sisco

Microplate Reader

User Manual

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Section 1 Important Safety Instruction

Dangerous or wrong using method may cause electric injuries, burns, fire or other disaster.
Basic safety protection including all the followings should be always obeyed.
When the instruments are used near children, disabled people or samples, rigorous monitoring should be performed.

Read the followings before using the instrument

1) Check correspondence of voltage equipment and supply voltage.
2) Connect with network source: Put the instrument plug in the socket which has a grounded power cord.
3) Take the plug out after finishing operating the instrument.
4) You mustn't put the instrument in or near liquid. If the instrument is wet, please take the plug out before touch it.
5) Please do not leave the instrument alone when it is working.
6) The instrument can only be used for tests according to the manual.
7) Do not use spare parts which are not provided or suggested by the manufacturer.
8) If the instrument is in abnormal working position or damaged, do not operate it.
9) Do not make instrument and lines touch surfaces which are too hot.
10) Do not block vents. Make vents away from soft cloth, fur, lint etc.
11) Do not put anything on the instrument.
12) Unless special requirements of the manual, you can not put anything into opening, pipe or seam of the instrument.
13) Do not use instrument in the place where exits aerosol, droplet or oxygen is controlled.
14) Do not use instrument outdoors.
15) Keep far away from electromagnetic interference sources.
16) Avoid direct exposure of high light.
17) When controlling the PC, do not use the cable to connect the instrument to the computer or disconnect the instrument from the computer when the instrument and the computer are not turned off.

Section 2 Instrument Introduction

2.1 Application Scope

SISCO SISCO Microplate Reader is applied in clinical optical method for enzyme-linked immunosorbent assay.

2.2 Main Performance

Wavelength accuracy and transmission character of the filters should meet the following requirements:

Item	Indicator
Indication error of wavelength（nm）	±1.0
Half width（nm）	≤8
Peak transmittance（%）	≥35

－Measured value stability：±0.003A in 10 minutes

－Absorbance indication error (Accuracy)：±0.008A

－Absorbance repeatability: ≤0.2%

－Sensibility：≥0.01（L/mg）

－Channel error: ≤0.01A

2.3 Main Function

－Large screen interface, touch screen and touch pen input mode make it convenient for users to input information.

－More than 500 programmable laboratory tests.

－Four measurement method: Single wavelength, Double wavelength, two point method, kinetic

－Several quantitative and qualitative methods: ABS, Cut-Off，Single-point calibration, broken line regression, linear regression, exponential regression, logarithm regression, double logarithm regression, log-logit, power regression, four parameter regression.

－96-well visual plate. Blank hole, contrast hole, sample hole, standard hole and quality control hole are adjustable.

－Conduct 24 different tests in one plate at the same time.

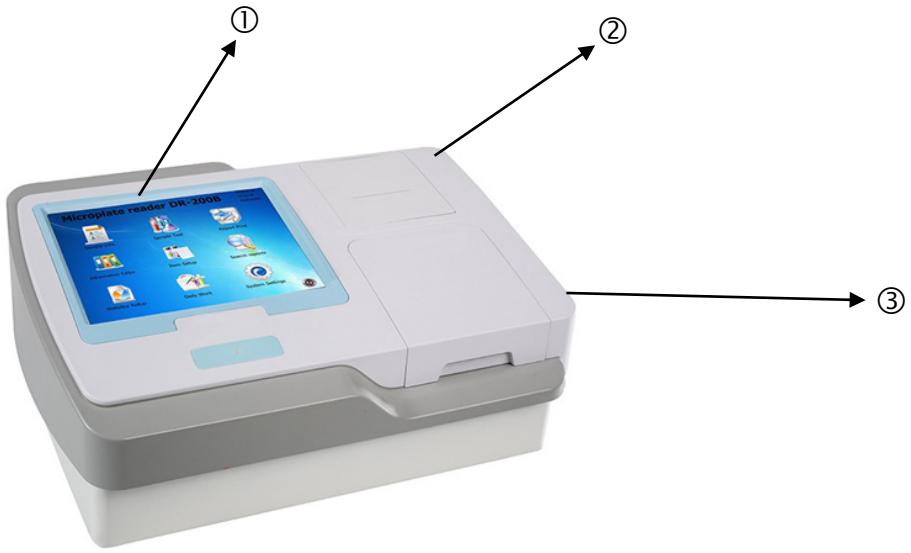
－Shaking and mixing before the test. Fast and accurate testing with 8 channels (≤10S/ Plate) .

－Flexible synthesis report output, supporting internal thermal printer and printer with USB interface

2.4 Main Structure and Components

The instrument is made up of switch power supply, optical path system, inner computer system and sample transmission system.

Front view:

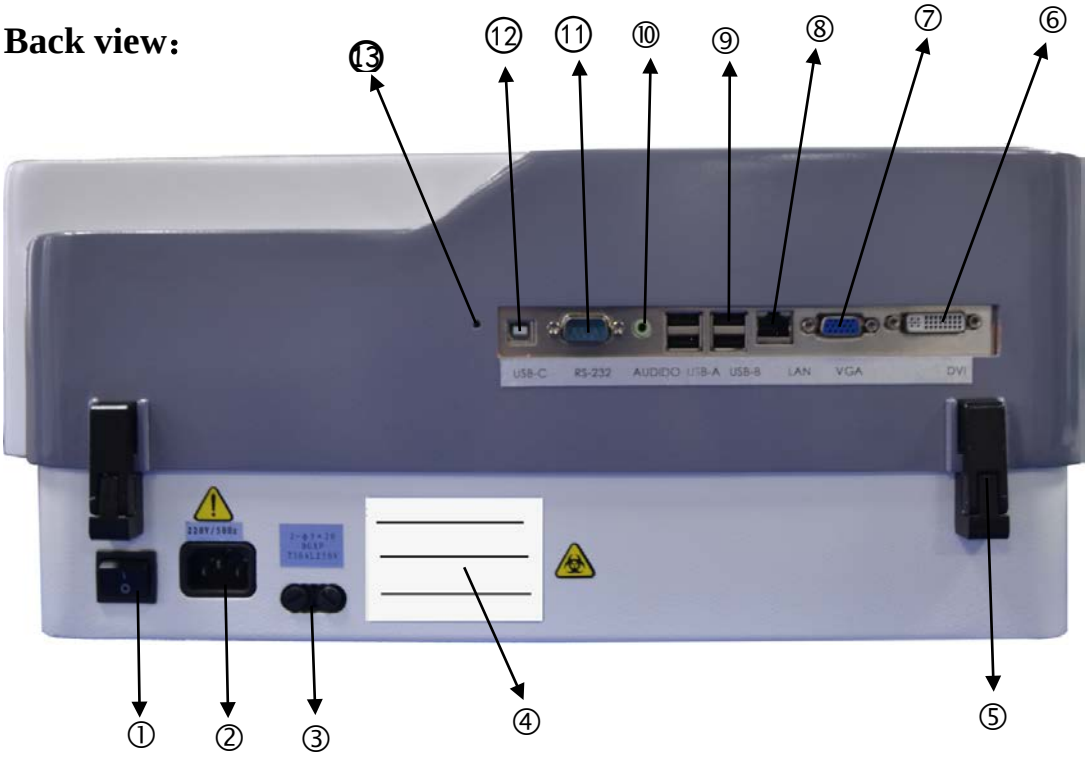


① Tablet touch screen: Show software interface. Users can press the screen with fingers for variable operation.

② Internal thermal printer: Plastic cover plate. Paper delivery when using internal thermal printer. You can open the cover plate to replace paper.

③ SISCO plate cover plate: Plastic cover plate. Prevent dust from polluting inner space of SISCO plate and instrument.

Back view:



① Power disconnecting switch: Turn on or turn off the power supply.
② Power supply socket: Connect AC power line.
③ Fuses: If no power after turning on power supply switch, check the fuses.
④ Nameplate: Show instrument model, specification etc.
⑤ Hinges: Connect bottom shell and top cover.
⑥ DVI interface: digital signal interface. Connect it with computer to show operation.
⑦ VGA interface: Analog signal interface. Connect it with computer to show operation.
⑧ LAN interface： Network interface.
⑨ USB -A/USB-B interface: It is used for connecting printer, USB flash disk, etc.
⑩ Audio interface: Audio output.
⑪ RS-232 interface: RS-232 serial port is used for computer software online operation.
⑫ USB-C interface: It is used for computer software online operation.
⑬ Reset: When instrument XP system appear problems, restart the system.

2.5 Specification and Technical Parameter

Weight:	11kg
Dimension:	460mm（L）×350mm（W）×197mm（H）
Power supply:	AC 100V~240V, 50/60 Hz
Fuses:	2-φ5×20 BGXP T 10 AL 250V
Working environment:	Environment temperature: +5 ℃+40 ℃;Relative humidity: 15%～80%; Atmosphere range: 70kPa～106kPa; Power supply: AC 100V~240V, 50/60 Hz; Transient over-voltage is classified as device class (over-voltage) class-Ⅱ; Rating pollution level is classified as class-Ⅱ.
Storage temperature:	-10 ℃+55 ℃
Light source:	Quartz halogen lamp OSRAM64607，8V/50W
Wavelength:	405nm，450nm，492nm，630nm，add at most 4 filters with wavelength between 400 nm and 850 nm.
Measuring range:	0.000～4.000A
Reading speed:	Single Wavelength ≤ 3s，Double Wavelength ≤ 6s
Warm-up time:	10 minutes
Computer system:	X86 core CPU，win7 operating system
Programming items:	More than 500
Communication interface:	DVI,VGA,NETWORK INTERFACE,USB,AUDIO INTERFACE, RS-232
Display:	10.4 inch color LED display, resolution 1024*600
Input mode:	Touch screen
Memory Capability:	Twenty million test data

Section 3 Instrument Installation

3.1 Instrument Packaging and unpacking

Unpack the instrument package, and take out the instrument. Check items in the package according to PACKING LIST: main instrument, power line, fuses, instruction manual, packing list, verify report and tablet PC power adapter.

3.2 Environmental Requirements

Choose flat worktable which is enough to place the instrument and without direct sunlight.

Instrument working environment:

Temperature: +5 ℃+40 ℃

Relative humidity: 15%～80%

Atmosphere range: 70kPa～106kPa

Power supply: AC 100V~240V, 50/60 Hz

Transient over-voltage is classified as device class (over-voltage) class-Ⅱ, Rating pollution level is classified as class-Ⅱ.

Good ventilation and no corrosive substances.

To insure normal operation of the instrument, you mustn't put instrument in the following places:

temperature polarization, extremely hot or cold, with a lot of dust, near electromagnetic equipment.

3.3 Transportation and Storage Conditions

Transportation condition: Transportation should meet the requirements of the instrument and package indication. Customers should check whether the package and instrument is OK when receiving goods. If any problem, customers need turn on the instrument to see if it works.
Storage condition: The instrument should be stored in a room with temperature -10 ℃+55 ℃, relative humidity less than 93%, good ventilation and no corrosive substances.

3.4 Service Life and guarantee

Service life: 8～10 years
Service guarantee: 1 year warranty and life-long maintenance.

3.5 Power Supply Requirements

Power supply voltage: AC 100V~240V, 50/60 Hz
Input power: <180VA.
AC power should be good earthing .(Protective earthing port voltage＜5V .
All protective earthing ports are unified with sign ⏚.
AC power must be stable.

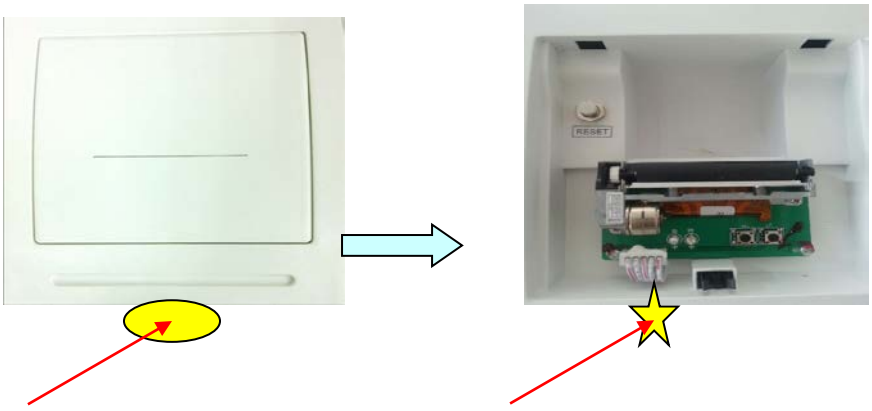
Note: **The AC power supply must be well grounded (protective grounding voltage＜5V)Internal protective grounding of the machine unified using with logo ⏚.The AC power supply must be stable, don't share power with high-power electrical appliances. When unplug the power line,, must grasp the plug itself, rather than the power line. If discover there is smoke, strange smell or strange sound, immediately shut off the power and contact the seller.**

3.6 Start installing

－－Connect instrument to power source；
－－Put one port of power line in power socket of the instrument ；
－－Put the other port of power line in AC power socket.

3.7 Print paper installation

3.7.1 Press the printer cover plate, then remove the printer cover (figure 1).
3.7.2 Pull out of the printer roller and place the printer paper thermal surface down to the head direction of printer . Press the printer roller (figure 2-3).
3.7. 3 Put the printer paper out of printer cover plate,cover the plate (figure 4).



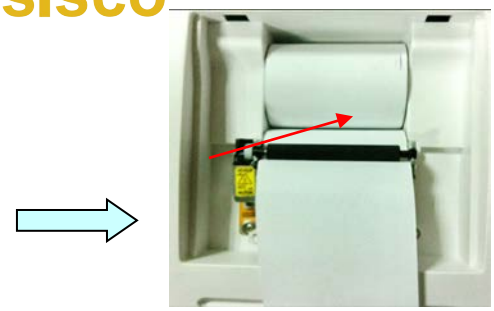


Figure 3

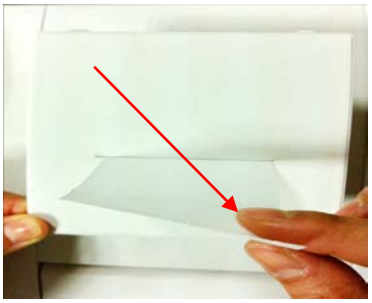


Figure 4

Note: 1. When pull the printer roller, pull in the middle.

2. When installing the printer roller, first install the gear side.

3.8 Notice and direction of sample collection and handling

The most common sample of inspection is blood, which includes serum, plasma and whole blood. Sometimes saliva and urine are also tested as sample. Sample collection should obey clinical blooding technology standard in principle, unless special requirements in the kit instruction.

Sample collection：

- Serum sample collection: Draw a certain amount of venous blood with single-use syringe or vacuum blood tube, and place it at room temperature for 1-2 hours. Centrifuge with speed after 3000r/minmore than 6 min after tarombokinesis and blood clot retraction, and suck serum in reserve. You should take care when collecting samples. It is proposed to use evacuated blood tubes or butterfly needles tocollect samples, avoiding direct contact with blood.

Sample storage：

- Serum or plasma sample which are used for antibody detection should be stored in temperature below -20 ℃.Samples which will be tested during 1 week can be stored in temperature of 2～8 ℃.Plasma and blood cell samples for antigen and nuclein detection should be cryopreserved in temperature below -20 ℃.

