URIT - 50

# Urine Analyzer

# OPERATING MANUAL



URIT Medical Electronic Co.,Ltd

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# Copyright and Declaration

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## Declaration

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## Limitation of Liability

URIT warrants to the original purchaser that this instrument will be free from defects in materials and workmanship for a period of one year from the later of the date of original purchase or installation.

URIT assumes no liability in the following situations even during the period of warranty.

1. Failure due to abuse the instrument or neglect the maintenance.
2. Use reagents and accessories other than manufactured or recommended by URIT.
3. Failure due to operate not under the instructions described in the manual.
4. Replace accessories not specified by URIT, or after maintenance or repair by a service agent not approved or authorized by URIT.

**CAUTION: THE INSTRUMENT IS FOR PROFESSIONAL AND PRESCRIPTION USE ONLY.**

**URIT Medical Electronic Co.，Ltd**
Add: No. 4 East Alley, Jiuhua Road, Guilin, Guangxi 541001,PR China
Tel: +86(773)2288586
Fax: +86(773)2288560
Web: www.urit.com
Email: service@uritest.com

**Supplied by: URIT Medical Electronic Co.，Ltd**

EC REP **Wellkang Ltd t/a Wellkang Tech Consulting**
Suite B, 29 Harley Street, LONDON W1G 9QR, UK

CE

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# Part 1 Operation

## 1 Indication for Use

The URIT-50 Urine Analyzer is a semi-automated, bench top instrument which is intended for professional, in vitro diagnostic use only. The instrument is used in conjunction with the URIT 11G urine reagent strips to perform semi-quantitative detection of the following analytes in urine: pH, Nitrite, Glucose, Protein, Blood, Specific Gravity, Bilirubin, Urobilinogen, Ketone, Leukocyte and Ascorbic Acid . Test result may provide information regarding the status of carbohydrate metabolism, kidney and liver function, acid-base balance and bacteriuria. The instrument uses the accompanying check strip for daily calibration.

***NOTE: Only URIT 10G and 11G Urine Reagent Strips guarantee the precision.***

## 2 Specifications

1) Reagent Strips: URIT 10G,11G urine reagent strips.
2) Measuring Principle: Reflectance photometry.
3) Throughput: 60 tests/hour or 125 tests/hour(Max).
4) Measuring Modes: Single test and continuous test modes.
5) Urinary Analytes: pH, Nitrite, Glucose, Protein, Blood, Specific Gravity, Bilirubin, Urobilinogen, Ketone, Leukocyte and Ascorbic Acid .
6) Display: Backlit LCD display.
7) Result Reporting: Results expressed with semi-quantitative symbols and conventional units.
8) Print: All test results are printed by the internal thermal printer (Life span: 500 thousand lines) or the external printer via serial interface or parallel interface, optional.
9) Operating Environment: 15℃-30℃, Relative Humidity ≤ 80% (recommended) .
10) Control Function: Self-checking, sample testing and malfunction detection are controlled by inbuilt microcomputer.
11) Lumination:≤2000 lx
12) Interface: Serial interface (RS232, a standard 9-pin socket), parallel interface (a standard 25-pin socket), and PS/2 Port (for bar code scanner).
13) Memory: Up to5,000 samples.
14) Weight: 2kg.
15) Dimension: 290mm X 200mm X100mm.
16) Power: DC12V (Adapter) , AC 100-240V, 50/60Hz.
17) Power Dissipation: 30VA.

# 3 Unpacking

1) Carefully unpack the shipping carton and take out URIT-50 urine analyzer and accessories.

2) Check the contents for quantity and visible signs of damage according to the following Standard Component List .

3) Please notify your local authorized distributor immediately in case any damage or loss exists.

**Table-1 Standard Component List**

| SN | Description | Quantity | Remark |
|---|---|---|---|
| 1 | URIT-50 urine analyzer | 1 unit | |
| 2 | Print paper | 1 roll | Thermal,57mm |
| 3 | Check strip box | 1 set | Check reagent strips - 2 pieces/box |
| 4 | Power cord | 1 pc | |
| 5 | Power adapter device | 1 unit | |
| 6 | Urine reagent strip holder | 2 pc | |
| 7 | Operation manual | 1 copy | |

# 4 Structure and Principle

## 4.1 Structure

The instrument is composed of optical-electronic sensor system, transfer mechanism, I/V converter, CPU, printer, LCD display, keyboard and power supply, etc. as shown in Figure1.

