

UA1001

Urine Chemistry Analyzer

User's Manual



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












1. Graphical Symbols

Graphical Symbols used on the UA 1001 or in the instruction for use as follow :

General use

-  : General warning, caution, risk of danger
-  : General prohibition sign
-  : Date of Manufacture
-  : Meets the requirements of the European medical device directives.
-  : Valid only for products marketed in U.S.A.

Symbols on the Analyzer

-  : Turns on the system
-  : Turns off the system
-  : Adaptor Jack for main power supply
-  : RS232C serial port for host computer.
-  : PS2 port for Keyboard
-  : USB port for host computer
-  : Displays the USB communication port
-  : Displays the keyboard
-  : Clean button to clean a strip loader.
-  : Linefeed button to lift up a printing paper.
-  : On/Off button to turn on/off the instrument.
-  : Cancel button to cancel a procedure or to go back to the previous condition.
-  : Enter/start button to select an option or to start test.

2. General Description & Intended Use

General Description

A urine analyzer examines the user's urine specimen to detect any changes in the substance of the urine in order to determine the user's health. This analysis is extremely useful in providing an early diagnosis of various diseases even if there are yet no visible symptoms. Unlike many other clinical tests, urine analysis is easy and painless; it is one of the basic and fundamental physical tests.

UA 1001 Urine Chemistry Analyzer provides specimen's health information by testing 11 parameters such as Urobilinogen, Glucose, Ketones, Billirubin, Protein, Nitrite, pH, Occult Blood, Specific Gravity, Leukocytes, and Ascorbic Acid of urine. With its convenient function buttons, UA 1001 is easy to use. The analytical test results can be printed out with a built-in printer and displayed on LCD. Also, our original user-friendly Program offers easy maintenance of user's test results and history via a personal computer.

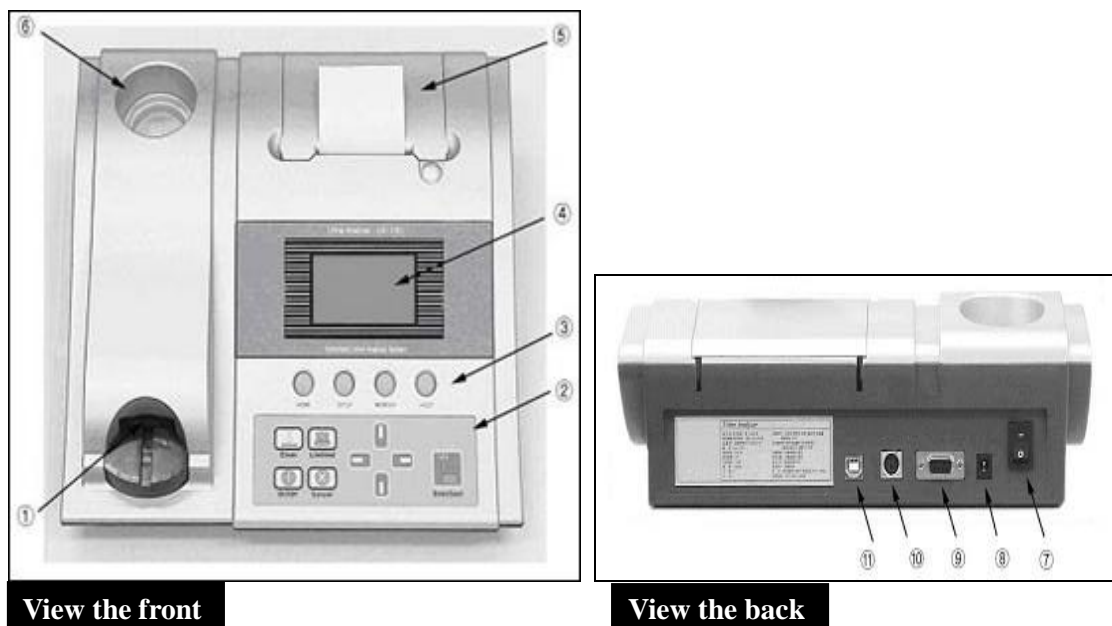
Intended Use

UA 1001 Urine Chemistry Analyzer is a designed to read **SELF-STIK 10L strips manufactured by Chungdo Pharm. Co., Ltd.** for Urinalysis. Depending on the product being used, SELF-STIK 10L contains reagent areas for testing 10 physical test parameters (Urobilinogen, Glucose, Ketones, Billirubin, Protein, Nitrite, pH, Occult Blood, Specific Gravity, and Leukocytes). Once stained strip with urine is laid on the instrument, press start button ; automatically activates the strip movement and reading cycle. Communication between the instrument and the user is through the use of a LCD, a printer and a computer. It can test **120 samples per hour**, and the instrument stores the operating parameters, records of up to **2000 samples** in ineternal memory. It is compatible with Keyboard, and it is also easy to clean the strip load.

The instrument is a reflectance spectrophotometer that analyzes the color and intensity of the light reflected from the reagent area and reports in clinically meaningful units (See table of results). No calculations are required by the user.

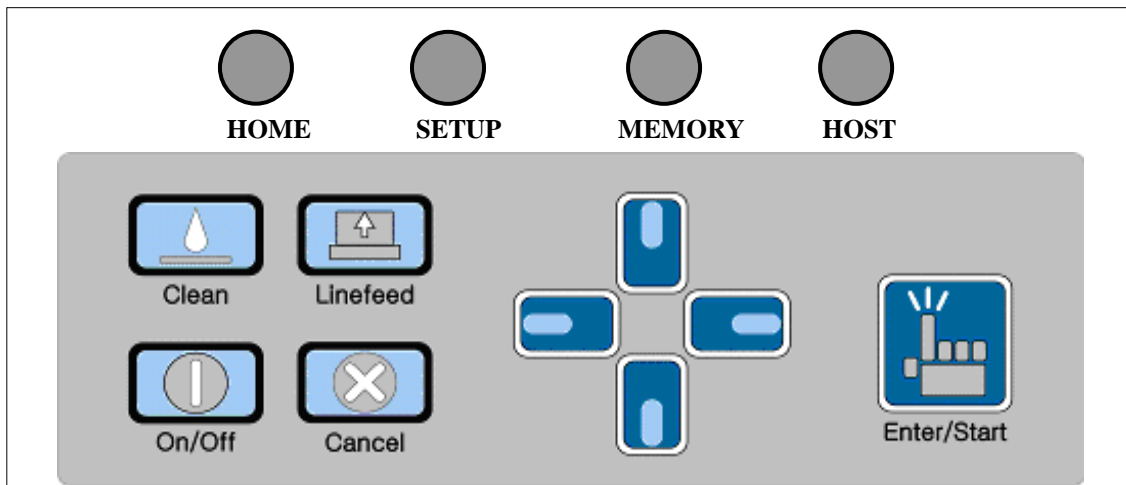
3. Identifications & Functions

Display on the Analyzer



- ① **Strip loader** : Delivers a strip for test.
- ② **Keypad** : Includes 9 functional buttons(Clean, Linefeed, On/Off, Cancel, Direction Buttons, Enter/Start).
- ③ **Shortcut Buttons**: Includes 4 shortcut buttons (HOME, SETUP, MEMORY, HOST)
- ④ **LCD Screen** : Displays the result and the process of test
- ⑤ **Printer** : Prints out the test results.
- ⑥ **Holder of Strip Bottle** : The place holding reagent strip bottle.
- ⑦ **Power Button** (⏻): Turns on/off the system.
- ⑧ **Adapter Jack** (⊖ ⊕): Connects to an adapter and supplies power source to system.
- ⑨ **RS232C port (10101)**: A serial port for communicating with computer.
- ⑩ **PS2 port (PS2)** : A port for connecting with Keyboard.
- ⑪ **USB port** (⏏): A port for communicating with computer.

