ATP 手持式荧光检测仪

Portable ATP Luminometer

使用说明书

Instruction Manual

版本号：201903　　Version No:201903

Operation Precautions and Limitations of Use

IMPORTANT: This product is designed and constructed to be safe and without risk to health when properly used (in accordance with the supplied documentation, etc) and when the operation precautions outlined in this document are fully observed.

These precautions are outlined below:

Operating Environment and Electrostatic Precautions

 **WARNING**: Do not use the unit in any area with explosive or flammable gases or vapors.

 **CAUTION**: Do not expose the unit to extremes of temperature (see section 13), and minimize any exposure to electrostatic charges.

Unit Handling

 **CAUTION**: Care should be taken not to drop the unit or subject it to rough physical handling.

Batteries

 **WARNING**: Use only non-rechargeable alkaline batteries, or rechargeable NiMH or NiCD batteries, of types specified in section 2.4.

 **WARNING**: Do not use batteries with individual cell voltages greater than 1.6 V, as this will cause permanent damage to the unit.

 **WARNING**: Batteries should be removed out when the device is not in use for long time.

 **CAUTION**: Old batteries should be disposed of in accordance with your local regulations.

Use and Insertion of Scithera ATP test kits

 **CAUTION**: Refer to the Scithera Swab data sheet and kit insert for details before using the device, and observe all federal, state and local environmental regulations.

 **CAUTION**: Do not force Scithera test kits into the unit. Do not attempt to insert any object other than an approved Scithera kit into the unit. Ensure that the Scithera kit is clean and dry before inserting it into the unit.

Keypad Buttons

 **CAUTION**: Do not use excessive force when pressing any of the buttons on the unit's

keypad.

Unit Casework

WARNING: There are no Operator serviceable parts inside the unit. Removal or opening of the unit's casework will void the warranty.

Contents

1. Introduction

The Scithera system is intended to provide a fast, easy screening test for bacterial contamination via the use of an ATP bioluminescence test. The Scithera system consists of two elements: the Scithera portable unit and the disposable Scithera ATP test kits.

This Operator's Manual provides a detailed description of how to use the Scithera unit, and how to handle maintenance and troubleshooting. For full details on the Scithera ATP test kits, please refer to the Scithera kit insert.

1.1 Principle of Operation

Adenosine Triphosphate, or ATP, is the energy molecule found in all living things, making it a perfect indicator when trying to determine if a surface or water is clean or not. Companies use ATP systems to rapidly verify surfaces cleaned thoroughly in food manufacturing and healthcare applications, and to ensure that biofilms are not developing on the surface that could affect quality.

The Scithera kits use bioluminescent chemistry technology to convert an invisible concentration of ATP (present in the swabbed sample or collected water) into a visible light output. The low-level light output is measured by the Scithera unit to produce both a quantitative and qualitative result. The quantitative result is a number in the range 0 to 9999, expressed in terms of Relative Light Units – RLUs.

Although Relative Light Units are not a tangible unit of light measurement (such as lux), they do provide a real measure of the amount of light output by the ATP bioluminescent test. In this application, 1 RLU is roughly equivalent to 1 fmol of ATP. The quantitative RLU reading is further compared against user programmable thresholds to provide an overall qualitative low (

), medium (

) or high () result.

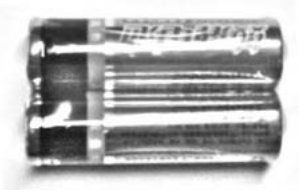
The Scithera unit is a highly sensitive measurement device and, as such, should be handled with care at all times.

2. Before You Begin!


IMPORTANT: Please ensure that you have read and understood all the "Operation Precautions and Limitations of Use" section at the beginning of the manual before continuing any further.

Your new set should come with the following items. If you need software for transferring data to computer, please ask for the software.