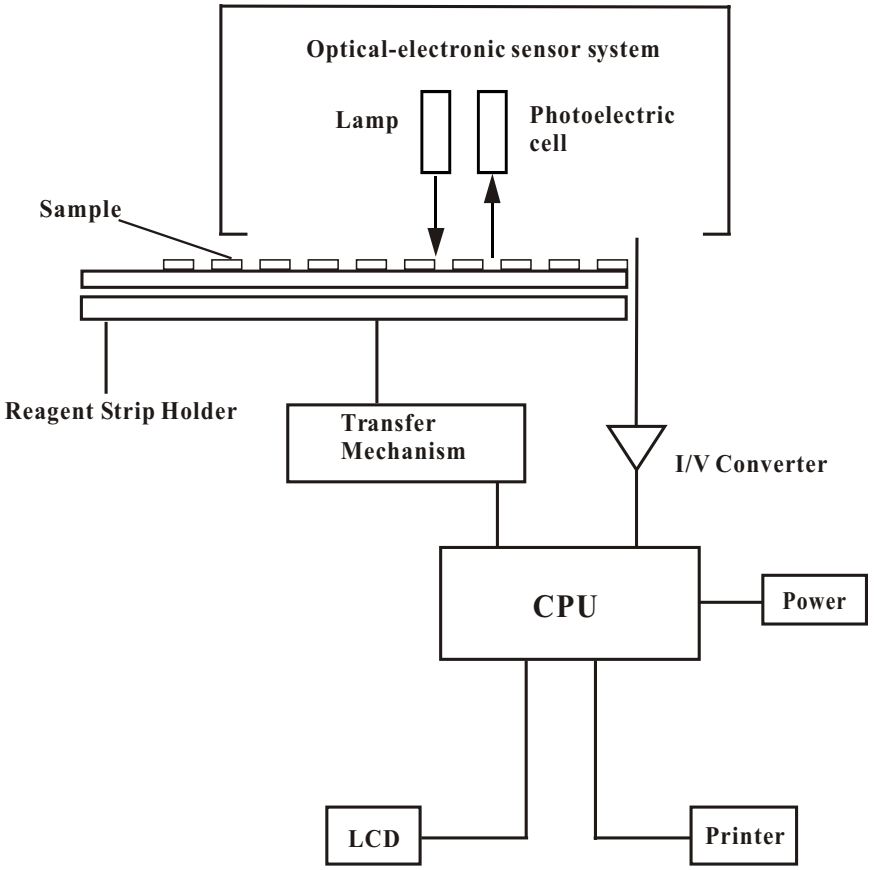


**Figure 1**

## 4.2 Principle

The optical-electronic sensor system is composed of a light source and a light receptor . The light from the light source falls on the reagent pads on the strip. The absorbance and reflectance vary according to the color of the reagent pad, i.e. if the reagent pad is darker, more light is absorbed, and less light is reflected, vice versa. The degree of color development is proportional to the concentration of analyte in urine. The reflectance ratio is obtained by the following formula:

$$R\ (\%) = (Tm \times Cs) \ / \ (Ts \times Cm)$$

R： Reflectance ratio
Tm： Reflectance intensity of measurement wavelength for test area
Ts： Reflectance intensity of reference wavelength for test area
Cm： Reflectance intensity of measurement wavelength for calibration pad
Cs： Reflectance intensity of reference wavelength for calibration pad

The reflected light is transmitted into the optical-electronic sensor system, which transforms the optical signal into electrical signal. The strength of the electrical signal correlates with the reflectance. After that, the electric signals are processed by CPU following transformed by I/V converter, and the test results are printed out.

## 4.3 The semi-quantitative symbol and concentration of URIT G series urine reagent strip.

The factors that may affect the test results are freshness of urine sample, drinking & eating habits of the patient, as well as pre-sports & post-sports activities. Therefore, the semi-quantitative value is good enough for clinical diagnosis. The test results are rounded off. It is permissible that two relevant values may vary in repeated tests.

Table 2 show the relevant symbols and data about semi-quantitative testing.

**Table 2 Symbols and Data (Conventional Unit and SI Unit)**

| 10 | 11 | Test | SemiQuantitative Symbol and Concentration | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ● | ● | Leukocyte | SemiQuantitative | − | ± | +1 | +2 | +3 | |
| | | | leu/μL | 0 | 15 | 70 | 125 | 500 | |
| ● | ● | Ketone | SemiQuantitative | − | ± | +1 | +2 | +3 | |
| | | | mg/dL (Con.) | 0 | 5 | 15 | 40 | ≥ 80 | |
| | | | mmol/L (SI) | 0 | 0.5 | 1.5 | 4.0 | ≥8.0 | |
| ● | ● | Nitrite | SemiQuantitative | − | + | | | | |
| ● | ● | Urobilinogen | SemiQuantitative | Normal | | +1 | +2 | +3 | |
| | | | E.U/dL (Con.) | | | 2.0 | 4.0 | ≥8.0 | |
| | | | μmol/L (SI) | | | 33 | 66 | ≥131 | |
| ● | ● | Bilirubin | SemiQuantitative | − | | +1 | +2 | +3 | |
| | | | mg/dL (Con.) | 0 | | 0.5 | 2 | 6 | |
| | | | μmol/L (SI) | 0 | | 8.6 | 33 | 100 | |
| ● | ● | Protein | SemiQuantitative | − | ± | +1 | +2 | +3 | |
| | | | mg/dL (Con.) | 0 | 15 | 30 | 100 | 300 | |
| | | | G/L (SI) | 0 | 0.15 | 0.3 | 1.0 | 3.0 | |
| ● | ● | Glucose | SemiQuantitative | − | ± | +1 | +2 | +3 | +4 |
| | | | mg/dL (Con.) | 0 | 50 | 100 | 250 | 500 | ≥1000 |
| | | | Mmol/L (SI) | 0 | 2.8 | 5.5 | 14 | 28 | ≥55 |
| ● | ● | Specific Gravity | | 1.005 | 1.010 | 1.015 | 1.020 | 1.025 | 1.030 |
| | | | | | | | | | |
| ● | ● | Occult Blood | SemiQuantitative | − | ± | +1 | +2 | +3 | |
| | | | ery/μL | 0 | 10 | 25 | 80 | 200 | |
| ● | ● | pH | | 5.0 5.5 | 6.0 6.5 | 7.0 | 7.5 8.0 | 8.5 | 9.0 |
| | ● | Ascorbic Acid | SemiQuantitative | − | ± | +1 | +2 | +3 | |
| | | | mg/dL (Con.) | 0 | 10 | 25 | 50 | 100 | |
| | | | Mmol/L (SI) | 0 | 0.6 | 1.4 | 2.8 | 5.6 | |

# 5 Outer Appearance and Components

## 5.1 Front Appearance

The Front appearance of URIT-50 urine analyzer is shown as Figure 2:

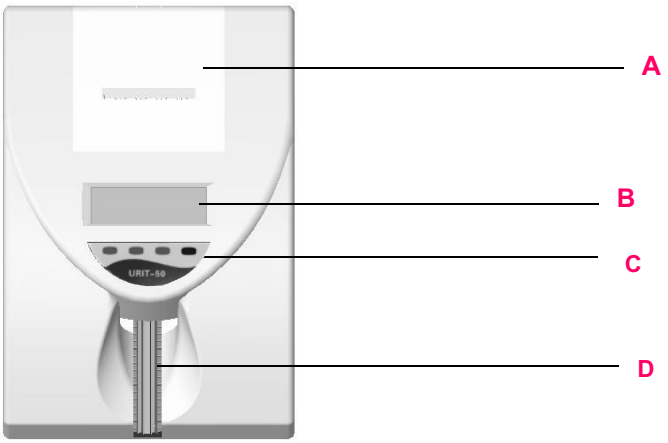


Figure 2

**A: Printer**

Thermal printer for printing test result; lift the printer cover to put in thermal paper.

**B: Display**

Displays the operating prompts and test results.