4. Functions of Shortcut Buttons and Keypad Buttons



Shortcut Buttons

- **Home** : Displays a screen for starting tests. User's ID, Sequential Number are displayed.
- **Setup** : Sets the environment for a test (Changing Units, Printer Setup, Date/Time).
- **Memory** : Manages the test results saved in the Memory. (View Data, Print Data, Send Data, Memory Clear)
- **Host** : Sets the contents of transmitting the data to PC. (Baud Rate, Data Transfer)

Keypad Buttons

- **Clean** : For cleaning, wipe the loader with cotton swabs or rags, after separating strip loader from analyzer.
- **Linefeed** : Lifts up every single line of a printing paper.
- **On/Off** : Stops all operations of the analyzer and converts to the energy saving mode if any running doesn't show in 3 minutes.
- **Cancel** : Cancels a procedure or to go back to the previous condition.
- **Direction Buttons** : Up/Down/Right/Left buttons of selecting the function on the screen.
- **Enter/Start** : A button to select an option to start a test.

5. Specifications & Environmental Requirements

Urine Chemistry Analyzer UA 1001

Power Supply	DC 12V, 2A
Electricity Consumption	Power-saving mode 12W, Maximum 30W
Operating Temperature Range	+5 °C ~+25 °C
Operating Relative Humidity Range	45%~70%
Optimum Working Range	Temperature(+18 °C ~+23 °C), Humidity(40%~60%)
Location for the Optimum Working Range	Vibration(None), Shock (None)
Dimensions	Width(300mm), Depth(90mm), Height(275mm)
Weight	1230g
Measurement Method	Reflectance Photometer
Wave Length	B(470nm), G (530nm), R (626nm)
Performance	30 samples per hour
Storage	EEPROM recorded up to 300 samples
Serial Communication	RS232C interface port
Display	LCD screen (Size: 128*64)
Printer	Thermal Printer
Options	User's program CD, Keyboard

Options: Keyboard



A keyboard can be connected to the PS2 interface port in the back of UA 1001. The keyboard can be used to enter the user's identification letters before the specimen is tested.

Environmental Requirements

As with all sensitive electronic instruments, prolonged exposure to excessive humidity and temperature should be avoided. Place the instrument where it will not be subjected to extreme temperature variations. Avoid proximity to open windows, direct sunlight, ovens, hot plates,

open burners, radiators, and dry ice baths.

6. Cautions & Warnings

AC adaptor

(AC CORD Type, Input Voltage: AC 100~250V, 50/60Hz, Output Voltage: DC 9V/2A)

Handle the AC adaptor carefully. Improper handling is dangerous.

- Do not touch it with wet hands.
- Do not place heavy objects on top of it.



Be sure to connect only the AC adaptor provided with the instrument



Disconnect the AC adaptor from the power outlet if the instrument is not going to be used for a long time.

Instrument



No altering or remodeling. This can cause malfunctioning.



No dropping or strong impacts. This may damage the instrument.



Do not forcibly pull/push the strip loader. It may cause malfunctioning.



Be sure to read carefully user's manual before operating the instrument.

Strips



Confirm that the strip is within the expiration date shown on the label before testing.



Always close the lid of the strip bottle after taking a strip out since strip may change in quality.



Once the strip is used, it cannot be reused. This can cause incorrect test results.



Don't leave the strip exposed for a long time.



Substances that cause abnormal urine color, such as drugs containing azo dyes, nitrofurantoin, and riboflavin, may affect the readability of the reagent areas on urinalysis reagent strip. The color development on the reagent pad may be masked, or a color reaction may be produced on the pad that could be interpreted visually and/or instrumentally as a false positive.



Please read strip instructions for use carefully before using strip.

Storage and Handling

Locations to be avoided

Avoid using the instrument in the following locations since they can cause malfunctioning.

- High humidity, high-temperature, and low-temperature storage places
- Warehouses and other dusty places

- Very hot places near heating appliances, etc

Do not leave the instrument exposed to direct sunlight for long periods of time. This may deform or discolor the body of the instrument and may also cause malfunctioning.

Do not touch the power-plug with a wet hand. It causes an electric shock.

Clean with a dry towel after wiping clean with a towel dampened by a neutral detergent or water.

Do not wipe the instrument clean with benzene, thinner, gasoline, etc. This may discolor the body of the instrument.

7. Installation

Examining Your Package Contents



When you receive your UA 1001, open the shipping box and check the contents against the packing list.

- ① UA 1001 Urine Chemistry Analyzer
- ② AC Adaptor
- ③ Serial Cable, USB cable
- ④ User's program CD
- ⑤ Manual / Warranty on UA 1001
- ⑥ A roll of thermal print paper

If damage to the instrument exists, immediately contact the local distributor/importer.

