



Ringbio

User Manual

NBReader[®] Q3
Test strip reader



Ring Biotechnology Co Ltd

Foreword

RINGBIO is short for Ring Biotechnology Co., Ltd, which is a research and market driven Chinese Biotechnology Company. As an innovative company serving the food and animal industry. RINGBIO has products ranged from animal diagnostics, food diagnostics, customized reagents and solutions to lab consumables. The company is ISO9001:2015 certified with GMP and GSP audited facility.

This NBReader ® Q3 rapid test strip reader is our latest product for laboratory food safety analysis. This device can read RINGBIO rapid tests in a flash. The results are accurate and stable, which can be stored locally and also on a PC system. With this reader, your routine analysis will be recorded and kept for long-term use.

Opening check

Please check the instruments as well as all accessories with packing list when you first open it. If you find any wrong or missing, please contact distributor or manufacturer.

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Safety warning and guidelines

1 Important information for safe use

Users should have a comprehensive understanding on how to use this instrument before operate, do read this operation manual carefully.



Any improper operation without reading manual is forbidden, otherwise may cause injured or electric shock.

Do read manual carefully and operate safely according to this guidelines.

2 Security

The operation, maintenance and repair of the Instrument should comply with the basic guidelines and the remarked warning below, or it will have effect on the using life of the Instrument and the protection provided.



Indoor use only.



Power off after finish your work. Pull off the connector plug when there's long time no use of the Instrument and cover it with a cloth or plastic paper to prevent from dust.

Pull out the connector plug from the power socket immediately in the following cases, and contact the vendor:



There is liquid flowing into the Instrument;
Drenched or fire burned.
Abnormal operation and abnormal sound or smell.
Instrument dropping or outer shell damaged.
The function has obviously changed.

3 The maintenance of instrument

Sample holder should be cleaned by the cloth stained with a little alcohol regular.
If there is smutch on the Instrument, clean them by soft cloth stained with cleaning cream.

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Chapter 1 Brief introduction

NBReader ® Q3 test strip reader is an innovative meter for test immunochromatographic rapid test cards or test strips. This reader can make rapid, high sensitivity and repeatability detection, avoiding reading mistake by eyes.

Features of this device

1. User friendly operating system,
2. Easy and simple detection procedure,
3. Efficient, detection time only 10S,
4. Multi-functions, varies software compliance to different test cards,
5. Unique function of qualitative detection,
6. Internet, wireless internet function extendable.

Chapter 2 Features

1. Working condition

Ambient temperature: 5°C~ 35°C

The relative humidity: ≤80% Power: DC12V 4A

2. Basic parameters

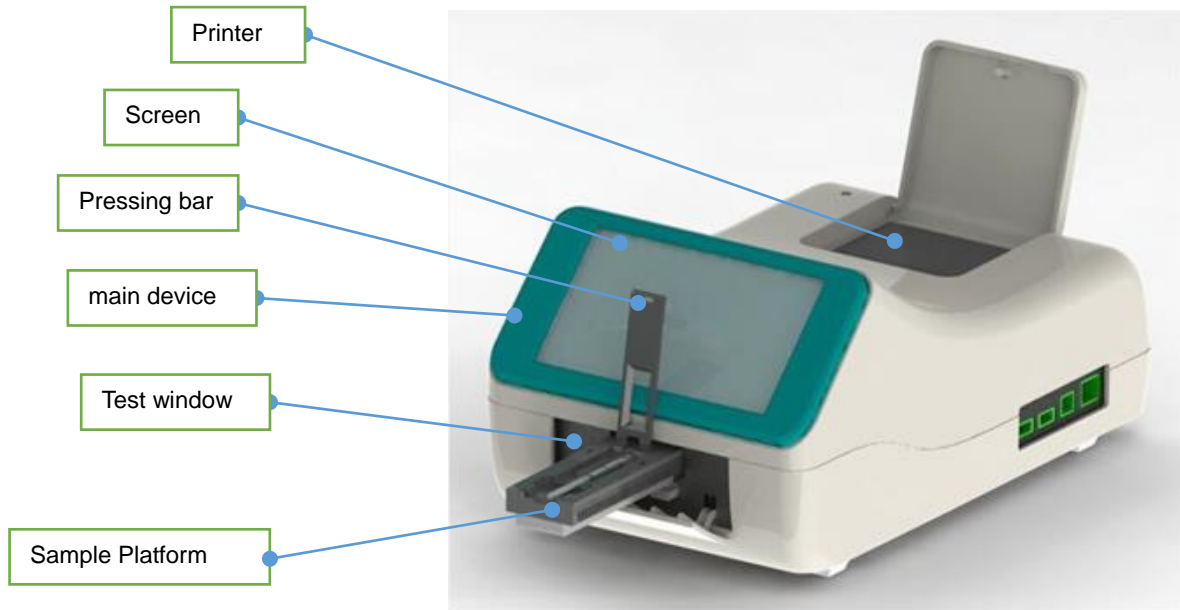
No.	Item	Details
1	Weight	3kg
2	Dimension (WxDxH)	320mm×195mm×156mm
3	Power	48W
4	Wavelength range	525±30nm
5	Detector	Silicon photo detector
6	Repeatabil	CV≤3%
7	Stability	Relative drift value ≤3%(within 2 hs)
8	Display	800×480 6.2inch display
9	Printer	Thermal printer
10	Memory	4GB and Flash
11	Typing	Mouse
12	Operating system	freeRTOS + emwin

Chapter 3 Operation guide

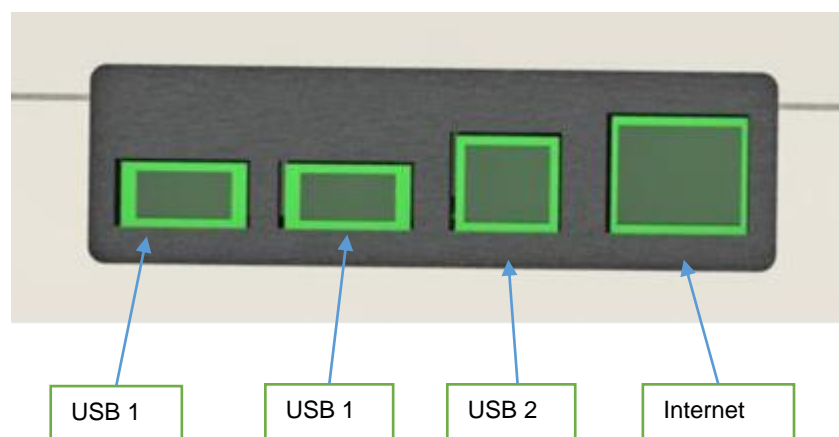
This part introduces instrument structure, operating preparation, please read carefully before operating.

1. Instrument and accessories

Instrument includes main device, power adapter (12V 4A), mouse. User can operate this instrument by touch screen as well as mouse. One strip is equipped with this instrument for calibration, not for detection.



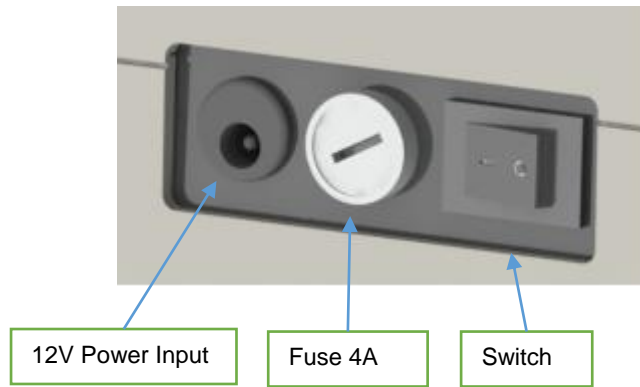
Front View



Side View

2. Function

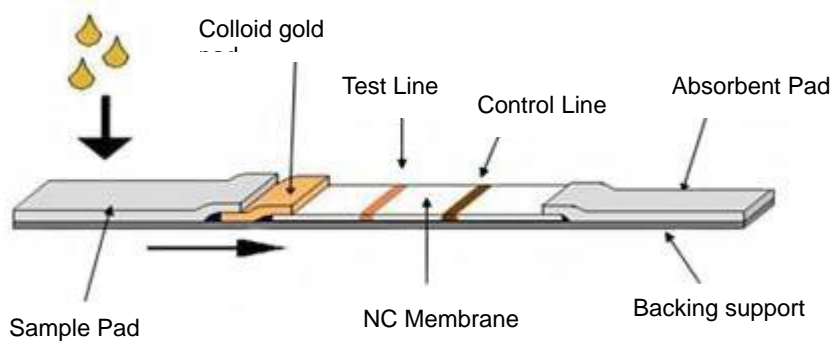
USB port 1, for data transportation, accessories connection, software upgrade, USB port 2 and internet port is extendable for future use.