**C: Keys**

There are 4 keys under the screen. Press the keys to perform routine testing according to the operating prompts displayed on the screen.

**D: Strip Holder**

Holds the reagent strip which is going to be tested.

## 5.2 Rear Appearance

The rear appearance of URIT-50 urine analyzer is shown as Figure 3:

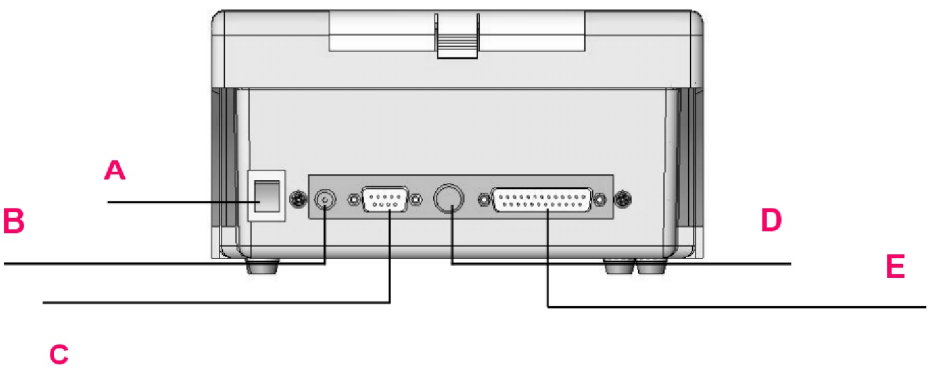


Figure 3

**A：Power Switch**

Turns the power supply ON or OFF.

**B：DC 12V Socket**

Do use the adapter that comes with the instrument to ensure the instrument runs at correct voltage.

**C：Serial Interface**

Standard 9—pin socket, RS232 port for exporting data.

**D：PS/2 port**

Standard 6—pin mini—DIN socket for bar code scanner.

**E：Parallel Interface**

Standard 25—pin socket for external printer.

# 6 Function

## 6.1 Self-checking

Turning on the power switch, the instrument begins to perform a self-checking, and a message of “ system checking, please wait...” displays on the screen. After completion of self-checking (this will take a few seconds), the instrument enters the **Ready** screen and is ready for testing. If error is detected during the self-checking process, the buzzer will go off and trouble code is displayed.

## 6.2 Print

An example of printed report for URIT 11G reagent strip is as follows (Figure4):

| | | | |
|---|---|---|---|
| **N0.000001** | | **2005-01-10** | |
| **ID:XXXXXX** | | **10:15:56** | |
| **LEU** | **-** | **0** | **Cell/μL** |
| **KET** | **-** | **0** | **mmol/L** |
| ***NIT** | **+** | | |
| **URO** | **Normal** | | |
| **BIL** | **-** | **0** | **μmol/L** |
| **PRO** | **-** | **0** | **g/L** |
| **GLU** | **-** | **0** | **mmol/L** |
| **SG** | **1.030** | | |
| **BLD** | **-** | **0** | **Cell/μL** |
| **pH** | **4.5** | | |
| ***Vc** | **+3** | **5.6** | **mmol/L** |

Figure 4

**Line 1:**

**No.000001** is the serial number of sample; **2005-01-10** is the date (Year-Month-Day).

**Line 2:**

**ID: XXXXXXX** is the identification number of barcoded label. It will be displayed only provided the option for "Serial no. Input" is enabled. **10:15:56** is the time ( Hour: Minute: Second).

**Line 3 to Line 13:**

Consists of item names, positive/negative notations, test values and units.

a) **The first column**: Abbreviation of items. Refer to **Table-3** for the full names.

b) **The second column**: Semi-quantitative symbols. "-" stands for negative and "+" stands for positive. Degrees of positive are represented by +2, +3....

c) **The third column**: Objective values of the items, which are displayed by semi-quantitative method. The figures of this column correspond to the plus system notation in the second column. e.g. "＋3" means a high concentration.

d) **The fourth column**: Conventional unit.

**NOTE:**

**If the test result is positive in semi-quantitative method, there will be an asterisk "*" before the item as a prompt. Refer to the Instruction that comes with URIT Series Urine Reagent Strips for details.**

**Table-3 Abbreviations of Items**

| NO. | Abbreviation | Full name |
|---|---|---|
| 1 | PH | PH VALUE |
| 2 | NIT | NITRITE |
| 3 | GLU | GLUCOSE |
| 4 | PRO | PROTEIN |
| 5 | BLD | BLOOD |
| 6 | KET | KETONE BODY |
| 7 | BIL | BILIRUBIN |
| 8 | URO | UROBILINOGEN |
| 9 | SG | SPECIFIC GRAVITY |
| 10 | LEU | LEUKOCYTE |
| 11 | VC | ASORBIC ACID(VITAMIN C) |

### 6.3 Display

All test results will be shown on the LCD display after each testing. The first display shows the first six items, and the next display shows the rest. You can review them by pressing the "[⇕]" button.

The display format varies with the measuring unit that you can select from the **System** menu.

### 6.4 Data Storage and Review

This instrument can store up to 5,000 records for reviewing and printing. The stored data will not be lost when the power supply is cut off. When the data exceed 5,000, the oldest will be removed from the memory automatically.

### 6.5 External Printer

The instrument can be connected to an external printer via the parallel interface .

### 6.6 Communication with Computer

The instrument can communicate with a computer via the RS232 interface. Refer to **Appendix** for the data exporting format.

### 6.7 Connection with Bar Code Scanner

A bar code scanner is available for use with the instrument via the PS/2 port.

## 7 Installation

### 7.1 Environment requirement

1) Install the instrument on a clean, level and firm workbench, which is free from vibration, direct sunlight, intensive magnetic field and moisture.
2) Prolonged exposure to excessive humidity and temperature should be avoided. The optimum temperature range for operating the analyzer is 15℃~30℃, and the relative humidity should be less than 80%. Air conditioner is recommended.
3) Keep the instrument away from open windows, ovens, hot source and explosive atmosphere.
4) The instrument should be connected with a well grounded AC electrical outlet.