Main unit

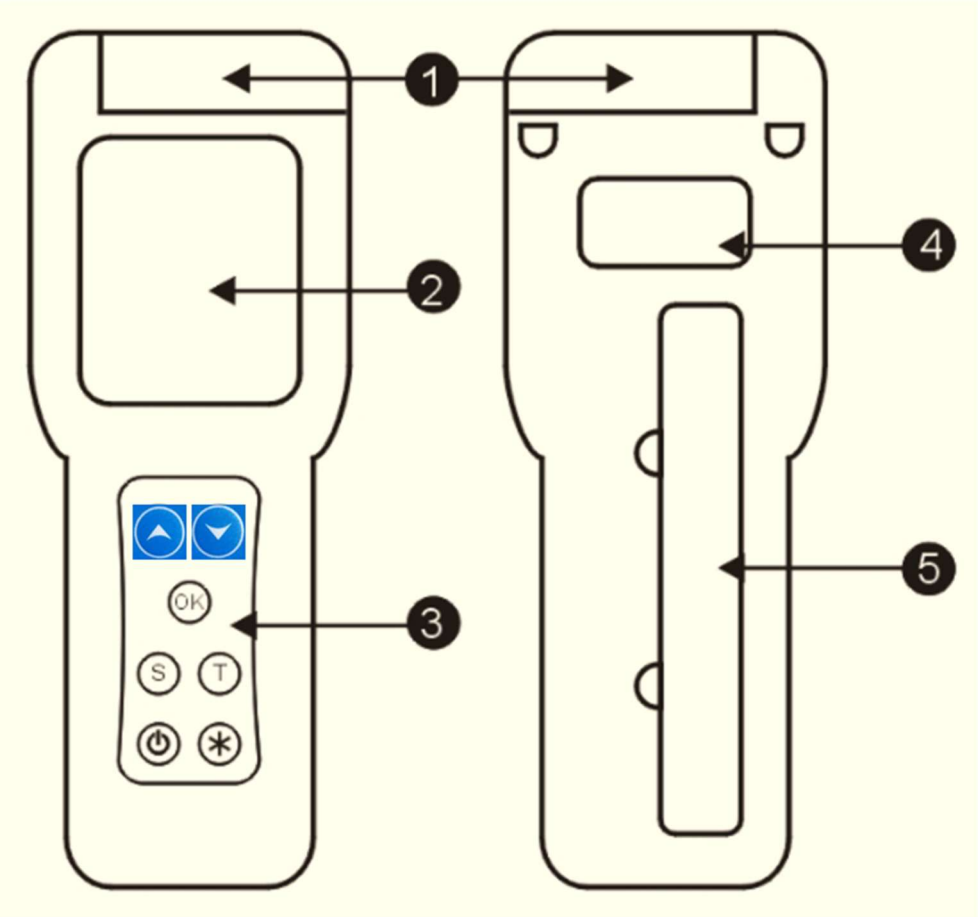


AA Battery

Connection Cable

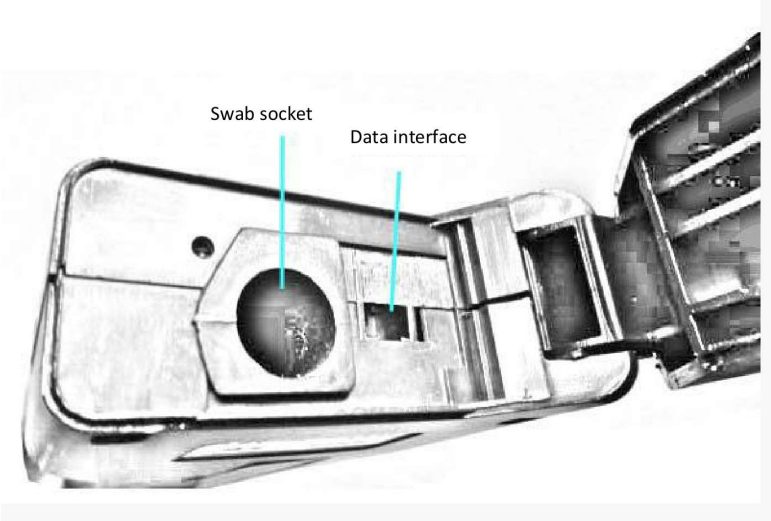
2.1 Unit Description

The unit has the following external front and rear features:



1. Unit lid
2. Liquid crystal display
3. Keypad
4. Serial number label
5. Battery compartment

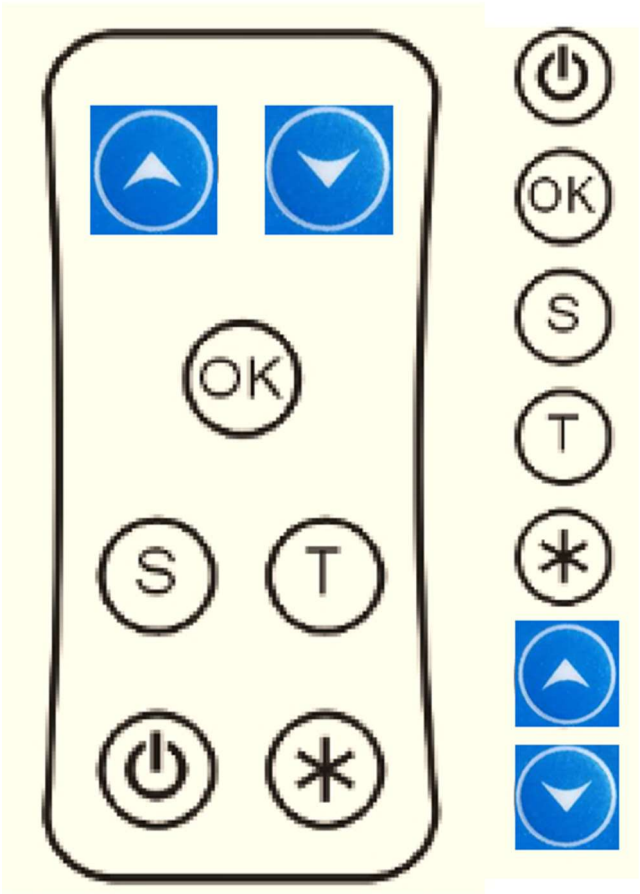
Opening the lid reveals the following internal features:



6. Data interface for connecting cable to transfer data to computer
7. Swab socket for inserting the All-in-one kit to the unit for RLU measurement

2.2 Keypad Symbols

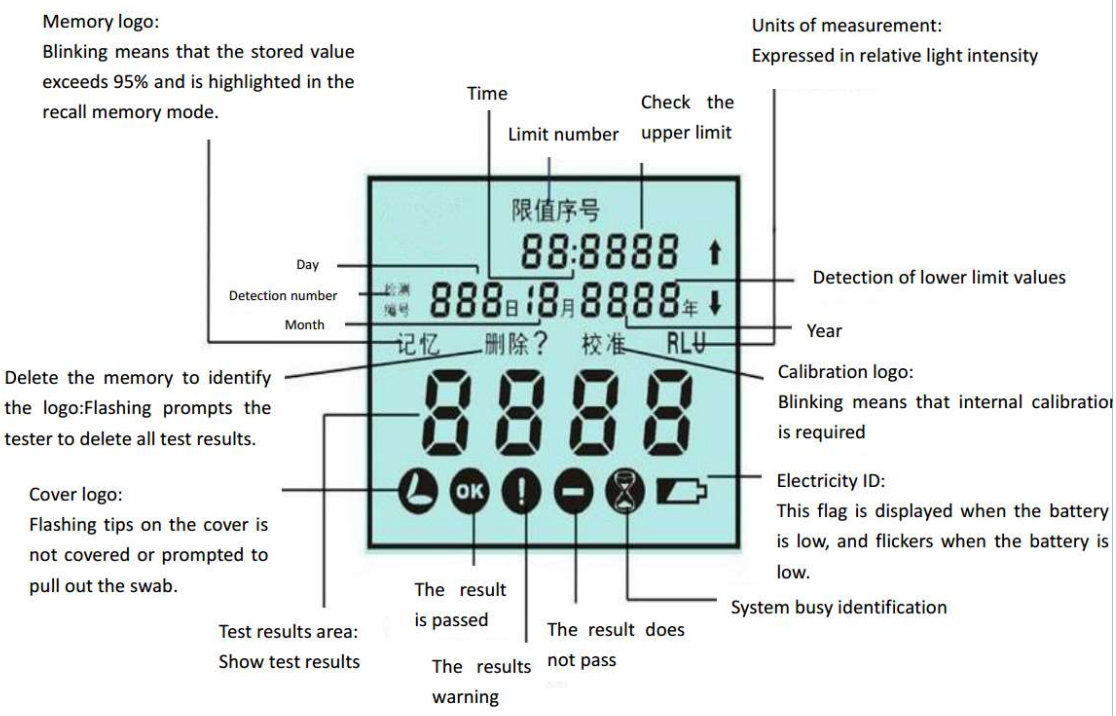
The keypad is arranged with the following buttons:

	**Power on/off button** **Start/accept button** **Program select button** **Time/Date set button** **Special function button** **Up/increase button** **Down/decrease button**

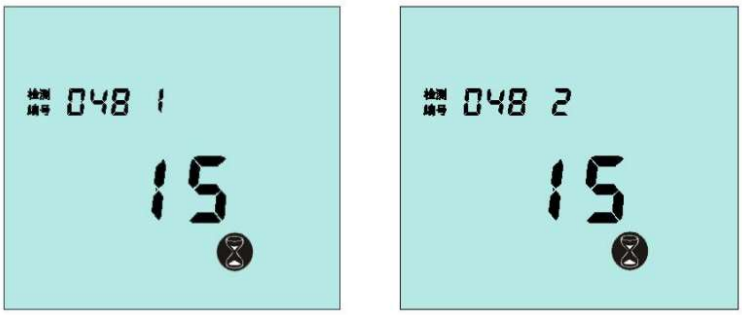
The function of the buttons is explained in more detail in the following sections.

2.3 Instrument display

Digital display on the top of the LCD display has a dual function of detection and time date, and is switched by time key T.



Storage instructions:



The number 1 of the check number is the number of the first group, 001 to 999. The three digits followed by 2 represent the second group, 000 to 999 numbers. Such as: 048 2 can be seen as the first 1048 number.

