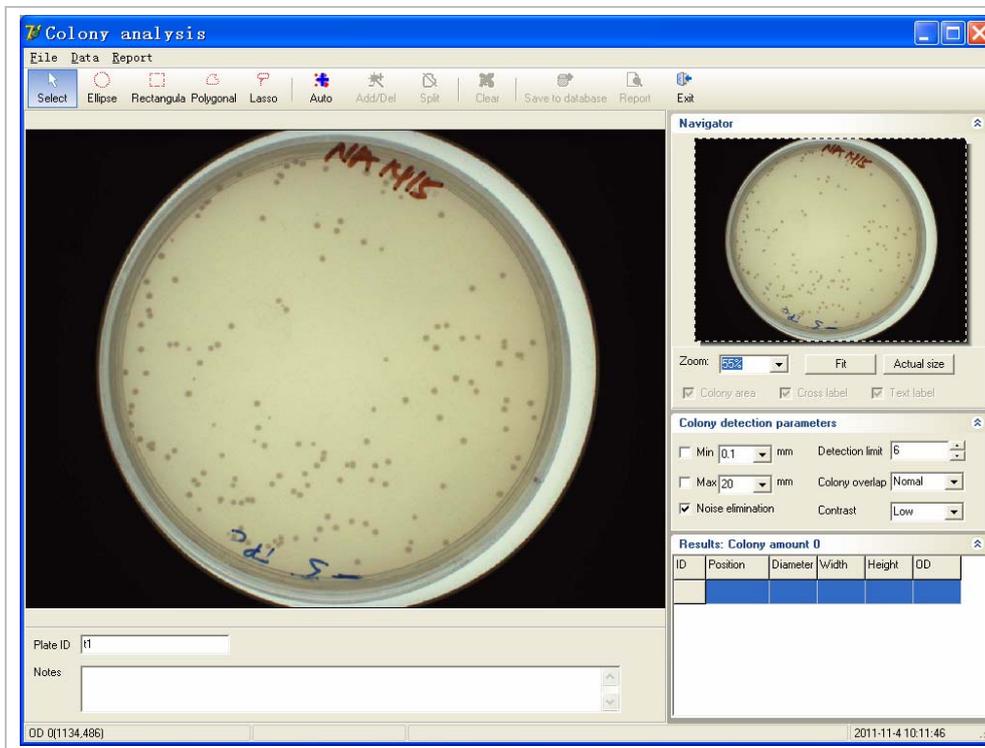
	The areas within the blue circle are the analyzing area to be analyzed which is recognized by software automatically. Zoom in or out the image, through "Zoom" option or by scrolling mouse wheel.

◆ Setting colony detection parameters

Set the "**colony detection parameters**" to eliminate too large or too small colonies.

Detection limit: System implied value is 6 and you can choose from 4-64 as you want.

Choose **Colony overlap** with **"Rare"** or **"Nomal"** or **"Many"** according to different requirements.
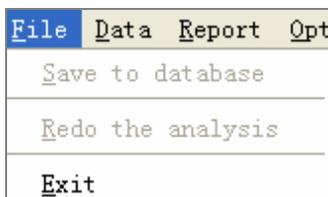**"Rare"**: very few clustered colonies
"Nomal": some clustered colonies
"Many": many clustered colonies.

◆ Menu bar
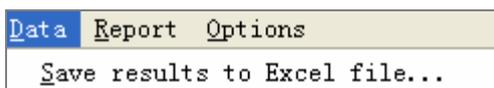Left click on the icon of "**File**" opens a menu bar with the following options

Save to database: save the image to database
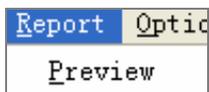**Redo the analysis:** Do the analysis again
Exit: Quit the software.