## 7.2 Installation of printer paper

1) Press the locker of the printer cover and lift the cover.
2) With your index fingers, press the rubber roller toward yourself and take away the roller upward.
3) Lay down the printer paper. Then, put the rubber roller on the notch and press the roller downward until it clips to the notch.
4) Pull the paper through the printer cover and replace the cover.

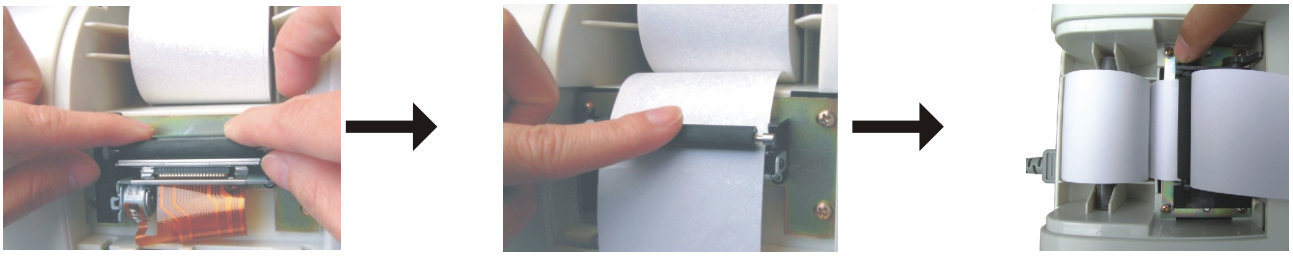

Figure 5

**Caution**

- **The thermal printer can just print on the obverse of the paper. If the paper is installed in reverse, the printer will print nothing.**
- **Ensure that the paper is dry before installation. If the paper is wet, exchange with a dry roll to avoid blocking.**

## 7.3 Connection with Power Cord

One end of the power cord should be connected with the DC 12V power adapter and the other end with a well grounded AC electrical outlet.

## 7.4 Connection with External Printer

Turn off the power switch and connect the instrument with external printer via the 25-pin parallel interface or the 9-pin serial interface.

## 7.5 Connection with computer

Turn off the power switch. Connect the appropriate end of the interface cable to the COM1 or COM2 on the computer and the other end to the RS232 interface on the instrument.

**Caution**

**Equipments and peripherals connected with the instrument should be consistent with safety criteria.**

# 8 Operation

## 8.1 General Information

you can operate the instrument by pressing the keys on the instrument. The last line information shown on the display screen is function prompts for the keys. For convenience, every function prompt on the screen corresponds with the key below.

If a key is active when pressing it, a short tone will be heard and you will see a change either in the display or in the instrument operation.

**Caution**

**Untrained operation may cause erroneous test result, and result in wrong diagnosis. Operator should be trained before using the instrument.**

## 8.2 Operation

### 8.2.1 Self-checking

Turn the power switch on. The instrument starts with a self-checking. After that, the display changes to the **Ready** screen(Figure 6) and is ready for routine testing .




**Figure 6**

On the **Ready** screen, you may see the icon and/or displayed on the upper of the screen:

Strip detector is closed. Refer to “8.2.2.1 System, Detector”.

Sensitivity has been adjusted. Refer to “8.2.2.1 System, Sensitivity”.

If the strip holder is not clean enough, a message of “**Dirty, please clean it** .” will be shown on the display.

In this case, turn the power switch off. Take the strip holder out and clean it with a dry, lint-free cloth. After installation, turn the power back on.

**NOTE:**

**There should be no urine strip or any foreign objects on the strip holder, when turning on the power switch. Otherwise the system will warn that the strip holder is not clean.**

### 8.2.2 Settings

Press the **MENU** key from the **Ready** screen to change to the **MAIN MENU** screen (Figure7):




Figure 7

#### 8.2.2.1 System

Press the **System** key from the **MAIN MENU** to display the **System** menu(Figure 8):

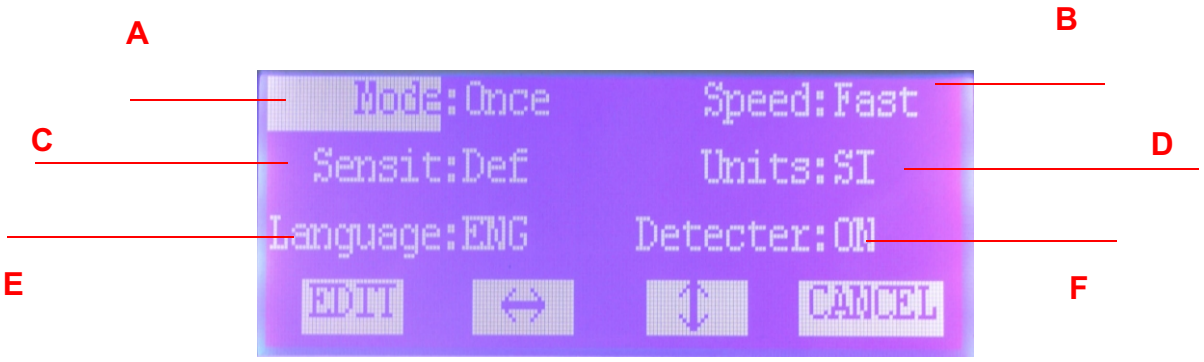


Figure 8

**A) Mode :**

Continuous and single test modes are available.

Continuous Mode：The instrument performs testing continuously with the prompts for user to prepare the next sample 30 seconds or 60 seconds in advance.

Single Test Mode：The instrument will stop the moment a sample testing is completed.

**B) Speed :**

**Normal**(60 seconds) and **Fast**( 30 seconds) for selection.

**C) Sensitivity:**

There are four options: **Default(Recommended)**, **High**, **Low** and **Manual**.

You can adjust the sensitivity for each testing item.

- For **Positive**, "+" denotes increasing reflectance ratio and decreasing cutoff value, "-"denotes decreasing reflectance ratio and increasing cutoff value.
- For **Linear**, "+" denotes increasing the reflectance ratio of high concentration, "-"denotes decreasing the reflectance ratio of high concentration.