Specifications to transmit analytical results of UA 1001 into computer

Baud rate : 38400, Data bit : 8, Parity: none

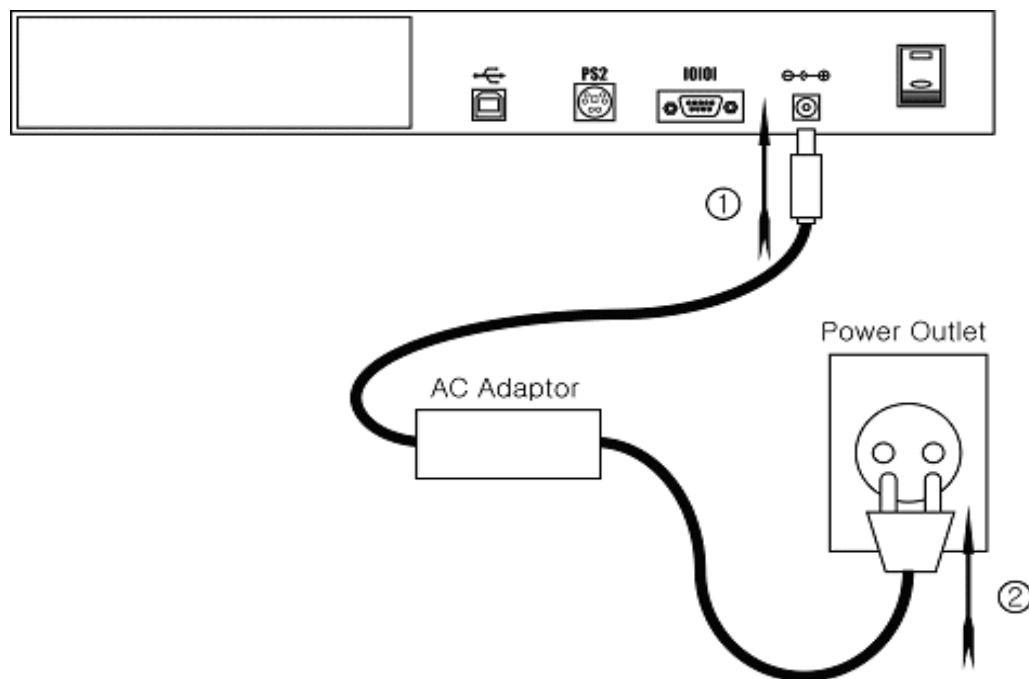
User's program System Requirements

- Intel® Pentium II® processor
- 32MB of free memory (64 MB of Ram recommended)
- 20MB of available hard-disk space
- Higher than VGA graphic card and monitor (Optimum resolution: 1024×768)
- Microsoft® Window 98 Second Edition, Windows Millennium Edition, Windows 2000, or Windows XP
- Computer Serial port: RS232C

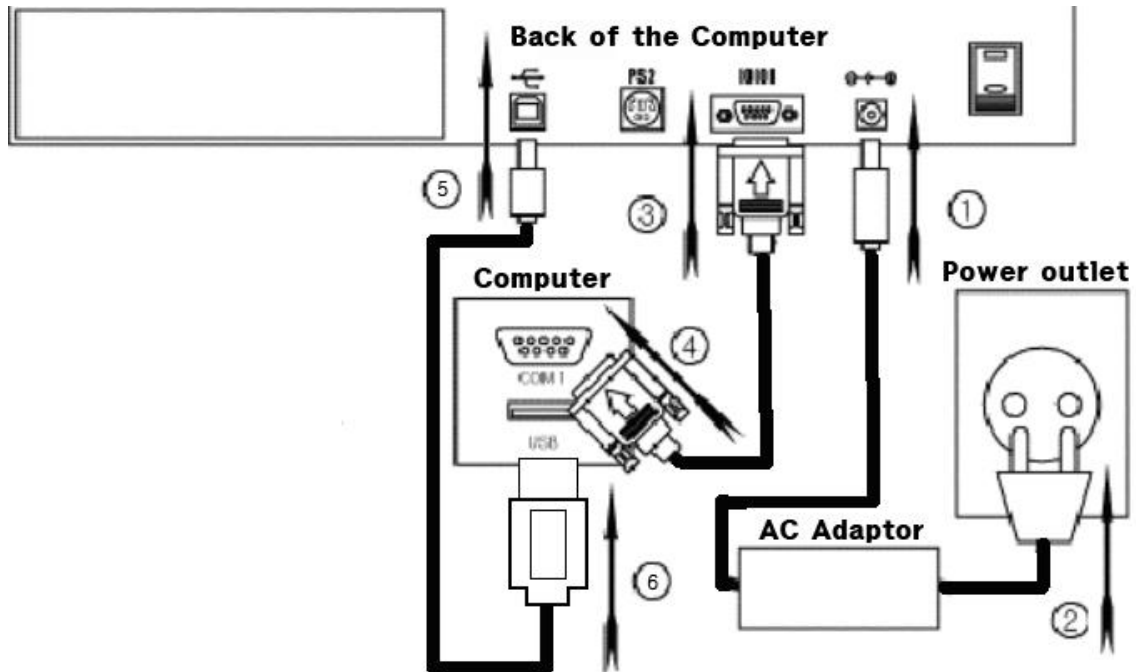
Power Supply

A 12V, 2A given adaptor can be used.

(AC CORD Type, Input Voltage: AC 100~250V, 50/60Hz, Output Voltage: DC 12V/2A)



Setting Up



As shown above (①~②), Connect the UA 1001 with power outlet using the AC adaptor. And turn on the main button in the back of UA 1001. Press On/OFF button on the Keypad of the instrument. Test results are printed out by built-in printer.

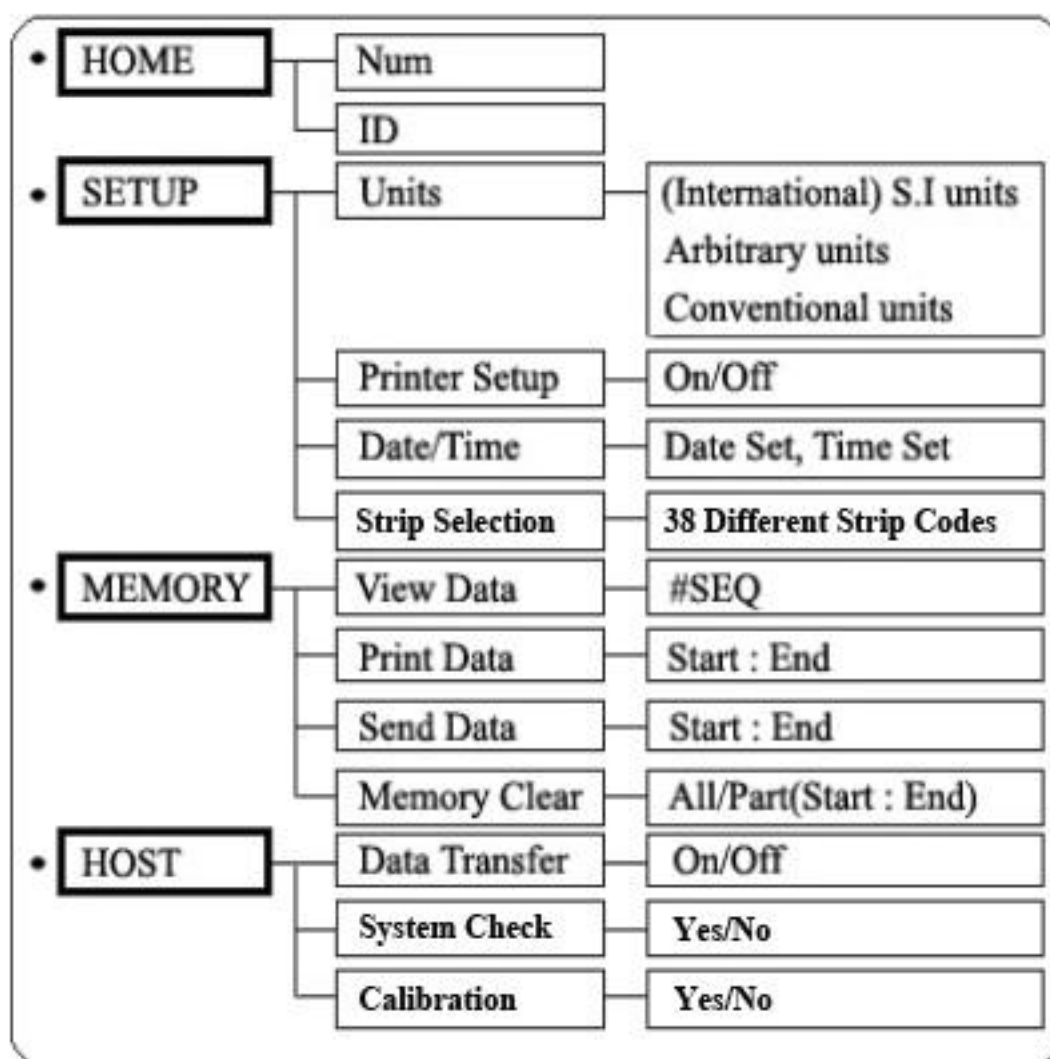
In case of viewing the test results in your computer, as shown above(③~④), connect the serial cable to a serial port of UA 1001 and a port for Com1 in the back of computer. Or connect the USB cable to a USB port of UA 1001 and a USB port of the computer as shown above (⑤~⑥.) Run the User program from the connected computer (Refer to User program in this manual). Then you can see the test results on your computer after testing.