Left click on the icon of "**Data**" opens a menu bar with the following options

Save results to Excel file: Save the analysis data to excel file
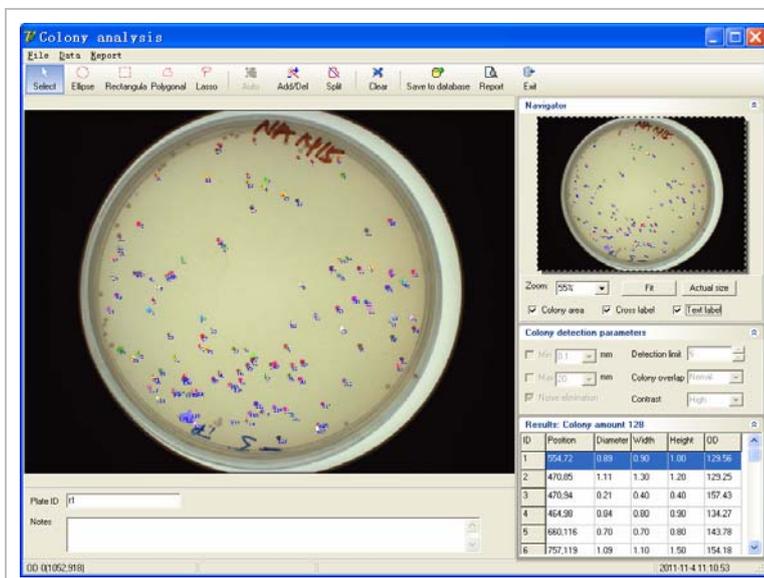
Left click on the icon of "**Report**" opens a menu bar with the following options

Preview: Preview the report.

◆ **Count:**

Click to count the colonies, the default analysis window for all colonies is as followed:

Zoom in or out the image, through "Zoom" option or by scrolling mouse wheel.

The counting results are displayed in the result window including colony amount, operation record and information for each colony.

If users think the counting result is not satisfied, users can add/delete any colony or divide up conglutinated colonies by manual operation using toolbars as followed:

◆ **Toolbars:**

(1) Selection tools:

Unselect

Rectangle selection: Drag out a rectangle from top left to bottom right while holding on the left mouse button.

Ellipse selection: Drag out an ellipse/circle from the starting dot(center of the circle).

Polygon selection: Drag out a polygon from one dot to another dot continuously. Double-click to finish.

Lasso selection: Drag out a lasso while holding on the lift mouse button.

(2) Colony counting tools:

Count colonies automatically:

Click this icon to count colonies automatically. All the colonies recognized will be marked with number.

You can also select one region by using selection tool to drag out a lasso while

holding on the lift mouse button. Then you can click to count the colonies in this region.

Add or Delete any Colony:

Click this icon, put the mouse on the colony you want to add or delete: left-click is to add, right-click is to delete.

After counting the colonies automatically, you can delete colonies in a particular area in batch.

Firstly, use the selection tool to choose one area for deleting colonies.

Secondly, click Clear to delete the colonies in the selected area.

Dividing up conglutinated colonies:

Conglutinated colonies are like this ;

Click , drawing a division by holding on the lift mouse button ;

Thus the two conglutinated colonies are divided .

(3) Save or Export Report:

After counting, users can save the report to the database by clicking on the icon. After saving, the report is related to the image. The information on the report includes Analysis title, Plate ID, size, user, image acquire time, image analysis time, image picture and colony amount.