**NOTE:**

The adjustable range is from +10 to -10. This figure is just a relative value of adjustable rang, not a percentage. **It's recommended that operator collect enough QC test data before using the function of sensitivity adjustment, and check the conformance with clinical test after adjustment.**

Press the following keys to adjust the sensitivity:

**[+]:** Increases the reflectance rate.

**[—]:** Reduces the reflectance rate.

**[← →]:** Switches between **Positive** and **Linear** .

**[ ↕ ]:** Displays the next item to be adjusted. Keeping pressing it for 3 seconds will save the adjustment and exit.

**NOTE:**

**The function is not recommended for use.**

**To save the current setting, keep pressing [ ↕ ] for 3 seconds.**

If the icon  displays on the **Ready** screen, it means the sensitivity is not in default. The system will prompt user to resume the default each time turning on the instrument. Press **[YES]** to reset the sensitivity to default; press **[NO]** to preserve the current setting.

**D) Units :**

Select desired unit for display and print report.

**E) Language:**

English is default.

**F) Detector:**

The URIT-50 urine analyzer is equipped with a detector for automatically detecting the presence of strip placed on the strip holder.

Select your option between "**ON**" and "**OFF**". If the detector is ON, the instrument will automatically start the testing procedure when a strip is placed on the strip holder, not necessarily pressing the **START** key. If the detector is OFF, the icon  will display on the **Ready** screen, and you need to press the **START** key to begin the testing.

### 8.2.2.2 Contrast (LCM) :

Press "[+]" and "[—]" to regulate the contrast of the Liquid Crystal Display .

### 8.2.2.3 Initialize:

Pressing **[OK]** will clear all test results stored in memory and reset all features to default; pressing **[DATA]** will only clear test results stored in memory.

**NOTE:**

**All records will be cleared up when initializing the instrument. Please select it carefully.**

### 8.2.2.4 Databank:

All records stored in memory can be recalled from the **Databank**. Pressing [ ↓ ], the screen will show the previous stored record, pressing [ ↑ ] will show the next stored record . For quick scrolling by an interval of 10 records, keep [ ↑ ] or [ ↓ ] pressed, the record 10 places lower or higher is recalled.

Press **[OUTPUT]** to display four options for data output. These are:

1. **[RS232]**: Test result will be exported through the serial interface.
2. **[PRINT]:** Test result will be printed out through the internal thermal printer.
3. **[LPT]**: Test result will be exported through the parallel interface.
4. **[ALL]:** Test result will be exported through the serial interface, printer and parallel interface.

When selecting any one of the four options above, the display changes to the corresponding data screen. Pressing the prompt key(RS232, PRINT, LPT or ALL), the current data will be exported. If you want to export all data(from current one to the newest one) at one time, keep pressing the prompt key for 2 seconds until a "Di.." sound is heard. To stop the export, press it again during the continuous exporting process.

.

#### 8.2.2.5 RS232 (Serial interface)

1. **RS232 OUT**: Turns on or off the RS232 interface. OFF means the instrument won't export data when testing is completed.
2. **Format:** Data export format, which is suitable to different computer software. At present, only U50 form is effective.
3. **BAR CODE:** The bar code scanner option is only available for the single test mode. For this, the bar code scanner option has to be enabled.

   The bar code ID will also be shown on the report of internal printer, RS 232 exporting and LPT exporting, bur not be stored in the instrument memory, i.e., there won't be bar code ID in the **Databank** screen.

#### 8.2.2.6 Info (System information)

Manufacturer and instrument information can be found here.

#### 8.2.2.7 Printer

1. **Printer**: Turns on or off the internal printer.
2. **Item Name**: English is default for the item name.
3. **LPT :** Turns on or off the parallel interface.

#### 8.2.2.8 Date&Time

Adjusts the date and time.

#### 8.2.2.9 GreyMeas

Only for factory.

### 8.2.3 SN(Serial Number)

Press the **SN** key form the **Ready** screen to display the **SN** screen. Move the cursor left or right to the digit that needs to be changed by pressing the [ ◄► ] key. Then, press **[+]** to increase the digit, and **[-]** to decrease the digit. After modification, press **[OK]** to save. The serial number will always be reset to "000001 " each time turning on the instrument.

### 8.2.4 Strip

Press the **STRIP** key from the **Ready** screen to display the **Strip Setting** screen. There are 11G and 10G urine strips for selection.

### 8.2.5 Start

Press the **START** key from the **Ready** screen to begin the testing procedure manually.

## 8.3 Calibration and Quality Control

### 8.3.1 Calibration

There are two check strips that come with the instrument. One is for regular use and the other is a stand-by. After testing with check strips, compare the results with reference values printed on the check strip bottle. If the result is consistent, it means the instrument functioning is normal and that it can be used for testing. If not, use the other check strip for calibration again. If the results are not consistent even after this, call up the authorized service personnel to check the instrument.

**NOTE:**

**Check strip needs to be run after maintenance or service on the instrument, and when using a new lot number of test strips.**

**The check strip should not be soaked into urine or water. If the strip holder is dirty, clean it first to avoid contaminating the check strip.**

### 8.3.2 Quality Control

Two levels of quality control needs to be run:

1) after using the check strip.
2) after maintenance or service .
3) when starting a new bottle of reagent strips.
4) when starting a new lot number of reagent strips.
5) when changing operator.
6) when where are questionable results.
7) every 30 days to check the storage conditions of the strips.

**NOTE:**

**It is recommended to use the Liquicheck Urinalysis Control Levels 1 and 2 offered by BIO-RAD, and follow the federal, state and local guidelines for quality control.**

## 8.4 Preparation before Testing

1. Take out strips from refrigerator and wait until they come to the room temperature before testing. Cold strips may affect the accuracy of test results. Refer to strip package insert for information.

2. Make sure that your strips being used are the URIT 10G or 11G strips . Use of any reagent strips other than the specified URIT 10G or 11G will cause erroneous results.

3. Make sure the strip being used matches with the strip type displayed on the **Ready** screen. Otherwise, "**TROUBLE－8**" will be displayed if a non-corresponding reagent strip is used.

4. Check the date, time and printer. Change them when needed.

## 8.5 Routine Testing

1. Connect the adapter to the instrument and the electrical outlet. Push the power switch at "**I**" position. The instrument is ready for test after self-checking.
2. Prepare the filter paper (for removing excess urine), urine sample and urine reagent strip.
3. Completely immerse the reagent strip into fresh, well-mixed, and uncentrifuged urine sample, then slowly draw it out along the container wall, using filter paper for excess urine, but not too dry. Place the top end of reagent strip in the groove of the strip holder, with pads upward. Then, push it along the groove until the buzzer goes off. See Figure 9 for correct positions of strips.