8. Selecting Options

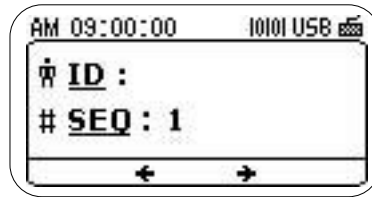
Outline

This outline, pressing the buttons on the analyzer, contains the system software that makes the system directly running. All interactions between the user and the UA 1001 are displayed on the LCD. The user can operate this analyzer with 4 shortcut buttons like Main, Setup, Memory, and Host; 4 buttons on a keypad like Clean, On/Off, Linefeed, and Cancel; 4 Direction buttons; and Enter Button. Select a menu with Up/Down and Right/Left direction buttons and if pressing the Enter button, you can select and set details. After selecting or setting, you can save the selected items by pressing the Enter button. Here, if pressing the Cancel button, you can return to the previous menu without saving the selected items.

Diagram of Shortcut Buttons



Home



Home is the initial screen. After setting the user **ID**, **Sequence** number, the check-up is immediately processed if pressing the Enter button. If you want to return to the initial screen for tests, press the Home button.

• ID


An user can enter letters and symbols for the ID number of tests, connecting the keyboard with this analyzer.

After entering the ID number of tests, the check-up can start by pressing the Enter/Start button on the keypad.

• SEQ

The test number of an user is sequentially increased.

An user can arbitrarily change the Sequence number using Right/Left direction buttons.

 Be careful when changing SEQ number, because the present result can be updated in the changed SEQ number if the existing test result was saved under the same SEQ number with the changed number.

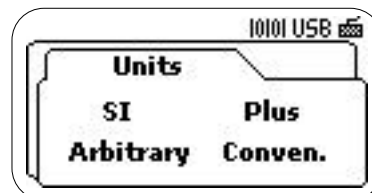
Setup



In case of changing the set-up saved in the analyzer, press the Setup button. Press the Enter button after selecting the setup desired to be changed, using the Up/Down button. Then you can select the details of each setup. If you press the Cancel button in the selecting screen of the details, you can return to the previous screen.

• Units

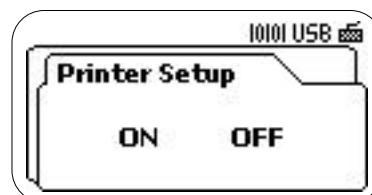
Set up the instrument displayed in the test result.



Set the instrument displayed in the test result using the Right/Left button. The basic set-up is **Arbitrary**. In case of saving the setup, press the Enter button. Refer to the Table of Results for the instrument displayed in the test result in this manual.

• Printer Setup

Set whether you want to print out the test result by built-in printer or not.

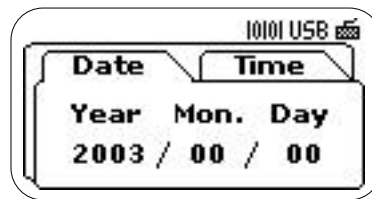


Select **ON** to automatically print out the test results using the Right/Left button; **OFF** not to automatically print out the test results. If OFF is selected, the test results are displayed only on the LCD. ON is already set as the basic setup. In case of saving the setup, press the Enter button.

- **Date/Time**

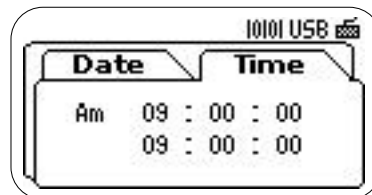
Set Date and Time.

Setting Date



Set date. After selecting year, month, and day with the Right/Left button, reset date using the Up/Down button. In case of saving the setup, press the Enter button. If you press the Enter button, you can move up to the screen for setting time.

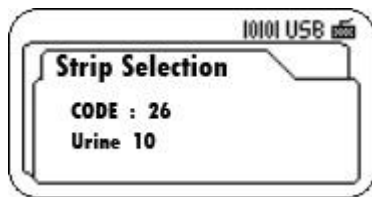
Setting time



Set time. After selecting hour and minute with the Right/Left button, reset time using the Up/Down button. In case of saving the setup, press the Enter button.

- **Strip Selection**

Selecting the type of strips to be used for testing



By using Up/Down buttons, you can select the type of strips you want to use for testing.

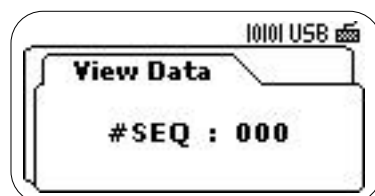
Memory



In case of commanding related to the data saved in the memory, press the Memory button. After selecting the desired command using the Up/Down button, pressing the Enter button can select the details for each command. If pressing the Cancel button on the keypad for selecting the details, it moves up to the previous screen.

• View Data

See the saved data selectively.



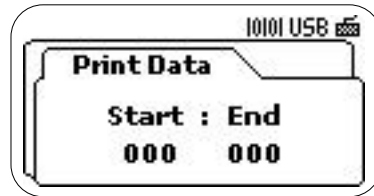
After the latest test sequence number is displayed, press the Enter button, then the result of the corresponding number is displayed.



The data of the selected SEQ number shows on the screen. You can see 10 items of the test results using the Up/Down button.

- **Print Data**

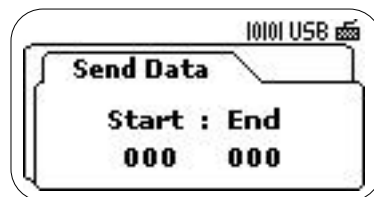
Print out the saved data selectively.



After selecting the start-number and the end-number of the data printed out using the Right/Left button, select the data number using the Up/Down button. After selecting the data number, press the Enter button for printing out the selected data.

- **Send Data**

Send the saved data to PC.



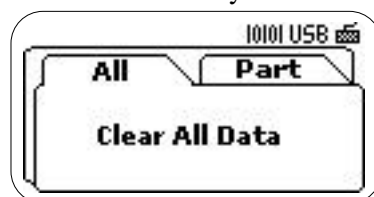
After selecting the start-number and the end-number of the data transmitted to PC using the Right/Left button, select the data number using the Up/Down button. After selecting the data number, press the Enter button, then the selected data is ready to be sent.

⚠ Confirm the condition of connecting communication with PC before performing the command.