Application of sample and incubation：

- Operators should use graduated transferpettors.
- When incubating, operators should check temperature and make accurate timing before put plate in incubator or water-bath.

Washing plates：

- It is best to use microplate washer to wash SISCO plates, also set soak time and washing times according to reagent instruction.
- When hand washing, try to avoid cross contamination.

Color development：

- Color developing reagent should be taken out from refrigerator 10 minutes before using. When adding color developing reagent, keep dropping bottle straight down and holding pressure uniform, besides dripping speed not too fast. Do not mix reagent A and B before adding, you should add A and B in turn.

Reading plates：

- After color development, operators should use microplate reader to read the SISCO plates during required time of the instructions'.
- After reading plates, operators should process sample plates as pollutant.

Waste processing

- Regard kit as infectious substance and process it according to laboratory regulation about infectious disease. (Refer to reagent instruction's requirements).

Section 4 Input Tool and Operation

4.1 Touch Screen

SISCO SISCO Microplate Reader uses touch screen as basic input device. The user operates within the scope of the screen. Basic operations are divided into 3 kinds:

(1) Click: Touch the screen with a finger then leave;

(2) Double Click: click twice;

(3) Right Click: continue to touch the screen with fingers,when appear a circle, right-click menu.

Warning:

SISCO SISCO Microplate Reader use touch screen: do not use sharp or hardness of objects (such as metal, glass, nails, etc.) touch screen surface; Part of touch screen is glass, do not exert great impact on touch screen, so as to avoid damage.

When use pen to operate,the arrow on the screen will move.If the deviation between the location you click on and the arrow position is bigger,you need to calibrate the touch screen.

Specific steps:

1.Back to WindowsXP desktop and click "eGalaxTouch" icon to make touch screen calibration.

2.Follow the onscreen prompts to calibrate.

Note: **SISCO SISCO Microplate Reader can be equipped with an external mouse, keyboard.**

4.2 Screen Keyboard

When “Screen Keyboard” valid under “System Setup -Startup Parameters-Use the screen keyboard”, the display interface  will appear on the screen.Then click the display interface to show “Keyboard” button, and software locates screen keyboard.

The system provides 3 choices:

(1)Caps Lock[a]

[a] is for lower case, and [A] for upper case.

(2)Space Bar

(3)Enter

4.3 Select and operate

1. Selection of operation records: In history list,  means current selected record.

2. Operation of records

New: Add an empty record after the ending of current record.

Delete: Delete current selected record.

Save:Save all previous operations, including adding,deletion and modifying operations.

Return:Return to main interface.

Notes: Be sure to click “Save” button after adding,deletion and modifying operations.

Section 5 Starting Up

5.1 Starting up process

Turn on the power switch on the back of the instrument; After the system is started, the system enters into the initialization process then display the animation.

Note: **Please do not continuous switch on the power supply for many times,each time interval should be more than 30 seconds.**

SISCO Microplate Reader boot initialization process need to complete the following two parts:

5.1.1 System self-check

1) System self-check checks and reads the parameter Settings;

2) System self-check checks data record and reading data;

3) System self-check checks the control port and handshake communication with the data acquisition part;

4) System self-check checks the parts of instruments mechanical operation is normal.

5) System self-check checks instruments’ optical performance is in line with the use requirement.

6) System self-check checks inspection instrument online port is normal.

If there is an error occurred during the process of initialization, the system will pop-up window report error information. The user can refer to "Simple Troubleshooting" in the Chapter "Instrument Maintenance" of this manual for inspection. If you can't solve, please contact the seller.

5.1.2 Initial system interface

Loading system each functional component.

5.2 Main Interface

After starting up, enter the system main interface.

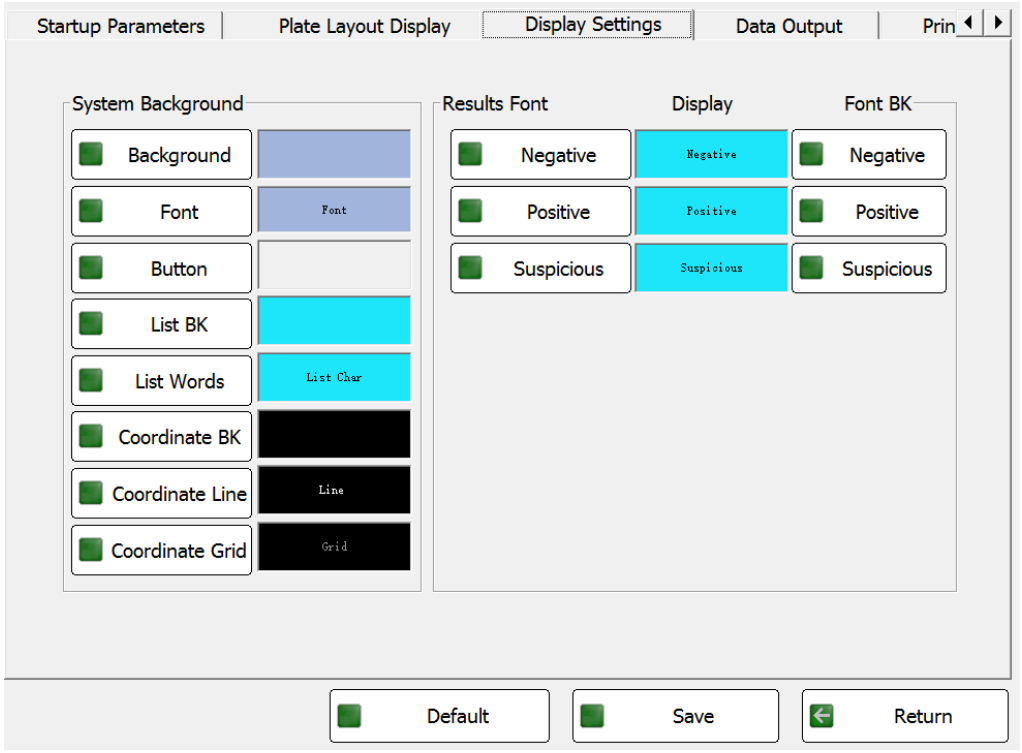
The main menu is the entrance of SISCO Microplate Reader all user function,users click on the icon in the window,then can perform the specific operation.

Main interface including company logo, three common function modules: sample information, sample test, report print; Six major functional modules: information edit, item setup,report search, statistics rollup, daily work, system setup.A shutdown button; and time display area at the upper right corner

Section 6 System Setup

Click the "System Setup" button in the main interface, enter the system management module.

This function modules includes startup parameters, plate layout display, display settings , data output, and print set five modules.



6.1 Startup Parameters

Click "Startup Parameters" button and enter start parameters setting window:

● Startup Settings: Users can set according to their habits.

Start Automatically when on boot.

Quick Detection when on boot.

Computer control.

Close the software,close the system

● Filter position: Standard filters are 630,492,450,405nm.

Can be customized equipped with 4 to 6 filters according to the instrument configuration and customer's requirements

● Plate Moving settings: Customers can set sisco plate layout direction, moving mode,shaking speed and shaking time according to their needs.

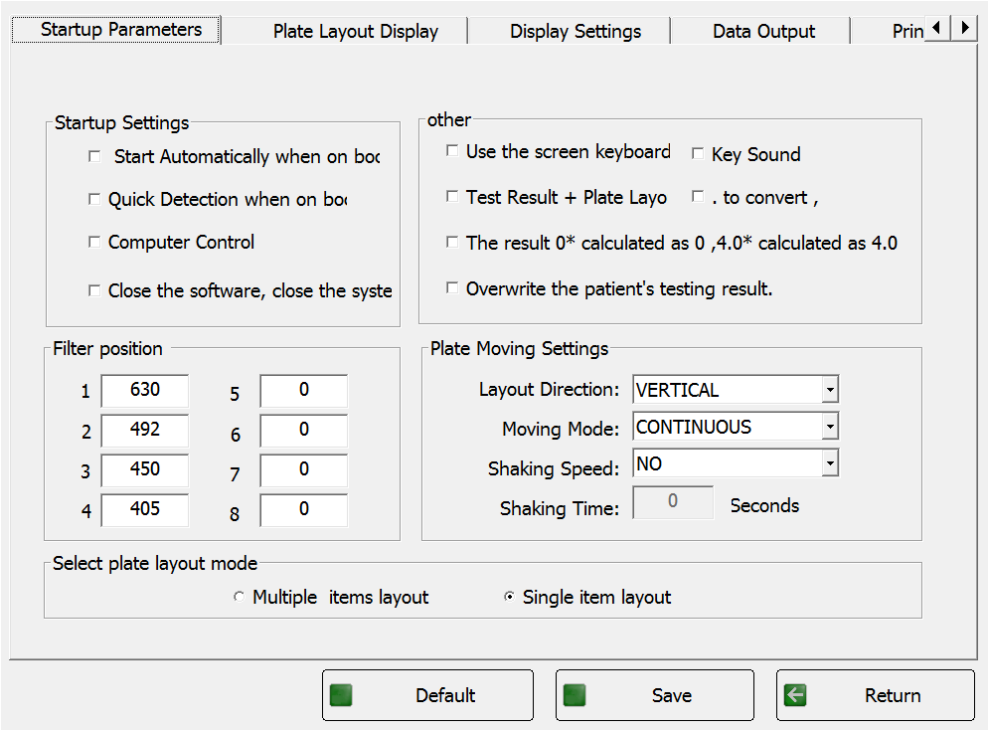
● Other: Some optional settings for customers.

● Select the plate layout mode: Choose "Multiple items layout" or "Single item layout" for items layout under "Sample test".

Click "Save" button to save current settings.

Click "Return" button to back to previous interface.

Click "Default" button to restore factory settings.



6.2 Plate Layout Display

● (Normal Mode) Multiple items layout

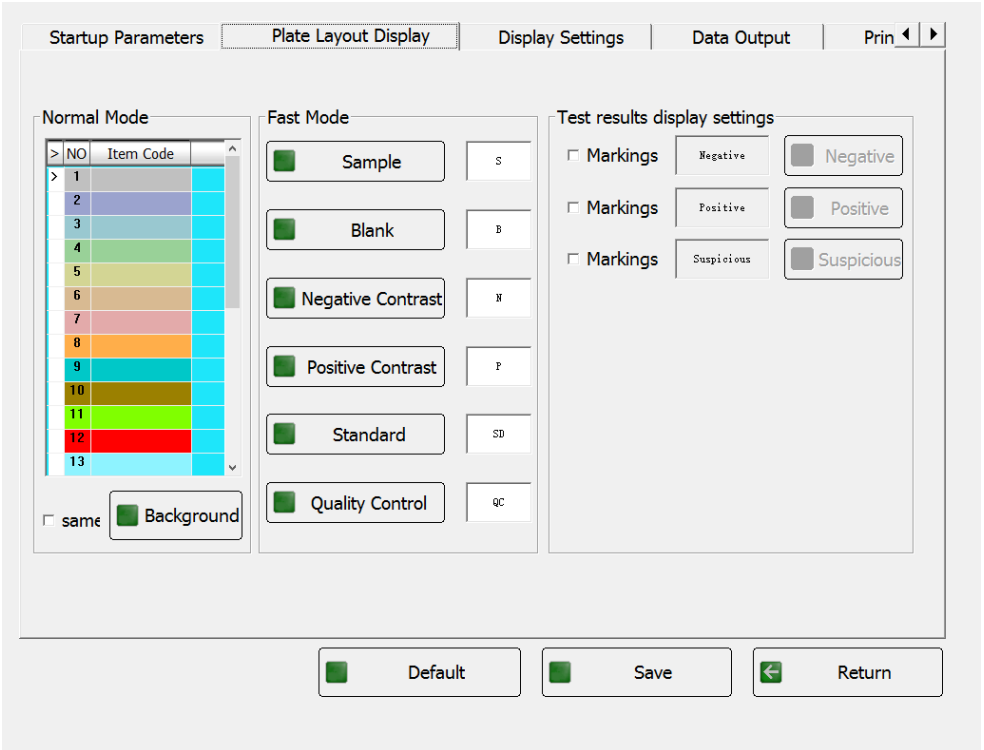
You can click record(24 records) to choose different background color for each item number.

● (Fast Mode) Single item layout

Single plate and fast plate not to color area distribution board, but you can use the color area distribution boards, click cloth board records, choose a color, you can preview effect.

● Record of query

Query report used here refers to set the background color and font color difference between different records



6.3 Display Settings

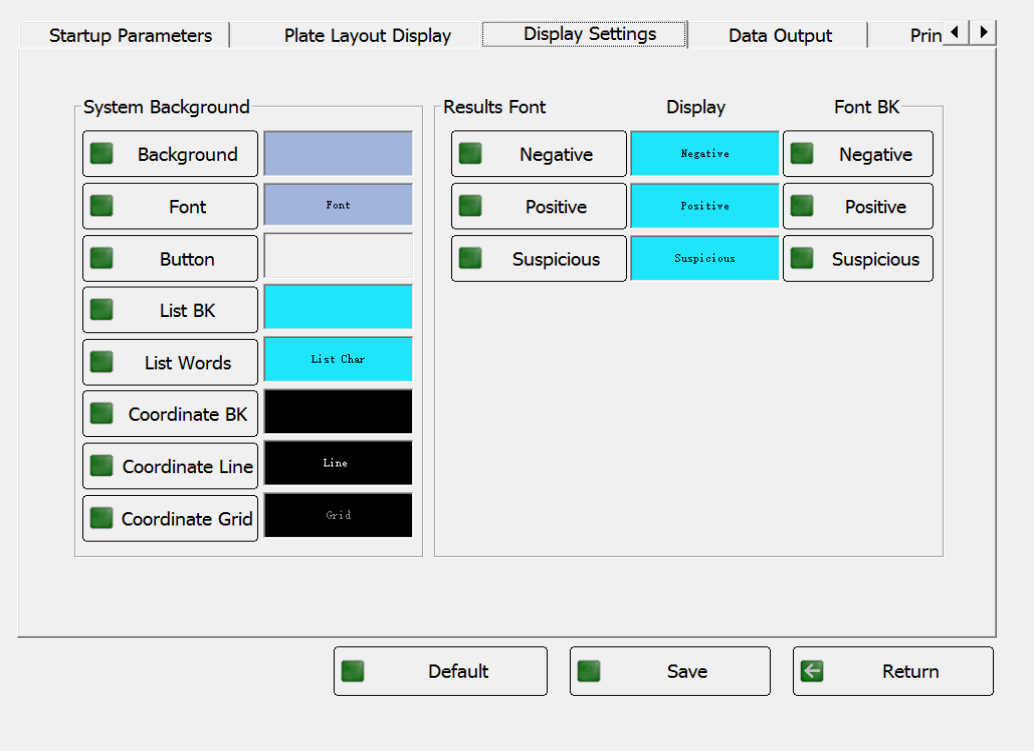
Click the "Display Settings" button and enter the display settings window.

● System Background

You can set background , font list, buttons, backgrounds, lists, text, coordinates, background, the coordinates of point, line, the color of the grid display.