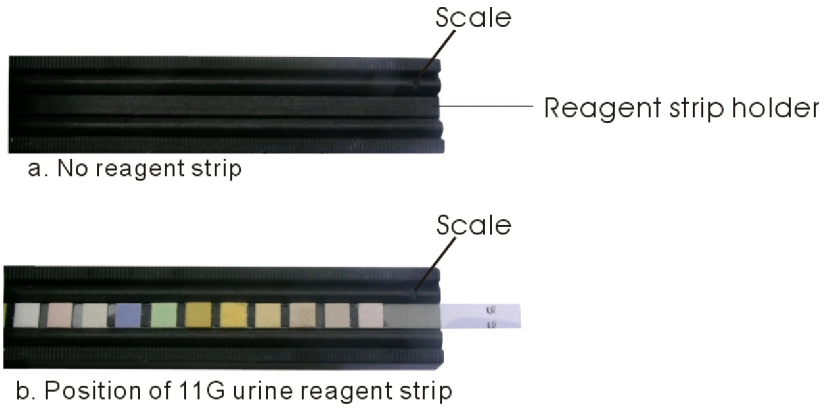


Figure 9

**Biological Hazard**

**DO NOT touch the urine sample or used strip directly as they may carry potential infections. Put on protective gloves during operation. If the sample sticks to human body, wash it off with water immediately.**

**Caution**

**All pads should be within the scale range marked on the holder.**

**A Single Testing Mode**

- If the Detector is ON, the instrument will automatically begin the testing procedure. A message of "**Testing is going on, please wait...**" is displayed and the 60s countdown timer starts to work, decreasing 1 every second. You can input bar code right now if the Bar Code is ON. When the timer shows "0", test results is displayed and printed out.

  When the strip holder completely moves out, remove the used strip and place a new one, the instrument will start the next testing automatically.

- If the Detector is OFF, press the **START** key to begin the testing procedure manually. The display screen shows 65s countdown. When counting down to 60 seconds, the buzzer goes off and the instrument begins testing.

  When the strip holder completely moves out, remove the used strip and place a new one. Press the **START** key to perform the next testing.

**B Continuous Testing Mode(Normal Speed)**

- If the Detector is ON, the instrument will automatically begin the testing procedure. A message of "**Testing is going on, please wait...**" is displayed and the 60s countdown timer starts to work, decreasing 1 every second. When the timer shows "0", test results is displayed and printed out. At the same time, the buzzer goes off, prompting to prepare the next strip. When the strip holder completely moves out, remove the used strip and place a new one, the instrument will start the next testing automatically. Afterward, the buzzer will go off every 60s to prompt operator to prepare the next strip.
- If the Detector is OFF, press the **START** key to begin the first testing manually. The rest of operation is the same as above.

**C. Continuous Testing Mode(Fast speed) ---Not Recommended**

- If the Detector is ON, the instrument will automatically begin the testing procedure. A message of "**Testing is going on please wait...**" is displayed and the 60s countdown timer starts to work, decreasing 1 every second. When the timer shows "30", the buzzer goes off , prompting to prepare the second strip. When the timer shows "0", test result of first strip is displayed and printed out. At the same time, the buzzer goes off, prompting to prepare the third strip. When the strip holder completely moves out, remove the first strip and place the second one, the instrument starts next testing automatically. Afterward, the buzzer will go off every 30s to prompt operator to prepare the next strip.
- If the Detector is OFF, press the **START** key to begin the first testing manually. The rest of operation is the same as above.

**Caution**

1) **In the continuous testing mode, the strip should not be replaced until the strip holder has moved out completely.**
2) **When the strip holder moves out completely, replace the strip as soon as possible.**
3) **When the Detector is on, if you don't replace the strip in time, the instrument will show " The strip has not been changed " and stop testing; When the Detector is off, if you don't replace the strip, the instrument will continue testing the same strip. It will not stop until there is no strip on the holder .**

4. During the testing process, pressing the **STOP** key, the instrument will stop testing and the strip holder will remove out.

   if the instrument detects no reagent strip on the holder when testing, it will also stop testing automatically.

5. When all the testing is completed, push the power switch at "0" position. Clean the strip holder as directed in **Daily Cleaning** of Part 2 Maintenance .

**Caution**

**If the instrument is disused for a long time, take the power cord out from the AC electrical outlet .**

## 8.6 Serial Interface

All the test results stored in memory can be exported to computer or external printer via the serial interface(RS232). You can turn on or off the interface (see **8.2.2.5 RS232**).

**A RS232 connector pin assignments**

- The second pin **RXD**: Receive Data
- The third pin **TXD**: Transmit Data
- The fifth pin **GND**: Ground
- Other pins are blank.

**B Parameter setting**

- **Baud rate :** 9600BPS
- **Data bit:** 8
- **Parity bit :** None
- **Stop bit :** 1 bit

**C Exporting data form （Appendix）**

- Regular result exporting form
- Trouble (error) exporting form

## 8.7 PS/2 port

The PS/2 port is mainly used for connecting with the bar code scanner to enter identification number from barcoded label . You can turn on or off the port (see **8.2.2.5 RS232**).

**A PS/2 port connector pin assignments**

- The first pin : DATA
- The third pin : GND
- The fourth pin : Power supply +5
- The fifth pin : CLK
- The second and the sixth pins are blank

**B Parameter setting**

- Exporting character：LC
- Exporting Finis character：Enter (CR)

# 9 Storage and Transportation

## 9.1 Storage Condition

Storage environment: －20℃～55℃； RH≤95%.

Atmospheric pressure: 80kPa～106kPa.

## 9.2 Transportation Condition

The URIT-50 urine analyzer is a precise instrument that must be transported with care, avoiding moisture, direct sunlight and bump.

Transportation environment: －40℃～55℃； RH≤95%.

