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Chapter 1 Overview of Urine Analyzer LTH100

1.1 Overview

Urine analyzer LTH100 is a new type of developing and testing multiple species.

。Urine analyzer LTH100 adopts modern advanced photics, electron and computer. Photics adopt High luminosity cold light source reflection determination" technology, from single wavelength recognition to upgrade visible color light recognition, improve the resolving power of optical system, highly reduce the influence on testing by environment lights, eliminate urine color interference appearance of traditional urine analyzer, realize strips color recognition, increase accuracy of testing results. On system structure, through modular system designing, adopt massive integrated circuit and large capacity memory chips, reduce mutual interference of parts internal, increase reliability and stability, also it is convenient for routine maintenance. Realize PH repairing function to SG, and eliminate the influence of pH to SG testing.

Urine analyzer LTH100 is the closed system, can use and match our urine strips uniquely. It can provide a qualitative or semi-quantitative result for Urobilinogen, Bilirubin, Ketone, Blood, Protein, Nitrite, Leucocytes, Glucose, Specific gravity, pH, Ascorbic Acid of the urine sample according to the color change caused by the interaction between the reagent areas and biochemical components in urine.

1.2 **Technical Index**

* Testing Principle: super-high luminosity cold light source reflection testing principle

* Testing items

NO.	Item	Abbr	NO.	Item	Abbr
1	Bilirubin	BIL	8	Glucose	GLU
2	Urobilinogen	URO	9	Specific Gravity	SG
3	Ketone	KET	10	PH	PH
4	Blood	BLD	11	Ascorbate	VC
5	Protein	PRO			
6	Nitrite	NIT			
7	Leucocyte	WBC			

* Matched urine strips urine URS-11 produced by our company.

* Light Wavelength: visible wavelength

* Data memory: 1000 inspection report(include date,time,ID)

* Testing Speed: 60 times/h for single testing, 120 times/h for continuous testing

* Display Screen: 240mm*128mm

* Printer: Thermal printer inside, with outer stylus printer interface

* External Output: Connect with the computer through Standard RS232C port

* Language: English

* Environment Condition: 0～40℃,

* Optimum: 20℃～25℃

* Humidity: RH＜85%RH.

* Power Supply: AC 220V(±15%),50～60Hz

* Fuse wire specification: 250 V 2A

* Power : ≤60W

* N.W. : 2.5Kg

* Vol.: 455mm×395mm×208mm

* Baud Rate of Data Communication Interface: 1200bps，2400bps，4800bps，9600bps，19200bps，38400bps，57600bps

1.3 Operation Principle

Urine Analyzer adopts the principle of photoelectric color comparison to test the quantity of biochemical component according to the color change caused by getting the urinalysis strips react with the biochemical components in urine. The instrument uses three kinds of monochromatic light to scan the reagent areas one after another, and the scanning system converts the optical signal to electric signal. After treatment, the reflection rate of the reagent area can be calculated according to the strength of the electric signal. The amount of the biochemical component in the urine sample can be calculated according to the reflective rate.

Optics system principle is as follows:

$$R(\%) = \frac{Tm \times Cr}{} \times 100\%$$

$$\frac{T_r}{C_m}$$

R -----The reflection rate

T_r -----The reflected intensity of the blocks on the strips under the reference light

C_r -----The reflected intensity of the blank block under the reference light

T_m --The reflected intensity of the blocks on the strips under the predetermined light

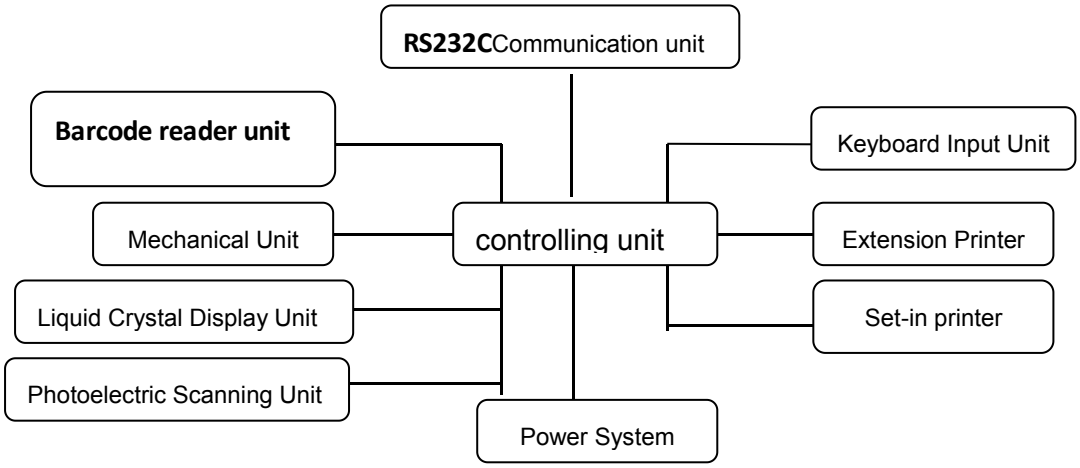
C_m -----The reflected intensity of the blank block under the predetermined light

The instruments can detect the concentration of chemical component on pads in urine through the value of reflection rate. then display and print the testing results by clinical significant unit.

1.4 **Composite Structure**

Urine Analyzer is mainly composed of Barcode reader unit, controlling unit, mechanism unit and photo electricity scanning unit etc.

Following is the structure Diagram:



The core of the Urine Analyzer is controlling unit. The main function is to taking over, transmitting, storing, disposing and sending all kinds of signal, so that each part will run harmony. Photo electricity cell is to finish the sending and inception of the cold light resource, the collection and transition of the testing signal, and further more change the Optical signal into the electronic signal. Mechanism cell mainly carries and scans the strip by the order of the control cell. LCD and the keyboard mainly realize the comfortable interface for the users. As to the data output, the Urine Analyzer mounts the traditional thermal printer inside, besides outer stylus printer with 25 parallel interfaces, which realize the data memory permanently. The Urine Analyzers manage and control the data through RS232 port connected with computer.

1.5 **Surface Introduction**

NO.	Item	NO.	Item
1	Keyboard	8	External Printer interface socket
2	LED screen	9	RS232 port
3	Blind flange of printer	10	Fuse
4	Printer box	11	Power switch
5	Loading platform	12	Electric outlet
6	Pallet of object stage	13	Barcode reader port
7	Labels		

1.6 **Keyboard Instruction**

1、 

Start key, press this key, there will be a reminder ring suggested to dip the test strip into urine. The analyzers are ready for test in 40 seconds. Pressing this key is no answer when testing

2、 

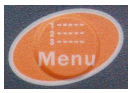
Enter key, in menu condition, press this key can enter the sub-menu or confirm the information on the screen. User can change or confirm the option.

3、 

Cancel key, In the continuous test mode, pressing this key when the current test is finished, it can stop the test and back to the under test state. In the current state, pressing this key can back to the main screen.

4、 

Press this key will print the current test data displayed on the screen.

5、 

Menu key, under the main screen, pressing the key can enter the main menu.

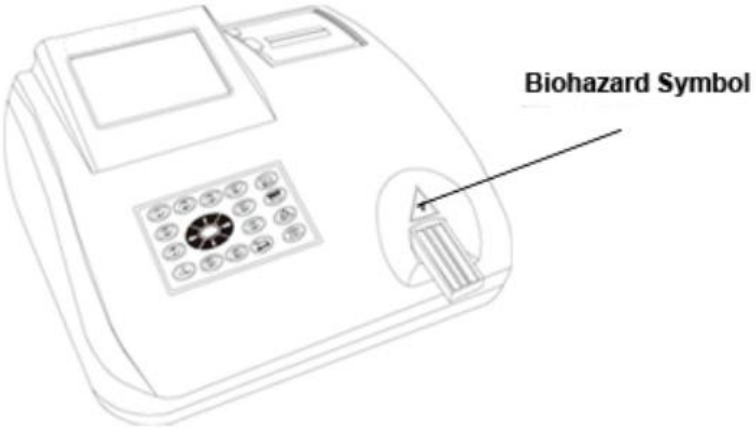
6、0 - 9　Clear key, press this key can clear the data in the database

7、 
Under the Menu state, press the direction key to move the cursor.

1.7 **Biohazard Symbol**


Urine has the potential infectious. Please take the protective measures in the process of test, clear or repair.

Please disposable the urine specimen and used test strips as the lab rules.



