KonsungPRO

Compass2800 Series

Portable Dry Biochemical Analyzer

User Manual

Read this manual carefully before use the product!

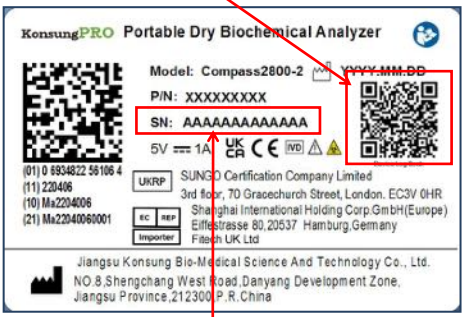
Jiangsu Konsung Bio-Medical Science And Technology Co., Ltd.

Register your device

To activate your warranty, follow this simple process to register your device. You have two options:

Using a mobile device with internet access:

1. Using your phone camera, scan the right-hand QR code on the device's reverse
2. Follow the on-screen prompts



Using a desktop device with internet access:

1. Go to web URL: http://register.konsungpro.com
2. Enter the KonsungPro serial number
3. Follow the on-screen prompts

Your KonsungPro comes with a valuable free online IVD manager. This tool not only records your device performance but also allows you to request support and technical assistance. Once you've completed the device registration, you'll gain access to this powerful tool.

Preface

Thanks for purchasing our portable dry biochemical analyzer (hereinafter called "**Analyzer**"). Before using this product, please read this manual carefully for understanding the operation and maintenance of the product. Keep this manual carefully after reading, so that it can be obtained conveniently when needed.

Released version of software: V1.0

About this Manual

P/N: 138040409
Version: 1.0
First edition/Revision date: June of 2024

Introduction

This manual will help you understand the operation and maintenance of the product better. It is reminded that the product shall be used strictly complying with this manual. User's operation failing to comply with this manual may result in malfunction or accident for which Jiangsu Konsung Bio-Medical Science And Technology Co., Ltd. (hereinafter called **Konsung**") cannot be held liable.

Konsung owns the copyrights of this manual. Without prior written consent of Konsung, any materials contained in this manual shall not be photocopied, reproduced or translated into other languages.

This manual contains the instructions necessary to operate the product safely and in accordance with its function and intended use. Observance of this manual is a prerequisite for

proper product performance and correct operation and ensures patient and operator safety.

This manual is based on the maximum configuration and therefore some contents may not apply to your product. If you have any questions, please contact us.

All illustrations in this manual serve as examples only. They may not necessarily reflect the setup or data displayed on your product. Please subject to the actual product and its display.

Important Statement

- **This analyzer can only be used with the matched test strip supplied by Konsung. Using the others test strip may cause inaccurate measurements.**
- **The analyzer is intended for in vitro diagnostic use only, it is indicated for use in clinical laboratories and for point-of-care settings.**
- **The equipment is Class II equipment of protection against electric shock, Class II of Overload Category, Class II of Pollution degree.**
- **Do not repair or disassemble the analyzer yourself at any time. If the analyzer has fault, stop using it immediately. If troubles cannot be resolved, please contact our after-sales service personnel.**
- **Do not use the equipment near strong radiation sources. Doing so may affect the equipment's normal operation.**
- **If the device is not used according to specified method by the manufacturer, the protection provided by the device may be destroyed.**
- **All disposable products are not reusable.**
- **Konsung reserves the right to change the product design and specifications, subject to change without notice.**

Responsibility of the Manufacturer

Konsung holds the rights to modify, update, and ultimately explain this manual.

Konsung is responsible for the effects on safety, reliability and performance of this product, only if:

- All installation operations, expansions, changes, modifications and repairs of this product are conducted by Konsung authorized personnel;
- All the replaced components and supporting accessories that using for maintenance should be supplied or approved by Konsung;
- The electrical installation of the relevant room complies with the applicable national and local requirements;
- The product is used in accordance with the instructions for use.

Conventions

WARNING: Indicates a potential hazard or unsafe practice that, if not avoided, could result in death or serious injury.

CAUTION: Indicates a potential hazard or unsafe practice that, if not avoided, could result in minor personal injury or product/property damage.

NOTE: Provides application tips or other useful information to ensure that you get the most from your product.

Table of Contents

1 Product Information

1.1 Introduction

The portable dry biochemical analyzer is a portable dry biochemical quantitative analysis instrument. The analyzer uses the principle of reflection spectrophotometry to quantitative detect the clinical chemical components in the whole blood, serum and plasma of human blood samples by testing the matched test strip.

The analyzer and the test strip are for In Vitro Diagnostic use only.

The working principle of the portable dry biochemical analyzer is as follows: illuminate the color area of test strip with a specific wavelength LED light source, measure the absorbance of the test strip, capture the reflected signal strength with the photosensitive diode, and detect the content of the analyte according to the obtained AD value.

Intended Use

Use matched test strip that manufactured by Jiangsu Konsung Bio-Medical Science And Technology Co., Ltd. to quantitatively analyze clinical chemical components in human whole blood, serum and plasma with the reflection spectrophotometry.