2.4 Install the battery

This machine requires two ordinary AA batteries. Install the battery only need to open the battery cover behind the instrument, insert two batteries, positive up. When the battery is inserted correctly, the instrument will automatically turn on and enter the clock setting mode. Set the time and date see Chapter 4.

Note: Do not reverse the positive and negative batteries, which may damage the instrument's electronic system.

Tip: In order to ensure better results, please use a better quality alkaline batteries; if you show low battery please replace.

3.Basic operation

The following provides the most basic daily operation of the instrument:

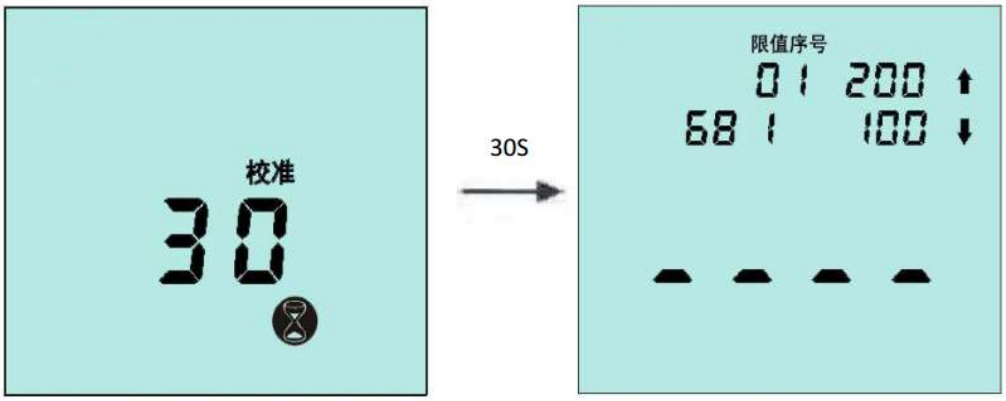
3.1 Boot:

Press the power button⏻to turn on. The instrument tweet once and the boot screen is displayed. Then, the instrument performs a 30 second internal calibration procedure.

Tip: If the clock is not set (such as after the replacement of the battery), the instrument first enter the time and date setting mode, set the clock before the implementation of its calibration procedures. See Chapter 4 for the time and date settings.

3.2 Internal calibration

After power on, the instrument performs an internal calibration check of 30 seconds, the digital display counts from 30 to 0:



Note: Do not insert the swab while making the internal calibration of the instrument and make sure the cover is tight. If the cover mark flashes, close the top cover.

The instrument automatically performs an internal calibration procedure (calibration mark flashes) in the following cases:

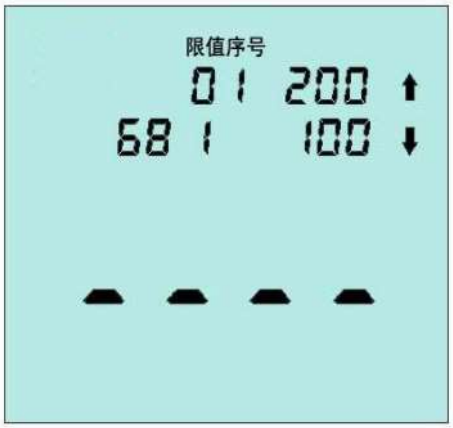
The instrument has been working continuously for a long time (usually more than 30 minutes);

The instrument works in a temperature-dependent environment (change greater than 5 ° C).

After the internal calibration is complete, the instrument enters the status to be checked.

3.3 Ready to finish:

After the internal calibration is complete, the instrument enters the status to be checked:



Refer to Section 6.1 for the inspection procedure.

3.4 Shut down:

Press the power button⏻. When the instrument isep once, the display disappears.

Tip: During specimen detection, power⏻cannot be used.

3.5 Energy saving mode：

When the instrument is in the power on, the standby time is more than 10 minutes (ie, more than 10 minutes without any action) will automatically enter the energy saving state.

To restore, press the power button⏻.

3.6 Low battery display

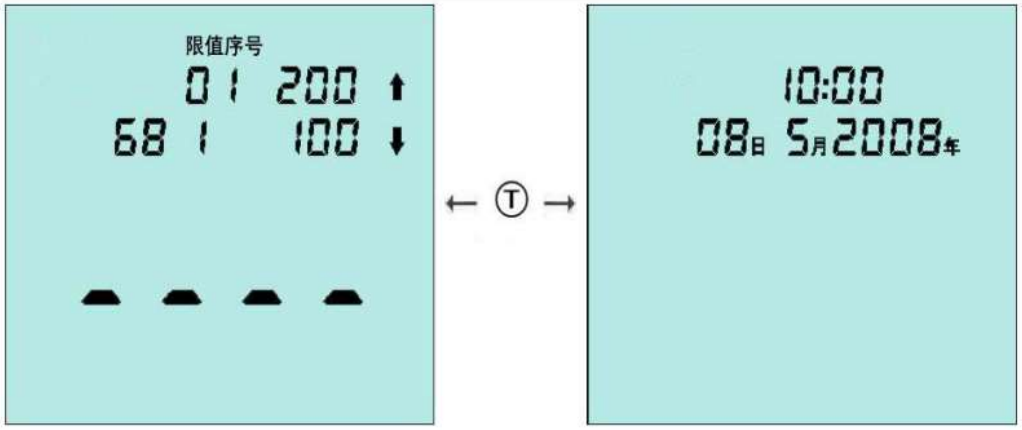
Power identification	Indicates battery status
Does not appear	The battery is fully charged
Appears	The battery is low and needs to be replaced
Flashing	The battery is dead and replaced immediately