Click on the icon to preview the report. The report window is as followed,
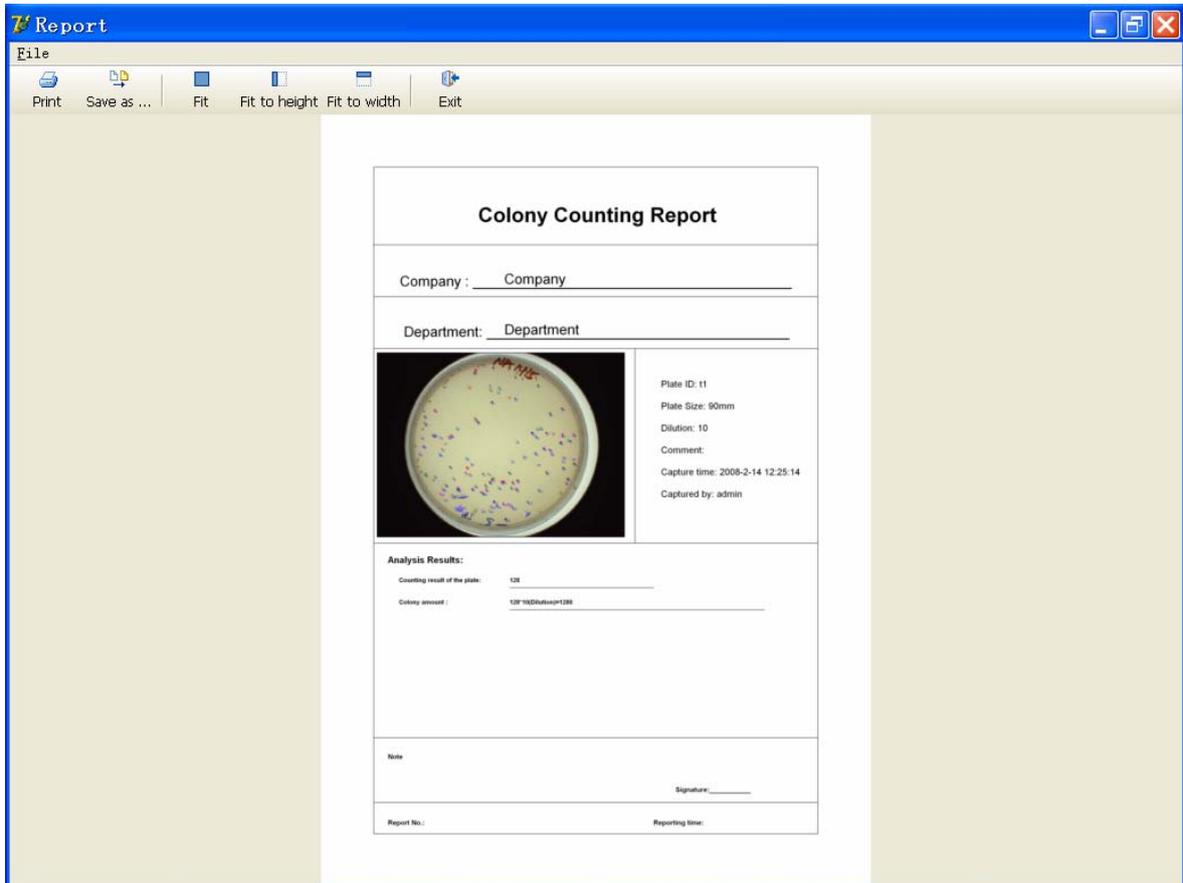
Click to print or to save the report anywhere on your computer.

(4) Exit

Click this icon to quit the Colony analysis software.

# Chapter 6   Inhibition Zone Measurement Software Tutorial

Introduction

BioCounter Zone Measurement is the attached software for Automatic colony counter. It includes three modules - Image Capture and Image Analysis as well as basic image database function for export, save, delete, search or print.