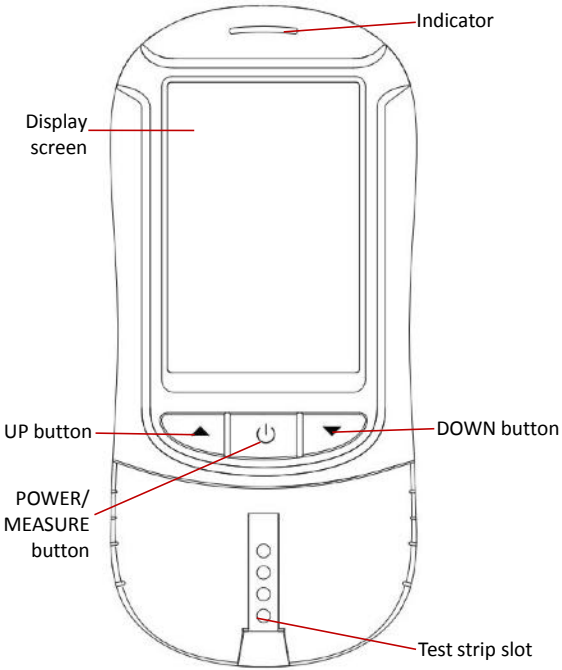
Sample type: whole blood, serum, plasma

1.2 Contraindications

None

1.3 Components

1.3.1 Front View



Indicator:

- The indicator lights red if the analyzer connected to the AC power supply, it indicates that the battery is being charged.
- The indicator lights green after charging is completed.
- The indicator lights blue, it indicates that the analyzer is testing the sample.

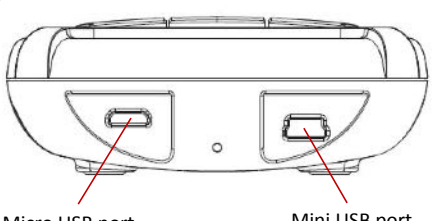
UP/DOWN button:

- After turning on the analyzer, press and hold button ▲ or ▼ to switch the menu screen;
- In the history screen, press button ▲ or ▼ to turn the page to view the history;
- In the setting screen, press button ▲ or ▼ to select the setting item;
- After selecting the setting item, press button ▲ or ▼ to adjust the value or option.

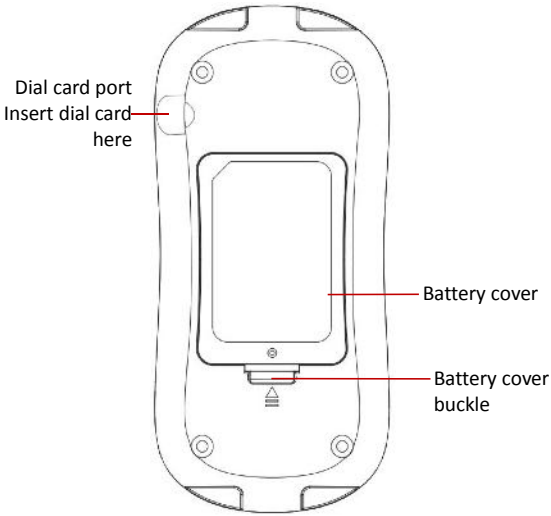
POWER/MEASURE button:

- Press and hold this button 3 seconds to turn on the analyzer.
- When the analyzer is on, press and hold this button 3 seconds to turn off the analyzer.
- In the measure mode screen, press and hold this button 3 seconds to start the test.
- In the settings screen, press this button to confirm the setting.

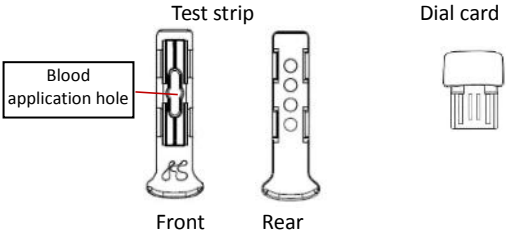
1.3.2 Top View



1.3.3 Back View



1.3.4 Test strip and dial card



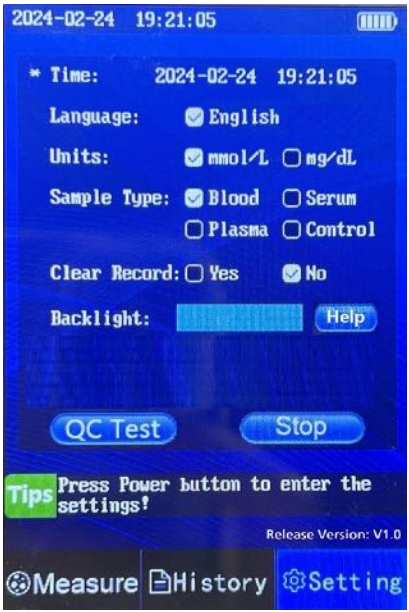
NOTE: Each analyzer is equipped with a QC dial card, and the same batch of test strips are equipped with a dial card of the same color. Keep the attached dial cards safely after each use.

1.3.5 Display Screen

Measure Screen

History Screen

Settings Screen



1.4 Safety Information

WARNING

- **Before using the analyzer, you need access to professional medical knowledge.**
- **Follow the instructions to use the equipment, any improper operation may lead to inaccurate measurements.**
- **Wear protective gloves to avoid bacterial infection during operation.**

- Care must be taken when dealing with blood samples or abandoned test strips. Any incorrect sequence of operations are likely to lead to infection.
- It is very dangerous for user making self-judgment or self-treatment through the measurements. Please follow the doctor's advice. Self-judgment may make the disease worse.
- Use only the power adapter provided or designated by our company. Using other adapters may cause fire or electric shock.
- Do not leave the equipment unattended when using AC power supply.
- The equipment cannot be used by children, disabled persons or patients; it is necessary to monitor the equipment closely when it is used for them or when used near them.
- Do not drop anything or put it into test strip slot of the analyzer, except for those items specified in this manual.
- Do not use the equipment in locations where aerosol droplets or oxygen controlled.
- Do not use the equipment outdoor.
- Do not place a test strip in the slot if the analyzer is not in use.
- Do not open the analyzer housing and attempt to repair it yourself.