Chapter 2 Setup Instruction about Urine Analyzer

This chapter introduce the assembling and operation of analyzer with details. You should read the instruction carefully before you using the instruments, and assembling, operation and maintenance strictly as requirement of instruction.

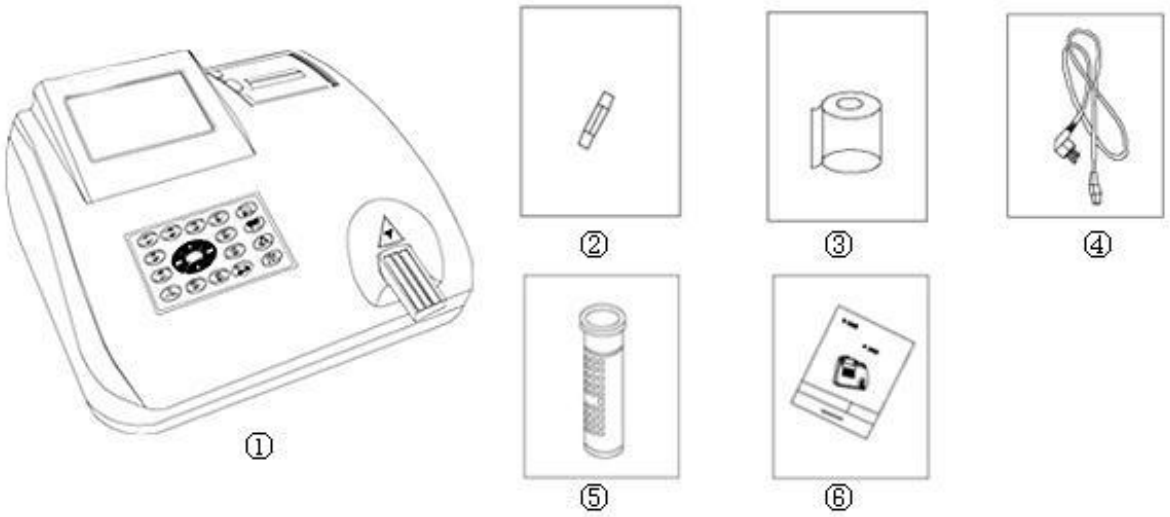
2.1 Environment Condition of Instrument Installation

Please put the instrument on a clean, stable and flat stage, keep far away from centrifuge, any vibration sources or refrigerators. Do not put the instrument in the environment which is affected by chemicals, corrosive gas or strong electromagnetic interference places. Keep the instrument from the direct sunlight, damp or high temperature place, at the same time, avoid too much dust corroded.

The temperature of working environment should be at 0℃-40℃， the optimum temperature should be at 20℃-25℃,the relative humidity should lesser than 85%.

The installation of instrument should connect to the electronic outlet of low voltage supply network, the earth terminal of electronic outlet should contact with the earth wire.

2.2 Unpacking



Take out urine analyzer and accessories, please check them with the package list .Any damage, please contact the manufacturer.

Package list: ①urine analyzer ② blown fuse ③printer paper ④ powder line⑤ samples strips ⑥product specification

2.3 **Instrument Installation**

2.3.1 **Printing Paper Setup**

a. The width of thermal printing paper should be 57mm, the diameter should less than 50mm.

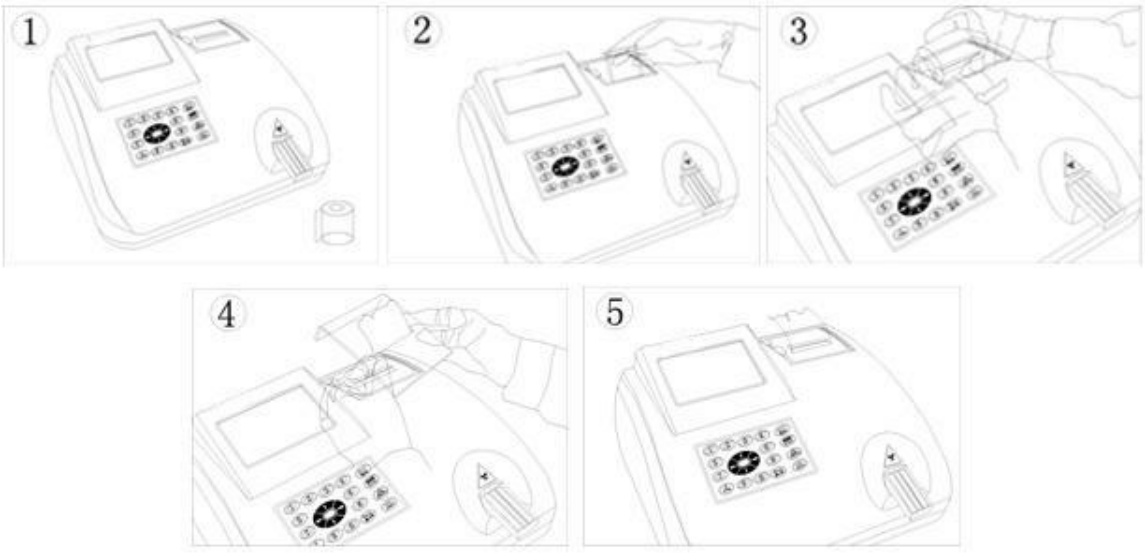
b. Take out the hood of printer

c Turn on the power, after the self-testing

d. Put the paper in the printing box and loosen the paper; Let the paper-out side near the inside of the instrument, the paper will inside automatically.

e. if the paper in abnormal or not in properly, please clear key, and carry on paper in again.

f. Let the paper through the exit and cover up the hood of printer



2.3.2 **Computer Connection**

Achieving data communication by using the standard RS232C port with the external computer, the computer can store the test result and establish the complete illness case database. The operator can accurately and conveniently manage the database; the computer can display the illness case and print data. At the same time, the data can be transferred to the manage network of hospital, such network

management can provide service systematically for medical experts and form an auxiliary diagnosis automatically

2.3.3 **Stylus Printer Connection**

Another data interface can connect with the external stylus printer. There is an option in the menu ”PRT Setup- External”. Through this way, the testing data of urine analyzer can be transferred to the external stylus printer; the information of illness case can be stored for long time.

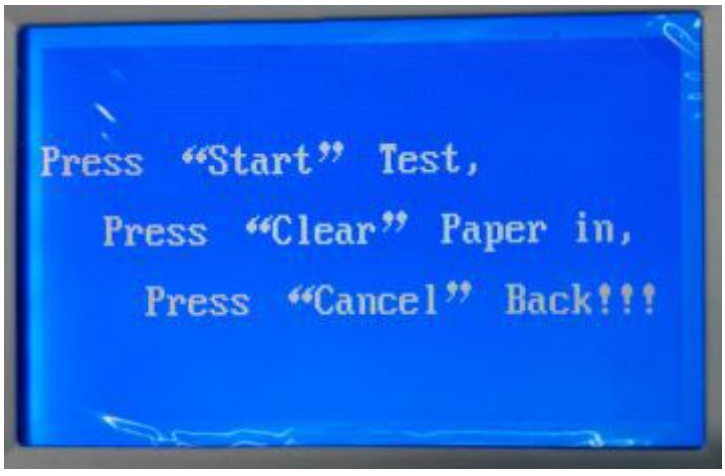
2.3.4 Barcode Reader Scan Function

The barcode reader can scan 13 code segment, and barcode reader connect 9 angles +5V power supply, scan patient’s ID number to LIS system. Scan the patient’s ID by hospital and transfer to upper computer, and make sure patient’s identity and illness data.

Chapter 3 The Function and Setting of Urine Analyzer LTH100

3.1 Menu Function

3.1.1 System self-testing will start after power on, then will enter the screen as following, you can select base on your requirements.



1、Press Start key to to testing directly

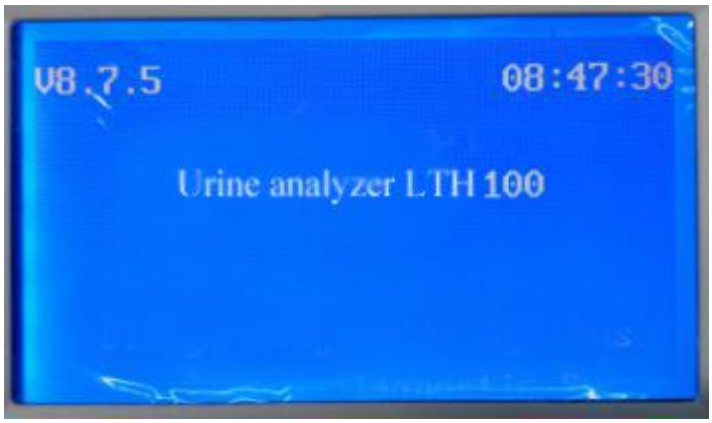
2、Press Clear key to let paper in.