## 10 Meaning of Markings


Caution! Refer to accompanying documents



Serial number


Danger! High voltage


Biological Hazard



In vitro diagnostic medical device


Protective ground terminal


Power on


Manufacturer


Power off


Recovery


Protect from heat and radioactive sources



Authorized representative in European Community

# Part 2 Maintenance

## 1 General Information

The URIT-50 urine analyzer is a precise instrument that must be handled with care. Rough handling may disturb internal calibrations and/or cause other malfunctions. If any malfunction occurs, the operator should refer to this part for solution. If the malfunction persists after following the recommended remedy, contact your local distributor. If problem seems to be caused by URIT series reagent strip, refer to the instruction that comes with the URIT series urine reagent strips, which might help solve the problem.

**NOTE:**

**Do not attempt to open the instrument by yourself as the high voltage may pose a hazard.**

## 2 Cleaning

### 2.1 General Information

1. Carefully read through the Operating Manual before operating the instrument.
2. Keep the exterior of the instrument free of dust at all times.
3. If the instrument is disused for a long time, cover it with vinyl dustcoat. When resuming operation, perform a testing with the check strip before making any determinations.
4. Do not try to open, re-construct or modify the instrument in any way.

### 2.2 General Cleaning

Keep the instrument clean and dust-free. If cleaning is needed, use wet fabric or soft detergent. Any oil, ester, silica gel and lubricant is forbidden for use.

Use only soft fabric to clean the screen. Water, ketene and aromatic solvent are forbidden for use.

### 2.3 Daily Cleaning

Clean the instrument at least once every day. If uncleanness affects test results, clean the instrument at any time.

If there is too much urine dirt on the strip holder’ s groove or flank, the test result might not be exact. In this case, remove out the holder and clean as below:

1. Switch off the power supply. Gently pull out the holder toward operator.
2. Clean the holder with water and dry it with soft, lint-free cloth.
3. After cleaning, gently push the holder in the entrance until the end of the holder parallels to the instrument edge.
4. Switch on the power supply. The instrument will automatically adjust the holder to its proper position.

**Caution**

**DO NOT wipe across the white calibration block on the top end of the holder. If dust exists, use a cotton swab, wetted with plain water, to clean the block.**

.

**Biological Hazard**

**Put on protective gloves when cleaning the instrument.**

## 3 Trouble - shooting

Table-4 lists the various trouble codes, along with possible causes and recommended remedies to quickly and easily solve the problem.

**Table-4 Trouble-shooting Table**

| TROUBLE CODE | POSSIBLE CAUSE | REMEDY |
|---|---|---|
| TROUBLE-01 | Reference light (LED 1) is too strong. | Contact your local distributor. |
| TROUBLE-02 | Red light (LED 2) is too strong. | |
| TROUBLE-03 | Green light (LED 3) is too strong. | |
| TROUBLE-04 | Reference light (LED 1) is too weak. | |
| TROUBLE-05 | Red light (LED 2) is too weak. | |
| TROUBLE-06 | Green light (LED 3) is too weak. | |

| TROUBLE CODE | POSSIBLE CAUSE | REMEDY |
|---|---|---|
| TROUBLE-07 | Improper position of reagent strip. | Place the reagent strip correctly (See 8.5 Routine Testing). |
| TROUBLE-08 | Reagent strip type is wrong. | Select the correct strip type (See 8.2.4 Strip ). |
| TROUBLE-09 | No reagent strip on the strip holder. | Place reagent strip on the holder. |
| TROUBLE-10 | ROM/RAM trouble. | Reconnect the DC power adapter. |
| TROUBLE-11 | Strip holder is dirty. | Clean the strip holder (See 9.3 Daily Cleaning). |
| TROUBLE-12 | Strip transfer mechanism error. | Check whether the white calibration block is clean. Clean it, if needed.<br>Check whether the strip holder is installed properly. Reinstall it, if needed.(See 9.3 Daily |

# Appendix

## Exporting Format of Normal Test Result

### 10G

| 1 | 2 | 3 | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| STX | ■ | ■ | | | | | | | | | | | | | | | | | | | |
| 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
| CR | LF | N | O | . | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | ■ | ■ | ■ | - | ■ | ■ | - | ■ | ■ |
| 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 |
| CR | LF | | | | | | | | | | | | | ■ | ■ | : | ■ | ■ | : | ■ | ■ |
| 48 | 49 | | | | | | | | | | | | | | | | | | | | |
| CR | LF | | | | | | | | | | | | | | | | | | | | |
| 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | |
| CR | LF | ■ | L | E | U | | ■ | ■ | | | ■ | ■ | ■ | C | e | l | l | / | u | L | |
| 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | |
| CR | LF | ■ | K | E | T | | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | m | m | o | l | / | L | |
| 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 | 101 | 102 | 103 | 104 | 105 | 106 | 107 | 108 | 109 | 110 | 111 | 112 | |
| CR | LF | ■ | N | I | T | | ■ | | | | | | | | | | | | | | |
| 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 | 121 | 122 | 123 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 131 | 132 | 133 | |
| CR | LF | ■ | U | R | O | | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | u | m | o | l | / | L | |
| 134 | 135 | 136 | 137 | 138 | 139 | 140 | 141 | 142 | 143 | 144 | 145 | 146 | 147 | 148 | 149 | 150 | 151 | 152 | 153 | 154 | |
| CR | LF | ■ | B | I | L | | ■ | ■ | | | | ■ | ■ | ■ | u | m | o | l | / | L | |
| 155 | 156 | 157 | 158 | 159 | 160 | 161 | 162 | 163 | 164 | 165 | 166 | 167 | 168 | 169 | 170 | 171 | 172 | 173 | 174 | 175 | |
| CR | LF | ■ | P | R | O | | ■ | ■ | | | | | ■ | ■ | ■ | ■ | ■ | g | / | L | |
| 176 | 177 | 178 | 179 | 180 | 181 | 182 | 183 | 184 | 185 | 186 | 187 | 188 | 189 | 190 | 191 | 192 | 193 | 194 | 195 | 196 | |
| CR | LF | ■ | G | L | U | | ■ | ■ | | | ■ | ■ | ■ | ■ | m | m | o | l | / | L | |
| 197 | 198 | 199 | 200 | 201 | 202 | 203 | 204 | 205 | 206 | 207 | 208 | 209 | 210 | 211 | 212 | 213 | 214 | 215 | 216 | 217 | |
| CR | LF | ■ | S | G | | | ■ | ■ | ■ | ■ | ■ | | | | | | | | | | |
| 218 | 219 | 220 | 221 | 222 | 223 | 224 | 225 | 226 | 227 | 228 | 229 | 230 | 231 | 232 | 233 | 234 | 235 | 236 | 237 | 238 | |
| CR | LF | ■ | B | L | D | | ■ | ■ | | | ■ | ■ | ■ | C | e | l | l | / | u | L | |
| 239 | 240 | 241 | 242 | 243 | 244 | 245 | 246 | 247 | 248 | 249 | 250 | 251 | 252 | 253 | 254 | 255 | 256 | 257 | 258 | 259 | |
| CR | LF | ■ | p | H | | | ■ | ■ | ■ | | | | | | | | | | | | |
| 260 | 261 | 262 | 263 | 264 | 265 | 266 | 267 | 268 | 269 | 270 | | | | | | | | | | | |
| CR | LF | CR | LF | CR | LF | CR | LF | CR | LF | ETX | | | | | | | | | | | |