CAUTION

- Use specified adapter to charge the analyzer’s battery, and unplug the power cord after charging is complete.
- Do not place the analyzer into the liquid, and do not put the analyzer in place where may fall into liquids.
- Do not place the analyzer in location that is easy to fall, falling and crashing may cause the malfunction of analyzer.
- To ensure user safety, use only parts and accessories specified by Konsung or in this manual.
- Do not use the analyzer if it is not working properly or damaged.

- **Do not place the analyzer or its data cable on the object surface with higher temperature.**
- **Do not place anything on the top of the analyzer.**

NOTE:

- **The pictures and interfaces in this manual are for reference only.**
- **This manual is based on the maximum configuration and therefore some contents may not apply to your product. If you have any questions, please contact us.**

1.5 Symbol and Explanation

Note: Some symbols may not appear on your equipment.

Symbol	Explanation	Symbol	Explanation
IVD	In vitro diagnostic medical device	SN	Serial Number
	Alternating current		Direct current
	Battery Status Indicator		Class II equipment
P/N	Part Number		Temperature limit
	Refer to instruction manual/ booklet		Warning; Biological hazard
	Caution		USB port
	Date of manufacture		Manufacturer

	Non-ionizing electromagnetic radiation		Power ON/OFF
UKRP	Name and Address of UK responsible person	UK CA	UKCA mark
CE	CE mark		The symbol indicates that the device should be sent to the special agencies according to local regulations for separate collection after its useful life.
EC REP	Authorized representative in the European community		
	Keep dry		Atmospheric pressure limitation
	This side up		Humidity limitation
	Max. Stack Quantity		Fragile, handle with care

2 Installation

2.1 Getting Started

Before unpacking, examine the packing case carefully for signs of damage. If any damage is detected, contact the carrier.

If the packing case is intact, open the packing case in a right way, take out the analyzer and its accessories from the packing case, and check according to the Packing List. Check all materials as per the packing list and check for any mechanical damage. If you have any questions, please contact us.

Fill in the service warranty card carefully, and return it to our company, so that we can track the quality of products and supply you our service timely.

NOTE:

- **Please save the packaging materials for future transport or storage use.**
- **Keep the packing material out of children's reach. Dispose of the packaging material, observing the applicable waste control regulations**
- **The system may be contaminated by microorganism during transport, storage and use. Verify the packaging, especially the packaging for the single use accessories, is intact. In case of any damage, contact the carrier or our company immediately.**
- **Disposal of this product and its accessories and packaging (plastic bags, foam and cartons, etc.) are subject to local laws and regulations.**

2.2 Environmental Requirements

The operating environment of the analyzer must meet the requirements ***A.3 Environmental Specifications*** specified in this manual.

Do not use the analyzer in places where are wet, containing corrosive gases, with strong dust, strong electromagnetic interference to ensure the normal use of it.

The portable dry biochemical analyzer is a precision electronic instrument that requires careful maintenance and avoids falling. The analyzer shall be stored away from light. Avoid operating the analyzer under direct lighting (such as sunlight, spotlights, floodlight, or in front of window). Direct sunlight can affect the test results.

Do not place the analyzer and its accessories in a place where the humidity is too high, too hot, too cold, dusty, or dirty. The analyzer shall be placed in an environment with relative humidity of ≤ 85% and room temperature of 15°C to 35°C. Do not refrigerate the analyzer. The analyzer shall be turned on and preheated for 10 minutes before operating it.

When the analyzer is moved from one place to another, condensation may occur because of temperature or humidity difference. In this case, never start the analyzer before the condensation disappears.

The analyzer should be placed in a well-ventilated room. Place the analyzer on a clean, stable surface. Do not place the device in a location where it is difficult to disconnect the power supply.

2.3 Connect the Power supply

The analyzer can be powered by AC adapter or built-in rechargeable Li-ion battery.

Power supply:

Adapter, input:100V--240V ~, 50/60Hz, 20VA;
Output of adapter: 5V ⎓ 1A
Internal power supply: 3.7±0.3V ⎓

NOTE: Use only the power adapter supplied or specified by Konsung.

2.4 Using Battery

The analyzer can be powered by rechargeable lithium battery. If the AC power supply is suddenly off, the analyzer can be powered by battery.

The battery will be charged when the analyzer is connected to AC power supply.

The indicator lights red during charging. And the indicator lights green when the battery is fully charged.

Battery icons' explanations are as follows:

-  Indicates that the batteries work correctly. The solid portion represents the current charge level of the batteries in proportion to their maximum charge level.
-  Indicates that the battery is low. Please charge it in time.