3、Press “Cancel” to enter main screen meanwhile load platform will inspect reset position, and back to analyzer.

3.1.2 Main Screen

Main screen will display version number, time and model.

Press Menu to enter function screen.



3.1.3 Function Screen

Functions screen includes system setup,testing results,unit setup,printer on and off , values,run no. , name output and input,company information and species.

** SET When entering the function screen, the system default on SET key with highlight, press Enter to setup screen.

** RESULT Press direction key to highlight RESULT key, press Enter to results checking screen

** UNIT Press direction key to highlight UNIT key, press Enter to units setup.

** PRINTER Printer on/off setup

** VALUE Reflectivity checking screen.

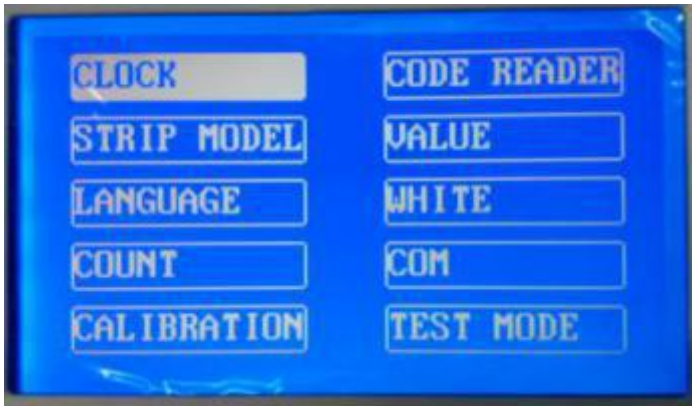
** RUN NO. Enter run no. and name setup screen

** OUTPUT Output setup.

** PROFILE CONTACT Company profile and contact information.

** SPECIES Species setup.

3.1.4 Setup



Setup screen is to set up parameters of instruments, includes time,date, strips models, language, count, calibration setting, white and test mode.

CLOCK **Highlight the key with direction keys, press Enter to enter and set up time and date.

STRIP MODEL **Highlight this key, press Enter to enter strips mode setup

LANGUAGE **Highlight the key, press Enter, to enter language selection

COUNT **Highlight this key, press Enter, to setup count

CALIBRATION **Highlight this key, press Enter, to Setup calibration.

CODE READER **Highlight this key, press Enter, to Setup barcode reader

VALUE **Highlight this key, press Enter, to enter reflectivity and anti-fake value checking .

WHITE **Highlight this key, press Enter, to setup white balance.

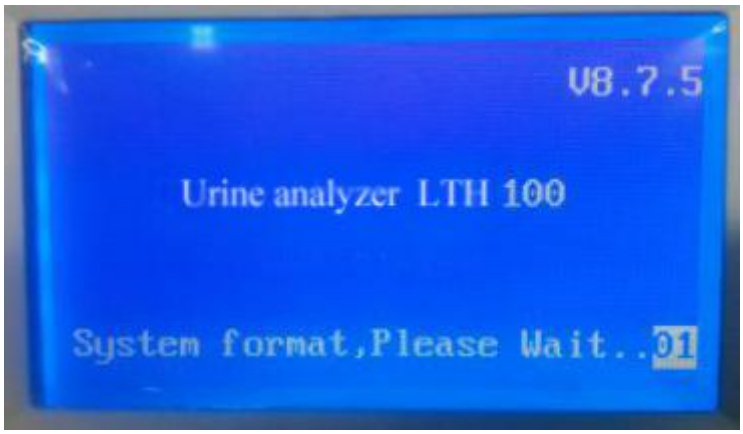
COM **Highlight this key, press Enter, to select COM

TEST MODE **Highlight this key, press Enter, to select test mode

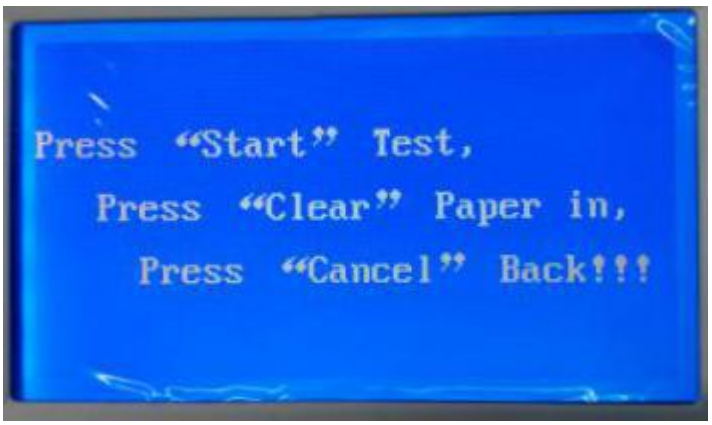
3.2 System function and Operation

3.2.1 System Starting

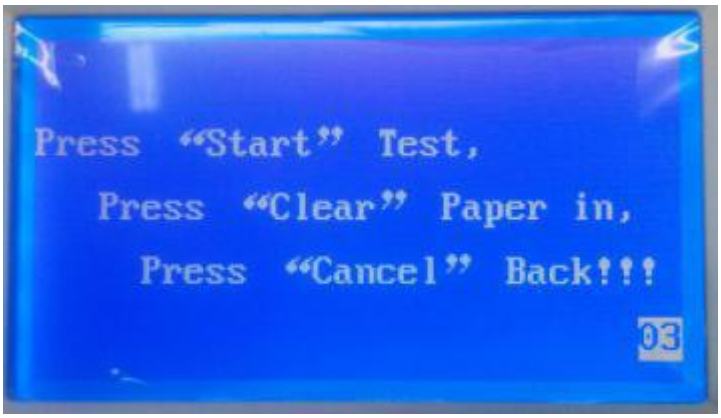
Plug the power line and open the switch, screen will display company logo, system start self-testing format, will display as follow photos.



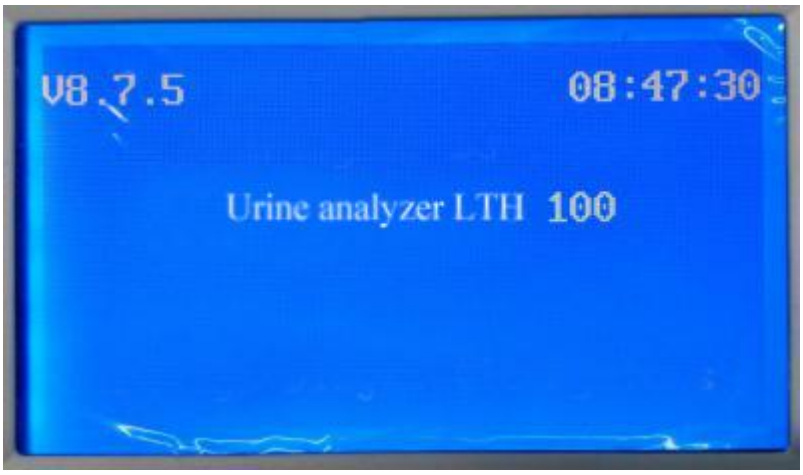
After self-testing, the instruments start the testing status.



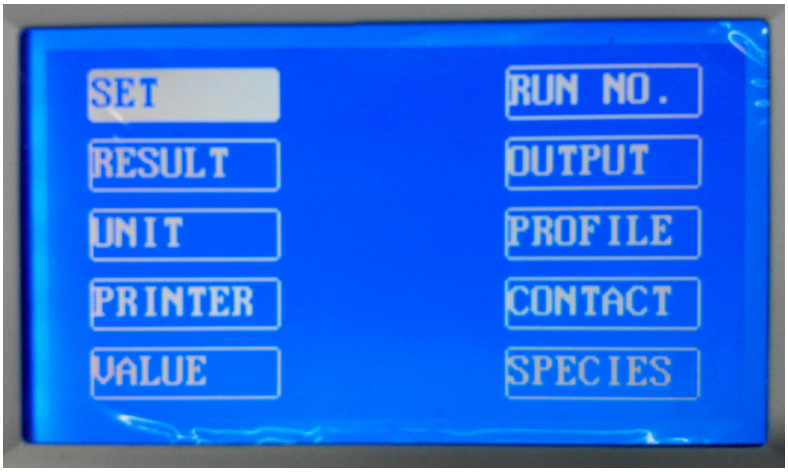
Press Start and keep time, figures as following:



Press clear, back to the main screen as follows



Under main screen press menu to function screen as following:



Press direction key, to move cursor on the setting items, press Enter to confirm, the screen will enter sub-menu. After setting, press Cancel to return to main screen.