Rear View

3. Basic operating of detection

Standard test strip structure as picture below, detect sample positive or negative (concentration) by measuring reflection of light intensity of T and C line. This instrument is also suitable for test strip contain several T line.



Basic structure of the rapid test strip

Please check power cable, mouse, and keypad (optional) all connected well before turning on instrument, in case of first use or software upgrade, please insert the software Flash disk to USB port at side.

Then, turn on instrument for self-checking. Choose sample test interface, the sample platform will come out automatically, open the pressing bar, put the test strip to sample platform properly. Measure the sample according to the step on the next chapter.

notice

please put down the pressing bar properly for correct reading.

Sample platform is replaceable. Pull the sample platform outward to make it lose from the base, then lift it upward 20 degree, then take out.

Install it onto the base oblique, and put it flat, push it inside to make tight with base. Shake it tenderly to check if it is installed completely

Chapter 4 Software Installation and Connection

This chapter mainly introduce the necessary environment and driver of the PC software, and the connection method selecting of hardware. Please read this chapter carefully before the first time using. The instrument can't operate normally if without environment and driver or the wrong installation.

1. Software installation

Open the installation file as fig1.

Double-click to enter the interface as fig below



Fig 1 Installation file

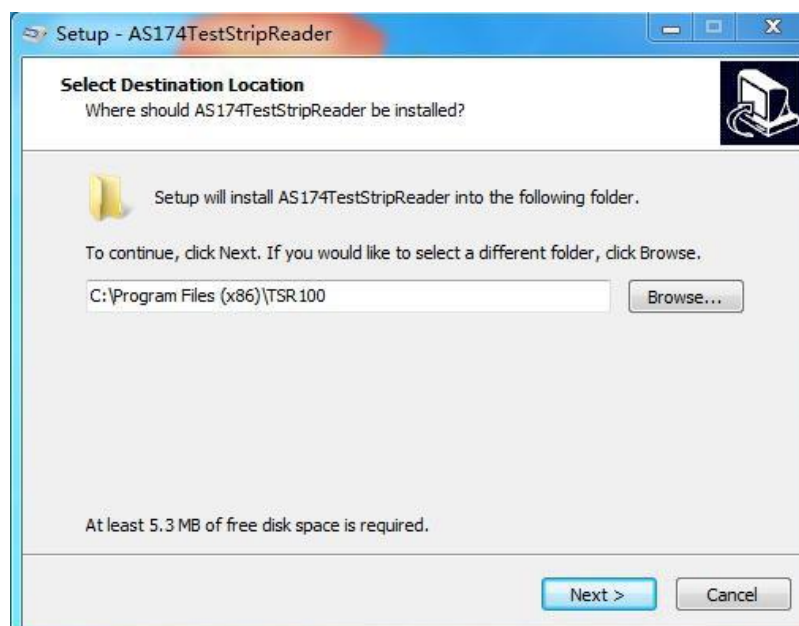


Fig 2 Select destination location

The installation destination can be chosen according to customer's requirement. After the installation location is confirmed, click "Next" and select start menu folder as fig 3,

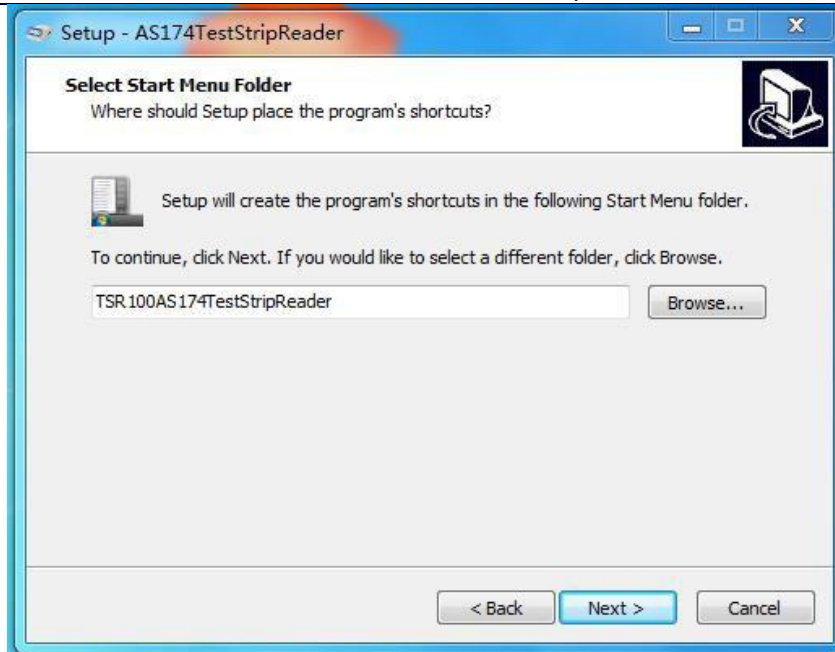


Fig 3 Start Menu Folder

Click "Next" and enter the interface as fig 4. Select "create a desktop shortcut":

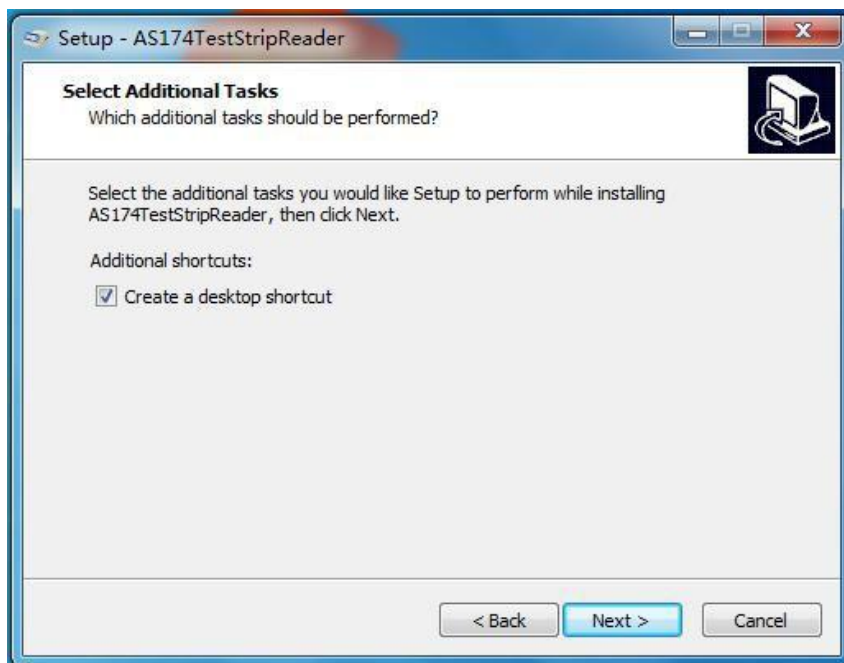


Fig 4 Select create a desktop shortcut

Click "Next" and confirm installation information as figure 5:

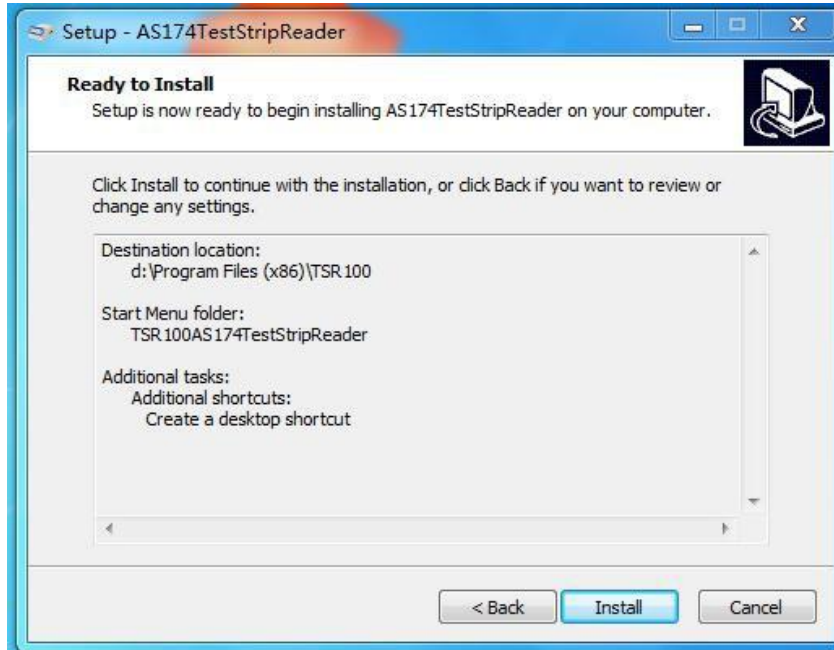


Fig 5 confirm installation information

Click “Install”, and start setup as fig 6 :

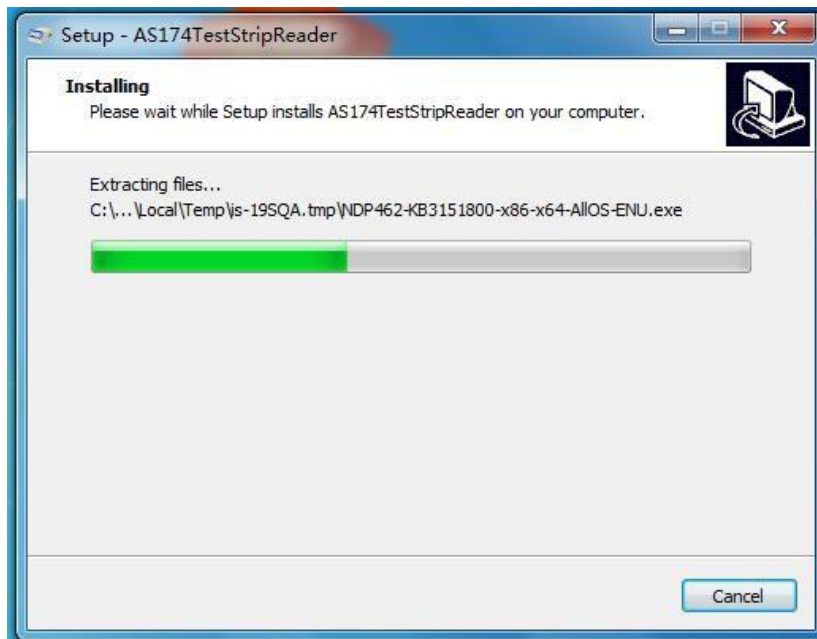


Fig 6 Program installation

During the installation process, the interface pop-up as Fig 7.

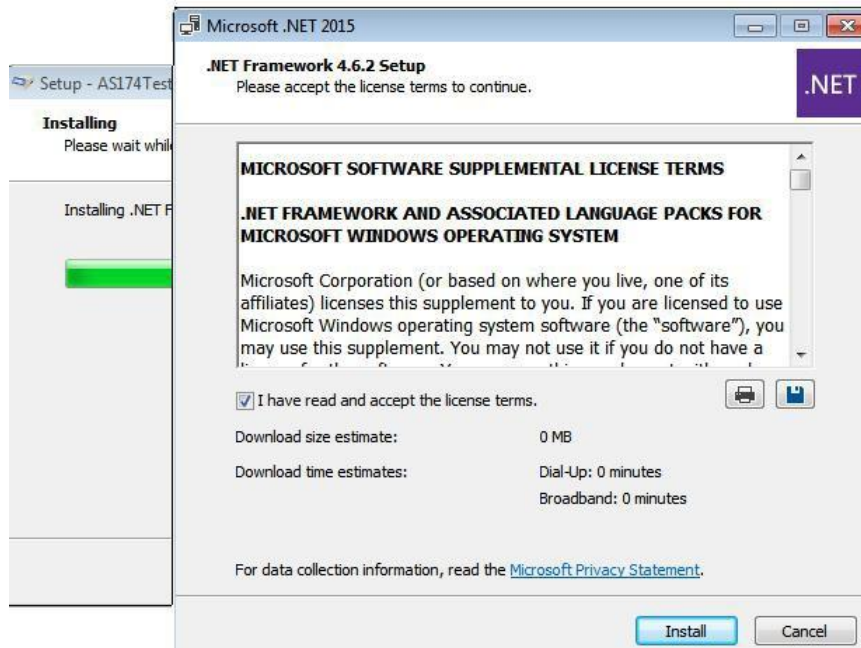


Fig 7 Environment installation

Click checkbox on the left of "I have read and accept the license terms" and click "Install" get below interface.

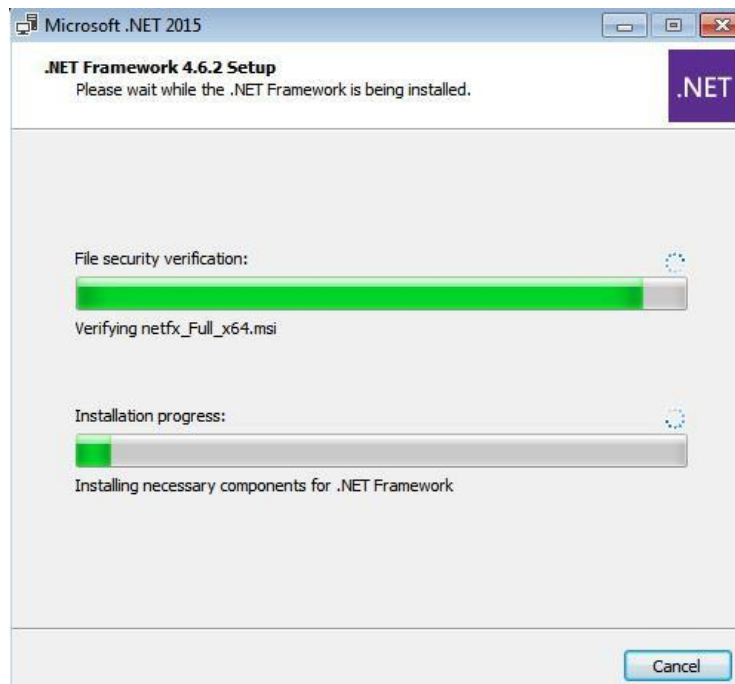


Fig 8 The process of installation

After installation complete, Click "Finish". See as Fig 9

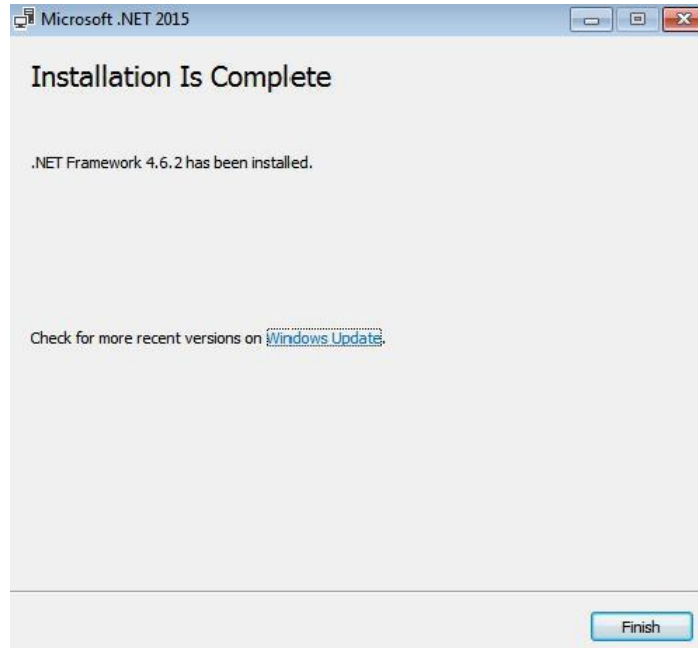


Fig 9 Installation is Complete



Fig10 restart the computer

After restart the computer, the installation software icon display on the desktop, as Fig11



Fig11.Desktop shortcut icon

2. Driver installation

Find the driver installation program as Fig 12 in the installation folder, double click to start the installation.