- **Memory Clear**

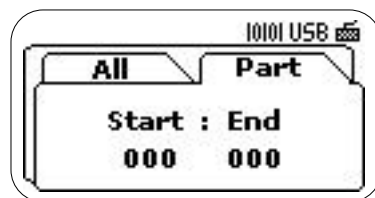
- Delete All**

You can erase all the results from the saved memory.

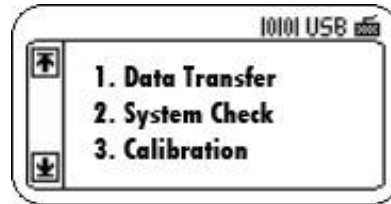


Delete partial data

You can select the range of data to delete by choosing the beginning of the number of the data,
Use **Enter** button to deletes



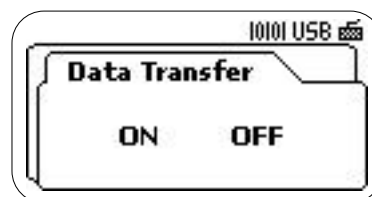
Host



In case of selecting the setup related to sending and receiving the data connecting with PC, press the Host button. After selecting the command wanted using the Up/Down button, press the Enter button and then you can select the details for each command. Press the Cancel button on the keypad for selecting the detail items, then return to the previous screen.

•Data Transfer

Setup an option for sending the test result to the PC automatically after the test



Use Left/Right buttons to setup an option.

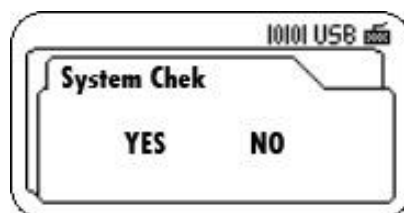
If you want to send the result to the computer automatically after the test, select 'ON',

If you don't want to send the result to the computer after the test, select 'OFF'

It is set to be 'OFF' from the factory setting.

•System Check

Checking the abnormality of the system



(Before you do system check/calibration, you need to press CLEAN button to remove the strip loader and to feed a CALIBRATION LOADER press CLEAN again. When you have finished

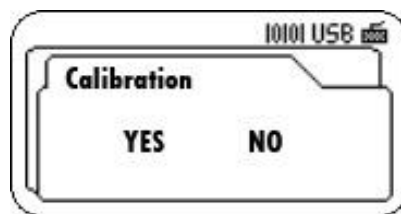
system check or calibration, you need to change the CALIBRATION LOADER to the standard one)

Use Left/Right buttons to check the system. Select YES and press ENTER for checking the system, or select NO and press ENTER for not checking.

If system checking give the result of 'FAIL', the system need to be calibrated to get precise results of the tests.

•Calibration

Calibrating the parameters

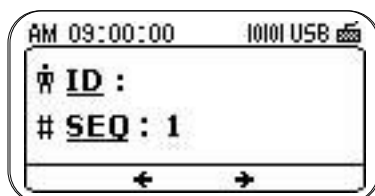


Use Left/Right buttons to Calibrate. Select YES and press ENTER for calibrating the system, or select NO and press ENTER for not checking. This function is necessary for the case when the system check gives 'FAIL' message.

(Before you do system check/calibration, you need to press CLEAN button to remove the strip loader and to feed a CALIBRATION LOADER press CLEAN again. When you have finished system check or calibration, you need to change the CALIBRATION LOADER to the standard one)

9. How to Use

Step1.




Supply power and let the analyzer running, then the initial screen for starting tests is displayed through the process of the calibration.

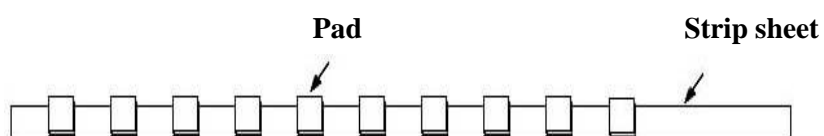
- Confirm the sequentially auto-increasing SEQ number.
- This number can be sequentially and automatically increased.
- An user can optionally select the number using the Right/Left button in the initial screen.
- The personal ID of patients can be entered as letters besides numbers, connecting with keyboard.

Step2. Take the strip out from the strip bottle.

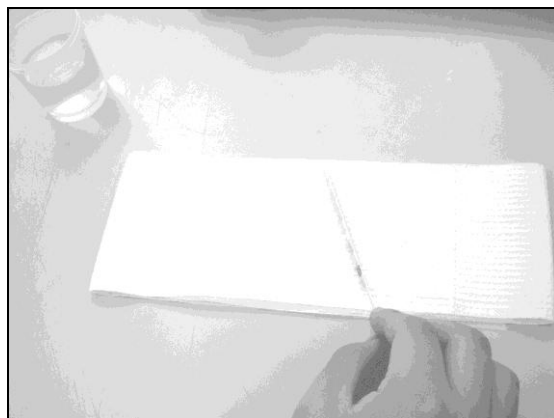


 Close the lid right after taking out the strip, because the strip exposed in air can affect the test result.

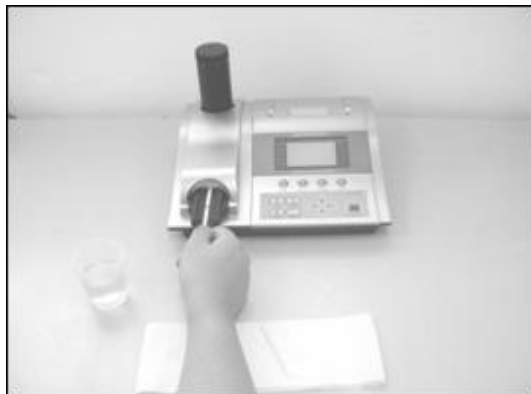
Step3. Let the pads on the strip sunk to urine. In case of sinking the strip long, sink it no more than 3 seconds because the chemical materials can be dissolved in the testing urine.



Step4. Slightly press the strip erected vertically for removing the rest urine over-stained; repress it laid down horizontally.



Step5. Correctly set the strip stained with urine on the grooved strip loader.



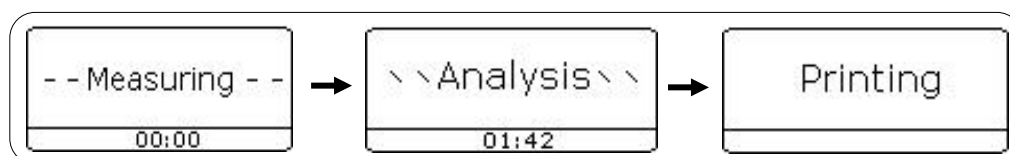
⚠ Complete the process, including Step3, Step4, and Step5, within at least 15 seconds.

Step6. Start the test by pressing the Enter/Start button.



(The loader has to come in and out twice.)

Step7. These screens are displayed in LCD after starting the test.



Step8. After completing the test and analyzing the result, **the result is printed out by the built-in printer. These results also can be transmitted into a computer to be observed.** (Please refer to User's Program under this Manual. It offers services including an administrative function to maintain the user's test results, transmit data from test results, save data from test results, and provide medical information on related diseases.)

