Portable Water Quality Rapid Test Kit

TK-7200

User Manual

Content

I. Safety Warnings and Precautions

1. Please read this manual carefully before using the instrument.

2. The analyzer must use original batteries. Do not operate with wet hands.

3. Wear protective gloves, goggles and a mask when using reagents, standard solutions, corrosive or toxic liquids. Do not inhale, taste or touch them directly.

4. If reagents splash onto skin or eyes, rinse immediately with plenty of water. Seek medical attention if serious.

5. Do not repair or disassemble the sensor unless you are a qualified professional.

6. Follow standard procedures for sampling and injection to avoid backflow and splashing.

7. Collect waste liquid as hazardous waste; do not pour directly into drains.

8. Emergency equipment such as eyewash, fire extinguisher, first-aid kit and absorbent cotton should be available.

9. Do not touch the heating module or the bottom of the digester while it is operating.

10. Always close the protective cover before starting the digester. Do not open the cover during digestion to avoid injury.

11. Do not use digestion tubes or caps if cracked, unsealed or loose.

12. After digestion, wait 3 minutes before removing tubes to prevent bursting due to rapid temperature change.

13. If liquid leaks into the digester, turn off the power immediately.

14. Keep away from open flames, heat sources and static electricity. Store in a dry, dust-free, vibration-free and low-magnetic field environment.

15. Do not place flammable or explosive materials near the instrument. Avoid direct sunlight, high temperature, high humidity and corrosive gases.

16. Close the protective cover when the digester is not in use to prevent dust ingress.

17. Always use a grounded power socket to ensure safety.

18. In case of leakage, electric shock or fire, disconnect power first before handling.

II. Disclaimer

1. Product specifications and information in this manual are for reference only and subject

to change without prior notice.

2. Please read “Safety Warnings and Precautions” and all highlighted instructions carefully before operation. The company shall not be liable for accidents caused by improper operation.

3. This product is intended for professional and specialized applications. Operators must possess relevant professional knowledge and skills. The company is not responsible for accidents caused by operational errors.

III. Product Introduction

3.1 Application

The Portable Water Quality Rapid Test Kit includes a digestion module, analysis module, pipetting module and accessory module. It functions as a mobile laboratory for measuring pollutant concentrations in water.

This instrument adopts or refers to the following standards:

- HJ/T 399-2007 Water quality – Determination of chemical oxygen demand – Rapid digestion spectrophotometric method
- HJ 535-2009 Water quality – Determination of ammonia nitrogen – Nessler’s reagent spectrophotometric method
- HJ 536-2009 Water quality – Determination of ammonia nitrogen – Salicylic acid spectrophotometric method
- GB/T 11893-1989 Water quality – Determination of total phosphorus – Ammonium molybdate spectrophotometric method

etc.

It is suitable for on-site testing in environmental pollution source screening, law enforcement inspection, industrial process water, municipal wastewater treatment, surface water monitoring, and small-sample testing in various fields.

3.2 Measurable Parameters and Ranges

Parameter	Range	Parameter	Range
COD	0~2000mg/L（multi-range）	Nickel	0~5mg/L
High-Chloride COD	30~20000mg/L（multi-range）	Phosphate	0.06~90mg/L（multi-range）
TP	0.02~30mg/L（multi-range）	Volatile Phenol	0.017~2mg/L
TN	0~100mg/L（multi-range）	Chlorine Dioxide	0.04~200mg/L（multi-range）
Ammonia Nitrogen	Nessler：0~150mg/L（multi-range） Salicylic acid：0~50mg/L（multi-range）	Hydrogen Peroxide	0.01~40mg/L（multi-range）
Formaldehyde	0.2~3.2mg/L	Cyanuric Acid	5~50mg/L
Hydrazine	0~1mg/L	Urea	0.05~3.5mg/L
Sulfate	5~250mg/L	Metasilicic Acid	2~100mg/L
Chloride	5~50；50~500mg/L	Residual Chlorine / Total Chlorine	0.02~3mg/L
Silica	0.02~80mg/L（multi-range）	Total Hardness	0.5~500mg/L（multi-range）
Nitrate	0~100mg/L（multi-range）	Volatile Phenol	0.1~12mg/L
Lead	0~1.6mg/L	Nitrite	0~10mg/L
Copper	0~10mg/L	Hexavalent Chromium	0~2mg/L