Fig 12 Driver file

Click "INSTALL" and close the window after the installation finished.

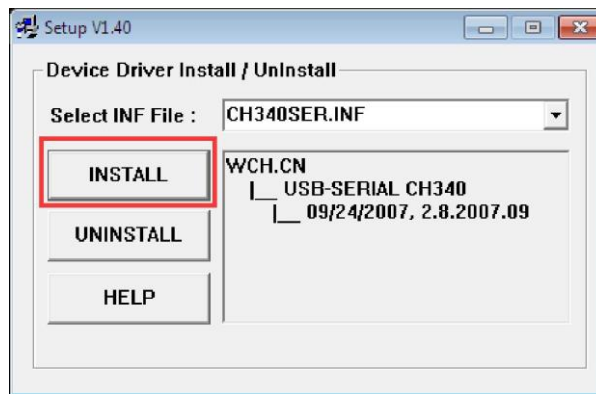


Fig 13 Driver install

3. Connect with computer



Fig 14 USB Connection cable

Use USB data cable which comes with the device together, connect the instrument with B side and USB port of computer with A side. Please make sure well and firm connection.

Running the software, the instrument will be connect automatically. Dialog “Device has been connected with PC, disconnect it now?” pop-up. See as Fig 15

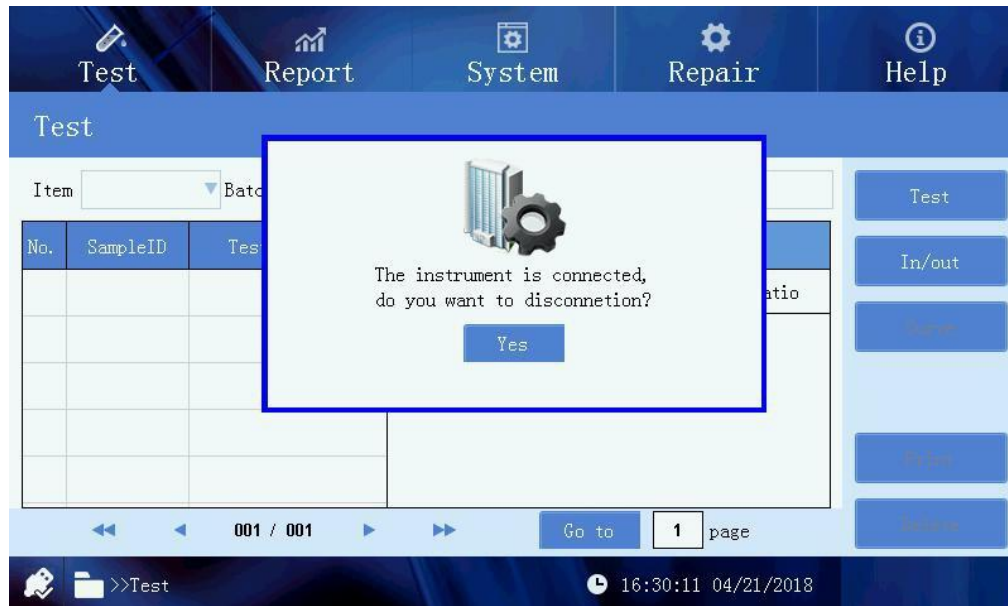


Fig15 Device has been connected with PC

Chapter 5 Software Operation

1. Software running

Power on the instrument, double click the PC software icon and open it.



Fig 16 PC software

Skip the guiding interface and into the test interface.

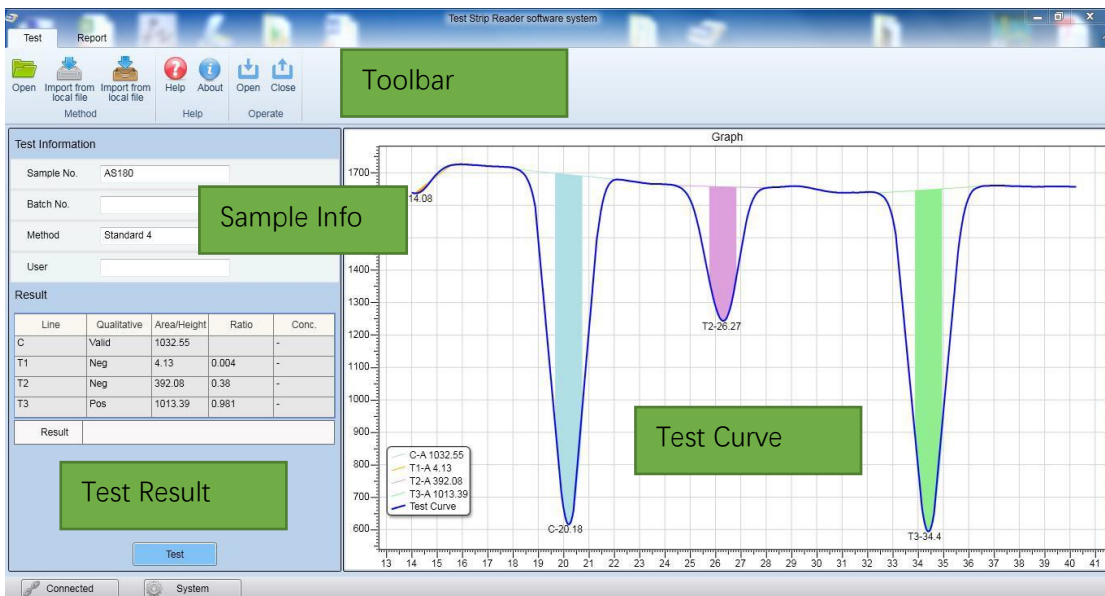


Fig17 Test interface

Software interface mainly include three parts: “Test” ”Report” “System/Connect”. Below is detail introduction about each interface.

2. Test interface

The first interface after software start-up is test interface, it includes four function areas: “test-menu-toolbar”, “ test information”, “test result”, “test curve”. See as Fig 17.

2.1 Test-Menu-Toolbar

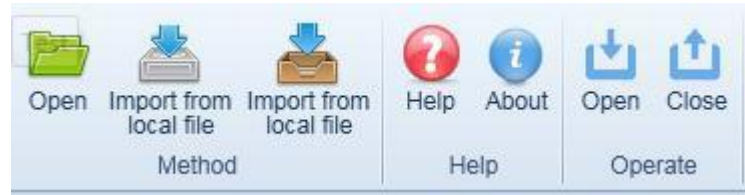


Fig 18 Test—Menu—Toolbar

Test-menu-toolbar mainly includes three parts: “Method” , “Help” and “Operate”.

“Method” is mainly using for selecting the “test method” according to different reagents, include “open ” , “import from instrument” and “import from local file”. “ Help” include “Help” and “About”. Click “Help” to open the help document. Click “About” to see the current system version number. The “Operate” include “Open” and ”Close” to control the platform in and out. Click open for out and close for in.

a. **“Open method”**: Choose one test method from data base of “Test method” for test. As Figure 19.