3.2.2 System Setup

System setup is to set up all the parameters of instruments, and then make sure the analyzer can test ,input and output accurately. Steps to setup the parameters.

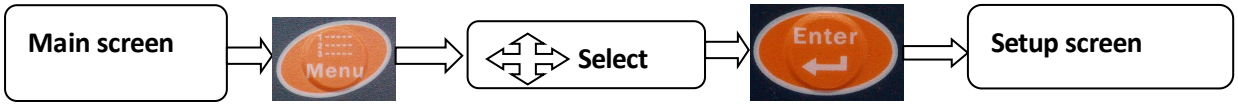
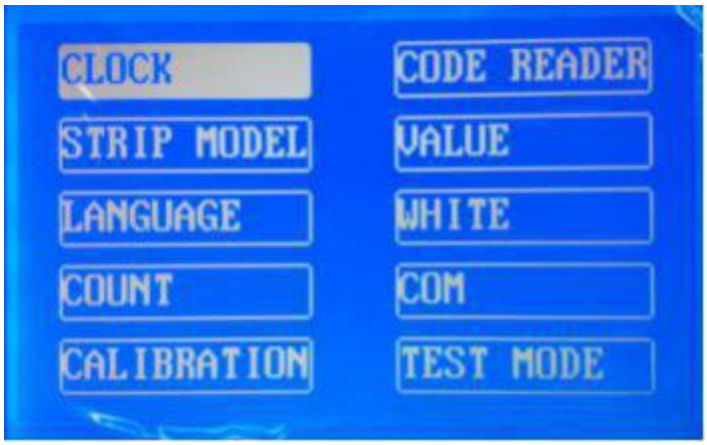
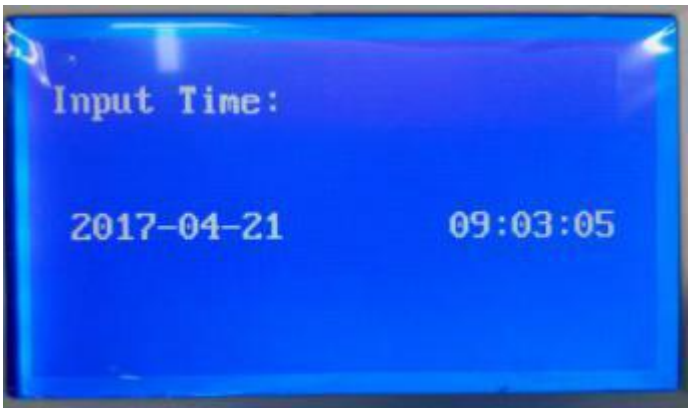


Figure as follow:



3.2.2.1 Clock Setup

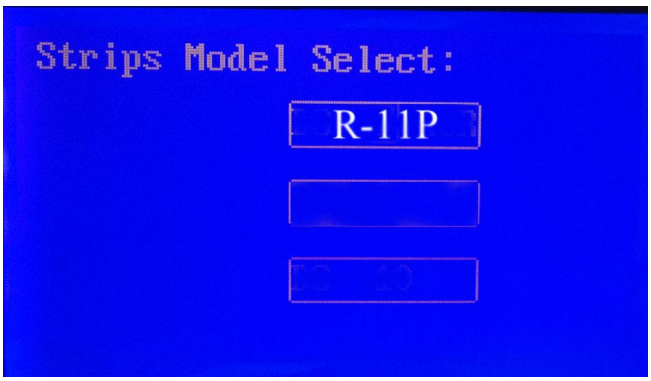
Under setup screen, using direction key to choose CLOCK, press Enter key on to enter time and date setup screen. As figure:



Input time to use number key. If input error, press “Clear” return to main screen and enter again,then input again. After input, press Enter to confirm.

3.2.2.2 Strips mode

Under setup screen, use direction key to choose STRIP MODEL key, press Enter to enter strips mode selection screen, as figure:



Move cursor to select strips mode, press Enter key to confirm, then return to upper menu.

NOTE: The tested urine strips must match the strips model in instruments, or the strips will not identify or testing not correct.

3.2.2.3 Language

Under this screen, using direction key to choose LANGUAGE press Enter key, to enter language select screen. As figure, move cursor on language, press Enter to set up, then back to upper menu .

As figure, move cursor on language, press Enter to set up, then back to upper menu.

3.2.2.4 Count

Under setup screen, using direction key to select COUNT, press Enter to count mode setup screen. Move cursor to count model, the press Enter key to confirm, then return to upper menu.

Note: Continuous count is to count the test result serial number from the last time. Reset count is to count the test result serial number from zero.

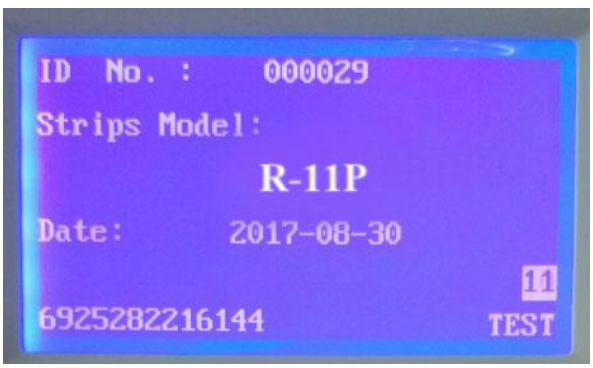
3.2.2.5 Barcode Reader

Under setup screen, using direction key to select CODE READER CODE READER, press Enter key to enter barcode reader screen.

Move cursor to selection mode， then press Enter key, return to upper menu after setting up.

Note: ID barcode scanner can read 13 digital.

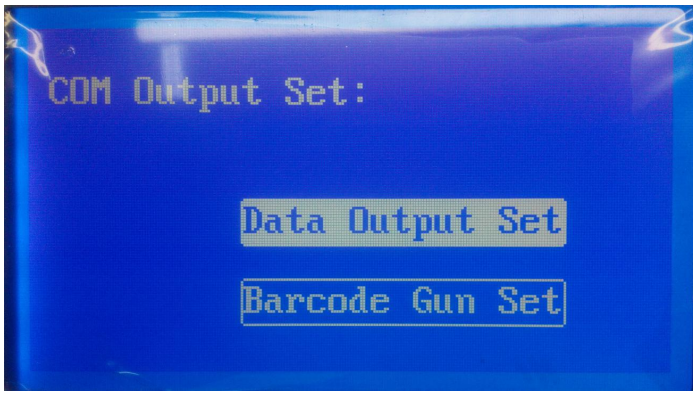
When start testing, the scanned barcode of patient can be printed before testing is finished.



Barcode will show on the bottom left

3.2.2.6 Output

Under setup screen, using direction key to COM , press Enter to enter output selection screen. As figure following:

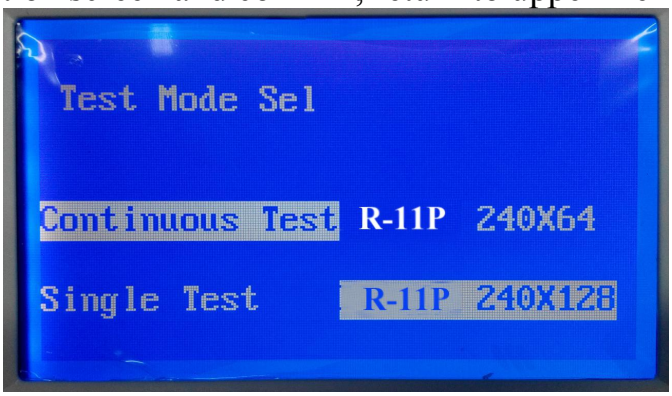


Move cursor on the port you will use, then press Enter to confirm, the screen will display as figure:

Move cursor on baud, then press Enter to confirm, return to upper menu after your setting up, then press Cancel to return to setup screen.