● System display Settings

Be out of tune the test results show that the interface, such as the need to a certain type of results for different color, you can choose corresponding record, select the background color, you can preview the effect.



6.4 Data Output

6.4.1 Database Path

Path settings are divided into database path and backup path.

The system default paths are C:\ FoundStation \ and C:\ FoundStation \backup\.

Customers can change according to their needs.

6.4.2 Data Output

● Service status :two options "start"and "stop"

When setting start, test data saved, while the output to the specified path and the specified file.

When setting stop, test data saved, not output to the specified path and the specified file.

● Output path: the right side of the "Set up" button to set the default path is C:\ FoundStation \

● File Type: output file to a text file (.TXT) and EXCEL files (.XLS) two types of files to choose from.

● File name: the "Custom", "Test plate number", "test date" ("test time") three kinds of file names to choose from. Generally have the following two cases

①Output to a text file

1. Custom: When you can customize the file name, the default file name Result (Result.txt) Under this definition, each test is completed, "Save" the test data, the software automatically clear the previous data, the new data will be saved to file.

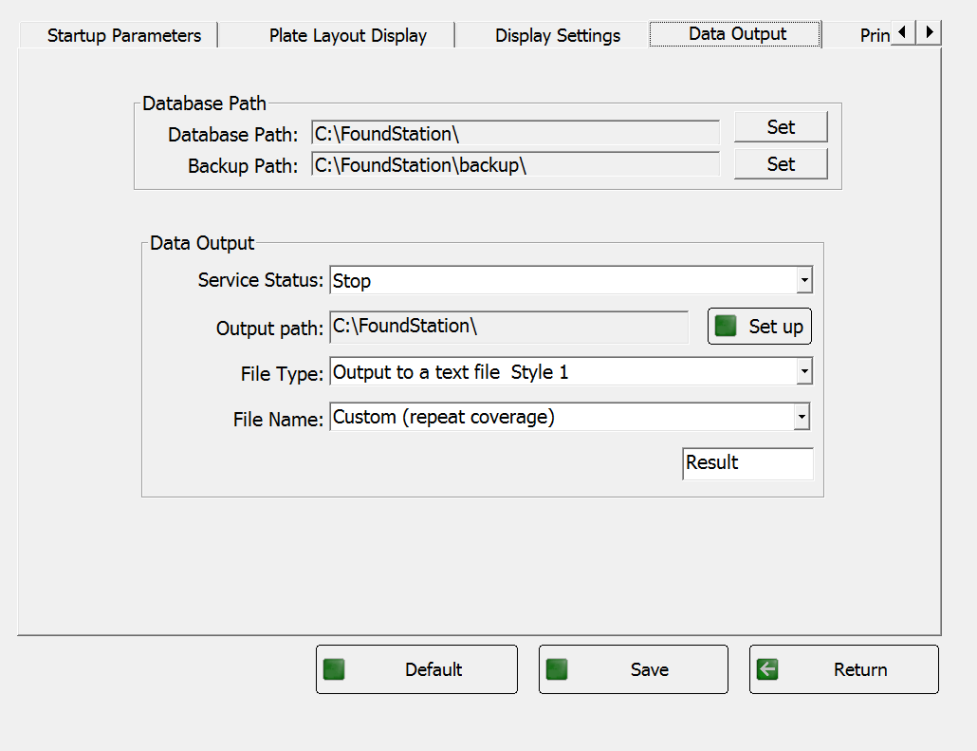
2. Test plate number: Save the data file named test plate number. When this is defined, each test is completed, "Save" the test data, the software automatically clears the data file of the same name, each plate is a test data file is saved. Such as "090611001.txt", "090611002.txt" etc., when too many files need to manually removed.
3. Test time: to save the data file named test test date + time. When this is defined, each test is completed, "Save" the test data, the software automatically clears the data file of the same name, each plate is a test data file is saved. Such as "20090611 152200.txt", "20090611 152804.txt" etc., when too many files need to manually removed.

Data storage format text file is as follows:
Test Test Date 2009-06-11 Time 15:22:00 test plate number 090 611 010
Project code, project name, sample number, number of holes, absorbance values quantitative value, the value of the project COUTOFF, qualitative results
CAP, chloramphenicol, 1, A1,0.000,0,0.105, negative
CAP, chloramphenicol, 2, B1,0.000,0,0.105, negative
CAP, chloramphenicol, 3, C1,0.000,0,0.105, negative
The first line：record basic information,like testing date,testing time, testing number plate
The second line：Test data definition record
The third line：test record from the third line to the final,each line represent one record.
Segmentation data: A, (comma) is split
Followed by project code, project name, sample number (sample number or NC, PC, SD, B), hole number, absorbance values quantitative value, the value of the project COUTOFF, qualitative results (NC, PC, SD, B)
①②Output to Excel
1. Custom: You can customize the file name, the default file name Result (Result.xls) deposited under this definition, there are two ways to select "temporary files" and "Test Plate Number SHEET name.":
Temporary Files: When saving data, the software automatically deleted before the document is saved each time new data to the new file.
Test Board Number SHEET Name: Each time you save the data, the software does not delete the data a single day the same day, the test plate number to the file name in the table.

2. Test Date: save data file named test date. Under this definition, there are two ways to store select "temporary files" and "Test Plate Number SHEET Name":
Temporary Files: When saving data, the software automatically delete every file of the same name, the new data will be saved to a new file.
Test Board Number SHEET name: the test date for the file name, the test plate number for the table name. Daily test data to
A file, the file is too large to be hand removed.

3. Test plate number: Save the data file named test plate number. When this is defined, each test is completed, "Save" the test data, soft Automatic purge data file of the same name, each plate a test data file is saved. Such as "090611001.xls","090611002.xls" etc., when too many files need to manually removed.
The format data storage of EXCEL as follows:The first line:the content of data storage defines A as item number,B as item name,C as sample number,D as hole number,E as Absorbance value,F as quantitative value，G as COUTOFF value，H as quantitative results.
The second line:the test record is from the second line to the end.each line represents one test record.

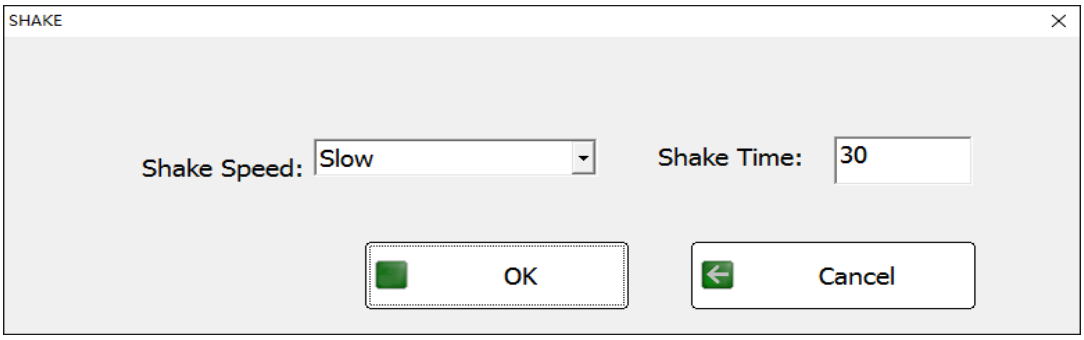
Click“saving”to save current setting,click “return”to return to the interface of the next higher level



Section 7 Daily Work

7.1 Shaking Plate & Blending

Enter “Daily Work” and click “Shaking Plate & Blending”.

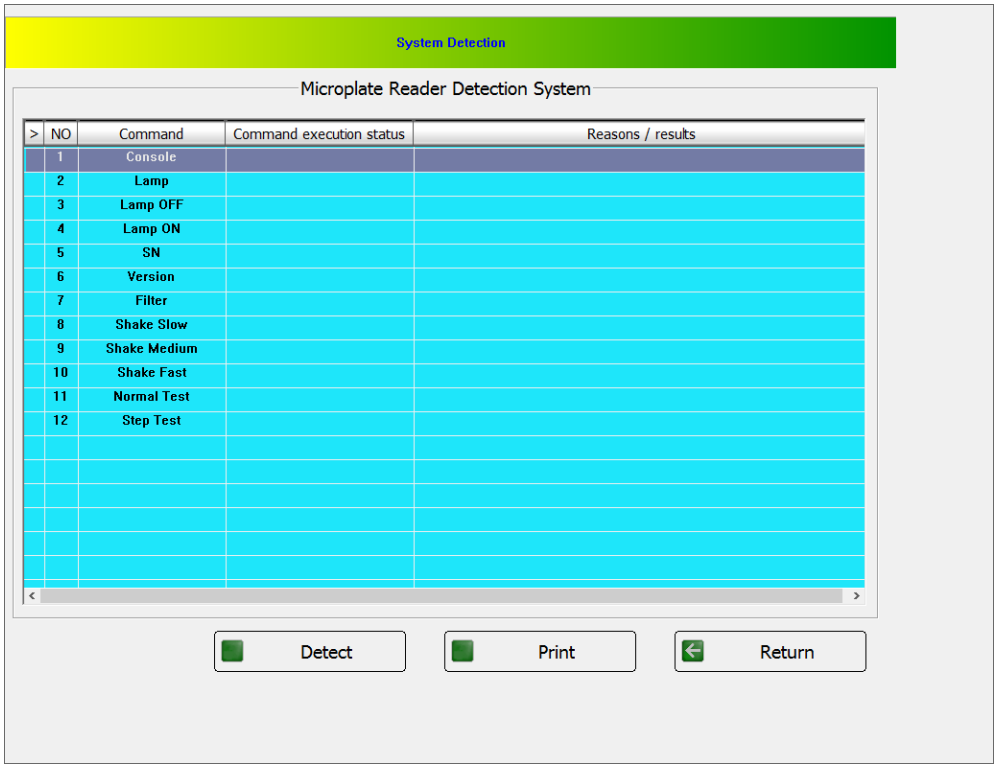


Set your needed shake speed and shake time,and click “OK”.

7.2 System self-check

Click “System self-check” button and the system will conduct self -check.

The self-check item is as following picture



7.2.1 Detect

Click “Detect” button, the system will conduct detection of system communication, mechanical operation and optical performance.

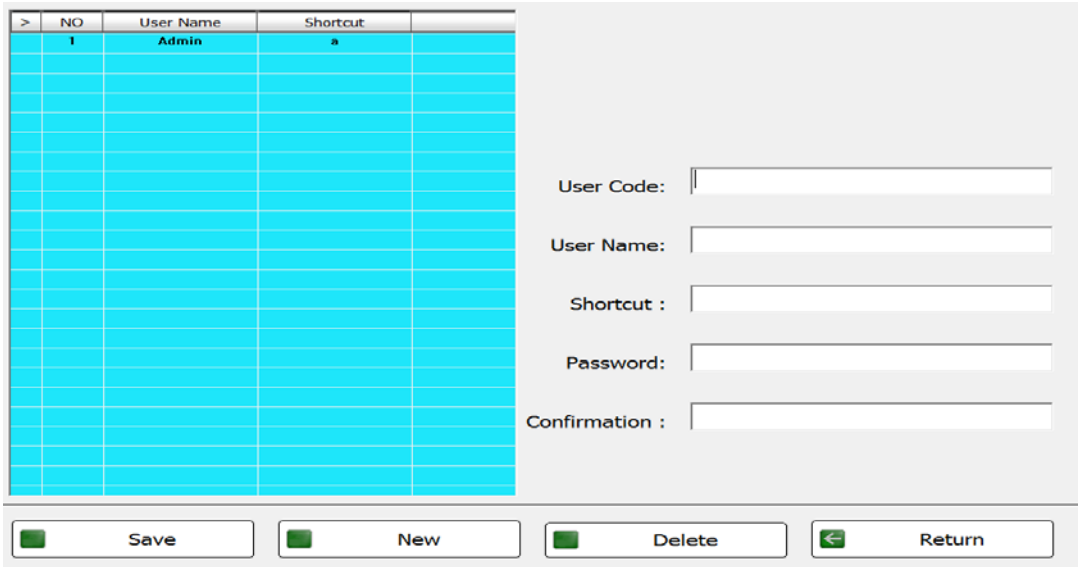
7.2.2 Print

Click “Print” button to print report of current records.

7.2.3 Return

Click “Return” button to return to previous interface.

7.3 User Management



User Code: User number. It is unique and non-repetitive .

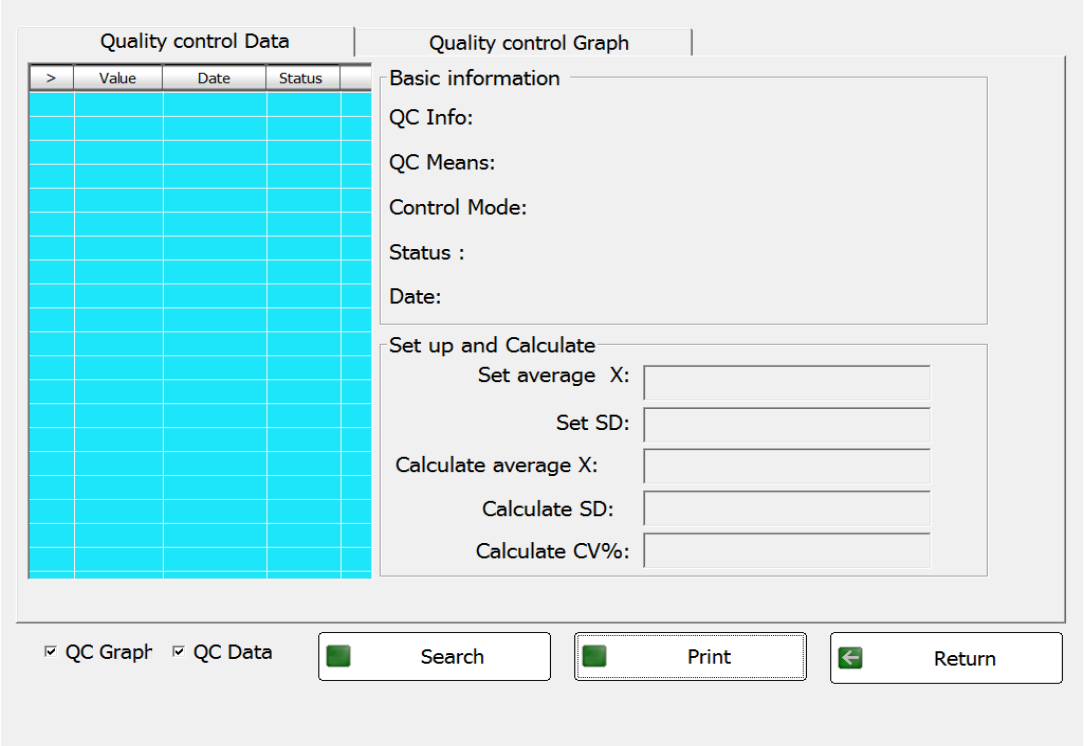
User Name: Record user name.

Shortcut: Type abbreviation to get user name.

Password: Fulfill user's enter password.