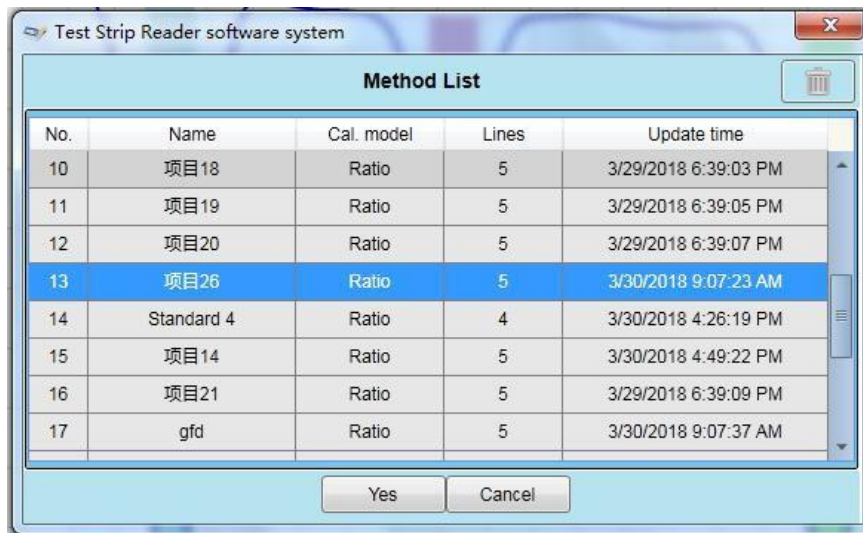


Fig19 Open method

b. **Select method**: Choose one of methods from the table, and click “OK” to set this method for the current test methods.

Delete method: Choose the method, click “delete” icon to delete it from the data base.

Note: The method used in "Test Information" cannot be deleted.

c. **“Import from instrument”**: Import the method from instrument to PC “Test method” data base, and find it from “Open method” . See as Fig 20.

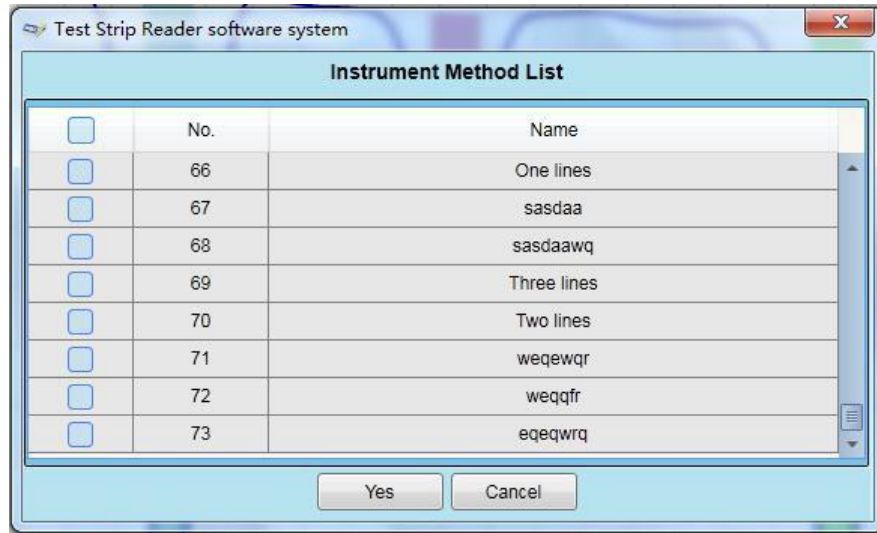


Fig 20 Import from instrument

The Fig.20 show the all test methods save in the current instrument which connect with PC, click the icon “” on the left side to select it, and icon turn to “”. Click “OK” to import this method to the software database.

Note: Select the checkbox on the left of method till “”change to “”. to import the method. Select the checkbox on the left of No. To import all the methods. If after select the method, the method display with highlight but checkbox still is “”, then the prompt dialog of “no selection method” will be pop-up.

d. “**Import from local file**”: Import the test method (.mth) to software on PC for test reagent, in the same time this test method will import to the data base of software. The interface is as Figure 21.

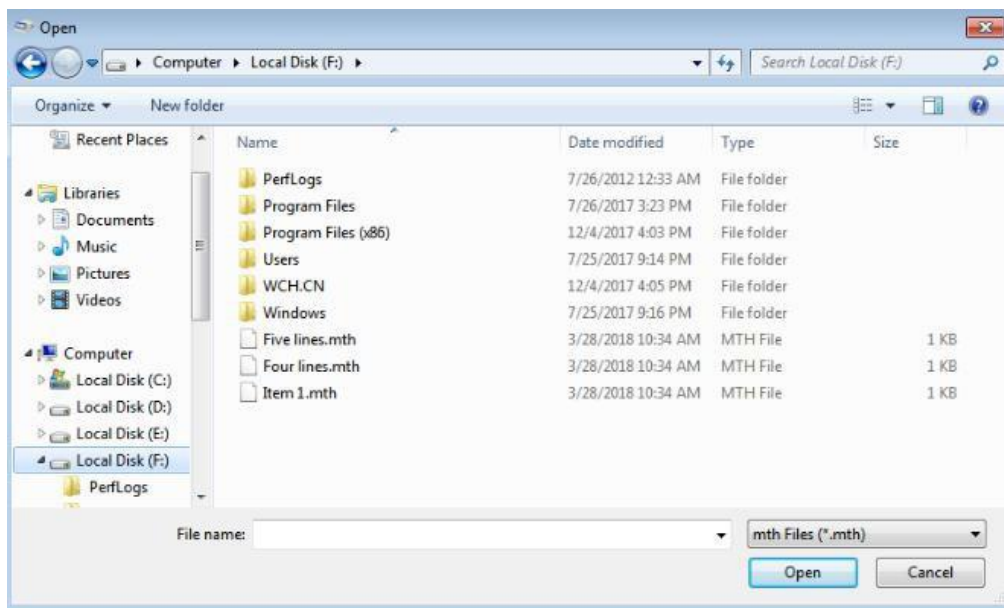


Fig 21 Import from local File

Import method from local file no need to call from the “open method”.

Note: Suggest put all the methods in the same folder, because there is memory function for the route of “import from local file”

2.2. Test information

The test information interface includes “sample No”, “Batch No”, “Method”, and “User”, as shown in the following figure:

Test Information	
Sample No.	<input type="text"/>
Batch No.	<input type="text"/>
Method	<input type="text"/>
User	<input type="text"/>

Fig 22 Test information

“Sample No.”: Name of sample which need to test currently, the sample no. can be written according to different requirement. The system can automatic number the sample, if there is no amend about the sample no., then the system will be automatic numbering tactic.

“Batch No.” User can be set the reagent lot no. according to the requirement. This can be set optionally

“Method”: the name of current “test method” cannot be amended here, it is only import from “open method” “import from local”. “User”:

input the tester name and no. Etc.

Note: Test only can be done after insert the sample no. and method.

2.3. The result

“Result” show all test data as below Fig 23 .

Result				
Line	Qualitative	Area/Height	Ratio	Conc.
C	Valid	1031.98		-
T1	Neg	4.3	0.004	-
T2	Neg	390.42	0.378	-
T3	Pos	1011.87	0.981	-
Result				

Fig 23 Test result

Test result includes below:

“Line”: Display the name of each test line

“Qualitative”: Display the qualitative analysis result, such as “Negative” “Positive” and so on.

“Area/Height”: Display the specific test value

“Ratio”: Display the calculated result according to the “Calculation method (ration method and value method) in the “Test result”.

“Conc.”: Display concentration value, calculate the concentration value according to the standard curve set in test method.

2.4. Test curve

“Test curve” display the current curve graph of current reagent, the graph show the corresponding peak and location of each test line. Curve graph can be zoom in and out.