Total Iron	0~10mg/L	Total Chromium	0~2mg/L
Manganese	0~20mg/L	Iron (II)	0~10mg/L
Permanganate Index	0.5~5mg/L	Cyanide	0.005~0.5mg/L
Iodine	0.07~7mg/L	Sulfide	0.02~1mg/L
pH	6.5~8.5	Fluoride	0~2mg/L
Bromine	0.05~5mg/L	Cobalt	0.02~2mg/L
Active Oxygen	0.005~1mg/L	Aluminum	0.002~0.2mg/L
Ozone	0.01~2.5mg/L	Arsenic	0.1~5mg/L
VFA	50~3000mg/L	Turbidity	20~2000NTU（分段）
Zinc	0~2mg/L	Color	0~500°
Cadmium	0.005~1mg/L	Suspended Solids	10~1000mg/L

IV. Product Features

1. Portable shockproof case, suitable for field use, law enforcement screening or laboratory testing of small-volume samples.

2. Integrated digestion module, analysis module, pipetting module and accessories. With pre-made reagents, it forms a mobile laboratory and is easy to operate after basic training.

3. The digester heats rapidly: reaches 165 ℃ from room temperature (25 ℃) within 6 minutes, improving detection efficiency.

4. The digester supports temperature calibration; temperature accuracy and uniformity are within ±1.5 ℃, ensuring consistency and stability of test results.

5. Built-in digestion programs for COD, TP and TN for one-key operation. Custom digestion programs are available to extend test parameters.

6. Separate curve library and sample test interface; users can customize frequently used items for quick access.

7. Three methods to add test items: dilution factor, manual input of wavelength, K-value and B-value, and curve import from PC.

8. Powered by 18650 rechargeable battery for longer standby time and reduced battery replacement.

9. High-compatibility Type-C interface for PC connection and charging.

10. Up to 7 light sources can be configured to meet full-parameter testing requirements.

11. Reference light for background correction to improve repeatability.

12. Stores no less than 100,000 test records for data traceability.

13. Both analyzer and digester are equipped with 3.5-inch color touch screens for clear and convenient operation.

14. Dual colorimetric system: Φ25 mm vial and 10 mL tube, expanding sample compatibility.

15. Pipetting module with 1 mL and 5 mL adjustable ranges to meet routine testing needs.

V. Technical Specifications

Analysis Module

Item	Details
Display & Input	3.5-inch color touch screen
Light Source	LED
Detector	Photodiode
Sample Cell	Φ16 mm digestion/colorimetric tube; Φ25 mm / 10 mL round vial
Wavelengths	350, 420, 525, 565, 610, 700, 860 nm (optional)
Test Mode	Absorbance (Abs), Concentration (Conc)
Background Correction	Reference beam
Measurement Error	≤5%
Repeatability	≤3%

Item	Details
Interface	Type-C, GPS, Bluetooth, 4G (optional)
Printing	External Bluetooth printer
Power	1×18650 rechargeable battery or Type-C
Battery Life	Standby approx. 30 days
Operating Environment	0–50 ℃, ≤90% RH (non-condensing)
Dimensions (L×W×H)	210×96×54 mm
Weight	approx. 430 g

Digestion Module

Item	Details
Display & Input	3.5-inch TFT color touch screen
Digestion Capacity	6 tubes
Heating Rate	Reaches 165 ℃ from 25 ℃ within 6 minutes
Sample Volume	0–10 mL
Heating Method	Thick film heating
Temperature Control	Intelligent PID control
Temp. Resolution	0.1 ℃
Temp. Accuracy	±1.5 ℃

Item	Details
Digestion Hole Size/Depth	16.6 mm / 67 mm
Power Input/Output	220 V/60 Hz; 24 V/8 A
Power	192 W
Dimensions	approx. 224×112×142 mm
Weight	approx. 1.4 kg

Whole Unit

- Dimensions (L×W×H): 541×422×232 mm
- Unit Weight: (to be filled)

VI. Instrument Structure

- Shockproof case: For storing and protecting all modules
- Digester: For digesting water samples requiring digestion, such as COD, total phosphorus, total nitrogen, etc.
- Analyzer: For analyzing various water quality pollutant parameters
- Pipette: For transferring liquid into digestion and colorimetric tubes
- Pipette tips: For use with the pipette

