User Notice

- 1. Thanks for purchasing Urine Analyzer! Please read the User Manual carefully before using this product. The User Manual which describes the operating procedures should be followed strictly.
- 2. This manual detailed introduce the steps must be noted when using the product, operation which may result in abnormal. Any anomalies or personal injury and device damage arising from use, maintain, store do not follow requirements of the User Manual, Our company is not responsible for the safety, reliability and performance guarantees! The manufacturer's warranty service does not cover such faults!
- 3. The device with data storage function, for user losses which caused by data loss due to device damage or user's operation, our company does not assume any responsibility.
- 4. Test strip can only choose regular products, it's recommended to use the test strip which supplied with the device, so better ensure the accuracy of the test.
- 5.Our Company reserves the right to change the content of the manual, the contents of this manual are subject to change without notice.

Statement

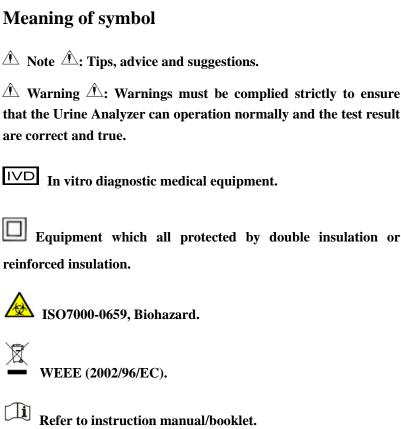
This user manual contains proprietary information, which is protected by copyright. All rights reserved. Reproduction, adaption or translation, for any part of the manual without prior written permission, is prohibited.

Our company assumes no responsibility for incidental or consequential damage in use caused by any error appear in this document. In case of product upgrades, the information contained in this manual is subject to change without notice.

Our company reserves the final elucidative right.

Meaning of symbol

Date of manufacture.



This item is compliant with In Vitro Diagnostic Medical Device Directive 98/79/EC of Dec.27,1998, a directive of the European Economic Community.

FCC WARNING

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.

- Increase the separation between the equipment and receiver.
- -Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- -Consult the dealer or an experienced radio/TV technician for help

RF Exposure

When using the device, ensure that the antenna of the device is as least 20 cm away from all persons.

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Chapter 1 Overview

1.1 Summarization

Urine test is the most common method for checking disease in clinical test, and checking with urine test strip is the most effective method. urine test strip and urine sample produce a chemical reaction, the color of each test color-area will change after reaction, the corresponding test results can be obtained according to the color change. The analyzer is researched and developed basing on modern photoelectric and microprocessor technology for clinical inspection of urine, and it integrates the advantages of easy and quick operation, exact result.

Features:

- High-luminance and white LED, improves Signal Noise Ratio;
- High-performance photoelectric receiving components, RGB tricolor test theory, which makes the analyzer possess the function of good anti-interference and adaptability;
- User-friendly interface, features in vivid arrangement and convenient use;
- With flash memory technology, automatic synchronization storage during testing process, and the data doesn't lose when the device power off or unexpected shut down;
- Store up to 500 test results, manage according to date and sample NO, which is convenient for consulting;
- Compatible with 8 items, 10 items and 11 items of test paper;
- With a rechargeable battery that can be tested anytime, anywhere.

Purpose:

Use with the dedicated urine test strips for clinical urine testing.

Life:

Under the conditions of daily maintenance, normal use time is not less than five years.

1.2 Precautions for Use

⚠ Note **⚠**

- Before using, please read the Manual carefully and strictly operate according to it.
- Please don't use the accessories not provided by manufacture.
- Please don't use the analyzer in condition that the test strip is expired or the device is damaged.
- Please transport, install and operate the analyzer following the User Manual.
- To ensure the accuracy, the operation temperature should be in range of 10°C-30°C, if exceeds this range, place the analyzer in required environment for 20-30 minutes before using.
- Away from the strong electric field (magnetic field) when using, avoid direct sunlight.
- Use the supporting test strip which specified by the manufacturer.