When the battery is dead, the battery logo flashes, beeps three times, and then automatically turns off.

Note: If the battery is dead, the instrument will not turn on. As the high temperature can reduce the battery life, if not, please put the instrument in a cool dry place.

4. Clock setting and adjustment

In the interface to be checked, if you press the information key Ⓣ to display the current time and date:



To adjust the time and date, press the key ⊛ and then the up ⓤ and down ⓓ keys to change the flashing number. Press the key ⓞ to confirm the number.

Tip: Pressing the key ⊛ at any time will abort the setting, and the time and date will not change.

When the battery is first installed or replaced, the instrument will automatically enter the clock setting mode. After the clock is set, the instrument will continue its internal calibration.

If the time setting is not correct (size month, leap year setting error), press the key ⓞ and the instrument will tweet once prompted the time to set the error and restart the setting.

5. Set the upper and lower limits of the test results

The instrument can store up to 100 limit Numbers (0-99)and each of these measurements has a pair of high and low limit values.

Note: The so-called limit number refers to the specific health requirements of different detection objects, how to choose the range of different detection objects, please contact the local health and epidemic prevention departments or according to the need to set their own test.

5.1 Change the limit number

Press the key Ⓢ to change the limit number, press the up Ⓤ and down Ⓓ keys to change the flashing limit number, and then press the key Ⓞ to confirm.

Tip: During the setup process, pressing the key Ⓢ again will exit the setting and the limit number remains unchanged.

5.2 Change the range of limits

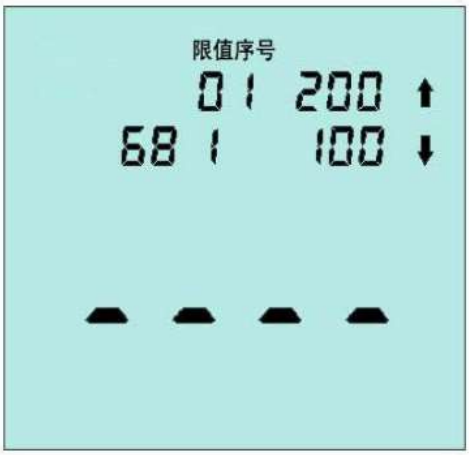
Press the key Ⓢ and then press the up Ⓤ and down Ⓓ keys to change the flash limit number, press the key Ⓞ to confirm the required limit number, and then press the up Ⓤ or down Ⓓ key to select the upper limit value, press the key Ⓞ to confirm; then select the lower limit of the value, and then press the key Ⓞ to save the new value.

Tip: When changing the upper and lower limits, the key ✱ will exit the setting mode, the limit number and limit range will not change.

6. Specimen detection and test results

6.1 Measurement

Boot, to be completed after the internal calibration, the preparation of new specimens will be completed.



The screen displays the limit number, the upper and lower limits, and the number of stored test data (for example, 68, indicating that there are 68 test results currently in the instrument).

Tip: When the storage results reach more than 95% of memory, the memory logo will flash. When the memory is completely full, you can not do any detection, unless the memory is empty or transmitted to the computer. (Please refer to 6.3 and Chapter 7, respectively)

Please follow the steps below to measure:

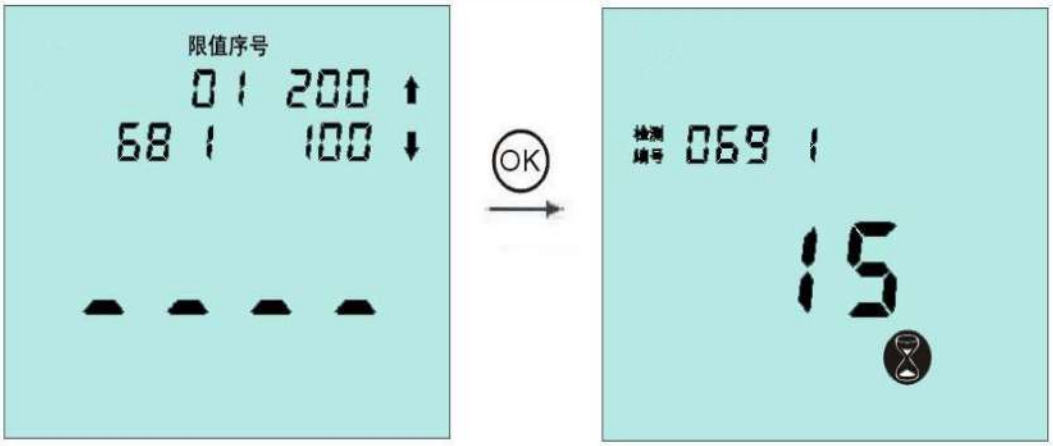
1.Take out the test

2.To ensure that the appearance of clean and dry test

3.Open the hatch, the test will be inserted into the instrument, cover the cover

4.Press the key Ⓞ to wait for 15 seconds to display the reading

When the test is performed, the screen displays a new detection number and the timer counts down for 15 seconds.



Note: Keep the instrument upright and stable to ensure that the liquid in the swab is at the bottom of the swab.

After the measurement is completed, the detector will display the new test data, and the data automatically compared with the limit range, the results displayed through the display logo, the cover mark flashes, prompt to remove the test. Press the key again, the instrument will enter the state to be checked, you can carry out the next test.

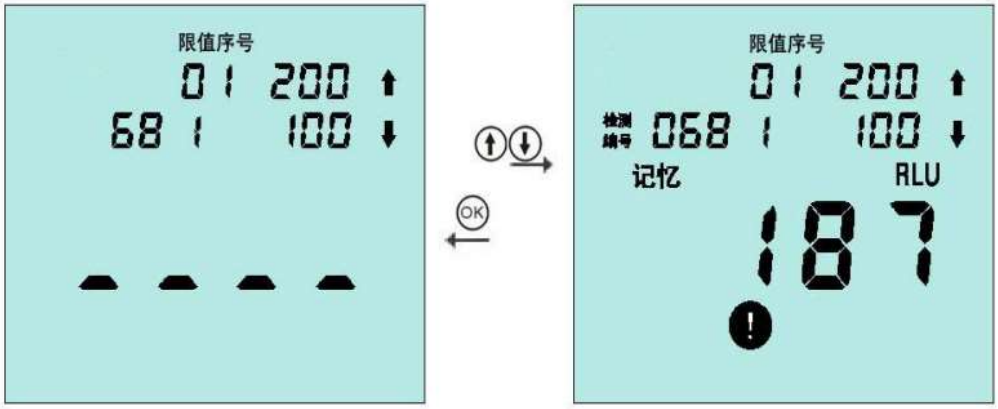
The significance of each logo is as follows:

Test data≤Low limit	OK
Test data>Low limit≤High limit	!
Test data>High limit	−

Tip: After the measurement is completed, be sure to remove the swab to prevent leakage of liquid within the swab, damage to the instrument.

6.2 View saved test results

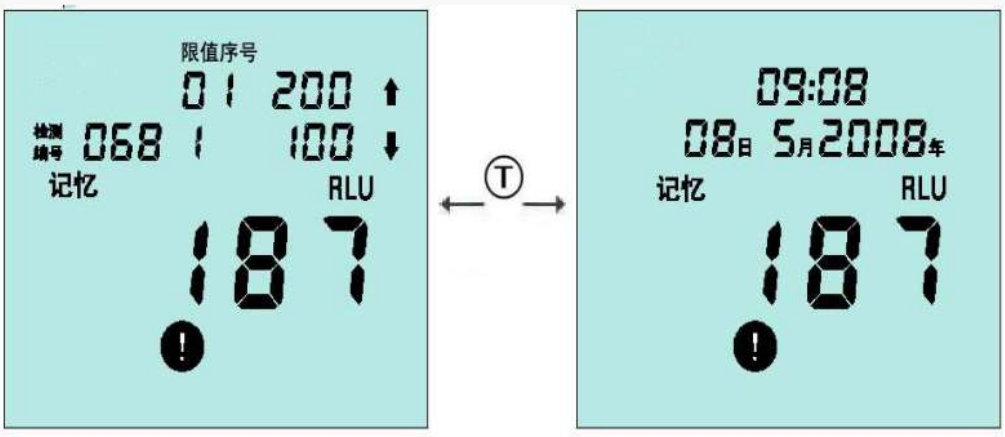
When the instrument is to be checked, press the up ⓣ and down ⓓ keys to view the previously stored test results.



When the display shows the stored test result, the memory logo appears and the detection number value flashes.

The key ⓣ is to look back for the storage result, and the key ⓓ is to go ahead and check the storage results.

To check the time and date when the detection number is detected, press the key Ⓣ.



To exit the view mode, press the key Ⓞ.