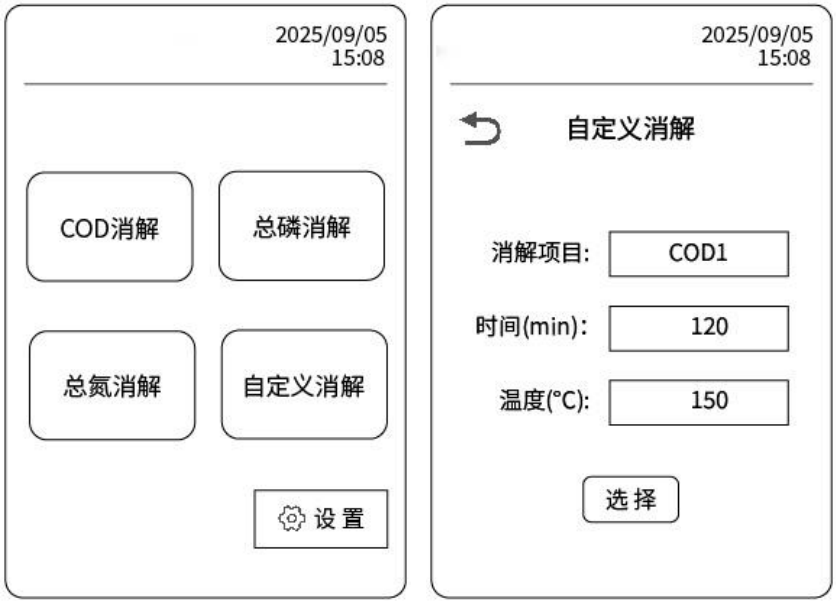
- Colorimetric tube rack: For holding colorimetric tubes

VII. Instrument Operation

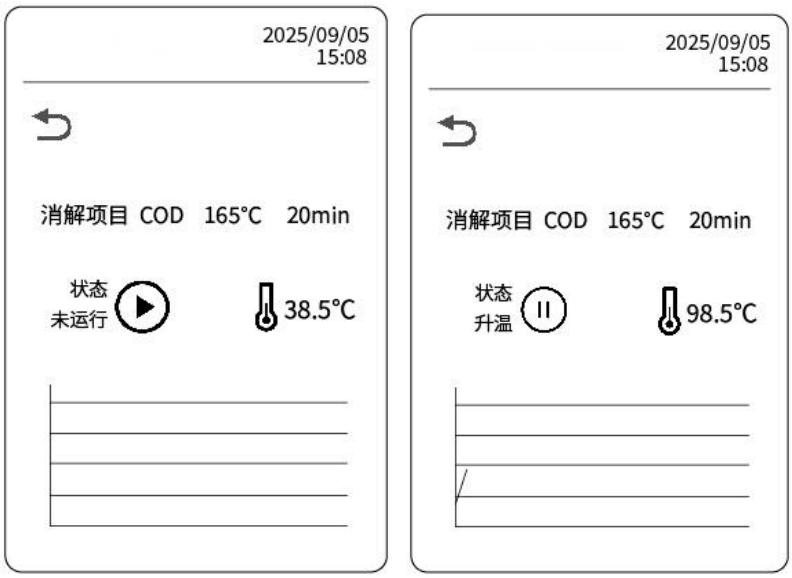
- For water samples requiring digestion: digest first, then test according to the reagent instructions.
- For samples that do not require digestion: skip digestion and test directly according to the reagent instructions.

7.1 Digester Operation

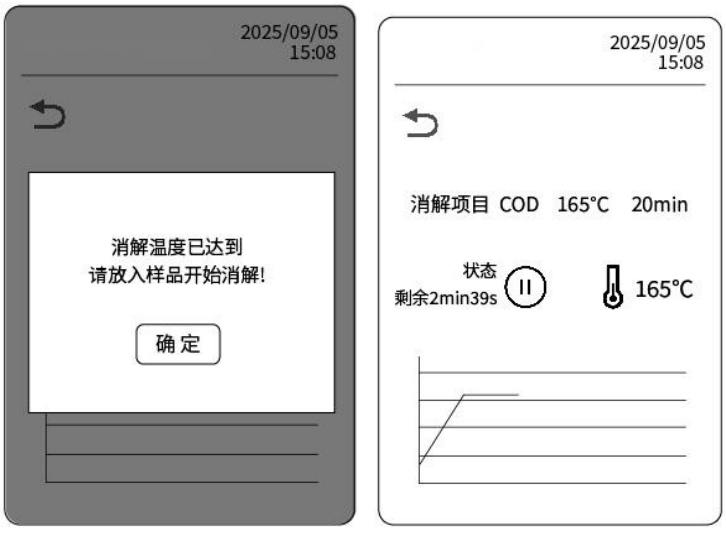
- Connect the AC power adapter to the power socket and turn on the power switch, as shown in the lower-left figure.