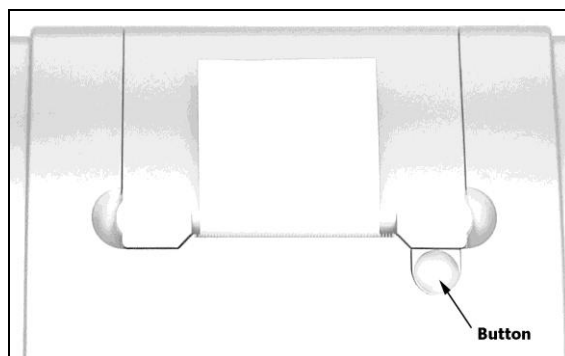


Refer to the View Data function by clicking Memory button for reconfirming the test result.

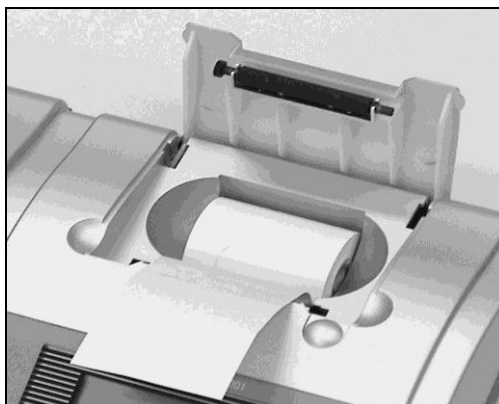
Step9. Press **On/OFF button** on the keypad to finish the test. And finally press **the main power button** in the back of instrument.


10. Exchanging Printing Paper

Step1. Press the button for opening the cover of the printing paper.



Step2. Close the cover to make 'click' sound after setting the printing paper as a below picture.



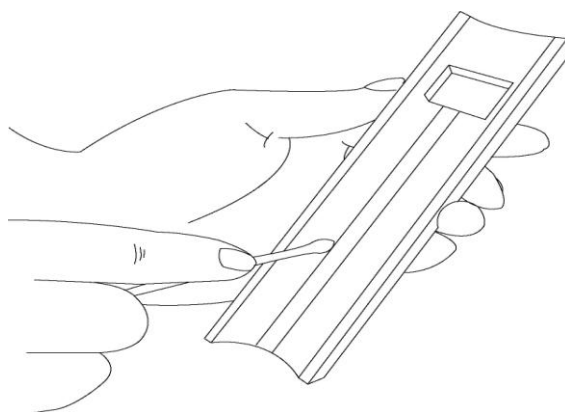
 Ensure the direction of the printing paper facing the outside of the roll.

11. How to Clean the Strip Loader after Use

Wipe clean the dirty case using a neutral detergent or a water-wet towel. Do not use volatile matters like thinner, gasoline, and benzene for cleaning the body. It is better for the strip loader to be cleaned everyday because the rest urine stained on the strip can be smeared on the loader.

Step1. Press the Clean button on the keypad and separate the loader from the body of the instrument.

Step2. Completely wipe the groove of the detached strip loader with a water-wet swab.



Step3. After the cleaning, put back the Strip Loader and click the Clean button. Then the Strip Loader will be put back to its original position. If the loader is not retreated immediately, slightly push the loader.

Step4. The strip loader slightly goes in and comes out then it is ready to start the test.

12. Basic Theory

The instrument contains a read-head which contains a light-emitting diode and photodiode pack. When a strip is moved into position under the read-head, the read-head scans the entire length of the strip, measuring the light reflectance of each reagent pad. A portion of the light striking the pad is reflected back to the photodiode pack. The light reflected at specific wavelengths from the test pad is dependent upon the degree of color change in the pad and is directly related to the concentration of the particular constituent in the urine.

The photodiode pack contains three filters, one each at 470nm(Blue), 530nm(Green), 626nm(Red). The light intensity detected by the photodiode pack is converted into electrical impulses, which are converted into clinically meaningful results. (See Table of Results) The results can be shown into LCD and be printed out by the built in thermal printer.

13. Suggestions for Collecting Urine Specimen

- Collect the urine specimen in a clean container; the examination must be performed right after collection while the urine specimen is fresh.
- The most appropriate urine specimen is the first urine in the morning. Collect the urine specimen as it falls not from another vessel.
- Test results for Bilirubin and Urobilinogen can easily be affected by the light and temperature, thus use fresh urine specimen to prevent incorrect test results.
- Leaving the urine specimen container exposed to the atmosphere for too long where it can be contaminated by germs changes pH in urine. pH usually changes to alkali which will cause urinary protein to be false positive. Glucose in urine is oxidized by germs decreasing pH in urine. When the urine specimen is contaminated by germs, test result for occult blood may appear as false positive due to peroxide. Female vaginal discharge may cause a false positive result as well.
- If disinfectant containing antimicrobial action is mixed with the urine specimen, the reading for protein may be affected. (Also, reading for Specific Gravity and Bilirubin may be affected.)

14. Descriptions for Test Items

- **Urobilinogen**

Urine Urobilinogen is biliary bilirubin decomposed by germs inside the small intestine or colon. Most of decomposed matter is excreted into the wall of the intestine; however, some gets absorbed into the wall of the intestine and returned to the liver through the blood stream. Decomposed matter is excreted with urine, entering the kidney through the blood stream. Malfunction of hepatocytes, increased bilirubin production, and congestion of intestine contents increase Urobilinogen in the urine.

<Reading>

Normal Value: 0.1 ~1 (mg/dl)

Abnormal Value: 2,4,8,12 (mg/dl)

Related diseases: Gallstones, Cholangiocarcinoma, Acute/Chronic Hepatitis, Hemolytic anemia

- **Glucose**

In the body, glucose, the energy resource, is always included in the blood. When healthy, glucose is absorbed in the tubule, it is not displayed in urine; but when the body is in an abnormal state, the glucose level in the blood exceeds the normal value and, as a result, lots of glucose shows in the urine. Measuring the glucose in urine is a preliminary way of testing for diabetes.

<Reading>

Normal Value: Negative (-)

Abnormal Value: ± (100), + (250), ++ (500), +++ (1000)

Related diseases: Diabetes, Graves' disease, Acromegaly, Cushing syndrome, Brown cellular tumor, Pancreas disease (Pancreas cancer, Pancreatitis), liver cirrhosis, and Brain tumor.

Note: When there is an over consumption of vitamin C, the glucose in the urine may display as Negative. Temporary over consumption of glucose may cause the glucose in urine to be displayed in the test results.

- **Ketones**

Ketones decomposed from fat is generated from the liver. If glucose as the energy resource is interrupted by diabetes or other causes, fatty acid is generated from fat and used as energy. This fatty acid is altered as Ketones in the liver. Lots of this excreted in urine is Ketones urine.

<Reading>

Normal Value: Negative

Abnormal Value: \pm , +, ++, +++

Related diseases: Diabetes, hyperthyroidism, acromegaly, and Cushing syndrome

Note: In case of Urine tester color as highly concentrated, Trace (\pm) can be displayed.