1.3 Technical Specification

Test item	Glucose(GLU), Bilirubin(BIL), Specific					
	gravity (SG), PH, Ketone body(KET), Occult					
	blood(BLD), Protein(PRO),					
	Urobilinogen(URO), Nitrite(NIT),					
	Leukocytes(LEU), Ascorbic acid (VC)					
Test mode	Single-step test					
Language	Chinese and English					
Display	LCD, resolution:320*240					
Principle	RGB tricolor test theory					
Communicatio	Mini USB interface, Bluetooth wireless					
n interface	communication(apply to BC401BT)					
Repeatability	CV≤1%					
Stability	CV≤1%					
Record mode	LCD display, FlashROM data storage					
Relative	<000/					
humidity	≤80%					
	Built-in rechargeable lithium battery 3.7V,					
Dayyar gunnly	1900mAh					
Power supply	Host computer: DC 5V, 1A					
	Adapter: AC 100V-240V, 50/60Hz					
Test range	Refer to Grads Table in appendix					
Input power	≤5W					
consumption						
	Temperature: 10°C~30°C					
Operating environment	Relative humidity: ≤80%					
	Atmospheric pressure: 76kPa~106kPa					
	Away from the strong electric field (magnetic					
	field), avoid direct sunlight					

Dimension	126mm(L)*73.5mm(W)*30mm(H)
-----------	----------------------------

Chapter 2 Installation

2.1 Operation Environment

As with all precise electronic instruments, the urine analyzer should avoid placing in high temperature and humidity environment for a long time. To get optimal result, please keep relative stable temperature($10^{\circ}\text{C}\sim30^{\circ}\text{C}$) and humidity($\leq80\%$), and the tabletop to be placed the analyzer should be level.

Operating environment:

Temperature: 10 °C~30 °C Relative humidity: ≤80%

Atmospheric pressure: 76kPa~106kPa Transportation and storage environment:

Temperature: $-40^{\circ}\text{C} \sim 55^{\circ}\text{C}$ Relative humidity: $\leq 95\%$

Atmospheric pressure: 76kPa~106kPa

⚠ Warning **⚠**

Please don't use the analyzer in the following places:

- Direct sunlight areas or the front of open window;
- There is flammable and explosive gases;
- Near the heating or cooling equipment;
- Near strong light-source.

2.2 Dismantlement and Installation

Open the package and remove the material used for transportation. Keep the package for possible future transportation or storage.

- (1) Take out the urine analyzer from the package.
- (2) Remove the wrapper, take out the analyzer from the plastic packaging.
 - (3) Check the components according to the packing list.
- If there is any problem, contact our company or agent immediately.

2.3 Appearance and Structure

2.3.1 Front View



Figure 2-1 Front view

- ① LCD display: man-machine conversation window
- ② Mini USB socket: AC adapter power supply socket, interface of data transmission.
- - ④ Test paper tray: place the strip to be tested on it.

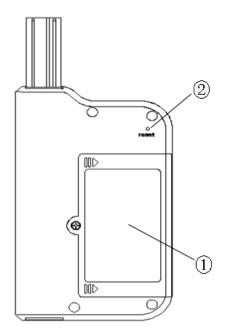


Figure 2-2 Back view

- ① Battery cover: it's need to open the battery cover when install and remove the lithium battery;
- ② Reset key: if necessary, press this button to reset the urine analyzer.

2.4 Power Supply

The device can use the built-in rechargeable battery as power supply. Connect the urine analyzer to the AC adapter when the built-in battery power is low or it needs to use the external power.

Steps for connecting AC adapter:

- 1) Make sure that the AC power complies with the technical specification.
- Apply the Mini USB data cable accompanying with the analyzer.
 Plug data cable to power interface of adapter, plug AC adapter to AC power socket.

\triangle Warning \triangle

- AC power outlet must be well connected to ground (zero grounding voltage<5V).
- The AC power must be stable, avoid using the same power together with high-power appliance, and a manostat is recommended to configure.
- Please turn off the power supply immediately and contact with the maintenance center, when fog, peculiar smell or strange sound was found in device.
- Hold the adapter itself when you unplug it, rather than the data cable.

Chapter 3 Operation

3.1 Buttons

operation.



Figure 3-1 Buttons

- ① ON/OFF button: Long press this button to turn on/off the device.
- ② **Menu button:** In the main interface, short press this button to switch current test user;

In the main interface, long press this button for 2 seconds to enter the setup interface;

In other interface, execute the return

- ③ **OK** button: Confirm the current operation; In the main interface, press this button to start test.
- 4 **Up direction button:** In the main interface, long press this button to move the tray up; in the menu interface, press this button to move the cursor up; in history interface, long press this button to quickly move the cursor.