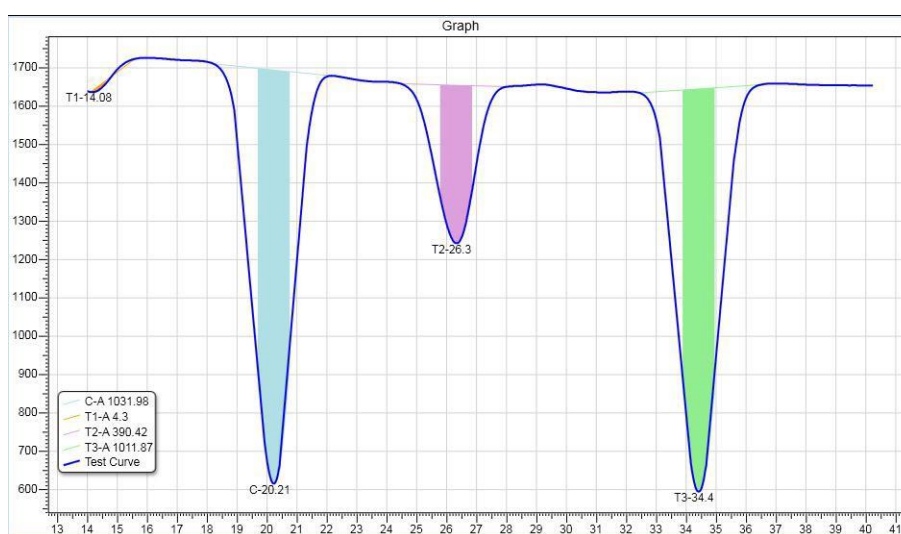


Fig 24 Test curve

2.5. Basic process of reagent test

- Select the test method through “Open” or “ Import from local file”;
- Input “Sample No.” “Batch No.” “Method” , “User” etc. If the user need to print the result with detail company information, please input it.
- Ensure that the instrument is in the "open" state;put the sample strip into the instrument;
- Click “Test” icon under the interface of “Result” to test.
- See “Result”

Note: The data is printed in the report interface.

3. Report interface

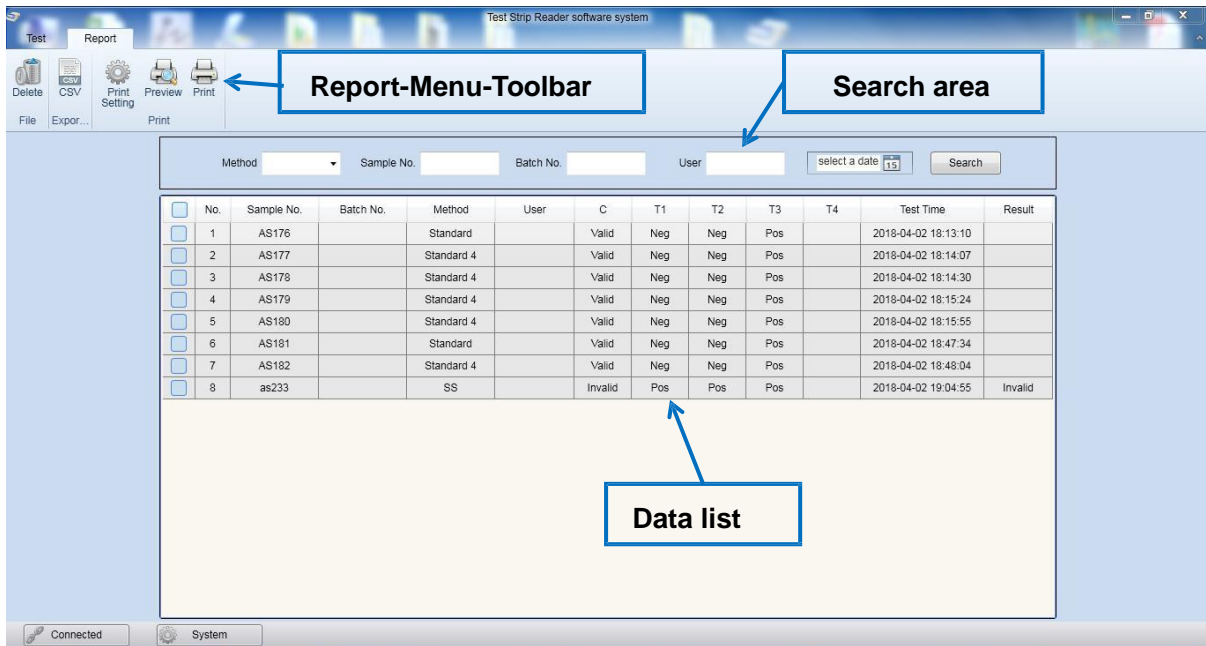


Fig 25 Report interface

Report interface includes three parts: “Report-menu-toolbar” “Search area” “Data list” (Fig 25)

3.1 Report-Menu-Toolbar

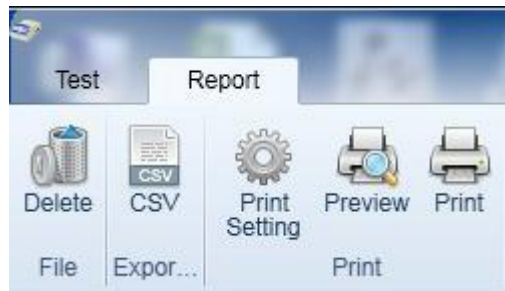


Fig 26 Report-Menu-Toolbar

“Report-Menu-Toolbar” include below functions:

“Delete”: Delete data, delete one or several pcs data is available.

“CSV”: Export CSV files.

“Print Setting”: Set print as Fig 27.

“Preview”: Preview the print page.

“Print”: Print selected data.

Note: All the function of “Report-Menu-Toolbar” is for the selected data in the data list , this function is not available if no selected data.

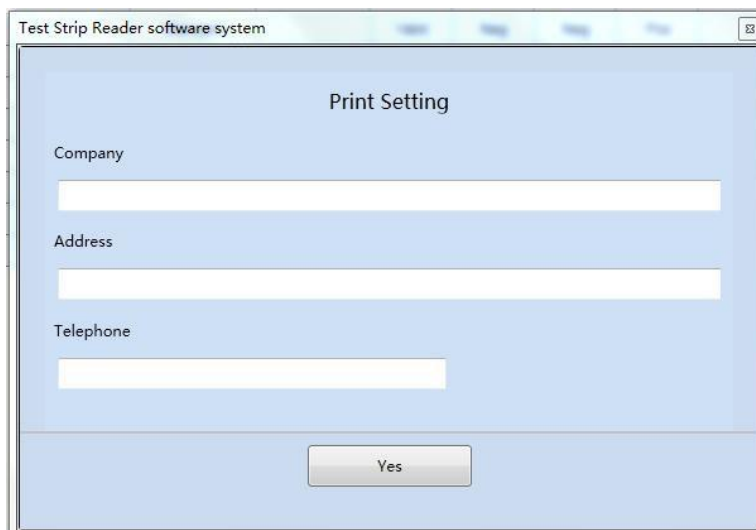


Fig 27 Print Setting

3.2. Search area

Each function of “Search area” is using for search the historical data information of software data base.

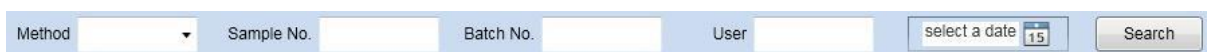


Fig 28 Search area

Click “Search” to search the data after the searching condition setting finished.


Operate methods as below:

“Method”: Click “▼”(On the right side of blank) to see the test method list. Select one of them and click “Search” to check all the test data which test by this method.

“Sample No.” : input “Sample no.” click search to check all the historical data information relate to this sample no..

“Batch No.”: Input “Batch No.” and click “ Search” to check all the historical data information relate to this Batch No..

“Test by”: Input “test person” and click “Search” to check all the historical data information which test by this person.

“Select a date”: Click icon “”, to select the date and click “Search” to check all the data test in this date. Fig 29.

Note: Users can input the partial contents of search conditions, and the system will search automatic.The system supports multiple search conditions while searching.

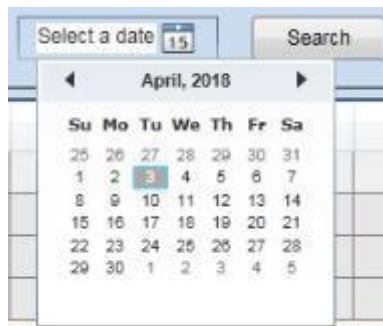


Fig 29 Time setting

3.3.

Data list

Historical list as below figure 30. Click checkbox “” on the left side of the form. Single, multiple, and full selection of historical data can be selected. Click checkbox on the left side of the “No.” to select all. After the test data is selected, “” change to “”.