3.2.2.7 Test mode

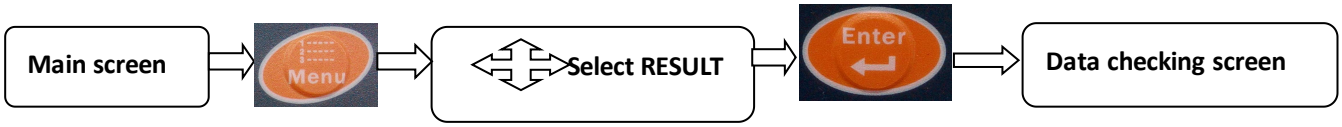
Under setup screen, using direction key to select TEST MODE ,press Enter key to enter test mode selection screen and confirm, return to upper menu.



3.2.3 Data checking

Data checking function is to save the testing results, you can check data when you needed. The instrument can save 1000 records. You can check records one by one or print data records.

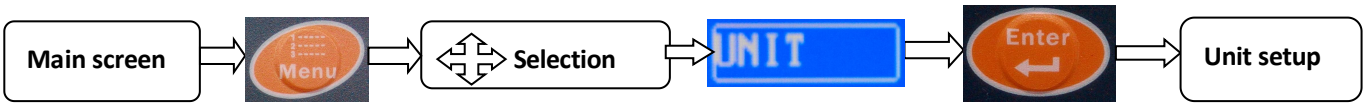
Steps to open data checking screen:



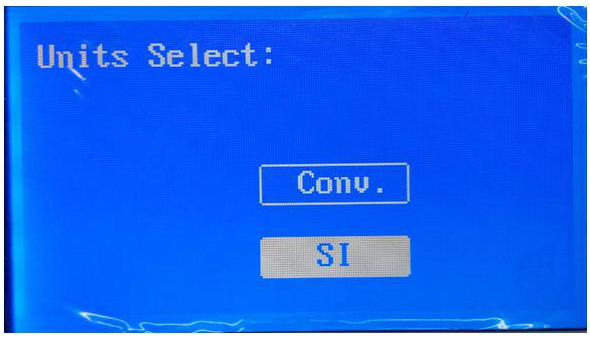
Checking screen figure as following:

3.2.4 Unit

Urine analyzer LTH100 has SI and Conventional units, steps to open the units screen as following:



Unit setup screen:

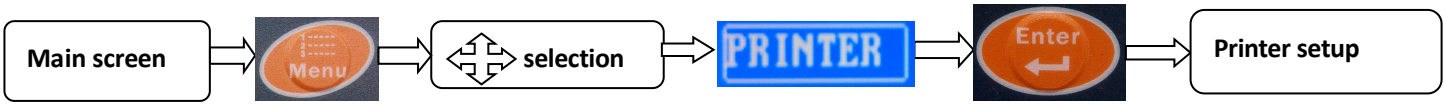


Move cursor on the units select, press Enter to set up, then return to upper menu.

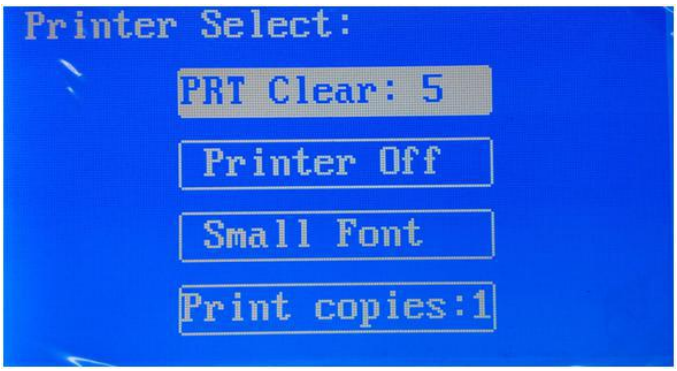
3.2.5 Printer

Printer can set up copy numbers, definition,typeface and turn on/off.

Steps to enter printer setup



Steps to printer setup screen:

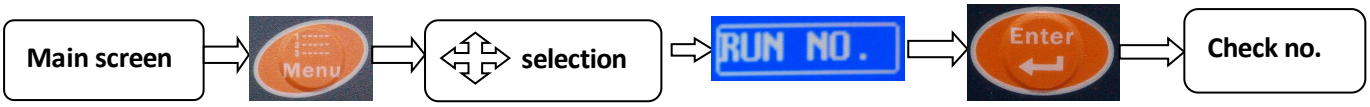


Printer setup screen as following: operator can choose printer model, move cursor on the option, press Enter to confirm.

3.2.6 Check no. and name

Urine analyzer LTH100 has complete database, 1000 testing records can be saved, you can check and print momentarily. Every record contains testing time,check no.and results. The instruments will save the records automatically after testing. If the records is more than 1000, the new records will cover previous one.

Steps to open check no. and name screen:



Check no. and name setup：

1、Check no. Input: system default input by highlight, move cursor to left by 1 on keyboard, move cursor to right by 2, and 0 to save on certain position. Direction key on keyboard control keys on display. Note: do not change the check no. optionally and not use letters. Press confirm to save check no., press clear not to save, and display present used check no..

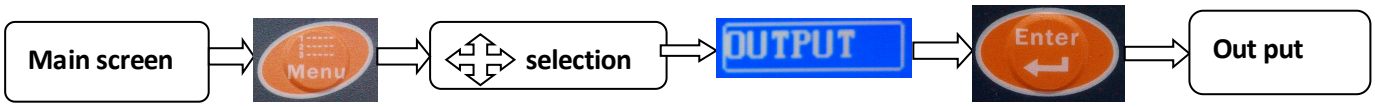
2、Input name: press Menu, choose input name, then cursor will highlight the first number. Move to left by 3 on keyboard, move right by 4, 9 will save the certain position. Direction key will control display keyboard.

Press Enter to save check no. and name, press Cancel not save, check no. and name will save present used no, and name automatically.

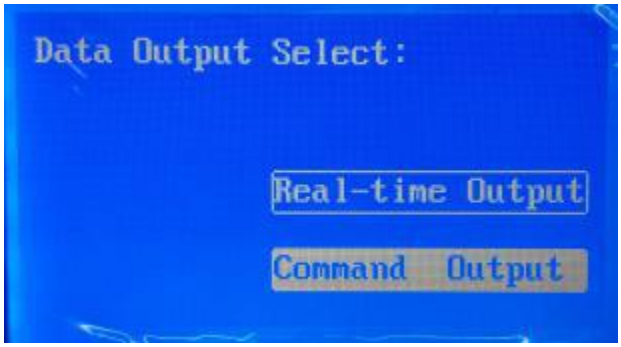
3.2.7 Output

The instrument will output data to upper computer at real time or command through port.

Steps to open output screen:



Data output select:



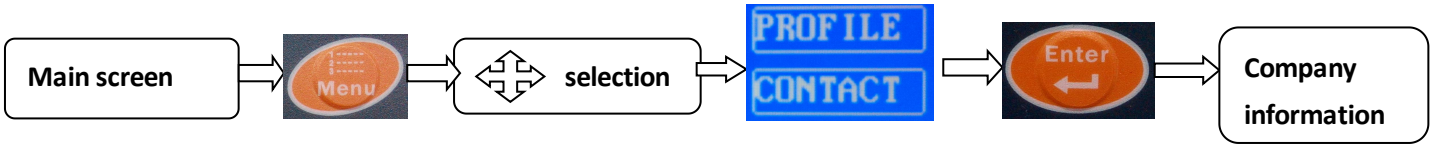
Move cursor to output mode, press Enter key, return to upper menu.

Note: real-time output is to output the data one by one in sequence.

Command output is to output the data as command requirements.

3.2.8 Company and contact information

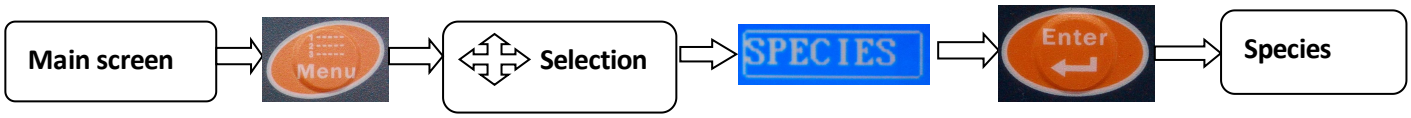
Steps to open company and contact information screen



3.2.9 Species

Urine analyzer LTH100 can analysis animal urine, be sure the species before your testing.

Step to open species:



Species Screen：

when entering species screen, you can choose 10 species to test, highlight the species, then press Enter to confirm, Press Clear return to main menu.