Down direction button: In the main interface, long press this button to move the tray down; in the menu interface, press this button to move the cursor down; in history interface, long press this button to quickly move the cursor.

3.2 Power On

Under normal power supply situation, long press ON/OFF button for 3 seconds, the urine analyzer will power on and test various parts of the system, enter the main interface after self-test, as shown in Figure 3-2:

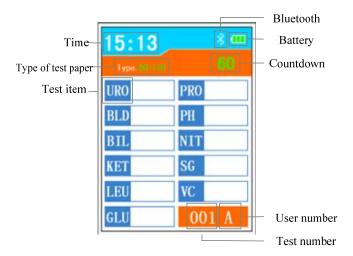


Figure 3-2 Main interface

⚠ Note **⚠**

 When self-test information prompt abnormities, first according to the user manual to resolve abnormities. If abnormalities are still not resolved, please contact the dealer or manufacturer. • When the device prompts to calibrate the clock after the self-test is completed, users need to set time themselves.

3.3 Start Test

Preparation before test:

- Urine test strips that matched the device;
- Urine sample that stored no more than 4 hours;
- Absorbent paper for sucking residual urine;
- Protective gloves for preventing contamination.

After the test strip is immersed in the sample, absorb the excess sample liquid in both sides of test paper with absorbent paper, then put the test strip flat on the device test paper tray. Keep the top of test strip is aligned with the top of test paper tray.

The main interface displays test countdown, test sample number, user name and the name of the test item.

According to the need, operate as follows:

- Short press this button once, the sample number add 1; long press this button for 3 seconds, the paper tray out of the storehouse.
- Short press this button once, the sample number reduce 1; long press this button for 3 seconds, the paper tray back to the storehouse.
- Short press this button once to switch testing user; long press this button for 2 seconds to enter the device setup interface; during the test, short press it to exit.
- Short press this button once to begin 60-seconds countdown, enter the test after the countdown return to zero; short press it once again before zeroing, the countdown will directly return to zero and immediately enter the rapid test status.

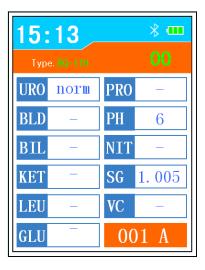
Test steps:

- 1) Place the test strip;
- 2) Under the main interface, press OK button to begin testing the current sample;

- 3) Begin 60-seconds countdown. After finishing the countdown or press OK button once again, the device begin to test data. If there are error messages during the test, follow the prompt, then press OK button to continue the measurement;
- 4) Measurement is completed, display and store the test result. As figure 3-3.

⚠ Note **⚠**

- The sample number starting from 1 after the first power-on every day, after testing 1 sample, the sample number automatically add 1. After power on again the same day, the sample number starting from the latest sample number.
- Select the history sample number, you can re-test the sample and save the latest test result.
- If an error message appears after pressing the OK button, please follow the prompt.
- Do not place objects on the front removable part of test paper tray, in order to avoid a collision when the tray is removed, cause the bias of test results.



3.4 Power Off

Recommended to power off as follows:

- 1) Under the main interface, long press the direction button for 3 seconds to make the paper tray back to the device storehouse, then long press the direction button for 3 seconds again to make the paper tray out of the device.
- 2) Remove the tray and rinse the bracket with clear water, then blot up the liquid above and below the tray with absorbent paper.
- 3) Install the tray into the location where it out of the storehouse, long press the direction button for 3 seconds to make the tray automatically back to the storehouse.
- 4) Long press ON/OFF button for 4 seconds, the device will automatically power off.

⚠ Note ⚠

• Don't directly unplug/ plug the paper tray with hand to avoid damages of mechanical structure.

3.5 Setup Menu

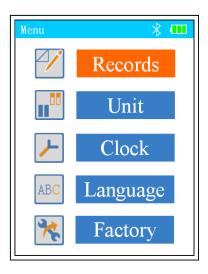


Figure 3-4 Menu

Figure 3-4 shows the device menu interface, it includes historical records, unit, clock, language, factory settings. Select menu option through direction button, press OK button to enter next submenu, press the menu button in any interface to return to the previous interface.