6.3 Clear the stored result record

After entering the view mode can delete all the test results, hold down the key ✱ for more than two seconds to show the number of all test results. **删除?** Flashing：

Hold down the key OK for more than two seconds to clear all data. Press any other key to cancel.

7. Transmit the test results to the PC

Use the supplied CD-ROM data processing software to transfer the stored results to your computer.

Tip: This section covers Windows XP, both for Microsoft Windows versions prior to Windows XP, such as Windows 2000.

Using a random cd-rom data processing software can transfer the stored results to a computer.

Tip: this section deals with Windows XP, which is applicable to Microsoft Windows versions before Windows XP, such as Windows 2000.

7.1 Install the transfer program software

Insert the installation software into your computer and follow the installation instructions.

Tip: If the installer does not automatically pop up, open the CD-ROM folder in My Computer and manually run the installation request.

After the installation is complete, press the transfer function shortcut key in the program to start transmission.

7.2 Data transfer function

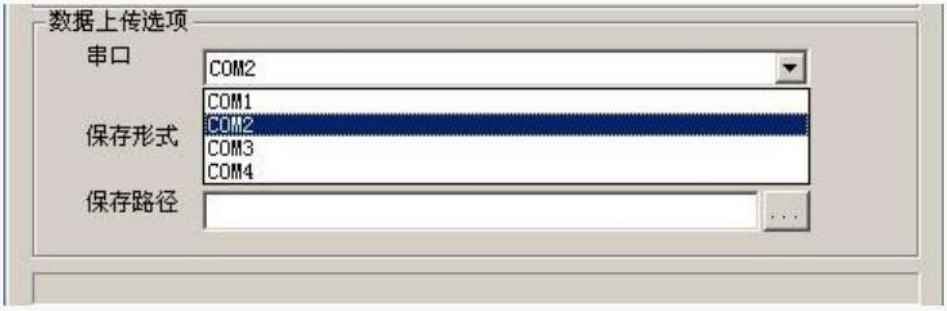
Run the transfer function from the Windows "Start" button to open a program dialog:

Use a USB cable (supplied by the instrument itself) to connect the detector to a USB COM interface on your computer:

(1) Connect one end of the random cable to the USB Mini connector

(2) Connect the other end to the USB port of the computer

The next step is to select the appropriate connection port from the alternate menu:



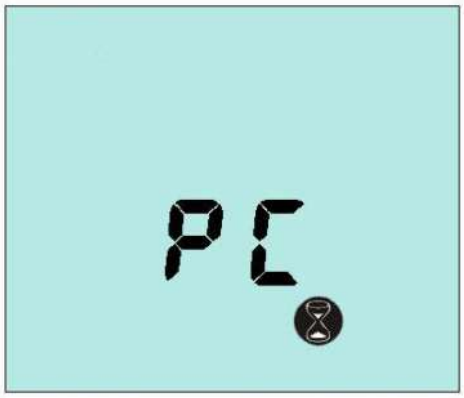
Then select a file storage type, select an Excel data document or a blank text document:

Tip: Using an Excel document may be more secure because its data can not be modified, and you must install Microsoft Excel on the same computer to save the results as an Excel document.

The next step is to save the transfer result named. The file name must be unique. The previous document name can not be used again.

Finally, press the key ⏻ to open, select the computer program in the "Start" button to start transmission.

Then the application will try to communicate with the instrument, if successful, the instrument will display PC:



At this point you can transfer from the instrument to the computer and save it in a specific data document, you can save 600 results within one minute.

WARNING: In data transfer and storage, do not open Excel with Excel, which may destroy data.

After the transfer is completed, unplug the cable, make sure the USB black rubber cover is pushed back in place, and the cover can be tightly closed.

7.3 Bluetooth data transmission

Some models have Bluetooth data transmission functions, such as DFY-420C. It must first be in the computer to be installed on the installation of Bluetooth driver software, such as IVT_BlueSoleil, such software customers to download their own on the Internet.

Bluetooth transmission follow the steps below:

7.3.1 ATP detector to boot, enter the screen to be checked, press the * key to enter the Bluetooth transmission mode, then the LCD will display LP two letters.

7.3.2 Insert the Bluetooth adapter, the system automatically identifies the Bluetooth software in the search for Bluetooth services, find a new Bluetooth device, select the pairing, matching password "1234".

7.3.3 After the pairing is complete, select the device, and obtain the name of the device. If it is HC06, it means that the device is selected correctly, then search the service and let the system recognize the Bluetooth serial module.

7.3.4 Select the connection serial port, and note the serial number, if the serial number is not in the "1 ~ 4" range (the device shows COMX, where X is the serial number), then modify the device manager

7.3.5 Open the data upload program atp_data.exe. Select the correct port number, click "Start" to upload.

7.3.6 After the upload is complete, press the OK key on the ATP tester to return to the screen and turn off the Bluetooth module to prevent the battery from being empty.