NOTE:

- **Do not charge the battery separately with other charger.**
- **Charge the battery with power adapter supplied or specified by Konsung.**

- **It is recommended that you charge the battery within 2 months to ensure proper use of the analyzer if long period no use of it.**
- **Ensure that the battery has enough capacity in measurement, lower capacity may lead to inaccurate results.**
- **The operating time depends on the configuration and operation. For example, testing repeatedly will also shorten the operating time of the batteries.**

Installing and replacing battery

Be sure to replace the battery with the same model and specification specified by Konsung. When the battery is replaced, the test results, time and date saved in the history record will not be deleted.

1. Remove the screw that fix the battery cover on the back of the analyzer, press the cover buckle with your finger and lift it up to remove the cover.
2. Remove the old battery from the compartment and properly discard.
3. Place the new battery into the battery compartment.
4. Install the battery cover back and tighten the fixing screw. The analyzer can be turned on after confirming that the battery is installed correctly.

3 Operation of Analyzer

The analyzer is calibrated at the factory and the user does not need to calibrate. The analyzer is intended for use only by clinical professionals or under their guidance. It must only be used by persons who have received adequate training in its use. Any operations of the analyzer by unauthorized or untrained person are prohibited.

The analyzer should be placed in a well-ventilated room. Place the analyzer on a clean, stable surface. Do not place the device in a location where it is difficult to disconnect the power supply.

3.1 Powering On

1. Before you start to make measurements, check the analyzer for any mechanical damage and make sure that accessories are properly connected.
2. Connect the adapter to the power supply socket. If you run the analyzer on battery power, ensure that the battery is sufficiently charged.
3. Press and hold button ⏻ 3 seconds to turn the analyzer on. The analyzer screen lights up, the startup screen is displayed, and the self-test is performed.

The touch screen has been calibrated before the analyzer leaves the factory, so the user does not need to calibrate it again. If "+" appears on the screen during the analyzer startup self-test (caused by the failure of the touch screen self-test). Now the user shall click the “+” on the screen in turn to perform the screen calibration. The analyzer enters the Measure screen after calibration is completed.

NOTE: If you do not click the "+", the calibration prompt will pop up after a period of time. At this time, the touch screen is inoperable, you need to turn off the analyzer and restart it, and then click the "+" to complete the touch screen calibration. The calibration prompt will disappear after successful calibration. The calibration prompt will disappear after successful calibration.

WARNING

- **Do not use the analyzer if it is mechanically damaged or appears abnormal. Contact our company or our service personnel.**
- **The analyzer will not turn on when battery is low if battery power used only.**
- **Turn off the analyzer and connect the external power supply to charge the battery for a period of time if the battery is too low. Otherwise, the analyzer will not be turned on.**

3.2 Powering Off

Press and hold button ⏻ 3 seconds to turn the analyzer off when it is on.

3.3 Quality Control Test

The purpose of the quality control test is to monitor the stability of the optical system of the analyzer.

QC strip and QC dial card

When to perform QC test

- The first use of the analyzer;
- Every day before starting measurement;
- The test data is obviously abnormal.

QC test procedure

A QC strip and QC dial card is provided by our company, refer to its instructions for use for details.

1. Turning on the analyzer.
2. In **Measure** screen, the analyzer shows "**Insert Dial Card**".

3. Insert the QC dial card. The analyzer prompts "**Enter Setting and start QC test**".

4. Click "**Setting**" to enter "**Setting**" screen and click "**QC Test**" to start QC test.

5. Insert the QC strip into slot.

6. Wait for completing test, and the analyzer prompts "**QC test Passed**".
7. Click "**Stop**" to finish the quality control testing.

External quality control test

Refer to the instructions for use of quality control materials purchased from third parties for details on specific tests.

3.4 Testing

Each test strip package provides instructions for use and information specific for each test. Please read the instructions completely before testing.

The following are required for blood test.

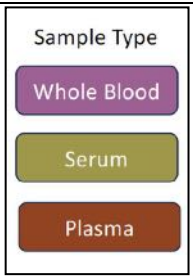
- Portable Dry Biochemical Analyzer
- Test strip
- code card with same batch number
- Lancet (collecting capillary specimen)
- Capillary tube or pipette
- Sterile gauze or cotton ball or cotton swab*
- Medical alcohol*
- Pipette or other transfer devices (collecting venous specimen)

*** items shall be prepared by yourself.**

Testing procedure

1. Press and hold button  3 seconds to turn on the analyzer.
2. The analyzer shows QR code (for the first use of analyzer) after completing POST. You can scan it to obtain operation video or click  to skip it.

4. The analyzer shows "**Sample Type**".



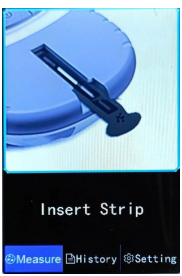
NOTE: You can also set the sample type in Setting screen. Before testing, confirm whether the sample type is correct, otherwise it will affect the accuracy of measurements.

5. Select the appropriate type based on the testing sample, the analyzer prompts "**Insert Dial Card**".

6. Open the test strip package, take out the dial card and insert it into the analyzer. **(Note: the dial card of each batch of test strip is different. Before use, make sure to use the same batch of dial card and test strip.)**

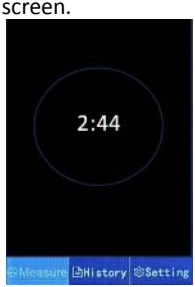
7. The analyzer shows the LOT number, and prompts "**Press Power to start**".