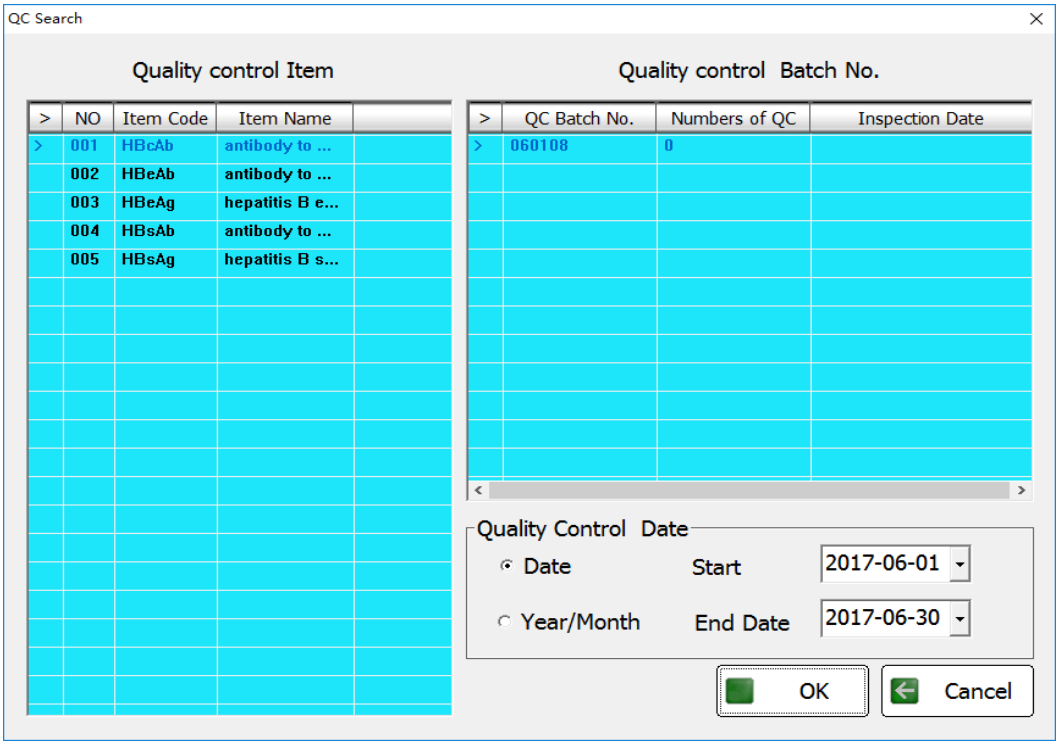
7.4 Quality Control Management

Click "Quality Control Management" button to enter quality control management interface.



7.4.1 Search

Click "Search" button to see the following interface.



Select the quality control item and QC date you want to query to find whether there is quality control

records.

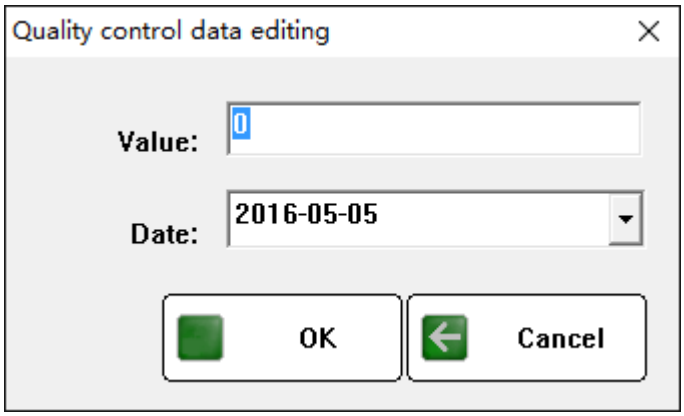
Select the quality control batch no. Record and click “OK” button to check quality control data and quality control graph.

7.4.2 Print

Click “Print” button to print current record report.

7.4.3 Add,Edit and Delete

After searching and find needed QC record, customers can add, edit and delete QC records.

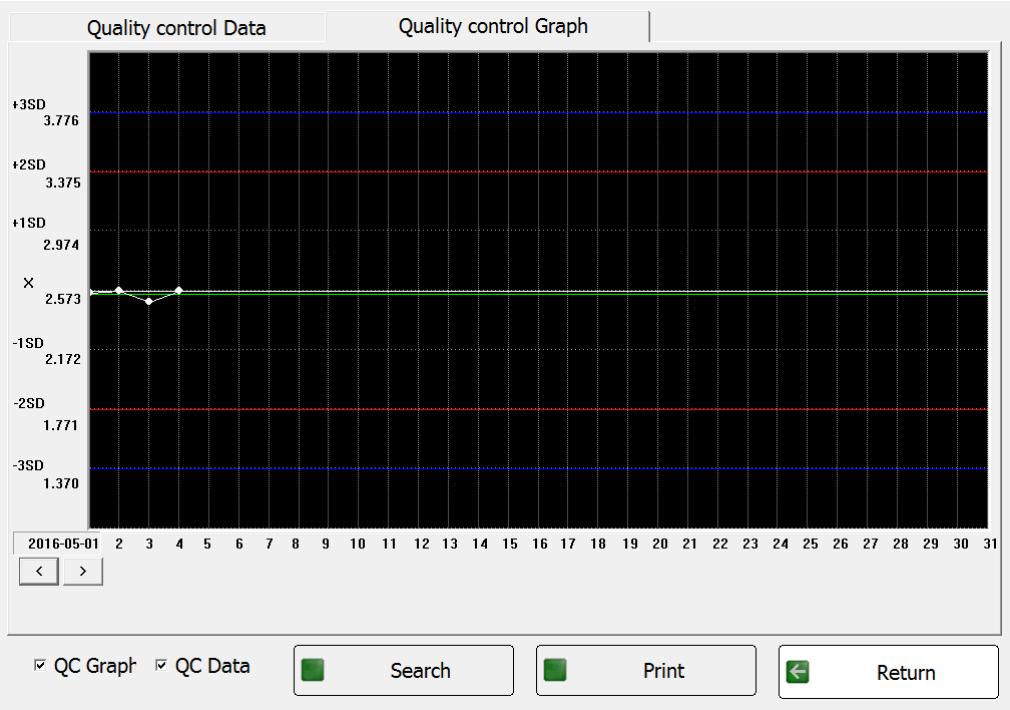


7.4.4 Return

Click “Return” button to return to previous interface.

7.4.5 Quality Control Graph

Click “Quality Control Graph” tab, customers can find QC graph of their searching QC record.

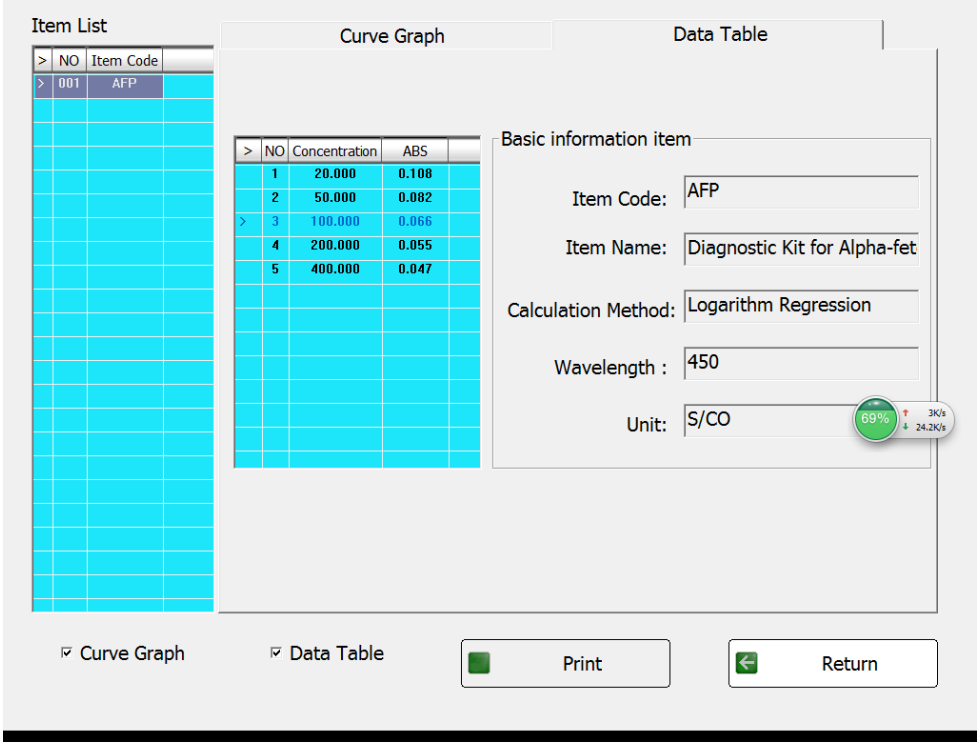


QC Graph：If ticking “QC Graph”, you can print QC graph.

QC Data : If ticking “QC Data”, you can print QC graph.

7.5 Standard Curve

Click “Standard Curve” to enter standard curve interface.



7.5.1 Item List

Curve Graph Tab: It shows standard curve graph.

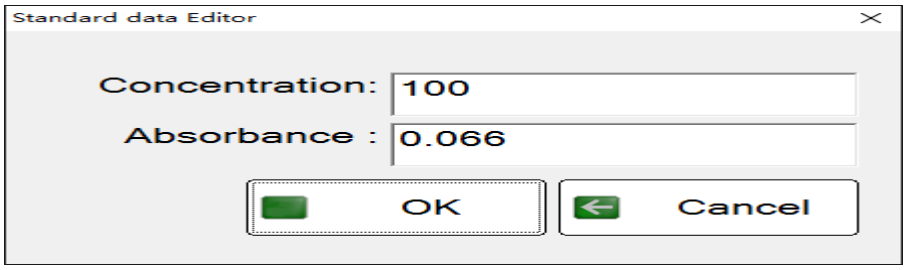
Data Table Tab： It shows standard data, including sample concentration value, absorbance value and other basic information of the item.

7.5.2 Select Record

Click your needed item code, then you will see relative item standard curve graph and data.

7.5.3 Standard data Editor

Double click or right-click, the pop-up window is as following



Modify concentration value and absorbance value, then click “OK” button to finish modification of selected item data.

7.5.4 Print

Click “Print” button to print report of current record.

7.5.5 Return

Click “Return” button to return to the previous interface.

Section 8 Information Edit

The function of “information edit” is typing common words to avoid repeated typing and improve work efficiency.

8.1 Entries for Editing

The entries for editing are as following:

- Types of Charges
- Patient Type
- Clinical Symptom
- Item Group
- Qualitative Prompt
- Sex
- Age
- Clinical Diagnosis
- Sample Type
- Diagnosis Doctor
- Diagnosis Dept.
- Inspection Dept.
- Unit

8.2 Function Keys

Save
New
Delete

8.3 Others

The Number of the record can be used as a shortcut key.

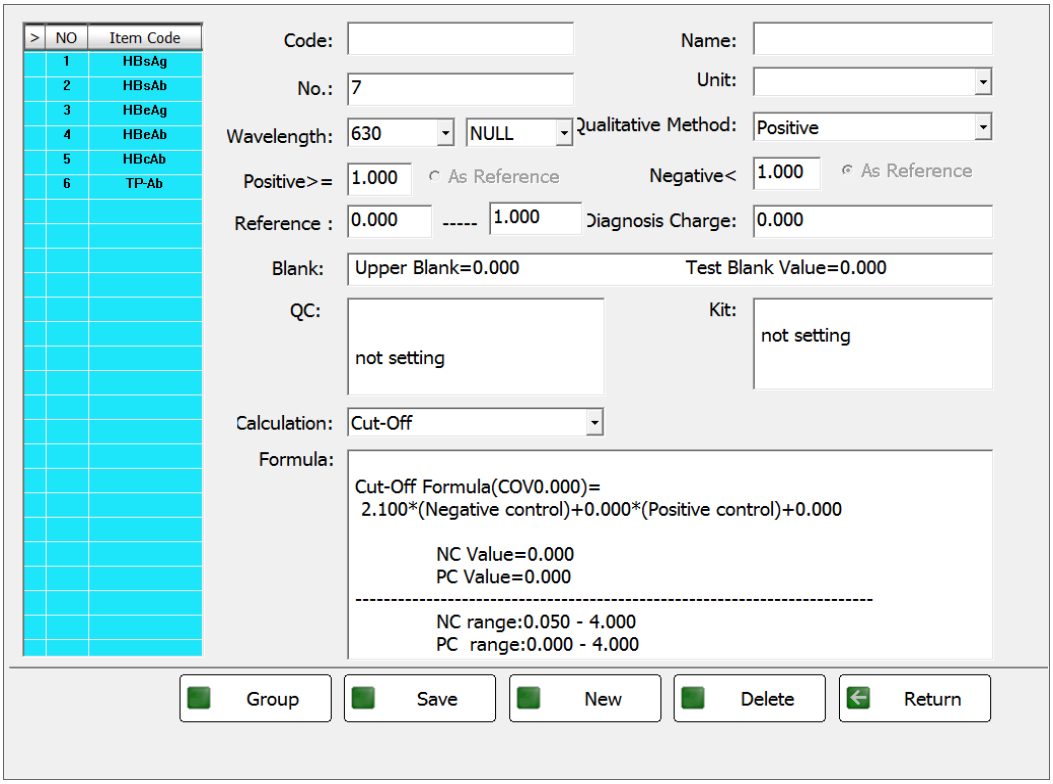
Entry name shows common words for users.

Shortcut can be defined by letter abbreviation.

Notes: Some common entries and shortcut are system default. Users can edit, delete and add entries according to needs.

Section 9 Item Setup

Click “Item Setup” button on main menu to enter item list window.



Notes: Above picture is an example. Detailed preset items are subject to the items listed on the screen.

All items of SISCO Microplate Reader can be defined by the user.
The item quantity is not limited.
All items user has set are listed on the window and automatically saved when turn off the instrument.

9.1 Function Keys

● Save
When the item record is selected, click “save” to save modification settings of current selected records.
● New
Initialize new project parameters
● Delete
Delete current record
● Group
Set item group type.

9.2 Calculation Method

SISCO Microplate Reader supports 10 different calculation methods. The calculation methods are divided into 3 categories:

9.2.1 **Absorbance mode**

Direct measurement and output sample absorbance.

9.2.2 **Qualitative calculation Cut-off**

Cut-Off threshold formula: $Cov = X \times NC + Y \times PC + Z \times \mathrm{TC} + Fac$

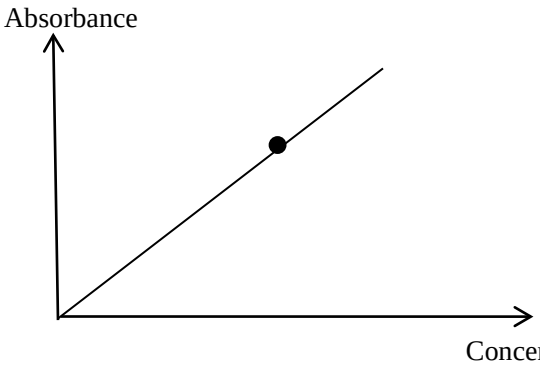
And NC as negative control absorbance value, PC as positive control absorbance value, TC is the critical control absorbance value, x, y, Z, FAC coefficient formula, by the user according to reagent

describes the input, other forms of qualitative formula can into this form. For example: the sample OD/ negative control OD = 2.1 was positive, X=2.1, Y=0, Z=0, Fac=0.