- Select the built-in digestion program. If the built-in programs cannot meet your requirements, you can define the required digestion program via “Custom Digestion”.
- Take COD as an example below; other digestion programs can be operated in the same way as COD.Tap “COD Digestion” to enter the following interface.

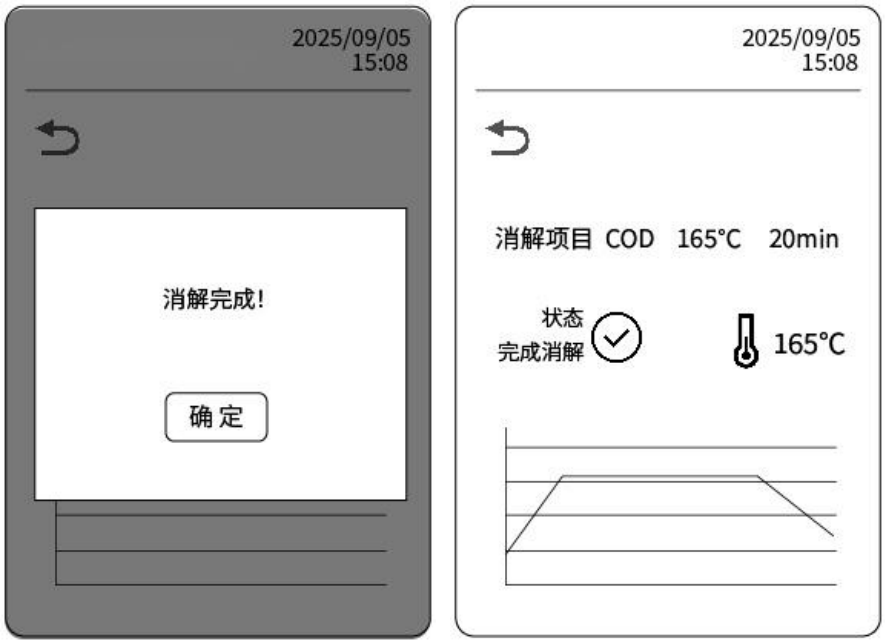


- Press the button in the upper-left figure to start the heating program. The instrument will enter the heating state; the thermometer icon will turn red, and the current temperature will be displayed in real time next to it. Press to stop heating, as shown in the upper-right figure.
- When the temperature reaches the set value for the selected digestion item, a pop-up prompt will appear with a beep, as shown in the lower-left figure. At this point, open the protective cover, place the corresponding reagent into the digestion block, close the cover, and press OK to start digestion. The digestion will then count down as shown in the lower-right figure.



- After the countdown ends, a pop-up prompt will indicate digestion completion, accompanied by a beep, as shown in the lower-left figure.

- Click OK to finish digestion, as shown in the lower-right figure.



7.2 Analyzer Operation

1. Unpack the package and check whether the instrument accessories are complete. The instrument is equipped with a built-in 18650 rechargeable lithium battery. Press and hold the power switch for 2 seconds to turn on the instrument, and confirm that the screen lights up normally.
2. Prepare the reagents and confirm the standard reagent tube type (16 mm colorimetric tube or 25 mm colorimetric vial). Prepare the supporting instruments and consumables, such as digester, pipette and tips, label paper, water samples, etc.
3. Sample Test

   3.1 Add Frequently Used Curves

   “Sample Test” is the common test program. Select the required test curve from the “Curve Library” via “Add Frequently Used Curves” and import it by pressing the “OK” key. After adding, you can directly enter the sample test page and select the corresponding curve for operation next time.