Chapter 4 Quality Control Monitoring

Attention:

Check the loading platform: please check the position of object stage and the clean of loading platform& white calibrated slice. If the position is inaccurate or they are dirty, please dispose it according to the details in the chapter 6 ”cleaning and maintenance”. Reset the analyzer and self-test after fixing it.

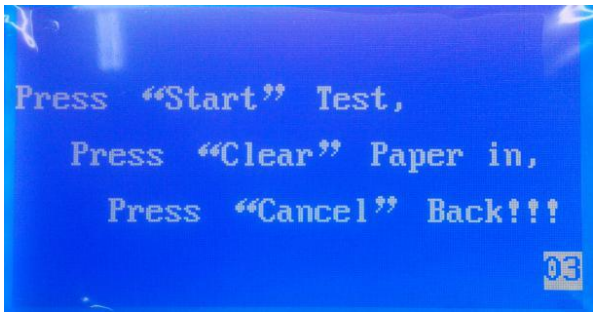
Adjust the test mode to single step (For details, chapter 3 , function and setting of LTH100 urine analyzer)

4．1 Quality Control Testing

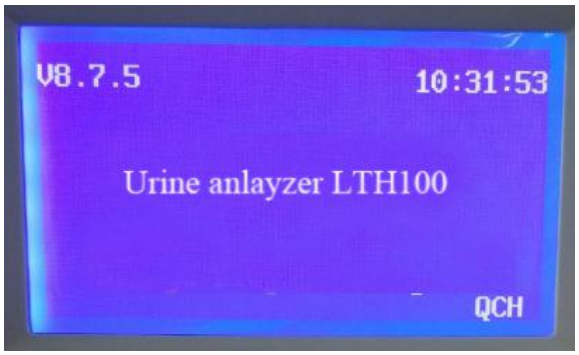
Testing Procedure

Step 1:

Prepared urine strips, Press “Start”,the loading platform will come out until the outermost side. The instrument enters the “Testing” condition. The screen shows as followed:



If press “Cancel” key, press up and down key to choose high and low controls testing screen to test controls, then press “start” loading platform move out, the instrument is on the status of “testing”:



Step 2：After 58 seconds, the instruments will make a sound,please let the reaction area of strip completely immerse into the quality control reagent and take out in 1 or 2 seconds,. Make the side edge of test strip scrape the extra liquid along the pipe wall of urine container or make the water paper absorb the extra liquid. Then put the test strip in the middle of loading platform flatware. Push the strip to the top of object stage. The instrument will start testing. The instrument would print out the test result when the test is over. The test value will compare with the reference value in quality control reagent specification.(The reagent of quality control is self-provided.)

Chapter 5 Urine test

Warning

Urine has the potential infectious. Please do the protective measure in the process of test, clear or repair.

Disposal the urine specimen and used strips as the local library rules.

This chapter introduces the methods of routine urine detection with the analyzer LTH100. The first use, please carefully read “chapter 3 Function and Setting of LTH100 Urine Analyzer”

NOTE:

Only matched urine strips produced by our company can promise testing precision. If not matched, results will be abnormal and can not assure if the problems caused by our analyzer.

When analyzers do the test, avoid the direct sunlight, keep the testing precision.

Please check the type of the strips matched the test model in instruments, avoid the wrong test results, because of the using urine test strips.

Do not use the strips which are over validity or metamorphic.

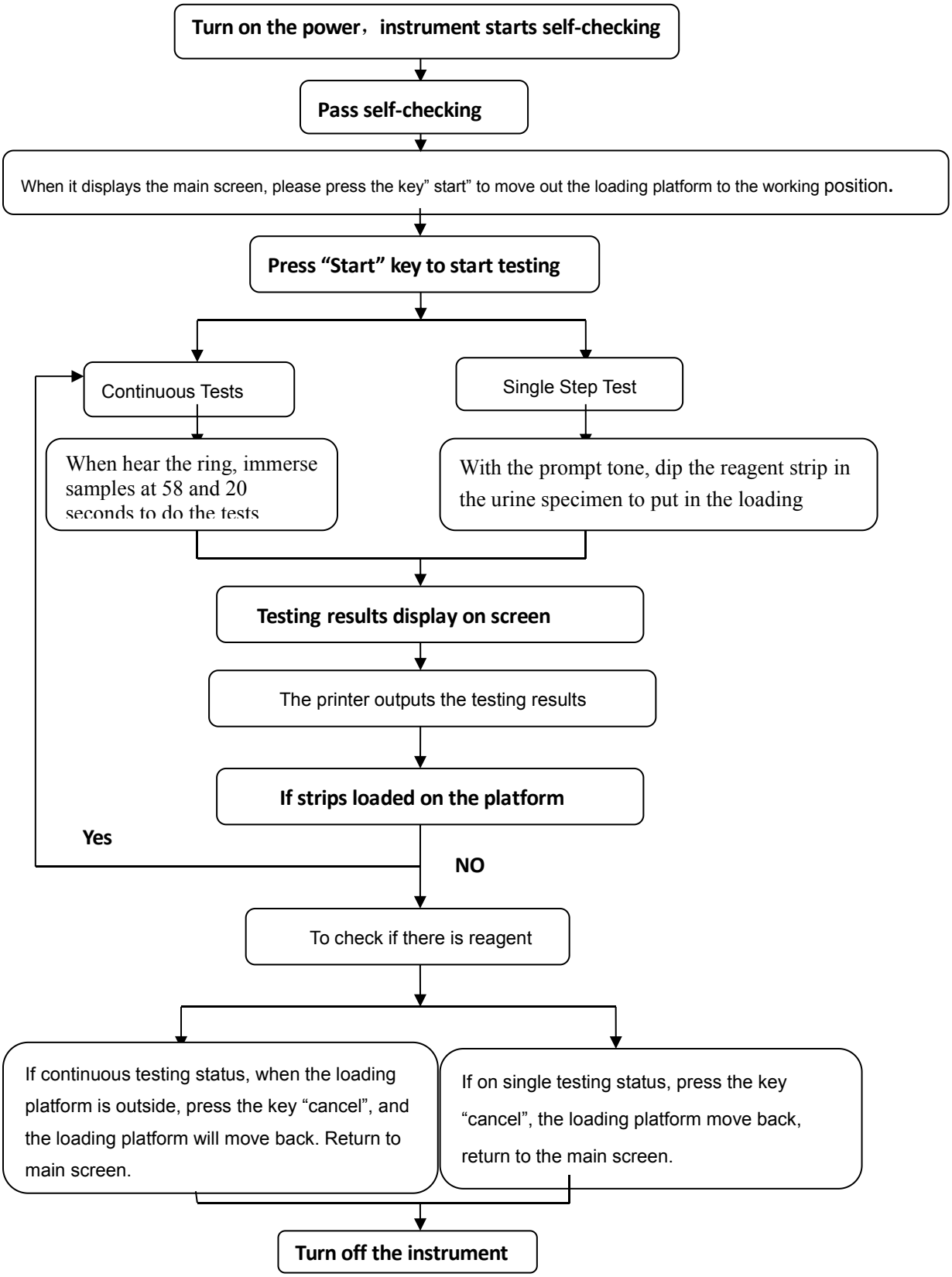
Immerse the reagent area of the strip in the urine specimen, the immerse time cannot be too short or too long, remove the excess urine with the blotting paper, or lead to the errors.

Please clean the stage after testing a specimen to avoid cross infection.

Check the loading platform: please check the position of object stage and the clean of loading platform& white calibrated slice. If the position is inaccurate or they are dirty, please dispose it according to the details in the chapter 6 ”cleaning and maintenance”. Reset the analyzer and self-test after fixing it.