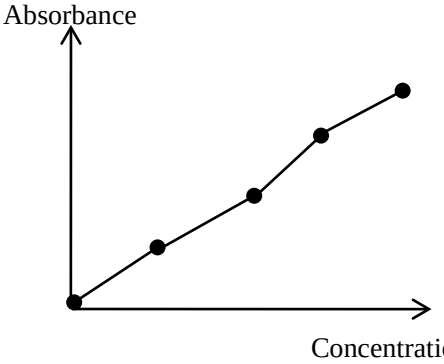
The results of qualitative calculation indicated that the ratio of the sample absorbance and the Cut-Off threshold value was s/co. In general to 1 as the critical value to determine the Positive and negative.

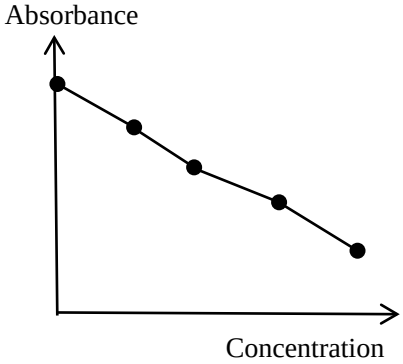
9.2.3 Quantitative calculation

1) Single point calibration: the need to set 1 standard products, the origin and the standard point of the connection for the calibration curve (horizontal coordinates for the concentration, the vertical coordinates for the absorbance, the same below), single point calibration must be set to calibrate the 0 points.

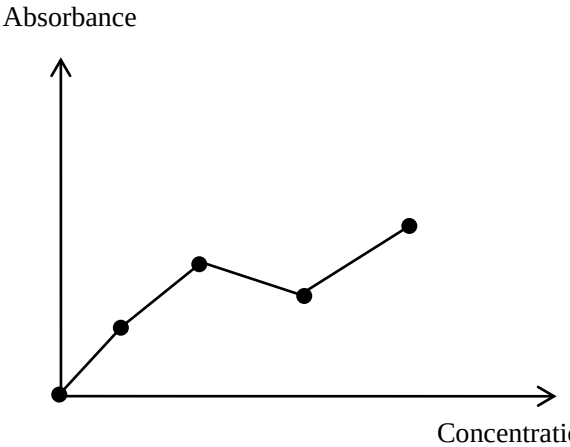


2) Broken line regression (point-to-point): allows setting 2-8 standards, in the standard attachment should is a monotonic increase or decrease the broken line) for the calibration curve

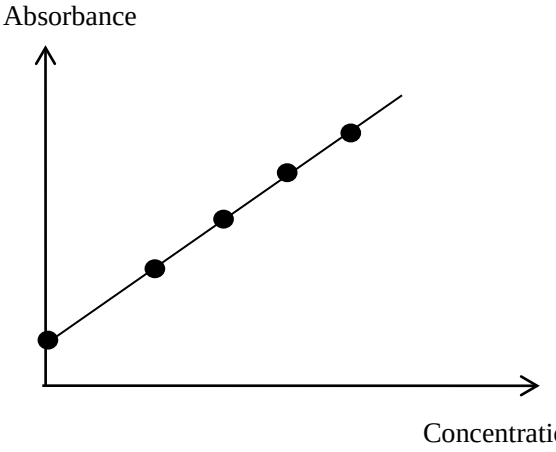




If the absorbance of the standard product is not monotonically increasing or decreasing, then the calibration result is wrong:



3) linear regression: allow to set up 2-8 standard products, through these standard points to a straight line, as a calibration curve:



4) index regression: allow to set up 2-8 standard products, through these standard points to return to an exponential curve $Y = ke^{bX}$ as a calibration curve, the absorbance value of the standard products must be greater than 0.

If the absorbance value is taken（$Y' = LnY$）, the exponential regression can be transformed into the form of linear regression: $Y' = k'X + b'$

5) the logarithm regression: allow to set up 2-8 standard product, through these standard point to return a logarithm curve $Y = kLnX + b$ to be used as the calibration curve, the concentration value of each standard product must be more than 0.

If the concentration value is taken from the logarithm ($X' = LnX$), then the log regression can also be transformed into the form of linear regression: $Y = kX' + b$

6) the double logarithm regression: allow to set up 2-8 standard product, through these standard point to return a pair of logarithm curve $Y = 10^{(kLnX+b)}$ to be used as the calibration curve, the concentration value of each standard product must be more than 0.

7) Log-logit：Allows to set 2-8 standard, through these standard points to return a Log-Logit curve $Y = \ell^{(kLnX+b)}$ for the calibration curve, the standard value of the product must be greater than 0. If the concentration value is taken from the logarithm ($X' = LnX$, $Y' = \text{logitY}$), then the Log-Logit regression can also be converted into the form of linear regression: $Y' = k'X' + b'$

8) power regression: allow to set 2-8 standard, through these standard points to return a power curve $Y = kX^{b}$ as the calibration curve, the standard product absorbance value and the concentration value must be greater than 0.

9.3 Modify/Create a new item

Modify parameter setting of an item:

- No.:For displaying and print ordering. Automatic accumulation, can be adjusted.
- Diagnosis Charge: Charge for the item.
- Qualitative Method:testing method testing items,such as immunoassay kit to fill in.
- Item name:Item name maximum length of 20 bytes, can not be empty.
- Concentration unit:measurement, calculation. For selection, please refer to the "Edit Information" section.
- Dilution Factor:test samples diluted.Non ABS and CUTOFF are effective.

● Calculation method:different types,with the change of parameter setting.

● Primary and secondary wavelength: double wavelength method needs two wavelength filter.Notes that do not mix the primary wavelength and second wavelength.

● Reference Range: For printing. If typing any value, the reference range of the printing report is the typed value.

● Blank value setting:

(1)Test blank value(Blank Value of Test): Actual testing blank contrast absorbance value.

(2)Upper blank(Max Blank Value) : If the reagent requires upper blank should be lower than 0.05, users should set upper blank as 0.05.

(3)Prompting mode: Warn and Ignore.

If choosing “Ignore”,system will automatically replace upper limit value as test value when blank value higher than upper limit.

If choosing “Warn”,system will indicate error information “Blank value too high” when blank value higher than upper blank.

● Qualitative setting: There are “negative”,”positive” and “No” options under “Qualitative Method” .

● Standard Quantity:When calculation method is not ABS and CUT OFF, the option is effective and appears. It varies from 1~8 according to calculation method.

● Quality Control

(1) Quality Control:Users can set 3 QC for single item: QC1,QC2 and QC3.

(2)Quality Control Means: Known X,SD means; LJ means, Instant means.

(3)Control Mode: Normal Rule, Westgard Rule.

(4)QC Batch No.: Current setting QC Batch NO.

(5)Average and SD Value: Type Average and SD value according to lab’s requirements.

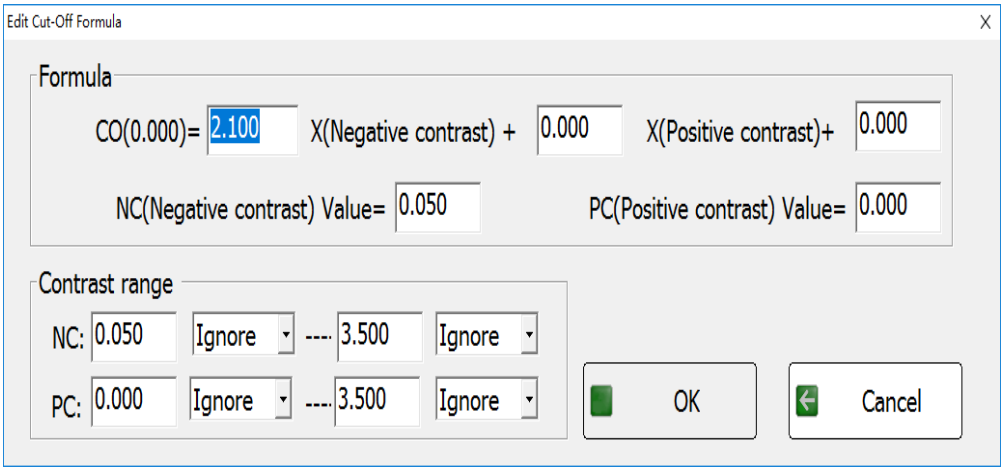
● Kit

(1) Kit Batch No.: Kit batch number of current item.

(2) Kit Manufacturer: Kit manufacturer of current item.

(3) Valid Date:Kit valid date of current item.

● Critical Equation: Critical equation is valid when calculation method is Cut-Off.



Users can set positive range and test value of positive and negative contrast.

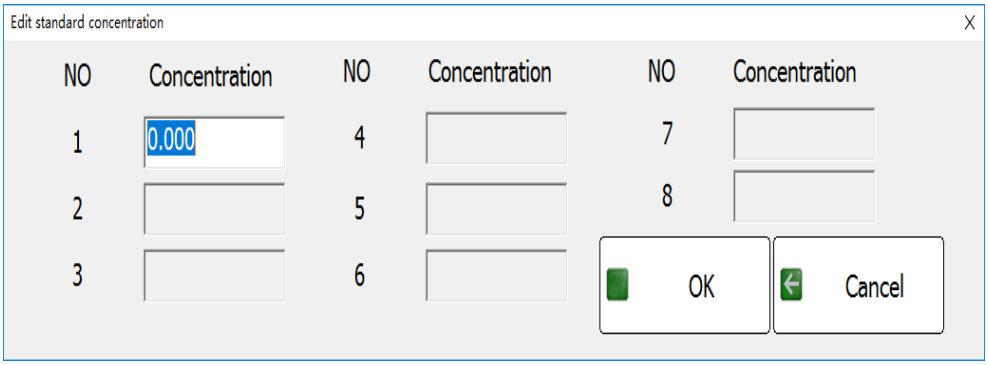
Range value can be set as “ Ignore” or “Warn”.

Ignore: When actual test value is lower than lower limit, take it as lower limit.

When actual test value is higher than higher limit, take it as higher limit.

Warm: When actual value is lower than lower limit or higher than higher limit, system will prompt the beyond limit value is invalid.

● Standard Concentration setting: It is valid when calculation is not Cut-Off or ABS.



Check or edit the concentration value in the above picture according to standard quantity the calculation method supports.

When the item record is selected, click “OK” to save modified concentration value of the current selected record.
When the item record is not selected, click “OK” to save new concentration value.

9.4 Delete an item

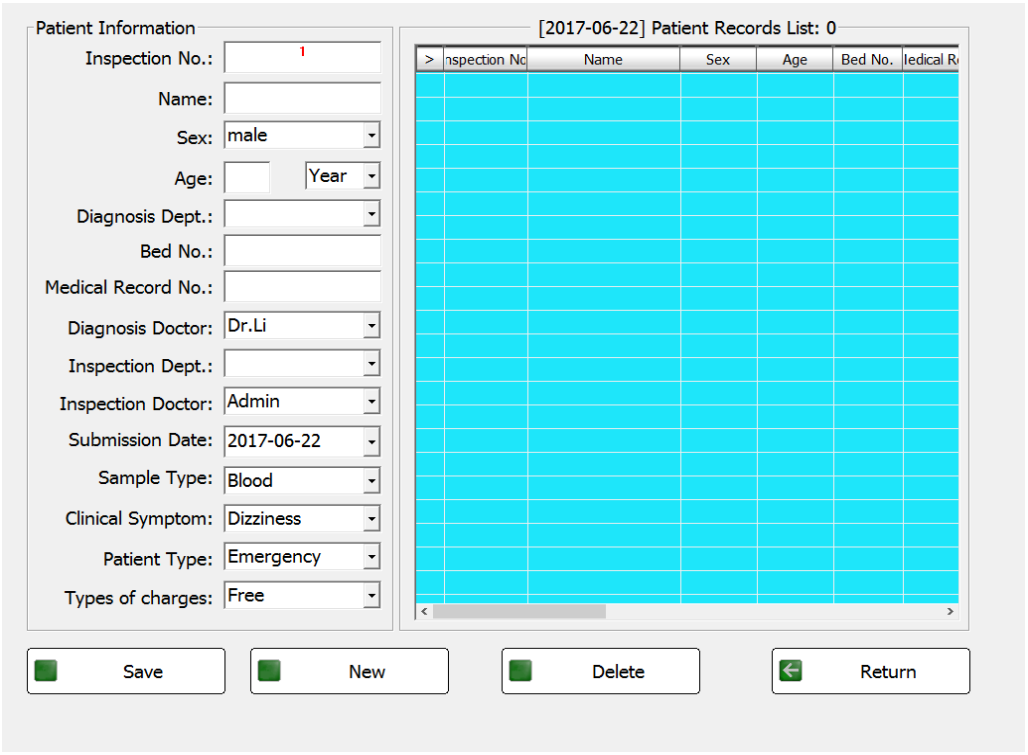
Select an item in the item list and click "delete" button, system will show confirmation window. Click “YES” to delete the item, or “NO” to cancel operation.

9.5 Item Portfolio

Make item portfolio according to actual needs.

Section 10 Sample Information

Click “Sample Information” in the main interface to enter sample information window.



Click “New” button or select a sample information record.
Inspection No.: 1~9999 automatic accumulation
Name: Patient name of the sample
Sex: Patient sex of the sample
Age: Patient age of the sample
Diagnosis Dept. : Type or select from the list (Users preset in the Diagnosis Dept. under “Information Edit”).
Bed No. And Medical Record No.: Patient hospital bed No. And medical record No..
Diagnosis Doctor: Type or select from the list (Users preset in the Diagnosis Doctor under “Edit Information ”).
Inspection Dept. : Type or select from the list (Users preset in the Inspection Dept. under “Information Edit”).
Inspection Doctor: Type or select from the list (Logged-in users preset).
Submission Date: Submission date defaults to the current date.Users can also modify the submission date.
Sample Type: Type or select from the list (Users preset in the sample type under “Edit Information ”).
Clinical Symptom: Type or select from the list (Users preset in the clinical symptom under “Edit Information ”).
Patient Type： Type or select from the list (Users preset in the patient type under “Edit Information ”).
Types of Charges: Type or select from the list (Users preset in the types of charge under “Edit Information ”).

Click “Save” to save current setting record.
Click “Delete” to delete selected record.
Click “Return” to return to main interface.