■ 6.1 Main Interface -- Image Database
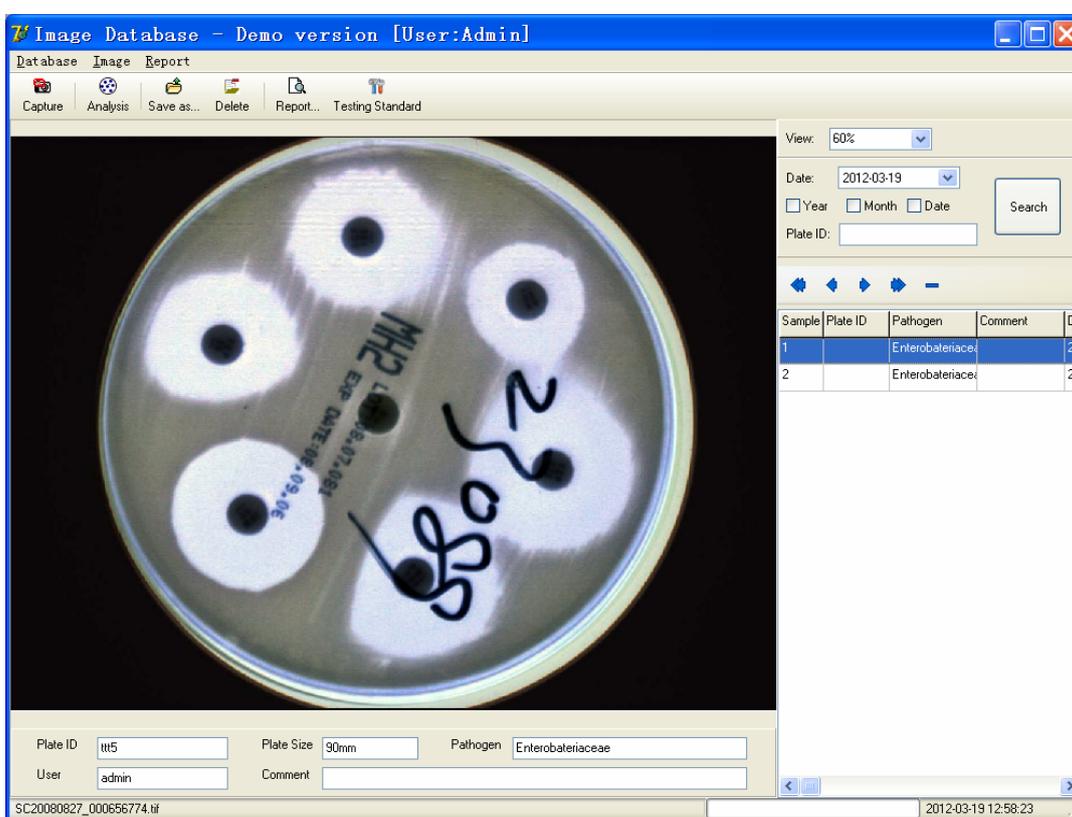
◆ Menu bar

Left click on the icon of "**Database**" opens a menu bar with the following options(Only administrators can access to this database management):
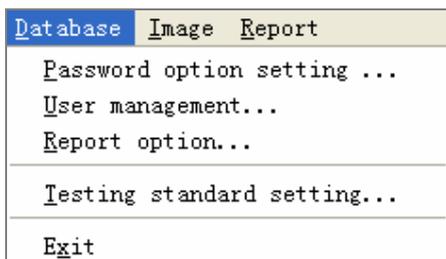
User Management: See in the last page.

Change password information: reset Minimum User ID length, Minimum Password length and Password Expiration Days.

Testing standard setting: Set the inhibition testing standards.

Report option: Fill in test company and department name

Exit: Quit the software.

Left click on the icon of "**Image**" opens a menu bar with the following options:

Capture: Enter Image Capture.

Analysis: Enter Image Analysis-inhibition zone measurement.

Save as: Save the image to anywhere of your computer.

Delete: Delete the image.

Left click on the icon of "**Report**" to preview the analysis report.

◆ Tool bar

The functions of icons on the toolbar are as followed:

Capture: Enter Image Capture interface.

Analysis: Enter Image Analysis interface.

Save as: Save the image to anywhere of your computer.
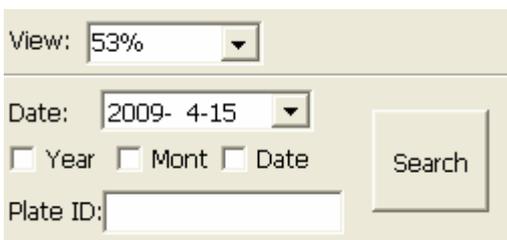
Delete: Delete the image.

Report: Preview before printing.

Testing Standard: Setting the inhibition testing standard.

◆ Date window

View: Zoom in or out the image of view.

Open a sample data: Users can search image through Date by ticking on Year, month and date, then click on Search button.

All sample data are displayed below. Users can click on any one to open it. Related information about this sample will be displayed on the plate information window.