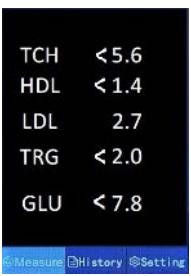
8. Press button , the analyzer shows "**Insert Strip**".



9. Insert the new test strip with front side (the side with sample application hole) facing up into the slot.

10. Refer to the instructions on the sample volume and sample collection in the instructions for use of each test strip, and drop the collected blood sample into the sample application hole.
11. The screen displays the countdown to the test. After the countdown is finished, the analyzer will beep to indicate that the test is complete, and the result is displayed on the screen.





12. After completing the test, remove and dispose the test strip according to local regulations.
13. Press and hold button ⏻ 3 seconds to turn the analyzer off if not use.

NOTE:

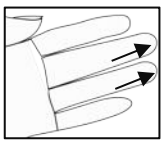
- **Before collecting blood, adding specimen and testing, please read the instructions for use of the test kit carefully and operate as required.**
- **Always handle blood specimens with care, as they might be infectious. Always wear protective gloves when handling blood specimens.**
- **Do not use the analyzer if the ambient temperature too high or too low.**
- **Always handle blood specimens with care, as they might**

be infectious. Consult local environmental authorities for proper disposal.

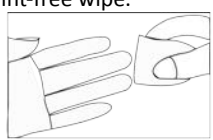
- Do not use the analyzer in direct sunlight place, the measurement accuracy will be affected.
- Do not insert others except for the matched test strip into the slot.
- The test strip slot shall be free from liquid contamination.
- Do not remove the test strip or move the analyzer during testing.
- The test strip shall be fully inserted into the slot.
- Fill the test strip in one continuous process. Do not refill.
- Do not remeasure the filled test strip.
- The test strip shall be tested as soon as possible after opening its package. Long-term exposure to the air will affect its performance. The test strip shall be protected from moisture and strong light.
- The test strip and blood lancet are disposable accessories and shall not be reused.
- Use the test strip before it expires, and the expiration date of the test strip is printed on the outer packaging.
- The test strip shall be started test immediately after filling with specimen. Prolonged exposure to air can affect measurement results.
- Do not leave the used test strip in the analyzer's test strip slot.
- If the batch number of the test strip and the dial card are different, the analyzer will prompt you to insert a dial card with the same batch number before testing.
- Before starting each test, please confirm whether the sample type displayed by the analyzer is consistent with the sample type to be tested. If they are inconsistent, please set the correct sample type first.

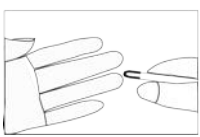
3.4.1 Measuring capillary blood

1. Make sure the patient's hand is warm and relaxed. Use only the middle or ring finger for sampling. Avoid fingers with rings on.



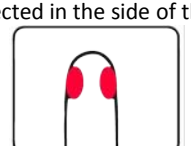
2. Clean fingertip with disinfectant or cotton swab dipped in alcohol. and allow drying completely or wiping off with a dry lint-free wipe.





Note: The disinfectant, cotton swab and alcohol shall be prepared by user.

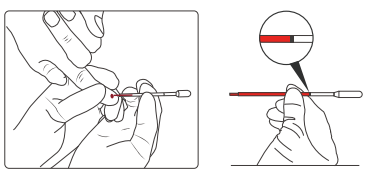
3. Specimen is collected in the side of the fingertip.



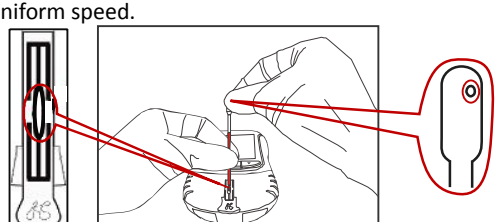
4. Using blood collection pen with a lancet to puncture the finger, and then wipe away the first drop of blood.

Note: Read the instructions of blood collection pen before using it.

5. And lightly press the finger from the top of the knuckle towards the tip.
6. Hold the middle of the collection tube to collect sufficient amount of blood. When the blood rises to the black line marked on the tube, the blood collection is completed. Hold the collection tube horizontally to prevent the blood from flowing out.



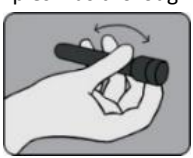
7. Put the collection tube vertically in the middle of the sample hole of the test strip, pinch the two small air holes on the tube head with your thumb and forefinger and squeeze it. Squeeze the blood sample completely at a uniform speed.



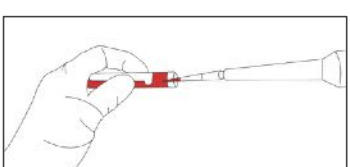
8. The screen displays the countdown to the test. After the The screen displays the countdown to the test. After the countdown is finished, the analyzer will beep to indicate that the test is complete, and the result is displayed on the screen.
9. After completing the test, remove and dispose the test strip according to local regulations.

3.4.2 Venous blood specimen testing

1. If the blood sample stored in the refrigerator, it should be preceded and heated to room temperature (15-35°C, 59-95°F) before measuring. Using a mechanical stirrer to stir the sample at least 1-2 minutes or using hand to upside down 10-20 times of the sample tube to make the venous blood samples was thoroughly mixed.



2. According to the requirements in the instructions for use of the supplied consumables, use a pipette to draw a sufficient amount of blood, and then drop the blood into the sample hole of the test strip.