## 11G

| 1 | 2 | 3 | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| STX | ■ | ■ | | | | | | | | | | | | | | | | | | | |
| 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
| CR | LF | N | O | . | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | ■ | ■ | ■ | - | ■ | ■ | - | ■ | ■ |
| 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 |
| CR | LF | | | | | | | | | | | | | ■ | ■ | : | ■ | ■ | : | ■ | ■ |
| 48 | 49 | | | | | | | | | | | | | | | | | | | | |
| CR | LF | | | | | | | | | | | | | | | | | | | | |
| 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | |
| CR | LF | ■ | L | E | U | | ■ | ■ | | | ■ | ■ | ■ | C | e | l | l | / | u | L | |
| 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | |
| CR | LF | ■ | K | E | T | | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | m | m | o | l | / | L | |
| 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 | 101 | 102 | 103 | 104 | 105 | 106 | 107 | 108 | 109 | 110 | 111 | 112 | |
| CR | LF | ■ | N | I | T | | ■ | | | | | | | | | | | | | | |
| 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 | 121 | 122 | 123 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 131 | 132 | 133 | |
| CR | LF | ■ | U | R | O | | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | u | m | o | l | / | L | |
| 134 | 135 | 136 | 137 | 138 | 139 | 140 | 141 | 142 | 143 | 144 | 145 | 146 | 147 | 148 | 149 | 150 | 151 | 152 | 153 | 154 | |
| CR | LF | ■ | B | I | L | | ■ | ■ | | | | ■ | ■ | ■ | u | m | o | l | / | L | |
| 155 | 156 | 157 | 158 | 159 | 160 | 161 | 162 | 163 | 164 | 165 | 166 | 167 | 168 | 169 | 170 | 171 | 172 | 173 | 174 | 175 | |
| CR | LF | ■ | P | R | O | | ■ | ■ | | | | | ■ | ■ | ■ | ■ | ■ | g | / | L | |
| 176 | 177 | 178 | 179 | 180 | 181 | 182 | 183 | 184 | 185 | 186 | 187 | 188 | 189 | 190 | 191 | 192 | 193 | 194 | 195 | 196 | |
| CR | LF | ■ | G | L | U | | ■ | ■ | | | ■ | ■ | ■ | ■ | m | m | o | l | / | L | |
| 197 | 198 | 199 | 200 | 201 | 202 | 203 | 204 | 205 | 206 | 207 | 208 | 209 | 210 | 211 | 212 | 213 | 214 | 215 | 216 | 217 | |
| CR | LF | ■ | S | G | | | ■ | ■ | ■ | ■ | ■ | | | | | | | | | | |
| 218 | 219 | 220 | 221 | 222 | 223 | 224 | 225 | 226 | 227 | 228 | 229 | 230 | 231 | 232 | 233 | 234 | 235 | 236 | 237 | 238 | |
| CR | LF | ■ | B | L | D | | ■ | ■ | | | ■ | ■ | ■ | C | e | l | l | / | u | L | |
| 239 | 240 | 241 | 242 | 243 | 244 | 245 | 246 | 247 | 248 | 249 | 250 | 251 | 252 | 253 | 254 | 255 | 256 | 257 | 258 | 259 | |
| CR | LF | ■ | p | H | | | ■ | ■ | ■ | | | | | | | | | | | | |
| 260 | 261 | 262 | 263 | 264 | 265 | 266 | 267 | 268 | 269 | 270 | 271 | 272 | 273 | 274 | 275 | 276 | 277 | 278 | 279 | 280 | |
| CR | LF | ■ | V | c | | | ■ | ■ | | | | ■ | ■ | ■ | m | m | o | l | / | L | |
| 281 | 282 | 283 | 284 | 285 | 286 | 287 | 288 | 289 | 290 | 291 | | | | | | | | | | | |
| CR | LF | CR | LF | CR | LF | CR | LF | CR | LF | ETX | | | | | | | | | | | |

# Exporting Format of Error

| 1 | 2 | 3 | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| STX | ■ | ■ | | | | | | | | | | | | | | | | | | | |
| 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
| CR | LF | N | O | . | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | ■ | ■ | ■ | - | ■ | ■ | - | ■ | ■ |
| 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 |
| CR | LF | | | | | | | | | | | | | ■ | ■ | : | ■ | ■ | : | ■ | ■ |
| 48 | 49 | | | | | | | | | | | | | | | | | | | | |
| CR | LF | | | | | | | | | | | | | | | | | | | | |
| 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | | | | | | | | | | |
| CR | LF | T | R | O | U | B | L | E | - | ■ | ■ | | | | | | | | | | |
| 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | | | | | | | | | | | |
| CR | LF | CR | LF | CR | LF | CR | LF | CR | LF | ETX | | | | | | | | | | | |

**Remark:**

**Digits denote serial numbers of ASCII code which are exported via the serial port.**
**The second code is internal communication code, which can be taken as a space code.**

**The black squares "■" denote test results.**
**The blank spaces denote space codes.**

URIT MEDICAL
www.urit.com

Tel: +86(773)2883225 Fax:+86(773)2804668