■ 6.2 Image Capture

To enter the image capture interface, Click on the button 🔲 on the "Image Database" interface.
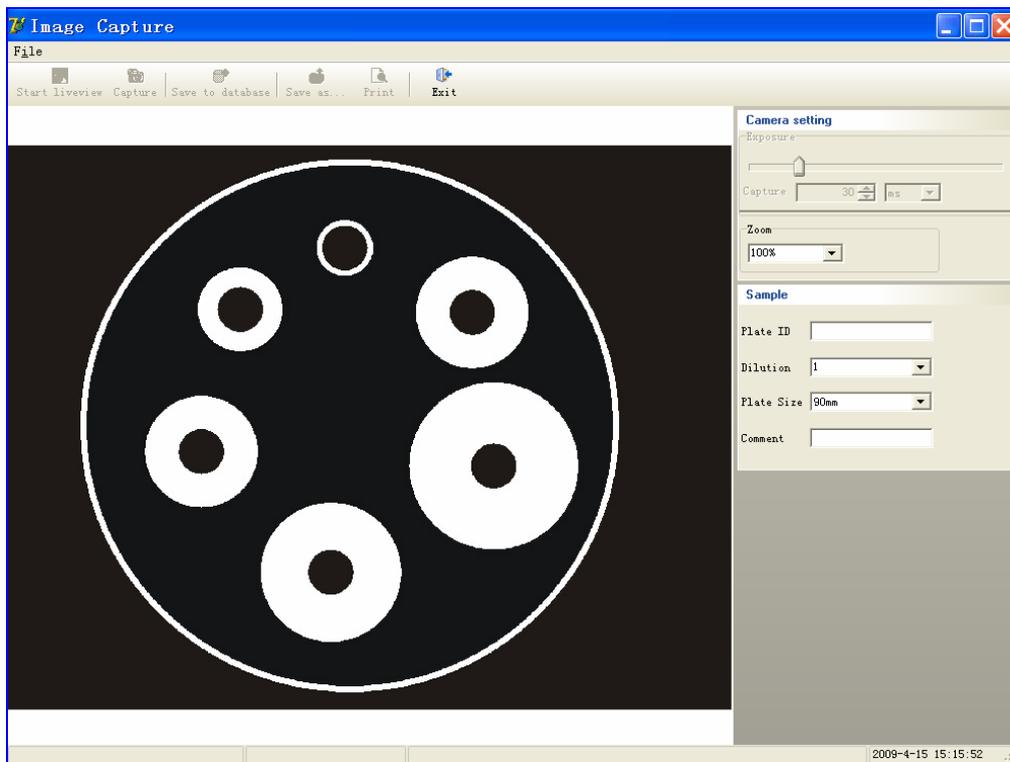
◆ Simple steps of image capture:

· Set the exposure time.
· Click 🔲 to preview
· Click 🔲 to capture.
· If you don't get satisfied image, redo setting and capturing until you get the optimal image.

Save the image to the database or anywhere on your computer

If you want to save the image to the database of the software in order to analyze it, the information of the Sample including **Plate ID, Pathogen and Plate Size** must be filled(Comment can be filled optionally):

◆ Menu bar

Left click on the icon of "File" opens a menu bar with the following options:

File
Start liveview
Capture image
Save to database
Save as...
Print
Exit

Start liveview: Preview the gel image.

Capture image: Capture the gel image.

Save to database: Save the gel image photo to the database。

Save as: Save the gel image photo to anywhere on your computer.

Print: Print the image photo

Exit: Close Image Capture and return to main interface "Image Database"