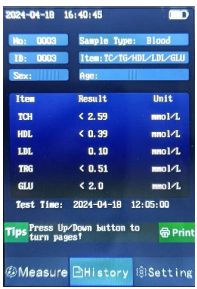


3. The screen displays the countdown to the test. After the countdown is finished, the analyzer will beep to indicate that the test is complete, and the result is displayed on the screen.
4. After completing the test, remove and dispose the test strip according to local regulations.

3.5 Review History Record

The test result is automatically saved in the analyzer.

Press and hold button ▲ or ▼ to select "**History**"; or touch the screen with your fingertip, click "**History**" to enter the history interface.



Click "**Print**" to print the history result in current page via the connected external printer.

Press button ▲ or ▼ to turn pages to view the history records.

Search history record

1. Click "**No.**", a soft keyboard pops up, enter the record number.

2. Click “**Yes**” or  to confirm the number and the result is displayed on the screen.

3.6 Upload Measurements

The analyzer can upload the measurements to the desired device. USB data cable can be used to upload the measurements to PC, the upload function needs software support, please contact our service personnel for details.

3.7 Settings

3.7.1 Set Time

1. Press and hold button ▲ or▼ to select “**Setting**”; or touch the screen with your fingertip, click “**Setting**” to enter setting screen. “*****” is displayed before **Time**.

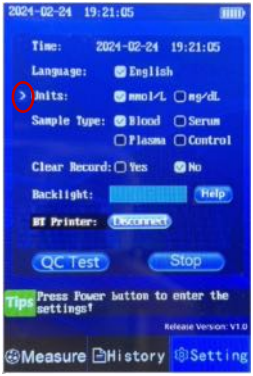
2. Press button ⏻ or click "**Time**" on screen to enter the time setting. ***** becomes **>**. The year digit will be flashing as shown in below figure.

3. Press ▲ or ▼ to adjust value, then press button ⏻ to confirm the setting, the next digit is flashing.
4. Adjust the values of year, month, day, hour, minute, and second in turn. Press button ⏻ to confirm the setting each time, and finally press button ⏻ to save all settings. The symbol **>** before time changes to *****.

3.7.2 Set Units

1. In **Setting** screen, press ▲ or ▼ to move cursor to select "**Units**" , ***** is displayed before Units.

2. Press button ⏻ to enter setting, ***** changes to **>**.



3. Press button ▲ or ▼ to select unit, or click the checkbox to switch unit between "**mmol/L**" and "**mg/dL**".

3.7.3 Set Sample Type

1. In **Setting** screen, press ▲ or ▼ to move cursor to select "**Sample Type**", ***** is displayed before Sample Type.

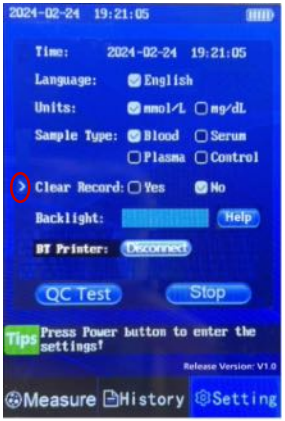
2. Press button ⏻ to enter setting, * changes to >.

3. Press button ▲ or ▼ to select type, or click the checkbox before sample type.
4. Press button ⏻ to save setting, the symbol **>** before the sample type changes to ***.

3.7.4 Clear Record

1. In "**Setting**" screen, press button ▲ or ▼ to select "**Clear record**", ***** is displayed before Clear Record.

2. Press button ⏻ to enter clear record setting, * becomes >.



3. Press button ▲ or ▼ to select “**Yes**” or “**No**”. Or click the checkbox before “**Yes**” or “**No**”. “**Yes**” means to clear all data stored in analyzer. “**No**” means to cancel the clear record operation.
4. Press button ⏻ to save setting, **>** becomes *****.

3.7.5 Backlight setting

1. In **Setting** screen, press button ▲ or ▼ to select “**Backlight**”, ***** is displayed before backlight.

2. Press button ⏻ to enter backlight setting, ***** becomes **>**.

3. Press button▲ or ▼ to adjust backlight. Or click the brightness bar to adjust the backlight.
4. Press button ⏻ to save setting, **>** becomes *****.

3.7.6 Connect Bluetooth printer

If the analyzer is already connected to Bluetooth printer, the status of the Bluetooth printer will be displayed as "**Connect**" in **Setting** screen.

If "**Disconnect**" is displayed, click "**Disconnect**" to enter the printer search screen. The analyzer scans available printers automatically.

Select one printer and click "**Connect**". After the printer is successfully connected, the "**Connect**" changes to "**Disconnect**".

- "**Last**" : click this key to view last page.
- "**Next**": click this key to view the next page.
- "**Return**": click this key to return to the setting screen.
- "**Disconnect**": click this key to disconnect the printer.
- "**Connect**": click this key to connect the printer.
- "**Scan**": click this key to scan the available printer.

4 Care and Cleaning

Use only the substances approved by us and methods listed in this chapter to clean or disinfect your equipment. Warranty does not cover damage caused by unapproved substances or methods.

We make no claims regarding the efficacy of the listed chemicals or methods as a means for controlling infection. For the method to control infection, consult your hospital's Infection Control Officer or Epidemiologist.

4.1 Cleaning the analyzer

The analyzer should be cleaned on a regular basis. If there is heavy pollution or lots of dust and sand in your place, the equipment should be cleaned more frequently. Recommended cleaning agent is 75% Ethanol.