7.4 Data results Document form

The transmitted test result data is stored in an Excel document or text document (see chapter 7.2). Documents in the same form:

Unit number	Detection number	Date	Time	Limit number	Result	RLU	Lower limit	Upper limit	Remark
0188	1	6/05/07	09:02	1	Through	34	100	200	
0188	2	6/05/07	09:08	1	Through	46	100	200	
0188	3	6/05/07	09:12	2	Alert	198	150	400	Secondary cleaning
0188	4	6/05/07	09:27	2	Through	87	150	400	
0188	5	6/05/07	16:22	1	Fail	269	100	200	Focus on monitoring
0188	6	6/05/07	16:24	2	Through	126	150	400	

The meaning of the data area name is as follows:

Unit number - unit serial number (see label behind instrument)

Detection number - detection number

Date - The date the operation was detected

Limits - Check the limit number used

RLU -RLUs Read the test results

Lower limit - low end (↓) Set limit value

Upper limit - high end (↑) set limit value

Remark - spare area

If necessary, add comments to each result in the comments area.

8. The instrument tweeted

During normal use the instrument issues a variety of different tweets:

The type of tweet	Possible reasons
Short treble	Boot or shutdown
	Start testing specimens
	Connect with PC
	Clear the result record
Long treble	Instrument self-calibration is complete
	Specimen detection is complete
	The result is cleared
Long bass	Enter an invalid date
	Enter an invalid limit value

9. List of faults

The detector failure is generally the cause of the battery, such as can not open, shut down, abnormal shutdown, the reason most of the battery is no electricity, the battery is loose due to the normal battery is still working properly with the manufacturer contact.

The following table lists some representative cases and their possible causes.

√ indicates that the user can solve the problem.

× Please indicate the technical staff may need help, please contact the manufacturer.

Happening	Cause of issue
Abnormal shutdown	√ Instrument for more than 10 minutes is not used automatically shut down into standby mode
Press the keyboard did not respond	√ Some buttons are only available when a certain program is selected

	× Damage or error of the instrument
Test results Total reading O RLU or always below the expected value	√ Improper use of swabs
	√ Swab expired
	√ Operate the instrument in an unstable environment, shut down and restart
	√ Protection of dirty mouth can be serious scrape
	× Damage or error of the instrument
USB interface does not appear working state	√ The interface is inserted incorrectly
	× PC serial interface or system software error
	√ PC software installation error or selection error
	× Wiring or interface damage is damaged
	× Damage or error of the instrument

9. Error code

In operation, the instrument itself has a variety of self-check, in the event of a problem, it will display an error code:

Error code	Possible reasons
E1 is outside the operating temperature range	√ The instrument operating temperature is outside the normal range
	√ The instrument is stored in a range that exceeds the operating temperature -before use, the instrument is adapted to the normal temperature range
	× damage or error of the instrument
E2 can not be self-calibrated	√ Instrument environment is unstable
	√ Protection mouth is dirty or severely cracked
	× protection mouth damage
	× damage or error of the instrument
E3 can not be stored	√ The instrument is dead or the battery is loose
	× The memory function of the instrument is damaged or error

Tip: Most of the problems are temporary, press the key OK or remove the battery more than 10 seconds and then re-placed can be resolved. If the fault persists, please find the technical staff to solve.

10. Warranty and Returns

The supplier warrants the Scithera unit, when purchased new, to be free from defects in materials and workmanship and will repair or replace, at their discretion, any Scithera unit, which is used under proper conditions and exhibits such defects.

Under the terms of this warranty, the product must be returned in the original packaging, transportation prepaid and Contact Scithera Microbial Technologies Inc to receive authorization to return the instrument, and enclose a detailed description of the problem.

10.1 Warranty Duration

This warranty is provided to the original purchaser for one year from the date of purchase. In no event will Scithera Microbial Technologies Inc be liable for indirect, incidental or consequential damages; the original user's remedies being limited to repair or replacement of the unit at the manufacturer's option.

10.2 Particular Exclusion

Unauthorised modification of any part of the Scithera unit or the attachment of any peripheral not supplied by will void this Warranty.

The use of any non Scithera supplied accessories and consumables will invalidate the warranty.

WARNING: Use only the accessories and consumables supplied by Scithera Microbial Technologies Inc

11. Technical Specifications

Detection limit	2X10^{-18} mol ATP with Scithera kit
Range	0~9999 RLU (Relative Light Unit)
Detection time	15 s
Reproducibility	±5% or ±5 RLUs
Baseline	≤2RLU
Data storage	More than 2000
USB connector	Data could be transferred to PC
Dimension (W×H×D)	192 mm×87 mm×34 mm
Weight (including battery)	260 g
Operation temperature	5℃ - 40℃
Operation humidity	20-85%,
Battery	Two AA size Alkaline Battery
Continuous reading	600