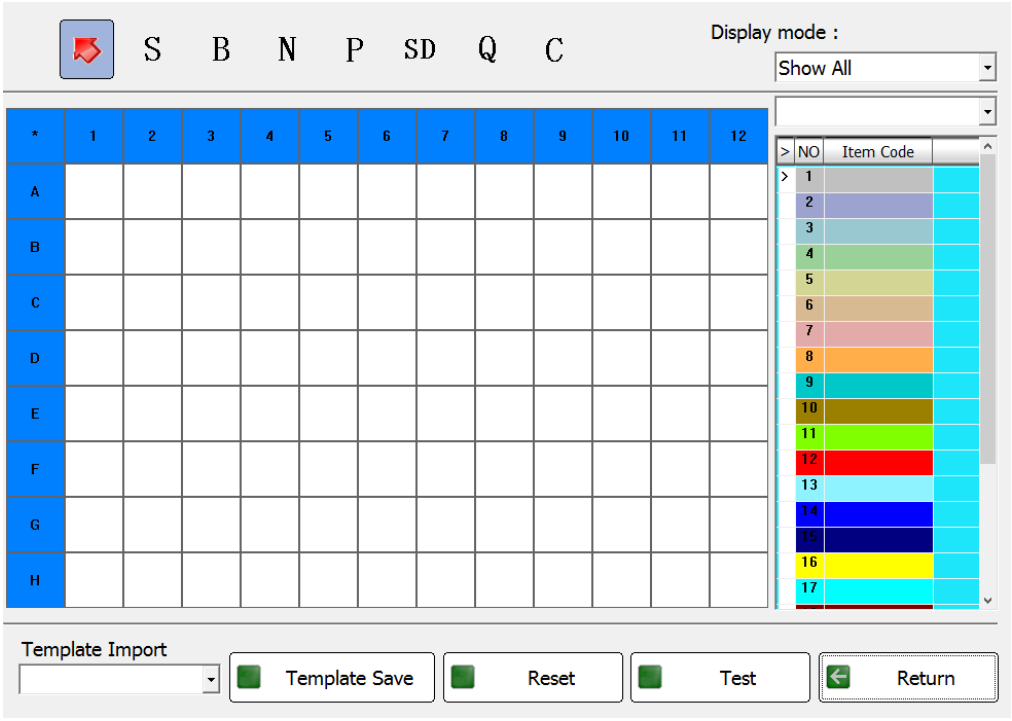
Section 11 Sample Test

11.1 Sample Test Parameters

Click “Sample Test” botton in the interface enter into the test parameters setting window.

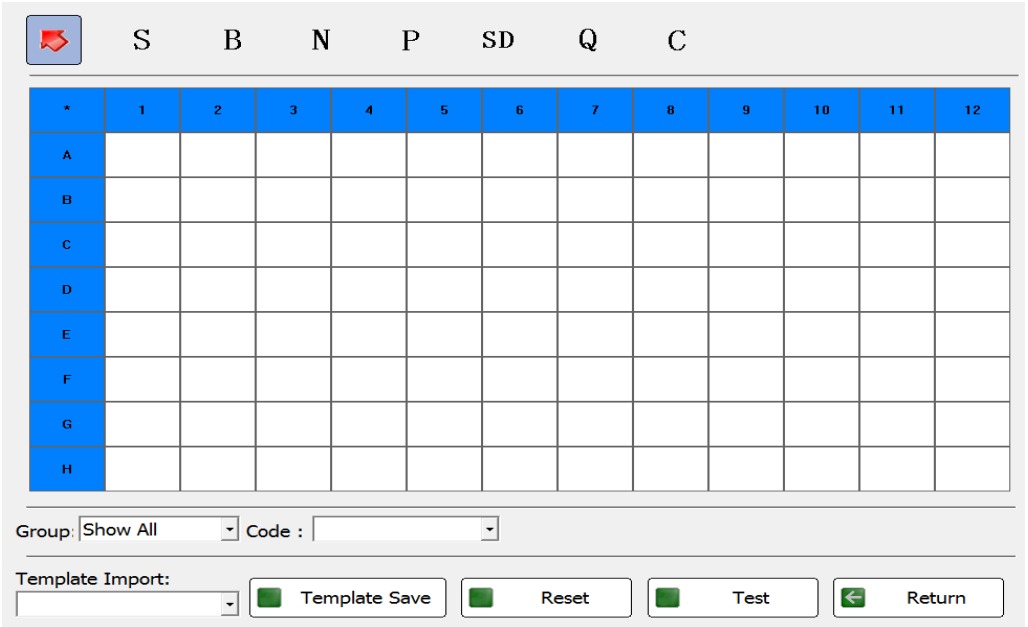
According display settings 6.2 “(Normal Mode) Multiple items layout、(Fast Mode) Single item layout ”,6.1 “Quick Detection when on boot ” to enter part of sample test layout interface.

11.1.1 Multiple items layout



11.1.2 Single item layout

Select test items to enter layout interface.



11.1.3 sisco plate well position distribution

*	1	2	3	4	5	6	7	8	9	10	11	12
A	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12
B	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
C	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
D	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12
E	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	E11	E12
F	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12
G	G1	G2	G3	G4	G5	G6	G7	G8	G9	G10	G11	G12
H	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11	H12

“Plate moving test” the forward direction of sisco plate ←——— .

11.2 Layout

SISCO Microplate Reader allows the user to set the well position arbitrarily within the range of 96 wells plate.

Layout steps:

General layout and single item in single plate: First select item then layout

Fast layout: Correspond to a line to select an item, item selection and layout are regardless of order.

Layout:

Well mark symbol:

- Sample：S
- Blank：B
- Negative：N
- Positive：P
- Standard：SD
- Quality：Q
- Clear：C

— Sample

User arbitrary click the well to be setting for the sample;if you want to modify the sample number, can click the well again, digital input box will pop up, input the sample number, range 1~9999.

— Blank

The blank well is used to adjust zero absorbance in the item test, that is, the absorbance value of other wells all need to minus the absorbance value of the blank well .According to the requirements of different items testing, the user can choose whether to set a blank.

If you do not set a blank in the item test, the system will automatically press 0 to calculate.

Each item can set one or more blank wells,if the user click different wells many times when setting blank well.Such as multiple blank in one item,only display a blank value (mean).

— Negative

It is only effective when the calculation method is Cut - Off in the item. According to the Cut-Off formula, the user must set the negative contrast.Each item can set one or more negative contrast. Such as multiple negative contrast in one item, display each contrast value.

The absorbance value of contrast well will be saved automatically when testing the item.In the follow-up tests of same item, if you don't reset the contrast, system will use old contrast values for calibration.

— Positive

Similar to negative contrast.

— Standard

It is effective when project setup need standard calibration. If the item has old standard,the user can choose not to set up standard(using the old standard calibration) or reset all standard,only set part of the standard is not allowed.Users click on the standard wells in turn, the system will marke as SD1, SD2..in turn.If users begin to test before setting the standard, the system will prompt "standard layout error".

Note: If you have set up standard in a item , and the calibration result is correct, the new standard will cover the old standard in this item.

— Quality

It is effective when project setup have set quality control.Indoor quality control is measuring serum quality control and sample together.

— Clear

If the user needs to modify the well position which has been set before, pressing clear switch then click it or right-click it.Users can use click to clear the well position which has been set in current item,then according to requirement to set up again.

- Template save

  Click “Template Import” selection bar, can choose template directly.

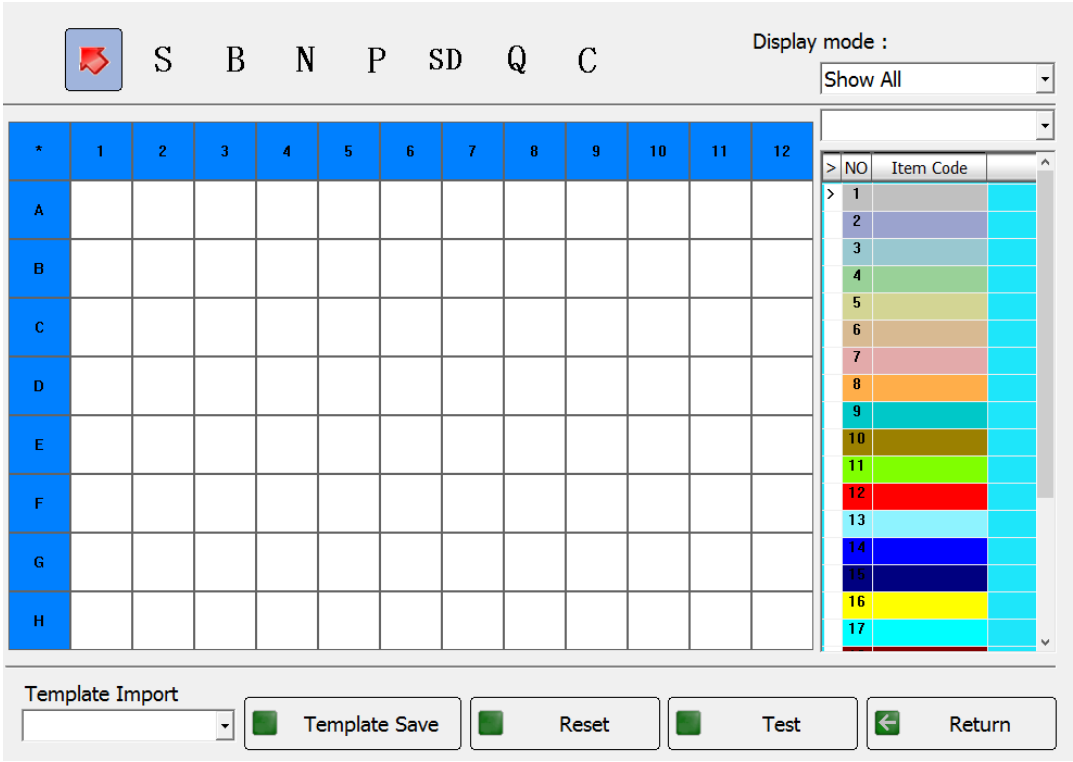
  Click “Template Save” botton to save, edit, delete and other management operation.

- Reset

  Initialization layout interface.

Multiple items layout

Rapid import: Choose the item group name and click, system will directly import the items of item group to layout project setup.



Multiple items layout can set up 24 items at the same time layout detection.

Item selection display button 

1 The item code;

2  Said the currently selected effective layout item ;

3 The current layout item name.

Single item layout

Select items: Can change selected items

- The shortcut of layout

  There are four kinds of wells layout,after selected the well type

  - According to the wells position can choose a well;
  - Press the number above (1 - 12) can select one column at a time (keep the determined well type unchanged);
  - Press the left letters (A - H) can choose one line at a time;
  - Press the "*" at the top left can choose all the wells.

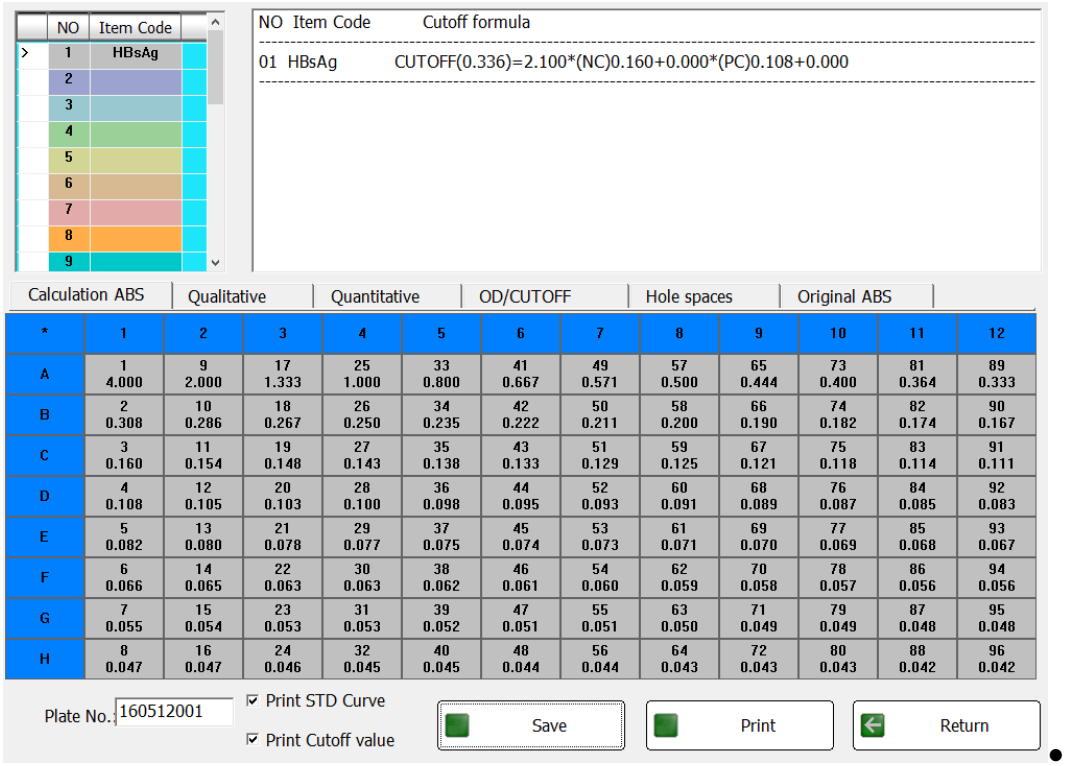
The above rules are equally valid for "clear". Use "*" selection function, can quickly perform bulk samples of layout.

11.3 Plate moving test

Press "Test" button,after system confirmation,then start to do plate moving test.Appear “Waiting for the light stability” and “Testing” interface.

11.4 Test results show(Multiple items layout, Single item layout)

After plate moving test, automatically enter the test results window.



*	1	2	3	4	5	6	7	8	9	10	11	12
A	1 4.000	9 2.000	17 1.333	25 1.000	33 0.800	41 0.667	49 0.571	57 0.500	65 0.444	73 0.400	81 0.364	89 0.333
B	2 0.308	10 0.286	18 0.267	26 0.250	34 0.235	42 0.222	50 0.211	58 0.200	66 0.190	74 0.182	82 0.174	90 0.167
C	3 0.160	11 0.154	19 0.148	27 0.143	35 0.138	43 0.133	51 0.129	59 0.125	67 0.121	75 0.118	83 0.114	91 0.111
D	4 0.108	12 0.105	20 0.103	28 0.100	36 0.098	44 0.095	52 0.093	60 0.091	68 0.089	76 0.087	84 0.085	92 0.083
E	5 0.082	13 0.080	21 0.078	29 0.077	37 0.075	45 0.074	53 0.073	61 0.071	69 0.070	77 0.069	85 0.068	93 0.067
F	6 0.066	14 0.065	22 0.063	30 0.063	38 0.062	46 0.061	54 0.060	62 0.059	70 0.058	78 0.057	86 0.056	94 0.056
G	7 0.055	15 0.054	23 0.053	31 0.053	39 0.052	47 0.051	55 0.051	63 0.050	71 0.049	79 0.049	87 0.048	95 0.048
H	8 0.047	16 0.047	24 0.046	32 0.045	40 0.045	48 0.044	56 0.044	64 0.043	72 0.043	80 0.043	88 0.042	96 0.042

Calculation ABS : Calculation ABS is a value which deduct blank value,the mean value when having multiple samples.