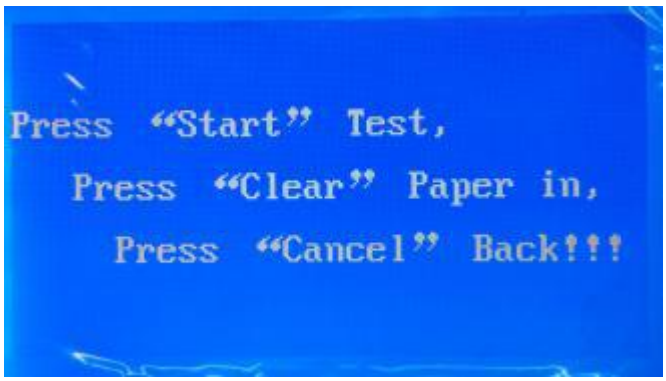
Adjust the test mode to single step (For details, chapter 3 , function and setting of LTH100 urine analyzer)

5.1 Test procedure

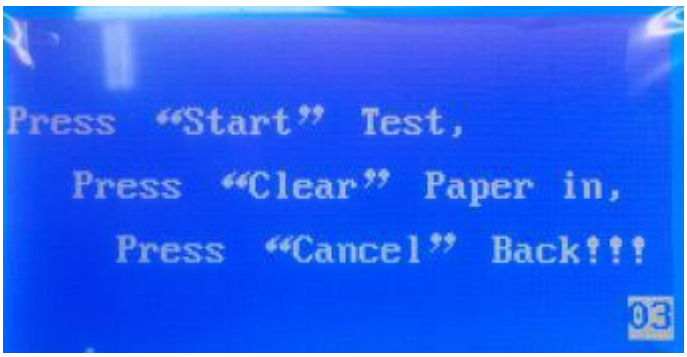

Turn on the power，instrument starts self-checking
Pass self-checking
When it displays the main screen, please press the key" start" to move out the loading platform to the working position.
Press "Start" key to start testing
Continuous Tests
Single Step Test
When hear the ring, immerse samples at 58 and 20 seconds to do the tests
With the prompt tone, dip the reagent strip in the urine specimen to put in the loading
Testing results display on screen
The printer outputs the testing results
If strips loaded on the platform
Yes
NO
To check if there is reagent
If continuous testing status, when the loading platform is outside, press the key "cancel", and the loading platform will move back. Return to main screen.
If on single testing status, press the key "cancel", the loading platform move back, return to the main screen.
Turn off the instrument

5.2 Start up the instrument

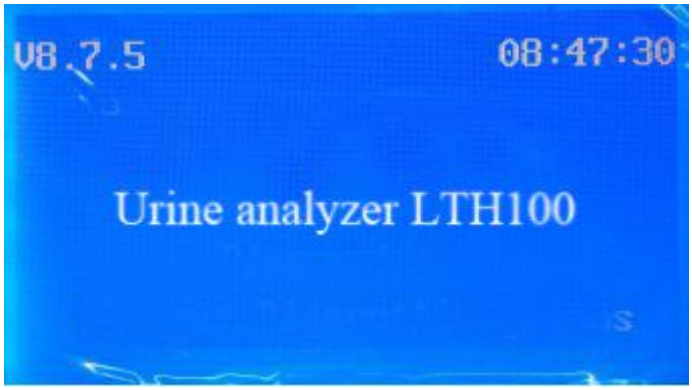
After installed the instrument, turn on the power-switch, and the instrument will go on the system self-checking. If the Self-checking passes, it enters working status, with the main screen displayed (Figure. As following)



Press “Enter ” the timer will count down from 56 seconds, the screen display as following



Press “Cancel” return to main screen as following:



As requirement by user to adjust the strips model, printer type, test model (As shown on Chapter 3). After adjustment, press “start”, the timer will count down from 56, testing start.

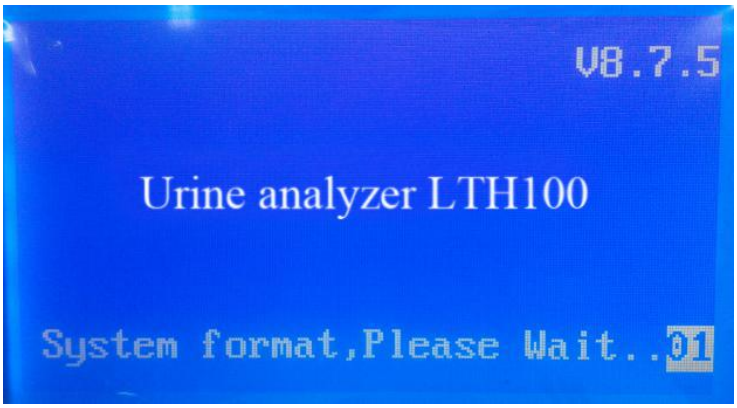
5.3 Inspection of loading platform

Before testing, check first if the loading platform position is proper and the white calibration area is clean. If not, please deal with the problem according to the related content in Chapter 6. After installing well, re-open the apparatus for self-checking.

5.4 Calibration strip testing

After self-testing, press “Cancel” key, press up and down to choose following screen to testing calibration strip. Put the calibration strip on loading platform, press “start” to test.

5.5 Reagent strips testing operationAfter power on, Press “Start”, the loading platform move out, the time will count down from 56, when loading platformmove utmost end, the instrument is ready for testing, the screen will display as following:



The testing is divided to continuous testing and single testing

***Continuous testing, the testing time is 30 seconds for each strip(the first is 60s), methods see the following

Step 1: there is reminder ring to stain the urine specimen

Step2:

Hearing the ring, immerse the strips test area to the fresh, mixed and not centrifugal urine specimen. Then draw the side-edge of the strip against the rim of the specimen container to remove the excess urine or use the blotting paper, put the strip in the central of loading platform, put forward to the end of the loading platform.(this is Strip 1).

Step 3：

Hearing the ring again, take another strip, immerse to the next urine specimen, then take it out immediately and wait for testing(this is Strip 2)

Step 4：

The count-down is 20 seconds, the loading platform move outside and stop, Strip 1 finish the test, the results show on the screen and be printed. At this time, take off the Strip 1, put Strip 2 in the central of loading platform.

Step 5：

The third time to hear the reminder ring, put another strips on the plotting paper to wait for testing.

Steps 6: Repeat step 4 and step 5.

Notice: If stop the testing, choose the following methods:

Wait for the loading platform moved out and print finished, before the reminder ring, press the cancel key, the analyzer stop and back to main screen.

No strip or the strip is in the incorrect position, the screen shows, “no strip” or “the wrong position”, the testing stop.

***Single Testing

The testing time is 30 seconds, the methods are following:

Step 1,press “Start” key, there is reminder ring to stain the urine specimen, as the rules in the (1),put the strips on the loading platform, after 30 seconds, then start to test. Test is finished, results are printed, then the loading platform moves out.

Step 2, repeat the first step, do the next test.

Notice:

After the loading platform move out, put the target strip correctly, but this must before hearing the reminder ring.

Do not touch the loading platform, if touch it, the testing result will be affected.

The analyzer will increase or reduce testing items automatically and arrange automatically the shown index and the printed sequence.

The clinical No. increase one automatically after one test finish. Each test result save in the database. Once test and once record, the records includes time, clinical No. and the testing data. 1000 records can be saved automatically, in case repeat or miss.

Chapter 6 Cleaning and Maintenance of the Urine Analyzer

6.1 Routine Maintenance and Attentions

6.1.1 Do not put the machine in the direct sunlight position when testing, otherwise it will influence the precision of test result.

6.1.2 Do not put things in front of object stage of analyzer, otherwise it will collide the object stage when it out.

6.1.3 Use the clean, soft and dry cloth to clean the analyzer often, keep the analyzer clean. If the surface of the analyzer is very dirty, you can use water to clean. Don’t use gas, paint thinner, benzene compound such organic solvent. The solvent can make the analyzer distortion and influence the normal work

6.1.4 Don’t use water to clean the LCD screen. Use clean, soft and dry cloth or paper to clean it softly.

6.1.5 Don’t use water to clean the LCD screen. Use clean, soft and dry cloth or paper to clean it softly.

Note: Because of the characteristic of the strip, it should be avoid of temperature influence, either cold or hot will influence the precision and correctness of the testing result(The temperature of working environment should be at 0℃-40℃，optimum temperature should be at 20℃-25℃,the relative humidity should lesser than 85%RH. The urine strips optimum temperature should be at 20℃-25℃).

6.2 **Cleaning the loading platform**

6.2.1 **Routine Cleaning**

1.Demount the loading platform

When the loading platform stays outside, turn off the power, hold the both front sides of the loading platform , pull it afterward gently.

2.Clean the loading platform

Clean the loading platform and white calibrated slice with cotton which is soaked by distilled water or soft water paper. Check the surface of white calibrated slice and make sure that there is no dust, foreign water and scratch. Dry in the air before use it. Please change a new one when the calibrate slice can’t be clean up, scratch

or damaged. Notice: Do not use any hard thing to touch the loading platform and calibrated slice, either any solvent to clean the slice.

3. Install the loading platform

Take the back side of calibrated slice, insert the loading platform to the pallet of it, pull it gently until it can't be moved any more.

4.Reset the analyzer and self-testing

6.2.2 **Regularity Cleaning**

Please clean as followed steps if there is urine stain on the loading platform

1. Take out the loading platform

2. Let the cotton bud soak the 0.1N NaOH solution and clean the loading platform. Do not let the NaOH solution touch the white plastic calibrated slice.