◆ Tool bar

To preview the gel image click on the icon

To capture the gel image click on the icon

To import an image to the database from your computer click

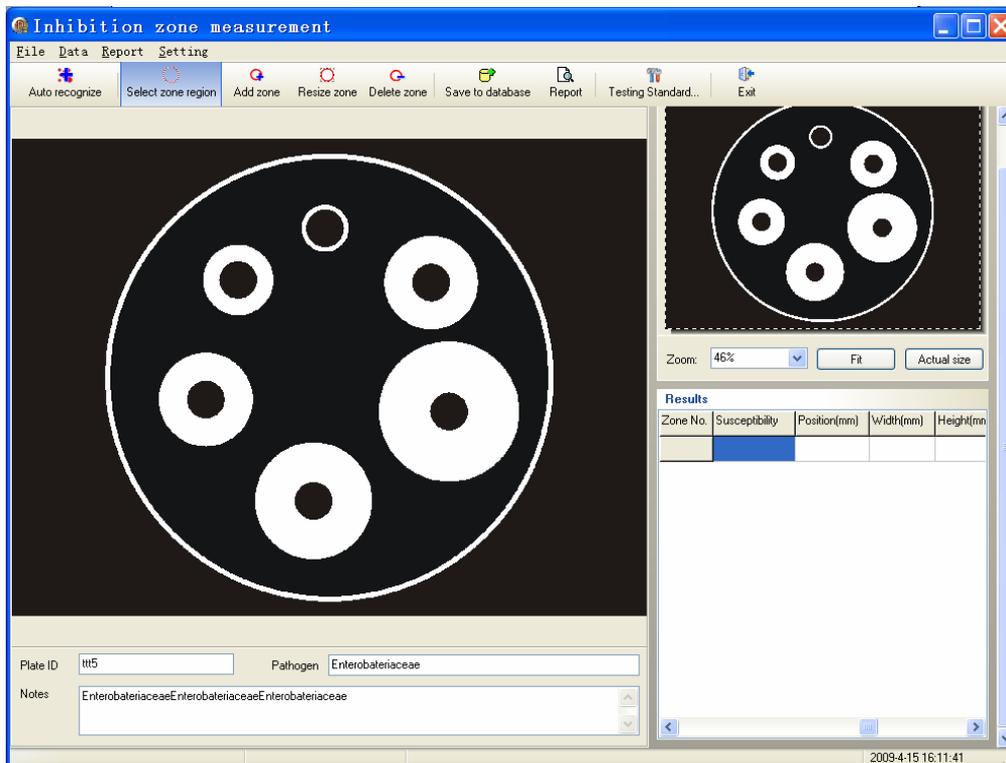To save the gel image to the database click the icon

To save the gel image to anywhere on your computer click the icon

To preview the printing image click on the icon
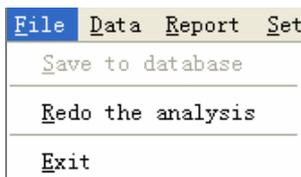
To exit the image capture software

■ 6.3 Image Analysis (Zone measurement)

To enter the image analysis interface, Click on the button on the "Image Database" interface..

◆ Menu bar

Left click on the icon of "**File**" opens a menu bar with the following options
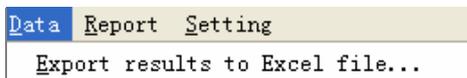

Save to database: save the image to database

Redo the analysis: Do the analysis again

Exit: Quit the software.

Left click on the icon of "**Data**" opens a menu bar with the following options
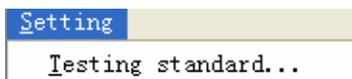

Save results to Excel file: Save the analysis data to excel file

Left click on the icon of "**Report**" opens a menu bar with the following options

Preview: Preview the report.

Left click on the icon of "**Options**" opens a menu bar with the following options

Settings: Set "Test standard"

◆ Tool bar:

**Recognize zone automatically:** Click [icon] to recognize zones automatically.

Analyze zones manually:

Click [icon] and Drag out an ellipse/circle from the starting dot(center of the circle). Then move the circle to a proper position.

Click [icon] to add the new zone selected. All the selected zones are marked with red circle and numbers.

Click [icon] and then click on the zone to resize it.

Click [icon] and then click on the zone to delete it.
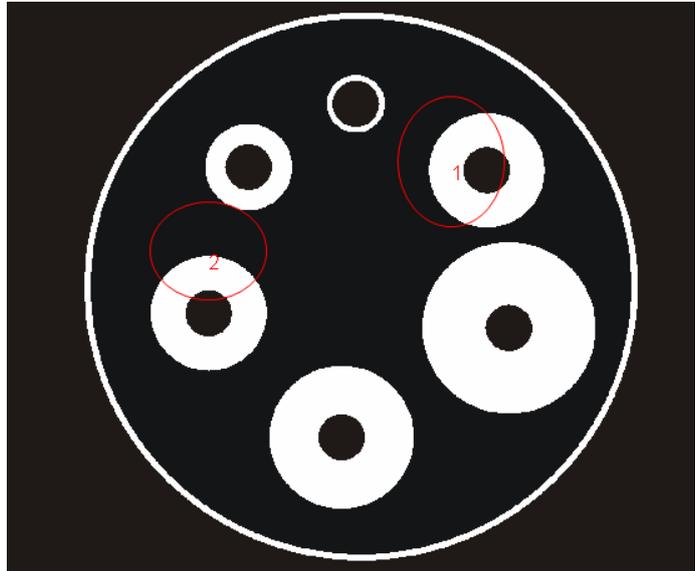
◆ Read the zone measurement results and analysis antimicrobial susceptibility:

After adding a new zone, the diameter, position, width and height of each zone are displayed in the Results window.