<input type="checkbox"/>	No.	Sample No.	Batch No.	Method	User	C	T1	T2	T3	T4	Test Time	Result
<input type="checkbox"/>	1	AS176		Standard		Valid	Neg	Neg	Pos		2018-04-02 18:13:10	
<input type="checkbox"/>	2	AS177		Standard 4		Valid	Neg	Neg	Pos		2018-04-02 18:14:07	
<input type="checkbox"/>	3	AS178		Standard 4		Valid	Neg	Neg	Pos		2018-04-02 18:14:30	
<input checked="" type="checkbox"/>	4	AS179		Standard 4		Valid	Neg	Neg	Pos		2018-04-02 18:15:24	
<input checked="" type="checkbox"/>	5	AS180		Standard 4		Valid	Neg	Neg	Pos		2018-04-02 18:15:55	
<input checked="" type="checkbox"/>	6	AS181		Standard		Valid	Neg	Neg	Pos		2018-04-02 18:47:34	
<input type="checkbox"/>	7	AS182		Standard 4		Valid	Neg	Neg	Pos		2018-04-02 18:48:04	
<input type="checkbox"/>	8	as233		SS		Invalid	Pos	Pos	Pos		2018-04-02 19:04:55	Invalid

Fig 30 Data display

notice

While the data is selected , the “” change to “”.

4. System/Connected

System/Connected include two parts: “  System ”、 “  Connected ”.

Click these two icons on the left bottom side to enter into these two functions.

4.1 System

System includes three functions: “Language”, “Time”, “Option” ,as below figure 31.

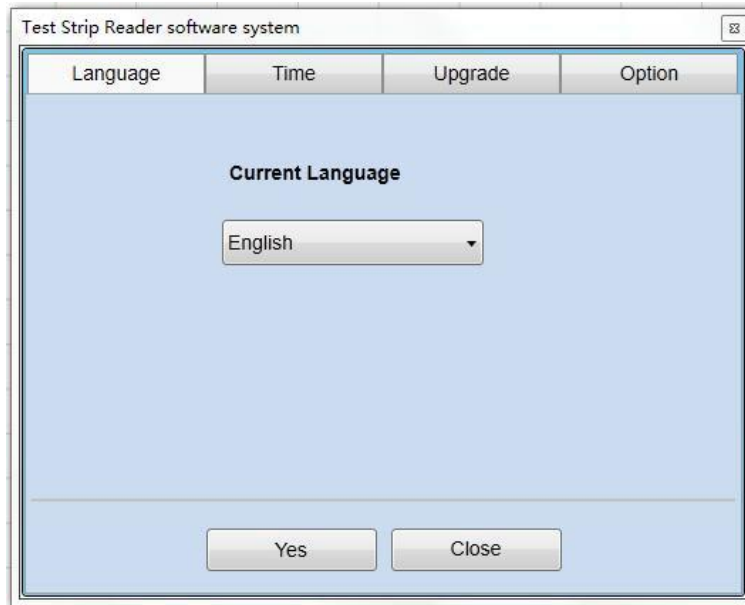


Fig 31 System Surface

4.1.1 Language

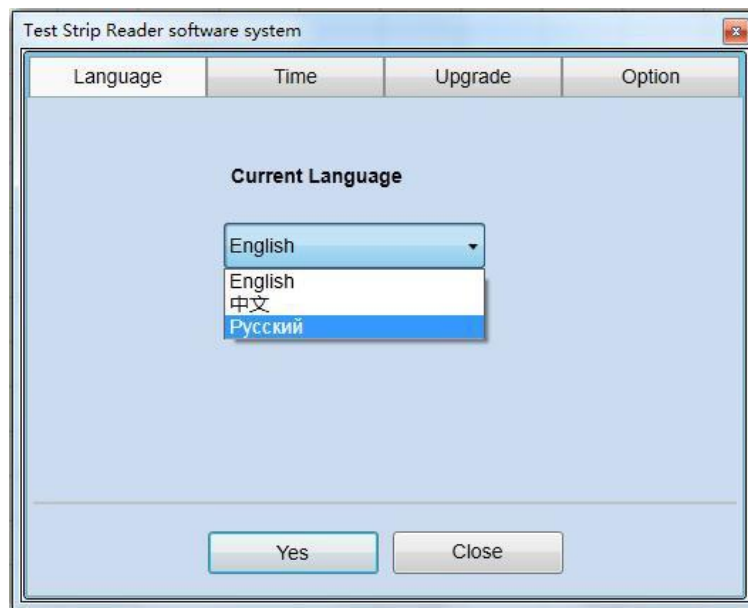


Fig 32 Language setting

Select the language as needed and click “Yes” to confirm. Only Chinese, English and Russian can be selected, the users can switch them as required

Note: After the language switched, the software will restart.

4.1.2 Time

“Time” is mainly for rapid time setting of instrument. This function is bas on PC software read system time of PC, click “Time Syn” to synchronization with instrument. The time interface is as below figure 33 .

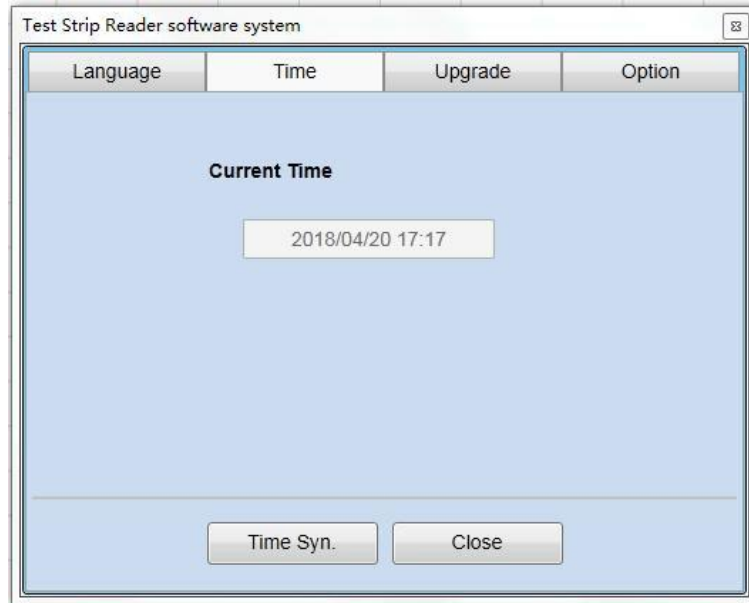


Fig 33 Time

Note: Please make sure the system time of PC is right before synchronization.

4.1.3 Upgrade

The “upgrade interface” can upgrade the instrument system, as below figure 34.

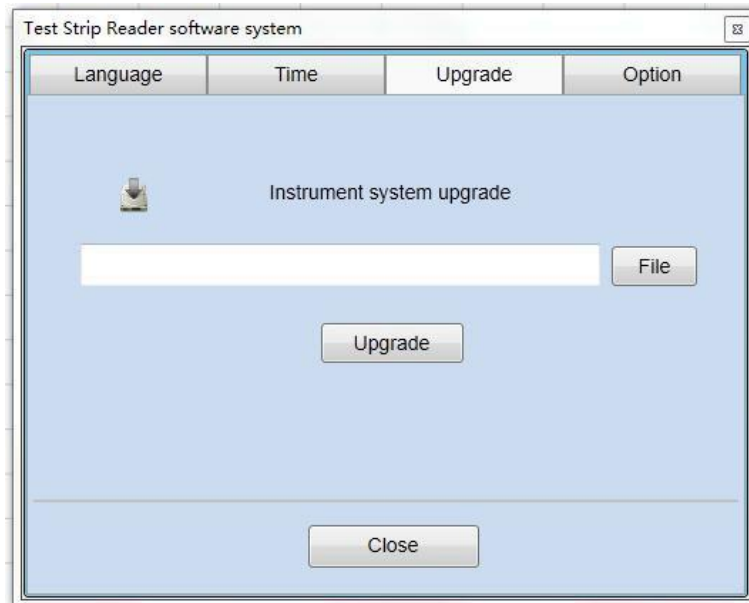


Fig34 Instrument system upgrade

Click “File” to select the file which need to upgrade, and get the dialog as below Fig 35

Click “upgrade” and pop-up the dialog, then click “Yes” for start upgrading. Please re-start the device after upgrade finished.