Follow the below steps to clean the main unit:

1. Turn the analyzer off.
2. Clean the display screen and shell by a soft, clean cloth with neutral cleaning solution.
3. Wipe off all the cleaning solution with a dry cloth after cleaning if necessary.
4. Dry the analyzer in a ventilated, cool place.

To avoid damage to the analyzer, follow these rules:

- Do not immerse the analyzer into liquid.
- Do not pour liquid onto the analyzer or accessories.
- Do not allow liquid to enter the case.
- Never use abrasive materials (such as steel wool or silver polish).

4.2 Cleaning the test strip slot

1. Wipe and clean the test strip slot by soft cotton swab with neutral cleaning solution. (Note: Alcohol cannot be used for transparent parts, only clean water can be used.)
2. Dry the analyzer in a ventilated, cool place after cleaning.

NOTE:

- **Keep the working environment and the analyzer surface clean and do not damage the screen.**
- **The gasoline, benzene organic solvent cleaning are forbidden to use, these tests will make the analyzer deformation or paint removed and affect the performance or appearance.**
- **The test strip slot shall be cleaned after each day of use.**
- **Do not contaminate or damage the slot when cleaning it.**
- **Any service of this analyzer can only be performed by an authorized service engineer. Do not maintain and disassembly the analyzer. If any quality problems occur, please call our customer service.**
- **The test strip slot must be kept clean to avoid affecting the accuracy of the test results.**
- **For cleaning, disinfecting and sterilizing other accessories, please contact the manufactures for details.**

4.3 Disinfection

There is no parts that requires user to disinfect. Disinfection may cause damage to the analyzer or accessories. We recommend that you disinfect the analyzer only when necessary. Clean the analyzer before disinfection.
Recommended disinfectant is Ethanol 75%.

4.4 Disposal of waste

Discard used blood samples, test strips and protective gloves in accordance with local regulations on disposal of bio-hazard waste.

The analyzer should be disposed in accordance with local standards for the disposal of electronic waste when After the expiry of the analyzer's life.

5 Warranty and Service

Refer to the product label for the manufacture date of the analyzer.

The analyzer has a warranty period of 12 months from the date of receipt. The service or repair will be charged according to regulations when the system is out of the warranty period. Any changes or modifications to this analyzer not expressly approved by manufacturer may void your authority to operate this system.

THIS WARRANTY IS EXCLUSIVE AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE. All faulty components can free repair or replace during the warranty period.

Do not open the analyzer's housing. If the analyzer housing is opened, the warranty will be invalid.

To protect your rights, please keep the evidence, such as invoices, receipts and so on well. The manufacturer will repair or replace the analyzer for free during its warranty period and any damage caused by non-human factors.

If any questions in equipment operation, please contact the manufacturer or local agency.

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6 Accessories and Spare Parts

NOTE:

- **Use only the data cable and power adapter supplied or specified by Konsung.**
- **Disposable accessories should not be resterilized and reused.**

The following accessories and spare parts are available:

Accessory name/Model	Remarks
Power adapter	Optional
USB data cable	Optional

7 Troubleshooting

7.1 Error code and prompt

The analyzer will identify some troubles during operation, and the fault code and prompt will be displayed on the screen. Follow the below description to solve the troubles.

Fault code and prompt	Measures
Err:3 POST error - Light hole 1 is aging	Restart the analyzer. Contact the manufacturer if the fault still exits.
Err:4 POST error - Light hole 2 is aging	Restart the analyzer. Contact the manufacturer if the fault still exits.
Err:5 POST error - Light hole 3 is aging	Restart the analyzer. Contact the manufacturer if the fault still exits.
Err:6 POST error - Light hole 4 is aging	Restart the analyzer. Contact the manufacturer if the fault still exits.
Err:18 Test abnormal	Restart the analyzer. Take a new test strip for testing. Contact the manufacturer if the fault still exits.
Err:19 Loading timeout	Remove the test strip. Remove the test strip. Reinsert and add sample for testing.
Err:21 Temperature below 15℃	Turn on the analyzer and run for more than 10 minutes.
Err:22 Dial card abnormal	Contact the manufacturer.
Err:23 Code different	Contact the manufacturer.
Err:24 Temperature above 45℃	Ensure that the ambient temperature is lower than 45°C.
Err:25 Reinsert dial card	Remove and reinsert the dial card.
Err:26 Test strip date error	Take another new dial card and test strip for testing, or check if the date displayed on analyzer is correct.

Err:27 Lot expired	Take another new dial card and test strip for testing, or check if the time displayed on analyzer is correct.
Err:28 Test abnormal	Perform new test. Contact the manufacturer if the fault still exits.

7.2 Other Troubles

Some common troubles will occur during the operation of analyzer. Follow the below description to solve the troubles.