Double click on the Antimicrobial Agent blank of each zone to select the antimicrobial agent of each zone.

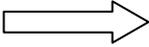Then the susceptibility of this zone is displayed in the results table.

If the Pathogen or Antimicrobial Agent of your inhibition zone is not listed on the **Antimicrobial Agent** menu which is the software featured, users can use [icon] to add a new **testing standard** to the software database manually.

Click [icon] will open a window like this: ⟹

Using the buttons [◄◄ ◄ ► ►►] to turn to the items you want to edit.

+ Add a new item of Pathogen or Antimicrobial Agent including susceptibility standard.

− Delete the item.

✓ Confirm and save the editing operation.

✗ Cancel the editing operation.
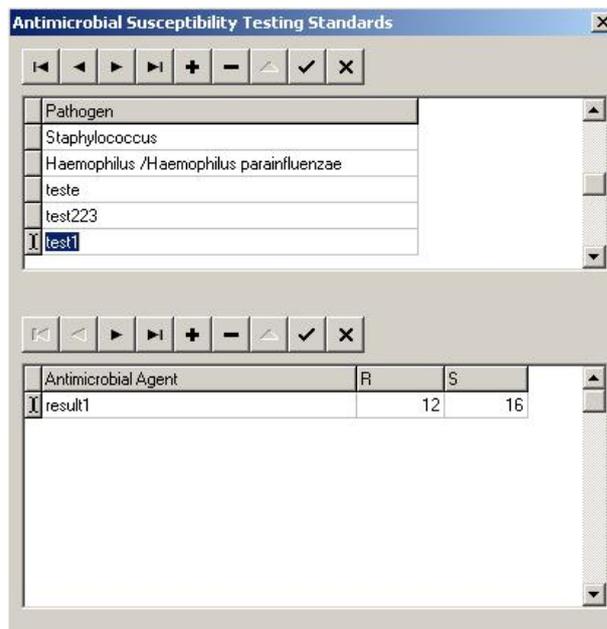
After adding the proper information of Pathogen and Antimicrobial Agent, close the testing standards setting window and return to inhibition zone measurement interface.

Choose the Antimicrobial Agent for your inhibition zone in the menu. And find the analysis result in the "Results" window.

◆ **Save or Export Report** Save to database   Report :

After analysis, users can save the report to the database by clicking on the icon. After saved, the report is related to the image. The information on the report includes Analysis title, Plate ID, size, user, image acquire time, image analysis time, image photo, analysis results and pathogen, antimicrobial agent as well as testing standards.