3.5.1 Records

Historical records menu interface, as shown in Figure 3-5.



Figure 3-5 Historical records

All records

Enter the all records query interface, each page shows 10 historical data at most, user can page to see more historical records through direction button, after selecting a record, press OK button to see the corresponding record. As shown in Figure 3-6.



Figure 3-6 Historical records

User list

Query the historical test data of the selected user.

Date list

Query the historical test data of the selected date.

Send

The urine analyzer upload all test results to PC through Mini USB interface or bluetooth(apply to BC401BT).



- If transmit data through Mini USB interface, users need to use the data cable which is specified by the manufacturer.
- Use the PC software which is specified by the manufacturer(optional).

Delete

Delete all historical data.



Data can not be recovered after deletion, please operate carefully. 3.5.2 Unit

The default unit when the urine analyzer leave factory is set to plus system, if you need change the unit, please change it through the unit menu.

3.5.3 Clock

Clock setup menu is used to modify the date and time. User can press the direction button to modify the value in this interface, press OK button to save the modification of the current item and enter the next modification, after completing modifications in turn, press OK button to complete all modifications, the system automatically saves the new date and time, and exit to the device setup interface. In clock setup interface, users can press menu button at any time to cancel modification and directly return to device setup interface.



- The system clock always has some cumulative error, the user should calibrate once every two months.
- Urine analyzer manages test reports according to the sample number, date and time of test report, please input the date and time according to the facts, otherwise it will lead to disorder of test report management.

3.5.4 Language

Set the language of device interface, the device supports both Chinese and English.

3.5.5 Factory Settings



Figure 3-7 The interface of inputing password User password: 0000.

Modify the value of current item with the direction button press the OK button to save the modification of current item and enter next item, after inputing the password, press the OK button to enter the factory settings interface, as shown as figure 3-8.

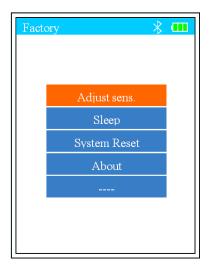


Figure 3-8 Factory settings

Adjust sensitivity

Adjust the sensitivity for the currently selected test strip. During using, the sensitivity can be adjusted when the user wants to increase or decrease the sensitivity of the analyzer.

When you set the sensitivity, must be careful, a valid setting is recommended, you can use urine quality control materials or homemade known content quality control substitutes. For example: gradually dilute known content glucose, homemade PRO standard, use standard of BLD, LEU with microscope, etc.

There are several problems should be pay attention to when use other types of analyzers for comparison:

- 1. The test paper used by the analyzer made by which standard.
- 2. The mutual comparability of test strips which made by different standards is very poor, the same control material test different test papers get different results.
- 3. How is the repeatability of the analyzer, whether has evaluation or self-evaluation.
- 4.How is the quality of the test paper which used by the analyzer, in the case of the repeatability of the analyzer is excellent, whether the repeatability of test paper is excellent.

After understanding the above, you can securely adjust the sensitivity.

The setup interface of adjusting sensitivity is shown in figure 3-9.

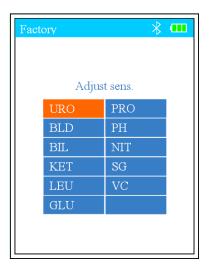


Figure 3-9 Adjust sensitivity

Select the item which need modified, enter the sensitivity adjusting menu of each grads in this item, as shown in figure 3-10.



Figure 3-10 Adjust sensitivity

Press direction button to select grads value which need modified, press OK button to enter the modification of current grads value, then modify the corresponding value through direction button, press OK button to confirm the modification, press menu button to cancel the modification. After finishing modification, press menu button to exit the modification of current item.

After modifing all item, press menu button to return to the factory settings menu.



- When you set the sensitivity, must be careful, adjust the sensitivity may cause detection errors.
- After adjusting, the sensitivity value of the test item remains the same size and sequence as before.

Sleep time

The device is set to enter the sleep state when there is no operation. Under sleep state, the display is turned off, press any button can restore to the working state at this time.

Under sleep state, the device will automatically power off without operation for 30 minutes.

System reset

Restore the system to factory settings.

After restoring to factory settings, all user settings(including sensitivity adjustment) will be restored to the factory state.

About

Display the relevant information of the device.