- Qualitative results : Show qualitative results
- Quantitative results : Show quantitative results
- OD/CUTOFF: S/CO value, CUTOFF item is effective
- Hole spaces : Show layout setting
- Original ABS : Instrument readings

Function key:

Plate No,: Click this button can modify the detection plate number

Save: Save current data

Print: Print current data

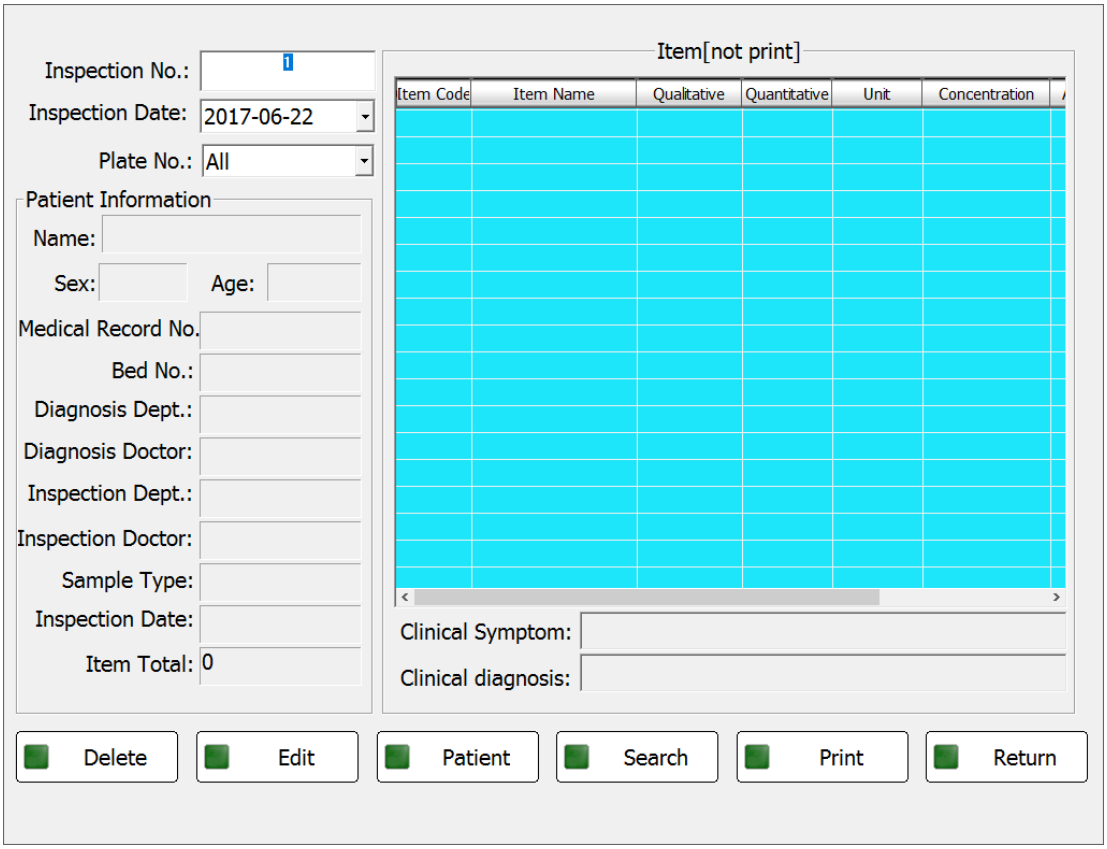
Print STD Curve: When this option is effective,print report and STD Curve

Print Cutoff value: When this option is effective,print report and the Cutoff value of items

Return : Return to layout interface

Section 12 Report Print

Click “Report Print” in the interface enter into the report print window.



12.1 Delete

Delete:Select test item record, record highlighting express was selected, click the "Delete" button, to delete the selected record.

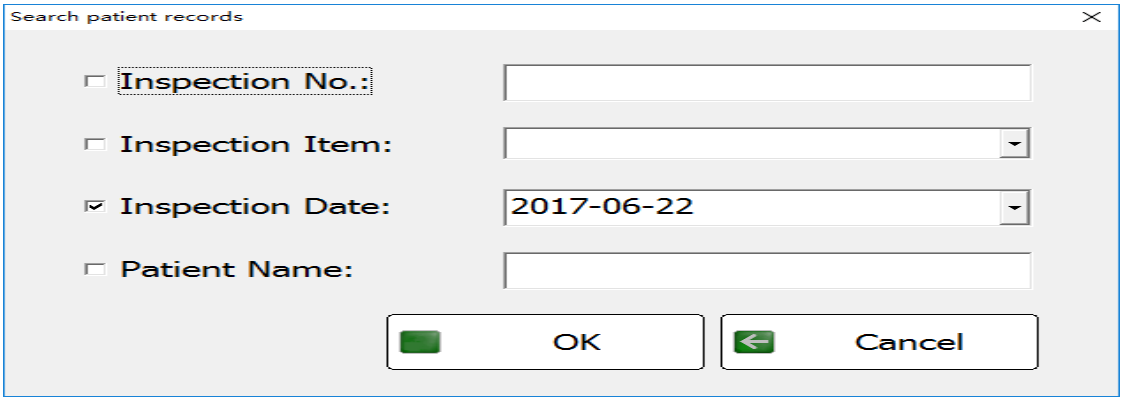
12.2 Edit

Click the "Edit" button to add or modify the record result.

12.3 Patient Information

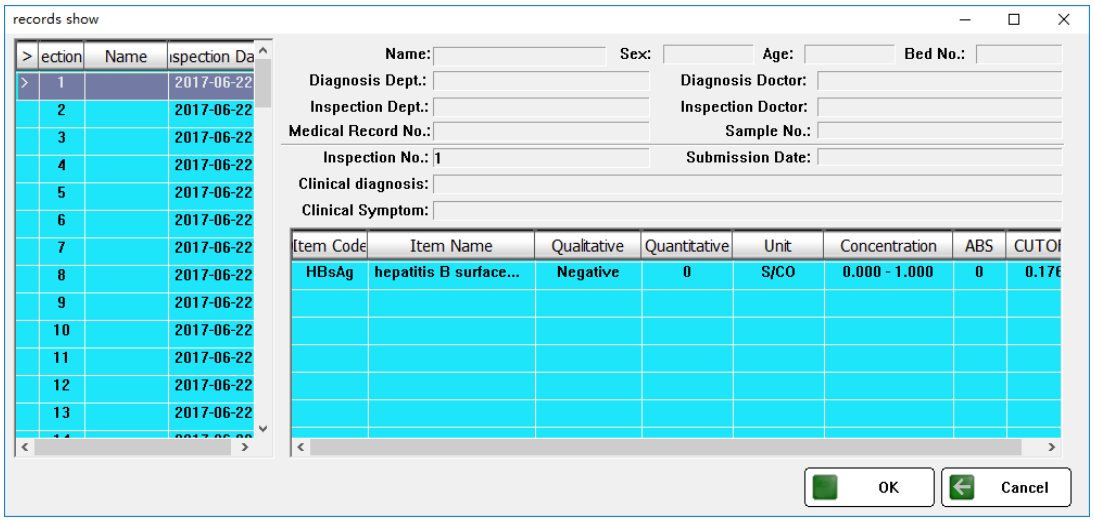
Click the "Patient" button,you can modify or edit the personnel information of current sample number.

12.4 Search



According Inspection No.,Inspection item,Inspection date,patient name search.

Select and input the search conditions, and click "ok" to enter eligible search record selection box.



Select the specified record, click "OK" button, then display the search record information and records in the "report print " interface.

12.5 Print

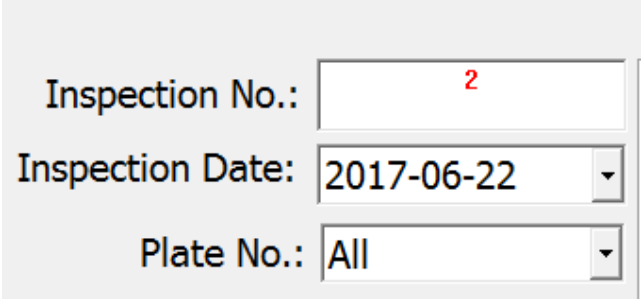
Click the “Print” button to print current record report.

12.6 Return

Return to main interface.

12.7 Direct Search

Input number in Inspection No.,Inspection date,plate No. to search directly.



Section 13 Report Search

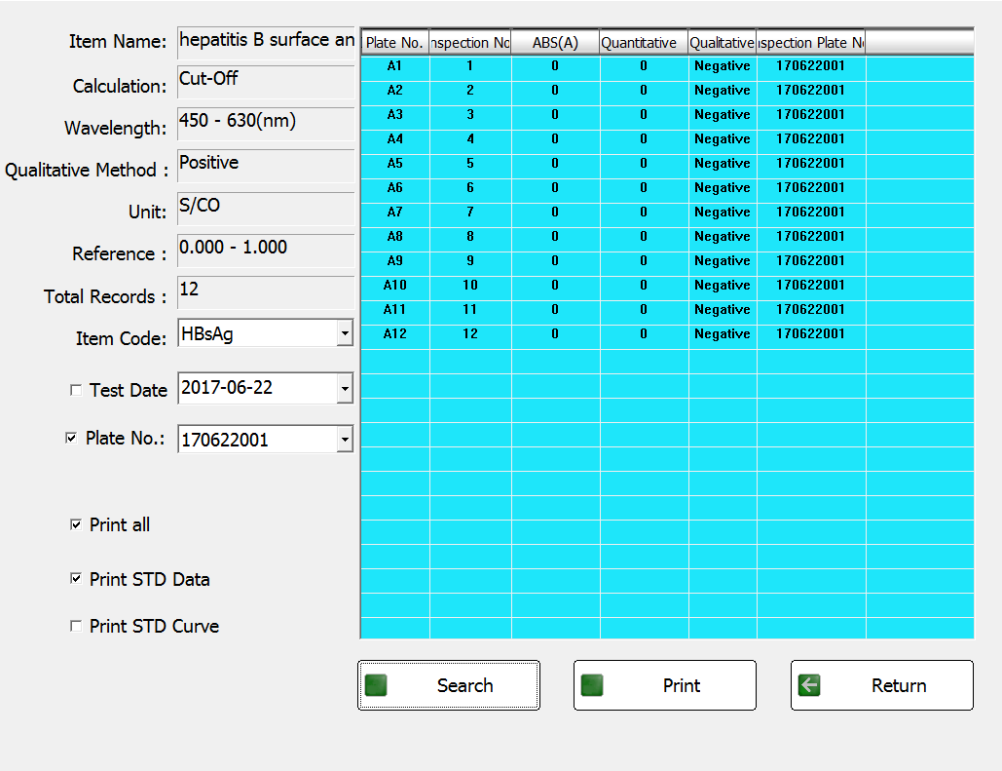
Click “Report Search” in the interface enter into the report search selection window.

13.1 Patient Report

Function and interface such as the main menu “Report Print”.

13.2 Item Report

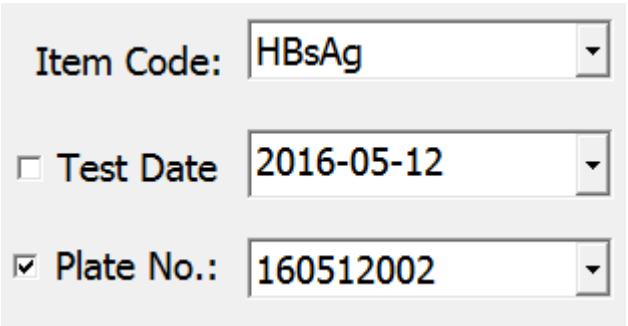
Click the “Item Report” button to enter the item test results search. According to item code, plate No. and test date search.



System default intraday test item record.

13.2.1 Direct Search

Select item code,test date,plate No. can quickly search test record .



13.2.2 Search

Function like 12.2.1.

13.2.3 Print

Click the “Print” button to print current record report.

1.Print options

Print all: Print the current date and the current plate, all test reports

Print STD Data : At present, there are projects such as the curves standard, the standard print curve, if there are standard test data

According to standard print data standard curve, or print project standard curve.

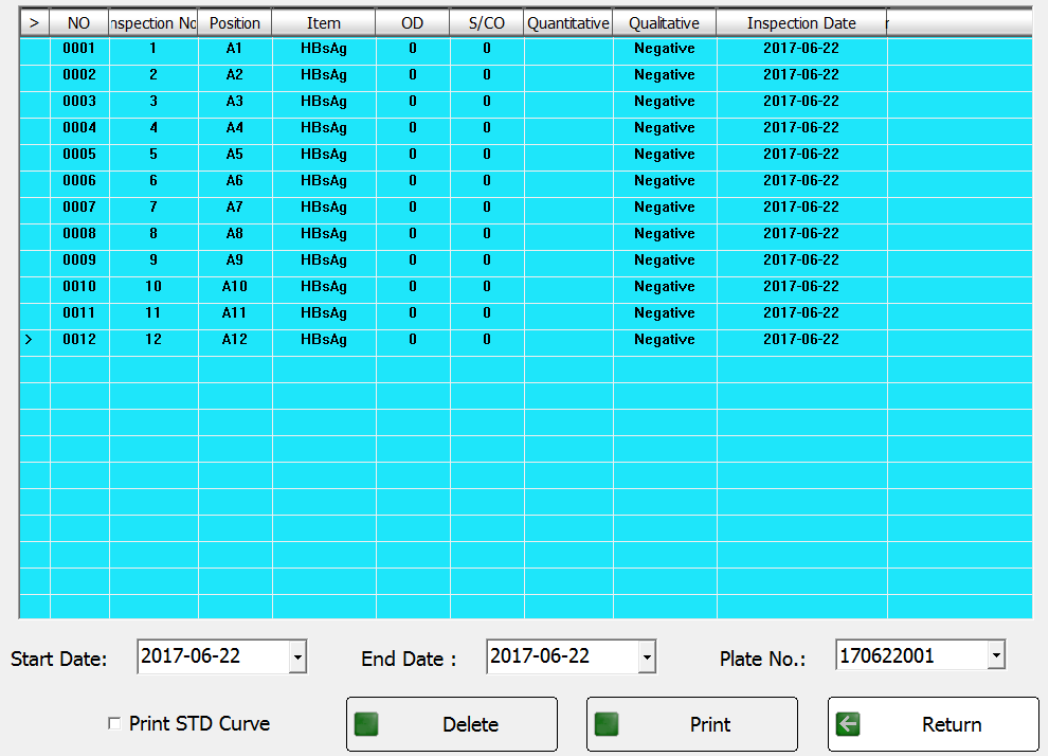
Print STD Cure: If the print project for the calibration project, the standard print data

(absorbance, the concentration of value), such as test data with standard data, the standard test Printing, print or project data standard.

13.2.4 Return

13.3 Plate Report

Click the “Plate Report” button to enter the plate report query interface.



Search:Select date(including start date、stop date),select plate number,automatically display the corresponding whole plate data.