3.2 Delete Frequently Used Curves

Tap Delete Frequently Used Curves, select the curves to be deleted, and press the OK button to delete them.

3.3 Sample Test

Tap the curve with the corresponding number to enter the test interface for the sample. Both concentration and absorbance will be displayed on this page.

a) Place the zero-adjustment sample into the sample cell and tap Zero.

b) Place the sample to be tested into the sample cell and tap Measure to read the result.

c) After the measurement data is displayed, tap Print to print the data (Bluetooth printer is optional).

d) Press the Back key to return to the previous menu.

e) Data is saved automatically. Test results can be viewed in Data Query.

4. Data Query

View saved measurement data. Tap the corresponding row to view data details.

Data export requires the PC software.

5.User Management

• Disabled by default. After enabling user management authority, restart the instrument to enter the administrator login interface.

• Administrator name: admin

• Default password: 123456

• Please change the password upon first login.

• Administrator authorities include: assigning sub-accounts, creating new curves, importing/exporting curves, deleting curves, querying data of all accounts, etc.

6. Settings

Tap Settings to enter the settings page. Tap the corresponding item to enter the secondary

page for configuration.

• Time setting

• Bluetooth setting (used when the Bluetooth module is optional)

• Serial number setting: cannot be modified after setting, only display

• Language setting: select Simplified Chinese or English

• Display: adjust screen brightness

• Sound: adjust volume

7. Help Center

Tap Help to enter the help interface. Press Back to return to the main interface.

VIII. Packing List

Item	Quantity	Notes (× = not included)
Water Quality Analyzer Main Unit	1 pc	
16/25 mm Adapter	1 pc	Installed in the analyzer cell, detachable
18650 Rechargeable Battery	1 pc	Installed in the analyzer battery compartment, detachable
Type-C Charging & Data Cable	1 pc	
Lanyard	1 pc	
25 mm Colorimetric Vial	2 pcs	
16 mm Colorimetric Tube	8 pcs	
Digester Main Unit	1 pc	
Digester Power Adapter	1 pc	
Colorimetric Tube Rack	1 pc	
1 mL Pipette	1 pc	
5 mL Pipette	1 pc	
1 mL Pipette Tips	1 box	

5 mL Pipette Tips	1 box	
Shockproof Case with Liner	1 pc	
Cleaning Cloth	1 pc	
User Manual	1 pc	
Certificate of Quality	1 pc	Included in the manual
Warranty Card	1 pc	Included in the manual

Warranty Terms

1. The warranty period is **one (1) year**.
2. During the warranty period, **free repair** will be provided for failures occurring under normal use in accordance with the user manual.
3. Within the warranty period, repair services will be **charged** if any of the following conditions apply:

   a) Failure to present this warranty certificate or valid purchase proof.

   b) Failures or damages caused by improper use, unauthorized disassembly or modification.

   c) Failures or damages caused by mishandling, dropping or transportation after purchase.

   d) Damages caused by other external factors, such as water immersion, exposure to other solutions, use of non-specified power supply, etc.

   e) Failures or damages caused by other unavoidable external factors.
4. Only the above warranties are provided. No other express or implied warranties (including but not limited to merchantability, fitness for a particular purpose) are given.

   The company shall not be liable for any special, incidental or indirect damages, whether based on contract, civil negligence or other legal theories.

About Zhongke Tk

Zhongke Tk (Shandong) Intelligent Technology Co., Ltd. was founded in 2015, with its headquarters located in Jinan, Shandong Province. It is a high-tech enterprise specializing in the R&D, production, sales and service of water quality analysis equipment.

The company has a professional R&D team. With profound professional knowledge and rich practical experience, the team members continuously promote the innovation and

progress of water quality analysis technology to ensure that the products are always at the advanced level of the industry.

Our products cover a variety of water quality analysis equipment, including hydrogen conductivity meter, dissolved oxygen meter, pH meter, conductivity meter, multi-parameter water quality analyzer, etc. At the same time, the company also provides customized solutions for customers, tailoring suitable water quality analysis equipment and monitoring schemes according to their specific needs.

Adhering to the business philosophy of Technological Innovation, Quality First, Service Supreme, we continuously improve product quality and service level, provides customers with suitable water quality analysis equipment and solutions, and makes greater contributions to the development of the water quality analysis industry.

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