3.6 Instructions of Bluetooth

3.6.1 Scope of Application

Apply to BC401BT Urine Analyzer.

3.6.2 Operating Steps of Bluetooth Communication

1. Power On

Turn on bluetooth function of computer, mobile phone or other intelligent device(hereinafter referred to as PC), and the Urine Analyzer is ON.

2. Matching

PC searchs and matching the bluetooth urine analyzer. Under normal circumstance, it doesn't need to input password during matching(the default bluetooth password is 0000).

3. Connecting

After a successful matching, PC can communicate with urine analyzer.

3.6.3 Other Descriptions

After the device has power on and enter the main interface, the bluetooth will turns on automatically, and the interface displays the bluetooth icon at the same time, users can search and connect bluetooth equipment in this interface for communication; the screen and bluetooth will automatically turn off 4at the same time if the device has no operation for sleep time, if you want to continue communication, press any button to exit sleep state, then the bluetooth automatically turns on; users can view the bluetooth name of the corresponding device in the interface of **Factory Settings-About**, specific reference to part of the factory settings 3.5.5.

⚠ Note ⚠

• Use the PC software which is specified by the manufacturer(optional).

Chapter 4 Maintenance

4.1 Maintenance

- After daily use, the test tray should be took out for cleaning, and the remained urine should be cleaned with absorbent paper or cotton swab in time, to avoid inaccurate result for cross-pollution.
- 2. Often clean the analyzer with soft cloth to keep it clean. If the surface of the analyzer is very dirty, then wipe it with clean water or neutral cleaning fluid. Do not clean with gasoline, paint dilutions, benzene compounds, alcohol and other organic solvents. As these reagents will make the urine analyzer transmogrify, drop lacquer, finally affect performance or appearance.
- 3. Do not clean the LCD with water, it is recommended to gently clean it with soft and dry cloth or soft paper.
- 4. Do not repair or dismantle the device without authorization, if there are quality problems, it can only be repaired by a factory authorized agency or factory engineers.

⚠ Note ⚠

When cleaning paper tray, do not pollute, scratch, or use chemical solvents to clean the white part on the top of the tray.

4.2 Dismantle and Install the Paper Tray

Dismantle and install the paper tray according to the following steps:

Under the main interface, long press the direction button for 3 seconds to make the paper tray back to the device storehouse, then long press the direction button for 3 seconds again to make the paper tray out of the device.

When installing, insert the clean tray into the device from underside, hold the paper tray gently with hand, at this time, press the direction button for three seconds, then the paper tray will move back to the device storehouse.

4.3 Clean the Paper Tray

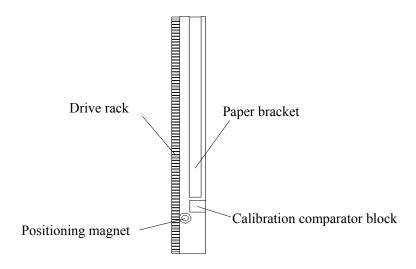


Figure 4-1 Test paper tray

For daily cleaning, use the soft cloth dipped with distilled water or absorbent paper to wipe the paper bracket and the calibration comparator block, and make sure there is no dust, substance, nick, if any found, please replace it with dealer.

If there is urine alkali in the paper bracket, use cotton swab dipping with NaOH (concentration: 0.1mol/L) to wipe the paper bracket, and use absorbent paper to wipe.



Please do not clean with any substance that may scrape the paper bracket and the calibration comparator block. Please do not clean the calibration comparator block with any solvent.

Please do not contact the calibration comparator block with NaOH.

4.4 Disinfection

- According to one of the following three methods to configure disinfectant:
- 2% glutaraldehyde solution;
- 0.05% sodium hypochlorite solution ----1:100 dilution: add 1mL sodium hypochlorite solution(concentration:5%) to 99ml water;
- Isopropanol (70% -80%), without dilution.
- 2) Inject the disinfectant into a tall and narrow container for about 10 cm high.
- 3) Immerse the paper tray to the disinfectant, and keep the calibration comparator block on the surface.
- 4) Soak for 10 minutes, then take it out and wipe it with absorbent paper.

4.5 Waste Disposal

According to local regulations about biohazard waste disposal to discard the waste generated during use.