Symptoms	Potential Causes	Solution
Analyzer cannot be turned on.	Battery capacity is low and no AC power is connected.	Connect the power adapter and check if the indicator lights red. If the indicator is off or fails to start after the indicator is on, contact the after-sales service personnel.
dial card error	Calibration dial card is damaged.	Change another dial card with same batch number with the test strips.
Date and time display error	Date and time settings are wrong	Set correct date and time by referring to the description of date/time setting in the user's manual.
Test error	Insufficient amount of blood dripped into test strip	Take a new test strip, draw sufficient amount of blood and drip into the sample hole.
Analyzer cannot perform detection	The analyzer cannot start the test after inserting the dial card.	Check the dial card and insert it into the analyzer correctly. If the trouble still exists, please contact our service personnel.
The analyzer cannot start the test after	Blood sample is not added.	Add blood sample.
	The test strip slot is	Remove the foreign matter from

inserting the test strip.	blocked by foreign matter.	the slot, restart the analyzer and perform the test. Contact our service personnel if the trouble still exists.
	Analyzer motor is broken	Replace a new analyzer
	Battery capacity is low and no AC power is connected.	Connect to the AC power supply to charge battery and perform a new measurement.
The screen shows wrong characters	The screen is damaged or the processor has fault.	Restart the analyzer Contact the service personnel if the trouble still exits.

8 Electromagnetic Compatibility

1. The equipment complies with the electromagnetic compatibility requirements specified in IEC 61326-1:2005 and IEC 61326-2-6:2005.
2. The manufacturer should provide EMC information to the customer or user. The user should ensure that the equipment is in an electromagnetic compatibility environment and that the equipment is functioning properly.
3. It is recommended to evaluate the electromagnetic environment before using the equipment. Do not use the equipment near strong radiation sources. Doing so may affect the equipment's normal operation.
4. It may cause damaging electrostatic discharge, and resulting in inaccurate test results when using the equipment in a dry environment, especially in a dry environment with artificial materials (such as artificial fabrics, carpets, etc.).
5. The equipment is designed and tested according to Class A equipment of CISPR 11. The equipment may cause radio interference, protective measures are required when using in home.

Table 1

Electromagnetic emissions	
Emission test	**Compliance**
CISPR11 Conducted emissions	Group 1, Class A
CISPR11 Radiated emissions	
Harmonic emissions IEC 61000-3-2	N/A
Voltage fluctuations/ flicker emissions IEC 61000-3-3	N/A

Table 2

Electromagnetic immunity			
Immunity test	**Fundamental standards**	**Test value**	**Compliance**
Electrostatic discharge (ESD)	IEC/EN 61000-4-2	Contact: ±2kV, ±4kV Air:±2kV, ±4kV, ±8kV	B
RF Electromagnetic field	IEC/EN 61000-4-3	3V/m, 80MHz～2.0GHz, 80%AM	A
Electrical fast transient/burst	IEC/EN 61000-4-4	Power supply cord:±1kV(5/50ns,5kHz)	B
Surge	IEC/EN 61000-4-5	line to ground:±2kV line to line±1kV	B
Conducted RF	IEC/EN 61000-4-6	Power cord: 3V/m, 150kHz～80MHz, 80%AM	A
Power frequency magnetic field	IEC/EN 61000-4-8	3A/m, 50/60Hz	A
Voltage dips, short interruptions	IEC/EN 61000-4-11	1 cycle 0%; 5/6 cycle 40%; 25/30 cycle 70%; 250/300 cycle 5%	B C C C
Performance judgment: A. Performance is normal within the specification limits during the test. B. During the test, the function or performance is temporarily reduced or lost, but it can be recovered by itself. C. The function or performance is temporarily reduced or lost during the test, but it requires operator intervention or system reset.			

A Product Specifications

This chapter lists the specifications related to the analyzer main unit only. For the detailed specifications of the test strip, refer to the instructions for use of test strip.

A.1 Analyzer type

Electric shock protection	Class II equipment and internal powered equipment
Degree of protection against liquid	IPX0
How to report work:	Continuous
Product life	Three years (20 samples per day) or 22,000 sample counts

A.2 Physical Specifications

Model	Configuration	Dimension	Weight
Compass2800-1	Main unit	168mm x 78.5mm x 27mm	About 220g (include battery)
Compass2800-2	Main unit +battery		

A.3 Environmental Specifications

Operating environment	Temperature: 15°C～35°C Relative humidity: ≤80%RH
Operating atmospheric pressure	70kPa～110kPa
Storage and transportation environment	Temperature: -20°C～60°C Relative humidity: 10%～90%
Barometric pressure	50kPa～110kPa

A.4 Technical Specifications

Detection method	Reflection spectrophotometry
Sample type	Serum, plasma, whole blood
Test time	≤3min
Accuracy or comparability	≤±10%
Data storage	10000 records
Display screen	3.5 inch touch screen
Power supply	Adapter: input voltage:100V-240V ~, 50/60Hz, 20VA; output voltage:5V ⎓ 1A Internal power supply (Lithium battery): 3.7±0.3V ⎓

B Symbols and Abbreviation

B.1 Units

Abb.	Full name
µl (µL)	microliter
A	ampere
°C	centigrade
V	volt
W	watt
mm	millimeter
kPa	kilopascal
h	hour
Hz	hertz
L	liter

B.2 Symbols

Symbol	Description
—	negative
%	percent
/	per; divide; or
~	to
+	positive
≤	less than or equal to
≥	greater than or equal to
©	copyright

B.3 Terms

Abb.	Full name
AC	Alternating current
CV	Coefficient of Variation
DC	Direct current
GLU	Glucose
HDL-C	High-density lipoprotein Cholesterol
TEMP	Temperature
USB	Universal serial bus
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronic Engineers
LDL-C	Low-density lipoprotein Cholesterol
TC	Total Cholesterol
TG	Triglycerides

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