Note: Please do not click “Yes” on the software upgrade interface. Please choose the right software version for upgrade.

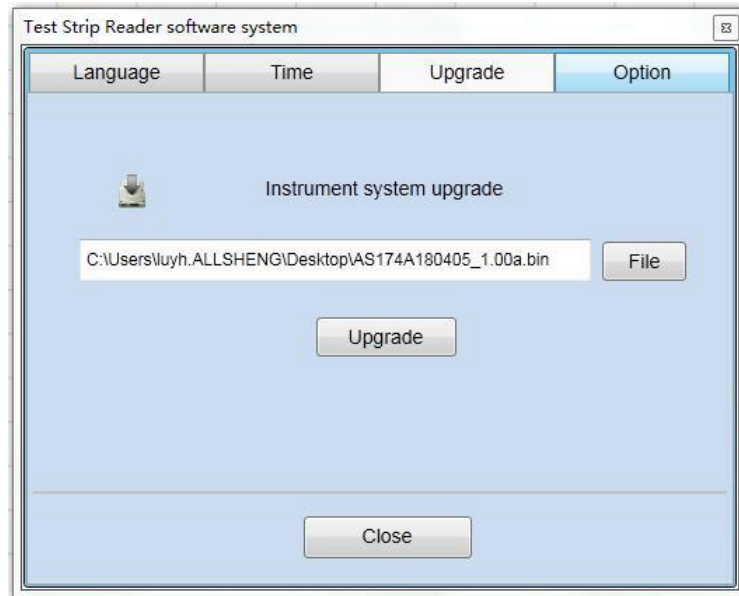


Fig35 Select upgrade file

4.2 Connected

To connect or disconnect the PC and instrument under this function. Click "Connect" to turn on or off. See as Fig 36,37. Click connect test to confirm and display the connection status

Note: the icon which show the connection status will display it.



Fig 36 Connection status



Fig 37 Disconnection status

Chapter 6 Trouble shooting

No.	Trouble	Causes	Solution
1	Screen does not work after power on	No power supply	Check power supply
		Fuse defective	Change fuse
		Switch defective	Change switch
		Power adapter defective	Contact distributor or manufacturer
		Others	Contact distributor or manufacturer
2	Instrument cannot be connected to PC	Instrument not turned on	Turn on the instrument
		USB cable defective	Change USB cable.
3	Instrument is shut down before sample platform is in.	Power cut off by accident	Check power supply, if normal restart instrument, or refer to No. 1
4	Sample platform is jammed	test strip is not laid flat	Stop detection, enter in to "Maintenance" interface to click sample in/out to take out test strip.
5	Result not precise	Upper part of sample platform is loose	Push the upper part in wards to fix.
6	E903 Weak light intensity	Weak light intensity or lamp is not powered	Contact distributor or manufacturer
7	E902 Strong light intensity	Intensity out of range	Contact distributor or manufacturer
8	E104 Problem on photoelectric switch or motor	Motor damage, out of step or damage to the photoelectric switch	Contact distributor or manufacturer
9	E602 Abnormal data	Sampler abnormality or data line is pulled	Contact distributor or manufacturer
10	E708 flash memory abnormality	Storage chip is damaged	Contact distributor or manufacturer
11	E705 Test record memory will be full	Excessive test record storage	Delete old the test records

Chapter 7 RINGBIO Rapid Tests Catalogue

Product Code	Category	Description	Package
100000	Reader	NBReader for Rapid Test Kit	1set
100001	Milk Test	Beta Lactams Rapid Test	96T
100002	Milk Test	Beta-Lactams+Tetracyclines, BT Combo Test(100ppb)	96T
101002	Milk Test	Beta-Lactams+Tetracyclines, BT Combo Test(10ppb)	96T
102002	Milk Test	Beta-Lactams+Tetracyclines, BT Combo Test(10ppb)	96T
103002	Milk Test	Beta-Lactams+Tetracyclines, BT Combo Test (2-4ppb)	96T
104002	Milk Test	Beta-Lactams+Tetracyclines, BT Combo Test (10ppb)	96T
105002	Milk Test	Beta-Lactams+Tetracyclines, BT Combo Test (10ppb)	96T
106002	Milk Test	Beta-Lactams+Tetracyclines, BT Combo Test (100ppb)	96T
110002	Milk Test	BT Combo Test Kit(low_sensitivity)	96T
120002	Milk Test	BT Combo Test Kit(high_sensitivity)	96T
110001	Milk Test	Cefalosporins Rapid Test (10-30ppb)	96T
100003	Milk Test	Beta-Lactamase Rapid Test	96T
100004	Milk Test	Aflatoxin M1 Rapid Test (0.05ppb)	96T
100004	Milk Test	Aflatoxin M1 Rapid Test (0.4ppb)	96T
100004	Milk Test	Aflatoxin M1 Rapid Test (0.5ppb)	96T
100005	Milk Test	Lincomycin Rapid Test	96T
100006	Milk Test	Tetracyclines Rapid Test (High sensitivity)	96T
100007	Milk Test	Tetracyclines Rapid Test (Low sensitivity)	96T
100008	Milk Test	Sulfonamides Rapid Test	96T
100009	Milk Test	Fluoroquinolones Rapid Test	96T
100010	Milk Test	Neomycin Rapid Test	96T
100011	Milk Test	Gentamicin Rapid Test	96T
100012	Milk Test	Streptomycin Rapid Test	96T
100013	Milk Test	Tylosin Rapid Test	96T
100014	Milk Test	Chloramphenicol Rapid Test	96T
100015	Milk Test	Beta/Tetra/Sulfa, BTS TriTest (100ppb)	96T
100015	Milk Test	Beta/Tetra/Sulfa, BTS TriTest (10ppb)	96T
100015	Milk Test	Beta/Tetra/Sulfa, BTS TriTest (3min+5min)	96T
100016	Milk Test	Beta/Tetra/AflaM1 TriTest BTM1 Rapid Test	96T
100017	Milk Test	Beta/Tetra/Macrolides, BTM TriTest	96T
100018	Milk Test	Beta/Tetra/CAP/Strep, BTCS QuaTest	96T
100019	Milk Test	Beta/Tetra/Cefalexine, BTCex TriTest	96T
100020	Milk Test	Linco/Quino/Tylo, LQT TriTest	96T
100021	Milk Test	Beta-Lactams+Cefalexin, BCex Combo Test	96T
100023	Milk Test	Macrolides Rapid Test	96T
100024	Milk Test	Quino/Macro/Linco/Erythro, QMLE QuaTest	96T
100025	Milk Test	Aminoglycosides Rapid Test	96T
400001	Feed Test	Aflatoxin B1 Rapid Test	96T

Product Code	Category	Description	Package
400002	Milk Test	Melamine Rapid Test	96T
400003	Milk Test	Milk adulteration test kit - bovine from sheep/goat	96T
430001	Feed Test	Myco 3 AfB1/ZON/DON TriTest	96T
300001	Milk Test	Albendazol Rapid Test	96T
600001	Feed Test	Zearalenone Rapid Test	96T
600002	Feed Test	Deoxynivalenol (Vormitoxin) Rapid Test	96T
R6001	Milk Test	Vitamin B7 Test	96T
R6001	Milk Test	Vitamin B9 Test	96T
R6001	Milk Test	Vitamin B12 Test	96T
E1041	Egg Test	Sulfonamides Rapid Test Kit	96T
E1052	Egg Test	Fluoroquinolones Rapid Test	96T
E1074	Egg Test	Chloramphenicol Rapid Test Kit	96T
E1077	Egg Test	Florfenicol Rapid Test Kit	96T
E72101	Egg Test	NF Combo Rapid Test	96T
E72201	Egg Test	FE Combo Rapid Test	96T
E72301	Egg Test	TT Combo Rapid Test	96T
E73101	Egg Test	TriTest BTS Rapid Test	96T

Note: this list will be updated time to time without further notice, please always contact us directly for latest product update.



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