4.6 Troubleshooting

When there is a fault with the urine analyzer or some functions can not be achieved caused by users' improper operation, the urine analyzer will displays error message, all error messages are as follows:

Error message	Solution
Abnormal system information	The memory has problems, the analyzer can not properly read the system parameters, if it still displays abnormal message after restarting please contact the dealer.

	1. Motor rotation is abnormal, check whether				
Abnormal	there is debris on the paper tray, causing the motor stuck.				
Motor	2. Low battery, restart after connecting the				
	AC adapter.				
	1. The light source is strong, weak or				
Abnormal light	damaged.				
source	2. The calibration comparator block is				
	contaminated, please clean it.				
	Please confirm whether the device work under				
Abnormal	strong light source, re-arrange the work				
backlight	environment of the device according to				
	requirements of the manual.				
	Please check whether the head of the test strip				
Toot mononia	has been placed to the inner end of the tray				
Test paper is	flute, even the strip has not been placed, if it is,				
placed wrong	please correct it within 10 seconds and press				
	OK button .				
	Low battery, restart after connecting the AC				
Can't power on	adapter, if still can't power on, please contact				
	the dealer.				
	The device can't work resulted from abnormal				
Hardware fault	test paper information, abnormal motor,				
Traidware fault	abnormal light source. Please contact the				
	dealer.				

Appendix

Grads Table

	Graus Table					
Item	cod e	Gra ds code	Special unit	Internatio nal unit	Conventio nal unit	
		0	Norm	3.3umol/l	0.2mg/dl	
LIDO	1	1	+1	33umol/l	2mg/dl	
URO	1	2	+2	66umol/l	4mg/dl	
		3	>=+3	131umol/l	8mg/dl	
		0	-	-	-	
		1	+-	10/ul	0.03mg/dl	
BLD	2	2	+1	25/ul	0.08mg/dl	
		2 3	+2	50/ul	0.15mg/dl	
		4	+3	250/ul	0.75mg/dl	
		0	-	0umol/l	0mg/dl	
DII	2	1	+1	17umol/l	1mg/dl	
BIL	3	2	+2	50umol/l	3mg/dl	
		2 3	+3	100umol/l	6mg/dl	
		0	-	0mmol/l	0mg/dl	
KET	4	1	+1	1.5mmol/l	15mg/dl	
KET	4	2	+2	4.0mmol/l	40mg/dl	
		3	+3	8.0mmol/l	80mg/dl	
		0	-	-	-	
		1	+-	15cells/ul	15cells/ul	
LEU	5	2	+1	70cells/ul	70cells/ul	
		2 3	+2	125cells/ul	125cells/ul	
		4	+3	500cells/ul	500cells/ul	
		0	-	0mmol/l	0mg/dl	
		1	+-	2.8mmol/l	50mg/dl	
CLU	6	2	+1	5.5mmol/l	100mg/dl	
GLU		2 3	+2	14mmol/l	250mg/dl	
		4	+3	28mmol/l	500mg/dl	
		5	+4	55mmol/l	1000mg/dl	
		0	-	0g/l	0mg/dl	
		1	+-	0.15g/l	15mg/dl	
PRO	7	2	+1	0.3g/l	30mg/dl	
		3	+2	1 g/l	100mg/dl	
		4	>=+3	3g/l	300mg/dl	
PH	8	0	5	5	5	
PH	0	1	6	6	6	

		2	7	7	7
		3	8	8	8
		4	9	9	9
NIT 9	0	0	-	-	-
	9	1	+1	18umol/l	0.12mg/dl
SG	SG 10	0	<=1.005	<=1.005	<=1.005
		1	1.010	1.010	1.010
		2	1.015	1.015	1.015
		3	1.020	1.020	1.020
		4	1.025	1.025	1.025
		5	>=1.030	>=1.030	>=1.030
VC 11		0	-	0mmol/l	0mg/dl
		1	+-	0.6mmol/l	10mg/dl
	11	2	+1	1.4mmol/l	25mg/dl
		3	+2	2.8mmol/l	50mg/dl
		4	+3	5.6mmol/l	100mg/dl

Note: 1. The parameter between in the table and the test strip may be different, please refer to Strip Instruction for details.

^{2.} The data in BLD item represent the number of each microlitre erythrocyte, the data in LEU item represent the number of each microlitre leucocyte.