Click on the icon to preview the report. The report window is as followed,
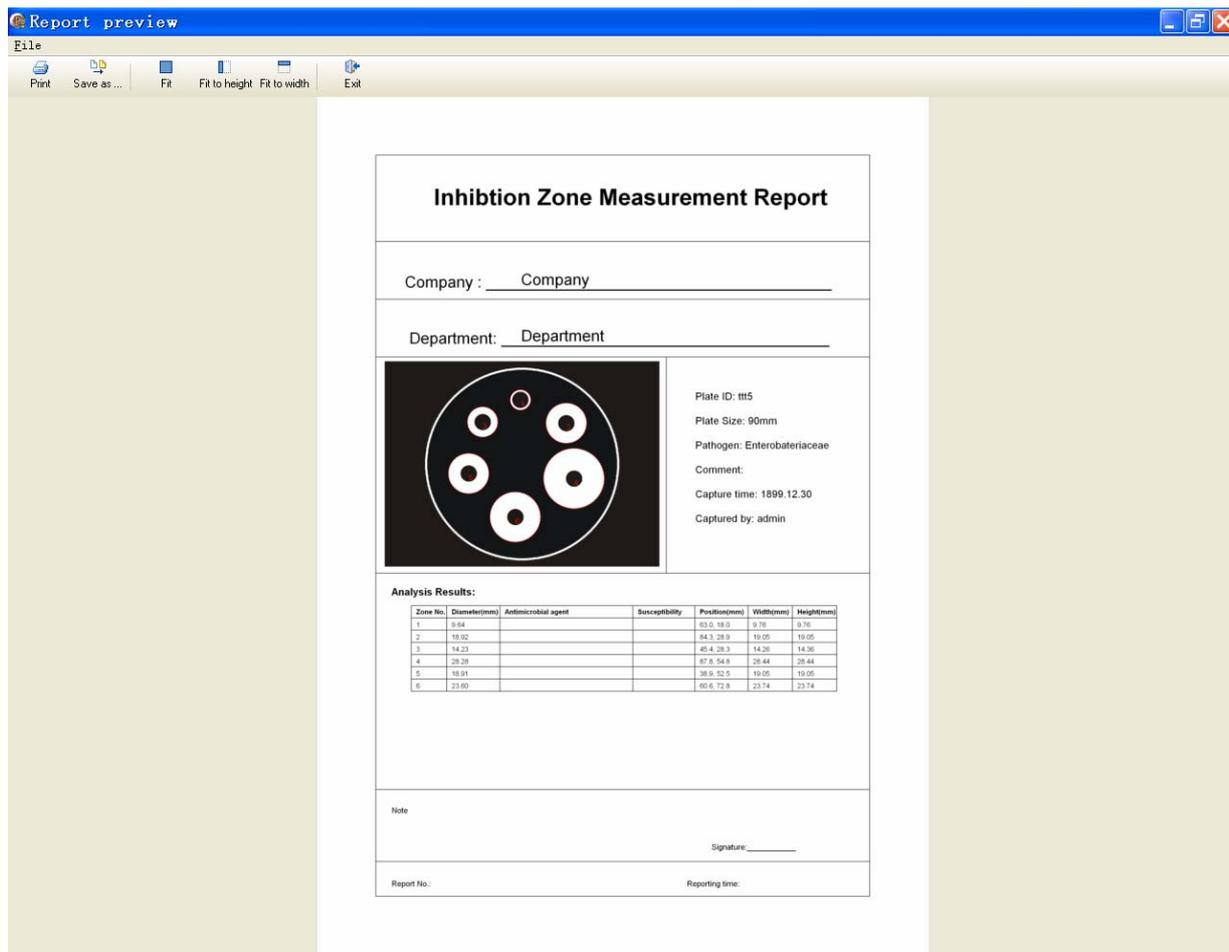
Click to print or to save the report anywhere on your computer.

Chapter 7   Care and maintenance

Cleaning

Caution!   Always turn off the system and disconnect the plug from the mains power before cleaning.
• Clean the filter surface after each use.
• Use 70% alcohol on a soft cloth or sponge to clean the unit exterior.
• Never use abrasive cleaners, solvents, or chloroform on any part.
• Don't put the unit in a dusty or moist room.

Notice

• Keep the room where the unit is located clean and dry.
• Turn off the power after each use to extend the life of the unit.

Troubleshooting

Unit does not operate when power is turned on
• Check that the power cord is plugged into a working electrical outlet.
• Check that the USB cable is connected to the computer right.
• Close the software and turn off the unit. Then turn on the unit and restart the software.
The camera can't be controlled by the software
• Check that the camera driver and circuit drive are installed correctly.
• Close the software and restart it.
Contact us in case the problems can not be settled.

Replacing fuses

Fuses protect equipment by disconnecting loads too large for the instrument's circuit design. For continued protection, **only replace fuses with the specified voltage and current ratings.** The fuse holder tray located below the main power cord receptacle.
1
Caution! Set the power switch to off and detach the power cord before replacing fuses.
2
Insert a small flat-blade screwdriver behind the tab of the fuse holder tray and pull out.
3
Pull the fuse out of its holder and inspect. If the fuse element is burned or broken, replace the fuse with an identical type. If the fuse appears to be intact, check it with an ohmmeter.
4
Insert a good fuse into the holder and then insert this assembly back into the unit. Seat the fuse holder tray by pushing the cover flush with the main power cord receptacle.