Delete:Select the record that needs to be deleted, and click “Delete”

Print:.Print the current display record

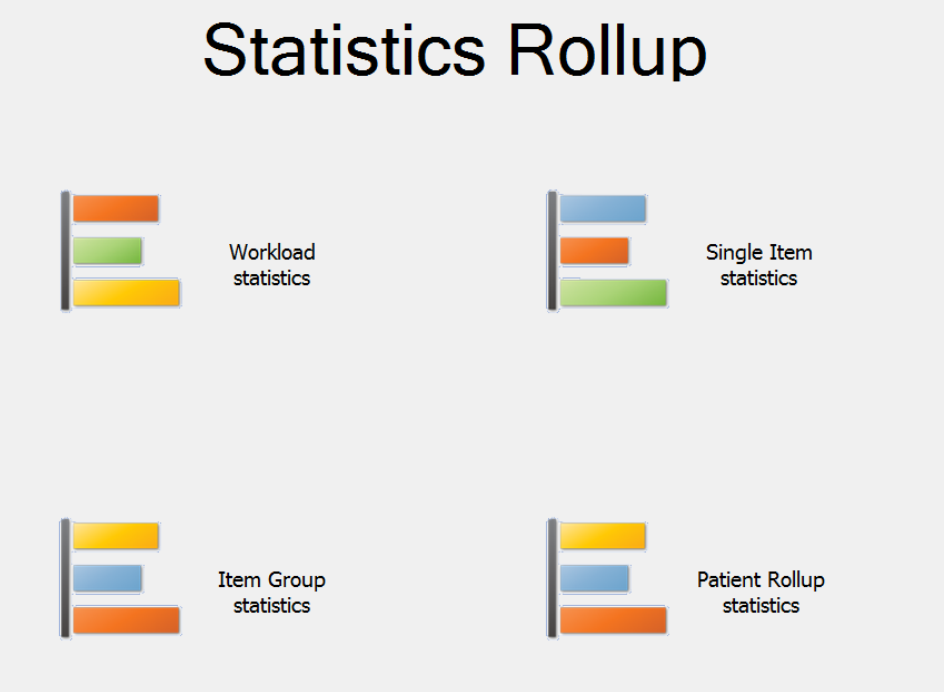
1.Print standard curves, when the option is valid,printing report at the same time printing standard curve.

13.4 Test Report

Click the “Test Report” button to enter the test report query interface.Operations such as 12.3 print report for layout plate form.

Section 14 Statistic Rollup

Click “Statistics Rollup” in the interface into the statistics rollup selection window.



14.1 Workload Statistics

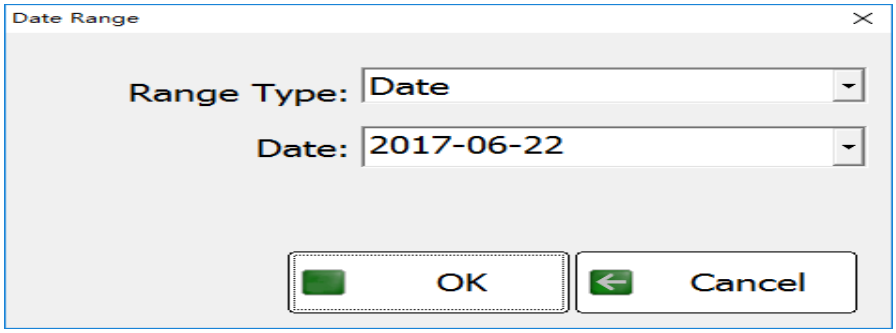
Click “Workload Statistics” in the interface into the workload statistics window.

14.1.1 Search

Area types are divided into 5 categories: Date, Year&Month, Quarter, Year and Area.

Select the desired query date range, press “ok”.

System according to the item code, item name, unit price, detection quantity, the accruing amounts, sorting display all data.



14.1.2 Print

Click the “Print” button to print the current record.

14.1.3 Preview

Set print titles, set the print format, preview print report content and so on.

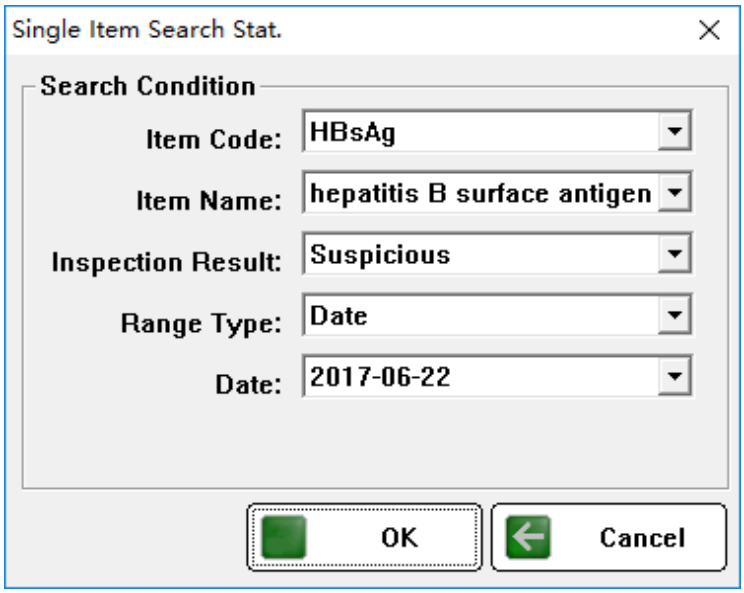
14.1.4 Return

Click “Return” button,return to the upper level interface.

14.2 Single Item Statistics

Click “Single Item Statistics” in the interface into the single item statistics window.

14.2.1 Search



Item Code and Item Name:They are valid items in the current database.

Inspection Result: Qualitative or quantitative results of the test records, please refer to the "Edit Information.-- Qualitative prompt".

Range types are divided into 5 categories: Date, Year&Month, Quarter, Year and Area.

Select the required date range, item and check results, press ok".

14.2.2 Print

Click the “Print” button to print the current record.

14.2.3 Preview

Set print titles, set the print format, preview print report content and so on.

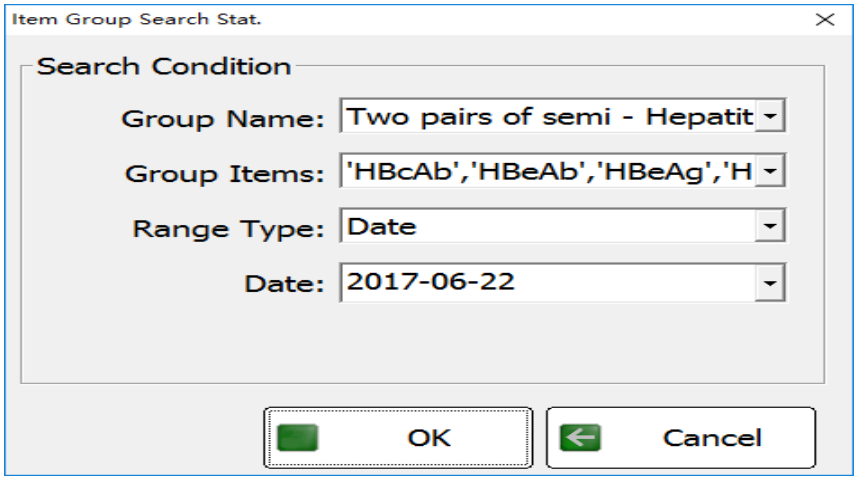
14.2.4 Return

Click “Return” button,return to the upper level interface.

14.3 Item Group Statistics

Click “Item Group Statistics” in the interface into the item group statistics window.

14.3.1 Search



Group name: Please refer to the "Edit Info.--- Item group".

Group Item: Please refer to the "Item Setup--- Group".
Range types are divided into 5 categories: Date, Year&Month, Quarter, Year and Area.
Select the required date range, group name or group items, press ok".
System according to the patient name, sex, age, sample type, delivery office, analysis No.,item code(result) sorting display all data.

14.3.2 Print

Click the "Print" button to print the current record.

14.3.3 Preview

Set print titles, set the print format, preview print report content and so on.

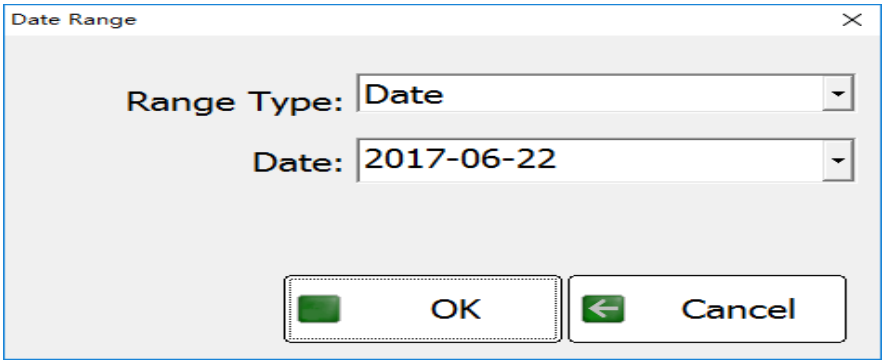
14.3.4 Return

Click “Return” button,return to the upper level interface.

14.4 Patient Rollup Statistics

Click “Patient Rollup Statistics” in the interface into the patient collect statistics window.

14.4.1 Search



Range types are divided into 5 categories: Date, Year&Month, Quarter, Year and Area.
Select the required date range,press ok".
System according to the patient name, sex, age, sample type, delivery office, analysis No.,item code(result) sorting display all data.

14.4.2 Print & Preview

Click the "Print" button to print the current record.Set print titles, set the print format, preview print report content and so on.

14.4.3 Return

Click “Return” button,return to the upper level interface.

Section 15 Shut Down System

Need to turn off the instrument, click the “Shut down” button on the main interface.System based on user settings will shut down automatically if the option “close the software,close the system” is

effectively.If the option “close the software,close the system” is ineffectively,users can enter into windows system.The above two cases, please shut down windows system first, then shut down the power supply.

Note: Please refer to the above process to shut down machine, do not shut down power supply directly, so as not to damage the system storage equipment!

Section 16 Instrument Maintenance

16.1 Summary

SISCO Microplate Reader is a precision clinical analytical instrument. To make the instrument keep a good status, user must do routine maintenance well. Although maintenance of YT-SY96S microplate reader is easy, user needs do it carefully.

16.2 Cleaning instrument

- Keep working condition of the instrument clean.
- User may use neutral clean solution and wet cloth to clean the instrument surface.
- User should clean LCD with soft cloth.

Attention: Keep instrument away from dissolvent, oil and corrosive substance.

16.3 Instrument parts replacement

16.3.1 Replace fuses

1) Shut down power switch.
   Fuses are equipped in fuse box which is back of instrument power switch. Users pull box lid and replace fuses with same specification ones.
   Fuse specification: 2-φ5×20 BGXP T 10 AL 250V

Attention: Users must use fuses of the above specification.

2) Close fuse box lid and restart the instrument.

16.3.2 Replace halogen tungsten lamp bulb

When halogen tungsten lamp bulb broken, replacement steps are as followings:

1) Shut down power switch and open instrument upper lid.
2) Undo locking screw of light screen and open light screen.
3) Take out bulb and lamp holder, then unplug bulb from lamp holder.
4) Fix new bulb （OSRAM64607，8V/50W）and lamp holder, then replace the new bulb.
5) Close light screen and tighten screws.
6) Close upper lid and restart the instrument.

16.4 Simple fault handling

	Phenomenon or hints	Reason analysis	Method
1	Bulb not lighting	● Bulb power supply abnormal ● Bulb broken	● Check whether supply voltage is 8V ● Replace bulb
2	Plate holder no resetting signal	● Plate holder position is too on the right side	● Push it to the left 1 cm gently
3	Built-in printer unable	● Printer power is not	● Check whether printer

	to start	normal ● The press handle of built-in printer is not pressed	power voltage is 5 V ● Check whether the press handle of built-in printer is pressed
4	Built-in printer unable to print	● Whether setting printer type ● Whether printer cable is connected well	● The printer type in the System Settings is set to built-in printer or not ● Printer 10 core cable is connected well or not
5	Instruments sometimes appear messy code	● Data storage uninitialized	● Click all clear in Data query
6	LCD screen brightness is not enough	● Adjusting potentiometer resistance value deviation ● Inverter output is not normal	● Adjust the potentiometer W1 on the motherboard to LCD screen to the appropriate brightness ● Measuring the output of the inverter should be AC 1000 V or so, if there is no voltage, replace the inverter
7	Filter wheel no reset signal	● Connection of the control line is not good ● Optical fiber head not fixed ● Photoelectric coupler fault	● Check whether the 7 core signal control line on the motor driver board is connected well ● Check whether optical fiber head is loose ● Turn the filter wheel, observe whether RT1 light emitting diode on Data Acquisition Board is change from dark to bright, if there is no change, change Filter Wheel Positioning Detection Plate
8	Instruments unable to start	● Power supply is not normal ● Switch machine time interval is too short	● Check whether instrument is electrified ● Check whether the power plug is loose ● Check the fuse ● Check the voltage ● Shutdown after waiting more than 30s to restart
9	External printer error	● External printer connect later	● System setup>Set Printer
10	Plate holder don’t move	● Drive motor fault	● Open the machine cover, check if the drive motor is rotating
11	External printer unable to start	● Printer power is not normal	● Check if power plug is loose ● Check ON/OFF button
12	External printer unable to print	● Printer setting is not correct	● Check if printer type is setting correct ● Check if print cable is normal connection ● If printer is setting normal
13	External printer appears to fade, print	● Printer problem	● Replace the cartridge or ribbon, clean the print

	quality decline		head (see the printer user's manual)
14	External printer paper jam and other faults	● Printer problem	● (See the printer user's manual)
15	Plate holder positioning detection signal abnormal	● Plate holder transverse position is not normal	● Check whether plate holder transverse plate is falling off, shifting ● Check whether 12 positioning grooves on the transverse plate is blocked ● Check plate holder positioning detection slot coupler
16	Xxx wavelength air gap is too low	● Bulb broken ● Filter broken	● Replace bulb ● Replace filter
17	Xxx wavelength air gap is too high	● Filter not properly installed ● Filter broken	● Check filter and filter wheel are properly installed ● Replace corresponding filter
18	Front end data acquisition board is not responding	● The serial line between front board and data acquisition board is loose	● Reconnection 3 core serial line
19	Plate moving test error	● Not detected the plate holder reset signal(Not necessarily signal error, it is possible that the distance is too long) (The error is related to the position of the reset signal and slot coupler)	● Check the plate holder motion stroke length and force condition ● Check the position of slot coupler
20	Plate moving test data error	● In the Cut - Off formula,calculated CO value is 0; ● Or in the quantitative formula, a standard ABS value exceeds the range of 0.000-4.000; ● Or in the quantitative formula, unable to get the curve after calculation, for example two different concentrations of standard ABS values are the same.	● Check project setup and sisco plate layout situation
21	Standard concentration must be increasing	● The concentration values of multiple standard must be increasing in the project setup	
22	Standard layout error	● The quantity of standard wells does not match with the quantity of standard which is setted in the project in the number of items set in the standard quantity	
23	Contrast plate arrangement error	● New projects do the plate moving for the first time,projects require setting contrast but layout do not not set (If the project require there are negative contrast and	

		positive contrast at the same time , layout must do both)	
24	Negative control absorbance too low	● Negative control value＜0	
25	Negative control absorbance too high	● Negative control value＞4.0	
26	Positive control absorbance too low	● Positive control value＜0	
27	Positive control absorbance too high	● Positive control value＞4.0	
28	Cut-Off value error	● Cut-Off value ≤0	
29	Standard absorbance too low	● Standard absorbance ≤0	
30	Standard absorbance too high	● Standard absorbance ≥4.0	
31	Standard value error	● Standard absorbance incorrect such as same absorbance value of standard with different concentration	
32	Blank value too high	● Blank value over setting value	

Note: In the use of the process if users can not solve the error, or a mistake is repeated,please contact the seller.