- **Bilirubin**

Bilirubin is bile pigment generated by decomposition of red blood cells in the liver. Usually bile is produced in the liver and excreted into the inside of the intestines. However, when bile is not excreted smoothly because the bile duct is blocked by a gallstone or bile cancer, Bilirubin in the blood is increased and the amount of excretion is increased. Also when there is hepatitis in the liver cells, Bilirubin in the blood is increased and Bilirubin in urine is increased because the excretion function has declined.

<Reading>

Normal Value: Negative

Abnormal Value: +, ++, +++

Related Diseases: gallstones, cholangiocarcinoma, acute hepatitis, and chronic hepatitis

Note: Because collected urine can be oxidized due to direct rays of light, it is better to test the urine right after being collected. If the Nitrite reaction is measured as positive due to a urinary tract infection, (\pm) trace may be displayed.

- **Protein**

Although Protein in the blood is filtered through a glomerulus and excreted into the urine, it is reabsorbed into a renal tubule and returned to the blood. Therefore it is normal that the urine of a healthy person does not have protein. If a kidney has a problem, protein in urine is displayed because protein is over-eliminated from a glomerulus or is not reabsorbed well into a renal tubule.

<Reading>

Normal value: Neg. ~Trace (\pm)

Abnormal value: + (30), ++ (100), +++ (300), ++++ (1000)

Related Diseases: Nephrotic syndrome, acute Nephritis, chronic Nephritis, pyelonephritis, Kidney tumor, high blood pressure, congestion cardiac insufficiency, diabetes, localities of medullar tumor, lupus erythematosus systmetic

Note: When urine is displayed as higher alkali over pH 9.0; when blood, pus, or vaginal excretions are included, the reaction of trace (\pm) may be displayed.

- **Nitrite**

Nitrite is generated by Nitrate's reacting with the germs in the bladder. This nitrate is included in the drinking water. The test for Urinary Nitrite checks whether Nitrite in urine is excreted or not.

<Reading>

Normal value: Negative

Abnormal value: Positive

Related Diseases: Urinary tract infection , pyelonphritis, Cystitis, non-gonococcal urethritis, gonococcal urethritis

Note: Because it takes 4~6 hours to be deoxidated from germ nitrate to nitrite, the first urine in the morning which has stayed in the bladder for a long time is good for test. In case of a patient who cannot drink water because of severe emesis; who breastfeeds baby; who is taking an antibiotic, a negative reaction is displayed. Also in cases where the collecting container has been infected by germs or stayed at room temperature for a long time, trace can be shown.

- **pH**

If a lot of meat is included in a diet, urine is acidulated. In cases involving a severe work-out, severe perspiration, starvation, acid toxication in diabetes or nephritis, and highly concentrated urine, a high acid rate is displayed. In cases where there has been consumption of a lot of vegetable, lots of bile or blood is included in the urine, alkali is displayed. Generally when the acid rate in urine is high, the color of urine is thick; when the acid rate is low, it is light.

<Reading>

Normal value: 5.0 ~ 8.0

Related Diseases:

Acidic urine: severe diarrhea, dehydration, pyrexia, germs generating, respiratory acidic toxication, and overeating acidic food (meat).

Alkali urine: chronic or acute disease related to kidney, emesis, metabolic alkalosis, respiratory alkalosis, overeating alkali food (vegetable, fruit), and germs generating ammonia.

- **Occult blood**

When red blood cells are mixed into urine because of abnormality in the path of urine in the kidney, urethra, bladder and urinary tract, it is called as Occult Blood. Usually, if the color of urine shows red, it contains lots of red blood cells. The urine of a healthy person has red blood cells. However, the general result of the test is displayed as negative.

<Reading>

Normal value: Negative

Abnormal Value: \pm , +, ++, +++

Related Diseases: Kidney tubercle, Renal calculus, renal abscess, kidney cancer, Acute nephritis, Chronic nephritis, Ureteral calculus, Cystitis, Bladder tumor, Bladder stone, Non-gonococcal urethritis, Gonococcal urethritis, Prostatitis, Prostatic carcinoma, Nephrosclerosis, Leukemia

Note: In the reaction of Occult Blood, the test result of a woman during menstruation is displayed as positive so it is better to test after menstruation.

- **Specific Gravity**

Urinary Specific Gravity is higher than water, because urea, nitrogen, and electrolytes like Na or Cl are included in urine. Kidney filters the impurities inside the body and functions to control the amount of water. If there are abnormal symptoms of the kidney function, urinary S. G is fluctuates severely because the urine concentration and the function of dilution are abnormal. The test of the urinary specific gravity is helpful to determine kidney diseases.

<Reading>

Normal Value: 1.005g/ml ~ 1.030 g/ml

Related Diseases:

Low S.G - Chronic nephritis, diabetes insipidus

High S.G - acute cardiac insufficiency, diabetes, congestive heart failure, and nephrotic syndrome

Note: If there is a high amount of protein in the urine, S. G is high. In the case of medicating a diuretic, it is displayed as low.

- **Leukocytes**

This test checks whether the urethra is infected or not. In case of a positive reading, it means there are leukocytes in the urine.

<Reading>

Normal Value: Negative

Abnormal Value: \pm , +, ++, +++



Related Diseases: non-gonococcal urethritis, gonococcal urethritis, prostatitis, kidney tubercle, cystitis, pyelonephritis




Note: Female vaginal discharge may cause a false positive result.

15. Table of Results

Test Item	Arbitrary	Plus	Conventional Units	SI Units
Urobilinogen	0.1	0.1	0.1 mg/dℓ(E.U./dℓ)	1.6μmol/ℓ
	1	1	1 mg/dℓ(E.U./dℓ)	16μmol/ℓ
	2	2	2 mg/dℓ(E.U./dℓ)	33μmol/ℓ
	4	4	4 mg/dℓ(E.U./dℓ)	66μmol/ℓ
	8	8	8 mg/dℓ(E.U./dℓ)	131μmol/ℓ
	12	12	≥12 mg/dℓ(E.U./dℓ)	≥204μmol/ℓ
Glucose	Neg.	Negative	Negative	Negative
	±(100)	Trace	100 mg/dℓ	6mmol/ℓ
	+(250)	1+	250 mg/dℓ	14mmol/ℓ
	++(500)	2+	500 mg/dℓ	28mmol/ℓ
	+++ (1000)	3+	≥1000 mg/dℓ	≥55mmol/ℓ
Ketones	Neg.	Negative	Negative	Negative
	±	Trace	5 mg/dℓ	0.5mmol/ℓ
	+	1+	15 mg/dℓ	1.5mmol/ℓ
	++	2+	40 mg/dℓ	3.9mmol/ℓ
	+++	3+	≥80 mg/dℓ	≥7.8mmol/ℓ
Bilirubin	Neg.	Negative	Negative	Negative
	+	1+	Small	Small
	++	2+	Moderate	Moderate
	+++	3+	Large	Large
Protein	Neg.	Negative	Negative	Negative
	Trace	Trace	15 mg/dℓ	0.15g/ℓ
	+(30)	1+	30 mg/dℓ	0.3g/ℓ
	++(100)	2+	100 mg/dℓ	1g/ℓ
	+++ (300)	3+	300 mg/dℓ	3g/ℓ
	++++ (1000)	4+	≥1000 mg/dℓ	≥10g/ℓ
Nitrite	Neg.	Negative	Negative	Negative
	Pos.	Positive	Positive	≥0.05 mg/dℓ