3. Use the wet cloth clean the NaOH solution which lifted on the loading platform.

4. Use the water paper cleans the loading platform.

5. Put the object stage back to the pallet, as the third step in the Routine Cleaning.

6.2.3 **Disinfection Treatment**

Because urine specimen always touches the loading platform, please disinfect it as follow steps:

1. Wash and dry the loading platform according to the four steps in the routine cleaning.

2. The following solutions can be used to conduct disinfection.

a). 2% glutaric dialdehyde solution (disinfect as the detailed specification in the reference label)

b). 5% hypochlorite natrium solution (add it to the 99ml water to be 1:100 thinner)

c). 70%-80% iso-propanol solution, no thinning

3. Put the disinfection liquid into a tall and narrow container, about 10 cm

4. Put the object stage into the liquid ,keep the white calibrated slice on the surface of the liquid

5. Keep it in the liquid about 10 munities.

6. Take out the loading platform; install the loading platform as the third step in the 6.2.1

7. Reset the analyzer and self-testing.

Chapter 7 Transportation and Deposit of Urine Analyzer

7.1 **Transportation Requirement**

During the transportation, the instrument should be water resistant, against violent vibration and extrusion. Please handle with care when loading and unloading.

7.2 Deposit Requirements

The instrument should deposit in indoor environment which is no chemical goods, corrosive gas, adequate ventilation and hygiene &cleanliness at 0℃-30℃ temperature.

Chapter 8 Urine Analyzer and Computer Connected

LTH100 series urine analyzer connects with computer through RS-232 port. The protocol as follows:

Baud Rate: 9600

Data Bit: 8 Bit

Stop Bit: 1 Bit

Verification: none

Hardware Handshake: none

First Symbol: 02H

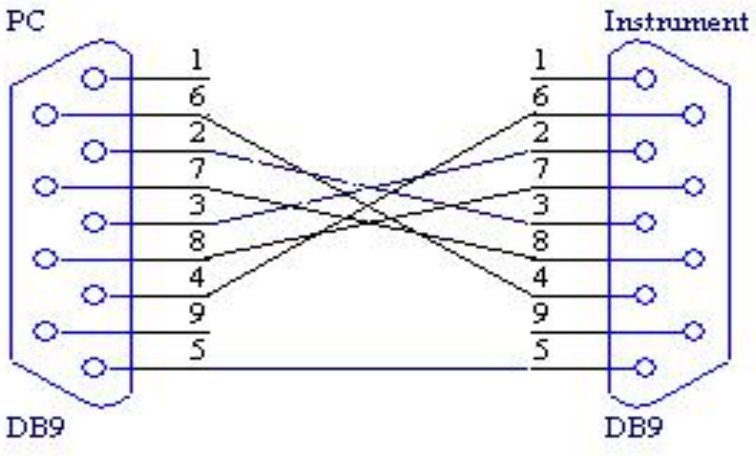
byte blank space: 20H

byte blank space: 0DH0AH

Tailed: 03H

Urine analyzer connect with computer

Computer Urine analyzer



Chapter 9 Fault Resolution of Urine Analyzer

This chapter has listed some simple answers to the questions that might appear in usage. If the corresponding methods can't still solve the problem please contact the sellers in order to obtain the quickest technical support and the service.

NO.	Faulting phenomenon	Elimination method
1	The screen does not have any display	(1) Check the power source whether it has the electricity (2) check the press or bounce of switch is normal or not (3) Check the fuse in the back side of machine to see whether it's normal
2	Fuse damaged	(1) Turn off the instrument and pull out the power plug (2) Take out the damaged fuse (3) Replace a new 2.0A fuse
3	The The printer does not work	(1) Printer choose the Internal, Auto print choose "on" (2) put paper if lacks
4	No printing on paper	Check if the paper fixed up proper(scratch the paper

		surface, the right side will turn black)
5	Testing results are wrong	Check whether the type of the strips is accorded with the Setup or not.

Appendix A

Warranty

Dear consumer:

Thank you for purchasing our urine analyzer. Our company provides the following services for you:

1. Technical consultations are provided at any time.

2. Maintenance free of charge within a year from the day you purchase the instrument.

3. Maintenance will be charged in the following conditions:

1) Product which has pass the date for free maintenance.

2) Damage caused by accidental factor or improper use.

3) Damage caused by the operation that not according to the instruction manual.

4) Damage caused by your own repair that without our company's permission.

4. With the development of technology, we will supply the service of update of analyzers

Appendix B

LTH100 series Urine Analyzer Testing Grades

Parameter	Conventional	Sl	Arbitrary
Glucose	Neg	Neg	Neg
	100mg⁄dL	5.5mmol⁄L	1+
	250mg⁄dL	14mmo1⁄L	2+
	500mg⁄dL	28mmo1⁄L	3+
	1000mg⁄dL	55mmo1⁄L	4+
Bilirubin	Neg	Neg	Neg
	1mg⁄dL	17umol/L	1+
	3mg⁄dL	50umol/L	2+
	6mg⁄dL	100umol/L	3+
Ketone	Neg	Neg	Neg
	5mg⁄dL	0.5mmo1⁄L	±
	15mg⁄dL	1.5mmo1⁄L	1+
	40mg⁄dL	4.0mmol⁄L	2+
	80mg⁄dL	8.0mmol⁄L	3+

Specific Gravity	1.005 1.010 1.015 1.020 1.025 1.030	1.005 1.010 1.015 1.020 1.025 1.030	
PH	5.0 6.0 6.5 7.0 7.5 8.0 8.5 9.0	5.0 6.0 6.5 7.0 7.5 8.0 8.5 9.0	
	Neg	Neg	Neg

Protein	20mg⁄dL	0.2g⁄L	±
	30mg⁄dL	0.3g⁄L	1+
	100mg⁄dL	1.0g⁄L	2+
	300mg⁄dL	3.0g⁄L	3+
Urobilinogen	0.2mg⁄dL	3.3umol/L	Norm
	1mg⁄dL	16umol/L	Norm
	2mg⁄dL	33umol/L	1+
	4mg⁄dL	6umol/L	2+
	8mg⁄dL	131umol/L	3+
Nitrite	Neg	Neg	—
	Pos	Pos	+
Blood	Neg	Neg	—
	10ca cells⁄uL	10ca cells⁄uL	±
	25ca cells⁄uL	25ca cells⁄uL	1+
	80ca cells⁄uL	80ca cells⁄uL	2+
	200ca cells⁄uL	200ca cells⁄uL	3+

Leucocytes	Neg 15ca cells⁄uL 70ca cells⁄uL 125ca cells⁄uL 500ca cells⁄uL	Neg 15ca cells⁄uL 70ca cells⁄uL 125ca cells⁄uL 500ca cells⁄uL	— ± 1+ 2+ 3+
Ascorbate	0mg⁄dL 10mg⁄dL 25mg⁄dL 50mg⁄dL 100mg⁄dL	0mmo1⁄L 0.5mmo1⁄L 1.5mmo1⁄L 3.0mmo1⁄L 6.0mmo1⁄L	0mmo1⁄L 0.5mmo1⁄L 1.5mmo1⁄L 3.0mmo1⁄L 6.0mmo1⁄L
Microalbumin	Neg 0.15mg/dL	Neg 0.15g/L	
Creatinine	10mg/dL 50mg/dL 100mg/dL 200mg/dL	0.9mmol/L 4.4mmol/L 8.8mmol/L 17.6mmol/L	

	300mg/dL	26.5mmol/L	
Microalbumin	1mg/dl 3mg/ dl 8mg/ dl 15mg/ dl	10 mg/L 30 mg/L 80 mg/L 150mg/L	
ACR	mg/g	ACR ratio value sheets	

ACR ratio value sheets

Malb/cre	CRE				
MALB	-0	20	10	5	3
	2+ 302	1+ 60	1+ 31	15	10
	2+ 768	1+ 161	1+ 79	1+ 41	27
	2+ 1352	2+ 312	1+ 148	1+ 75	1+ 50

Packing list

NO.	Name	Unit	QTY
1	Urine analyzer LTH100	set	1
2	Fuse	pcs	2
3	Paper（57mm）	pc	1
4	Powder line	pc	1
5	samples	bottles	1
6	User manual	pc	1
7	Calibration strip	pcs	2
8	Calibration value	set	1
9	Guarantee card	pc	1
10	Barcode reader	pc	1