Test Item	Arbitrary	Plus	Conventional Units	SI Units
pH	5	5	5	5
	6	6	6	6
	6.5	6.5	6.5	6.5
	7	7	7	7
	8	8	8	8
	9	9	9	9
Occult Blood	Neg.	Negative	Negative	Negative
	Trace	Trace	Trace	10RBC/ μ l
	+	1+	Small	25RBC/ μ l
	++	2+	Moderate	50RBC/ μ l
	+++	3+	Large	250RBC/ μ l
S.G	1.000	1.000	1.000	1.000
	1.005	1.005	1.005	1.005
	1.010	1.010	1.010	1.010
	1.015	1.015	1.015	1.015
	1.020	1.020	1.020	1.020
	1.025	1.025	1.025	1.025
	1.030	≥ 1.030	≥ 1.030	≥ 1.030
Leukocytes	Neg.	Negative	Negative	Negative
	Trace	Trace	Trace	15-25WBC/ μ l
	+	1+	Small	75WBC/ μ l
	++	2+	Moderate	250WBC/ μ l
	+++	3+	Large	500WBC/ μ l

 : Negative,
  : Positive

-  '----' Illegible : Pad color is out of the range for analysis. Please test again.
-  '± (Trace)' can be shown depending on the tester's body condition and indigestion of the day although the tester is healthy.
-  In case of '+ (Positives)' like +, ++, +++, re-examine 2 or 3 more times then consult with a professional doctor if specific items continue to show this symptoms.

16. Troubleshooting & Maintenance

Maintenance & Cleaning

No maintenance is required other than routine cleaning.

- Clean the outside of the UA 1001 body with a dry towel after wiping clean with a towel dampened by a neutral detergent or water.
- Do not wipe the body of the UA 1001 clean with benzene, thinner, gasoline, etc.
- Do not force the strip loader. It works automatically. Refer to How to Clean the strip loader after Use under user's manual.
- If you want to know detailed information for environmental factors and cautions, refer to Specifications, Cautions & Warnings under User's manual.

Troubleshooting

SYMPTOM	POSSIBLE CAUSE	REMDY
'----' symbol is printed in LCD or printing paper.	1. Pad color is out of the range for analysis. 2. Dry strip is tested. 3. Tested without inserting a strip 4. A strip has become misaligned during processing. 5. A used strip is reused. 6. Responding time-passed strip is tested.	1. Please test again. 2. Insert a strip stained with urine. 3. Insert a strip stained with urine. 4. Do not move the strip during processing. 5. Do not reuse strip to test. And read strip instructions for use carefully before using strip. 6. Do not use responding time-passed strip.
The Instrument does not operating normally.	No power.	Check the connection of instrument to the power supply using given adaptor. If it is still unable to be operated, contact your local Customer Service Office.
A strip loader stops unexpectedly during operation.	Unstable electricity.	Use a rated current. Contact your local Customer Service Office if it doesn't operate correctly

SYMPTOM	POSSIBLE CAUSE	REMDY
Test results are not being transmitted into a PC.	<ol style="list-style-type: none"> 1. Disconnected a serial cable to your computer. 2. User's program is not opened. 3. Your serial port is not in a proper location. 4. You have no serial port in your computer and only a USB port. 5. It had been selected as OFF option in Data Transfer of Host shortcut button. 	<ol style="list-style-type: none"> 1. Check connection of a serial cable between the instrument and the computer. 2. Open the User's program. 3. Connect correctly a serial port for Com1. 4. Purchase a cable to convert USB to Serial. 5. Select On option in Data Transfer of Host.
Test results are not being printed by the build-in printer.	<ol style="list-style-type: none"> 1. A printing paper is misaligned (accompanied by an unusual noise). 2. No paper installed in the printer. 	<ol style="list-style-type: none"> 1. Press a Linefeed button on the key pad to confirm the operation of printer normally. If print paper does not come out, open the printer cover and check the paper direction and path. 2. Change a new roll of printing paper (Refer to Exchanging Printing Paper in this manual)
User's program is not being installed.	<ol style="list-style-type: none"> 1. Do not meet Operating System requirements. 2. Can not execute Autorun. 	<ol style="list-style-type: none"> 1. When installed in your computer, display OS requirements to set up a User's program. Operating System higher than Windows 98 SE is compatible. 2. Find the file in 'CD Rom driver:\English\UA 1001' and click URINE.exe. Refer to S/W Installation in user manual.

17. Warranty and Service

Chungdo Pharm. Co., Ltd guarantees that Urine Chemistry Analyzer UA 1001 will be in good working order on the day it is installed and that it will conform to UA 1001's specifications. Chungdo Pharm. CO., Ltd or local distributor/importer will provide service to keep or restore analyzer to good working order for one year at no additional charge to the purchaser. Warranty service provided under this agreement does not assure uninterrupted operation of the Analyzer.

Warranty Support

- Please present this warranty upon any request for warranty support.
- This product is guaranteed to be repaired or replaced **free of charge for one year from the date of the Buyer's purchase.**
- Duplicates of this warranty are not issued. Please keep it in a safe place.
- **Please contact your local distributor/importer** where you purchased the product for repair or replacement service.
- Any parts for repair are kept for three years after the product is discontinued.

Request for warranty support

- Please refer to the User's manual once again to ensure operation, maintenance and usage have been performed under the suggested guidelines before calling for repair or replacement service.
- If malfunction, failure or defect of the product still persists, unplug the product and call your local distributor/importer.
- Please provide a description of the malfunction with information on the warranty such as model name, date of the purchase, serial number, customer's name, address, and phone number when calling for repair or replacement.
- In case of service requiring a charge, the service fee shall include parts and a repair charge. When repairperson is sent to your location, it also includes travel costs.

Service free of charge

- Information on this warranty should be filled out upon purchasing.
- If malfunction or defects in the product sold is found during the warranty period, repair or replacement of the defective product is guaranteed. Please contact the local point of sales for warranty support.
- Warranty support is effective only upon the presentation of this warranty.

Service with a charge

A service fee for repair or replacement of defective products will be charged when,

- Service for repair or replacement is requested after the warranty period is over.
- Any defect, malfunction or failure of the product is caused by improper maintenance, misuse by the user or purchaser, do not use within the initial purpose of this product.
- Any defect, malfunction or failure of the product is caused by repair of the product by a person other than an authorized repair organization of Chungdo Pharm. CO., Ltd.
- Any defect, malfunction or failure of the product due to natural calamities. (Fire, salt damage, inundation damage, etc.)

Customer's Receipt			
Product name	Urine Chemistry Analyzer	Model	UA 1001
Purchasing date		Serial NO.	
Customer name		Phone number	
Customer address			
Store(Seller) name		Phone number	

For Seller's Record			
Product name	Urine Chemistry Analyzer	Model	UA 1001
Purchasing date		Serial NO.	
Customer name		Phone number	
Customer address			
Store(Seller) name		Phone number	